APPENDIX E

LABORATORY ANALYTICAL RESULTS

ERM
840 W Sam Houston Parkway
#600, Houston, Texas, 77024

CD-01R (0-2)

Core Mineralogy, Inc.

Analytical Consulting Services

Semi Quantitative X-Ray Diffraction (XRD) &

Energy Dispersive X-Ray Spectrometry (EDX)

www.coremineral.com
100 Jared Drive
Broussard, LA 70518
Phone: (337) 984-0500
e-mail: mansourr@coremineral.com
Analyst: Mansour Rahmatian (M.S.)

Sampled on 4/30/2025 @ 0930
Sample Submitted to CMI Labs on: 4/30/2025 @ 1115
Attention: David Upthegrove

CMI # 24043001 EDXXRD
Date Reported: 5/2/2025

Sample ID		Semi Quantitative Weight Percent Elemental Composition by EDX Normalized to 100%																			Mineral Phases Identified by XRD																	
Client Sample ID	CMI Sample #	Carbon (C)	Oxygen (O)	Sodium (Na)	Magnesium (Mg)	Aluminum (Al)	Silicon (Si)	Phosphorus (P)	Sulfur (S)	Chlorine (Cl)	Potassium (K)	Calcium (Ca)	Chromium (Cr)	Manganese (Mn)	Iron (Fe)	Zinc (Zn)	Strontium (Sr)	Barium (Ba)	Titanium (Ti)	Total	Quartz (SiO_2)	K-Feldspars ($KAlSi_3O_8$)	Plagioclase ($NaAlSi_3O_8$)	Calcite ($CaCO_3$)	Fe Dolomite ($FeMgCa(CO3)_2$]	Pyrite (FeS_2)	Barium Sulfide (BaS)	Barite ($BaSO_4$)	Witherite ($BaCO_3$)	Barium Chloride ($BaCl_2$)	Baria (BaO)	Barium Peroxide (BaO_2)	Total Clay	Total
CD-01R (0-2)	21671	7.15	45.04	0.34	0.21	4.86	33.56	ND	0.88	0.05	1.05	0.20	ND	ND	3.14	ND	ND	3.19	0.33	100	81.3	1.1	1.0	ND	ND	ND	ND	5.5	ND	ND	ND	ND	11.1	100

ND = None Detected

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Limitation of Liability: These analysis, opinions or interpretations are based on observation and materials supplied by the client and they represent the best judgment of Core Mineralogy, Inc., (all errors and omissions excepted); but Core Mineralogy, Inc. and its officers and employees shall not be liable for any loss or damage resulting from the furnishing of the data reported herein: and Core Mineralogy, Inc. makes no warranties, expressed or implied, whether of fitness for a particular purpose, merchantability or otherwise, as to the accuracy of the data reported. Core Mineralogy, Inc. disclaims any liability in the use of these data, including possible infringement of patent.

BP/Castex-Ltd Adm-Apx E-000002

Core Mineralogy Labs
100 Jared Drive
Broussard, LA 70518
Phone: (337) 984-0500
Website: coremineral.com
Email: mansourr@coremineral.com

CHAIN OF CUSTODY RECORD

Wellbore Forensic Specialists™

REPORT RESULTS TO

Contact Name:	DAVID. UPTHEGROVE @ERM.com
Company:	ERM
Mailing Address:	840 W SAM HOUSTON PKWY N #600
City, State, Zip:	HOUSTON, TX 77024
Telephone #:	281 600 1000
E-mail:	DAVID. UPTHEGROVE @ ERM.com

SEND INVOICE TO

Purchase Order #:	
Contact Name:	SAME
Company:	
City, State, Zip:	
Telephone #:	
E-mail:	

Special Instructions:

Analysis Requested (Enter an "X" in the boxes below to indicate request)

Lab ID# (CMI USE ONLY)	Client Sample ID: *Field, Well, Location, Sampling Point..*	Date Sampled	Time Sampled	Combined XRD-EDX	XRD (Bulk)	XRD (Clay)	EDX Only	FTIR	GCMS	Laser Particle Size Distribution	Acid Solubility	Barite Solubility	Complete Water	SEM	Glycol QC Test	BA Speciation (XRD)				
21671	CD-01R (0-2)	4/30/25	0930													X				

RELINQUISHED BY: (SIGNATURE)	Date Submitted 4/30/25	Time Submitted 1115	RECEIVED BY: (SIGNATURE) ERIC MUCHIRI	Date Submitted 4/30/25	Time Submitted 1115	Normal Turnaround ☐ 10 Working Days
RELINQUISHED BY: (PLEASE PRINT YOUR NAME) Connor Matherne	Date Submitted	Time Submitted	RECEIVED BY: (SIGNATURE)	Date Submitted	Time Submitted	RUSH Service ☒ 24 Hours ☐ 72 Hours
NORM Survey Meter Reading: _____ (microR/hr)			Comments:			Other Service (Please Specify) ☒ WILL SPECIFY LATER TODAY

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 º Fax 504-371-8560
www.waypointanalytical.com

5/7/2025

ERM (Sugar Land)
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 25-121-0011
Project Description: Castex
PN 0727954
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 5/1/2025 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-000004

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

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Sample Summary Table

Report Number: **25-121-0011**

Client Project Description: **Castex**
PN 0727954
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received
56436	CD- 01R (0-2)	Solids	04/30/2025 09:30	05/01/2025 13:16
56437	CD- 01R (0-2)	SPLP	04/30/2025 09:30	05/01/2025 13:16

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Client: ERM (Sugar Land) **CASE NARRATIVE**
Project: Castex
Lab Report Number: 25-121-0011
Date: 5/7/2025

Metals Analysis Method 6010D
Sample 56436 (CD- 01R (0-2))
Analyte: Barium
QC Batch No: A102475/A102416
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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10485
ERM (Sugar Land)
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston , TX 77024

Project Castex
Information : PN 0727954
Jennings, LA

Report Date : 05/07/2025
Received : 05/01/2025

Report Number : **25-121-0011**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **56436**
Sample ID : **CD- 01R (0-2)**

Matrix: **Solids**
Sampled: **4/30/2025 09:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	8.87	%	0.050	1	05/01/25 11:35	JMB	SW-DRYWT
True Total Barium	17700	mg/Kg	50.0	1	05/05/25 19:17	APB	29B
Barium	1180	mg/Kg	0.500	1	05/05/25 18:47	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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10485
ERM (Sugar Land)
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston , TX 77024

Project Castex
Information : PN 0727954
Jennings, LA

Report Date : 05/07/2025
Received : 05/01/2025

Report Number : **25-121-0011**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **56437**
Sample ID : **CD- 01R (0-2)**

Matrix: **SPLP**
Sampled: **4/30/2025 09:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/02/25 14:00	HLF	1312
SPLP Barium	0.502	mg/L	0.0100	1	05/06/25 23:17	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **25-121-0011**

QC Prep: A102415
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): A102474
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-A102415 Matrix: SOL
Associated Lab Samples: 56436

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 50.0	50.0	05/05/25 19:08

Laboratory Control Sample LCS-A102415

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	9840	98.0	80-120

Matrix Spike & Matrix Spike Duplicate A 56436-A102412-MS-A102415 A 56436-A102412-MSD-A102415

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	17700	9800	9900	27100	28100	96.0	105	75-125	3.6	20.0

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **25-121-0011**

QC Prep: A102416
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A102475
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-A102416 Matrix: SOL
Associated Lab Samples: 56436

Parameter	Units	Blank Result	MQL	Analyzed
Barium	mg/Kg	<0.500	0.500	05/05/25 18:25

Laboratory Control Sample & LCSD LCS-A102416 LCSD-A102416

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Barium	mg/Kg	50.0	51.4	51.5	103	103	80-120	0.1	20

Matrix Spike & Matrix Spike Duplicate A 56436-MS-A102416 A 56436-MSD-A102416

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Barium	mg/Kg	1180	49.1	49.7	816	963	0.0*	0.0*	75-125	16.5	20

* QC Fail

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 25-121-0011

QC Prep: A102486
QC Prep Batch Method: SW-3010A
QC Analytical Batch(es): A102510
Analysis Method: 6010D
Analysis Description: Metals Analysis (SPLP)

Lab Reagent Blank LRB-A102486 Matrix: TCL
Associated Lab Samples: 56437

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Barium	mg/L	<0.0100	0.0100	05/06/25 23:00

Laboratory Control Sample & LCSD LCS-A102486 LCSD-A102486

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
SPLP Barium	mg/L	1.00	1.02	1.02	102	102	80-120	0.0	20

Matrix Spike & Matrix Spike Duplicate A 56437-MS-A102486 A 56437-MSD-A102486

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
SPLP Barium	mg/L	0.502	1.00	1.00	1.53	1.53	103	103	75-125	0.0	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **25-121-0011**

QC Analytical Batch: A102411
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate L 82021-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	2.70	2.77	2.5	20.0	05/01/25 11:35

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM (Sugar Land)**
Report Number: **25-121-0011**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR Gun #2

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Brandi Hidalgo Date & Time: 05/01/2025 13:16:00

Client Name/Address	Client Project Manager/Contact	Billing Information	For Laboratory Use Only
ERM	DAVE UPTHEGROVE	ERM	

Project Description	Project/Site Location (City/State)		Method of Shipment	Matrix Key
CASTEX	JENNINGS, LA	☒ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0727954	504-481-6470	DAVE.UPTHEGROVE@ERM.COM		

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5041 Taravella Road
Marrero, LA 70072
504-371-8557

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCl pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative: BTA	TTBA	SPLP BTA	% Moisture	Comments/Notes
4/30	930	CD-01R (0-2)	1	S	G	X	X	X	X	56436-56437

25-121-0011
10485
05-01-2025
11:45:14
ERM (Sugar Land)
Castex

For Laboratory Use Only			Sampled by (Name – Print)	Client Remarks/Comments
Ice: Y / N (Y)	Custody Seals: Y / N (N)	Lab Comments	Connor Matherne	
Blank/Cooler Temp: 2.2°c				

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
	4/30 1545	Kathryn Hendrix 04/30/25	1545
Kathryn Hendrix 05/01/25	0800		5/1/25 e 0800
	5/1/25 e 1316	Brandi Hidalgo	5-1-25 1316

BP/Castex-Ltd Adm-Apx E-000015

Safeguard LITHO USA Form No. 811-2/E15CS000388 07/15

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

May 21, 2025

Greg Miller
ICON Environmental Services
2049 Commercial Drive
Port Allen, LA 70767
TEL: (225) 344-8490
FAX (225) 344-6654

RE: Castex 9403-016-0100

Order No.: 25050277

Dear Greg Miller:

Element Materials Technology Lafayette received 1 sample(s) on 5/6/2025 for the analyses presented in the following report.

In accordance with your instructions, Element Lafayette either conducted or subcontracted these analyses. Subcontracted analyses will be identified in the accompanying case narrative. All relevant sampling information can be found on the attached Chain-of-Custody form. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet the applicable requirements of TNI. Reported results relate only to the items tested.

Where applicable, all soil data, except for 29-B, are reported on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. MNELAP Certification No.: 2414959. LDHH Certification No.: LA023. ISDH Certification No.: C-LA-01. NDELCP Certification No.: R-226. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation. PA registration No.: 68-05967.

Estimated uncertainty is available upon request. This report shall not be reproduced, except in full, without the written approval of the laboratory.

Buffy Bryant

Buffy Bryant
Customer Service Supervisor

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

Case Narrative

WO#: **25050277**
Date: **5/21/2025**

CLIENT: ICON Environmental Services
Project: Castex 9403-016-0100

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

Analytical Report

(consolidated)

WO#: **25050277**

Date Reported **5/21/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/30/2025 9:30:00 AM

Project: Castex 9403-016-0100

Lab ID: 25050277-001 **Matrix:** SOIL

Client Sample ID CD - 1R (0-2')

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **SG**
Electrical Conductivity	1.60	0.10		mmhos/cm	1	5/13/2025 11:00:00 AM
29B METALS METALS IN SOIL OR SLUDGE BY ICP				**SW6010B**	**SW3050B**	Analyst: **IO**
Barium	3,580	0.998		mg/Kg-dry	1	5/13/2025 3:40:00 PM
29B METALS METALS IN SOIL OR SLUDGE BY ICP				**SW6010B**	**SW3050B**	Analyst: **IO**
Barium	3,290	1.83		mg/Kg	1	5/13/2025 3:40:00 PM
29B METALS TRUE TOTAL BARIUM				**LDNR 29-B**		Analyst: **IO**
True Total Barium	15,300	49.3		mg/Kg-dry	1	5/19/2025 5:09:00 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	8.00	1.00		wt%	1	5/7/2025 12:51:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

QC SUMMARY REPORT

WO#: **25050277**

21-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61724**

Sample ID: **MB-61724**	SampType: **MBLK**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/9/2025**	RunNo: **150700**
Client ID: **PBS**	Batch ID: **61724**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	< 1.00	1.00									

Sample ID: **LCS-61724**	SampType: **LCS**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/9/2025**	RunNo: **150700**
Client ID: **LCSS**	Batch ID: **61724**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	53.1	1.00	50.00	0	106	80	120				

Sample ID: **LCSD-61724**	SampType: **LCSD**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/9/2025**	RunNo: **150700**
Client ID: **LCSS02**	Batch ID: **61724**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	52.4	1.00	50.00	0	105	80	120	53.07	1.29	20	

Sample ID: **25050203-001AMS**	SampType: **MS**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/9/2025**	RunNo: **150700**
Client ID: **ZZZZZZ**	Batch ID: **61724**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	854	0.999	49.96	845.7	16.8	75	125				S

NOTES:
S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

Element Materials Technology Lafayette
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TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

QC SUMMARY REPORT

WO#: **25050277**

21-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61724**

Sample ID:	**25050203-001AMSD**	SampType:	**MSD**	TestCode:	**6010_S_29B**	Units:	**mg/Kg-dry**	Prep Date:	**5/9/2025**	RunNo:	**150700**
Client ID:	**ZZZZZZ**	Batch ID:	**61724**	TestNo:	**SW6010B**	**SW3050B**		Analysis Date:	**5/13/2025**	SeqNo:	**3691546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	806	0.995	49.75	845.7	-79.5	75	125	854.1	5.78	20	S

NOTES:
S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25050277**

21-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61725**

Sample ID: **MB-61725**	SampType: **MBLK**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/9/2025**	RunNo: **150701**
Client ID: **PBS**	Batch ID: **61725**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691584**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	< 2.00	2.00									

Sample ID: **LCS-61725**	SampType: **LCS**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/9/2025**	RunNo: **150701**
Client ID: **LCSS**	Batch ID: **61725**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691585**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	53.1	2.00	50.00	0	106	80	120				

Sample ID: **LCSD-61725**	SampType: **LCSD**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/9/2025**	RunNo: **150701**
Client ID: **LCSS02**	Batch ID: **61725**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691586**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	52.4	2.00	50.00	0	105	80	120	53.07	1.29	20	

Sample ID: **25050203-001AMS**	SampType: **MS**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/9/2025**	RunNo: **150701**
Client ID: **ZZZZZZ**	Batch ID: **61725**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	562	1.31	32.87	556.5	16.8	75	125				S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25050277**

21-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61725**

Sample ID: **25050203-001AMSD**	SampType: **MSD**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/9/2025**	RunNo: **150701**
Client ID: **ZZZZZZ**	Batch ID: **61725**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/13/2025**	SeqNo: **3691591**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	530	1.31	32.74	556.5	-79.5	75	125	562.0	5.78	20	S

NOTES:
S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25050277**

21-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61797**

Sample ID: **MB-61797**	SampType: **MBLK**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/15/2025**	RunNo: **150857**
Client ID: **PBS**	Batch ID: **61797**	TestNo: **LDNR 29-B**		Analysis Date: **5/19/2025**	SeqNo: **3696108**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	< 50.0	50.0									

Sample ID: **LCS-61797**	SampType: **LCS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/15/2025**	RunNo: **150857**
Client ID: **LCSS**	Batch ID: **61797**	TestNo: **LDNR 29-B**		Analysis Date: **5/19/2025**	SeqNo: **3696109**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,300	50.0	5,000	0	106	75	125				

Sample ID: **LCSD-61797**	SampType: **LCSD**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/15/2025**	RunNo: **150857**
Client ID: **LCSS02**	Batch ID: **61797**	TestNo: **LDNR 29-B**		Analysis Date: **5/19/2025**	SeqNo: **3696110**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,250	50.0	5,000	0	105	75	125	5,296	0.916	20	

Sample ID: **25050277-001AMS**	SampType: **MS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/15/2025**	RunNo: **150857**
Client ID: **CD - 1R (0-2')**	Batch ID: **61797**	TestNo: **LDNR 29-B**		Analysis Date: **5/19/2025**	SeqNo: **3696114**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	20,600	45.9	4,587	15,280	115	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25050277**

21-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61797**

Sample ID: **25050277-001AMSD** SampType: **MSD** TestCode: **TTBA** Units: **mg/Kg-dry** Prep Date: **5/15/2025** RunNo: **150857**
Client ID: **CD - 1R (0-2')** Batch ID: **61797** TestNo: **LDNR 29-B** Analysis Date: **5/19/2025** SeqNo: **3696115**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	20,500	46.1	4,608	15,280	114	75	125	20,580	0.204	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25050277**

21-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150589**

Sample ID: **25050280-014ADUP**	SampType: **DUP**	TestCode: **PMOIST_29B**	Units: **wt%**	Prep Date:	RunNo: **150589**
Client ID: **ZZZZZZ**	Batch ID: **R150589**	TestNo: **LDNR 29-B**		Analysis Date: **5/6/2025**	SeqNo: **3687819**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	22.7	1.00						24.50	7.63	20	

Sample ID: **25050277-001ADUP**	SampType: **DUP**	TestCode: **PMOIST_29B**	Units: **wt%**	Prep Date:	RunNo: **150589**
Client ID: **CD - 1R (0-2')**	Batch ID: **R150589**	TestNo: **LDNR 29-B**		Analysis Date: **5/7/2025**	SeqNo: **3687823**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	8.10	1.00						8.00	1.24	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25050277**

21-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150651**

Sample ID: **MB-R150651**	SampType: **MBLK**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150651**
Client ID: **PBS**	Batch ID: **R150651**	TestNo: **LDNR 29-B**		Analysis Date: **5/13/2025**	SeqNo: **3690387**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	< 0.10	0.10									

Sample ID: **LCS1-R150651**	SampType: **LCS1**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150651**
Client ID: **ZZZZZZ**	Batch ID: **R150651**	TestNo: **LDNR 29-B**		Analysis Date: **5/13/2025**	SeqNo: **3690388**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.49	0.10	0.50	0	97.7	90	110				

Sample ID: **LCS2-R150651**	SampType: **LCS2**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150651**
Client ID: **ZZZZZZ**	Batch ID: **R150651**	TestNo: **LDNR 29-B**		Analysis Date: **5/13/2025**	SeqNo: **3690389**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	52.1	0.10	53.00	0	98.3	90	110				

Sample ID: **25050280-014ADUP**	SampType: **DUP**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150651**
Client ID: **ZZZZZZ**	Batch ID: **R150651**	TestNo: **LDNR 29-B**		Analysis Date: **5/13/2025**	SeqNo: **3690395**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	9.88	0.10						10.39	5.03	20	*

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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Sample Log-In Check List

Client Name: **ICON_ENV** Work Order Number: **25050277** RcptNo: **1**

Logged by:	**Martin Lee**	**5/6/2025 2:20:00 PM**	Martin Lee
Completed By:	**Martin Lee**	**5/6/2025 2:34:01 PM**	Martin Lee
Reviewed By:	**Kelli Foreman**	**5/7/2025 10:48:03 AM**	Kelli R Fo

Chain of Custody

1. Is Chain of Custody complete? Yes ☐ No ☑ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes ☑ No ☐ NA ☐
4. Shipping container/cooler in good condition? Yes ☑ No ☐
   Custody seals intact on shipping container/cooler? Yes ☐ No ☐ Not Present ☑
   No. Seal Date: Signed By:
5. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☑
6. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Not required
7. Sample(s) in proper container(s)? Yes ☑ No ☐
8. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
9. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
10. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
11. Is the headspace in the VOA vials less than 1/4 inch or 6 mm? Yes ☐ No ☐ No VOA Vials ☑
12. Were any sample containers received broken? Yes ☐ No ☑
13. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
14. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
15. Is it clear what analyses were requested? Yes ☑ No ☐
16. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

Special Handling (if applicable)

17. Was client notified of all discrepancies with this order? Yes ☐ No ☑ NA ☐

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

18. Additional remarks:
    Date and time of client's relinquish signature does not match drivers

Cooler Information

Cooler No	Temp ºC	Condition	Seal Intact	Seal No	Seal Date	Signed By

element

Chain of Custody

Laboratory Number: 25052277

Page 1 of 1

	Client Information:	Billing Information:	PO Number:	Project Name/Number:
Company Name:	ICON	SAME		CASTEX 9403-016-0100
Contact Name:			Quote Number:	
Address:				Sampler's Signature: Ashley Bergeron
			Required QC Level	
City, State Zip:				
Phone Number:	Ext:	Ext:	Bill Monthly ☐Yes ☐No	Shipping Method: UPS / FedEx / NOW DHL / Element / Hand / Mail
Fax Number:				
E-mail Address:				

Matrix Code

DW = Drinking Water
WW = Waste Water
GW = Ground Water
AQ = Aqueous
OT = Other
SL = Sludge SOL = Solid
O = Oil SO = Soil
F = Food SW = Swab
NG = Natural Gas
NGL = Natural Gas Liquid
PW = Produced Water
CF = Completion Fluid

Which Regulations Apply:
☐RCRA ☐Drinking Water
☐POTW ☐Distribution
☐NPDES ☐Special
☐USDA/FDA ☐State
☐RECAP/RISC ☐Other

Turn Time
☐Standard
RUSH
☐1 Day
☐2 Day
☐Other
(Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Type P=Plastic, G=Glass, V=Vial	Pres.: HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	Requested Tests: Ba	TTBa	% Moisture	EC	Comments
CD-1R 0-2'	4-30-25	0930	G	SO	1	P	—	X	X	X	X	

	Relinquished by	Date/Time	Received by	Date/Time
1	Ashley Bergeron	5-5-2025 1020	Matthew Miller	5.5.25 / 1027
2	Matthew Miller	5.6.25 / 1420		5-6-25 1420
3				

Field Notes:

Received at lab on ice?
☐Yes ☐~~No~~ Temp:

All samples submitted to Element Materials Technology for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Element Materials Technology reserves the right to return unused sample portions.

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F 812-375-0731

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46825 USA
P 260-471-7000
F 260-471-7777

909 Executive Dr
Warsaw, IN
46580 USA
P 574-267-3305
F 574-269-6569

3370 Cleveland Road, Suite 100A
South Bend, IN
46628 USA
P 574-277-0707
F 574-273-5699

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Lafayette, LA
70508 USA
P 337-235-0483
F 337-233-6540

Waypoint ANALYTICAL

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www.waypointanalytical.com

5/1/2025

Hydro-Environmental Technology, Inc.
Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott, LA, 70583

Ref: Report Number: 25-111-0011
Project Description: Castex
1009.A75
Jennings, LA

Dear Mr. Stewart Stover, Jr.:

Waypoint Analytical Louisiana, Inc. received sample(s) on 4/21/2025 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-000029

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

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Sample Summary Table

Report Number: **25-111-0011**

Client Project Description: **Castex**
1009.A75
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received
55583	DB-1 (8-10')	Solids	04/16/2025 15:45	04/21/2025 14:30
55584	DB-1 (23-25')	Solids	04/16/2025 16:10	04/21/2025 14:30
55585	DB-1 (43-45')	Solids	04/17/2025 08:30	04/21/2025 14:30
55586	DB-1 (58-60')	Solids	04/17/2025 08:45	04/21/2025 14:30
55587	DB-1 (60-62')	Solids	04/17/2025 09:00	04/21/2025 14:30
55588	DB-1 (70-72')	Solids	04/17/2025 09:20	04/21/2025 14:30
55589	DB-1 (78-80')	Solids	04/17/2025 09:20	04/21/2025 14:30

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Client: Hydro-Environmental Technology, Inc. **CASE NARRATIVE**
Project: Castex
Lab Report Number: 25-111-0011
Date: 5/1/2025

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Waypoint ANALYTICAL

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09996
Hydro-Environmental Technology, Inc.
Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott , LA 70583

Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/01/2025
Received : 04/21/2025

Report Number : **25-111-0011**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **55583**
Sample ID : **DB-1 (8-10')**

Matrix: **Solids**
Sampled: **4/16/2025 15:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**22.1**	%	0.050	1	04/23/25 10:34	BXH	SW-DRYWT
% Saturation (Sat Paste)	**91.9**	%		1	04/25/25 09:00	JMB	29B
Alkalinity (Sat Paste)	<0.3	meq/L	0.3	1	04/25/25 14:20	JMB	29B
Chloride (Sat Paste)	**46.8**	meq/L	0.010	20	04/30/25 12:18	MJM	29B
Chloride	**1440**	mg/Kg	20.0	5	04/30/25 10:58	MJM	9056A
Electrical Conductivity (Sat Paste)	**5.13**	mmhos/cm		1	04/25/25 09:00	JMB	29B
pH (Sat Paste)	**7.13**	s.u.		1	04/25/25 09:00	JMB	29B
Sulfate (Sat Paste)	**0.066**	meq/L	0.010	20	04/30/25 12:18	MJM	29B
Calcium (Sat Paste)	**11.5**	meq/L	0.050	10	04/25/25 13:09	APB	29B
Magnesium (Sat Paste)	**6.54**	meq/L	0.082	10	04/25/25 13:09	APB	29B
Sodium (Sat Paste)	**29.1**	meq/L	0.220	10	04/25/25 13:09	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
J Estimated value

BP/Castex-Ltd Adm-Apx E-000033

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/01/2025
Received : 04/21/2025

Report Number : **25-111-0011**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **55584**
Sample ID : **DB-1 (23-25')**

Matrix: **Solids**
Sampled: **4/16/2025 16:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**9.02**	%	0.050	1	04/23/25 10:34	BXH	SW-DRYWT
% Saturation (Sat Paste)	**135**	%		1	04/25/25 09:00	JMB	29B
Alkalinity (Sat Paste)	**1.5**	meq/L	0.3	1	04/25/25 14:20	JMB	29B
Chloride (Sat Paste)	**3.76**	meq/L	0.010	5	04/30/25 12:30	MJM	29B
Chloride	**87.6**	mg/Kg	20.0	5	04/30/25 11:35	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.589**	mmhos/cm		1	04/25/25 09:00	JMB	29B
pH (Sat Paste)	**8.14**	s.u.		1	04/25/25 09:00	JMB	29B
Sulfate (Sat Paste)	**0.088**	meq/L	0.010	5	04/30/25 12:30	MJM	29B
Calcium (Sat Paste)	**2.04**	meq/L	0.025	5	04/25/25 13:13	APB	29B
Magnesium (Sat Paste)	**0.916**	meq/L	0.041	5	04/25/25 13:13	APB	29B
Sodium (Sat Paste)	**2.17**	meq/L	0.110	5	04/25/25 13:13	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
J Estimated value

BP/Castex-Ltd Adm-Apx E-000034

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Scott , LA 70583

Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/01/2025
Received : 04/21/2025

Report Number : **25-111-0011**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **55585**
Sample ID : **DB-1 (43-45')**

Matrix: **Solids**
Sampled: **4/17/2025 08:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**23.0**	%	0.050	1	04/23/25 10:34	BXH	SW-DRYWT
% Saturation (Sat Paste)	**88.5**	%		1	04/25/25 09:00	JMB	29B
Alkalinity (Sat Paste)	**2.3**	meq/L	0.3	1	04/25/25 14:20	JMB	29B
Chloride (Sat Paste)	**14.9**	meq/L	0.010	10	04/30/25 12:43	MJM	29B
Chloride	**304**	mg/Kg	20.0	5	04/30/25 11:47	MJM	9056A
Electrical Conductivity (Sat Paste)	**1.87**	mmhos/cm		1	04/25/25 09:00	JMB	29B
pH (Sat Paste)	**8.23**	s.u.		1	04/25/25 09:00	JMB	29B
Sulfate (Sat Paste)	**0.276**	meq/L	0.010	10	04/30/25 12:43	MJM	29B
Calcium (Sat Paste)	**5.10**	meq/L	0.050	10	04/25/25 13:17	APB	29B
Magnesium (Sat Paste)	**2.07**	meq/L	0.082	10	04/25/25 13:17	APB	29B
Sodium (Sat Paste)	**8.95**	meq/L	0.220	10	04/25/25 13:17	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
J Estimated value

BP/Castex-Ltd Adm-Apx E-000035

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/01/2025
Received : 04/21/2025

Report Number : **25-111-0011**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **55586**
Sample ID : **DB-1 (58-60')**

Matrix: **Solids**
Sampled: **4/17/2025 08:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**28.5**	%	0.050	1	04/23/25 10:34	BXH	SW-DRYWT
% Saturation (Sat Paste)	**79.3**	%		1	04/25/25 09:00	JMB	29B
Alkalinity (Sat Paste)	**2.8**	meq/L	0.3	1	04/25/25 14:20	JMB	29B
Chloride (Sat Paste)	**16.2**	meq/L	0.010	10	04/30/25 13:09	MJM	29B
Chloride	**270**	mg/Kg	20.0	5	04/30/25 11:59	MJM	9056A
Electrical Conductivity (Sat Paste)	**2.04**	mmhos/cm		1	04/25/25 09:00	JMB	29B
pH (Sat Paste)	**8.07**	s.u.		1	04/25/25 09:00	JMB	29B
Sulfate (Sat Paste)	**0.289**	meq/L	0.010	10	04/30/25 13:09	MJM	29B
Calcium (Sat Paste)	**8.28**	meq/L	0.050	10	04/25/25 13:26	APB	29B
Magnesium (Sat Paste)	**3.67**	meq/L	0.082	10	04/25/25 13:26	APB	29B
Sodium (Sat Paste)	**5.19**	meq/L	0.220	10	04/25/25 13:26	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
J Estimated value

BP/Castex-Ltd Adm-Apx E-000036

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/01/2025
Received : 04/21/2025

Report Number : **25-111-0011**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **55587**
Sample ID : **DB-1 (60-62')**

Matrix: **Solids**
Sampled: **4/17/2025 09:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**31.3**	%	0.050	1	04/23/25 10:34	BXH	SW-DRYWT
% Saturation (Sat Paste)	**112**	%		1	04/25/25 09:00	JMB	29B
Alkalinity (Sat Paste)	**2.2**	meq/L	0.3	1	04/25/25 14:20	JMB	29B
Chloride (Sat Paste)	**9.42**	meq/L	0.010	5	04/30/25 13:22	MJM	29B
Chloride	**168**	mg/Kg	20.0	5	04/30/25 12:12	MJM	9056A
Electrical Conductivity (Sat Paste)	**1.31**	mmhos/cm		1	04/25/25 09:00	JMB	29B
pH (Sat Paste)	**8.08**	s.u.		1	04/25/25 09:00	JMB	29B
Sulfate (Sat Paste)	**0.345**	meq/L	0.010	5	04/30/25 13:22	MJM	29B
Calcium (Sat Paste)	**5.22**	meq/L	0.050	10	04/25/25 13:30	APB	29B
Magnesium (Sat Paste)	**2.29**	meq/L	0.082	10	04/25/25 13:30	APB	29B
Sodium (Sat Paste)	**3.43**	meq/L	0.220	10	04/25/25 13:30	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
J Estimated value

BP/Castex-Ltd Adm-Apx E-000037

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/01/2025
Received : 04/21/2025

Report Number : **25-111-0011**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **55588**
Sample ID : **DB-1 (70-72')**

Matrix: **Solids**
Sampled: **4/17/2025 09:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**29.1**	%	0.050	1	04/23/25 10:34	BXH	SW-DRYWT
% Saturation (Sat Paste)	**68.5**	%		1	04/25/25 09:00	JMB	29B
Alkalinity (Sat Paste)	**4.2**	meq/L	0.3	1	04/25/25 14:20	JMB	29B
Chloride (Sat Paste)	**0.955**	meq/L	0.010	5	04/30/25 13:35	MJM	29B
Chloride	**24.8**	mg/Kg	20.0	5	04/30/25 12:24	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.653**	mmhos/cm		1	04/25/25 09:00	JMB	29B
pH (Sat Paste)	**8.51**	s.u.		1	04/25/25 09:00	JMB	29B
Sulfate (Sat Paste)	**1.36**	meq/L	0.010	5	04/30/25 13:35	MJM	29B
Calcium (Sat Paste)	**2.59**	meq/L	0.025	5	04/25/25 13:34	APB	29B
Magnesium (Sat Paste)	**1.14**	meq/L	0.041	5	04/25/25 13:34	APB	29B
Sodium (Sat Paste)	**2.64**	meq/L	0.110	5	04/25/25 13:34	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
J Estimated value

BP/Castex-Ltd Adm-Apx E-000038

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/01/2025
Received : 04/21/2025

Report Number : **25-111-0011**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **55589**
Sample ID : **DB-1 (78-80')**

Matrix: **Solids**
Sampled: **4/17/2025 09:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**22.4**	%	0.050	1	04/23/25 10:34	BXH	SW-DRYWT
% Saturation (Sat Paste)	**110**	%		1	04/25/25 09:00	JMB	29B
Alkalinity (Sat Paste)	**3.6**	meq/L	0.3	1	04/25/25 14:20	JMB	29B
Chloride (Sat Paste)	**1.15**	meq/L	0.010	5	04/30/25 14:26	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	04/30/25 12:36	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.525**	mmhos/cm		1	04/25/25 09:00	JMB	29B
pH (Sat Paste)	**8.38**	s.u.		1	04/25/25 09:00	JMB	29B
Sulfate (Sat Paste)	**0.637**	meq/L	0.010	5	04/30/25 14:26	MJM	29B
Calcium (Sat Paste)	**1.92**	meq/L	0.025	5	04/25/25 13:38	APB	29B
Magnesium (Sat Paste)	**0.827**	meq/L	0.041	5	04/25/25 13:38	APB	29B
Sodium (Sat Paste)	**2.18**	meq/L	0.110	5	04/25/25 13:38	APB	29B

Qualifiers/ Definitions DF Dilution Factor J Estimated value

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-111-0011**

QC Prep: A102127
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102173,A102328,A102174,A102175
Analysis Method: 29B
Analysis Description: Alkalinity

Duplicate A 55585-A102122-DUP-A102127

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Alkalinity (Sat Paste)	meq/L	2.3	2.3	0.0	30.0	04/25/25 14:20

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Quality Control Data

Client ID: Hydro-Environmental Technology, Inc.
Project Description: Castex
Report No: 25-111-0011

QC Prep: A102127
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102173,A102328,A102174,A102175
Analysis Method: 29B
Analysis Description: Anions by Ion Chromatography

Duplicate A 55585-A102122-DUP-A102127

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Chloride (Sat Paste)	meq/L	14.9	13.6	9.1	30.0	04/30/25 12:56
Sulfate (Sat Paste)	meq/L	0.276	0.267	3.3	30.0	04/30/25 12:56

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-111-0011**

QC Prep: A102127
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102173,A102328,A102174,A102175
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 55585-A102122-DUP-A102127

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	88.5	91.4	3.2	30.0	04/25/25 09:00
Electrical Conductivity (Sat Paste)	mmhos/cm	1.87	1.74	7.2	30.0	04/25/25 09:00
pH (Sat Paste)	s.u.	8.23	8.23	0.0	30.0	04/25/25 09:00

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Quality Control Data

Client ID: Hydro-Environmental Technology, Inc.
Project Description: Castex
Report No: 25-111-0011

QC Prep: A102127
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102173,A102328,A102174,A102175
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 55585-A102122-DUP-A102127

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	5.10	4.60	10.3	30.0	04/25/25 13:22
Magnesium (Sat Paste)	meq/L	2.07	1.91	8.0	30.0	04/25/25 13:22
Sodium (Sat Paste)	meq/L	8.95	8.45	5.7	30.0	04/25/25 13:22

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-111-0011**

QC Prep: A102237
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): A102276
Analysis Method: 9056A
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A102237 Matrix: SOL
Associated Lab Samples: 55583, 55584, 55585, 55586, 55587, 55588, 55589

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	04/30/25 10:33

Laboratory Control Sample LCS-A102237

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	529	106	80-120

Matrix Spike & Matrix Spike Duplicate A 55583-MS-A102237 A 55583-MSD-A102237

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	1440	495	491	1930	1960	99.0	106	80-120	1.5	15.0

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Shipment Receipt Form

Customer Number: **09996**
Customer Name: **Hydro-Environmental Technology, Inc.**
Report Number: **25-111-0011**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 2

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Brandi Hidalgo Date & Time: 04/21/2025 14:30:00

HYDRO-ENVIRONMENTAL TEC
Environmental Consu
P.O. Box 60295
Lafayette, LA 70596-
Phone (337) 261-1963 FAX (3

25-111-0011
09996
04-21-2025
10:57:27
Hydro-Environmental Technology, Inc.
Castex

SAMPLE CHAIN-OF-CUSTODY RECORD

Laboratory:	Waypoint		
Project Name:	Castex	**Collected By:**	EM
Project Number:	1009.A75	**Company:**	Hydro-Environmental Technology, Inc.
Project Location:	Jennings, LA	**Date:**	4/16/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
DB-1 (8-10') 55583	SO	4/16/2025	1545	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
DB-1 (23-25') 55584	SO	4/16/2025	1610	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
DB-1 (43-45") 55585	SO	4/17/2025	0830	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
DB-1 (58-60') 55586	SO	4/17/2025	0845	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
DB-1 (60-62') 55587	SO	4/17/2025	0900	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
DB-1 (70-72') 55588	SO	4/17/2025	0920	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
DB-1 (78-80') 55589	SO	4/17/2025	0920	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C

HOLD for possible analysis of SPLP Chloride and Sodium
Cations*: Soluble Calcium, Magnesium, and Sodium
Anions*: Cl, SO4, HCO3

2.1°c

Relinquished By: Eric Hutt	Received By: DB Caco
Date/Time: 4/21/25 0845	Date/Time: 4/21/25 @ 8:45
Relinquished By: DB Caco	Received By:
Date/Time: 4/21/25 @ ~~DBCo~~ 10:25	Date/Time: 4/21/25@ 1025
Analysis Due: Verbal:	Written:

REC: 4/21/25@ 1430 Brand Hidalgo 4.21.25 1430

Page 1 of 1

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

May 02, 2025

Greg Miller
ICON Environmental Services
2049 Commercial Drive
Port Allen, LA 70767
TEL: (225) 344-8490
FAX (225) 344-6654

RE: Castex Development 9403-016-0100

Order No.: 25041279

Dear Greg Miller:

Element Materials Technology Lafayette received 7 sample(s) on 4/25/2025 for the analyses presented in the following report.

In accordance with your instructions, Element Lafayette either conducted or subcontracted these analyses. Subcontracted analyses will be identified in the accompanying case narrative. All relevant sampling information can be found on the attached Chain-of-Custody form. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet the applicable requirements of TNI. Reported results relate only to the items tested.

Where applicable, all soil data, except for 29-B, are reported on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. MNELAP Certification No.: 2414959. LDHH Certification No.: LA023. ISDH Certification No.: C-LA-01. NDELCP Certification No.: R-226. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation. PA registration No.: 68-05967.

Estimated uncertainty is available upon request. This report shall not be reproduced, except in full, without the written approval of the laboratory.

Buffy Bryant

Buffy Bryant
Customer Service Supervisor

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

Case Narrative

WO#: **25041279**
Date: **5/2/2025**

CLIENT: ICON Environmental Services
Project: Castex Development 9403-016-0100

5/2/25:This report is being re-issued and replaces the original report in its entirety. The EC value for client sample ID DB-1 8-10 has changed (Rev01e).

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

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Analytical Report

(consolidated)

WO#: **25041279**

Date Reported **5/2/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/16/2025 3:45:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041279-001 **Matrix:** SOIL

Client Sample ID DB-1 8-10

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	5.55	0.10	*	mmhos/cm	1	4/30/2025 11:57:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	1,350	18.0		mg/Kg-dry	100	4/30/2025 6:34:24 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded
M	Matrix Interference	ND	Not Detected at the Reporting Limit
RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041279**

Date Reported **5/2/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/16/2025 4:40:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041279-002 **Matrix:** SOIL

Client Sample ID DB-1 23-25

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.53	0.10		mmhos/cm	1	4/30/2025 11:57:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	90.2	1.98		mg/Kg-dry	10	4/30/2025 6:49:11 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded
M	Matrix Interference	ND	Not Detected at the Reporting Limit
RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041279**

Date Reported **5/2/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/17/2025 8:30:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041279-003 **Matrix:** SOIL

Client Sample ID DB-1 43-45

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	1.50	0.10		mmhos/cm	1	4/30/2025 11:57:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	339	10.6		mg/Kg-dry	50	4/30/2025 7:33:32 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded
M	Matrix Interference	ND	Not Detected at the Reporting Limit
RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041279**

Date Reported **5/2/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/17/2025 8:45:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041279-004 **Matrix:** SOIL

Client Sample ID DB-1 58-60

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	1.60	0.10		mmhos/cm	1	4/30/2025 11:57:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	278	8.12		mg/Kg-dry	50	4/30/2025 7:48:20 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded
M	Matrix Interference	ND	Not Detected at the Reporting Limit
RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041279**

Date Reported **5/2/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/17/2025 9:00:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041279-005 **Matrix:** SOIL

Client Sample ID DB-1 60-62

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	1.05	0.10		mmhos/cm	1	4/30/2025 11:57:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	198	4.00		mg/Kg-dry	20	4/30/2025 8:03:08 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded
M	Matrix Interference	ND	Not Detected at the Reporting Limit
RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041279**

Date Reported **5/2/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/17/2025 9:10:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041279-006 **Matrix:** SOIL

Client Sample ID DB-1 70-72

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.32	0.10		mmhos/cm	1	4/30/2025 11:57:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	19.5	1.05		mg/Kg-dry	5	4/30/2025 8:17:55 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded
M	Matrix Interference	ND	Not Detected at the Reporting Limit
RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041279**

Date Reported **5/2/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/17/2025 9:20:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041279-007 **Matrix:** SOIL

Client Sample ID DB-1 78-80

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.61	0.10		mmhos/cm	1	4/30/2025 11:57:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	24.5	1.75		mg/Kg-dry	10	4/30/2025 8:32:42 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded
M	Matrix Interference	ND	Not Detected at the Reporting Limit
RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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QC SUMMARY REPORT

WO#: **25041279**

02-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150327**

Sample ID: **MB-R150327**	SampType: **MBLK**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150327**
Client ID: **PBS**	Batch ID: **R150327**	TestNo: **LDNR 29-B**		Analysis Date: **4/30/2025**	SeqNo: **3681284**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	< 0.10	0.10									

Sample ID: **LCS1-R150327**	SampType: **LCS1**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150327**
Client ID: **ZZZZZZ**	Batch ID: **R150327**	TestNo: **LDNR 29-B**		Analysis Date: **4/30/2025**	SeqNo: **3681285**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.47	0.10	0.50	0	92.3	90	110				

Sample ID: **LCS2-R150327**	SampType: **LCS2**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150327**
Client ID: **ZZZZZZ**	Batch ID: **R150327**	TestNo: **LDNR 29-B**		Analysis Date: **4/30/2025**	SeqNo: **3681286**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	49.8	0.10	53.00	0	93.9	90	110				

Sample ID: **25041204-001ADUP**	SampType: **DUP**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150327**
Client ID: **ZZZZZZ**	Batch ID: **R150327**	TestNo: **LDNR 29-B**		Analysis Date: **4/30/2025**	SeqNo: **3681293**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.55	0.10						0.55	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041279**

02-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150356**

Sample ID: **mblk** SampType: **MBLK** TestCode: **9056_S** Units: **mg/Kg-dry** Prep Date: RunNo: **150356**
Client ID: **PBS** Batch ID: **R150356** TestNo: **SW9056A** Analysis Date: **4/30/2025** SeqNo: **3681659**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	< 0.250	0.250									

Sample ID: **lcs** SampType: **LCS** TestCode: **9056_S** Units: **mg/Kg-dry** Prep Date: RunNo: **150356**
Client ID: **LCSS** Batch ID: **R150356** TestNo: **SW9056A** Analysis Date: **4/30/2025** SeqNo: **3681660**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.97	0.250	10.00	0	99.7	80	120				

Sample ID: **lcsd** SampType: **LCSD** TestCode: **9056_S** Units: **mg/Kg-dry** Prep Date: RunNo: **150356**
Client ID: **LCSS02** Batch ID: **R150356** TestNo: **SW9056A** Analysis Date: **4/30/2025** SeqNo: **3681661**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.2	0.250	10.00	0	102	80	120	9.972	2.06	15	

Sample ID: **25041086-001ams** SampType: **MS** TestCode: **9056_S** Units: **mg/Kg-dry** Prep Date: RunNo: **150356**
Client ID: **ZZZZZZ** Batch ID: **R150356** TestNo: **SW9056A** Analysis Date: **4/30/2025** SeqNo: **3681664**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	61.2	2.50	50.00	12.91	96.6	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041279**

02-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150356**

Sample ID: **25041086-001amsd** SampType: **MSD** TestCode: **9056_S** Units: **mg/Kg-dry** Prep Date: RunNo: **150356**
Client ID: **ZZZZZZ** Batch ID: **R150356** TestNo: **SW9056A** Analysis Date: **4/30/2025** SeqNo: **3681665**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	60.3	2.50	50.00	12.91	94.8	80	120	61.22	1.47	15	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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Sample Log-In Check List

Client Name: **ICON_ENV** Work Order Number: **25041279** RcptNo: **1**

Logged by:	**Rhonda David**	**4/25/2025 12:50:00 PM**	Rhonda David
Completed By:	**Tammy Thibodeaux**	**4/25/2025 1:28:25 PM**	Tammy L Thibodeaux
Reviewed By:	**Buffy Bryant**	**5/1/2025 12:15:59 PM**	Buffy Bryant

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present	☐
2.	How was the sample delivered?	Element					

Log In

3.	Coolers are present?	Yes	☑	No	☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No	☐		
	Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	Not Present	☑
	No. Seal Date: Signed By:						
5.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA	☐
6.	Were all samples received at a temperature of >0° C to 6.0°C	Yes	☑	No	☐	NA	☐
7.	Sample(s) in proper container(s)?	Yes	☑	No	☐		
8.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐		
9.	Are samples (except VOA and ONG) properly preserved?	Yes	☑	No	☐		
10.	Was preservative added to bottles?	Yes	☐	No	☑	NA	☐
11.	Is the headspace in the VOA vials less than 1/4 inch or 6 mm?	Yes	☐	No	☐	No VOA Vials	☑
12.	Were any sample containers received broken?	Yes	☐	No	☑		
13.	Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes	☑	No	☐		
14.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐		
15.	Is it clear what analyses were requested?	Yes	☑	No	☐		
16.	Were all holding times able to be met? (If no, notify customer for authorization.)	Yes	☑	No	☐		

Special Handling (if applicable)

17.	Was client notified of all discrepancies with this order?	Yes	☐	No	☑	NA	☐

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

18. Additional remarks:
Improper error correction(s) made by client

Cooler Information

Cooler No	Temp ºC	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Not Present			

element

Chain of Custody

Laboratory Number: 25041279

Client Information:	Billing Information:	PO Number:	Project Name/Number:	Page of
Company Name: ICON	SAME		CASTEX DEVELOPMENT 9403-016-0100	
Contact Name:		Quote Number:	Sampler's Signature	
Address:				
City, State Zip:		Required QC Level		
Phone Number: Ext:	Ext:	Bill Monthly ☐Yes ☐No	Shipping Method: UPS / FedEx / NOW DHL / Element / Hand / Mail	
Fax Number:				
E-mail Address:				

Matrix Code
DW = Drinking Water
WW = Waste Water
GW = Ground Water
AQ = Aqueous
OT = Other
SL = Sludge SOL = Solid
O = Oil SO = Soil
F = Food SW = Swab
NG = Natural Gas
NGL = Natural Gas Liquid
PW = Produced Water
CF = Completion Fluid

Which Regulations Apply:
☐RCRA ☐Drinking Water
☐POTW ☐Distribution
☐NPDES ☐Special
☐USDA/FDA ☐State
☐RECAP/RISC ☐Other

Turn Time
☐Standard
RUSH
☐1 Day
☐2 Day
☐Other
(Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Container: Type P=Plastic, G=Glass, V=Vial	Pres.: HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	Requested Tests: EC	Requested Tests: Soluble Chlorides	Comments
DB-1 8-10	4-16-25	1545	G	So	1	P	–	X	X	
DB-1 23-25	4-16-25	1400	G	So	1	P	–	X	X	
DB-1 43-45	4-17-25	0830	G	So	1	P	–	X	X	
DB-1 58-60	4-17-25	0845	G	So	1	P	–	X	X	
DB-1 60-62	4-17-25	0900	G	So	1	P	–	X	X	
DB-1 70-72	4-17-25	0910	G	So	1	P	–	X	X	
DB-1 78-80	4-17-25	0920	G	So	1	P	–	X	X	

	Relinquished by	Date/Time	Received by	Date/Time
1		4-25-25 0955		4-25-25 0955
2				
3		4-25-25 1250		4-25-25 1250

Field Notes: RB

Received at lab on ice? ☐Yes ☑No Temp: 3.4 #5 IR3

All samples submitted to Element Materials Technology for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Element Materials Technology reserves the right to return unused sample portions.

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F 812-375-0731

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46825 USA
P 260-471-7000
F 260-471-7777

909 Executive Dr
Warsaw, IN
46580 USA
P 574-267-3305
F 574-269-6569

3371 Cleveland Road, Suite 100A
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BP/Castex-Ltd Adm-Apx E-000060

BURNS COOLEY DENNIS, INC.

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Fax: (601) 856-3552

LELAP Certificate #03075

May 14, 2025

Mr. Brent Pooler
Hydro-Environmental Technology, Inc.
Post Office Box 60295
Lafayette, Louisiana 70596-0295

BCD Project No. 250261

Re: Geotechnical Laboratory Testing
Castex
Jennings, Louisiana
HET Project No. 1009.A75

Dear Mr. Pooler:

Transmitted herewith are the results of geotechnical laboratory tests performed on samples of soil from the referenced project site. A copy of the chain-of-custody form that was transmitted with the samples is included after the test results. These services were authorized on April 28, 2025.

We appreciate the opportunity to be of service. If you should have any questions concerning the attached data, please do not hesitate to call us.

Very truly yours,

BURNS COOLEY DENNIS, INC.

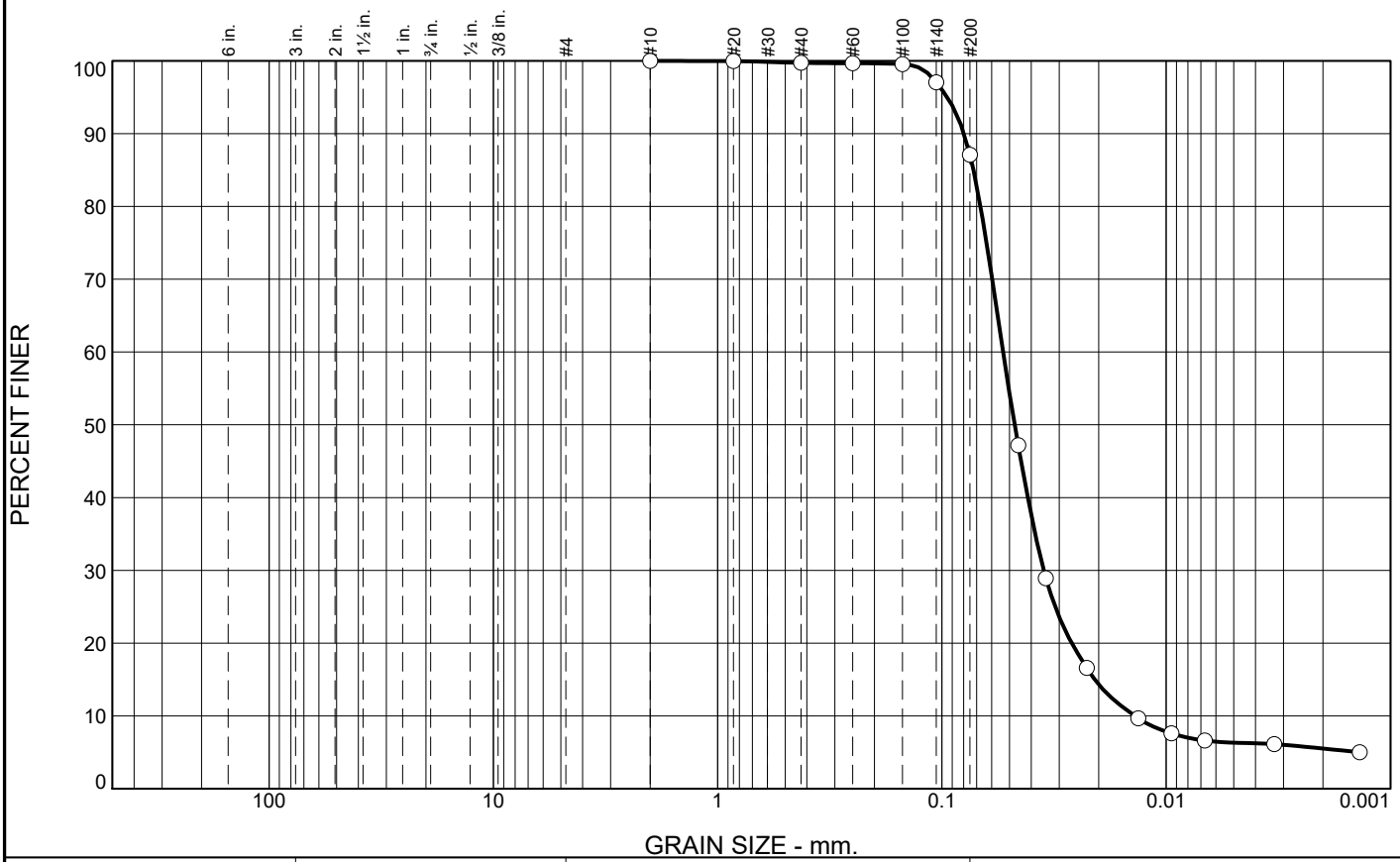
Marcos V. F. Rodrigues, P.E. (MS)

Copies Submitted: (via e-mail)
Attachments: Table 1 - Summary of Laboratory Test Results
Sieve Analysis Sheets
Sample Chain of Custody Record

TABLE 1
SUMMARY OF LABORATORY TEST RESULTS
Castex
Jennings, Louisiana
HET Project No.1009.A75

Sample I.D.	Sample Depth (ft)	Description	Atterberg Limits			% Passing No. 200 Sieve	Water Content (%)	Dry Density (pcf)	Coefficient of Permeability (cm/sec)
			LL	PL	PI				
CD-18R	48 - 50	Tan silt (ML), slightly sandy	-	-	-	87.1	-	-	-
CD-12R	54 - 56	Tan silt (ML), slightly sandy	-	-	-	88.5	-	-	-
CD-12R	78 - 80	Tan silt (ML) with sand	-	-	-	82.0	-	-	-
CD-10R	68 - 70	Tan silt (ML), slightly sandy	-	-	-	92.8	-	-	-
CD-10R	43 - 45	Gray and tan clay (CH)	60	20	40	99.9	33.6	89.2	4.16×10^{-8}
CD-18R	72 - 74	Gray clay (CH)	64	19	45	99.7	34.2	87.5	4.97×10^{-8}
DB-01	58 - 60	Gray clay (CH)	70	25	45	99.6	47.4	73.3	6.12×10^{-8}
DB-01	70 - 72	Gray clay (CH)	73	21	52	99.4	38.9	83.5	5.49×10^{-8}
CD-05R	78 - 80	Gray clay (CH), slightly silty	52	21	31	99.7	29.5	98.8	5.53×10^{-8}
CD-12R	29 - 30	Red and gray clay (CH)	75	26	49	99.8	37.7	82.4	3.94×10^{-8}

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	12.6	81.6	5.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	100.0		
#40	99.7		
#60	99.7		
#100	99.6		
#140	97.1		
#200	87.1		
0.0457 mm.	47.2		
0.0344 mm.	28.9		
0.0226 mm.	16.6		
0.0133 mm.	9.7		
0.0095 mm.	7.6		
0.0067 mm.	6.6		
0.0033 mm.	6.1		
0.0014 mm.	5.0		

* (no specification provided)

Soil Description

Tan silt (ML), slightly sandy

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.0796 D_{85}= 0.0724 D_{60}= 0.0534
D_{50}= 0.0474 D_{30}= 0.0352 D_{15}= 0.0208
D_{10}= 0.0138 C_u= 3.87 C_c= 1.68

Classification

USCS= ML AASHTO=

Remarks

Source of Sample: CD-18R **Depth:** 50.0'
Sample Number: 1

Date: 05-12-25

BURNS COOLEY DENNIS, INC.

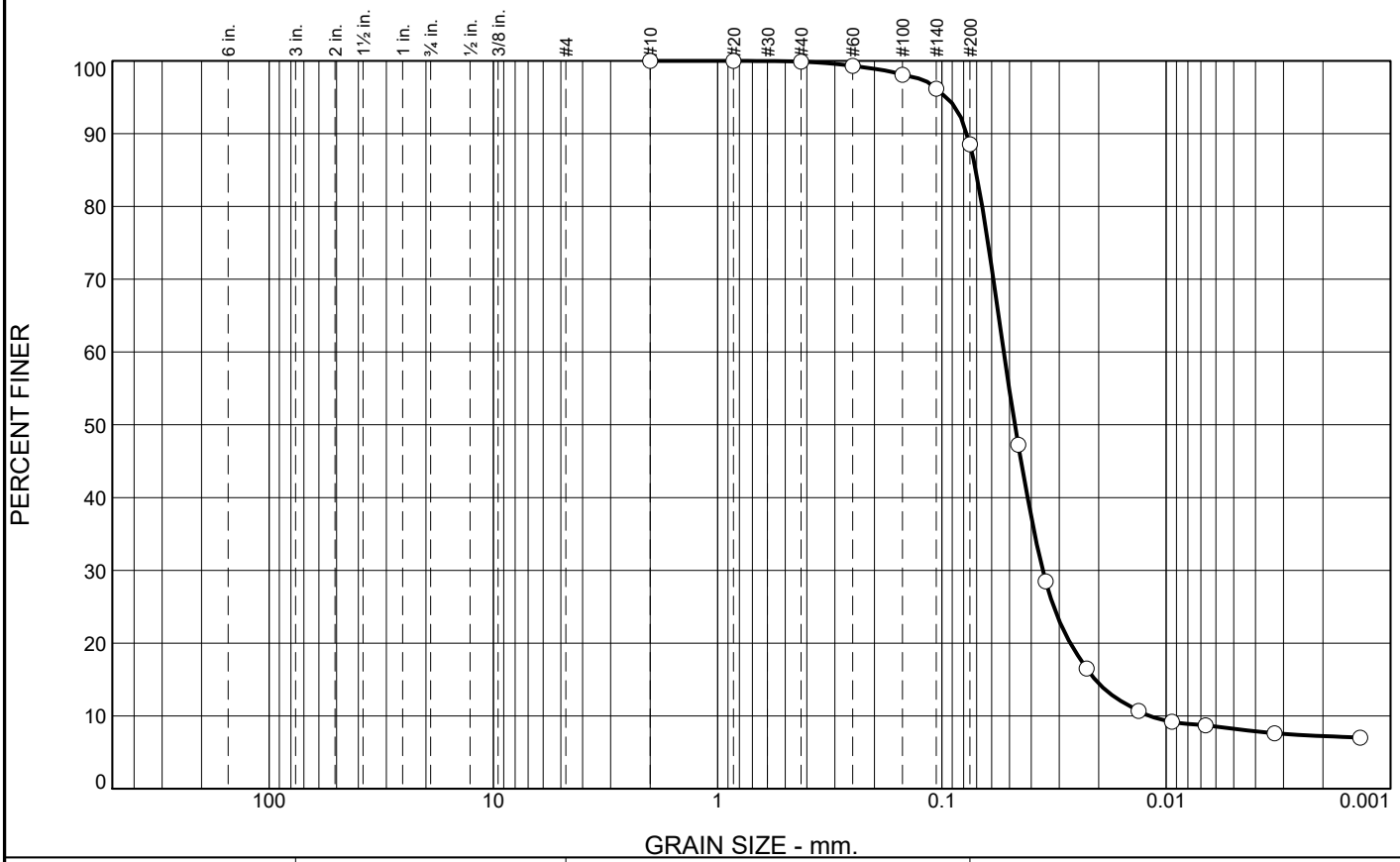
Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261

Figure

Tested By: aw **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	11.4	81.3	7.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	100.0		
#40	99.9		
#60	99.3		
#100	98.1		
#140	96.2		
#200	88.5		
0.0457 mm.	47.3		
0.0345 mm.	28.5		
0.0226 mm.	16.5		
0.0133 mm.	10.7		
0.0094 mm.	9.2		
0.0067 mm.	8.7		
0.0033 mm.	7.6		
0.0014 mm.	7.0		

* (no specification provided)

Soil Description

Tan silt (ML), slightly sandy

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.0773 D_{85}= 0.0707 D_{60}= 0.0530
D_{50}= 0.0473 D_{30}= 0.0355 D_{15}= 0.0208
D_{10}= 0.0119 C_u= 4.46 C_c= 2.00

Classification

USCS= ML AASHTO=

Remarks

Source of Sample: CD-12R **Depth:** 56.0'
Sample Number: 2

Date: 05-12-25

BURNS COOLEY DENNIS, INC.

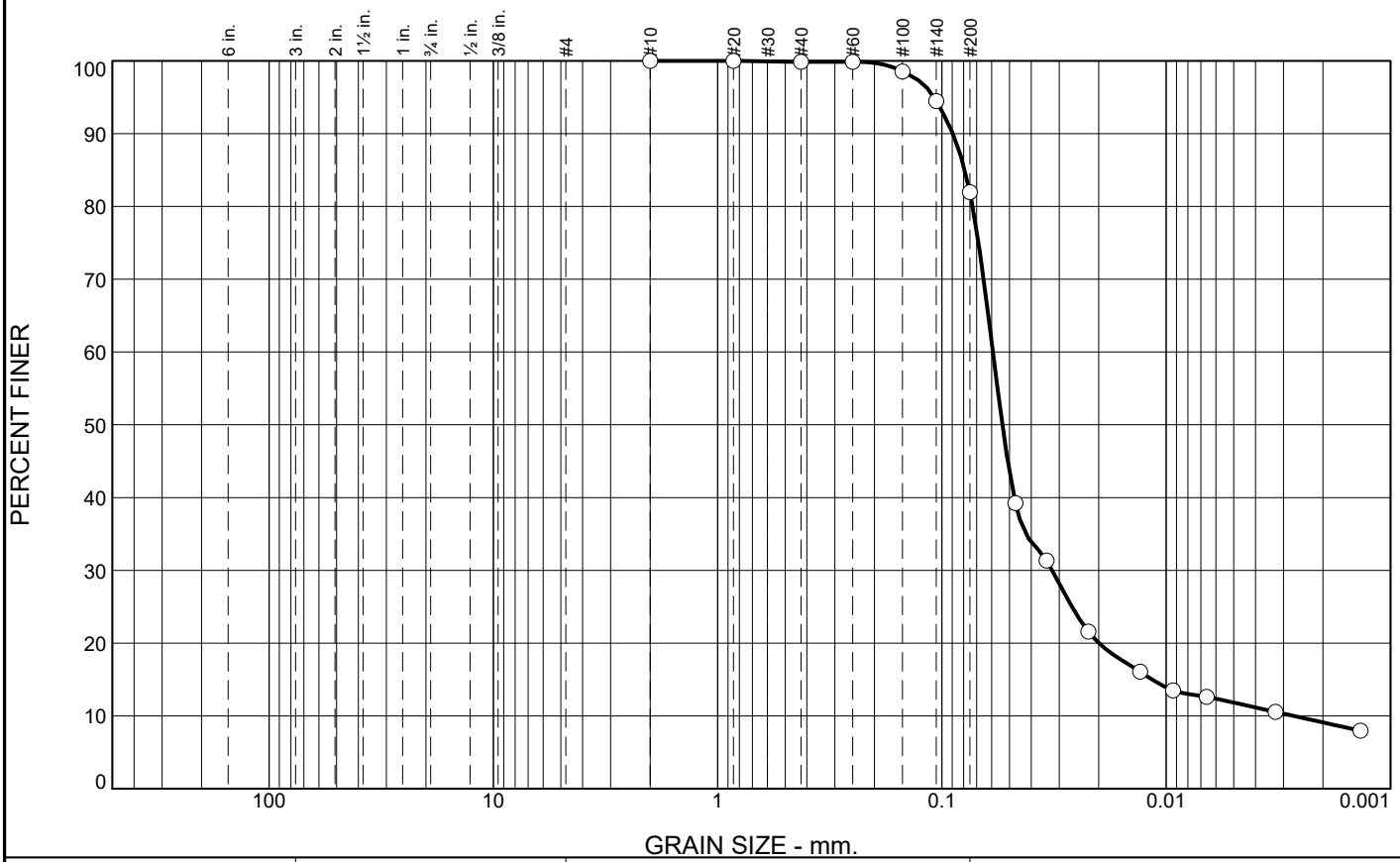
Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261

Figure

Tested By: aw **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	17.9	72.9	9.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	100.0		
#40	99.9		
#60	99.9		
#100	98.5		
#140	94.5		
#200	82.0		
0.0470 mm.	39.2		
0.0341 mm.	31.3		
0.0222 mm.	21.6		
0.0131 mm.	16.1		
0.0093 mm.	13.5		
0.0066 mm.	12.6		
0.0033 mm.	10.5		
0.0014 mm.	8.0		

* (no specification provided)

Soil Description

Tan silt (ML) with sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.0893 D_{85}= 0.0791 D_{60}= 0.0592
D_{50}= 0.0538 D_{30}= 0.0323 D_{15}= 0.0116
D_{10}= 0.0027 C_u= 21.89 C_c= 6.50

Classification

USCS= ML AASHTO=

Remarks

Source of Sample: CD-12R **Depth:** 80.0'
Sample Number: 3

Date: 05-13-25

BURNS COOLEY DENNIS, INC.

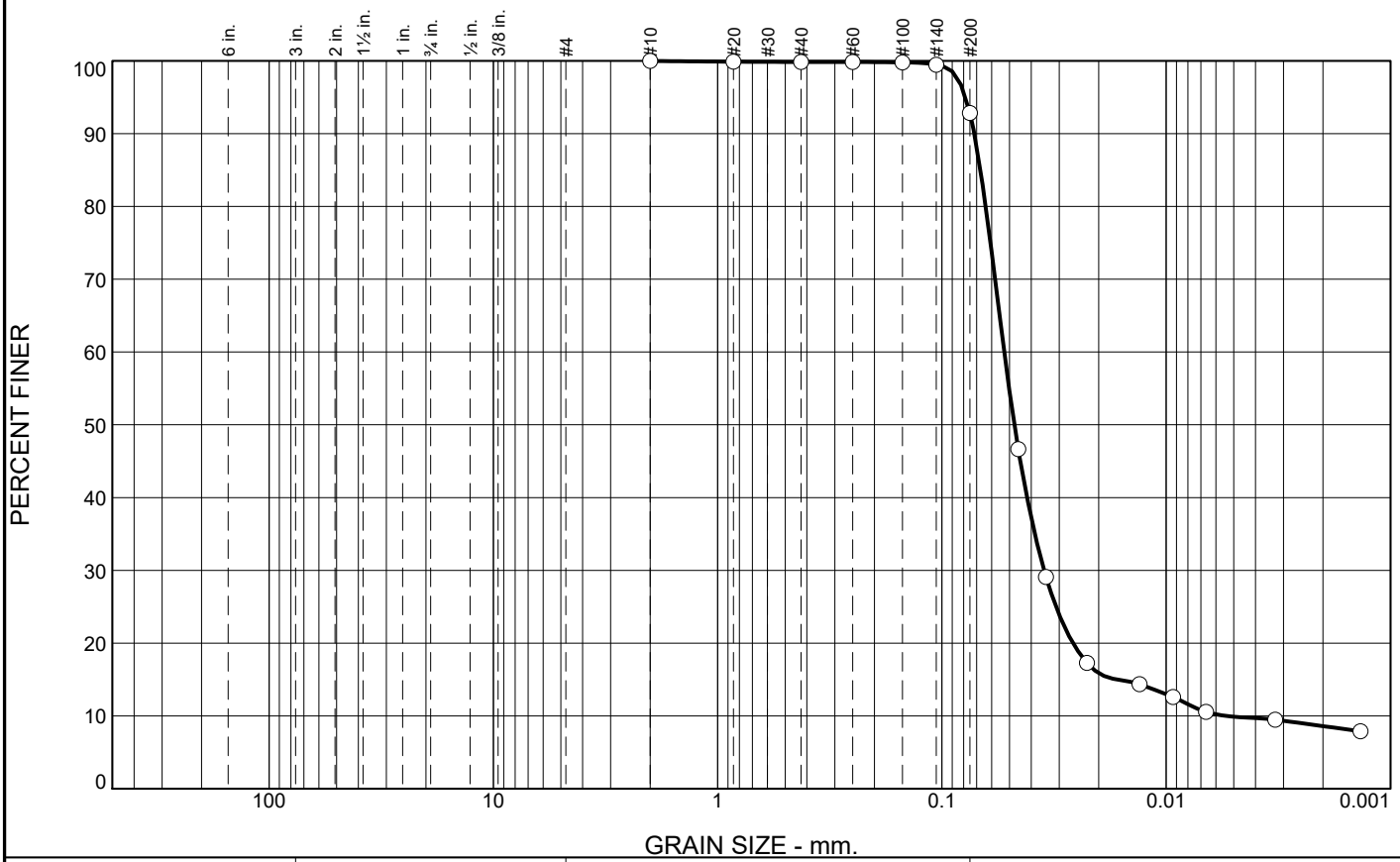
Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261

Figure

Tested By: aw **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	7.1	84.2	8.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.9		
#40	99.9		
#60	99.9		
#100	99.8		
#140	99.5		
#200	92.8		
0.0457 mm.	46.7		
0.0343 mm.	29.1		
0.0226 mm.	17.3		
0.0131 mm.	14.4		
0.0093 mm.	12.6		
0.0066 mm.	10.5		
0.0033 mm.	9.5		
0.0014 mm.	7.9		

* (no specification provided)

Soil Description

Tan silt (ML), slightly sandy

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.0717 D_{85}= 0.0674 D_{60}= 0.0528
D_{50}= 0.0476 D_{30}= 0.0350 D_{15}= 0.0166
D_{10}= 0.0054 C_u= 9.78 C_c= 4.31

Classification

USCS= ML AASHTO=

Remarks

Source of Sample: CD-10R **Depth:** 70.0'
Sample Number: 4

Date: 05-08-25

BURNS COOLEY DENNIS, INC.

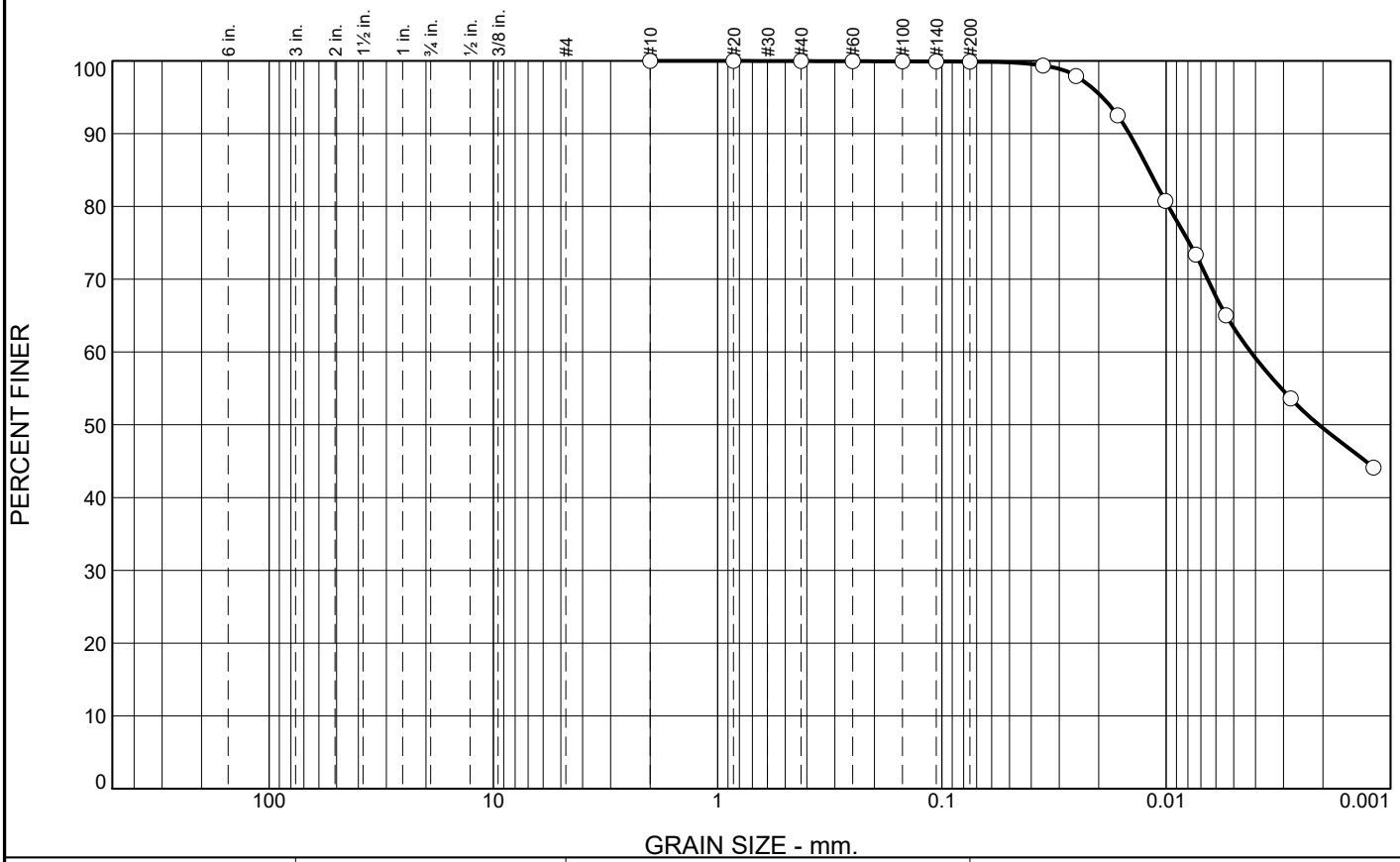
Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261

Figure

Tested By: aw **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.0	0.1	50.4	49.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	100.0		
#40	100.0		
#60	100.0		
#100	99.9		
#140	99.9		
#200	99.9		
0.0354 mm.	99.4		
0.0252 mm.	97.9		
0.0165 mm.	92.5		
0.0101 mm.	80.8		
0.0074 mm.	73.4		
0.0054 mm.	65.0		
0.0028 mm.	53.6		
0.0012 mm.	44.1		

* (no specification provided)

Soil Description

Gray and tan clay (CH)

Atterberg Limits

PL= 20 LL= 60 PI= 40

Coefficients

D_{90}= 0.0146 D_{85}= 0.0119 D_{60}= 0.0042
D_{50}= 0.0021 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Source of Sample: CD-10R **Depth:** 45.0'
Sample Number: 5

Date: 05-12-25

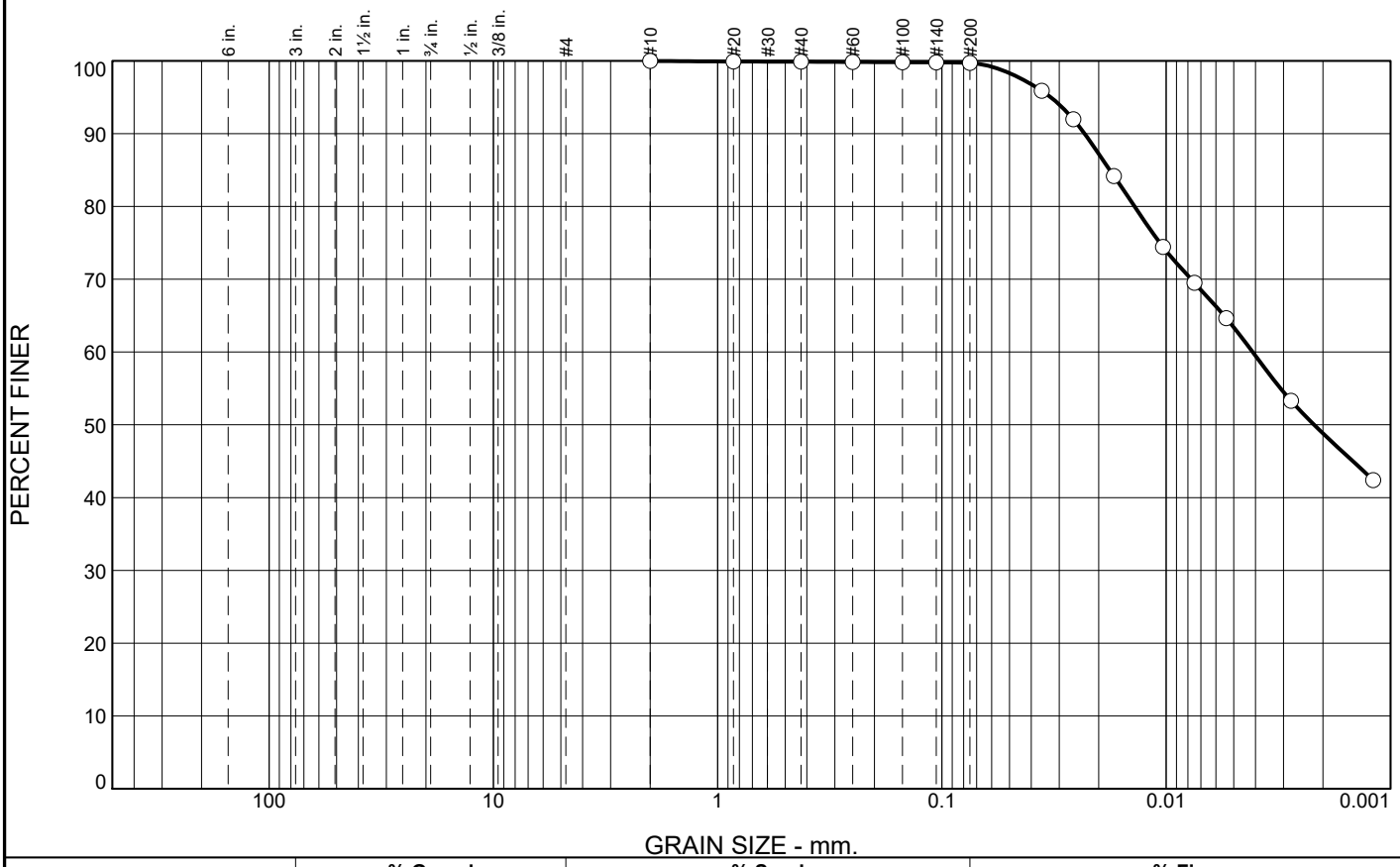
BURNS COOLEY DENNIS, INC.

Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261 **Figure**

Tested By: aw / nb **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	0.2	50.9	48.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.9		
#40	99.9		
#60	99.9		
#100	99.8		
#140	99.8		
#200	99.7		
0.0359 mm.	95.9		
0.0260 mm.	92.0		
0.0171 mm.	84.2		
0.0103 mm.	74.4		
0.0075 mm.	69.5		
0.0054 mm.	64.7		
0.0028 mm.	53.3		
0.0012 mm.	42.4		

* (no specification provided)

Soil Description

Gray clay (CH)

Atterberg Limits

PL= 19 LL= 64 PI= 45

Coefficients

D_{90}= 0.0231 D_{85}= 0.0179 D_{60}= 0.0041
D_{50}= 0.0022 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Source of Sample: CD-18R **Depth:** 74.0'
Sample Number: 6

Date: 05-13-25

BURNS COOLEY DENNIS, INC.

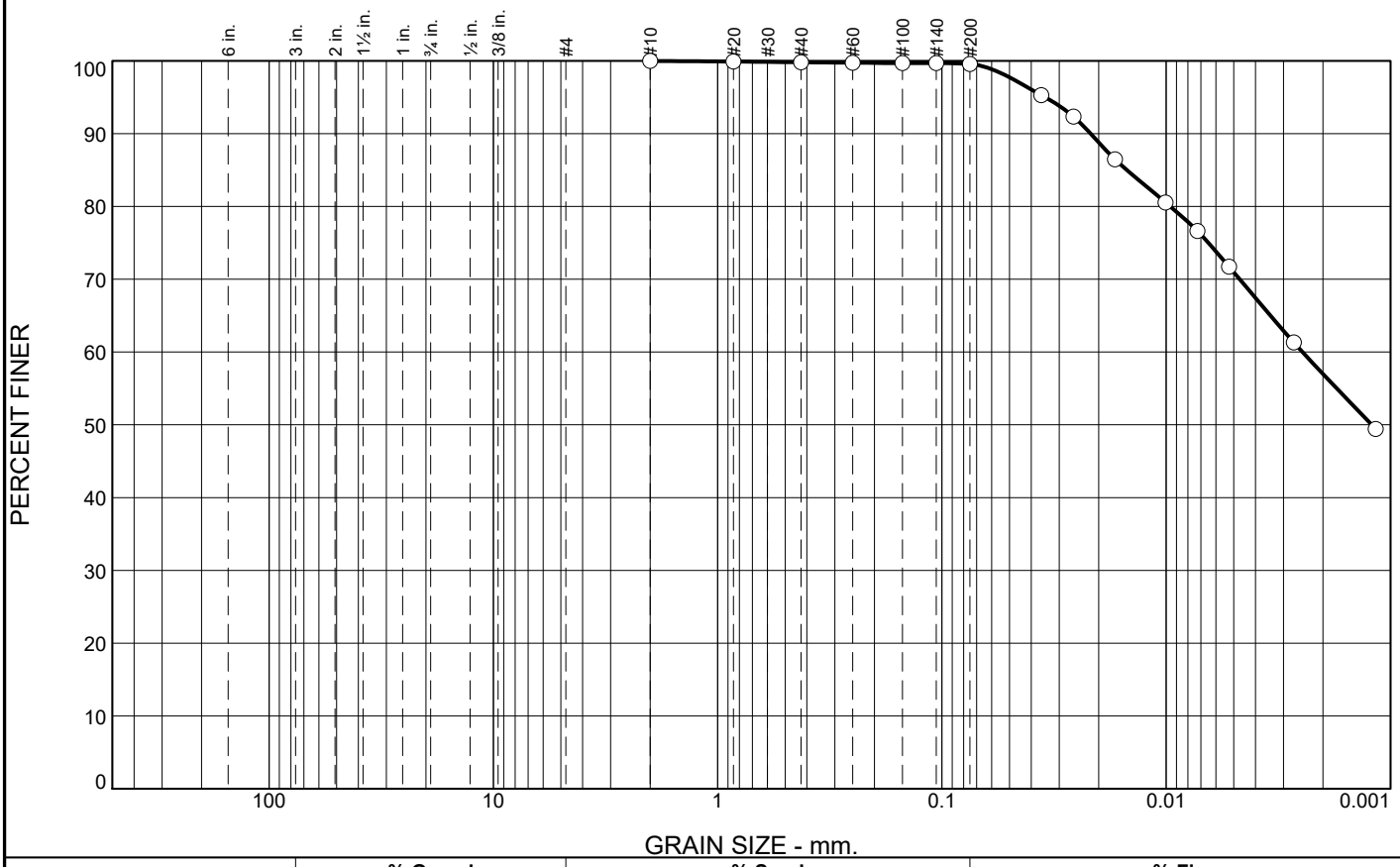
Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261

Figure

Tested By: aw / nb **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	0.2	42.6	57.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.9		
#40	99.8		
#60	99.8		
#100	99.7		
#140	99.7		
#200	99.6		
0.0361 mm.	95.3		
0.0259 mm.	92.4		
0.0169 mm.	86.5		
0.0101 mm.	80.6		
0.0073 mm.	76.6		
0.0052 mm.	71.7		
0.0027 mm.	61.3		
0.0012 mm.	49.4		

* (no specification provided)

Soil Description

Gray clay (CH)

Atterberg Limits

PL= 25 LL= 70 PI= 45

Coefficients

D_{90}= 0.0217 D_{85}= 0.0150 D_{60}= 0.0025
D_{50}= 0.0012 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Source of Sample: DB-01 **Depth:** 60.0'
Sample Number: 7 **Date:** 05-06-25

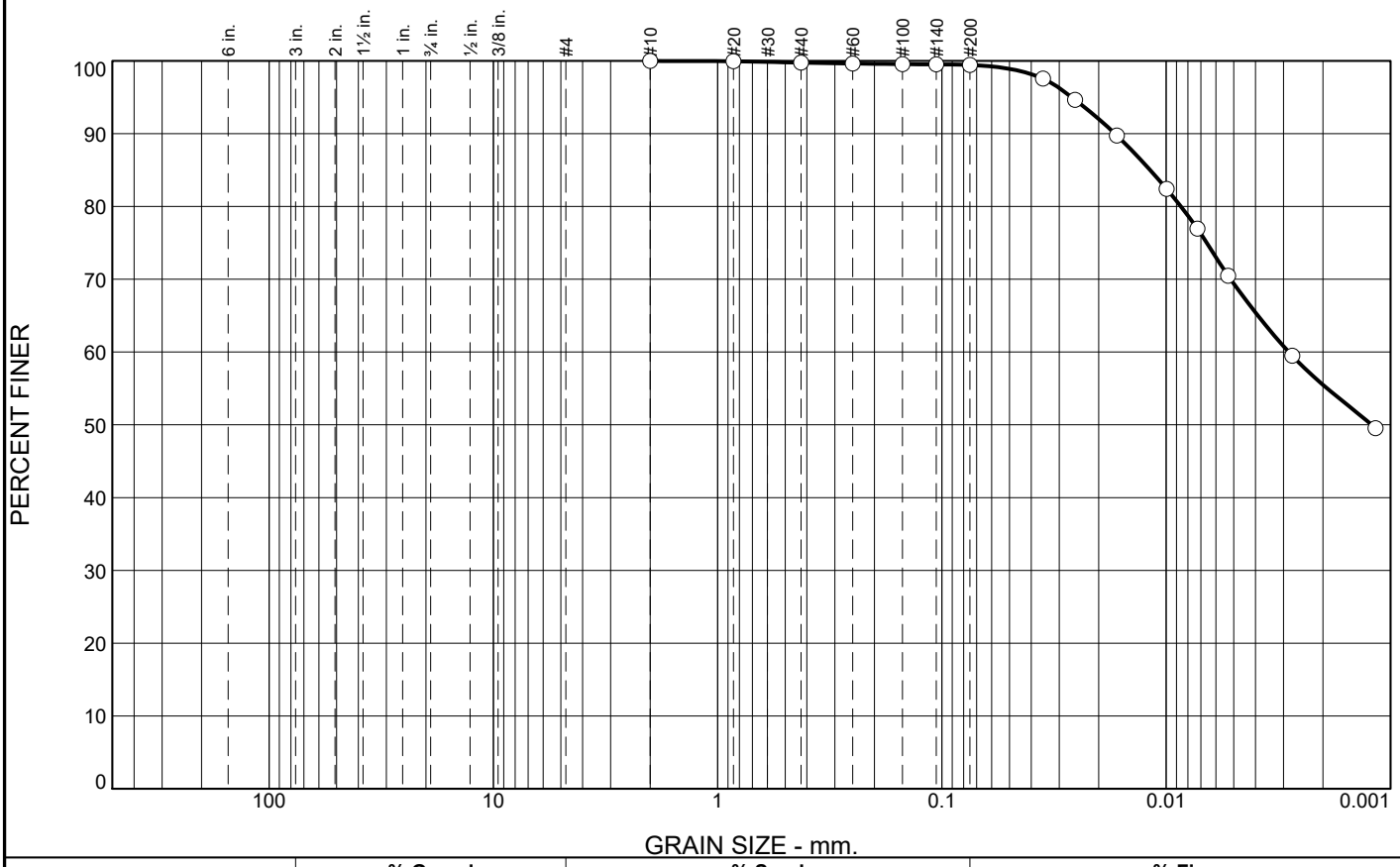
BURNS COOLEY DENNIS, INC.

Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261 **Figure**

Tested By: aw / nb **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	0.4	43.9	55.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	100.0		
#40	99.8		
#60	99.6		
#100	99.6		
#140	99.5		
#200	99.4		
0.0355 mm.	97.6		
0.0255 mm.	94.7		
0.0166 mm.	89.8		
0.0100 mm.	82.4		
0.0073 mm.	76.9		
0.0053 mm.	70.5		
0.0027 mm.	59.5		
0.0012 mm.	49.5		

* (no specification provided)

Soil Description

Gray clay (CH)

Atterberg Limits

PL= 21 LL= 73 PI= 52

Coefficients

D_{90}= 0.0169 D_{85}= 0.0118 D_{60}= 0.0028
D_{50}= 0.0012 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Source of Sample: DB-01 **Depth:** 72.0'
Sample Number: 8

Date: 05-07-25

BURNS COOLEY DENNIS, INC.

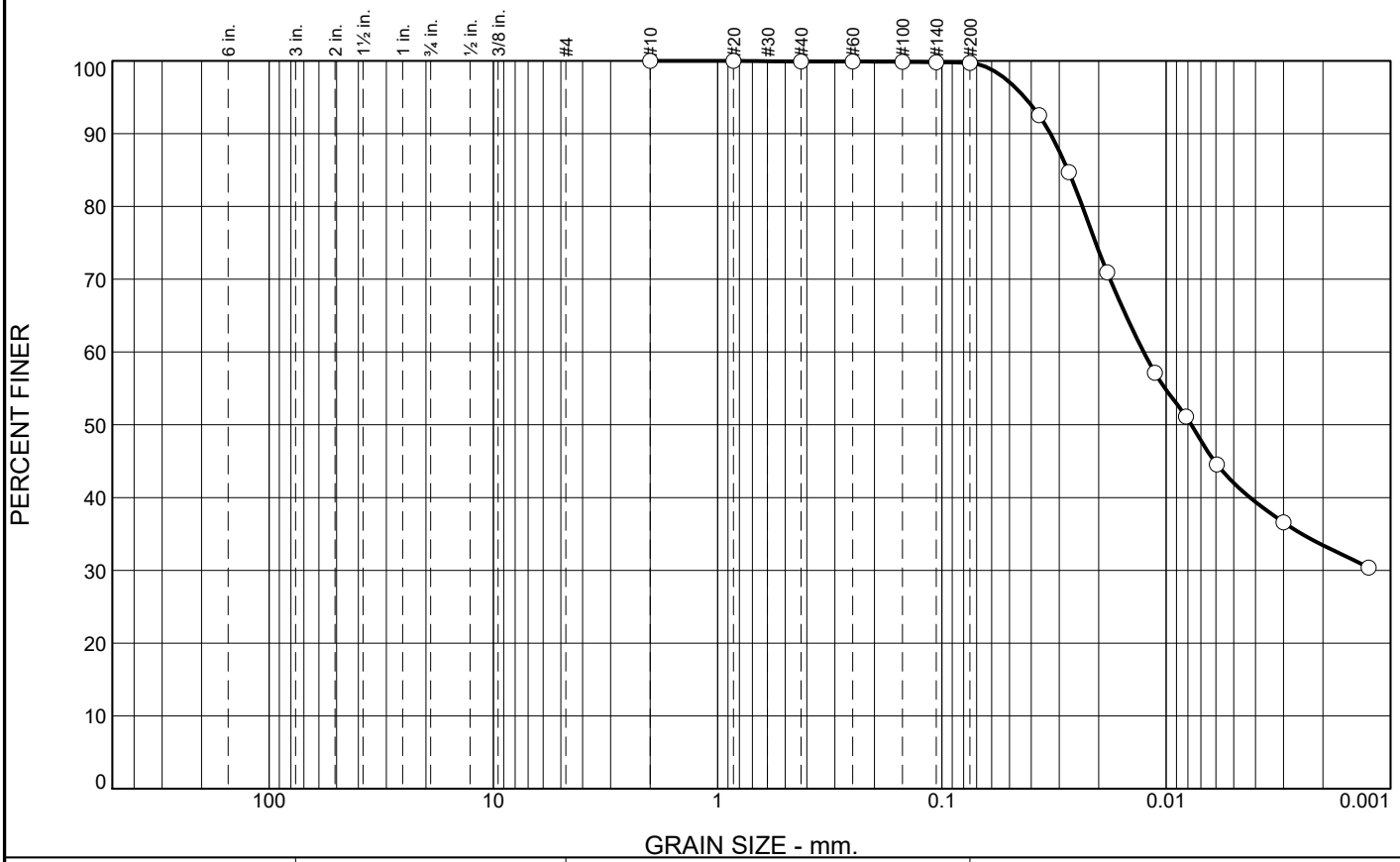
Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261

Figure

Tested By: aw / nb **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	0.2	66.3	33.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	100.0		
#40	99.9		
#60	99.9		
#100	99.9		
#140	99.8		
#200	99.7		
0.0369 mm.	92.6		
0.0272 mm.	84.7		
0.0183 mm.	71.0		
0.0112 mm.	57.2		
0.0082 mm.	51.1		
0.0059 mm.	44.5		
0.0030 mm.	36.6		
0.0013 mm.	30.4		

* (no specification provided)

Soil Description

Gray clay (CH), slightly silty

Atterberg Limits

PL= 21 LL= 52 PI= 31

Coefficients

D_{90}= 0.0328 D_{85}= 0.0274 D_{60}= 0.0126
D_{50}= 0.0077 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Source of Sample: CD-05R **Depth:** 80.0'
Sample Number: 9

Date: 05-09-25

BURNS COOLEY DENNIS, INC.

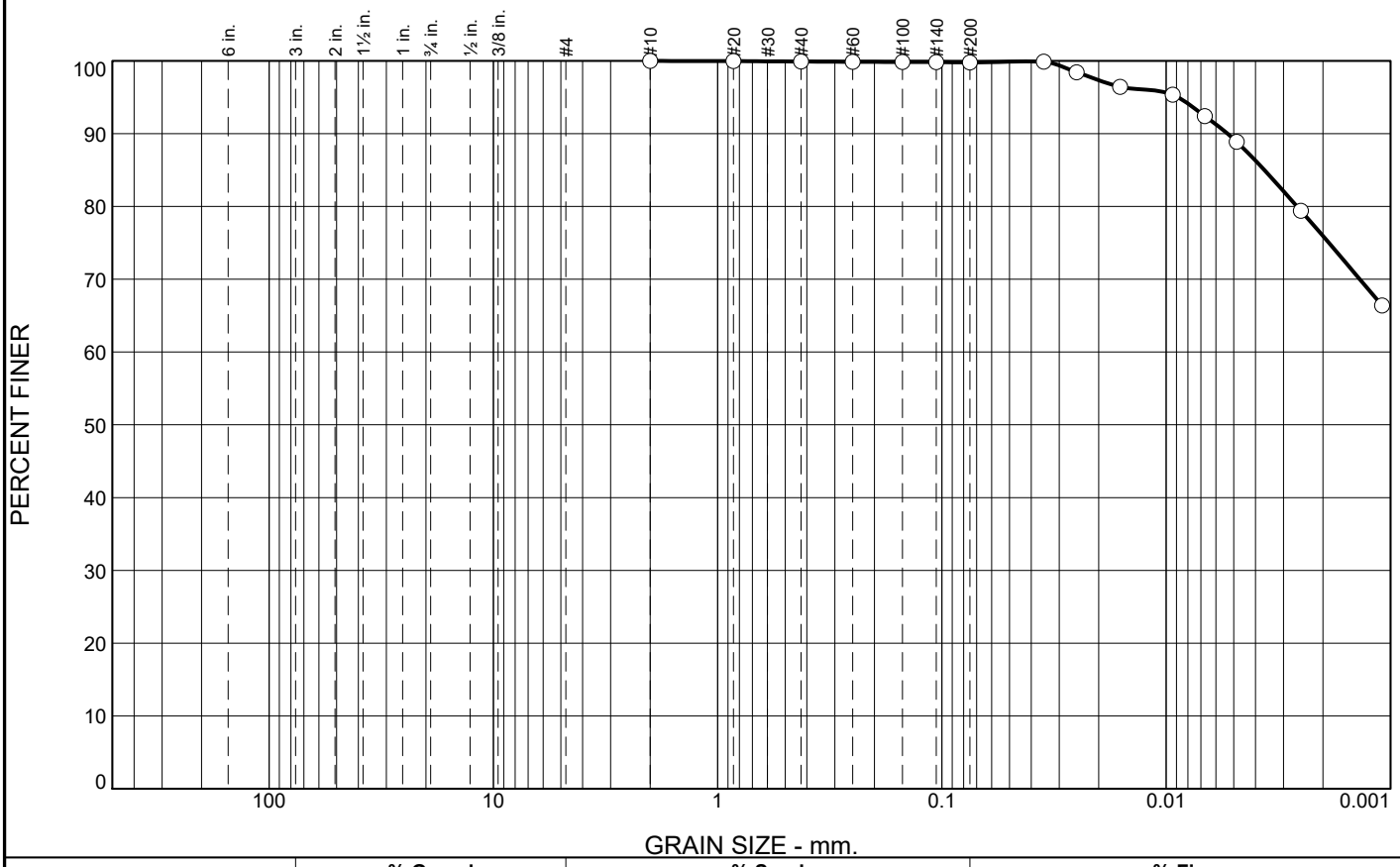
Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261

Figure

Tested By: aw / nb **Checked By:** ah

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	0.1	23.9	75.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	100.0		
#40	99.9		
#60	99.9		
#100	99.9		
#140	99.8		
#200	99.8		
0.0351 mm.	99.9		
0.0251 mm.	98.4		
0.0161 mm.	96.4		
0.0094 mm.	95.4		
0.0067 mm.	92.4		
0.0049 mm.	88.9		
0.0025 mm.	79.4		
0.0011 mm.	66.4		

* (no specification provided)

Soil Description

Red and tan clay (CH)

Atterberg Limits

PL= 26 LL= 75 PI= 49

Coefficients

D_{90}= 0.0053 D_{85}= 0.0036 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Source of Sample: CD-12R **Depth:** 30.0'
Sample Number: 10 **Date:** 05-08-25

BURNS COOLEY DENNIS, INC.

Ridgeland, Mississippi

Client: Hydro-Environmental Technology, Inc.
Project: Castex - Jennings, Louisiana
HET Project # 1009.A75
Project No: 250261 **Figure**

Tested By: aw / nb **Checked By:** ah

HYDRO-ENVIRONMENTAL TECHNOLOGY, INC.
Environmental Consultants
P.O. Box 60295
Lafayette, LA 70596-0295
Phone (337) 261-1963 FAX (337) 261-1953

SAMPLE CHAIN-OF-CUSTODY RECORD

Laboratory:	Burns Cooley Dennis, Inc.		
Project Name:	Castex	***Collected By:***	EM / JD
Project Number:	1009.A75	***Company:***	HET
Project Location:	Jennings, LA	***Date:***	4/15/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
CD-18R (48-50')	SO	4/16/2025	0915	(1) Quart ziploc bag	Particle Size Analysis (ASTM D422) USCS: ASTM D2487	
CD-12R (54-56')	SO	4/22/2025	1130	(3) Quart ziploc bags	Particle Size Analysis (ASTM D422) USCS: ASTM D2487	
CD-12R (78-80')	SO	4/22/2025	1200	(3) Quart ziploc bags	Particle Size Analysis (ASTM D422) USCS: ASTM D2487	
CD-10R (68-70')	SO	4/23/2025	0945	(1) Gallon ziploc bag	Particle Size Analysis (ASTM D422) USCS: ASTM D2487	
CD-10R (43-45')	SO	4/15/2025	1000	(1) Vacuum-Sealed Sample Core	USCS: ASTM D2487 Hydraulic Conductivity by ASTM D2432 or D5084 Atterberg Limits: ASTM D4318 Particle Size Analysis: ASTM D6913 Moisture Content: ASTM D2216-10, D2487-11, or D2488-09A	
CD-18R (72-74')	SO	4/16/2025	1035	(1) Vacuum-Sealed Sample Core		
DB-01 (58-60')	SO	4/17/2025	0845	(1) Vacuum-Sealed Sample Core		
DB-01 (70-72')	SO	4/17/2025	0920	(1) Vacuum-Sealed Sample Core		
CD-05R (78-80')	SO	4/21/2025	1550	(1) Vacuum-Sealed Sample Core		
CD-12R (29-30')	SO	4/22/2025	1020	(1) Vacuum-Sealed Sample Core		

RUSH

Relinquished By: Eric Mata SHIPPED VIA FEDEX Date/Time: 4-24-25	Received By: Date/Time:
Relinquished By: Date/Time:	Received By: Date/Time:
Analysis Due: Verbal:	Written:

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

May 14, 2025

Greg Miller
ICON Environmental Services
2049 Commercial Drive
Port Allen, LA 70767
TEL: (225) 344-8490
FAX (225) 344-6654

RE: Castex 9403-016-0100

Order No.: 25041317

Dear Greg Miller:

Element Materials Technology Lafayette received 30 sample(s) on 4/28/2025 for the analyses presented in the following report.

In accordance with your instructions, Element Lafayette either conducted or subcontracted these analyses. Subcontracted analyses will be identified in the accompanying case narrative. All relevant sampling information can be found on the attached Chain-of-Custody form. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet the applicable requirements of TNI. Reported results relate only to the items tested.

Where applicable, all soil data, except for 29-B, are reported on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. MNELAP Certification No.: 2414959. LDHH Certification No.: LA023. ISDH Certification No.: C-LA-01. NDELCP Certification No.: R-226. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation. PA registration No.: 68-05967.

Estimated uncertainty is available upon request. This report shall not be reproduced, except in full, without the written approval of the laboratory.

Buffy Bryant

Buffy Bryant
Customer Service Supervisor

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

Case Narrative

WO#: **25041317**
Date: **5/14/2025**

CLIENT: ICON Environmental Services
Project: Castex 9403-016-0100

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:10:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-001 **Matrix:** SOIL

Client Sample ID SB-1 0-2'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.18	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.104	0.104		mg/Kg-dry	1	5/12/2025 4:37:40 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	8.05	0.653		mg/Kg-dry	5	5/5/2025 8:48:09 AM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.58	1.99		mg/Kg-dry	1	5/2/2025 2:36:00 PM
Barium	206	0.996		mg/Kg-dry	1	5/2/2025 2:36:00 PM
Cadmium	< 0.498	0.498		mg/Kg-dry	1	5/2/2025 2:36:00 PM
Chromium	11.9	0.996		mg/Kg-dry	1	5/2/2025 2:36:00 PM
Lead	13.2	0.996		mg/Kg-dry	1	5/2/2025 2:36:00 PM
Strontium	11.9	0.996		mg/Kg-dry	1	5/2/2025 2:36:00 PM
Zinc	13.0	0.996		mg/Kg-dry	1	5/2/2025 2:36:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.94	1.72		mg/Kg	1	5/2/2025 2:36:00 PM
Barium	178	1.72		mg/Kg	1	5/2/2025 2:36:00 PM
Cadmium	< 0.429	0.429		mg/Kg	1	5/2/2025 2:36:00 PM
Chromium	10.3	0.859		mg/Kg	1	5/2/2025 2:36:00 PM
Lead	11.4	0.859		mg/Kg	1	5/2/2025 2:36:00 PM
Strontium	10.2	0.859		mg/Kg	1	5/2/2025 2:36:00 PM
Zinc	11.2	0.859		mg/Kg	1	5/2/2025 2:36:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	207	47.2		mg/Kg-dry	1	5/2/2025 3:30:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:10:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-001 **Matrix:** SOIL

Client Sample ID SB-1 0-2'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	13.8	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 10:40:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-002 **Matrix:** SOIL

Client Sample ID SB-1 2-4'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.25	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.109	0.109		mg/Kg-dry	1	5/12/2025 4:52:11 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	15.5	0.752		mg/Kg-dry	5	5/5/2025 9:02:56 AM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.82	1.99		mg/Kg-dry	1	5/2/2025 2:45:00 PM
Barium	298	0.996		mg/Kg-dry	1	5/2/2025 2:45:00 PM
Cadmium	< 0.498	0.498		mg/Kg-dry	1	5/2/2025 2:45:00 PM
Chromium	12.7	0.996		mg/Kg-dry	1	5/2/2025 2:45:00 PM
Lead	11.3	0.996		mg/Kg-dry	1	5/2/2025 2:45:00 PM
Strontium	16.8	0.996		mg/Kg-dry	1	5/2/2025 2:45:00 PM
Zinc	19.3	0.996		mg/Kg-dry	1	5/2/2025 2:45:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.98	1.64		mg/Kg	1	5/2/2025 2:45:00 PM
Barium	246	1.64		mg/Kg	1	5/2/2025 2:45:00 PM
Cadmium	< 0.411	0.411		mg/Kg	1	5/2/2025 2:45:00 PM
Chromium	10.5	0.821		mg/Kg	1	5/2/2025 2:45:00 PM
Lead	9.29	0.821		mg/Kg	1	5/2/2025 2:45:00 PM
Strontium	13.9	0.821		mg/Kg	1	5/2/2025 2:45:00 PM
Zinc	15.9	0.821		mg/Kg	1	5/2/2025 2:45:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	318	49.9		mg/Kg-dry	1	5/2/2025 3:37:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 10:40:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-002 **Matrix:** SOIL

Client Sample ID SB-1 2-4'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	17.5	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:35:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-003 **Matrix:** SOIL

Client Sample ID SB-1 6-8'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.25	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0945	0.0945		mg/Kg-dry	1	5/12/2025 4:55:34 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	8.30	0.884		mg/Kg-dry	5	5/5/2025 9:17:43 AM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	5.97	1.99		mg/Kg-dry	1	5/2/2025 2:48:00 PM
Barium	289	0.993		mg/Kg-dry	1	5/2/2025 2:48:00 PM
Cadmium	< 0.497	0.497		mg/Kg-dry	1	5/2/2025 2:48:00 PM
Chromium	13.2	0.993		mg/Kg-dry	1	5/2/2025 2:48:00 PM
Lead	10.6	0.993		mg/Kg-dry	1	5/2/2025 2:48:00 PM
Strontium	25.1	0.993		mg/Kg-dry	1	5/2/2025 2:48:00 PM
Zinc	38.8	0.993		mg/Kg-dry	1	5/2/2025 2:48:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.76	1.59		mg/Kg	1	5/2/2025 2:48:00 PM
Barium	231	1.59		mg/Kg	1	5/2/2025 2:48:00 PM
Cadmium	< 0.396	0.396		mg/Kg	1	5/2/2025 2:48:00 PM
Chromium	10.5	0.793		mg/Kg	1	5/2/2025 2:48:00 PM
Lead	8.49	0.793		mg/Kg	1	5/2/2025 2:48:00 PM
Strontium	20.0	0.793		mg/Kg	1	5/2/2025 2:48:00 PM
Zinc	31.0	0.793		mg/Kg	1	5/2/2025 2:48:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	394	48.5		mg/Kg-dry	1	5/2/2025 3:40:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:35:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-003 **Matrix:** SOIL

Client Sample ID SB-1 6-8'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	20.2	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:40:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-004 **Matrix:** SOIL

Client Sample ID SB-1 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.27	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0965	0.0965		mg/Kg-dry	1	5/12/2025 4:58:57 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	10.3	0.636		mg/Kg-dry	5	5/5/2025 9:32:31 AM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.97	2.00		mg/Kg-dry	1	5/2/2025 2:50:00 PM
Barium	179	0.999		mg/Kg-dry	1	5/2/2025 2:50:00 PM
Cadmium	< 0.500	0.500		mg/Kg-dry	1	5/2/2025 2:50:00 PM
Chromium	9.99	0.999		mg/Kg-dry	1	5/2/2025 2:50:00 PM
Lead	7.72	0.999		mg/Kg-dry	1	5/2/2025 2:50:00 PM
Strontium	17.4	0.999		mg/Kg-dry	1	5/2/2025 2:50:00 PM
Zinc	27.7	0.999		mg/Kg-dry	1	5/2/2025 2:50:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.23	1.63		mg/Kg	1	5/2/2025 2:50:00 PM
Barium	146	1.63		mg/Kg	1	5/2/2025 2:50:00 PM
Cadmium	< 0.407	0.407		mg/Kg	1	5/2/2025 2:50:00 PM
Chromium	8.14	0.814		mg/Kg	1	5/2/2025 2:50:00 PM
Lead	6.29	0.814		mg/Kg	1	5/2/2025 2:50:00 PM
Strontium	14.2	0.814		mg/Kg	1	5/2/2025 2:50:00 PM
Zinc	22.6	0.814		mg/Kg	1	5/2/2025 2:50:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	202	47.9		mg/Kg-dry	1	5/2/2025 3:42:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:40:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-004 **Matrix:** SOIL

Client Sample ID SB-1 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	18.5	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:50:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-005 **Matrix:** SOIL

Client Sample ID SB-1 13-15'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.19	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0938	0.0938		mg/Kg-dry	1	5/12/2025 5:09:36 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	9.91	1.25		mg/Kg-dry	5	5/5/2025 9:47:19 AM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	7.65	1.98		mg/Kg-dry	1	5/2/2025 2:57:00 PM
Barium	173	0.991		mg/Kg-dry	1	5/2/2025 2:57:00 PM
Cadmium	< 0.495	0.495		mg/Kg-dry	1	5/2/2025 2:57:00 PM
Chromium	14.6	0.991		mg/Kg-dry	1	5/2/2025 2:57:00 PM
Lead	12.5	0.991		mg/Kg-dry	1	5/2/2025 2:57:00 PM
Strontium	52.0	0.991		mg/Kg-dry	1	5/2/2025 2:57:00 PM
Zinc	57.0	0.991		mg/Kg-dry	1	5/2/2025 2:57:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	5.83	1.51		mg/Kg	1	5/2/2025 2:57:00 PM
Barium	132	1.51		mg/Kg	1	5/2/2025 2:57:00 PM
Cadmium	< 0.378	0.378		mg/Kg	1	5/2/2025 2:57:00 PM
Chromium	11.1	0.755		mg/Kg	1	5/2/2025 2:57:00 PM
Lead	9.56	0.755		mg/Kg	1	5/2/2025 2:57:00 PM
Strontium	39.6	0.755		mg/Kg	1	5/2/2025 2:57:00 PM
Zinc	43.5	0.755		mg/Kg	1	5/2/2025 2:57:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	254	49.9		mg/Kg-dry	1	5/2/2025 3:45:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:50:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-005 **Matrix:** SOIL

Client Sample ID SB-1 13-15'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	23.8	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 9:55:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-006 **Matrix:** SOIL

Client Sample ID SB-1 15-16'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.27	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	18.5	1.18		mg/Kg-dry	5	5/5/2025 10:19:31 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	25.1	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 10:15:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-007 **Matrix:** SOIL

Client Sample ID SB-1 20-22'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.18	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	6.78	1.00		mg/Kg-dry	5	5/5/2025 10:33:58 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	20.9	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

Element Materials Technology Lafayette
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Website: www.element.com

Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 10:20:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-008 **Matrix:** SOIL

Client Sample ID SB-1 22-24'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.25	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	8.72	0.663		mg/Kg-dry	5	5/5/2025 2:40:22 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	20.4	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 2:40:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-009 **Matrix:** SOIL

Client Sample ID SB-2 0-2'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.61	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.101	0.101		mg/Kg-dry	1	5/12/2025 5:12:57 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	16.4	1.37		mg/Kg-dry	10	5/5/2025 2:55:09 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.13	1.99		mg/Kg-dry	1	5/2/2025 2:59:00 PM
Barium	179	0.997		mg/Kg-dry	1	5/2/2025 2:59:00 PM
Cadmium	< 0.499	0.499		mg/Kg-dry	1	5/2/2025 2:59:00 PM
Chromium	10.8	0.997		mg/Kg-dry	1	5/2/2025 2:59:00 PM
Lead	12.7	0.997		mg/Kg-dry	1	5/2/2025 2:59:00 PM
Strontium	20.3	0.997		mg/Kg-dry	1	5/2/2025 2:59:00 PM
Zinc	12.3	0.997		mg/Kg-dry	1	5/2/2025 2:59:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.03	1.46		mg/Kg	1	5/2/2025 2:59:00 PM
Barium	131	1.46		mg/Kg	1	5/2/2025 2:59:00 PM
Cadmium	< 0.365	0.365		mg/Kg	1	5/2/2025 2:59:00 PM
Chromium	7.94	0.730		mg/Kg	1	5/2/2025 2:59:00 PM
Lead	9.33	0.730		mg/Kg	1	5/2/2025 2:59:00 PM
Strontium	14.8	0.730		mg/Kg	1	5/2/2025 2:59:00 PM
Zinc	9.01	0.730		mg/Kg	1	5/2/2025 2:59:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	142	49.6		mg/Kg-dry	1	5/2/2025 3:47:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 2:40:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-009 **Matrix:** SOIL

Client Sample ID SB-2 0-2'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	26.8	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 2:45:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-010 **Matrix:** SOIL

Client Sample ID SB-2 2-4'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	1.07	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.103	0.103		mg/Kg-dry	1	5/12/2025 5:16:21 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	166	3.81		mg/Kg-dry	20	5/5/2025 3:09:57 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.04	1.99		mg/Kg-dry	1	5/2/2025 3:02:00 PM
Barium	243	0.997		mg/Kg-dry	1	5/2/2025 3:02:00 PM
Cadmium	< 0.498	0.498		mg/Kg-dry	1	5/2/2025 3:02:00 PM
Chromium	11.1	0.997		mg/Kg-dry	1	5/2/2025 3:02:00 PM
Lead	11.7	0.997		mg/Kg-dry	1	5/2/2025 3:02:00 PM
Strontium	25.1	0.997		mg/Kg-dry	1	5/2/2025 3:02:00 PM
Zinc	16.2	0.997		mg/Kg-dry	1	5/2/2025 3:02:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.12	1.54		mg/Kg	1	5/2/2025 3:02:00 PM
Barium	188	1.54		mg/Kg	1	5/2/2025 3:02:00 PM
Cadmium	< 0.386	0.386		mg/Kg	1	5/2/2025 3:02:00 PM
Chromium	8.63	0.772		mg/Kg	1	5/2/2025 3:02:00 PM
Lead	9.09	0.772		mg/Kg	1	5/2/2025 3:02:00 PM
Strontium	19.4	0.772		mg/Kg	1	5/2/2025 3:02:00 PM
Zinc	12.5	0.772		mg/Kg	1	5/2/2025 3:02:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	254	48.2		mg/Kg-dry	1	5/2/2025 3:54:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 2:45:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-010 **Matrix:** SOIL

Client Sample ID SB-2 2-4'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	22.6	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 3:00:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-011 **Matrix:** SOIL

Client Sample ID SB-2 6-8'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	1.13	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0987	0.0987		mg/Kg-dry	1	5/12/2025 5:19:42 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	166	2.70		mg/Kg-dry	20	5/5/2025 3:54:20 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	2.52	1.98		mg/Kg-dry	1	5/2/2025 3:04:00 PM
Barium	134	0.992		mg/Kg-dry	1	5/2/2025 3:04:00 PM
Cadmium	< 0.496	0.496		mg/Kg-dry	1	5/2/2025 3:04:00 PM
Chromium	8.65	0.992		mg/Kg-dry	1	5/2/2025 3:04:00 PM
Lead	7.18	0.992		mg/Kg-dry	1	5/2/2025 3:04:00 PM
Strontium	18.7	0.992		mg/Kg-dry	1	5/2/2025 3:04:00 PM
Zinc	20.3	0.992		mg/Kg-dry	1	5/2/2025 3:04:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	2.09	1.65		mg/Kg	1	5/2/2025 3:04:00 PM
Barium	111	1.65		mg/Kg	1	5/2/2025 3:04:00 PM
Cadmium	< 0.413	0.413		mg/Kg	1	5/2/2025 3:04:00 PM
Chromium	7.20	0.825		mg/Kg	1	5/2/2025 3:04:00 PM
Lead	5.98	0.825		mg/Kg	1	5/2/2025 3:04:00 PM
Strontium	15.6	0.825		mg/Kg	1	5/2/2025 3:04:00 PM
Zinc	16.9	0.825		mg/Kg	1	5/2/2025 3:04:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	85.6	48.1		mg/Kg-dry	1	5/2/2025 3:56:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 3:00:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-011 **Matrix:** SOIL

Client Sample ID SB-2 6-8'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	16.8	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 3:05:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-012 **Matrix:** SOIL

Client Sample ID SB-2 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	6.11	0.10	*	mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.103	0.103		mg/Kg-dry	1	5/12/2025 5:23:04 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	1,170	15.2		mg/Kg-dry	100	5/5/2025 4:09:06 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	5.48	1.99		mg/Kg-dry	1	5/2/2025 3:07:00 PM
Barium	284	0.995		mg/Kg-dry	1	5/2/2025 3:07:00 PM
Cadmium	< 0.498	0.498		mg/Kg-dry	1	5/2/2025 3:07:00 PM
Chromium	11.9	0.995		mg/Kg-dry	1	5/2/2025 3:07:00 PM
Lead	9.04	0.995		mg/Kg-dry	1	5/2/2025 3:07:00 PM
Strontium	29.4	0.995		mg/Kg-dry	1	5/2/2025 3:07:00 PM
Zinc	39.2	0.995		mg/Kg-dry	1	5/2/2025 3:07:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.29	1.56		mg/Kg	1	5/2/2025 3:07:00 PM
Barium	222	1.56		mg/Kg	1	5/2/2025 3:07:00 PM
Cadmium	< 0.390	0.390		mg/Kg	1	5/2/2025 3:07:00 PM
Chromium	9.32	0.779		mg/Kg	1	5/2/2025 3:07:00 PM
Lead	7.08	0.779		mg/Kg	1	5/2/2025 3:07:00 PM
Strontium	23.0	0.779		mg/Kg	1	5/2/2025 3:07:00 PM
Zinc	30.7	0.779		mg/Kg	1	5/2/2025 3:07:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	254	45.9		mg/Kg-dry	1	5/2/2025 3:59:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 3:05:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-012 **Matrix:** SOIL

Client Sample ID SB-2 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	21.7	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 3:20:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-013 **Matrix:** SOIL

Client Sample ID SB-2 12-14'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.85	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	154	3.40		mg/Kg-dry	20	5/5/2025 4:53:29 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	19.2	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 3:30:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-014 **Matrix:** SOIL

Client Sample ID SB-2 16-18'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.21	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	25.9	0.932		mg/Kg-dry	5	5/5/2025 5:08:17 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	21.4	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 3:45:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-015 **Matrix:** SOIL

Client Sample ID SB-2 22-24'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.54	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	30.8	1.04		mg/Kg-dry	10	5/5/2025 5:23:04 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	19.9	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:05:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-016 **Matrix:** SOIL

Client Sample ID SB-3 0-2'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.37	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0942	0.0942		mg/Kg-dry	1	5/12/2025 5:26:26 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	24.2	1.30		mg/Kg-dry	10	5/5/2025 5:37:51 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	5.59	2.00		mg/Kg-dry	1	5/2/2025 3:09:00 PM
Barium	208	0.998		mg/Kg-dry	1	5/2/2025 3:09:00 PM
Cadmium	< 0.499	0.499		mg/Kg-dry	1	5/2/2025 3:09:00 PM
Chromium	12.5	0.998		mg/Kg-dry	1	5/2/2025 3:09:00 PM
Lead	15.3	0.998		mg/Kg-dry	1	5/2/2025 3:09:00 PM
Strontium	19.9	0.998		mg/Kg-dry	1	5/2/2025 3:09:00 PM
Zinc	13.8	0.998		mg/Kg-dry	1	5/2/2025 3:09:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.73	1.69		mg/Kg	1	5/2/2025 3:09:00 PM
Barium	176	1.69		mg/Kg	1	5/2/2025 3:09:00 PM
Cadmium	< 0.422	0.422		mg/Kg	1	5/2/2025 3:09:00 PM
Chromium	10.5	0.844		mg/Kg	1	5/2/2025 3:09:00 PM
Lead	12.9	0.844		mg/Kg	1	5/2/2025 3:09:00 PM
Strontium	16.8	0.844		mg/Kg	1	5/2/2025 3:09:00 PM
Zinc	11.7	0.844		mg/Kg	1	5/2/2025 3:09:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	155	47.8		mg/Kg-dry	1	5/2/2025 4:01:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

Element Materials Technology Lafayette
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Website: www.element.com

Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:05:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-016 **Matrix:** SOIL

Client Sample ID SB-3 0-2'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	15.4	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:20:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-017 **Matrix:** SOIL

Client Sample ID SB-3 2-4'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.33	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0926	0.0926		mg/Kg-dry	1	5/12/2025 5:29:47 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	25.9	0.982		mg/Kg-dry	5	5/5/2025 5:52:38 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.55	2.00		mg/Kg-dry	1	5/2/2025 3:11:00 PM
Barium	189	0.999		mg/Kg-dry	1	5/2/2025 3:11:00 PM
Cadmium	< 0.499	0.499		mg/Kg-dry	1	5/2/2025 3:11:00 PM
Chromium	10.9	0.999		mg/Kg-dry	1	5/2/2025 3:11:00 PM
Lead	12.8	0.999		mg/Kg-dry	1	5/2/2025 3:11:00 PM
Strontium	23.0	0.999		mg/Kg-dry	1	5/2/2025 3:11:00 PM
Zinc	15.6	0.999		mg/Kg-dry	1	5/2/2025 3:11:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	2.92	1.64		mg/Kg	1	5/2/2025 3:11:00 PM
Barium	155	1.64		mg/Kg	1	5/2/2025 3:11:00 PM
Cadmium	< 0.410	0.410		mg/Kg	1	5/2/2025 3:11:00 PM
Chromium	8.98	0.821		mg/Kg	1	5/2/2025 3:11:00 PM
Lead	10.6	0.821		mg/Kg	1	5/2/2025 3:11:00 PM
Strontium	18.9	0.821		mg/Kg	1	5/2/2025 3:11:00 PM
Zinc	12.8	0.821		mg/Kg	1	5/2/2025 3:11:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	197	50.0		mg/Kg-dry	1	5/2/2025 4:04:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:20:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-017 **Matrix:** SOIL

Client Sample ID SB-3 2-4'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	17.8	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:20:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-018 **Matrix:** SOIL

Client Sample ID SB-3 4-6'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.21	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0950	0.0950		mg/Kg-dry	1	5/12/2025 5:33:09 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	12.6	0.785		mg/Kg-dry	5	5/5/2025 6:07:25 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	6.89	1.98		mg/Kg-dry	1	5/2/2025 3:14:00 PM
Barium	330	0.991		mg/Kg-dry	1	5/2/2025 3:14:00 PM
Cadmium	< 0.496	0.496		mg/Kg-dry	1	5/2/2025 3:14:00 PM
Chromium	12.2	0.991		mg/Kg-dry	1	5/2/2025 3:14:00 PM
Lead	12.7	0.991		mg/Kg-dry	1	5/2/2025 3:14:00 PM
Strontium	33.1	0.991		mg/Kg-dry	1	5/2/2025 3:14:00 PM
Zinc	32.1	0.991		mg/Kg-dry	1	5/2/2025 3:14:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	5.49	1.58		mg/Kg	1	5/2/2025 3:14:00 PM
Barium	263	1.58		mg/Kg	1	5/2/2025 3:14:00 PM
Cadmium	< 0.395	0.395		mg/Kg	1	5/2/2025 3:14:00 PM
Chromium	9.72	0.790		mg/Kg	1	5/2/2025 3:14:00 PM
Lead	10.1	0.790		mg/Kg	1	5/2/2025 3:14:00 PM
Strontium	26.4	0.790		mg/Kg	1	5/2/2025 3:14:00 PM
Zinc	25.6	0.790		mg/Kg	1	5/2/2025 3:14:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	334	49.3		mg/Kg-dry	1	5/2/2025 4:06:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:20:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-018 **Matrix:** SOIL

Client Sample ID SB-3 4-6'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	20.3	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:30:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-019 **Matrix:** SOIL

Client Sample ID SB-3 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.22	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0927	0.0927		mg/Kg-dry	1	5/12/2025 5:36:31 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	11.3	0.771		mg/Kg-dry	5	5/5/2025 6:22:13 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	8.80	1.99		mg/Kg-dry	1	5/2/2025 3:16:00 PM
Barium	309	0.996		mg/Kg-dry	1	5/2/2025 3:16:00 PM
Cadmium	< 0.498	0.498		mg/Kg-dry	1	5/2/2025 3:16:00 PM
Chromium	12.0	0.996		mg/Kg-dry	1	5/2/2025 3:16:00 PM
Lead	9.37	0.996		mg/Kg-dry	1	5/2/2025 3:16:00 PM
Strontium	36.5	0.996		mg/Kg-dry	1	5/2/2025 3:16:00 PM
Zinc	39.5	0.996		mg/Kg-dry	1	5/2/2025 3:16:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	6.89	1.56		mg/Kg	1	5/2/2025 3:16:00 PM
Barium	242	1.56		mg/Kg	1	5/2/2025 3:16:00 PM
Cadmium	< 0.390	0.390		mg/Kg	1	5/2/2025 3:16:00 PM
Chromium	9.39	0.780		mg/Kg	1	5/2/2025 3:16:00 PM
Lead	7.34	0.780		mg/Kg	1	5/2/2025 3:16:00 PM
Strontium	28.5	0.780		mg/Kg	1	5/2/2025 3:16:00 PM
Zinc	31.0	0.780		mg/Kg	1	5/2/2025 3:16:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	294	45.7		mg/Kg-dry	1	5/2/2025 4:08:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:30:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-019 **Matrix:** SOIL

Client Sample ID SB-3 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	21.7	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 9:50:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-020 **Matrix:** SOIL

Client Sample ID SB-3 12-14'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.15	0.10		mmhos/cm	1	5/2/2025 11:45:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	7.19	0.685		mg/Kg-dry	5	5/5/2025 6:37:01 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	19.3	1.00		wt%	1	4/28/2025 4:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 10:00:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-021 **Matrix:** SOIL

Client Sample ID SB-3 16-18'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.26	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	18.3	0.975		mg/Kg-dry	5	5/5/2025 8:05:47 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	22.7	1.00		wt%	1	4/28/2025 6:15:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 10:15:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-022 **Matrix:** SOIL

Client Sample ID SB-3 22-24'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.30	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	19.3	0.591		mg/Kg-dry	5	5/5/2025 8:20:34 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	19.7	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 11:05:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-023 **Matrix:** SOIL

Client Sample ID SB-4 0-2'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.34	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0991	0.0991		mg/Kg-dry	1	5/12/2025 5:39:52 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	2.70	0.586		mg/Kg-dry	5	5/5/2025 8:35:22 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	7.05	1.99		mg/Kg-dry	1	5/8/2025 3:25:00 PM
Barium	275	0.997		mg/Kg-dry	1	5/8/2025 3:25:00 PM
Cadmium	< 0.499	0.499		mg/Kg-dry	1	5/8/2025 3:25:00 PM
Chromium	12.4	0.997		mg/Kg-dry	1	5/8/2025 3:25:00 PM
Lead	21.9	0.997		mg/Kg-dry	1	5/8/2025 3:25:00 PM
Strontium	11.4	0.997		mg/Kg-dry	1	5/8/2025 3:25:00 PM
Zinc	12.0	0.997		mg/Kg-dry	1	5/8/2025 3:25:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	6.05	1.71		mg/Kg	1	5/8/2025 3:25:00 PM
Barium	236	1.71		mg/Kg	1	5/8/2025 3:25:00 PM
Cadmium	< 0.428	0.428		mg/Kg	1	5/8/2025 3:25:00 PM
Chromium	10.6	0.856		mg/Kg	1	5/8/2025 3:25:00 PM
Lead	18.8	0.856		mg/Kg	1	5/8/2025 3:25:00 PM
Strontium	9.81	0.856		mg/Kg	1	5/8/2025 3:25:00 PM
Zinc	10.3	0.856		mg/Kg	1	5/8/2025 3:25:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	222	49.5		mg/Kg-dry	1	5/9/2025 4:35:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

Element Materials Technology Lafayette
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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 11:05:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-023 **Matrix:** SOIL

Client Sample ID SB-4 0-2'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	14.2	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 11:10:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-024 **Matrix:** SOIL

Client Sample ID SB-4 2-4'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.15	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.101	0.101		mg/Kg-dry	1	5/12/2025 5:50:31 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	3.69	0.929		mg/Kg-dry	5	5/5/2025 8:50:09 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	6.31	2.00		mg/Kg-dry	1	5/8/2025 3:33:00 PM
Barium	345	0.999		mg/Kg-dry	1	5/8/2025 3:33:00 PM
Cadmium	< 0.500	0.500		mg/Kg-dry	1	5/8/2025 3:33:00 PM
Chromium	13.8	0.999		mg/Kg-dry	1	5/8/2025 3:33:00 PM
Lead	21.0	0.999		mg/Kg-dry	1	5/8/2025 3:33:00 PM
Strontium	17.7	0.999		mg/Kg-dry	1	5/8/2025 3:33:00 PM
Zinc	17.6	0.999		mg/Kg-dry	1	5/8/2025 3:33:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	5.25	1.66		mg/Kg	1	5/8/2025 3:33:00 PM
Barium	287	1.66		mg/Kg	1	5/8/2025 3:33:00 PM
Cadmium	< 0.416	0.416		mg/Kg	1	5/8/2025 3:33:00 PM
Chromium	11.5	0.832		mg/Kg	1	5/8/2025 3:33:00 PM
Lead	17.5	0.832		mg/Kg	1	5/8/2025 3:33:00 PM
Strontium	14.8	0.832		mg/Kg	1	5/8/2025 3:33:00 PM
Zinc	14.7	0.832		mg/Kg	1	5/8/2025 3:33:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	332	48.3		mg/Kg-dry	1	5/9/2025 4:49:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 11:10:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-024 **Matrix:** SOIL

Client Sample ID SB-4 2-4'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	16.8	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 11:25:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-025 **Matrix:** SOIL

Client Sample ID SB-4 7-9'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.18	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.105	0.105		mg/Kg-dry	1	5/12/2025 5:53:52 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	6.43	0.602		mg/Kg-dry	5	5/5/2025 9:04:56 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.08	2.00		mg/Kg-dry	1	5/8/2025 3:35:00 PM
Barium	204	0.998		mg/Kg-dry	1	5/8/2025 3:35:00 PM
Cadmium	< 0.499	0.499		mg/Kg-dry	1	5/8/2025 3:35:00 PM
Chromium	10.1	0.998		mg/Kg-dry	1	5/8/2025 3:35:00 PM
Lead	6.82	0.998		mg/Kg-dry	1	5/8/2025 3:35:00 PM
Strontium	15.5	0.998		mg/Kg-dry	1	5/8/2025 3:35:00 PM
Zinc	19.1	0.998		mg/Kg-dry	1	5/8/2025 3:35:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.51	1.72		mg/Kg	1	5/8/2025 3:35:00 PM
Barium	175	1.72		mg/Kg	1	5/8/2025 3:35:00 PM
Cadmium	< 0.429	0.429		mg/Kg	1	5/8/2025 3:35:00 PM
Chromium	8.73	0.859		mg/Kg	1	5/8/2025 3:35:00 PM
Lead	5.87	0.859		mg/Kg	1	5/8/2025 3:35:00 PM
Strontium	13.3	0.859		mg/Kg	1	5/8/2025 3:35:00 PM
Zinc	16.4	0.859		mg/Kg	1	5/8/2025 3:35:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	198	47.9		mg/Kg-dry	1	5/9/2025 4:52:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 11:25:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-025 **Matrix:** SOIL

Client Sample ID SB-4 7-9'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	13.9	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 11:30:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-026 **Matrix:** SOIL

Client Sample ID SB-4 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.24	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.101	0.101		mg/Kg-dry	1	5/12/2025 5:57:14 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	3.96	0.489		mg/Kg-dry	5	5/5/2025 9:19:43 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.91	1.98		mg/Kg-dry	1	5/8/2025 3:42:00 PM
Barium	120	0.991		mg/Kg-dry	1	5/8/2025 3:42:00 PM
Cadmium	< 0.496	0.496		mg/Kg-dry	1	5/8/2025 3:42:00 PM
Chromium	7.87	0.991		mg/Kg-dry	1	5/8/2025 3:42:00 PM
Lead	5.22	0.991		mg/Kg-dry	1	5/8/2025 3:42:00 PM
Strontium	11.8	0.991		mg/Kg-dry	1	5/8/2025 3:42:00 PM
Zinc	17.2	0.991		mg/Kg-dry	1	5/8/2025 3:42:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.06	1.64		mg/Kg	1	5/8/2025 3:42:00 PM
Barium	99.5	1.64		mg/Kg	1	5/8/2025 3:42:00 PM
Cadmium	< 0.410	0.410		mg/Kg	1	5/8/2025 3:42:00 PM
Chromium	6.52	0.821		mg/Kg	1	5/8/2025 3:42:00 PM
Lead	4.32	0.821		mg/Kg	1	5/8/2025 3:42:00 PM
Strontium	9.80	0.821		mg/Kg	1	5/8/2025 3:42:00 PM
Zinc	14.3	0.821		mg/Kg	1	5/8/2025 3:42:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	130	48.8		mg/Kg-dry	1	5/9/2025 4:55:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 11:30:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-026 **Matrix:** SOIL

Client Sample ID SB-4 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	17.2	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 12:20:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-027 **Matrix:** SOIL

Client Sample ID SB-4 18-20'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.15	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	10.9	1.39		mg/Kg-dry	5	5/5/2025 9:34:31 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	23.3	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 12:30:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-028 **Matrix:** SOIL

Client Sample ID SB-4 22-24'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.25	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	12.9	0.636		mg/Kg-dry	5	5/5/2025 9:49:18 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	19.7	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

(consolidated)

WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 11:25:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-029 **Matrix:** SOIL

Client Sample ID HA-10R

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.26	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0963	0.0963		mg/Kg-dry	1	5/12/2025 6:00:36 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	29.5	0.885		mg/Kg-dry	5	5/5/2025 10:04:06 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.99	2.00		mg/Kg-dry	1	5/8/2025 3:44:00 PM
Barium	1,210	0.999		mg/Kg-dry	1	5/8/2025 3:44:00 PM
Cadmium	< 0.499	0.499		mg/Kg-dry	1	5/8/2025 3:44:00 PM
Chromium	13.0	0.999		mg/Kg-dry	1	5/8/2025 3:44:00 PM
Lead	11.9	0.999		mg/Kg-dry	1	5/8/2025 3:44:00 PM
Strontium	33.7	0.999		mg/Kg-dry	1	5/8/2025 3:44:00 PM
Zinc	17.2	0.999		mg/Kg-dry	1	5/8/2025 3:44:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	3.32	1.66		mg/Kg	1	5/8/2025 3:44:00 PM
Barium	1,010	1.66		mg/Kg	1	5/8/2025 3:44:00 PM
Cadmium	< 0.415	0.415		mg/Kg	1	5/8/2025 3:44:00 PM
Chromium	10.8	0.830		mg/Kg	1	5/8/2025 3:44:00 PM
Lead	9.90	0.830		mg/Kg	1	5/8/2025 3:44:00 PM
Strontium	28.0	0.830		mg/Kg	1	5/8/2025 3:44:00 PM
Zinc	14.3	0.830		mg/Kg	1	5/8/2025 3:44:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	2,400	47.7		mg/Kg-dry	1	5/9/2025 4:58:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/25/2025 11:25:00 AM

Project: Castex 9403-016-0100

Lab ID: 25041317-029 **Matrix:** SOIL

Client Sample ID HA-10R

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	16.9	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
	U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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Analytical Report

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WO#: **25041317**

Date Reported **5/14/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/24/2025 12:00:00 PM

Project: Castex 9403-016-0100

Lab ID: 25041317-030 **Matrix:** SOIL

Client Sample ID SB-4 12-14'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.15	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	10.8	0.764		mg/Kg-dry	2	5/5/2025 10:18:53 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	39.1	1.00		wt%	1	4/29/2025 12:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61603**

Sample ID: **MB-61603**	SampType: **MBLK**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/1/2025**	RunNo: **150431**
Client ID: **PBS**	Batch ID: **61603**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/2/2025**	SeqNo: **3683685**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.00	2.00									
Barium	< 1.00	1.00									
Cadmium	< 0.500	0.500									
Chromium	< 1.00	1.00									
Lead	< 1.00	1.00									
Strontium	< 1.00	1.00									
Zinc	< 1.00	1.00									

Sample ID: **LCS-61603**	SampType: **LCS**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/1/2025**	RunNo: **150431**
Client ID: **LCSS**	Batch ID: **61603**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/2/2025**	SeqNo: **3683686**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	43.7	2.00	50.00	0	87.3	80	120				
Barium	47.0	1.00	50.00	0	93.9	80	120				
Cadmium	44.0	0.500	50.00	0	88.0	80	120				
Chromium	46.5	1.00	50.00	0	93.0	80	120				
Lead	45.8	1.00	50.00	0	91.5	80	120				
Strontium	45.8	1.00	50.00	0	91.7	80	120				
Zinc	43.4	1.00	50.00	0	86.8	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61603**

Sample ID: **LCSD-61603** SampType: **LCSD** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/1/2025** RunNo: **150431**
Client ID: **LCSS02** Batch ID: **61603** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/2/2025** SeqNo: **3683687**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	45.1	2.00	50.00	0	90.2	80	120	43.67	3.27	20	
Barium	48.2	1.00	50.00	0	96.5	80	120	46.95	2.69	20	
Cadmium	45.5	0.500	50.00	0	90.9	80	120	43.99	3.28	20	
Chromium	47.7	1.00	50.00	0	95.3	80	120	46.51	2.45	20	
Lead	46.8	1.00	50.00	0	93.7	80	120	45.76	2.34	20	
Strontium	47.0	1.00	50.00	0	94.0	80	120	45.84	2.48	20	
Zinc	44.5	1.00	50.00	0	89.0	80	120	43.38	2.58	20	

Sample ID: **25041317-001AMS** SampType: **MS** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/1/2025** RunNo: **150431**
Client ID: **SB-1 0-2'** Batch ID: **61603** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/2/2025** SeqNo: **3683691**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	41.0	1.98	49.54	4.576	73.6	75	125				S
Barium	247	0.991	49.54	206.5	82.5	75	125				
Cadmium	38.2	0.495	49.54	0.06475	76.9	75	125				
Chromium	51.9	0.991	49.54	11.93	80.6	75	125				
Lead	51.9	0.991	49.54	13.18	78.2	75	125				
Strontium	52.4	0.991	49.54	11.87	81.7	75	125				
Zinc	52.5	0.991	49.54	13.01	79.7	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services

Project: Castex 9403-016-0100 **BatchID:** **61603**

Sample ID: **25041317-001AMSD** SampType: **MSD** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/1/2025** RunNo: **150431**

Client ID: **SB-1 0-2'** Batch ID: **61603** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/2/2025** SeqNo: **3683692**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	41.4	2.00	49.92	4.576	73.7	75	125	41.05	0.802	20	S
Barium	248	0.998	49.92	206.5	82.7	75	125	247.3	0.173	20	
Cadmium	38.3	0.499	49.92	0.06475	76.5	75	125	38.15	0.311	20	
Chromium	52.4	0.998	49.92	11.93	81.1	75	125	51.88	1.04	20	
Lead	52.2	0.998	49.92	13.18	78.1	75	125	51.94	0.416	20	
Strontium	51.6	0.998	49.92	11.87	79.6	75	125	52.36	1.43	20	
Zinc	52.4	0.998	49.92	13.01	78.8	75	125	52.47	0.227	20	

NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61604**

Sample ID: **MB-61604**	SampType: **MBLK**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/1/2025**	RunNo: **150432**
Client ID: **PBS**	Batch ID: **61604**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/2/2025**	SeqNo: **3683815**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.00	2.00									
Barium	< 2.00	2.00									
Cadmium	< 0.500	0.500									
Chromium	< 1.00	1.00									
Lead	< 1.00	1.00									
Strontium	< 1.00	1.00									
Zinc	< 1.00	1.00									

Sample ID: **LCS-61604**	SampType: **LCS**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/1/2025**	RunNo: **150432**
Client ID: **LCSS**	Batch ID: **61604**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/2/2025**	SeqNo: **3683816**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	43.7	2.00	50.00	0	87.3	80	120				
Barium	47.0	2.00	50.00	0	93.9	80	120				
Cadmium	44.0	0.500	50.00	0	88.0	80	120				
Chromium	46.5	1.00	50.00	0	93.0	80	120				
Lead	45.8	1.00	50.00	0	91.5	80	120				
Strontium	45.8	1.00	50.00	0	91.7	80	120				
Zinc	43.4	1.00	50.00	0	86.8	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61604**

Sample ID: **LCSD-61604** SampType: **LCSD** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/1/2025** RunNo: **150432**
Client ID: **LCSS02** Batch ID: **61604** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/2/2025** SeqNo: **3683817**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	45.1	2.00	50.00	0	90.2	80	120	43.67	3.27	20	
Barium	48.2	2.00	50.00	0	96.5	80	120	46.95	2.69	20	
Cadmium	45.5	0.500	50.00	0	90.9	80	120	43.99	3.28	20	
Chromium	47.7	1.00	50.00	0	95.3	80	120	46.51	2.45	20	
Lead	46.8	1.00	50.00	0	93.7	80	120	45.76	2.34	20	
Strontium	47.0	1.00	50.00	0	94.0	80	120	45.84	2.48	20	
Zinc	44.5	1.00	50.00	0	89.0	80	120	43.38	2.58	20	

Sample ID: **25041317-001AMS** SampType: **MS** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/1/2025** RunNo: **150432**
Client ID: **SB-1 0-2'** Batch ID: **61604** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/2/2025** SeqNo: **3683821**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	35.4	1.71	42.71	3.945	73.6	75	125				S
Barium	213	1.71	42.71	178.0	82.5	75	125				
Cadmium	32.9	0.427	42.71	0.05581	76.9	75	125				
Chromium	44.7	0.854	42.71	10.29	80.6	75	125				
Lead	44.8	0.854	42.71	11.36	78.2	75	125				
Strontium	45.1	0.854	42.71	10.23	81.7	75	125				
Zinc	45.2	0.854	42.71	11.21	79.7	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services

Project: Castex 9403-016-0100 **BatchID:** **61604**

Sample ID: **25041317-001AMSD** SampType: **MSD** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/1/2025** RunNo: **150432**

Client ID: **SB-1 0-2'** Batch ID: **61604** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/2/2025** SeqNo: **3683822**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	35.7	1.72	43.03	3.945	73.7	75	125	35.38	0.802	20	S
Barium	214	1.72	43.03	178.0	82.7	75	125	213.2	0.173	20	
Cadmium	33.0	0.430	43.03	0.05581	76.5	75	125	32.89	0.311	20	
Chromium	45.2	0.861	43.03	10.29	81.1	75	125	44.72	1.04	20	
Lead	45.0	0.861	43.03	11.36	78.1	75	125	44.77	0.416	20	
Strontium	44.5	0.861	43.03	10.23	79.6	75	125	45.13	1.43	20	
Zinc	45.1	0.861	43.03	11.21	78.8	75	125	45.23	0.227	20	

NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61605**

Sample ID: **MB-61605**	SampType: **MBLK**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/1/2025**	RunNo: **150430**
Client ID: **PBS**	Batch ID: **61605**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683650**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	< 50.0	50.0									

Sample ID: **LCS-61605**	SampType: **LCS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/1/2025**	RunNo: **150430**
Client ID: **LCSS**	Batch ID: **61605**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683653**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,010	50.0	5,000	0	100	75	125				

Sample ID: **LCSD-61605**	SampType: **LCSD**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/1/2025**	RunNo: **150430**
Client ID: **LCSS02**	Batch ID: **61605**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683654**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,050	50.0	5,000	0	101	75	125	5,007	0.916	20	

Sample ID: **25041317-001AMS**	SampType: **MS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/1/2025**	RunNo: **150430**
Client ID: **SB-1 0-2'**	Batch ID: **61605**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683656**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	4,850	46.7	4,669	206.9	99.4	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61605**

Sample ID: **25041317-001AMSD** SampType: **MSD** TestCode: **TTBA** Units: **mg/Kg-dry** Prep Date: **5/1/2025** RunNo: **150430**
Client ID: **SB-1 0-2'** Batch ID: **61605** TestNo: **LDNR 29-B** Analysis Date: **5/2/2025** SeqNo: **3683657**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,170	49.6	4,960	206.9	100	75	125	4,846	6.39	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61628**

Sample ID: **MB-61628**	SampType: **MBLK**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/2/2025**	RunNo: **150650**
Client ID: **PBS**	Batch ID: **61628**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/12/2025**	SeqNo: **3690033**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	< 0.100	0.100									

Sample ID: **LCS-61628**	SampType: **LCS**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/2/2025**	RunNo: **150650**
Client ID: **LCSS**	Batch ID: **61628**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/12/2025**	SeqNo: **3690034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.748	0.100	0.8330	0	89.8	80	120				

Sample ID: **LCSD-61628**	SampType: **LCSD**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/2/2025**	RunNo: **150650**
Client ID: **LCSS02**	Batch ID: **61628**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/12/2025**	SeqNo: **3690035**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.807	0.100	0.8330	0	96.9	80	120	0.7479	7.59	20	

Sample ID: **25041317-001AMS**	SampType: **MS**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/2/2025**	RunNo: **150650**
Client ID: **SB-1 0-2'**	Batch ID: **61628**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/12/2025**	SeqNo: **3690038**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.732	0.0948	0.7899	0	92.7	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61628**

Sample ID: **25041317-001AMSD** SampType: **MSD** TestCode: **HG_S_29B** Units: **mg/Kg-dry** Prep Date: **5/2/2025** RunNo: **150650**
Client ID: **SB-1 0-2'** Batch ID: **61628** TestNo: **29B/SW7471** **SW7471A** Analysis Date: **5/12/2025** SeqNo: **3690039**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.648	0.0938	0.7809	0	82.9	75	125	0.7322	12.3	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61674**

Sample ID: **MB-61674**	SampType: **MBLK**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150582**
Client ID: **PBS**	Batch ID: **61674**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687585**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.00	2.00									
Barium	< 1.00	1.00									
Cadmium	< 0.500	0.500									
Chromium	< 1.00	1.00									
Lead	< 1.00	1.00									
Strontium	< 1.00	1.00									
Zinc	< 1.00	1.00									

Sample ID: **LCS-61674**	SampType: **LCS**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150582**
Client ID: **LCSS**	Batch ID: **61674**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687586**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.4	2.00	50.00	0	92.8	80	120				
Barium	50.4	1.00	50.00	0	101	80	120				
Cadmium	46.9	0.500	50.00	0	93.9	80	120				
Chromium	50.1	1.00	50.00	0	100	80	120				
Lead	49.3	1.00	50.00	0	98.6	80	120				
Strontium	49.8	1.00	50.00	0	99.7	80	120				
Zinc	46.5	1.00	50.00	0	93.1	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61674**

Sample ID: **LCSD-61674** SampType: **LCSD** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/6/2025** RunNo: **150582**
Client ID: **LCSS02** Batch ID: **61674** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687587**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	47.0	2.00	50.00	0	94.0	80	120	46.38	1.32	20	
Barium	51.0	1.00	50.00	0	102	80	120	50.41	1.14	20	
Cadmium	47.6	0.500	50.00	0	95.2	80	120	46.95	1.38	20	
Chromium	50.6	1.00	50.00	0	101	80	120	50.12	0.898	20	
Lead	49.5	1.00	50.00	0	99.1	80	120	49.30	0.467	20	
Strontium	50.3	1.00	50.00	0	101	80	120	49.84	0.911	20	
Zinc	47.2	1.00	50.00	0	94.4	80	120	46.54	1.43	20	

Sample ID: **25041317-023AMS** SampType: **MS** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/6/2025** RunNo: **150582**
Client ID: **SB-4 0-2'** Batch ID: **61674** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687589**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.1	2.00	49.98	7.050	78.1	75	125				
Barium	301	1.00	49.98	274.9	51.8	75	125				S
Cadmium	40.7	0.500	49.98	0.01795	81.3	75	125				
Chromium	57.0	1.00	49.98	12.38	89.2	75	125				
Lead	62.7	1.00	49.98	21.89	81.6	75	125				
Strontium	55.2	1.00	49.98	11.43	87.5	75	125				
Zinc	55.4	1.00	49.98	12.01	86.8	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61674**

Sample ID: **25041317-023AMSD** SampType: **MSD** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/6/2025** RunNo: **150582**
Client ID: **SB-4 0-2'** Batch ID: **61674** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	44.4	1.99	49.72	7.050	75.1	75	125	46.08	3.77	20	
Barium	285	0.994	49.72	274.9	20.6	75	125	300.8	5.34	20	S
Cadmium	40.0	0.497	49.72	0.01795	80.4	75	125	40.65	1.66	20	
Chromium	54.2	0.994	49.72	12.38	84.2	75	125	56.97	4.90	20	
Lead	60.2	0.994	49.72	21.89	77.0	75	125	62.65	4.04	20	
Strontium	54.5	0.994	49.72	11.43	86.6	75	125	55.17	1.26	20	
Zinc	54.1	0.994	49.72	12.01	84.6	75	125	55.41	2.43	20	

NOTES:
S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61675**

Sample ID: **MB-61675**	SampType: **MBLK**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/6/2025**	RunNo: **150583**
Client ID: **PBS**	Batch ID: **61675**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687613**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.00	2.00									
Barium	< 2.00	2.00									
Cadmium	< 0.500	0.500									
Chromium	< 1.00	1.00									
Lead	< 1.00	1.00									
Strontium	< 1.00	1.00									
Zinc	< 1.00	1.00									

Sample ID: **LCS-61675**	SampType: **LCS**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/6/2025**	RunNo: **150583**
Client ID: **LCSS**	Batch ID: **61675**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687614**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.4	2.00	50.00	0	92.8	80	120				
Barium	50.4	2.00	50.00	0	101	80	120				
Cadmium	46.9	0.500	50.00	0	93.9	80	120				
Chromium	50.1	1.00	50.00	0	100	80	120				
Lead	49.3	1.00	50.00	0	98.6	80	120				
Strontium	49.8	1.00	50.00	0	99.7	80	120				
Zinc	46.5	1.00	50.00	0	93.1	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61675**

Sample ID: **LCSD-61675** SampType: **LCSD** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/6/2025** RunNo: **150583**
Client ID: **LCSS02** Batch ID: **61675** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687615**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	47.0	2.00	50.00	0	94.0	80	120	46.38	1.32	20	
Barium	51.0	2.00	50.00	0	102	80	120	50.41	1.14	20	
Cadmium	47.6	0.500	50.00	0	95.2	80	120	46.95	1.38	20	
Chromium	50.6	1.00	50.00	0	101	80	120	50.12	0.898	20	
Lead	49.5	1.00	50.00	0	99.1	80	120	49.30	0.467	20	
Strontium	50.3	1.00	50.00	0	101	80	120	49.84	0.911	20	
Zinc	47.2	1.00	50.00	0	94.4	80	120	46.54	1.43	20	

Sample ID: **25041317-023AMS** SampType: **MS** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/6/2025** RunNo: **150583**
Client ID: **SB-4 0-2'** Batch ID: **61675** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687617**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	39.5	1.72	42.88	6.049	78.1	75	125				
Barium	258	1.72	42.88	235.9	51.8	75	125				S
Cadmium	34.9	0.429	42.88	0.01540	81.3	75	125				
Chromium	48.9	0.858	42.88	10.62	89.2	75	125				
Lead	53.8	0.858	42.88	18.78	81.6	75	125				
Strontium	47.3	0.858	42.88	9.811	87.5	75	125				
Zinc	47.5	0.858	42.88	10.30	86.8	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services

Project: Castex 9403-016-0100 **BatchID:** **61675**

Sample ID: **25041317-023AMSD** SampType: **MSD** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/6/2025** RunNo: **150583**

Client ID: **SB-4 0-2'** Batch ID: **61675** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687618**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	38.1	1.71	42.66	6.049	75.1	75	125	39.53	3.77	20	
Barium	245	1.71	42.66	235.9	20.6	75	125	258.1	5.34	20	S
Cadmium	34.3	0.427	42.66	0.01540	80.4	75	125	34.88	1.66	20	
Chromium	46.5	0.853	42.66	10.62	84.2	75	125	48.88	4.90	20	
Lead	51.6	0.853	42.66	18.78	77.0	75	125	53.75	4.04	20	
Strontium	46.7	0.853	42.66	9.811	86.6	75	125	47.33	1.26	20	
Zinc	46.4	0.853	42.66	10.30	84.6	75	125	47.55	2.43	20	

NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61676**

Sample ID: **MB-61676**	SampType: **MBLK**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **PBS**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688991**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	< 50.0	50.0									

Sample ID: **LCS-61676**	SampType: **LCS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **LCSS**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,090	50.0	5,000	0	102	75	125				

Sample ID: **LCSD-61676**	SampType: **LCSD**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **LCSS02**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,130	50.0	5,000	0	103	75	125	5,090	0.692	20	

Sample ID: **25041317-023AMS**	SampType: **MS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **SB-4 0-2'**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688995**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,110	47.6	4,757	221.7	103	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **61676**

Sample ID: **25041317-023AMSD**	SampType: **MSD**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **SB-4 0-2'**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688998**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,110	48.4	4,836	221.7	101	75	125	5,110	0.0921	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150334**

Sample ID: **25041317-003ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150334**
Client ID: **SB-1 6-8'** Batch ID: **R150334** TestNo: **LDNR 29-B** Analysis Date: **4/28/2025** SeqNo: **3680956**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	21.7	1.00						20.20	7.16	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150392**

Sample ID: **MB-R150392**	SampType: **MBLK**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150392**
Client ID: **PBS**	Batch ID: **R150392**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3682861**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	< 0.10	0.10									

Sample ID: **LCS1-R150392**	SampType: **LCS1**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150392**
Client ID: **ZZZZZZ**	Batch ID: **R150392**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3682862**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.48	0.10	0.50	0	95.8	90	110				

Sample ID: **LCS2-R150392**	SampType: **LCS2**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150392**
Client ID: **ZZZZZZ**	Batch ID: **R150392**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3682863**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	51.5	0.10	53.00	0	97.2	90	110				

Sample ID: **25041317-003ADUP**	SampType: **DUP**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150392**
Client ID: **SB-1 6-8'**	Batch ID: **R150392**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3682867**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.25	0.10						0.25	0.20	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150393**

Sample ID: **MB-R150393**	SampType: **MBLK**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150393**
Client ID: **PBS**	Batch ID: **R150393**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	< 0.10	0.10									

Sample ID: **LCS1-R150393**	SampType: **LCS1**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150393**
Client ID: **ZZZZZZ**	Batch ID: **R150393**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683035**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.48	0.10	0.50	0	95.4	90	110				

Sample ID: **LCS2-R150393**	SampType: **LCS2**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150393**
Client ID: **ZZZZZZ**	Batch ID: **R150393**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683036**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	52.1	0.10	53.00	0	98.3	90	110				

Sample ID: **25041317-021ADUP**	SampType: **DUP**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150393**
Client ID: **SB-3 16-18'**	Batch ID: **R150393**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683038**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.26	0.10						0.26	1.08	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150395**

Sample ID: **25041317-021ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150395**
Client ID: **SB-3 16-18'** Batch ID: **R150395** TestNo: **LDNR 29-B** Analysis Date: **4/28/2025** SeqNo: **3682590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	20.4	1.00						22.70	10.7	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150423**

Sample ID: **25041339-001ADUP**	SampType: **DUP**	TestCode: **PMOIST_29B**	Units: **wt%**	Prep Date:	RunNo: **150423**
Client ID: **ZZZZZZ**	Batch ID: **R150423**	TestNo: **LDNR 29-B**		Analysis Date: **4/29/2025**	SeqNo: **3683512**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	17.1	1.00						17.10	0	20	

Sample ID: **25041414-001ADUP**	SampType: **DUP**	TestCode: **PMOIST_29B**	Units: **wt%**	Prep Date:	RunNo: **150423**
Client ID: **ZZZZZZ**	Batch ID: **R150423**	TestNo: **LDNR 29-B**		Analysis Date: **4/30/2025**	SeqNo: **3683520**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	75.7	1.00						75.80	0.13	20	

Sample ID: **25041445-001ADUP**	SampType: **DUP**	TestCode: **PMOIST_29B**	Units: **wt%**	Prep Date:	RunNo: **150423**
Client ID: **ZZZZZZ**	Batch ID: **R150423**	TestNo: **LDNR 29-B**		Analysis Date: **4/30/2025**	SeqNo: **3688965**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	18.7	1.00						16.70	11.3	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150449**

Sample ID: **mblk**	SampType: **MBLK**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **PBS**	Batch ID: **R150449**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684053**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	< 0.250	0.250									

Sample ID: **lcs**	SampType: **LCS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **LCSS**	Batch ID: **R150449**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684054**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.1	0.250	10.00	0	101	80	120				

Sample ID: **lcsd**	SampType: **LCSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **LCSS02**	Batch ID: **R150449**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684055**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.1	0.250	10.00	0	101	80	120	10.08	0.480	15	

Sample ID: **25041317-012ams**	SampType: **MS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **SB-2 8-10'**	Batch ID: **R150449**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684072**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1,370	15.2	305.0	1,167	66.1	80	120				S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150449**

Sample ID: **25041317-012amsd**	SampType: **MSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:				RunNo: **150449**	
Client ID: **SB-2 8-10'**	Batch ID: **R150449**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**				SeqNo: **3684073**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1,390	15.2	305.0	1,167	73.1	80	120	1,369	1.55	15	S

NOTES:
S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150449-2**

Sample ID: **mblk**	SampType: **MBLK**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **PBS**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684084**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	< 0.250	0.250									

Sample ID: **lcs**	SampType: **LCS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **LCSS**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684085**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.68	0.250	10.00	0	96.8	80	120				

Sample ID: **lcsd**	SampType: **LCSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **LCSS02**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684086**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.50	0.250	10.00	0	95.0	80	120	9.681	1.92	15	

Sample ID: **25041320-003ams**	SampType: **MS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **ZZZZZZ**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684100**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3,010	49.6	991.5	2,153	86.5	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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QC SUMMARY REPORT

WO#: **25041317**

14-May-25

Client: ICON Environmental Services
Project: Castex 9403-016-0100 **BatchID:** **R150449-2**

Sample ID: **25041320-003amsd**	SampType: **MSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **ZZZZZZ**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684101**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2,970	49.6	991.5	2,153	82.8	80	120	3,011	1.23	15	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode				

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Sample Log-In Check List

Client Name: **ICON_ENV** Work Order Number: **25041317** RcptNo: **1**

Logged by:	**Rhonda David**	**4/28/2025 11:35:00 AM**	Rhonda David
Completed By:	**Rhonda David**	**4/28/2025 12:57:55 PM**	Rhonda David
Reviewed By:	**Buffy Bryant**	**5/14/2025 9:17:44 AM**	Buffy Bryant

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present	☐
2.	How was the sample delivered?	Element					

Log In

3.	Coolers are present?	Yes	☑	No	☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No	☐		
	Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	Not Present	☑
	No. Seal Date: Signed By:						
5.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA	☐
6.	Were all samples received at a temperature of >0° C to 6.0°C	Yes	☑	No	☐	NA	☐
7.	Sample(s) in proper container(s)?	Yes	☑	No	☐		
8.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐		
9.	Are samples (except VOA and ONG) properly preserved?	Yes	☑	No	☐		
10.	Was preservative added to bottles?	Yes	☐	No	☑	NA	☐
11.	Is the headspace in the VOA vials less than 1/4 inch or 6 mm?	Yes	☐	No	☐	No VOA Vials	☑
12.	Were any sample containers received broken?	Yes	☐	No	☑		
13.	Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes	☑	No	☐		
14.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐		
15.	Is it clear what analyses were requested?	Yes	☑	No	☐		
16.	Were all holding times able to be met? (If no, notify customer for authorization.)	Yes	☑	No	☐		

Special Handling (if applicable)

17.	Was client notified of all discrepancies with this order?	Yes	☑	No	☐	NA	☐

Person Notified: Ashley Bergeron Date: 4/28/2025
By Whom: Buffy Bryant Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: Received bag for SB-4 12-14' (4/24/25 12:00) not written on COC
Client Instructions: Sample SB-4 12-14' needs EC,PMOIST, and Cl testing.

18. Additional remarks:

Added information provided for SB-4 12-14'.

Cooler Information

Cooler No	Temp ºC	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Not Present			

element

Chain of Custody

Laboratory Number: 25041317

Page 1 of 4

Client Information:	Billing Information:	PO Number:	Project Name/Number:
Company Name: ICON	SAME		CASTEX 9403-016-0100
Contact Name:		Quote Number:	Sampler's Signature: Ashley Bryson
Address:		Required QC Level	
City, State Zip:		Bill Monthly ☐Yes ☐No	Shipping Method: UPS / FedEx / NOW / DHL / Element / Hand / Mail
Phone Number: Ext:	Ext:		
Fax Number:			
E-mail Address:			

Matrix Code

DW = Drinking Water
WW = Waste Water
GW = Ground Water
AQ = Aqueous
OT = Other
SL = Sludge SOL = Solid
O = Oil SO = Soil
F = Food SW = Swab
NG = Natural Gas
NGL = Natural Gas Liquid
PW = Produced Water
CF = Completion Fluid

Which Regulations Apply:
☐RCRA ☐Drinking Water
☐POTW ☐Distribution
☐NPDES ☐Special
☐USDA/FDA ☐State
☐RECAP/RISC ☐Other

Turn Time
☐Standard
RUSH
☐1 Day
☐2 Day
☐Other
(Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Container: Type P=Plastic, G=Glass, V=Vial	Pres. HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	Requested Tests: EC	% Moisture	cations/anions	Soluble Cl-	8B Metals						Comments
SB-1 0-2'	4-24-25	0910	G	SO	1	P		X	X		X	X						As, Ba, TTBa, Cd, Cr, Pb, ~~Se~~ AB, Sr, Zn, Hg
SB-1 2-4'	4-25-25	1040						X	X		X	X						
SB-1 6-8'	4-24-25	0935						X	X		X	X						
SB-1 8-10'		0940						X	X		X	X						
SB-1 13-15'		0950						X	X		X	X						
SB-1 15-16'		0955						X	X		X	X	AB					
SB-1 20-22'		1015						X	X		X	X						
SB-1 22-24'		1020						X	X		X	X						
SB-2 0-2'	4-24-25	1440				G		X	X		X	X						

	Relinquished by	Date/Time	Received by	Date/Time
1	Ashley Bryson DJ	4/28/25 0915	Rhonda Davis	4/28/25 0915
2		4/28/25 1135		4/28/25 1135
3				

Field Notes:

Received at lab on ice? ☑Yes ☐No Temp: 3.5°C

All samples submitted to Element Materials Technology for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Element Materials Technology reserves the right to return unused sample portions.

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909 Executive Dr, Warsaw, IN 46580 USA, P 574-267-3305, F 574-269-6569
3371 Cleveland Road, Suite 100A, South Bend, IN 46628 USA, P 574-277-0707, F 574-273-5699
2417 W. Pinhook Rd, Lafayette, LA 70508 USA, P 337-235-0483, F 337-233-6540

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Chain of Custody

Laboratory Number: 2504317

Page 2 of 4

Client Information:	Billing Information:	PO Number:	Project Name/Number:
Company Name: ICON	SAME		CASTEX
Contact Name:		Quote Number:	
Address:			Sampler's Signature: Ashley Ferguson
		Required QC Level	
City, State Zip:			
Phone Number: Ext:	Ext:	Bill Monthly ☐Yes ☐No	Shipping Method: UPS / FedEx / NOW DHL / Element / Hand / Mail
Fax Number:			
E-mail Address:			

Matrix Code

DW = Drinking Water
WW = Waste Water
GW = Ground Water
AQ = Aqueous
OT = Other
SL = Sludge SOL = Solid
O = Oil SO = Soil
F = Food SW = Swab
NG = Natural Gas
NGL = Natural Gas Liquid
PW = Produced Water
CF = Completion Fluid

Which Regulations Apply:
☐RCRA ☐Drinking Water
☐POTW ☐Distribution
☐NPDES ☐Special
☐USDA/FDA ☐State
☐RECAP/RISC ☐Other

Turn Time
☐Standard
RUSH
☐1 Day
☐2 Day
☐Other
(Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description		Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Container: Type P=Plastic, G=Glass, V=Vial	Pres.: HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	Requested Tests: EC	% Moisture	Cations/anions	Soluble Cl⁻	29B Metals						Comments
SB-2	2-4'	1445	4-24-25	G	SO	1	G		X	X		X	X						*see pg-1*
SB-2	6-8'	1500					P		X	X		X	X						
SB-2	8-10'	1505							X	X		X	X						
SB-2	12-14'	1520							X	X		X	X	(B)					
SB-2	16-18'	1530							X	X		X	X						
SB-2	22-24'	1545	↓				↓		X	X		X	X						
SB-3	0-2'	4-25-25	0905			↓	G		X	X		X	X						
SB-3	2-4'	↓	0910			2	P,G		X	X		X	X						
SB-3	4-6'	↓	0920	↓	↓	1	P		X	X		X	X						

	Relinquished by	Date/Time	Received by	Date/Time
1	[signature] VS	4/28/25 0915	[signature] VS	4/28/25 0915
2	[signature] VS	4/28/25 1135	[signature]	4/28/25 1135
3				

Field Notes:

Received at lab on ice?
☑Yes ☐No Temp: 3.5°C

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3371 Cleveland Road, Suite 100A, South Bend, IN 46628 USA, P 574-277-0707, F 574-273-5699
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Chain of Custody

Laboratory Number: 25041317

Page 3 of 4

	Client Information:	Billing Information:	PO Number:	Project Name/Number:
Company Name:	ICON	SAME		CASTEX
Contact Name:			Quote Number:	
Address:				Sampler's Signature: Ashley Bryson
			Required QC Level	
City, State Zip:				
Phone Number:	Ext:	Ext:	Bill Monthly	Shipping Method:
Fax Number:			☐Yes	UPS / FedEx / NOW
E-mail Address:			☐No	DHL / (Element) / Hand / Mail

Matrix Code

DW = Drinking Water
WW = Waste Water
GW = Ground Water
AQ = Aqueous
OT = Other
SL = Sludge SOL = Solid
O = Oil SO = Soil
F = Food SW = Swab
NG = Natural Gas
NGL = Natural Gas Liquid
PW = Produced Water
CF = Completion Fluid

Which Regulations Apply:
☐RCRA ☐Drinking Water
☐POTW ☐Distribution
☐NPDES ☐Special
☐UST/FDA ☐State
☐RECAP/RISC ☐Other

Turn Time
☐Standard
RUSH
☐1 Day
☐2 Day
☐Other
(Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Container: Type P=Plastic, G=Glass, V=Vial	Pres. HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	Requested Tests: EC	% Moisture	Cations/Anions	Soluble Cl⁻	2MB Metals						Comments
SB-3 8-10'	4-24-25	0930	G	SO	1	P		X	X		X	X						*see pg. 1*
SB-3 12-14'		0950						X	X		X	X (AB)						
SB-3 16-18'		1000						X	X		X	X						
SB-3 22-24'		1015						X	X		X	X						
SB-4 0-2'	4-24-25	1105			2	P,G		X	X		X	X						
SB-4 2-4'		1110			2	P,G		X	X		X	X						
SB-4 7-9'		1125			1	G		X	X		X	X						
SB-4 8-10'		1130			1	G		X	X		X	X						
SB-4 18-20'		1220			1	P		X	X		X	X (AB)						

	Relinquished by	Date/Time	Received by	Date/Time
1	Ashley Bryson	4/28/25 0915	Thomas Ward	4/28/25 0915
2	Ashley Bryson	4/28/25 1135	Thomas Ward	4/28/25 1135
3				

Field Notes:

Received at lab on ice?
☐Yes ☐No Temp: 3.5°C

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F 260-471-7777

909 Executive Dr
Warsaw, IN
46580 USA
P 574-267-3305
F 574-269-6569

3311 Cleveland Road, Suite 100A
South Bend, IN
46628 USA
P 574-277-0707
F 574-273-5699

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Lafayette, LA
70508 USA
P 337-235-0483
F 337-233-6540

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Chain of Custody

Laboratory Number: 2504137

Page 4 of 4

Client Information:	Billing Information:	PO Number:	Project Name/Number:
Company Name: ICON	SAME		CASTEX
Contact Name:		Quote Number:	
Address:			Sampler's Signature: Ashley Bigeon
		Required QC Level	
City, State Zip:			
Phone Number: Ext:	Ext:	Bill Monthly ☐Yes ☐No	Shipping Method: UPS / FedEx / NOW DHL / Element / Hand / Mail
Fax Number:			
E-mail Address:			

Matrix Code

DW = Drinking Water
WW = Waste Water
GW = Ground Water
AQ = Aqueous
OT = Other
SL = Sludge SOL = Solid
O = Oil SO = Soil
F = Food SW = Swab
NG = Natural Gas
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PW = Produced Water
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Which Regulations Apply:
☐RCRA ☐Drinking Water
☐POTW ☐Distribution
☐NPDES ☐Special
☐USDA/FDA ☐State
☐RECAP/RISC ☐Other

Turn Time
☐Standard
RUSH
☐1 Day
☐2 Day
☐Other
(Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Container: Type P=Plastic, G=Glass, V=Vial	Pres.: HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	Requested Tests: EC	% moisture	cations/anions	Soluble Cl-	29B Metals						Comments
SB-4 22-24'	4-24-25	1230	G	SO	1	P	—	X	X		X	X AB						* see pg. 1 *
HA-10R 0-2'	4-25-25	1125	G	SO	1	P	—	X	X		X	X						
SB-4 12-14'	4/24/25	1200	G	~~Soil~~ SO	1	P	—	X	X		X						YKT 4/28/25	Per Client
				YKT 4/28/25														

	Relinquished by	Date/Time	Received by	Date/Time
1	Ashley Bigeon US	4/28/25 0915	Rhonda Durrel US	4/28/25 0915
2	US	4/28/25 1135		4/28/25 1135
3				

Field Notes:

Received at lab on ice? ☐Yes ☐No Temp: 3.5°C

All samples submitted to Element Materials Technology for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Element Materials Technology reserves the right to return unused sample portions.

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46580 USA
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5/21/2025

Hydro-Environmental Technology, Inc.
Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott, LA, 70583

Ref: Report Number: 25-119-0035
Project Description: Castex
1009.A75
Jennings, LA

Dear Mr. Stewart Stover, Jr.:

Waypoint Analytical Louisiana, Inc. received sample(s) on 4/29/2025 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2026
Kentucky	State Program	KY98013	12/31/2025
Louisiana	State Program - NELAP	04023	06/30/2025

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Sample Summary Table

Report Number: **25-119-0035**

Client Project Description: **Castex**
1009.A75
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
56291	SB-3 (0-2')	Solids	04/25/2025 09:05	04/29/2025 13:46		
56291	SB-3 (0-2')	Solids	04/25/2025 09:05	04/29/2025 13:46	X-RAY SXRD XRD EDX	Core Min
56291	SB-3 (0-2')	Solids	04/25/2025 09:05	04/29/2025 13:46	MAEPH LA	WP RMS
56291	SB-3 (0-2')	Solids	04/25/2025 09:05	04/29/2025 13:46	MAVPH LA	WP RMS
56291	SB-3 (0-2')	Solids	04/25/2025 09:05	04/29/2025 13:46	8270D SIM	WP RMS
56292	SB-3 (2-4')	Solids	04/25/2025 09:10	04/29/2025 13:46		
56292	SB-3 (2-4')	Solids	04/25/2025 09:10	04/29/2025 13:46	MAEPH LA	WP RMS
56292	SB-3 (2-4')	Solids	04/25/2025 09:10	04/29/2025 13:46	8270D SIM	WP RMS
56293	SB-3 (4-6')	Solids	04/25/2025 09:20	04/29/2025 13:46		
56293	SB-3 (4-6')	Solids	04/25/2025 09:20	04/29/2025 13:46	8270D SIM	WP RMS
56293	SB-3 (4-6')	Solids	04/25/2025 09:20	04/29/2025 13:46	MAEPH LA	WP RMS
56294	SB-3 (8-10')	Solids	04/25/2025 09:30	04/29/2025 13:46		
56294	SB-3 (8-10')	Solids	04/25/2025 09:30	04/29/2025 13:46	8270D SIM	WP RMS
56294	SB-3 (8-10')	Solids	04/25/2025 09:30	04/29/2025 13:46	MAVPH LA	WP RMS
56294	SB-3 (8-10')	Solids	04/25/2025 09:30	04/29/2025 13:46	MAEPH LA	WP RMS
56295	SB-3 (12-14')	Solids	04/25/2025 09:50	04/29/2025 13:46		
56295	SB-3 (12-14')	Solids	04/25/2025 09:50	04/29/2025 13:46	8270D SIM	WP RMS
56296	SB-3 (16-18')	Solids	04/25/2025 10:00	04/29/2025 13:46		
56296	SB-3 (16-18')	Solids	04/25/2025 10:00	04/29/2025 13:46	8270D SIM	WP RMS
56297	SB-3 (22-24')	Solids	04/25/2025 10:15	04/29/2025 13:46		
56297	SB-3 (22-24')	Solids	04/25/2025 10:15	04/29/2025 13:46	8270D SIM	WP RMS
56298	SB-1 (2-4')	Solids	04/25/2025 10:40	04/29/2025 13:46		
56298	SB-1 (2-4')	Solids	04/25/2025 10:40	04/29/2025 13:46	8270D SIM	WP RMS
56298	SB-1 (2-4')	Solids	04/25/2025 10:40	04/29/2025 13:46	MAEPH LA	WP RMS
56299	HA-10R (0-2')	Solids	04/25/2025 11:25	04/29/2025 13:46	X-RAY SXRD XRD EDX	Core Min
56300	Trip Blank	Aqueous	04/25/2025 07:30	04/29/2025 13:46	MAVPH LA	WP RMS

220 Core Mineralogy: Core Mineralogy, Inc., Broussard, LA

198 WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Sample Summary Table

Report Number: **25-119-0035**

Client Project Description: **Castex**
1009.A75
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
56301	Field Blank	Aqueous	04/25/2025 08:30	04/29/2025 13:46	MAVPH LA	WP RMS

220 Core Mineralogy: Core Mineralogy, Inc., Broussard, LA

198 WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Client: Hydro-Environmental Technology, Inc. **CASE NARRATIVE**
Project: Castex
Lab Report Number: 25-119-0035
Date: 5/21/2025

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are reported AR - As Received by adjusting the data using the percent moisture result.
- True Total Barium results are reported dry weight
- Oil & Grease results reported dry weight
- VPH/EPH results reported as received

Metals Analysis Method 6010D
Sample 56316 (2504291611)
Analyte: Barium
QC Batch No: A102558/A102488
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 56316 (2504291611)
Analyte: Barium
QC Batch No: A102558/A102488
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.
MS/MSD

Sample 56316 (2504291611)
Analyte: Lead
QC Batch No: A102558/A102488
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.
MS/MSD

Sample 56316 (2504291611)
Analyte: Lead
QC Batch No: A102558/A102488
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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09996
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Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott , LA 70583

Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56291**
Sample ID : **SB-3 (0-2')**

Matrix: **Solids**
Sampled: **4/25/2025 09:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**15.8**	%	0.050	1	04/30/25 12:20	TJL	SW-DRYWT
% Saturation (Sat Paste)	**67.1**	%		1	05/05/25 11:38	BXH	29B
Alkalinity (Sat Paste)	**5.2**	meq/L	0.3	1	05/08/25 08:37	APB	29B
Chloride (Sat Paste)	**1.64**	meq/L	0.010	5	05/05/25 15:38	MJM	29B
Chloride	**26.2**	mg/Kg	20.0	5	05/05/25 13:18	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.773**	mmhos/cm		1	05/05/25 11:38	BXH	29B
pH (Sat Paste)	**8.28**	s.u.		1	05/05/25 11:38	BXH	29B
Sulfate (Sat Paste)	**0.911**	meq/L	0.010	5	05/05/25 15:38	MJM	29B
Calcium (Sat Paste)	**2.56**	meq/L	0.025	5	05/06/25 14:47	APB	29B
Magnesium (Sat Paste)	**1.81**	meq/L	0.041	5	05/06/25 14:47	APB	29B
Sodium (Sat Paste)	**4.27**	meq/L	0.110	5	05/06/25 14:47	APB	29B
Total Barium	**297**	mg/Kg AR	1.00	2	05/08/25 19:55	APB	6010D
True Total Barium	**376**	mg/Kg	50.0	1	05/08/25 20:46	APB	29B
Total Chromium	**18.9**	mg/Kg AR	0.500	2	05/08/25 19:55	APB	6010D
Total Lead	**16.0**	mg/Kg AR	0.600	2	05/08/25 19:55	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 19:53	SJS	G207039
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 19:53	SJS	G207039
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 19:53	SJS	G207039

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000161

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56291**
Sample ID : **SB-3 (0-2')**

Matrix: **Solids**
Sampled: **4/25/2025 09:05**

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 19:53	SJS	G207039
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/01/25 19:53	SJS	G207039
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/01/25 19:53	SJS	G207039
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/01/25 19:53	SJS	G207039
Surrogate: Chlorooctadecane	97.6		Limits: 40-140%	1	05/01/25 19:53	SJS	MAEPH LA
Surrogate: OTP Surrogate	53.0		Limits: 40-140%	1	05/01/25 19:53	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207000** 05/02/25 08:40
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.426	mg/Kg	0.426	100	05/02/25 20:01	MAO	G207026
Aliphatic >C8-C10	<1.11	mg/Kg	1.11	100	05/02/25 20:01	MAO	G207026
Aromatic >C8-C10	<0.426	mg/Kg	0.426	100	05/02/25 20:01		G207026
Surrogate: Toluene-d8	122		Limits: 50-150%	100	05/02/25 20:01	MAO	G207026

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000162

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56292**
Sample ID : **SB-3 (2-4')**

Matrix: **Solids**
Sampled: **4/25/2025 09:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**20.1**	%	0.050	1	04/30/25 12:20	TJL	SW-DRYWT
% Saturation (Sat Paste)	**84.1**	%		1	05/05/25 11:38	BXH	29B
Alkalinity (Sat Paste)	**0.8**	meq/L	0.3	1	05/08/25 08:37	APB	29B
Chloride (Sat Paste)	**2.05**	meq/L	0.010	5	05/05/25 15:51	MJM	29B
Chloride	**24.0**	mg/Kg	20.0	5	05/05/25 13:55	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.420**	mmhos/cm		1	05/05/25 11:38	BXH	29B
pH (Sat Paste)	**7.51**	s.u.		1	05/05/25 11:38	BXH	29B
Sulfate (Sat Paste)	**0.464**	meq/L	0.010	5	05/05/25 15:51	MJM	29B
Sodium Adsorption Ratio (Sat Paste)	**6.71**	Calc	0.025	5	05/06/25 15:00		29B
Calcium (Sat Paste)	**0.380**	meq/L	0.025	5	05/06/25 15:00	APB	29B
Magnesium (Sat Paste)	**0.167**	meq/L	0.041	5	05/06/25 15:00	APB	29B
Sodium (Sat Paste)	**3.51**	meq/L	0.110	5	05/06/25 15:00	APB	29B
Total Barium	**152**	mg/Kg AR	0.799	2	05/08/25 20:00	APB	6010D
True Total Barium	**245**	mg/Kg	50.0	1	05/08/25 20:58	APB	29B
Total Chromium	**22.6**	mg/Kg AR	0.400	2	05/08/25 20:00	APB	6010D
Total Lead	**9.50**	mg/Kg AR	0.479	2	05/08/25 20:00	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 20:24	SJS	G207039
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 20:24	SJS	G207039

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000163

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56292**
Sample ID : **SB-3 (2-4')**

Matrix: **Solids**
Sampled: **4/25/2025 09:10**

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 20:24	SJS	G207039
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 20:24	SJS	G207039
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/01/25 20:24	SJS	G207039
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/01/25 20:24	SJS	G207039
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/01/25 20:24	SJS	G207039
Surrogate: Chlorooctadecane	83.7		Limits: 40-140%	1	05/01/25 20:24	SJS	MAEPH LA
Surrogate: OTP Surrogate	80.7		Limits: 40-140%	1	05/01/25 20:24	SJS	MAEPH LA

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000164

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56293**
Sample ID : **SB-3 (4-6')**

Matrix: **Solids**
Sampled: **4/25/2025 09:20**

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 20:54	SJS	G207039
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 20:54	SJS	G207039
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 20:54	SJS	G207039
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 20:54	SJS	G207039
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/01/25 20:54	SJS	G207039
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/01/25 20:54	SJS	G207039
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/01/25 20:54	SJS	G207039
Surrogate: Chlorooctadecane	89.8		Limits: 40-140%	1	05/01/25 20:54	SJS	MAEPH LA
Surrogate: OTP Surrogate	53.5		Limits: 40-140%	1	05/01/25 20:54	SJS	MAEPH LA

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56294**
Sample ID : **SB-3 (8-10')**

Matrix: **Solids**
Sampled: **4/25/2025 09:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**26.0**	%	0.050	1	04/30/25 12:20	TJL	SW-DRYWT
% Saturation (Sat Paste)	**113**	%		1	05/05/25 11:38	BXH	29B
Alkalinity (Sat Paste)	**2.6**	meq/L	0.3	1	05/08/25 08:37	APB	29B
Chloride (Sat Paste)	**0.552**	meq/L	0.010	5	05/05/25 16:03	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/05/25 14:07	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.358**	mmhos/cm		1	05/05/25 11:38	BXH	29B
pH (Sat Paste)	**7.93**	s.u.		1	05/05/25 11:38	BXH	29B
Sulfate (Sat Paste)	**0.376**	meq/L	0.010	5	05/05/25 16:03	MJM	29B
Calcium (Sat Paste)	**0.375**	meq/L	0.025	5	05/06/25 15:04	APB	29B
Magnesium (Sat Paste)	**0.181**	meq/L	0.041	5	05/06/25 15:04	APB	29B
Sodium (Sat Paste)	**3.25**	meq/L	0.110	5	05/06/25 15:04	APB	29B
Total Barium	**383**	mg/Kg AR	1.00	2	05/08/25 20:04	APB	6010D
True Total Barium	**538**	mg/Kg	50.0	1	05/08/25 21:02	APB	29B
Total Chromium	**21.4**	mg/Kg AR	0.500	2	05/08/25 20:04	APB	6010D
Total Lead	**9.37**	mg/Kg AR	0.600	2	05/08/25 20:04	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 21:25	SJS	G207039
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 21:25	SJS	G207039
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 21:25	SJS	G207039

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000166

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56294**
Sample ID : **SB-3 (8-10')**

Matrix: **Solids**
Sampled: **4/25/2025 09:30**

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 21:25	SJS	G207039
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/01/25 21:25	SJS	G207039
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/01/25 21:25	SJS	G207039
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/01/25 21:25	SJS	G207039
Surrogate: Chlorooctadecane	81.3		Limits: 40-140%	1	05/01/25 21:25	SJS	MAEPH LA
Surrogate: OTP Surrogate	89.8		Limits: 40-140%	1	05/01/25 21:25	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207000** 05/02/25 08:40
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.453	mg/Kg	0.453	100	05/02/25 20:23	MAO	G207026
Aliphatic >C8-C10	<1.18	mg/Kg	1.18	100	05/02/25 20:23	MAO	G207026
Aromatic >C8-C10	<0.453	mg/Kg	0.453	100	05/02/25 20:23		G207026
Surrogate: Toluene-d8	120		Limits: 50-150%	100	05/02/25 20:23	MAO	G207026

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000167

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Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56295**
Sample ID : **SB-3 (12-14')**

Matrix: **Solids**
Sampled: **4/25/2025 09:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.8**	%	0.050	1	04/30/25 12:20	TJL	SW-DRYWT
% Saturation (Sat Paste)	**60.6**	%		1	05/05/25 11:38	BXH	29B
Alkalinity (Sat Paste)	**2.4**	meq/L	0.3	1	05/08/25 08:37	APB	29B
Chloride (Sat Paste)	**0.970**	meq/L	0.010	5	05/05/25 16:16	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/05/25 14:20	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.391**	mmhos/cm		1	05/05/25 11:38	BXH	29B
pH (Sat Paste)	**7.90**	s.u.		1	05/05/25 11:38	BXH	29B
Sulfate (Sat Paste)	**0.401**	meq/L	0.010	5	05/05/25 16:16	MJM	29B
Calcium (Sat Paste)	**0.541**	meq/L	0.025	5	05/06/25 15:08	APB	29B
Magnesium (Sat Paste)	**0.258**	meq/L	0.041	5	05/06/25 15:08	APB	29B
Sodium (Sat Paste)	**3.23**	meq/L	0.110	5	05/06/25 15:08	APB	29B
Total Barium	**94.2**	mg/Kg AR	1.00	2	05/08/25 20:08	APB	6010D
True Total Barium	**184**	mg/Kg	50.0	1	05/08/25 21:07	APB	29B
Total Chromium	**15.8**	mg/Kg AR	0.500	2	05/08/25 20:08	APB	6010D
Total Lead	**7.43**	mg/Kg AR	0.600	2	05/08/25 20:08	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56296**
Sample ID : **SB-3 (16-18')**

Matrix: **Solids**
Sampled: **4/25/2025 10:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**25.2**	%	0.050	1	04/30/25 12:20	TJL	SW-DRYWT
% Saturation (Sat Paste)	**134**	%		1	05/05/25 11:38	BXH	29B
Alkalinity (Sat Paste)	**2.0**	meq/L	0.3	1	05/08/25 08:37	APB	29B
Chloride (Sat Paste)	**0.388**	meq/L	0.010	5	05/05/25 16:29	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/05/25 14:32	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.262**	mmhos/cm		1	05/05/25 11:38	BXH	29B
pH (Sat Paste)	**7.90**	s.u.		1	05/05/25 11:38	BXH	29B
Sulfate (Sat Paste)	**0.270**	meq/L	0.010	5	05/05/25 16:29	MJM	29B
Calcium (Sat Paste)	**0.540**	meq/L	0.025	5	05/06/25 15:12	APB	29B
Magnesium (Sat Paste)	**0.279**	meq/L	0.041	5	05/06/25 15:12	APB	29B
Sodium (Sat Paste)	**1.89**	meq/L	0.110	5	05/06/25 15:12	APB	29B
Total Barium	**143**	mg/Kg AR	1.00	2	05/08/25 20:12	APB	6010D
True Total Barium	**280**	mg/Kg	50.0	1	05/08/25 21:24	APB	29B
Total Chromium	**22.6**	mg/Kg AR	0.500	2	05/08/25 20:12	APB	6010D
Total Lead	**9.66**	mg/Kg AR	0.600	2	05/08/25 20:12	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Report Date : 05/21/2025
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Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56297**
Sample ID : **SB-3 (22-24')**

Matrix: **Solids**
Sampled: **4/25/2025 10:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**20.3**	%	0.050	1	04/30/25 12:20	TJL	SW-DRYWT
% Saturation (Sat Paste)	**60.4**	%		1	05/05/25 11:38	BXH	29B
Alkalinity (Sat Paste)	**1.9**	meq/L	0.3	1	05/08/25 08:37	APB	29B
Chloride (Sat Paste)	**1.67**	meq/L	0.010	5	05/05/25 16:42	MJM	29B
Chloride	**24.7**	mg/Kg	20.0	5	05/05/25 14:44	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.420**	mmhos/cm		1	05/05/25 11:38	BXH	29B
pH (Sat Paste)	**7.93**	s.u.		1	05/05/25 11:38	BXH	29B
Sulfate (Sat Paste)	**0.344**	meq/L	0.010	5	05/05/25 16:42	MJM	29B
Calcium (Sat Paste)	**1.06**	meq/L	0.025	5	05/06/25 15:16	APB	29B
Magnesium (Sat Paste)	**0.526**	meq/L	0.041	5	05/06/25 15:16	APB	29B
Sodium (Sat Paste)	**2.41**	meq/L	0.110	5	05/06/25 15:16	APB	29B
Total Barium	**109**	mg/Kg AR	1.00	2	05/08/25 20:30	APB	6010D
True Total Barium	**193**	mg/Kg	50.0	1	05/08/25 21:28	APB	29B
Total Chromium	**16.7**	mg/Kg AR	0.500	2	05/08/25 20:30	APB	6010D
Total Lead	**7.15**	mg/Kg AR	0.600	2	05/08/25 20:30	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56298**
Sample ID : **SB-1 (2-4')**

Matrix: **Solids**
Sampled: **4/25/2025 10:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.0**	%	0.050	1	04/30/25 12:20	TJL	SW-DRYWT
% Saturation (Sat Paste)	**88.5**	%		1	05/05/25 11:38	BXH	29B
Alkalinity (Sat Paste)	**2.0**	meq/L	0.3	1	05/08/25 08:37	APB	29B
Chloride (Sat Paste)	**0.203**	meq/L	0.010	5	05/05/25 17:08	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/05/25 14:57	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.246**	mmhos/cm		1	05/05/25 11:38	BXH	29B
pH (Sat Paste)	**7.89**	s.u.		1	05/05/25 11:38	BXH	29B
Sulfate (Sat Paste)	**0.242**	meq/L	0.010	5	05/05/25 17:08	MJM	29B
Calcium (Sat Paste)	**1.47**	meq/L	0.025	5	05/06/25 15:24	APB	29B
Magnesium (Sat Paste)	**0.496**	meq/L	0.041	5	05/06/25 15:24	APB	29B
Sodium (Sat Paste)	**0.603**	meq/L	0.110	5	05/06/25 15:24	APB	29B
Total Barium	**287**	mg/Kg AR	0.790	2	05/08/25 20:34	APB	6010D
True Total Barium	**429**	mg/Kg	50.0	1	05/08/25 21:32	APB	29B
Total Chromium	**22.7**	mg/Kg AR	0.395	2	05/08/25 20:34	APB	6010D
Total Lead	**9.77**	mg/Kg AR	0.474	2	05/08/25 20:34	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 21:57	SJS	G207039
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/01/25 21:57	SJS	G207039
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 21:57	SJS	G207039

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000171

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56298**
Sample ID : **SB-1 (2-4')**

Matrix: **Solids**
Sampled: **4/25/2025 10:40**

Analytical Method: MAEPH LA **Prep Batch(es):** **G206890** 05/01/25 09:06
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/01/25 21:57	SJS	G207039
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/01/25 21:57	SJS	G207039
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/01/25 21:57	SJS	G207039
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/01/25 21:57	SJS	G207039
Surrogate: Chlorooctadecane	75.9		Limits: 40-140%	1	05/01/25 21:57	SJS	MAEPH LA
Surrogate: OTP Surrogate	110		Limits: 40-140%	1	05/01/25 21:57	SJS	MAEPH LA

Qualifiers/ Definitions				
	B	Analyte detected in blank	DF	Dilution Factor
	J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000172

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Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56300**
Sample ID : **Trip Blank**

Matrix: **Aqueous**
Sampled: **4/25/2025 07:30**

Analytical Method: MAVPH LA **Prep Batch(es):** **G206998** 05/02/25 08:40
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	05/02/25 11:22	MAO	G207024
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	05/02/25 11:22	MAO	G207024
Aromatic >C8-C10	<0.005	mg/L	0.005	1	05/02/25 11:22		G207024
Surrogate: Toluene-d8	88.8		Limits: 70-130%	1	05/02/25 11:22	MAO	G207024

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/21/2025
Received : 04/29/2025

Report Number : **25-119-0035**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56301**
Sample ID : **Field Blank**

Matrix: **Aqueous**
Sampled: **4/25/2025 08:30**

Analytical Method: MAVPH LA **Prep Batch(es):** **G206998** 05/02/25 08:40
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	05/02/25 11:44	MAO	G207024
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	05/02/25 11:44	MAO	G207024
Aromatic >C8-C10	<0.005	mg/L	0.005	1	05/02/25 11:44		G207024
Surrogate: Toluene-d8	83.4		Limits: 70-130%	1	05/02/25 11:44	MAO	G207024

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000174

Waypoint Analytical
Report # 25-119-0035

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Analyst: Mansour Rahmatian (M.S.)

Sample Submitted to CMI Labs on: 5/1/2025 @ 9:30 AM
Attention: Amy Jackson

CMI # 25050101 EDXXRD
Date Reported: 5/5/2025

Sample ID					Semi Quantitative Weight Percent Elemental Composition by EDX Normalized to 100%																	Mineral Phases Identified by XRD												
Client Sample ID	Lab #	Sampling Date	Sampling Time	CMI Sample #	Carbon (C)	Oxygen (O)	Sodium (Na)	Magnesium (Mg)	Aluminum (Al)	Silicon (Si)	Phosphorus (P)	Sulfur (S)	Chlorine (Cl)	Potassium (K)	Calcium (Ca)	Chromium (Cr)	Manganese (Mn)	Iron (Fe)	Zinc (Zn)	Strontium (Sr)	Barium (Ba)	Titanium (Ti)	Total	Quartz (SiO_2)	K-Feldspars ($KAlSi_3O_8$)	Plagioclase ($NaAlSi_3O_8$)	Calcite ($CaCO_3$)	Fe Dolomite ($FeMgCa(CO3)_2$)	Pyrite (FeS_2)	Halite (NaCl)	Barium Sulfide (BaS)	Barite ($BaSO_4$)	Witherite ($BaCO_3$)	Barium Chloride ($BaCl_2$)	Baria (BaO)	Barium Peroxide (BaO_2)	Total Clay	Total
SB-3 (0-2')	56921	4/25/25	9:05	21674	1.29	48.13	0.42	0.83	7.42	32.89	ND	ND	0.14	2.07	1.82	ND	ND	4.20	ND	ND	0.22	0.58	100	61.5	1.6	5.2	2.0	ND	ND	ND	ND	Tr	ND	ND	ND	ND	29.8	100
HA-10R (0-2')	56299	4/25/25	11:25	21675	3.30	47.88	0.20	0.50	8.18	32.83	ND	ND	ND	1.59	0.22	ND	0.08	4.41	ND	ND	0.14	0.68	100	59.7	0.8	2.6	ND	ND	ND	ND	ND	Tr	ND	ND	ND	ND	36.9	100

ND = None Detected; Tr -Trace Amount

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04/30/2025 17:08:46

Export Batch Report

Export Batch Id : **12046EXP**

Created: 4/30/2025 17:08:37
Computer: WPALMS-108
User: Christina R. Varuso
Project Manager: Amy Jackson

To: Core Mineralogy, Inc.
100 Jared Drive
Broussard, LA 70518
337-984-0500

From: Waypoint Analytical Louisiana, Inc.
5041 Taravella Rd.
Marrero, LA 70072
504-371-8557

Report No	Due Date	Sample Date	Customer Sample No	Rush	Matrix	Lab No	Method No	Fee Code Description
25-119-0035	05/05/2025	04/25/2025 09:05	SB-3 (0-2') 21674	☑	SOL	56291	X-RAY SXRD XRD EDX	X-Ray X-Ray Diffraction (XRD) & X-Ray Spectrometry (EDX)
25-119-0035	05/05/2025	04/25/2025 11:25	HA-10R (0-2') 21675	☑	SOL	56299	X-RAY SXRD XRD EDX	X-Ray X-Ray Diffraction (XRD) & X-Ray Spectrometry (EDX)

Rush please

Sampled By	Method of Shipment	Blank / Cooler Temp.	
Remarks			
Relinquished By (sign)	Date / Time 4/30/25 1708	Received By (sign)	Date / Time 5/1/25 @ 9:30Am
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: A102489
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): A102556
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-A102489 Matrix: SOL
Associated Lab Samples: 56291, 56292, 56294, 56295, 56296, 56297, 56298

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 50.0	50.0	05/08/25 20:38

Laboratory Control Sample LCS-A102489

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	10300	103	80-120

Matrix Spike & Matrix Spike Duplicate A 56291-A102419-MS-A102489 A 56291-A102419-MSD-A102489

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	376	9620	9620	10300	10400	103	104	75-125	0.9	20.0

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: A102432
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102457,A102484,A102459,A102460
Analysis Method: 29B
Analysis Description: Alkalinity

Duplicate A 56297-A102419-DUP-A102432

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Alkalinity (Sat Paste)	meq/L	1.9	1.6	17.1	30.0	05/08/25 08:37

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: A102432
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102457,A102484,A102459,A102460
Analysis Method: 29B
Analysis Description: Anions by Ion Chromatography

Duplicate A 56297-A102419-DUP-A102432

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Chloride (Sat Paste)	meq/L	1.67	1.66	0.6	30.0	05/05/25 16:55
Sulfate (Sat Paste)	meq/L	0.344	0.335	2.6	30.0	05/05/25 16:55

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: A102432
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102457,A102484,A102459,A102460
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 56297-A102419-DUP-A102432

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	60.4	59.9	0.8	30.0	05/05/25 11:38
Electrical Conductivity (Sat Paste)	mmhos/cm	0.420	0.398	5.3	30.0	05/05/25 11:38
pH (Sat Paste)	s.u.	7.93	7.91	0.2	30.0	05/05/25 11:38

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: A102432
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102457,A102484,A102459,A102460
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 56297-A102419-DUP-A102432

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	1.06	0.920	14.1	30.0	05/06/25 15:20
Magnesium (Sat Paste)	meq/L	0.526	0.481	8.9	30.0	05/06/25 15:20
Sodium (Sat Paste)	meq/L	2.41	2.42	0.4	30.0	05/06/25 15:20

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Quality Control Data

Client ID: Hydro-Environmental Technology, Inc.
Project Description: Castex
Report No: 25-119-0035

QC Prep: A102488
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A102558
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-A102488 Matrix: SOL
Associated Lab Samples: 56291, 56292, 56294, 56295, 56296, 56297, 56298

Parameter	Units	Blank Result	MQL	Analyzed
Total Barium	mg/Kg AR	< 0.500	0.500	05/08/25 18:57
Total Chromium	mg/Kg AR	< 0.250	0.250	05/08/25 18:57
Total Lead	mg/Kg AR	< 0.300	0.300	05/08/25 18:57

Laboratory Control Sample & LCSD LCS-A102488 LCSD-A102488

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Total Barium	mg/Kg AR	50.0	53.1	52.6	106	105	80-120	0.9	20.0
Total Chromium	mg/Kg AR	50.0	54.3	53.5	109	107	80-120	1.4	20.0
Total Lead	mg/Kg AR	5.00	5.29	5.21	106	104	80-120	1.5	20.0

Matrix Spike & Matrix Spike Duplicate A 56316-MS-A102488 A 56316-MSD-A102488

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Total Barium	mg/Kg AR	110	45.9	49.7	209	156	216*	93.0	75-125	29.0*	20.0
Total Chromium	mg/Kg AR	14.3	45.9	49.7	60.6	65.5	101	103	75-125	7.7	20.0
Total Lead	mg/Kg AR	5.41	4.59	4.97	11.6	9.41	135*	80.0	75-125	20.8*	20.0

* QC Fail

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: A102363
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): A102437
Analysis Method: 9056A
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A102363 Matrix: SOL
Associated Lab Samples: 56291, 56292, 56294, 56295, 56296, 56297, 56298

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	05/05/25 12:53

Laboratory Control Sample LCS-A102363

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	521	104	80-120

Matrix Spike & Matrix Spike Duplicate A 56291-MS-A102363 A 56291-MSD-A102363

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	26.2	488	488	527	512	103	99.0	80-120	2.8	15.0

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: G206890
QC Prep Batch Method: MAEPH LA (Soil)
QC Analytical Batch(es): G207039
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Lab Reagent Blank LRB-G206890 Matrix: SOL
Associated Lab Samples: 56291, 56292, 56293, 56294, 56298

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C10-C12	mg/Kg	<2.00	2.00	05/01/25 16:47		
Aliphatic >C12-C16	mg/Kg	<2.00	2.00	05/01/25 16:47		
Aliphatic >C16-C35	mg/Kg	<4.00	4.00	05/01/25 16:47		
Aromatic >C10-C12	mg/Kg	<2.00	2.00	05/01/25 16:47		
Aromatic >C12-C16	mg/Kg	<2.00	2.00	05/01/25 16:47		
Aromatic >C16-C21	mg/Kg	<2.00	2.00	05/01/25 16:47		
Aromatic >C21-C35	mg/Kg	<2.00	2.00	05/01/25 16:47		
Chlorooctadecane (S)				05/01/25 16:47	100	40-140
OTP Surrogate (S)				05/01/25 16:47	80.2	40-140

Laboratory Control Sample & LCSD LCS-G206890 LCSD-G206890

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C12-C16	mg/Kg	3.33	2.83	2.40	84.9	72.0	40-140	16.4	25
Aliphatic >C16-C35	mg/Kg	10.0	10.3	9.39	103	93.9	40-140	9.2	25
Aromatic >C10-C12	mg/Kg	3.33	3.17	2.80	95.1	84.0	40-140	12.3	25
Aromatic >C12-C16	mg/Kg	6.67	4.94	4.12	74.0	61.7	40-140	18.1	25
Aromatic >C16-C21	mg/Kg	3.33	3.88	3.07	117	92.1	40-140	23.3	25
Chlorooctadecane (S)					99.4	90.4	40-140		
OTP Surrogate (S)					91.0	77.2	40-140		

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: G206998
QC Prep Batch Method: MAVPH LA (GC/MS) (Aqueous)
QC Analytical Batch(es): G207024
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G206998 Matrix: AQU
Associated Lab Samples: 56300, 56301

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/L	<0.005	0.005	05/02/25 10:59		
Aliphatic >C8-C10	mg/L	<0.013	0.013	05/02/25 10:59		
Aromatic >C8-C10 A	mg/L	<0.005	0.005	05/02/25 10:59		
Toluene-d8 (S)				05/02/25 10:59	83.6	70-130

Laboratory Control Sample & LCSD LCS-G206998 LCSD-G206998

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/L	0.500	0.463	0.474	92.6	94.8	70-130	2.3	25
Aliphatic >C8-C10	mg/L	1.30	1.18	1.15	90.7	88.4	70-130	2.5	25
Aromatic >C8-C10 A	mg/L	0.500	0.486	0.502	97.2	100	70-130	3.2	25
Toluene-d8 (S)					85.4	89.0	70-130		

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Prep: G207000
QC Prep Batch Method: MAVPH LA (GC/MS) (Soil)
QC Analytical Batch(es): G207026
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G207000 Matrix: SOL
Associated Lab Samples: 56291, 56294

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/Kg	<0.500	0.500	05/02/25 10:59		
Aliphatic >C8-C10	mg/Kg	<1.30	1.30	05/02/25 10:59		
Aromatic >C8-C10 A	mg/Kg	<0.500	0.500	05/02/25 10:59		
Toluene-d8 (S)				05/02/25 10:59	83.6	50-150

Laboratory Control Sample & LCSD LCS-G207000 LCSD-G207000

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/Kg	50.0	46.3	47.4	92.6	94.8	80-120	2.3	30
Aliphatic >C8-C10	mg/Kg	130	118	115	90.7	88.4	80-120	2.5	30
Aromatic >C8-C10 A	mg/Kg	50.0	48.6	50.2	97.2	100	80-120	3.2	30
Toluene-d8 (S)					85.4	89.0	50-150		

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-119-0035**

QC Analytical Batch: A102332
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 56291-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	15.8	16.3	3.1	20.0	04/30/25 12:20

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Shipment Receipt Form

Customer Number: **09996**
Customer Name: **Hydro-Environmental Technology, Inc.**
Report Number: **25-119-0035**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 2

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◉ Yes	◯ No	◯ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Brandi Hidalgo Date & Time: 04/29/2025 13:46:00

HYDRO-ENVIRONMENTAL TE
Environmental Cons
P.O. Box 6025
Lafayette, LA 7059
Phone (337) 261-1963 FAX

Hydro-Environmental Technology, Inc.
Castex

25-119-0035
09996
04-29-2025
16:06:58

SAMPLE CHAIN-OF-CUSTODY RECORD

Laboratory:	Waypoint		
Project Name:	Castex	**Collected By:**	EM
Project Number:	1009.A75	**Company:**	Hydro-Environmental Technology, Inc.
Project Location:	Jennings, LA	**Date:**	4/25/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
SB-3 (0-2') 56291	SO	4/25/2025	0905	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals*, X-Ray Diffraction **HOLD** PAH	4°C
SB-3 (2-4') 56292	SO	4/25/2025	0910	(3) 40mL Methanol (2) 8oz Glass	EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals **HOLD** PAH, VPH	4°C
SB-3 (4-6') 56293	SO	4/25/2025	0920	(1) 16oz Glass	**HOLD:** EC, Chlorides, % Moisture, Cations*, Anions*, Metals, PAH, EPH	4°C
SB-3 (8-10') 56294	SO	4/25/2025	0930	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-3 (12-14') 56295	SO	4/25/2025	0950	(1) 16oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-3 (16-18') 56296	SO	4/25/2025	1000	(1) 16oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-3 (22-24') 56297	SO	4/25/2025	1015	(1) 16oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-1 (2-4') 56298	SO	4/25/2025	1040	(3) 40mL Methanol (2) 8oz Glass	EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals **HOLD** PAH, VPH	4°C

2.1°-

HOLD for possible analysis of SPLP Chloride and Sodium
Cations*: Soluble Calcium, Magnesium, and Sodium
Anions*: Cl, SO4, HCO3
Metals*: Barium, True Total Barium, Chromium, and Lead

Relinquished By: [signature]	Received By: P. Howard
Date/Time: 4/29/25 0815	Date/Time: 4-29-25 0815
Relinquished By: P. Howard	Received By: Andrew Rte
Date/Time: 4-29-25 0920	Date/Time: 04/29/25 0920
Analysis Due: Verbal:	Written:

REC: REC: REC:

BP/Castex-Ltd Adm-Apx E-000189

Waypoint ANALYTICAL

Chain of Custody Record Extension

Hydro-Environmental – Castex Project Number: 1009.A75

Relinquished by: Print: Andrew Petersen **Date:** 04/29/25

Sign: Andrew Peterson **Time:** 0945

Received by: Print: PAT HUESMANN **Date:** 4/29/25

Sign: [signature] **Time:** @ 0945

Relinquished by: Print: PAT HUESMANN **Date:** 4/29/25

Sign: [signature] **Time:** @ 1346

Received by: Print: Brandi Hidalgo **Date:** 4-29-25

Sign: Brandi Hidalgo **Time:** 1346

Relinquished by: Print: _____ **Date:** _____

Sign: _____ **Time:** _____

Received by: Print: _____ **Date:** _____

Sign: _____ **Time:** _____

Relinquished by: Print: _____ **Date:** _____

Sign: _____ **Time:** _____

Received by: Print: _____ **Date:** _____

Sign: _____ **Time:** _____

HYDRO-ENVIRONMENTAL TECHNOLOGY, INC.
Environmental Consultants
P.O. Box 60295
Lafayette, LA 70596-0295
Phone (337) 261-1963 FAX (337) 261-1953

SAMPLE CHAIN-OF-CUSTODY RECORD

Laboratory:	Waypoint		
Project Name:	Castex	*Collected By:*	EM
Project Number:	1009.A75	*Company:*	Hydro-Environmental Technology, Inc.
Project Location:	Jennings, LA	*Date:*	4/25/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
HA-10R (0-2') 56299	SO	4/25/2025	1125	(1) 16oz Glass	X-Ray Diffraction	4°C
Trip Blank 56300	SO	4/25/2025	0730	(3) 40mL HCl	VPH	4°C
Field Blank 56301	SO	4/25/2025	0830	(3) 40mL HCl	VPH	4°C

2.1°

HOLD for possible analysis of SPLP Chloride and Sodium
Cations*: Soluble Calcium, Magnesium, and Sodium
Anions*: Cl, SO4, HCO3
Metals*: Barium, True Total Barium, Chromium, and Lead

Relinquished By: Eric W Date/Time: 4/29/25 0815	Received By: P. Howard Date/Time: 4-29-25 0815
Relinquished By: P. Howard Date/Time: 4-29-25 0920	Received By: Andrew Patin Date/Time: 04/29/25 0920
Analysis Due: Verbal:	Written:

REC: REC: REC:

Waypoint ANALYTICAL

Chain of Custody Record Extension

Hydro-Environmental – Castex Project Number: 1009.A75

Relinquished by: **Print:** Andrew Peterson **Date:** 04/29/25
Sign: Andrew Peterson **Time:** 0945

Received by: **Print:** PAT HUESMANN **Date:** 4/29/25
Sign: [signature] **Time:** @ 0945

Relinquished by: **Print:** PAT HUESMANN **Date:** 4/29/25
Sign: [signature] **Time:** @ 1346

Received by: **Print:** Brandi Hidalgo **Date:** 4-29-25
Sign: Brandi Hidalgo **Time:** 1346

Relinquished by: **Print:** _____ **Date:** _____
Sign: _____ **Time:** _____

Received by: **Print:** _____ **Date:** _____
Sign: _____ **Time:** _____

Relinquished by: **Print:** _____ **Date:** _____
Sign: _____ **Time:** _____

Received by: **Print:** _____ **Date:** _____
Sign: _____ **Time:** _____

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

May 22, 2025

Greg Miller
ICON Environmental Services
2049 Commercial Drive
Port Allen, LA 70767
TEL: (225) 344-8490
FAX (225) 344-6654

RE: Castex Development 9403-016-0100

Order No.: 25041320

Dear Greg Miller:

Element Materials Technology Lafayette received 13 sample(s) on 4/28/2025 for the analyses presented in the following report.

In accordance with your instructions, Element Lafayette either conducted or subcontracted these analyses. Subcontracted analyses will be identified in the accompanying case narrative. All relevant sampling information can be found on the attached Chain-of-Custody form. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet the applicable requirements of TNI. Reported results relate only to the items tested.

Where applicable, all soil data, except for 29-B, are reported on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. MNELAP Certification No.: 2414959. LDHH Certification No.: LA023. ISDH Certification No.: C-LA-01. NDELCP Certification No.: R-226. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation. PA registration No.: 68-05967.

Estimated uncertainty is available upon request. This report shall not be reproduced, except in full, without the written approval of the laboratory.

Buffy Bryant
Customer Service Supervisor

BP/Castex-Ltd Adm-Apx E-000193

Element Materials Technology Lafayette
2417 W. Pinhook Road
Lafayette, LA 70508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

Case Narrative

WO#: **25041320**
Date: **5/22/2025**

CLIENT: ICON Environmental Services
Project: Castex Development 9403-016-0100

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

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Analytical Report

(consolidated)

WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 1:20:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-001 **Matrix:** SOIL

Client Sample ID HA-2R 6-8'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	5.82	0.10	*	mmhos/cm	1	5/16/2025 11:09:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0981	0.0981		mg/Kg-dry	1	5/13/2025 1:51:38 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **MRM**
Chloride	1,690	22.1		mg/Kg-dry	100	5/19/2025 2:15:26 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	6.24	2.00		mg/Kg-dry	1	5/19/2025 4:55:00 PM
Barium	1,330	1.00		mg/Kg-dry	1	5/19/2025 4:55:00 PM
Cadmium	< 0.500	0.500		mg/Kg-dry	1	5/19/2025 4:55:00 PM
Chromium	19.7	1.00		mg/Kg-dry	1	5/19/2025 4:55:00 PM
Lead	24.3	1.00		mg/Kg-dry	1	5/19/2025 4:55:00 PM
Strontium	192	1.00		mg/Kg-dry	1	5/19/2025 4:55:00 PM
Zinc	23.0	1.00		mg/Kg-dry	1	5/19/2025 4:55:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.82	1.54		mg/Kg	1	5/19/2025 4:55:00 PM
Barium	1,030	1.54		mg/Kg	1	5/19/2025 4:55:00 PM
Cadmium	< 0.386	0.386		mg/Kg	1	5/19/2025 4:55:00 PM
Chromium	15.2	0.772		mg/Kg	1	5/19/2025 4:55:00 PM
Lead	18.7	0.772		mg/Kg	1	5/19/2025 4:55:00 PM
Strontium	148	0.772		mg/Kg	1	5/19/2025 4:55:00 PM
Zinc	17.7	0.772		mg/Kg	1	5/19/2025 4:55:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	1,730	49.4		mg/Kg-dry	1	5/19/2025 5:23:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 1:20:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-001 **Matrix:** SOIL

Client Sample ID HA-2R 6-8'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	22.8	1.00		wt%	1	4/30/2025 11:15:00 AM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Matrix Interference
	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
	SDL	Sample detection limit	U	Analyte not detected
	W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

(consolidated)

WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 1:35:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-002 **Matrix:** SOIL

Client Sample ID HA-2R 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	13.6	0.10	*	mmhos/cm	1	5/16/2025 11:09:00 AM
TPH-D/O IN SOIL BY SW8015 **TPH DRO/ORO IN SOIL BY SW8015C**				**SW8015C**	**SW3546**	Analyst: **TXA**
TPH (Diesel Range)	5,230	200		mg/Kg	10	5/2/2025 9:41:00 AM
TPH (Oil Range)	2,800	200		mg/Kg	10	5/2/2025 9:41:00 AM
Surr: 4-Terphenyl-d14	57.8	33 - 152		%Rec	10	5/2/2025 9:41:00 AM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0953	0.0953		mg/Kg-dry	1	5/13/2025 2:06:11 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **MRM**
Chloride	3,990	41.6		mg/Kg-dry	200	5/19/2025 2:30:13 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	5.77	2.00		mg/Kg-dry	1	5/19/2025 4:57:00 PM
Barium	2,300	0.999		mg/Kg-dry	1	5/19/2025 4:57:00 PM
Cadmium	< 0.500	0.500		mg/Kg-dry	1	5/19/2025 4:57:00 PM
Chromium	29.1	0.999		mg/Kg-dry	1	5/19/2025 4:57:00 PM
Lead	35.0	0.999		mg/Kg-dry	1	5/19/2025 4:57:00 PM
Strontium	321	0.999		mg/Kg-dry	1	5/19/2025 4:57:00 PM
Zinc	22.1	0.999		mg/Kg-dry	1	5/19/2025 4:57:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	4.22	1.46		mg/Kg	1	5/19/2025 4:57:00 PM
Barium	1,680	1.46		mg/Kg	1	5/19/2025 4:57:00 PM
Cadmium	< 0.365	0.365		mg/Kg	1	5/19/2025 4:57:00 PM
Chromium	21.3	0.731		mg/Kg	1	5/19/2025 4:57:00 PM
Lead	25.6	0.731		mg/Kg	1	5/19/2025 4:57:00 PM
Strontium	235	0.731		mg/Kg	1	5/19/2025 4:57:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 1:35:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-002 **Matrix:** SOIL

Client Sample ID HA-2R 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
29B METALS				**SW6010B**	**SW3050B**	Analyst: **IO**
METALS IN SOIL OR SLUDGE BY ICP						
Zinc	16.2	0.731		mg/Kg	1	5/19/2025 4:57:00 PM
29B METALS				**LDNR 29-B**		Analyst: **IO**
TRUE TOTAL BARIUM						
True Total Barium	3,260	49.4		mg/Kg-dry	1	5/19/2025 5:26:00 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	26.9	1.00		wt%	1	5/5/2025 3:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 1:40:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-003 **Matrix:** SOIL

Client Sample ID HA-2R 10-12'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	3.67	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
29B METALS **MERCURY IN SOIL OR SLUDGE**				**29B/SW7471A**	**SW7471A**	Analyst: **SAR**
Mercury	< 0.0936	0.0936		mg/Kg-dry	1	5/12/2025 6:04:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	2,150	49.6		mg/Kg-dry	100	5/5/2025 11:03:15 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	7.11	1.99		mg/Kg-dry	1	5/8/2025 3:47:00 PM
Barium	367	0.994		mg/Kg-dry	1	5/8/2025 3:47:00 PM
Cadmium	< 0.497	0.497		mg/Kg-dry	1	5/8/2025 3:47:00 PM
Chromium	15.5	0.994		mg/Kg-dry	1	5/8/2025 3:47:00 PM
Lead	13.9	0.994		mg/Kg-dry	1	5/8/2025 3:47:00 PM
Strontium	199	0.994		mg/Kg-dry	1	5/8/2025 3:47:00 PM
Zinc	30.6	0.994		mg/Kg-dry	1	5/8/2025 3:47:00 PM
29B METALS **METALS IN SOIL OR SLUDGE BY ICP**				**SW6010B**	**SW3050B**	Analyst: **IO**
Arsenic	5.62	1.57		mg/Kg	1	5/8/2025 3:47:00 PM
Barium	290	1.57		mg/Kg	1	5/8/2025 3:47:00 PM
Cadmium	< 0.393	0.393		mg/Kg	1	5/8/2025 3:47:00 PM
Chromium	12.3	0.786		mg/Kg	1	5/8/2025 3:47:00 PM
Lead	11.0	0.786		mg/Kg	1	5/8/2025 3:47:00 PM
Strontium	157	0.786		mg/Kg	1	5/8/2025 3:47:00 PM
Zinc	24.2	0.786		mg/Kg	1	5/8/2025 3:47:00 PM
29B METALS **TRUE TOTAL BARIUM**				**LDNR 29-B**		Analyst: **IO**
True Total Barium	490	48.1		mg/Kg-dry	1	5/9/2025 5:00:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 1:40:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-003 **Matrix:** SOIL

Client Sample ID HA-2R 10-12'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	20.9	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 2:05:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-004 **Matrix:** SOIL

Client Sample ID HA-2R 14-16'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	4.52	0.10	*	mmhos/cm	1	5/2/2025 12:06:00 PM
TPH-D/O IN SOIL BY SW8015 **TPH DRO/ORO IN SOIL BY SW8015C**				**SW8015C**	**SW3546**	Analyst: **TXA**
TPH (Diesel Range)	< 19.9	19.9		mg/Kg	1	5/1/2025 10:24:00 PM
TPH (Oil Range)	36.4	19.9		mg/Kg	1	5/1/2025 10:24:00 PM
Surr: 4-Terphenyl-d14	66.4	33 - 152		%Rec	1	5/1/2025 10:24:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	1,410	25.0		mg/Kg-dry	100	5/5/2025 11:47:38 PM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	19.4	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 2:20:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-005 **Matrix:** SOIL

Client Sample ID HA-2R 18-20'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	1.40	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	656	8.33		mg/Kg-dry	20	5/6/2025 12:02:25 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	21.6	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 2:35:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-006 **Matrix:** SOIL

Client Sample ID HA-2R 22-24'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	1.16	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	353	5.74		mg/Kg-dry	20	5/6/2025 12:17:12 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	21.6	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Limit
SDL	Sample detection limit
W	Sample container temperature is out of limit as specified at testcode
E	Value above quantitation range
M	Matrix Interference
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
U	Analyte not detected

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/23/2025 3:15:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-007 **Matrix:** SOIL

Client Sample ID HA-2R 28-30'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	2.03	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	275	5.94		mg/Kg-dry	50	5/6/2025 12:31:59 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	22.3	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/22/2025 9:55:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-008 **Matrix:** SOIL

Client Sample ID CD-12R 8-10'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.67	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	88.3	1.82		mg/Kg-dry	10	5/6/2025 12:46:46 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	18.1	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Limit
SDL	Sample detection limit
W	Sample container temperature is out of limit as specified at testcode
E	Value above quantitation range
M	Matrix Interference
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
U	Analyte not detected

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/22/2025 10:10:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-009 **Matrix:** SOIL

Client Sample ID CD-12R 16-18'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.18	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	11.2	1.78		mg/Kg-dry	5	5/6/2025 1:01:34 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	24.6	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Limit
SDL	Sample detection limit
W	Sample container temperature is out of limit as specified at testcode
E	Value above quantitation range
M	Matrix Interference
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
U	Analyte not detected

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Analytical Report

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WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/22/2025 10:20:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-010 **Matrix:** SOIL

Client Sample ID CD-12R 26-28'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.19	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	7.09	0.854		mg/Kg-dry	5	5/6/2025 1:16:21 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	21.0	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Limit
SDL	Sample detection limit
W	Sample container temperature is out of limit as specified at testcode
E	Value above quantitation range
M	Matrix Interference
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
U	Analyte not detected

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Analytical Report

(consolidated)

WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/22/2025 11:15:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-011 **Matrix:** SOIL

Client Sample ID CD-12R 46-48'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.38	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	20.9	1.90		mg/Kg-dry	10	5/6/2025 1:31:08 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	21.0	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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Analytical Report

(consolidated)

WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/22/2025 11:45:00 AM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-012 **Matrix:** SOIL

Client Sample ID CD-12R 60-62'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.48	0.10		mmhos/cm	1	5/2/2025 12:06:00 PM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	11.3	0.828		mg/Kg-dry	10	5/6/2025 1:45:55 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	24.2	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Limit
SDL	Sample detection limit
W	Sample container temperature is out of limit as specified at testcode
E	Value above quantitation range
M	Matrix Interference
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
U	Analyte not detected

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Analytical Report

(consolidated)

WO#: **25041320**

Date Reported **5/22/2025**

CLIENT: ICON Environmental Services **Collection Date:** 4/22/2025 12:00:00 PM

Project: Castex Development 9403-016-0100

Lab ID: 25041320-013 **Matrix:** SOIL

Client Sample ID CD-12R 78-80'

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY @ SATURATION				**LDNR 29-B**		Analyst: **BB**
Electrical Conductivity	0.48	0.10		mmhos/cm	1	5/8/2025 10:13:00 AM
SOLUBLE INORGANIC ANIONS IN SOIL BY IC				**SW9056A**		Analyst: **BXB**
Chloride	17.8	0.830		mg/Kg-dry	10	5/9/2025 6:33:39 AM
PERCENT MOISTURE				**LDNR 29-B**		Analyst: **BB**
Percent Moisture	17.5	1.00		wt%	1	4/29/2025 11:00:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected
W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61550**

Sample ID: **25041320-004BMSD**	SampType: **msd**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **HA-2R 14-16'**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682558**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Oil Range)	222	20.0	299.4	36.36	62.1	14.5	174	234.0	5.15	48.8	
Surr: 4-Terphenyl-d14	9.30		9.980		93.2	33	152		0	40	

Sample ID: **25041320-004BMSM**	SampType: **ms**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **HA-2R 14-16'**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Oil Range)	234	20.0	299.7	36.36	65.9	14.5	174				
Surr: 4-Terphenyl-d14	9.59		9.990		96.0	33	152				

Sample ID: **lcs-d61550**	SampType: **lcs**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **LCSS**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682570**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Diesel Range)	251	19.9	299.1	0	83.9	63.4	109				
Surr: 4-Terphenyl-d14	9.36		9.970		93.8	33	152				

Sample ID: **lcsd-d61550**	SampType: **lcsd**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **LCSS02**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Diesel Range)	275	20.0	300.0	0	91.6	63.4	109	251.1	9.07	21.9	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61550**

Sample ID: **lcsd-d61550**	SampType: **lcsd**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **LCSS02**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	9.75		10.00		97.5	33	152		0	40	

Sample ID: **lcsd-m61550**	SampType: **lcsd**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **LCSS02**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682572**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Oil Range)	283	20.0	299.7	0	94.5	63.9	120	247.2	13.6	20.7	
Surr: 4-Terphenyl-d14	11.0		9.990		110	33	152		0	40	

Sample ID: **lcs-m61550**	SampType: **lcs**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **LCSS**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682573**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Oil Range)	247	20.0	299.7	0	82.5	63.9	120				
Surr: 4-Terphenyl-d14	9.84		9.990		98.5	33	152				

Sample ID: **mb-61550**	SampType: **mblk**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **PBS**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682574**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Diesel Range)	< 19.9	19.9									
TPH (Oil Range)	< 19.9	19.9									

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61550**

Sample ID: **mb-61550**	SampType: **mblk**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **PBS**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/1/2025**	SeqNo: **3682574**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	8.15		9.960		81.8	33	152				

Sample ID: **25041320-002BMSD**	SampType: **ms**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **HA-2R 8-10'**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/2/2025**	SeqNo: **3682657**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Diesel Range)	2,390	200	300.0	5,233	-947	23.4	123				S
Surr: 4-Terphenyl-d14	8.84		10.00		88.4	33	152				

Sample ID: **25041320-002BMSD**	SampType: **msd**	TestCode: **8015C_DO_S**	Units: **mg/Kg**	Prep Date: **4/28/2025**	RunNo: **150394**
Client ID: **HA-2R 8-10'**	Batch ID: **61550**	TestNo: **SW8015C**	**SW3546**	Analysis Date: **5/2/2025**	SeqNo: **3682658**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Diesel Range)	754	199	299.1	5,233	-1,500	23.4	123	2,391	104	35.6	RS
Surr: 4-Terphenyl-d14	6.65		9.970		66.7	33	152		0	40	

NOTES:
S/R - Poor spike recoveries and high RPD due to sample matrix. The method is in control as indicated by the LCS/LCSD.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61628**

Sample ID: **MB-61628**	SampType: **MBLK**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/2/2025**	RunNo: **150650**
Client ID: **PBS**	Batch ID: **61628**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/12/2025**	SeqNo: **3690033**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	< 0.100	0.100									

Sample ID: **LCS-61628**	SampType: **LCS**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/2/2025**	RunNo: **150650**
Client ID: **LCSS**	Batch ID: **61628**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/12/2025**	SeqNo: **3690034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.748	0.100	0.8330	0	89.8	80	120				

Sample ID: **LCSD-61628**	SampType: **LCSD**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/2/2025**	RunNo: **150650**
Client ID: **LCSS02**	Batch ID: **61628**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/12/2025**	SeqNo: **3690035**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.807	0.100	0.8330	0	96.9	80	120	0.7479	7.59	20	

Sample ID: **25041317-001AMS**	SampType: **MS**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/2/2025**	RunNo: **150650**
Client ID: **ZZZZZZ**	Batch ID: **61628**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/12/2025**	SeqNo: **3690038**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.732	0.0948	0.7899	0	92.7	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61628**

Sample ID: **25041317-001AMSD** SampType: **MSD** TestCode: **HG_S_29B** Units: **mg/Kg-dry** Prep Date: **5/2/2025** RunNo: **150650**
Client ID: **ZZZZZZ** Batch ID: **61628** TestNo: **29B/SW7471** **SW7471A** Analysis Date: **5/12/2025** SeqNo: **3690039**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.648	0.0938	0.7809	0	82.9	75	125	0.7322	12.3	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61674**

Sample ID: **MB-61674**	SampType: **MBLK**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150582**
Client ID: **PBS**	Batch ID: **61674**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687585**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.00	2.00									
Barium	< 1.00	1.00									
Cadmium	< 0.500	0.500									
Chromium	< 1.00	1.00									
Lead	< 1.00	1.00									
Strontium	< 1.00	1.00									
Zinc	< 1.00	1.00									

Sample ID: **LCS-61674**	SampType: **LCS**	TestCode: **6010_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150582**
Client ID: **LCSS**	Batch ID: **61674**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687586**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.4	2.00	50.00	0	92.8	80	120				
Barium	50.4	1.00	50.00	0	101	80	120				
Cadmium	46.9	0.500	50.00	0	93.9	80	120				
Chromium	50.1	1.00	50.00	0	100	80	120				
Lead	49.3	1.00	50.00	0	98.6	80	120				
Strontium	49.8	1.00	50.00	0	99.7	80	120				
Zinc	46.5	1.00	50.00	0	93.1	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61674**

Sample ID: **LCSD-61674** SampType: **LCSD** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/6/2025** RunNo: **150582**
Client ID: **LCSS02** Batch ID: **61674** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687587**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	47.0	2.00	50.00	0	94.0	80	120	46.38	1.32	20	
Barium	51.0	1.00	50.00	0	102	80	120	50.41	1.14	20	
Cadmium	47.6	0.500	50.00	0	95.2	80	120	46.95	1.38	20	
Chromium	50.6	1.00	50.00	0	101	80	120	50.12	0.898	20	
Lead	49.5	1.00	50.00	0	99.1	80	120	49.30	0.467	20	
Strontium	50.3	1.00	50.00	0	101	80	120	49.84	0.911	20	
Zinc	47.2	1.00	50.00	0	94.4	80	120	46.54	1.43	20	

Sample ID: **25041317-023AMS** SampType: **MS** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/6/2025** RunNo: **150582**
Client ID: **ZZZZZZ** Batch ID: **61674** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687589**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.1	2.00	49.98	7.050	78.1	75	125				
Barium	301	1.00	49.98	274.9	51.8	75	125				S
Cadmium	40.7	0.500	49.98	0.01795	81.3	75	125				
Chromium	57.0	1.00	49.98	12.38	89.2	75	125				
Lead	62.7	1.00	49.98	21.89	81.6	75	125				
Strontium	55.2	1.00	49.98	11.43	87.5	75	125				
Zinc	55.4	1.00	49.98	12.01	86.8	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **61674**

Sample ID: **25041317-023AMSD** SampType: **MSD** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/6/2025** RunNo: **150582**

Client ID: **ZZZZZZ** Batch ID: **61674** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	44.4	1.99	49.72	7.050	75.1	75	125	46.08	3.77	20	
Barium	285	0.994	49.72	274.9	20.6	75	125	300.8	5.34	20	S
Cadmium	40.0	0.497	49.72	0.01795	80.4	75	125	40.65	1.66	20	
Chromium	54.2	0.994	49.72	12.38	84.2	75	125	56.97	4.90	20	
Lead	60.2	0.994	49.72	21.89	77.0	75	125	62.65	4.04	20	
Strontium	54.5	0.994	49.72	11.43	86.6	75	125	55.17	1.26	20	
Zinc	54.1	0.994	49.72	12.01	84.6	75	125	55.41	2.43	20	

NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61675**

Sample ID: **MB-61675**	SampType: **MBLK**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/6/2025**	RunNo: **150583**
Client ID: **PBS**	Batch ID: **61675**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687613**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.00	2.00									
Barium	< 2.00	2.00									
Cadmium	< 0.500	0.500									
Chromium	< 1.00	1.00									
Lead	< 1.00	1.00									
Strontium	< 1.00	1.00									
Zinc	< 1.00	1.00									

Sample ID: **LCS-61675**	SampType: **LCS**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/6/2025**	RunNo: **150583**
Client ID: **LCSS**	Batch ID: **61675**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687614**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.4	2.00	50.00	0	92.8	80	120				
Barium	50.4	2.00	50.00	0	101	80	120				
Cadmium	46.9	0.500	50.00	0	93.9	80	120				
Chromium	50.1	1.00	50.00	0	100	80	120				
Lead	49.3	1.00	50.00	0	98.6	80	120				
Strontium	49.8	1.00	50.00	0	99.7	80	120				
Zinc	46.5	1.00	50.00	0	93.1	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61675**

Sample ID: **LCSD-61675** SampType: **LCSD** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/6/2025** RunNo: **150583**
Client ID: **LCSS02** Batch ID: **61675** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687615**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	47.0	2.00	50.00	0	94.0	80	120	46.38	1.32	20	
Barium	51.0	2.00	50.00	0	102	80	120	50.41	1.14	20	
Cadmium	47.6	0.500	50.00	0	95.2	80	120	46.95	1.38	20	
Chromium	50.6	1.00	50.00	0	101	80	120	50.12	0.898	20	
Lead	49.5	1.00	50.00	0	99.1	80	120	49.30	0.467	20	
Strontium	50.3	1.00	50.00	0	101	80	120	49.84	0.911	20	
Zinc	47.2	1.00	50.00	0	94.4	80	120	46.54	1.43	20	

Sample ID: **25041317-023AMS** SampType: **MS** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/6/2025** RunNo: **150583**
Client ID: **ZZZZZZ** Batch ID: **61675** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/8/2025** SeqNo: **3687617**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	39.5	1.72	42.88	6.049	78.1	75	125				
Barium	258	1.72	42.88	235.9	51.8	75	125				S
Cadmium	34.9	0.429	42.88	0.01540	81.3	75	125				
Chromium	48.9	0.858	42.88	10.62	89.2	75	125				
Lead	53.8	0.858	42.88	18.78	81.6	75	125				
Strontium	47.3	0.858	42.88	9.811	87.5	75	125				
Zinc	47.5	0.858	42.88	10.30	86.8	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **61675**

Sample ID: **25041317-023AMSD**	SampType: **MSD**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/6/2025**	RunNo: **150583**						
Client ID: **ZZZZZZ**	Batch ID: **61675**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/8/2025**	SeqNo: **3687618**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	38.1	1.71	42.66	6.049	75.1	75	125	39.53	3.77	20	
Barium	245	1.71	42.66	235.9	20.6	75	125	258.1	5.34	20	S
Cadmium	34.3	0.427	42.66	0.01540	80.4	75	125	34.88	1.66	20	
Chromium	46.5	0.853	42.66	10.62	84.2	75	125	48.88	4.90	20	
Lead	51.6	0.853	42.66	18.78	77.0	75	125	53.75	4.04	20	
Strontium	46.7	0.853	42.66	9.811	86.6	75	125	47.33	1.26	20	
Zinc	46.4	0.853	42.66	10.30	84.6	75	125	47.55	2.43	20	

NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61676**

Sample ID: **MB-61676**	SampType: **MBLK**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **PBS**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688991**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	< 50.0	50.0									

Sample ID: **LCS-61676**	SampType: **LCS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **LCSS**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,090	50.0	5,000	0	102	75	125				

Sample ID: **LCSD-61676**	SampType: **LCSD**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **LCSS02**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,130	50.0	5,000	0	103	75	125	5,090	0.692	20	

Sample ID: **25041317-023AMS**	SampType: **MS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **ZZZZZZ**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688995**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,110	47.6	4,757	221.7	103	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **61676**

Sample ID: **25041317-023AMSD**	SampType: **MSD**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/6/2025**	RunNo: **150623**
Client ID: **ZZZZZZ**	Batch ID: **61676**	TestNo: **LDNR 29-B**		Analysis Date: **5/9/2025**	SeqNo: **3688998**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,110	48.4	4,836	221.7	101	75	125	5,110	0.0921	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61701**

Sample ID: **MB-61701**	SampType: **MBLK**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/8/2025**	RunNo: **150669**
Client ID: **PBS**	Batch ID: **61701**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/13/2025**	SeqNo: **3690767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	< 0.100	0.100									

Sample ID: **LCS-61701**	SampType: **LCS**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/8/2025**	RunNo: **150669**
Client ID: **LCSS**	Batch ID: **61701**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/13/2025**	SeqNo: **3690768**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.940	0.100	0.8330	0	113	80	120				

Sample ID: **LCSD-61701**	SampType: **LCSD**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/8/2025**	RunNo: **150669**
Client ID: **LCSS02**	Batch ID: **61701**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/13/2025**	SeqNo: **3690769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.870	0.100	0.8330	0	104	80	120	0.9401	7.76	20	

Sample ID: **25041320-001AMS**	SampType: **MS**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/8/2025**	RunNo: **150669**
Client ID: **HA-2R 6-8'**	Batch ID: **61701**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/13/2025**	SeqNo: **3690772**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.964	0.101	0.8376	0.02414	112	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **61701**

Sample ID: **25041320-001AMSD**	SampType: **MSD**	TestCode: **HG_S_29B**	Units: **mg/Kg-dry**	Prep Date: **5/8/2025**	RunNo: **150669**
Client ID: **HA-2R 6-8'**	Batch ID: **61701**	TestNo: **29B/SW7471**	**SW7471A**	Analysis Date: **5/13/2025**	SeqNo: **3690773**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.918	0.0971	0.8087	0.02414	111	75	125	0.9641	4.89	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61795**

Sample ID: **MB-61795** SampType: **MBLK** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/15/2025** RunNo: **150858**
Client ID: **PBS** Batch ID: **61795** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/19/2025** SeqNo: **3696031**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.00	2.00									
Barium	< 1.00	1.00									
Cadmium	< 0.500	0.500									
Chromium	< 1.00	1.00									
Lead	< 1.00	1.00									
Strontium	< 1.00	1.00									
Zinc	< 1.00	1.00									

Sample ID: **LCS-61795** SampType: **LCS** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/15/2025** RunNo: **150858**
Client ID: **LCSS** Batch ID: **61795** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/19/2025** SeqNo: **3696032**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	48.7	2.00	50.00	0	97.4	80	120				
Barium	52.7	1.00	50.00	0	105	80	120				
Cadmium	49.9	0.500	50.00	0	99.7	80	120				
Chromium	52.0	1.00	50.00	0	104	80	120				
Lead	50.2	1.00	50.00	0	100	80	120				
Strontium	51.0	1.00	50.00	0	102	80	120				
Zinc	48.3	1.00	50.00	0	96.7	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61795**

Sample ID: **LCSD-61795** SampType: **LCSD** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/15/2025** RunNo: **150858**
Client ID: **LCSS02** Batch ID: **61795** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/19/2025** SeqNo: **3696033**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	49.3	2.00	50.00	0	98.5	80	120	48.68	1.16	20	
Barium	52.9	1.00	50.00	0	106	80	120	52.74	0.248	20	
Cadmium	50.1	0.500	50.00	0	100	80	120	49.86	0.540	20	
Chromium	52.5	1.00	50.00	0	105	80	120	51.98	0.938	20	
Lead	50.5	1.00	50.00	0	101	80	120	50.25	0.573	20	
Strontium	51.5	1.00	50.00	0	103	80	120	50.98	0.974	20	
Zinc	48.6	1.00	50.00	0	97.1	80	120	48.35	0.429	20	

Sample ID: **25050280-016AMS** SampType: **MS** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/15/2025** RunNo: **150858**
Client ID: **ZZZZZZ** Batch ID: **61795** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/19/2025** SeqNo: **3696039**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	70.8	2.00	49.95	24.63	92.4	75	125				
Barium	1,040	0.999	49.95	930.8	228	75	125				S
Cadmium	58.9	0.499	49.95	9.974	97.9	75	125				
Chromium	283	0.999	49.95	235.7	95.3	75	125				
Lead	228	0.999	49.95	195.5	66.0	75	125				S
Strontium	489	0.999	49.95	444.5	88.6	75	125				
Zinc	3,470	0.999	49.95	3,376	186	75	125				S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **61795**

Sample ID: **25050280-016AMSD** SampType: **MSD** TestCode: **6010_S_29B** Units: **mg/Kg-dry** Prep Date: **5/15/2025** RunNo: **150858**

Client ID: **ZZZZZZ** Batch ID: **61795** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/19/2025** SeqNo: **3696040**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	69.2	1.98	49.59	24.63	89.8	75	125	70.78	2.31	20	
Barium	961	0.992	49.59	930.8	61.3	75	125	1,045	8.35	20	S
Cadmium	56.9	0.496	49.59	9.974	94.6	75	125	58.89	3.43	20	
Chromium	283	0.992	49.59	235.7	95.7	75	125	283.3	0.0479	20	
Lead	205	0.992	49.59	195.5	18.3	75	125	228.5	11.0	20	S
Strontium	476	0.992	49.59	444.5	63.0	75	125	488.8	2.70	20	S
Zinc	3,280	0.992	49.59	3,376	-185	75	125	3,469	5.47	20	S

NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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Website: www.element.com

QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61796**

Sample ID: **MB-61796**	SampType: **MBLK**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/15/2025**	RunNo: **150860**
Client ID: **PBS**	Batch ID: **61796**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/19/2025**	SeqNo: **3696159**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.00	2.00									
Barium	< 2.00	2.00									
Cadmium	< 0.500	0.500									
Chromium	< 1.00	1.00									
Lead	< 1.00	1.00									
Strontium	< 1.00	1.00									
Zinc	< 1.00	1.00									

Sample ID: **LCS-61796**	SampType: **LCS**	TestCode: **6010_S_WET**	Units: **mg/Kg**	Prep Date: **5/15/2025**	RunNo: **150860**
Client ID: **LCSS**	Batch ID: **61796**	TestNo: **SW6010B**	**SW3050B**	Analysis Date: **5/19/2025**	SeqNo: **3696160**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	48.7	2.00	50.00	0	97.4	80	120				
Barium	52.7	2.00	50.00	0	105	80	120				
Cadmium	49.9	0.500	50.00	0	99.7	80	120				
Chromium	52.0	1.00	50.00	0	104	80	120				
Lead	50.2	1.00	50.00	0	100	80	120				
Strontium	51.0	1.00	50.00	0	102	80	120				
Zinc	48.3	1.00	50.00	0	96.7	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61796**

Sample ID: **LCSD-61796** SampType: **LCSD** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/15/2025** RunNo: **150860**
Client ID: **LCSS02** Batch ID: **61796** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/19/2025** SeqNo: **3696161**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	49.3	2.00	50.00	0	98.5	80	120	48.68	1.16	20	
Barium	52.9	2.00	50.00	0	106	80	120	52.74	0.248	20	
Cadmium	50.1	0.500	50.00	0	100	80	120	49.86	0.540	20	
Chromium	52.5	1.00	50.00	0	105	80	120	51.98	0.938	20	
Lead	50.5	1.00	50.00	0	101	80	120	50.25	0.573	20	
Strontium	51.5	1.00	50.00	0	103	80	120	50.98	0.974	20	
Zinc	48.6	1.00	50.00	0	97.1	80	120	48.35	0.429	20	

Sample ID: **25050280-016AMS** SampType: **MS** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/15/2025** RunNo: **150860**
Client ID: **ZZZZZZ** Batch ID: **61796** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/19/2025** SeqNo: **3696167**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.2	1.47	36.81	18.15	92.4	75	125				
Barium	770	1.47	36.81	686.0	228	75	125				S
Cadmium	43.4	0.368	36.81	7.351	97.9	75	125				
Chromium	209	0.736	36.81	173.7	95.3	75	125				
Lead	168	0.736	36.81	144.1	66.0	75	125				S
Strontium	360	0.736	36.81	327.6	88.6	75	125				
Zinc	2,560	0.736	36.81	2,488	186	75	125				S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **61796**

Sample ID: **25050280-016AMSD** SampType: **MSD** TestCode: **6010_S_WET** Units: **mg/Kg** Prep Date: **5/15/2025** RunNo: **150860**

Client ID: **ZZZZZZ** Batch ID: **61796** TestNo: **SW6010B** **SW3050B** Analysis Date: **5/19/2025** SeqNo: **3696168**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	51.0	1.46	36.55	18.15	89.8	75	125	52.17	2.31	20	
Barium	708	1.46	36.55	686.0	61.3	75	125	770.1	8.35	20	S
Cadmium	41.9	0.365	36.55	7.351	94.6	75	125	43.40	3.43	20	
Chromium	209	0.731	36.55	173.7	95.7	75	125	208.8	0.0479	20	
Lead	151	0.731	36.55	144.1	18.3	75	125	168.4	11.0	20	S
Strontium	351	0.731	36.55	327.6	63.0	75	125	360.2	2.70	20	S
Zinc	2,420	0.731	36.55	2,488	-185	75	125	2,556	5.47	20	S

NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61797**

Sample ID: **MB-61797**	SampType: **MBLK**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/15/2025**	RunNo: **150857**
Client ID: **PBS**	Batch ID: **61797**	TestNo: **LDNR 29-B**		Analysis Date: **5/19/2025**	SeqNo: **3696108**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	< 50.0	50.0									

Sample ID: **LCS-61797**	SampType: **LCS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/15/2025**	RunNo: **150857**
Client ID: **LCSS**	Batch ID: **61797**	TestNo: **LDNR 29-B**		Analysis Date: **5/19/2025**	SeqNo: **3696109**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,300	50.0	5,000	0	106	75	125				

Sample ID: **LCSD-61797**	SampType: **LCSD**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/15/2025**	RunNo: **150857**
Client ID: **LCSS02**	Batch ID: **61797**	TestNo: **LDNR 29-B**		Analysis Date: **5/19/2025**	SeqNo: **3696110**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	5,250	50.0	5,000	0	105	75	125	5,296	0.916	20	

Sample ID: **25050277-001AMS**	SampType: **MS**	TestCode: **TTBA**	Units: **mg/Kg-dry**	Prep Date: **5/15/2025**	RunNo: **150857**
Client ID: **ZZZZZZ**	Batch ID: **61797**	TestNo: **LDNR 29-B**		Analysis Date: **5/19/2025**	SeqNo: **3696114**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	20,600	45.9	4,587	15,280	115	75	125				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **61797**

Sample ID: **25050277-001AMSD** SampType: **MSD** TestCode: **TTBA** Units: **mg/Kg-dry** Prep Date: **5/15/2025** RunNo: **150857**
Client ID: **ZZZZZZ** Batch ID: **61797** TestNo: **LDNR 29-B** Analysis Date: **5/19/2025** SeqNo: **3696115**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
True Total Barium	20,500	46.1	4,608	15,280	114	75	125	20,580	0.204	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150393**

Sample ID: **MB-R150393**	SampType: **MBLK**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150393**
Client ID: **PBS**	Batch ID: **R150393**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	< 0.10	0.10									

Sample ID: **LCS1-R150393**	SampType: **LCS1**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150393**
Client ID: **ZZZZZZ**	Batch ID: **R150393**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683035**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.48	0.10	0.50	0	95.4	90	110				

Sample ID: **LCS2-R150393**	SampType: **LCS2**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150393**
Client ID: **ZZZZZZ**	Batch ID: **R150393**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683036**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	52.1	0.10	53.00	0	98.3	90	110				

Sample ID: **25041317-021ADUP**	SampType: **DUP**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150393**
Client ID: **ZZZZZZ**	Batch ID: **R150393**	TestNo: **LDNR 29-B**		Analysis Date: **5/2/2025**	SeqNo: **3683038**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.26	0.10						0.26	1.08	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **R150395**

Sample ID: **25041317-021ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150395**

Client ID: **ZZZZZZ** Batch ID: **R150395** TestNo: **LDNR 29-B** Analysis Date: **4/28/2025** SeqNo: **3682590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	20.4	1.00						22.70	10.7	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150423**

Sample ID: **25041339-001ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150423**
Client ID: **ZZZZZZ** Batch ID: **R150423** TestNo: **LDNR 29-B** Analysis Date: **4/29/2025** SeqNo: **3683512**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	17.1	1.00						17.10	0	20	

Sample ID: **25041414-001ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150423**
Client ID: **ZZZZZZ** Batch ID: **R150423** TestNo: **LDNR 29-B** Analysis Date: **4/30/2025** SeqNo: **3683520**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	75.7	1.00						75.80	0.13	20	

Sample ID: **25041445-001ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150423**
Client ID: **ZZZZZZ** Batch ID: **R150423** TestNo: **LDNR 29-B** Analysis Date: **4/30/2025** SeqNo: **3688965**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	18.7	1.00						16.70	11.3	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150449-2**

Sample ID: **mblk**	SampType: **MBLK**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **PBS**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684084**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	< 0.250	0.250									

Sample ID: **lcs**	SampType: **LCS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **LCSS**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684085**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.68	0.250	10.00	0	96.8	80	120				

Sample ID: **lcsd**	SampType: **LCSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **LCSS02**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684086**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.50	0.250	10.00	0	95.0	80	120	9.681	1.92	15	

Sample ID: **25041320-003ams**	SampType: **MS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **HA-2R 10-12'**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684100**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3,010	49.6	991.5	2,153	86.5	80	120				

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **R150449-2**

Sample ID: **25041320-003amsd**	SampType: **MSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150449**
Client ID: **HA-2R 10-12'**	Batch ID: **R150449-2**	TestNo: **SW9056A**		Analysis Date: **5/5/2025**	SeqNo: **3684101**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2,970	49.6	991.5	2,153	82.8	80	120	3,011	1.23	15	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150536**

Sample ID: **MB-R150536**	SampType: **MBLK**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150536**
Client ID: **PBS**	Batch ID: **R150536**	TestNo: **LDNR 29-B**		Analysis Date: **5/8/2025**	SeqNo: **3686521**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	< 0.10	0.10									

Sample ID: **LCS1-R150536**	SampType: **LCS1**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150536**
Client ID: **ZZZZZZ**	Batch ID: **R150536**	TestNo: **LDNR 29-B**		Analysis Date: **5/8/2025**	SeqNo: **3686522**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.47	0.10	0.50	0	93.5	90	110				

Sample ID: **LCS2-R150536**	SampType: **LCS2**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150536**
Client ID: **ZZZZZZ**	Batch ID: **R150536**	TestNo: **LDNR 29-B**		Analysis Date: **5/8/2025**	SeqNo: **3686523**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	52.6	0.10	53.00	0	99.3	90	110				

Sample ID: **25041517-009ADUP**	SampType: **DUP**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150536**
Client ID: **ZZZZZZ**	Batch ID: **R150536**	TestNo: **LDNR 29-B**		Analysis Date: **5/8/2025**	SeqNo: **3686528**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	4.52	0.10						4.45	1.56	20	*

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150545**

Sample ID: **25050119-001ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150545**
Client ID: **ZZZZZZ** Batch ID: **R150545** TestNo: **LDNR 29-B** Analysis Date: **5/5/2025** SeqNo: **3686645**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	76.6	1.00						76.30	0.39	20	

Sample ID: **25050063-001ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150545**
Client ID: **ZZZZZZ** Batch ID: **R150545** TestNo: **LDNR 29-B** Analysis Date: **5/5/2025** SeqNo: **3686647**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	55.6	1.00						57.60	3.53	20	

Sample ID: **25050201-001ADUP** SampType: **DUP** TestCode: **PMOIST_29B** Units: **wt%** Prep Date: RunNo: **150545**
Client ID: **ZZZZZZ** Batch ID: **R150545** TestNo: **LDNR 29-B** Analysis Date: **5/5/2025** SeqNo: **3686659**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	75.6	1.00						75.60	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150572**

Sample ID: **mblk**	SampType: **MBLK**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150572**
Client ID: **PBS**	Batch ID: **R150572**	TestNo: **SW9056A**		Analysis Date: **5/8/2025**	SeqNo: **3687264**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	< 0.250	0.250									

Sample ID: **lcs**	SampType: **LCS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150572**
Client ID: **LCSS**	Batch ID: **R150572**	TestNo: **SW9056A**		Analysis Date: **5/8/2025**	SeqNo: **3687265**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.87	0.250	10.00	0	98.7	80	120				

Sample ID: **lcsd**	SampType: **LCSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150572**
Client ID: **LCSS02**	Batch ID: **R150572**	TestNo: **SW9056A**		Analysis Date: **5/8/2025**	SeqNo: **3687266**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.92	0.250	10.00	0	99.2	80	120	9.865	0.563	15	

Sample ID: **25050371-001DMS**	SampType: **MS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150572**
Client ID: **ZZZZZZ**	Batch ID: **R150572**	TestNo: **SW9056A**		Analysis Date: **5/8/2025**	SeqNo: **3687269**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	13,200	125	2,500	11,630	62.0	80	120				ES

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services

Project: Castex Development 9403-016-0100 **BatchID:** **R150572**

Sample ID: **25050371-001DMSD**	SampType: **MSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150572**
Client ID: **ZZZZZZ**	Batch ID: **R150572**	TestNo: **SW9056A**		Analysis Date: **5/8/2025**	SeqNo: **3687270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	13,100	125	2,500	11,630	57.8	80	120	13,180	0.817	15	ES

NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

E - Sample concentration exceeded the upper instrument calibration level. Result is reported as an estimated value.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150800**

Sample ID: **MB-R150800**	SampType: **MBLK**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150800**
Client ID: **PBS**	Batch ID: **R150800**	TestNo: **LDNR 29-B**		Analysis Date: **5/16/2025**	SeqNo: **3694353**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	< 0.10	0.10									

Sample ID: **LCS1-R150800**	SampType: **LCS1**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150800**
Client ID: **ZZZZZZ**	Batch ID: **R150800**	TestNo: **LDNR 29-B**		Analysis Date: **5/16/2025**	SeqNo: **3694354**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	0.48	0.10	0.50	0	95.0	90	110				

Sample ID: **LCS2-R150800**	SampType: **LCS2**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150800**
Client ID: **ZZZZZZ**	Batch ID: **R150800**	TestNo: **LDNR 29-B**		Analysis Date: **5/16/2025**	SeqNo: **3694355**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	51.2	0.10	53.00	0	96.7	90	110				

Sample ID: **25041320-001ADUP**	SampType: **DUP**	TestCode: **EC_S**	Units: **mmhos/cm**	Prep Date:	RunNo: **150800**
Client ID: **HA-2R 6-8'**	Batch ID: **R150800**	TestNo: **LDNR 29-B**		Analysis Date: **5/16/2025**	SeqNo: **3694357**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Electrical Conductivity	5.84	0.10						5.82	0.34	20	*

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150909**

Sample ID: **mblk**	SampType: **MBLK**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150909**
Client ID: **PBS**	Batch ID: **R150909**	TestNo: **SW9056A**		Analysis Date: **5/19/2025**	SeqNo: **3697498**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	< 0.250	0.250									

Sample ID: **lcs**	SampType: **LCS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150909**
Client ID: **LCSS**	Batch ID: **R150909**	TestNo: **SW9056A**		Analysis Date: **5/19/2025**	SeqNo: **3697499**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.2	0.250	10.00	0	102	80	120				

Sample ID: **lcsd**	SampType: **LCSD**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150909**
Client ID: **LCSS02**	Batch ID: **R150909**	TestNo: **SW9056A**		Analysis Date: **5/19/2025**	SeqNo: **3697500**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.2	0.250	10.00	0	102	80	120	10.23	0.0726	15	

Sample ID: **25050280-004ams**	SampType: **MS**	TestCode: **9056_S**	Units: **mg/Kg-dry**	Prep Date:	RunNo: **150909**
Client ID: **ZZZZZZ**	Batch ID: **R150909**	TestNo: **SW9056A**		Analysis Date: **5/19/2025**	SeqNo: **3697502**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1,750	25.0	500.0	1,363	77.1	80	120				S

NOTES:
S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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QC SUMMARY REPORT

WO#: **25041320**

22-May-25

Client: ICON Environmental Services
Project: Castex Development 9403-016-0100 **BatchID:** **R150909**

Sample ID: **25050280-004amsd** SampType: **MSD** TestCode: **9056_S** Units: **mg/Kg-dry** Prep Date: RunNo: **150909**
Client ID: **ZZZZZZ** Batch ID: **R150909** TestNo: **SW9056A** Analysis Date: **5/19/2025** SeqNo: **3697503**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1,760	25.0	500.0	1,363	79.6	80	120	1,749	0.716	15	S

NOTES:
S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range	H	Holding times for preparation or analysis exceed
M	Matrix Interference	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits	SDL	Sample detection limit
U	Analyte not detected	W	Sample container temperature is out of limit as specified at testcode		

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Sample Log-In Check List

Client Name: **ICON_ENV** Work Order Number: **25041320** RcptNo: **1**

Logged by:	**Rhonda David**	**4/28/2025 11:35:00 AM**	Rhonda David
Completed By:	**Buffy Bryant**	**5/22/2025 3:26:35 PM**	Buffy Bryant
Reviewed By:	**Buffy Bryant**	**5/22/2025 3:26:43 PM**	Buffy Bryant

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present	☐
2.	How was the sample delivered?	Element					

Log In

3.	Coolers are present?	Yes	☑	No	☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No	☐		
	Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	Not Present	☑
	No. Seal Date: Signed By:						
5.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA	☐
6.	Were all samples received at a temperature of >0° C to 6.0°C	Yes	☑	No	☐	NA	☐
7.	Sample(s) in proper container(s)?	Yes	☑	No	☐		
8.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐		
9.	Are samples (except VOA and ONG) properly preserved?	Yes	☑	No	☐		
10.	Was preservative added to bottles?	Yes	☐	No	☑	NA	☐
11.	Is the headspace in the VOA vials less than 1/4 inch or 6 mm?	Yes	☐	No	☐	No VOA Vials	☑
12.	Were any sample containers received broken?	Yes	☐	No	☑		
13.	Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes	☑	No	☐		
14.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐		
15.	Is it clear what analyses were requested?	Yes	☑	No	☐		
16.	Were all holding times able to be met? (If no, notify customer for authorization.)	Yes	☑	No	☐		

Special Handling (if applicable)

17.	Was client notified of all discrepancies with this order?	Yes	☑	No	☐	NA	☐

Person Notified: Jason Sills Date: 5/29/2025
By Whom: Buffy Bryant Via: ☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: CD-12 R samples not received.
Client Instructions: The samples are still with the sampler.

18. Additional remarks:
Improper error correction(s) made by client

Cooler Information

Cooler No	Temp ºC	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Not Present			

element

Chain of Custody

Laboratory Number: 25041320

Client Information:	Billing Information:	PO Number:	Project Name/Number:	Page 1 of 2
Company Name: ICON	SAME		~~CHEX~~ CASTEX DEVELOPMENT	**Matrix Code**
Contact Name:		Quote Number:	9403-016-0100	DW = Drinking Water
Address:			Sampler's Signature	WW = Waste Water
		Required QC Level		GW = Ground Water
City, State Zip:				AQ = Aqueous
Phone Number: Ext:	Ext:	Bill Monthly	Shipping Method:	OT = Other
Fax Number:		☐Yes	UPS / FedEx / NOW	SL = Sludge SOL = Solid
E-mail Address:		☐No	DHL / Element / Hand / Mail	O = Oil SO = Soil
				F = Food SW = Swab
				NG = Natural Gas
				NGL = Natural Gas Liquid
				PW = Produced Water
				CF = Completion Fluid

Which Regulations Apply:
☐RCRA ☐Drinking Water
☐POTW ☐Distribution
☐NPDES ☐Special
☐USDA/FDA ☐State
☐RECAP/RISC ☐Other

Turn Time
☐Standard
RUSH
☐1 Day
☐2 Day
☐Other
(Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Container: Type P=Plastic, G=Glass, V=Vial	Pres.: HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	EC	Soluble Chlorides	8015 Metals	% Moisture	TPH-D+O						Comments
HA-2R (6-8)	4-23-25	1320	G	So	1	P	-	X	X	X	X							As, Ba, TlBe, Ca, Cr, Pb, Sr, Zn, Hg
HA-2R (8-10)	4-23-25	1335	G	So	2	PG	-	X	X	X	X	X						
HA-2R (10-12)	4-23-25	1340	G	So	1	P	-	X	X	X	X							
HA-2R (14-16)	4-23-25	1425	G	So	2	PG	-	X	X		X	X						
HA-2R (18-20)	4-23-25	1420	G	So	1	P	-	X	X		X							
HA-2R (22-24)	4-23-25	1435	G	So	1	P	-	X	X		X							
HA-2R (28-30)	4-23-25	1515	G	So	1	P	-	X	X		X							
CD-12R (8-10)	4-22-25	0955	G	So	1	P	-	X	X		X							
CD-12R (16-18)	4-22-25	1010	G	So	1	P	-	X	X		X							

	Relinquished by	Date/Time	Received by	Date/Time	Field Notes:
1		4/28/25 0915		4/28/25 0915	
2		4/28/25 1135		4/28/25 1135	Received at lab on ice? ☑Yes ☐No Temp: 3.5 °C
3					

All samples submitted to Element Materials Technology for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Element Materials Technology reserves the right to return unused sample portions.

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Chain of Custody

Laboratory Number: 25041320

	Client Information:	Billing Information:	PO Number:	Project Name/Number:
Company Name:	ICON	SAME		CASTEX DEVELOPMENT 9403-DL-0100
Contact Name:			Quote Number:	
Address:				Sampler's Signature:
			Required QC Level	
City, State Zip:				
Phone Number:	Ext:	Ext:	Bill Monthly ☐Yes ☐No	Shipping Method: UPS / FedEx / NOW DHL / Element / Hand / Mail
Fax Number:				
E-mail Address:				

Matrix Code

DW = Drinking Water
WW = Waste Water
GW = Ground Water
AQ = Aqueous
OT = Other
SL = Sludge SOL = Solid
O = Oil SO = Soil
F = Food SW = Swab
NG = Natural Gas
NGL = Natural Gas Liquid
PW = Produced Water
CF = Completion Fluid

Which Regulations Apply:
☐RCRA ☐Drinking Water
☐POTW ☐Distribution
☐NPDES ☐Special
☐USDA/FDA ☐State
☐RECAP/RISC ☐Other

Turn Time
☐Standard
RUSH
☐1 Day
☐2 Day
☐Other
(Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Type P=Plastic, G=Glass, V=Vial	Pres.: HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	Requested Tests: EC	Soluble Chloride	% Moisture	Comments
CD-12R (26-28)	4-22-25	1020	G	So	1	P	–	X	X	X	
CD-12R (46-48)	4-22-25	1115	G	So	1	P	–	X	X	X	
CD-12R (60-62)	4-22-25	1145	G	So	1	P	–	X	X	X	
CD-12R (78-80)	4-22-25	1200	G	So	1	P	–	X	X	X	

	Relinquished by	Date/Time	Received by	Date/Time
1		4/28/25 0915		4/28/25 0915
2	VJ	4/28/25 1135		4/28/25 1135
3				

Field Notes:

Received at lab on ice?
☑Yes ☐No Temp: 3.5°C

All samples submitted to Element Materials Technology for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Element Materials Technology reserves the right to return unused sample portions.

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3317 Cleveland Road, Suite 100A, South Bend, IN 46628 USA, P 574-277-0707, F 574-273-5699
2417 W. Pinhook Rd, Lafayette, LA 70508 USA, P 337-235-0483, F 337-233-6540

Waypoint ANALYTICAL

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ⁰ Fax 504-371-8560
www.waypointanalytical.com

5/27/2025

Hydro-Environmental Technology, Inc.
Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott, LA, 70583

Ref: Report Number: 25-115-0010
Project Description: Castex
1009.A75
Jennings, LA

Dear Mr. Stewart Stover, Jr.:

Waypoint Analytical Louisiana, Inc. received sample(s) on 4/25/2025 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2026
Kentucky	State Program	KY98013	12/31/2025
Louisiana	State Program - NELAP	04023	06/30/2025

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Sample Summary Table

Report Number: **25-115-0010**

Client Project Description: **Castex**
1009.A75
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
56035	CD-12R (8-10')	Solids	04/22/2025 09:55	04/25/2025 13:13		
56036	CD-12R (16-18')	Solids	04/22/2025 10:10	04/25/2025 13:13		
56037	CD-12R (22-24)	Solids	04/22/2025 10:20	04/25/2025 13:13		
56038	CD-12R (26-28')	Solids	04/22/2025 10:20	04/25/2025 13:13		
56039	CD-12R (46-48')	Solids	04/22/2025 11:15	04/25/2025 13:13		
56040	CD-12R (54-56')	Solids	04/22/2025 11:30	04/25/2025 13:13		
56041	CD-12R (60-62')	Solids	04/22/2025 11:45	04/25/2025 13:13		
56042	CD-12R (70-72')	Solids	04/22/2025 12:00	04/25/2025 13:13		
56043	CD-12R (78-80')	Solids	04/22/2025 12:00	04/25/2025 13:13		
56044	HA-2R (0-2')	Solids	04/23/2025 12:50	04/25/2025 13:13		
56044	HA-2R (0-2')	Solids	04/23/2025 12:50	04/25/2025 13:13	X-RAY SXRD XRD EDX	Core Min
56044	HA-2R (0-2')	Solids	04/23/2025 12:50	04/25/2025 13:13	8270D SIM	WP RMS
56044	HA-2R (0-2')	Solids	04/23/2025 12:50	04/25/2025 13:13	MAVPH LA	WP RMS
56044	HA-2R (0-2')	Solids	04/23/2025 12:50	04/25/2025 13:13	MAEPH LA	WP RMS
56045	HA-2R (2-4')	Solids	04/23/2025 12:55	04/25/2025 13:13		
56045	HA-2R (2-4')	Solids	04/23/2025 12:55	04/25/2025 13:13	8270D SIM	WP RMS
56045	HA-2R (2-4')	Solids	04/23/2025 12:55	04/25/2025 13:13	MAEPH LA	WP RMS
56046	HA-2R (4-6')	Solids	04/23/2025 13:15	04/25/2025 13:13		
56046	HA-2R (4-6')	Solids	04/23/2025 13:15	04/25/2025 13:13	8270D SIM	WP RMS
56046	HA-2R (4-6')	Solids	04/23/2025 13:15	04/25/2025 13:13	MAEPH LA	WP RMS
56047	HA-2R (6-8')	Solids	04/23/2025 13:20	04/25/2025 13:13		
56047	HA-2R (6-8')	Solids	04/23/2025 13:20	04/25/2025 13:13	MAEPH LA	WP RMS
56047	HA-2R (6-8')	Solids	04/23/2025 13:20	04/25/2025 13:13	8270D SIM	WP RMS
56048	HA-2R (8-10')	Solids	04/23/2025 13:35	04/25/2025 13:13		
56048	HA-2R (8-10')	Solids	04/23/2025 13:35	04/25/2025 13:13	8270D SIM	WP RMS
56048	HA-2R (8-10')	Solids	04/23/2025 13:35	04/25/2025 13:13	MAVPH LA	WP RMS

220 Core Mineralogy: Core Mineralogy, Inc., Broussard, LA

198 WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Sample Summary Table

Report Number: **25-115-0010**

Client Project Description: **Castex**
1009.A75
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
56048	HA-2R (8-10')	Solids	04/23/2025 13:35	04/25/2025 13:13	MAEPH LA	WP RMS
56049	HA-2R (10-12')	Solids	04/23/2025 13:40	04/25/2025 13:13		
56049	HA-2R (10-12')	Solids	04/23/2025 13:40	04/25/2025 13:13	8270D SIM	WP RMS
56049	HA-2R (10-12')	Solids	04/23/2025 13:40	04/25/2025 13:13	MAVPH LA	WP RMS
56049	HA-2R (10-12')	Solids	04/23/2025 13:40	04/25/2025 13:13	MAEPH LA	WP RMS
56050	HA-2R (14-16')	Solids	04/23/2025 14:05	04/25/2025 13:13		
56050	HA-2R (14-16')	Solids	04/23/2025 14:05	04/25/2025 13:13	8270D SIM	WP RMS
56050	HA-2R (14-16')	Solids	04/23/2025 14:05	04/25/2025 13:13	MAVPH LA	WP RMS
56050	HA-2R (14-16')	Solids	04/23/2025 14:05	04/25/2025 13:13	MAEPH LA	WP RMS
56051	HA-2R (18-20')	Solids	04/23/2025 14:20	04/25/2025 13:13		
56051	HA-2R (18-20')	Solids	04/23/2025 14:20	04/25/2025 13:13	8270D SIM	WP RMS
56051	HA-2R (18-20')	Solids	04/23/2025 14:20	04/25/2025 13:13	MAEPH LA	WP RMS
56052	HA-2R (22-24')	Solids	04/23/2025 14:35	04/25/2025 13:13		
56052	HA-2R (22-24')	Solids	04/23/2025 14:35	04/25/2025 13:13	8270D SIM	WP RMS
56052	HA-2R (22-24')	Solids	04/23/2025 14:35	04/25/2025 13:13	MAVPH LA	WP RMS
56052	HA-2R (22-24')	Solids	04/23/2025 14:35	04/25/2025 13:13	MAEPH LA	WP RMS
56053	HA-2R (28-30')	Solids	04/23/2025 15:15	04/25/2025 13:13		
56053	HA-2R (28-30')	Solids	04/23/2025 15:15	04/25/2025 13:13	8270D SIM	WP RMS
56053	HA-2R (28-30')	Solids	04/23/2025 15:15	04/25/2025 13:13	MAEPH LA	WP RMS
56054	SB-1 (0-2')	Solids	04/24/2025 09:10	04/25/2025 13:13		
56054	SB-1 (0-2')	Solids	04/24/2025 09:10	04/25/2025 13:13	8270D SIM	WP RMS
56054	SB-1 (0-2')	Solids	04/24/2025 09:10	04/25/2025 13:13	MAVPH LA	WP RMS
56054	SB-1 (0-2')	Solids	04/24/2025 09:10	04/25/2025 13:13	MAEPH LA	WP RMS
56055	SB-1 (6-8')	Solids	04/24/2025 09:35	04/25/2025 13:13		
56056	SB-1 (8-10')	Solids	04/24/2025 09:40	04/25/2025 13:13		
56056	SB-1 (8-10')	Solids	04/24/2025 09:40	04/25/2025 13:13	8270D SIM	WP RMS

220 Core Mineralogy: Core Mineralogy, Inc., Broussard, LA

198 WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Sample Summary Table

Report Number: **25-115-0010**

Client Project Description: **Castex**
1009.A75
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
56056	SB-1 (8-10')	Solids	04/24/2025 09:40	04/25/2025 13:13	MAVPH LA	WP RMS
56056	SB-1 (8-10')	Solids	04/24/2025 09:40	04/25/2025 13:13	MAEPH LA	WP RMS
56057	SB-1 (13-15')	Solids	04/24/2025 09:50	04/25/2025 13:13		
56058	SB-1 (15-16')	Solids	04/24/2025 09:55	04/25/2025 13:13		
56059	SB-1 (20-22')	Solids	04/24/2025 10:15	04/25/2025 13:13		
56060	SB-1 (22-24')	Solids	04/24/2025 10:20	04/25/2025 13:13		
56060	SB-1 (22-24')	Solids	04/24/2025 10:20	04/25/2025 13:13	8270D SIM	WP RMS
56060	SB-1 (22-24')	Solids	04/24/2025 10:20	04/25/2025 13:13	MAEPH LA	WP RMS
56061	SB-4 (0-2')	Solids	04/24/2025 11:05	04/25/2025 13:13		
56061	SB-4 (0-2')	Solids	04/24/2025 11:05	04/25/2025 13:13	MAVPH LA	WP RMS
56061	SB-4 (0-2')	Solids	04/24/2025 11:05	04/25/2025 13:13	MAEPH LA	WP RMS
56061	SB-4 (0-2')	Solids	04/24/2025 11:05	04/25/2025 13:13	8270D SIM	WP RMS
56062	SB-4 (2-4')	Solids	04/24/2025 11:10	04/25/2025 13:13		
56062	SB-4 (2-4')	Solids	04/24/2025 11:10	04/25/2025 13:13	8270D SIM	WP RMS
56062	SB-4 (2-4')	Solids	04/24/2025 11:10	04/25/2025 13:13	MAVPH LA	WP RMS
56062	SB-4 (2-4')	Solids	04/24/2025 11:10	04/25/2025 13:13	MAEPH LA	WP RMS
56063	SB-4 (7-9')	Solids	04/24/2025 11:25	04/25/2025 13:13		
56064	SB-4 (8-10')	Solids	04/24/2025 11:30	04/25/2025 13:13		
56064	SB-4 (8-10')	Solids	04/24/2025 11:30	04/25/2025 13:13	8270D SIM	WP RMS
56064	SB-4 (8-10')	Solids	04/24/2025 11:30	04/25/2025 13:13	MAVPH LA	WP RMS
56064	SB-4 (8-10')	Solids	04/24/2025 11:30	04/25/2025 13:13	MAEPH LA	WP RMS
56065	SB-4 (12-14')	Solids	04/24/2025 12:00	04/25/2025 13:13		
56066	SB-4 (18-20')	Solids	04/24/2025 12:20	04/25/2025 13:13		
56067	SB-4 (22-24')	Solids	04/24/2025 12:30	04/25/2025 13:13		
56068	SB-2 (0-2')	Solids	04/24/2025 14:40	04/25/2025 13:13		
56068	SB-2 (0-2')	Solids	04/24/2025 14:40	04/25/2025 13:13	8270D SIM	WP RMS

220 Core Mineralogy: Core Mineralogy, Inc., Broussard, LA

198 WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Sample Summary Table

Report Number: **25-115-0010**

Client Project Description: **Castex**
1009.A75
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
56068	SB-2 (0-2')	Solids	04/24/2025 14:40	04/25/2025 13:13	MAVPH LA	WP RMS
56068	SB-2 (0-2')	Solids	04/24/2025 14:40	04/25/2025 13:13	MAEPH LA	WP RMS
56069	SB-2 (2-4')	Solids	04/24/2025 14:45	04/25/2025 13:13		
56069	SB-2 (2-4')	Solids	04/24/2025 14:45	04/25/2025 13:13	8270D SIM	WP RMS
56069	SB-2 (2-4')	Solids	04/24/2025 14:45	04/25/2025 13:13	MAVPH LA	WP RMS
56069	SB-2 (2-4')	Solids	04/24/2025 14:45	04/25/2025 13:13	MAEPH LA	WP RMS
56070	SB-2 (6-8')	Solids	04/24/2025 15:00	04/25/2025 13:13		
56071	SB-2 (8-10')	Solids	04/24/2025 15:05	04/25/2025 13:13		
56071	SB-2 (8-10')	Solids	04/24/2025 15:05	04/25/2025 13:13	8270D SIM	WP RMS
56071	SB-2 (8-10')	Solids	04/24/2025 15:05	04/25/2025 13:13	MAVPH LA	WP RMS
56071	SB-2 (8-10')	Solids	04/24/2025 15:05	04/25/2025 13:13	MAEPH LA	WP RMS
56072	SB-2 (12-14')	Solids	04/24/2025 15:20	04/25/2025 13:13		
56073	SB-2 (16-18')	Solids	04/24/2025 15:30	04/25/2025 13:13		
56074	SB-2 (22-24')	Solids	04/24/2025 15:45	04/25/2025 13:13		
56075	Trip Blank 4/23/25	Aqueous	04/23/2025 09:30	04/25/2025 13:13	MAVPH LA	WP RMS
56076	Field Blank 4/23/25	Aqueous	04/23/2025 11:00	04/25/2025 13:13	MAVPH LA	WP RMS
56077	Trip Blank 4/24/25	Aqueous	04/24/2025 07:30	04/25/2025 13:13	MAVPH LA	WP RMS
56078	Field Blank 4/24/25	Aqueous	04/24/2025 09:45	04/25/2025 13:13	MAVPH LA	WP RMS
57159	HA-2R (8-10')	SPLP	04/23/2025 13:35	04/25/2025 13:13		
57160	HA-2R (10-12')	SPLP	04/23/2025 13:40	04/25/2025 13:13		
57161	HA-2R (14-16')	SPLP	04/23/2025 14:05	04/25/2025 13:13		
57179	HA-2R (0-2')	SPLP	04/23/2025 12:50	04/25/2025 13:13		

220 Core Mineralogy: Core Mineralogy, Inc., Broussard, LA

198 WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Client: Hydro-Environmental Technology, Inc. **CASE NARRATIVE**
Project: Castex
Lab Report Number: 25-115-0010
Date: 5/27/2025

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are reported AR - As Received by adjusting the data using the percent moisture result.
- True Total Barium results are reported dry weight
- Oil & Grease results reported dry weight
- VPH/EPH results reported as received
- PAH results reported as received

Anions by Ion Chromatography Method 29B
Sample 56041 (CD-12R (60-62'))
Analyte: Chloride
QC Batch No: A102442/A102337/A102319
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

MADEP VPH Rev 1.1 Method MAVPH LA
Analyte: Aliphatic >C8-C10
QC Batch No: G207082
Although the LCS was biased high for this analyte, the samples in the associated batch were below the detection limit.

Metals Analysis Method 6010D
Sample 56265
Analyte: Barium
QC Batch No: A102431/A102351
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 56265
Analyte: Barium
QC Batch No: A102431/A102351
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

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Sample 56265
Analyte: Chromium
QC Batch No: A102431/A102351
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Waypoint ANALYTICAL

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09996
Hydro-Environmental Technology, Inc.
Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott , LA 70583

Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56035**
Sample ID : **CD-12R (8-10')**

Matrix: **Solids**
Sampled: **4/22/2025 09:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**18.7**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**101**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**0.8**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**2.82**	meq/L	0.010	5	05/06/25 13:58	MJM	29B
Chloride	**37.4**	mg/Kg	20.0	5	05/07/25 16:16	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.531**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**7.58**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.438**	meq/L	0.010	5	05/06/25 13:58	MJM	29B
Calcium (Sat Paste)	**0.614**	meq/L	0.025	5	05/06/25 11:54	APB	29B
Magnesium (Sat Paste)	**0.153**	meq/L	0.041	5	05/06/25 11:54	APB	29B
Sodium (Sat Paste)	**4.46**	meq/L	0.110	5	05/06/25 11:54	APB	29B

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000257

Waypoint ANALYTICAL
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09996
Hydro-Environmental Technology, Inc.
Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott , LA 70583

Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56036**
Sample ID : **CD-12R (16-18')**

Matrix: **Solids**
Sampled: **4/22/2025 10:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**29.7**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**182**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.6**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.302**	meq/L	0.010	5	05/06/25 14:11	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 16:53	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.287**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.00**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.120**	meq/L	0.010	5	05/06/25 14:11	MJM	29B
Calcium (Sat Paste)	**0.830**	meq/L	0.025	5	05/06/25 11:58	APB	29B
Magnesium (Sat Paste)	**0.295**	meq/L	0.041	5	05/06/25 11:58	APB	29B
Sodium (Sat Paste)	**1.96**	meq/L	0.110	5	05/06/25 11:58	APB	29B

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000258

Waypoint ANALYTICAL

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09996
Hydro-Environmental Technology, Inc.
Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott , LA 70583

Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56038**
Sample ID : **CD-12R (26-28')**

Matrix: **Solids**
Sampled: **4/22/2025 10:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**23.6**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**100**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.6**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.393**	meq/L	0.010	5	05/06/25 14:24	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 17:05	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.338**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.10**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.319**	meq/L	0.010	5	05/06/25 14:24	MJM	29B
Calcium (Sat Paste)	**0.901**	meq/L	0.025	5	05/06/25 12:02	APB	29B
Magnesium (Sat Paste)	**0.373**	meq/L	0.041	5	05/06/25 12:02	APB	29B
Sodium (Sat Paste)	**2.33**	meq/L	0.110	5	05/06/25 12:02	APB	29B

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000259

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56039**
Sample ID : **CD-12R (46-48')**

Matrix: **Solids**
Sampled: **4/22/2025 11:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**22.1**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**106**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**3.3**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.411**	meq/L	0.010	5	05/06/25 14:36	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 17:17	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.427**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.22**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.650**	meq/L	0.010	5	05/06/25 14:36	MJM	29B
Calcium (Sat Paste)	**1.83**	meq/L	0.025	5	05/06/25 12:06	APB	29B
Magnesium (Sat Paste)	**0.626**	meq/L	0.041	5	05/06/25 12:06	APB	29B
Sodium (Sat Paste)	**1.79**	meq/L	0.110	5	05/06/25 12:06	APB	29B

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000260

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56041**
Sample ID : **CD-12R (60-62')**

Matrix: **Solids**
Sampled: **4/22/2025 11:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.6**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**36.8**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.4**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**1.43**	meq/L	0.010	5	05/06/25 14:49	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 17:30	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.544**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.01**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**1.10**	meq/L	0.010	5	05/06/25 14:49	MJM	29B
Calcium (Sat Paste)	**2.01**	meq/L	0.025	5	05/06/25 12:10	APB	29B
Magnesium (Sat Paste)	**0.745**	meq/L	0.041	5	05/06/25 12:10	APB	29B
Sodium (Sat Paste)	**2.59**	meq/L	0.110	5	05/06/25 12:10	APB	29B

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56043**
Sample ID : **CD-12R (78-80')**

Matrix: **Solids**
Sampled: **4/22/2025 12:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**18.6**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**30.6**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.3**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**1.47**	meq/L	0.010	5	05/06/25 15:15	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 17:42	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.486**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.00**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.602**	meq/L	0.010	5	05/06/25 15:15	MJM	29B
Calcium (Sat Paste)	**1.76**	meq/L	0.025	5	05/06/25 12:28	APB	29B
Magnesium (Sat Paste)	**0.734**	meq/L	0.041	5	05/06/25 12:28	APB	29B
Sodium (Sat Paste)	**2.06**	meq/L	0.110	5	05/06/25 12:28	APB	29B

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56044**
Sample ID : **HA-2R (0-2')**

Matrix: **Solids**
Sampled: **4/23/2025 12:50**

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**16.4**	%		0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**128**	%			1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**3.2**	meq/L		0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**6.71**	meq/L		0.010	5	05/06/25 15:28	MJM	29B
Chloride	**159**	mg/Kg		20.0	5	05/07/25 17:54	MJM	9056A
Electrical Conductivity (Sat Paste)	**1.33**	mmhos/cm			1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.04**	s.u.			1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**2.33**	meq/L		0.010	5	05/06/25 15:28	MJM	29B
Sodium Adsorption Ratio (Sat Paste)	**18.9**				1	05/06/25 12:32		29B
Calcium (Sat Paste)	**0.516**	meq/L		0.025	5	05/06/25 12:32	APB	29B
Magnesium (Sat Paste)	**0.289**	meq/L		0.041	5	05/06/25 12:32	APB	29B
Sodium (Sat Paste)	**12.0**	meq/L		0.110	5	05/06/25 12:32	APB	29B
Total Barium	**1570**	mg/Kg AR		1.00	2	05/06/25 18:29	APB	6010D
True Total Barium	**3250**	mg/Kg		50.0	1	05/13/25 11:24	APB	29B
Total Chromium	**20.2**	mg/Kg AR		0.500	2	05/06/25 18:29	APB	6010D
Total Lead	**17.1**	mg/Kg AR		0.600	2	05/06/25 18:29	APB	6010D

Analytical Method: 8270D SIM **Prep Batch(es):** **G207022** 05/05/25 09:17
Prep Method: 3546

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
2-Methylnaphthalene	<0.000224	mg/Kg	0.000224	0.000660	1	05/06/25 15:02	WMS	G207618
Acenaphthene	<0.000183	mg/Kg	0.000183	0.000660	1	05/06/25 15:02	WMS	G207618

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56044**
Sample ID : **HA-2R (0-2')**

Matrix: **Solids**
Sampled: **4/23/2025 12:50**

Analytical Method: 8270D SIM **Prep Batch(es):** **G207022** 05/05/25 09:17
Prep Method: 3546

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Acenaphthylene	<0.000134	mg/Kg	0.000134	0.000660	1	05/06/25 15:02	WMS	G207618
Anthracene	<0.000213	mg/Kg	0.000213	0.000660	1	05/06/25 15:02	WMS	G207618
Benzo(a)anthracene	**0.000718**	mg/Kg	0.000202	0.000660	1	05/06/25 15:02	WMS	G207618
Benzo(a)pyrene	**0.000836**	mg/Kg	0.000139	0.000660	1	05/06/25 15:02	WMS	G207618
Benzo(b)fluoranthene	**0.000949**	mg/Kg	0.000155	0.000660	1	05/06/25 15:02	WMS	G207618
Benzo(k)fluoranthene	<0.000154	mg/Kg	0.000154	0.000660	1	05/06/25 15:02	WMS	G207618
Chrysene	**0.000842**	mg/Kg	0.000230	0.000660	1	05/06/25 15:02	WMS	G207618
Dibenz(a,h)anthracene	<0.000096	mg/Kg	0.000096	0.000660	1	05/06/25 15:02	WMS	G207618
Fluoranthene	**0.00118**	mg/Kg	0.000136	0.000660	1	05/06/25 15:02	WMS	G207618
Fluorene	<0.000137	mg/Kg	0.000137	0.000660	1	05/06/25 15:02	WMS	G207618
Indeno(1,2,3-cd)pyrene	**0.000768**	mg/Kg	0.000319	0.000660	1	05/06/25 15:02	WMS	G207618
Naphthalene	<0.000097	mg/Kg	0.000097	0.000660	1	05/06/25 15:02	WMS	G207618
Phenanthrene	**0.000810**	mg/Kg	0.000183	0.000660	1	05/06/25 15:02	WMS	G207618
Pyrene	**0.00107**	mg/Kg	0.000185	0.000660	1	05/06/25 15:02	WMS	G207618
Surrogate: 2-Fluorobiphenyl	58.0			Limits: 33-122%	1	05/06/25 15:02	WMS	G207618
Surrogate: 4-Terphenyl-d14	55.9			Limits: 33-122%	1	05/06/25 15:02	WMS	G207618

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg		2.00	1	05/06/25 19:17	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg		2.00	1	05/06/25 19:17	SJS	G207147

Qualifiers/ Definitions

B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56044**
Sample ID : **HA-2R (0-2')**

Matrix: **Solids**
Sampled: **4/23/2025 12:50**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C12-C16	<2.00	mg/Kg		2.00	1	05/06/25 19:17	SJS	G207147
Aromatic >C12-C16	<2.00	mg/Kg		2.00	1	05/06/25 19:17	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg		2.00	1	05/06/25 19:17	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg		4.00	1	05/06/25 19:17	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg		2.00	1	05/06/25 19:17	SJS	G207147
Surrogate: Chlorooctadecane	63.5		Limits: 40-140%		1	05/06/25 19:17	SJS	MAEPH LA
Surrogate: OTP Surrogate	64.7		Limits: 40-140%		1	05/06/25 19:17	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.415	mg/Kg		0.415	100	05/06/25 00:55	MAO	G207079
Aliphatic >C8-C10	<1.08	mg/Kg		1.08	100	05/06/25 00:55	MAO	G207079
Aromatic >C8-C10	<0.415	mg/Kg		0.415	100	05/06/25 00:55		G207079
Surrogate: Toluene-d8	120		Limits: 50-150%		100	05/06/25 00:55	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56045**
Sample ID : **HA-2R (2-4')**

Matrix: **Solids**
Sampled: **4/23/2025 12:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**19.9**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**121**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.3**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**22.8**	meq/L	0.010	20	05/06/25 15:41	MJM	29B
Chloride	**751**	mg/Kg	20.0	5	05/07/25 18:07	MJM	9056A
Electrical Conductivity (Sat Paste)	**3.13**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**7.88**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**4.23**	meq/L	0.010	20	05/06/25 15:41	MJM	29B
Calcium (Sat Paste)	**0.774**	meq/L	0.025	5	05/06/25 12:36	APB	29B
Magnesium (Sat Paste)	**0.333**	meq/L	0.041	5	05/06/25 12:36	APB	29B
Sodium (Sat Paste)	**29.0**	meq/L	0.110	5	05/06/25 12:36	APB	29B
Total Barium	**355**	mg/Kg AR	1.00	2	05/06/25 18:33	APB	6010D
True Total Barium	**456**	mg/Kg	50.0	1	05/09/25 15:11	APB	29B
Total Chromium	**17.9**	mg/Kg AR	0.500	2	05/06/25 18:33	APB	6010D
Total Lead	**15.9**	mg/Kg AR	0.600	2	05/06/25 18:33	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/06/25 19:50	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/06/25 19:50	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/06/25 19:50	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56045**
Sample ID : **HA-2R (2-4')**

Matrix: **Solids**
Sampled: **4/23/2025 12:55**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/06/25 19:50	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/06/25 19:50	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/06/25 19:50	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/06/25 19:50	SJS	G207147
Surrogate: Chlorooctadecane	70.5		Limits: 40-140%	1	05/06/25 19:50	SJS	MAEPH LA
Surrogate: OTP Surrogate	69.3		Limits: 40-140%	1	05/06/25 19:50	SJS	MAEPH LA

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56048**
Sample ID : **HA-2R (8-10')**

Matrix: **Solids**
Sampled: **4/23/2025 13:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**27.1**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**113**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.2**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**85.6**	meq/L	0.014	50	05/06/25 15:54	MJM	29B
Chloride	**2410**	mg/Kg	20.0	5	05/07/25 18:56	MJM	9056A
Electrical Conductivity (Sat Paste)	**9.37**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**7.91**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**1.01**	meq/L	0.010	50	05/06/25 15:54	MJM	29B
Calcium (Sat Paste)	**2.49**	meq/L	0.025	5	05/06/25 12:40	APB	29B
Magnesium (Sat Paste)	**1.09**	meq/L	0.041	5	05/06/25 12:40	APB	29B
Sodium (Sat Paste)	**87.4**	meq/L	0.110	5	05/06/25 12:40	APB	29B
Total Barium	**1100**	mg/Kg AR	1.00	2	05/06/25 18:37	APB	6010D
True Total Barium	**2410**	mg/Kg	50.0	1	05/09/25 15:15	APB	29B
Total Chromium	**25.8**	mg/Kg AR	0.500	2	05/06/25 18:37	APB	6010D
Total Lead	**25.0**	mg/Kg AR	0.600	2	05/06/25 18:37	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<40.0	mg/Kg	40.0	20	05/07/25 11:24	SJS	G207147
Aromatic >C10-C12	**29.7**	mg/Kg	2.00	1	05/06/25 21:31	SJS	G207147
Aliphatic >C12-C16	**262**	mg/Kg	40.0	20	05/07/25 11:24	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000268

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56048**
Sample ID : **HA-2R (8-10')**

Matrix: **Solids**
Sampled: **4/23/2025 13:35**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	**64.6**	mg/Kg	4.00	2	05/07/25 09:59	SJS	G207147
Aromatic >C16-C21	**50.1**	mg/Kg	4.00	2	05/07/25 09:59	SJS	G207147
Aliphatic >C16-C35	**987**	mg/Kg	80.0	20	05/07/25 11:24	SJS	G207147
Aromatic >C21-C35	**11.8**	mg/Kg	2.00	1	05/06/25 21:31	SJS	G207147
Surrogate: Chlorooctadecane	118		Limits: 40-140%	1	05/06/25 21:31	SJS	MAEPH LA
Surrogate: OTP Surrogate	51.3		Limits: 40-140%	1	05/06/25 21:31	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	**33.1**	mg/Kg	0.506	100	05/06/25 02:25	MAO	G207079
Aliphatic >C8-C10	**53.1**	mg/Kg	1.31	100	05/06/25 02:25	MAO	G207079
Aromatic >C8-C10	**9.68**	mg/Kg	0.506	100	05/06/25 02:25		G207079
Surrogate: Toluene-d8	104		Limits: 50-150%	100	05/06/25 02:25	MAO	G207079

Qualifiers/ Definitions				
	B	Analyte detected in blank	DF	Dilution Factor
	J	Estimated value	MQL	Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56049**
Sample ID : **HA-2R (10-12')**

Matrix: **Solids**
Sampled: **4/23/2025 13:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**28.5**	%	0.050	1	04/29/25 13:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**366**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**3.4**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**28.5**	meq/L	0.010	20	05/06/25 16:45	MJM	29B
Chloride	**2230**	mg/Kg	20.0	5	05/07/25 19:09	MJM	9056A
Electrical Conductivity (Sat Paste)	**3.44**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.33**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.264**	meq/L	0.010	20	05/06/25 16:45	MJM	29B
Calcium (Sat Paste)	**0.380**	meq/L	0.025	5	05/06/25 12:44	APB	29B
Magnesium (Sat Paste)	**0.137**	meq/L	0.041	5	05/06/25 12:44	APB	29B
Sodium (Sat Paste)	**32.3**	meq/L	0.110	5	05/06/25 12:44	APB	29B
Total Barium	**312**	mg/Kg AR	1.00	2	05/06/25 18:42	APB	6010D
True Total Barium	**605**	mg/Kg	50.0	1	05/09/25 15:20	APB	29B
Total Chromium	**18.6**	mg/Kg AR	0.500	2	05/06/25 18:42	APB	6010D
Total Lead	**12.5**	mg/Kg AR	0.600	2	05/06/25 18:42	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/06/25 22:04	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/06/25 22:04	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/06/25 22:04	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56049**
Sample ID : **HA-2R (10-12')**

Matrix: **Solids**
Sampled: **4/23/2025 13:40**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/06/25 22:04	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/06/25 22:04	SJS	G207147
Aliphatic >C16-C35	**4.62**	mg/Kg	4.00	1	05/06/25 22:04	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/06/25 22:04	SJS	G207147
Surrogate: Chlorooctadecane	67.5		Limits: 40-140%	1	05/06/25 22:04	SJS	MAEPH LA
Surrogate: OTP Surrogate	108		Limits: 40-140%	1	05/06/25 22:04	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.495	mg/Kg	0.495	100	05/06/25 02:48	MAO	G207079
Aliphatic >C8-C10	**4.91**	mg/Kg	1.29	100	05/06/25 02:48	MAO	G207079
Aromatic >C8-C10	**0.539**	mg/Kg	0.495	100	05/06/25 02:48		G207079
Surrogate: Toluene-d8	111		Limits: 50-150%	100	05/06/25 02:48	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56050**
Sample ID : **HA-2R (14-16')**

Matrix: **Solids**
Sampled: **4/23/2025 14:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**23.8**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**178**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**1.8**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**62.3**	meq/L	0.014	50	05/06/25 16:58	MJM	29B
Chloride	**2340**	mg/Kg	20.0	5	05/07/25 19:21	MJM	9056A
Electrical Conductivity (Sat Paste)	**6.77**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**7.89**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.293**	meq/L	0.010	50	05/06/25 16:58	MJM	29B
Calcium (Sat Paste)	**1.48**	meq/L	0.025	5	05/06/25 12:48	APB	29B
Magnesium (Sat Paste)	**0.758**	meq/L	0.041	5	05/06/25 12:48	APB	29B
Sodium (Sat Paste)	**62.8**	meq/L	0.110	5	05/06/25 12:48	APB	29B
Total Barium	**137**	mg/Kg AR	1.00	2	05/06/25 18:46	APB	6010D
True Total Barium	**207**	mg/Kg	50.0	1	05/09/25 15:24	APB	29B
Total Chromium	**16.1**	mg/Kg AR	0.500	2	05/06/25 18:46	APB	6010D
Total Lead	**8.06**	mg/Kg AR	0.600	2	05/06/25 18:46	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/06/25 22:38	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/06/25 22:38	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/06/25 22:38	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56050**
Sample ID : **HA-2R (14-16')**

Matrix: **Solids**
Sampled: **4/23/2025 14:05**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/06/25 22:38	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/06/25 22:38	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/06/25 22:38	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/06/25 22:38	SJS	G207147
Surrogate: Chlorooctadecane	74.3		Limits: 40-140%	1	05/06/25 22:38	SJS	MAEPH LA
Surrogate: OTP Surrogate	71.3		Limits: 40-140%	1	05/06/25 22:38	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.439	mg/Kg	0.439	100	05/06/25 03:10	MAO	G207079
Aliphatic >C8-C10	<1.14	mg/Kg	1.14	100	05/06/25 03:10	MAO	G207079
Aromatic >C8-C10	<0.439	mg/Kg	0.439	100	05/06/25 03:10		G207079
Surrogate: Toluene-d8	108		Limits: 50-150%	100	05/06/25 03:10	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000273

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56052**
Sample ID : **HA-2R (22-24')**

Matrix: **Solids**
Sampled: **4/23/2025 14:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**25.0**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**146**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.9**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**18.1**	meq/L	0.010	10	05/06/25 17:11	MJM	29B
Chloride	**414**	mg/Kg	20.0	5	05/07/25 19:33	MJM	9056A
Electrical Conductivity (Sat Paste)	**2.31**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.17**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.113**	meq/L	0.010	10	05/06/25 17:11	MJM	29B
Calcium (Sat Paste)	**0.377**	meq/L	0.025	5	05/06/25 12:52	APB	29B
Magnesium (Sat Paste)	**0.150**	meq/L	0.041	5	05/06/25 12:52	APB	29B
Sodium (Sat Paste)	**21.6**	meq/L	0.110	5	05/06/25 12:52	APB	29B
Total Barium	**90.3**	mg/Kg AR	1.00	2	05/06/25 18:50	APB	6010D
True Total Barium	**164**	mg/Kg	50.0	1	05/09/25 15:28	APB	29B
Total Chromium	**18.0**	mg/Kg AR	0.500	2	05/06/25 18:50	APB	6010D
Total Lead	**8.20**	mg/Kg AR	0.600	2	05/06/25 18:50	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 00:50	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 00:50	SJS	G207147
Aliphatic >C12-C16	**2.78**	mg/Kg	2.00	1	05/07/25 00:50	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Jennings, LA

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56052**
Sample ID : **HA-2R (22-24')**

Matrix: **Solids**
Sampled: **4/23/2025 14:35**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 00:50	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 00:50	SJS	G207147
Aliphatic >C16-C35	**10.6**	mg/Kg	4.00	1	05/07/25 00:50	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 00:50	SJS	G207147
Surrogate: Chlorooctadecane	85.5		Limits: 40-140%	1	05/07/25 00:50	SJS	MAEPH LA
Surrogate: OTP Surrogate	107		Limits: 40-140%	1	05/07/25 00:50	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.463	mg/Kg	0.463	100	05/06/25 03:55	MAO	G207079
Aliphatic >C8-C10	<1.20	mg/Kg	1.20	100	05/06/25 03:55	MAO	G207079
Aromatic >C8-C10	<0.463	mg/Kg	0.463	100	05/06/25 03:55		G207079
Surrogate: Toluene-d8	92.6		Limits: 50-150%	100	05/06/25 03:55	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000275

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Project Castex
Information : 1009.A75
Jennings, LA

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56053**
Sample ID : **HA-2R (28-30')**

Matrix: **Solids**
Sampled: **4/23/2025 15:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**19.3**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**38.9**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**1.0**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**20.1**	meq/L	0.010	10	05/06/25 17:23	MJM	29B
Chloride	**204**	mg/Kg	20.0	5	05/07/25 19:46	MJM	9056A
Electrical Conductivity (Sat Paste)	**2.38**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**7.42**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.258**	meq/L	0.010	10	05/06/25 17:23	MJM	29B
Calcium (Sat Paste)	**4.43**	meq/L	0.025	5	05/06/25 12:57	APB	29B
Magnesium (Sat Paste)	**2.57**	meq/L	0.041	5	05/06/25 12:57	APB	29B
Sodium (Sat Paste)	**15.0**	meq/L	0.110	5	05/06/25 12:57	APB	29B
Total Barium	**54.0**	mg/Kg AR	1.00	2	05/06/25 19:07	APB	6010D
True Total Barium	**135**	mg/Kg	50.0	1	05/09/25 15:41	APB	29B
Total Chromium	**7.93**	mg/Kg AR	0.500	2	05/06/25 19:07	APB	6010D
Total Lead	**3.78**	mg/Kg AR	0.600	2	05/06/25 19:07	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000276

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56054**
Sample ID : **SB-1 (0-2')**

Matrix: **Solids**
Sampled: **4/24/2025 09:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**20.2**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**66.5**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**0.7**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.585**	meq/L	0.010	5	05/06/25 17:36	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 19:58	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.201**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**7.01**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.437**	meq/L	0.010	5	05/06/25 17:36	MJM	29B
Calcium (Sat Paste)	**0.945**	meq/L	0.025	5	05/06/25 13:01	APB	29B
Magnesium (Sat Paste)	**0.293**	meq/L	0.041	5	05/06/25 13:01	APB	29B
Sodium (Sat Paste)	**0.649**	meq/L	0.110	5	05/06/25 13:01	APB	29B
Total Barium	**194**	mg/Kg AR	1.00	2	05/06/25 19:11	APB	6010D
True Total Barium	**284**	mg/Kg	50.0	1	05/09/25 15:45	APB	29B
Total Chromium	**15.9**	mg/Kg AR	0.500	2	05/06/25 19:11	APB	6010D
Total Lead	**13.8**	mg/Kg AR	0.600	2	05/06/25 19:11	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 01:55	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 01:55	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 01:55	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000277

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56054**
Sample ID : **SB-1 (0-2')**

Matrix: **Solids**
Sampled: **4/24/2025 09:10**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 01:55	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 01:55	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/07/25 01:55	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 01:55	SJS	G207147
Surrogate: Chlorooctadecane	72.3		Limits: 40-140%	1	05/07/25 01:55	SJS	MAEPH LA
Surrogate: OTP Surrogate	69.3		Limits: 40-140%	1	05/07/25 01:55	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.448	mg/Kg	0.448	100	05/06/25 04:18	MAO	G207079
Aliphatic >C8-C10	<1.16	mg/Kg	1.16	100	05/06/25 04:18	MAO	G207079
Aromatic >C8-C10	<0.448	mg/Kg	0.448	100	05/06/25 04:18		G207079
Surrogate: Toluene-d8	111		Limits: 50-150%	100	05/06/25 04:18	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000278

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56055**
Sample ID : **SB-1 (6-8')**

Matrix: **Solids**
Sampled: **4/24/2025 09:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**25.7**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**110**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.3**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.210**	meq/L	0.010	5	05/06/25 17:49	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 20:10	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.280**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.11**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.335**	meq/L	0.010	5	05/06/25 17:49	MJM	29B
Calcium (Sat Paste)	**1.09**	meq/L	0.025	5	05/06/25 13:05	APB	29B
Magnesium (Sat Paste)	**0.289**	meq/L	0.041	5	05/06/25 13:05	APB	29B
Sodium (Sat Paste)	**1.60**	meq/L	0.110	5	05/06/25 13:05	APB	29B
Total Barium	**254**	mg/Kg AR	1.00	2	05/06/25 19:16	APB	6010D
True Total Barium	**339**	mg/Kg	50.0	1	05/09/25 15:49	APB	29B
Total Chromium	**22.0**	mg/Kg AR	0.500	2	05/06/25 19:16	APB	6010D
Total Lead	**9.77**	mg/Kg AR	0.600	2	05/06/25 19:16	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56056**
Sample ID : **SB-1 (8-10')**

Matrix: **Solids**
Sampled: **4/24/2025 09:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**22.8**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**65.8**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.3**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.941**	meq/L	0.010	5	05/06/25 18:02	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 20:23	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.382**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**7.99**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.209**	meq/L	0.010	5	05/06/25 18:02	MJM	29B
Calcium (Sat Paste)	**1.85**	meq/L	0.025	5	05/06/25 13:18	APB	29B
Magnesium (Sat Paste)	**0.446**	meq/L	0.041	5	05/06/25 13:18	APB	29B
Sodium (Sat Paste)	**1.57**	meq/L	0.110	5	05/06/25 13:18	APB	29B
Total Barium	**152**	mg/Kg AR	1.00	2	05/06/25 19:20	APB	6010D
True Total Barium	**247**	mg/Kg	50.0	1	05/09/25 15:53	APB	29B
Total Chromium	**16.1**	mg/Kg AR	0.500	2	05/06/25 19:20	APB	6010D
Total Lead	**7.59**	mg/Kg AR	0.600	2	05/06/25 19:20	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 02:29	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 02:29	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 02:29	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56056**
Sample ID : **SB-1 (8-10')**

Matrix: **Solids**
Sampled: **4/24/2025 09:40**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 02:29	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 02:29	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/07/25 02:29	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 02:29	SJS	G207147
Surrogate: Chlorooctadecane	64.5		Limits: 40-140%	1	05/07/25 02:29	SJS	MAEPH LA
Surrogate: OTP Surrogate	70.5		Limits: 40-140%	1	05/07/25 02:29	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.450	mg/Kg	0.450	100	05/06/25 04:40	MAO	G207079
Aliphatic >C8-C10	<1.17	mg/Kg	1.17	100	05/06/25 04:40	MAO	G207079
Aromatic >C8-C10	<0.450	mg/Kg	0.450	100	05/06/25 04:40		G207079
Surrogate: Toluene-d8	122		Limits: 50-150%	100	05/06/25 04:40	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56057**
Sample ID : **SB-1 (13-15')**

Matrix: **Solids**
Sampled: **4/24/2025 09:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**26.0**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**188**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.2**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.245**	meq/L	0.010	5	05/06/25 18:15	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 20:35	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.249**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**7.91**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.132**	meq/L	0.010	5	05/06/25 18:15	MJM	29B
Calcium (Sat Paste)	**1.08**	meq/L	0.025	5	05/06/25 13:22	APB	29B
Magnesium (Sat Paste)	**0.414**	meq/L	0.041	5	05/06/25 13:22	APB	29B
Sodium (Sat Paste)	**1.06**	meq/L	0.110	5	05/06/25 13:22	APB	29B
Total Barium	**180**	mg/Kg AR	1.00	2	05/06/25 19:24	APB	6010D
True Total Barium	**367**	mg/Kg	50.0	1	05/09/25 15:57	APB	29B
Total Chromium	**23.3**	mg/Kg AR	0.500	2	05/06/25 19:24	APB	6010D
Total Lead	**12.1**	mg/Kg AR	0.600	2	05/06/25 19:24	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56058**
Sample ID : **SB-1 (15-16')**

Matrix: **Solids**
Sampled: **4/24/2025 09:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**29.3**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**178**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.2**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.266**	meq/L	0.010	5	05/06/25 18:28	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/07/25 20:47	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.267**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.06**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.158**	meq/L	0.010	5	05/06/25 18:28	MJM	29B
Calcium (Sat Paste)	**1.18**	meq/L	0.025	5	05/06/25 13:27	APB	29B
Magnesium (Sat Paste)	**0.464**	meq/L	0.041	5	05/06/25 13:27	APB	29B
Sodium (Sat Paste)	**1.12**	meq/L	0.110	5	05/06/25 13:27	APB	29B
Total Barium	**161**	mg/Kg AR	1.00	2	05/06/25 19:28	APB	6010D
True Total Barium	**339**	mg/Kg	50.0	1	05/09/25 16:01	APB	29B
Total Chromium	**25.3**	mg/Kg AR	0.500	2	05/06/25 19:28	APB	6010D
Total Lead	**11.9**	mg/Kg AR	0.600	2	05/06/25 19:28	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000283

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56059**
Sample ID : **SB-1 (20-22')**

Matrix: **Solids**
Sampled: **4/24/2025 10:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.5**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**118**	%		1	05/05/25 08:39	BXH	29B
Alkalinity (Sat Paste)	**2.6**	meq/L	0.3	1	05/07/25 15:10	APB	29B
Chloride (Sat Paste)	**0.317**	meq/L	0.010	5	05/06/25 18:40	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/09/25 12:15	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.287**	mmhos/cm		1	05/05/25 08:39	BXH	29B
pH (Sat Paste)	**8.08**	s.u.		1	05/05/25 08:39	BXH	29B
Sulfate (Sat Paste)	**0.171**	meq/L	0.010	5	05/06/25 18:40	MJM	29B
Calcium (Sat Paste)	**0.959**	meq/L	0.025	5	05/06/25 13:31	APB	29B
Magnesium (Sat Paste)	**0.446**	meq/L	0.041	5	05/06/25 13:31	APB	29B
Sodium (Sat Paste)	**1.58**	meq/L	0.110	5	05/06/25 13:31	APB	29B
Total Barium	**152**	mg/Kg AR	1.00	2	05/06/25 19:32	APB	6010D
True Total Barium	**300**	mg/Kg	50.0	1	05/09/25 16:06	APB	29B
Total Chromium	**20.9**	mg/Kg AR	0.500	2	05/06/25 19:32	APB	6010D
Total Lead	**10.4**	mg/Kg AR	0.600	2	05/06/25 19:32	APB	6010D

Qualifiers/ Definitions

B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000284

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Jennings, LA

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56060**
Sample ID : **SB-1 (22-24')**

Matrix: **Solids**
Sampled: **4/24/2025 10:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.5**	%	0.050	1	04/29/25 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**51.1**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**1.6**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**0.506**	meq/L	0.010	5	05/06/25 19:32	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/09/25 12:27	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.243**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.59**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.217**	meq/L	0.010	5	05/06/25 19:32	MJM	29B
Calcium (Sat Paste)	**0.706**	meq/L	0.025	5	05/06/25 13:36	APB	29B
Magnesium (Sat Paste)	**0.351**	meq/L	0.041	5	05/06/25 13:36	APB	29B
Sodium (Sat Paste)	**1.37**	meq/L	0.110	5	05/06/25 13:36	APB	29B
Total Barium	**91.9**	mg/Kg AR	1.00	2	05/06/25 19:37	APB	6010D
True Total Barium	**199**	mg/Kg	50.0	1	05/09/25 16:10	APB	29B
Total Chromium	**11.9**	mg/Kg AR	0.500	2	05/06/25 19:37	APB	6010D
Total Lead	**5.63**	mg/Kg AR	0.600	2	05/06/25 19:37	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56061**
Sample ID : **SB-4 (0-2')**

Matrix: **Solids**
Sampled: **4/24/2025 11:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**14.6**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**61.1**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**2.6**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**0.157**	meq/L	0.010	5	05/06/25 19:45	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/09/25 12:40	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.304**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.90**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.434**	meq/L	0.010	5	05/06/25 19:45	MJM	29B
Calcium (Sat Paste)	**2.11**	meq/L	0.025	5	05/06/25 13:40	APB	29B
Magnesium (Sat Paste)	**0.647**	meq/L	0.041	5	05/06/25 13:40	APB	29B
Sodium (Sat Paste)	**0.407**	meq/L	0.110	5	05/06/25 13:40	APB	29B
Total Barium	**260**	mg/Kg AR	1.00	2	05/06/25 19:41	APB	6010D
True Total Barium	**244**	mg/Kg	50.0	1	05/09/25 16:14	APB	29B
Total Chromium	**17.4**	mg/Kg AR	0.500	2	05/06/25 19:41	APB	6010D
Total Lead	**24.4**	mg/Kg AR	0.600	2	05/06/25 19:41	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 03:34	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 03:34	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 03:34	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56061**
Sample ID : **SB-4 (0-2')**

Matrix: **Solids**
Sampled: **4/24/2025 11:05**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 03:34	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 03:34	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/07/25 03:34	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 03:34	SJS	G207147
Surrogate: Chlorooctadecane	77.7		Limits: 40-140%	1	05/07/25 03:34	SJS	MAEPH LA
Surrogate: OTP Surrogate	72.3		Limits: 40-140%	1	05/07/25 03:34	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.432	mg/Kg	0.432	100	05/06/25 05:25	MAO	G207079
Aliphatic >C8-C10	<1.12	mg/Kg	1.12	100	05/06/25 05:25	MAO	G207079
Aromatic >C8-C10	<0.432	mg/Kg	0.432	100	05/06/25 05:25		G207079
Surrogate: Toluene-d8	102		Limits: 50-150%	100	05/06/25 05:25	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56062**
Sample ID : **SB-4 (2-4')**

Matrix: **Solids**
Sampled: **4/24/2025 11:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.5**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**67.9**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**0.8**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**0.152**	meq/L	0.010	5	05/06/25 19:57	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/09/25 12:52	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.132**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.53**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.211**	meq/L	0.010	5	05/06/25 19:57	MJM	29B
Calcium (Sat Paste)	**0.635**	meq/L	0.025	5	05/06/25 13:44	APB	29B
Magnesium (Sat Paste)	**0.263**	meq/L	0.041	5	05/06/25 13:44	APB	29B
Sodium (Sat Paste)	**0.434**	meq/L	0.110	5	05/06/25 13:44	APB	29B
Total Barium	**193**	mg/Kg AR	1.00	2	05/06/25 20:03	APB	6010D
True Total Barium	**263**	mg/Kg	50.0	1	05/09/25 16:18	APB	29B
Total Chromium	**18.6**	mg/Kg AR	0.500	2	05/06/25 20:03	APB	6010D
Total Lead	**10.9**	mg/Kg AR	0.600	2	05/06/25 20:03	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 04:07	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 04:07	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 04:07	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000288

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56062**
Sample ID : **SB-4 (2-4')**

Matrix: **Solids**
Sampled: **4/24/2025 11:10**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 04:07	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 04:07	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/07/25 04:07	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 04:07	SJS	G207147
Surrogate: Chlorooctadecane	78.9		Limits: 40-140%	1	05/07/25 04:07	SJS	MAEPH LA
Surrogate: OTP Surrogate	47.3		Limits: 40-140%	1	05/07/25 04:07	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.444	mg/Kg	0.444	100	05/06/25 05:48	MAO	G207079
Aliphatic >C8-C10	<1.15	mg/Kg	1.15	100	05/06/25 05:48	MAO	G207079
Aromatic >C8-C10	<0.444	mg/Kg	0.444	100	05/06/25 05:48		G207079
Surrogate: Toluene-d8	107		Limits: 50-150%	100	05/06/25 05:48	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Jennings, LA

Report Date : 05/27/2025
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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56064**
Sample ID : **SB-4 (8-10')**

Matrix: **Solids**
Sampled: **4/24/2025 11:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**16.2**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**38.1**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**0.6**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**0.438**	meq/L	0.010	5	05/06/25 20:10	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/09/25 13:05	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.182**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.56**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.461**	meq/L	0.010	5	05/06/25 20:10	MJM	29B
Calcium (Sat Paste)	**0.294**	meq/L	0.025	5	05/06/25 13:48	APB	29B
Magnesium (Sat Paste)	**0.140**	meq/L	0.041	5	05/06/25 13:48	APB	29B
Sodium (Sat Paste)	**1.30**	meq/L	0.110	5	05/06/25 13:48	APB	29B
Total Barium	**90.1**	mg/Kg AR	1.00	2	05/06/25 20:24	APB	6010D
True Total Barium	**155**	mg/Kg	50.0	1	05/09/25 16:31	APB	29B
Total Chromium	**10.8**	mg/Kg AR	0.500	2	05/06/25 20:24	APB	6010D
Total Lead	**6.51**	mg/Kg AR	0.600	2	05/06/25 20:24	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 04:39	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 04:39	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 04:39	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56064**
Sample ID : **SB-4 (8-10')**

Matrix: **Solids**
Sampled: **4/24/2025 11:30**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 04:39	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 04:39	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/07/25 04:39	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 04:39	SJS	G207147
Surrogate: Chlorooctadecane	86.2		Limits: 40-140%	1	05/07/25 04:39	SJS	MAEPH LA
Surrogate: OTP Surrogate	55.7		Limits: 40-140%	1	05/07/25 04:39	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.438	mg/Kg	0.438	100	05/06/25 06:10	MAO	G207079
Aliphatic >C8-C10	<1.14	mg/Kg	1.14	100	05/06/25 06:10	MAO	G207079
Aromatic >C8-C10	<0.438	mg/Kg	0.438	100	05/06/25 06:10		G207079
Surrogate: Toluene-d8	102		Limits: 50-150%	100	05/06/25 06:10	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000291

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Jennings, LA

Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56064**
Sample ID : **SB-4 (8-10')**

Matrix: **Solids**
Sampled: **4/24/2025 11:30**

Analytical Method: 8270D SIM
Prep Method: 3546

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
2-Fluorobiphenyl	**Hold**			1			Hold

Qualifiers/ Definitions	B	Analyte detected in blank	DF	Dilution Factor
	J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000292

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56065**
Sample ID : **SB-4 (12-14')**

Matrix: **Solids**
Sampled: **4/24/2025 12:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**29.8**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**188**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**2.7**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**0.286**	meq/L	0.010	5	05/06/25 20:36	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/09/25 13:42	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.308**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**8.07**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.204**	meq/L	0.010	5	05/06/25 20:36	MJM	29B
Calcium (Sat Paste)	**0.875**	meq/L	0.025	5	05/06/25 13:57	APB	29B
Magnesium (Sat Paste)	**0.360**	meq/L	0.041	5	05/06/25 13:57	APB	29B
Sodium (Sat Paste)	**2.07**	meq/L	0.110	5	05/06/25 13:57	APB	29B
Total Barium	**149**	mg/Kg AR	1.00	2	05/06/25 20:28	APB	6010D
True Total Barium	**318**	mg/Kg	50.0	1	05/09/25 16:35	APB	29B
Total Chromium	**24.8**	mg/Kg AR	0.500	2	05/06/25 20:28	APB	6010D
Total Lead	**12.1**	mg/Kg AR	0.600	2	05/06/25 20:28	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000293

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56066**
Sample ID : **SB-4 (18-20')**

Matrix: **Solids**
Sampled: **4/24/2025 12:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**30.5**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**142**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**2.2**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**0.416**	meq/L	0.010	5	05/06/25 20:49	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/09/25 13:54	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.268**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**8.11**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.179**	meq/L	0.010	5	05/06/25 20:49	MJM	29B
Calcium (Sat Paste)	**0.668**	meq/L	0.025	5	05/06/25 14:10	APB	29B
Magnesium (Sat Paste)	**0.290**	meq/L	0.041	5	05/06/25 14:10	APB	29B
Sodium (Sat Paste)	**1.86**	meq/L	0.110	5	05/06/25 14:10	APB	29B
Total Barium	**187**	mg/Kg AR	1.00	2	05/06/25 20:32	APB	6010D
True Total Barium	**342**	mg/Kg	50.0	1	05/09/25 16:39	APB	29B
Total Chromium	**17.6**	mg/Kg AR	0.500	2	05/06/25 20:32	APB	6010D
Total Lead	**9.34**	mg/Kg AR	0.600	2	05/06/25 20:32	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000294

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56067**
Sample ID : **SB-4 (22-24')**

Matrix: **Solids**
Sampled: **4/24/2025 12:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**23.3**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**92.5**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**2.0**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**0.670**	meq/L	0.010	5	05/06/25 21:02	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/09/25 14:06	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.301**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.97**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.256**	meq/L	0.010	5	05/06/25 21:02	MJM	29B
Calcium (Sat Paste)	**0.762**	meq/L	0.025	5	05/06/25 14:14	APB	29B
Magnesium (Sat Paste)	**0.342**	meq/L	0.041	5	05/06/25 14:14	APB	29B
Sodium (Sat Paste)	**1.95**	meq/L	0.110	5	05/06/25 14:14	APB	29B
Total Barium	**113**	mg/Kg AR	1.00	2	05/06/25 20:36	APB	6010D
True Total Barium	**190**	mg/Kg	50.0	1	05/09/25 16:43	APB	29B
Total Chromium	**19.2**	mg/Kg AR	0.500	2	05/06/25 20:36	APB	6010D
Total Lead	**8.99**	mg/Kg AR	0.600	2	05/06/25 20:36	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000295

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56068**
Sample ID : **SB-2 (0-2')**

Matrix: **Solids**
Sampled: **4/24/2025 14:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**16.6**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**62.5**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**6.6**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**1.28**	meq/L	0.010	5	05/06/25 21:14	MJM	29B
Chloride	<20.0	mg/Kg	20.0	5	05/12/25 16:24	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.770**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**8.15**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.420**	meq/L	0.010	5	05/06/25 21:14	MJM	29B
Calcium (Sat Paste)	**2.82**	meq/L	0.025	5	05/06/25 14:18	APB	29B
Magnesium (Sat Paste)	**1.48**	meq/L	0.041	5	05/06/25 14:18	APB	29B
Sodium (Sat Paste)	**4.36**	meq/L	0.110	5	05/06/25 14:18	APB	29B
Total Barium	**156**	mg/Kg AR	1.00	2	05/06/25 20:40	APB	6010D
True Total Barium	**192**	mg/Kg	50.0	1	05/09/25 16:48	APB	29B
Total Chromium	**18.4**	mg/Kg AR	0.500	2	05/06/25 20:40	APB	6010D
Total Lead	**15.6**	mg/Kg AR	0.600	2	05/06/25 20:40	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 05:12	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 05:12	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 05:12	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56068**
Sample ID : **SB-2 (0-2')**

Matrix: **Solids**
Sampled: **4/24/2025 14:40**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 05:12	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 05:12	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/07/25 05:12	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 05:12	SJS	G207147
Surrogate: Chlorooctadecane	68.1		Limits: 40-140%	1	05/07/25 05:12	SJS	MAEPH LA
Surrogate: OTP Surrogate	55.2		Limits: 40-140%	1	05/07/25 05:12	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.452	mg/Kg	0.452	100	05/06/25 06:33	MAO	G207079
Aliphatic >C8-C10	<1.18	mg/Kg	1.18	100	05/06/25 06:33	MAO	G207079
Aromatic >C8-C10	<0.452	mg/Kg	0.452	100	05/06/25 06:33		G207079
Surrogate: Toluene-d8	108		Limits: 50-150%	100	05/06/25 06:33	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Information : 1009.A75
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Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56069**
Sample ID : **SB-2 (2-4')**

Matrix: **Solids**
Sampled: **4/24/2025 14:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**24.4**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**117**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**4.2**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**4.69**	meq/L	0.010	5	05/06/25 21:27	MJM	29B
Chloride	**96.8**	mg/Kg	20.0	5	05/12/25 16:37	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.953**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**8.27**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.330**	meq/L	0.010	5	05/06/25 21:27	MJM	29B
Calcium (Sat Paste)	**0.824**	meq/L	0.025	5	05/06/25 14:22	APB	29B
Magnesium (Sat Paste)	**0.594**	meq/L	0.041	5	05/06/25 14:22	APB	29B
Sodium (Sat Paste)	**8.16**	meq/L	0.110	5	05/06/25 14:22	APB	29B
Total Barium	**221**	mg/Kg AR	1.00	2	05/06/25 20:57	APB	6010D
True Total Barium	**293**	mg/Kg	50.0	1	05/09/25 17:00	APB	29B
Total Chromium	**20.5**	mg/Kg AR	0.500	2	05/06/25 20:57	APB	6010D
Total Lead	**12.3**	mg/Kg AR	0.600	2	05/06/25 20:57	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 05:45	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 05:45	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 05:45	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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Report Date : 05/27/2025
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Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56069**
Sample ID : **SB-2 (2-4')**

Matrix: **Solids**
Sampled: **4/24/2025 14:45**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 05:45	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 05:45	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/07/25 05:45	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 05:45	SJS	G207147
Surrogate: Chlorooctadecane	108		Limits: 40-140%	1	05/07/25 05:45	SJS	MAEPH LA
Surrogate: OTP Surrogate	65.7		Limits: 40-140%	1	05/07/25 05:45	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207063** 05/05/25 22:10
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.475	mg/Kg	0.475	100	05/06/25 06:55	MAO	G207079
Aliphatic >C8-C10	<1.23	mg/Kg	1.23	100	05/06/25 06:55	MAO	G207079
Aromatic >C8-C10	<0.475	mg/Kg	0.475	100	05/06/25 06:55		G207079
Surrogate: Toluene-d8	97.2		Limits: 50-150%	100	05/06/25 06:55	MAO	G207079

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Jennings, LA

Report Date : 05/27/2025
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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56070**
Sample ID : **SB-2 (6-8')**

Matrix: **Solids**
Sampled: **4/24/2025 15:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**18.7**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**101**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**1.5**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**12.3**	meq/L	0.010	5	05/06/25 22:19	MJM	29B
Chloride	**264**	mg/Kg	20.0	5	05/12/25 16:49	MJM	9056A
Electrical Conductivity (Sat Paste)	**1.58**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.84**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.198**	meq/L	0.010	5	05/06/25 22:19	MJM	29B
Calcium (Sat Paste)	**0.860**	meq/L	0.025	5	05/06/25 14:26	APB	29B
Magnesium (Sat Paste)	**0.646**	meq/L	0.041	5	05/06/25 14:26	APB	29B
Sodium (Sat Paste)	**13.3**	meq/L	0.110	5	05/06/25 14:26	APB	29B
Total Barium	**116**	mg/Kg AR	1.00	2	05/06/25 21:02	APB	6010D
True Total Barium	**148**	mg/Kg	50.0	1	05/09/25 17:04	APB	29B
Total Chromium	**15.2**	mg/Kg AR	0.500	2	05/06/25 21:02	APB	6010D
Total Lead	**6.41**	mg/Kg AR	0.600	2	05/06/25 21:02	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Jennings, LA

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56071**
Sample ID : **SB-2 (8-10')**

Matrix: **Solids**
Sampled: **4/24/2025 15:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**23.4**	%	0.050	1	04/29/25 16:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	**70.0**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**0.7**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**62.3**	meq/L	0.014	50	05/06/25 22:32	MJM	29B
Chloride	**1300**	mg/Kg	20.0	5	05/12/25 17:01	MJM	9056A
Electrical Conductivity (Sat Paste)	**6.42**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.36**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.153**	meq/L	0.010	50	05/06/25 22:32	MJM	29B
Calcium (Sat Paste)	**23.5**	meq/L	0.025	5	05/06/25 14:30	APB	29B
Magnesium (Sat Paste)	**13.0**	meq/L	0.041	5	05/06/25 14:30	APB	29B
Sodium (Sat Paste)	**24.8**	meq/L	0.110	5	05/06/25 14:30	APB	29B
Total Barium	**345**	mg/Kg AR	1.00	2	05/06/25 21:06	APB	6010D
True Total Barium	**403**	mg/Kg	50.0	1	05/09/25 17:08	APB	29B
Total Chromium	**17.0**	mg/Kg AR	0.500	2	05/06/25 21:06	APB	6010D
Total Lead	**8.69**	mg/Kg AR	0.600	2	05/06/25 21:06	APB	6010D

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 06:18	SJS	G207147
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	05/07/25 06:18	SJS	G207147
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 06:18	SJS	G207147

Qualifiers/ Definitions
B Analyte detected in blank
J Estimated value
DF Dilution Factor
MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56071**
Sample ID : **SB-2 (8-10')**

Matrix: **Solids**
Sampled: **4/24/2025 15:05**

Analytical Method: MAEPH LA **Prep Batch(es):** **G207021** 05/05/25 09:17
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	05/07/25 06:18	SJS	G207147
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	05/07/25 06:18	SJS	G207147
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	05/07/25 06:18	SJS	G207147
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	05/07/25 06:18	SJS	G207147
Surrogate: Chlorooctadecane	58.9		Limits: 40-140%	1	05/07/25 06:18	SJS	MAEPH LA
Surrogate: OTP Surrogate	71.9		Limits: 40-140%	1	05/07/25 06:18	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G207065** 05/06/25 00:50
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.440	mg/Kg	0.440	100	05/06/25 03:14	MAO	G207082
Aliphatic >C8-C10	<1.14	mg/Kg	1.14	100	05/06/25 03:14	MAO	G207082
Aromatic >C8-C10	<0.440	mg/Kg	0.440	100	05/06/25 03:14		G207082
Surrogate: Toluene-d8	97.3		Limits: 50-150%	100	05/06/25 03:14	MAO	G207082

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000302

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Information : 1009.A75
Jennings, LA

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56072**
Sample ID : **SB-2 (12-14')**

Matrix: **Solids**
Sampled: **4/24/2025 15:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**24.3**	%	0.050	1	04/29/25 16:28	JMB	SW-DRYWT
% Saturation (Sat Paste)	**73.8**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**1.0**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**8.59**	meq/L	0.010	5	05/06/25 22:44	MJM	29B
Chloride	**166**	mg/Kg	20.0	5	05/12/25 17:14	MJM	9056A
Electrical Conductivity (Sat Paste)	**1.07**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.66**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.038**	meq/L	0.010	5	05/06/25 22:44	MJM	29B
Calcium (Sat Paste)	**3.49**	meq/L	0.025	5	05/06/25 14:34	APB	29B
Magnesium (Sat Paste)	**1.70**	meq/L	0.041	5	05/06/25 14:34	APB	29B
Sodium (Sat Paste)	**4.28**	meq/L	0.110	5	05/06/25 14:34	APB	29B
Total Barium	**110**	mg/Kg AR	1.00	2	05/06/25 21:10	APB	6010D
True Total Barium	**220**	mg/Kg	50.0	1	05/09/25 17:21	APB	29B
Total Chromium	**15.9**	mg/Kg AR	0.500	2	05/06/25 21:10	APB	6010D
Total Lead	**6.83**	mg/Kg AR	0.600	2	05/06/25 21:10	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56073**
Sample ID : **SB-2 (16-18')**

Matrix: **Solids**
Sampled: **4/24/2025 15:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**22.7**	%	0.050	1	04/29/25 16:28	JMB	SW-DRYWT
% Saturation (Sat Paste)	**125**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**1.7**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**1.50**	meq/L	0.010	5	05/06/25 22:57	MJM	29B
Chloride	**41.0**	mg/Kg	20.0	5	05/12/25 17:26	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.342**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.95**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.036**	meq/L	0.010	5	05/06/25 22:57	MJM	29B
Calcium (Sat Paste)	**0.824**	meq/L	0.025	5	05/06/25 14:39	APB	29B
Magnesium (Sat Paste)	**0.461**	meq/L	0.041	5	05/06/25 14:39	APB	29B
Sodium (Sat Paste)	**1.94**	meq/L	0.110	5	05/06/25 14:39	APB	29B
Total Barium	**144**	mg/Kg AR	1.00	2	05/06/25 21:14	APB	6010D
True Total Barium	**236**	mg/Kg	50.0	1	05/09/25 17:25	APB	29B
Total Chromium	**22.4**	mg/Kg AR	0.500	2	05/06/25 21:14	APB	6010D
Total Lead	**10.3**	mg/Kg AR	0.600	2	05/06/25 21:14	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000304

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09996
Hydro-Environmental Technology, Inc.
Mr. Stewart Stover, Jr.
620 Apollo Rd
Scott , LA 70583

Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56074**
Sample ID : **SB-2 (22-24')**

Matrix: **Solids**
Sampled: **4/24/2025 15:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**20.7**	%	0.050	1	04/29/25 16:28	JMB	SW-DRYWT
% Saturation (Sat Paste)	**44.2**	%		1	05/05/25 10:26	BXH	29B
Alkalinity (Sat Paste)	**1.1**	meq/L	0.3	1	05/08/25 09:24	APB	29B
Chloride (Sat Paste)	**2.90**	meq/L	0.010	5	05/06/25 23:10	MJM	29B
Chloride	**37.1**	mg/Kg	20.0	5	05/12/25 17:38	MJM	9056A
Electrical Conductivity (Sat Paste)	**0.469**	mmhos/cm		1	05/05/25 10:26	BXH	29B
pH (Sat Paste)	**7.59**	s.u.		1	05/05/25 10:26	BXH	29B
Sulfate (Sat Paste)	**0.070**	meq/L	0.010	5	05/06/25 23:10	MJM	29B
Calcium (Sat Paste)	**1.63**	meq/L	0.025	5	05/06/25 14:43	APB	29B
Magnesium (Sat Paste)	**0.696**	meq/L	0.041	5	05/06/25 14:43	APB	29B
Sodium (Sat Paste)	**1.86**	meq/L	0.110	5	05/06/25 14:43	APB	29B
Total Barium	**73.0**	mg/Kg AR	1.00	2	05/06/25 21:18	APB	6010D
True Total Barium	**134**	mg/Kg	50.0	1	05/09/25 17:30	APB	29B
Total Chromium	**11.3**	mg/Kg AR	0.500	2	05/06/25 21:18	APB	6010D
Total Lead	**4.64**	mg/Kg AR	0.600	2	05/06/25 21:18	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000305

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56075**
Sample ID : **Trip Blank 4/23/25**

Matrix: **Aqueous**
Sampled: **4/23/2025 09:30**

Analytical Method: MAVPH LA **Prep Batch(es):** **G207061** 05/05/25 08:40
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	05/05/25 11:24	MAO	G207077
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	05/05/25 11:24	MAO	G207077
Aromatic >C8-C10	<0.005	mg/L	0.005	1	05/05/25 11:24		G207077
Surrogate: Toluene-d8	85.2		Limits: 70-130%	1	05/05/25 11:24	MAO	G207077

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56076**
Sample ID : **Field Blank 4/23/25**

Matrix: **Aqueous**
Sampled: **4/23/2025 11:00**

Analytical Method: MAVPH LA **Prep Batch(es):** **G207061** 05/05/25 08:40
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	05/05/25 11:47	MAO	G207077
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	05/05/25 11:47	MAO	G207077
Aromatic >C8-C10	<0.005	mg/L	0.005	1	05/05/25 11:47		G207077
Surrogate: Toluene-d8	83.2		Limits: 70-130%	1	05/05/25 11:47	MAO	G207077

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000307

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56077**
Sample ID : **Trip Blank 4/24/25**

Matrix: **Aqueous**
Sampled: **4/24/2025 07:30**

Analytical Method: MAVPH LA **Prep Batch(es):** **G207061** 05/05/25 08:40
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	05/05/25 12:09	MAO	G207077
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	05/05/25 12:09	MAO	G207077
Aromatic >C8-C10	<0.005	mg/L	0.005	1	05/05/25 12:09		G207077
Surrogate: Toluene-d8	88.6		Limits: 70-130%	1	05/05/25 12:09	MAO	G207077

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **56078**
Sample ID : **Field Blank 4/24/25**

Matrix: **Aqueous**
Sampled: **4/24/2025 09:45**

Analytical Method: MAVPH LA **Prep Batch(es):** **G207061** 05/05/25 08:40
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	05/05/25 12:32	MAO	G207077
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	05/05/25 12:32	MAO	G207077
Aromatic >C8-C10	<0.005	mg/L	0.005	1	05/05/25 12:32		G207077
Surrogate: Toluene-d8	83.6		Limits: 70-130%	1	05/05/25 12:32	MAO	G207077

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **57159**
Sample ID : **HA-2R (8-10')**

Matrix: **SPLP**
Sampled: **4/23/2025 13:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	**Leachate**			1	05/13/25 16:00	HLF	1312
SPLP Chloride	**101**	mg/L	8.00	20	05/23/25 18:49	AJA	9056
SPLP Sodium	**148**	mg/L	0.500	1	05/19/25 16:44	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project Castex
Information : 1009.A75
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Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **57160**
Sample ID : **HA-2R (10-12')**

Matrix: **SPLP**
Sampled: **4/23/2025 13:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	**Leachate**			1	05/13/25 16:00	HLF	1312
SPLP Barium	**7.85**	mg/L	0.0100	1	05/19/25 16:48	APB	6010D

Qualifiers/ Definitions				
	B	Analyte detected in blank	DF	Dilution Factor
	J	Estimated value	MQL	Method Quantitation Limit

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Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **57161**
Sample ID : **HA-2R (14-16')**

Matrix: **SPLP**
Sampled: **4/23/2025 14:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	**Leachate**			1	05/13/25 16:00	HLF	1312
SPLP Chloride	**103**	mg/L	4.00	10	05/23/25 14:54	AJA	9056
SPLP Sodium	**128**	mg/L	0.500	1	05/19/25 16:53	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project Castex
Information : 1009.A75
Jennings, LA

Report Date : 05/27/2025
Received : 04/25/2025

Report Number : **25-115-0010**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **57179**
Sample ID : **HA-2R (0-2')**

Matrix: **SPLP**
Sampled: **4/23/2025 12:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	**Leachate**			1	05/13/25 16:00	HLF	1312
SPLP Barium	**5.58**	mg/L	0.0100	1	05/19/25 11:44	APB	6010D
SPLP Chromium	**0.339**	mg/L	0.0050	1	05/19/25 11:44	APB	6010D
SPLP Lead	**0.0936**	mg/L	0.0060	1	05/19/25 11:44	APB	6010D

Qualifiers/ Definitions

B	Analyte detected in blank	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

Waypoint Analytical
Report # 25-115-0010

Core Mineralogy, Inc.
Analytical Consulting Services
Semi Quantitative X-Ray Diffraction (XRD) &
Energy Dispersive X-Ray Spectrometry (EDX)

www.coremineral.com
100 Jared Drive
Broussard, LA 70518
Phone: (337) 984-0500
e-mail: mansourr@coremineral.com
Analyst: Mansour Rahmatian (M.S.)

Sample Submitted to CMI Labs on: 5/1/2025 @ 9:30 AM
Attention: Amy Jackson

CMI # 25050102 EDXXRD
Date Reported: 5/5/2025

Sample ID					Semi Quantitative Weight Percent Elemental Composition by EDX Normalized to 100%																		Mineral Phases Identified by XRD																	
Client Sample ID	Lab #	Sampling Date	Sampling Time	CMI Sample #	Carbon (C)	Oxygen (O)	Sodium (Na)	Magnesium (Mg)	Aluminum (Al)	Silicon (Si)	Phosphorus (P)	Sulfur (S)	Chlorine (Cl)	Potassium (K)	Calcium (Ca)	Chromium (Cr)	Manganese (Mn)	Iron (Fe)	Zinc (Zn)	Strontium (Sr)	Barium (Ba)	Titanium (Ti)	Total	Quartz (SiO_2)	K-Feldspars ($KAlSi_3O_8$)	Plagioclase ($NaAlSi_3O_8$)	Calcite ($CaCO_3$)	Fe Dolomite ($FeMgCa(CO3)_2$)	Pyrite (FeS_2)	Halite (NaCl)	Barium Sulfide (BaS)	Barite ($BaSO_4$)	Witherite ($BaCO_3$)	Barium Chloride ($BaCl_2$)	Baria (BaO)	Barium Peroxide (BaO_2)	Total Clay	Total
HA-2R (0-2')	56044	4/23/25	12:50	21676	0.97	48.37	0.52	0.68	8.20	32.50	ND	Tr	ND	1.90	1.18	ND	ND	4.80	ND	ND	0.17	0.70	100	49.9	0.6	3.0	0.6	ND	ND	ND	ND	Tr	ND	ND	ND	ND	45.9	100

ND = None Detected

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04/30/2025 17:08:20

Export Batch Report

Export Batch Id : 12045EXP

Created: 4/30/2025 17:07:57
Computer: WPALMS-108
User: Christina R. Varuso
Project Manager: Amy Jackson

To: Core Mineralogy, Inc.
100 Jared Drive
Broussard, LA 70518
337-984-0500

From: Waypoint Analytical Louisiana, Inc.
5041 Taravella Rd.
Marrero, LA 70072
504-371-8557

Report No	Due Date	Sample Date	Customer Sample No	Rush	Matrix	Lab No	Method No	Fee Code Description
25-115-0010	05/09/2025	04/23/2025 12:50	HA-2R (0-2') 21676		SOL	56044	X-RAY SXRD XRD EDX	X-Ray X-Ray Diffraction (XRD) & X-Ray Spectrometry (EDX)

Sampled By	Method of Shipment	Blank / Cooler Temp.	
Remarks			
Relinquished By (sign)	Date / Time 4-30-25 1700	Received By (sign)	Date / Time 5/1/25 @ 9:30 Am
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102353
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): A102603
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-A102353 Matrix: SOL

Associated Lab Samples: 56044, 56045, 56048, 56049, 56050, 56052, 56053, 56054, 56055, 56056, 56057, 56058, 56059, 56060, 56061, 56062, 56064, 56065, 56066, 56067

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 50.0	50.0	05/09/25 14:21

Laboratory Control Sample LCS-A102353

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	10000	100	80-120

Matrix Spike & Matrix Spike Duplicate A 56044-A102319-MS-A102353 A 56044-A102319-MSD-A102353

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	3250	9800	9520	13600	13000	106	102	75-125	4.5	20.0

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102354
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): A102603
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-A102354 Matrix: SOL
Associated Lab Samples: 56068, 56069, 56070, 56071, 56072, 56073, 56074

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 50.0	50.0	05/09/25 14:29

Laboratory Control Sample LCS-A102354

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	10200	102	80-120

Matrix Spike & Matrix Spike Duplicate A 56068-A102320-MS-A102354 A 56068-A102320-MSD-A102354

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	192	10000	9900	9880	9770	97.0	97.0	75-125	1.1	20.0

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102337
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102455,A102442,A102417,A102460
Analysis Method: 29B
Analysis Description: Alkalinity

Duplicate A 56041-A102319-DUP-A102337

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Alkalinity (Sat Paste)	meq/L	2.4	2.4	0.0	30.0	05/07/25 15:10

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102339
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102456,A102483,A102458,A102460
Analysis Method: 29B
Analysis Description: Alkalinity

Duplicate A 56064-A102320-DUP-A102339

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Alkalinity (Sat Paste)	meq/L	0.6	0.6	0.0	30.0	05/08/25 09:24

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102337
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102455,A102442,A102417,A102460
Analysis Method: 29B
Analysis Description: Anions by Ion Chromatography

Duplicate A 56041-A102319-DUP-A102337

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Chloride (Sat Paste)	meq/L	1.43	1.01	34.4*	30.0	05/06/25 15:02
Sulfate (Sat Paste)	meq/L	1.10	1.15	4.4	30.0	05/06/25 15:02

* QC Fail

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Quality Control Data

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Report No: **25-115-0010**

QC Prep: A102339
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102456,A102483,A102458,A102460
Analysis Method: 29B
Analysis Description: Anions by Ion Chromatography

Duplicate A 56064-A102320-DUP-A102339

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Chloride (Sat Paste)	meq/L	0.438	0.398	9.5	30.0	05/06/25 20:23
Sulfate (Sat Paste)	meq/L	0.461	0.508	9.7	30.0	05/06/25 20:23

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102337
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102455,A102442,A102417,A102460
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 56041-A102319-DUP-A102337

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	36.8	37.0	0.5	30.0	05/05/25 08:39
Electrical Conductivity (Sat Paste)	mmhos/cm	0.544	0.504	7.6	30.0	05/05/25 08:39
pH (Sat Paste)	s.u.	8.01	8.08	0.8	30.0	05/05/25 08:39

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102339
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102456,A102483,A102458,A102460
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 56064-A102320-DUP-A102339

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	38.1	38.4	0.7	30.0	05/05/25 10:26
Electrical Conductivity (Sat Paste)	mmhos/cm	0.182	0.190	4.3	30.0	05/05/25 10:26
pH (Sat Paste)	s.u.	7.56	7.52	0.5	30.0	05/05/25 10:26

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102337
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102455,A102442,A102417,A102460
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 56041-A102319-DUP-A102337

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	2.01	1.85	8.2	30.0	05/06/25 12:15
Magnesium (Sat Paste)	meq/L	0.745	0.717	3.8	30.0	05/06/25 12:15
Sodium (Sat Paste)	meq/L	2.59	2.35	9.7	30.0	05/06/25 12:15

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102339
QC Prep Batch Method: 29B
QC Analytical Batch(es): A102456,A102483,A102458,A102460
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 56064-A102320-DUP-A102339

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	0.294	0.338	13.9	30.0	05/06/25 13:53
Magnesium (Sat Paste)	meq/L	0.140	0.154	9.5	30.0	05/06/25 13:53
Sodium (Sat Paste)	meq/L	1.30	1.34	3.0	30.0	05/06/25 13:53

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Quality Control Data

Client ID: Hydro-Environmental Technology, Inc.
Project Description: Castex
Report No: 25-115-0010

QC Prep: A102351
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A102431
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-A102351 Matrix: SOL
Associated Lab Samples: 56044, 56045, 56048, 56049, 56050, 56052, 56053, 56054, 56055, 56056, 56057, 56058, 56059, 56060, 56061

Parameter	Units	Blank Result	MQL	Analyzed
Total Barium	mg/Kg AR	< 0.500	0.500	05/06/25 17:18
Total Chromium	mg/Kg AR	< 0.250	0.250	05/06/25 17:18
Total Lead	mg/Kg AR	< 0.300	0.300	05/06/25 17:18

Laboratory Control Sample & LCSD LCS-A102351 LCSD-A102351

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Total Barium	mg/Kg AR	50.0	52.3	52.6	105	105	80-120	0.5	20.0
Total Chromium	mg/Kg AR	50.0	54.7	54.5	109	109	80-120	0.3	20.0
Total Lead	mg/Kg AR	5.00	5.56	5.54	111	111	80-120	0.3	20.0

Matrix Spike & Matrix Spike Duplicate A 56265-MS-A102351 A 56265-MSD-A102351

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Total Barium	mg/Kg AR	24.5	49.2	47.8	117	147	188*	256*	75-125	22.7*	20.0
Total Chromium	mg/Kg AR	7.21	49.2	47.8	67.6	68.2	123	127*	75-125	0.8	20.0
Total Lead	mg/Kg AR	11.6	4.92	4.78	16.7	16.6	104	105	75-125	0.6	20.0

* QC Fail

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102352
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A102431
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-A102352 Matrix: SOL
Associated Lab Samples: 56062, 56064, 56065, 56066, 56067, 56068, 56069, 56070, 56071, 56072, 56073, 56074

Parameter	Units	Blank Result	MQL	Analyzed
Total Barium	mg/Kg AR	< 0.500	0.500	05/06/25 17:31
Total Chromium	mg/Kg AR	< 0.250	0.250	05/06/25 17:31
Total Lead	mg/Kg AR	< 0.300	0.300	05/06/25 17:31

Laboratory Control Sample & LCSD LCS-A102352 LCSD-A102352

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Total Barium	mg/Kg AR	50.0	52.2	52.2	104	104	80-120	0.0	20.0
Total Chromium	mg/Kg AR	50.0	53.8	55.0	108	110	80-120	2.2	20.0
Total Lead	mg/Kg AR	5.00	5.45	5.61	109	112	80-120	2.8	20.0

Matrix Spike & Matrix Spike Duplicate A 56062-A102320-MS-A102352 A 56062-A102320-MSD-A102352

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Total Barium	mg/Kg AR	193	50.0	49.1	231	238	76.0	92.0	75-125	2.9	20.0
Total Chromium	mg/Kg AR	18.6	50.0	49.1	58.9	59.2	81.0	83.0	75-125	0.5	20.0
Total Lead	mg/Kg AR	10.9	5.00	4.91	14.4	15.1	70.0*	86.0	75-125	4.7	20.0

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Quality Control Data

Client ID: Hydro-Environmental Technology, Inc.
Project Description: Castex
Report No: 25-115-0010

QC Prep: A102769
QC Prep Batch Method: SW-3010A
QC Analytical Batch(es): A102825
Analysis Method: 6010D
Analysis Description: Metals Analysis (SPLP)

Lab Reagent Blank LRB-A102769 Matrix: TCL
Associated Lab Samples: 57159, 57160, 57161, 57179

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Lead	mg/L	< 0.0060	0.0060	05/19/25 16:28
SPLP Sodium	mg/L	< 0.500	0.500	05/19/25 16:28
SPLP Barium	mg/L	< 0.0100	0.0100	05/19/25 16:28
SPLP Chromium	mg/L	< 0.0050	0.0050	05/19/25 16:28

Laboratory Control Sample & LCSD LCS-A102769 LCSD-A102769

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
SPLP Lead	mg/L	0.100	0.107	0.109	107	109	80-120	1.8	20.0
SPLP Sodium	mg/L	10.0	10.6	10.7	106	107	80-120	0.9	20.0
SPLP Barium	mg/L	1.00	1.05	1.06	105	106	80-120	0.9	20.0
SPLP Chromium	mg/L	1.00	1.12	1.12	112	112	80-120	0.0	20.0

Matrix Spike & Matrix Spike Duplicate A 57179-MS-A102769 A 57179-MSD-A102769

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
SPLP Lead	mg/L	0.0936	0.100	0.100	0.197	0.187	103	93.0	75-125	5.2	20.0
SPLP Sodium	mg/L	43.5	10.0	10.0	55.5	56.0	120	125	75-125	0.8	20.0
SPLP Barium	mg/L	5.58	1.00	1.00	6.79	6.60	121	102	75-125	2.8	20.0
SPLP Chromium	mg/L	0.339	1.00	1.00	1.43	1.44	109	110	75-125	0.6	20.0

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Quality Control Data

Client ID: Hydro-Environmental Technology, Inc.
Project Description: Castex
Report No: 25-115-0010

QC Prep: G207022
QC Prep Batch Method: 3546
QC Analytical Batch(es): G207618
Analysis Method: 8270D SIM
Analysis Description: Semivolatile Organic Compounds - GC/MS (SIM)

Lab Reagent Blank LRB-G207022 Matrix: SOL

Associated Lab Samples: 56044, 56045, 56046, 56047, 56048, 56049, 56050, 56051, 56052, 56053, 56054, 56056, 56060, 56061, 56062, 56064, 56068, 56069, 56071

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
2-Methylnaphthalene	mg/Kg	<0.000224	0.000224	0.000660	05/06/25 13:35		
Acenaphthene	mg/Kg	<0.000183	0.000183	0.000660	05/06/25 13:35		
Acenaphthylene	mg/Kg	<0.000134	0.000134	0.000660	05/06/25 13:35		
Anthracene	mg/Kg	<0.000213	0.000213	0.000660	05/06/25 13:35		
Benzo(a)anthracene	mg/Kg	<0.000202	0.000202	0.000660	05/06/25 13:35		
Benzo(a)pyrene	mg/Kg	<0.000139	0.000139	0.000660	05/06/25 13:35		
Benzo(b)fluoranthene	mg/Kg	<0.000155	0.000155	0.000660	05/06/25 13:35		
Benzo(k)fluoranthene	mg/Kg	<0.000154	0.000154	0.000660	05/06/25 13:35		
Chrysene	mg/Kg	<0.000230	0.000230	0.000660	05/06/25 13:35		
Dibenz(a,h)anthracene	mg/Kg	<0.000096	0.000096	0.000660	05/06/25 13:35		
Fluoranthene	mg/Kg	<0.000136	0.000136	0.000660	05/06/25 13:35		
Fluorene	mg/Kg	<0.000137	0.000137	0.000660	05/06/25 13:35		
Indeno(1,2,3-cd)pyrene	mg/Kg	<0.000319	0.000319	0.000660	05/06/25 13:35		
Naphthalene	mg/Kg	<0.000097	0.000097	0.000660	05/06/25 13:35		
Phenanthrene	mg/Kg	<0.000183	0.000183	0.000660	05/06/25 13:35		
Pyrene	mg/Kg	<0.000185	0.000185	0.000660	05/06/25 13:35		
2-Fluorobiphenyl (S)					05/06/25 13:35	75.0	33-122
4-Terphenyl-d14 (S)					05/06/25 13:35	69.0	33-122

Laboratory Control Sample & LCSD LCS-G207022 LCSD-G207022

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
2-Methylnaphthalene	mg/Kg	0.167	0.124	0.116	74.2	69.4	40-130	6.6	20
Acenaphthene	mg/Kg	0.167	0.118	0.111	70.6	66.4	40-130	6.1	20
Acenaphthylene	mg/Kg	0.167	0.122	0.115	73.0	68.8	40-130	5.9	20
Anthracene	mg/Kg	0.167	0.127	0.120	76.0	71.8	40-130	5.6	20

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: G207022
QC Prep Batch Method: 3546
QC Analytical Batch(es): G207618
Analysis Method: 8270D SIM
Analysis Description: Semivolatile Organic Compounds - GC/MS (SIM)

Laboratory Control Sample & LCSD LCS-G207022 LCSD-G207022

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Benzo(a)anthracene	mg/Kg	0.167	0.125	0.118	74.8	70.6	40-130	5.7	20
Benzo(a)pyrene	mg/Kg	0.167	0.121	0.115	72.4	68.8	40-130	5.0	20
Benzo(b)fluoranthene	mg/Kg	0.167	0.111	0.104	66.4	62.2	40-130	6.5	20
Benzo(k)fluoranthene	mg/Kg	0.167	0.111	0.104	66.4	62.2	40-130	6.5	20
Chrysene	mg/Kg	0.167	0.135	0.139	80.8	83.2	40-130	2.9	20
Dibenz(a,h)anthracene	mg/Kg	0.167	0.119	0.111	71.2	66.4	40-130	6.9	20
Fluoranthene	mg/Kg	0.167	0.126	0.118	75.4	70.6	40-130	6.5	20
Fluorene	mg/Kg	0.167	0.120	0.113	71.8	67.6	40-130	6.0	20
Indeno(1,2,3-cd)pyrene	mg/Kg	0.167	0.120	0.109	71.8	65.2	40-130	9.6	20
Naphthalene	mg/Kg	0.167	0.117	0.109	70.0	65.2	40-130	7.0	20
Phenanthrene	mg/Kg	0.167	0.122	0.116	73.0	69.4	40-130	5.0	20
Pyrene	mg/Kg	0.167	0.125	0.116	74.8	69.4	40-130	7.4	20
2-Fluorobiphenyl (S)					73.8	70.8	33-122		
4-Terphenyl-d14 (S)					67.8	65.1	33-122		

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102364
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): A102438
Analysis Method: 9056A
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A102364 Matrix: SOL

Associated Lab Samples: 56035, 56036, 56038, 56039, 56041, 56043, 56044, 56045, 56048, 56049, 56050, 56052, 56053, 56054, 56055, 56056, 56057, 56058, 56059, 56060

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	05/07/25 15:14

Laboratory Control Sample LCS-A102364

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	528	106	80-120

Matrix Spike & Matrix Spike Duplicate A 56035-MS-A102364 A 56035-MSD-A102364

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	37.4	497	499	540	538	101	100	80-120	0.3	15.0

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: A102365
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): A102439
Analysis Method: 9056A
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A102365 Matrix: SOL
Associated Lab Samples: 56061, 56062, 56064, 56065, 56066, 56067, 56068, 56069, 56070, 56071, 56072, 56073, 56074

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	05/09/25 11:50

Laboratory Control Sample LCS-A102365

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	535	107	80-120

Matrix Spike & Matrix Spike Duplicate A 56064-MS-A102365 A 56064-MSD-A102365

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	< 20.0	488	487	512	512	105	105	80-120	0.0	15.0

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: G207021
QC Prep Batch Method: MAEPH LA (Soil)
QC Analytical Batch(es): G207147
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Lab Reagent Blank LRB-G207021 Matrix: SOL

Associated Lab Samples: 56044, 56045, 56046, 56047, 56048, 56049, 56050, 56051, 56052, 56053, 56054, 56056, 56060, 56061, 56062, 56064, 56068, 56069, 56071

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C10-C12	mg/Kg	<2.00	2.00	05/06/25 17:37		
Aliphatic >C12-C16	mg/Kg	<2.00	2.00	05/06/25 17:37		
Aliphatic >C16-C35	mg/Kg	<4.00	4.00	05/06/25 17:37		
Aromatic >C10-C12	mg/Kg	<2.00	2.00	05/06/25 17:37		
Aromatic >C12-C16	mg/Kg	<2.00	2.00	05/06/25 17:37		
Aromatic >C16-C21	mg/Kg	<2.00	2.00	05/06/25 17:37		
Aromatic >C21-C35	mg/Kg	<2.00	2.00	05/06/25 17:37		
Chlorooctadecane (S)				05/06/25 17:37	87.4	40-140
OTP Surrogate (S)				05/06/25 17:37	120	40-140

Laboratory Control Sample & LCSD LCS-G207021 LCSD-G207021

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C12-C16	mg/Kg	3.33	<2.00	2.04	58.2	61.2	40-140	5.0	25
Aliphatic >C16-C35	mg/Kg	10.0	7.76	9.07	77.6	90.7	40-140	15.5	25
Aromatic >C10-C12	mg/Kg	3.33	2.72	2.43	81.6	72.9	40-140	11.2	25
Aromatic >C12-C16	mg/Kg	6.67	6.01	5.83	90.1	87.4	40-140	3.0	25
Aromatic >C16-C21	mg/Kg	3.33	3.85	3.76	116	113	40-140	2.3	25
Chlorooctadecane (S)					69.4	73.6	40-140		
OTP Surrogate (S)					89.8	80.8	40-140		

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: G207061
QC Prep Batch Method: MAVPH LA (GC/MS) (Aqueous)
QC Analytical Batch(es): G207077
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G207061 Matrix: AQU
Associated Lab Samples: 56075, 56076, 56077, 56078

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/L	<0.005	0.005	05/05/25 11:01		
Aliphatic >C8-C10	mg/L	<0.013	0.013	05/05/25 11:01		
Aromatic >C8-C10 A	mg/L	<0.005	0.005	05/05/25 11:01		
Toluene-d8 (S)				05/05/25 11:01	83.2	70-130

Laboratory Control Sample & LCSD LCS-G207061 LCSD-G207061

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/L	0.500	0.511	0.482	102	96.4	70-130	5.8	25
Aliphatic >C8-C10	mg/L	1.30	1.24	1.15	95.3	88.4	70-130	7.5	25
Aromatic >C8-C10 A	mg/L	0.500	0.497	0.484	99.4	96.8	70-130	2.6	25
Toluene-d8 (S)					87.4	86.2	70-130		

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: G207063
QC Prep Batch Method: MAVPH LA (GC/MS) (Soil)
QC Analytical Batch(es): G207079
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G207063 Matrix: SOL
Associated Lab Samples: 56044, 56048, 56049, 56050, 56052, 56054, 56056, 56061, 56062, 56064, 56068, 56069

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/Kg	<0.500	0.500	05/06/25 00:33		
Aliphatic >C8-C10	mg/Kg	<1.30	1.30	05/06/25 00:33		
Aromatic >C8-C10 A	mg/Kg	<0.500	0.500	05/06/25 00:33		
Toluene-d8 (S)				05/06/25 00:33	84.2	50-150

Laboratory Control Sample & LCSD LCS-G207063 LCSD-G207063

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/Kg	50.0	47.2	44.6	94.4	89.2	80-120	5.6	30
Aliphatic >C8-C10	mg/Kg	130	120	113	92.3	86.9	80-120	6.0	30
Aromatic >C8-C10 A	mg/Kg	50.0	47.9	46.9	95.8	93.8	80-120	2.1	30
Toluene-d8 (S)					89.2	87.0	50-150		

Waypoint ANALYTICAL
5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Prep: G207065
QC Prep Batch Method: MAVPH LA (GC/MS) (Soil)
QC Analytical Batch(es): G207082
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G207065 Matrix: SOL
Associated Lab Samples: 56071

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/Kg	<0.500	0.500	05/06/25 02:40		
Aliphatic >C8-C10	mg/Kg	<1.30	1.30	05/06/25 02:40		
Aromatic >C8-C10 A	mg/Kg	<0.500	0.500	05/06/25 02:40		
Toluene-d8 (S)				05/06/25 02:40	84.2	50-150

Laboratory Control Sample & LCSD LCS-G207065 LCSD-G207065

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/Kg	50.0	55.9	58.8	112	118	80-120	5.0	30
Aliphatic >C8-C10	mg/Kg	130	158	161	122*	124*	80-120	1.8	30
Aromatic >C8-C10 A	mg/Kg	50.0	53.5	54.5	107	109	80-120	1.8	30
Toluene-d8 (S)					90.6	89.8	50-150		

* QC Fail

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Analytical Batch: A102292
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 56035-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	18.7	22.4	18.0	20.0	04/29/25 13:50

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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Analytical Batch: A102293
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 56050-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	23.8	23.2	2.5	20.0	04/29/25 14:50

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Analytical Batch: A102294
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 56061-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	14.6	15.2	4.0	20.0	04/29/25 16:09

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
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Quality Control Data

Client ID: **Hydro-Environmental Technology, Inc.**
Project Description: **Castex**
Report No: **25-115-0010**

QC Analytical Batch: A102295
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 56072-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	24.3	23.1	5.0	20.0	04/29/25 16:28

Waypoint ANALYTICAL

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
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Shipment Receipt Form

Customer Number: **09996**
Customer Name: **Hydro-Environmental Technology, Inc.**
Report Number: **25-115-0010**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 2

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◉ Yes	◯ No	◯ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Brandi Hidalgo Date & Time: 04/25/2025 13:13:00

HYDRO-ENVIRONMENTAL TI
Environmental Cor
P.O. Box 602
Lafayette, LA 705
Phone (337) 261-1963 FA)

Hydro-Environmental Technology, Inc.
Castex
25-115-0010
09996
04-25-2025
11:02:58

SAMPLE CHAIN-OF-CUSTODY RECORD

Project Name:	Castex	**Laboratory:**	Waypoint
Project Number:	1009.A75	**Collected By:**	EM
Project Location:	Jennings, LA	**Company:**	Hydro-Environmental Technology, Inc.
		Date:	4/22/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
CD-12R (8-10') 56035	SO	4/22/2025	0955	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
CD-12R (16-18') 56036	SO	4/22/2025	1010	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
CD-12R (22-24) 56037	SO	4/22/2025	1020	(1) 16 oz Glass Jar	**HOLD** EC, Chlorides, % Moisture, Cations*, Anions*	4°C
CD-12R (26-28') 56038	SO	4/22/2025	1020	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
CD-12R (46-48') 56039	SO	4/22/2025	1115	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
CD-12R (54-46') 56040	SO	4/22/2025	1130	(1) 16 oz Glass Jar	**HOLD** EC, Chlorides, % Moisture, Cations*, Anions*	4°C
CD-12R (60-62') 56041	SO	4/22/2025	1145	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C
CD-12R (70-72') 56042	SO	4/22/2025	1200	(1) 16 oz Glass Jar	**HOLD** EC, Chlorides, % Moisture, Cations*, Anions*	4°C
CD-12R (78-80') 56043	SO	4/22/2025	1200	(1) 16 oz Glass Jar	EC, Chlorides, % Moisture, Cations*, Anions*	4°C

2.1°c

HOLD for possible analysis of SPLP Chloride and Sodium
Cations*: Soluble Calcium, Magnesium, and Sodium
Anions*: Cl, SO4, HCO3
Metals*: Barium, True Total Barium, Chromium, and Lead

Relinquished By: Eric Martin	Received By: P. Howard
Date/Time: 4/25/25 0900	Date/Time: 4-25-25 0900
Relinquished By: P. Howard	Received By:
Date/Time: 4-25-25 1015	Date/Time: 4/25/25e 1015
Analysis Due: Verbal:	Written:

REL: 4/25/25e 1313 Brana Hidalgo 4-25-25 1313

BP/Castex-Ltd Adm-Apx E-000342

HYDRO-ENVIRONMENTAL TECHNOLOGY, INC.
Environmental Consultants
P.O. Box 60295
Lafayette, LA 70596-0295
Phone (337) 261-1963 FAX (337) 261-1953

SAMPLE CHAIN-OF-CUSTODY RECORD

Project Name:	Castex	*Laboratory:*	Waypoint
Project Number:	1009.A75	*Collected By:*	EM
Project Location:	Jennings, LA	*Company:*	Hydro-Environmental Technology, Inc.
		Date:	4/22/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
HA-2R (0-2') 56044	SO	4/23/2025	1250	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals*, X-Ray Diffraction **HOLD** PAH	4°C
HA-2R (2-4') 56045	SO	4/23/2025	1255	(3) 40mL Methanol (2) 8oz Glass	EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals **HOLD** PAH, VPH	4°C
HA-2R (4-6') 56046	SO	4/23/2025	1315	(3) 40mL Methanol (2) 8oz Glass	**HOLD:** EC, Chlorides, % Moisture, Cations*, Anions*, Metals, PAH, VPH, EPH	4°C
HA-2R (6-8') 56047	SO	4/23/2025	1320	(3) 40mL Methanol (2) 8oz Glass	**HOLD:** EC, Chlorides, % Moisture, Cations*, Anions*, Metals, PAH, VPH, EPH	4°C
HA-2R (8-10') 56048	SO	4/23/2025	1335	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
HA-2R (10-12') 56049	SO	4/23/2025	1340	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
HA-2R (14-16') 56050	SO	4/23/2025	1405	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
HA-2R (18-20') 56051	SO	4/23/2025	1420	(3) 40mL Methanol (2) 8oz Glass	**HOLD:** EC, Chlorides, % Moisture, Cations*, Anions*, Metals, PAH, VPH, EPH	4°C
HA-2R (22-24') 56052	SO	4/23/2025	1435	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C

2.1°

HOLD for possible analysis of SPLP Chloride and Sodium
Cations*: Soluble Calcium, Magnesium, and Sodium
Anions*: Cl, SO4, HCO3
Metals*: Barium, True Total Barium, Chromium, and Lead

Relinquished By: Eric Mat	Received By: P. Howard
Date/Time: 4/25/25 0900	Date/Time: 4-25-25 0900
Relinquished By: P. Howard	Received By:
Date/Time: 4-25-25 1015	Date/Time: 4/25/25 e 1015
Analysis Due: Verbal:	Written:

Rec'd: 4/25/25 e 1313 Brand Hidalgo 4-25-25 1313

HYDRO-ENVIRONMENTAL TECHNOLOGY, INC.
Environmental Consultants
P.O. Box 60295
Lafayette, LA 70596-0295
Phone (337) 261-1963 FAX (337) 261-1953

SAMPLE CHAIN-OF-CUSTODY RECORD

Laboratory:	Waypoint		
Project Name:	Castex	*Collected By:*	EM
Project Number:	1009.A75	*Company:*	Hydro-Environmental Technology, Inc.
Project Location:	Jennings, LA	*Date:*	4/22/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
HA-2R (28-30') 56053	SO	4/23/2025	1515	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** EPH, PAH	4°C
SB-1 (0-2') 56054	SO	4/24/2025	0910	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-1 (6-8') 56055	SO	4/24/2025	0935	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals	4°C
SB-1 (8-10') 56056	SO	4/24/2025	0940	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-1 (13-15') 56057	SO	4/24/2025	0950	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-1 (15-16') 56058	SO	4/24/2025	0955	(1) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-1 (20-22') 56059	SO	4/24/2025	1015	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-1 (22-24') 56060	SO	4/24/2025	1020	(3) 40mL Methanol (2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** VPH, EPH, PAH	4°C
SB-4 (0-2') 56061	SO	4/24/2025	1105	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C

HOLD for possible analysis of SPLP Chloride and Sodium
Cations*: Soluble Calcium, Magnesium, and Sodium
Anions*: Cl, SO4, HCO3
Metals*: Barium, True Total Barium, Chromium, and Lead

21°

Relinquished By: Eric Matherne Date/Time: 4/25/25 0900	Received By: P. Howard Date/Time: 4-25-25 0900
Relinquished By: P. Howard Date/Time: 4-25-25 1015	Received By: Date/Time: 4/25/25e 1015
Analysis Due: Verbal:	Written:

Rec: 4/25/25e 1313 Brand Hidalgo 4-25-25 1313

HYDRO-ENVIRONMENTAL TECHNOLOGY, INC.
Environmental Consultants
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Lafayette, LA 70596-0295
Phone (337) 261-1963 FAX (337) 261-1953

SAMPLE CHAIN-OF-CUSTODY RECORD

Project Name:	Castex	*Laboratory:*	Waypoint
Project Number:	1009.A75	*Collected By:*	EM
Project Location:	Jennings, LA	*Company:*	Hydro-Environmental Technology, Inc.
		Date:	4/22/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
SB-4 (2-4') 560662	SO	4/24/2025	1110	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-4 (7-9') 560663	SO	4/24/2025	1125	(1) 8oz Glass	**HOLD** EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-4 (8-10') 560664	SO	4/24/2025	1130	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-4 (12-14') 560665	SO	4/24/2025	1200	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-4 (18-20') 560666	SO	4/24/2025	1220	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-4 (22-24') 560667	SO	4/24/2025	1230	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-2 (0-2') 560668	SO	4/24/2025	1440	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-2 (2-4') 560669	SO	4/24/2025	1445	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-2 (6-8') 560670	SO	4/24/2025	1500	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C

2.1°C

HOLD for possible analysis of SPLP Chloride and Sodium
Cations*: Soluble Calcium, Magnesium, and Sodium
Anions*: Cl, SO4, HCO3
Metals*: Barium, True Total Barium, Chromium, and Lead

Relinquished By: Eric Matte	Received By: P. Howard
Date/Time: 4/25/25 0900	Date/Time: 4-25-25 0900
Relinquished By: P. Howard	Received By: [signature]
Date/Time: 4-25-25 1015	Date/Time: 4/25/25e 1015
Analysis Due: Verbal:	Written:

Rec: [signature] 4/25/25e 1313 Brandi Hidalgo 4-25-25 1313

HYDRO-ENVIRONMENTAL TECHNOLOGY, INC.
Environmental Consultants
P.O. Box 60295
Lafayette, LA 70596-0295
Phone (337) 261-1963 FAX (337) 261-1953

SAMPLE CHAIN-OF-CUSTODY RECORD

Project Name:	Castex	*Laboratory:*	Waypoint
Project Number:	1009.A75	*Collected By:*	EM
Project Location:	Jennings, LA	*Company:*	Hydro-Environmental Technology, Inc.
		Date:	4/22/2025

Sample I.D.	Type	Date/Time Sampled		Containers	Analysis Requested/Method	Comments
SB-2 (8-10') 56071	SO	4/24/2025	1505	(3) 40mL Methanol (2) 8oz Glass	VPH, EPH, EC, Chlorides, % Moisture, Cations*, Anions*, Metals* **HOLD** PAH	4°C
SB-2 (12-14') 56072	SO	4/24/2025	1520	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-2 (16-18') 56073	SO	4/24/2025	1530	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
SB-2 (22-24') 56074	SO	4/24/2025	1545	(2) 8oz Glass	EC, Chlorides, % Moisture, Cations*, Anions*, Metals*	4°C
Trip Blank 56075	AQ	4/23/2025	0930	(3) 40ml HCl	VPH	4°C
Field Blank 56076	AQ	4/23/2025	1100	(3) 40ml HCl	VPH	4°C
Trip Blank 56077	AQ	4/24/2025	0730	(3) 40ml HCl	VPH	4°C
Field Blank 56078	AQ	4/24/2025	0945	(3) 40ml HCl	VPH	4°C

2.1°-

HOLD for possible analysis of SPLP Chloride and Sodium
Cations*: Soluble Calcium, Magnesium, and Sodium
Anions*: Cl, SO4, HCO3
Metals*: Barium, True Total Barium, Chromium, and Lead

Relinquished By: Eric Matt	Received By: P. Howard
Date/Time: 4/25/25 0900	Date/Time: 4-25-25 0900
Relinquished By: P. Howard	Received By: [signature]
Date/Time: 4-25-25 1015	Date/Time: 4/25/25 @ 1015
Analysis Due: Verbal:	Written:

Rec: [signature] 4/25/25 @ 1313 Brandi Hidalgo 4-25-25 1313

LELAP CERTIFICATE NUMBER: 01955
DOD-ELAP ACCREDITATION NUMBER: 74960

ANALYTICAL RESULTS

PERFORMED BY

Pace Analytical Gulf Coast
7979 Innovation Park Dr.
Baton Rouge, LA 70820
(225) 769-4900

Report Date 07/16/2021

Report # 221070219

Project 0575834

Samples Collected 6/29/21

Deliver To	*Additional Recipients*
Shawn Wiggens Aegom 640 W Sam Houston Parkway Suite 600 Houston, TX 77024 971-303-2385	NONE

BP/Castex-Ltd Adm-Apx E-000347

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*****	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	Organics **-** The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%
L	Reporting Limits adjusted to meet risk-based limit.
P	RPD between primary and confirmation result is greater than 40
DL	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature
Pace Gulf Coast Report 221070219

Certifications

Certification	Certification Number
DOD ELAP	74960
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

Case Narrative

Client: ERM-Baton Rouge **Report:** 221070219

Pace Analytical Gulf Coast received and analyzed the sample(s) listed
on the Report Sample Summary page of this report. Receipt of the sample(s) is documented
by the attached chain of custody. This applies only to the sample(s) listed in this report.
No sample integrity or quality control exceptions were identified unless noted below.

PROJECT MANAGER COMMENTS

Project Manager Comments - per client e-mail dated 07/15/21 - analyze PAHs on sample HA-5 4-6' (221070219-05). (UNK 07/15/2021 14:31)

SEMI-VOLATILES MASS SPECTROMETRY

In the EPA 8270C SIM analysis, sample 22107021905 (HA-5 4-6') had to be diluted to bracket the concentration of target analytes within the calibration range of the instrument. This is reflected in elevated detection limits.

In the EPA 8270C SIM analysis of sample 22107021905 (HA-5 4-6') , the recoveries for the surrogates are reported as diluted out for those analyses performed at a 10 or higher dilution.

SEMI-VOLATILES GAS CHROMATOGRAPHY

In the MADEP EPH Revision 1.1 (LA) analysis, the recovery for the surrogate(s) is reported as diluted out for those analyses performed at a 10 or higher dilution.

Sample Summary

Lab ID	Client ID	Matrix	Collect Date	Receive Date
22107021901	HA-2 0-2'	Solid	6/29/21 09:40	7/01/21 13:08
22107021902	HA-2 2-4'	Solid	6/29/21 09:45	7/01/21 13:08
22107021903	HA-2 4-6'	Solid	6/29/21 09:50	7/01/21 13:08
22107021904	HA-5 2-4'	Solid	6/29/21 17:00	7/01/21 13:08
22107021905	HA-5 4-6'	Solid	6/29/21 17:05	7/01/21 13:08

BP/Castex-Ltd Adm-Apx E-000351

Q Flag Summary

NO Q FLAGS FOR THIS WORKORDER

Sample Results

HA-2 0-2'

Collect Date	06/29/2021 09:40	**Lab ID**	22107021901
Receive Date	07/01/2021 13:08	**Matrix**	Solid

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/06/21 16:53	715487	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-14	Aromatic >C8-C10	ND	28.7	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	38.60	36.7	mg/kg	95	60 - 140

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/06/21 16:53	715488	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-10	Aliphatic >C8-C10	ND	28.7	mg/kg
GCSV-02-30	Aliphatic C6-C8	ND	28.7	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	38.60	37.4	mg/kg	97	60 - 140

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 18:44	715663	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-11	Aliphatic >C10-C12	ND	6.00	mg/kg
GCSV-02-12	Aliphatic >C12-C16	37.4	6.00	mg/kg
GCSV-02-31	Aliphatic >C16-C35	32.7	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
3386-33-2	1-Chlorooctadecane	4	3.01	mg/kg	75	40 - 140

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 18:59	715662	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-05-18	Aromatic >C21-C35	ND	6.00	mg/kg
GCSV-02-15	Unadjusted >C10-C12 Aromatics	ND	6.00	mg/kg
GCSV-02-16	Unadjusted >C12-C16 Aromatics	ND	6.00	mg/kg
GCSV-02-17	Unadjusted >C16-C21 Aromatics	ND	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	4	3	mg/kg	75	40 - 140
580-13-2	2-Bromonaphthalene	4	2.85	mg/kg	71	40 - 140
321-60-8	2-Fluorobiphenyl	4	4.26	mg/kg	107	40 - 140

Sample Results

HA-2 0-2'

Collect Date	06/29/2021 09:40	**Lab ID**	22107021901
Receive Date	07/01/2021 13:08	**Matrix**	Solid

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	07/07/21 18:35	715648	KLO	NA

CAS#	Parameter	Result	LOQ	Units
WET-037	Total Moisture	18.5	0.010	%

HA-2 2-4'

Collect Date	06/29/2021 09:45	**Lab ID**	22107021902
Receive Date	07/01/2021 13:08	**Matrix**	Solid

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/06/21 17:09	715487	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-14	Aromatic >C8-C10	35.1	29.9	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	38.90	36.3	mg/kg	93	60 - 140

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/06/21 17:09	715488	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-10	Aliphatic >C8-C10	ND	29.9	mg/kg
GCSV-02-30	Aliphatic C6-C8	ND	29.9	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	38.90	52.2	mg/kg	134	60 - 140

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 18:59	715663	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-11	Aliphatic >C10-C12	34.1	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
3386-33-2	1-Chlorooctadecane	4	4.48	mg/kg	112	40 - 140

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 19:19	715662	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-05-18	Aromatic >C21-C35	16.6	6.00	mg/kg

Sample Results

HA-2 2-4'

Collect Date	06/29/2021 09:45	**Lab ID**	22107021902
Receive Date	07/01/2021 13:08	**Matrix**	Solid

MADEP EPH Revision 1.1 (LA) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 19:19	715662	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-15	Unadjusted >C10-C12 Aromatics	6.12	6.00	mg/kg
GCSV-02-17	Unadjusted >C16-C21 Aromatics	22.4	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	4	3.75	mg/kg	94	40 - 140
580-13-2	2-Bromonaphthalene	4	2.03	mg/kg	51	40 - 140
321-60-8	2-Fluorobiphenyl	4	4.71	mg/kg	118	40 - 140

MADEP EPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	2	07/08/21 19:55	715825	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-16	Unadjusted >C12-C16 Aromatics	41.8	12.0	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	4	3.15	mg/kg	79	40 - 140
580-13-2	2-Bromonaphthalene	4	1.74	mg/kg	44	40 - 140
321-60-8	2-Fluorobiphenyl	4	3.7	mg/kg	93	40 - 140

MADEP EPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	20	07/08/21 19:55	715826	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-12	Aliphatic >C12-C16	527	120	mg/kg
GCSV-02-31	Aliphatic >C16-C35	378	120	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
3386-33-2	1-Chlorooctadecane	4	Diluted Out	mg/kg	0*	40 - 140

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	07/07/21 18:35	715648	KLO	NA

CAS#	Parameter	Result	LOQ	Units
WET-037	Total Moisture	21.8	0.010	%

Sample Results

HA-2 4-6'

Collect Date	06/29/2021 09:50	**Lab ID**	22107021903
Receive Date	07/01/2021 13:08	**Matrix**	Solid

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/06/21 17:24	715487	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-14	Aromatic >C8-C10	ND	26.8	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	34.20	33.9	mg/kg	99	60 - 140

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/06/21 17:24	715488	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-10	Aliphatic >C8-C10	ND	26.8	mg/kg
GCSV-02-30	Aliphatic C6-C8	ND	26.8	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	34.20	42.4	mg/kg	124	60 - 140

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 19:19	715663	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-11	Aliphatic >C10-C12	9.81	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
3386-33-2	1-Chlorooctadecane	4	2.98	mg/kg	75	40 - 140

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 19:38	715662	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-05-18	Aromatic >C21-C35	ND	6.00	mg/kg
GCSV-02-15	Unadjusted >C10-C12 Aromatics	ND	6.00	mg/kg
GCSV-02-16	Unadjusted >C12-C16 Aromatics	13.4	6.00	mg/kg
GCSV-02-17	Unadjusted >C16-C21 Aromatics	6.46	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	4	3.49	mg/kg	87	40 - 140
580-13-2	2-Bromonaphthalene	4	3.28	mg/kg	82	40 - 140
321-60-8	2-Fluorobiphenyl	4	4.59	mg/kg	115	40 - 140

BP/Castex-Ltd Adm-Apx E-000356

Sample Results

HA-2 4-6'

Collect Date	06/29/2021 09:50	**Lab ID**	22107021903
Receive Date	07/01/2021 13:08	**Matrix**	Solid

MADEP EPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	5	07/08/21 20:13	715826	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-12	Aliphatic >C12-C16	154	30.0	mg/kg
GCSV-02-31	Aliphatic >C16-C35	131	30.0	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
3386-33-2	1-Chlorooctadecane	4	3.26	mg/kg	82	40 - 140

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	07/07/21 18:35	715648	KLO	NA

CAS#	Parameter	Result	LOQ	Units
WET-037	Total Moisture	21.1	0.010	%

HA-5 2-4'

Collect Date	06/29/2021 17:00	**Lab ID**	22107021904
Receive Date	07/01/2021 13:08	**Matrix**	Solid

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/06/21 17:39	715487	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-14	Aromatic >C8-C10	ND	44.7	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	57.50	54.2	mg/kg	94	60 - 140

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	50	07/06/21 17:39	715488	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-10	Aliphatic >C8-C10	ND	2.23	mg/kg
GCSV-02-30	Aliphatic C6-C8	ND	2.23	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	2.87	2.98	mg/kg	104	60 - 140

Sample Results

HA-5 2-4'

Collect Date	06/29/2021 17:00	**Lab ID**	22107021904
Receive Date	07/01/2021 13:08	**Matrix**	Solid

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 19:38	715663	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-11	Aliphatic >C10-C12	ND	6.00	mg/kg
GCSV-02-12	Aliphatic >C12-C16	20.2	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
3386-33-2	1-Chlorooctadecane	4	4.28	mg/kg	107	40 - 140

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/12/21 11:30	715955	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-05-18	Aromatic >C21-C35	22.2	6.00	mg/kg
GCSV-02-15	Unadjusted >C10-C12 Aromatics	ND	6.00	mg/kg
GCSV-02-16	Unadjusted >C12-C16 Aromatics	ND	6.00	mg/kg
GCSV-02-17	Unadjusted >C16-C21 Aromatics	ND	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	4	3.26	mg/kg	82	40 - 140
580-13-2	2-Bromonaphthalene	4	3.13	mg/kg	78	40 - 140
321-60-8	2-Fluorobiphenyl	4	3.71	mg/kg	93	40 - 140

MADEP EPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	5	07/08/21 20:31	715826	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-31	Aliphatic >C16-C35	131	30.0	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
3386-33-2	1-Chlorooctadecane	4	5.17	mg/kg	129	40 - 140

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	07/07/21 18:35	715648	KLO	NA

CAS#	Parameter	Result	LOQ	Units
WET-037	Total Moisture	34.1	0.010	%

Sample Results

HA-5 4-6'

Collect Date	06/29/2021 17:05	**Lab ID**	22107021905
Receive Date	07/01/2021 13:08	**Matrix**	Solid

EPA 8270C SIM

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 08:15	715448	EPA 3546	10	07/07/21 14:10	715587	SMH	

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	0.803	0.033	mg/kg
91-57-6	2-Methylnaphthalene	1.02	0.033	mg/kg
83-32-9	Acenaphthene	ND	0.066	mg/kg
208-96-8	Acenaphthylene	ND	0.066	mg/kg
120-12-7	Anthracene	ND	0.033	mg/kg
56-55-3	Benzo(a)anthracene	ND	0.066	mg/kg
50-32-8	Benzo(a)pyrene	ND	0.033	mg/kg
205-99-2	Benzo(b)fluoranthene	ND	0.066	mg/kg
191-24-2	Benzo(g,h,i)perylene	ND	0.033	mg/kg
207-08-9	Benzo(k)fluoranthene	ND	0.033	mg/kg
218-01-9	Chrysene	ND	0.066	mg/kg
53-70-3	Dibenz(a,h)anthracene	ND	0.066	mg/kg
206-44-0	Fluoranthene	0.038	0.033	mg/kg
86-73-7	Fluorene	0.193	0.033	mg/kg
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.033	mg/kg
91-20-3	Naphthalene	0.608	0.033	mg/kg
85-01-8	Phenanthrene	0.429	0.033	mg/kg
129-00-0	Pyrene	0.046	0.033	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
7297-45-2	2-Methylnaphthalene-d10	0.3330	Diluted Out	mg/kg	0*	47 - 120
93951-69-0	Fluoranthene-d10	0.3330	Diluted Out	mg/kg	0*	47 - 120

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/07/21 12:18	715487	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-14	Aromatic >C8-C10	77.2	38.2	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	44.20	42.8	mg/kg	97	60 - 140

MADEP VPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1000	07/07/21 12:18	715488	JAR	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-10	Aliphatic >C8-C10	147	38.2	mg/kg
GCSV-02-30	Aliphatic C6-C8	64.4	38.2	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
615-59-8	2,5-Dibromotoluene	44.20	58.9	mg/kg	133	60 - 140

Sample Results

HA-5 4-6'

Collect Date	06/29/2021 17:05	**Lab ID**	22107021905
Receive Date	07/01/2021 13:08	**Matrix**	Solid

MADEP EPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	10	07/07/21 20:14	715663	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-11	Aliphatic >C10-C12	99.2	60.0	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
3386-33-2	1-Chlorooctadecane	4	Diluted Out	mg/kg	0*	40 - 140

MADEP EPH Revision 1.1 (LA)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	1	07/07/21 20:14	715662	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-15	Unadjusted >C10-C12 Aromatics	11.2	6.00	mg/kg
GCSV-02-17	Unadjusted >C16-C21 Aromatics	34.7	6.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	4	3.66	mg/kg	92	40 - 140
580-13-2	2-Bromonaphthalene	4	2.13	mg/kg	53	40 - 140
321-60-8	2-Fluorobiphenyl	4	4.39	mg/kg	110	40 - 140

MADEP EPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	5	07/08/21 21:07	715825	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-05-18	Aromatic >C21-C35	133	30.0	mg/kg
GCSV-02-16	Unadjusted >C12-C16 Aromatics	38.4	30.0	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	4	3.67	mg/kg	92	40 - 140
580-13-2	2-Bromonaphthalene	4	1.74	mg/kg	44	40 - 140
321-60-8	2-Fluorobiphenyl	4	3.93	mg/kg	98	40 - 140

MADEP EPH Revision 1.1 (LA)

*Results And limits are adjusted for dilution.

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/06/21 09:10	715418	MADEP EPH Revision 1.1 (LA)	50	07/08/21 20:49	715826	MFS	

CAS#	Parameter	Result	LOQ	Units
GCSV-02-12	Aliphatic >C12-C16	513	300	mg/kg
GCSV-02-31	Aliphatic >C16-C35	1560	300	mg/kg

BP/Castex-Ltd Adm-Apx E-000360

Sample Results

HA-5 4-6'				
	Collect Date	06/29/2021 17:05	Lab ID	22107021905
	Receive Date	07/01/2021 13:08	Matrix	Solid

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	07/07/21 18:35	715648	KLO	NA

CAS#	Parameter	Result	LOQ	Units
WET-037	Total Moisture	39.1	0.010	%

BP/Castex-Ltd Adm-Apx E-000361

GC/MS Semi-Volatiles QC Summary

Analytical Batch	Client ID	MB715448		LCS715448				LCSD715448				
715587	Lab ID	2209298		2209299				2209300				
Prep Batch	Sample Type	MB		LCS				LCSD				
715448	Prep Date	07/06/21 08:15		07/06/21 08:15				07/06/21 08:15				
Prep Method	Analysis Date	07/07/21 07:39		07/07/21 07:58				07/07/21 08:17				
EPA 3546	Matrix	Solid		Solid				Solid				
EPA 8270C SIM		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1-Methylnaphthalene	90-12-0	ND	0.00326	0.329	0.259	79	43 - 111	0.327	0.256	78	1	20
2-Methylnaphthalene	91-57-6	ND	0.00326	0.329	0.237	72	39 - 114	0.327	0.233	71	2	20
Acenaphthene	83-32-9	ND	0.00651	0.329	0.254	77	44 - 111	0.327	0.249	76	2	20
Acenaphthylene	208-96-8	ND	0.00651	0.329	0.247	75	39 - 116	0.327	0.245	75	1	20
Anthracene	120-12-7	ND	0.00326	0.329	0.221	67	50 - 114	0.327	0.221	68	0	20
Benzo(a)anthracene	56-55-3	ND	0.00651	0.329	0.257	78	54 - 122	0.327	0.256	78	0	20
Benzo(a)pyrene	50-32-8	ND	0.00326	0.329	0.258	78	50 - 125	0.327	0.261	80	1	20
Benzo(b)fluoranthene	205-99-2	ND	0.00651	0.329	0.262	80	53 - 128	0.327	0.260	80	1	20
Benzo(g,h,i)perylene	191-24-2	ND	0.00326	0.329	0.277	84	49 - 127	0.327	0.276	84	0	20
Benzo(k)fluoranthene	207-08-9	ND	0.00326	0.329	0.259	79	56 - 123	0.327	0.255	78	2	20
Chrysene	218-01-9	ND	0.00651	0.329	0.254	77	57 - 118	0.327	0.254	78	0	20
Dibenz(a,h)anthracene	53-70-3	ND	0.00651	0.329	0.285	87	50 - 129	0.327	0.284	87	0	20
Fluoranthene	206-44-0	ND	0.00326	0.329	0.258	78	55 - 119	0.327	0.257	79	0	20
Fluorene	86-73-7	ND	0.00326	0.329	0.250	76	47 - 114	0.327	0.246	75	2	20
Indeno(1,2,3-cd)pyrene	193-39-5	ND	0.00326	0.329	0.295	90	49 - 130	0.327	0.291	89	1	20
Naphthalene	91-20-3	ND	0.00326	0.329	0.245	74	38 - 111	0.327	0.242	74	1	20
Phenanthrene	85-01-8	ND	0.00326	0.329	0.265	81	49 - 113	0.327	0.263	80	1	20
Pyrene	129-00-0	ND	0.00326	0.329	0.282	86	55 - 117	0.327	0.281	86	0	20
Surrogate												
2-Methylnaphthalene-d10	7297-45-2	.2	61	.329	.19	58	47 - 120	.327	.187	57	NA	NA
Fluoranthene-d10	93951-69-0	.194	59	.329	.194	59	47 - 120	.327	.194	59	NA	NA

GC Volatiles QC Summary

Analytical Batch	Client ID	MB715487		LCS715487				LCSD715487				
715487	Lab ID	2209479		2209480				2209481				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	07/06/21 14:01		07/06/21 12:36				07/06/21 12:52				
	Matrix	Solid		Solid				Solid				
MADEP VPH Revision 1.1 (LA)		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Aromatic >C8-C10	GCSV-02-14	ND	1.50	7.50	7.29	97	60 - 140	7.50	7.17	96	2	30
Surrogate												
2,5-Dibromotoluene	615-59-8	2.03	81	2.5	1.96	78	60 - 140	2.5	2	80	NA	NA

Analytical Batch	Client ID	MB715488		LCS715488				LCSD715488				
715488	Lab ID	2209483		2209484				2209485				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	07/06/21 14:01		07/06/21 12:36				07/06/21 12:52				
	Matrix	Solid		Solid				Solid				
MADEP VPH Revision 1.1 (LA)		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Aliphatic >C8-C10	GCSV-02-10	ND	1.50	5.00	5.29	106	60 - 140	5.00	5.43	109	3	30
Aliphatic C6-C8	GCSV-02-30	ND	1.50	7.50	8.35	111	60 - 140	7.50	8.20	109	2	30
Surrogate												
2,5-Dibromotoluene	615-59-8	2.05	82	2.5	1.96	78	60 - 140	2.5	2.13	85	NA	NA

GC Semi-Volatiles QC Summary

Analytical Batch	Client ID	MB715418		LCS715418				LCSD715418				
715663	Lab ID	2209215		2209216				2209217				
Prep Batch	Sample Type	MB		LCS				LCSD				
715418	Prep Date	07/06/21 09:10		07/06/21 09:10				07/06/21 09:10				
Prep Method	Analysis Date	07/07/21 17:18		07/07/21 17:37				07/07/21 17:55				
MADEP EPH Revision 1.1 (LA)	Matrix	Solid		Solid				Solid				
MADEP EPH Revision 1.1 (LA)		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Aliphatic >C10-C12	GCSV-02-11	ND	6.00	10.0	7.15	72	30 - 140	10.0	7.99	80	11	25
Aliphatic >C12-C16	GCSV-02-12	ND	6.00	10.0	7.87	79	40 - 140	10.0	8.77	88	11	25
Aliphatic >C16-C35	GCSV-02-31	ND	6.00	45.0	39.9	89	40 - 140	45.0	42.8	95	7	25
Surrogate												
1-Chlorooctadecane	3386-33-2	2.56	64	4	3.25	81	40 - 140	4	3.61	90	NA	NA

Analytical Batch	Client ID	MB715418		LCS715418				LCSD715418				
715662	Lab ID	2209215		2209216				2209217				
Prep Batch	Sample Type	MB		LCS				LCSD				
715418	Prep Date	07/06/21 09:10		07/06/21 09:10				07/06/21 09:10				
Prep Method	Analysis Date	07/07/21 17:18		07/07/21 18:21				07/07/21 17:55				
MADEP EPH Revision 1.1 (LA)	Matrix	Solid		Solid				Solid				
MADEP EPH Revision 1.1 (LA)		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Aromatic >C21-C35	GCSV-05-18	ND	6.00	50.0	43.0	86	40 - 140	50.0	43.9	88	2	25
Unadjusted >C10-C12 Aromatics	GCSV-02-15	ND	6.00	5.00	4.64	93	30 - 140	5.00	4.53	91	2	25
Unadjusted >C12-C16 Aromatics	GCSV-02-16	ND	6.00	20.0	19.7	99	40 - 140	20.0	18.8	94	5	25
Unadjusted >C16-C21 Aromatics	GCSV-02-17	ND	6.00	10.0	9.98	100	40 - 140	10.0	9.73	97	3	25
Surrogate												
2-Bromonaphthalene	580-13-2	1.92	48	4	2.53	63	40 - 140	4	2.43	61	NA	NA
2-Fluorobiphenyl	321-60-8	3.78	95	4	4.86	122	40 - 140	4	4.55	114	NA	NA
o-Terphenyl	84-15-1	2.7	68	4	3.63	91	40 - 140	4	3.59	90	NA	NA

General Chemistry QC Summary

Analytical Batch		Client ID	HA-2 0-2'		2208377DUP		
715648		Lab ID	22107021901		2210246		
		Sample Type	SAMPLE		DUP		
		Prep Date	NA		NA		
		Analysis Date	07/07/2021 18:35		07/07/21 18:35		
		Matrix	Solid		Solid		
SM 2540 G-2011		Units Result	% LOQ		Result	RPD	RPD Limit
Total Moisture	WET-037	18.5	0.010		19.2	4	25

Analytical Batch		Client ID	HA-2 2-4'		2208378DUP		
715648		Lab ID	22107021902		2211165		
		Sample Type	SAMPLE		DUP		
		Prep Date	NA		NA		
		Analysis Date	07/07/2021 18:35		07/07/21 18:35		
		Matrix	Solid		Solid		
SM 2540 G-2011		Units Result	% LOQ		Result	RPD	RPD Limit
Total Moisture	WET-037	21.8	0.010		22.5	3	25

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Work

Client ID: 4271 - ERM-Baton Rouge
SDG: 221070219
PM: AMK

ALL SHA

Container Preservative T

** Preservative Types: (1) nitric acid, (2) sul
(6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate,
(C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Company: ERM	Billing Information:
Address: 640 W Sam Houston Parkway N	Suite 600
Report To: Shawn Wiggins	Email To: shawn.wiggins@erm.com
Copy To:	Site Collection Info/Address:
Customer Project Name/Number: 0575834	State: / County/City: Time Zone Collected: [ ] PT [ ] MT [ ] CT [ ] ET
Phone: Email:	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): Michael Goodman	Purchase Order #: Quote #: DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: Immediately Packed on Ice: [ ] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [ ] No Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y N NA
Custody Signatures Present	Y N NA
Collector Signature Present	Y N NA
Bottles Intact	Y N NA
Correct Bottles	Y N NA
Sufficient Volume	Y N NA
Samples Received on Ice	Y N NA
VOA - Headspace Acceptable	Y N NA
USDA Regulated Soils	Y N NA
Samples in Holding Time	Y N NA
Residual Chlorine Present	Y N NA
Cl Strips: _____	
Sample pH Acceptable	Y N NA
pH Strips: _____	
Sulfide Present	Y N NA
Lead Acetate Strips: _____	

LAB USE ONLY:
Lab Sample # / Comments:

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	TPH Fractions	% Moisture	PAH's (TO HOLD)								Lab Profile/Line:
HA-2 0-2'	SL	G	6-29	0940				5	X	X	X								1
HA-2 2-4'	SL	G	6-29	0945				5	X	X	X								2
HA-2 4-6'	SL	G	6-29	0950				5	X	X	X								3
HA-5 2-4'	SL	G	6-29	1700				5	X	X	X								4
HA-5 4-6'	SL	G	6-29	1705				5	X	X	X								5
																			Hold PAH's
																			↓

Customer Remarks / Special Conditions / Possible Hazards: Hold PAH's

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2672949

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: _____oC
Cooler 1 Therm Corr. Factor: _____oC
Cooler 1 Corrected Temp: _____oC
Comments:
0.1 E34 33CPM

	Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
1	ERM	6-30 1320	PACE	6/30/21 1320
2	PACE	7/1/21 0900		7/1/21 900
3		7/1/21 1300		7-1-21 13:08

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

SAMPLE RECEIVING CHECKLIST

SAMPLE DELIVERY GROUP 221070219	
Client **PM** AMK 4271 - ERM-Baton Rouge	**Transport Method** COURIER
Profile Number 292721	**Received By** McCune, Dodie N.
Line Item(s) 1 - Solid	**Receive Date(s)** 07/01/21

CHECKLIST	YES	NO
Samples received with proper thermal preservation?	☑	☐
Radioactivity is <1600 cpm? If no, record cpm value in notes section.	☑	☐
COC relinquished and complete (including sampleIDs, collect times, and sampler)?	☑	☐
All containers received in good condition and within hold time?	☑	☐
All sample labels and containers received match the chain of custody?	☑	☐
Preservative added to any containers?	☐	☑
If received, was headspace for VOC water containers < 6mm?	☑	☐
Samples collected in containers provided by Pace Gulf Coast?	☑	☐

COOLERS

Airbill	Thermometer ID: E34	Temp °C
		0.1

DISCREPANCIES

None

LAB PRESERVATIONS

None

NOTES

Revision 1.6

Waypoint ANALYTICAL

5041 Taravella Road, Marrero, LA 70072
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7/22/2021

MPA/ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway
Suite 600
Houston, TX, 77024

Ref: Report Number: 21-182-0034
Project Description: Castex - Oversight of ICON/Split Samplin
Project Number: 0575834

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 7/1/2021 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule August 2017) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Anthony J. Albert
Laboratory Director

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-000368

Waypoint ANALYTICAL

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2022
Louisiana	State Program - NELAP	02041	06/30/2022

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2022
Arkansas	State Program	88-0650	02/07/2022
California	State Program	2904	06/30/2022
Florida	State Program - NELAP	E871157	06/30/2022
Georgia	State Program	C044	02/18/2023
Georgia	State Program	04015	06/30/2021
Illinois	State Program - NELAP	200078	10/10/2021
Kentucky	State Program	80215	06/30/2022
Kentucky	State Program	KY90047	12/31/2021
Louisiana	State Program - NELAP	LA037	12/31/2021
Louisiana	State Program - NELAP	04015	06/30/2022
Mississippi	State Program	MS	02/11/2023
North Carolina	State Program	415	12/31/2021
Oklahoma	State Program	9311	08/31/2021
Pennsylvania	State Program - NELAP	68-03195	05/31/2022
South Carolina	State Program	84002	06/30/2022
South Carolina	State Program	84002	06/30/2022
Tennessee	State Program	02027	02/11/2023
Tennessee	A2LA ISO 17025:2017	4313.01	10/31/2021
Texas	State Program - NELAP	T104704180	09/30/2021
Virginia	State Program	00106	06/30/2022
Virginia	State Program - NELAP	460181	09/14/2021

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Sample Summary Table

Report Number: **21-182-0034**

Client Project Description: **Castex - Oversight of ICON/Split Samplin**
Project Number: 0575834

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
91814	HA-1 0-2'	Solids	06/29/2021 08:20	07/01/2021		
91814	HA-1 0-2'	Solids	06/29/2021 08:20	07/01/2021	6010D	WP MTN
91814	HA-1 0-2'	Solids	06/29/2021 08:20	07/01/2021	29B	WP MTN
91814	HA-1 0-2'	Solids	06/29/2021 08:20	07/01/2021	7471A	WP MTN
91815	HA-1 2-4'	Solids	06/29/2021 08:30	07/01/2021		
91815	HA-1 2-4'	Solids	06/29/2021 08:30	07/01/2021	6010D	WP MTN
91815	HA-1 2-4'	Solids	06/29/2021 08:30	07/01/2021	29B	WP MTN
91815	HA-1 2-4'	Solids	06/29/2021 08:30	07/01/2021	7471A	WP MTN
91816	HA-1 4-6'	Solids	06/29/2021 08:40	07/01/2021		
91816	HA-1 4-6'	Solids	06/29/2021 08:40	07/01/2021	6010D	WP MTN
91816	HA-1 4-6'	Solids	06/29/2021 08:40	07/01/2021	29B	WP MTN
91816	HA-1 4-6'	Solids	06/29/2021 08:40	07/01/2021	7471A	WP MTN
91817	HA-2 0-2'	Solids	06/29/2021 09:40	07/01/2021		
91817	HA-2 0-2'	Solids	06/29/2021 09:40	07/01/2021	29B	WP MTN
91817	HA-2 0-2'	Solids	06/29/2021 09:40	07/01/2021	6010D	WP MTN
91817	HA-2 0-2'	Solids	06/29/2021 09:40	07/01/2021	7471A	WP MTN
91818	HA-2 2-4'	Solids	06/29/2021 09:45	07/01/2021		
91818	HA-2 2-4'	Solids	06/29/2021 09:45	07/01/2021	7471A	WP MTN
91818	HA-2 2-4'	Solids	06/29/2021 09:45	07/01/2021	29B	WP MTN
91818	HA-2 2-4'	Solids	06/29/2021 09:45	07/01/2021	6010D	WP MTN
91819	HA-2 4-6'	Solids	06/29/2021 09:50	07/01/2021		
91819	HA-2 4-6'	Solids	06/29/2021 09:50	07/01/2021	6010D	WP MTN
91819	HA-2 4-6'	Solids	06/29/2021 09:50	07/01/2021	7471A	WP MTN
91819	HA-2 4-6'	Solids	06/29/2021 09:50	07/01/2021	29B	WP MTN
91820	HA-3 0-2'	Solids	06/29/2021 10:40	07/01/2021		
91820	HA-3 0-2'	Solids	06/29/2021 10:40	07/01/2021	7471A	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Sample Summary Table

Report Number: **21-182-0034**

Client Project Description: **Castex - Oversight of ICON/Split Samplin**
Project Number: 0575834

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
91820	HA-3 0-2'	Solids	06/29/2021 10:40	07/01/2021	6010D	WP MTN
91820	HA-3 0-2'	Solids	06/29/2021 10:40	07/01/2021	29B	WP MTN
91821	HA-3 2-4'	Solids	06/29/2021 10:45	07/01/2021		
91821	HA-3 2-4'	Solids	06/29/2021 10:45	07/01/2021	6010D	WP MTN
91821	HA-3 2-4'	Solids	06/29/2021 10:45	07/01/2021	29B	WP MTN
91821	HA-3 2-4'	Solids	06/29/2021 10:45	07/01/2021	7471A	WP MTN
91822	HA-3 4-6'	Solids	06/29/2021 10:50	07/01/2021		
91822	HA-3 4-6'	Solids	06/29/2021 10:50	07/01/2021	7471A	WP MTN
91822	HA-3 4-6'	Solids	06/29/2021 10:50	07/01/2021	6010D	WP MTN
91822	HA-3 4-6'	Solids	06/29/2021 10:50	07/01/2021	29B	WP MTN
91823	HA-4 0-2'	Solids	06/29/2021 15:55	07/01/2021		
91823	HA-4 0-2'	Solids	06/29/2021 15:55	07/01/2021	7471A	WP MTN
91823	HA-4 0-2'	Solids	06/29/2021 15:55	07/01/2021	6010D	WP MTN
91823	HA-4 0-2'	Solids	06/29/2021 15:55	07/01/2021	29B	WP MTN
91824	HA-4 2-4'	Solids	06/29/2021 16:00	07/01/2021		
91824	HA-4 2-4'	Solids	06/29/2021 16:00	07/01/2021	7471A	WP MTN
91824	HA-4 2-4'	Solids	06/29/2021 16:00	07/01/2021	6010D	WP MTN
91824	HA-4 2-4'	Solids	06/29/2021 16:00	07/01/2021	29B	WP MTN
91825	HA-4 4-6'	Solids	06/29/2021 16:05	07/01/2021		
91825	HA-4 4-6'	Solids	06/29/2021 16:05	07/01/2021	7471A	WP MTN
91825	HA-4 4-6'	Solids	06/29/2021 16:05	07/01/2021	6010D	WP MTN
91825	HA-4 4-6'	Solids	06/29/2021 16:05	07/01/2021	29B	WP MTN
91826	HA-5 0-2'	Solids	06/29/2021 16:55	07/01/2021		
91826	HA-5 0-2'	Solids	06/29/2021 16:55	07/01/2021	7471A	WP MTN
91826	HA-5 0-2'	Solids	06/29/2021 16:55	07/01/2021	6010D	WP MTN
91826	HA-5 0-2'	Solids	06/29/2021 16:55	07/01/2021	29B	WP MTN

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Sample Summary Table

Report Number: **21-182-0034**

Client Project Description: **Castex - Oversight of ICON/Split Samplin**
Project Number: 0575834

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
91827	HA-5 2-4'	Solids	06/29/2021 17:00	07/01/2021		
91827	HA-5 2-4'	Solids	06/29/2021 17:00	07/01/2021	7471A	WP MTN
91827	HA-5 2-4'	Solids	06/29/2021 17:00	07/01/2021	6010D	WP MTN
91827	HA-5 2-4'	Solids	06/29/2021 17:00	07/01/2021	29B	WP MTN
91828	HA-5 4-6'	Solids	06/29/2021 17:05	07/01/2021		
91828	HA-5 4-6'	Solids	06/29/2021 17:05	07/01/2021	7471A	WP MTN
91828	HA-5 4-6'	Solids	06/29/2021 17:05	07/01/2021	6010D	WP MTN
91828	HA-5 4-6'	Solids	06/29/2021 17:05	07/01/2021	29B	WP MTN
91829	HA-6 0-2'	Solids	06/30/2021 07:45	07/01/2021		
91829	HA-6 0-2'	Solids	06/30/2021 07:45	07/01/2021	6010D	WP MTN
91829	HA-6 0-2'	Solids	06/30/2021 07:45	07/01/2021	29B	WP MTN
91829	HA-6 0-2'	Solids	06/30/2021 07:45	07/01/2021	7471A	WP MTN
91830	HA-6 2-4'	Solids	06/30/2021 07:50	07/01/2021		
91830	HA-6 2-4'	Solids	06/30/2021 07:50	07/01/2021	7471A	WP MTN
91830	HA-6 2-4'	Solids	06/30/2021 07:50	07/01/2021	6010D	WP MTN
91830	HA-6 2-4'	Solids	06/30/2021 07:50	07/01/2021	29B	WP MTN
91831	HA-6 4-6'	Solids	06/30/2021 07:55	07/01/2021		
91831	HA-6 4-6'	Solids	06/30/2021 07:55	07/01/2021	7471A	WP MTN
91831	HA-6 4-6'	Solids	06/30/2021 07:55	07/01/2021	6010D	WP MTN
91831	HA-6 4-6'	Solids	06/30/2021 07:55	07/01/2021	29B	WP MTN
91832	HA-7 0-2'	Solids	06/30/2021 08:45	07/01/2021		
91832	HA-7 0-2'	Solids	06/30/2021 08:45	07/01/2021	7471A	WP MTN
91832	HA-7 0-2'	Solids	06/30/2021 08:45	07/01/2021	6010D	WP MTN
91832	HA-7 0-2'	Solids	06/30/2021 08:45	07/01/2021	29B	WP MTN
91833	HA-7 2-4'	Solids	06/30/2021 08:50	07/01/2021		
91833	HA-7 2-4'	Solids	06/30/2021 08:50	07/01/2021	7471A	WP MTN

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Sample Summary Table

Report Number: **21-182-0034**

Client Project Description: **Castex - Oversight of ICON/Split Samplin**
Project Number: 0575834

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
91833	HA-7 2-4'	Solids	06/30/2021 08:50	07/01/2021	6010D	WP MTN
91833	HA-7 2-4'	Solids	06/30/2021 08:50	07/01/2021	29B	WP MTN
91834	HA-7 4-6'	Solids	06/30/2021 08:55	07/01/2021		
91834	HA-7 4-6'	Solids	06/30/2021 08:55	07/01/2021	7471A	WP MTN
91834	HA-7 4-6'	Solids	06/30/2021 08:55	07/01/2021	6010D	WP MTN
91834	HA-7 4-6'	Solids	06/30/2021 08:55	07/01/2021	29B	WP MTN
91835	HA-8 0-2	Solids	06/30/2021 09:50	07/01/2021		
91835	HA-8 0-2	Solids	06/30/2021 09:50	07/01/2021	7471A	WP MTN
91835	HA-8 0-2	Solids	06/30/2021 09:50	07/01/2021	6010D	WP MTN
91835	HA-8 0-2	Solids	06/30/2021 09:50	07/01/2021	29B	WP MTN
91836	HA-8 2-4'	Solids	06/30/2021 09:55	07/01/2021		
91836	HA-8 2-4'	Solids	06/30/2021 09:55	07/01/2021	7471A	WP MTN
91836	HA-8 2-4'	Solids	06/30/2021 09:55	07/01/2021	6010D	WP MTN
91836	HA-8 2-4'	Solids	06/30/2021 09:55	07/01/2021	29B	WP MTN
91837	HA-8 4-6'	Solids	06/30/2021 10:00	07/01/2021		
91837	HA-8 4-6'	Solids	06/30/2021 10:00	07/01/2021	7471A	WP MTN
91837	HA-8 4-6'	Solids	06/30/2021 10:00	07/01/2021	6010D	WP MTN
91837	HA-8 4-6'	Solids	06/30/2021 10:00	07/01/2021	29B	WP MTN
91838	HA-9 0-2'	Solids	06/30/2021 10:45	07/01/2021		
91838	HA-9 0-2'	Solids	06/30/2021 10:45	07/01/2021	7471A	WP MTN
91838	HA-9 0-2'	Solids	06/30/2021 10:45	07/01/2021	6010D	WP MTN
91838	HA-9 0-2'	Solids	06/30/2021 10:45	07/01/2021	29B	WP MTN
91839	HA-9 2-4'	Solids	06/30/2021 10:50	07/01/2021		
91839	HA-9 2-4'	Solids	06/30/2021 10:50	07/01/2021	7471A	WP MTN
91839	HA-9 2-4'	Solids	06/30/2021 10:50	07/01/2021	6010D	WP MTN
91839	HA-9 2-4'	Solids	06/30/2021 10:50	07/01/2021	29B	WP MTN

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Sample Summary Table

Report Number: **21-182-0034**

Client Project Description: **Castex - Oversight of ICON/Split Samplin**
Project Number: 0575834

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
91840	HA-9 4-6'	Solids	06/30/2021 10:55	07/01/2021		
91840	HA-9 4-6'	Solids	06/30/2021 10:55	07/01/2021	7471A	WP MTN
91840	HA-9 4-6'	Solids	06/30/2021 10:55	07/01/2021	6010D	WP MTN
91840	HA-9 4-6'	Solids	06/30/2021 10:55	07/01/2021	29B	WP MTN

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Client: MPA/ERM
Project: Castex - Oversight of ICON/Split Samplin
Lab Report Number: 21-182-0034
Date: 7/22/2021

CASE NARRATIVE

Saturated Paste Extraction Method 29B
Sample 91837 (HA-8 4-6')
Analyte: Electrical Conductivity
QC Batch No: A68425/A68363/A68357
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits. At low conductivities as is the case with this duplicate pair, RPD is largely not applicable.

Saturated Paste Extraction Method 29B
Sample 91814 (HA-1 0-2')
Analyte: Sodium
QC Batch No: A68429/A68362/A68357
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

Sample 91837 (HA-8 4-6')
Analyte: Calcium
QC Batch No: A68429/A68363/A68357
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

Analyte: Sodium
QC Batch No: A68429/A68363/A68357
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

Metals Analysis Method 6010D
Sample 91833 (HA-7 2-4')
Analyte: Barium
QC Batch No: L564099/L563307
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Analyte: Lead
QC Batch No: L564099/L563307
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Analyte: Selenium
QC Batch No: L564099/L563307
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 91840 (HA-9 4-6')
Analyte: Lead
QC Batch No: L563653/L563309

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The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
- True Total Barium results are reported dry weight.
- Oil & Grease results are reported dry weight.
- TX1006 results are reported as received.
- Samples for TX1006 were collected using the bulk container option.
- PAH results reported as received.

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Anthony J. Albert
Laboratory Director

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Lab No : **91814**
Sample ID : **HA-1 0-2'**

Matrix: **Solids**
Sampled: **6/29/2021 8:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**15.8**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**70.9**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.360**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**7.71**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**20.5**	meq/100g	0.100	20	07/15/21 09:25		29B
Exchangeable Sodium Percentage	**1.80**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**3.26**	Calc	0.215	5	07/15/21 15:13		29B
Calcium (Sat Paste)	**0.989**	meq/L	0.250	5	07/16/21 08:56	BMB	29B
Magnesium (Sat Paste)	<0.410	meq/L	0.410	5	07/16/21 09:54	BMB	29B
Sodium (Sat Paste)	**2.29**	meq/L	0.215	5	07/15/21 15:13	BMB	29B
True Total Barium	<500	mg/Kg	500	1	07/16/21 01:25	JTR	29B
Arsenic	**3.01**	mg/Kg	1.00	1	07/15/21 20:07	JTR	6010D
Barium	**168**	mg/Kg	1.00	1	07/15/21 20:07	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:07	JTR	6010D
Chromium	**10.9**	mg/Kg	0.500	1	07/15/21 20:07	JTR	6010D
Lead	**8.06**	mg/Kg	0.600	1	07/15/21 20:07	JTR	6010D
Mercury	**0.0236**	mg/Kg	0.0157	1	07/14/21 15:42	TJS	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:07	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:07	JTR	6010D
Zinc	**14.1**	mg/Kg	2.50	1	07/15/21 20:07	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000377

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91815**
Sample ID : **HA-1 2-4'**

Matrix: **Solids**
Sampled: **6/29/2021 8:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.8**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**110**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.294**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**7.62**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**24.5**	meq/100g	0.100	20	07/15/21 09:26		29B
Exchangeable Sodium Percentage	**5.45**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**8.60**	Calc	0.100	2	07/15/21 15:15		29B
Calcium (Sat Paste)	**0.180**	meq/L	0.100	2	07/16/21 15:34	BMB	29B
Magnesium (Sat Paste)	<0.410	meq/L	0.410	5	07/16/21 09:56	BMB	29B
Sodium (Sat Paste)	**2.58**	meq/L	0.215	5	07/15/21 15:15	BMB	29B
True Total Barium	<500	mg/Kg	500	1	07/16/21 01:40	JTR	29B
Arsenic	**3.64**	mg/Kg	1.00	1	07/15/21 20:12	JTR	6010D
Barium	**196**	mg/Kg	1.00	1	07/15/21 20:12	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:12	JTR	6010D
Chromium	**10.6**	mg/Kg	0.500	1	07/15/21 20:12	JTR	6010D
Lead	**17.3**	mg/Kg	0.600	1	07/15/21 20:12	JTR	6010D
Mercury	**0.0208**	mg/Kg	0.0150	1	07/14/21 15:43	TJS	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:12	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:12	JTR	6010D
Zinc	**12.6**	mg/Kg	2.50	1	07/15/21 20:12	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91816**
Sample ID : **HA-1 4-6'**

Matrix: **Solids**
Sampled: **6/29/2021 8:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**24.8**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**120**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.321**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**7.72**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**35.1**	meq/100g	0.100	20	07/15/21 09:27		29B
Exchangeable Sodium Percentage	**6.33**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**9.29**	Calc	0.100	2	07/15/21 15:16		29B
Calcium (Sat Paste)	**0.174**	meq/L	0.100	2	07/16/21 15:35	BMB	29B
Magnesium (Sat Paste)	<0.410	meq/L	0.410	5	07/16/21 09:57	BMB	29B
Sodium (Sat Paste)	**2.74**	meq/L	0.215	5	07/15/21 15:16	BMB	29B
True Total Barium	<500	mg/Kg	500	1	07/16/21 01:45	JTR	29B
Arsenic	**3.51**	mg/Kg	1.00	1	07/15/21 20:26	JTR	6010D
Barium	**226**	mg/Kg	1.00	1	07/15/21 20:26	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:26	JTR	6010D
Chromium	**10.1**	mg/Kg	0.500	1	07/15/21 20:26	JTR	6010D
Lead	**8.74**	mg/Kg	0.600	1	07/15/21 20:26	JTR	6010D
Mercury	**0.0197**	mg/Kg	0.0150	1	07/14/21 15:44	TJS	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:26	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:26	JTR	6010D
Zinc	**19.9**	mg/Kg	2.50	1	07/15/21 20:26	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000379

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91817**
Sample ID : **HA-2 0-2'**

Matrix: **Solids**
Sampled: **6/29/2021 9:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**20.3**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**101**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**3.71**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.22**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**20.1**	meq/100g	0.100	20	07/15/21 09:28		29B
Exchangeable Sodium Percentage	**21.1**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**35.3**	Calc	0.500	10	07/15/21 15:17		29B
Calcium (Sat Paste)	**1.56**	meq/L	0.500	10	07/16/21 09:01	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 09:58	BMB	29B
Sodium (Sat Paste)	**31.2**	meq/L	0.860	20	07/15/21 15:17	BMB	29B
True Total Barium	**3520**	mg/Kg	500	1	07/16/21 01:50	JTR	29B
Arsenic	**6.62**	mg/Kg	1.00	1	07/15/21 20:31	JTR	6010D
Barium	**2530**	mg/Kg	10.0	10	07/16/21 18:47	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:31	JTR	6010D
Chromium	**35.1**	mg/Kg	0.500	1	07/15/21 20:31	JTR	6010D
Lead	**119**	mg/Kg	0.600	1	07/15/21 20:31	JTR	6010D
Mercury	**0.0649**	mg/Kg	0.0143	1	07/14/21 15:46	TJS	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:31	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:31	JTR	6010D
Zinc	**42.4**	mg/Kg	2.50	1	07/15/21 20:31	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000380

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91818**
Sample ID : **HA-2 2-4'**

Matrix: **Solids**
Sampled: **6/29/2021 9:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**23.8**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**183**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**5.80**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.17**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**22.5**	meq/100g	0.100	20	07/15/21 09:29		29B
Exchangeable Sodium Percentage	**21.6**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**64.9**	Calc	1.00	20	07/15/21 15:18		29B
Calcium (Sat Paste)	**1.21**	meq/L	1.00	20	07/16/21 09:03	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:00	BMB	29B
Sodium (Sat Paste)	**50.5**	meq/L	2.15	50	07/15/21 15:18	BMB	29B
True Total Barium	**14200**	mg/Kg	500	1	07/16/21 01:55	JTR	29B
Arsenic	**9.98**	mg/Kg	1.00	1	07/15/21 20:36	JTR	6010D
Barium	**1040**	mg/Kg	10.0	10	07/16/21 19:02	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:36	JTR	6010D
Chromium	**146**	mg/Kg	0.500	1	07/15/21 20:36	JTR	6010D
Lead	**200**	mg/Kg	0.600	1	07/15/21 20:36	JTR	6010D
Mercury	**0.0452**	mg/Kg	0.0154	1	07/15/21 16:05	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:36	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:36	JTR	6010D
Zinc	**93.6**	mg/Kg	2.50	1	07/15/21 20:36	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

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Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91819**
Sample ID : **HA-2 4-6'**

Matrix: **Solids**
Sampled: **6/29/2021 9:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.4**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**223**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**5.09**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.35**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**25.9**	meq/100g	0.100	20	07/15/21 09:30		29B
Exchangeable Sodium Percentage	**28.4**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**36.3**	Calc	1.00	20	07/15/21 15:19		29B
Calcium (Sat Paste)	**2.90**	meq/L	1.00	20	07/16/21 15:36	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:01	BMB	29B
Sodium (Sat Paste)	**43.7**	meq/L	2.15	50	07/15/21 15:19	BMB	29B
True Total Barium	**2620**	mg/Kg	500	1	07/16/21 02:00	JTR	29B
Arsenic	**2.83**	mg/Kg	1.00	1	07/15/21 20:41	JTR	6010D
Barium	**1130**	mg/Kg	10.0	10	07/16/21 19:07	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:41	JTR	6010D
Chromium	**12.0**	mg/Kg	0.500	1	07/15/21 20:41	JTR	6010D
Lead	**9.88**	mg/Kg	0.600	1	07/15/21 20:41	JTR	6010D
Mercury	**0.0260**	mg/Kg	0.0151	1	07/15/21 16:07	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:41	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:41	JTR	6010D
Zinc	**14.9**	mg/Kg	2.50	1	07/15/21 20:41	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91820**
Sample ID : **HA-3 0-2'**

Matrix: **Solids**
Sampled: **6/29/2021 10:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.7**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**202**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**2.06**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.61**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**23.9**	meq/100g	0.100	20	07/15/21 09:31		29B
Exchangeable Sodium Percentage	**36.7**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**27.5**	Calc	0.500	10	07/15/21 15:20		29B
Calcium (Sat Paste)	**0.906**	meq/L	0.500	10	07/16/21 15:38	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 10:02	BMB	29B
Sodium (Sat Paste)	**18.5**	meq/L	0.860	20	07/15/21 15:20	BMB	29B
True Total Barium	**624**	mg/Kg	500	1	07/16/21 02:05	JTR	29B
Arsenic	**4.25**	mg/Kg	1.00	1	07/15/21 20:46	JTR	6010D
Barium	**194**	mg/Kg	1.00	1	07/15/21 20:46	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:46	JTR	6010D
Chromium	**8.19**	mg/Kg	0.500	1	07/15/21 20:46	JTR	6010D
Lead	**6.76**	mg/Kg	0.600	1	07/15/21 20:46	JTR	6010D
Mercury	**0.0165**	mg/Kg	0.0148	1	07/15/21 16:08	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:46	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:46	JTR	6010D
Zinc	**14.5**	mg/Kg	2.50	1	07/15/21 20:46	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91821**
Sample ID : **HA-3 2-4'**

Matrix: **Solids**
Sampled: **6/29/2021 10:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**22.3**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**236**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**2.99**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.63**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**24.9**	meq/100g	0.100	20	07/15/21 09:32		29B
Exchangeable Sodium Percentage	**42.3**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**38.4**	Calc	0.500	10	07/15/21 15:21		29B
Calcium (Sat Paste)	**0.896**	meq/L	0.500	10	07/16/21 15:39	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 10:03	BMB	29B
Sodium (Sat Paste)	**25.7**	meq/L	0.860	20	07/15/21 15:21	BMB	29B
True Total Barium	<500	mg/Kg	500	1	07/16/21 02:10	JTR	29B
Arsenic	**2.79**	mg/Kg	1.00	1	07/15/21 20:51	JTR	6010D
Barium	**103**	mg/Kg	1.00	1	07/15/21 20:51	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:51	JTR	6010D
Chromium	**11.3**	mg/Kg	0.500	1	07/15/21 20:51	JTR	6010D
Lead	**8.46**	mg/Kg	0.600	1	07/15/21 20:51	JTR	6010D
Mercury	**0.0179**	mg/Kg	0.0156	1	07/15/21 16:10	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:51	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:51	JTR	6010D
Zinc	**15.0**	mg/Kg	2.50	1	07/15/21 20:51	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91822**
Sample ID : **HA-3 4-6'**

Matrix: **Solids**
Sampled: **6/29/2021 10:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**21.6**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**245**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**2.64**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.43**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**23.9**	meq/100g	0.100	20	07/15/21 09:35		29B
Exchangeable Sodium Percentage	**48.1**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**37.8**	Calc	0.500	10	07/15/21 15:21		29B
Calcium (Sat Paste)	**0.761**	meq/L	0.500	10	07/16/21 15:40	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 10:04	BMB	29B
Sodium (Sat Paste)	**23.3**	meq/L	0.860	20	07/15/21 15:21	BMB	29B
True Total Barium	**500**	mg/Kg	500	1	07/16/21 02:25	JTR	29B
Arsenic	**2.85**	mg/Kg	1.00	1	07/15/21 20:56	JTR	6010D
Barium	**104**	mg/Kg	1.00	1	07/15/21 20:56	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 20:56	JTR	6010D
Chromium	**9.36**	mg/Kg	0.500	1	07/15/21 20:56	JTR	6010D
Lead	**6.35**	mg/Kg	0.600	1	07/15/21 20:56	JTR	6010D
Mercury	**0.0303**	mg/Kg	0.0156	1	07/15/21 16:11	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 20:56	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 20:56	JTR	6010D
Zinc	**20.4**	mg/Kg	2.50	1	07/15/21 20:56	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91823**
Sample ID : **HA-4 0-2'**

Matrix: **Solids**
Sampled: **6/29/2021 15:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**26.3**	%		1	07/06/21 08:50	APB	SW-DRYWT
% Saturation (Sat Paste)	**100**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**2.14**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.13**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**25.0**	meq/100g	0.100	20	07/15/21 09:36		29B
Exchangeable Sodium Percentage	**7.12**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**14.6**	Calc	0.500	10	07/15/21 15:25		29B
Calcium (Sat Paste)	**2.68**	meq/L	0.500	10	07/16/21 09:11	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 10:08	BMB	29B
Sodium (Sat Paste)	**16.9**	meq/L	0.860	20	07/15/21 15:25	BMB	29B
True Total Barium	**13100**	mg/Kg	500	1	07/16/21 02:30	JTR	29B
Arsenic	**5.88**	mg/Kg	1.00	1	07/15/21 21:01	JTR	6010D
Barium	**1410**	mg/Kg	10.0	10	07/16/21 19:12	JADS	6010D
Cadmium	**0.440**	mg/Kg	0.200	1	07/15/21 21:01	JTR	6010D
Chromium	**89.1**	mg/Kg	0.500	1	07/15/21 21:01	JTR	6010D
Lead	**33.4**	mg/Kg	0.600	1	07/15/21 21:01	JTR	6010D
Mercury	**0.122**	mg/Kg	0.0155	1	07/15/21 16:12	DDB	7471A
Selenium	**1.37**	mg/Kg	1.00	1	07/15/21 21:01	JTR	6010D
Silver	**0.851**	mg/Kg	0.500	1	07/15/21 21:01	JTR	6010D
Zinc	**378**	mg/Kg	2.50	1	07/15/21 21:01	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000386

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Project Castex - Oversight of ICON/Split Samplin

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91824**
Sample ID : **HA-4 2-4'**

Matrix: **Solids**
Sampled: **6/29/2021 16:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**23.0**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**180**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**3.51**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.19**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**25.7**	meq/100g	0.100	20	07/15/21 09:37		29B
Exchangeable Sodium Percentage	**17.6**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**23.1**	Calc	0.860	20	07/15/21 15:26		29B
Calcium (Sat Paste)	**3.16**	meq/L	1.00	20	07/16/21 15:41	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:09	BMB	29B
Sodium (Sat Paste)	**29.0**	meq/L	0.860	20	07/15/21 15:26	BMB	29B
True Total Barium	**1250**	mg/Kg	500	1	07/16/21 02:35	JTR	29B
Arsenic	**4.35**	mg/Kg	1.00	1	07/15/21 21:06	JTR	6010D
Barium	**1160**	mg/Kg	10.0	10	07/16/21 19:17	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 21:06	JTR	6010D
Chromium	**18.5**	mg/Kg	0.500	1	07/15/21 21:06	JTR	6010D
Lead	**18.8**	mg/Kg	0.600	1	07/15/21 21:06	JTR	6010D
Mercury	**0.0340**	mg/Kg	0.0145	1	07/15/21 16:14	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 21:06	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 21:06	JTR	6010D
Zinc	**37.3**	mg/Kg	2.50	1	07/15/21 21:06	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000387

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91825**
Sample ID : **HA-4 4-6'**

Matrix: **Solids**
Sampled: **6/29/2021 16:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**29.5**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**144**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**5.79**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.02**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**25.3**	meq/100g	0.100	20	07/15/21 09:38		29B
Exchangeable Sodium Percentage	**22.5**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**55.0**	Calc	1.00	20	07/15/21 15:27		29B
Calcium (Sat Paste)	**1.65**	meq/L	1.00	20	07/16/21 09:13	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:10	BMB	29B
Sodium (Sat Paste)	**50.0**	meq/L	2.15	50	07/15/21 15:27	BMB	29B
True Total Barium	**2100**	mg/Kg	500	1	07/16/21 02:40	JTR	29B
Arsenic	**3.59**	mg/Kg	1.00	1	07/15/21 21:11	JTR	6010D
Barium	**557**	mg/Kg	1.00	1	07/15/21 21:11	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 21:11	JTR	6010D
Chromium	**7.94**	mg/Kg	0.500	1	07/15/21 21:11	JTR	6010D
Lead	**7.55**	mg/Kg	0.600	1	07/15/21 21:11	JTR	6010D
Mercury	**0.0170**	mg/Kg	0.0152	1	07/15/21 16:15	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 21:11	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 21:11	JTR	6010D
Zinc	**15.5**	mg/Kg	2.50	1	07/15/21 21:11	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000388

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91826**
Sample ID : **HA-5 0-2'**

Matrix: **Solids**
Sampled: **6/29/2021 16:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**30.9**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**89.7**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.808**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**7.71**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**26.1**	meq/100g	0.100	20	07/15/21 09:39		29B
Exchangeable Sodium Percentage	**2.80**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**3.29**	Calc	0.430	10	07/15/21 15:28		29B
Calcium (Sat Paste)	**2.43**	meq/L	0.500	10	07/16/21 09:14	BMB	29B
Magnesium (Sat Paste)	**0.860**	meq/L	0.820	10	07/16/21 10:11	BMB	29B
Sodium (Sat Paste)	**4.22**	meq/L	0.430	10	07/15/21 15:28	BMB	29B
True Total Barium	**6030**	mg/Kg	500	1	07/16/21 02:45	JTR	29B
Arsenic	**7.00**	mg/Kg	1.00	1	07/15/21 21:26	JTR	6010D
Barium	**1930**	mg/Kg	10.0	10	07/16/21 19:22	JADS	6010D
Cadmium	**0.297**	mg/Kg	0.200	1	07/15/21 21:26	JTR	6010D
Chromium	**119**	mg/Kg	0.500	1	07/15/21 21:26	JTR	6010D
Lead	**36.7**	mg/Kg	0.600	1	07/15/21 21:26	JTR	6010D
Mercury	**0.161**	mg/Kg	0.0156	1	07/15/21 16:20	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 21:26	JTR	6010D
Silver	**0.756**	mg/Kg	0.500	1	07/15/21 21:26	JTR	6010D
Zinc	**179**	mg/Kg	2.50	1	07/15/21 21:26	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91827**
Sample ID : **HA-5 2-4'**

Matrix: **Solids**
Sampled: **6/29/2021 17:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**31.7**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**86.5**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**4.83**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**7.69**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**18.8**	meq/100g	0.100	20	07/15/21 09:40		29B
Exchangeable Sodium Percentage	**4.54**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**7.38**	Calc	0.860	20	07/15/21 15:29		29B
Calcium (Sat Paste)	**2.24**	meq/L	1.00	20	07/16/21 09:15	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:12	BMB	29B
Sodium (Sat Paste)	**7.81**	meq/L	0.860	20	07/15/21 15:29	BMB	29B
Oil & Grease	**0.83**	%	0.10	1	07/06/21 15:00	APB	29B
True Total Barium	**68900**	mg/Kg	5000	10	07/16/21 12:06	JTR	29B
Arsenic	**4.51**	mg/Kg	1.00	1	07/15/21 21:31	JTR	6010D
Barium	**899**	mg/Kg	1.00	1	07/15/21 21:31	JTR	6010D
Cadmium	**0.922**	mg/Kg	0.200	1	07/15/21 21:31	JTR	6010D
Chromium	**73.1**	mg/Kg	0.500	1	07/15/21 21:31	JTR	6010D
Lead	**59.6**	mg/Kg	0.600	1	07/15/21 21:31	JTR	6010D
Mercury	**0.224**	mg/Kg	0.0155	1	07/15/21 16:21	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 21:31	JTR	6010D
Silver	**0.576**	mg/Kg	0.500	1	07/15/21 21:31	JTR	6010D
Zinc	**242**	mg/Kg	2.50	1	07/15/21 21:31	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91828**
Sample ID : **HA-5 4-6'**

Matrix: **Solids**
Sampled: **6/29/2021 17:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**44.1**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**99.9**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**4.85**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**9.12**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**25.7**	meq/100g	0.100	20	07/15/21 09:41		29B
Exchangeable Sodium Percentage	**9.12**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**13.6**	Calc	0.860	20	07/15/21 15:30		29B
Calcium (Sat Paste)	**11.7**	meq/L	1.00	20	07/16/21 09:17	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:14	BMB	29B
Sodium (Sat Paste)	**33.0**	meq/L	0.860	20	07/15/21 15:30	BMB	29B
Oil & Grease	**3.30**	%	0.10	1	07/06/21 15:00	APB	29B
True Total Barium	**10600**	mg/Kg	500	1	07/16/21 02:55	JTR	29B
Arsenic	**4.89**	mg/Kg	1.00	1	07/15/21 21:36	JTR	6010D
Barium	**772**	mg/Kg	1.00	1	07/15/21 21:36	JTR	6010D
Cadmium	**0.268**	mg/Kg	0.200	1	07/15/21 21:36	JTR	6010D
Chromium	**94.7**	mg/Kg	0.500	1	07/15/21 21:36	JTR	6010D
Lead	**26.5**	mg/Kg	0.600	1	07/15/21 21:36	JTR	6010D
Mercury	**0.147**	mg/Kg	0.0145	1	07/15/21 16:23	DDB	7471A
Selenium	**1.46**	mg/Kg	1.00	1	07/15/21 21:36	JTR	6010D
Silver	**0.655**	mg/Kg	0.500	1	07/15/21 21:36	JTR	6010D
Zinc	**166**	mg/Kg	2.50	1	07/15/21 21:36	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91829**
Sample ID : **HA-6 0-2'**

Matrix: **Solids**
Sampled: **6/30/2021 7:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**19.2**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**63.5**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.528**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.00**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**16.8**	meq/100g	0.100	20	07/15/21 09:42		29B
Exchangeable Sodium Percentage	**0.869**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**1.28**	Calc	0.215	5	07/15/21 15:31		29B
Calcium (Sat Paste)	**2.59**	meq/L	0.250	5	07/16/21 09:18	BMB	29B
Magnesium (Sat Paste)	**0.933**	meq/L	0.410	5	07/16/21 10:15	BMB	29B
Sodium (Sat Paste)	**1.70**	meq/L	0.215	5	07/15/21 15:31	BMB	29B
True Total Barium	**14300**	mg/Kg	500	1	07/16/21 03:00	JTR	29B
Arsenic	**3.34**	mg/Kg	1.00	1	07/15/21 21:40	JTR	6010D
Barium	**2190**	mg/Kg	10.0	10	07/16/21 19:27	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 21:40	JTR	6010D
Chromium	**24.0**	mg/Kg	0.500	1	07/15/21 21:40	JTR	6010D
Lead	**20.3**	mg/Kg	0.600	1	07/15/21 21:40	JTR	6010D
Mercury	**0.0369**	mg/Kg	0.0157	1	07/15/21 16:24	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 21:40	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 21:40	JTR	6010D
Zinc	**36.4**	mg/Kg	2.50	1	07/15/21 21:40	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000392

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91830**
Sample ID : **HA-6 2-4'**

Matrix: **Solids**
Sampled: **6/30/2021 7:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**18.8**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**101**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.711**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**6.29**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**25.3**	meq/100g	0.100	20	07/15/21 09:43		29B
Exchangeable Sodium Percentage	**4.21**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**9.62**	Calc	0.430	10	07/15/21 15:32		29B
Calcium (Sat Paste)	**0.540**	meq/L	0.500	10	07/16/21 09:20	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 10:16	BMB	29B
Sodium (Sat Paste)	**5.00**	meq/L	0.430	10	07/15/21 15:32	BMB	29B
True Total Barium	**899**	mg/Kg	500	1	07/16/21 03:05	JTR	29B
Arsenic	**2.33**	mg/Kg	1.00	1	07/15/21 21:45	JTR	6010D
Barium	**444**	mg/Kg	1.00	1	07/15/21 21:45	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 21:45	JTR	6010D
Chromium	**11.2**	mg/Kg	0.500	1	07/15/21 21:45	JTR	6010D
Lead	**12.2**	mg/Kg	0.600	1	07/15/21 21:45	JTR	6010D
Mercury	**0.0250**	mg/Kg	0.0151	1	07/15/21 16:25	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 21:45	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 21:45	JTR	6010D
Zinc	**15.2**	mg/Kg	2.50	1	07/15/21 21:45	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000393

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91831**
Sample ID : **HA-6 4-6'**

Matrix: **Solids**
Sampled: **6/30/2021 7:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**16.1**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**114**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.748**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**7.68**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**23.2**	meq/100g	0.100	20	07/15/21 09:44		29B
Exchangeable Sodium Percentage	**7.96**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**7.15**	Calc	0.430	10	07/15/21 15:33		29B
Calcium (Sat Paste)	**1.53**	meq/L	0.500	10	07/16/21 15:42	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 10:17	BMB	29B
Sodium (Sat Paste)	**6.25**	meq/L	0.430	10	07/15/21 15:33	BMB	29B
True Total Barium	**850**	mg/Kg	500	1	07/16/21 03:10	JTR	29B
Arsenic	**2.17**	mg/Kg	1.00	1	07/15/21 21:50	JTR	6010D
Barium	**261**	mg/Kg	1.00	1	07/15/21 21:50	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 21:50	JTR	6010D
Chromium	**8.80**	mg/Kg	0.500	1	07/15/21 21:50	JTR	6010D
Lead	**5.20**	mg/Kg	0.600	1	07/15/21 21:50	JTR	6010D
Mercury	**0.0273**	mg/Kg	0.0139	1	07/15/21 16:27	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 21:50	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 21:50	JTR	6010D
Zinc	**15.8**	mg/Kg	2.50	1	07/15/21 21:50	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91832**
Sample ID : **HA-7 0-2'**

Matrix: **Solids**
Sampled: **6/30/2021 8:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**16.3**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**70.7**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.478**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**8.12**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**18.8**	meq/100g	0.100	20	07/15/21 09:47		29B
Exchangeable Sodium Percentage	**1.18**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**1.57**	Calc	0.215	5	07/15/21 15:33		29B
Calcium (Sat Paste)	**2.17**	meq/L	0.250	5	07/16/21 09:22	BMB	29B
Magnesium (Sat Paste)	**0.859**	meq/L	0.410	5	07/16/21 10:17	BMB	29B
Sodium (Sat Paste)	**1.93**	meq/L	0.215	5	07/15/21 15:33	BMB	29B
True Total Barium	**7890**	mg/Kg	500	1	07/16/21 03:24	JTR	29B
Arsenic	**3.90**	mg/Kg	1.00	1	07/15/21 21:55	JTR	6010D
Barium	**1870**	mg/Kg	10.0	10	07/16/21 19:32	JADS	6010D
Cadmium	**0.469**	mg/Kg	0.200	1	07/15/21 21:55	JTR	6010D
Chromium	**40.3**	mg/Kg	0.500	1	07/15/21 21:55	JTR	6010D
Lead	**38.3**	mg/Kg	0.600	1	07/15/21 21:55	JTR	6010D
Mercury	**0.172**	mg/Kg	0.0146	1	07/15/21 16:28	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 21:55	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 21:55	JTR	6010D
Zinc	**120**	mg/Kg	2.50	1	07/15/21 21:55	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000395

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Mr. Dave Upthegrove
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Houston , TX 77024

Project Castex - Oversight of ICON/Split Samplin

Information : Project Number: 0575834

Report Date : 07/22/2021
Received : 07/01/2021

Report Number : **21-182-0034**

REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91833**
Sample ID : **HA-7 2-4'**

Matrix: **Solids**
Sampled: **6/30/2021 8:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**18.0**	%		1	07/08/21 16:20	APB	SW-DRYWT
% Saturation (Sat Paste)	**85.3**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**0.917**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**7.87**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**20.4**	meq/100g	0.100	20	07/15/21 09:49		29B
Exchangeable Sodium Percentage	**5.89**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**11.3**	Calc	0.430	10	07/15/21 15:37		29B
Calcium (Sat Paste)	**0.722**	meq/L	0.500	10	07/16/21 09:26	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 10:21	BMB	29B
Sodium (Sat Paste)	**6.78**	meq/L	0.430	10	07/15/21 15:37	BMB	29B
True Total Barium	**900**	mg/Kg	500	1	07/16/21 03:30	JTR	29B
Arsenic	**3.31**	mg/Kg	1.00	1	07/15/21 22:00	JTR	6010D
Barium	**497**	mg/Kg	1.00	1	07/15/21 22:00	JTR	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/15/21 22:00	JTR	6010D
Chromium	**12.8**	mg/Kg	0.500	1	07/15/21 22:00	JTR	6010D
Lead	**5.47**	mg/Kg	0.600	1	07/15/21 22:00	JTR	6010D
Mercury	**0.0350**	mg/Kg	0.0142	1	07/15/21 16:30	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/15/21 22:00	JTR	6010D
Silver	<0.500	mg/Kg	0.500	1	07/15/21 22:00	JTR	6010D
Zinc	**23.0**	mg/Kg	2.50	1	07/15/21 22:00	JTR	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000396

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91834**
Sample ID : **HA-7 4-6'**

Matrix: **Solids**
Sampled: **6/30/2021 8:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**17.1**	%		1	07/08/21 16:30	APB	SW-DRYWT
% Saturation (Sat Paste)	**105**	%		1	07/14/21 14:30	BMB	29B
Electrical Conductivity (Sat Paste)	**1.15**	mmhos/cm		1	07/14/21 14:30	BMB	29B
pH (Sat Paste)	**7.48**	s.u.		1	07/14/21 14:30	BMB	29B
Cation Exchange Capacity	**22.6**	meq/100g	0.100	20	07/15/21 09:50		29B
Exchangeable Sodium Percentage	**6.55**	%	0.100	1	07/14/21 14:30		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**16.0**	Calc	0.430	10	07/15/21 15:38		29B
Calcium (Sat Paste)	**0.613**	meq/L	0.500	10	07/16/21 09:27	BMB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	07/16/21 10:22	BMB	29B
Sodium (Sat Paste)	**8.86**	meq/L	0.430	10	07/15/21 15:38	BMB	29B
True Total Barium	**597**	mg/Kg	500	1	07/16/21 03:45	JTR	29B
Arsenic	**2.04**	mg/Kg	1.00	1	07/14/21 06:00	JADS	6010D
Barium	**150**	mg/Kg	1.00	1	07/14/21 06:00	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/14/21 06:00	JADS	6010D
Chromium	**5.25**	mg/Kg	0.500	1	07/14/21 06:00	JADS	6010D
Lead	**8.97**	mg/Kg	0.600	1	07/14/21 06:00	JADS	6010D
Mercury	<0.0158	mg/Kg	0.0158	1	07/15/21 16:31	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/14/21 06:00	JADS	6010D
Silver	<0.500	mg/Kg	0.500	1	07/14/21 06:00	JADS	6010D
Zinc	**13.0**	mg/Kg	2.50	1	07/14/21 06:00	JADS	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91835**
Sample ID : **HA-8 0-2**

Matrix: **Solids**
Sampled: **6/30/2021 9:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**19.4**	%		1	07/08/21 16:30	APB	SW-DRYWT
% Saturation (Sat Paste)	**63.9**	%		1	07/15/21 09:00	MJM	29B
Electrical Conductivity (Sat Paste)	**0.460**	mmhos/cm		1	07/15/21 09:00	MJM	29B
pH (Sat Paste)	**7.82**	s.u.		1	07/15/21 09:00	MJM	29B
Cation Exchange Capacity	**16.8**	meq/100g	0.100	20	07/15/21 09:51		29B
Exchangeable Sodium Percentage	**0.625**	%	0.100	1	07/15/21 09:00		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**0.972**	Calc	0.215	5	07/15/21 15:39		29B
Calcium (Sat Paste)	**2.54**	meq/L	0.250	5	07/16/21 09:28	BMB	29B
Magnesium (Sat Paste)	**0.609**	meq/L	0.410	5	07/16/21 10:23	BMB	29B
Sodium (Sat Paste)	**1.22**	meq/L	0.215	5	07/15/21 15:39	BMB	29B
True Total Barium	**16100**	mg/Kg	500	1	07/16/21 04:00	JTR	29B
Arsenic	**6.96**	mg/Kg	1.00	1	07/14/21 06:05	JADS	6010D
Barium	**3330**	mg/Kg	10.0	10	07/15/21 23:36	JADS	6010D
Cadmium	**1.05**	mg/Kg	0.200	1	07/14/21 06:05	JADS	6010D
Chromium	**249**	mg/Kg	0.500	1	07/14/21 06:05	JADS	6010D
Lead	**115**	mg/Kg	0.600	1	07/14/21 06:05	JADS	6010D
Mercury	**0.255**	mg/Kg	0.0158	1	07/15/21 16:32	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/14/21 06:05	JADS	6010D
Silver	**0.677**	mg/Kg	0.500	1	07/14/21 06:05	JADS	6010D
Zinc	**325**	mg/Kg	2.50	1	07/14/21 06:05	JADS	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000398

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91836**
Sample ID : **HA-8 2-4'**

Matrix: **Solids**
Sampled: **6/30/2021 9:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**17.5**	%		1	07/08/21 16:30	APB	SW-DRYWT
% Saturation (Sat Paste)	**110**	%		1	07/15/21 09:00	MJM	29B
Electrical Conductivity (Sat Paste)	**0.542**	mmhos/cm		1	07/15/21 09:00	MJM	29B
pH (Sat Paste)	**7.19**	s.u.		1	07/15/21 09:00	MJM	29B
Cation Exchange Capacity	**22.0**	meq/100g	0.100	20	07/15/21 09:52		29B
Exchangeable Sodium Percentage	**3.51**	%	0.100	1	07/15/21 09:00		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**7.50**	Calc	0.215	5	07/15/21 15:40		29B
Calcium (Sat Paste)	**0.487**	meq/L	0.250	5	07/16/21 09:29	BMB	29B
Magnesium (Sat Paste)	<0.410	meq/L	0.410	5	07/16/21 10:24	BMB	29B
Sodium (Sat Paste)	**3.70**	meq/L	0.215	5	07/15/21 15:40	BMB	29B
True Total Barium	**611**	mg/Kg	500	1	07/16/21 04:05	JTR	29B
Arsenic	**1.56**	mg/Kg	1.00	1	07/14/21 06:10	JADS	6010D
Barium	**257**	mg/Kg	1.00	1	07/14/21 06:10	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/14/21 06:10	JADS	6010D
Chromium	**6.06**	mg/Kg	0.500	1	07/14/21 06:10	JADS	6010D
Lead	**6.79**	mg/Kg	0.600	1	07/14/21 06:10	JADS	6010D
Mercury	**0.0240**	mg/Kg	0.0149	1	07/15/21 16:37	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/14/21 06:10	JADS	6010D
Silver	<0.500	mg/Kg	0.500	1	07/14/21 06:10	JADS	6010D
Zinc	**10.7**	mg/Kg	2.50	1	07/14/21 06:10	JADS	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91837**
Sample ID : **HA-8 4-6'**

Matrix: **Solids**
Sampled: **6/30/2021 10:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**17.3**	%		1	07/08/21 16:30	APB	SW-DRYWT
% Saturation (Sat Paste)	**79.5**	%		1	07/15/21 09:00	MJM	29B
Electrical Conductivity (Sat Paste)	**0.490**	mmhos/cm		1	07/15/21 09:00	MJM	29B
pH (Sat Paste)	**7.18**	s.u.		1	07/15/21 09:00	MJM	29B
Cation Exchange Capacity	**18.9**	meq/100g	0.100	20	07/15/21 09:53		29B
Exchangeable Sodium Percentage	**6.22**	%	0.100	1	07/15/21 09:00		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**3.57**	Calc	0.215	5	07/15/21 15:41		29B
Calcium (Sat Paste)	<0.250	meq/L	0.250	5	07/16/21 09:30	BMB	29B
Magnesium (Sat Paste)	<0.410	meq/L	0.410	5	07/16/21 10:25	BMB	29B
Sodium (Sat Paste)	**3.57**	meq/L	0.215	5	07/15/21 15:41	BMB	29B
True Total Barium	<500	mg/Kg	500	1	07/16/21 04:10	JTR	29B
Arsenic	**1.45**	mg/Kg	1.00	1	07/14/21 06:14	JADS	6010D
Barium	**56.8**	mg/Kg	1.00	1	07/14/21 06:14	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/14/21 06:14	JADS	6010D
Chromium	**3.48**	mg/Kg	0.500	1	07/14/21 06:14	JADS	6010D
Lead	**4.69**	mg/Kg	0.600	1	07/14/21 06:14	JADS	6010D
Mercury	**0.0274**	mg/Kg	0.0141	1	07/15/21 16:38	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/14/21 06:14	JADS	6010D
Silver	<0.500	mg/Kg	0.500	1	07/14/21 06:14	JADS	6010D
Zinc	**8.60**	mg/Kg	2.50	1	07/14/21 06:14	JADS	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000400

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91838**
Sample ID : **HA-9 0-2'**

Matrix: **Solids**
Sampled: **6/30/2021 10:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**18.3**	%		1	07/08/21 16:30	APB	SW-DRYWT
% Saturation (Sat Paste)	**101**	%		1	07/15/21 09:00	MJM	29B
Electrical Conductivity (Sat Paste)	**4.72**	mmhos/cm		1	07/15/21 09:00	MJM	29B
pH (Sat Paste)	**8.43**	s.u.		1	07/15/21 09:00	MJM	29B
Cation Exchange Capacity	**19.8**	meq/100g	0.100	20	07/15/21 09:54		29B
Exchangeable Sodium Percentage	**11.9**	%	0.100	1	07/15/21 09:00		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**35.7**	Calc	1.00	20	07/15/21 15:43		29B
Calcium (Sat Paste)	**2.25**	meq/L	1.00	20	07/16/21 09:33	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:28	BMB	29B
Sodium (Sat Paste)	**37.9**	meq/L	2.15	50	07/15/21 15:43	BMB	29B
True Total Barium	**784**	mg/Kg	500	1	07/16/21 04:25	JTR	29B
Arsenic	**2.59**	mg/Kg	1.00	1	07/14/21 06:20	JADS	6010D
Barium	**75.3**	mg/Kg	1.00	1	07/14/21 06:20	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/14/21 06:20	JADS	6010D
Chromium	**8.39**	mg/Kg	0.500	1	07/14/21 06:20	JADS	6010D
Lead	**5.80**	mg/Kg	0.600	1	07/14/21 06:20	JADS	6010D
Mercury	**0.0283**	mg/Kg	0.0150	1	07/15/21 16:48	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/14/21 06:20	JADS	6010D
Silver	<0.500	mg/Kg	0.500	1	07/14/21 06:20	JADS	6010D
Zinc	**14.3**	mg/Kg	2.50	1	07/14/21 06:20	JADS	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000401

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91839**
Sample ID : **HA-9 2-4'**

Matrix: **Solids**
Sampled: **6/30/2021 10:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**19.7**	%		1	07/08/21 16:30	APB	SW-DRYWT
% Saturation (Sat Paste)	**189**	%		1	07/15/21 09:00	MJM	29B
Electrical Conductivity (Sat Paste)	**5.63**	mmhos/cm		1	07/15/21 09:00	MJM	29B
pH (Sat Paste)	**6.49**	s.u.		1	07/15/21 09:00	MJM	29B
Cation Exchange Capacity	**22.6**	meq/100g	0.100	20	07/15/21 09:55		29B
Exchangeable Sodium Percentage	**25.0**	%	0.100	1	07/15/21 09:00		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**46.3**	Calc	1.00	20	07/15/21 15:44		29B
Calcium (Sat Paste)	<1.00	meq/L	1.00	20	07/16/21 09:34	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:29	BMB	29B
Sodium (Sat Paste)	**46.3**	meq/L	2.15	50	07/15/21 15:44	BMB	29B
True Total Barium	<500	mg/Kg	500	1	07/16/21 04:30	JTR	29B
Arsenic	**1.52**	mg/Kg	1.00	1	07/14/21 06:25	JADS	6010D
Barium	**130**	mg/Kg	1.00	1	07/14/21 06:25	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/14/21 06:25	JADS	6010D
Chromium	**6.76**	mg/Kg	0.500	1	07/14/21 06:25	JADS	6010D
Lead	**7.38**	mg/Kg	0.600	1	07/14/21 06:25	JADS	6010D
Mercury	**0.0196**	mg/Kg	0.0148	1	07/15/21 16:50	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/14/21 06:25	JADS	6010D
Silver	<0.500	mg/Kg	0.500	1	07/14/21 06:25	JADS	6010D
Zinc	**11.9**	mg/Kg	2.50	1	07/14/21 06:25	JADS	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000402

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REPORT OF ANALYSIS

Anthony J. Albert
Laboratory Director

Lab No : **91840**
Sample ID : **HA-9 4-6'**

Matrix: **Solids**
Sampled: **6/30/2021 10:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	**17.4**	%		1	07/08/21 16:30	APB	SW-DRYWT
% Saturation (Sat Paste)	**219**	%		1	07/15/21 09:00	MJM	29B
Electrical Conductivity (Sat Paste)	**6.31**	mmhos/cm		1	07/15/21 09:00	MJM	29B
pH (Sat Paste)	**7.84**	s.u.		1	07/15/21 09:00	MJM	29B
Cation Exchange Capacity	**20.2**	meq/100g	0.100	20	07/15/21 09:55		29B
Exchangeable Sodium Percentage	**26.7**	%	0.100	1	07/15/21 09:00		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	**52.5**	Calc	1.00	20	07/15/21 15:45		29B
Calcium (Sat Paste)	<1.00	meq/L	1.00	20	07/16/21 09:35	BMB	29B
Magnesium (Sat Paste)	<1.64	meq/L	1.64	20	07/16/21 10:30	BMB	29B
Sodium (Sat Paste)	**52.5**	meq/L	2.15	50	07/15/21 15:45	BMB	29B
True Total Barium	<500	mg/Kg	500	1	07/16/21 04:35	JTR	29B
Arsenic	<1.00	mg/Kg	1.00	1	07/14/21 06:30	JADS	6010D
Barium	**66.0**	mg/Kg	1.00	1	07/14/21 06:30	JADS	6010D
Cadmium	<0.200	mg/Kg	0.200	1	07/14/21 06:30	JADS	6010D
Chromium	**5.00**	mg/Kg	0.500	1	07/14/21 06:30	JADS	6010D
Lead	**6.81**	mg/Kg	0.600	1	07/14/21 06:30	JADS	6010D
Mercury	<0.0155	mg/Kg	0.0155	1	07/15/21 16:54	DDB	7471A
Selenium	<1.00	mg/Kg	1.00	1	07/14/21 06:30	JADS	6010D
Silver	<0.500	mg/Kg	0.500	1	07/14/21 06:30	JADS	6010D
Zinc	**12.3**	mg/Kg	2.50	1	07/14/21 06:30	JADS	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

BP/Castex-Ltd Adm-Apx E-000403

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563265
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): L564097
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-L563265 Matrix: SOL

Associated Lab Samples: 91814, 91815, 91816, 91817, 91818, 91819, 91820, 91821, 91822, 91823, 91824, 91825, 91826, 91827, 91828, 91829, 91830, 91831, 91832, 91833

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 500	500	07/16/21 01:04

Laboratory Control Sample LCS-L563265

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	9710	8100	83.0	80-120

Matrix Spike & Matrix Spike Duplicate A 91814-A68357-MS-L563265 A 91814-A68357-MSD-L563265

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	< 500	6760	8060	5990	7000	89.0	87.0	75-125	15.5	20.0

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563266
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): L564097
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-L563266 Matrix: SOL
Associated Lab Samples: 91834, 91835, 91836, 91837, 91838, 91839, 91840

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 500	500	07/16/21 03:35

Laboratory Control Sample LCS-L563266

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	8620	9300	108	80-120

Matrix Spike & Matrix Spike Duplicate A 91834-A68357-MS-L563266 A 91834-A68357-MSD-L563266

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	597	9090	5780	10300	6790	107	107	75-125	41.0*	20.0

* QC Fail

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: A68360
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A68431
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A68360 Matrix: SOL

Associated Lab Samples: 91814, 91815, 91816, 91817, 91818, 91819, 91820, 91821, 91822, 91823, 91824, 91825, 91826, 91827, 91828, 91829, 91830, 91831, 91832, 91833

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	07/15/21 09:23

Duplicate A 91832-A68357-DUP-A68360

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	4330	4210	2.8	30.0	07/15/21 09:48

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Quality Control Data

Client ID: **MPA/ERM**
Project Description: **Castex - Oversight of ICON/Split Sampling**
Report No: **21-182-0034**

QC Prep: A68361
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A68431
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A68361 Matrix: SOL
Associated Lab Samples: 91834, 91835, 91836, 91837, 91838, 91839, 91840

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	07/15/21 09:24

Duplicate A 91840-A68357-DUP-A68361

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	4640	4960	6.6	30.0	07/15/21 09:59

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: A68358
QC Prep Batch Method: 29B
QC Analytical Batch(es): A68444
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 91832-A68357-DUP-A68358

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	0.358	0.344	3.9	20.0	07/15/21 11:46

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: A68359
QC Prep Batch Method: 29B
QC Analytical Batch(es): A68444
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 91840-A68357-DUP-A68359

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	16.9	17.5	3.4	20.0	07/15/21 10:36

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Analytical Batch: A68310
Analysis Method: 29B
Analysis Description: Soxhlet Oil and Grease

Lab Reagent Blank LRB Matrix: SOL
Associated Lab Samples: 91827, 91828

Parameter	Units	Blank Result	MQL	Analyzed
Oil & Grease	%	< 0.10	0.10	07/06/21 15:00

Laboratory Control Sample LCS

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Oil & Grease	%	1.26	1.23	98.0	70-130

Duplicate A 91827-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Oil & Grease	%	0.83	0.88	5.8	35.0	07/06/21 15:00

Matrix Spike A 91827-MS

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	%Rec Limits	Max RPD
Oil & Grease	%	0.83	1.63		2.52		104	50-150	

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: A68362
QC Prep Batch Method: 29B
QC Analytical Batch(es): A68424,A68429
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 91814-A68357-DUP-A68362

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	70.9	71.7	1.1	30.0	07/14/21 14:30
Electrical Conductivity (Sat Paste)	mmhos/cm	0.360	0.464	25.2	30.0	07/14/21 14:30
pH (Sat Paste)	s.u.	7.71	8.01	3.8	30.0	07/14/21 14:30

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Quality Control Data

Client ID: **MPA/ERM**
Project Description: **Castex - Oversight of ICON/Split Sampling**
Report No: **21-182-0034**

QC Prep: A68363
QC Prep Batch Method: 29B
QC Analytical Batch(es): A68425,A68429
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 91837-A68357-DUP-A68363

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	79.5	84.3	5.8	30.0	07/15/21 09:00
Electrical Conductivity (Sat Paste)	mmhos/cm	0.490	0.706	36.1*	30.0	07/15/21 09:00
pH (Sat Paste)	s.u.	7.18	7.26	1.1	30.0	07/15/21 09:00

* QC Fail

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Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: A68362
QC Prep Batch Method: 29B
QC Analytical Batch(es): A68424,A68429
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 91814-A68357-DUP-A68362

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	0.989	1.16	15.9	30.0	07/16/21 08:57
Magnesium (Sat Paste)	meq/L	< 0.410	< 0.410	0.0	30.0	07/16/21 09:55
Sodium (Sat Paste)	meq/L	2.29	3.31	36.4*	30.0	07/15/21 15:14

* QC Fail

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: A68363
QC Prep Batch Method: 29B
QC Analytical Batch(es): A68425,A68429
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 91837-A68357-DUP-A68363

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Magnesium (Sat Paste)	meq/L	< 0.410	< 0.410	0.0	30.0	07/16/21 10:27
Sodium (Sat Paste)	meq/L	3.57	5.09	35.1*	30.0	07/15/21 15:42

* QC Fail

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563307
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L564099
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-L563307 Matrix: SOL

Associated Lab Samples: 91814, 91815, 91816, 91817, 91818, 91819, 91820, 91821, 91822, 91823, 91824, 91825, 91826, 91827, 91828, 91829, 91830, 91831, 91832, 91833

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 1.00	1.00	07/15/21 20:02
Barium	mg/Kg	< 1.00	1.00	07/15/21 20:02
Cadmium	mg/Kg	< 0.200	0.200	07/15/21 20:02
Chromium	mg/Kg	< 0.500	0.500	07/15/21 20:02
Lead	mg/Kg	< 0.600	0.600	07/15/21 20:02
Selenium	mg/Kg	< 1.00	1.00	07/15/21 20:02
Silver	mg/Kg	< 0.500	0.500	07/15/21 20:02
Zinc	mg/Kg	< 2.50	2.50	07/15/21 20:02

Laboratory Control Sample LCS-L563307

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/Kg	10.0	10.1	101	80-120
Barium	mg/Kg	100	101	101	80-120
Cadmium	mg/Kg	10.0	10.3	103	80-120
Chromium	mg/Kg	100	111	111	80-120
Lead	mg/Kg	10.0	10.4	104	80-120
Selenium	mg/Kg	10.0	10.6	106	80-120
Silver	mg/Kg	10.0	10.8	108	80-120
Zinc	mg/Kg	100	105	105	80-120

Matrix Spike & Matrix Spike Duplicate A 91833-MS-L563307 A 91833-MSD-L563307

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	3.31	9.71	9.80	11.2	11.1	81.0	79.0	75-125	0.8	20.0
Barium	mg/Kg	497	97.1	98.0	609	453	115	-45*	75-125	29.3*	20.0

* QC Fail

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563307
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L564099
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 91833-MS-L563307 A 91833-MSD-L563307

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Cadmium	mg/Kg	< 0.200	9.71	9.80	8.22	8.76	85.0	89.0	75-125	6.3	20.0
Chromium	mg/Kg	12.8	97.1	98.0	102	109	92.0	98.0	75-125	6.6	20.0
Lead	mg/Kg	5.47	9.71	9.80	25.5	14.7	206*	94.0	75-125	53.7*	20.0
Selenium	mg/Kg	< 1.00	9.71	9.80	7.19	8.77	74.0*	89.0	75-125	19.7	20.0
Silver	mg/Kg	< 0.500	9.71	9.80	8.99	9.80	93.0	100	75-125	8.6	20.0
Zinc	mg/Kg	23.0	97.1	98.0	101	108	80.0	87.0	75-125	6.6	20.0

* QC Fail

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563309
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L563653
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-L563309 Matrix: SOL
Associated Lab Samples: 91834, 91835, 91836, 91837, 91838, 91839, 91840

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 1.00	1.00	07/14/21 05:54
Barium	mg/Kg	< 1.00	1.00	07/14/21 05:54
Cadmium	mg/Kg	< 0.200	0.200	07/14/21 05:54
Chromium	mg/Kg	< 0.500	0.500	07/14/21 05:54
Lead	mg/Kg	< 0.600	0.600	07/14/21 05:54
Selenium	mg/Kg	< 1.00	1.00	07/14/21 05:54
Silver	mg/Kg	< 0.500	0.500	07/14/21 05:54
Zinc	mg/Kg	< 2.50	2.50	07/14/21 05:54

Laboratory Control Sample LCS-L563309

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/Kg	10.0	10.3	103	80-120
Barium	mg/Kg	100	106	106	80-120
Cadmium	mg/Kg	10.0	10.5	105	80-120
Chromium	mg/Kg	100	112	112	80-120
Lead	mg/Kg	10.0	10.5	105	80-120
Selenium	mg/Kg	10.0	9.81	98.0	80-120
Silver	mg/Kg	10.0	10.7	107	80-120
Zinc	mg/Kg	100	110	110	80-120

Matrix Spike & Matrix Spike Duplicate A 91840-MS-L563309 A 91840-MSD-L563309

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	< 1.00	9.52	9.63	9.53	10.2	100	106	75-125	6.7	20.0
Barium	mg/Kg	66.0	95.2	96.3	170	185	109	124	75-125	8.4	20.0

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563309
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L563653
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 91840-MS-L563309 A 91840-MSD-L563309

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Cadmium	mg/Kg	< 0.200	9.52	9.63	9.57	9.34	100	97.0	75-125	2.4	20.0
Chromium	mg/Kg	5.00	95.2	96.3	111	107	111	106	75-125	3.6	20.0
Lead	mg/Kg	6.81	9.52	9.63	18.1	22.4	119	162*	75-125	21.2*	20.0
Selenium	mg/Kg	< 1.00	9.52	9.63	8.61	8.30	90.0	86.0	75-125	3.6	20.0
Silver	mg/Kg	< 0.500	9.52	9.63	9.94	9.59	104	100	75-125	3.5	20.0
Zinc	mg/Kg	12.3	95.2	96.3	118	114	111	106	75-125	3.4	20.0

* QC Fail

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563418
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L563721
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L563418 Matrix: SOL
Associated Lab Samples: 91814, 91815, 91816, 91817

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.0160	0.0160	07/14/21 15:12

Laboratory Control Sample LCS-L563418

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.450	113	80-120

Matrix Spike & Matrix Spike Duplicate P 92790-MS-L563418 P 92790-MSD-L563418

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	0.0174	0.349	0.398	0.370	0.415	101	100	80-120	11.4	20.0

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563682
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L563951
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L563682 Matrix: SOL

Associated Lab Samples: 91818, 91819, 91820, 91821, 91822, 91823, 91824, 91825, 91826, 91827, 91828, 91829, 91830, 91831, 91832, 91833, 91834, 91835, 91836, 91837

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.0160	0.0160	07/15/21 16:02

Laboratory Control Sample LCS-L563682

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.422	106	80-120

Matrix Spike & Matrix Spike Duplicate A 91837-MS-L563682 A 91837-MSD-L563682

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	0.0274	0.374	0.344	0.415	0.385	104	104	80-120	7.5	20.0

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Quality Control Data

Client ID: MPA/ERM
Project Description: Castex - Oversight of ICON/Split Sampling
Report No: 21-182-0034

QC Prep: L563683
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L563951
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L563683 Matrix: SOL
Associated Lab Samples: 91838, 91839, 91840

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.0160	0.0160	07/15/21 16:45

Laboratory Control Sample LCS-L563683

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.430	108	80-120

Matrix Spike & Matrix Spike Duplicate A 91840-MS-L563683 A 91840-MSD-L563683

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	< 0.0143	0.357	0.389	0.392	0.419	110	108	80-120	6.6	20.0

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Quality Control Data

Client ID: **MPA/ERM**
Project Description: **Castex - Oversight of ICON/Split Sampling**
Report No: **21-182-0034**

QC Analytical Batch: A68313
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 91814-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	15.8	15.9	0.6	20.0	07/06/21 08:50

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Quality Control Data

Client ID: **MPA/ERM**
Project Description: **Castex - Oversight of ICON/Split Sampling**
Report No: **21-182-0034**

QC Analytical Batch: A68349
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 91824-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	23.0	23.1	0.4	20.0	07/08/21 16:20

Waypoint ANALYTICAL
5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Quality Control Data

Client ID: **MPA/ERM**
Project Description: **Castex - Oversight of ICON/Split Sampling**
Report No: **21-182-0034**

QC Analytical Batch: A68350
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 91834-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	17.1	17.4	1.7	20.0	07/08/21 16:30

Waypoint ANALYTICAL

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Shipment Receipt Form

Customer Number: **10485**
Customer Name: **MPA/ERM**
Report Number: **21-182-0034**

Shipping Method

(●) Fed Ex	( ) US Postal	( ) Lab	( ) Other :	
( ) UPS	( ) Client	( ) Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	(●) Yes	( ) No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	( ) Yes	( ) No	(●) Not Present
Custody seals intact on sample bottles?	( ) Yes	( ) No	(●) Not Present
Chain of Custody (COC) present?	(●) Yes	( ) No	
COC agrees with sample label(s)?	(●) Yes	( ) No	
COC properly completed	(●) Yes	( ) No	
Samples in proper containers?	(●) Yes	( ) No	
Sample containers intact?	(●) Yes	( ) No	
Sufficient sample volume for indicated test(s)?	(●) Yes	( ) No	
All samples received within holding time?	(●) Yes	( ) No	
Cooler temperature in compliance?	(●) Yes	( ) No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	(●) Yes	( ) No	
Water - Sample containers properly preserved	( ) Yes	( ) No	(●) N/A
Water - VOA vials free of headspace	( ) Yes	( ) No	(●) N/A
Trip Blanks received with VOAs	( ) Yes	( ) No	(●) N/A
Soil VOA method 5035 – compliance criteria met	( ) Yes	( ) No	(●) N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	( ) Yes	(●) No

Comments:

Signature: Christina R. Varuso Date & Time: 07/01/2021 08:57:00

21-182-0034
10485
07-01-2021
17:26:07
ERM (Sugar Land)
Castex - Oversight of ICON/Split Sampling

Client Name/Ac	Client Project Manager/Contact	Billing Information
Castex	Shawn Wiggins	Bill to ERM

Project Description	Project/Site Location (City/State)	RUSH – Additional charges apply Special Detection Limit(s) Date Results Needed	Method of Shipment Fed Ex UPS USPS Courier Client Drop Off Other	Matrix Key WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc
Oversight of ICON/Split Sampling	Castex, Jennings, LA			

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575834	832-730-4388	shawn.wiggins@erm.com		

Waypoint ANALYTICAL
5041 Taravella Road
Marrero, LA 70072
(504) 371-8560

Unless noted, all containers per Table II of 40 CFR Part 136.

A Cool < 10C Na2S2O3 (Micro Only)
B Cool <= 6C
C H2SO4 pH<2
D None Required
E NaOH pH>10
F HNO3 pH<2
G HCL pH<2
H H3PO4 pH<2
I Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	% Moisture	29B Salts	29B Metals	Comments/Notes
6/29	0820	HA-1 0-2'	1	S	G	X	X	X	91814
6/29	0830	HA-1 2-4'	1	S	G	X	X	X	91815
6/29	0840	HA-1 4-6'	1	S	G	X	X	X	91816
6/29	0940	HA-2 0-2'	1	S	G	X	X	X	91817
6/29	0945	HA-2 2-4'	1	S	G	X	X	X	91818
6/29	0950	HA-2 4-6'	1	S	G	X	X	X	91819
6/29	1040	HA-3 0-2'	1	S	G	X	X	X	91820
6/29	1045	HA-3 2-4'	1	S	G	X	X	X	91821
6/29	1050	HA-3 4-6'	1	S	G	X	X	X	91822
6/29	1555	HA-4 0-2'	1	S	G	X	X	X	91823

Required Analysis / Preservative

For Laboratory Use Only

Ice	Custody Seals	Lab Comments	Blank/Cooler Temp
Y/N	Y/N	FedEx 2809 7224 1150	2.7°C

Sampled by (Name – Print): Michael Goodman

Client Remarks/Comments

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
	6/30		7-1-21 0857
Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time

BP/Castex-Ltd Adm-Apx E-000426

Client Name/Ac	Client Project Manager/Contact	Billing Information	
Castex	Shawn Wiggins	Bill to ERM	

21-182-0034
10485
07-01-2021
17:26:07
ERM (Sugar Land)
Castex - Oversight of ICON/Split Sampling

Project Description	Project/Site Location (City/State)		Method of Shipm
Oversight of ICON/Split Sampling	Castex, Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other

WW – Wastewater GW – Groundwater
DW – Drinking Water S – Soil /Solid O – Oil
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575834	832-730-4388	shawn.wiggins@erm.com		

Waypoint ANALYTICAL
5041 Taravella Road
Marrero, LA 70072
(504) 371-8560

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	% Moisture	29B Metals	29B Salts	HEM O&G						Comments/Notes
						Required Analysis / Preservative									
6/29	1600	HA-4 2-4'	1	S	G	X	X	X							91824
6/29	1605	HA-4 4-6'	1	S	G	X	X	X							91825
6/29	1655	HA-5 0-2'	1	S	G	X	X	X							91826
6/29	1700	HA-5 2-4'	2	S	G	X	X	X	X						91827
6/29	1705	HA-5 4-6'	2	S	G	X	X	X	X						91828
6/30	0745	HA-6 0-2'	1	S	G	X	X	X							91829
6/30	0750	HA-6 2-4'	1	S	G	X	X	X							91830
6/30	0755	HA-6 4-6'	1	S	G	X	X	X							91831
6/30	0845	HA-7 0-2'	1	S	G	X	X	X							91832
6/30	0850	HA-7 2-4	1	S	G	X	X	X							91833

For Laboratory Use Only

Ice	Custody Seals	Lab Comments	Blank/Cooler Temp
Y/N	Y/N	Fed Ex 2809 7224 1150	2.7°C

Sampled by (Name – Print): Michael Goodman

Client Remarks/Comments

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
	6-30		7-1-21 857
Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time

Client Name/Ac	Client Project Manager/Contact	Billing Information	For Laboratory Use Only
Castex	Shawn Wiggins	Bill to ERM	

Project Description	Project/Site Location (City/State)		Method of Shipment	Matrix Key
Oversight of ICON/Split Sampling	Castex, Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575834	832-730-4388	shawn.wiggins@erm.com		

Waypoint ANALYTICAL
5041 Taravella Road
Marrero, LA 70072
(504) 371-8560

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCl pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	% Moisture	29B Metals	29B Salts							Comments/Notes
			Required Analysis / Preservative												
6/30	0855	HA-7 4-6'	1	S	G	X	X	X							91834
6/30	0950	HA-8 0-2'	1	S	G	X	X	X							91835
6/30	0955	HA-8 2-4'	1	S	G	X	X	X							91836
6/30	1000	HA-8 4-6'	1	S	G	X	X	X							91837
6/30	1045	HA-9 0-2'	1	S	G	X	X	X							91838
6/30	1050	HA-9 2-4'	1	S	G	X	X	X							91839
6/30	1055	HA-9 4-6'	1	S	G	X	X	X							91840

For Laboratory Use Only			Sampled by (Name – Print)	Client Remarks/Comments
Ice	Custody Seals	Lab Comments	Michael Goodman	
(Y) N	Y / (N)	FedEx 2809 7224 1150		
Blank/Cooler Temp				
2.7°C				

	Date Time		Date Time
Relinquished by: (SIGNATURE)	6-30	Received by: (SIGNATURE)	7-1-21 0857
Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time

BP/Castex-Ltd Adm-Apx E-000428

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

April 06, 2022

David Upthegrove
ERM Southwest, Inc.
804 Main Street
Baton Rouge, LA 70802

Work Order: **HS22031358**

Laboratory Results for: **Castex 0575834**

Dear David Upthegrove,

ALS Environmental received 11 sample(s) on Mar 25, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Anna Kinchen
Project Manager

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22031358

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22031358-01	CD-5B	Water		23-Mar-2022 10:20	25-Mar-2022 08:00	☐
HS22031358-02	CD-2A	Water		17-Mar-2022 08:25	25-Mar-2022 08:00	☐
HS22031358-03	CD-2B	Water		17-Mar-2022 10:50	25-Mar-2022 08:00	☐
HS22031358-04	CD-3A	Water		17-Mar-2022 13:40	25-Mar-2022 08:00	☐
HS22031358-05	CD-3B	Water		18-Mar-2022 08:10	25-Mar-2022 08:00	☐
HS22031358-06	CD-1B	Water		18-Mar-2022 09:00	25-Mar-2022 08:00	☐
HS22031358-07	CD-1A	Water		18-Mar-2022 09:55	25-Mar-2022 08:00	☐
HS22031358-08	CD-1C	Water		21-Mar-2022 11:00	25-Mar-2022 08:00	☐
HS22031358-09	CD-4A	Water		21-Mar-2022 13:45	25-Mar-2022 08:00	☐
HS22031358-10	CD-4B	Water		21-Mar-2022 15:00	25-Mar-2022 08:00	☐
HS22031358-11	CD-5A	Water		21-Mar-2022 16:25	25-Mar-2022 08:00	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc. **CASE NARRATIVE**
Project: Castex 0575834
Work Order: HS22031358

Work Order Comments

- Sample CD-1B - the Dissolved Metals aliquot pH>6; we preserved the sample at the lab.
- Samples taken on 03/17/22 were received out of hold time for TDS. Samples taken on 03/18/22 had minimal holding time remaining for TDS.

GC Semivolatiles by Method MA EPH

Batch ID: 176983

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method MA VPH

Batch ID: R405211,R405301

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R404990

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22031358

CASE NARRATIVE

Metals by Method SW6020A

Batch ID: 177174

Sample ID: CD-3A (HS22031358-04)

- Sample ran at 10x due to high concentration of Sodium.

Sample ID: CD-5B (HS22031358-01)

- Sample ran at 5x due to high concentration of Sodium.

Sample ID: HS22031336-17MS

- MS and MSD are for an unrelated sample

Batch ID: 177003

Sample ID: CD-2A (HS22031358-02)

- Sample ran at 5x due to high concentration of Sodium.

Sample ID: CD-3A (HS22031358-04)

- Sample ran at 10x due to high concentration of Sodium.

Sample ID: CD-5B (HS22031358-01)

- Sample ran at 5x due to high concentration of Sodium.

Sample ID: HS22031233-01MS

- MS and MSD are for an unrelated sample

Metals by Method SW7470A

Batch ID: 176829,176886,176988,177081

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: ERM Southwest, Inc. **CASE NARRATIVE**
Project: Castex 0575834
Work Order: HS22031358

WetChemistry by Method SW9056

Batch ID: R405357

Sample ID: CD-3A (HS22031358-04)

- The reporting limit(s) is/are elevated due to dilution for high concentrations of CL

Sample ID: HS22031590-02MS

- MS and MSD are for an unrelated sample (Sulfate)

Batch ID: R405227

Sample ID: CCB

- All reported samples bracketed by this CCB are 10 times greater than the Chloride content in this CCB. No qualification needed

Sample ID: CD-5B (HS22031358-01)

- The reporting limit(s) is/are elevated due to dilution for high concentrations of CL

WetChemistry by Method SM2320B

Batch ID: R405204

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M2540C

Batch ID: R405051

Sample ID: CD-2A (HS22031358-02)

- Sample was received with limited holding time remaining. The analysis was performed as soon as possible after sample receipt. Results are flagged with "H" and should be considered estimated.

Sample ID: CD-2B (HS22031358-03)

- Sample was received with limited holding time remaining. The analysis was performed as soon as possible after sample receipt. Results are flagged with "H" and should be considered estimated.

Sample ID: CD-3A (HS22031358-04)

- Sample was received with limited holding time remaining. The analysis was performed as soon as possible after sample receipt. Results are flagged with "H" and should be considered estimated.

Batch ID: R405173,R405364

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-5B
Collection Date: 23-Mar-2022 10:20

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	**13**		**1.0**	**ug/L**	1	27-Mar-2022 16:02
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 16:02
Toluene	ND		1.0	ug/L	1	27-Mar-2022 16:02
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 16:02
Surr: 1,2-Dichloroethane-d4	*100*		*70-126*	*%REC*	*1*	*27-Mar-2022 16:02*
Surr: 4-Bromofluorobenzene	*91.7*		*77-113*	*%REC*	*1*	*27-Mar-2022 16:02*
Surr: Dibromofluoromethane	*100*		*77-123*	*%REC*	*1*	*27-Mar-2022 16:02*
Surr: Toluene-d8	*99.4*		*82-127*	*%REC*	*1*	*27-Mar-2022 16:02*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	29-Mar-2022 21:21
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	29-Mar-2022 21:21
Aromatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 20:05
Surr: 2,5-Dibromotoluene (Aliphatic)	*100*		*70-130*	*%REC*	*1*	*29-Mar-2022 21:21*
Surr: 2,5-Dibromotoluene (Aliphatic)	*96.6*		*70-130*	*%REC*	*1*	*30-Mar-2022 20:05*
Surr: 2,5-Dibromotoluene (Aromatic)	*100*		*70-130*	*%REC*	*1*	*29-Mar-2022 21:21*
Surr: 2,5-Dibromotoluene (Aromatic)	*96.6*		*70-130*	*%REC*	*1*	*30-Mar-2022 20:05*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 14:37
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 14:37
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 14:37
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 15:40
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 15:40
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 15:40
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 15:40
Surr: 1-Chlorooctadecane	*41.8*		*40-140*	*%REC*	*1*	*01-Apr-2022 14:37*
Surr: 2-Bromonaphthalene	*86.3*		*40-140*	*%REC*	*1*	*01-Apr-2022 15:40*
Surr: 2-Fluorobiphenyl	*95.7*		*40-140*	*%REC*	*1*	*01-Apr-2022 15:40*
Surr: o-Terphenyl	*63.4*		*40-140*	*%REC*	*1*	*01-Apr-2022 15:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-5B
Collection Date: 23-Mar-2022 10:20

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	ND		0.0100	mg/L	5	05-Apr-2022 16:20
Barium	**27.9**		**0.800**	**mg/L**	200	05-Apr-2022 17:47
Cadmium	ND		0.0100	mg/L	5	05-Apr-2022 16:20
Calcium	**2,840**		**100**	**mg/L**	200	05-Apr-2022 17:47
Chromium	**0.0516**		**0.0200**	**mg/L**	5	05-Apr-2022 16:20
Iron	**99.3**		**1.00**	**mg/L**	5	05-Apr-2022 16:20
Lead	**0.0788**		**0.0100**	**mg/L**	5	05-Apr-2022 16:20
Magnesium	**770**		**1.00**	**mg/L**	5	05-Apr-2022 16:20
Manganese	**12.3**		**1.00**	**mg/L**	200	05-Apr-2022 17:47
Potassium	**20.8**		**1.00**	**mg/L**	5	05-Apr-2022 16:20
Sodium	**3,320**		**40.0**	**mg/L**	200	05-Apr-2022 17:47
Strontium	**26.2**		**1.00**	**mg/L**	200	05-Apr-2022 17:47
Zinc	**0.213**		**0.0200**	**mg/L**	5	05-Apr-2022 16:20
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	ND		0.0100	mg/L	5	04-Apr-2022 21:17
Barium	**32.7**		**0.800**	**mg/L**	200	05-Apr-2022 14:00
Cadmium	ND		0.0100	mg/L	5	04-Apr-2022 21:17
Chromium	ND		0.0200	mg/L	5	04-Apr-2022 21:17
Iron	**55.2**		**1.00**	**mg/L**	5	04-Apr-2022 21:17
Lead	ND		0.0100	mg/L	5	04-Apr-2022 21:17
Manganese	**11.1**		**1.00**	**mg/L**	200	05-Apr-2022 14:00
Strontium	**31.7**		**1.00**	**mg/L**	200	05-Apr-2022 14:00
Zinc	ND		0.0200	mg/L	5	04-Apr-2022 21:17
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:32
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 29-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	29-Mar-2022 14:56
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**26,500**		**10.0**	**mg/L**	1	30-Mar-2022 15:28
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**177**		**5.00**	**mg/L**	1	29-Mar-2022 18:21
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 18:21
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**12,900**		**100**	**mg/L**	200	29-Mar-2022 21:08
Sulfate	**14.1**		**10.0**	**mg/L**	20	29-Mar-2022 21:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-2A
Collection Date: 17-Mar-2022 08:25

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 16:22
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 16:22
Toluene	**8.5**		**1.0**	**ug/L**	1	27-Mar-2022 16:22
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 16:22
Surr: 1,2-Dichloroethane-d4	*101*		*70-126*	*%REC*	*1*	*27-Mar-2022 16:22*
Surr: 4-Bromofluorobenzene	*93.5*		*77-113*	*%REC*	*1*	*27-Mar-2022 16:22*
Surr: Dibromofluoromethane	*98.8*		*77-123*	*%REC*	*1*	*27-Mar-2022 16:22*
Surr: Toluene-d8	*100*		*82-127*	*%REC*	*1*	*27-Mar-2022 16:22*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	30-Mar-2022 08:28
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 08:28
Aromatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 20:32
Surr: 2,5-Dibromotoluene (Aliphatic)	*82.5*		*70-130*	*%REC*	*1*	*30-Mar-2022 08:28*
Surr: 2,5-Dibromotoluene (Aliphatic)	*103*		*70-130*	*%REC*	*1*	*30-Mar-2022 20:32*
Surr: 2,5-Dibromotoluene (Aromatic)	*82.5*		*70-130*	*%REC*	*1*	*30-Mar-2022 08:28*
Surr: 2,5-Dibromotoluene (Aromatic)	*103*		*70-130*	*%REC*	*1*	*30-Mar-2022 20:32*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 15:09
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 15:09
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 15:09
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 16:12
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 16:12
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 16:12
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 16:12
Surr: 1-Chlorooctadecane	*44.8*		*40-140*	*%REC*	*1*	*01-Apr-2022 15:09*
Surr: 2-Bromonaphthalene	*96.2*		*40-140*	*%REC*	*1*	*01-Apr-2022 16:12*
Surr: 2-Fluorobiphenyl	*101*		*40-140*	*%REC*	*1*	*01-Apr-2022 16:12*
Surr: o-Terphenyl	*63.3*		*40-140*	*%REC*	*1*	*01-Apr-2022 16:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-2A
Collection Date: 17-Mar-2022 08:25

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.0889**		**0.0100**	**mg/L**	5	05-Apr-2022 16:22
Barium	**3.00**		**0.0200**	**mg/L**	5	05-Apr-2022 16:22
Cadmium	ND		0.0100	mg/L	5	05-Apr-2022 16:22
Calcium	**2,480**		**50.0**	**mg/L**	100	05-Apr-2022 17:49
Chromium	ND		0.0200	mg/L	5	05-Apr-2022 16:22
Iron	**42.8**		**1.00**	**mg/L**	5	05-Apr-2022 16:22
Lead	ND		0.0100	mg/L	5	05-Apr-2022 16:22
Magnesium	**776**		**1.00**	**mg/L**	5	05-Apr-2022 16:22
Manganese	**16.1**		**0.500**	**mg/L**	100	05-Apr-2022 17:49
Potassium	**17.9**		**1.00**	**mg/L**	5	05-Apr-2022 16:22
Sodium	**4,330**		**20.0**	**mg/L**	100	05-Apr-2022 17:49
Strontium	**16.8**		**0.500**	**mg/L**	100	05-Apr-2022 17:49
Zinc	ND		0.0200	mg/L	5	05-Apr-2022 16:22
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	**0.0850**		**0.0100**	**mg/L**	5	04-Apr-2022 21:21
Barium	**4.60**		**0.0200**	**mg/L**	5	04-Apr-2022 21:21
Cadmium	ND		0.0100	mg/L	5	04-Apr-2022 21:21
Chromium	ND		0.0200	mg/L	5	04-Apr-2022 21:21
Iron	**42.4**		**1.00**	**mg/L**	5	04-Apr-2022 21:21
Lead	ND		0.0100	mg/L	5	04-Apr-2022 21:21
Manganese	**16.1**		**0.500**	**mg/L**	100	05-Apr-2022 14:02
Strontium	**16.7**		**0.500**	**mg/L**	100	05-Apr-2022 14:02
Zinc	ND		0.0200	mg/L	5	04-Apr-2022 21:21
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:34
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 29-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	29-Mar-2022 14:57
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**27,500**	H	**10.0**	**mg/L**	1	25-Mar-2022 15:04
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**174**		**5.00**	**mg/L**	1	29-Mar-2022 18:34
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 18:34
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**13,300**		**100**	**mg/L**	200	29-Mar-2022 22:01
Sulfate	**96.2**		**10.0**	**mg/L**	20	29-Mar-2022 21:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-2B
Collection Date: 17-Mar-2022 10:50

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 16:43
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 16:43
Toluene	ND		1.0	ug/L	1	27-Mar-2022 16:43
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 16:43
Surr: 1,2-Dichloroethane-d4	*95.3*		*70-126*	*%REC*	*1*	*27-Mar-2022 16:43*
Surr: 4-Bromofluorobenzene	*90.7*		*77-113*	*%REC*	*1*	*27-Mar-2022 16:43*
Surr: Dibromofluoromethane	*92.7*		*77-123*	*%REC*	*1*	*27-Mar-2022 16:43*
Surr: Toluene-d8	*100*		*82-127*	*%REC*	*1*	*27-Mar-2022 16:43*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	29-Mar-2022 22:17
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	29-Mar-2022 22:17
Aromatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 21:00
Surr: 2,5-Dibromotoluene (Aliphatic)	*103*		*70-130*	*%REC*	*1*	*29-Mar-2022 22:17*
Surr: 2,5-Dibromotoluene (Aliphatic)	*96.5*		*70-130*	*%REC*	*1*	*30-Mar-2022 21:00*
Surr: 2,5-Dibromotoluene (Aromatic)	*103*		*70-130*	*%REC*	*1*	*29-Mar-2022 22:17*
Surr: 2,5-Dibromotoluene (Aromatic)	*96.5*		*70-130*	*%REC*	*1*	*30-Mar-2022 21:00*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 15:40
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 15:40
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 15:40
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 16:44
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 16:44
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 16:44
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 16:44
Surr: 1-Chlorooctadecane	*44.3*		*40-140*	*%REC*	*1*	*01-Apr-2022 15:40*
Surr: 2-Bromonaphthalene	*93.0*		*40-140*	*%REC*	*1*	*01-Apr-2022 16:44*
Surr: 2-Fluorobiphenyl	*96.3*		*40-140*	*%REC*	*1*	*01-Apr-2022 16:44*
Surr: o-Terphenyl	*66.1*		*40-140*	*%REC*	*1*	*01-Apr-2022 16:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-2B
Collection Date: 17-Mar-2022 10:50

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.00999**		**0.00200**	**mg/L**	1	05-Apr-2022 16:24
Barium	**4.14**		**0.200**	**mg/L**	50	05-Apr-2022 17:51
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 16:24
Calcium	**718**		**25.0**	**mg/L**	50	05-Apr-2022 17:51
Chromium	**0.00424**		**0.00400**	**mg/L**	1	05-Apr-2022 16:24
Iron	**15.6**		**0.200**	**mg/L**	1	05-Apr-2022 16:24
Lead	ND		0.00200	mg/L	1	05-Apr-2022 16:24
Magnesium	**219**		**10.0**	**mg/L**	50	05-Apr-2022 17:51
Manganese	**2.22**		**0.250**	**mg/L**	50	05-Apr-2022 17:51
Potassium	**10.8**		**0.200**	**mg/L**	1	05-Apr-2022 16:24
Sodium	**306**		**10.0**	**mg/L**	50	05-Apr-2022 17:51
Strontium	**4.55**		**0.250**	**mg/L**	50	05-Apr-2022 17:51
Zinc	**0.0108**		**0.00400**	**mg/L**	1	05-Apr-2022 16:24
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	**0.0102**		**0.00200**	**mg/L**	1	04-Apr-2022 20:42
Barium	**4.24**		**0.200**	**mg/L**	50	05-Apr-2022 14:17
Cadmium	ND		0.00200	mg/L	1	04-Apr-2022 20:42
Chromium	ND		0.00400	mg/L	1	04-Apr-2022 20:42
Iron	**12.9**		**0.200**	**mg/L**	1	04-Apr-2022 20:42
Lead	ND		0.00200	mg/L	1	04-Apr-2022 20:42
Manganese	**2.27**		**0.250**	**mg/L**	50	05-Apr-2022 14:17
Strontium	**4.73**		**0.250**	**mg/L**	50	05-Apr-2022 14:17
Zinc	ND		0.00400	mg/L	1	04-Apr-2022 20:42
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:36
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 29-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	29-Mar-2022 14:59
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**6,230**	H	**10.0**	**mg/L**	1	25-Mar-2022 15:04
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**167**		**5.00**	**mg/L**	1	29-Mar-2022 18:40
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 18:40
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**2,510**		**25.0**	**mg/L**	50	29-Mar-2022 22:12
Sulfate	**11.9**		**2.50**	**mg/L**	5	29-Mar-2022 22:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-3A
Collection Date: 17-Mar-2022 13:40

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 17:04
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 17:04
Toluene	ND		1.0	ug/L	1	27-Mar-2022 17:04
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 17:04
Surr: 1,2-Dichloroethane-d4	*102*		*70-126*	*%REC*	*1*	*27-Mar-2022 17:04*
Surr: 4-Bromofluorobenzene	*92.5*		*77-113*	*%REC*	*1*	*27-Mar-2022 17:04*
Surr: Dibromofluoromethane	*98.5*		*77-123*	*%REC*	*1*	*27-Mar-2022 17:04*
Surr: Toluene-d8	*102*		*82-127*	*%REC*	*1*	*27-Mar-2022 17:04*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	29-Mar-2022 22:44
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	29-Mar-2022 22:44
Aromatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 21:27
Surr: 2,5-Dibromotoluene (Aliphatic)	*106*		*70-130*	*%REC*	*1*	*29-Mar-2022 22:44*
Surr: 2,5-Dibromotoluene (Aliphatic)	*102*		*70-130*	*%REC*	*1*	*30-Mar-2022 21:27*
Surr: 2,5-Dibromotoluene (Aromatic)	*106*		*70-130*	*%REC*	*1*	*29-Mar-2022 22:44*
Surr: 2,5-Dibromotoluene (Aromatic)	*102*		*70-130*	*%REC*	*1*	*30-Mar-2022 21:27*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 16:12
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 16:12
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 16:12
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 17:15
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 17:15
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 17:15
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 17:15
Surr: 1-Chlorooctadecane	*41.7*		*40-140*	*%REC*	*1*	*01-Apr-2022 16:12*
Surr: 2-Bromonaphthalene	*94.7*		*40-140*	*%REC*	*1*	*01-Apr-2022 17:15*
Surr: 2-Fluorobiphenyl	*91.0*		*40-140*	*%REC*	*1*	*01-Apr-2022 17:15*
Surr: o-Terphenyl	*54.4*		*40-140*	*%REC*	*1*	*01-Apr-2022 17:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-3A
Collection Date: 17-Mar-2022 13:40

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.0671**		**0.0200**	**mg/L**	10	05-Apr-2022 16:37
Barium	**27.7**		**0.800**	**mg/L**	200	05-Apr-2022 17:53
Cadmium	ND		0.0200	mg/L	10	05-Apr-2022 16:37
Calcium	**1,190**		**5.00**	**mg/L**	10	05-Apr-2022 16:37
Chromium	ND		0.0400	mg/L	10	05-Apr-2022 16:37
Iron	**14.5**		**2.00**	**mg/L**	10	05-Apr-2022 16:37
Lead	ND		0.0200	mg/L	10	05-Apr-2022 16:37
Magnesium	**363**		**2.00**	**mg/L**	10	05-Apr-2022 16:37
Manganese	**6.21**		**0.0500**	**mg/L**	10	05-Apr-2022 16:37
Potassium	**17.2**		**2.00**	**mg/L**	10	05-Apr-2022 16:37
Sodium	**11,600**		**40.0**	**mg/L**	200	05-Apr-2022 17:53
Strontium	**37.6**		**1.00**	**mg/L**	200	05-Apr-2022 17:53
Zinc	ND		0.0400	mg/L	10	05-Apr-2022 16:37
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	**0.0659**		**0.0200**	**mg/L**	10	05-Apr-2022 14:19
Barium	**30.3**		**0.800**	**mg/L**	200	05-Apr-2022 14:21
Cadmium	ND		0.0200	mg/L	10	05-Apr-2022 14:19
Chromium	ND		0.0400	mg/L	10	05-Apr-2022 14:19
Iron	**14.2**		**2.00**	**mg/L**	10	05-Apr-2022 14:19
Lead	ND		0.0200	mg/L	10	05-Apr-2022 14:19
Manganese	**6.23**		**0.0500**	**mg/L**	10	05-Apr-2022 14:19
Strontium	**42.8**		**1.00**	**mg/L**	200	05-Apr-2022 14:21
Zinc	ND		0.0400	mg/L	10	05-Apr-2022 14:19
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:42
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 29-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	29-Mar-2022 15:01
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**38,500**	H	**10.0**	**mg/L**	1	25-Mar-2022 15:04
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**421**		**5.00**	**mg/L**	1	29-Mar-2022 18:47
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 18:47
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**22,000**		**250**	**mg/L**	500	30-Mar-2022 14:49
Sulfate	ND		25.0	mg/L	50	30-Mar-2022 14:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-3B
Collection Date: 18-Mar-2022 08:10

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 17:24
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 17:24
Toluene	**35**		**1.0**	**ug/L**	1	27-Mar-2022 17:24
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 17:24
Surr: 1,2-Dichloroethane-d4	*97.4*		*70-126*	*%REC*	*1*	*27-Mar-2022 17:24*
Surr: 4-Bromofluorobenzene	*92.1*		*77-113*	*%REC*	*1*	*27-Mar-2022 17:24*
Surr: Dibromofluoromethane	*87.8*		*77-123*	*%REC*	*1*	*27-Mar-2022 17:24*
Surr: Toluene-d8	*99.8*		*82-127*	*%REC*	*1*	*27-Mar-2022 17:24*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	**0.0132**		**0.0100**	**mg/L**	1	29-Mar-2022 23:12
Aliphatics >C8 - C10	**0.0136**		**0.0100**	**mg/L**	1	29-Mar-2022 23:12
Aromatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 21:55
Surr: 2,5-Dibromotoluene (Aliphatic)	*110*		*70-130*	*%REC*	*1*	*29-Mar-2022 23:12*
Surr: 2,5-Dibromotoluene (Aliphatic)	*104*		*70-130*	*%REC*	*1*	*30-Mar-2022 21:55*
Surr: 2,5-Dibromotoluene (Aromatic)	*110*		*70-130*	*%REC*	*1*	*29-Mar-2022 23:12*
Surr: 2,5-Dibromotoluene (Aromatic)	*104*		*70-130*	*%REC*	*1*	*30-Mar-2022 21:55*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 16:44
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 16:44
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 16:44
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 17:56
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 17:56
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 17:56
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 17:56
Surr: 1-Chlorooctadecane	*42.4*		*40-140*	*%REC*	*1*	*01-Apr-2022 16:44*
Surr: 2-Bromonaphthalene	*96.5*		*40-140*	*%REC*	*1*	*01-Apr-2022 17:56*
Surr: 2-Fluorobiphenyl	*101*		*40-140*	*%REC*	*1*	*01-Apr-2022 17:56*
Surr: o-Terphenyl	*62.7*		*40-140*	*%REC*	*1*	*01-Apr-2022 17:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-3B
Collection Date: 18-Mar-2022 08:10

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.0273**		**0.00200**	**mg/L**	1	05-Apr-2022 16:39
Barium	**0.866**		**0.00400**	**mg/L**	1	05-Apr-2022 16:39
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 16:39
Calcium	**914**		**25.0**	**mg/L**	50	05-Apr-2022 17:55
Chromium	**0.145**		**0.00400**	**mg/L**	1	05-Apr-2022 16:39
Iron	**68.8**		**0.200**	**mg/L**	1	05-Apr-2022 16:39
Lead	**0.0424**		**0.00200**	**mg/L**	1	05-Apr-2022 16:39
Magnesium	**272**		**10.0**	**mg/L**	50	05-Apr-2022 17:55
Manganese	**4.82**		**0.250**	**mg/L**	50	05-Apr-2022 17:55
Potassium	**16.7**		**0.200**	**mg/L**	1	05-Apr-2022 16:39
Sodium	**798**		**10.0**	**mg/L**	50	05-Apr-2022 17:55
Strontium	**5.45**		**0.250**	**mg/L**	50	05-Apr-2022 17:55
Zinc	**0.261**		**0.00400**	**mg/L**	1	05-Apr-2022 16:39
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	**0.0100**		**0.00200**	**mg/L**	1	05-Apr-2022 14:23
Barium	**1.40**		**0.00400**	**mg/L**	1	05-Apr-2022 14:23
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 14:23
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 14:23
Iron	**11.9**		**0.200**	**mg/L**	1	05-Apr-2022 14:23
Lead	ND		0.00200	mg/L	1	05-Apr-2022 14:23
Manganese	**2.56**		**0.0250**	**mg/L**	5	04-Apr-2022 21:29
Strontium	**5.42**		**0.0250**	**mg/L**	5	04-Apr-2022 21:29
Zinc	**0.00598**		**0.00400**	**mg/L**	1	05-Apr-2022 14:23
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:44
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 29-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	29-Mar-2022 15:03
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**8,060**		**10.0**	**mg/L**	1	25-Mar-2022 15:04
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**159**		**5.00**	**mg/L**	1	29-Mar-2022 18:53
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 18:53
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**3,190**		**25.0**	**mg/L**	50	29-Mar-2022 22:54
Sulfate	**125**		**2.50**	**mg/L**	5	29-Mar-2022 22:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-1B
Collection Date: 18-Mar-2022 09:00

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 17:45
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 17:45
Toluene	**8.8**		**1.0**	**ug/L**	1	27-Mar-2022 17:45
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 17:45
Surr: 1,2-Dichloroethane-d4	*100.0*		*70-126*	*%REC*	*1*	*27-Mar-2022 17:45*
Surr: 4-Bromofluorobenzene	*92.0*		*77-113*	*%REC*	*1*	*27-Mar-2022 17:45*
Surr: Dibromofluoromethane	*98.3*		*77-123*	*%REC*	*1*	*27-Mar-2022 17:45*
Surr: Toluene-d8	*99.7*		*82-127*	*%REC*	*1*	*27-Mar-2022 17:45*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	29-Mar-2022 23:40
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	29-Mar-2022 23:40
Aromatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 22:23
Surr: 2,5-Dibromotoluene (Aliphatic)	*107*		*70-130*	*%REC*	*1*	*29-Mar-2022 23:40*
Surr: 2,5-Dibromotoluene (Aliphatic)	*106*		*70-130*	*%REC*	*1*	*30-Mar-2022 22:23*
Surr: 2,5-Dibromotoluene (Aromatic)	*107*		*70-130*	*%REC*	*1*	*29-Mar-2022 23:40*
Surr: 2,5-Dibromotoluene (Aromatic)	*106*		*70-130*	*%REC*	*1*	*30-Mar-2022 22:23*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 17:15
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 17:15
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 17:15
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 18:27
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 18:27
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 18:27
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 18:27
Surr: 1-Chlorooctadecane	*44.9*		*40-140*	*%REC*	*1*	*01-Apr-2022 17:15*
Surr: 2-Bromonaphthalene	*97.4*		*40-140*	*%REC*	*1*	*01-Apr-2022 18:27*
Surr: 2-Fluorobiphenyl	*87.5*		*40-140*	*%REC*	*1*	*01-Apr-2022 18:27*
Surr: o-Terphenyl	*72.1*		*40-140*	*%REC*	*1*	*01-Apr-2022 18:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-1B
Collection Date: 18-Mar-2022 09:00

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.00893**		**0.00200**	**mg/L**	1	05-Apr-2022 16:41
Barium	**0.390**		**0.00400**	**mg/L**	1	05-Apr-2022 16:41
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 16:41
Calcium	**52.0**		**0.500**	**mg/L**	1	05-Apr-2022 16:41
Chromium	**0.00830**		**0.00400**	**mg/L**	1	05-Apr-2022 16:41
Iron	**0.739**		**0.200**	**mg/L**	1	05-Apr-2022 16:41
Lead	ND		0.00200	mg/L	1	05-Apr-2022 16:41
Magnesium	**16.0**		**0.200**	**mg/L**	1	05-Apr-2022 16:41
Manganese	**0.442**		**0.00500**	**mg/L**	1	05-Apr-2022 16:41
Potassium	**2.34**		**0.200**	**mg/L**	1	05-Apr-2022 16:41
Sodium	**70.2**		**0.200**	**mg/L**	1	05-Apr-2022 16:41
Strontium	**0.314**		**0.00500**	**mg/L**	1	05-Apr-2022 16:41
Zinc	**0.00489**		**0.00400**	**mg/L**	1	05-Apr-2022 16:41
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	**0.00910**		**0.00200**	**mg/L**	1	05-Apr-2022 14:25
Barium	**0.380**		**0.00400**	**mg/L**	1	05-Apr-2022 14:25
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 14:25
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 14:25
Iron	**0.215**		**0.200**	**mg/L**	1	05-Apr-2022 14:25
Lead	ND		0.00200	mg/L	1	05-Apr-2022 14:25
Manganese	**0.428**		**0.00500**	**mg/L**	1	05-Apr-2022 14:25
Strontium	**0.309**		**0.00500**	**mg/L**	1	05-Apr-2022 14:25
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 14:25
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:45
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 29-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	29-Mar-2022 15:19
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**420**		**10.0**	**mg/L**	1	25-Mar-2022 15:04
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**315**		**5.00**	**mg/L**	1	29-Mar-2022 19:21
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 19:21
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**36.3**		**0.500**	**mg/L**	1	29-Mar-2022 22:59
Sulfate	**26.2**		**0.500**	**mg/L**	1	29-Mar-2022 22:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-1A
Collection Date: 18-Mar-2022 09:55

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-07
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 18:05
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 18:05
Toluene	ND		1.0	ug/L	1	27-Mar-2022 18:05
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 18:05
Surr: 1,2-Dichloroethane-d4	*98.4*		*70-126*	*%REC*	*1*	*27-Mar-2022 18:05*
Surr: 4-Bromofluorobenzene	*93.0*		*77-113*	*%REC*	*1*	*27-Mar-2022 18:05*
Surr: Dibromofluoromethane	*97.6*		*77-123*	*%REC*	*1*	*27-Mar-2022 18:05*
Surr: Toluene-d8	*100*		*82-127*	*%REC*	*1*	*27-Mar-2022 18:05*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	30-Mar-2022 08:56
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 08:56
Aromatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 22:51
Surr: 2,5-Dibromotoluene (Aliphatic)	*92.6*		*70-130*	*%REC*	*1*	*30-Mar-2022 08:56*
Surr: 2,5-Dibromotoluene (Aliphatic)	*95.1*		*70-130*	*%REC*	*1*	*30-Mar-2022 22:51*
Surr: 2,5-Dibromotoluene (Aromatic)	*92.6*		*70-130*	*%REC*	*1*	*30-Mar-2022 08:56*
Surr: 2,5-Dibromotoluene (Aromatic)	*95.1*		*70-130*	*%REC*	*1*	*30-Mar-2022 22:51*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 17:56
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 17:56
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 17:56
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 18:59
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 18:59
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 18:59
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 18:59
Surr: 1-Chlorooctadecane	*42.2*		*40-140*	*%REC*	*1*	*01-Apr-2022 17:56*
Surr: 2-Bromonaphthalene	*80.6*		*40-140*	*%REC*	*1*	*01-Apr-2022 18:59*
Surr: 2-Fluorobiphenyl	*62.5*		*40-140*	*%REC*	*1*	*01-Apr-2022 18:59*
Surr: o-Terphenyl	*55.7*		*40-140*	*%REC*	*1*	*01-Apr-2022 18:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-1A
Collection Date: 18-Mar-2022 09:55

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-07
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	ND		0.00200	mg/L	1	05-Apr-2022 16:43
Barium	**0.303**		**0.00400**	**mg/L**	1	05-Apr-2022 16:43
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 16:43
Calcium	**32.9**		**0.500**	**mg/L**	1	05-Apr-2022 16:43
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 16:43
Iron	ND		0.200	mg/L	1	05-Apr-2022 16:43
Lead	ND		0.00200	mg/L	1	05-Apr-2022 16:43
Magnesium	**11.9**		**0.200**	**mg/L**	1	05-Apr-2022 16:43
Manganese	**0.192**		**0.00500**	**mg/L**	1	05-Apr-2022 16:43
Potassium	**0.852**		**0.200**	**mg/L**	1	05-Apr-2022 16:43
Sodium	**74.2**		**0.200**	**mg/L**	1	05-Apr-2022 16:43
Strontium	**0.177**		**0.00500**	**mg/L**	1	05-Apr-2022 16:43
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 16:43
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	ND		0.00200	mg/L	1	05-Apr-2022 14:33
Barium	**0.301**		**0.00400**	**mg/L**	1	05-Apr-2022 14:33
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 14:33
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 14:33
Iron	ND		0.200	mg/L	1	05-Apr-2022 14:33
Lead	ND		0.00200	mg/L	1	05-Apr-2022 14:33
Manganese	**0.188**		**0.00500**	**mg/L**	1	05-Apr-2022 14:33
Strontium	**0.181**		**0.00500**	**mg/L**	1	05-Apr-2022 14:33
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 14:33
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:47
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 01-Apr-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	01-Apr-2022 17:07
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**372**		**10.0**	**mg/L**	1	25-Mar-2022 15:04
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**295**		**5.00**	**mg/L**	1	29-Mar-2022 19:28
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 19:28
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**21.4**		**0.500**	**mg/L**	1	29-Mar-2022 23:05
Sulfate	**29.8**		**0.500**	**mg/L**	1	29-Mar-2022 23:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-1C
Collection Date: 21-Mar-2022 11:00

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-08
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 18:26
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 18:26
Toluene	**2.7**		**1.0**	**ug/L**	1	27-Mar-2022 18:26
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 18:26
Surr: 1,2-Dichloroethane-d4	*97.6*		*70-126*	*%REC*	*1*	*27-Mar-2022 18:26*
Surr: 4-Bromofluorobenzene	*92.6*		*77-113*	*%REC*	*1*	*27-Mar-2022 18:26*
Surr: Dibromofluoromethane	*94.5*		*77-123*	*%REC*	*1*	*27-Mar-2022 18:26*
Surr: Toluene-d8	*102*		*82-127*	*%REC*	*1*	*27-Mar-2022 18:26*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	30-Mar-2022 01:58
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 01:58
Aromatics >C8 - C10	ND		0.0100	mg/L	1	31-Mar-2022 00:14
Surr: 2,5-Dibromotoluene (Aliphatic)	*107*		*70-130*	*%REC*	*1*	*30-Mar-2022 01:58*
Surr: 2,5-Dibromotoluene (Aliphatic)	*98.9*		*70-130*	*%REC*	*1*	*31-Mar-2022 00:14*
Surr: 2,5-Dibromotoluene (Aromatic)	*107*		*70-130*	*%REC*	*1*	*30-Mar-2022 01:58*
Surr: 2,5-Dibromotoluene (Aromatic)	*98.9*		*70-130*	*%REC*	*1*	*31-Mar-2022 00:14*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 19:31
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 19:31
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 19:31
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 20:34
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 20:34
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 20:34
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 20:34
Surr: 1-Chlorooctadecane	*42.1*		*40-140*	*%REC*	*1*	*01-Apr-2022 19:31*
Surr: 2-Bromonaphthalene	*84.5*		*40-140*	*%REC*	*1*	*01-Apr-2022 20:34*
Surr: 2-Fluorobiphenyl	*86.5*		*40-140*	*%REC*	*1*	*01-Apr-2022 20:34*
Surr: o-Terphenyl	*59.1*		*40-140*	*%REC*	*1*	*01-Apr-2022 20:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-1C
Collection Date: 21-Mar-2022 11:00

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-08
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.00419**		**0.00200**	**mg/L**	1	05-Apr-2022 16:45
Barium	**0.518**		**0.00400**	**mg/L**	1	05-Apr-2022 16:45
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 16:45
Calcium	**69.7**		**0.500**	**mg/L**	1	05-Apr-2022 16:45
Chromium	**0.0135**		**0.00400**	**mg/L**	1	05-Apr-2022 16:45
Iron	**7.75**		**0.200**	**mg/L**	1	05-Apr-2022 16:45
Lead	**0.00948**		**0.00200**	**mg/L**	1	05-Apr-2022 16:45
Magnesium	**19.7**		**0.200**	**mg/L**	1	05-Apr-2022 16:45
Manganese	**0.448**		**0.00500**	**mg/L**	1	05-Apr-2022 16:45
Potassium	**3.16**		**0.200**	**mg/L**	1	05-Apr-2022 16:45
Sodium	**70.0**		**0.200**	**mg/L**	1	05-Apr-2022 16:45
Strontium	**0.345**		**0.00500**	**mg/L**	1	05-Apr-2022 16:45
Zinc	**0.0384**		**0.00400**	**mg/L**	1	05-Apr-2022 16:45
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	ND		0.00200	mg/L	1	05-Apr-2022 14:35
Barium	**0.382**		**0.00400**	**mg/L**	1	05-Apr-2022 14:35
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 14:35
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 14:35
Iron	**0.659**		**0.200**	**mg/L**	1	05-Apr-2022 14:35
Lead	ND		0.00200	mg/L	1	05-Apr-2022 14:35
Manganese	**0.216**		**0.00500**	**mg/L**	1	05-Apr-2022 14:35
Strontium	**0.317**		**0.00500**	**mg/L**	1	05-Apr-2022 14:35
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 14:35
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:49
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 28-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	28-Mar-2022 15:47
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**408**		**10.0**	**mg/L**	1	28-Mar-2022 16:23
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**315**		**5.00**	**mg/L**	1	29-Mar-2022 19:35
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 19:35
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**44.4**		**0.500**	**mg/L**	1	29-Mar-2022 23:10
Sulfate	**17.7**		**0.500**	**mg/L**	1	29-Mar-2022 23:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-4A
Collection Date: 21-Mar-2022 13:45

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-09
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 18:47
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 18:47
Toluene	ND		1.0	ug/L	1	27-Mar-2022 18:47
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 18:47
Surr: 1,2-Dichloroethane-d4	*97.3*		*70-126*	*%REC*	*1*	*27-Mar-2022 18:47*
Surr: 4-Bromofluorobenzene	*92.2*		*77-113*	*%REC*	*1*	*27-Mar-2022 18:47*
Surr: Dibromofluoromethane	*95.2*		*77-123*	*%REC*	*1*	*27-Mar-2022 18:47*
Surr: Toluene-d8	*102*		*82-127*	*%REC*	*1*	*27-Mar-2022 18:47*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	30-Mar-2022 02:26
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 02:26
Aromatics >C8 - C10	ND		0.0100	mg/L	1	31-Mar-2022 00:41
Surr: 2,5-Dibromotoluene (Aliphatic)	*111*		*70-130*	*%REC*	*1*	*30-Mar-2022 02:26*
Surr: 2,5-Dibromotoluene (Aliphatic)	*99.5*		*70-130*	*%REC*	*1*	*31-Mar-2022 00:41*
Surr: 2,5-Dibromotoluene (Aromatic)	*111*		*70-130*	*%REC*	*1*	*30-Mar-2022 02:26*
Surr: 2,5-Dibromotoluene (Aromatic)	*99.5*		*70-130*	*%REC*	*1*	*31-Mar-2022 00:41*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 20:02
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 20:02
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 20:02
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 21:06
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 21:06
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 21:06
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 21:06
Surr: 1-Chlorooctadecane	*44.4*		*40-140*	*%REC*	*1*	*01-Apr-2022 20:02*
Surr: 2-Bromonaphthalene	*95.0*		*40-140*	*%REC*	*1*	*01-Apr-2022 21:06*
Surr: 2-Fluorobiphenyl	*93.9*		*40-140*	*%REC*	*1*	*01-Apr-2022 21:06*
Surr: o-Terphenyl	*70.3*		*40-140*	*%REC*	*1*	*01-Apr-2022 21:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-4A
Collection Date: 21-Mar-2022 13:45

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-09
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.0304**		**0.00200**	**mg/L**	1	05-Apr-2022 17:16
Barium	**0.524**		**0.00400**	**mg/L**	1	05-Apr-2022 17:16
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 17:16
Calcium	**86.7**		**0.500**	**mg/L**	1	05-Apr-2022 17:16
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 17:16
Iron	**0.368**		**0.200**	**mg/L**	1	05-Apr-2022 17:16
Lead	ND		0.00200	mg/L	1	05-Apr-2022 17:16
Magnesium	**30.0**		**0.200**	**mg/L**	1	05-Apr-2022 17:16
Manganese	**0.371**		**0.00500**	**mg/L**	1	05-Apr-2022 17:16
Potassium	**2.32**		**0.200**	**mg/L**	1	05-Apr-2022 17:16
Sodium	**268**		**4.00**	**mg/L**	20	05-Apr-2022 17:57
Strontium	**2.10**		**0.100**	**mg/L**	20	05-Apr-2022 17:57
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 17:16
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	**0.0298**		**0.00200**	**mg/L**	1	05-Apr-2022 14:37
Barium	**0.474**		**0.00400**	**mg/L**	1	05-Apr-2022 14:37
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 14:37
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 14:37
Iron	**0.329**		**0.200**	**mg/L**	1	05-Apr-2022 14:37
Lead	ND		0.00200	mg/L	1	05-Apr-2022 14:37
Manganese	**0.347**		**0.00500**	**mg/L**	1	05-Apr-2022 14:37
Strontium	**2.43**		**0.0250**	**mg/L**	5	04-Apr-2022 21:45
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 14:37
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:51
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 28-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	28-Mar-2022 15:49
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**1,120**		**10.0**	**mg/L**	1	28-Mar-2022 16:23
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**489**		**5.00**	**mg/L**	1	29-Mar-2022 19:42
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 19:42
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**409**		**5.00**	**mg/L**	10	29-Mar-2022 23:20
Sulfate	**24.8**		**0.500**	**mg/L**	1	29-Mar-2022 23:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-4B
Collection Date: 21-Mar-2022 15:00

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-10
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 19:07
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 19:07
Toluene	**17**		**1.0**	**ug/L**	1	27-Mar-2022 19:07
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 19:07
Surr: 1,2-Dichloroethane-d4	*101*		*70-126*	*%REC*	*1*	*27-Mar-2022 19:07*
Surr: 4-Bromofluorobenzene	*92.4*		*77-113*	*%REC*	*1*	*27-Mar-2022 19:07*
Surr: Dibromofluoromethane	*99.3*		*77-123*	*%REC*	*1*	*27-Mar-2022 19:07*
Surr: Toluene-d8	*99.0*		*82-127*	*%REC*	*1*	*27-Mar-2022 19:07*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	30-Mar-2022 09:24
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 09:24
Aromatics >C8 - C10	ND		0.0100	mg/L	1	31-Mar-2022 01:09
Surr: 2,5-Dibromotoluene (Aliphatic)	*96.8*		*70-130*	*%REC*	*1*	*30-Mar-2022 09:24*
Surr: 2,5-Dibromotoluene (Aliphatic)	*96.1*		*70-130*	*%REC*	*1*	*31-Mar-2022 01:09*
Surr: 2,5-Dibromotoluene (Aromatic)	*96.8*		*70-130*	*%REC*	*1*	*30-Mar-2022 09:24*
Surr: 2,5-Dibromotoluene (Aromatic)	*96.1*		*70-130*	*%REC*	*1*	*31-Mar-2022 01:09*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 20:34
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 20:34
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 20:34
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 21:38
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 21:38
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 21:38
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 21:38
Surr: 1-Chlorooctadecane	*41.1*		*40-140*	*%REC*	*1*	*01-Apr-2022 20:34*
Surr: 2-Bromonaphthalene	*96.2*		*40-140*	*%REC*	*1*	*01-Apr-2022 21:38*
Surr: 2-Fluorobiphenyl	*74.3*		*40-140*	*%REC*	*1*	*01-Apr-2022 21:38*
Surr: o-Terphenyl	*72.5*		*40-140*	*%REC*	*1*	*01-Apr-2022 21:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-4B
Collection Date: 21-Mar-2022 15:00

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-10
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.0235**		**0.00200**	**mg/L**	1	05-Apr-2022 17:18
Barium	**1.44**		**0.00400**	**mg/L**	1	05-Apr-2022 17:18
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 17:18
Calcium	**271**		**10.0**	**mg/L**	20	05-Apr-2022 17:59
Chromium	**0.0235**		**0.00400**	**mg/L**	1	05-Apr-2022 17:18
Iron	**16.9**		**0.200**	**mg/L**	1	05-Apr-2022 17:18
Lead	**0.00946**		**0.00200**	**mg/L**	1	05-Apr-2022 17:18
Magnesium	**84.3**		**0.200**	**mg/L**	1	05-Apr-2022 17:18
Manganese	**1.32**		**0.00500**	**mg/L**	1	05-Apr-2022 17:18
Potassium	**6.39**		**0.200**	**mg/L**	1	05-Apr-2022 17:18
Sodium	**221**		**4.00**	**mg/L**	20	05-Apr-2022 17:59
Strontium	**2.12**		**0.100**	**mg/L**	20	05-Apr-2022 17:59
Zinc	**0.0499**		**0.00400**	**mg/L**	1	05-Apr-2022 17:18
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	**0.0208**		**0.00200**	**mg/L**	1	05-Apr-2022 14:39
Barium	**1.14**		**0.00400**	**mg/L**	1	05-Apr-2022 14:39
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 14:39
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 14:39
Iron	**5.14**		**0.200**	**mg/L**	1	05-Apr-2022 14:39
Lead	ND		0.00200	mg/L	1	05-Apr-2022 14:39
Manganese	**1.12**		**0.00500**	**mg/L**	1	05-Apr-2022 14:39
Strontium	**2.34**		**0.0250**	**mg/L**	5	04-Apr-2022 21:47
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 14:39
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:52
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 28-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	28-Mar-2022 15:51
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**2,580**		**10.0**	**mg/L**	1	28-Mar-2022 16:23
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**212**		**5.00**	**mg/L**	1	29-Mar-2022 19:48
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 19:48
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**1,150**		**25.0**	**mg/L**	50	29-Mar-2022 23:31
Sulfate	**39.9**		**2.50**	**mg/L**	5	29-Mar-2022 23:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-5A
Collection Date: 21-Mar-2022 16:25

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-11
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	27-Mar-2022 19:28
Ethylbenzene	ND		1.0	ug/L	1	27-Mar-2022 19:28
Toluene	ND		1.0	ug/L	1	27-Mar-2022 19:28
Xylenes, Total	ND		1.0	ug/L	1	27-Mar-2022 19:28
Surr: 1,2-Dichloroethane-d4	*96.4*		*70-126*	*%REC*	*1*	*27-Mar-2022 19:28*
Surr: 4-Bromofluorobenzene	*93.8*		*77-113*	*%REC*	*1*	*27-Mar-2022 19:28*
Surr: Dibromofluoromethane	*94.6*		*77-123*	*%REC*	*1*	*27-Mar-2022 19:28*
Surr: Toluene-d8	*101*		*82-127*	*%REC*	*1*	*27-Mar-2022 19:28*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	30-Mar-2022 09:51
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	30-Mar-2022 09:51
Aromatics >C8 - C10	ND		0.0100	mg/L	1	31-Mar-2022 01:36
Surr: 2,5-Dibromotoluene (Aliphatic)	*94.7*		*70-130*	*%REC*	*1*	*30-Mar-2022 09:51*
Surr: 2,5-Dibromotoluene (Aliphatic)	*97.9*		*70-130*	*%REC*	*1*	*31-Mar-2022 01:36*
Surr: 2,5-Dibromotoluene (Aromatic)	*94.7*		*70-130*	*%REC*	*1*	*30-Mar-2022 09:51*
Surr: 2,5-Dibromotoluene (Aromatic)	*97.9*		*70-130*	*%REC*	*1*	*31-Mar-2022 01:36*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 31-Mar-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 21:06
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Apr-2022 21:06
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Apr-2022 21:06
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Apr-2022 22:09
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Apr-2022 22:09
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Apr-2022 22:09
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Apr-2022 22:09
Surr: 1-Chlorooctadecane	*43.2*		*40-140*	*%REC*	*1*	*01-Apr-2022 21:06*
Surr: 2-Bromonaphthalene	*94.0*		*40-140*	*%REC*	*1*	*01-Apr-2022 22:09*
Surr: 2-Fluorobiphenyl	*97.4*		*40-140*	*%REC*	*1*	*01-Apr-2022 22:09*
Surr: o-Terphenyl	*62.7*		*40-140*	*%REC*	*1*	*01-Apr-2022 22:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-5A
Collection Date: 21-Mar-2022 16:25

ANALYTICAL REPORT
WorkOrder:HS22031358
Lab ID:HS22031358-11
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Apr-2022		Analyst: JHD
Arsenic	**0.0135**		**0.00200**	**mg/L**	1	05-Apr-2022 17:20
Barium	**0.997**		**0.00400**	**mg/L**	1	05-Apr-2022 17:20
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 17:20
Calcium	**122**		**0.500**	**mg/L**	1	05-Apr-2022 17:20
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 17:20
Iron	**0.721**		**0.200**	**mg/L**	1	05-Apr-2022 17:20
Lead	ND		0.00200	mg/L	1	05-Apr-2022 17:20
Magnesium	**34.3**		**0.200**	**mg/L**	1	05-Apr-2022 17:20
Manganese	**0.563**		**0.00500**	**mg/L**	1	05-Apr-2022 17:20
Potassium	**2.86**		**0.200**	**mg/L**	1	05-Apr-2022 17:20
Sodium	**136**		**0.200**	**mg/L**	1	05-Apr-2022 17:20
Strontium	**0.604**		**0.00500**	**mg/L**	1	05-Apr-2022 17:20
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 17:20
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 31-Mar-2022		Analyst: JHD
Arsenic	**0.0138**		**0.00200**	**mg/L**	1	05-Apr-2022 14:41
Barium	**0.991**		**0.00400**	**mg/L**	1	05-Apr-2022 14:41
Cadmium	ND		0.00200	mg/L	1	05-Apr-2022 14:41
Chromium	ND		0.00400	mg/L	1	05-Apr-2022 14:41
Iron	**0.694**		**0.200**	**mg/L**	1	05-Apr-2022 14:41
Lead	ND		0.00200	mg/L	1	05-Apr-2022 14:41
Manganese	**0.564**		**0.00500**	**mg/L**	1	05-Apr-2022 14:41
Strontium	**0.605**		**0.00500**	**mg/L**	1	05-Apr-2022 14:41
Zinc	ND		0.00400	mg/L	1	05-Apr-2022 14:41
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 31-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	31-Mar-2022 11:54
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 28-Mar-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	28-Mar-2022 15:52
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**842**		**10.0**	**mg/L**	1	28-Mar-2022 16:23
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**541**		**5.00**	**mg/L**	1	29-Mar-2022 19:55
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	29-Mar-2022 19:55
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**204**		**5.00**	**mg/L**	10	30-Mar-2022 00:13
Sulfate	**12.2**		**0.500**	**mg/L**	1	30-Mar-2022 00:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

Batch ID: 176829 **Start Date:** 28 Mar 2022 09:00 **End Date:** 28 Mar 2022 12:00
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22031358-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-11		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 176886 **Start Date:** 29 Mar 2022 09:00 **End Date:** 29 Mar 2022 12:00
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22031358-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-06		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 176983 **Start Date:** 31 Mar 2022 06:30 **End Date:** 31 Mar 2022 12:00
Method: MA EPH EXTRACTION-FRACTIONATION **Prep Code:** MA EPH_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22031358-01	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-02	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-03	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-04	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-05	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-06	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-07	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-08	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-09	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-10	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2
HS22031358-11	1	1000 (mL)	2 (mL)	0.002	1-liter amber glass, HCl to pH <2

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

Batch ID: 176988 **Start Date:** 31 Mar 2022 07:30 **End Date:** 31 Mar 2022 10:30
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22031358-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-11		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 177003 **Start Date:** 31 Mar 2022 10:30 **End Date:** 31 Mar 2022 14:30
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22031358-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-11		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 177081 **Start Date:** 01 Apr 2022 09:30 **End Date:** 01 Apr 2022 12:30
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22031358-07		10 (mL)	10 (mL)	1	120 plastic HNO3

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

Batch ID: 177174 **Start Date:** 05 Apr 2022 08:30 **End Date:** 05 Apr 2022 12:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22031358-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22031358-11		10 (mL)	10 (mL)	1	120 plastic HNO3

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 176829 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Water	
HS22031358-08	CD-1C	21 Mar 2022 11:00		28 Mar 2022 09:00	28 Mar 2022 15:47	1
HS22031358-09	CD-4A	21 Mar 2022 13:45		28 Mar 2022 09:00	28 Mar 2022 15:49	1
HS22031358-10	CD-4B	21 Mar 2022 15:00		28 Mar 2022 09:00	28 Mar 2022 15:51	1
HS22031358-11	CD-5A	21 Mar 2022 16:25		28 Mar 2022 09:00	28 Mar 2022 15:52	1
Batch ID: 176886 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20		29 Mar 2022 09:00	29 Mar 2022 14:56	1
HS22031358-02	CD-2A	17 Mar 2022 08:25		29 Mar 2022 09:00	29 Mar 2022 14:57	1
HS22031358-03	CD-2B	17 Mar 2022 10:50		29 Mar 2022 09:00	29 Mar 2022 14:59	1
HS22031358-04	CD-3A	17 Mar 2022 13:40		29 Mar 2022 09:00	29 Mar 2022 15:01	1
HS22031358-05	CD-3B	18 Mar 2022 08:10		29 Mar 2022 09:00	29 Mar 2022 15:03	1
HS22031358-06	CD-1B	18 Mar 2022 09:00		29 Mar 2022 09:00	29 Mar 2022 15:19	1
Batch ID: 176983 (0)	**Test Name :** MASSACHUSETTS EPH R2.1, DEC 2019				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20		31 Mar 2022 07:23	01 Apr 2022 15:40	1
HS22031358-01	CD-5B	23 Mar 2022 10:20		31 Mar 2022 07:23	01 Apr 2022 14:37	1
HS22031358-02	CD-2A	17 Mar 2022 08:25		31 Mar 2022 07:23	01 Apr 2022 16:12	1
HS22031358-02	CD-2A	17 Mar 2022 08:25		31 Mar 2022 07:23	01 Apr 2022 15:09	1
HS22031358-03	CD-2B	17 Mar 2022 10:50		31 Mar 2022 07:23	01 Apr 2022 16:44	1
HS22031358-03	CD-2B	17 Mar 2022 10:50		31 Mar 2022 07:23	01 Apr 2022 15:40	1
HS22031358-04	CD-3A	17 Mar 2022 13:40		31 Mar 2022 07:23	01 Apr 2022 17:15	1
HS22031358-04	CD-3A	17 Mar 2022 13:40		31 Mar 2022 07:23	01 Apr 2022 16:12	1
HS22031358-05	CD-3B	18 Mar 2022 08:10		31 Mar 2022 07:23	01 Apr 2022 17:56	1
HS22031358-05	CD-3B	18 Mar 2022 08:10		31 Mar 2022 07:23	01 Apr 2022 16:44	1
HS22031358-06	CD-1B	18 Mar 2022 09:00		31 Mar 2022 07:23	01 Apr 2022 18:27	1
HS22031358-06	CD-1B	18 Mar 2022 09:00		31 Mar 2022 07:23	01 Apr 2022 17:15	1
HS22031358-07	CD-1A	18 Mar 2022 09:55		31 Mar 2022 07:23	01 Apr 2022 18:59	1
HS22031358-07	CD-1A	18 Mar 2022 09:55		31 Mar 2022 07:23	01 Apr 2022 17:56	1
HS22031358-08	CD-1C	21 Mar 2022 11:00		31 Mar 2022 07:23	01 Apr 2022 20:34	1
HS22031358-08	CD-1C	21 Mar 2022 11:00		31 Mar 2022 07:23	01 Apr 2022 19:31	1
HS22031358-09	CD-4A	21 Mar 2022 13:45		31 Mar 2022 07:23	01 Apr 2022 21:06	1
HS22031358-09	CD-4A	21 Mar 2022 13:45		31 Mar 2022 07:23	01 Apr 2022 20:02	1
HS22031358-10	CD-4B	21 Mar 2022 15:00		31 Mar 2022 07:23	01 Apr 2022 21:38	1
HS22031358-10	CD-4B	21 Mar 2022 15:00		31 Mar 2022 07:23	01 Apr 2022 20:34	1
HS22031358-11	CD-5A	21 Mar 2022 16:25		31 Mar 2022 07:23	01 Apr 2022 22:09	1
HS22031358-11	CD-5A	21 Mar 2022 16:25		31 Mar 2022 07:23	01 Apr 2022 21:06	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 176988 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20		31 Mar 2022 07:30	31 Mar 2022 11:32	1
HS22031358-02	CD-2A	17 Mar 2022 08:25		31 Mar 2022 07:30	31 Mar 2022 11:34	1
HS22031358-03	CD-2B	17 Mar 2022 10:50		31 Mar 2022 07:30	31 Mar 2022 11:36	1
HS22031358-04	CD-3A	17 Mar 2022 13:40		31 Mar 2022 07:30	31 Mar 2022 11:42	1
HS22031358-05	CD-3B	18 Mar 2022 08:10		31 Mar 2022 07:30	31 Mar 2022 11:44	1
HS22031358-06	CD-1B	18 Mar 2022 09:00		31 Mar 2022 07:30	31 Mar 2022 11:45	1
HS22031358-07	CD-1A	18 Mar 2022 09:55		31 Mar 2022 07:30	31 Mar 2022 11:47	1
HS22031358-08	CD-1C	21 Mar 2022 11:00		31 Mar 2022 07:30	31 Mar 2022 11:49	1
HS22031358-09	CD-4A	21 Mar 2022 13:45		31 Mar 2022 07:30	31 Mar 2022 11:51	1
HS22031358-10	CD-4B	21 Mar 2022 15:00		31 Mar 2022 07:30	31 Mar 2022 11:52	1
HS22031358-11	CD-5A	21 Mar 2022 16:25		31 Mar 2022 07:30	31 Mar 2022 11:54	1
Batch ID: 177003 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20		31 Mar 2022 10:30	05 Apr 2022 14:00	200
HS22031358-01	CD-5B	23 Mar 2022 10:20		31 Mar 2022 10:30	04 Apr 2022 21:17	5
HS22031358-02	CD-2A	17 Mar 2022 08:25		31 Mar 2022 10:30	05 Apr 2022 14:02	100
HS22031358-02	CD-2A	17 Mar 2022 08:25		31 Mar 2022 10:30	04 Apr 2022 21:21	5
HS22031358-03	CD-2B	17 Mar 2022 10:50		31 Mar 2022 10:30	05 Apr 2022 14:17	50
HS22031358-03	CD-2B	17 Mar 2022 10:50		31 Mar 2022 10:30	04 Apr 2022 20:42	1
HS22031358-04	CD-3A	17 Mar 2022 13:40		31 Mar 2022 10:30	05 Apr 2022 14:21	200
HS22031358-04	CD-3A	17 Mar 2022 13:40		31 Mar 2022 10:30	05 Apr 2022 14:19	10
HS22031358-05	CD-3B	18 Mar 2022 08:10		31 Mar 2022 10:30	05 Apr 2022 14:23	1
HS22031358-05	CD-3B	18 Mar 2022 08:10		31 Mar 2022 10:30	04 Apr 2022 21:29	5
HS22031358-06	CD-1B	18 Mar 2022 09:00		31 Mar 2022 10:30	05 Apr 2022 14:25	1
HS22031358-07	CD-1A	18 Mar 2022 09:55		31 Mar 2022 10:30	05 Apr 2022 14:33	1
HS22031358-08	CD-1C	21 Mar 2022 11:00		31 Mar 2022 10:30	05 Apr 2022 14:35	1
HS22031358-09	CD-4A	21 Mar 2022 13:45		31 Mar 2022 10:30	05 Apr 2022 14:37	1
HS22031358-09	CD-4A	21 Mar 2022 13:45		31 Mar 2022 10:30	04 Apr 2022 21:45	5
HS22031358-10	CD-4B	21 Mar 2022 15:00		31 Mar 2022 10:30	05 Apr 2022 14:39	1
HS22031358-10	CD-4B	21 Mar 2022 15:00		31 Mar 2022 10:30	04 Apr 2022 21:47	5
HS22031358-11	CD-5A	21 Mar 2022 16:25		31 Mar 2022 10:30	05 Apr 2022 14:41	1
Batch ID: 177081 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Water	
HS22031358-07	CD-1A	18 Mar 2022 09:55		01 Apr 2022 09:30	01 Apr 2022 17:07	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 177174 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20		05 Apr 2022 08:30	05 Apr 2022 17:47	200
HS22031358-01	CD-5B	23 Mar 2022 10:20		05 Apr 2022 08:30	05 Apr 2022 16:20	5
HS22031358-02	CD-2A	17 Mar 2022 08:25		05 Apr 2022 08:30	05 Apr 2022 17:49	100
HS22031358-02	CD-2A	17 Mar 2022 08:25		05 Apr 2022 08:30	05 Apr 2022 16:22	5
HS22031358-03	CD-2B	17 Mar 2022 10:50		05 Apr 2022 08:30	05 Apr 2022 17:51	50
HS22031358-03	CD-2B	17 Mar 2022 10:50		05 Apr 2022 08:30	05 Apr 2022 16:24	1
HS22031358-04	CD-3A	17 Mar 2022 13:40		05 Apr 2022 08:30	05 Apr 2022 17:53	200
HS22031358-04	CD-3A	17 Mar 2022 13:40		05 Apr 2022 08:30	05 Apr 2022 16:37	10
HS22031358-05	CD-3B	18 Mar 2022 08:10		05 Apr 2022 08:30	05 Apr 2022 17:55	50
HS22031358-05	CD-3B	18 Mar 2022 08:10		05 Apr 2022 08:30	05 Apr 2022 16:39	1
HS22031358-06	CD-1B	18 Mar 2022 09:00		05 Apr 2022 08:30	05 Apr 2022 16:41	1
HS22031358-07	CD-1A	18 Mar 2022 09:55		05 Apr 2022 08:30	05 Apr 2022 16:43	1
HS22031358-08	CD-1C	21 Mar 2022 11:00		05 Apr 2022 08:30	05 Apr 2022 16:45	1
HS22031358-09	CD-4A	21 Mar 2022 13:45		05 Apr 2022 08:30	05 Apr 2022 17:57	20
HS22031358-09	CD-4A	21 Mar 2022 13:45		05 Apr 2022 08:30	05 Apr 2022 17:16	1
HS22031358-10	CD-4B	21 Mar 2022 15:00		05 Apr 2022 08:30	05 Apr 2022 17:59	20
HS22031358-10	CD-4B	21 Mar 2022 15:00		05 Apr 2022 08:30	05 Apr 2022 17:18	1
HS22031358-11	CD-5A	21 Mar 2022 16:25		05 Apr 2022 08:30	05 Apr 2022 17:20	1
Batch ID: R404990 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20			27 Mar 2022 16:02	1
HS22031358-02	CD-2A	17 Mar 2022 08:25			27 Mar 2022 16:22	1
HS22031358-03	CD-2B	17 Mar 2022 10:50			27 Mar 2022 16:43	1
HS22031358-04	CD-3A	17 Mar 2022 13:40			27 Mar 2022 17:04	1
HS22031358-05	CD-3B	18 Mar 2022 08:10			27 Mar 2022 17:24	1
HS22031358-06	CD-1B	18 Mar 2022 09:00			27 Mar 2022 17:45	1
HS22031358-07	CD-1A	18 Mar 2022 09:55			27 Mar 2022 18:05	1
HS22031358-08	CD-1C	21 Mar 2022 11:00			27 Mar 2022 18:26	1
HS22031358-09	CD-4A	21 Mar 2022 13:45			27 Mar 2022 18:47	1
HS22031358-10	CD-4B	21 Mar 2022 15:00			27 Mar 2022 19:07	1
HS22031358-11	CD-5A	21 Mar 2022 16:25			27 Mar 2022 19:28	1
Batch ID: R405051 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22031358-02	CD-2A	17 Mar 2022 08:25			25 Mar 2022 15:04	1
HS22031358-03	CD-2B	17 Mar 2022 10:50			25 Mar 2022 15:04	1
HS22031358-04	CD-3A	17 Mar 2022 13:40			25 Mar 2022 15:04	1
HS22031358-05	CD-3B	18 Mar 2022 08:10			25 Mar 2022 15:04	1
HS22031358-06	CD-1B	18 Mar 2022 09:00			25 Mar 2022 15:04	1
HS22031358-07	CD-1A	18 Mar 2022 09:55			25 Mar 2022 15:04	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R405173 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22031358-08	CD-1C	21 Mar 2022 11:00			28 Mar 2022 16:23	1
HS22031358-09	CD-4A	21 Mar 2022 13:45			28 Mar 2022 16:23	1
HS22031358-10	CD-4B	21 Mar 2022 15:00			28 Mar 2022 16:23	1
HS22031358-11	CD-5A	21 Mar 2022 16:25			28 Mar 2022 16:23	1
Batch ID: R405204 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20			29 Mar 2022 18:21	1
HS22031358-02	CD-2A	17 Mar 2022 08:25			29 Mar 2022 18:34	1
HS22031358-03	CD-2B	17 Mar 2022 10:50			29 Mar 2022 18:40	1
HS22031358-04	CD-3A	17 Mar 2022 13:40			29 Mar 2022 18:47	1
HS22031358-05	CD-3B	18 Mar 2022 08:10			29 Mar 2022 18:53	1
HS22031358-06	CD-1B	18 Mar 2022 09:00			29 Mar 2022 19:21	1
HS22031358-07	CD-1A	18 Mar 2022 09:55			29 Mar 2022 19:28	1
HS22031358-08	CD-1C	21 Mar 2022 11:00			29 Mar 2022 19:35	1
HS22031358-09	CD-4A	21 Mar 2022 13:45			29 Mar 2022 19:42	1
HS22031358-10	CD-4B	21 Mar 2022 15:00			29 Mar 2022 19:48	1
HS22031358-11	CD-5A	21 Mar 2022 16:25			29 Mar 2022 19:55	1
Batch ID: R405211 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20			29 Mar 2022 21:21	1
HS22031358-02	CD-2A	17 Mar 2022 08:25			30 Mar 2022 08:28	1
HS22031358-03	CD-2B	17 Mar 2022 10:50			29 Mar 2022 22:17	1
HS22031358-04	CD-3A	17 Mar 2022 13:40			29 Mar 2022 22:44	1
HS22031358-05	CD-3B	18 Mar 2022 08:10			29 Mar 2022 23:12	1
HS22031358-06	CD-1B	18 Mar 2022 09:00			29 Mar 2022 23:40	1
HS22031358-07	CD-1A	18 Mar 2022 09:55			30 Mar 2022 08:56	1
HS22031358-08	CD-1C	21 Mar 2022 11:00			30 Mar 2022 01:58	1
HS22031358-09	CD-4A	21 Mar 2022 13:45			30 Mar 2022 02:26	1
HS22031358-10	CD-4B	21 Mar 2022 15:00			30 Mar 2022 09:24	1
HS22031358-11	CD-5A	21 Mar 2022 16:25			30 Mar 2022 09:51	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R405227 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20			29 Mar 2022 21:08	200
HS22031358-01	CD-5B	23 Mar 2022 10:20			29 Mar 2022 21:03	20
HS22031358-02	CD-2A	17 Mar 2022 08:25			29 Mar 2022 22:01	200
HS22031358-02	CD-2A	17 Mar 2022 08:25			29 Mar 2022 21:56	20
HS22031358-03	CD-2B	17 Mar 2022 10:50			29 Mar 2022 22:12	50
HS22031358-03	CD-2B	17 Mar 2022 10:50			29 Mar 2022 22:06	5
HS22031358-05	CD-3B	18 Mar 2022 08:10			29 Mar 2022 22:54	50
HS22031358-05	CD-3B	18 Mar 2022 08:10			29 Mar 2022 22:49	5
HS22031358-06	CD-1B	18 Mar 2022 09:00			29 Mar 2022 22:59	1
HS22031358-07	CD-1A	18 Mar 2022 09:55			29 Mar 2022 23:05	1
HS22031358-08	CD-1C	21 Mar 2022 11:00			29 Mar 2022 23:10	1
HS22031358-09	CD-4A	21 Mar 2022 13:45			29 Mar 2022 23:20	10
HS22031358-09	CD-4A	21 Mar 2022 13:45			29 Mar 2022 23:15	1
HS22031358-10	CD-4B	21 Mar 2022 15:00			29 Mar 2022 23:31	50
HS22031358-10	CD-4B	21 Mar 2022 15:00			29 Mar 2022 23:26	5
HS22031358-11	CD-5A	21 Mar 2022 16:25			30 Mar 2022 00:13	10
HS22031358-11	CD-5A	21 Mar 2022 16:25			30 Mar 2022 00:08	1
Batch ID: R405301 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20			30 Mar 2022 20:05	1
HS22031358-02	CD-2A	17 Mar 2022 08:25			30 Mar 2022 20:32	1
HS22031358-03	CD-2B	17 Mar 2022 10:50			30 Mar 2022 21:00	1
HS22031358-04	CD-3A	17 Mar 2022 13:40			30 Mar 2022 21:27	1
HS22031358-05	CD-3B	18 Mar 2022 08:10			30 Mar 2022 21:55	1
HS22031358-06	CD-1B	18 Mar 2022 09:00			30 Mar 2022 22:23	1
HS22031358-07	CD-1A	18 Mar 2022 09:55			30 Mar 2022 22:51	1
HS22031358-08	CD-1C	21 Mar 2022 11:00			31 Mar 2022 00:14	1
HS22031358-09	CD-4A	21 Mar 2022 13:45			31 Mar 2022 00:41	1
HS22031358-10	CD-4B	21 Mar 2022 15:00			31 Mar 2022 01:09	1
HS22031358-11	CD-5A	21 Mar 2022 16:25			31 Mar 2022 01:36	1
Batch ID: R405357 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS22031358-04	CD-3A	17 Mar 2022 13:40			30 Mar 2022 14:49	500
HS22031358-04	CD-3A	17 Mar 2022 13:40			30 Mar 2022 14:43	50
Batch ID: R405364 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22031358-01	CD-5B	23 Mar 2022 10:20			30 Mar 2022 15:28	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 176983 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MBLK Sample ID: **MBLK-176983** Units: **mg/L** Analysis Date: **01-Apr-2022 13:02**
Client ID: Run ID: **FID-7_405703** SeqNo: **6579777** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	ND	0.00100								
Aliphatics >C12 - C16	ND	0.00200								
Aliphatics >C16 - C35	ND	0.00800								
Surr: 1-Chlorooctadecane	*0.01712*	*0*	*0.04*	*0*	*42.8*	*40 - 140*				

MBLK Sample ID: **MBLK-176983** Units: **mg/L** Analysis Date: **01-Apr-2022 14:05**
Client ID: Run ID: **FID-8_405705** SeqNo: **6579826** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	ND	0.00100								
Aromatics >C12 - C16	ND	0.00400								
Aromatics >C16 - C21	ND	0.00300								
Aromatics >C21 - C35	ND	0.00900								
Surr: 2-Bromonaphthalene	*0.03731*	*0*	*0.04*	*0*	*93.3*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03707*	*0*	*0.04*	*0*	*92.7*	*40 - 140*				
Surr: o-Terphenyl	*0.02424*	*0*	*0.04*	*0*	*60.6*	*40 - 140*				

LCS Sample ID: **LCS-176983** Units: **mg/L** Analysis Date: **01-Apr-2022 13:34**
Client ID: Run ID: **FID-7_405703** SeqNo: **6579778** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.05203	0.00100	0.05	0	104	40 - 140				
Aliphatics >C12 - C16	0.09908	0.00200	0.1	0	99.1	40 - 140				
Aliphatics >C16 - C35	0.3738	0.00800	0.4	0	93.4	40 - 140				
Surr: 1-Chlorooctadecane	*0.02499*	*0*	*0.04*	*0*	*62.5*	*40 - 140*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 176983 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS-176983** Units: **mg/L** Analysis Date: **01-Apr-2022 14:37**
Client ID: Run ID: **FID-8_405705** SeqNo: **6579827** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.05643	0.00100	0.05	0	113	40 - 140				
Aromatics >C12 - C16	0.2261	0.00400	0.2	0	113	40 - 140				
Aromatics >C16 - C21	0.189	0.00300	0.15	0	126	40 - 140				
Aromatics >C21 - C35	0.5379	0.00900	0.45	0	120	40 - 140				
Surr: 2-Bromonaphthalene	*0.03742*	*0*	*0.04*	*0*	*93.6*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03434*	*0*	*0.04*	*0*	*85.8*	*40 - 140*				
Surr: o-Terphenyl	*0.03049*	*0*	*0.04*	*0*	*76.2*	*40 - 140*				

LCSD Sample ID: **LCSD-176983** Units: **mg/L** Analysis Date: **01-Apr-2022 14:05**
Client ID: Run ID: **FID-7_405703** SeqNo: **6579779** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.05048	0.00100	0.05	0	101	40 - 140	0.05203	3.03	50	
Aliphatics >C12 - C16	0.09783	0.00200	0.1	0	97.8	40 - 140	0.09908	1.27	50	
Aliphatics >C16 - C35	0.373	0.00800	0.4	0	93.3	40 - 140	0.3738	0.201	50	
Surr: 1-Chlorooctadecane	*0.02471*	*0*	*0.04*	*0*	*61.8*	*40 - 140*	*0.02499*	*1.15*	*50*	

LCSD Sample ID: **LCSD-176983** Units: **mg/L** Analysis Date: **05-Apr-2022 13:35**
Client ID: Run ID: **FID-8_405705** SeqNo: **6580012** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.06043	0.00100	0.05	0	121	40 - 140	0.05643	6.85	50	
Aromatics >C12 - C16	0.2333	0.00400	0.2	0	117	40 - 140	0.2261	3.13	50	
Aromatics >C16 - C21	0.1901	0.00300	0.15	0	127	40 - 140	0.189	0.573	50	
Aromatics >C21 - C35	0.543	0.00900	0.45	0	121	40 - 140	0.5379	0.944	50	
Surr: 2-Bromonaphthalene	*0.03777*	*0*	*0.04*	*0*	*94.4*	*40 - 140*	*0.03742*	*0.91*	*50*	
Surr: 2-Fluorobiphenyl	*0.03351*	*0*	*0.04*	*0*	*83.8*	*40 - 140*	*0.03434*	*2.43*	*50*	
Surr: o-Terphenyl	*0.03132*	*0*	*0.04*	*0*	*78.3*	*40 - 140*	*0.03049*	*2.68*	*50*	

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-04
HS22031358-05	HS22031358-06	HS22031358-07	HS22031358-08
HS22031358-09	HS22031358-10	HS22031358-11	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R405211 (0) **Instrument: FID-14** **Method: MASSACHUSETTS VPH, FEB 2018, REV 2.1**

MBLK Sample ID: **MBLK-220329** Units: **mg/L** Analysis Date: **29-Mar-2022 20:26**
Client ID: Run ID: **FID-14_405211** SeqNo: **6568657** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	ND	0.0100								
Aliphatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2611*	*0.0100*	*0.25*	*0*	*104*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2611*	*0.0100*	*0.25*	*0*	*104*	*70 - 130*				

LCS Sample ID: **LCS-220329** Units: **mg/L** Analysis Date: **29-Mar-2022 19:58**
Client ID: Run ID: **FID-14_405211** SeqNo: **6568656** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02423	0.0100	0.025	0	96.9	70 - 130				
Aliphatics >C8 - C10	0.02339	0.0100	0.025	0	93.6	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2854*	*0.0100*	*0.25*	*0*	*114*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2854*	*0.0100*	*0.25*	*0*	*114*	*70 - 130*				

LCSD Sample ID: **LCSD-220329** Units: **mg/L** Analysis Date: **30-Mar-2022 00:35**
Client ID: Run ID: **FID-14_405211** SeqNo: **6568663** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02445	0.0100	0.025	0	97.8	70 - 130	0.02423	0.896	25	
Aliphatics >C8 - C10	0.0244	0.0100	0.025	0	97.6	70 - 130	0.02339	4.23	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2744*	*0.0100*	*0.25*	*0*	*110*	*70 - 130*	*0.2854*	*3.95*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2744*	*0.0100*	*0.25*	*0*	*110*	*70 - 130*	*0.2854*	*3.95*	*25*	

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-04
HS22031358-05	HS22031358-06	HS22031358-07	HS22031358-08
HS22031358-09	HS22031358-10	HS22031358-11	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R405301 (0) **Instrument: FID-15** **Method: MASSACHUSETTS VPH, FEB 2018, REV 2.1**

MBLK Sample ID: **MBLK-220329** Units: **mg/L** Analysis Date: **30-Mar-2022 19:37**
Client ID: Run ID: **FID-15_405301** SeqNo: **6570839** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2645*	*0.0100*	*0.25*	*0*	*106*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2645*	*0.0100*	*0.25*	*0*	*106*	*70 - 130*				

LCS Sample ID: **LCS-220330** Units: **mg/L** Analysis Date: **30-Mar-2022 18:42**
Client ID: Run ID: **FID-15_405301** SeqNo: **6570837** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.1017	0.0100	0.1	0	102	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2915*	*0.0100*	*0.25*	*0*	*117*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2915*	*0.0100*	*0.25*	*0*	*117*	*70 - 130*				

LCSD Sample ID: **LCSD-220330** Units: **mg/L** Analysis Date: **30-Mar-2022 19:09**
Client ID: Run ID: **FID-15_405301** SeqNo: **6570838** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.1046	0.0100	0.1	0	105	70 - 130	0.1017	2.81	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.281*	*0.0100*	*0.25*	*0*	*112*	*70 - 130*	*0.2915*	*3.68*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.281*	*0.0100*	*0.25*	*0*	*112*	*70 - 130*	*0.2915*	*3.68*	*25*	

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-04
HS22031358-05	HS22031358-06	HS22031358-07	HS22031358-08
HS22031358-09	HS22031358-10	HS22031358-11	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 176829 (0) **Instrument: HG03** **Method: DISSOLVED MERCURY BY SW7470A (DISSOLVED)**

MBLK Sample ID: **MBLKF1-176829** Units: **mg/L** Analysis Date: **28-Mar-2022 13:52**
Client ID: Run ID: **HG03_405036** SeqNo: **6564765** PrepDate: **28-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

MBLK Sample ID: **MBLK-176829** Units: **mg/L** Analysis Date: **28-Mar-2022 13:51**
Client ID: Run ID: **HG03_405036** SeqNo: **6564764** PrepDate: **28-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-176829** Units: **mg/L** Analysis Date: **28-Mar-2022 13:54**
Client ID: Run ID: **HG03_405036** SeqNo: **6564766** PrepDate: **28-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0049	0.000200	0.005	0	98.0	80 - 120				

MS Sample ID: **HS22030915-01MS** Units: **mg/L** Analysis Date: **28-Mar-2022 13:57**
Client ID: Run ID: **HG03_405036** SeqNo: **6564768** PrepDate: **28-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0051	0.000200	0.005	-0.000032	103	80 - 120				

MSD Sample ID: **HS22030915-01MSD** Units: **mg/L** Analysis Date: **28-Mar-2022 14:02**
Client ID: Run ID: **HG03_405036** SeqNo: **6564769** PrepDate: **28-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00504	0.000200	0.005	-0.000032	101	80 - 120	0.0051	1.18	20	

The following samples were analyzed in this batch: HS22031358-08 HS22031358-09 HS22031358-10 HS22031358-11

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 176886 (0) **Instrument: HG03** **Method: DISSOLVED MERCURY BY SW7470A (DISSOLVED)**

MBLK Sample ID: **MBLK-176886** Units: **mg/L** Analysis Date: **29-Mar-2022 14:15**
Client ID: Run ID: **HG03_405136** SeqNo: **6567498** PrepDate: **29-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-176886** Units: **mg/L** Analysis Date: **29-Mar-2022 14:19**
Client ID: Run ID: **HG03_405136** SeqNo: **6567499** PrepDate: **29-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00495	0.000200	0.005	0	99.0	80 - 120				

MS Sample ID: **HS22030980-06MS** Units: **mg/L** Analysis Date: **29-Mar-2022 14:27**
Client ID: Run ID: **HG03_405136** SeqNo: **6567503** PrepDate: **29-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00543	0.000200	0.005	0.000012	108	80 - 120				

MSD Sample ID: **HS22030980-06MSD** Units: **mg/L** Analysis Date: **29-Mar-2022 14:28**
Client ID: Run ID: **HG03_405136** SeqNo: **6567504** PrepDate: **29-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00532	0.000200	0.005	0.000012	106	80 - 120	0.00543	2.05	20	

The following samples were analyzed in this batch: HS22031358-01 HS22031358-02 HS22031358-03 HS22031358-04 HS22031358-05 HS22031358-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 176988 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-176988** Units: **mg/L** Analysis Date: **31-Mar-2022 11:07**
Client ID: Run ID: **HG03_405307** SeqNo: **6571372** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-176988** Units: **mg/L** Analysis Date: **31-Mar-2022 11:14**
Client ID: Run ID: **HG03_405307** SeqNo: **6571375** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00589	0.000200	0.005	0	118	80 - 120				

MS Sample ID: **HS22031447-01MS** Units: **mg/L** Analysis Date: **31-Mar-2022 11:24**
Client ID: Run ID: **HG03_405307** SeqNo: **6571377** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00489	0.000200	0.005	0.000086	96.1	75 - 125				

MSD Sample ID: **HS22031447-01MSD** Units: **mg/L** Analysis Date: **31-Mar-2022 11:26**
Client ID: Run ID: **HG03_405307** SeqNo: **6571378** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.000200	0.005	0.000086	102	75 - 125	0.00489	5.57	20	

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-04
HS22031358-05	HS22031358-06	HS22031358-07	HS22031358-08
HS22031358-09	HS22031358-10	HS22031358-11	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 177003 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLK-177003** Units: **mg/L** Analysis Date: **05-Apr-2022 13:44**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580237** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

LCS Sample ID: **LCS-177003** Units: **mg/L** Analysis Date: **04-Apr-2022 20:22**
Client ID: Run ID: **ICPMS06_405604** SeqNo: **6578151** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04974	0.00200	0.05	0	99.5	80 - 120				
Barium	0.04965	0.00400	0.05	0	99.3	80 - 120				
Cadmium	0.05126	0.00200	0.05	0	103	80 - 120				
Chromium	0.04949	0.00400	0.05	0	99.0	80 - 120				
Iron	4.926	0.200	5	0	98.5	80 - 120				
Lead	0.05012	0.00200	0.05	0	100	80 - 120				
Manganese	0.05107	0.00500	0.05	0	102	80 - 120				
Strontium	0.09643	0.00500	0.1	0	96.4	80 - 120				
Zinc	0.05295	0.00400	0.05	0	106	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 177003 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MS Sample ID: **HS22031233-01MS** Units: **mg/L** Analysis Date: **04-Apr-2022 20:28**
Client ID: Run ID: **ICPMS06_405604** SeqNo: **6578154** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05349	0.00200	0.05	0.003711	99.6	75 - 125				
Barium	0.09148	0.00400	0.05	0.04255	97.9	75 - 125				
Cadmium	0.04908	0.00200	0.05	0.000028	98.1	75 - 125				
Chromium	0.04797	0.00400	0.05	0.000415	95.1	75 - 125				
Iron	5.038	0.200	5	0.3278	94.2	75 - 125				
Lead	0.04985	0.00200	0.05	0.000131	99.4	75 - 125				
Manganese	0.8812	0.00500	0.05	0.8614	39.6	75 - 125				SO
Strontium	0.6122	0.00500	0.1	0.5334	78.8	75 - 125				O
Zinc	0.07014	0.00400	0.05	0.023	94.3	75 - 125				

MSD Sample ID: **HS22031233-01MSD** Units: **mg/L** Analysis Date: **04-Apr-2022 20:30**
Client ID: Run ID: **ICPMS06_405604** SeqNo: **6578155** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05604	0.00200	0.05	0.003711	105	75 - 125	0.05349	4.65	20	
Barium	0.09496	0.00400	0.05	0.04255	105	75 - 125	0.09148	3.73	20	
Cadmium	0.05178	0.00200	0.05	0.000028	104	75 - 125	0.04908	5.34	20	
Chromium	0.04976	0.00400	0.05	0.000415	98.7	75 - 125	0.04797	3.68	20	
Iron	5.211	0.200	5	0.3278	97.7	75 - 125	5.038	3.37	20	
Lead	0.0522	0.00200	0.05	0.000131	104	75 - 125	0.04985	4.61	20	
Manganese	0.9103	0.00500	0.05	0.8614	97.8	75 - 125	0.8812	3.25	20	O
Strontium	0.6335	0.00500	0.1	0.5334	100	75 - 125	0.6122	3.43	20	O
Zinc	0.07308	0.00400	0.05	0.023	100	75 - 125	0.07014	4.1	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 177003 (0) **Instrument: ICPMS06** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

PDS Sample ID: **HS22031233-01PDS** Units: **mg/L** Analysis Date: **04-Apr-2022 20:32**
Client ID: Run ID: **ICPMS06_405604** SeqNo: **6578156** PrepDate: **31-Mar-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1219	0.00200	0.1	0.003711	118	75 - 125				
Barium	0.164	0.00400	0.1	0.04255	121	75 - 125				
Cadmium	0.1189	0.00200	0.1	0.000028	119	75 - 125				
Chromium	0.115	0.00400	0.1	0.000415	115	75 - 125				
Iron	11.57	0.200	10	0.3278	112	75 - 125				
Lead	0.1196	0.00200	0.1	0.000131	119	75 - 125				
Manganese	0.9626	0.00500	0.1	0.8614	101	75 - 125				O
Zinc	0.1392	0.00400	0.1	0.023	116	75 - 125				

SD Sample ID: **HS22031233-01SD** Units: **mg/L** Analysis Date: **04-Apr-2022 20:26**
Client ID: Run ID: **ICPMS06_405604** SeqNo: **6578153** PrepDate: **31-Mar-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.003803	0.0100					0.003711	0	10	J
Barium	0.04384	0.0200					0.04255	3.02	10	
Cadmium	ND	0.0100					0.000028	0	10	
Chromium	ND	0.0200					0.000415	0	10	
Iron	0.3331	1.00					0.3278	0	10	J
Lead	ND	0.0100					0.000131	0	10	
Manganese	0.8905	0.0250					0.8614	3.38	10	
Strontium	0.5539	0.0250					0.5334	3.84	10	
Zinc	0.02324	0.0200					0.023	1.03	10	

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-04
HS22031358-05	HS22031358-06	HS22031358-07	HS22031358-08
HS22031358-09	HS22031358-10	HS22031358-11	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 177081 (0) **Instrument: HG03** **Method: DISSOLVED MERCURY BY SW7470A (DISSOLVED)**

MBLK Sample ID: **MBLK-177081** Units: **mg/L** Analysis Date: **01-Apr-2022 16:17**
Client ID: Run ID: **HG03_405460** SeqNo: **6575037** PrepDate: **01-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-177081** Units: **mg/L** Analysis Date: **01-Apr-2022 16:19**
Client ID: Run ID: **HG03_405460** SeqNo: **6575038** PrepDate: **01-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00525	0.000200	0.005	0	105	80 - 120				

MS Sample ID: **HS22031233-01MS** Units: **mg/L** Analysis Date: **01-Apr-2022 16:25**
Client ID: Run ID: **HG03_405460** SeqNo: **6575040** PrepDate: **01-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00543	0.000200	0.005	0.000026	108	80 - 120				

MSD Sample ID: **HS22031233-01MSD** Units: **mg/L** Analysis Date: **01-Apr-2022 16:34**
Client ID: Run ID: **HG03_405460** SeqNo: **6575041** PrepDate: **01-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00507	0.000200	0.005	0.000026	101	80 - 120	0.00543	6.86	20	

The following samples were analyzed in this batch: HS22031358-07

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 177174 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-177174** Units: **mg/L** Analysis Date: **05-Apr-2022 15:58**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580370** PrepDate: **05-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Calcium	ND	0.500								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Magnesium	ND	0.200								
Manganese	ND	0.00500								
Potassium	ND	0.200								
Sodium	ND	0.200								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

LCS Sample ID: **LCS-177174** Units: **mg/L** Analysis Date: **05-Apr-2022 16:04**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580371** PrepDate: **05-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04959	0.00200	0.05	0	99.2	80 - 120				
Barium	0.05164	0.00400	0.05	0	103	80 - 120				
Cadmium	0.05266	0.00200	0.05	0	105	80 - 120				
Calcium	4.754	0.500	5	0	95.1	80 - 120				
Chromium	0.04852	0.00400	0.05	0	97.0	80 - 120				
Iron	4.799	0.200	5	0	96.0	80 - 120				
Lead	0.05105	0.00200	0.05	0	102	80 - 120				
Magnesium	4.995	0.200	5	0	99.9	80 - 120				
Manganese	0.0505	0.00500	0.05	0	101	80 - 120				
Potassium	4.892	0.200	5	0	97.8	80 - 120				
Sodium	4.86	0.200	5	0	97.2	80 - 120				
Strontium	0.09623	0.00500	0.1	0	96.2	80 - 120				
Zinc	0.05416	0.00400	0.05	0	108	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 177174 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS22031336-17MS** Units: **mg/L** Analysis Date: **05-Apr-2022 16:14**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580374** PrepDate: **05-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.07016	0.00200	0.05	0.0146	111	80 - 120				
Barium	7.52	0.00400	0.05	7.383	273	80 - 120				SEO
Cadmium	0.05425	0.00200	0.05	0.000011	108	80 - 120				
Calcium	125	0.500	5	117.1	159	80 - 120				SO
Chromium	0.05276	0.00400	0.05	0.000489	105	80 - 120				
Iron	6.639	0.200	5	1.448	104	80 - 120				
Lead	0.05351	0.00200	0.05	0.000378	106	80 - 120				
Magnesium	50.91	0.200	5	45.48	108	80 - 120				O
Manganese	0.5832	0.00500	0.05	0.5268	113	80 - 120				O
Potassium	20.18	0.200	5	14.9	106	80 - 120				
Sodium	310.8	0.200	5	306.8	78.2	80 - 120				SEO
Strontium	40.04	0.00500	0.1	38.91	1120	80 - 120				SEO
Zinc	0.06003	0.00400	0.05	0.005818	108	80 - 120				

MSD Sample ID: **HS22031336-17MSD** Units: **mg/L** Analysis Date: **05-Apr-2022 16:16**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580375** PrepDate: **05-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0702	0.00200	0.05	0.0146	111	80 - 120	0.07016	0.0541	20	
Barium	7.734	0.00400	0.05	7.383	702	80 - 120	7.52	2.81	20	SEO
Cadmium	0.05739	0.00200	0.05	0.000011	115	80 - 120	0.05425	5.62	20	
Calcium	123.5	0.500	5	117.1	129	80 - 120	125	1.2	20	SO
Chromium	0.05344	0.00400	0.05	0.000489	106	80 - 120	0.05276	1.3	20	
Iron	6.672	0.200	5	1.448	104	80 - 120	6.639	0.489	20	
Lead	0.05579	0.00200	0.05	0.000378	111	80 - 120	0.05351	4.16	20	
Magnesium	51.41	0.200	5	45.48	118	80 - 120	50.91	0.976	20	O
Manganese	0.5913	0.00500	0.05	0.5268	129	80 - 120	0.5832	1.37	20	SO
Potassium	20.14	0.200	5	14.9	105	80 - 120	20.18	0.227	20	
Sodium	311.5	0.200	5	306.8	92.1	80 - 120	310.8	0.223	20	EO
Strontium	40.34	0.00500	0.1	38.91	1420	80 - 120	40.04	0.744	20	SEO
Zinc	0.0617	0.00400	0.05	0.005818	112	80 - 120	0.06003	2.75	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 177174 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS22031336-17PDS** Units: **mg/L** Analysis Date: **05-Apr-2022 16:18**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580376** PrepDate: **05-Apr-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1121	0.00200	0.1	0.0146	97.5	75 - 125				
Cadmium	0.09736	0.00200	0.1	0.000011	97.3	75 - 125				
Calcium	126.7	0.500	10	117.1	96.4	75 - 125				O
Chromium	0.09353	0.00400	0.1	0.000489	93.0	75 - 125				
Iron	10.56	0.200	10	1.448	91.2	75 - 125				
Lead	0.09869	0.00200	0.1	0.000378	98.3	75 - 125				
Magnesium	53.07	0.200	10	45.48	75.9	75 - 125				O
Manganese	0.6062	0.00500	0.1	0.5268	79.4	75 - 125				O
Potassium	23.86	0.200	10	14.9	89.6	75 - 125				
Zinc	0.1026	0.00400	0.1	0.005818	96.8	75 - 125				

PDS Sample ID: **HS22031336-17PDS** Units: **mg/L** Analysis Date: **05-Apr-2022 17:26**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580490** PrepDate: **05-Apr-2022** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	12.7	0.200	5	7.374	107	75 - 125				
Sodium	770.2	10.0	500	309.1	92.2	75 - 125				
Strontium	43.96	0.250	5	37.97	120	75 - 125				O

SD Sample ID: **HS22031336-17SD** Units: **mg/L** Analysis Date: **05-Apr-2022 16:06**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580372** PrepDate: **05-Apr-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.01442	0.0100					0.0146	1.19	10	
Cadmium	ND	0.0100					0.000011	0	10	
Calcium	125.8	2.50					117.1	7.5	10	
Chromium	ND	0.0200					0.000489	0	10	
Iron	1.504	1.00					1.448	3.84	10	
Lead	ND	0.0100					0.000378	0	10	
Magnesium	45.55	1.00					45.48	0.161	10	
Manganese	0.534	0.0250					0.5268	1.37	10	
Potassium	14.96	1.00					14.9	0.379	10	
Zinc	ND	0.0200					0.005818	0	10	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: 177174 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS22031336-17SD** Units: **mg/L** Analysis Date: **05-Apr-2022 17:24**
Client ID: Run ID: **ICPMS06_405713** SeqNo: **6580489** PrepDate: **05-Apr-2022** DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	7.288	1.00					7.374	1.16	10	
Sodium	320.7	50.0					309.1	3.75	10	
Strontium	37.63	1.25					37.97	0.874	10	

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-04
HS22031358-05	HS22031358-06	HS22031358-07	HS22031358-08
HS22031358-09	HS22031358-10	HS22031358-11	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R404990 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-220327** Units: **ug/L** Analysis Date: **27-Mar-2022 11:51**
Client ID: Run ID: **VOA7_404990** SeqNo: **6563319** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*50.1*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.77*	*1.0*	*50*	*0*	*93.5*	*77 - 113*				
Surr: Dibromofluoromethane	*48.78*	*1.0*	*50*	*0*	*97.6*	*73 - 126*				
Surr: Toluene-d8	*51.16*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-220327** Units: **ug/L** Analysis Date: **27-Mar-2022 11:10**
Client ID: Run ID: **VOA7_404990** SeqNo: **6563318** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.94	1.0	20	0	99.7	74 - 120				
Ethylbenzene	20.56	1.0	20	0	103	77 - 117				
Toluene	19.21	1.0	20	0	96.0	77 - 118				
Xylenes, Total	60.31	1.0	60	0	101	75 - 122				
Surr: 1,2-Dichloroethane-d4	*52.21*	*1.0*	*50*	*0*	*104*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.7*	*1.0*	*50*	*0*	*101*	*77 - 113*				
Surr: Dibromofluoromethane	*52.68*	*1.0*	*50*	*0*	*105*	*73 - 126*				
Surr: Toluene-d8	*50.1*	*1.0*	*50*	*0*	*100*	*81 - 120*				

MS Sample ID: **HS22030848-01MS** Units: **ug/L** Analysis Date: **27-Mar-2022 13:58**
Client ID: Run ID: **VOA7_404990** SeqNo: **6563325** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	17.9	1.0	20	0	89.5	70 - 127				
Ethylbenzene	18.6	1.0	20	0	93.0	70 - 124				
Toluene	17.21	1.0	20	0	86.0	70 - 123				
Xylenes, Total	54.18	1.0	60	0	90.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.62*	*1.0*	*50*	*0*	*101*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.43*	*1.0*	*50*	*0*	*98.9*	*77 - 113*				
Surr: Dibromofluoromethane	*49.06*	*1.0*	*50*	*0*	*98.1*	*77 - 123*				
Surr: Toluene-d8	*49.25*	*1.0*	*50*	*0*	*98.5*	*82 - 127*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R404990 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS22030848-01MSD** Units: **ug/L** Analysis Date: **27-Mar-2022 14:18**
Client ID: Run ID: **VOA7_404990** SeqNo: **6563326** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	16.87	1.0	20	0	84.3	70 - 127	17.9	5.95	20	
Ethylbenzene	18.15	1.0	20	0	90.7	70 - 124	18.6	2.45	20	
Toluene	17.07	1.0	20	0	85.4	70 - 123	17.21	0.778	20	
Xylenes, Total	53.95	1.0	60	0	89.9	70 - 130	54.18	0.439	20	
Surr: 1,2-Dichloroethane-d4	*50.12*	*1.0*	*50*	*0*	*100*	*70 - 126*	*50.62*	*0.987*	*20*	
Surr: 4-Bromofluorobenzene	*49.73*	*1.0*	*50*	*0*	*99.5*	*77 - 113*	*49.43*	*0.593*	*20*	
Surr: Dibromofluoromethane	*51.14*	*1.0*	*50*	*0*	*102*	*77 - 123*	*49.06*	*4.15*	*20*	
Surr: Toluene-d8	*49.77*	*1.0*	*50*	*0*	*99.5*	*82 - 127*	*49.25*	*1.05*	*20*	

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-04
HS22031358-05	HS22031358-06	HS22031358-07	HS22031358-08
HS22031358-09	HS22031358-10	HS22031358-11	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R405051 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-032522** Units: **mg/L** Analysis Date: **25-Mar-2022 15:04**
Client ID: Run ID: **Balance1_405051** SeqNo: **6564955** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-032522** Units: **mg/L** Analysis Date: **25-Mar-2022 15:04**
Client ID: Run ID: **Balance1_405051** SeqNo: **6564956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1056	10.0	1000	0	106	85 - 115				

DUP Sample ID: **HS22031106-01DUP** Units: **mg/L** Analysis Date: **25-Mar-2022 15:04**
Client ID: Run ID: **Balance1_405051** SeqNo: **6564948** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1136	10.0					1130	0.53	5	

DUP Sample ID: **HS22031062-15DUP** Units: **mg/L** Analysis Date: **25-Mar-2022 15:04**
Client ID: Run ID: **Balance1_405051** SeqNo: **6564938** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	13580	10.0					13680	0.734	5	

The following samples were analyzed in this batch: HS22031358-02 HS22031358-03 HS22031358-04 HS22031358-05 HS22031358-06 HS22031358-07

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R405173 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-032822** Units: **mg/L** Analysis Date: **28-Mar-2022 16:23**
Client ID: Run ID: **Balance1_405173** SeqNo: **6567737** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-032822** Units: **mg/L** Analysis Date: **28-Mar-2022 16:23**
Client ID: Run ID: **Balance1_405173** SeqNo: **6567738** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1034	10.0	1000	0	103	85 - 115				

DUP Sample ID: **HS22031097-04DUP** Units: **mg/L** Analysis Date: **28-Mar-2022 16:23**
Client ID: Run ID: **Balance1_405173** SeqNo: **6567722** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1370	10.0					1372	0.146	5	

DUP Sample ID: **HS22031097-01DUP** Units: **mg/L** Analysis Date: **28-Mar-2022 16:23**
Client ID: Run ID: **Balance1_405173** SeqNo: **6567718** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1332	10.0					1326	0.451	5	

The following samples were analyzed in this batch: HS22031358-08 HS22031358-09 HS22031358-10 HS22031358-11

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R405204 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **WBLKW1-220329** Units: **mg/L** Analysis Date: **29-Mar-2022 17:58**
Client ID: Run ID: **ManTech01_405204** SeqNo: **6568523** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS1-220329** Units: **mg/L** Analysis Date: **29-Mar-2022 18:07**
Client ID: Run ID: **ManTech01_405204** SeqNo: **6568524** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	979.8	5.00	1000	0	98.0	85 - 115				

LCSD Sample ID: **LCSD1-220329** Units: **mg/L** Analysis Date: **29-Mar-2022 18:16**
Client ID: Run ID: **ManTech01_405204** SeqNo: **6568525** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	983.6	5.00	1000	0	98.4	85 - 115	979.8	0.387	20	

DUP Sample ID: **HS22031358-01DUP** Units: **mg/L** Analysis Date: **29-Mar-2022 18:28**
Client ID: **CD-5B** Run ID: **ManTech01_405204** SeqNo: **6568527** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	203.2	5.00					177	13.8	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-04
HS22031358-05	HS22031358-06	HS22031358-07	HS22031358-08
HS22031358-09	HS22031358-10	HS22031358-11	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R405227 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **29-Mar-2022 15:51**
Client ID: Run ID: **ICS-Integrion_405227** SeqNo: **6569106** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Sulfate	ND	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **29-Mar-2022 15:57**
Client ID: Run ID: **ICS-Integrion_405227** SeqNo: **6569107** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.79	0.500	20	0	94.0	80 - 120				
Sulfate	20.14	0.500	20	0	101	80 - 120				

MS Sample ID: **HS22031044-01MS** Units: **mg/L** Analysis Date: **29-Mar-2022 18:40**
Client ID: Run ID: **ICS-Integrion_405227** SeqNo: **6569113** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	44.37	0.500	10	34.55	98.2	80 - 120				
Sulfate	104.7	0.500	10	96.68	80.0	80 - 120				EO

MSD Sample ID: **HS22031044-01MSD** Units: **mg/L** Analysis Date: **29-Mar-2022 18:46**
Client ID: Run ID: **ICS-Integrion_405227** SeqNo: **6569114** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	44.43	0.500	10	34.55	98.8	80 - 120	44.37	0.14	20	
Sulfate	104.8	0.500	10	96.68	81.2	80 - 120	104.7	0.114	20	EO

The following samples were analyzed in this batch:

HS22031358-01	HS22031358-02	HS22031358-03	HS22031358-05
HS22031358-06	HS22031358-07	HS22031358-08	HS22031358-09
HS22031358-10	HS22031358-11		

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R405357 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **30-Mar-2022 13:51**
Client ID: Run ID: **ICS-Integrion_405357** SeqNo: **6572154** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Sulfate	ND	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **30-Mar-2022 13:56**
Client ID: Run ID: **ICS-Integrion_405357** SeqNo: **6572155** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.88	0.500	20	0	94.4	80 - 120				
Sulfate	21.63	0.500	20	0	108	80 - 120				

MS Sample ID: **HS22031590-02MS** Units: **mg/L** Analysis Date: **30-Mar-2022 14:17**
Client ID: Run ID: **ICS-Integrion_405357** SeqNo: **6572157** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	127.9	2.50	50	77.03	102	80 - 120				
Sulfate	2734	2.50	50	2643	181	80 - 120				SEO

MSD Sample ID: **HS22031590-02MSD** Units: **mg/L** Analysis Date: **30-Mar-2022 14:22**
Client ID: Run ID: **ICS-Integrion_405357** SeqNo: **6572158** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	127.6	2.50	50	77.03	101	80 - 120	127.9	0.18	20	
Sulfate	2730	2.50	50	2643	173	80 - 120	2734	0.152	20	SEO

The following samples were analyzed in this batch: HS22031358-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22031358

QC BATCH REPORT

Batch ID: R405364 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-033022** Units: **mg/L** Analysis Date: **30-Mar-2022 15:28**
Client ID: Run ID: **Balance1_405364** SeqNo: **6572299** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-033022** Units: **mg/L** Analysis Date: **30-Mar-2022 15:28**
Client ID: Run ID: **Balance1_405364** SeqNo: **6572300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1056	10.0	1000	0	106	85 - 115				

DUP Sample ID: **HS22031340-01DUP** Units: **mg/L** Analysis Date: **30-Mar-2022 15:28**
Client ID: Run ID: **Balance1_405364** SeqNo: **6572293** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	144	10.0					142	1.4	5	

DUP Sample ID: **HS22031324-08DUP** Units: **mg/L** Analysis Date: **30-Mar-2022 15:28**
Client ID: Run ID: **Balance1_405364** SeqNo: **6572290** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	7940	10.0					7980	0.503	5	

The following samples were analyzed in this batch: HS22031358-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: **HS22031358**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Florida	E87611-34	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
Texas	T104704231-21-28	30-Apr-2022

Sample Receipt Checklist

Work Order ID: HS22031358 **Date/Time Received:** **25-Mar-2022 08:00**

Client Name: ERMSW-BRLA **Received by:** **Paresh M. Giga**

Completed By:	/S/ Nilesh D. Ranchod	25-Mar-2022 12:22	**Reviewed by:**	/S/ Anna Kinchen	25-Mar-2022 14:50
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **Greyhound**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:50222
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.2C/0.7C,0.4C/0.9C,0.1C/0.6C,0.3C/0.8C,0.5C/1.0C,0.3C/0.8C UC/C	IR 31
Cooler(s)/Kit(s):	Blue	
Date/Time sample(s) sent to storage:	03/25/2022 12:45	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☑	N/A ☐
pH adjusted?	Yes ☑	No ☐	N/A ☐
pH adjusted by:	Si Ma		

Login Notes: SX CD-1B Sample , CD-1B (Filtered) Metals pH>6 Preserved with 0.5ml HNO3 on 3/25/2022 @11:30am lot # 318173210 By Sima After preservation pH (1)

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTIONS | RIGHT PARTNER

BP/Castex-Ltd Adm-Apx E-000490

RIGHT SOLUTIONS | RIGHT PARTNER

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Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 50222

HS22031358

ERM Southwest, Inc.

Castex 0575834

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	CASTEX
Work Order		Project Number	0575834
Company Name	ERM	Bill To Company	SAME
Send Report To	DAVE UPTHEGROVE	Invoice Attn	
Address	840 W. SAM HOUSTON PKWY. NORTH SUITE 600, HOUSTON, TX	Address	
City/State/Zip		City/State/Zip	
Phone	504-481-6470	Phone	
Fax		Fax	
e-Mail Address	DAVID.UPTHEGROVE@ERM.COM	e-Mail Address	

A	BTEX
B	TPH FRACTIONS (EPH/VPH)
C	TOTAL METALS ARSENIC, BARIUM, CADMIUM, CHROMIUM, IRON, MANGANESE, LEAD, STRONTIUM, ZINC, MERCURY
D	DISSOLVED METALS
E	CATIONS (SODIUM, CALCIUM, MAGNESIUM, POTASSIUM)
F	ANIONS (SULFATE, ALKALINITY BICARBONATE, ALKALINITY CARBONATE)
G	TDS
H	CHLORIDES
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
	CD-5B	3/23/22	1020	WATER													
1	CD-2A	3/17/22	0825	WATER		10	X	X	X	X	X	X	X	X			
2	CD-2B	3/17/22	1050	WATER		10	X	X	X	X	X	X	X	X			
3	CD-3A	3/17/22	1340	WATER		10	X	X	X	X	X	X	X	X			
4	CD-3B	3/18/22	0810	WATER		10	X	X	X	X	X	X	X	X			
5	CD-1B	3/18/22	0900	WATER		10	X	X	X	X	X	X	X	X			
6	CD-1A	3/18/22	0955	WATER		10	X	X	X	X	X	X	X	X			
7	CD-1C	3/21/22	1100	WATER		10	X	X	X	X	X	X	X	X			
8	CD-4A	3/21/22	1345	WATER		10	X	X	X	X	X	X	X	X			
9	CD-4B	3/21/22	1500	WATER		10	X	X	X	X	X	X	X	X			
10	CD-5A	3/21/22	1625	WATER		10	X	X	X	X	X	X	X	X			

Sampler(s) Please Print & Sign: KURT BOEHRINGER

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other _____

Results Due Date:

	Date:	Time:		
Relinquished by:	3/24/22	1050	Received by:	
Relinquished by:	Date:	Time:	Received by (Laboratory):	3/25/2022 08:00
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
BW-1	0.2°
BW-2	0.4°
BW-3	0.1°
BW-4	0.3°
BW-5	-0.3°
BW-6	-0.3°

QC Package: (Check One Box Below)

☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other _____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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431 CF 0.5

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Ph: +1 281 530 5656
Fax: +1 281 530 5887

Bmc

CUSTODY SEAL

Date: 3/29/22 Time: 1345
Name: [illegible]
Company: ALS

Seal Broken By:
Date: 03125122

Bmc 1

24MAR22 05:33P ** LABEL **

Schd: GLI 1265
HOUSTON, TX
ALS CORPUS
000-000-0000 Bmc
A L S
HOLD AT STATION

HOUSTON, TX 77002
Phone: 281-530-5656
Standard

PG 03125122
08:00

GLI 3090059412

HOLD AT STATION

Manual Wght:
326.0
Tariff Wght:
326.0

PO/Ref #:

EX-635 (6/05)

Greyhound
Package Express

Bmc

PACKAGE ID NUMBER

A1126726A

RIGHT SOLUTIONS | RIGHT PARTNER

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Blue 2

Date: 3/24/22
Name:
Company: ALS

CUSTODY SEAL
Time: 1340

Seal Broken By:
Date: 03/25/22

Blue 2 MAR 25 2022

24MAR22 05:33P ** LABEL **

Schd: GLI 1265

HOUSTON, TX

ALS CORPUS
000-000-0000

A L S

HOLD AT STATION

HOUSTON, TX 77002

Phone: 281-530-5656

Standard

GLI 3090059412

HOLD AT STATION

Blue 2

PU 03/25/22 08:00

Manual Wght: 326.0

Tariff Wght: 326.0

PO/Ref #:

Greyhound
Package Express

Blue 2

PACKAGE ID NUMBER

A1126725A

RIGHT SOLUTIONS | RIGHT PARTNER

BP/Castex-Ltd Adm-Apx E-000492

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Blue 3

CUSTODY SEAL
Date: 3/24/22 Time: 1845
Name:
Company:

Seal Broken By:
Date: 03125122

Blue 3 MAR 25 2022

24MAR22 05:33P ** BABEL **

Schd: GLI 1265

HOUSTON, TX

AIS CORPUS
000-000-0000

Blue 3

A L S

HOLD AT STATION

HOUSTON, TX 77002

Phone: 281-530-5656

Standard

GLI 3090059412

HOLD AT STATION

Manual Wght:
326.0

Tariff Wght:
326.0

PO/Ref #:

PG 03125122 08:00

Greyhound
Package Express

Blue 3
PACKAGE ID NUMBER

A1126727A

BP/Castex-Ltd Adm-Apx E-000493
RIGHT SOLUTIONS | RIGHT PARTNER

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Bruey

CUSTODY SEAL

Date: 3/24/22 Time: 1340
Name: ALW
Company: ALS

Seal Broken By: SM
Date: 03/25/22

Bruey MAR 2 5 2022

24MAR22 05:33P ** LABEL **

Schd: GLI 1265

HOUSTON, TX

ALS CORPUS
000-000-0000

A L S

HOLD AT STATION

HOUSTON, TX 77002

Phone: 281-530-5656

Standard

GLI 3090059412

HOLD AT STATION

Manual Wght:
326.0

Tariff Wght:
326.0

PO/Ref #:

Bruey

PG 03/25/22 08:00

Greyhound

Bruey Package Express

PACKAGE ID NUMBER

A1126724A

BP/Castex-Ltd Adm-Apx E-000494

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
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Fax. +1 281 530 5887

BMES

CUSTODY SEAL

Date: 3/24/22
Time: 1346
Name:
Company: ALS

Seal Broken By:
Date: 03/25/22

BMES MAR 25 2022

24MAR22 05:33P ** LABEL **

Schd: GLI 1265

GLI 3090059412

HOUSTON, TX

ALS CORPUS
000-000-0000

BMES

PG 03/25/22 08:00

A L S

HOLD AT STATION

HOLD AT STATION

Manual Wght:
326.0

Tariff Wght:
326.0

HOUSTON, TX 77002

Phone: 281-530-5656

PO/Ref #:

Standard

Greyhound
Package Express

BMES

PACKAGE ID NUMBER

A1126729A

RIGHT SOLUTIONS | RIGHT PARTNER

BP/Castex-Ltd Adm-Apx E-000496

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Bmc6

CUSTODY SEAL

Date: 3/24/22 Time: 1340
Name: Grant
Company: ALS

Seal Broken By: SM
Date: 03/25/22

Bmc6 MAR 2 5 2022

24MAR22 05:33P ** LABEL **

Schd: GLI 1265

HOUSTON, TX

ALS CORPUS
000-000-0000

Bmc6

A L S

PG 03/25/22 08:00

HOLD AT STATION

HOUSTON, TX 77002

Phone: 281-530-5656

Standard

GLI 3090059412

HOLD AT STATION

Manual Wght:
326.0

Tariff Wght:
326.0

PO/Ref #:

Greyhound

Bmc6

Package Express

PACKAGE ID NUMBER

A1126723A

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4/15/2022

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 22-073-0033
Project Description: Castex Development
Project Number: 0575834
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 3/14/2022 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2022
Louisiana	State Program - NELAP	02041	06/30/2022

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2023
Arkansas	State Program	88-0650	02/07/2023
California	State Program	2904	06/30/2022
Florida	State Program - NELAP	E871157	06/30/2022
Georgia	State Program	C044	02/18/2023
Georgia	State Program	04015	06/30/2022
Illinois	State Program - NELAP	200078	10/10/2022
Kentucky	State Program	80215	06/30/2022
Kentucky	State Program	KY90047	12/31/2022
Louisiana	State Program - NELAP	LA037	12/31/2022
Louisiana	State Program - NELAP	04015	06/30/2022
Mississippi	State Program	MS	02/11/2023
North Carolina	State Program	415	12/31/2022
Pennsylvania	State Program - NELAP	68-03195	05/31/2022
South Carolina	State Program	84002	06/30/2022
South Carolina	State Program	84002	06/30/2022
Tennessee	State Program	02027	02/11/2023
Texas	State Program - NELAP	T104704180	09/30/2022
Virginia	State Program	00106	06/30/2022
Virginia	State Program - NELAP	460181	09/14/2022

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Sample Summary Table

Report Number: **22-073-0033**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
64922	CD-1 (0-2')	Solids	02/23/2022 14:45	03/14/2022		
64922	CD-1 (0-2')	Solids	02/23/2022 14:45	03/14/2022	7471A	WP MTN
64922	CD-1 (0-2')	Solids	02/23/2022 14:45	03/14/2022	6010D	WP MTN
64922	CD-1 (0-2')	Solids	02/23/2022 14:45	03/14/2022	29B	WP MTN
64923	CD-1 (4-6')	Solids	02/23/2022 14:55	03/14/2022		
64923	CD-1 (4-6')	Solids	02/23/2022 14:55	03/14/2022	29B	WP MTN
64923	CD-1 (4-6')	Solids	02/23/2022 14:55	03/14/2022	7471A	WP MTN
64923	CD-1 (4-6')	Solids	02/23/2022 14:55	03/14/2022	6010D	WP MTN
64924	CD-1 (10-12')	Solids	02/23/2022 15:10	03/14/2022		
64924	CD-1 (10-12')	Solids	02/23/2022 15:10	03/14/2022	7471A	WP MTN
64924	CD-1 (10-12')	Solids	02/23/2022 15:10	03/14/2022	6010D	WP MTN
64924	CD-1 (10-12')	Solids	02/23/2022 15:10	03/14/2022	29B	WP MTN
64925	CD-1 (22-24')	Solids	02/23/2022 15:40	03/14/2022		
64926	CD-1 (22-24')	TCLP	02/23/2022 15:40	03/14/2022	9056	WP MTN
64926	CD-1 (22-24')	TCLP	02/23/2022 15:40	03/14/2022	1312	WP MTN
64927	CD-1 (36-38')	Solids	02/23/2022 16:15	03/14/2022		
64928	CD-1 (36-38')	TCLP	02/23/2022 16:15	03/14/2022	9056	WP MTN
64928	CD-1 (36-38')	TCLP	02/23/2022 16:15	03/14/2022	1312	WP MTN
64929	CD-1 (46-48')	Solids	02/23/2022 16:40	03/14/2022		
64930	CD-1 (56-58')	Solids	02/24/2022 08:20	03/14/2022		
64931	CD-1 (56-58')	TCLP	02/24/2022 08:20	03/14/2022	9056	WP MTN
64931	CD-1 (56-58')	TCLP	02/24/2022 08:20	03/14/2022	1312	WP MTN
64932	CD-2 (14-16')	Solids	03/13/2022 15:00	03/14/2022		
64933	CD-2 (28-30')	Solids	03/13/2022 15:30	03/14/2022		
64934	CD-2 (38-40')	Solids	03/13/2022 15:55	03/14/2022		
64935	CD-2 (46-48')	Solids	03/13/2022 16:15	03/14/2022		

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Sample Summary Table

Report Number: **22-073-0033**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
64936	CD-2 (52-54')	Solids	03/04/2022 07:30	03/14/2022		
64937	CD-2 (60-62')	Solids	03/04/2022 07:50	03/14/2022		
64938	CD-3 (18-20')	Solids	03/08/2022 11:20	03/14/2022		
64939	CD-3 (28-30')	Solids	03/08/2022 11:45	03/14/2022		
64940	CD-3 (44-46')	Solids	03/08/2022 12:25	03/14/2022		
64941	CD-3 (52-54')	Solids	03/08/2022 12:45	03/14/2022		
64942	CD-3 (60-62')	Solids	03/09/2022 13:05	03/14/2022		
64943	CD-3 (64-66')	Solids	03/09/2022 13:15	03/14/2022		
64944	CD-4 (8-10')	Solids	03/09/2022 16:00	03/14/2022		
64944	CD-4 (8-10')	Solids	03/09/2022 16:00	03/14/2022	7471A	WP MTN
64944	CD-4 (8-10')	Solids	03/09/2022 16:00	03/14/2022	6010D	WP MTN
64944	CD-4 (8-10')	Solids	03/09/2022 16:00	03/14/2022	29B	WP MTN
64945	CD-4 (8-10')	TCLP	03/09/2022 16:00	03/14/2022	9056	WP MTN
64945	CD-4 (8-10')	TCLP	03/09/2022 16:00	03/14/2022	1312	WP MTN
64946	CD-4 (22-24')	Solids	03/09/2022 16:25	03/14/2022		
64947	CD-4 (32-34')	Solids	03/09/2022 16:50	03/14/2022		
64948	CD-4 (46-48')	Solids	03/10/2022 08:00	03/14/2022		
64949	CD-4 (56-58')	Solids	03/10/2022 08:25	03/14/2022		
64950	CD-4 (66-68')	Solids	03/10/2022 08:50	03/14/2022		
66231	CD-1 (0-2')	TCLP	02/23/2022 14:45	03/14/2022	6010D	WP MTN
66231	CD-1 (0-2')	TCLP	02/23/2022 14:45	03/14/2022	1312	WP MTN
66232	CD-2 (14-16')	TCLP	03/13/2022 15:00	03/14/2022	9056	WP MTN
66232	CD-2 (14-16')	TCLP	03/13/2022 15:00	03/14/2022	1312	WP MTN
66233	CD-2 (28-30')	TCLP	03/13/2022 15:30	03/14/2022	9056	WP MTN
66233	CD-2 (28-30')	TCLP	03/13/2022 15:30	03/14/2022	1312	WP MTN
66234	CD-2 (52-54')	TCLP	03/04/2022 07:30	03/14/2022	9056	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Sample Summary Table

Report Number: **22-073-0033**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
66234	CD-2 (52-54')	TCLP	03/04/2022 07:30	03/14/2022	1312	WP MTN
66235	CD-3 (18-20')	TCLP	03/08/2022 11:20	03/14/2022	9056	WP MTN
66235	CD-3 (18-20')	TCLP	03/08/2022 11:20	03/14/2022	1312	WP MTN
66236	CD-3 (52-54')	TCLP	03/08/2022 12:45	03/14/2022	9056	WP MTN
66236	CD-3 (52-54')	TCLP	03/08/2022 12:45	03/14/2022	1312	WP MTN
66237	CD-3 (64-66')	TCLP	03/09/2022 13:15	03/14/2022	9056	WP MTN
66237	CD-3 (64-66')	TCLP	03/09/2022 13:15	03/14/2022	1312	WP MTN
66238	CD-4 (56-58')	TCLP	03/10/2022 08:25	03/14/2022	9056	WP MTN
66238	CD-4 (56-58')	TCLP	03/10/2022 08:25	03/14/2022	1312	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Client: ERM
Project: Castex Development
Lab Report Number: 22-073-0033
Date: 4/15/2022

CASE NARRATIVE

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
- True Total Barium results are reported dry weight
- Oil & Grease results are reported dry weight
- VPH/EPH results reported as received
- PAH results reported as received

Saturated Paste Extraction Method 29B
Sample 64924 (CD-1 (10-12'))
Analyte: Calcium
QC Batch No: A73047/A72861/A72804
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

Sample 64924 (CD-1 (10-12'))
Analyte: Sodium
QC Batch No: A73047/A72861/A72804
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

Metals Analysis Method 6010D
Sample 64924 (CD-1 (10-12'))
QC Batch No: L608183/L607438
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Solids Total Mercury Analysis - CVAA Method 7471A
Sample 94071
Analyte: Mercury
QC Batch No: L606855/L606577
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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Anions by Ion Chromatography Method 9056
Sample 64932 (CD-2 (14-16'))
Analyte: Chloride
QC Batch No: A72963/A72851
Matrix spike and matrix spike duplicate recoveries were outside QC acceptance limits, but LCS recovery was within range indicating the method is working properly.

Waypoint ANALYTICAL

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10485
ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston , TX 77024

Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/14/2022

Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64922**
Sample ID : **CD-1 (0-2')**

Matrix: **Solids**
Sampled: **2/23/2022 14:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	11.3	%		1	03/21/22 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	52.4	%		1	03/28/22 10:00	APB	29B
Chloride	7.84	mg/Kg	4.00	1	03/23/22 11:40	MJM	9056
Electrical Conductivity (Sat Paste)	0.560	mmhos/cm		1	03/28/22 10:00	APB	29B
pH (Sat Paste)	6.22	s.u.		1	03/28/22 10:00	APB	29B
Cation Exchange Capacity	13.1	meq/100g	0.100	20	03/24/22 12:53		29B
Exchangeable Sodium Percentage	0.4	%	0.1	1	03/30/22 09:25		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	1.77	Calc	0.215	5	03/30/22 09:25		29B
Calcium (Sat Paste)	1.44	meq/L	0.250	5	03/30/22 09:38	BMB	29B
Magnesium (Sat Paste)	0.775	meq/L	0.410	5	03/30/22 09:51	BMB	29B
Sodium (Sat Paste)	1.86	meq/L	0.215	5	03/30/22 09:25	BMB	29B
True Total Barium	16200	mg/Kg	500	1	04/02/22 07:24	TJS	29B
Arsenic	2.66	mg/Kg	1.00	1	03/31/22 14:35	EAL	6010D
Barium	2780	mg/Kg	10.0	10	03/31/22 14:30	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	03/29/22 20:29	EAL	6010D
Chromium	7.30	mg/Kg	0.500	1	03/29/22 20:29	EAL	6010D
Lead	13.3	mg/Kg	0.600	1	03/29/22 20:29	EAL	6010D
Mercury	0.0190 **H**	mg/Kg	0.0157	1	03/24/22 11:41	ZMT	7471A
Selenium	<1.00	mg/Kg	1.00	1	03/31/22 14:35	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	03/29/22 20:29	EAL	6010D
Zinc	11.1	mg/Kg	2.50	1	03/29/22 20:29	EAL	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

BP/Castex-Ltd Adm-Apx E-000504

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/14/2022

Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64923**
Sample ID : **CD-1 (4-6')**

Matrix: **Solids**
Sampled: **2/23/2022 14:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	15.6	%		1	03/21/22 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	93.2	%		1	03/28/22 10:00	APB	29B
Chloride	9.32	mg/Kg	4.00	1	03/23/22 12:17	MJM	9056
Electrical Conductivity (Sat Paste)	0.243	mmhos/cm		1	03/28/22 10:00	APB	29B
pH (Sat Paste)	6.40	s.u.		1	03/28/22 10:00	APB	29B
Cation Exchange Capacity	25.1	meq/100g	0.100	20	03/24/22 12:54		29B
Exchangeable Sodium Percentage	3.6	%	0.1	1	03/30/22 09:26		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	9.51	Calc	0.050	1	03/30/22 09:26		29B
Calcium (Sat Paste)	0.061	meq/L	0.050	1	03/30/22 12:30	BMB	29B
Magnesium (Sat Paste)	<0.410	meq/L	0.410	5	03/30/22 09:53	BMB	29B
Sodium (Sat Paste)	1.66	meq/L	0.215	5	03/30/22 09:26	BMB	29B
True Total Barium	<500	mg/Kg	500	1	04/02/22 07:29	TJS	29B
Arsenic	3.70	mg/Kg	1.00	1	03/31/22 14:40	EAL	6010D
Barium	115	mg/Kg	1.00	1	03/29/22 20:34	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	03/29/22 20:34	EAL	6010D
Chromium	12.7	mg/Kg	0.500	1	03/29/22 20:34	EAL	6010D
Lead	9.54	mg/Kg	0.600	1	03/29/22 20:34	EAL	6010D
Mercury	0.0312 **H**	mg/Kg	0.0157	1	03/24/22 11:43	ZMT	7471A
Selenium	<1.00	mg/Kg	1.00	1	03/31/22 14:40	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	03/29/22 20:34	EAL	6010D
Zinc	16.8	mg/Kg	2.50	1	03/29/22 20:34	EAL	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/14/2022

Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64924**
Sample ID : **CD-1 (10-12')**

Matrix: **Solids**
Sampled: **2/23/2022 15:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.6	%		1	03/21/22 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	81.6	%		1	03/28/22 11:00	APB	29B
Chloride	11.2	mg/Kg	4.00	1	03/23/22 12:29	MJM	9056
Electrical Conductivity (Sat Paste)	0.371	mmhos/cm		1	03/28/22 11:00	APB	29B
pH (Sat Paste)	7.35	s.u.		1	03/28/22 11:00	APB	29B
Cation Exchange Capacity	32.0	meq/100g	0.100	20	03/24/22 12:55		29B
Exchangeable Sodium Percentage	3.0	%	0.1	1	03/30/22 12:21		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	5.21	Calc	0.172	4	03/30/22 09:53		29B
Calcium (Sat Paste)	0.530	meq/L	0.200	4	03/30/22 12:31	BMB	29B
Magnesium (Sat Paste)	<0.410	meq/L	0.410	5	03/30/22 09:53	BMB	29B
Sodium (Sat Paste)	2.68	meq/L	0.172	4	03/30/22 12:21	BMB	29B
True Total Barium	507	mg/Kg	500	1	04/02/22 07:34	TJS	29B
Arsenic	<5.00	mg/Kg	5.00	5	03/31/22 15:26	EAL	6010D
Barium	165	mg/Kg	5.00	5	03/31/22 15:26	EAL	6010D
Cadmium	<1.00	mg/Kg	1.00	5	03/31/22 15:26	EAL	6010D
Chromium	13.2	mg/Kg	2.50	5	03/31/22 15:26	EAL	6010D
Lead	4.92	mg/Kg	3.00	5	03/31/22 15:26	EAL	6010D
Mercury	<0.0155 H	mg/Kg	0.0155	1	03/24/22 11:44	ZMT	7471A
Selenium	<5.00	mg/Kg	5.00	5	03/31/22 15:26	EAL	6010D
Silver	<2.50	mg/Kg	2.50	5	03/31/22 15:26	EAL	6010D
Zinc	27.0	mg/Kg	12.5	5	03/31/22 15:26	EAL	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Project Information : Castex Development
Project Number: 0575834
Jennings, LA

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64925**
Sample ID : **CD-1 (22-24')**

Matrix: **Solids**
Sampled: **2/23/2022 15:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	25.7	%		1	03/21/22 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	88.6	%		1	03/28/22 10:00	APB	29B
Chloride	6.17	mg/Kg	4.00	1	03/23/22 13:19	MJM	9056
Electrical Conductivity (Sat Paste)	0.414	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64926**
Sample ID : **CD-1 (22-24')**

Matrix: **TCLP**
Sampled: **2/23/2022 15:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	03/21/22 13:00	SWB	1312
SPLP Chloride	<0.400	mg/L	0.400	1	03/23/22 12:40	JCA	9056

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64927**
Sample ID : **CD-1 (36-38')**

Matrix: **Solids**
Sampled: **2/23/2022 16:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	23.2	%		1	03/21/22 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	49.3	%		1	03/28/22 10:00	APB	29B
Chloride	7.71	mg/Kg	4.00	1	03/23/22 13:31	MJM	9056
Electrical Conductivity (Sat Paste)	0.368	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64928**
Sample ID : **CD-1 (36-38')**

Matrix: **TCLP**
Sampled: **2/23/2022 16:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	03/21/22 13:00	SWB	1312
SPLP Chloride	<0.400	mg/L	0.400	1	03/23/22 13:06	JCA	9056

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64929**
Sample ID : **CD-1 (46-48')**

Matrix: **Solids**
Sampled: **2/23/2022 16:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	24.7	%		1	03/21/22 14:50	APB	SW-DRYWT
% Saturation (Sat Paste)	53.8	%		1	03/28/22 10:00	APB	29B
Chloride	7.32	mg/Kg	4.00	1	03/23/22 13:43	MJM	9056
Electrical Conductivity (Sat Paste)	0.569	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64930**
Sample ID : **CD-1 (56-58')**

Matrix: **Solids**
Sampled: **2/24/2022 8:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	19.4	%		1	03/22/22 16:56	APB	SW-DRYWT
% Saturation (Sat Paste)	32.9	%		1	03/28/22 10:00	APB	29B
Chloride	8.93	mg/Kg	4.00	1	03/23/22 13:56	MJM	9056
Electrical Conductivity (Sat Paste)	0.685	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64931**
Sample ID : **CD-1 (56-58')**

Matrix: **TCLP**
Sampled: **2/24/2022 8:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	03/21/22 13:00	SWB	1312
SPLP Chloride	0.516	mg/L	0.400	1	03/23/22 13:32	JCA	9056

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64932**
Sample ID : **CD-2 (14-16')**

Matrix: **Solids**
Sampled: **3/13/2022 15:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	23.0	%		1	03/22/22 16:56	APB	SW-DRYWT
% Saturation (Sat Paste)	167	%		1	03/28/22 10:00	APB	29B
Chloride	5560	mg/Kg	40.0	10	03/28/22 18:10	MJM	9056
Electrical Conductivity (Sat Paste)	13.3	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64933**
Sample ID : **CD-2 (28-30')**

Matrix: **Solids**
Sampled: **3/13/2022 15:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	19.2	%		1	03/22/22 16:56	APB	SW-DRYWT
% Saturation (Sat Paste)	69.7	%		1	03/28/22 10:00	APB	29B
Chloride	2840	mg/Kg	40.0	10	03/28/22 19:24	MJM	9056
Electrical Conductivity (Sat Paste)	18.3	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64934**
Sample ID : **CD-2 (38-40')**

Matrix: **Solids**
Sampled: **3/13/2022 15:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	25.5	%		1	03/22/22 16:56	APB	SW-DRYWT
% Saturation (Sat Paste)	37.0	%		1	03/28/22 10:00	APB	29B
Chloride	3610	mg/Kg	80.0	20	03/28/22 19:36	MJM	9056
Electrical Conductivity (Sat Paste)	27.3	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64935**
Sample ID : **CD-2 (46-48')**

Matrix: **Solids**
Sampled: **3/13/2022 16:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.0	%		1	03/22/22 16:56	APB	SW-DRYWT
% Saturation (Sat Paste)	37.9	%		1	03/28/22 10:00	APB	29B
Chloride	2260	mg/Kg	80.0	20	03/28/22 19:49	MJM	9056
Electrical Conductivity (Sat Paste)	21.5	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64936**
Sample ID : **CD-2 (52-54')**

Matrix: **Solids**
Sampled: **3/4/2022 7:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	31.8	%		1	03/22/22 16:56	APB	SW-DRYWT
% Saturation (Sat Paste)	88.1	%		1	03/28/22 10:00	APB	29B
Chloride	1170	mg/Kg	20.0	5	03/28/22 20:01	MJM	9056
Electrical Conductivity (Sat Paste)	5.65	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64937**
Sample ID : **CD-2 (60-62')**

Matrix: **Solids**
Sampled: **3/4/2022 7:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.6	%		1	03/22/22 16:56	APB	SW-DRYWT
% Saturation (Sat Paste)	47.0	%		1	03/28/22 10:00	APB	29B
Chloride	499	mg/Kg	8.00	2	03/28/22 20:13	MJM	9056
Electrical Conductivity (Sat Paste)	4.19	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64938**
Sample ID : **CD-3 (18-20')**

Matrix: **Solids**
Sampled: **3/8/2022 11:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	20.8	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	217	%		1	03/28/22 10:00	APB	29B
Chloride	2930	mg/Kg	20.0	5	03/28/22 20:26	MJM	9056
Electrical Conductivity (Sat Paste)	5.44	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
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Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64939**
Sample ID : **CD-3 (28-30')**

Matrix: **Solids**
Sampled: **3/8/2022 11:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	23.7	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	41.2	%		1	03/28/22 10:00	APB	29B
Chloride	4640	mg/Kg	80.0	20	03/28/22 20:38	MJM	9056
Electrical Conductivity (Sat Paste)	34.6	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/14/2022

Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64940**
Sample ID : **CD-3 (44-46')**

Matrix: **Solids**
Sampled: **3/8/2022 12:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	41.3	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	99.1	%		1	03/28/22 10:00	APB	29B
Chloride	9870	mg/Kg	80.0	20	03/28/22 20:51	MJM	9056
Electrical Conductivity (Sat Paste)	30.6	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64941**
Sample ID : **CD-3 (52-54')**

Matrix: **Solids**
Sampled: **3/8/2022 12:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	30.1	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	81.7	%		1	03/28/22 10:00	APB	29B
Chloride	4490	mg/Kg	40.0	10	03/28/22 21:03	MJM	9056
Electrical Conductivity (Sat Paste)	17.1	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64942**
Sample ID : **CD-3 (60-62')**

Matrix: **Solids**
Sampled: **3/9/2022 13:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	23.0	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	55.5	%		1	03/28/22 10:00	APB	29B
Chloride	546	mg/Kg	8.00	2	03/28/22 21:15	MJM	9056
Electrical Conductivity (Sat Paste)	3.74	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64943**
Sample ID : **CD-3 (64-66')**

Matrix: **Solids**
Sampled: **3/9/2022 13:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	26.8	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	57.6	%		1	03/28/22 10:00	APB	29B
Chloride	352	mg/Kg	4.00	1	03/28/22 22:05	MJM	9056
Electrical Conductivity (Sat Paste)	2.49	mmhos/cm		1	03/28/22 10:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64944**
Sample ID : **CD-4 (8-10')**

Matrix: **Solids**
Sampled: **3/9/2022 16:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	20.4	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	43.8	%		1	03/28/22 11:00	APB	29B
Chloride	5030	mg/Kg	80.0	20	03/28/22 22:17	MJM	9056
Electrical Conductivity (Sat Paste)	27.4	mmhos/cm		1	03/28/22 11:00	APB	29B
pH (Sat Paste)	7.12	s.u.		1	03/28/22 11:00	APB	29B
Cation Exchange Capacity	14.4	meq/100g	0.100	20	03/24/22 12:56		29B
Exchangeable Sodium Percentage	23.0	%	0.100	1	03/24/22 12:56		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	26.5	Calc	8.60	200	03/30/22 09:29		29B
Calcium (Sat Paste)	73.9	meq/L	10.0	200	03/30/22 09:42	BMB	29B
Magnesium (Sat Paste)	35.4	meq/L	16.4	200	03/30/22 09:55	BMB	29B
Sodium (Sat Paste)	196	meq/L	8.60	200	03/30/22 09:29	BMB	29B
True Total Barium	<500	mg/Kg	500	1	04/04/22 16:49	TJS	29B
Arsenic	4.93	mg/Kg	1.00	1	03/31/22 14:51	EAL	6010D
Barium	86.0	mg/Kg	1.00	1	03/31/22 14:51	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	03/31/22 14:51	EAL	6010D
Chromium	7.39	mg/Kg	0.500	1	03/31/22 14:51	EAL	6010D
Lead	4.67	mg/Kg	0.600	1	03/31/22 14:51	EAL	6010D
Mercury	<0.0144	mg/Kg	0.0144	1	03/24/22 11:46	ZMT	7471A
Selenium	<1.00	mg/Kg	1.00	1	03/31/22 14:51	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	03/31/22 14:51	EAL	6010D
Zinc	16.1	mg/Kg	2.50	1	03/31/22 14:51	EAL	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Project Castex Development

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Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64945**
Sample ID : **CD-4 (8-10')**

Matrix: **TCLP**
Sampled: **3/9/2022 16:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	03/21/22 13:00	SWB	1312
SPLP Chloride	238	mg/L	4.00	10	03/23/22 14:11	JCA	9056

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64946**
Sample ID : **CD-4 (22-24')**

Matrix: **Solids**
Sampled: **3/9/2022 16:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.7	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	213	%		1	03/28/22 11:00	APB	29B
Chloride	954	mg/Kg	8.00	2	03/28/22 16:44	MJM	9056
Electrical Conductivity (Sat Paste)	3.32	mmhos/cm		1	03/28/22 11:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64947**
Sample ID : **CD-4 (32-34')**

Matrix: **Solids**
Sampled: **3/9/2022 16:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	25.1	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	38.1	%		1	03/28/22 11:00	APB	29B
Chloride	54.8	mg/Kg	4.00	1	03/28/22 17:21	MJM	9056
Electrical Conductivity (Sat Paste)	1.84	mmhos/cm		1	03/28/22 11:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64948**
Sample ID : **CD-4 (46-48')**

Matrix: **Solids**
Sampled: **3/10/2022 8:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	28.1	%		1	03/22/22 16:08	APB	SW-DRYWT
% Saturation (Sat Paste)	60.0	%		1	03/28/22 11:00	APB	29B
Chloride	834	mg/Kg	20.0	5	03/28/22 17:33	MJM	9056
Electrical Conductivity (Sat Paste)	6.23	mmhos/cm		1	03/28/22 11:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64949**
Sample ID : **CD-4 (56-58')**

Matrix: **Solids**
Sampled: **3/10/2022 8:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	32.2	%		1	03/22/22 16:25	APB	SW-DRYWT
% Saturation (Sat Paste)	102	%		1	03/28/22 11:00	APB	29B
Chloride	1430	mg/Kg	20.0	5	03/28/22 17:45	MJM	9056
Electrical Conductivity (Sat Paste)	7.80	mmhos/cm		1	03/28/22 11:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Report Number : **22-073-0033**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **64950**
Sample ID : **CD-4 (66-68')**

Matrix: **Solids**
Sampled: **3/10/2022 8:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	25.2	%		1	03/22/22 16:25	APB	SW-DRYWT
% Saturation (Sat Paste)	48.7	%		1	03/28/22 11:00	APB	29B
Chloride	26.4	mg/Kg	4.00	1	03/28/22 17:58	MJM	9056
Electrical Conductivity (Sat Paste)	0.811	mmhos/cm		1	03/28/22 11:00	APB	29B

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66231**
Sample ID : **CD-1 (0-2')**

Matrix: **TCLP**
Sampled: **2/23/2022 14:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/11/22 12:00	SWB	1312
SPLP Barium	<0.0277	mg/L	0.0277	1	04/13/22 17:34	EAL	6010D

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66232**
Sample ID : **CD-2 (14-16')**

Matrix: **TCLP**
Sampled: **3/13/2022 15:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/11/22 12:00	SWB	1312
SPLP Chloride	261	mg/L	4.00	10	04/12/22 20:54	JCA	9056

Qualifiers/ Definitions
DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66233**
Sample ID : **CD-2 (28-30')**

Matrix: **TCLP**
Sampled: **3/13/2022 15:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/11/22 12:00	SWB	1312
SPLP Chloride	125	mg/L	4.00	10	04/12/22 21:19	JCA	9056

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66234**
Sample ID : **CD-2 (52-54')**

Matrix: **TCLP**
Sampled: **3/4/2022 7:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/11/22 12:00	SWB	1312
SPLP Chloride	57.9	mg/L	0.400	1	04/12/22 21:32	JCA	9056

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66235**
Sample ID : **CD-3 (18-20')**

Matrix: **TCLP**
Sampled: **3/8/2022 11:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/11/22 12:00	SWB	1312
SPLP Chloride	107	mg/L	4.00	10	04/12/22 22:11	JCA	9056

Qualifiers/ Definitions
DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66236**
Sample ID : **CD-3 (52-54')**

Matrix: **TCLP**
Sampled: **3/8/2022 12:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/11/22 12:00	SWB	1312
SPLP Chloride	188	mg/L	4.00	10	04/12/22 22:37	JCA	9056

Qualifiers/ Definitions
DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66237**
Sample ID : **CD-3 (64-66')**

Matrix: **TCLP**
Sampled: **3/9/2022 13:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/11/22 12:00	SWB	1312
SPLP Chloride	14.0	mg/L	0.400	1	04/12/22 23:16	JCA	9056

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66238**
Sample ID : **CD-4 (56-58')**

Matrix: **TCLP**
Sampled: **3/10/2022 8:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/11/22 12:00	SWB	1312
SPLP Chloride	70.0	mg/L	0.400	1	04/12/22 23:41	JCA	9056

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
H Beyond holding time

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: L608146
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): L608568
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-L608146 Matrix: SOL
Associated Lab Samples: 64922, 64923, 64924, 64944

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 500	500	04/02/22 05:25

Laboratory Control Sample LCS-L608146

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	8700	7950	91.0	80-120

Matrix Spike & Matrix Spike Duplicate A 64815-A72803-MS-L608146 A 64815-A72803-MSD-L608146

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	6330	7350	7810	12600	13000	85.0	85.0	75-125	3.1	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72829
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A72904
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A72829 Matrix: SOL
Associated Lab Samples: 64922, 64923, 64924, 64944

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	03/24/22 12:52

Duplicate A 64922-A72804-DUP-A72829

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	3010	3550	16.4	30.0	03/24/22 12:53

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72830
QC Prep Batch Method: 29B
QC Analytical Batch(es): A72905
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 64922-A72804-DUP-A72830

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	< 0.180	< 0.180	0.0	20.0	03/24/22 16:11

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72860
QC Prep Batch Method: 29B
QC Analytical Batch(es): A72984,A73047
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 64922-A72804-DUP-A72860

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	52.4	53.0	1.1	30.0	03/28/22 10:00
Electrical Conductivity (Sat Paste)	mmhos/cm	0.560	0.515	8.3	30.0	03/28/22 10:00
pH (Sat Paste)	s.u.	6.22	6.01	3.4	30.0	03/28/22 10:00

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72861
QC Prep Batch Method: 29B
QC Analytical Batch(es): A72986,A73047
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 64924-A72804-DUP-A72861

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	81.6	81.3	0.3	30.0	03/28/22 11:00
Electrical Conductivity (Sat Paste)	mmhos/cm	0.371	0.277	29.0	30.0	03/28/22 11:00
pH (Sat Paste)	s.u.	7.35	7.34	0.1	30.0	03/28/22 11:00

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72860
QC Prep Batch Method: 29B
QC Analytical Batch(es): A72984,A73047
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 64922-A72804-DUP-A72860

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	1.44	1.32	8.6	30.0	03/30/22 09:39
Magnesium (Sat Paste)	meq/L	0.775	0.697	10.5	30.0	03/30/22 09:52
Sodium (Sat Paste)	meq/L	1.86	1.69	9.5	30.0	03/30/22 09:26

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72861
QC Prep Batch Method: 29B
QC Analytical Batch(es): A72986,A73047
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 64924-A72804-DUP-A72861

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	0.530	< 0.200	90.4*	30.0	03/30/22 12:32
Magnesium (Sat Paste)	meq/L	< 0.410	< 0.410	0.0	30.0	03/30/22 09:54
Sodium (Sat Paste)	meq/L	2.68	1.92	33.0*	30.0	03/30/22 12:22

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: L607438
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L607797,L608183
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-L607438 Matrix: SOL
Associated Lab Samples: 64922, 64923, 64924, 64944

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 1.00	1.00	03/31/22 14:25
Barium	mg/Kg	< 1.00	1.00	03/29/22 20:23
Cadmium	mg/Kg	< 0.200	0.200	03/29/22 20:23
Chromium	mg/Kg	< 0.500	0.500	03/29/22 20:23
Lead	mg/Kg	< 0.600	0.600	03/29/22 20:23
Selenium	mg/Kg	< 1.00	1.00	03/31/22 14:25
Silver	mg/Kg	< 0.500	0.500	03/29/22 20:23
Zinc	mg/Kg	< 2.50	2.50	03/29/22 20:23

Laboratory Control Sample LCS-L607438

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/Kg	10.0	10.7	107	80-120
Barium	mg/Kg	100	101	101	80-120
Cadmium	mg/Kg	10.0	9.73	97.0	80-120
Chromium	mg/Kg	100	105	105	80-120
Lead	mg/Kg	10.0	10.4	104	80-120
Selenium	mg/Kg	10.0	10.3	103	80-120
Silver	mg/Kg	10.0	10.6	106	80-120
Zinc	mg/Kg	100	106	106	80-120

Matrix Spike & Matrix Spike Duplicate A 64944-MS-L607438 A 64944-MSD-L607438

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	4.93	8.98	9.05	14.3	13.2	104	91.0	75-125	8.0	20.0
Barium	mg/Kg	86.0	89.8	90.5	169	180	92.0	104	75-125	6.3	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: L607438
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L607797,L608183
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 64944-MS-L607438 A 64944-MSD-L607438

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Cadmium	mg/Kg	< 0.200	8.98	9.05	7.91	8.28	88.0	91.0	75-125	4.5	20.0
Chromium	mg/Kg	7.39	89.8	90.5	98.7	104	102	107	75-125	5.2	20.0
Lead	mg/Kg	4.67	8.98	9.05	12.5	12.3	87.0	84.0	75-125	1.6	20.0
Selenium	mg/Kg	< 1.00	8.98	9.05	8.10	8.15	90.0	90.0	75-125	0.6	20.0
Silver	mg/Kg	< 0.500	8.98	9.05	8.98	9.29	100	103	75-125	3.3	20.0
Zinc	mg/Kg	16.1	89.8	90.5	98.6	103	92.0	96.0	75-125	4.3	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: L610511
QC Prep Batch Method: 3015A
QC Analytical Batch(es): L610753
Analysis Method: 6010D
Analysis Description: Metals Analysis (SPLP)

Lab Reagent Blank LRB-L610511 Matrix: TCL
Associated Lab Samples: 66231

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Barium	mg/L	< 0.0250	0.0250	04/13/22 15:49

Laboratory Control Sample LCS-L610511

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Barium	mg/L	1.00	1.10	110	80-120

Matrix Spike & Matrix Spike Duplicate L 85632-MS-L610511 L 85632-MSD-L610511

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
SPLP Barium	mg/L	0.730	50.0	50.0	52.6	53.1	104	105	75-125	0.9	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: L606577
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L606855
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L606577 Matrix: SOL
Associated Lab Samples: 64922, 64923, 64924, 64944

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.0160	0.0160	03/24/22 11:27

Laboratory Control Sample LCS-L606577

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.335	84.0	80-120

Matrix Spike & Matrix Spike Duplicate L 94071-MS-L606577 L 94071-MSD-L606577

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	< 0.0143	0.359	0.373	0.0883	0.0646	25.0*	17.0*	80-120	31.0*	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72849
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A72963
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A72849 Matrix: SOL
Associated Lab Samples: 64946, 64947, 64948, 64949, 64950

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	03/28/22 15:42

Laboratory Control Sample LCS-A72849

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	513	103	80-120

Matrix Spike & Matrix Spike Duplicate A 64946-MS-A72849 A 64946-MSD-A72849

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	954	480	486	1420	1450	97.0	102	80-120	2.0	15.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72850
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A72858
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A72850 Matrix: SOL
Associated Lab Samples: 64922, 64923, 64924, 64925, 64927, 64929, 64930

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	03/23/22 10:13

Laboratory Control Sample LCS-A72850

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	500	100	80-120

Matrix Spike & Matrix Spike Duplicate A 64922-MS-A72850 A 64922-MSD-A72850

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	7.84	494	492	520	522	104	105	80-120	0.3	15.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: A72851
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A72963
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A72851 Matrix: SOL
Associated Lab Samples: 64932, 64933, 64934, 64935, 64936, 64937, 64938, 64939, 64940, 64941, 64942, 64943, 64944

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	03/28/22 16:19

Laboratory Control Sample LCS-A72851

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	513	103	80-120

Matrix Spike & Matrix Spike Duplicate A 64932-MS-A72851 A 64932-MSD-A72851

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	5560	488	498	6170	5610	125*	10.0*	80-120	9.5	15.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-073-0033

QC Prep: L606629
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L606630
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L606629 Matrix: TCL
Associated Lab Samples: 64926, 64928, 64931, 64945

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	03/23/22 10:23

Laboratory Control Sample LCS-L606629

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	53.8	108	90-110

Matrix Spike & Matrix Spike Duplicate A 64926-MS-L606629 A 64926-MSD-L606629

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
SPLP Chloride	mg/L	<0.444	55.6	55.6	58.7	58.4	106	105	80-120	0.5	15

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-073-0033**

QC Prep: L610387
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L610475
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L610387 Matrix: TCL
Associated Lab Samples: 66232, 66233, 66234, 66235, 66236, 66237, 66238

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	04/12/22 09:33

Laboratory Control Sample LCS-L610387

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	51.7	103	90-110

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-073-0033**

QC Analytical Batch: A72808
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 64922-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	11.3	11.8	4.3	20.0	03/21/22 14:50

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-073-0033**

QC Analytical Batch: A72833
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 64930-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	19.4	19.6	1.0	20.0	03/22/22 16:56

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-073-0033**

QC Analytical Batch: A72834
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 64938-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	20.8	24.3	15.5	20.0	03/22/22 16:08

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-073-0033**

QC Analytical Batch: A72835
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 64949-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	32.2	32.7	1.5	20.0	03/22/22 16:25

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **22-073-0033**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 03/14/2022 14:40:00

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM	Dave Upthegrove	840 W. Sam Houston Pkwy N. Ste 600 Houston, Tx 77024

22-073-0033
10485
03-15-2022
12:12:30
ERM (Sugar Land)
Castex Development

Project Description	Project/Site Location (City/State)	
Castex Development	Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed

Method of
☐ Fed Ex
☐ Courier ☐ Client Drop Off
Other

DW – Drinking Water S – Soil /Solid O – Oil
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575834	504-481-6470	David.Upthegrove@ERM.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative: EC	SAR | ESP	CEC	Leachate Chloride	29B metals	Soluble Chloride	% Moisture			Comments/Notes
2/23/22	1445	CD-1 (0-2')	1	S	G	X	X	X		X	X	X			64922
	1455	CD-1 (4-6')					X	X		X					64923
	1510	CD-1 (10-12')					X	X		X					64924
	1540	CD-1 (22-24')							X						64925 - 64926
	1615	CD-1 (36-38')							X						64927 - 64928
	1640	CD-1 (46-48')													64929
2/24/22	(A)	CD-1 (56-58')							X						64930 - 64931

For Laboratory Use Only

Ice: (Y)/N
Custody Seals: Y/(N)
Blank/Cooler Temp: ~~2.2°~~ 2.1° CRV

Lab Comments:
(A) Sample set not rec'd on ice, temp written in error - CRV
(A) Sample time of 0820 retrieved from sample container - CRV

Sampled by (Name – Print): David Sanguinetti

Client Remarks/Comments

Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
	3/11/22	1030		3/11	10:30
	3/11/22	1120		3/11	11:20
	3/14	10:06		3/14	10:06

Relinquished by: P. Howard 3/14 1214 Rec: 3/14/22 1248
Rel: 3/14/22 1440 Rec by: 3-14-22 1440

Safeguard LITHO USA Form No. 811-2/E15CS000388 07/15

Client Name/Address	Client Project Manager/Contact	Billing Information	For Laboratory Use Only
ERM	Dave Upthegrove	840 W. Sam Houston Pkwy N. Ste 600 Houston, Tx 77024	

Project Description	Project/Site Location (City/State)		Method of Shipment	Matrix Key
Castex Development	Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575834	504-481-6470	David.Upthegrove@ERM.com		

Waypoint ANALYTICAL
5041 Taravella Road
Marrero, LA 70072
504-371-8557

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative: EC	Soluble Chloride	% Moisture	Comments/Notes
3/3/22	1500	CD-2 (14-16')	1	S	G	X	X	X	64932
	1520	CD-2 (28-30')							64933
	1555	CD-2 (38-40')							64934
	1615	CD-2 (46-48')							64935
3/4/22	730	CD-2 (52-54')							64936
3/4/22	750	CD-2 (60-62')							64937
3/8/22	1120	CD-3 (18-20')	X	X	X	X	X	X	64938
	1145	CD-3 (28-30')							64939
	1225	CD-3 (44-46')							64940
	1245	CD-3 (52-54')							64941

For Laboratory Use Only

Ice	Custody Seals	Lab Comments	Blank/Cooler Temp
(Y)/N	Y/N	(A) Samples not recd on ice temp noted in error -CRV	2.4°C (A) CRV

Sampled by (Name – Print): David Sanguinetti

Client Remarks/Comments

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
	3/11/22 1030		3/11/22 10:30
	3/11/22 1120	DB Coco	3/11 11:20
DB Coco	3/4 10:00	P Hayward	3/4 10:06
Relinquished by: P. Hayward	3/4 12:48	Rec:	3/14/22 1248
Rel:	3/14/22 1440	Rec'd By:	3-14-22 1440

Safeguard LITHO USA Form No. 811-2/E15CS000388 07/15

BP/Castex-Ltd Adm-Apx E-000563

Client Name/Address	Client Project Manager/Contact	Billing Information	For Laboratory Use Only
ERM	Dave Uptegrove	840 W. Sam Houston Pkwy N. Ste. 600 Houston, Tx 77024	

Project Description	Project/Site Location (City/State)		Method of Shipment	Matrix Key
Castex Development	Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575854	504-481-6470	David.Uptegrove@ERM.com		

Waypoint ANALYTICAL
5041 Taravella Road
Marrero, LA 70072
504-371-8557

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative								Comments/Notes
						EC	Sample Chloride ~~Sulfate~~ DS	CEC	Leachate Chloride	2ab metals	Soluble Sulfate Chlorides	% Moisture		
3/9/22	1305	CD-3 (60-62')	1	S	G	X	X	X				X		64942
3/9/22	1315	CD-3 (64-66')				X	X	X				X		64943
	1600	CD-4 (8-10')						X	X	X	X			64944 - 64945
	1625	CD-4 (22-24')												64946
	1650	CD-4 (32-34')												64947
3/10/22	0800	CD-4 (46-48')												64948
3/10/22	0825	CD-4 (56-58')												64949
3/10/22	0850	CD-4 (66-68')												64950

For Laboratory Use Only

Ice	Custody Seals	Lab Comments
(Y)/N	Y/(N)	(A) Samples not received on ICE - CRV Temp written in Error - CRV

Blank/Cooler Temp: ~~7.3°~~ (A) CRV

Sampled by (Name – Print): David Sanguinetti

Client Remarks/Comments

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
DBS*	3/11/22 1030		3/11/22 10:30
	3/11/22 1120	DB Coco	3/11 11:20
DB Coco	3/4 10:06	P.Howard	3/4 10:06
Relinquished by: P. Howard	3/4 12:48	Rec:	3/14/22 1248
Rel:	3/14/22 ~~1248~~ @1440 CM	Rec by:	3.14.22 1440

BP/Castex-Ltd Adm-Apx E-000564

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4/15/2022

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 22-080-0022
Project Description: Castex Development
Project Number: 0575834
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 3/21/2022 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2022
Louisiana	State Program - NELAP	02041	06/30/2022

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2023
Arkansas	State Program	88-0650	02/07/2023
California	State Program	2904	06/30/2022
Florida	State Program - NELAP	E871157	06/30/2022
Georgia	State Program	C044	02/18/2023
Georgia	State Program	04015	06/30/2022
Illinois	State Program - NELAP	200078	10/10/2022
Kentucky	State Program	80215	06/30/2022
Kentucky	State Program	KY90047	12/31/2022
Louisiana	State Program - NELAP	LA037	12/31/2022
Louisiana	State Program - NELAP	04015	06/30/2022
Mississippi	State Program	MS	02/11/2023
North Carolina	State Program	415	12/31/2022
Pennsylvania	State Program - NELAP	68-03195	05/31/2022
South Carolina	State Program	84002	06/30/2022
South Carolina	State Program	84002	06/30/2022
Tennessee	State Program	02027	02/11/2023
Texas	State Program - NELAP	T104704180	09/30/2022
Virginia	State Program	00106	06/30/2022
Virginia	State Program - NELAP	460181	09/14/2022

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Sample Summary Table

Report Number: **22-080-0022**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
65292	CD-5 26-28'	Solids	03/14/2022 11:25	03/21/2022		
65293	CD-5 38-40'	Solids	03/14/2022 11:55	03/21/2022		
65294	CD-5 52-54'	Solids	03/14/2022 12:30	03/21/2022		
65295	CD-5 56-58'	Solids	03/14/2022 12:40	03/21/2022		
65296	CD-5 60-62'	Solids	03/14/2022 12:50	03/21/2022		
65297	CD-5 68-70'	Solids	03/14/2022 13:45	03/21/2022		
65298	CD-5 70-72'	Solids	03/14/2022 13:50	03/21/2022		
66455	CD-5 60-62'	TCLP	03/14/2022 12:50	03/21/2022	9056	WP MTN
66455	CD-5 60-62'	TCLP	03/14/2022 12:50	03/21/2022	1312	WP MTN
66456	CD-5 70-72'	TCLP	03/14/2022 13:50	03/21/2022	9056	WP MTN
66456	CD-5 70-72'	TCLP	03/14/2022 13:50	03/21/2022	1312	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Client: ERM
Project: Castex Development
Lab Report Number: 22-080-0022
Date: 4/15/2022

CASE NARRATIVE

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
- True Total Barium results are reported dry weight
- Oil & Grease results are reported dry weight
- VPH/EPH results reported as received
- PAH results reported as received

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10485
ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston , TX 77024

Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **65292**
Sample ID : **CD-5 26-28'**

Matrix: **Solids**
Sampled: **3/14/2022 11:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.1	%		1	03/24/22 15:52	BXH	SW-DRYWT
% Saturation (Sat Paste)	111.8	%		1	03/31/22 10:45	APB	29B
Chloride	70.1	mg/Kg	4.00	1	04/05/22 16:18	MJM	9056
Electrical Conductivity (Sat Paste)	0.878	mmhos/cm		1	03/31/22 10:45	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000569

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **65293**
Sample ID : **CD-5 38-40'**

Matrix: **Solids**
Sampled: **3/14/2022 11:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	23.6	%		1	03/24/22 15:52	BXH	SW-DRYWT
% Saturation (Sat Paste)	52.2	%		1	03/29/22 12:30	APB	29B
Chloride	27.3	mg/Kg	4.00	1	04/05/22 16:55	MJM	9056
Electrical Conductivity (Sat Paste)	0.882	mmhos/cm		1	03/31/22 10:45	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000570

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **65294**
Sample ID : **CD-5 52-54'**

Matrix: **Solids**
Sampled: **3/14/2022 12:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.0	%		1	03/24/22 15:52	BXH	SW-DRYWT
% Saturation (Sat Paste)	37.5	%		1	03/31/22 10:45	APB	29B
Chloride	56.8	mg/Kg	4.00	1	04/05/22 17:07	MJM	9056
Electrical Conductivity (Sat Paste)	0.878	mmhos/cm		1	03/31/22 10:45	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000571

Waypoint ANALYTICAL

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **65295**
Sample ID : **CD-5 56-58'**

Matrix: **Solids**
Sampled: **3/14/2022 12:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.5	%		1	03/24/22 15:52	BXH	SW-DRYWT
% Saturation (Sat Paste)	57.1	%		1	03/31/22 10:45	APB	29B
Chloride	1620	mg/Kg	20.0	5	04/05/22 17:19	MJM	9056
Electrical Conductivity (Sat Paste)	14.0	mmhos/cm		1	03/31/22 10:45	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000572

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **65296**
Sample ID : **CD-5 60-62'**

Matrix: **Solids**
Sampled: **3/14/2022 12:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	33.1	%		1	03/24/22 15:52	BXH	SW-DRYWT
% Saturation (Sat Paste)	91.3	%		1	03/31/22 10:45	APB	29B
Chloride	3840	mg/Kg	40.0	10	04/05/22 17:32	MJM	9056
Electrical Conductivity (Sat Paste)	19.2	mmhos/cm		1	03/31/22 10:45	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000573

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840 W. Sam Houston Parkway, Suite 600
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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **65297**
Sample ID : **CD-5 68-70'**

Matrix: **Solids**
Sampled: **3/14/2022 13:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.3	%		1	03/24/22 15:52	BXH	SW-DRYWT
% Saturation (Sat Paste)	64.4	%		1	03/31/22 10:45	APB	29B
Chloride	3290	mg/Kg	40.0	10	04/05/22 17:44	MJM	9056
Electrical Conductivity (Sat Paste)	17.0	mmhos/cm		1	03/31/22 10:45	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000574

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **65298**
Sample ID : **CD-5 70-72'**

Matrix: **Solids**
Sampled: **3/14/2022 13:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	30.2	%		1	03/24/22 15:52	BXH	SW-DRYWT
% Saturation (Sat Paste)	98.4	%		1	03/31/22 10:45	APB	29B
Chloride	1970	mg/Kg	20.0	5	04/05/22 18:33	MJM	9056
Electrical Conductivity (Sat Paste)	9.13	mmhos/cm		1	03/31/22 10:45	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000575

Waypoint ANALYTICAL

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66455**
Sample ID : **CD-5 60-62'**

Matrix: **TCLP**
Sampled: **3/14/2022 12:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/13/22 14:00	ALM	1312
SPLP Chloride	194	mg/L	4.00	10	04/14/22 14:14	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000576

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 04/15/2022
Received : 03/21/2022

Report Number : **22-080-0022**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66456**
Sample ID : **CD-5 70-72'**

Matrix: **TCLP**
Sampled: **3/14/2022 13:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/13/22 14:00	ALM	1312
SPLP Chloride	87.0	mg/L	0.400	1	04/14/22 14:27	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000577

Waypoint ANALYTICAL
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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-080-0022

QC Prep: A73034
QC Prep Batch Method: 29B
QC Analytical Batch(es): A73061
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 65294-A73033-DUP-A73034

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Electrical Conductivity (Sat Paste)	mmhos/cm	0.878	0.890	1.3	30.0	03/31/22 10:45

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-080-0022

QC Prep: A73044
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A73160
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A73044 Matrix: SOL
Associated Lab Samples: 65292, 65293, 65294, 65295, 65296, 65297, 65298

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	04/05/22 12:48

Laboratory Control Sample LCS-A73044

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	522	104	80-120

Matrix Spike & Matrix Spike Duplicate A 65292-MS-A73044 A 65292-MSD-A73044

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	70.1	438	454	557	570	111	110	80-120	2.3	15.0

Waypoint ANALYTICAL
5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-080-0022

QC Prep: L610900
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L611011
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L610900 Matrix: TCL
Associated Lab Samples: 66455, 66456

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	< 0.400	0.400	04/14/22 12:31

Laboratory Control Sample LCS-L610900

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	52.0	104	90-110

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-080-0022**

QC Analytical Batch: A72925
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 65284-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	61.8	61.8	0.0	20.0	03/24/22 15:52

Waypoint ANALYTICAL

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **22-080-0022**

Shipping Method

○ Fed Ex	○ US Postal	◉ Lab	○ Other :	
○ UPS	○ Client	○ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	○ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	○ Yes	○ No	◉ Not Present
Custody seals intact on sample bottles?	○ Yes	○ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	○ No	
COC agrees with sample label(s)?	◉ Yes	○ No	
COC properly completed	◉ Yes	○ No	
Samples in proper containers?	◉ Yes	○ No	
Sample containers intact?	◉ Yes	○ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	○ No	
All samples received within holding time?	◉ Yes	○ No	
Cooler temperature in compliance?	◉ Yes	○ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	○ No	
Water - Sample containers properly preserved	○ Yes	○ No	◉ N/A
Water - VOA vials free of headspace	○ Yes	○ No	◉ N/A
Trip Blanks received with VOAs	○ Yes	○ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	○ Yes	○ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	○ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 03/21/2022 16:04:14

BP/Castex-Ltd Adm-Apx E-000583

22-080-0022
10485
ERM (Sugar Land)
Castex Development
03-21-2022
16:03:09

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM 840 W. SAM HOUSTON PKWY NORTH HOUSTON, TX	DAVE UPTHEGROVE	SAME

Project Description	Project/Site Location (City/State)	
CASTEX	JENNINGS, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) ☐ Date Results Needed

Me: ☐ Fed Ex ☐ UPS ☐ ☑ Courier ☐ Client Drop Off Other

dwater
DW – Drinking Water S – Soil /Solid O – Oil
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575834	504-481-6470	DAVID.UPTHEGROVE@ERM.COM SHAWN.WIGGINS@ERM.COM		

Waypoint ANALYTICAL
235 Highpoint Dr.
Ridgeland, MS 39157
(601) 957-2676

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative: % MOISTURE	EC	SOLUBLE CHLORIDE						Comments/Notes
3/14/22	1125	CD-5 26-28'	1	S	G	X	X	X						65292
	1155	CD-5 38-40'	1	S	G	X	X	X						65293
	1230	CD-5 52-54'	1	S	G	X	X	X						65294
	1240	CD-5 56-58'	1	S	G	X	X	X						65295
	1250	CD-5 60-62'	1	S	G	X	X	X						65296
	1345	CD-5 68-70'	1	S	G	X	X	X						65297
3/14/22	1350	CD-5 70-72'	1	S	G	X	X	X						65298

For Laboratory Use Only

Ice	Custody Seals	Lab Comments
(Y) / N	Y / (N)	

Blank/Cooler Temp: 0,8 °C

Sampled by (Name – Print): KURT BOEHRINGER

Client Remarks/Comments:

Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
KB	3/18/22	1305	KB Cooo	3/18	13:05
KB Cooo	3/21	0930	P. Howard	3/21	0930
P. Howard	3/21	10:30		3/21/22	1030

rel: 3/21/22 1245 Rec'd By: 3/21/22 1245

ERM

0575834 CASTEX

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #22-03099-OR

May 3, 2022

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

BP/Castex-Ltd Adm-Apx E-000584

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Eberline Services – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Services Work Order # 22-03099

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		3/28/22	[signature]	Sample Log-In
		4/1/22	[signature]	Data Compilation
		4-13-22	[signature]	First Technical Data Review
		4/21/22	MM	Second Technical Data Review
		4/27/22	[signature]	Data Entry/Electronic Deliverable
		4/27/22	[signature]	Case Narrative
		5/3/22	[signature]	Electronic Deliverable Proof
		3/29/22	MM	Samples Analyzed within Holding Time Yes? [ ] No? [✓]
		5/3/22	MM	QA/QC Review
				Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by: [signature] 5/3/22

Laboratory Manager — Date

Copy No. _____

Radiochemistry Services

SECTION I

CHAIN OF CUSTODY
& pH CHECK

EBERLINE ~~Pace Analytical~~

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

22-03099

ALL SHADED AREAS are for LAB USE ONLY

Company: ERM 340 W. SAM HOUSTON PKWY NORTH	Billing Information: SAME
Address: SUITE 600, HOUSTON, TX	
Report To: DAVE UPTHEGROVE	Email To:
Copy To: KURT.BOEHRINGER@ERM.COM	Site Collection Info/Address:
Customer Project Name/Number: CASTEX - 0575934	State: LA County/City: JENNINGS Time Zone Collected: [ ] PT [ ] MT [✓] CT [ ] ET
Phone: 504-481-6470 Email: DAVID.UPTHEGROVE@ERM.COM	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): KURT BOEHRINGER	Purchase Order #: Quote #: DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: STANDARD Immediately Packed on Ice: [ ] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [ ] No Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

	Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Time	Composite End Date	Time	Res Cl	# of Ctns	Container Preservative Type **	Analyses: RADIUM 226	RADIUM 228	TDS	Lab Profile/Line:
4	CD-5B	GW	GRAB	3/23/22	1020				1		X	X	X	REC'D MAR 28 2022
5	CD-2A	GW	GRAB	3/17/22	0825				1		X	X	X	
6	CD-2B	GW	GRAB	3/17/22	1050				1		X	X	X	
7	CD-3A	GW	GRAB	3/17/22	1340				1		X	X	X	
	~~CD-3B~~ KMB	GW	GRAB	3/19/22	0810			KMB	1		X	X	X	
8	CD-1B	GW	GRAB	3/18/22	0900				1		X	X	X	
9	CD-1A	GW	GRAB	3/18/22	0955				1		X	X	X	
10	CD-1C	GW	GRAB	3/21/22	1100				1		X	X	X	
11	CD-4A	GW	GRAB	3/21/22	1345				1		X	X	X	
12	CD-4B	GW	GRAB	3/21/22	1500				1		X	X	X	
13	CD-5A	GW	GRAB	3/21/22	1625				1		X	X	X	

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: _____			
Sample pH Acceptable	Y	N	NA
pH Strips: _____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: _____			

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2699046

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: _____oC
Cooler 1 Therm Corr. Factor: _____oC
Cooler 1 Corrected Temp: _____oC
Comments:

	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	3/24/22 1430	Ramdall Spencer	3/28/22 1610
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

0005

BP/Castex-Ltd Adm-Apx E-000588

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	**22-03099**
Lab Deadline	**4/11/2022**
Analysis	**Ra226 - Level 4**
Sample Matrix	**Water**

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	40	PP1.3
	05	20	PP1.3
	06	50	PP1.3
	07	30	PP1.3
	08	40	PP1.3
	09	60	PP1.3
	10	30	PP1.3
	11	40	PP1.3
	12	30	PP1.3
	13	50	PP1.3

	Location (circle one)					Initials	Date
Received by	(Sample Storage)	Rough Prep	Prep	Separations	Count Room	Harney	3/30/22 0700
Relinquished by	Sample Storage	Rough Prep	(Prep)	Separations	Count Room	Harney	3/31/22 1600
Received by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	3/31/22 1207
Relinquished by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	4/5/22 0914
Received by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	LP	4/5/22 0915
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	LP	4/5/22 1356
Received by	(Sample Storage)	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	22-03099
Lab Deadline	4/11/2022
Analysis	Ra228 - Level 4
Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	40	PP1.3
	05	20	PP1.3
	06	50	PP1.3
	07	30	PP1.3
	08	40	PP1.3
	09	60	PP1.3
	10	30	PP1.3
	11	40	PP1.3
	12	30	PP1.3
	13	50	PP1.3

	Location (circle one)					Initials	Date
Received by	(Sample Storage)	Rough Prep	Prep	Separations	Count Room	[illegible]	3/30/22 0700
Relinquished by	Sample Storage	Rough Prep	(Prep)	Separations	Count Room	[illegible]	3/31/22 1200
Received by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	3/31/22 1201
Relinquished by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	4/5/22 0914
Received by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KP	4/5/22 0915
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KP	4/5/22 1356
Received by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	4/5/22 1357
Relinquished by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	4/8/22 1005
Received by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KP	4/8/22 1005
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KP	4/8/22 1208
Received by	(Sample Storage)	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	22-03099
Lab Deadline	3/29/2022
Analysis	TDS - Level 4
Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	40	PP1.3
	05	20	PP1.3
	06	50	PP1.3
	07	30	PP1.3
	08	40	PP1.3
	09	60	PP1.3
	10	30	PP1.3
	11	40	PP1.3
	12	30	PP1.3
	13	50	PP1.3

	Location (circle one)					Initials	Date
Received by	(Sample Storage)	Rough Prep	Prep	Separations	Count Room	1100	3-28-22
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	2:00	3-29-22
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

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EBERLINE SERVICES

Sample Receiving Report
(Volumes, pH, & CPM)

Internal Work Order
22-03099
Received By
RSPENCER

FR	ClientID	# Btls	Comments	Matrix	Storage	Rec Vol Ttl	CPM Max
01	LCS	0		WA	PP1.3		
02	BLANK	0		WA	PP1.3		
03	DUP	0		WA	PP1.3		
04	CD-5B	1		WA	PP1.3	3.76	40
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	40
05	CD-2A	1		WA	PP1.3	3.76	20
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	20
06	CD-2B	1		WA	PP1.3	3.76	50
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	50
07	CD-3A	1		WA	PP1.3	3.76	30
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	30
08	CD-1B	1		WA	PP1.3	3.76	40
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	40
09	CD-1A	1		WA	PP1.3	3.76	60
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	60
10	CD-1C	1		WA	PP1.3	3.76	30
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	30
11	CD-4A	1		WA	PP1.3	3.76	40
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	40
12	CD-4B	1		WA	PP1.3	3.76	30
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	30
13	CD-5A	1		WA	PP1.3	3.76	50
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	50

Received by: Randolph Spencer Date: 3-28-22

SECTION II

SAMPLE ACKNOWLEDGEMENT

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
ERM	0575834	Environmental	03/28/2022	21	22-03099
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
575834	CASTEX	W	04/11/2022	04/15/2022	04/18/2022

Internal ID	Client ID	Sample Date	Matrix	Storage	Ra226	Ra228	TDS																							Ttl
01	LCS	03/28/22	WA	PP1.3	X	X	X																							3
02	BLANK	03/28/22	WA	PP1.3	X	X	X																							3
03	DUP	03/28/22	WA	PP1.3	X	X	X																							3
04	CD-5B	03/23/22 10:20	WA	PP1.3	X	X	X																							3
05	CD-2A	03/17/22 08:25	WA	PP1.3	X	X	X																							3
06	CD-2B	03/17/22 10:50	WA	PP1.3	X	X	X																							3
07	CD-3A	03/17/22 13:40	WA	PP1.3	X	X	X																							3
08	CD-1B	03/18/22 09:00	WA	PP1.3	X	X	X																							3
09	CD-1A	03/18/22 09:55	WA	PP1.3	X	X	X																							3
10	CD-1C	03/21/22 11:00	WA	PP1.3	X	X	X																							3
11	CD-4A	03/21/22 13:45	WA	PP1.3	X	X	X																							3
12	CD-4B	03/21/22 15:00	WA	PP1.3	X	X	X																							3
13	CD-5A	03/21/22 16:25	WA	PP1.3	X	X	X																							3
																														0
																														0
																														0
																														0
																														0
																														0
																														0
Totals Per Analysis (non QA samples)					10	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice	
	Accounts Payable
	ERM
	840 W Sam Houston Pkwy N, Suite 600
	Houston, TX 77024
Voice	281-242-5700
Fax	281-520-4625

Contact	
	Dave Upthegrove
Voice	504-481-6470
Fax	

Report Data	
	Dave Upthegrove
	ERM
	840 W. Sam Houston Pkwy N #600
	Houston, TX 77024
Voice	504-481-6470
Fax	

BP/Castex-Ltd Adm-Apx E-000594

0011

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Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 22-03099

SAMPLE MATRIX/MATRICES: (CIRCLE ONE OR BOTH)

(AQUEOUS) NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	(Y)	N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: Randolph Spencer DATE: 3-28-22

SECTION III

CASE NARRATIVE

BP/Castex-Ltd Adm-Apx E-000596

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-49613

May 3, 2022

Dave Upthegrove
ERM
840 W Sam Houston Pkwy N #600
Houston, TX 77478

CASE NARRATIVE
Work Order # 22-03099-OR

SAMPLE RECEIPT

This work order contains ten water samples received 03/28/2022. Samples were analyzed for Radium-226/228 and Total Dissolved Solids.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
CD-5B	22-03099-04	CD-1A	22-03099-09
CD-2A	22-03099-05	CD-1C	22-03099-10
CD-2B	22-03099-06	CD-4A	22-03099-11
CD-3A	22-03099-07	CD-4B	22-03099-12
CD-1B	22-03099-08	CD-5A	22-03099-13

ANALYTICAL METHODS

Radium-226 was analyzed using EPA Method 903.0 Modified. Radium-228 was analyzed using EPA Method 904.0. Total Dissolved Solids were performed using Standard Methods 2540C.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

SPECIAL CIRCUMSTANCES

Due to high solids content, all samples except CD-1B, CD-1A, CD-4A, and CD-5A were filtered prior to chemical preparations.

ANALYTICAL RESULTS CONTINUED

RADIUM-226

Samples were prepared by removing representative aliquots followed by mixed acid digestions as appropriate. This was followed by precipitations of Radium/Barium Sulfate. Precipitates were dissolved in alkaline EDTA. Radium was selectively precipitated and mounted on micro-porous filter media. Samples were counted by alpha spectroscopy using an energy specific region of interest for Radium-226. The final result was corrected for inherent self-absorption from elemental Barium. Chemical recovery was calculated using a Barium-133 tracer, which was determined by HPGe gamma spectroscopy.

Samples demonstrated acceptable results for Radium-226 analyses. In this case chemical recovery for sample fraction -09 (Client ID: CD-1A) was estimated as 100 percent. Chemical recovery was acceptable for all other analyses. The Radium-226 method blank demonstrated an acceptable result. Results for the Radium-226 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Radium-226 laboratory control sample demonstrated an acceptable percent recovery.

RADIUM-228

Following alpha spectroscopy analysis of Radium-226, Barium/Radium Sulfate precipitates were redissolved and allowed for sufficient ingrowth of the Actinium-228 daughter. After ingrowth, Actinium-228 was selectively precipitated. Precipitates were filtered and beta emissions for Actinium-228 were counted on a gas proportional counter. Chemical recovery was determined using a Barium-133 tracer, the activity of which was determined by HPGe gamma spectroscopy and an elemental Yttrium carrier by gravimetric measurements. The product of these two recoveries was used to calculate chemical yield.

Samples demonstrated acceptable results for all Radium-228 analyses. Chemical recovery was acceptable for all analyses. In this case gravimetric recovery only was used as chemical recovery for sample fraction -09 (Client ID: CD-1A). The Radium-228 method blank demonstrated an acceptable result. Results for the Radium-228 duplicate demonstrated a slightly high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Radium-228 laboratory control sample demonstrated a high percent recovery.

TOTAL DISSOLVED SOLIDS (TDS)

A volumetric aliquot of each sample was filtered through 0.45µm filter media into a tared 250 ml beaker. Samples were dried on a hot plate and allowed to cool. The TDS content was determined by reweighing tared beakers.

Samples demonstrated results for Total Dissolved Solids content that ranged from 421.0 to 31,976.0 mg/L.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

M.R. McDougall
Laboratory Manager

Date: 5/3/2022

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

SECTION IV

ANALYTICAL RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-000600

Eberline Analytical
Final Report of Analysis

Report To:
Dave Upthegrove
ERM
840 W. Sam Houston Pkwy N #600
Houston, TX 77024

Work Order Details:

SDG:	22-03099
Project:	0575834 CASTEX
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	WA

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-03099-01	LCS	KNOWN	03/28/22 00:00	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	9.96E+00	4.58E-01			pCi/l
22-03099-01	LCS	SPIKE	03/28/22 00:00	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	1.12E+01	1.56E+00	2.83E+00	3.15E-01	pCi/l
22-03099-02	MBL	BLANK	03/28/22 00:00	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	-1.52E-02	9.18E-02	9.19E-02	2.90E-01	pCi/l
22-03099-03	DUP	CD-5A	03/21/22 16:25	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	1.05E+00	3.20E-01	3.90E-01	1.18E-01	pCi/l
22-03099-04	TRG	CD-5B	03/23/22 10:20	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	4.70E+00	1.35E+00	1.67E+00	7.33E-01	pCi/l
22-03099-05	TRG	CD-2A	03/17/22 08:25	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	2.62E+00	8.60E-01	1.02E+00	4.78E-01	pCi/l
22-03099-06	TRG	CD-2B	03/17/22 10:50	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	3.92E+00	8.82E-01	1.21E+00	3.51E-01	pCi/l
22-03099-07	TRG	CD-3A	03/17/22 13:40	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	3.52E+00	1.04E+00	1.23E+00	5.58E-01	pCi/l
22-03099-08	TRG	CD-1B	03/18/22 09:00	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	3.13E-01	1.67E-01	1.80E-01	1.39E-01	pCi/l
22-03099-09	TRG	CD-1A	03/18/22 09:55	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	1.84E-01	1.84E-01	1.88E-01	2.55E-01	pCi/l
22-03099-10	TRG	CD-1C	03/21/22 11:00	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	3.28E-01	1.34E-01	1.51E-01	8.13E-02	pCi/l
22-03099-11	TRG	CD-4A	03/21/22 13:45	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	3.85E-01	1.62E-01	1.81E-01	1.06E-01	pCi/l
22-03099-12	TRG	CD-4B	03/21/22 15:00	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	1.13E+00	2.84E-01	3.70E-01	7.60E-02	pCi/l
22-03099-13	DO	CD-5A	03/21/22 16:25	3/28/2022	4/5/2022	22-03099	Radium-226	EPA 903.0 Modified	5.01E-01	2.01E-01	2.27E-01	1.20E-01	pCi/l
22-03099-01	LCS	KNOWN	03/28/22 00:00	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	9.12E+00	4.65E-01			pCi/l
22-03099-01	LCS	SPIKE	03/28/22 00:00	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	1.89E+01	1.98E+00	4.71E+00	1.27E+00	pCi/l
22-03099-02	MBL	BLANK	03/28/22 00:00	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	7.20E-01	4.95E-01	5.21E-01	9.77E-01	pCi/l
22-03099-03	DUP	CD-5A	03/21/22 16:25	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	6.56E-01	5.23E-01	5.44E-01	1.05E+00	pCi/l
22-03099-04	TRG	CD-5B	03/23/22 10:20	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	2.30E+01	1.68E+00	5.47E+00	1.79E+00	pCi/l
22-03099-05	TRG	CD-2A	03/17/22 08:25	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	4.64E+00	7.65E-01	1.30E+00	1.17E+00	pCi/l
22-03099-06	TRG	CD-2B	03/17/22 10:50	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	4.17E+00	7.00E-01	1.[illegible]8E+00	1.10E+00	pCi/l
22-03099-07	TRG	CD-3A	03/17/22 13:40	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	1.98E+01	1.39E+00	4.70E+00	1.44E+00	pCi/l
22-03099-08	TRG	CD-1B	03/18/22 09:00	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	1.95E-01	4.63E-01	4.65E-01	9.68E-01	pCi/l
22-03099-09	TRG	CD-1A	03/18/22 09:55	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	-2.54E-02	4.18E-01	4.[illegible]8E-01	9.00E-01	pCi/l
22-03099-10	TRG	CD-1C	03/21/22 11:00	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	1.29E+00	4.57E-01	5.42E-01	8.25E-01	pCi/l
22-03099-11	TRG	CD-4A	03/21/22 13:45	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	6.28E-01	4.59E-01	4.80E-01	9.09E-01	pCi/l
22-03099-12	TRG	CD-4B	03/21/22 15:00	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	1.29E+00	5.48E-01	6.21E-01	1.04E+00	pCi/l
22-03099-13	DO	CD-5A	03/21/22 16:25	3/28/2022	4/8/2022	22-03099	Radium-228	EPA 904.0	9.35E-01	5.29E-01	5.70E-01	1.03E+00	pCi/l

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

Eberline Analytical
Final Report of Analysis

Report To:
Dave Upthegrove
ERM
840 W. Sam Houston Pkwy N #600
Houston, TX 77024

Work Order Details:

SDG:	22-03099
Project:	0575834 CASTEX
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	WA

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-03099-04	TRG	CD-5B	03/23/22 10:20	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	1.90E+04				mg/l
22-03099-05	TRG	CD-2A	03/17/22 08:25	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	1.98E+04				mg/l
22-03099-06	TRG	CD-2B	03/17/22 10:50	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	4.98E+03				mg/l
22-03099-07	TRG	CD-3A	03/17/22 13:40	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	3.20E+04				mg/l
22-03099-08	TRG	CD-1B	03/18/22 09:00	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	4.21E+02				mg/l
22-03099-09	TRG	CD-1A	03/18/22 09:55	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	4.36E+02				mg/l
22-03099-10	TRG	CD-1C	03/21/22 11:00	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	6.05E+02				mg/l
22-03099-11	TRG	CD-4A	03/21/22 13:45	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	1.23E+03				mg/l
22-03099-12	TRG	CD-4B	03/21/22 15:00	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	2.12E+03				mg/l
22-03099-13	TRG	CD-5A	03/21/22 16:25	3/28/2022	3/29/2022	22-03099	TDS	SM2540C	7.14E+02				mg/l

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

SECTION V

ANALYTICAL STANDARD

SRS Number: 110755
Source Description: 5 mL Liquid in Flame Sealed Ampoule
Product Code: 8133
Customer: Eberline Analytical Corporation
P.O. Number: MCDOUGAL14AUG18/VS, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution calibrated with an ionization chamber. The ionization chamber was calibrated by the National Physical Laboratory (NPL), Teddington, U.K., and is traceable to national standards. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology (NIST) through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Reference Date: 06-September-2018 12:00 PM EST

Isotope	Half-Life, d	Activity, Bq	Uncertainty u_A, %	u_B, %	U, %*	Calibration Method**
Ba-133	3.854E+03	1.834E+05	0.1	0.9	1.8	IC

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results." ****Calibration Methods:** 4π LS - 4π Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber.

(Certificate continued on reverse side)

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

QCP-009

Rev.8; 11/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
QCP 009-1

mm

CURRENT DATE 10/19/2021 0:00

SOLUTION REFERENCE # EZA 100755 **SOLUTION #** Ba-7

Principal Radionuclide	Half Life, Years	Half Life, Days
^{133}Barium	1.048E+01	3.828E+03

Radionuclide ^{133}Barium

Reference Date 9/6/2018 12:00

Certified Activity 1.834E+05 **Total Bq**

Ampoule /Solution Gross		**Weight, Grams**
Empty Ampoule		**Weight, Grams**
Solution Net		**Weight, Grams**
Total Activity in Ampoule	4.9568	µCi

Chemical Composition of Standard Solution

$^{133}BaCl_2$ in 1M HCl

Dilution Instructions:

Dilution Solvent Used 1M HCl

Dilute to a volume of 1000.00 **milliliters**

Certified Total Activity of 4.9568 µCi **Which Equals** 1.100E+07 **dpm at the date listed above**

And after dilution the activity of this solution is 1.100E+04 **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: October 19, 2022

Verified & Approved By _____ Date: 10/19/21

QC Approval Marianne Mey Date: 10-19-21

Ra-5

QA/QC REVIEWED
Date 2/8/94 Initials MT

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	Ra-226	Customer:	TMA EBERLINE
Half Life:	1600 ± 7 years	P.O.No.:	VH1888
Catalog No.:	7226	Reference Date:	February 1 1994 12:00 PST.
Source No.:	453-26	Contained Radioactivity: (Ra-226)	1.001 μCi.
		Contained Radioactivity: (Ra-226)	37.0 kBq.

Description of Solution

a. Mass of solution: 5.1864 g (in a 5 ml Flame Sealed Ampoule)

b. Chemical form: $Ra(NO_3)_2$ in 1 N HNO_3

c. Carrier content: None added

d. Density: 1.0318 g/ml @ 20°C.

Radioimpurities: None detected(other than daughters)

Radioactive Daughters

Rn-222, Po-218, At-218, Pb-214, Bi-214, Po-214, Tl-210, Pb-210, Bi-210, Po-210 and Tl-206.

Radionuclide Concentration

(Ra-226) 0.1929 μCi/g.

Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry:
Energy peak(s) integrated under: 186 keV.
Branching ratio(s) used: 0.0351 gamma rays per decay.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:	±3.4%
b. Random uncertainty in assay:	±3.1%
c. Random uncertainty in weighing(s):	±0.2%
d. Total uncertainty at the 99% confidence level:	±4.6%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

Anna U. Kuen
QUALITY CONTROL

Feb. 3, 1994
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 North Keystone Street
Burbank, California 91504
(818) 843 - 7000

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

CURRENT DATE 8/18/2021 0:00

SOLUTION REFERENCE # IPL 453-26 **SOLUTION #** Ra-5

Principal Radionuclide	Half Life, Years	Half Life, Days
^{226}Radium	1.600E+03	5.844E+05

Radionuclide ^{226}Radium **Reference Date** 2/1/1994 0:00
Certified Activity 1.001E+00 µCi
Certified Concentration µCi per gram

Ampoule /Solution Gross Weight, Grams
Empty Ampoule Weight, Grams
Solution Net Weight, Grams
Total Activity in Ampoule 1.0010 µCi

Chemical Composition of Standard Solution
$^{226}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions: **Dilution Solvent Used** 1M HNO_3

Dilute to a volume of 1000.00 **milliliters**

Certified Total Activity of 1.0010 µCi **Which Equals** 2.222E+06 **dpm at the date listed above**

And after dilution the activity of this solution is 2.222E+03 **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: August 18, 2022

Verified & Approved By _____ Date: 8/18/2021

QC Approval Marianne Mary Date: 8-30-21

BP/Castex-Ltd Adm-Apx E-000607

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP 009

Rev.8; 11/01/03
Title: **Radioactive Reference Standards Solutions & Records**

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP 009

Solution Reference # IPL-453-26 **Date** 8/18/2021 0:00 **Solution #** Ra-5b

Principal Radionuclide	Half Life, Years	Half Life, Days
^{226}Radium	1.600E+03	5.844E+05

Radionuclide of Interest ^{226}Radium
Parent Solution Conc. 2.22E+03 dpm/ml

Reference Date 2/1/1994 0:00

Chemical Composition of Standard Solution
$^{226}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions:

Dilution Solvent Used 1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 20.0000 ml
Total Activity: 4.4440E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 4.4440E+01 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: 18-Aug-22

Verified & Approved By _____ Date: 8/18/2021 0:00

QC Approval Mananin May Date: 8-30-21

ANALYTICS #411 Rec'd 2/15/06 R Brenton

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

Ra^{228}

72325-207

Ra-228 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Ra-228
ACTIVITY (dps):	4.022 E3
HALF-LIFE:	5.75 years
CALIBRATION DATE:	February 10, 2006 12:00 EST
RELATIIVE EXPANDED UNCERTAINTY (k=2):	4.0%

Impurities: γ-impurities <0.1%

5.10721 grams 0.1M HCl solution with 50 µg/g Ba carrier.

P O NUMBER 00003181, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: W M. [illegible] 2-13-06

0026

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP-009

Rev.8; 1/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
RECERTIFICATION
MP 009

CURRENT DATE 1/7/2022 0:00
SOLUTION REFERENCE # Analytics 7235-207 **SOLUTION #** Ra-12

Principal Radionuclide	Half Life, Years	Half Life, Days
^{228}Ra	5.750E+00	2.100E+03

Radionuclide ^{228}Ra
Certified Activity 1.087E-01 µCi
Certified Concentration µCi per gram

Reference Date 2/10/2006 0:00

Ampoule /Solution Gross	9.0741	Weight, Grams
Empty Ampoule	3.9858	Weight, Grams
Solution Net	5.0883	Weight, Grams
Total Activity in Ampoule	0.1087	µCi

Chemical Composition of Standard Solution
$^{228}Ra(NO_3)_2$ in 0.5 M HCl

Dilution Instructions: **Dilution Solvent Used** 0.5 M HCl

Dilute to a volume of 991.00 **Kg**

Certified Total Activity of 0.1087 µCi **Which Equals** 2.413E+05 **dpm at the date listed above**

And after dilution the activity of this solution is 2.435E+02 **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 4, 2023

Recertified By _____ Date: 1/7/22

QC Approval Manarine Mau Date: 1-7-22

0027

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-000611

Eberline Services
Analysis Control Chart

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-03099	Ra226	1	pCi	l	ERM

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-226		112.20%	25.32%	100.00%	4.60%	9.96E+00	4.58E-01	1.12E+01	2.83E+00	Ra-5b	4.39E+01	4.60E+00	5.04E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-226	2.40	71.13	5.01E-01	2.27E-01	1.05E+00	3.90E-01

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.12	OK				NA	OK

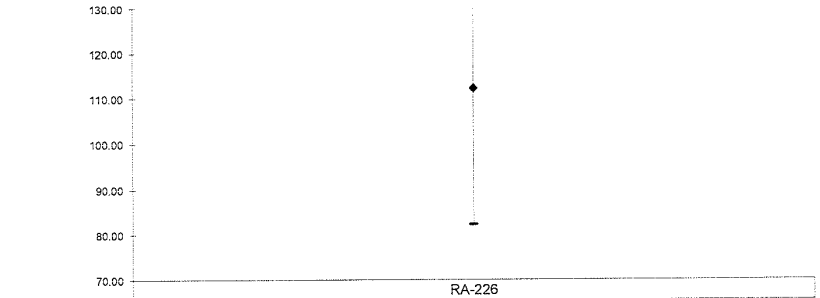
BP/Castex-Ltd Adm-Apx E-000612

0029

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-03099	Ra226	1	pCi	l	ERM

LCS % Recovery

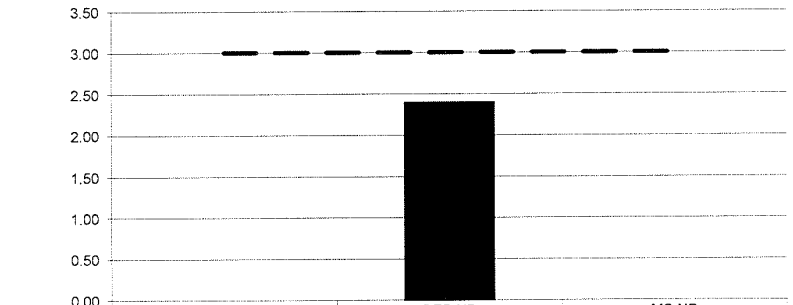


	RA-226
Lower Error	82.28
Upper Error	142.12
%R	112.20
LCL	75
Mean	100
UCL	125

Replicate Sample RPD

	RA-226
Lower Error	85.25
Upper Error	57.02
RPD	71.13
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
RA-226	0.00	2.40	0.00
UCL	3	3	3

No Matrix Spike

BP/Castex-Ltd Adm-Apx E-000613

0030

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-03099	Ra228	1	pCi	l	ERM

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-228		206.93%	24.96%	100.00%	5.10%	9.12E+00	4.65E-01	1.89E+01	4.71E+00	Ra-12	3.47E+01	5.10E+00	5.83E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-228	0.69	35.01	9.35E-01	5.70E-01	6.56E-01	5.44E-01

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
2.07	INV				NA	OK

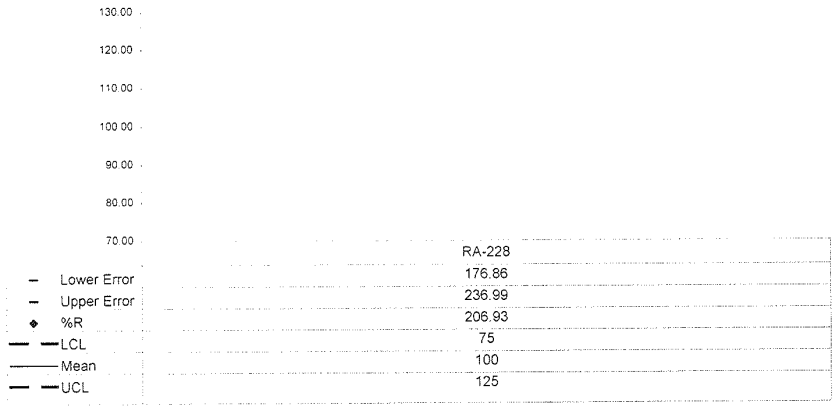
BP/Castex-Ltd Adm-Apx E-000614

0031

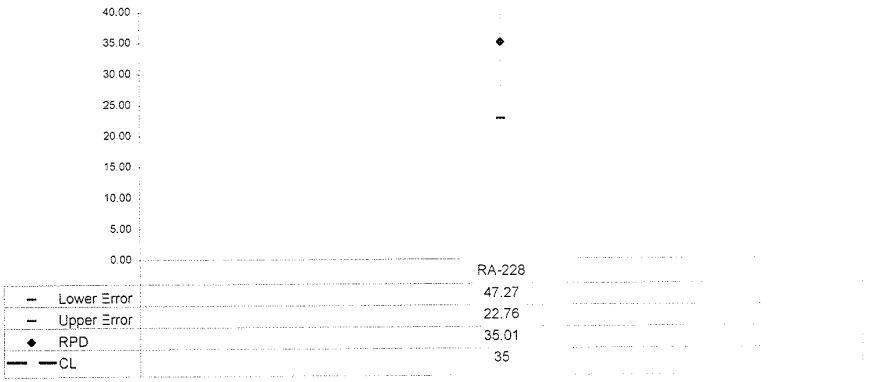
Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-03099	Ra228	1	pCi	l	ERM

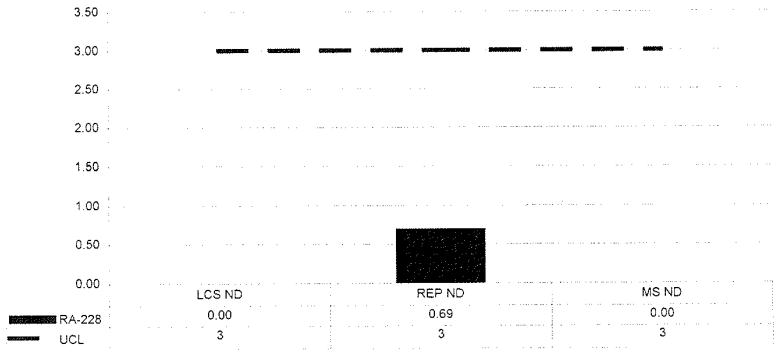
LCS % Recovery



Replicate Sample RPD



Normalized Difference



No Matrix Spike

BP/Castex-Ltd Adm-Apx E-000615

0032

Version

SECTION VII

LABORATORY TECHNICIAN'S NOTES

BP/Castex-Ltd Adm-Apx E-000616

RA-226 NOTES

BP/Castex-Ltd Adm-Apx E-000617

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-03099
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	03/30/22 09:07	PREP	JHARVEY	ALIQUOTED- FILTERED FRACTIONS 4-7, 10 AND 12- ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS

J Harvey
3/30/22

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-03099
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	03/30/22 09:07	PREP	JHARVEY	ALIQUOTED- FILTERED FRACTIONS 4-7, 10 AND 12- ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	04/05/22 08:39	CHEM	MDAVIS	ADDED EDTA TO SAMPLES AND LET SIT. ADDED AMMONIUM SULFATE AND ACETIC ACID TO SAMPLES. RECORDED T0. FILTERED ONTO TARED FILTER PAPERS, LET DRY UNDER HEAT LAMP, REWEIGHED, AND SUBMITTED TO COUNT.

MD
4/5/22

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
22-03099	
Analysis Code	Run
Ra226	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
023319P	Ammonium Hydroxide	Reagent Grade	JHARVEY	3/30/2022
023625D01	Ammonium Sulfate	200 mg/ml	JHARVEY	3/30/2022
023237D01	Barium Carrier	1 mg/ml	JHARVEY	3/30/2022
023967D01	Lead Carrier	166 mg/ml	JHARVEY	3/30/2022
024041P	Nitric Acid	Reagent Grade	JHARVEY	3/30/2022
023196P	Acetic Acid	Reagent Grade	MDAVIS	4/5/2022
023495D07	Ammonium Sulfate	200 mg/ml	MDAVIS	4/5/2022
024033S	EDTA	0.25M	MDAVIS	4/5/2022

Alpha Banks

Date	Sample #	Client	Load time	Count time	Analysis	Tech
3/31/22	220309GA (1-4)	Eurofins	0757	2hr 50min	UU	KP
3/31/22	220309HA (3,4)	BR Water Well	1105	2hr 50min	Ra^{6}	KP
3/31/22	220307SA (1-4)	UCOR	1105	2hr 50min	Ra^{6}	KP
3/31/22	220309GA (3)	Eurofins	1106	2hr 50min	UU	KP
3/31/22	220309JA (1-5,7)	DOE	1106	5hr 35min	UU	KP
3/31/22	220304JA (1-8)	TN Dept.	1107	5hr 35min	Pu	KP
4/1/22	Daily Pulser	Lab	0513	10 min	NA	KP
4/1/22	Cal Check (33-48)	Lab	0526	2hr 30min	NA	KP
4/1/22	Cal Check (49-60)	Lab	0759	2hr 30min	NA	KP
4/1/22	220307SA (1-4)	UCOR	0800	2hr 50min	Am^{241}	KP
4/1/22	220307SA (1-4)	UCOR	0801	2hr 50min	Am^{243}	KP
4/1/22	220307SA (1-4)	UCOR	0802	2hr 50min	Np	KP
4/1/22	System Blkgd	Lab	1358	16.40 hrs	NA	KP
4/4/22	Daily Pulser	Lab	0608	10 min	NA	KP
4/4/22	220308A (3-9)	Weston	0800	2hr 50min	Th	KP
4/4/22	220308A (1-9)	Weston	0801	2hr 50min	UU	KP
4/4/22	220307SA (1-4,7)	UCOR	0802	2hr 50min	Pu	KP
4/4/22	220307SA (1-4)	UCOR	0802	2hr 50min	Pu^{242}	KP
4/4/22	220308A (1-9)	Weston	1104	2hr 50min	Ra^{6}	KP
4/4/22	220308A (2)	Weston	1105	2hr 50min	UU	KP
4/5/22	Daily Pulser	Lab	0549	10 min	NA	KP
4/5/22	220310ZA (3,4)	UCOR	0756	2hr 50min	UU	KP
4/5/22	220310ZA (4)	UCOR	0756	2hr 50min	UUNT	KP
4/5/22	220310ZA (1-4)	UCOR	0757	2hr 50min	Th	KP
4/5/22	220310ZA (1-4)	UCOR	0757	2hr 50min	Th^{229}	KP
4/5/22	220309BA (1-13)	BV Commodities	0758	2hr 50min	Am^{241}	KP
4/5/22	220309BA (14,15)	BV Commodities	1051	2hr 50min	Am^{241}	KP
4/5/22	220309GA (1-15)	ERM	1052	2hr 50min	Ra^{6}	KP

RA-228 NOTES

BP/Castex-Ltd Adm-Apx E-000622

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-03099
Analysis Code	Ra228
Run Number	1

#	Date	Dept	User	Notes
1	03/30/22 09:08	PREP	JHARVEY	ALIQUOTED- FILTERED FRACTIONS 4-7, 10 AND 12- ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS

JC Jarvey
3/30/22

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-03099
Analysis Code	Ra228
Run Number	1

#	Date	Dept	User	Notes
1	03/30/22 09:08	PREP	JHARVEY	ALIQUOTED- FILTERED FRACTIONS 4-7, 10 AND 12- ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	04/08/22 09:26	CHEM	MDAVIS	ADDED FILTER PAPERS FROM COUNT ROOM TO LABELED C-TUBES, FILLED WITH EDTA SOLUTION AND LET SIT OVERNIGHT. REMOVED FILTER FROM EDTA-ADDED 2MLS YTTRIUM 9MG/ML CARRIER ADDED 18N NAOH TO SAMPLES AND RECORDED T1. HOT BATHED FOR 15 MIN, CENTRIFUGED AND DISCARDED SUPERNANT. ADDED 6N HNO3, DI WATER AND 10N NAOH. HOT BATHED FOR 15 MIN, CENTRIFUED AND DISCARDED SUPERNTANT. ADDED IN HNO3, DI WATER, AND AMMONIUM OXALATE. FILTERED ONTO TARED FILTER PAPERS. LET DRY UNDER HEAT LAMP, REWEIGHED AND SUBMITTED TO COUNT.

MD
4/8/22

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
22-03099	
Analysis Code	Run
Ra228	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
023319P	Ammonium Hydroxide	Reagent Grade	JHARVEY	3/30/2022
023625D01	Ammonium Sulfate	200 mg/ml	JHARVEY	3/30/2022
023237D01	Barium Carrier	1 mg/ml	JHARVEY	3/30/2022
023967D01	Lead Carrier	166 mg/ml	JHARVEY	3/30/2022
024041P	Nitric Acid	Reagent Grade	JHARVEY	3/30/2022
023894D02	Ammonium Oxalate	5%	MDAVIS	4/8/2022
024033S	EDTA	0.25M	MDAVIS	4/8/2022
023733D10	Nitric Acid	1N	MDAVIS	4/8/2022
023055D11	Nitric Acid	6N	MDAVIS	4/8/2022
023120D02	Sodium Hydroxide	10M	MDAVIS	4/8/2022
023247D03	Sodium Hydroxide	18M	MDAVIS	4/8/2022
023128D01	Yttrium Carrier	9 mg/ml	MDAVIS	4/8/2022

Red LB4110

Date	Sample #	Client	Lead Time	Count Time	Analysis	Tech
4/7/22	220401SAB(17E-18A)	Freezer	1344	2hrs	αβ	KB
4/8/22	Daily Bkgd/QC	Lab	0547/0516	1hr/30min	αβ	KP
4/8/22	Cross Talk	Lab	0650	5min	αβ	KP
4/8/22	Cross Talk	Lab	0657	5min	αβ	KP
4/8/22	220 307454(346)	UCOR	0706	2hrs	Sr90	KP
4/8/22	220399Ra(1)	ERM	1007	30min	Ra8	KP

BP/Castex-Ltd Adm-Apx E-000626

Aqua LB4110

Date	Sample #	Client	Load time	Count time	Analysis	Tech
4/7/22	Cross Talk	Lab	0755	5 min	αB	KP
4/7/22	Cross Talk	Lab	0800	5 min	αB	KP
4/7/22	220311ONp(1-4)	Unitech	0751	10 min	Np	KP
4/7/22	220401295(1-6)	USA	0829	1hr	Pb	KP
4/7/22	220402AB(1-4)	Materion	0832	1hr	αB	KP
4/7/22	220401SAB(11A-12E)	Feezor	0934	2hrs	αB	KP
4/7/22	220401SAB(13C-15B)	Feezor	1140	2hrs	αβ	KB
4/7/22	220401SAB(15E-17D)	Feezor	1344	2hrs	αβ	KB
4/8/22	Daily BKgd/QC	Lab	0516/0625	1hr/30min	αB	KP
4/8/22	Cross Talk	Lab	0658	5min	αB	KP
4/8/22	Cross Talk	Lab	0706	5min	αB	KP
4/8/22	220307459(1,2)	UCOR	0713	2hrs	Sr^{90}	KP
4/8/22	220307559(1-4,6)	UCOR	0714	2hrs	Sr^{90}	KP
4/8/22	220401SAB(18B-18E)	Feezor	0715	2hrs	αB	KP
4/8/22	220309RaC(2-13)	ERM	1007	2hrs	Ra^{8}	KP

TDS NOTES

BP/Castex-Ltd Adm-Apx E-000628

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-03099
Analysis Code	TDS
Run Number	1

#	Date	Dept	User	Notes
1	03/29/22 08:58	PREP	JPACHELLA	TDS Samples were filtered, aliquoted into tared beakers, dried, and reweighed.

3-29-22 JPachella

SECTION VIII

ANALYTICAL DATA (RADIUM-226)

BP/Castex-Ltd Adm-Apx E-000630

22-03099
Ra226
Run 1

Work Order	22-03099
Analysis Code	Ra226
Run	1
Date Received	3/28/2022
Lab Deadline	4/11/2022
Client	ERM
Project	575834
Report Level	4
Activity Units	pCi
Aliquot Units	l
Matrix	WA
Method	EPA 903.0 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-7
Tracer Act (dpm/g)	8694.43
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		03/28/22 00:00	1.0000E+00
02	MBL	BLANK		03/28/22 00:00	1.0000E+00
03	DUP	CD-5A	50	03/21/22 16:25	1.0000E+00
04	TRG	CD-5B	40	03/23/22 10:20	1.0000E+00
05	TRG	CD-2A	20	03/17/22 08:25	1.0000E+00
06	TRG	CD-2B	50	03/17/22 10:50	1.0000E+00
07	TRG	CD-3A	30	03/17/22 13:40	1.0000E+00
08	TRG	CD-1B	40	03/18/22 09:00	1.0000E+00
09	TRG	CD-1A	60	03/18/22 09:55	1.0000E+00
10	TRG	CD-1C	30	03/21/22 11:00	1.0000E+00
11	TRG	CD-4A	40	03/21/22 13:45	1.0000E+00
12	TRG	CD-4B	30	03/21/22 15:00	1.0000E+00
13	DO	CD-5A	50	03/21/22 16:25	1.0000E+00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.1241	1079.0	494.0	101.64		0.0200	0.0269	0.0069		101.64	2.47	1.00
02	MBL	0.1246	1083.3	482.0	98.77		0.0199	0.0264	0.0065		98.77	2.34	1.00
03	DUP	0.1246	1083.3	470.0	96.31		0.0198	0.0241	0.0043		96.31	1.31	1.00
04	TRG	0.1252	1088.5	265.0	54.04		0.0198	0.0329	0.0131		54.04	3.00^	1.00
05	TRG	0.1253	1089.4	370.0	75.40		0.0200	0.0346	0.0146		75.40	3.00^	1.00
06	TRG	0.1250	1086.8	450.0	91.92		0.0201	0.0292	0.0091		91.92	3.00^	1.00
07	TRG	0.1246	1083.3	317.0	64.96		0.0205	0.0293	0.0088		64.96	2.96	1.00
08	TRG	0.1247	1084.2	512.0	104.84		0.0200	0.0243	0.0043		104.84	1.31	1.00
09	TRG	0.1223	1063.3	25.5	5.32		0.0204	0.0261	0.0057		5.32	2.04	1.00
10	TRG	0.1237	1075.5	479.0	98.87		0.0200	0.0236	0.0036		98.87	0.82	1.00
11	TRG	0.1241	1079.0	479.0	98.55		0.0200	0.0230	0.0030		98.55	0.31	1.00
12	TRG	0.1200	1043.3	463.0	98.52		0.0201	0.0239	0.0038		98.52	0.97	1.00
13	DO	0.1236	1074.6	494.0	102.05		0.0199	0.0235	0.0036		102.05	0.82	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
02	MBL			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
03	DUP			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
04	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
05	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
06	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
07	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
08	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
09	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
10	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
11	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
12	TRG			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		
13	DO			03/30/22 08:51	MHIGHTOWER	04/05/22 08:14	MDAVIS		

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Eberline Services
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 22-03099-Ra226-1

Printed: 4/6/2022 7:33 AM

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	22-03099	ERM

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-226	LCS	LCS	pCi/l	1.12E+01	1.56E+00	3.15E-01	9.96E+00	112.20	OK		OK	
02	RA-226	MBL	BLANK	pCi/l	-1.52E-02	9.18E-02	2.90E-01					OK	OK
03	RA-226	DUP	CD-5A	pCi/l	1.05E+00	3.20E-01	1.18E-01				NA	OK	
04	RA-226	TRG	CD-5B	pCi/l	4.70E+00	1.35E+00	7.33E-01					OK	
05	RA-226	TRG	CD-2A	pCi/l	2.62E+00	8.60E-01	4.78E-01					OK	
06	RA-226	TRG	CD-2B	pCi/l	3.92E+00	8.82E-01	3.51E-01					OK	
07	RA-226	TRG	CD-3A	pCi/l	3.52E+00	1.04E+00	5.58E-01					OK	
08	RA-226	TRG	CD-1B	pCi/l	3.13E-01	1.67E-01	1.39E-01					OK	
09	RA-226	TRG	CD-1A	pCi/l	1.84E-01	1.84E-01	2.55E-01					OK	
10	RA-226	TRG	CD-1C	pCi/l	3.28E-01	1.34E-01	8.13E-02					OK	
11	RA-226	TRG	CD-4A	pCi/l	3.85E-01	1.62E-01	1.06E-01					OK	
12	RA-226	TRG	CD-4B	pCi/l	1.13E+00	2.84E-01	7.60E-02					OK	
13	RA-226	DO	CD-5A	pCi/l	5.01E-01	2.01E-01	1.20E-01					OK	

BP/Castex-Ltd Adm-Apx E-000634

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	22-03099	ERM

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-226	LCS	03/28/22 00:00	1.00E+00	100.00	0.00	101.64		4/5/2022 8:14	
02	RA-226	MBL	03/28/22 00:00	1.00E+00	98.77	0.00	98.77		4/5/2022 8:14	
03	RA-226	DUP	03/21/22 16:25	1.00E+00	96.31	0.00	96.31		4/5/2022 8:14	
04	RA-226	TRG	03/23/22 10:20	1.00E+00	54.04	0.00	54.04		4/5/2022 8:14	
05	RA-226	TRG	03/17/22 08:25	1.00E+00	75.40	0.00	75.40		4/5/2022 8:14	
06	RA-226	TRG	03/17/22 10:50	1.00E+00	91.92	0.00	91.92		4/5/2022 8:14	
07	RA-226	TRG	03/17/22 13:40	1.00E+00	64.96	0.00	64.96		4/5/2022 8:14	
08	RA-226	TRG	03/18/22 09:00	1.00E+00	100.00	0.00	104.84		4/5/2022 8:14	
09	RA-226	TRG	03/18/22 09:55	1.00E+00	100.00	0.00	5.32		4/5/2022 8:14	
10	RA-226	TRG	03/21/22 11:00	1.00E+00	98.87	0.00	98.87		4/5/2022 8:14	
11	RA-226	TRG	03/21/22 13:45	1.00E+00	98.55	0.00	98.55		4/5/2022 8:14	
12	RA-226	TRG	03/21/22 15:00	1.00E+00	98.52	0.00	98.52		4/5/2022 8:14	
13	RA-226	DO	03/21/22 16:25	1.00E+00	100.00	0.00	102.05		4/5/2022 8:14	

BP/Castex-Ltd Adm-Apx E-000635

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	22-03099	ERM

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	RA-226	LCS	04/05/22 10:52		A_Spec	Alpha_035	170	2.13 E+02	0.00 E+00	12.5
02	RA-226	MBL	04/05/22 10:52		A_Spec	Alpha_037	170	-3.60 E-01	8.00 E-03	14.9
03	RA-226	DUP	04/05/22 10:52		A_Spec	Alpha_038	170	4.27 E+01	2.00 E-03	14.6
04	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_039	170	5.00 E+01	1.20 E-02	15.6
05	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_040	170	3.76 E+01	8.00 E-03	15.1
06	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_041	170	7.95 E+01	9.00 E-03	17.5
07	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_044	170	4.63 E+01	1.00 E-02	15.9
08	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_045	170	1.48 E+01	7.00 E-03	16.4
09	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_046	170	5.30 E+00	1.00 E-02	15.6
10	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_048	170	2.41 E+01	5.00 E-03	19.7
11	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_049	170	2.30 E+01	6.00 E-03	16.1
12	RA-226	TRG	04/05/22 10:52		A_Spec	Alpha_050	170	6.18 E+01	1.00 E-03	14.8
13	RA-226	DO	04/05/22 10:52		A_Spec	Alpha_051	170	2.50 E+01	0.00 E+00	13.2

BP/Castex-Ltd Adm-Apx E-000636

Count Room Report
Client: ERM

22-03099-Ra226-1 (pCi/l) in WA
Tracer ID: Ba-7

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	03/28/22 00:00	1.0000	0.1241	1078.9788	494.0000	101.64	2.47	1.00
02	MBL	BLANK	03/28/22 00:00	1.0000	0.1246	1083.3260	482.0000	98.77	2.34	1.00
03	DUP	CD-5A	03/21/22 16:25	1.0000	0.1246	1083.3260	470.0000	96.31	1.31	1.00
04	TRG	CD-5B	03/23/22 10:20	1.0000	0.1252	1088.5426	265.0000	54.04	3.00^	1.00
05	TRG	CD-2A	03/17/22 08:25	1.0000	0.1253	1089.4121	370.0000	75.40	3.00^	1.00
06	TRG	CD-2B	03/17/22 10:50	1.0000	0.1250	1086.8038	450.0000	91.92	3.00^	1.00
07	TRG	CD-3A	03/17/22 13:40	1.0000	0.1246	1083.3260	317.0000	64.96	2.96	1.00
08	TRG	CD-1B	03/18/22 09:00	1.0000	0.1247	1084.1954	512.0000	104.84	1.31	1.00
09	TRG	CD-1A	03/18/22 09:55	1.0000	0.1223	1063.3288	25.5000	5.32	2.04	1.00
10	TRG	CD-1C	03/21/22 11:00	1.0000	0.1237	1075.5010	479.0000	98.87	0.82	1.00
11	TRG	CD-4A	03/21/22 13:45	1.0000	0.1241	1078.9788	479.0000	98.55	0.31	1.00
12	TRG	CD-4B	03/21/22 15:00	1.0000	0.1200	1043.3316	463.0000	98.52	0.97	1.00
13	DO	CD-5A	03/21/22 16:25	1.0000	0.1236	1074.6315	494.0000	102.05	0.82	1.00

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 3/30/2022 08:51

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
22-03099	1	Ra226	3/30/2022 08:45	MHIGHTOWER		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
Ra-226	Ra-5b	43.900	3/30/2022	0.500	0.5038				9.96	0.458	0.00	0.000	0.00	0.000	0.00	0.000
Tc-99 MS	Tc-2a	22043.08	3/30/2022	0.1												

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	Ba-133	Ba-7	8694.430	3/30/2022	0.1241	0.1200
02	Ba-133	Ba-7	8694.430	3/30/2022	0.1246	0.1200
03	Ba-133	Ba-7	8694.430	3/30/2022	0.1246	0.1200
04	Ba-133	Ba-7	8694.430	3/30/2022	0.1252	0.1200
05	Ba-133	Ba-7	8694.430	3/30/2022	0.1253	0.1200
06	Ba-133	Ba-7	8694.430	3/30/2022	0.1250	0.1200
07	Ba-133	Ba-7	8694.430	3/30/2022	0.1246	0.1200
08	Ba-133	Ba-7	8694.430	3/30/2022	0.1247	0.1200
09	Ba-133	Ba-7	8694.430	3/30/2022	0.1223	0.1200
10	Ba-133	Ba-7	8694.430	3/30/2022	0.1237	0.1200
11	Ba-133	Ba-7	8694.430	3/30/2022	0.1241	0.1200
12	Ba-133	Ba-7	8694.430	3/30/2022	0.1200	0.1200
13	Ba-133	Ba-7	8694.430	3/30/2022	0.1236	0.1200

Balance Printer Tapes

Tracer

LCS

Matrix Spike

BP/Castex-Ltd Adm-Apx E-000638

0055

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 3/30/2022 09:04

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
22-03099	1	Ra226	liters	4/11/2022	JHARVEY

Lab Fraction	ERM Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-5A	DUP					1.0000E+00	1.0000E+00				
04	CD-5B	TRG					1.0000E+00	1.0000E+00				
05	CD-2A	TRG					1.0000E+00	1.0000E+00				
06	CD-2B	TRG					1.0000E+00	1.0000E+00				
07	CD-3A	TRG					1.0000E+00	1.0000E+00				
08	CD-1B	TRG					1.0000E+00	1.0000E+00				
09	CD-1A	TRG					1.0000E+00	1.0000E+00				
10	CD-1C	TRG					1.0000E+00	1.0000E+00				
11	CD-4A	TRG					1.0000E+00	1.0000E+00				
12	CD-4B	TRG					1.0000E+00	1.0000E+00				
13	CD-5A	DO					1.0000E+00	1.0000E+00				

Comments	

0056

Technician: JHarvey Date: 3/30/22

BP/Castex-Ltd Adm-Apx E-000639

Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Printed: 4/5/2022 9:10 AM

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
22-03099	1	Ra226			MDAVIS

TRetec Fraction	ERM Client ID	Sample Type	Carrier Data	Filter Data			Gravimetric
			Carrier Added (ml)	Filter Tare (g)	Filter Final (g)	Filter Net (g)	% Recovery
01	LCS	LCS		0.0200	0.0269	**0.0069**	
02	BLANK	MBL		0.0199	0.0264	**0.0065**	
03	DUP	DUP		0.0198	0.0241	**0.0043**	
04	CD-5B	TRG		0.0198	0.0329	**0.0131**	
05	CD-2A	TRG		0.0200	0.0346	**0.0146**	
06	CD-2B	TRG		0.0201	0.0292	**0.0091**	
07	CD-3A	TRG		0.0205	0.0293	**0.0088**	
08	CD-1B	TRG		0.0200	0.0243	**0.0043**	
09	CD-1A	TRG		0.0204	0.0261	**0.0057**	
10	CD-1C	TRG		0.0200	0.0236	**0.0036**	
11	CD-4A	TRG		0.0200	0.0230	**0.0030**	
12	CD-4B	TRG		0.0201	0.0239	**0.0038**	
13	CD-5A	DO		0.0199	0.0235	**0.0036**	

Technician: Megan Davis Date: 4/5/22

BP/Castex-Ltd Adm-Apx E-000640

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_035
Chamber Serial Number: 04026477A
Detector Serial Number: 58771
Env. Background: System Bkgd 317519
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.470E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 4/5/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:06 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1247 +/- 0.0023 on 5/21/2021 9:18:11 AM
Effective Efficiency: 0.1247 +/- 0.0023

Control Certificate Name: Ra226_Ra-5b
Chem. Recov. of Control: RA-226 0.454225 +/- 0.035068
Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

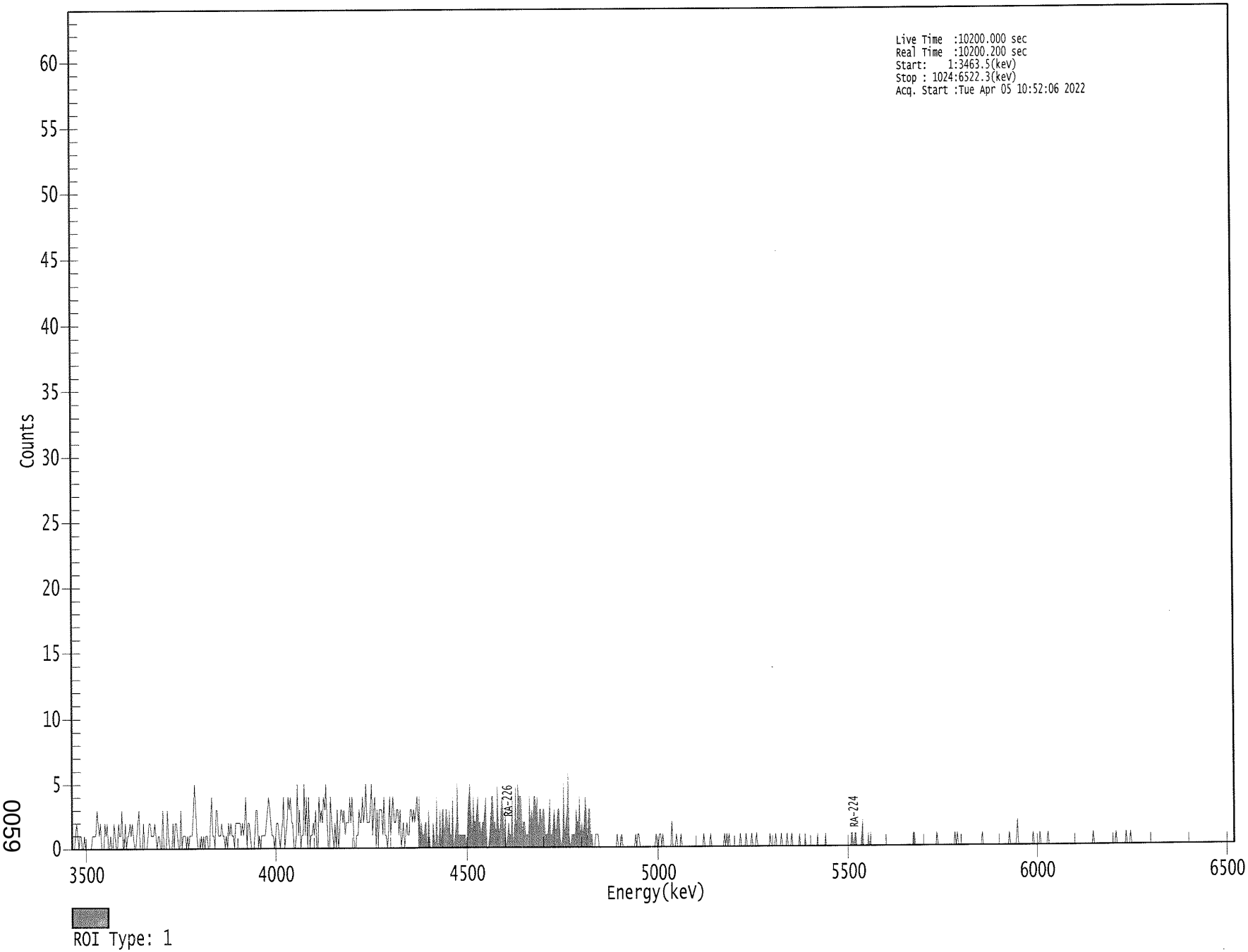
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.517	13.98	54.61	1.02	0.00E+000	4.5
RA-226	4.679	213.00	13.46	0.00	0.00E+000	4.8

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.963	5685.50*	7.71E-001 +/- 4.22E-001	3.48E-001 +/- 1.26E-002
RA-226	0.985	4785.00*	1.12E+001 +/- 1.56E+000	3.15E-001 +/- 1.14E-002

AG
4/5/22

0000311043.CNF



0059

BP/Castex-Ltd Adm-Apx E-000642

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 01

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	1	2	1	0	1
9:	1	0	0	1	0	0	0	0
17:	0	0	1	1	1	1	3	2
25:	1	2	0	0	0	2	1	2
33:	0	0	1	0	0	2	1	0
41:	0	2	1	1	3	0	0	2
49:	0	1	1	2	1	2	1	0
57:	0	1	2	3	0	0	0	2
65:	0	0	0	1	2	2	1	1
73:	1	2	1	0	1	1	0	0
81:	3	0	0	0	3	1	0	0
89:	0	2	0	2	2	1	0	0
97:	3	0	1	1	1	0	1	0
105:	1	1	1	3	5	3	1	0
113:	0	0	1	0	1	0	1	1
121:	0	0	2	4	1	1	0	3
129:	3	1	1	1	2	1	1	0
137:	1	0	2	1	2	1	1	0
145:	2	2	2	2	2	1	2	1
153:	2	4	0	2	2	1	0	0
161:	0	1	3	3	0	1	0	1
169:	1	1	1	2	3	4	3	2
177:	1	1	0	1	2	2	1	0
185:	1	2	4	0	1	2	4	3
193:	4	2	2	0	0	1	5	1
201:	3	0	1	1	5	1	4	0
209:	4	0	1	1	2	1	3	0
217:	0	4	2	3	2	4	3	5
225:	2	0	0	4	2	1	0	2
233:	0	3	0	1	3	3	2	3
241:	1	2	2	2	4	2	4	2
249:	0	0	1	1	3	2	2	4
257:	2	3	5	2	2	2	3	5
265:	1	3	4	0	3	0	3	3
273:	3	1	4	1	1	0	1	4
281:	1	3	4	2	2	3	3	1
289:	3	0	1	2	0	1	2	1
297:	1	3	3	2	3	2	3	4
305:	2	4	1	2	1	1	2	2
313:	0	3	1	0	0	2	1	0
321:	4	0	1	3	0	3	3	1
329:	3	3	1	3	1	1	4	0
337:	1	2	5	1	1	1	1	1
345:	1	1	0	3	4	5	3	1
353:	4	2	2	3	4	2	2	1
361:	2	2	3	4	0	0	1	2

BP/Castex-Ltd Adm-Apx E-000643

369:	4	4	2	2	1	5	2	1

Sample Title: 01

Channel								
377:	3	4	3	1	3	0	1	2
385:	1	1	4	0	2	5	1	5
393:	4	4	4	1	2	2	1	1
401:	1	4	2	3	2	4	4	3
409:	4	1	3	3	2	3	3	1
417:	1	1	2	4	1	1	2	3
425:	1	2	3	3	1	0	1	5
433:	1	2	3	6	1	0	1	1
441:	1	1	3	2	2	4	1	2
449:	1	2	4	3	0	3	3	1
457:	1	0	0	1	1	1	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	1	0
481:	0	0	1	0	0	0	0	0
489:	0	0	0	0	0	0	1	0
497:	1	1	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	1	0	0	1	1	0	1	0
521:	0	0	0	0	0	0	2	0
529:	0	0	1	0	0	0	1	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	1	0	0	0	0	0
561:	1	0	0	0	0	0	0	0
569:	0	0	0	0	1	0	1	0
577:	1	0	0	0	0	0	0	0
585:	0	0	1	0	0	0	0	1
593:	0	0	0	0	1	0	0	0
601:	1	0	0	0	0	0	0	0
609:	0	0	0	0	1	0	0	0
617:	0	1	0	0	0	0	1	0
625:	0	0	0	1	0	0	0	1
633:	0	0	0	0	0	0	1	0
641:	0	0	0	1	0	0	0	0
649:	0	0	0	0	0	0	1	0
657:	0	0	0	0	0	1	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	1	1	0	1
689:	1	0	0	0	0	1	2	0
697:	0	0	0	1	0	1	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	1	1	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	1	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	1	0	1	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000644

801:	1	0	0	0	0	0	0	0

Sample Title: 01

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	1	0	0	0	0	0	0	2
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	1	0	0
849:	0	0	0	1	0	0	0	0
857:	0	0	1	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	1	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	1	0
921:	0	0	0	0	0	0	0	1
929:	0	0	0	1	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

KP
4/5/22

Apex-Alpha™

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_037
Chamber Serial Number: 04026478A
Detector Serial Number: 91133
Env. Background: System Bkgd 317520
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.340E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 4/5/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:08 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9877 +/- 0.0000
Counting Efficiency: 0.1487 +/- 0.0027 on 5/21/2021 9:18:07 AM
Effective Efficiency: 0.1468 +/- 0.0026

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.560	1.32	215.97	0.68	0.00E+000	3.0
RA-226	4.576	-0.36	604.11	1.36	0.00E+000	3.0

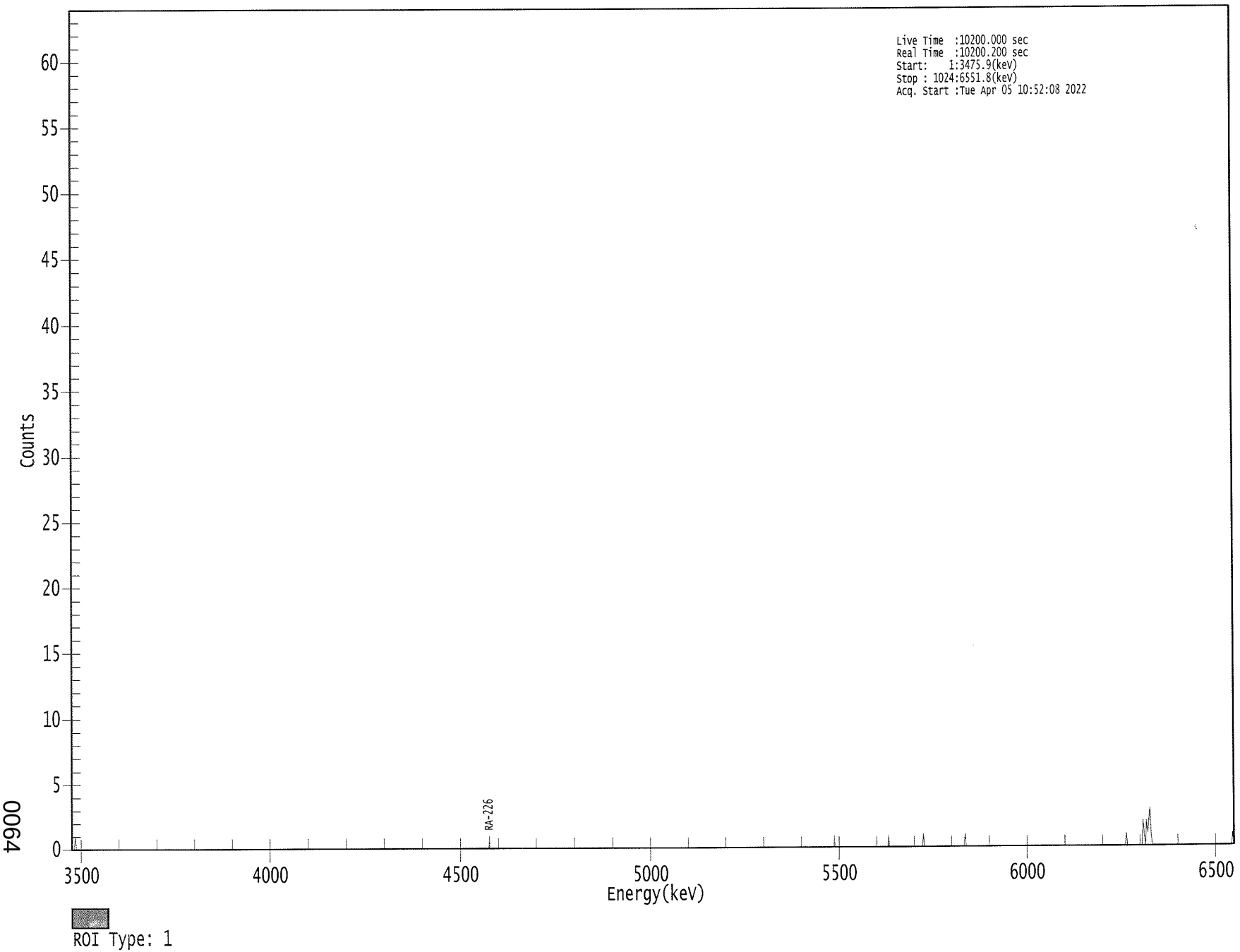
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.980	5685.50*	5.86E-002 +/- 1.27E-001	2.50E-001 +/- 8.83E-003
RA-226	0.945	4785.00*	-1.52E-002 +/- 9.18E-002	2.90E-001 +/- 1.02E-002

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000646

0000311044.CNF



0064

BP/Castex-Ltd Adm-Apx E-000647

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 02

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	1	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	1	0

BP/Castex-Ltd Adm-Apx E-000648

369:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	1	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	1	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	1	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	1	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000649

801:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	1
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	2	1
945:	0	2	1	2	3	1	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	1	0	0

KP
4/5/22

Apex-Alpha™

Sample Description: CD-5A DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_038
Chamber Serial Number: 04026478B
Detector Serial Number: 91134
Env. Background: System Bkgd 317521
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.310E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 3/21/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:09 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9631 +/- 0.0000
Counting Efficiency: 0.1457 +/- 0.0026 on 5/21/2021 9:18:06 AM
Effective Efficiency: 0.1404 +/- 0.0025

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.486	7.32	76.28	0.68	0.00E+000	3.0
RA-226	4.594	42.66	30.15	0.34	0.00E+000	6.0

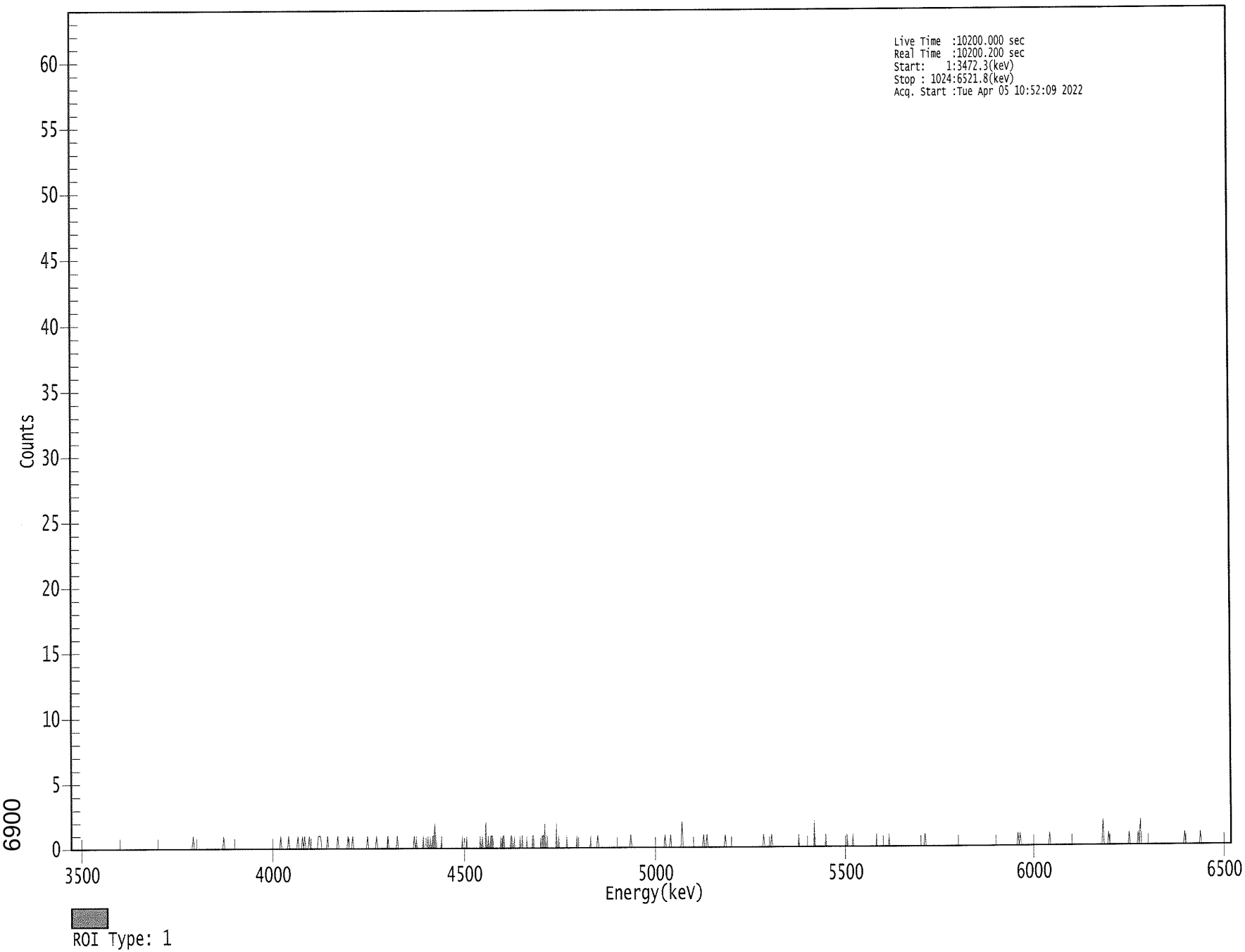
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.949	5685.50*	1.91E-001 +/- 1.46E-001	1.47E-001 +/- 5.21E-003
RA-226	0.953	4785.00*	1.05E+000 +/- 3.20E-001	1.18E-001 +/- 4.17E-003

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000651

0000311045.CNF



BP/Castex-Ltd Adm-Apx E-000652

0000

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 03

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	1	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	1	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	1	0	0	0	0	0	0	1
193:	0	0	0	0	0	0	0	1
201:	0	0	0	1	0	1	0	0
209:	0	1	0	0	0	0	0	0
217:	0	1	1	1	0	0	0	0
225:	0	1	0	0	0	0	0	0
233:	0	0	1	0	0	0	0	0
241:	0	0	0	1	0	0	0	1
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	1	0	0	0
265:	0	0	0	0	1	0	0	0
273:	0	0	0	0	0	0	1	0
281:	0	0	0	0	0	0	1	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	1	0	1
305:	0	0	0	0	0	1	0	0
313:	0	1	0	1	0	1	1	2
321:	1	0	0	0	0	1	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	1
345:	0	0	0	1	0	0	0	0
353:	0	0	0	0	0	0	0	1
361:	0	1	0	0	2	0	1	0

BP/Castex-Ltd Adm-Apx E-000653

369:	1	1	1	0	0	0	0	0

Sample Title: 03

Channel								
377:	0	1	0	1	1	0	0	0
385:	0	0	1	1	0	1	0	0
393:	0	0	1	0	1	0	0	0
401:	1	0	0	0	0	1	1	0
409:	0	0	0	0	0	1	1	1
417:	2	0	1	0	0	0	0	0
425:	0	0	2	0	1	0	0	0
433:	0	0	0	1	0	0	0	0
441:	0	0	0	0	1	0	0	0
449:	0	0	0	0	0	0	0	0
457:	1	0	0	0	0	0	1	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	1	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	1	0	0	0	0	1	0
529:	0	0	0	0	0	0	0	0
537:	2	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	1	0	0	1	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	1	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	1	0	0	0	0	0	0	1
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	1
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	2	0	0
657:	0	0	0	0	0	0	0	1
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	1	0	0	0	0	1
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	1	0	0	0
713:	0	0	0	0	0	0	0	1
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	1
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000654

801:	0	0	0	0	0	0	0	0

Sample Title: 03

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	1	0	1	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	1	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	2	0	0
913:	0	0	1	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	1	0	0	0
937:	0	0	0	0	1	0	2	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	1	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	1	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000655

KP
4/5/22

Apex-Alpha™

Sample Description: CD-5B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_039
Chamber Serial Number: 06027396A
Detector Serial Number: 83109
Env. Background: System Bkgd 317522
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 3.000E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 3/23/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:11 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.5404 +/- 0.0000
Counting Efficiency: 0.1562 +/- 0.0028 on 5/21/2021 9:18:04 AM
Effective Efficiency: 0.0844 +/- 0.0015

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.564	4.81	101.48	1.19	0.00E+000	3.0
RA-226	4.614	49.96	28.38	2.04	0.00E+000	3.0

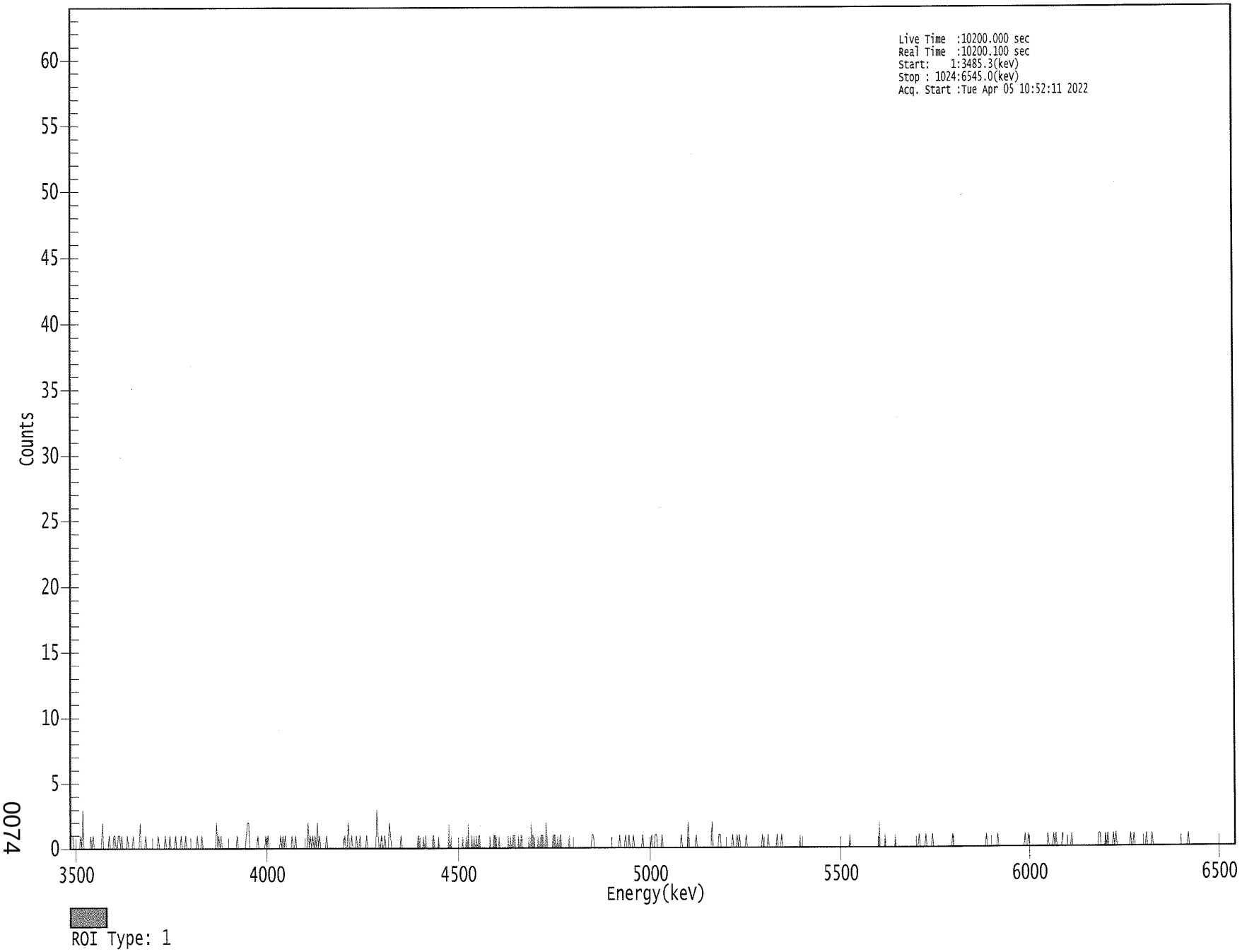
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.981	5685.50*	4.78E-001 +/- 4.86E-001	6.55E-001 +/- 2.29E-002
RA-226	0.962	4785.00*	4.70E+000 +/- 1.35E+000	7.33E-001 +/- 2.57E-002

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000656

0000311046.CNF



0074

BP/Castex-Ltd Adm-Apx E-000657

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 04

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	2	1	1	0	0	0	0	0
9:	0	1	0	3	0	0	0	0
17:	0	0	1	0	1	0	0	0
25:	0	0	0	0	2	0	0	0
33:	0	0	1	0	0	0	1	1
41:	0	0	1	1	0	1	0	0
49:	0	0	1	0	0	0	0	1
57:	0	0	0	0	0	2	0	0
65:	0	0	1	0	0	0	0	0
73:	0	0	0	0	0	1	0	0
81:	0	0	0	1	0	0	0	1
89:	0	0	0	0	1	0	0	0
97:	0	1	0	0	0	1	0	0
105:	0	0	0	0	0	0	0	1
113:	0	0	0	1	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	2	0	1	0	1	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	1	0	0	0	0	0
153:	0	0	1	2	2	0	0	0
161:	0	0	0	0	1	0	0	0
169:	0	0	0	1	0	1	0	0
177:	0	0	0	0	0	0	0	0
185:	1	0	1	0	1	0	0	0
193:	0	0	1	0	0	1	0	0
201:	0	0	0	0	0	0	0	0
209:	2	0	1	0	1	0	1	0
217:	2	0	1	0	0	0	0	0
225:	1	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	1	0	0	2	0	0	1	0
249:	0	0	1	0	0	1	0	0
257:	0	0	0	1	0	0	0	0
265:	0	0	0	0	3	1	0	0
273:	1	0	0	1	0	0	0	2
281:	1	0	0	0	0	0	0	0
289:	0	1	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	1	1	0	0	0	1	0	1
313:	0	0	0	0	0	1	1	0
321:	0	0	1	0	0	0	0	0
329:	0	0	0	2	0	1	0	0
337:	0	0	0	0	0	0	0	1
345:	0	0	1	0	2	0	0	1
353:	0	1	0	1	0	1	1	0
361:	0	0	0	0	0	0	0	1

BP/Castex-Ltd Adm-Apx E-000658

369:	0	0	1	1	1	0	0	1

Sample Title: 04

Channel								
377:	0	0	0	0	0	0	0	1
385:	0	1	0	1	1	1	0	0
393:	1	0	1	1	0	0	0	0
401:	0	1	0	2	1	1	0	0
409:	0	1	0	1	1	1	1	0
417:	2	1	0	0	0	0	1	1
425:	1	0	1	0	1	1	0	0
433:	0	0	0	0	1	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	1	1	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	1	0	0	0	0	1	0	0
489:	1	0	0	0	1	0	0	0
497:	0	0	0	0	1	0	0	0
505:	0	0	0	0	1	0	0	1
513:	1	0	0	0	0	1	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	1	0
537:	0	0	0	0	2	0	0	0
545:	0	0	0	1	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	2	0	0	0	0	0	1
569:	1	0	0	0	0	0	0	0
577:	0	0	0	1	0	0	0	1
585:	0	1	0	0	0	0	0	1
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	1	0	0
609:	0	0	1	0	0	0	0	0
617:	0	0	1	0	0	0	1	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	1	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	1	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	2	0	0	0
713:	0	1	0	0	0	0	0	0
721:	0	0	1	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	1
745:	0	0	0	0	0	1	0	0
753:	0	0	0	1	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	1	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000659

801:	0	0	0	1	0	0	0	0

Sample Title: 04

Channel								
809:	0	0	0	0	0	1	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	1	0	0
841:	1	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	1	0	0	0	0	1	0
865:	1	0	0	0	0	0	1	0
873:	0	0	0	0	0	0	1	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	1	1
905:	0	0	0	0	1	0	1	0
913:	0	0	0	1	0	1	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	1	0	0	1	0	0
937:	0	0	0	0	0	0	0	0
945:	1	0	0	0	0	1	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	1	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000660

KP
4/5/22

Apex-Alpha™

Sample Description: CD-2A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_040
Chamber Serial Number: 06027396B
Detector Serial Number: 91135
Env. Background: System Bkgd 317523
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 3.000E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 3/17/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:14 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.7540 +/- 0.0000
Counting Efficiency: 0.1514 +/- 0.0027 on 11/30/2021 2:02:37 PM
Effective Efficiency: 0.1141 +/- 0.0020

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.493	6.83	76.08	0.17	0.00E+000	3.0
RA-226	4.611	37.64	32.62	1.36	0.00E+000	4.5

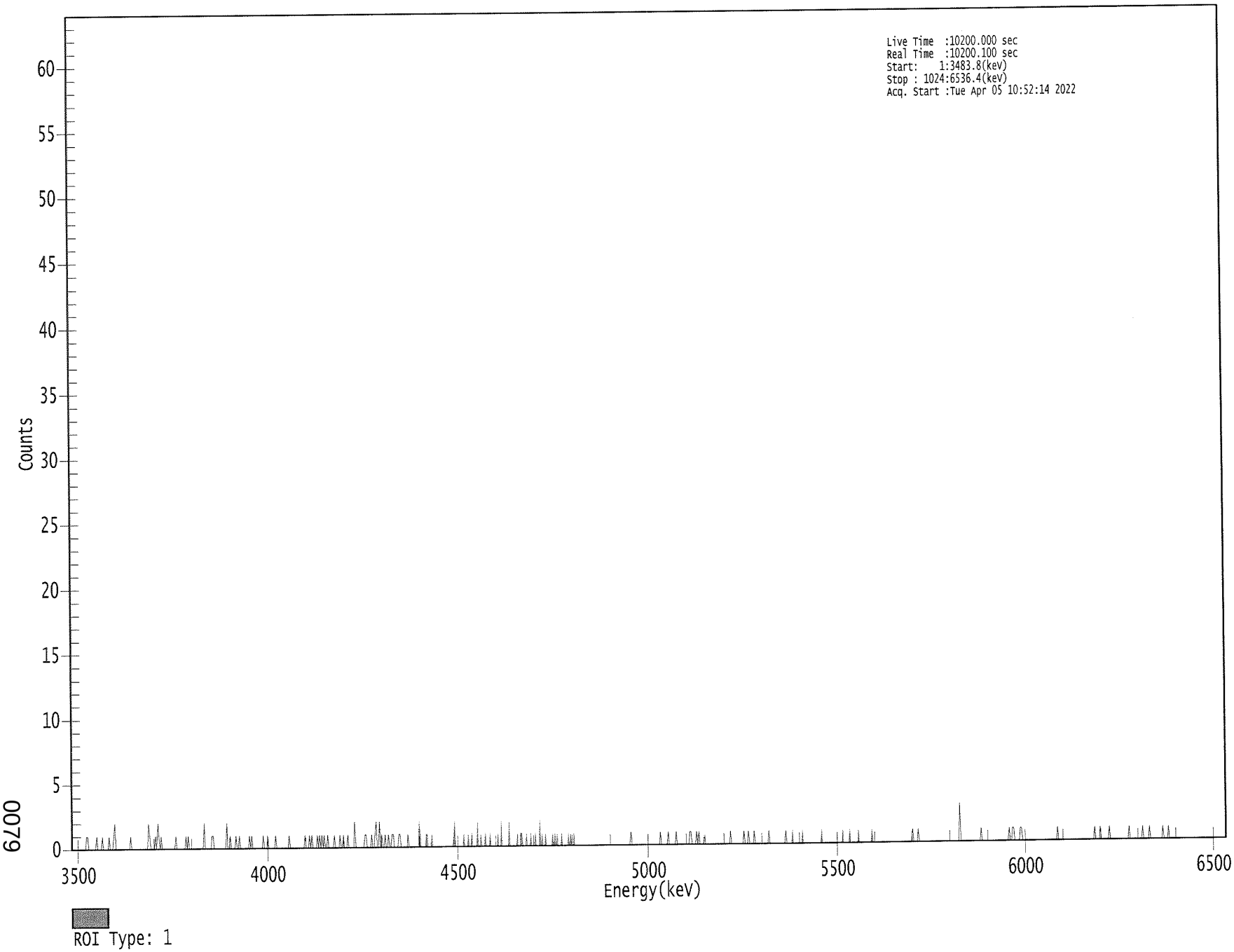
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.953	5685.50*	5.03E-001 +/- 3.83E-001	3.08E-001 +/- 1.08E-002
RA-226	0.961	4785.00*	2.62E+000 +/- 8.60E-001	4.78E-001 +/- 1.68E-002

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000661

0000311047.CNF



0076

BP/Castex-Ltd Adm-Apx E-000662

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 05

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	1	1	0
17:	0	0	0	0	0	0	1	0
25:	0	0	0	1	0	0	0	0
33:	0	1	0	0	0	1	2	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	1	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	2	1	0	0
73:	0	0	1	0	2	1	0	1
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	1	0	0	0
97:	0	0	0	0	0	1	0	1
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	2	0	0
121:	0	0	0	0	1	1	0	0
129:	0	0	0	0	0	0	0	0
137:	0	2	0	0	1	0	0	0
145:	0	1	0	0	1	0	0	0
153:	0	0	0	0	0	1	0	1
161:	0	0	0	0	0	0	0	0
169:	0	1	0	0	0	1	0	0
177:	0	0	0	0	1	0	0	0
185:	0	0	0	0	0	0	0	0
193:	1	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	1	0
209:	0	0	1	0	1	0	0	0
217:	0	1	0	1	0	1	0	1
225:	0	0	1	0	0	0	0	0
233:	1	0	0	0	0	1	0	0
241:	1	0	0	0	1	0	0	0
249:	0	0	2	0	0	0	0	0
257:	0	0	0	1	1	0	0	0
265:	0	1	0	0	1	2	0	0
273:	2	0	1	0	0	1	0	0
281:	1	0	0	1	1	0	0	0
289:	0	1	1	0	0	0	0	0
297:	0	1	0	0	0	0	0	0
305:	0	0	0	2	1	0	0	0
313:	0	1	1	0	0	0	1	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	1	2	0	0	0	0	0
345:	0	0	1	0	0	0	1	0
353:	0	1	0	0	0	0	2	0
361:	0	1	0	0	0	1	0	0

BP/Castex-Ltd Adm-Apx E-000663

369:	0	1	0	0	0	0	0	0

Sample Title: 05

Channel								
377:	1	0	0	2	0	0	0	0
385:	0	0	2	0	0	0	0	0
393:	0	1	0	0	1	1	0	0
401:	0	1	0	0	0	1	0	0
409:	0	1	0	0	0	2	0	1
417:	0	0	1	0	0	0	0	0
425:	1	0	1	0	1	0	0	0
433:	1	0	0	0	0	0	1	0
441:	1	0	0	1	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	1	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	1
521:	0	0	0	0	0	0	1	0
529:	0	0	0	0	0	1	0	0
537:	0	0	0	0	0	0	0	0
545:	0	1	1	0	0	0	0	1
553:	0	1	0	0	0	0	1	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	1	0	0
585:	0	0	0	0	0	0	0	0
593:	0	1	0	0	0	1	0	0
601:	0	0	1	0	0	0	0	0
609:	0	0	0	0	0	0	0	1
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	1	0
633:	0	0	0	0	1	0	0	0
641:	0	0	0	0	0	1	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	1	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	1	0	0	0	0	0	1
689:	0	0	0	0	0	0	0	1
697:	0	0	0	0	0	0	0	0
705:	0	0	0	1	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	1
745:	0	0	0	0	1	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	3	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000664

801:	0	0	0	0	1	0	0	0

Sample Title: 05

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	1	0	0
833:	1	1	0	0	0	0	0	1
841:	1	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	1	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	1	0	0	0	0	1	0
913:	0	0	0	0	0	0	1	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	1	0	0	0	0	0	0	0
945:	0	0	0	0	1	0	0	0
953:	0	0	1	0	0	0	0	0
961:	0	0	0	0	0	0	1	0
969:	0	0	0	1	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000665

LP 4/5/22

Apex-Alpha™

Sample Description: CD-2B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_041
Chamber Serial Number: 05026930A
Detector Serial Number: 91087
Env. Background: System Bkgd 317524
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 3.000E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 3/17/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:17 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9192 +/- 0.0000
Counting Efficiency: 0.1753 +/- 0.0031 on 5/21/2021 9:18:01 AM
Effective Efficiency: 0.1611 +/- 0.0028

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.508	19.66	44.65	0.34	0.00E+000	3.0
RA-226	4.599	79.47	22.23	1.53	0.00E+000	3.0

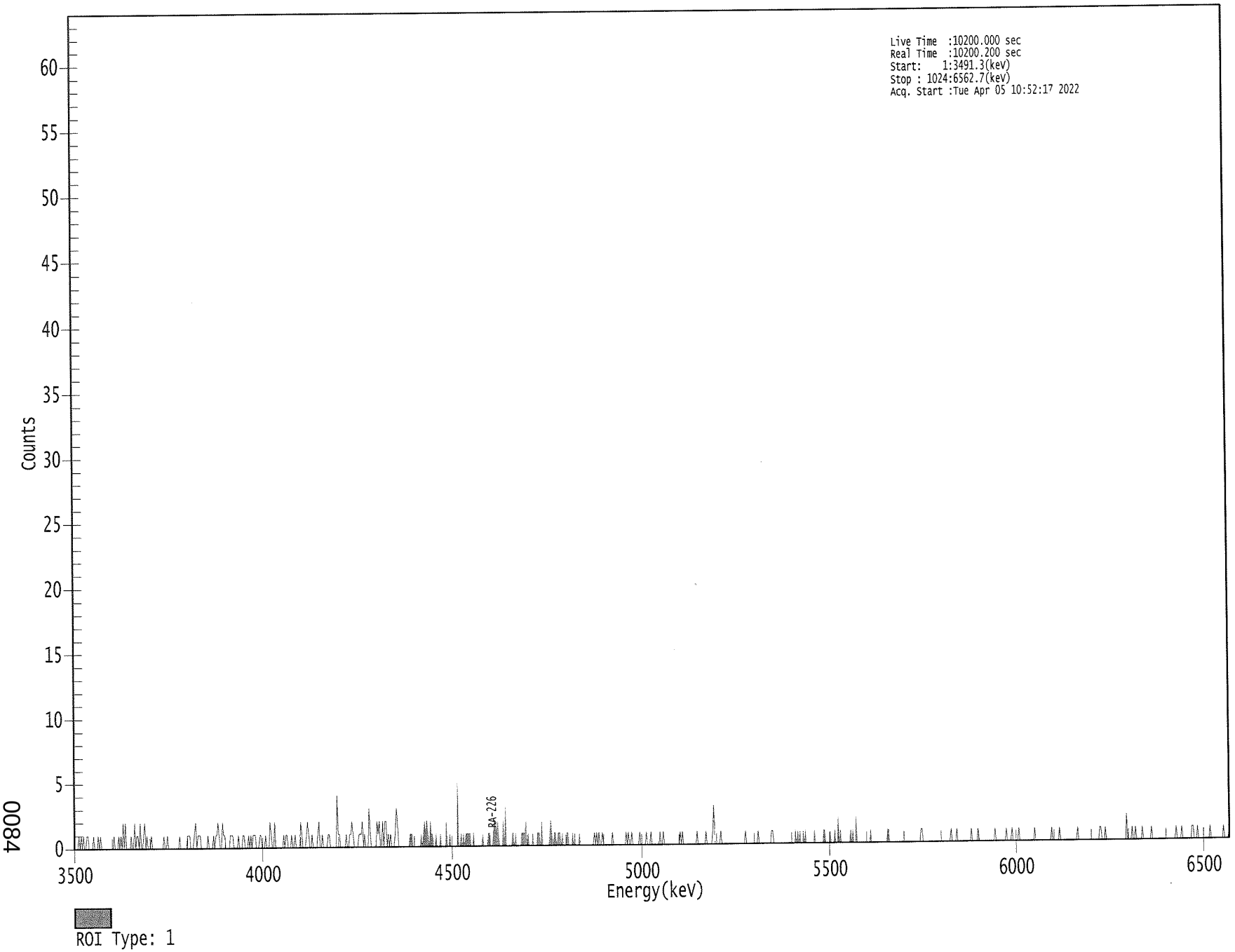
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.960	5685.50*	1.03E+000 +/- 4.60E-001	2.50E-001 +/- 8.59E-003
RA-226	0.956	4785.00*	3.92E+000 +/- 8.82E-001	3.51E-001 +/- 1.20E-002

AG 4/5/22

BP/Castex-Ltd Adm-Apx E-000666

0000311048.CNF



0084

BP/Castex-Ltd Adm-Apx E-000667

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 06

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	1	0	1	0
9:	1	0	0	1	1	0	0	0
17:	0	1	0	0	0	1	0	1
25:	0	0	0	0	0	0	0	0
33:	0	0	0	1	0	0	0	1
41:	0	1	0	2	0	2	0	0
49:	0	0	1	0	0	2	0	1
57:	1	0	2	0	0	1	2	0
65:	1	0	0	0	1	0	0	0
73:	0	0	0	0	0	0	0	1
81:	0	0	1	0	0	0	0	0
89:	0	0	0	0	0	1	0	0
97:	0	0	0	0	1	1	1	0
105:	0	0	1	2	0	1	1	1
113:	0	0	0	0	0	0	1	0
121:	0	0	0	1	0	1	1	2
129:	1	0	0	2	1	1	0	0
137:	0	0	1	1	1	0	0	0
145:	0	1	0	0	0	1	1	0
153:	0	0	1	0	1	0	1	1
161:	1	0	0	0	1	1	0	0
169:	0	1	0	0	0	2	1	0
177:	0	2	0	0	0	0	0	0
185:	0	1	0	1	1	0	0	0
193:	1	0	0	1	0	0	0	0
201:	2	1	0	0	0	1	2	1
209:	0	0	1	0	0	0	0	1
217:	2	0	0	1	0	0	0	0
225:	1	1	0	0	0	0	0	0
233:	4	1	1	0	0	0	0	0
241:	1	0	0	1	1	2	1	0
249:	0	0	0	1	1	1	2	0
257:	1	0	0	0	3	1	0	0
265:	0	0	0	2	1	2	0	0
273:	2	0	2	2	0	1	0	1
281:	0	0	0	1	3	2	0	0
289:	0	0	0	0	0	0	0	0
297:	1	1	1	0	0	0	0	0
305:	0	0	1	0	1	2	1	2
313:	1	0	2	1	1	0	0	1
321:	0	0	0	1	0	0	0	0
329:	2	0	0	1	0	0	0	0
337:	0	0	5	0	0	1	0	1
345:	0	1	1	1	1	1	0	0
353:	1	0	0	0	0	0	0	0
361:	1	0	0	0	0	1	1	0

BP/Castex-Ltd Adm-Apx E-000668

369:	0	1	2	2	1	2	1	0

Sample Title: 06

Channel								
377:	0	0	2	0	3	0	0	0
385:	0	0	1	1	0	1	0	0
393:	0	0	1	1	1	1	2	0
401:	1	0	0	0	1	0	0	0
409:	1	1	1	0	2	0	0	0
417:	0	0	0	1	2	1	0	1
425:	1	0	1	1	1	0	1	0
433:	0	0	1	1	0	0	0	1
441:	0	1	0	0	0	1	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	1	0	1	0	1	0
465:	0	1	0	0	0	0	0	0
473:	0	0	1	0	0	0	0	0
481:	0	0	0	0	0	0	1	0
489:	1	0	0	1	0	0	0	0
497:	0	0	1	0	0	0	0	0
505:	1	0	0	0	1	0	0	0
513:	0	0	0	0	1	0	0	1
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	1	0
537:	1	0	0	0	0	0	0	0
545:	0	0	0	0	0	1	0	0
553:	0	0	0	0	0	1	0	0
561:	0	0	0	1	3	0	0	0
569:	0	0	1	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	1	0	0	0	0	0	0	0
601:	0	0	0	1	0	0	0	0
609:	0	0	0	0	0	0	0	1
617:	1	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	1	0	1	0
641:	1	0	0	1	0	1	0	0
649:	0	0	0	0	0	1	0	0
657:	0	0	0	0	0	1	1	0
665:	0	0	0	1	0	0	0	1
673:	0	0	2	0	1	0	0	0
681:	0	0	0	0	0	1	0	1
689:	0	0	2	0	0	0	0	0
697:	0	0	0	0	0	0	0	1
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	1	1
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	1	1	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	1
777:	0	0	0	0	1	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	1	0	0	0	0	0	1

BP/Castex-Ltd Adm-Apx E-000669

801:	0	0	0	0	0	0	0	0

Sample Title: 06

Channel								
809:	0	0	0	0	0	0	1	0
817:	0	0	0	0	0	0	0	0
825:	1	0	0	0	0	1	0	0
833:	0	0	0	1	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	1	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	1	0	0	0	0	0	0	1
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	1
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	1	1	0	0	0
913:	1	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	2	0	0	0	0
937:	1	0	0	1	0	0	0	0
945:	0	1	0	0	0	0	0	0
953:	0	1	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	1
977:	0	0	0	0	1	0	0	0
985:	0	0	0	0	0	1	1	0
993:	0	0	1	0	0	0	0	0
1001:	0	0	0	0	0	1	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	1	0	0	0	0	1	0

BP/Castex-Ltd Adm-Apx E-000670

KP
4/5/22

Apex-Alpha™

Sample Description: CD-3A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 07
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_044
Chamber Serial Number: 04026481B
Detector Serial Number: 84168
Env. Background: System Bkgd 317526
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.960E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 3/17/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:19 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.6496 +/- 0.0000
Counting Efficiency: 0.1589 +/- 0.0028 on 11/30/2021 2:02:39 PM
Effective Efficiency: 0.1032 +/- 0.0018

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.579	8.15	72.72	0.85	0.00E+000	3.0
RA-226	4.588	46.30	29.42	1.70	0.00E+000	3.0

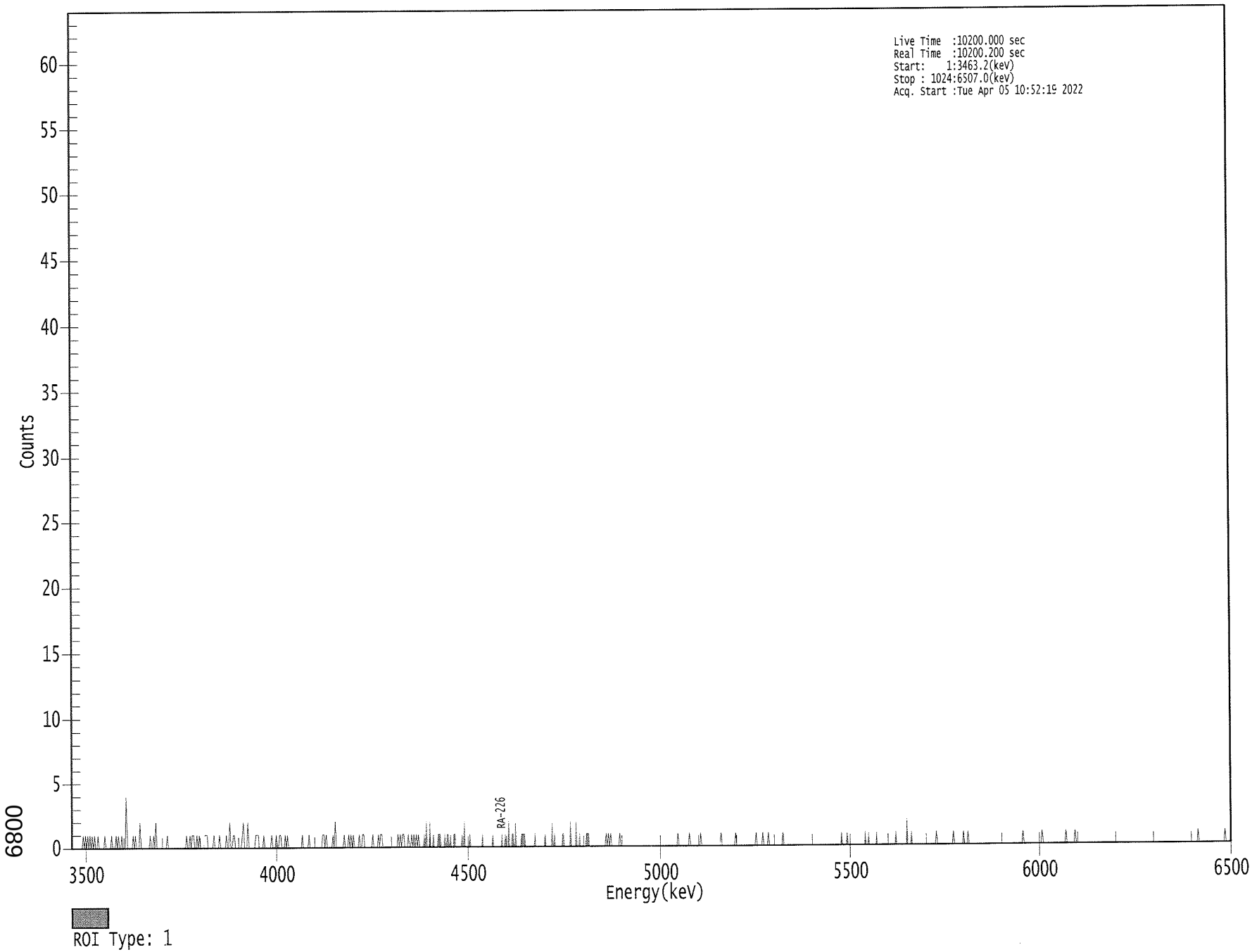
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.985	5685.50*	6.55E-001 +/- 4.77E-001	4.81E-001 +/- 1.69E-002
RA-226	0.951	4785.00*	3.52E+000 +/- 1.04E+000	5.58E-001 +/- 1.95E-002

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000671

0000311041.CNF



6800

BP/Castex-Ltd Adm-Apx E-000672

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 07

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	1	0	1	0	1	0
17:	1	0	1	0	1	0	0	1
25:	0	0	0	0	0	1	0	0
33:	0	0	0	1	0	0	0	1
41:	0	1	0	0	1	0	0	0
49:	4	0	0	0	0	0	1	0
57:	1	0	0	0	2	0	0	0
65:	0	0	0	0	0	1	0	0
73:	1	0	2	0	0	0	0	0
81:	0	0	0	0	1	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	1	0	0
105:	1	0	1	1	0	0	1	0
113:	1	0	0	0	0	1	1	1
121:	0	0	0	0	0	1	0	0
129:	0	0	1	0	0	0	0	0
137:	1	0	0	2	0	0	1	1
145:	0	0	0	0	0	0	1	2
153:	0	0	0	2	0	0	0	0
161:	0	0	1	1	1	0	0	0
169:	0	1	0	0	0	0	0	0
177:	1	0	0	0	1	0	0	1
185:	1	0	0	0	1	0	1	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	1	0	0	0	0
209:	0	1	0	0	0	0	0	0
217:	0	0	0	0	0	1	1	0
225:	1	0	0	0	0	0	1	0
233:	2	0	0	0	0	0	0	0
241:	1	0	0	0	1	0	1	0
249:	1	0	0	0	0	1	0	0
257:	1	1	0	0	0	0	0	0
265:	0	1	0	0	0	0	1	0
273:	1	1	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	1
289:	0	1	0	1	1	0	0	0
297:	1	0	0	1	0	1	0	1
305:	0	1	0	0	0	0	1	0
313:	2	0	0	2	0	0	1	0
321:	0	0	1	1	1	0	0	0
329:	1	0	1	1	0	1	0	0
337:	1	1	0	0	0	0	0	1
345:	0	2	0	0	0	0	1	0
353:	0	0	0	0	0	0	0	0
361:	0	1	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000673

369:	0	0	1	0	0	0	0	0

Sample Title: 07

Channel								
377:	0	0	1	0	0	1	0	0
385:	2	0	0	1	1	0	2	0
393:	0	0	0	1	1	1	1	0
401:	0	0	0	0	0	0	0	1
409:	0	0	0	0	0	0	0	0
417:	1	0	0	0	0	0	2	0
425:	1	0	0	0	0	0	0	1
433:	1	0	0	0	0	0	2	0
441:	0	0	0	2	0	0	1	0
449:	0	0	0	0	1	1	1	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	1	0	1
473:	0	1	0	0	0	0	0	0
481:	0	1	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	1	0	0	0
537:	0	0	0	0	0	0	1	0
545:	0	0	0	0	0	0	0	0
553:	1	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	1	0	0	0	0	0
577:	0	0	0	0	0	0	0	1
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	1	0	0	0	0	0	1
609:	0	0	0	0	1	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	1	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	1	0	0
681:	0	0	1	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	1	0	0	1	0	0
705:	0	0	0	0	1	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	1	0	0
729:	0	0	0	0	0	0	0	2
737:	0	0	0	1	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	1	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	1	0	0	0	0	0	0	0
785:	0	1	0	0	0	1	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000674

801:	0	0	0	0	0	0	0	0

Sample Title: 07

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	1	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	1
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	1	0	0	0
881:	0	0	0	0	1	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	1	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	1	0	0	0	0	0	0

KP
4/5/22

Apex-Alpha™

Sample Description: CD-1B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 08
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_045
Chamber Serial Number: 04026482A
Detector Serial Number: 91131
Env. Background: System Bkgd 317527
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.310E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 3/18/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:22 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1642 +/- 0.0029 on 5/21/2021 9:18:20 AM
Effective Efficiency: 0.1642 +/- 0.0029

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.390	1.32	215.97	0.68	0.00E+000	3.0
RA-226	4.597	14.81	53.27	1.19	0.00E+000	3.0

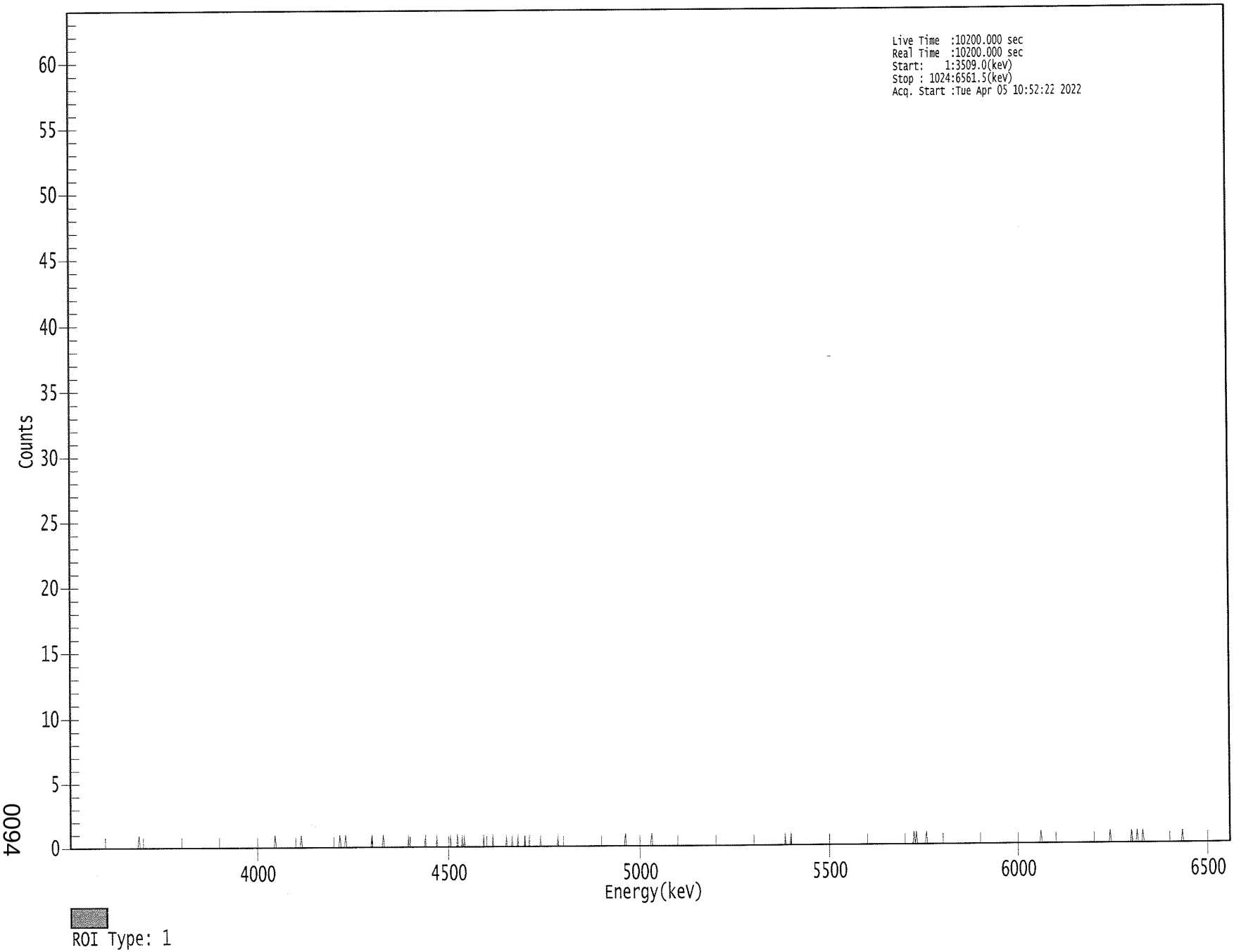
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.892	5685.50*	2.95E-002 +/- 6.38E-002	1.26E-001 +/- 4.40E-003
RA-226	0.955	4785.00*	3.13E-001 +/- 1.67E-001	1.39E-001 +/- 4.85E-003

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000676

0000311049.CNF



0094

BP/Castex-Ltd Adm-Apx E-000677

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 08

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	1	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	1	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	1	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	1	0	0
241:	0	0	1	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	1	0	0	0	0	0	0
273:	0	0	0	1	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	1	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	1	0	0	0	0	0	0	0
321:	0	0	1	0	0	0	0	0
329:	0	0	0	0	0	0	1	0
337:	0	0	0	0	1	0	0	0
345:	1	0	1	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	1	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000678

369:	0	0	0	1	0	0	0	0

Sample Title: 08

Channel								
377:	0	0	0	0	0	0	0	1
385:	0	0	0	0	1	0	0	0
393:	0	1	0	0	0	0	0	1
401:	0	0	0	1	0	0	0	0
409:	0	0	0	0	0	1	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	1	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	1
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	1	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	1	0	0	0
633:	0	1	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	1	0
745:	1	0	0	0	0	0	0	0
753:	0	1	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000679

801:	0	0	0	0	0	0	0	0

Sample Title: 08

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	1
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	1	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	1
937:	0	0	0	0	1	0	0	0
945:	0	1	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	1	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

Sample Description: CD-1A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 09
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_046
Chamber Serial Number: 04026482B
Detector Serial Number: 58762
Env. Background: System Bkgd 317528
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.040E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 3/18/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:25 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Estimated @ 100% per Mem

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1557 +/- 0.0028 on 5/21/2021 9:18:19 AM
Effective Efficiency: 0.1557 +/- 0.0028

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.530	-0.51	400.63	0.51	0.00E+000	0.0
RA-226	4.557	5.30	99.84	1.70	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.969	5685.50*	-1.87E-002 +/- 7.50E-002	1.93E-001 +/- 6.77E-003
RA-226	0.935	4785.00*	1.84E-001 +/- 1.84E-001	2.55E-001 +/- 8.95E-003

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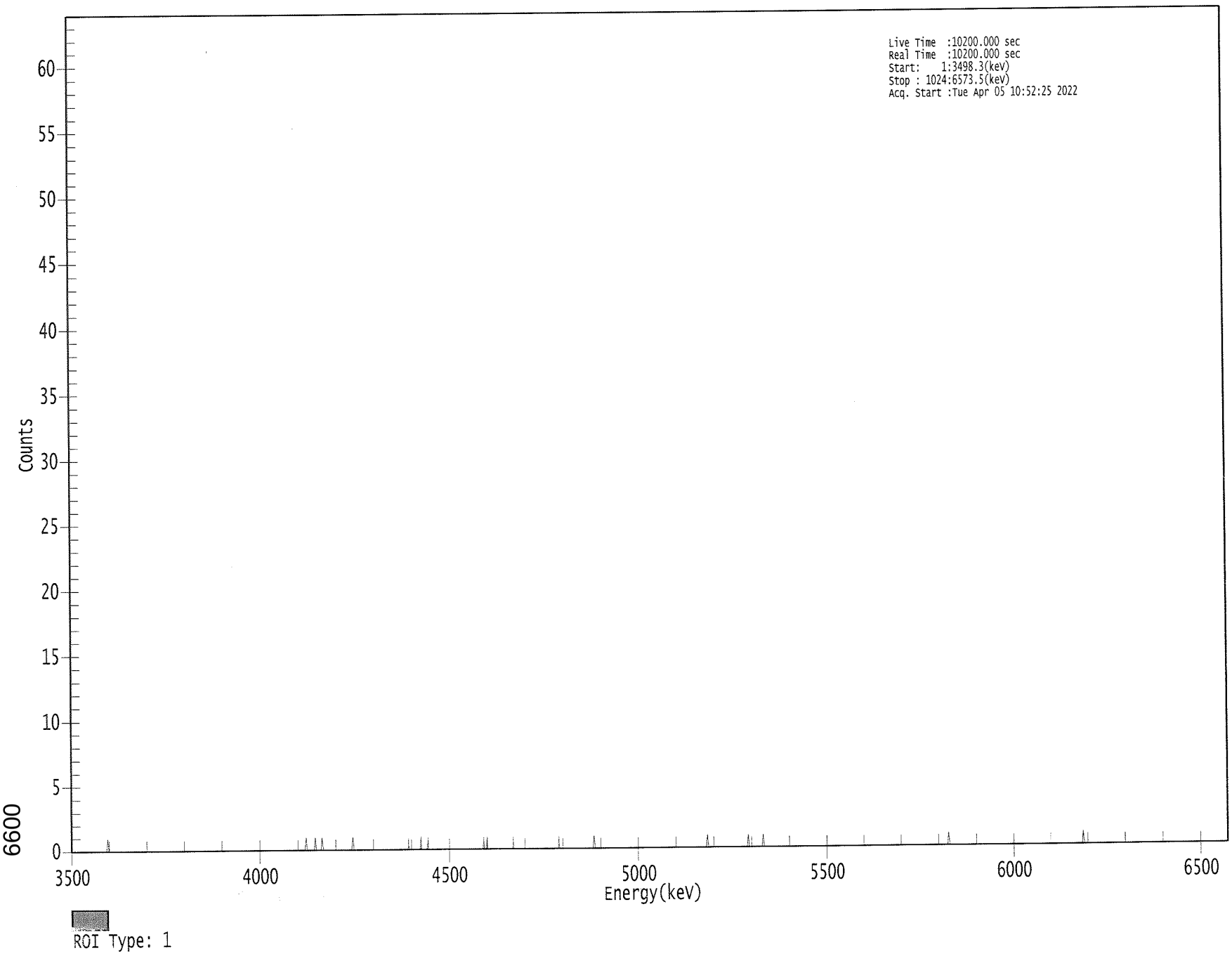
4/6/22

BP/Castex-Ltd Adm-Apx E-000681

0000311050.CNF



0099

BP/Castex-Ltd Adm-Apx E-000682

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 09

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	1	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	1
209:	0	0	0	0	0	0	0	1
217:	0	0	0	0	0	1	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	1	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	1	0	0	0	0	0	0
305:	0	0	0	0	1	0	0	0
313:	0	0	1	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	1	0	0	1	0

BP/Castex-Ltd Adm-Apx E-000683

369:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	1	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	1	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	1	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	1	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	1	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	1	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	1	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	1	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000685

LP
4/5/22

Apex-Alpha™

Sample Description: CD-1C
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 10
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_048
Chamber Serial Number: 10006125B
Detector Serial Number: 83111
Env. Background: System Bkgd 317529
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Sample Date/Time: 3/21/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:27 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9887 +/- 0.0000
Counting Efficiency: 0.1973 +/- 0.0034 on 12/3/2021 12:28:22 PM
Effective Efficiency: 0.1951 +/- 0.0034

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.499	8.83	66.70	0.17	0.00E+000	2.9
RA-226	4.594	24.15	40.70	0.85	0.00E+000	5.1

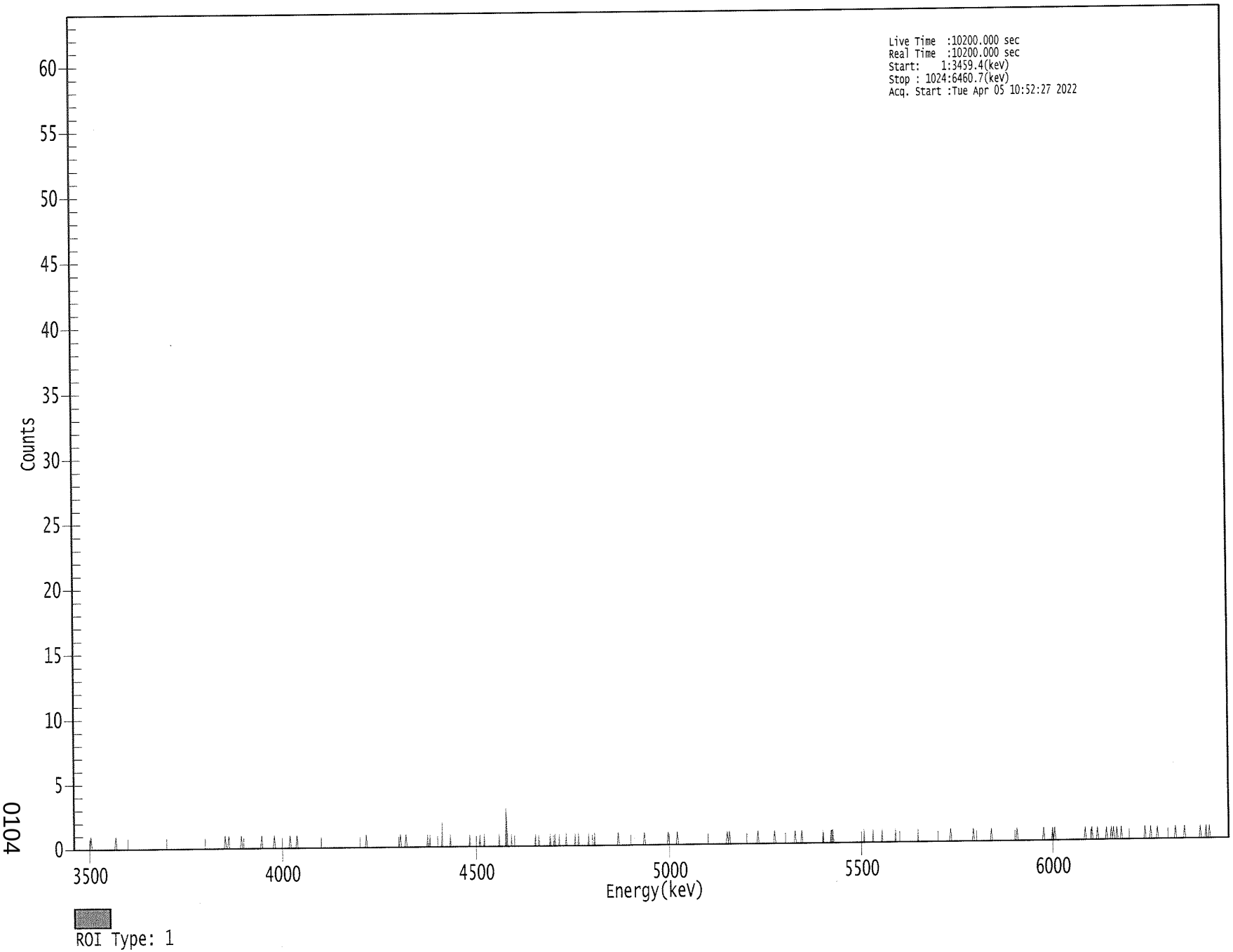
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.956	5685.50*	1.27E-001 +/- 8.46E-002	5.99E-002 +/- 2.04E-003
RA-226	0.953	4785.00*	3.28E-001 +/- 1.34E-001	8.13E-002 +/- 2.76E-003

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000686

0000311051.CNF



0104

BP/Castex-Ltd Adm-Apx E-000687

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 10

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	1
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	1	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	1	0
137:	0	1	0	0	0	0	0	0
145:	0	0	0	0	1	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	1	0
169:	0	0	0	0	0	0	0	0
177:	0	1	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	1
193:	0	0	0	0	0	1	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	1	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	1	0	0	0	0	1	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	1	0	1	0	0	0	0	0
321:	0	0	0	0	0	2	0	0
329:	0	0	0	0	1	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	1	0	0
353:	0	0	0	0	0	0	1	0
361:	0	0	1	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000688

369:	0	0	0	0	0	0	0	1

Sample Title: 10

Channel								
377:	0	0	0	0	0	3	2	0
385:	0	0	1	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	1
409:	0	0	1	0	0	0	0	0
417:	0	0	0	0	1	0	0	0
425:	1	0	0	0	1	0	0	0
433:	0	0	1	0	0	0	0	0
441:	0	0	1	0	0	1	0	0
449:	0	0	0	0	0	0	1	0
457:	0	0	0	1	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	1	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	1
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	1	0	0	0
529:	0	0	0	0	1	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	1	0	1	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	1	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	1	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	1	0	0	0
641:	0	0	1	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	1	0	0
665:	0	0	0	0	1	1	1	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	1	0	0	0	0	0
705:	0	0	1	0	0	0	0	0
713:	0	0	1	0	0	0	0	0
721:	0	0	0	0	0	0	1	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	1	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	1
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	1	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000689

801:	0	0	0	0	0	0	0	0

Sample Title: 10

Channel								
809:	0	0	0	1	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	1	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	1	0	0	0	0	0
865:	0	0	1	0	1	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	1
897:	0	0	0	0	0	1	0	0
905:	0	0	1	0	0	0	0	0
913:	0	0	1	0	0	0	1	0
921:	1	0	0	1	0	0	0	1
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	1	0	0	0
953:	0	1	0	0	0	0	0	1
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	1
977:	0	0	0	0	0	0	0	1
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	1	0	0
1001:	0	0	1	0	0	1	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000690

KP
4/5/22

Apex-Alpha™

Sample Description: CD-4A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 11
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_049
Chamber Serial Number: 10006121A
Detector Serial Number: 49
Env. Background: System Bkgd 317530
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Sample Date/Time: 3/21/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:30 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9855 +/- 0.0000
Counting Efficiency: 0.1605 +/- 0.0029 on 5/21/2021 3:25:40 PM
Effective Efficiency: 0.1582 +/- 0.0028

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.519	5.98	87.78	1.02	0.00E+000	3.0
RA-226	4.583	22.98	41.93	1.02	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

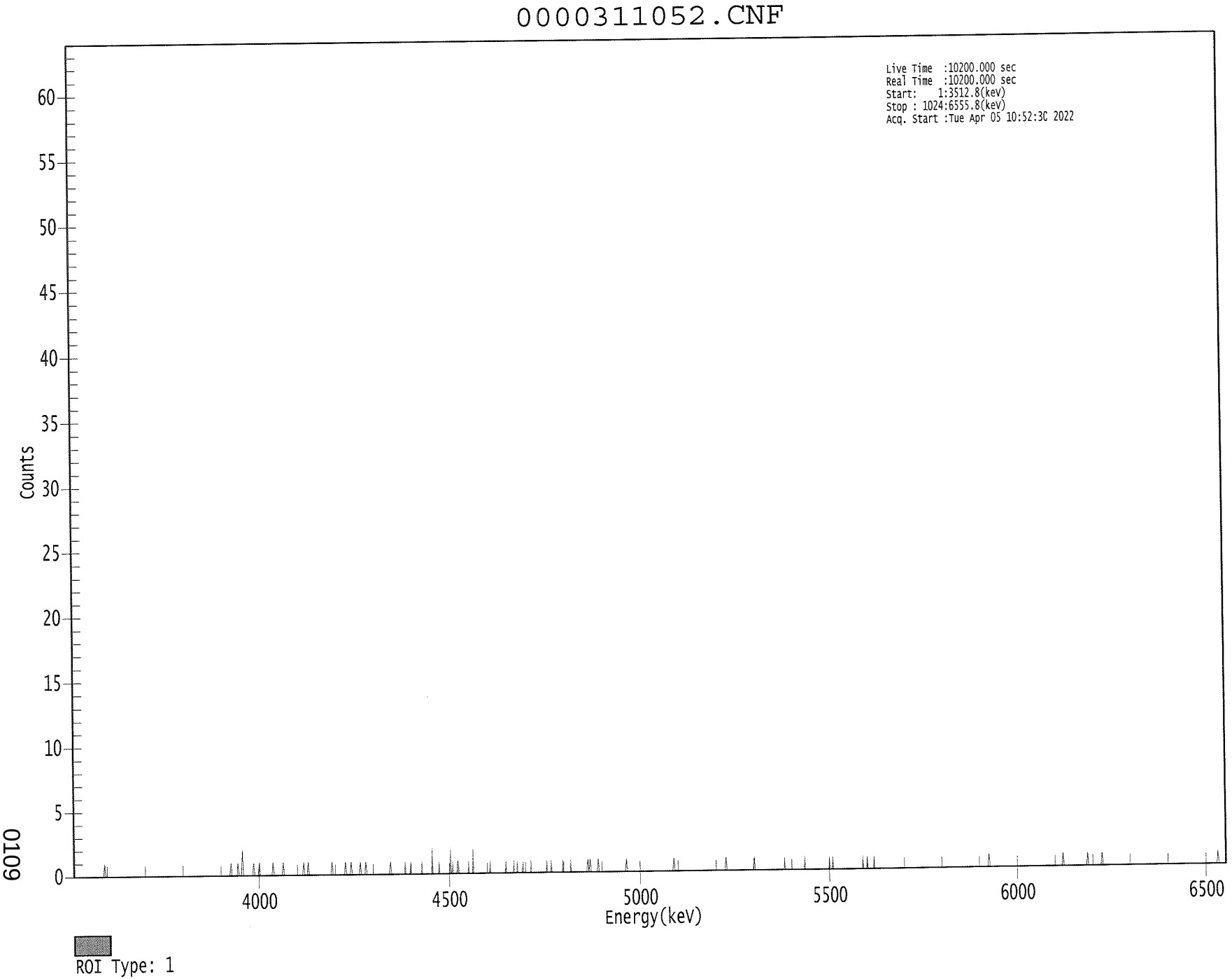
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.964	5685.50*	1.06E-001 +/- 9.30E-002	1.12E-001 +/- 3.92E-003
RA-226	0.948	4785.00*	3.85E-001 +/- 1.62E-001	1.06E-001 +/- 3.70E-003

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000691

BP/Castex-Ltd Adm-Apx E-000692

0109



****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 11

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	1	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	1	0	0	0	0
145:	0	1	0	0	0	2	0	0
153:	0	0	0	0	0	0	0	1
161:	0	0	0	0	1	0	0	0
169:	0	0	0	0	0	0	0	0
177:	1	0	0	0	0	0	0	0
185:	0	1	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	1	0	0	0	1
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	1	0	0	0
233:	0	0	0	0	0	0	0	0
241:	1	0	0	0	0	1	0	0
249:	0	0	0	0	0	1	0	0
257:	0	0	1	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	1	0	0	0	0	0	0	0
289:	0	0	0	0	0	1	0	0
297:	0	0	1	0	0	0	0	0
305:	0	0	0	0	1	0	0	0
313:	0	0	0	0	0	2	0	0
321:	0	0	0	1	0	0	0	0
329:	0	0	0	0	0	2	0	1
337:	0	0	0	1	1	0	0	0
345:	0	0	0	0	0	1	0	0
353:	0	2	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000693

369:	1	0	0	0	0	0	0	0

Sample Title: 11

Channel								
377:	0	0	0	0	0	0	1	0
385:	0	0	0	0	0	1	0	0
393:	1	0	0	0	0	1	0	0
401:	0	0	0	0	1	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	1	0	0	0	1	0
425:	0	0	0	0	0	0	0	0
433:	1	0	0	0	0	0	0	1
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	1	0
457:	1	0	0	0	0	0	0	1
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	1	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	1	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	1	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	1	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	1	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	1	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	1	0	0	1
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	1	0	0	0	1	0
705:	0	0	0	0	1	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000694

801:	0	0	0	0	0	0	0	0

Sample Title: 11

Channel								
809:	0	0	0	1	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	1	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	1	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	1	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	1
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000695

KP
4/5/22

Apex-Alpha™

Sample Description: CD-4B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 12
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_050
Chamber Serial Number: 10006121B
Detector Serial Number: 50
Env. Background: System Bkgd 317531
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Sample Date/Time: 3/21/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:33 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9852 +/- 0.0000
Counting Efficiency: 0.1477 +/- 0.0027 on 5/26/2021 3:37:09 PM
Effective Efficiency: 0.1455 +/- 0.0026

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.539	19.49	45.07	0.51	0.00E+000	3.0
RA-226	4.587	61.83	24.97	0.17	0.00E+000	4.4

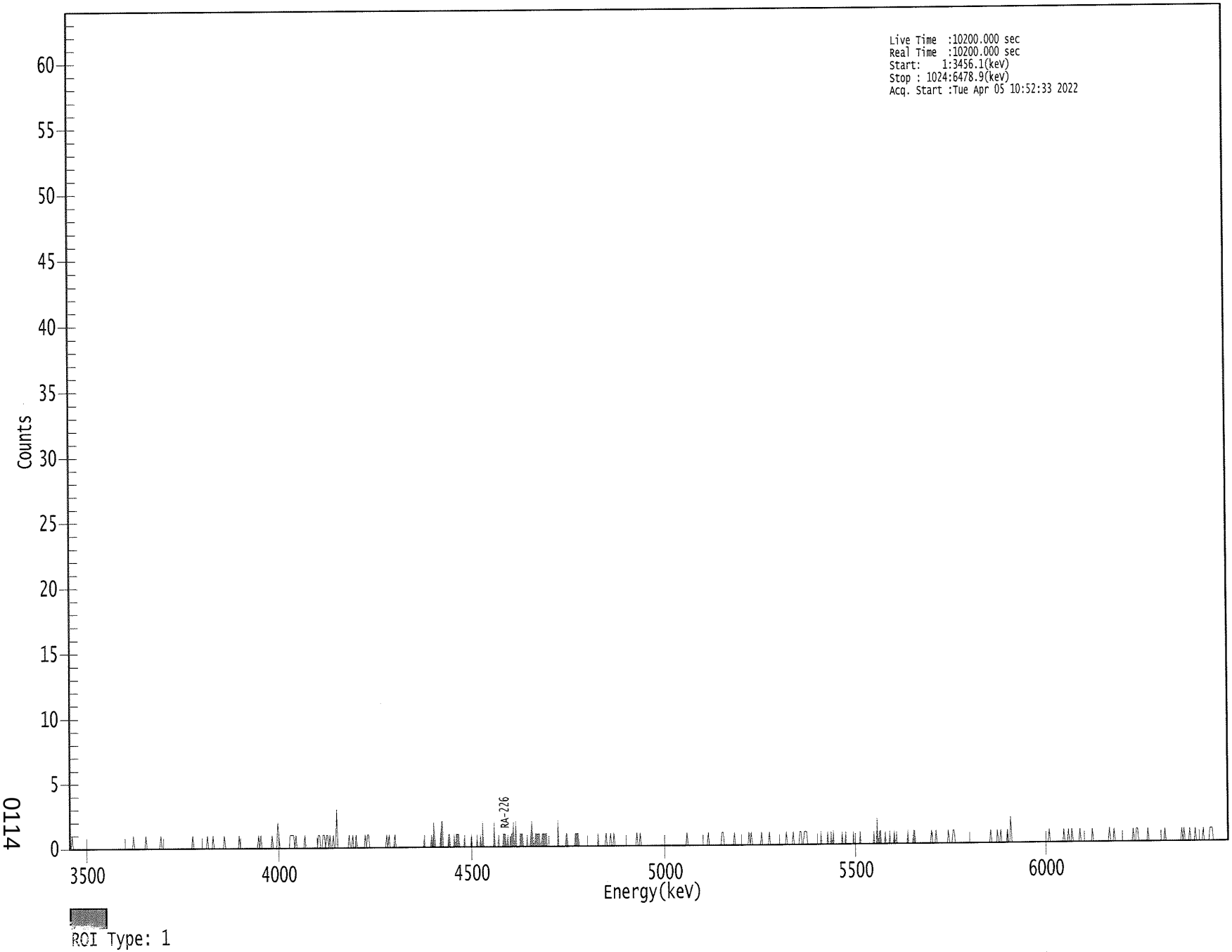
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.972	5685.50*	3.75E-001 +/- 1.70E-001	1.01E-001 +/- 3.56E-003
RA-226	0.950	4785.00*	1.13E+000 +/- 2.84E-001	7.60E-002 +/- 2.68E-003

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000696

0000311053.CNF



0114

BP/Castex-Ltd Adm-Apx E-000697

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 12

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	1	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	1	0	0	0	0	0	0	0
65:	0	0	0	1	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	1	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	1	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	1	0	0	0	0	1	0
129:	0	0	0	0	0	0	0	0
137:	1	0	0	0	0	0	0	0
145:	0	0	0	0	0	1	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	1	0
169:	1	0	0	0	0	0	0	0
177:	0	0	1	0	0	0	0	2
185:	1	0	0	0	0	0	0	0
193:	0	0	1	1	1	1	0	1
201:	0	0	0	0	0	0	0	1
209:	0	0	0	0	0	0	0	0
217:	0	0	0	1	1	0	0	1
225:	1	0	1	1	0	1	0	0
233:	1	0	0	3	0	0	0	0
241:	0	0	0	0	0	0	1	0
249:	0	1	0	0	1	0	0	0
257:	0	0	0	0	1	0	1	1
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	1
281:	0	1	0	0	0	0	1	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	1	0	0	0	0	0	1	0
321:	2	1	0	0	0	0	1	2
329:	2	0	0	0	0	1	1	0
337:	0	0	1	0	1	1	1	0
345:	0	0	0	1	0	0	0	0
353:	0	1	0	0	0	0	1	0
361:	0	1	0	2	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000698

369:	0	0	0	0	0	2	0	0

Sample Title: 12

Channel								
377:	0	1	0	0	0	1	1	1
385:	0	1	0	0	1	1	2	0
393:	2	0	0	0	1	1	1	0
401:	0	0	1	0	0	1	2	1
409:	0	1	1	1	1	1	0	1
417:	1	1	1	1	0	0	0	0
425:	0	0	0	0	0	2	0	0
433:	0	0	0	0	1	1	0	0
441:	0	0	0	0	1	1	1	1
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	1	0	0	0	0	0	0	1
473:	0	0	0	1	0	0	1	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	1	0	0	1	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	1	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	1	0	0	0	0	0	0
569:	0	0	0	0	0	1	1	0
577:	0	0	0	0	0	0	0	0
585:	1	0	0	0	0	0	0	0
593:	0	0	0	0	0	1	0	1
601:	0	0	0	0	0	0	0	0
609:	1	0	0	0	0	0	0	1
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	1	0
633:	0	0	0	0	1	0	0	0
641:	0	0	1	1	0	0	1	1
649:	1	0	0	0	0	0	0	0
657:	0	0	0	0	0	1	0	0
665:	0	0	0	1	0	0	1	0
673:	1	0	0	0	0	0	0	0
681:	1	0	0	1	0	0	0	0
689:	0	0	1	0	0	0	0	0
697:	1	0	0	0	0	0	0	0
705:	0	0	0	0	1	0	0	2
713:	0	1	1	0	0	0	1	0
721:	0	0	1	0	0	0	1	0
729:	1	0	0	0	0	0	0	0
737:	0	0	1	0	0	0	0	1
745:	1	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	1
761:	0	0	0	1	0	0	0	0
769:	0	0	0	0	0	0	1	0
777:	0	0	1	1	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000699

801:	0	0	0	0	0	0	0	0

Sample Title: 12

Channel								
809:	0	0	0	0	1	0	0	0
817:	0	0	1	0	0	1	0	0
825:	0	0	0	1	0	0	2	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	1	0	0	0	0	0	0	0
873:	0	0	0	0	0	1	0	0
881:	0	1	0	0	1	0	0	0
889:	0	0	0	1	0	0	0	0
897:	0	0	0	0	0	0	1	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	1	0	0
921:	0	1	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	1	0	0	1	1	0
945:	0	0	0	0	0	0	0	1
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	1	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	1	0	1
985:	0	0	0	0	1	0	0	0
993:	0	1	0	0	0	0	0	0
1001:	1	0	0	0	0	0	1	1
1009:	1	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KP
4/5/22

Sample Description: CD-5A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003110
Batch Identification: 2203099A-RA
Sample Identification: 13
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_051
Chamber Serial Number: 10006123A
Detector Serial Number: 51
Env. Background: System Bkgd 317532
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Sample Date/Time: 3/21/2022 9:20:17 AM
Acquisition Date/Time: 4/5/2022 10:52:36 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1321 +/- 0.0024 on 5/21/2021 3:25:39 PM
Effective Efficiency: 0.1321 +/- 0.0024

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.577	5.32	91.11	0.68	0.00E+000	3.0
RA-226	4.613	25.00	39.98	0.00	0.00E+000	3.0

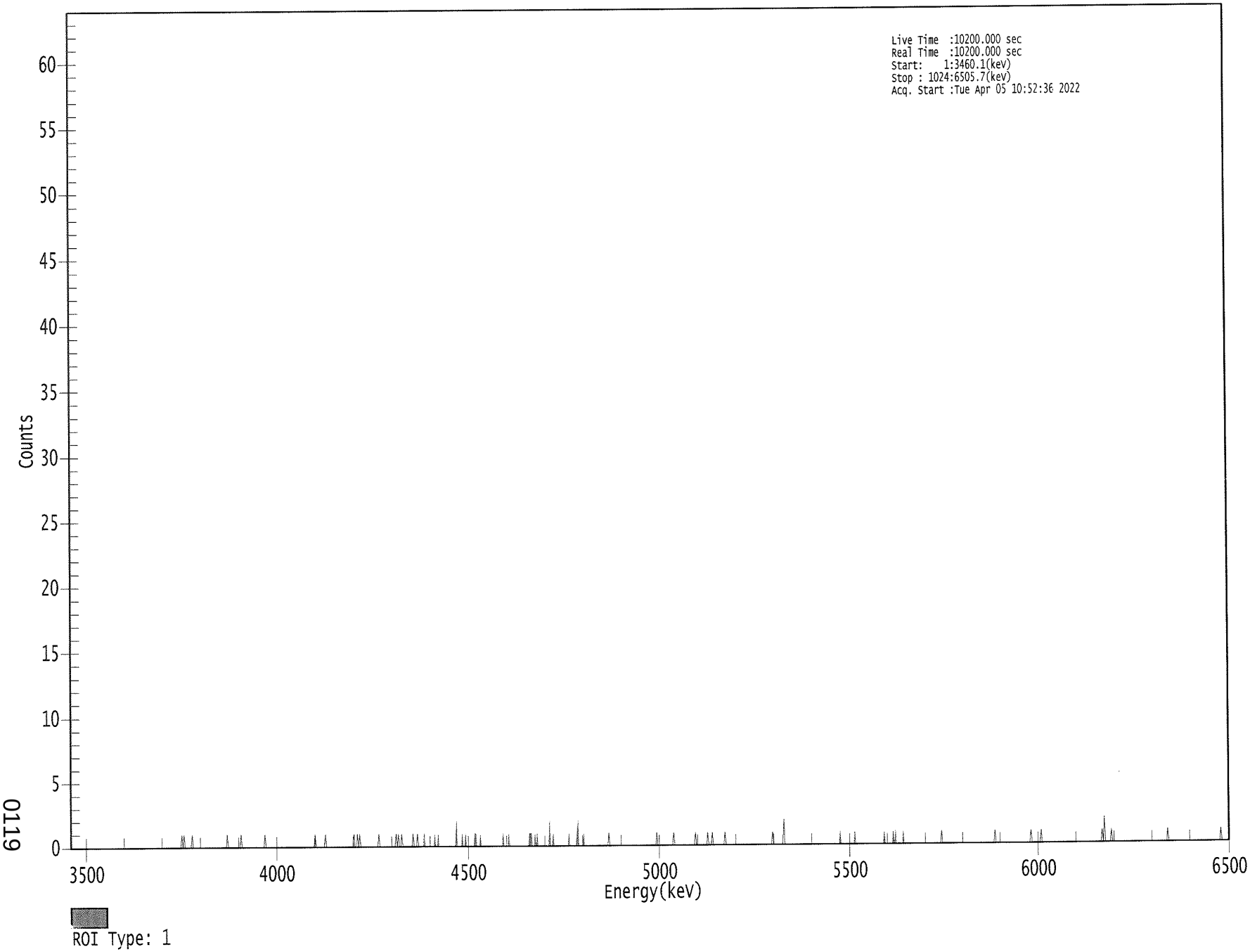
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.985	5685.50*	1.13E-001 +/- 1.03E-001	1.20E-001 +/- 4.30E-003
RA-226	0.962	4785.00*	5.01E-001 +/- 2.01E-001	1.20E-001 +/- 4.32E-003

AG
4/5/22

BP/Castex-Ltd Adm-Apx E-000701

0000311042.CNF



0119

BP/Castex-Ltd Adm-Apx E-000702

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 13

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0
97:	0	0	1	0	1	0	0
105:	0	0	0	1	0	0	0
113:	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0
137:	0	0	1	0	0	0	0
145:	0	0	0	0	0	0	1
153:	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0
169:	0	0	0	1	0	0	0
177:	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	1
217:	0	0	0	0	0	0	0
225:	1	0	0	0	0	0	0
233:	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0
249:	0	1	0	0	1	0	1	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	1
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	1	0
289:	1	0	0	1	0	0	0	0
297:	0	0	0	0	0	1	0	0
305:	0	1	0	0	0	0	0	1
313:	0	0	0	0	0	0	0	0
321:	1	0	0	1	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	2	0	0	0	0
345:	1	0	0	1	0	0	0	0
353:	0	0	0	1	1	0	0	0
361:	1	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000703

369:	0	0	0	0	0	0	0	0

Sample Title: 13

Channel								
377:	0	0	0	0	1	0	0	0
385:	0	1	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	1	1	1	0	0
409:	1	0	1	0	0	0	0	0
417:	0	0	0	0	0	2	0	0
425:	1	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	1	0
441:	0	0	0	0	0	1	2	0
449:	0	0	0	1	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	1	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	1	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	1	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	1	0	0
553:	0	0	0	0	0	0	0	0
561:	1	0	0	0	1	0	0	0
569:	0	0	0	0	0	0	0	1
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	1	0	0	0	0	0	0
625:	0	0	0	2	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	1	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	1	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	1	0	0	0
721:	0	0	0	0	1	0	1	0
729:	0	0	0	0	0	1	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	1
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 13

Channel								
809:	0	0	0	0	0	0	0	1
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	1
849:	0	0	0	0	0	0	0	0
857:	1	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	1	0
913:	2	0	0	0	0	0	1	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	1	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	1
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000705

Apex-Alpha™

QA SUMMARY REPORT
Review Of QA Results - Pulser Check

Date : 4/5/2022
Time : 6:26:41 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Not Done	
Alpha_004	21f	ALL	Not Done	
Alpha_005	21f	ALL	Not Done	
Alpha_006	21f	ALL	Not Done	
Alpha_007	21f	ALL	Not Done	
Alpha_008	21f	ALL	Not Done	
Alpha_009	21f	ALL	Not Done	
Alpha_010	21f	ALL	Not Done	
Alpha_011	21f	ALL	Passed	4/5/2022 6:11:59 AM
Alpha_012	21f	ALL	Passed	4/5/2022 6:12:00 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Not Done	
Alpha_015	21f	ALL	Not Done	
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:01 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:03 AM
Alpha_035	Alpha Analyst100DC	Peak Energy	Action	4/5/2022 6:12:04 AM
Alpha_036	Alpha Analyst100DC	ALL	Not Done	
Alpha_037	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:06 AM
Alpha_038	Alpha Analyst100DC	Peak Energy	Action	4/5/2022 6:12:08 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:09 AM
Alpha_040	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:12 AM
Alpha_041	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:14 AM
Alpha_042	Alpha Analyst100DC	ALL	Not Done	
Alpha_043	Alpha Analyst100DC	Peak Energy	Action	4/4/2022 6:08:54 AM
Alpha_043	Alpha Analyst100DC	Peak FWHM	Action	4/4/2022 6:08:54 AM
Alpha_044	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:16 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:18 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:21 AM
Alpha_047	Alpha Analyst100DC	ALL	Not Done	
Alpha_048	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:23 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:26 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:29 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:31 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:34 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:37 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:40 AM
Alpha_055	Alpha Analyst100DC	Peak FWHM	Action	4/5/2022 6:12:43 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:46 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:49 AM

4/5/2022 6:26:41 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_058	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:52 AM
Alpha_059	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:55 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	4/5/2022 6:12:57 AM

APPROVED BY: MP

APPROVAL DATE: 4/5/22

BP/Castex-Ltd Adm-Apx E-000707

****
***** L I B R A R Y L I S T I N G R E P O R T *****
****

Nuclide Library Title: Radium

Nuclide Library Description: Ra-226, Po-218, Rn-222

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert.(Abs.+-)
PO-218	5.049E+010	6003.000*	0.000	99.9800	0.0000
RN-222	5.049E+010	5490.000*	0.000	99.9200	0.0000
RA-226	5.049E+010	4785.000*	0.000	100.0000	0.0000

* = key line

TOTALS: 3 Nuclides 3 Energy Lines

BP/Castex-Ltd Adm-Apx E-000708

SECTION IX

ANALYTICAL DATA (RADIUM-228)

BP/Castex-Ltd Adm-Apx E-000709

Work Order	22-03099
Analysis Code	Ra228
Run	1
Date Received	3/28/2022
Lab Deadline	4/11/2022
Client	ERM
Project	575834
Report Level	4
Activity Units	pCi
Aliquot Units	l
Matrix	WA
Method	EPA 904.0
Instrument Type	Alpha/Beta GPC
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-7
Tracer Act (dpm/g)	8680.28
Carrier	Yttrium
Carrier Conc (mg/ml)	35.15

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		03/28/22 00:00	1.0000E+00
02	MBL	BLANK		03/28/22 00:00	1.0000E+00
03	DUP	CD-5A	50	03/21/22 16:25	1.0000E+00
04	TRG	CD-5B	40	03/23/22 10:20	1.0000E+00
05	TRG	CD-2A	20	03/17/22 08:25	1.0000E+00
06	TRG	CD-2B	50	03/17/22 10:50	1.0000E+00
07	TRG	CD-3A	30	03/17/22 13:40	1.0000E+00
08	TRG	CD-1B	40	03/18/22 09:00	1.0000E+00
09	TRG	CD-1A	60	03/18/22 09:55	1.0000E+00
10	TRG	CD-1C	30	03/21/22 11:00	1.0000E+00
11	TRG	CD-4A	40	03/21/22 13:45	1.0000E+00
12	TRG	CD-4B	30	03/21/22 15:00	1.0000E+00
13	DO	CD-5A	50	03/21/22 16:25	1.0000E+00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-000710

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.1241	1077.2	494.0	101.81	2.000	0.0834	0.1483	0.0649	92.32	93.99	1.00	1.00
02	MBL	0.1246	1081.6	482.0	98.93	2.000	0.0837	0.1438	0.0601	85.49	84.58	1.00	1.00
03	DUP	0.1246	1081.6	470.0	96.47	2.000	0.0840	0.1502	0.0662	94.17	90.85	1.00	1.00
04	TRG	0.1252	1086.8	265.0	54.13	2.000	0.0833	0.1480	0.0647	92.03	49.82	1.00	1.00
05	TRG	0.1253	1087.6	370.0	75.52	2.000	0.0831	0.1506	0.0675	96.02	72.51	1.00	1.00
06	TRG	0.1250	1085.0	450.0	92.07	2.000	0.0835	0.1508	0.0673	95.73	88.14	1.00	1.00
07	TRG	0.1246	1081.6	317.0	65.07	2.000	0.0836	0.1500	0.0664	94.45	61.46	1.00	1.00
08	TRG	0.1247	1082.4	512.0	105.01	2.000	0.0838	0.1488	0.0650	92.46	97.09	1.00	1.00
09	TRG	0.1223	1061.6	25.5	5.33	2.000	0.0835	0.1503	0.0668	95.02	5.07	1.00	1.00
10	TRG	0.1237	1073.8	479.0	99.03	2.000	0.0838	0.1499	0.0661	94.03	93.12	1.00	1.00
11	TRG	0.1241	1077.2	479.0	98.71	2.000	0.0836	0.1446	0.0610	86.77	85.66	1.00	1.00
12	TRG	0.1200	1041.6	463.0	98.68	2.000	0.0838	0.1460	0.0622	88.48	87.31	1.00	1.00
13	DO	0.1236	1072.9	494.0	102.22	2.000	0.0836	0.1453	0.0617	87.77	89.71	1.00	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

22-03099
Ra228
Run 1

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
02	MBL			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
03	DUP			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
04	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
05	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
06	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
07	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
08	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
09	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
10	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
11	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
12	TRG			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS
13	DO			04/08/22 08:13	MDAVIS	04/05/22 08:14	MDAVIS	04/08/22 07:43	MDAVIS

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Preliminary Data Report & Analytical Calculations

Work Order: 22-03099-Ra228-1

Client: ERM
Eberline Services Work Order: 22-03099
Analysis Code: Ra228
Run: 1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-228	LCS	LCS	pCi/l	1.89E+01	1.98E+00	1.27E+00	9.12E+00	206.93	INV		OK	
02	RA-228	MBL	BLANK	pCi/l	7.20E-01	4.95E-01	9.77E-01					OK	OK
03	RA-228	DUP	CD-5A	pCi/l	6.56E-01	5.23E-01	1.05E+00				NA	OK	
04	RA-228	TRG	CD-5B	pCi/l	2.30E+01	1.68E+00	1.79E+00					OK	
05	RA-228	TRG	CD-2A	pCi/l	4.64E+00	7.65E-01	1.17E+00					OK	
06	RA-228	TRG	CD-2B	pCi/l	4.17E+00	7.00E-01	1.10E+00					OK	
07	RA-228	TRG	CD-3A	pCi/l	1.98E+01	1.39E+00	1.44E+00					OK	
08	RA-228	TRG	CD-1B	pCi/l	1.95E-01	4.63E-01	9.68E-01					OK	
09	RA-228	TRG	CD-1A	pCi/l	-2.54E-02	4.18E-01	9.00E-01					OK	
10	RA-228	TRG	CD-1C	pCi/l	1.29E+00	4.57E-01	8.25E-01					OK	
11	RA-228	TRG	CD-4A	pCi/l	6.28E-01	4.59E-01	9.09E-01					OK	
12	RA-228	TRG	CD-4B	pCi/l	1.29E+00	5.48E-01	1.04E+00					OK	
13	RA-228	DO	CD-5A	pCi/l	9.35E-01	5.29E-01	1.03E+00					OK	

BP/Castex-Ltd Adm-Apx E-000713

Client: ERM
Eberline Services Work Order: 22-03099
Analysis Code: Ra228
Run: 1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-228	LCS	03/28/22 00:00	1.00E+00	101.81	92.32	93.99	1.00	4/5/2022 8:14	4/8/2022 7:43
02	RA-228	MBL	03/28/22 00:00	1.00E+00	98.93	85.49	84.58	1.00	4/5/2022 8:14	4/8/2022 7:43
03	RA-228	DUP	03/21/22 16:25	1.00E+00	96.47	94.17	90.85	1.00	4/5/2022 8:14	4/8/2022 7:43
04	RA-228	TRG	03/23/22 10:20	1.00E+00	54.13	92.03	49.82	1.00	4/5/2022 8:14	4/8/2022 7:43
05	RA-228	TRG	03/17/22 08:25	1.00E+00	75.52	96.02	72.51	1.00	4/5/2022 8:14	4/8/2022 7:43
06	RA-228	TRG	03/17/22 10:50	1.00E+00	92.07	95.73	88.14	1.00	4/5/2022 8:14	4/8/2022 7:43
07	RA-228	TRG	03/17/22 13:40	1.00E+00	65.07	94.45	61.46	1.00	4/5/2022 8:14	4/8/2022 7:43
08	RA-228	TRG	03/18/22 09:00	1.00E+00	105.01	92.46	97.09	1.00	4/5/2022 8:14	4/8/2022 7:43
09	RA-228	TRG	03/18/22 09:55	1.00E+00	5.33	95.02	95.02	1.00	4/5/2022 8:14	4/8/2022 7:43
10	RA-228	TRG	03/21/22 11:00	1.00E+00	99.03	94.03	93.12	1.00	4/5/2022 8:14	4/8/2022 7:43
11	RA-228	TRG	03/21/22 13:45	1.00E+00	98.71	86.77	85.66	1.00	4/5/2022 8:14	4/8/2022 7:43
12	RA-228	TRG	03/21/22 15:00	1.00E+00	98.68	88.48	87.31	1.00	4/5/2022 8:14	4/8/2022 7:43
13	RA-228	DO	03/21/22 16:25	1.00E+00	102.22	87.77	89.71	1.00	4/5/2022 8:14	4/8/2022 7:43

BP/Castex-Ltd Adm-Apx E-000714

Client: ERM
Eberline Services Work Order: 22-03099
Analysis Code: Ra228
Run: 1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	RA-228	LCS	04/08/22 10:07		LB4110A	G1	30	449	1.25	0.4705
02	RA-228	MBL	04/08/22 10:07		LB4110A	A1	120	199	1.216666667	0.4803
03	RA-228	DUP	04/08/22 10:07		LB4110A	A2	120	241	1.583333333	0.4724
04	RA-228	TRG	04/08/22 10:07		LB4110A	B1	120	1118	1.316666667	0.4626
05	RA-228	TRG	04/08/22 10:07		LB4110A	B2	120	432	1.216666667	0.4691
06	RA-228	TRG	04/08/22 10:07		LB4110A	B3	120	477	1.483333333	0.449
07	RA-228	TRG	04/08/22 10:07		LB4110A	B4	120	1175	1.3	0.4619
08	RA-228	TRG	04/08/22 10:07		LB4110A	C1	120	196	1.5	0.4667
09	RA-228	TRG	04/08/22 10:07		LB4110A	C2	120	140	1.183333333	0.4578
10	RA-228	TRG	04/08/22 10:07		LB4110A	C3	120	222	1	0.4699
11	RA-228	TRG	04/08/22 10:07		LB4110A	D1	120	184	1.133333333	0.4924
12	RA-228	TRG	04/08/22 10:07		LB4110A	D3	120	266	1.416666667	0.4719
13	RA-228	DO	04/08/22 10:07		LB4110A	D4	120	252	1.5	0.4741

BP/Castex-Ltd Adm-Apx E-000715

Count Room Report
Client: ERM

22-03099-Ra228-1 (pCi/l) in WA
Tracer ID: Ba-7

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	03/28/22 00:00	1.0000	0.1241	1077.2227	494.0000	101.81	1.00	1.00
02	MBL	BLANK	03/28/22 00:00	1.0000	0.1246	1081.5629	482.0000	98.93	1.00	1.00
03	DUP	CD-5A	03/21/22 16:25	1.0000	0.1246	1081.5629	470.0000	96.47	1.00	1.00
04	TRG	CD-5B	03/23/22 10:20	1.0000	0.1252	1086.7711	265.0000	54.13	1.00	1.00
05	TRG	CD-2A	03/17/22 08:25	1.0000	0.1253	1087.6391	370.0000	75.52	1.00	1.00
06	TRG	CD-2B	03/17/22 10:50	1.0000	0.1250	1085.0350	450.0000	92.07	1.00	1.00
07	TRG	CD-3A	03/17/22 13:40	1.0000	0.1246	1081.5629	317.0000	65.07	1.00	1.00
08	TRG	CD-1B	03/18/22 09:00	1.0000	0.1247	1082.4309	512.0000	105.01	1.00	1.00
09	TRG	CD-1A	03/18/22 09:55	1.0000	0.1223	1061.5982	25.5000	5.33	1.00	1.00
10	TRG	CD-1C	03/21/22 11:00	1.0000	0.1237	1073.7506	479.0000	99.03	1.00	1.00
11	TRG	CD-4A	03/21/22 13:45	1.0000	0.1241	1077.2227	479.0000	98.71	1.00	1.00
12	TRG	CD-4B	03/21/22 15:00	1.0000	0.1200	1041.6336	463.0000	98.68	1.00	1.00
13	DO	CD-5A	03/21/22 16:25	1.0000	0.1236	1072.8826	494.0000	102.22	1.00	1.00

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
22-03099	1	Ra228	4/8/2022 8:12	MDAVIS	MD	

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
Ra-228	Ra-12	34.730	4/8/2022	0.580	0.5832				9.12	0.465	0.00	0.000	0.00	0.000	0.00	0.000
Tc-99 MS	Tc-2a	22043.08	4/8/2022	0.1												

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	Ba-133	Ba-7	8680.280	4/8/2022	0.1241	0.1200
02	Ba-133	Ba-7	8680.280	4/8/2022	0.1246	0.1200
03	Ba-133	Ba-7	8680.280	4/8/2022	0.1246	0.1200
04	Ba-133	Ba-7	8680.280	4/8/2022	0.1252	0.1200
05	Ba-133	Ba-7	8680.280	4/8/2022	0.1253	0.1200
06	Ba-133	Ba-7	8680.280	4/8/2022	0.1250	0.1200
07	Ba-133	Ba-7	8680.280	4/8/2022	0.1246	0.1200
08	Ba-133	Ba-7	8680.280	4/8/2022	0.1247	0.1200
09	Ba-133	Ba-7	8680.280	4/8/2022	0.1223	0.1200
10	Ba-133	Ba-7	8680.280	4/8/2022	0.1237	0.1200
11	Ba-133	Ba-7	8680.280	4/8/2022	0.1241	0.1200
12	Ba-133	Ba-7	8680.280	4/8/2022	0.1200	0.1200
13	Ba-133	Ba-7	8680.280	4/8/2022	0.1236	0.1200

Balance Printer Tapes

Tracer	LCS

Matrix Spike

BP/Castex-Ltd Adm-Apx E-000717

0134

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 3/30/2022 09:05

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
22-03099	1	Ra228	liters	4/11/2022	JHARVEY

Lab Fraction	ERM Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-5A	DUP					1.0000E+00	1.0000E+00				
04	CD-5B	TRG					1.0000E+00	1.0000E+00				
05	CD-2A	TRG					1.0000E+00	1.0000E+00				
06	CD-2B	TRG					1.0000E+00	1.0000E+00				
07	CD-3A	TRG					1.0000E+00	1.0000E+00				
08	CD-1B	TRG					1.0000E+00	1.0000E+00				
09	CD-1A	TRG					1.0000E+00	1.0000E+00				
10	CD-1C	TRG					1.0000E+00	1.0000E+00				
11	CD-4A	TRG					1.0000E+00	1.0000E+00				
12	CD-4B	TRG					1.0000E+00	1.0000E+00				
13	CD-5A	DO					1.0000E+00	1.0000E+00				

Comments	

Technician: JHarvey Date: 3/30/22

BP/Castex-Ltd Adm-Apx E-000718

Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Printed: 4/8/2022 9:47 AM

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
22-03099	1	Ra228	Yttrium	35.1500	MDAVIS

TRetec Fraction	ERM Client ID	Sample Type	Carrier Data	Filter Data			Gravimetric
			Carrier Added (ml)	Filter Tare (g)	Filter Final (g)	Filter Net (g)	% Recovery
01	LCS	LCS	2.0000	0.0834	0.1483	**0.0649**	**92.32**
02	BLANK	MBL	2.0000	0.0837	0.1438	**0.0601**	**85.49**
03	DUP	DUP	2.0000	0.0840	0.1502	**0.0662**	**94.17**
04	CD-5B	TRG	2.0000	0.0833	0.1480	**0.0647**	**92.03**
05	CD-2A	TRG	2.0000	0.0831	0.1506	**0.0675**	**96.02**
06	CD-2B	TRG	2.0000	0.0835	0.1508	**0.0673**	**95.73**
07	CD-3A	TRG	2.0000	0.0836	0.1500	**0.0664**	**94.45**
08	CD-1B	TRG	2.0000	0.0838	0.1488	**0.0650**	**92.46**
09	CD-1A	TRG	2.0000	0.0835	0.1503	**0.0668**	**95.02**
10	CD-1C	TRG	2.0000	0.0838	0.1499	**0.0661**	**94.03**
11	CD-4A	TRG	2.0000	0.0836	0.1446	**0.0610**	**86.77**
12	CD-4B	TRG	2.0000	0.0838	0.1460	**0.0622**	**88.48**
13	CD-5A	DO	2.0000	0.0836	0.1453	**0.0617**	**87.77**

Technician: Meagan Dan Date: 4/8/22

BP/Castex-Ltd Adm-Apx E-000719

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
G1	2203099-01	44	449	30	1410	4/8/2022 10:07:17 AM
A1	2203099-02	28	199	120	1410	4/8/2022 10:07:16 AM
A2	2203099-03	27	241	120	1410	4/8/2022 10:07:16 AM
B1	2203099-04	45	1118	120	1410	4/8/2022 10:07:16 AM
B2	2203099-05	28	432	120	1410	4/8/2022 10:07:16 AM
B3	2203099-06	22	477	120	1410	4/8/2022 10:07:16 AM
B4	2203099-07	32	1175	120	1410	4/8/2022 10:07:16 AM
C1	2203099-08	14	196	120	1410	4/8/2022 10:07:16 AM
C2	2203099-09	18	140	120	1410	4/8/2022 10:07:17 AM
C3	2203099-10	20	222	120	1410	4/8/2022 10:07:17 AM
D1	2203099-11	12	184	120	1410	4/8/2022 10:07:17 AM
D3	2203099-12	27	266	120	1410	4/8/2022 10:07:17 AM
D4	2203099-13	31	252	120	1410	4/8/2022 10:07:17 AM

MP
4/8/22

BP/Castex-Ltd Adm-Apx E-000720

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Backgrounds)

Printed: 4/8/2022 7:00 AM

KP
4/8/22

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/2/2019	4/8/2022	1.83E-01	P	7.73E-03	1.65E-01	3.23E-01
LB4110A - A2	Alpha	11/2/2019	4/8/2022	1.33E-01	P	7.58E-03	1.51E-01	2.94E-01
LB4110A - A3	Alpha	11/2/2019	4/8/2022	2.50E-01	P	1.54E-02	1.63E-01	3.10E-01
LB4110A - A4	Alpha	11/2/2019	4/8/2022	2.33E-01	P	1.33E-02	1.63E-01	3.12E-01
LB4110A - B1	Alpha	11/2/2019	4/8/2022	1.00E-01	P	-2.43E-02	1.42E-01	3.08E-01
LB4110A - B2	Alpha	11/2/2019	4/8/2022	8.33E-02	P	-6.99E-03	1.98E-01	4.04E-01
LB4110A - B3	Alpha	11/2/2019	4/8/2022	1.00E-01	P	1.18E-02	1.68E-01	3.24E-01
LB4110A - B4	Alpha	11/2/2019	4/8/2022	6.67E-02	P	-9.32E-03	1.15E-01	2.40E-01
LB4110A - C1	Alpha	11/2/2019	4/8/2022	1.50E-01	P	-1.62E-02	1.13E-01	2.42E-01
LB4110A - C2	Alpha	11/2/2019	4/8/2022	1.00E-01	P	-1.77E-02	1.09E-01	2.36E-01
LB4110A - C3	Alpha	11/2/2019	4/8/2022	1.67E-01	P	-2.19E-02	8.73E-02	1.97E-01
LB4110A - C4	Alpha	11/2/2019	4/8/2022	1.67E-01	P	3.06E-02	2.21E-01	4.11E-01
LB4110A - D1	Alpha	11/2/2019	4/8/2022	6.67E-02	P	-2.55E-02	7.10E-02	1.67E-01
LB4110A - D2	Alpha	11/2/2019	4/8/2022	6.67E-02	P	-1.09E-02	1.06E-01	2.23E-01
LB4110A - D3	Alpha	11/2/2019	4/8/2022	1.83E-01	P	3.79E-04	1.26E-01	2.51E-01
LB4110A - D4	Alpha	11/2/2019	4/8/2022	5.00E-02	P	2.68E-02	1.65E-01	3.03E-01
LB4110A - E1	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E2	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E3	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E4	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - F1	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-3.26E-02	1.31E-01	2.95E-01
LB4110A - F2	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-3.95E-02	1.19E-01	2.77E-01
LB4110A - F3	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-2.28E-02	1.05E-01	2.34E-01
LB4110A - F4	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-4.44E-02	7.07E-02	1.86E-01
LB4110A - G1	Alpha	11/2/2019	4/8/2022	6.67E-02	P	-1.90E-02	8.91E-02	1.97E-01
LB4110A - G2	Alpha	11/2/2019	4/8/2022	1.50E-01	P	-2.67E-02	9.20E-02	2.11E-01
LB4110A - G3	Alpha	11/2/2019	4/8/2022	3.50E-01	F	-3.54E-02	1.62E-01	3.60E-01
LB4110A - G4	Alpha	11/2/2019	4/8/2022	1.50E-01	P	-2.96E-02	1.04E-01	2.38E-01

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Backgrounds)

Printed: 4/8/2022 7:00 AM

KP
4/8/22

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/2/2019	4/8/2022	1.22E+00	P	-1.44E+00	1.36E+00	4.17E+00
LB4110A - A2	Beta	11/2/2019	4/8/2022	1.58E+00	P	-1.23E+00	1.64E+00	4.50E+00
LB4110A - A3	Beta	11/2/2019	4/8/2022	1.55E+00	P	-1.20E+00	1.45E+00	4.10E+00
LB4110A - A4	Beta	11/2/2019	4/8/2022	1.50E+00	P	-1.31E+00	1.48E+00	4.28E+00
LB4110A - B1	Beta	11/2/2019	4/8/2022	1.32E+00	P	1.02E+00	1.39E+00	1.77E+00
LB4110A - B2	Beta	11/2/2019	4/8/2022	1.22E+00	P	7.81E-01	1.37E+00	1.96E+00
LB4110A - B3	Beta	11/2/2019	4/8/2022	1.48E+00	P	8.96E-01	1.31E+00	1.72E+00
LB4110A - B4	Beta	11/2/2019	4/8/2022	1.30E+00	P	5.83E-01	1.52E+00	2.46E+00
LB4110A - C1	Beta	11/2/2019	4/8/2022	1.50E+00	P	7.90E-01	1.16E+00	1.53E+00
LB4110A - C2	Beta	11/2/2019	4/8/2022	1.18E+00	P	6.54E-01	1.01E+00	1.37E+00
LB4110A - C3	Beta	11/2/2019	4/8/2022	1.00E+00	P	7.21E-01	1.31E+00	1.89E+00
LB4110A - C4	Beta	11/2/2019	4/8/2022	1.40E+00	P	8.61E-01	1.28E+00	1.70E+00
LB4110A - D1	Beta	11/2/2019	4/8/2022	1.13E+00	P	6.68E-01	1.07E+00	1.47E+00
LB4110A - D2	Beta	11/2/2019	4/8/2022	2.20E+00	F	-1.24E+00	2.29E+00	5.81E+00
LB4110A - D3	Beta	11/2/2019	4/8/2022	1.42E+00	P	7.34E-01	1.12E+00	1.50E+00
LB4110A - D4	Beta	11/2/2019	4/8/2022	1.50E+00	P	1.03E+00	1.46E+00	1.90E+00
LB4110A - E1	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E2	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E3	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E4	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - F1	Beta	11/2/2019	1/10/2022	1.67E-02	P	2.10E-01	1.28E+00	2.35E+00
LB4110A - F2	Beta	11/2/2019	1/10/2022	0.00E+00	P	-5.04E-01	1.19E+00	2.88E+00
LB4110A - F3	Beta	11/2/2019	1/10/2022	0.00E+00	P	-2.58E-01	1.18E+00	2.62E+00
LB4110A - F4	Beta	11/2/2019	1/10/2022	0.00E+00	P	-1.30E+00	1.60E+00	4.50E+00
LB4110A - G1	Beta	11/2/2019	4/8/2022	1.25E+00	P	7.47E-01	1.18E+00	1.62E+00
LB4110A - G2	Beta	11/2/2019	4/8/2022	1.55E+00	P	1.12E+00	1.58E+00	2.04E+00
LB4110A - G3	Beta	11/2/2019	4/8/2022	1.30E+00	P	7.63E-01	1.19E+00	1.61E+00
LB4110A - G4	Beta	11/2/2019	4/8/2022	1.02E+00	P	6.00E-01	1.25E+00	1.91E+00

BP/Castex-Ltd Adm-Apx E-000722

GPC Detector Report
(ALL Efficiencies)

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/2/2019	4/8/2022	0.2308	P	0.2079	0.2329	0.2579
LB4110A - A2	Alpha	11/2/2019	4/8/2022	0.2047	P	0.1799	0.2019	0.2239
LB4110A - A3	Alpha	11/2/2019	4/8/2022	0.1992	P	0.1749	0.1968	0.2186
LB4110A - A4	Alpha	11/2/2019	4/8/2022	0.2347	P	0.2010	0.2261	0.2511
LB4110A - B1	Alpha	11/2/2019	4/8/2022	0.2104	P	0.1860	0.2113	0.2367
LB4110A - B2	Alpha	11/2/2019	4/8/2022	0.1830	P	0.1717	0.1970	0.2223
LB4110A - B3	Alpha	11/2/2019	4/8/2022	0.2196	P	0.2014	0.2323	0.2631
LB4110A - B4	Alpha	11/2/2019	4/8/2022	0.2123	P	0.1969	0.2265	0.2560
LB4110A - C1	Alpha	11/2/2019	4/8/2022	0.1857	P	0.1742	0.1976	0.2209
LB4110A - C2	Alpha	11/2/2019	4/8/2022	0.1886	P	0.1747	0.1992	0.2237
LB4110A - C3	Alpha	11/2/2019	4/8/2022	0.2183	P	0.1930	0.2236	0.2543
LB4110A - C4	Alpha	11/2/2019	4/8/2022	0.2115	P	0.1784	0.2089	0.2393
LB4110A - D1	Alpha	11/2/2019	4/8/2022	0.1910	P	0.1735	0.1968	0.2201
LB4110A - D2	Alpha	11/2/2019	4/8/2022	0.2285	P	0.2078	0.2346	0.2613
LB4110A - D3	Alpha	11/2/2019	4/8/2022	0.2343	P	0.2135	0.2406	0.2676
LB4110A - D4	Alpha	11/2/2019	4/8/2022	0.1776	P	0.1623	0.1839	0.2054
LB4110A - E1	Alpha	11/2/2017	5/19/2020	0.2075	P	0.1686	0.2257	0.2828
LB4110A - E2	Alpha	11/2/2017	5/19/2020	0.1778	P	0.1514	0.2049	0.2583
LB4110A - E3	Alpha	11/2/2017	5/19/2020	0.2234	P	0.1549	0.2076	0.2604
LB4110A - E4	Alpha	11/2/2017	5/19/2020	0.2155	P	0.1746	0.2353	0.2961
LB4110A - F1	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1419	0.2082	0.2746
LB4110A - F2	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1190	0.1738	0.2286
LB4110A - F3	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1494	0.2173	0.2853
LB4110A - F4	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1457	0.2123	0.2788
LB4110A - G1	Alpha	11/2/2019	4/8/2022	0.1867	P	0.1764	0.1871	0.1979
LB4110A - G2	Alpha	11/2/2019	4/8/2022	0.1859	P	0.1726	0.1834	0.1942
LB4110A - G3	Alpha	11/2/2019	4/8/2022	0.2130	P	0.2033	0.2149	0.2265
LB4110A - G4	Alpha	11/2/2019	4/8/2022	0.1908	P	0.1645	0.1834	0.2022

KP 4/8/22

KP 4/8/22 out of service

BP/Castex-Ltd Adm-Apx E-000723

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Efficiencies)

Printed: 4/8/2022 7:00 AM

KP 4/8/22

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/2/2019	4/8/2022	0.5521	P	0.5051	0.5659	0.6268
LB4110A - A2	Beta	11/2/2019	4/8/2022	0.4511	P	0.3950	0.4437	0.4923
LB4110A - A3	Beta	11/2/2019	4/8/2022	0.5022	P	0.4268	0.4801	0.5334
LB4110A - A4	Beta	11/2/2019	4/8/2022	0.5791	P	0.4942	0.5550	0.6157
LB4110A - B1	Beta	11/2/2019	4/8/2022	0.4835	P	0.4348	0.4948	0.5549
LB4110A - B2	Beta	11/2/2019	4/8/2022	0.4288	P	0.4021	0.4855	0.5688
LB4110A - B3	Beta	11/2/2019	4/8/2022	0.5293	P	0.4967	0.5791	0.6614
LB4110A - B4	Beta	11/2/2019	4/8/2022	0.4986	P	0.4734	0.5567	0.6400
LB4110A - C1	Beta	11/2/2019	4/8/2022	0.4508	P	0.4210	0.4758	0.5305
LB4110A - C2	Beta	11/2/2019	4/8/2022	0.4610	P	0.4200	0.4774	0.5349
LB4110A - C3	Beta	11/2/2019	4/8/2022	0.5577	P	0.4922	0.5669	0.6416
LB4110A - C4	Beta	11/2/2019	4/8/2022	0.5097	P	0.4409	0.5112	0.5814
LB4110A - D1	Beta	11/2/2019	4/8/2022	0.5553	P	0.5101	0.5764	0.6428
LB4110A - D2	Beta	11/2/2019	4/8/2022	0.5713	P	0.5262	0.5929	0.6596
LB4110A - D3	Beta	11/2/2019	4/8/2022	0.5911	P	0.5361	0.6023	0.6685
LB4110A - D4	Beta	11/2/2019	4/8/2022	0.4690	P	0.4292	0.4825	0.5358
LB4110A - E1	Beta	11/2/2017	5/19/2020	0.5360	P	0.4167	0.5408	0.6649
LB4110A - E2	Beta	11/2/2017	5/19/2020	0.4520	P	0.3728	0.4910	0.6092
LB4110A - E3	Beta	11/2/2017	5/19/2020	0.5775	P	0.3848	0.5001	0.6154
LB4110A - E4	Beta	11/2/2017	5/19/2020	0.5466	P	0.4532	0.5887	0.7241
LB4110A - F1	Beta	11/2/2019	1/10/2022	0.0044	F	0.3744	0.5247	0.6751
LB4110A - F2	Beta	11/2/2019	1/10/2022	0.0009	F	0.3099	0.4365	0.5632
LB4110A - F3	Beta	11/2/2019	1/10/2022	0.0002	F	0.4027	0.5661	0.7294
LB4110A - F4	Beta	11/2/2019	1/10/2022	0.0003	F	0.3883	0.5461	0.7040
LB4110A - G1	Beta	11/2/2019	4/8/2022	0.4432	P	0.4190	0.4440	0.4690
LB4110A - G2	Beta	11/2/2019	4/8/2022	0.4265	P	0.4068	0.4339	0.4611
LB4110A - G3	Beta	11/2/2019	4/8/2022	0.5178	P	0.4926	0.5182	0.5437
LB4110A - G4	Beta	11/2/2019	4/8/2022	0.4453	P	0.3967	0.4395	0.4822

KP 4/8/22 out of service

BP/Castex-Ltd Adm-Apx E-000724

SECTION X

BARIUM-133 ANALYTICAL TRACER DATA

BP/Castex-Ltd Adm-Apx E-000725

LP 4/5/22

Apex-Gamma

Analysis Report for 2203099-01
SPIKE

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-01
Sample Description	: SPIKE
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:17:46AM
Acquisition Started	: 4/5/2022 9:19:47AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE1
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 32 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/14/2021
Efficiency Calibration Description	:
Sample Number	: 122369

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 9:34:50AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-01

SPIKE

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	53.42	51 -	56	53.11	4.15E+01	33.00	1.87E+02	2.44
M	2	62.04	57 -	68	61.73	2.39E+02	48.88	2.43E+02	2.45
m	3	66.03	57 -	68	65.72	9.99E+01	48.39	2.49E+02	2.42
	4	81.50	77 -	86	81.18	1.00E+03	79.20	3.19E+02	2.16
	5	113.26	107 -	120	112.94	2.66E+02	67.89	3.76E+02	2.70
	6	177.54	173 -	181	177.21	2.97E+01	34.31	1.65E+02	1.12
	7	277.04	272 -	283	276.70	8.35E+01	36.66	1.27E+02	2.26
m	8	303.17	293 -	313	302.83	1.79E+02	31.61	4.99E+01	2.49
m	9	307.34	293 -	313	307.00	3.56E+01	24.57	4.40E+01	2.26
	10	334.07	330 -	338	333.73	4.59E+01	30.77	1.18E+02	1.47
M	11	351.89	349 -	360	351.54	1.87E+01	16.80	5.41E+01	2.28
m	12	356.48	349 -	360	356.13	6.03E+02	52.31	5.67E+01	2.36
	13	364.93	362 -	368	364.58	1.54E+01	18.75	5.32E+01	1.30
M	14	384.26	380 -	397	383.91	1.06E+02	27.95	1.87E+01	2.47
m	15	387.27	380 -	397	386.92	2.08E+02	35.68	1.25E+01	2.27
m	16	391.04	380 -	397	390.69	5.19E+01	33.23	1.08E+01	2.80
M	17	415.12	411 -	421	414.77	3.70E+01	20.78	4.32E+01	2.57
m	18	418.59	411 -	421	418.23	2.15E+01	21.07	4.59E+01	2.53
	19	437.60	432 -	443	437.25	7.85E+01	27.13	4.89E+01	2.36
	20	469.36	463 -	475	469.00	1.84E+01	21.44	4.51E+01	2.31
	21	491.89	488 -	495	491.53	7.85E+00	7.48	4.30E+00	3.90
	22	542.01	536 -	548	541.65	1.70E+01	8.25	0.00E+00	3.36
	23	779.28	776 -	781	778.90	5.57E+00	6.08	2.86E+00	1.53
	24	1405.39	1401 -	1407	1405.00	5.00E+00	4.47	0.00E+00	2.98

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 9:34:50AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122288.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	53.42	4.15E+01	33.00			4.15E+01	3.30E+01
M	2	62.04	2.39E+02	48.88	2.30E+01	2.61E+00	2.16E+02	4.90E+01
m	3	66.03	9.99E+01	48.39	2.30E+01	2.61E+00	7.69E+01	4.85E+01
	4	81.50	1.00E+03	79.20			1.00E+03	7.92E+01
	5	113.26	2.66E+02	67.89	1.50E+00	2.19E+00	2.64E+02	6.79E+01

BP/Castex-Ltd Adm-Apx E-000727

Analysis Report for 2203099-01

SPIKE

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	6	177.54	2.97E+01	34.31			2.97E+01	3.43E+01
	7	277.04	8.35E+01	36.66			8.35E+01	3.67E+01
m	8	303.17	1.79E+02	31.61			1.79E+02	3.16E+01
m	9	307.34	3.56E+01	24.57			3.56E+01	2.46E+01
	10	334.07	4.59E+01	30.77			4.59E+01	3.08E+01
M	11	351.89	1.87E+01	16.80			1.87E+01	1.68E+01
m	12	356.48	6.03E+02	52.31			6.03E+02	5.23E+01
	13	364.93	1.54E+01	18.75			1.54E+01	1.88E+01
M	14	384.26	1.06E+02	27.95			1.06E+02	2.79E+01
m	15	387.27	2.08E+02	35.68	0.00E+00	0.00E+00	2.08E+02	3.57E+01
m	16	391.04	5.19E+01	33.23			5.19E+01	3.32E+01
M	17	415.12	3.70E+01	20.78			3.70E+01	2.08E+01
m	18	418.59	2.15E+01	21.07			2.15E+01	2.11E+01
	19	437.60	7.85E+01	27.13			7.85E+01	2.71E+01
	20	469.36	1.84E+01	21.44			1.84E+01	2.14E+01
	21	491.89	7.85E+00	7.48			7.85E+00	7.48E+00
	22	542.01	1.70E+01	8.25			1.70E+01	8.25E+00
	23	779.28	5.57E+00	6.08			5.57E+00	6.08E+00
	24	1405.39	5.00E+00	4.47			5.00E+00	4.47E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.94	255.12		1.93		
		391.69	*	61.90	3.91E+01	2.51E+01
BA-133	0.99	81.00	*	34.06	5.15E+02	4.58E+01
		302.84	*	18.33	4.97E+02	9.16E+01
		356.01	*	62.05	4.73E+02	4.54E+01
HG-203	0.88	279.19	*	77.30	5.55E+01	2.46E+01
TH-234	0.96	63.29	*	3.80	5.79E+02	1.32E+02

BP/Castex-Ltd Adm-Apx E-000728

Analysis Report for 2203099-01

SPIKE

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.943	3.91E+01	2.51E+01	
BA-133	0.995	4.94E+02	3.04E+01	
HG-203	0.888	5.55E+01	2.46E+01	
TH-234	0.961	5.79E+02	1.32E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2203099-01
SPIKE

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 9:34:50AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	53.42	4.61440E-02	39.73		
m	3	66.03	8.54430E-02	31.51		
	5	113.26	2.93736E-01	12.85	Tol.	U-237
	6	177.54	3.29563E-02	57.83		
m	9	307.34	3.95853E-02	34.48		
	10	334.07	5.09524E-02	33.54		
M	11	351.89	2.08095E-02	44.85		
	13	364.93	1.71296E-02	60.83	Sum	
M	14	384.26	1.17385E-01	13.23	Sum	
m	15	387.27	2.30978E-01	8.58		
M	17	415.12	4.11618E-02	28.05		
m	18	418.59	2.39231E-02	48.93	Sum	
	19	437.60	8.72762E-02	17.27	Sum	
	20	469.36	2.04878E-02	58.14		
	21	491.89	8.72222E-03	47.66		
	22	542.01	1.88889E-02	24.25		
	23	779.28	6.19048E-03	54.59		
	24	1405.39	5.55556E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Analysis Report for 2203099-01

SPIKE

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.44E-07	5.44E-07	0.00E+00	0.00E+00
		3.31		12.30	6.51E-06		0.00E+00	0.00E+00
	FE-55	5.89		24.50	1.09E-04	1.09E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.64E+01	1.64E+01	-1.90E+00	7.71E+00
		136.48		10.60	1.64E+02		1.15E+01	7.76E+01
	NI-59	6.92		29.80	2.19E-04	2.19E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	8.08E-03	8.08E-03	0.00E+00	0.00E+00
		18.60		10.00	6.79E-02		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	4.51E-02	4.51E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.66E+02	2.66E+02	-2.27E+02	1.26E+02
+	SN-113	255.12		1.93	8.81E+02	2.51E+01	-8.33E+00	4.05E+02
		391.69	*	61.90	2.51E+01		3.91E+01	1.15E+01
	SN-119M	23.87		16.10	1.08E-01	9.18E-02	0.00E+00	0.00E+00
		25.10		22.70	9.18E-02		0.00E+00	0.00E+00
	I-129	29.78		57.00	1.28E+00	1.28E+00	-9.78E-01	6.08E-01
		33.60		13.20	2.20E+01		9.58E+01	1.08E+01
		39.58		7.52	4.81E+01		6.24E+01	2.35E+01
+	BA-133	81.00	*	34.06	4.16E+01	3.69E+01	5.15E+02	2.01E+01
		302.84	*	18.33	1.93E+02		4.97E+02	9.26E+01
		356.01	*	62.05	3.69E+01		4.73E+02	1.74E+01
	CE-139	165.85		80.35	2.61E+01	2.61E+01	6.51E+00	1.23E+01
	CE-144	133.54		10.80	1.56E+02	1.56E+02	4.28E+01	7.37E+01
+	HG-203	279.19	*	77.30	3.65E+01	3.65E+01	5.55E+01	1.74E+01
	PB-210	46.50		4.25	6.05E+01	6.05E+01	-8.81E-01	2.86E+01
	TH-231	25.64		14.70	1.53E-01	1.53E-01	0.00E+00	0.00E+00
		84.21		6.40	4.07E+02		1.98E+03	2.00E+02
	PA-234M	9.89		89.00	4.64E-04	4.64E-04	0.00E+00	0.00E+00
		21.72		64.90	1.90E-02		0.00E+00	0.00E+00
		37.93		23.75	1.66E+01		6.39E+01	8.11E+00
+	TH-234	63.29	*	3.80	2.53E+02	2.53E+02	5.79E+02	1.23E+02
	NP-237	29.37		14.00	4.98E+00	4.98E+00	-3.81E+00	2.36E+00
		86.50		12.60	9.93E+01		-1.82E+01	4.76E+01
	U-237	97.08		16.30	7.40E+01	4.72E+01	-1.38E+01	3.50E+01
		101.07		26.30	4.72E+01		-8.11E+00	2.23E+01
		114.00		12.30	2.11E+02		5.26E+02	1.02E+02
		208.01		22.00	8.37E+01		2.22E+01	3.89E+01
	AM-241	59.54		35.90	2.21E+01	2.21E+01	1.96E+01	1.07E+01
	AM-243	74.67		66.00	1.31E+01	1.31E+01	1.64E+00	6.26E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-000731

KP 4/5/22

Apex-Gamma

Analysis Report for 2203099-02

BLANK

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-02
Sample Description	: BLANK
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:17:53AM
Acquisition Started	: 4/5/2022 9:19:53AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 28 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122370

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 9:35:05AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-02

BLANK

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.64	37 -	41	37.24	4.09E+02	74.51	2.92E+02	1.71
	2	53.38	51 -	58	54.94	9.81E+01	36.44	1.56E+02	1.44
	3	61.85	60 -	66	63.40	2.05E+02	49.61	3.01E+02	1.73
	4	66.32	67 -	71	67.86	6.34E+01	37.26	2.39E+02	1.22
	5	81.29	80 -	86	82.79	9.25E+02	69.33	1.99E+02	1.32
M	6	112.12	109 -	122	113.57	1.89E+02	38.85	1.38E+02	1.94
m	7	116.16	109 -	122	117.60	5.67E+01	30.68	1.22E+02	1.95
	8	160.91	159 -	166	162.25	3.30E+01	32.37	1.62E+02	1.48
m	9	276.81	273 -	284	277.93	7.18E+01	20.30	2.08E+01	1.57
M	10	303.24	299 -	316	304.30	1.89E+02	29.59	3.75E+01	1.64
m	11	307.64	299 -	316	308.69	2.59E+01	16.23	2.08E+01	1.76
	12	334.27	331 -	338	335.27	7.32E+01	26.00	6.36E+01	1.38
m	13	356.53	352 -	363	357.50	6.48E+02	51.44	1.97E+01	1.60
M	14	383.94	382 -	391	384.85	1.34E+02	28.96	5.67E+01	1.68
m	15	387.25	382 -	391	388.15	1.66E+02	35.92	1.36E+02	1.69
	16	391.58	391 -	395	392.48	4.07E+01	19.31	4.26E+01	1.40
M	17	415.05	413 -	422	415.90	3.15E+01	17.29	1.97E+01	1.89
m	18	418.00	413 -	422	418.84	1.52E+01	17.57	3.77E+01	1.72
	19	437.47	434 -	441	438.28	9.41E+01	20.00	3.71E+00	1.78
	20	468.47	466 -	472	469.22	2.00E+01	10.79	5.91E+00	1.97
	21	485.45	483 -	489	486.16	7.10E+00	8.03	5.80E+00	3.05
	22	825.45	823 -	828	825.53	4.33E+00	5.74	3.33E+00	1.64
	23	1462.94	1458 -	1464	1461.93	5.14E+00	6.34	3.71E+00	2.60

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 9:35:05AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122289.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.64	4.09E+02	74.51	0.00E+00	0.00E+00	4.09E+02	7.45E+01
	2	53.38	9.81E+01	36.44	4.26E-01	1.86E+00	9.77E+01	3.65E+01
	3	61.85	2.05E+02	49.61	2.31E+00	1.59E+00	2.02E+02	4.96E+01
	4	66.32	6.34E+01	37.26	2.84E+00	2.03E+00	6.05E+01	3.73E+01
	5	81.29	9.25E+02	69.33			9.25E+02	6.93E+01
M	6	112.12	1.89E+02	38.85			1.89E+02	3.88E+01

BP/Castex-Ltd Adm-Apx E-000733

Analysis Report for 2203099-02

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	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	7	116.16	5.67E+01	30.68			5.67E+01	3.07E+01
	8	160.91	3.30E+01	32.37			3.30E+01	3.24E+01
m	9	276.81	7.18E+01	20.30			7.18E+01	2.03E+01
M	10	303.24	1.89E+02	29.59			1.89E+02	2.96E+01
m	11	307.64	2.59E+01	16.23			2.59E+01	1.62E+01
	12	334.27	7.32E+01	26.00			7.32E+01	2.60E+01
m	13	356.53	6.48E+02	51.44			6.48E+02	5.14E+01
M	14	383.94	1.34E+02	28.96			1.34E+02	2.90E+01
m	15	387.25	1.66E+02	35.92			1.66E+02	3.59E+01
	16	391.58	4.07E+01	19.31			4.07E+01	1.93E+01
M	17	415.05	3.15E+01	17.29			3.15E+01	1.73E+01
m	18	418.00	1.52E+01	17.57			1.52E+01	1.76E+01
	19	437.47	9.41E+01	20.00	9.87E-01	1.02E+00	9.32E+01	2.00E+01
	20	468.47	2.00E+01	10.79			2.00E+01	1.08E+01
	21	485.45	7.10E+00	8.03			7.10E+00	8.03E+00
	22	825.45	4.33E+00	5.74	0.00E+00	0.00E+00	4.33E+00	5.74E+00
	23	1462.94	5.14E+00	6.34	8.33E-01	5.94E-01	4.31E+00	6.37E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	2.96E+01	1.41E+01
BA-133	0.99	81.00	*	34.06	4.78E+02	4.09E+01
		302.84	*	18.33	4.89E+02	8.08E+01
		356.01	*	62.05	4.84E+02	4.33E+01
HG-203	0.86	279.19	*	77.30	4.39E+01	1.27E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	5.65E+01	1.03E+01
TH-234	0.94	63.29	*	3.80	5.88E+02	1.45E+02
AM-241	0.87	59.54	*	35.90	6.22E+01	1.53E+01

BP/Castex-Ltd Adm-Apx E-000734

Analysis Report for 2203099-02

BLANK

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	SN-113	0.952	2.96E+01	1.41E+01	
	BA-133	0.995	4.82E+02	2.79E+01	
	HG-203	0.865	4.39E+01	1.27E+01	
	PA-234M	0.982	5.65E+01	1.03E+01	
?	TH-234	0.948	5.88E+02	1.45E+02	
?	AM-241	0.872	6.22E+01	1.53E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000735

Analysis Report for 2203099-02

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 9:35:05AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.38	1.08567E-01	18.67		
	4	66.32	6.72553E-02	30.82		
M	6	112.12	2.10334E-01	10.26	Tol.	U-237
m	7	116.16	6.30336E-02	27.04	Sum	
	8	160.91	3.66407E-02	49.08	Sum	
m	11	307.64	2.87932E-02	31.32		
	12	334.27	8.13439E-02	17.76		
M	14	383.94	1.48961E-01	10.80	Sum	
m	15	387.25	1.84657E-01	10.81		
M	17	415.05	3.50528E-02	27.41		
m	18	418.00	1.69141E-02	57.71	Sum	
	19	437.47	1.03509E-01	10.75	Sum	
	20	468.47	2.22705E-02	26.93		
	21	485.45	7.88889E-03	56.56		
	22	825.45	4.81481E-03	66.28		
	23	1462.94	4.78898E-03	73.92		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Analysis Report for 2203099-02

BLANK

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.34E+01	1.34E+01	-6.98E-01	6.23E+00
		136.48		10.60	1.14E+02		-2.95E+01	5.27E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.16E+02	2.16E+02	7.75E+00	1.01E+02
+	SN-113	255.12		1.93	7.43E+02	1.94E+01	2.43E+02	3.39E+02
		391.69	*	61.90	1.94E+01		2.96E+01	8.69E+00
	SN-119M	23.87		16.10	1.81E-01	1.81E-01	0.00E+00	0.00E+00
		25.10		22.70	1.11E+00		-1.27E+00	4.81E-01
	I-129	29.78		57.00	8.43E+00	8.43E+00	8.06E+01	4.17E+00
		33.60		13.20	4.84E+01		5.06E+01	2.39E+01
		39.58		7.52	2.16E+01		2.13E+00	1.00E+01
+	BA-133	81.00	*	34.06	2.97E+01	2.42E+01	4.78E+02	1.41E+01
		302.84	*	18.33	1.55E+02		4.89E+02	7.39E+01
		356.01	*	62.05	2.42E+01		4.84E+02	1.11E+01
	CE-139	165.85		80.35	1.83E+01	1.83E+01	-1.05E-01	8.51E+00
	CE-144	133.54		10.80	1.12E+02	1.12E+02	5.55E+01	5.21E+01
+	HG-203	279.19	*	77.30	2.09E+01	2.09E+01	4.39E+01	9.62E+00
	PB-210	46.50		4.25	5.58E+01	5.58E+01	1.35E+00	2.59E+01
	TH-231	25.64		14.70	3.26E+00	3.26E+00	-4.40E+00	1.51E+00
		84.21		6.40	1.56E+02		-1.63E+01	7.39E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.46E+01		5.65E+01	7.11E+00
+	TH-234	63.29	*	3.80	2.65E+02	2.65E+02	5.88E+02	1.28E+02
	NP-237	29.37		14.00	3.30E+01	3.30E+01	3.16E+02	1.63E+01
		86.50		12.60	5.89E+01		-4.03E+01	2.74E+01
	U-237	97.08		16.30	5.56E+01	3.53E+01	1.45E+01	2.59E+01
		101.07		26.30	3.53E+01		3.03E-01	1.64E+01
		114.00		12.30	1.75E+02		2.11E+02	8.45E+01
		208.01		22.00	7.71E+01		-1.00E+01	3.59E+01
+	AM-241	59.54	*	35.90	2.80E+01	2.80E+01	6.22E+01	1.36E+01
	AM-243	74.67		66.00	9.95E+00	9.95E+00	-9.88E-01	4.66E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-000737

KP 4/5/22

Apex-Gamma

Analysis Report for 2203099-03
CD-5A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-03
Sample Description	: CD-5A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:18:07AM
Acquisition Started	: 4/5/2022 9:20:00AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE3
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 913.5 seconds
Dead Time	: 1.48 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 7 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122371

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 9:35:27AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

BP/Castex-Ltd Adm-Apx E-000738

Analysis Report for 2203099-03

CD-5A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	21.25	16 -	42	21.90	1.69E+02	69.75	4.76E+02	4.91
m	2	31.54	16 -	42	32.18	3.12E+03	135.09	5.06E+02	4.89
M	3	52.82	47 -	71	53.44	7.54E+01	69.68	5.12E+02	4.86
m	4	61.82	47 -	71	62.44	3.86E+02	88.55	6.45E+02	4.84
	5	81.23	74 -	90	81.83	1.05E+03	104.22	6.27E+02	3.21
	6	113.49	107 -	125	114.07	4.02E+02	82.53	4.36E+02	4.49
	7	160.67	155 -	166	161.22	5.03E+01	49.03	2.73E+02	2.24
	8	208.25	203 -	215	208.77	6.66E+01	49.19	2.53E+02	5.20
	9	276.71	272 -	285	277.18	5.50E+01	41.62	1.68E+02	3.02
	10	303.33	296 -	315	303.79	1.76E+02	48.99	1.47E+02	4.24
	11	334.97	326 -	343	335.41	1.13E+02	41.73	1.17E+02	6.73
	12	356.11	349 -	362	356.53	5.11E+02	51.08	6.25E+01	3.38
	13	387.23	379 -	398	387.63	3.70E+02	55.82	1.19E+02	5.58
	14	416.91	408 -	425	417.29	8.48E+01	34.94	7.64E+01	5.06
	15	437.04	430 -	444	437.41	1.35E+02	28.72	3.00E+01	2.96

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 9:35:27AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122290.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	21.25	1.69E+02	69.75			1.69E+02	6.97E+01
m	2	31.54	3.12E+03	135.09			3.12E+03	1.35E+02
M	3	52.82	7.54E+01	69.68			7.54E+01	6.97E+01
m	4	61.82	3.86E+02	88.55	7.57E+01	7.78E-01	3.10E+02	8.86E+01
	5	81.23	1.05E+03	104.22			1.05E+03	1.04E+02
	6	113.49	4.02E+02	82.53			4.02E+02	8.25E+01
	7	160.67	5.03E+01	49.03			5.03E+01	4.90E+01
	8	208.25	6.66E+01	49.19			6.66E+01	4.92E+01
	9	276.71	5.50E+01	41.62			5.50E+01	4.16E+01
	10	303.33	1.76E+02	48.99			1.76E+02	4.90E+01
	11	334.97	1.13E+02	41.73			1.13E+02	4.17E+01
	12	356.11	5.11E+02	51.08			5.11E+02	5.11E+01
	13	387.23	3.70E+02	55.82			3.70E+02	5.58E+01
	14	416.91	8.48E+01	34.94			8.48E+01	3.49E+01

BP/Castex-Ltd Adm-Apx E-000739

Analysis Report for 2203099-03

CD-5A

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
15	437.04	1.35E+02	28.72			1.35E+02	2.87E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.58	29.78	*	57.00	1.06E+02	4.61E+00
		33.60		13.20		
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	4.62E+02	4.92E+01
		302.84	*	18.33	5.32E+02	1.50E+02
		356.01	*	62.05	4.72E+02	5.09E+01
HG-203	0.85	279.19	*	77.30	3.81E+01	2.89E+01
TH-234	0.94	63.29	*	3.80	7.46E+02	2.14E+02
NP-237	0.59	29.37	*	14.00	4.31E+02	1.88E+01
		86.50		12.60		
AM-241	0.87	59.54	*	35.90	7.90E+01	2.26E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000740

Analysis Report for 2203099-03

CD-5A

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
?	I-129	0.585	1.06E+02	4.61E+00	
	BA-133	0.998	4.70E+02	3.44E+01	
	HG-203	0.854	3.81E+01	2.89E+01	
?	TH-234	0.946	7.46E+02	2.14E+02	
?	NP-237	0.590	4.31E+02	1.88E+01	
?	AM-241	0.875	7.90E+01	2.26E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2203099-03
CD-5A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 9:35:27AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	21.25	1.87460E-01	20.67	Tol.	PA-234M
M	3	52.82	8.38293E-02	46.18		
	6	113.49	4.46604E-01	10.27	Sum	
	7	160.67	5.59239E-02	48.71	Sum	
	8	208.25	7.39810E-02	36.94	Tol.	U-237
	11	334.97	1.26005E-01	18.40	Sum	
	13	387.23	4.10684E-01	7.55	Sum	
	14	416.91	9.41960E-02	20.61	Sum	
	15	437.04	1.50000E-01	10.64	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	1.47E-04	1.47E-04	2.08E-04	6.96E-05
	3.31	12.30	1.51E-03		2.15E-03	7.16E-04
FE-55	5.89	24.50	1.49E-02	1.49E-02	2.74E-02	7.16E-03
CO-57	122.06	85.51	2.53E+01	2.53E+01	-5.69E-01	1.22E+01
	136.48	10.60	1.92E+02		9.54E+00	9.22E+01
NI-59	6.92	29.80	2.53E-02	2.53E-02	4.01E-02	1.22E-02
MO-93	16.59	52.90	5.91E-01	5.91E-01	5.65E-01	2.88E-01
	18.60	10.00	4.30E+00		-1.03E-01	2.09E+00

BP/Castex-Ltd Adm-Apx E-000742

Analysis Report for 2203099-03

CD-5A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	NB-93M	16.57		9.43	3.30E+00	3.30E+00	3.16E+00	1.61E+00
	CD-109	88.03		3.72	6.43E+02	6.43E+02	1.28E+01	3.15E+02
	SN-113	255.12		1.93	1.25E+03	7.91E+01	-2.01E+02	5.91E+02
		391.69		61.90	7.91E+01		2.16E+02	3.83E+01
	SN-119M	23.87		16.10	1.27E+01	1.14E+01	6.09E+01	6.27E+00
		25.10		22.70	1.14E+01		8.36E+01	5.64E+00
+	I-129	29.78	*	57.00	6.55E+00	6.55E+00	1.06E+02	3.23E+00
		33.60		13.20	4.86E+01		5.60E+02	2.41E+01
		39.58		7.52	8.70E+01		-4.99E+00	4.29E+01
+	BA-133	81.00	*	34.06	6.04E+01	3.87E+01	4.62E+02	2.96E+01
		302.84	*	18.33	2.13E+02		5.32E+02	1.02E+02
		356.01	*	62.05	3.87E+01		4.72E+02	1.81E+01
	CE-139	165.85		80.35	3.22E+01	3.22E+01	-7.56E-01	1.54E+01
	CE-144	133.54		10.80	1.84E+02	1.84E+02	2.34E+01	8.80E+01
+	HG-203	279.19	*	77.30	4.62E+01	4.62E+01	3.81E+01	2.22E+01
	PB-210	46.50		4.25	9.95E+01	9.95E+01	-1.29E+01	4.82E+01
	TH-231	25.64		14.70	1.87E+01	1.87E+01	1.37E+02	9.26E+00
		84.21		6.40	4.26E+02		-6.57E+00	2.10E+02
	PA-234M	9.89		89.00	4.08E-02	4.08E-02	5.71E-02	1.97E-02
		21.72		64.90	1.31E+00		-2.76E+01	6.41E-01
		37.93		23.75	2.94E+01		-1.42E+00	1.45E+01
+	TH-234	63.29	*	3.80	4.89E+02	4.89E+02	7.46E+02	2.41E+02
+	NP-237	29.37	*	14.00	2.67E+01	2.67E+01	4.31E+02	1.31E+01
		86.50		12.60	2.21E+02		3.12E+01	1.09E+02
	U-237	97.08		16.30	1.05E+02	6.60E+01	3.60E+01	5.06E+01
		101.07		26.30	6.60E+01		-2.40E+01	3.19E+01
		114.00		12.30	2.30E+02		7.08E+02	1.12E+02
		208.01		22.00	1.40E+02		7.38E+01	6.73E+01
+	AM-241	59.54	*	35.90	5.18E+01	5.18E+01	7.90E+01	2.55E+01
	AM-243	74.67		66.00	3.08E+01	3.08E+01	3.94E-01	1.51E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

MP 4/5/22

Analysis Report for 2203099-04

CD-5B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-04
Sample Description	: CD-5B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:18:16AM
Acquisition Started	: 4/5/2022 9:20:07AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.5 seconds
Dead Time	: 0.05 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122372

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 9:35:16AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-04

CD-5B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.34	18 -	23	20.31	3.39E+01	31.38	1.68E+02	1.74
M	2	25.54	24 -	39	25.51	2.73E+01	16.90	7.71E+01	2.94
m	3	30.79	24 -	39	30.75	1.16E+03	74.20	1.43E+02	2.40
m	4	35.00	24 -	39	34.96	2.89E+02	67.92	9.84E+01	2.45
M	5	61.81	56 -	68	61.75	1.35E+02	43.58	1.77E+02	3.30
m	6	66.08	56 -	68	66.02	4.69E+01	28.12	8.98E+01	1.86
	7	80.88	75 -	88	80.81	5.17E+02	65.41	2.48E+02	2.62
	8	112.77	107 -	120	112.68	1.29E+02	49.59	2.12E+02	2.70
M	9	218.42	216 -	226	218.26	1.86E+01	13.88	2.87E+01	2.84
m	10	224.03	216 -	226	223.87	2.17E+01	16.70	3.68E+01	2.41
	11	276.20	271 -	283	276.01	4.03E+01	25.70	5.94E+01	3.43
	12	302.94	299 -	306	302.73	8.07E+01	23.24	3.66E+01	2.34
	13	331.34	315 -	344	331.11	5.24E+01	47.41	1.19E+02	7.33
	14	356.28	350 -	362	356.04	2.74E+02	37.76	3.90E+01	2.55
	15	385.95	379 -	393	385.69	1.57E+02	27.72	1.50E+01	5.65
	16	414.54	410 -	417	414.27	1.32E+01	14.00	2.37E+01	3.26
	17	437.38	431 -	444	437.09	3.10E+01	19.39	2.80E+01	2.65
	18	490.63	487 -	493	490.31	5.21E+00	6.34	3.57E+00	2.55
	19	549.70	546 -	553	549.35	9.00E+00	9.17	8.00E+00	1.66
	20	738.85	735 -	740	738.40	5.00E+00	4.47	0.00E+00	1.24
	21	797.48	792 -	799	797.00	6.00E+00	4.90	0.00E+00	2.88
	22	1568.80	1565 -	1570	1568.00	5.00E+00	4.47	0.00E+00	1.50

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 9:35:16AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122291.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	20.34	3.39E+01	31.38			3.39E+01	3.14E+01
M	2	25.54	2.73E+01	16.90			2.73E+01	1.69E+01
m	3	30.79	1.16E+03	74.20			1.16E+03	7.42E+01
m	4	35.00	2.89E+02	67.92			2.89E+02	6.79E+01
M	5	61.81	1.35E+02	43.58	1.42E+01	3.89E+00	1.21E+02	4.38E+01
m	6	66.08	4.69E+01	28.12			4.69E+01	2.81E+01
	7	80.88	5.17E+02	65.41			5.17E+02	6.54E+01

BP/Castex-Ltd Adm-Apx E-000745

Analysis Report for 2203099-04

CD-5B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	8	112.77	1.29E+02	49.59			1.29E+02	4.96E+01
M	9	218.42	1.86E+01	13.88			1.86E+01	1.39E+01
m	10	224.03	2.17E+01	16.70			2.17E+01	1.67E+01
	11	276.20	4.03E+01	25.70			4.03E+01	2.57E+01
	12	302.94	8.07E+01	23.24			8.07E+01	2.32E+01
	13	331.34	5.24E+01	47.41			5.24E+01	4.74E+01
	14	356.28	2.74E+02	37.76			2.74E+02	3.78E+01
	15	385.95	1.57E+02	27.72			1.57E+02	2.77E+01
	16	414.54	1.32E+01	14.00			1.32E+01	1.40E+01
	17	437.38	3.10E+01	19.39			3.10E+01	1.94E+01
	18	490.63	5.21E+00	6.34			5.21E+00	6.34E+00
	19	549.70	9.00E+00	9.17			9.00E+00	9.17E+00
	20	738.85	5.00E+00	4.47			5.00E+00	4.47E+00
	21	797.48	6.00E+00	4.90			6.00E+00	4.90E+00
	22	1568.80	5.00E+00	4.47			5.00E+00	4.47E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.86	29.78	*	57.00	2.37E+01	1.51E+00
		33.60	*	13.20	3.91E+01	9.18E+00
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	2.48E+02	3.28E+01
		302.84	*	18.33	2.89E+02	8.46E+01
		356.01	*	62.05	2.87E+02	4.14E+01
TH-231	0.88	25.64	*	14.70	1.10E+00	6.81E-01
		84.21		6.40		
TH-234	0.94	63.29	*	3.80	2.85E+02	1.04E+02
AM-241	0.87	59.54	*	35.90	3.02E+01	1.10E+01

BP/Castex-Ltd Adm-Apx E-000746

Analysis Report for 2203099-04

CD-5B

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.869	2.41E+01	1.49E+00	
	BA-133	0.999	2.65E+02	2.46E+01	
	TH-231	0.881	1.10E+00	6.81E-01	
?	TH-234	0.945	2.85E+02	1.04E+02	
X	NP-237	0.699			
?	AM-241	0.877	3.02E+01	1.10E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000747

Analysis Report for 2203099-04

CD-5B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 9:35:16AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.34	3.76648E-02	46.29	Tol.	PA-234M
m	6	66.08	5.21140E-02	29.98	Sum	
	8	112.77	1.43487E-01	19.20	Sum	
M	9	218.42	2.06427E-02	37.36		
m	10	224.03	2.41149E-02	38.46		
	11	276.20	4.47619E-02	31.89		
	13	331.34	5.82044E-02	45.26	Sum	
	15	385.95	1.73889E-01	8.86	Sum	
	16	414.54	1.46222E-02	53.19		
	17	437.38	3.44444E-02	31.28	Sum	
	18	490.63	5.79365E-03	60.84		
	19	549.70	1.00000E-02	50.92		
	20	738.85	5.55556E-03	44.72		
	21	797.48	6.66667E-03	40.82		
	22	1568.80	5.55556E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Analysis Report for 2203099-04

CD-5B

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
		3.31		12.30	2.92E-06		0.00E+00	0.00E+00
	FE-55	5.89		24.50	6.01E-04	6.01E-04	-1.88E-05	2.73E-04
	CO-57	122.06		85.51	1.52E+01	1.52E+01	-4.94E+00	7.06E+00
		136.48		10.60	1.52E+02		5.73E+01	7.09E+01
	NI-59	6.92		29.80	1.69E-03	1.69E-03	1.08E-03	7.86E-04
	MO-93	16.59		52.90	1.33E-01	1.33E-01	2.93E-03	6.41E-02
		18.60		10.00	1.11E+00		1.46E-01	5.30E-01
	NB-93M	16.57		9.43	7.44E-01	7.44E-01	1.63E-02	3.57E-01
	CD-109	88.03		3.72	2.57E+02	2.57E+02	2.60E+01	1.21E+02
	SN-113	255.12		1.93	9.79E+02	4.08E+01	2.50E+02	4.45E+02
		391.69		61.90	4.08E+01		-3.34E+00	1.90E+01
	SN-119M	23.87		16.10	1.90E+00	1.90E+00	-2.89E+01	9.14E-01
		25.10		22.70	1.95E+00		-3.22E+01	9.43E-01
+	I-129	29.78	*	57.00	1.80E+00	1.80E+00	2.37E+01	8.72E-01
		33.60	*	13.20	1.18E+01		3.91E+01	5.70E+00
		39.58		7.52	2.15E+01		2.36E+00	1.03E+01
+	BA-133	81.00	*	34.06	3.85E+01	3.43E+01	2.48E+02	1.86E+01
		302.84	*	18.33	9.64E+01		2.89E+02	4.34E+01
		356.01	*	62.05	3.43E+01		2.87E+02	1.57E+01
	CE-139	165.85		80.35	2.27E+01	2.27E+01	-9.86E+00	1.06E+01
	CE-144	133.54		10.80	1.32E+02	1.32E+02	-6.23E+01	6.11E+01
	HG-203	279.19		77.30	3.15E+01	3.15E+01	2.51E+01	1.46E+01
	PB-210	46.50		4.25	4.27E+01	4.27E+01	-3.36E+01	2.00E+01
+	TH-231	25.64	*	14.70	3.48E+00	3.48E+00	1.10E+00	1.69E+00
		84.21		6.40	3.13E+02		1.28E+03	1.53E+02
	PA-234M	9.89		89.00	5.52E-03	5.52E-03	5.38E-03	2.63E-03
		21.72		64.90	3.08E-01		-3.03E-01	1.48E-01
		37.93		23.75	8.61E+00		-3.65E-01	4.17E+00
+	TH-234	63.29	*	3.80	1.76E+02	1.76E+02	2.85E+02	8.49E+01
	NP-237	29.37	*	14.00	7.32E+00	7.32E+00	9.64E+01	3.55E+00
		86.50		12.60	1.03E+02		-1.76E+01	4.95E+01
	U-237	97.08		16.30	6.40E+01	4.08E+01	-1.23E+01	3.01E+01
		101.07		26.30	4.08E+01		-2.27E-01	1.91E+01
		114.00		12.30	1.66E+02		3.23E+02	7.97E+01
		208.01		22.00	9.55E+01		1.64E+01	4.42E+01
+	AM-241	59.54	*	35.90	1.87E+01	1.87E+01	3.02E+01	8.99E+00
	AM-243	74.67		66.00	1.12E+01	1.12E+01	1.16E+00	5.32E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

KP 4/5/22

Apex-Gamma

Analysis Report for 2203099-05
CD-2A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-05
Sample Description	: CD-2A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:18:28AM
Acquisition Started	: 4/5/2022 9:36:15AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE1
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.2 seconds
Dead Time	: 0.02 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 31 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/14/2021
Efficiency Calibration Description	:
Sample Number	: 122373

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 9:51:18AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-05

CD-2A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	62.11	57 -	73	61.80	2.17E+02	49.11	2.43E+02	2.70
m	2	66.36	57 -	73	66.05	1.17E+02	46.33	2.01E+02	2.49
m	3	70.64	57 -	73	70.33	3.02E+01	43.08	2.21E+02	2.71
	4	81.27	75 -	86	80.96	7.49E+02	76.34	3.54E+02	2.15
	5	102.12	99 -	104	101.80	2.61E+01	28.77	1.46E+02	1.60
M	6	112.46	106 -	120	112.14	1.98E+02	41.67	1.80E+02	2.45
m	7	117.10	106 -	120	116.78	3.66E+01	39.19	1.64E+02	2.79
	8	277.15	273 -	282	276.81	4.00E+01	32.14	1.24E+02	1.98
	9	303.68	297 -	310	303.34	1.58E+02	40.74	1.21E+02	2.69
	10	312.93	310 -	316	312.59	2.12E+01	20.11	5.56E+01	2.84
	11	335.16	328 -	341	334.82	9.41E+01	33.53	7.99E+01	2.38
M	12	356.45	350 -	369	356.10	4.47E+02	45.21	4.14E+01	2.57
m	13	364.96	350 -	369	364.61	2.95E+01	19.96	2.86E+01	3.06
M	14	384.56	379 -	397	384.21	9.33E+01	32.86	4.60E+01	2.54
m	15	387.52	379 -	397	387.17	1.57E+02	33.38	2.76E+01	2.23
m	16	391.58	379 -	397	391.23	5.06E+01	29.46	2.06E+01	2.55
M	17	415.59	410 -	427	415.23	3.56E+01	20.30	3.76E+01	2.57
m	18	418.59	410 -	427	418.23	2.62E+01	20.98	3.55E+01	2.57
	19	437.22	432 -	441	436.86	9.23E+01	24.04	2.94E+01	1.71
M	20	464.62	463 -	471	464.27	9.79E+00	5.74	3.81E+00	2.98
m	21	468.10	463 -	471	467.74	1.54E+01	13.11	1.77E+01	2.69
	22	512.07	506 -	518	511.71	3.05E+01	13.35	7.09E+00	2.84
	23	753.85	750 -	755	753.48	4.75E+00	5.74	2.50E+00	1.78
	24	842.72	839 -	844	842.33	5.38E+00	7.07	5.25E+00	1.84

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 9:51:18AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122288.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	62.11	2.17E+02	49.11	2.30E+01	2.61E+00	1.94E+02	4.92E+01
m	2	66.36	1.17E+02	46.33			1.17E+02	4.63E+01
m	3	70.64	3.02E+01	43.08			3.02E+01	4.31E+01
	4	81.27	7.49E+02	76.34			7.49E+02	7.63E+01
	5	102.12	2.61E+01	28.77			2.61E+01	2.88E+01

BP/Castex-Ltd Adm-Apx E-000751

Analysis Report for 2203099-05

CD-2A

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	6	112.46	1.98E+02	41.67	1.50E+00	2.19E+00	1.96E+02	4.17E+01
m	7	117.10	3.66E+01	39.19			3.66E+01	3.92E+01
	8	277.15	4.00E+01	32.14			4.00E+01	3.21E+01
	9	303.68	1.58E+02	40.74			1.58E+02	4.07E+01
	10	312.93	2.12E+01	20.11			2.12E+01	2.01E+01
	11	335.16	9.41E+01	33.53			9.41E+01	3.35E+01
M	12	356.45	4.47E+02	45.21			4.47E+02	4.52E+01
m	13	364.96	2.95E+01	19.96			2.95E+01	2.00E+01
M	14	384.56	9.33E+01	32.86			9.33E+01	3.29E+01
m	15	387.52	1.57E+02	33.38	0.00E+00	0.00E+00	1.57E+02	3.34E+01
m	16	391.58	5.06E+01	29.46			5.06E+01	2.95E+01
M	17	415.59	3.56E+01	20.30			3.56E+01	2.03E+01
m	18	418.59	2.62E+01	20.98			2.62E+01	2.10E+01
	19	437.22	9.23E+01	24.04			9.23E+01	2.40E+01
M	20	464.62	9.79E+00	5.74			9.79E+00	5.74E+00
m	21	468.10	1.54E+01	13.11			1.54E+01	1.31E+01
	22	512.07	3.05E+01	13.35	1.73E+01	1.50E+00	1.32E+01	1.34E+01
	23	753.85	4.75E+00	5.74			4.75E+00	5.74E+00
	24	842.72	5.38E+00	7.07			5.38E+00	7.07E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.81E+01	2.22E+01
BA-133	0.99	81.00	*	34.06	3.83E+02	4.20E+01
		302.84	*	18.33	4.40E+02	1.15E+02
		356.01	*	62.05	3.51E+02	3.83E+01
HG-203	0.89	279.19	*	77.30	2.66E+01	2.14E+01
TH-234	0.96	63.29	*	3.80	5.22E+02	1.33E+02

BP/Castex-Ltd Adm-Apx E-000752

Analysis Report for 2203099-05
CD-2A

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.953	3.81E+01	2.22E+01	
BA-133	0.994	3.70E+02	2.75E+01	
HG-203	0.899	2.66E+01	2.14E+01	
TH-234	0.965	5.22E+02	1.33E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2203099-05
CD-2A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 9:51:18AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	2	66.36	1.30331E-01	19.75		
m	3	70.64	3.35197E-02	71.40		
	5	102.12	2.89675E-02	55.19	Tol.	U-237
M	6	112.46	2.18107E-01	10.63	Tol.	U-237
m	7	117.10	4.06640E-02	53.54		
	10	312.93	2.35714E-02	47.39		
	11	335.16	1.04511E-01	17.82		
m	13	364.96	3.27264E-02	33.89	Sum	
M	14	384.56	1.03679E-01	17.61	Sum	
m	15	387.52	1.74306E-01	10.64		
M	17	415.59	3.96025E-02	28.47		
m	18	418.59	2.90635E-02	40.10	Sum	
	19	437.22	1.02534E-01	13.03	Sum	
M	20	464.62	1.08821E-02	29.33		
m	21	468.10	1.71385E-02	42.51		
	22	512.07	1.46481E-02	50.96		
	23	753.85	5.27778E-03	60.47		
	24	842.72	5.97222E-03	65.78		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

BP/Castex-Ltd Adm-Apx E-000754

Analysis Report for 2203099-05

CD-2A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.44E-07	5.44E-07	0.00E+00	0.00E+00
		3.31		12.30	6.51E-06		0.00E+00	0.00E+00
	FE-55	5.89		24.50	1.09E-04	1.09E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.76E+01	1.76E+01	5.30E+00	8.28E+00
		136.48		10.60	1.54E+02		5.68E+01	7.26E+01
	NI-59	6.92		29.80	2.19E-04	2.19E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	8.08E-03	8.08E-03	0.00E+00	0.00E+00
		18.60		10.00	6.79E-02		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	4.51E-02	4.51E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.93E+02	2.93E+02	-6.92E+01	1.39E+02
+	SN-113	255.12		1.93	8.90E+02	3.82E+01	3.97E+02	4.09E+02
		391.69	*	61.90	3.82E+01		3.81E+01	1.81E+01
	SN-119M	23.87		16.10	1.08E-01	9.18E-02	0.00E+00	0.00E+00
		25.10		22.70	9.18E-02		0.00E+00	0.00E+00
	I-129	29.78		57.00	1.23E+00	1.23E+00	-5.44E-01	5.81E-01
		33.60		13.20	1.95E+01		8.05E+01	9.54E+00
		39.58		7.52	3.97E+01		2.83E+01	1.92E+01
+	BA-133	81.00	*	34.06	4.62E+01	4.46E+01	3.83E+02	2.24E+01
		302.84	*	18.33	2.04E+02		4.40E+02	9.80E+01
		356.01	*	62.05	4.46E+01		3.51E+02	2.12E+01
	CE-139	165.85		80.35	2.05E+01	2.05E+01	-2.02E+00	9.52E+00
	CE-144	133.54		10.80	1.46E+02	1.46E+02	5.06E+01	6.88E+01
+	HG-203	279.19	*	77.30	3.41E+01	3.41E+01	2.66E+01	1.61E+01
	PB-210	46.50		4.25	6.19E+01	6.19E+01	1.56E+01	2.93E+01
	TH-231	25.64		14.70	1.53E-01	1.53E-01	0.00E+00	0.00E+00
		84.21		6.40	3.55E+02		1.31E+03	1.74E+02
	PA-234M	9.89		89.00	4.64E-04	4.64E-04	0.00E+00	0.00E+00
		21.72		64.90	1.90E-02		0.00E+00	0.00E+00
		37.93		23.75	1.37E+01		3.91E+01	6.71E+00
+	TH-234	63.29	*	3.80	3.15E+02	3.15E+02	5.22E+02	1.54E+02
	NP-237	29.37		14.00	4.78E+00	4.78E+00	-2.12E+00	2.26E+00
		86.50		12.60	9.63E+01		7.42E+00	4.61E+01
	U-237	97.08		16.30	7.28E+01	4.85E+01	-1.47E+01	3.44E+01
		101.07		26.30	4.85E+01		3.79E+00	2.30E+01
		114.00		12.30	1.97E+02		4.39E+02	9.51E+01
		208.01		22.00	8.18E+01		-1.02E+01	3.79E+01
	AM-241	59.54		35.90	2.07E+01	2.07E+01	1.40E+01	9.98E+00
	AM-243	74.67		66.00	1.25E+01	1.25E+01	-2.20E+01	5.94E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

ICP 4/5/22

Apex-Gamma

Analysis Report for 2203099-06
CD-2B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-06
Sample Description	: CD-2B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:18:36AM
Acquisition Started	: 4/5/2022 9:36:24AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 28 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122374

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 9:51:32AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-06

CD-2B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.62	37 -	40	37.22	3.88E+02	63.28	2.14E+02	1.69
	2	52.93	52 -	57	54.49	4.47E+01	33.24	1.89E+02	1.12
M	3	62.12	60 -	71	63.67	2.00E+02	36.88	1.29E+02	1.47
m	4	66.22	60 -	71	67.76	7.83E+01	30.66	1.40E+02	1.48
	5	81.27	79 -	86	82.77	8.93E+02	72.47	2.80E+02	1.27
M	6	112.35	109 -	120	113.79	1.82E+02	35.14	9.01E+01	1.60
m	7	116.16	109 -	120	117.60	3.81E+01	25.03	7.44E+01	1.61
	8	168.80	167 -	173	170.13	2.84E+01	26.22	1.03E+02	3.93
	9	276.62	275 -	281	277.74	6.18E+01	25.64	7.63E+01	1.45
	10	296.49	295 -	300	297.57	1.44E+01	13.75	2.51E+01	2.54
	11	303.09	301 -	306	304.16	1.74E+02	29.09	2.94E+01	1.75
	12	307.64	308 -	312	308.70	1.57E+01	19.84	6.85E+01	1.31
M	13	333.85	331 -	342	334.85	6.23E+01	19.89	1.32E+01	1.63
m	14	356.50	352 -	365	357.46	5.87E+02	49.81	2.79E+01	1.53
	15	370.09	369 -	374	371.03	1.80E+01	11.31	9.91E+00	2.11
M	16	377.40	375 -	396	378.32	1.50E+01	11.09	6.21E+00	1.84
m	17	384.33	375 -	396	385.24	1.25E+02	26.89	7.45E+00	1.85
m	18	387.31	375 -	396	388.22	1.95E+02	31.22	8.28E+00	1.80
m	19	391.78	375 -	396	392.68	4.47E+01	16.82	1.16E+01	1.86
M	20	415.31	412 -	424	416.16	2.85E+01	14.18	5.40E+00	1.72
m	21	419.00	412 -	424	419.84	3.01E+01	16.16	1.29E+01	1.72
	22	437.63	434 -	441	438.43	1.02E+02	22.45	1.60E+01	2.00
	23	468.42	466 -	472	469.17	9.98E+00	13.18	2.40E+01	1.65
	24	583.49	580 -	587	584.02	9.14E+00	7.75	3.73E+00	3.66
	25	609.83	606 -	614	610.31	1.80E+01	11.34	8.09E+00	1.89
	26	901.65	899 -	904	901.60	5.00E+00	4.47	0.00E+00	1.24
	27	1206.90	1202 -	1209	1206.32	5.21E+00	6.63	3.57E+00	2.69
	28	1319.49	1314 -	1321	1318.71	7.00E+00	5.29	0.00E+00	1.92

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 9:51:32AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122289.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	35.62	3.88E+02	63.28	0.00E+00	0.00E+00	3.88E+02	6.33E+01

BP/Castex-Ltd Adm-Apx E-000757

Analysis Report for 2203099-06

CD-2B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	2	52.93	4.47E+01	33.24	4.26E-01	1.86E+00	4.43E+01	3.33E+01
M	3	62.12	2.00E+02	36.88	2.31E+00	1.59E+00	1.97E+02	3.69E+01
m	4	66.22	7.83E+01	30.66	2.84E+00	2.03E+00	7.55E+01	3.07E+01
	5	81.27	8.93E+02	72.47			8.93E+02	7.25E+01
M	6	112.35	1.82E+02	35.14			1.82E+02	3.51E+01
m	7	116.16	3.81E+01	25.03			3.81E+01	2.50E+01
	8	168.80	2.84E+01	26.22			2.84E+01	2.62E+01
	9	276.62	6.18E+01	25.64			6.18E+01	2.56E+01
	10	296.49	1.44E+01	13.75	1.75E+00	1.52E+00	1.27E+01	1.38E+01
	11	303.09	1.74E+02	29.09			1.74E+02	2.91E+01
	12	307.64	1.57E+01	19.84			1.57E+01	1.98E+01
M	13	333.85	6.23E+01	19.89			6.23E+01	1.99E+01
m	14	356.50	5.87E+02	49.81			5.87E+02	4.98E+01
	15	370.09	1.80E+01	11.31			1.80E+01	1.13E+01
M	16	377.40	1.50E+01	11.09			1.50E+01	1.11E+01
m	17	384.33	1.25E+02	26.89			1.25E+02	2.69E+01
m	18	387.31	1.95E+02	31.22			1.95E+02	3.12E+01
m	19	391.78	4.47E+01	16.82			4.47E+01	1.68E+01
M	20	415.31	2.85E+01	14.18			2.85E+01	1.42E+01
m	21	419.00	3.01E+01	16.16			3.01E+01	1.62E+01
	22	437.63	1.02E+02	22.45	9.87E-01	1.02E+00	1.01E+02	2.25E+01
	23	468.42	9.98E+00	13.18			9.98E+00	1.32E+01
	24	583.49	9.14E+00	7.75	2.13E+00	7.97E-01	7.01E+00	7.79E+00
	25	609.83	1.80E+01	11.34	1.92E+00	8.93E-01	1.60E+01	1.14E+01
	26	901.65	5.00E+00	4.47			5.00E+00	4.47E+00
	27	1206.90	5.21E+00	6.63			5.21E+00	6.63E+00
	28	1319.49	7.00E+00	5.29			7.00E+00	5.29E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.25E+01	1.23E+01

BP/Castex-Ltd Adm-Apx E-000758

Analysis Report for 2203099-06
CD-2B

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
BA-133	0.99	81.00	*	34.06	4.61E+02	4.20E+01
		302.84	*	18.33	4.50E+02	7.89E+01
		356.01	*	62.05	4.38E+02	4.13E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	5.35E+01	8.74E+00
TH-234	0.96	63.29	*	3.80	5.78E+02	1.09E+02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.952	3.25E+01	1.23E+01	
BA-133	0.996	4.50E+02	2.76E+01	
PA-234M	0.982	5.35E+01	8.74E+00	
TH-234	0.966	5.78E+02	1.09E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2203099-06
CD-2B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 9:51:32AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	52.93	4.92393E-02	37.56		
m	4	66.22	8.38568E-02	20.36		
M	6	112.35	2.01985E-01	9.66	Tol.	U-237
m	7	116.16	4.23559E-02	32.84	Sum	
	8	168.80	3.16111E-02	46.08		
	9	276.62	6.86944E-02	20.73		
	10	296.49	1.41100E-02	54.46		
	12	307.64	1.74778E-02	63.07		
M	13	333.85	6.92592E-02	15.96		
	15	370.09	2.00483E-02	31.35		
M	16	377.40	1.66536E-02	37.00		
m	17	384.33	1.38533E-01	10.78	Sum	
m	18	387.31	2.16526E-01	8.01		
M	20	415.31	3.16436E-02	24.89		
m	21	419.00	3.33890E-02	26.88	Sum	
	22	437.63	1.12236E-01	11.12	Sum	
	23	468.42	1.10859E-02	66.06		
	24	583.49	7.78522E-03	55.57		
	25	609.83	1.78187E-02	35.45		
	26	901.65	5.55556E-03	44.72		
	27	1206.90	5.79365E-03	63.61		
	28	1319.49	7.77778E-03	37.80		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 2203099-06

CD-2B

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.20E+01	1.20E+01	3.17E+00	5.50E+00
		136.48		10.60	1.20E+02		-4.77E+01	5.57E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.14E+02	2.14E+02	-2.35E+01	9.99E+01
+	SN-113	255.12		1.93	7.24E+02	2.55E+01	4.85E+01	3.29E+02
		391.69	*	61.90	2.55E+01		3.25E+01	1.18E+01
	SN-119M	23.87		16.10	1.81E-01	1.81E-01	0.00E+00	0.00E+00
		25.10		22.70	1.04E+00		-2.43E+00	4.45E-01
	I-129	29.78		57.00	8.37E+00	8.37E+00	8.00E+01	4.14E+00
		33.60		13.20	4.69E+01		4.24E+01	2.32E+01
		39.58		7.52	2.07E+01		9.42E+00	9.57E+00
+	BA-133	81.00	*	34.06	3.62E+01	3.20E+01	4.61E+02	1.74E+01
		302.84	*	18.33	5.88E+01		4.50E+02	2.59E+01
		356.01	*	62.05	3.20E+01		4.38E+02	1.50E+01
	CE-139	165.85		80.35	1.88E+01	1.88E+01	6.48E+00	8.73E+00
	CE-144	133.54		10.80	1.17E+02	1.17E+02	3.46E+01	5.44E+01
	HG-203	279.19		77.30	2.70E+01	2.70E+01	3.08E+01	1.27E+01
	PB-210	46.50		4.25	6.28E+01	6.28E+01	3.77E+01	2.94E+01
	TH-231	25.64		14.70	3.73E+00	3.73E+00	-1.20E+00	1.74E+00
		84.21		6.40	1.55E+02		-2.49E+00	7.36E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.16E+01		5.35E+01	5.62E+00
+	TH-234	63.29	*	3.80	2.57E+02	2.57E+02	5.78E+02	1.25E+02
	NP-237	29.37		14.00	3.28E+01	3.28E+01	3.13E+02	1.62E+01
		86.50		12.60	6.68E+01		-1.67E+01	3.13E+01
	U-237	97.08		16.30	5.69E+01	4.06E+01	-3.59E+01	2.66E+01
		101.07		26.30	4.06E+01		9.69E+00	1.91E+01
		114.00		12.30	1.74E+02		2.57E+02	8.41E+01
		208.01		22.00	7.54E+01		2.01E+00	3.50E+01
	AM-241	59.54		35.90	1.79E+01	1.79E+01	-5.11E+01	8.55E+00
	AM-243	74.67		66.00	9.76E+00	9.76E+00	-7.47E+00	4.56E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-000761

Analysis Report for 2203099-06

CD-2B

KP 4/5/22

Analysis Report for 2203099-07

CD-3A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-07
Sample Description	: CD-3A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:18:46AM
Acquisition Started	: 4/5/2022 9:36:33AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE3
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 913.1 seconds
Dead Time	: 1.43 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 8 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122375

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 9:51:54AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-07

CD-3A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	31.73	22 -	40	32.37	1.92E+03	144.26	1.16E+03	3.64
	2	63.27	54 -	70	63.89	1.55E+02	97.25	8.42E+02	6.06
	3	81.26	75 -	89	81.87	6.41E+02	89.57	5.64E+02	3.91
	4	112.81	106 -	120	113.39	2.14E+02	65.39	3.61E+02	2.99
	5	276.72	274 -	282	277.19	5.14E+01	24.32	6.13E+01	3.95
	6	303.42	297 -	313	303.87	1.40E+02	41.46	1.09E+02	3.61
	7	356.05	347 -	363	356.47	3.78E+02	49.87	9.08E+01	3.24
M	8	377.03	369 -	395	377.44	2.24E+01	25.40	5.53E+01	5.07
m	9	385.96	369 -	395	386.36	1.83E+02	36.79	3.58E+01	5.07
	10	437.52	432 -	444	437.88	6.91E+01	23.39	2.99E+01	2.69
	11	769.41	764 -	775	769.58	1.20E+01	6.93	0.00E+00	6.24

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 9:51:54AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122290.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	31.73	1.92E+03	144.26			1.92E+03	1.44E+02
	2	63.27	1.55E+02	97.25	7.57E+01	7.78E-01	7.94E+01	9.72E+01
	3	81.26	6.41E+02	89.57			6.41E+02	8.96E+01
	4	112.81	2.14E+02	65.39			2.14E+02	6.54E+01
	5	276.72	5.14E+01	24.32			5.14E+01	2.43E+01
	6	303.42	1.40E+02	41.46			1.40E+02	4.15E+01
	7	356.05	3.78E+02	49.87			3.78E+02	4.99E+01
M	8	377.03	2.24E+01	25.40			2.24E+01	2.54E+01
m	9	385.96	1.83E+02	36.79			1.83E+02	3.68E+01
	10	437.52	6.91E+01	23.39			6.91E+01	2.34E+01
	11	769.41	1.20E+01	6.93			1.20E+01	6.93E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 2203099-07
CD-3A

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
BA-133	0.99	81.00	*	34.06	2.83E+02	4.09E+01
		302.84	*	18.33	4.24E+02	1.27E+02
		356.01	*	62.05	3.49E+02	4.82E+01
HG-203	0.85	279.19	*	77.30	3.56E+01	1.70E+01
TH-234	1.00	63.29	*	3.80	2.00E+02	2.45E+02
NP-237	0.57	29.37	*	14.00	2.69E+02	2.03E+01
		86.50		12.60		

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
BA-133	0.998	3.17E+02	3.03E+01	
HG-203	0.856	3.56E+01	1.70E+01	
TH-234	1.000	2.00E+02	2.45E+02	
NP-237	0.579	2.69E+02	2.03E+01	

BP/Castex-Ltd Adm-Apx E-000765

Analysis Report for 2203099-07

CD-3A

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000766

Analysis Report for 2203099-07
CD-3A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 9:51:54AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	4	112.81	2.37383E-01	15.30	Sum	
M	8	377.03	2.48375E-02	56.82		
m	9	385.96	2.03423E-01	10.05	Sum	
	10	437.52	7.67262E-02	16.94	Sum	
	11	769.41	1.33333E-02	28.87		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	1.84E-04	1.84E-04	3.42E-04	8.82E-05
	3.31	12.30	1.89E-03		3.52E-03	9.08E-04
FE-55	5.89	24.50	1.85E-02	1.85E-02	5.11E-02	8.98E-03
CO-57	122.06	85.51	2.33E+01	2.33E+01	-1.55E+01	1.12E+01
	136.48	10.60	1.76E+02		-5.30E+01	8.39E+01
NI-59	6.92	29.80	3.18E-02	3.18E-02	8.92E-02	1.54E-02
MO-93	16.59	52.90	6.32E-01	6.32E-01	1.40E+00	3.09E-01
	18.60	10.00	4.41E+00		-1.35E+00	2.15E+00
NB-93M	16.57	9.43	3.53E+00	3.53E+00	7.82E+00	1.73E+00
CD-109	88.03	3.72	5.47E+02	5.47E+02	-1.88E+01	2.67E+02
SN-113	255.12	1.93	1.09E+03	6.13E+01	1.43E+02	5.10E+02
	391.69	61.90	6.13E+01		-5.61E+00	2.94E+01

BP/Castex-Ltd Adm-Apx E-000767

Analysis Report for 2203099-07

CD-3A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	SN-119M	23.87		16.10	1.06E+01	9.41E+00	-3.18E-01	5.20E+00
		25.10		22.70	9.41E+00		5.99E-01	4.64E+00
	I-129	29.78		57.00	6.64E+00	6.64E+00	5.44E+01	3.28E+00
		33.60		13.20	3.95E+01		3.53E+02	1.95E+01
		39.58		7.52	7.09E+01		-4.03E+01	3.48E+01
+	BA-133	81.00	*	34.06	5.48E+01	5.00E+01	2.83E+02	2.68E+01
		302.84	*	18.33	1.77E+02		4.24E+02	8.45E+01
		356.01	*	62.05	5.00E+01		3.49E+02	2.37E+01
	CE-139	165.85		80.35	2.90E+01	2.90E+01	2.37E+01	1.39E+01
	CE-144	133.54		10.80	1.73E+02	1.73E+02	6.28E+01	8.27E+01
+	HG-203	279.19	*	77.30	2.43E+01	2.43E+01	3.56E+01	1.12E+01
	PB-210	46.50		4.25	9.36E+01	9.36E+01	-2.23E+02	4.52E+01
	TH-231	25.64		14.70	1.54E+01	1.54E+01	9.84E-01	7.62E+00
		84.21		6.40	3.56E+02		-7.19E+00	1.74E+02
	PA-234M	9.89		89.00	4.98E-02	4.98E-02	1.09E-01	2.42E-02
		21.72		64.90	1.18E+00		-8.68E-01	5.78E-01
		37.93		23.75	2.40E+01		-8.63E+00	1.18E+01
+	TH-234	63.29	*	3.80	4.03E+02	4.03E+02	2.00E+02	1.98E+02
+	NP-237	29.37	*	14.00	2.68E+01	2.68E+01	2.69E+02	1.32E+01
		86.50		12.60	1.85E+02		1.02E+01	9.05E+01
	U-237	97.08		16.30	9.11E+01	5.79E+01	5.56E+00	4.39E+01
		101.07		26.30	5.79E+01		-6.09E+00	2.79E+01
		114.00		12.30	1.92E+02		-6.81E+00	9.35E+01
		208.01		22.00	1.06E+02		-1.93E+01	5.04E+01
	AM-241	59.54		35.90	2.57E+01	2.57E+01	4.25E+01	1.25E+01
	AM-243	74.67		66.00	2.62E+01	2.62E+01	-3.95E-01	1.28E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-000768

KP
4/5/22

Apex-Gamma

Analysis Report for 2203099-08
CD-1B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-08
Sample Description	: CD-1B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:18:55AM
Acquisition Started	: 4/5/2022 9:36:40AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.6 seconds
Dead Time	: 0.07 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122376

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 9:51:43AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-08

CD-1B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.46	17 -	24	20.43	1.20E+02	46.48	2.80E+02	2.16
M	2	30.73	25 -	39	30.70	2.57E+03	107.60	2.12E+02	2.32
m	3	34.92	25 -	39	34.88	6.07E+02	98.22	1.96E+02	2.60
M	4	61.81	48 -	70	61.75	2.50E+02	52.61	2.59E+02	2.72
m	5	65.81	48 -	70	65.75	1.25E+02	50.75	2.77E+02	2.73
	6	80.95	74 -	86	80.88	1.07E+03	84.35	3.33E+02	2.29
	7	112.18	106 -	118	112.09	2.23E+02	58.21	3.40E+02	2.79
	8	160.16	155 -	164	160.04	4.14E+01	36.35	1.65E+02	2.85
	9	276.46	271 -	283	276.27	7.51E+01	33.67	9.99E+01	2.99
	10	303.18	299 -	310	302.97	1.49E+02	35.89	9.30E+01	2.60
	11	334.37	327 -	340	334.14	4.85E+01	38.95	1.47E+02	2.35
	12	356.01	349 -	361	355.77	4.79E+02	47.43	3.94E+01	2.55
	13	386.63	379 -	398	386.37	2.98E+02	46.26	7.50E+01	5.48
	14	417.01	406 -	426	416.73	5.83E+01	33.94	7.33E+01	6.68
	15	437.37	432 -	441	437.08	7.05E+01	19.67	1.49E+01	1.76
	16	467.43	461 -	472	467.13	2.73E+01	17.32	2.35E+01	1.82
	17	510.56	505 -	514	510.23	2.20E+01	9.38	0.00E+00	3.83
	18	597.90	593 -	601	597.52	9.50E+00	9.82	9.00E+00	5.03
	19	609.33	605 -	612	608.94	8.15E+00	7.48	3.70E+00	1.91
	20	680.52	676 -	684	680.09	6.00E+00	7.23	4.00E+00	5.72

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 9:51:43AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122291.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	20.46	1.20E+02	46.48			1.20E+02	4.65E+01
M	2	30.73	2.57E+03	107.60			2.57E+03	1.08E+02
m	3	34.92	6.07E+02	98.22			6.07E+02	9.82E+01
M	4	61.81	2.50E+02	52.61	1.42E+01	3.89E+00	2.35E+02	5.28E+01
m	5	65.81	1.25E+02	50.75	1.42E+01	3.89E+00	1.11E+02	5.09E+01
	6	80.95	1.07E+03	84.35			1.07E+03	8.43E+01
	7	112.18	2.23E+02	58.21			2.23E+02	5.82E+01
	8	160.16	4.14E+01	36.35			4.14E+01	3.63E+01
	9	276.46	7.51E+01	33.67			7.51E+01	3.37E+01

BP/Castex-Ltd Adm-Apx E-000770

Analysis Report for 2203099-08

CD-1B

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
10	303.18	1.49E+02	35.89			1.49E+02	3.59E+01
11	334.37	4.85E+01	38.95			4.85E+01	3.89E+01
12	356.01	4.79E+02	47.43			4.79E+02	4.74E+01
13	386.63	2.98E+02	46.26			2.98E+02	4.63E+01
14	417.01	5.83E+01	33.94			5.83E+01	3.39E+01
15	437.37	7.05E+01	19.67			7.05E+01	1.97E+01
16	467.43	2.73E+01	17.32			2.73E+01	1.73E+01
17	510.56	2.20E+01	9.38	1.12E+01	1.27E+00	1.08E+01	9.47E+00
18	597.90	9.50E+00	9.82	0.00E+00	0.00E+00	9.50E+00	9.82E+00
19	609.33	8.15E+00	7.48			8.15E+00	7.48E+00
20	680.52	6.00E+00	7.23			6.00E+00	7.23E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.87	29.78	*	57.00	5.19E+01	2.18E+00
		33.60	*	13.20	8.14E+01	1.32E+01
		39.58		7.52		
BA-133	1.00	81.00	*	34.06	5.16E+02	4.52E+01
		302.84	*	18.33	5.35E+02	1.32E+02
		356.01	*	62.05	5.03E+02	5.40E+01
TH-234	0.94	63.29	*	3.80	5.57E+02	1.25E+02
AM-241	0.87	59.54	*	35.90	5.89E+01	1.33E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000771

Analysis Report for 2203099-08
CD-1B

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.872	5.27E+01	2.15E+00	
	BA-133	1.000	5.12E+02	3.35E+01	
?	TH-234	0.945	5.57E+02	1.25E+02	
X	NP-237	0.701			
?	AM-241	0.877	5.89E+01	1.33E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2203099-08
CD-1B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 9:51:43AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.46	1.33333E-01	19.36	Tol.	MO-93 PA-234M
m	5	65.81	1.23147E-01	22.96	Sum	
	7	112.18	2.47981E-01	13.04	Sum	
	8	160.16	4.59991E-02	43.90	Sum	
	9	276.46	8.33956E-02	22.43		
	11	334.37	5.38889E-02	40.15	Sum	
	13	386.63	3.30557E-01	7.77	Sum	
	14	417.01	6.48129E-02	29.09	Sum	
	15	437.37	7.83761E-02	13.94	Sum	
	16	467.43	3.02849E-02	31.77		
	17	510.56	1.19527E-02	44.00		
	18	597.90	1.05556E-02	51.70		
	19	609.33	9.05555E-03	45.91		
	20	680.52	6.66667E-03	60.24		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)

Analysis Report for 2203099-08

CD-1B

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
		3.31		12.30	2.92E-06		0.00E+00	0.00E+00
	FE-55	5.89		24.50	6.73E-04	6.73E-04	2.30E-04	3.09E-04
	CO-57	122.06		85.51	1.96E+01	1.96E+01	3.65E-01	9.27E+00
		136.48		10.60	1.83E+02		1.30E+01	8.64E+01
	NI-59	6.92		29.80	1.74E-03	1.74E-03	9.36E-04	8.11E-04
	MO-93	16.59		52.90	1.61E-01	1.61E-01	2.73E-02	7.79E-02
		18.60		10.00	1.38E+00		7.67E-02	6.69E-01
	NB-93M	16.57		9.43	8.98E-01	8.98E-01	1.52E-01	4.34E-01
	CD-109	88.03		3.72	2.95E+02	2.95E+02	-4.52E+01	1.40E+02
	SN-113	255.12		1.93	1.17E+03	6.07E+01	-1.29E+02	5.40E+02
		391.69		61.90	6.07E+01		5.41E+01	2.89E+01
	SN-119M	23.87		16.10	2.42E+00	2.42E+00	-7.52E+01	1.17E+00
		25.10		22.70	2.56E+00		-7.36E+01	1.25E+00
+	I-129	29.78	*	57.00	2.07E+00	2.07E+00	5.19E+01	1.01E+00
		33.60	*	13.20	1.37E+01		8.14E+01	6.67E+00
		39.58		7.52	2.80E+01		-3.00E+00	1.35E+01
+	BA-133	81.00	*	34.06	4.33E+01	3.43E+01	5.16E+02	2.10E+01
		302.84	*	18.33	1.64E+02		5.35E+02	7.73E+01
		356.01	*	62.05	3.43E+01		5.03E+02	1.57E+01
	CE-139	165.85		80.35	3.02E+01	3.02E+01	-1.19E+00	1.43E+01
	CE-144	133.54		10.80	1.65E+02	1.65E+02	-2.58E+01	7.76E+01
	HG-203	279.19		77.30	4.30E+01	4.30E+01	6.25E+01	2.04E+01
	PB-210	46.50		4.25	5.53E+01	5.53E+01	1.38E+01	2.63E+01
	TH-231	25.64		14.70	6.85E+00	6.85E+00	-2.20E+01	3.37E+00
		84.21		6.40	4.29E+02		-2.41E+01	2.11E+02
	PA-234M	9.89		89.00	5.82E-03	5.82E-03	6.48E-03	2.78E-03
		21.72		64.90	3.95E-01		-1.24E-01	1.91E-01
		37.93		23.75	1.19E+01		-7.03E-01	5.80E+00
+	TH-234	63.29	*	3.80	3.77E+02	3.77E+02	5.57E+02	1.85E+02
	NP-237	29.37	*	14.00	8.44E+00	8.44E+00	2.11E+02	4.11E+00
		86.50		12.60	1.40E+02		-5.24E+00	6.78E+01
	U-237	97.08		16.30	7.71E+01	4.98E+01	-1.20E+01	3.66E+01
		101.07		26.30	4.98E+01		-2.84E+00	2.36E+01
		114.00		12.30	2.16E+02		5.15E+02	1.05E+02
		208.01		22.00	1.28E+02		1.91E+01	6.05E+01
+	AM-241	59.54	*	35.90	3.99E+01	3.99E+01	5.89E+01	1.96E+01
	AM-243	74.67		66.00	1.60E+01	1.60E+01	-5.02E-01	7.73E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-000774

KP 4/5/22

Apex-Gamma

Analysis Report for 2203099-09
CD-1A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-09
Sample Description	: CD-1A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:19:03AM
Acquisition Started	: 4/5/2022 9:54:07AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE1
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.1 seconds
Dead Time	: 0.01 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 32 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/14/2021
Efficiency Calibration Description	:
Sample Number	: 122377

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 10:09:10AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-09

CD-1A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	63.48	57 -	68	63.17	7.38E+01	37.31	1.34E+02	3.10
M	2	76.63	69 -	99	76.32	3.05E+01	22.18	5.53E+01	2.73
m	3	81.50	69 -	99	81.18	5.53E+01	23.83	4.66E+01	2.73
	4	117.34	112 -	120	117.02	2.67E+01	23.58	6.27E+01	3.02
M	5	353.12	347 -	361	352.77	1.92E+01	16.00	1.34E+01	2.52
m	6	356.58	347 -	361	356.23	2.82E+01	16.73	1.84E+01	2.52
	7	363.85	361 -	366	363.50	8.50E+00	8.66	7.00E+00	1.55
	8	386.53	381 -	391	386.19	2.46E+01	14.92	1.68E+01	1.80
	9	437.81	433 -	443	437.45	1.39E+01	9.91	6.24E+00	4.00
	10	519.20	516 -	521	518.84	9.68E+00	7.28	2.64E+00	2.82
	11	609.51	606 -	612	609.14	1.40E+01	7.48	0.00E+00	1.40

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 10:09:10AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122288.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	63.48	7.38E+01	37.31	2.30E+01	2.61E+00	5.07E+01	3.74E+01
M	2	76.63	3.05E+01	22.18			3.05E+01	2.22E+01
m	3	81.50	5.53E+01	23.83			5.53E+01	2.38E+01
	4	117.34	2.67E+01	23.58			2.67E+01	2.36E+01
M	5	353.12	1.92E+01	16.00			1.92E+01	1.60E+01
m	6	356.58	2.82E+01	16.73			2.82E+01	1.67E+01
	7	363.85	8.50E+00	8.66			8.50E+00	8.66E+00
	8	386.53	2.46E+01	14.92	0.00E+00	0.00E+00	2.46E+01	1.49E+01
	9	437.81	1.39E+01	9.91			1.39E+01	9.91E+00
	10	519.20	9.68E+00	7.28			9.68E+00	7.28E+00
	11	609.51	1.40E+01	7.48	7.05E-01	2.02E+00	1.33E+01	7.75E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000776

Analysis Report for 2203099-09
CD-1A

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
BA-133	0.78	81.00	*	34.06	2.84E+01	1.23E+01
		302.84		18.33		
		356.01	*	62.05	2.21E+01	1.32E+01
TH-234	0.99	63.29	*	3.80	1.43E+02	1.06E+02
AM-243	0.90	74.67	*	66.00	7.22E+00	5.27E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
BA-133	0.784	2.55E+01	8.99E+00	
TH-234	0.999	1.43E+02	1.06E+02	
AM-243	0.906	7.22E+00	5.27E+00	

BP/Castex-Ltd Adm-Apx E-000777

Analysis Report for 2203099-09

CD-1A

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000778

Analysis Report for 2203099-09
CD-1A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 10:09:10AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	4	117.34	2.96169E-02	44.23		
M	5	353.12	2.13746E-02	41.59		
	7	363.85	9.44444E-03	50.94		
	8	386.53	2.73232E-02	30.35		
	9	437.81	1.54248E-02	35.70	Sum	
	10	519.20	1.07576E-02	37.60		
	11	609.51	1.47719E-02	29.15		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	5.44E-07	5.44E-07	0.00E+00	0.00E+00
	3.31	12.30	6.51E-06		0.00E+00	0.00E+00
FE-55	5.89	24.50	1.09E-04	1.09E-04	0.00E+00	0.00E+00
CO-57	122.06	85.51	1.05E+01	1.05E+01	1.22E+00	4.75E+00
	136.48	10.60	1.04E+02		4.70E+01	4.75E+01
NI-59	6.92	29.80	2.19E-04	2.19E-04	0.00E+00	0.00E+00
MO-93	16.59	52.90	8.08E-03	8.08E-03	0.00E+00	0.00E+00
	18.60	10.00	6.79E-02		0.00E+00	0.00E+00
NB-93M	16.57	9.43	4.51E-02	4.51E-02	0.00E+00	0.00E+00
CD-109	88.03	3.72	1.98E+02	1.98E+02	-7.53E+01	9.19E+01

BP/Castex-Ltd Adm-Apx E-000779

Analysis Report for 2203099-09

CD-1A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	SN-113	255.12		1.93	5.34E+02	1.51E+01	0.00E+00	2.31E+02
		391.69		61.90	1.51E+01		7.53E-01	6.55E+00
	SN-119M	23.87		16.10	1.08E-01	9.18E-02	0.00E+00	0.00E+00
		25.10		22.70	9.18E-02		0.00E+00	0.00E+00
	I-129	29.78		57.00	3.83E-01	3.83E-01	-1.33E-01	1.59E-01
		33.60		13.20	6.75E+00		-2.39E+00	3.17E+00
		39.58		7.52	2.44E+01		1.75E+01	1.16E+01
+	BA-133	81.00	*	34.06	4.56E+01	2.30E+01	2.84E+01	2.21E+01
		302.84		18.33	6.08E+01		2.50E+01	2.66E+01
		356.01	*	62.05	2.30E+01		2.21E+01	1.04E+01
	CE-139	165.85		80.35	1.33E+01	1.33E+01	-7.30E-01	5.95E+00
	CE-144	133.54		10.80	1.05E+02	1.05E+02	5.59E+01	4.81E+01
	HG-203	279.19		77.30	1.34E+01	1.34E+01	3.72E+00	5.78E+00
	PB-210	46.50		4.25	4.65E+01	4.65E+01	-1.17E+01	2.16E+01
	TH-231	25.64		14.70	1.53E-01	1.53E-01	0.00E+00	0.00E+00
		84.21		6.40	1.27E+02		6.61E+01	5.96E+01
	PA-234M	9.89		89.00	4.64E-04	4.64E-04	0.00E+00	0.00E+00
		21.72		64.90	1.90E-02		0.00E+00	0.00E+00
		37.93		23.75	7.10E+00		6.87E+00	3.38E+00
+	TH-234	63.29	*	3.80	1.68E+02	1.68E+02	1.43E+02	8.02E+01
	NP-237	29.37		14.00	1.49E+00	1.49E+00	-5.17E-01	6.18E-01
		86.50		12.60	5.18E+01		-1.14E+02	2.38E+01
	U-237	97.08		16.30	4.57E+01	2.67E+01	-1.95E+01	2.09E+01
		101.07		26.30	2.67E+01		4.04E+00	1.21E+01
		114.00		12.30	8.43E+01		-1.30E+01	3.89E+01
		208.01		22.00	6.62E+01		5.55E+00	3.01E+01
	AM-241	59.54		35.90	1.06E+01	1.06E+01	-1.08E+01	4.94E+00
+	AM-243	74.67	*	66.00	2.11E+01	2.11E+01	7.22E+00	1.02E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

KP 4/5/22

Apex-Gamma

Analysis Report for 2203099-10
CD-1C

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-10
Sample Description	: CD-1C
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:19:13AM
Acquisition Started	: 4/5/2022 9:54:13AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 28 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122378

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 10:09:23AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-10

CD-1C

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.59	37 -	39	37.19	3.40E+02	58.41	4.32E+02	1.66
	2	52.99	51 -	57	54.55	5.68E+01	39.51	2.44E+02	1.17
M	3	62.08	59 -	71	63.63	2.68E+02	44.02	1.79E+02	1.62
m	4	66.28	59 -	71	67.82	1.13E+02	36.41	1.66E+02	1.63
	5	81.28	80 -	86	82.79	9.20E+02	70.43	2.31E+02	1.29
	6	112.08	111 -	116	113.52	1.99E+02	42.80	2.13E+02	1.72
	7	116.83	117 -	121	118.27	4.35E+01	27.82	1.25E+02	1.08
	8	161.04	159 -	165	162.39	4.20E+01	32.24	1.54E+02	1.40
	9	172.43	172 -	176	173.75	1.60E+01	20.99	8.21E+01	1.74
	10	277.01	274 -	281	278.13	6.71E+01	28.21	8.78E+01	1.30
	11	303.23	301 -	307	304.29	1.80E+02	33.00	6.84E+01	1.76
	12	323.49	321 -	327	324.51	1.98E+01	11.69	1.04E+01	1.27
M	13	334.09	331 -	342	335.10	6.54E+01	20.57	3.10E+01	1.63
m	14	356.54	352 -	362	357.50	6.53E+02	52.47	2.76E+01	1.51
M	15	384.30	382 -	396	385.21	1.25E+02	25.36	1.11E+01	1.85
m	16	387.42	382 -	396	388.32	2.22E+02	33.03	6.98E+00	1.82
m	17	391.85	382 -	396	392.75	4.82E+01	17.29	6.39E+00	1.86
M	18	415.38	410 -	425	416.23	3.37E+01	15.36	1.62E+01	1.89
m	19	418.83	410 -	425	419.67	2.12E+01	14.56	6.09E+00	1.89
m	20	422.20	410 -	425	423.04	1.13E+01	12.00	1.57E+00	1.89
	21	437.70	433 -	441	438.51	1.04E+02	23.77	2.49E+01	1.94
	22	469.37	465 -	475	470.12	3.61E+01	14.98	9.76E+00	2.77
	23	610.10	607 -	613	610.59	1.56E+01	10.02	6.74E+00	1.95
	24	624.51	622 -	628	624.96	5.07E+00	6.34	3.86E+00	2.66
	25	840.37	838 -	843	840.43	7.00E+00	5.29	0.00E+00	2.22
	26	877.21	874 -	879	877.20	5.00E+00	4.47	0.00E+00	2.32
	27	908.56	906 -	910	908.50	6.00E+00	4.90	0.00E+00	1.16
	28	1121.44	1118 -	1123	1121.00	5.00E+00	4.47	0.00E+00	1.50

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 10:09:23AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122289.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	35.59	3.40E+02	58.41	0.00E+00	0.00E+00	3.40E+02	5.84E+01

BP/Castex-Ltd Adm-Apx E-000782

Analysis Report for 2203099-10
CD-1C

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	2	52.99	5.68E+01	39.51	4.26E-01	1.86E+00	5.64E+01	3.96E+01
M	3	62.08	2.68E+02	44.02	2.31E+00	1.59E+00	2.66E+02	4.40E+01
m	4	66.28	1.13E+02	36.41	2.84E+00	2.03E+00	1.10E+02	3.65E+01
	5	81.28	9.20E+02	70.43			9.20E+02	7.04E+01
	6	112.08	1.99E+02	42.80			1.99E+02	4.28E+01
	7	116.83	4.35E+01	27.82			4.35E+01	2.78E+01
	8	161.04	4.20E+01	32.24			4.20E+01	3.22E+01
	9	172.43	1.60E+01	20.99			1.60E+01	2.10E+01
	10	277.01	6.71E+01	28.21			6.71E+01	2.82E+01
	11	303.23	1.80E+02	33.00			1.80E+02	3.30E+01
	12	323.49	1.98E+01	11.69			1.98E+01	1.17E+01
M	13	334.09	6.54E+01	20.57			6.54E+01	2.06E+01
m	14	356.54	6.53E+02	52.47			6.53E+02	5.25E+01
M	15	384.30	1.25E+02	25.36			1.25E+02	2.54E+01
m	16	387.42	2.22E+02	33.03			2.22E+02	3.30E+01
m	17	391.85	4.82E+01	17.29			4.82E+01	1.73E+01
M	18	415.38	3.37E+01	15.36			3.37E+01	1.54E+01
m	19	418.83	2.12E+01	14.56			2.12E+01	1.46E+01
m	20	422.20	1.13E+01	12.00			1.13E+01	1.20E+01
	21	437.70	1.04E+02	23.77	9.87E-01	1.02E+00	1.03E+02	2.38E+01
	22	469.37	3.61E+01	14.98			3.61E+01	1.50E+01
	23	610.10	1.56E+01	10.02	1.92E+00	8.93E-01	1.37E+01	1.01E+01
	24	624.51	5.07E+00	6.34			5.07E+00	6.34E+00
	25	840.37	7.00E+00	5.29			7.00E+00	5.29E+00
	26	877.21	5.00E+00	4.47			5.00E+00	4.47E+00
	27	908.56	6.00E+00	4.90			6.00E+00	4.90E+00
	28	1121.44	5.00E+00	4.47			5.00E+00	4.47E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.51E+01	1.27E+01

Analysis Report for 2203099-10
CD-1C

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
BA-133	0.99	81.00	*	34.06	4.75E+02	4.13E+01
		302.84	*	18.33	4.65E+02	8.88E+01
		356.01	*	62.05	4.88E+02	4.40E+01
HG-203	0.88	279.19	*	77.30	4.11E+01	1.74E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	4.68E+01	8.05E+00
TH-234	0.96	63.29	*	3.80	7.78E+02	1.30E+02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.952	3.51E+01	1.27E+01	
BA-133	0.995	4.79E+02	2.85E+01	
HG-203	0.886	4.11E+01	1.74E+01	
PA-234M	0.981	4.68E+01	8.05E+00	
TH-234	0.963	7.78E+02	1.30E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2203099-10
CD-1C

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 10:09:23AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	52.99	6.26431E-02	35.08		
m	4	66.28	1.22699E-01	16.51		
	6	112.08	2.20703E-01	10.77	Tol.	U-237
	7	116.83	4.83857E-02	31.94	Sum	
	8	161.04	4.66713E-02	38.38	Sum	
	9	172.43	1.77290E-02	65.77		
	12	323.49	2.19778E-02	29.56		
M	13	334.09	7.26200E-02	15.73		
M	15	384.30	1.39108E-01	10.13	Sum	
m	16	387.42	2.46685E-01	7.44		
M	18	415.38	3.74486E-02	22.79		
m	19	418.83	2.35758E-02	34.31	Sum	
m	20	422.20	1.25449E-02	53.14		
	21	437.70	1.13984E-01	11.60	Sum	
	22	469.37	4.01355E-02	20.74		
	23	610.10	1.52377E-02	36.70		
	24	624.51	5.63492E-03	62.55		
	25	840.37	7.77778E-03	37.80		
	26	877.21	5.55556E-03	44.72		
	27	908.56	6.66667E-03	40.82		
	28	1121.44	5.55556E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Analysis Report for 2203099-10

CD-1C

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.38E+01	1.38E+01	5.85E+00	6.44E+00
		136.48		10.60	1.15E+02		-1.12E+02	5.32E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.11E+02	2.11E+02	8.57E+01	9.84E+01
+	SN-113	255.12		1.93	6.84E+02	1.81E+01	-6.31E+01	3.09E+02
		391.69	*	61.90	1.81E+01		3.51E+01	8.07E+00
	SN-119M	23.87		16.10	1.81E-01	1.81E-01	0.00E+00	0.00E+00
		25.10		22.70	1.08E+00		-1.77E+00	4.64E-01
	I-129	29.78		57.00	8.47E+00	8.47E+00	8.06E+01	4.19E+00
		33.60		13.20	4.85E+01		4.43E+01	2.40E+01
		39.58		7.52	2.34E+01		1.04E+00	1.09E+01
+	BA-133	81.00	*	34.06	3.18E+01	2.62E+01	4.75E+02	1.52E+01
		302.84	*	18.33	8.87E+01		4.65E+02	4.09E+01
		356.01	*	62.05	2.62E+01		4.88E+02	1.21E+01
	CE-139	165.85		80.35	1.77E+01	1.77E+01	3.78E+00	8.21E+00
	CE-144	133.54		10.80	1.13E+02	1.13E+02	-7.25E+01	5.26E+01
+	HG-203	279.19	*	77.30	2.48E+01	2.48E+01	4.11E+01	1.16E+01
	PB-210	46.50		4.25	5.71E+01	5.71E+01	-2.52E+01	2.66E+01
	TH-231	25.64		14.70	3.46E+00	3.46E+00	-2.40E+00	1.61E+00
		84.21		6.40	1.50E+02		-6.51E+01	7.11E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.50E+01		4.68E+01	7.32E+00
+	TH-234	63.29	*	3.80	2.85E+02	2.85E+02	7.78E+02	1.39E+02
	NP-237	29.37		14.00	3.32E+01	3.32E+01	3.16E+02	1.64E+01
		86.50		12.60	6.55E+01		-6.22E+00	3.07E+01
	U-237	97.08		16.30	4.97E+01	3.45E+01	2.71E+00	2.30E+01
		101.07		26.30	3.45E+01		-1.92E-01	1.60E+01
		114.00		12.30	1.83E+02		1.68E+02	8.83E+01
		208.01		22.00	7.67E+01		-1.24E+01	3.56E+01
	AM-241	59.54		35.90	2.03E+01	2.03E+01	-4.77E+01	9.76E+00
	AM-243	74.67		66.00	1.01E+01	1.01E+01	-5.16E+00	4.72E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0203

KP 4/5/22

Apex-Gamma

Analysis Report for 2203099-11
CD-4A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-11
Sample Description	: CD-4A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:19:21AM
Acquisition Started	: 4/5/2022 9:54:20AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE3
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 913.1 seconds
Dead Time	: 1.43 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 4 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122379

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 10:09:45AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

BP/Castex-Ltd Adm-Apx E-000787

Analysis Report for 2203099-11

CD-4A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	9.80	9 -	14	10.45	9.12E+01	37.55	2.26E+02	1.69
M	2	20.80	16 -	43	21.45	8.70E+01	68.00	6.10E+02	4.53
m	3	31.52	16 -	43	32.16	2.98E+03	137.60	6.09E+02	4.89
	4	63.53	57 -	71	64.14	4.57E+02	97.83	8.06E+02	3.71
	5	81.24	74 -	88	81.85	1.03E+03	98.81	5.90E+02	3.40
	6	112.97	108 -	122	113.56	3.39E+02	79.08	5.07E+02	3.50
	7	185.75	182 -	191	186.29	5.47E+01	41.06	2.09E+02	4.64
	8	276.47	270 -	285	276.94	7.74E+01	39.90	1.29E+02	1.74
	9	303.42	298 -	312	303.88	1.99E+02	48.80	1.74E+02	3.25
	10	335.18	326 -	343	335.62	1.16E+02	44.12	1.34E+02	8.09
	11	356.18	348 -	363	356.60	5.34E+02	56.32	1.02E+02	3.86
	12	386.88	371 -	399	387.28	4.00E+02	57.34	1.08E+02	6.03
	13	416.74	410 -	426	417.12	8.80E+01	33.86	7.20E+01	5.41
	14	436.90	430 -	442	437.27	1.10E+02	25.71	2.60E+01	3.96
	15	467.97	458 -	475	468.32	3.82E+01	21.24	2.77E+01	15.19
	16	508.98	500 -	516	509.30	3.00E+01	10.95	0.00E+00	5.86
	17	599.66	595 -	604	599.93	7.60E+00	8.06	4.80E+00	1.06
	18	721.10	717 -	725	721.30	4.71E+00	6.95	4.57E+00	1.85

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 10:09:45AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122290.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	9.80	9.12E+01	37.55			9.12E+01	3.75E+01
M	2	20.80	8.70E+01	68.00			8.70E+01	6.80E+01
m	3	31.52	2.98E+03	137.60			2.98E+03	1.38E+02
	4	63.53	4.57E+02	97.83	7.57E+01	7.78E-01	3.81E+02	9.78E+01
	5	81.24	1.03E+03	98.81			1.03E+03	9.88E+01
	6	112.97	3.39E+02	79.08			3.39E+02	7.91E+01
	7	185.75	5.47E+01	41.06	6.98E+00	8.86E-01	4.77E+01	4.11E+01
	8	276.47	7.74E+01	39.90			7.74E+01	3.99E+01
	9	303.42	1.99E+02	48.80			1.99E+02	4.88E+01
	10	335.18	1.16E+02	44.12			1.16E+02	4.41E+01
	11	356.18	5.34E+02	56.32			5.34E+02	5.63E+01

BP/Castex-Ltd Adm-Apx E-000788

Analysis Report for 2203099-11

CD-4A

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
12	386.88	4.00E+02	57.34			4.00E+02	5.73E+01
13	416.74	8.80E+01	33.86			8.80E+01	3.39E+01
14	436.90	1.10E+02	25.71			1.10E+02	2.57E+01
15	467.97	3.82E+01	21.24			3.82E+01	2.12E+01
16	508.98	3.00E+01	10.95	1.39E+01	2.41E-01	1.61E+01	1.10E+01
17	599.66	7.60E+00	8.06			7.60E+00	8.06E+00
18	721.10	4.71E+00	6.95			4.71E+00	6.95E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.58	29.78	*	57.00	1.01E+02	4.68E+00
		33.60		13.20		
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	4.56E+02	4.69E+01
		302.84	*	18.33	6.01E+02	1.50E+02
		356.01	*	62.05	4.93E+02	5.57E+01
PA-234M	0.95	9.89	*	89.00	4.35E-02	1.79E-02
		21.72	*	64.90	7.82E-01	6.11E-01
		37.93		23.75		
TH-234	0.99	63.29	*	3.80	9.67E+02	2.49E+02
NP-237	0.59	29.37	*	14.00	4.11E+02	1.91E+01
		86.50		12.60		

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000789

Analysis Report for 2203099-11

CD-4A

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
?	I-129	0.586	1.01E+02	4.68E+00	
	BA-133	0.998	4.79E+02	3.49E+01	
	PA-234M	0.950	4.41E-02	1.79E-02	
	TH-234	0.999	9.67E+02	2.49E+02	
?	NP-237	0.591	4.11E+02	1.91E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2203099-11
CD-4A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 10:09:45AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
6	112.97	3.76980E-01	11.65	Sum	
7	185.75	5.30189E-02	43.04		
8	276.47	8.59624E-02	25.79		
10	335.18	1.28743E-01	19.04	Sum	
12	386.88	4.44338E-01	7.17	Sum	
13	416.74	9.77778E-02	19.24		
14	436.90	1.22222E-01	11.69	Sum	
15	467.97	4.24038E-02	27.82		
16	508.98	1.79423E-02	33.93		
17	599.66	8.44445E-03	53.04		
18	721.10	5.23810E-03	73.67		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	1.50E-04	1.50E-04	-9.64E-05	7.16E-05
	3.31	12.30	1.55E-03		-9.92E-04	7.37E-04
FE-55	5.89	24.50	1.46E-02	1.46E-02	-7.49E-03	7.01E-03
CO-57	122.06	85.51	2.52E+01	2.52E+01	-6.62E+00	1.22E+01
	136.48	10.60	1.92E+02		5.07E+01	9.19E+01

Analysis Report for 2203099-11

CD-4A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	NI-59	6.92		29.80	2.56E-02	2.56E-02	3.98E-02	1.24E-02
	MO-93	16.59		52.90	5.87E-01	5.87E-01	7.45E-01	2.86E-01
		18.60		10.00	4.28E+00		-4.58E+01	2.08E+00
	NB-93M	16.57		9.43	3.28E+00	3.28E+00	4.16E+00	1.60E+00
	CD-109	88.03		3.72	6.40E+02	6.40E+02	-7.57E+01	3.14E+02
	SN-113	255.12		1.93	1.24E+03	7.83E+01	-5.37E+02	5.84E+02
		391.69		61.90	7.83E+01		2.16E+02	3.79E+01
	SN-119M	23.87		16.10	1.27E+01	1.13E+01	6.04E+01	6.26E+00
		25.10		22.70	1.13E+01		7.96E+01	5.60E+00
+	I-129	29.78	*	57.00	7.45E+00	7.45E+00	1.01E+02	3.68E+00
		33.60		13.20	4.84E+01		5.56E+02	2.39E+01
		39.58		7.52	8.58E+01		-5.20E+00	4.23E+01
+	BA-133	81.00	*	34.06	5.56E+01	5.14E+01	4.56E+02	2.72E+01
		302.84	*	18.33	2.06E+02		6.01E+02	9.89E+01
		356.01	*	62.05	5.14E+01		4.93E+02	2.45E+01
	CE-139	165.85		80.35	3.36E+01	3.36E+01	2.93E+01	1.62E+01
	CE-144	133.54		10.80	1.77E+02	1.77E+02	-5.26E+01	8.48E+01
	HG-203	279.19		77.30	3.78E+01	3.78E+01	3.98E+01	1.80E+01
	PB-210	46.50		4.25	1.04E+02	1.04E+02	-1.55E+01	5.04E+01
	TH-231	25.64		14.70	1.86E+01	1.86E+01	1.31E+02	9.20E+00
		84.21		6.40	4.25E+02		-8.63E+01	2.09E+02
+	PA-234M	9.89	*	89.00	2.66E-02	2.66E-02	4.35E-02	1.27E-02
		21.72	*	64.90	1.98E+00		7.82E-01	9.78E-01
		37.93		23.75	2.89E+01		-1.34E+00	1.43E+01
+	TH-234	63.29	*	3.80	3.81E+02	3.81E+02	9.67E+02	1.87E+02
+	NP-237	29.37	*	14.00	3.03E+01	3.03E+01	4.11E+02	1.50E+01
		86.50		12.60	2.21E+02		-1.51E+01	1.09E+02
	U-237	97.08		16.30	1.00E+02	6.37E+01	2.45E+01	4.84E+01
		101.07		26.30	6.37E+01		-9.06E+01	3.08E+01
		114.00		12.30	2.36E+02		6.83E+02	1.15E+02
		208.01		22.00	1.27E+02		1.15E+01	6.09E+01
	AM-241	59.54		35.90	3.27E+01	3.27E+01	3.88E+00	1.60E+01
	AM-243	74.67		66.00	3.13E+01	3.13E+01	5.68E-01	1.54E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-000792

KP 4/5/22

Apex-Gamma

Analysis Report for 2203099-12
CD-4B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-12
Sample Description	: CD-4B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:19:31AM
Acquisition Started	: 4/5/2022 9:54:27AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.6 seconds
Dead Time	: 0.07 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122380

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 10:09:34AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-12

CD-4B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	20.26	17 -	39	20.23	8.83E+01	38.94	2.94E+02	2.52
m	2	30.70	17 -	39	30.67	2.38E+03	105.67	2.61E+02	2.28
m	3	34.96	17 -	39	34.92	5.05E+02	93.78	1.78E+02	2.39
	4	52.75	48 -	56	52.70	6.62E+01	42.25	2.34E+02	2.27
M	5	61.68	57 -	69	61.63	2.46E+02	46.64	2.15E+02	2.28
m	6	65.85	57 -	69	65.79	1.09E+02	46.25	2.12E+02	2.48
	7	80.94	75 -	86	80.87	9.28E+02	78.15	2.98E+02	2.29
	8	93.35	90 -	96	93.27	3.76E+01	26.90	9.68E+01	3.70
M	9	111.84	104 -	122	111.75	2.27E+02	44.50	1.70E+02	2.77
m	10	117.31	104 -	122	117.22	3.55E+01	37.31	1.46E+02	2.52
	11	276.07	270 -	279	275.88	6.66E+01	26.23	6.09E+01	2.72
	12	303.22	298 -	308	303.01	1.45E+02	39.67	1.34E+02	2.06
	13	334.66	329 -	339	334.43	5.35E+01	28.13	7.70E+01	2.02
	14	356.17	351 -	360	355.93	4.59E+02	45.23	3.02E+01	2.46
	15	386.34	380 -	394	386.08	2.52E+02	35.96	3.00E+01	5.44
	16	418.32	410 -	428	418.04	6.35E+01	24.06	2.69E+01	13.91
	17	437.06	432 -	441	436.77	7.69E+01	21.17	2.02E+01	1.62
	18	468.55	463 -	473	468.24	2.15E+01	11.24	5.04E+00	1.51
	19	511.91	506 -	518	511.58	2.74E+01	12.89	7.19E+00	5.67

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 10:09:34AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122291.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	20.26	8.83E+01	38.94			8.83E+01	3.89E+01
m	2	30.70	2.38E+03	105.67			2.38E+03	1.06E+02
m	3	34.96	5.05E+02	93.78			5.05E+02	9.38E+01
	4	52.75	6.62E+01	42.25			6.62E+01	4.22E+01
M	5	61.68	2.46E+02	46.64	1.42E+01	3.89E+00	2.32E+02	4.68E+01
m	6	65.85	1.09E+02	46.25	1.42E+01	3.89E+00	9.49E+01	4.64E+01
	7	80.94	9.28E+02	78.15			9.28E+02	7.82E+01
	8	93.35	3.76E+01	26.90	1.39E+01	1.89E+00	2.37E+01	2.70E+01
M	9	111.84	2.27E+02	44.50			2.27E+02	4.45E+01
m	10	117.31	3.55E+01	37.31			3.55E+01	3.73E+01

BP/Castex-Ltd Adm-Apx E-000794

Analysis Report for 2203099-12

CD-4B

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
11	276.07	6.66E+01	26.23			6.66E+01	2.62E+01
12	303.22	1.45E+02	39.67			1.45E+02	3.97E+01
13	334.66	5.35E+01	28.13			5.35E+01	2.81E+01
14	356.17	4.59E+02	45.23			4.59E+02	4.52E+01
15	386.34	2.52E+02	35.96			2.52E+02	3.60E+01
16	418.32	6.35E+01	24.06			6.35E+01	2.41E+01
17	437.06	7.69E+01	21.17			7.69E+01	2.12E+01
18	468.55	2.15E+01	11.24			2.15E+01	1.12E+01
19	511.91	2.74E+01	12.89	1.12E+01	1.27E+00	1.62E+01	1.30E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.87	29.78	*	57.00	4.79E+01	2.13E+00
		33.60	*	13.20	6.79E+01	1.26E+01
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	4.46E+02	4.13E+01
		302.84	*	18.33	5.20E+02	1.45E+02
		356.01	*	62.05	4.82E+02	5.16E+01
TH-234	0.93	63.29	*	3.80	5.45E+02	1.11E+02
AM-241	0.88	59.54	*	35.90	5.77E+01	1.17E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000795

Analysis Report for 2203099-12

CD-4B

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.872	4.85E+01	2.10E+00	
	BA-133	0.999	4.63E+02	3.15E+01	
?	TH-234	0.936	5.45E+02	1.11E+02	
X	NP-237	0.702			
?	AM-241	0.889	5.77E+01	1.17E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2203099-12
CD-4B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 10:09:34AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	20.26	9.80978E-02	22.05	Tol.	PA-234M
	4	52.75	7.35003E-02	31.93		
m	6	65.85	1.05494E-01	24.44	Sum	
	8	93.35	2.62975E-02	56.97	Sum	
M	9	111.84	2.52029E-01	9.81	Sum	
m	10	117.31	3.94654E-02	52.52	Sum	
	11	276.07	7.39633E-02	19.70		
	13	334.66	5.94444E-02	26.29	Sum	
	15	386.34	2.80000E-01	7.13	Sum	
	16	418.32	7.05988E-02	18.93	Sum	
	17	437.06	8.54279E-02	13.76	Sum	
	18	468.55	2.38657E-02	26.16		
	19	511.91	1.79563E-02	40.09		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
	3.31	12.30	2.92E-06		0.00E+00	0.00E+00

BP/Castex-Ltd Adm-Apx E-000797

Analysis Report for 2203099-12

CD-4B

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	FE-55	5.89		24.50	7.17E-04	7.17E-04	3.58E-04	3.30E-04
	CO-57	122.06		85.51	1.83E+01	1.83E+01	-6.51E-01	8.63E+00
		136.48		10.60	1.75E+02		-5.10E+01	8.26E+01
	NI-59	6.92		29.80	1.87E-03	1.87E-03	9.60E-04	8.77E-04
	MO-93	16.59		52.90	1.66E-01	1.66E-01	6.64E-02	8.05E-02
		18.60		10.00	1.40E+00		1.18E-01	6.77E-01
	NB-93M	16.57		9.43	9.28E-01	9.28E-01	3.71E-01	4.49E-01
	CD-109	88.03		3.72	2.77E+02	2.77E+02	3.66E+01	1.31E+02
	SN-113	255.12		1.93	1.21E+03	5.39E+01	2.97E+02	5.61E+02
		391.69		61.90	5.39E+01		3.78E+01	2.56E+01
	SN-119M	23.87		16.10	2.55E+00	2.55E+00	-6.93E+01	1.24E+00
		25.10		22.70	2.71E+00		-6.37E+01	1.32E+00
+	I-129	29.78	*	57.00	3.38E+00	3.38E+00	4.79E+01	1.66E+00
		33.60	*	13.20	2.24E+01		6.79E+01	1.10E+01
		39.58		7.52	2.67E+01		-7.77E+00	1.29E+01
+	BA-133	81.00	*	34.06	4.00E+01	2.79E+01	4.46E+02	1.94E+01
		302.84	*	18.33	1.95E+02		5.20E+02	9.28E+01
		356.01	*	62.05	2.79E+01		4.82E+02	1.25E+01
	CE-139	165.85		80.35	3.05E+01	3.05E+01	-1.42E+00	1.44E+01
	CE-144	133.54		10.80	1.69E+02	1.69E+02	-7.17E-02	7.97E+01
	HG-203	279.19		77.30	3.89E+01	3.89E+01	-7.00E+00	1.83E+01
	PB-210	46.50		4.25	5.10E+01	5.10E+01	5.25E+00	2.42E+01
	TH-231	25.64		14.70	6.92E+00	6.92E+00	-1.92E+01	3.41E+00
		84.21		6.40	4.08E+02		8.95E+00	2.00E+02
	PA-234M	9.89		89.00	6.05E-03	6.05E-03	5.88E-03	2.89E-03
		21.72		64.90	4.14E-01		-1.56E-01	2.00E-01
		37.93		23.75	1.14E+01		1.51E+00	5.57E+00
+	TH-234	63.29	*	3.80	2.21E+02	2.21E+02	5.45E+02	1.07E+02
	NP-237	29.37	*	14.00	1.37E+01	1.37E+01	1.95E+02	6.76E+00
		86.50		12.60	1.27E+02		1.05E+01	6.17E+01
	U-237	97.08		16.30	6.66E+01	4.54E+01	-1.67E+01	3.14E+01
		101.07		26.30	4.54E+01		7.19E-01	2.14E+01
		114.00		12.30	2.22E+02		5.87E+02	1.08E+02
		208.01		22.00	1.24E+02		1.56E+01	5.84E+01
+	AM-241	59.54	*	35.90	2.34E+01	2.34E+01	5.77E+01	1.14E+01
	AM-243	74.67		66.00	1.42E+01	1.42E+01	3.24E-01	6.83E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-000798

KP 4/5/22

Apex-Gamma

Analysis Report for 2203099-13
CD-5A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2203099-13
Sample Description	: CD-5A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 4/5/2022 9:19:38AM
Acquisition Started	: 4/5/2022 10:10:05AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.6 seconds
Dead Time	: 0.07 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 122382

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/5/2022 10:25:08AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2203099-13

CD-5A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.55	16 -	24	20.52	8.51E+01	53.12	3.80E+02	2.81
M	2	30.68	25 -	41	30.64	2.56E+03	107.16	2.14E+02	2.39
m	3	34.95	25 -	41	34.91	6.46E+02	97.20	1.66E+02	2.62
M	4	52.63	47 -	73	52.58	7.59E+01	41.08	1.99E+02	2.99
m	5	61.56	47 -	73	61.50	2.52E+02	44.35	1.57E+02	2.42
m	6	66.08	47 -	73	66.02	1.22E+02	49.27	2.05E+02	3.00
m	7	80.86	74 -	90	80.80	1.00E+03	70.11	1.61E+02	2.29
	8	112.24	107 -	119	112.15	2.85E+02	58.88	2.77E+02	2.72
	9	134.43	132 -	137	134.33	2.11E+01	24.56	1.02E+02	2.21
	10	275.76	268 -	283	275.57	5.78E+01	38.88	1.28E+02	2.65
	11	303.04	298 -	310	302.83	1.65E+02	37.94	9.38E+01	2.80
	12	334.87	329 -	341	334.64	9.50E+01	32.30	7.80E+01	2.53
	13	356.06	349 -	360	355.82	4.80E+02	47.58	4.54E+01	2.57
	14	386.65	379 -	396	386.39	2.57E+02	46.86	9.74E+01	3.96
	15	417.96	411 -	426	417.68	6.14E+01	23.66	2.93E+01	7.09
	16	437.20	432 -	441	436.91	6.52E+01	20.00	1.96E+01	1.61
	17	470.25	464 -	475	469.94	1.86E+01	17.44	2.48E+01	5.30
	18	510.79	506 -	515	510.45	2.20E+01	9.38	0.00E+00	2.69
	19	558.50	553 -	560	558.14	7.00E+00	5.29	0.00E+00	1.16

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/5/2022 10:25:08AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000122291.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	20.55	8.51E+01	53.12			8.51E+01	5.31E+01
M	2	30.68	2.56E+03	107.16			2.56E+03	1.07E+02
m	3	34.95	6.46E+02	97.20			6.46E+02	9.72E+01
M	4	52.63	7.59E+01	41.08			7.59E+01	4.11E+01
m	5	61.56	2.52E+02	44.35	1.42E+01	3.89E+00	2.38E+02	4.45E+01
m	6	66.08	1.22E+02	49.27			1.22E+02	4.93E+01
m	7	80.86	1.00E+03	70.11			1.00E+03	7.01E+01
	8	112.24	2.85E+02	58.88			2.85E+02	5.89E+01
	9	134.43	2.11E+01	24.56			2.11E+01	2.46E+01
	10	275.76	5.78E+01	38.88			5.78E+01	3.89E+01

BP/Castex-Ltd Adm-Apx E-000800

Analysis Report for 2203099-13

CD-5A

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
11	303.04	1.65E+02	37.94			1.65E+02	3.79E+01
12	334.87	9.50E+01	32.30			9.50E+01	3.23E+01
13	356.06	4.80E+02	47.58			4.80E+02	4.76E+01
14	386.65	2.57E+02	46.86			2.57E+02	4.69E+01
15	417.96	6.14E+01	23.66			6.14E+01	2.37E+01
16	437.20	6.52E+01	20.00			6.52E+01	2.00E+01
17	470.25	1.86E+01	17.44			1.86E+01	1.74E+01
18	510.79	2.20E+01	9.38	1.12E+01	1.27E+00	1.08E+01	9.47E+00
19	558.50	7.00E+00	5.29	4.13E-01	9.54E-01	6.59E+00	5.38E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.87	29.78	*	57.00	5.14E+01	2.16E+00
		33.60	*	13.20	8.69E+01	1.31E+01
		39.58		7.52		
BA-133	1.00	81.00	*	34.06	4.82E+02	3.84E+01
		302.84	*	18.33	5.91E+02	1.40E+02
		356.01	*	62.05	5.04E+02	5.42E+01
CE-144	0.98	133.54	*	10.80	7.40E+01	8.63E+01
TH-234	0.92	63.29	*	3.80	5.58E+02	1.05E+02
AM-241	0.90	59.54	*	35.90	5.90E+01	1.11E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000801

Analysis Report for 2203099-13

CD-5A

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.873	5.24E+01	2.13E+00	
	BA-133	1.000	4.94E+02	3.06E+01	
	CE-144	0.980	7.40E+01	8.63E+01	
?	TH-234	0.926	5.58E+02	1.05E+02	
X	NP-237	0.703			
?	AM-241	0.901	5.90E+01	1.11E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-000802

Analysis Report for 2203099-13
CD-5A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/5/2022 10:25:08AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.55	9.45758E-02	31.20	Tol.	PA-234M
M	4	52.63	8.43024E-02	27.07		
m	6	66.08	1.35126E-01	20.26	Sum	
	8	112.24	3.16156E-01	10.35	Sum	
	10	275.76	6.41803E-02	33.66		
	12	334.87	1.05556E-01	17.00	Sum	
	14	386.65	2.85871E-01	9.11	Sum	
	15	417.96	6.81871E-02	19.28	Sum	
	16	437.20	7.24296E-02	15.34	Sum	
	17	470.25	2.06452E-02	46.92		
	18	510.79	1.19527E-02	44.00		
	19	558.50	7.31837E-03	40.82		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
	3.31	12.30	2.92E-06		0.00E+00	0.00E+00
FE-55	5.89	24.50	7.24E-04	7.24E-04	4.53E-04	3.34E-04

Analysis Report for 2203099-13

CD-5A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CO-57	122.06		85.51	1.87E+01	1.87E+01	-1.55E+01	8.82E+00
		136.48		10.60	1.86E+02		-1.24E+01	8.80E+01
	NI-59	6.92		29.80	1.81E-03	1.81E-03	1.61E-03	8.47E-04
	MO-93	16.59		52.90	1.54E-01	1.54E-01	1.15E-02	7.42E-02
		18.60		10.00	1.38E+00		2.05E+00	6.65E-01
	NB-93M	16.57		9.43	8.58E-01	8.58E-01	6.43E-02	4.14E-01
	CD-109	88.03		3.72	2.86E+02	2.86E+02	4.95E+01	1.36E+02
	SN-113	255.12		1.93	1.34E+03	5.82E+01	5.33E+02	6.25E+02
		391.69		61.90	5.82E+01		5.74E+01	2.77E+01
	SN-119M	23.87		16.10	2.45E+00	2.45E+00	-7.47E+01	1.19E+00
		25.10		22.70	2.71E+00		-6.53E+01	1.32E+00
+	I-129	29.78	*	57.00	2.28E+00	2.28E+00	5.14E+01	1.11E+00
		33.60	*	13.20	1.51E+01		8.69E+01	7.38E+00
		39.58		7.52	2.85E+01		1.84E-02	1.38E+01
+	BA-133	81.00	*	34.06	4.90E+01	3.48E+01	4.82E+02	2.38E+01
		302.84	*	18.33	1.74E+02		5.91E+02	8.22E+01
		356.01	*	62.05	3.48E+01		5.04E+02	1.60E+01
	CE-139	165.85		80.35	2.94E+01	2.94E+01	-1.35E+01	1.39E+01
+	CE-144	133.54	*	10.80	1.41E+02	1.41E+02	7.40E+01	6.57E+01
	HG-203	279.19		77.30	3.93E+01	3.93E+01	4.60E+01	1.85E+01
	PB-210	46.50		4.25	5.30E+01	5.30E+01	2.51E+00	2.51E+01
	TH-231	25.64		14.70	7.01E+00	7.01E+00	-1.68E+01	3.45E+00
		84.21		6.40	4.24E+02		2.49E+03	2.08E+02
	PA-234M	9.89		89.00	5.36E-03	5.36E-03	3.53E-03	2.54E-03
		21.72		64.90	3.98E-01		-2.22E-01	1.92E-01
		37.93		23.75	1.21E+01		1.91E+01	5.90E+00
+	TH-234	63.29	*	3.80	3.63E+02	3.63E+02	5.58E+02	1.79E+02
	NP-237	29.37	*	14.00	9.29E+00	9.29E+00	2.09E+02	4.54E+00
		86.50		12.60	1.30E+02		-4.54E+02	6.32E+01
	U-237	97.08		16.30	6.81E+01	4.68E+01	-3.46E+01	3.21E+01
		101.07		26.30	4.68E+01		-1.18E+00	2.21E+01
		114.00		12.30	2.29E+02		6.92E+02	1.11E+02
		208.01		22.00	1.24E+02		3.00E+01	5.85E+01
+	AM-241	59.54	*	35.90	3.85E+01	3.85E+01	5.90E+01	1.89E+01
	AM-243	74.67		66.00	1.49E+01	1.49E+01	-2.66E+02	7.17E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

SECTION XI

ANALYTICAL DATA (TOTAL DISSOLVED SOLIDS)

BP/Castex-Ltd Adm-Apx E-000805

Eberline Services - Oak Ridge
Version 1.0 9/1999

TDS / TSS Worksheet

Printed: 3/29/2022 8:57 AM

Work Order	Run	Analysis Code	Technician
22-03099	1	TDS	JPACHELLA

TRetec Fraction	ERM Client ID	Aliquot ml	Filter Data Filter Tare (g)	Filter Final (g)	Filter Net (g)	TDS/TSS (mg/L)	Maximum Aliq (mL)
04	CD-5B	100.0000	79.9330	81.8373	1.9043	19043.0000	5.25
05	CD-2A	100.0000	78.9668	80.9473	1.9805	19805.0000	5.05
06	CD-2B	100.0000	78.5038	79.0013	0.4975	4975.0000	20.10
07	CD-3A	100.0000	73.3209	76.5185	3.1976	31976.0000	3.13
08	CD-1B	100.0000	118.5358	118.5779	0.0421	421.0000	237.53
09	CD-1A	100.0000	84.0264	84.0700	0.0436	436.0000	229.36
10	CD-1C	100.0000	118.4663	118.5268	0.0605	605.0000	165.29
11	CD-4A	100.0000	99.4781	99.6013	0.1232	1232.0000	81.17
12	CD-4B	100.0000	79.9561	80.1677	0.2116	2116.0000	47.26
13	CD-5A	100.0000	82.3946	82.4660	0.0714	714.0000	140.06

Technician: JPachella Date: 3/29/22

BP/Castex-Ltd Adm-Apx E-000806

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 3/29/2022 8:54 AM

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
22-03099	1	TDS	liters	4/11/2022	JPACHELLA

Lab Fraction	ERM Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	DUP	DUP					1.0000E-01	1.0000E-01				
04	CD-5B	TRG					1.0000E-01	1.0000E-01				
05	CD-2A	TRG					1.0000E-01	1.0000E-01				
06	CD-2B	TRG					1.0000E-01	1.0000E-01				
07	CD-3A	TRG					1.0000E-01	1.0000E-01				
08	CD-1B	TRG					1.0000E-01	1.0000E-01				
09	CD-1A	TRG					1.0000E-01	1.0000E-01				
10	CD-1C	TRG					1.0000E-01	1.0000E-01				
11	CD-4A	TRG					1.0000E-01	1.0000E-01				
12	CD-4B	TRG					1.0000E-01	1.0000E-01				
13	CD-5A	TRG					1.0000E-01	1.0000E-01				

Comments	

0224

Technician: JPachella Date: 3/29/22

BP/Castex-Ltd Adm-Apx E-000807

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5/10/2022

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 22-112-0017
Project Description: Castex Development
Project Number: 0575834
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 4/22/2022 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-000808

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2022
Louisiana	State Program - NELAP	02041	06/30/2022

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2023
Arkansas	State Program	88-0650	02/07/2023
California	State Program	2904	06/30/2022
Florida	State Program - NELAP	E871157	06/30/2022
Georgia	State Program	C044	02/18/2023
Georgia	State Program	04015	06/30/2022
Illinois	State Program - NELAP	200078	10/10/2022
Kentucky	State Program	80215	06/30/2022
Kentucky	State Program	KY90047	12/31/2022
Louisiana	State Program - NELAP	LA037	12/31/2022
Louisiana	State Program - NELAP	04015	06/30/2022
Mississippi	State Program	MS	02/11/2023
North Carolina	State Program	415	12/31/2022
Pennsylvania	State Program - NELAP	68-03195	05/31/2022
South Carolina	State Program	84002	06/30/2022
South Carolina	State Program	84002	06/30/2022
Tennessee	State Program	02027	02/11/2023
Texas	State Program - NELAP	T104704180	09/30/2022
Virginia	State Program	00106	06/30/2022
Virginia	State Program - NELAP	460181	09/14/2022

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Sample Summary Table

Report Number: **22-112-0017**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
66987	CD-8 (4-6')	Solids	04/21/2022 08:15	04/22/2022		
66987	CD-8 (4-6')	Solids	04/21/2022 08:15	04/22/2022	6010D	WP MTN
66987	CD-8 (4-6')	Solids	04/21/2022 08:15	04/22/2022	29B	WP MTN
66987	CD-8 (4-6')	Solids	04/21/2022 08:15	04/22/2022	7471A	WP MTN
66988	CD-8 (8-10')	Solids	04/21/2022 08:25	04/22/2022		
66988	CD-8 (8-10')	Solids	04/21/2022 08:25	04/22/2022	6010D	WP MTN
66988	CD-8 (8-10')	Solids	04/21/2022 08:25	04/22/2022	29B	WP MTN
66988	CD-8 (8-10')	Solids	04/21/2022 08:25	04/22/2022	7471A	WP MTN
66989	CD-8 (18-20')	Solids	04/21/2022 08:50	04/22/2022		
66990	CD-8 (18-20')	TCLP	04/21/2022 08:50	04/22/2022	9056	WP MTN
66990	CD-8 (18-20')	TCLP	04/21/2022 08:50	04/22/2022	1312	WP MTN
66991	CD-8 (48-50')	Solids	04/21/2022 10:45	04/22/2022		
66992	CD-8 (48-50')	TCLP	04/21/2022 10:45	04/22/2022	9056	WP MTN
66992	CD-8 (48-50')	TCLP	04/21/2022 10:45	04/22/2022	1312	WP MTN
66993	CD-8 (62-64')	Solids	04/21/2022 13:30	04/22/2022		

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Client: ERM
Project: Castex Development
Lab Report Number: 22-112-0017
Date: 5/6/2022

CASE NARRATIVE

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
- True Total Barium results are reported dry weight
- Oil & Grease results are reported dry weight
- VPH/EPH results reported as received
- PAH results reported as received

Metals Analysis Method 6010D
Sample 66988 (CD-8 (8-10'))
Analyte: Arsenic
QC Batch No: L613745/L613327
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 66988 (CD-8 (8-10'))
Analyte: Barium
QC Batch No: L613745/L613327
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 66988 (CD-8 (8-10'))
Analyte: Lead
QC Batch No: L613745/L613327
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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ERM
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Houston , TX 77024

Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/22/2022

Report Number : **22-112-0017**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66987**
Sample ID : **CD-8 (4-6')**

Matrix: **Solids**
Sampled: **4/21/2022 8:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	18.3	%		1	04/25/22 10:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	78.1	%		1	04/27/22 09:00	BXH	29B
Chloride	43.8	mg/Kg	4.00	1	05/05/22 12:55	MJM	9056
Electrical Conductivity (Sat Paste)	0.557	mmhos/cm		1	04/27/22 09:00	BXH	29B
pH (Sat Paste)	8.17	s.u.		1	04/27/22 09:00	BXH	29B
Cation Exchange Capacity	33.5	meq/100g	0.100	10	04/27/22 12:30		29B
Exchangeable Sodium Percentage	0.853	%	0.100	1	04/27/22 09:00		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	1.25	Calc	0.215	5	04/27/22 12:36		29B
Calcium (Sat Paste)	2.32	meq/L	0.250	5	04/27/22 12:47	BMB	29B
Magnesium (Sat Paste)	0.769	meq/L	0.410	5	04/27/22 12:58	BMB	29B
Sodium (Sat Paste)	1.55	meq/L	0.215	5	04/27/22 12:36	BMB	29B
True Total Barium	<500	mg/Kg	500	1	05/02/22 16:16	TJS	29B
Arsenic	1.99	mg/Kg	1.00	1	04/29/22 20:56	EAL	6010D
Barium	109	mg/Kg	1.00	1	04/29/22 20:56	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	04/29/22 20:56	EAL	6010D
Chromium	6.30	mg/Kg	0.500	1	04/29/22 20:56	EAL	6010D
Lead	5.88	mg/Kg	0.600	1	04/29/22 20:56	EAL	6010D
Mercury	<0.153	mg/Kg	0.153	1	05/03/22 11:44	JTR	7471A
Selenium	<1.00	mg/Kg	1.00	1	04/29/22 20:56	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	04/29/22 20:56	EAL	6010D
Zinc	18.4	mg/Kg	2.50	1	04/29/22 20:56	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000812

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/22/2022

Report Number : **22-112-0017**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66988**
Sample ID : **CD-8 (8-10')**

Matrix: **Solids**
Sampled: **4/21/2022 8:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	15.9	%		1	04/25/22 10:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	75.9	%		1	04/27/22 09:00	BXH	29B
Chloride	12.0	mg/Kg	4.00	1	05/05/22 13:07	MJM	9056
Electrical Conductivity (Sat Paste)	0.422	mmhos/cm		1	04/27/22 09:00	BXH	29B
pH (Sat Paste)	8.19	s.u.		1	04/27/22 09:00	BXH	29B
Cation Exchange Capacity	27.4	meq/100g	0.100	10	04/27/22 12:31		29B
Exchangeable Sodium Percentage	0.795	%	0.100	1	04/27/22 09:00		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	1.20	Calc	0.215	5	04/27/22 12:39		29B
Calcium (Sat Paste)	2.33	meq/L	0.250	5	04/27/22 12:49	BMB	29B
Magnesium (Sat Paste)	0.753	meq/L	0.410	5	04/27/22 12:59	BMB	29B
Sodium (Sat Paste)	1.49	meq/L	0.215	5	04/27/22 12:39	BMB	29B
True Total Barium	<500	mg/Kg	500	1	05/02/22 16:31	TJS	29B
Arsenic	8.67	mg/Kg	1.00	1	04/29/22 21:12	EAL	6010D
Barium	192	mg/Kg	1.00	1	04/29/22 21:12	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	04/29/22 21:12	EAL	6010D
Chromium	9.28	mg/Kg	0.500	1	04/29/22 21:12	EAL	6010D
Lead	9.53	mg/Kg	0.600	1	04/29/22 21:12	EAL	6010D
Mercury	<0.135	mg/Kg	0.135	1	05/03/22 11:45	JTR	7471A
Selenium	<1.00	mg/Kg	1.00	1	04/29/22 21:12	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	04/29/22 21:12	EAL	6010D
Zinc	40.1	mg/Kg	2.50	1	04/29/22 21:12	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000813

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/22/2022

Report Number : **22-112-0017**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66989**
Sample ID : **CD-8 (18-20')**

Matrix: **Solids**
Sampled: **4/21/2022 8:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	26.7	%		1	04/25/22 10:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	107	%		1	04/27/22 09:00	BXH	29B
Chloride	<4.00	mg/Kg	4.00	1	05/05/22 13:19	MJM	9056
Electrical Conductivity (Sat Paste)	0.244	mmhos/cm		1	04/27/22 09:00	BXH	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/22/2022

Report Number : **22-112-0017**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66990**
Sample ID : **CD-8 (18-20')**

Matrix: **TCLP**
Sampled: **4/21/2022 8:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/28/22 12:00	PHE	1312
SPLP Chloride	<0.400	mg/L	0.400	1	05/05/22 11:22	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000815

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/22/2022

Report Number : **22-112-0017**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66991**
Sample ID : **CD-8 (48-50')**

Matrix: **Solids**
Sampled: **4/21/2022 10:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	35.1	%		1	04/25/22 10:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	64.2	%		1	04/27/22 09:00	BXH	29B
Chloride	11.6	mg/Kg	4.00	1	05/05/22 13:56	MJM	9056
Electrical Conductivity (Sat Paste)	0.740	mmhos/cm		1	04/27/22 09:00	BXH	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000816

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/22/2022

Report Number : **22-112-0017**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66992**
Sample ID : **CD-8 (48-50')**

Matrix: **TCLP**
Sampled: **4/21/2022 10:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	04/28/22 12:00	PHE	1312
SPLP Chloride	0.908	mg/L	0.400	1	05/05/22 11:48	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000817

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/22/2022

Report Number : **22-112-0017**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **66993**
Sample ID : **CD-8 (62-64')**

Matrix: **Solids**
Sampled: **4/21/2022 13:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.0	%		1	04/25/22 10:09	JMB	SW-DRYWT
% Saturation (Sat Paste)	59.1	%		1	04/27/22 09:00	BXH	29B
Chloride	43.0	mg/Kg	4.00	1	05/05/22 14:09	MJM	9056
Electrical Conductivity (Sat Paste)	0.721	mmhos/cm		1	04/27/22 09:00	BXH	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000818

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: L613680
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): L613991
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-L613680 Matrix: SOL
Associated Lab Samples: 66987, 66988

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 500	500	05/02/22 16:11

Laboratory Control Sample LCS-L613680

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	10200	102	80-120

Matrix Spike & Matrix Spike Duplicate A 66987-A73602-MS-L613680 A 66987-A73602-MSD-L613680

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	< 500	9900	9010	10400	9240	105	103	75-125	11.8	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: A73605
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A73634
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A73605 Matrix: SOL
Associated Lab Samples: 66987, 66988

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	04/27/22 12:30

Duplicate A 66988-A73602-DUP-A73605

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	6300	6280	0.3	30.0	04/27/22 12:32

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: A73606
QC Prep Batch Method: 29B
QC Analytical Batch(es): A73635
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 66988-A73602-DUP-A73606

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	0.331	0.339	2.3	30.0	04/27/22 12:35

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: A73607
QC Prep Batch Method: 29B
QC Analytical Batch(es): A73663,A73664
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 66987-A73602-DUP-A73607

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	78.1	78.0	0.1	30.0	04/27/22 09:00
Electrical Conductivity (Sat Paste)	mmhos/cm	0.557	0.535	4.0	30.0	04/27/22 09:00
pH (Sat Paste)	s.u.	8.17	8.17	0.0	30.0	04/27/22 09:00

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: A73607
QC Prep Batch Method: 29B
QC Analytical Batch(es): A73663,A73664
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 66987-A73602-DUP-A73607

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	2.32	2.20	5.3	30.0	04/27/22 12:48
Magnesium (Sat Paste)	meq/L	0.769	0.657	15.7	30.0	04/27/22 12:59
Sodium (Sat Paste)	meq/L	1.55	1.55	0.0	30.0	04/27/22 12:36

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: L613327
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L613745
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-L613327 Matrix: SOL
Associated Lab Samples: 66987, 66988

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 1.00	1.00	04/29/22 20:51
Barium	mg/Kg	< 1.00	1.00	04/29/22 20:51
Cadmium	mg/Kg	< 0.200	0.200	04/29/22 20:51
Chromium	mg/Kg	< 0.500	0.500	04/29/22 20:51
Lead	mg/Kg	< 0.600	0.600	04/29/22 20:51
Selenium	mg/Kg	< 1.00	1.00	04/29/22 20:51
Silver	mg/Kg	< 0.500	0.500	04/29/22 20:51
Zinc	mg/Kg	< 2.50	2.50	04/29/22 20:51

Laboratory Control Sample LCS-L613327

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/Kg	10.0	11.3	113	80-120
Barium	mg/Kg	100	112	112	80-120
Cadmium	mg/Kg	10.0	11.1	111	80-120
Chromium	mg/Kg	100	114	114	80-120
Lead	mg/Kg	10.0	11.4	114	80-120
Selenium	mg/Kg	10.0	11.0	110	80-120
Silver	mg/Kg	10.0	11.2	112	80-120
Zinc	mg/Kg	100	115	115	80-120

Matrix Spike & Matrix Spike Duplicate A 66988-MS-L613327 A 66988-MSD-L613327

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	8.67	9.61	9.81	15.2	12.4	68.0*	38.0*	75-125	20.2*	20.0
Barium	mg/Kg	192	96.1	98.1	275	259	86.0	68.0*	75-125	5.9	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: L613327
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L613745
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 66988-MS-L613327 A 66988-MSD-L613327

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Cadmium	mg/Kg	< 0.200	9.61	9.81	9.66	9.99	101	102	75-125	3.3	20.0
Chromium	mg/Kg	9.28	96.1	98.1	110	115	105	108	75-125	4.4	20.0
Lead	mg/Kg	9.53	9.61	9.81	18.1	15.3	89.0	59.0*	75-125	16.7	20.0
Selenium	mg/Kg	< 1.00	9.61	9.81	8.40	8.65	87.0	88.0	75-125	2.9	20.0
Silver	mg/Kg	< 0.500	9.61	9.81	9.97	10.3	104	105	75-125	3.2	20.0
Zinc	mg/Kg	40.1	96.1	98.1	138	139	102	101	75-125	0.7	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: L613885
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L614137
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L613885 Matrix: SOL
Associated Lab Samples: 66987, 66988

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.160	0.160	05/03/22 11:31

Laboratory Control Sample LCS-L613885

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.427	107	80-120

Matrix Spike & Matrix Spike Duplicate A 67100-MS-L613885 A 67100-MSD-L613885

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	< 0.159	0.399	0.348	0.425	0.357	106	103	80-120	17.3	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: A73644
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A73810
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A73644 Matrix: SOL
Associated Lab Samples: 66987, 66988, 66989, 66991, 66993

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	05/05/22 12:30

Laboratory Control Sample LCS-A73644

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	523	105	80-120

Matrix Spike & Matrix Spike Duplicate A 66989-MS-A73644 A 66989-MSD-A73644

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	< 4.00	46.8	46.4	50.1	48.9	99.1	97.4	80-120	2.4	15.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-112-0017

QC Prep: L614628
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L614698
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L614628 Matrix: TCL
Associated Lab Samples: 66990, 66992

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	05/05/22 09:41

Laboratory Control Sample LCS-L614628

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	53.0	106	90-110

Matrix Spike & Matrix Spike Duplicate A 66990-MS-L614628 A 66990-MSD-L614628

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
SPLP Chloride	mg/L	<0.444	55.6	55.6	58.5	58.9	105	106	80-120	0.6	15

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-112-0017**

QC Analytical Batch: A73608
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 66988-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	15.9	15.3	3.8	20.0	04/25/22 10:09

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **22-112-0017**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◉ Yes	◯ No	◯ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 04/22/2022 15:30:41

element

Chain of Custody

Laboratory Number:

Client Information:	Billing Information:	PO Number:	Project Name/Number:	Page of
Company Name: ERM	same		Castex/0575834	**Matrix Code**
Contact Name: Michael Goodman		Quote Number:		DW = Drinking Water
Address: 3838 N Causeway Blvd			Sampler's Signature	WW = Waste Water
Metairie, LA 70002		Required QC Level		GW = Ground Water
City, State Zip:				AQ = Aqueous
Phone Number: (530) 379-6098 Ext:	Ext:	Bill Monthly	Shipping Method:	OT = Other
Fax Number:		☐ Yes	UPS / FedEx / NOW	SL = Sludge SOL = Solid
E-mail Address: michael.goodman@erm.com		☐ No	DHL / Element / Hand / Mail	O = Oil SO = Soil
				F = Food SW = Swab
				NG = Natural Gas
				NGL = Natural Gas Liquid
				PW = Produced Water
				CF = Completion Fluid

Which Regulations Apply: ☐RCRA ☐Drinking Water ☐POTW ☐Distribution ☐NPDES ☐Special ☐USDA/FDA ☐State ☐RECAP/RISC ☐Other

Turn Time: ☒Standard RUSH ☐1 Day ☐2 Day ☐Other (Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Collection Information: Date	Time	Grab / Composite	Matrix	Container: Quantity	Container: Type P=Plastic, G=Glass, V=Vial	Pres. HCl, HNO_3, H_2SO_4, NaOH, $Na_2S_2O_3$	EC	% Moisture	CEC/ESP/SAR	29-B Metals	Cl- (method 9056)	SPLP Cl-				Comments
~~CD-8 (2-4')~~	~~4-21-22~~	~~0810~~	~~G~~	~~SO~~													Metals
CD-8 (4-6')	4-21-22	0815	G	SO	1	P	—	X	X	X	X	X				66987	As, Ba, TTBa,
CD-8 (8-10')	4-21-22	0825	G	SO	1	P	—	X	X	X	X	X				66988	Ca, Cr, Pb, Hg,
CD-8 (18-20')	4-21-22	0850	G	SO	1	P	—	X	X			X	X			66989-66990	Se, Ag, Sr, Zn
CD-8 (48-50')	4-21-22	1045	G	SO	1	P	—	X	X			X	X			66991-66992	Cd, not ca needed
CD-8 (62-64')	4-21-22	1330	G	SO	1	P	—	X	X			X				66993	Per Michael Goodman - CRV

	Relinquished by	Date/Time	Received by	Date/Time
1	Jake Rhoman	4-22-22 1405		4-22-22 1405
2				
3				

Field Notes:

Received at lab on ice? ☐Yes ☒No Temp: N/A

All samples submitted to Element Materials Technology for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples.

Element Materials Technolc

8800 North US 31
Columbus, IN
47201 USA
P 812-375-0531
F 812-375-0731

328 Ley Road, Suite 100
Fort Wayne, IN
46825 USA
P 260-471-7000
F 260-471-7777

2417 W. Pinhook Rd
Lafayette, LA
70508 USA
P 337-235-0483
F 337-233-6540

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5/10/2022

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 22-116-0019
Project Description: Castex Development
Project Number: 0575834
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 4/26/2022 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-000832

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2022
Louisiana	State Program - NELAP	02041	06/30/2022

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2023
Arkansas	State Program	88-0650	02/07/2023
California	State Program	2904	06/30/2022
Florida	State Program - NELAP	E871157	06/30/2022
Georgia	State Program	C044	02/18/2023
Georgia	State Program	04015	06/30/2022
Illinois	State Program - NELAP	200078	10/10/2022
Kentucky	State Program	80215	06/30/2022
Kentucky	State Program	KY90047	12/31/2022
Louisiana	State Program - NELAP	LA037	12/31/2022
Louisiana	State Program - NELAP	04015	06/30/2022
Mississippi	State Program	MS	02/11/2023
North Carolina	State Program	415	12/31/2022
Pennsylvania	State Program - NELAP	68-03195	05/31/2022
South Carolina	State Program	84002	06/30/2022
South Carolina	State Program	84002	06/30/2022
Tennessee	State Program	02027	02/11/2023
Texas	State Program - NELAP	T104704180	09/30/2022
Virginia	State Program	00106	06/30/2022
Virginia	State Program - NELAP	460181	09/14/2022

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Sample Summary Table

Report Number: **22-116-0019**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
67092	CD-6 6-8'	Solids	04/12/2022 14:20	04/26/2022		
67092	CD-6 6-8'	Solids	04/12/2022 14:20	04/26/2022	7471A	WP MTN
67092	CD-6 6-8'	Solids	04/12/2022 14:20	04/26/2022	29B	WP MTN
67092	CD-6 6-8'	Solids	04/12/2022 14:20	04/26/2022	6010D	WP MTN
67093	CD-6 10-2'	Solids	04/12/2022 14:30	04/26/2022		
67093	CD-6 10-2'	Solids	04/12/2022 14:30	04/26/2022	6010D	WP MTN
67093	CD-6 10-2'	Solids	04/12/2022 14:30	04/26/2022	29B	WP MTN
67093	CD-6 10-2'	Solids	04/12/2022 14:30	04/26/2022	7471A	WP MTN
67094	CD-6 28-30'	Solids	04/12/2022 15:20	04/26/2022		
67095	CD-6 28-30'	TCLP	04/12/2022 15:20	04/26/2022	9056	WP MTN
67095	CD-6 28-30'	TCLP	04/12/2022 15:20	04/26/2022	1312	WP MTN
67096	CD-6 52-54'	Solids	04/13/2022 09:55	04/26/2022		
67097	CD-6 52-54	TCLP	04/13/2022 09:55	04/26/2022	9056	WP MTN
67097	CD-6 52-54	TCLP	04/13/2022 09:55	04/26/2022	1312	WP MTN
67098	CD-6 76-78'	Solids	04/13/2022 11:55	04/26/2022		
67099	CD-7 4-6'	Solids	04/19/2022 09:50	04/26/2022		
67099	CD-7 4-6'	Solids	04/19/2022 09:50	04/26/2022	7471A	WP MTN
67099	CD-7 4-6'	Solids	04/19/2022 09:50	04/26/2022	6010D	WP MTN
67099	CD-7 4-6'	Solids	04/19/2022 09:50	04/26/2022	29B	WP MTN
67100	CD-7 8-10'	Solids	04/19/2022 10:00	04/26/2022		
67100	CD-7 8-10'	Solids	04/19/2022 10:00	04/26/2022	7471A	WP MTN
67100	CD-7 8-10'	Solids	04/19/2022 10:00	04/26/2022	6010D	WP MTN
67100	CD-7 8-10'	Solids	04/19/2022 10:00	04/26/2022	29B	WP MTN
67101	CD-7 26-28'	Solids	04/19/2022 10:45	04/26/2022		
67102	CD-7 26-28'	TCLP	04/19/2022 10:45	04/26/2022	9056	WP MTN
67102	CD-7 26-28'	TCLP	04/19/2022 10:45	04/26/2022	1312	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Sample Summary Table

Report Number: **22-116-0019**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
67103	CD-7 36-38'	Solids	04/19/2022 11:30	04/26/2022		
67104	CD-7 36-38'	TCLP	04/19/2022 11:30	04/26/2022	9056	WP MTN
67104	CD-7 36-38'	TCLP	04/19/2022 11:30	04/26/2022	1312	WP MTN
67105	CD-7 58-60'	Solids	04/19/2022 12:25	04/26/2022		

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Client: ERM
Project: Castex Development
Lab Report Number: 22-116-0019
Date: 5/10/2022

CASE NARRATIVE

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
- True Total Barium results are reported dry weight
- Oil & Grease results are reported dry weight
- VPH/EPH results reported as received
- PAH results reported as received

Metals Analysis Method 6010D
Sample 67100 (CD-7 8-10')
Analyte: Arsenic
QC Batch No: L614441/L613754
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 67100 (CD-7 8-10')
Analyte: Barium
QC Batch No: L614441/L613754
The matrix spike, matrix spike duplicate and the dilution test were all outside of the quality control acceptance ranges. Matrix interference is suspected.

Sample 67100 (CD-7 8-10')
Analyte: Lead
QC Batch No: L614441/L613754
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 67100 (CD-7 8-10')
Analyte: Selenium
QC Batch No: L614441/L613754
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/26/2022

Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67092**
Sample ID : **CD-6 6-8'**

Matrix: **Solids**
Sampled: **4/12/2022 14:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	16.3	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	113	%		1	05/02/22 08:40	BMB	29B
Chloride	10.7	mg/Kg	4.00	1	05/09/22 13:24	MJM	9056
Electrical Conductivity (Sat Paste)	0.569	mmhos/cm		1	05/02/22 08:40	BMB	29B
pH (Sat Paste)	8.54	s.u.		1	05/02/22 08:40	BMB	29B
Cation Exchange Capacity	37.7	meq/100g	0.100	20	05/02/22 12:29		29B
Exchangeable Sodium Percentage	4.41	%	0.100	1	05/02/22 08:40		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	8.43	Calc	0.100	2	05/02/22 11:21		29B
Calcium (Sat Paste)	0.420	meq/L	0.100	2	05/02/22 12:56	APB	29B
Magnesium (Sat Paste)	0.292	meq/L	0.164	2	05/02/22 12:44	APB	29B
Sodium (Sat Paste)	5.03	meq/L	0.215	5	05/02/22 11:21	APB	29B
True Total Barium	<500	mg/Kg	500	1	05/02/22 16:36	TJS	29B
Arsenic	2.71	mg/Kg	1.00	1	05/04/22 21:23	EAL	6010D
Barium	189	mg/Kg	1.00	1	05/04/22 21:23	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	05/04/22 21:23	EAL	6010D
Chromium	11.7	mg/Kg	0.500	1	05/04/22 21:23	EAL	6010D
Lead	7.01	mg/Kg	0.600	1	05/04/22 21:23	EAL	6010D
Mercury	<0.134	mg/Kg	0.134	1	05/03/22 11:49	JTR	7471A
Selenium	<1.00	mg/Kg	1.00	1	05/04/22 21:23	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	05/04/22 21:23	EAL	6010D
Zinc	33.0	mg/Kg	2.50	1	05/04/22 21:23	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/26/2022

Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67093**
Sample ID : **CD-6 10-2'**

Matrix: **Solids**
Sampled: **4/12/2022 14:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.1	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	160	%		1	05/02/22 08:40	BMB	29B
Chloride	12.7	mg/Kg	4.00	1	05/09/22 14:01	MJM	9056
Electrical Conductivity (Sat Paste)	0.526	mmhos/cm		1	05/02/22 08:40	BMB	29B
pH (Sat Paste)	8.52	s.u.		1	05/02/22 08:40	BMB	29B
Cation Exchange Capacity	30.4	meq/100g	0.100	10	05/02/22 11:12		29B
Exchangeable Sodium Percentage	6.34	%	0.100	1	05/02/22 08:40		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	9.10	Calc	0.100	2	05/02/22 11:22		29B
Calcium (Sat Paste)	0.312	meq/L	0.100	2	05/02/22 12:57	APB	29B
Magnesium (Sat Paste)	0.235	meq/L	0.164	2	05/02/22 12:45	APB	29B
Sodium (Sat Paste)	4.76	meq/L	0.215	5	05/02/22 11:22	APB	29B
True Total Barium	<500	mg/Kg	500	1	05/02/22 16:41	TJS	29B
Arsenic	9.45	mg/Kg	1.00	1	05/04/22 21:28	EAL	6010D
Barium	184	mg/Kg	1.00	1	05/04/22 21:28	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	05/04/22 21:28	EAL	6010D
Chromium	19.9	mg/Kg	0.500	1	05/04/22 21:28	EAL	6010D
Lead	15.6	mg/Kg	0.600	1	05/04/22 21:28	EAL	6010D
Mercury	<0.147	mg/Kg	0.147	1	05/03/22 11:54	JTR	7471A
Selenium	<1.00	mg/Kg	1.00	1	05/04/22 21:28	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	05/04/22 21:28	EAL	6010D
Zinc	55.7	mg/Kg	2.50	1	05/04/22 21:28	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/26/2022

Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67094**
Sample ID : **CD-6 28-30'**

Matrix: **Solids**
Sampled: **4/12/2022 15:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	24.3	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	48.2	%		1	05/02/22 08:40	BMB	29B
Electrical Conductivity (Sat Paste)	0.806	mmhos/cm		1	05/02/22 08:40	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
Information : Project Number: 0575834
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Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67095**
Sample ID : **CD-6 28-30'**

Matrix: **TCLP**
Sampled: **4/12/2022 15:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/02/22 14:00	PHE	1312
SPLP Chloride	3.86	mg/L	0.400	1	05/09/22 21:32	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67096**
Sample ID : **CD-6 52-54'**

Matrix: **Solids**
Sampled: **4/13/2022 9:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.4	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	77.0	%		1	05/02/22 08:40	BMB	29B
Electrical Conductivity (Sat Paste)	0.704	mmhos/cm		1	05/02/22 08:40	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67097**
Sample ID : **CD-6 52-54**

Matrix: **TCLP**
Sampled: **4/13/2022 9:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/02/22 14:00	PHE	1312
SPLP Chloride	0.863	mg/L	0.400	1	05/09/22 22:00	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67098**
Sample ID : **CD-6 76-78'**

Matrix: **Solids**
Sampled: **4/13/2022 11:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	20.1	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	63.4	%		1	05/02/22 08:40	BMB	29B
Electrical Conductivity (Sat Paste)	0.619	mmhos/cm		1	05/02/22 08:40	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67099**
Sample ID : **CD-7 4-6'**

Matrix: **Solids**
Sampled: **4/19/2022 9:50**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	17.8	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	111	%		1	05/02/22 08:40	BMB	29B
Chloride	258	mg/Kg	4.00	1	05/09/22 14:13	MJM	9056
Electrical Conductivity (Sat Paste)	1.39	mmhos/cm		1	05/02/22 08:40	BMB	29B
pH (Sat Paste)	7.91	s.u.		1	05/02/22 08:40	BMB	29B
Cation Exchange Capacity	30.7	meq/100g	0.100	10	05/02/22 11:13		29B
Exchangeable Sodium Percentage	8.70	%	0.100	1	05/02/22 08:40		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	15.3	Calc	0.100	10	05/02/22 11:23		29B
Calcium (Sat Paste)	0.553	meq/L	0.100	2	05/02/22 12:58	APB	29B
Magnesium (Sat Paste)	0.439	meq/L	0.164	2	05/02/22 12:46	APB	29B
Sodium (Sat Paste)	10.8	meq/L	0.430	10	05/02/22 11:23	APB	29B
True Total Barium	614	mg/Kg	500	1	05/02/22 16:46	TJS	29B
Arsenic	2.23	mg/Kg	1.00	1	05/04/22 21:33	EAL	6010D
Barium	126	mg/Kg	1.00	1	05/04/22 21:33	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	05/04/22 21:33	EAL	6010D
Chromium	9.54	mg/Kg	0.500	1	05/04/22 21:33	EAL	6010D
Lead	7.10	mg/Kg	0.600	1	05/04/22 21:33	EAL	6010D
Mercury	<0.149	mg/Kg	0.149	1	05/03/22 11:55	JTR	7471A
Selenium	<1.00	mg/Kg	1.00	1	05/04/22 21:33	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	05/04/22 21:33	EAL	6010D
Zinc	16.9	mg/Kg	2.50	1	05/04/22 21:33	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development

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Jennings, LA

Report Date : 05/10/2022
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Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67100**
Sample ID : **CD-7 8-10'**

Matrix: **Solids**
Sampled: **4/19/2022 10:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.1	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	120	%		1	05/02/22 08:40	BMB	29B
Chloride	217	mg/Kg	4.00	1	05/09/22 14:26	MJM	9056
Electrical Conductivity (Sat Paste)	0.921	mmhos/cm		1	05/02/22 08:40	BMB	29B
pH (Sat Paste)	8.06	s.u.		1	05/02/22 08:40	BMB	29B
Cation Exchange Capacity	50.4	meq/100g	0.100	20	05/02/22 12:30		29B
Exchangeable Sodium Percentage	7.23	%	0.100	1	05/02/22 08:40		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	13.1	Calc	0.100	10	05/02/22 11:24		29B
Calcium (Sat Paste)	0.382	meq/L	0.100	2	05/02/22 12:59	APB	29B
Magnesium (Sat Paste)	0.224	meq/L	0.164	2	05/02/22 12:47	APB	29B
Sodium (Sat Paste)	7.21	meq/L	0.430	10	05/02/22 11:24	APB	29B
True Total Barium	<500	mg/Kg	500	1	05/02/22 16:51	TJS	29B
Arsenic	6.07	mg/Kg	1.00	1	05/04/22 21:48	EAL	6010D
Barium	186	mg/Kg	1.00	1	05/04/22 21:48	EAL	6010D
Cadmium	0.389	mg/Kg	0.200	1	05/04/22 21:48	EAL	6010D
Chromium	15.2	mg/Kg	0.500	1	05/04/22 21:48	EAL	6010D
Lead	8.64	mg/Kg	0.600	1	05/04/22 21:48	EAL	6010D
Mercury	<0.142	mg/Kg	0.142	1	05/03/22 11:59	JTR	7471A
Selenium	<1.00	mg/Kg	1.00	1	05/04/22 21:48	EAL	6010D
Silver	<0.500	mg/Kg	0.500	1	05/04/22 21:48	EAL	6010D
Zinc	36.6	mg/Kg	2.50	1	05/04/22 21:48	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
Received : 04/26/2022

Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67101**
Sample ID : **CD-7 26-28'**

Matrix: **Solids**
Sampled: **4/19/2022 10:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.2	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	114	%		1	05/02/22 08:40	BMB	29B
Chloride	14.7	mg/Kg	4.00	1	05/09/22 14:38	MJM	9056
Electrical Conductivity (Sat Paste)	0.320	mmhos/cm		1	05/02/22 08:40	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
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Jennings, LA

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Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67102**
Sample ID : **CD-7 26-28'**

Matrix: **TCLP**
Sampled: **4/19/2022 10:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/02/22 14:00	PHE	1312
SPLP Chloride	0.763	mg/L	0.400	1	05/09/22 20:37	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Jennings, LA

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Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67103**
Sample ID : **CD-7 36-38'**

Matrix: **Solids**
Sampled: **4/19/2022 11:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.9	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	45.9	%		1	05/02/22 08:40	BMB	29B
Chloride	27.8	mg/Kg	4.00	1	05/09/22 14:50	MJM	9056
Electrical Conductivity (Sat Paste)	0.467	mmhos/cm		1	05/02/22 08:40	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 05/10/2022
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Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67104**
Sample ID : **CD-7 36-38'**

Matrix: **TCLP**
Sampled: **4/19/2022 11:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/02/22 14:00	PHE	1312
SPLP Chloride	1.44	mg/L	0.400	1	05/09/22 21:05	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Report Number : **22-116-0019**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67105**
Sample ID : **CD-7 58-60'**

Matrix: **Solids**
Sampled: **4/19/2022 12:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	39.8	%		1	04/27/22 09:13	BXH	SW-DRYWT
% Saturation (Sat Paste)	67.2	%		1	05/02/22 08:40	BMB	29B
Chloride	27.3	mg/Kg	4.00	1	05/09/22 15:03	MJM	9056
Electrical Conductivity (Sat Paste)	0.745	mmhos/cm		1	05/02/22 08:40	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: L613680
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): L613991
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-L613680 Matrix: SOL
Associated Lab Samples: 67092, 67093, 67099, 67100

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 500	500	05/02/22 16:11

Laboratory Control Sample LCS-L613680

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	10200	102	80-120

Matrix Spike & Matrix Spike Duplicate A 66987-A73602-MS-L613680 A 66987-A73602-MSD-L613680

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	< 500	9900	9010	10400	9240	105	103	75-125	11.8	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: A73685
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A73708
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A73685 Matrix: SOL
Associated Lab Samples: 67092, 67093, 67099, 67100

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	05/02/22 11:10

Duplicate A 67100-A73684-DUP-A73685

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	11600	9680	18.0	30.0	05/02/22 12:30

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: A73687
QC Prep Batch Method: 29B
QC Analytical Batch(es): A73709
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 67100-A73684-DUP-A73687

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	4.51	4.64	2.8	30.0	05/02/22 12:33

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: A73688
QC Prep Batch Method: 29B
QC Analytical Batch(es): A73759,A73760
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 67099-A73684-DUP-A73688

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	111	112	0.8	30.0	05/02/22 08:40
Electrical Conductivity (Sat Paste)	mmhos/cm	1.39	1.03	29.7	30.0	05/02/22 08:40
pH (Sat Paste)	s.u.	7.91	7.95	0.5	30.0	05/02/22 08:40

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: A73688
QC Prep Batch Method: 29B
QC Analytical Batch(es): A73759,A73760
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 67099-A73684-DUP-A73688

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	0.553	0.432	24.5	30.0	05/02/22 12:58
Magnesium (Sat Paste)	meq/L	0.439	0.325	29.8	30.0	05/02/22 12:47
Sodium (Sat Paste)	meq/L	10.8	8.11	28.4	30.0	05/03/22 10:05

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: L613754
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L614441
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-L613754 Matrix: SOL
Associated Lab Samples: 67092, 67093, 67099, 67100

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 1.00	1.00	05/04/22 21:17
Barium	mg/Kg	< 1.00	1.00	05/04/22 21:17
Cadmium	mg/Kg	< 0.200	0.200	05/04/22 21:17
Chromium	mg/Kg	< 0.500	0.500	05/04/22 21:17
Lead	mg/Kg	< 0.600	0.600	05/04/22 21:17
Selenium	mg/Kg	< 1.00	1.00	05/04/22 21:17
Silver	mg/Kg	< 0.500	0.500	05/04/22 21:17
Zinc	mg/Kg	< 2.50	2.50	05/04/22 21:17

Laboratory Control Sample LCS-L613754

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/Kg	10.0	11.0	110	80-120
Barium	mg/Kg	100	104	104	80-120
Cadmium	mg/Kg	10.0	10.4	104	80-120
Chromium	mg/Kg	100	115	115	80-120
Lead	mg/Kg	10.0	10.7	107	80-120
Selenium	mg/Kg	10.0	10.2	102	80-120
Silver	mg/Kg	10.0	10.8	108	80-120
Zinc	mg/Kg	100	109	109	80-120

Matrix Spike & Matrix Spike Duplicate A 67100-MS-L613754 A 67100-MSD-L613754

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	6.07	9.78	9.56	12.2	13.7	63.0*	80.0	75-125	11.5	20.0
Barium	mg/Kg	186	97.8	95.6	309	267	126*	85.0	75-125	14.5	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: L613754
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L614441
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 67100-MS-L613754 A 67100-MSD-L613754

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Cadmium	mg/Kg	0.389	9.78	9.56	9.17	8.26	90.0	82.0	75-125	10.4	20.0
Chromium	mg/Kg	15.2	97.8	95.6	115	104	102	93.0	75-125	10.0	20.0
Lead	mg/Kg	8.64	9.78	9.56	18.5	15.6	101	73.0*	75-125	17.0	20.0
Selenium	mg/Kg	< 1.00	9.78	9.56	7.04	6.42	72.0*	67.0*	75-125	9.2	20.0
Silver	mg/Kg	< 0.500	9.78	9.56	9.36	8.46	96.0	88.0	75-125	10.1	20.0
Zinc	mg/Kg	36.6	97.8	95.6	128	118	93.0	85.0	75-125	8.1	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: L613885
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L614137
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L613885 Matrix: SOL
Associated Lab Samples: 67092, 67093, 67099, 67100

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.160	0.160	05/03/22 11:31

Laboratory Control Sample LCS-L613885

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.427	107	80-120

Matrix Spike & Matrix Spike Duplicate A 67100-MS-L613885 A 67100-MSD-L613885

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	< 0.159	0.399	0.348	0.425	0.357	106	103	80-120	17.3	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: A73813
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A73870
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A73813 Matrix: SOL
Associated Lab Samples: 67092, 67093, 67099, 67100, 67101, 67103, 67105

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	05/09/22 12:22

Laboratory Control Sample LCS-A73813

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	519	104	80-120

Matrix Spike & Matrix Spike Duplicate A 67092-MS-A73813 A 67092-MSD-A73813

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	10.7	487	487	544	546	110	110	80-120	0.3	15.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-116-0019

QC Prep: L615128
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L615199
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L615128 Matrix: TCL
Associated Lab Samples: 67095, 67097, 67102, 67104

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	05/09/22 20:09

Laboratory Control Sample LCS-L615128

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	52.8	106	90-110

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-116-0019**

QC Analytical Batch: A73661
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 67098-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	20.1	21.1	4.8	20.0	04/27/22 09:13

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **22-116-0019**

Shipping Method

(●) Fed Ex	( ) US Postal	( ) Lab	( ) Other :	
( ) UPS	( ) Client	( ) Courier	Thermometer ID:	

Shipping container/cooler uncompromised?	(●) Yes	( ) No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	(●) Yes	( ) No	( ) Not Present
Custody seals intact on sample bottles?	( ) Yes	( ) No	(●) Not Present
Chain of Custody (COC) present?	(●) Yes	( ) No	
COC agrees with sample label(s)?	(●) Yes	( ) No	
COC properly completed	(●) Yes	( ) No	
Samples in proper containers?	(●) Yes	( ) No	
Sample containers intact?	(●) Yes	( ) No	
Sufficient sample volume for indicated test(s)?	(●) Yes	( ) No	
All samples received within holding time?	(●) Yes	( ) No	
Cooler temperature in compliance?	(●) Yes	( ) No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	( ) Yes	(●) No	
Water - Sample containers properly preserved	( ) Yes	( ) No	(●) N/A
Water - VOA vials free of headspace	( ) Yes	( ) No	(●) N/A
Trip Blanks received with VOAs	( ) Yes	( ) No	(●) N/A
Soil VOA method 5035 – compliance criteria met	( ) Yes	( ) No	(●) N/A

☐ High concentration container (48 hr)
☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d)
☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	( ) Yes	(●) No

Comments:

Signature: Christina R. Varuso Date & Time: 04/26/2022 14:53:11

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM 840 W. SAM HOUSTON PKWY NORTH SUITE 600, HOUSTON, TX	DAVID UPTHEGROVE MICHAEL.GOODMAN@ERM.COM	SAME

22-116-0019
10485
04-26-2022
14:52:53
ERM (Sugar Land)
Castex Development

Project Description	Project/Site Location (City/State)	RUSH – Additional charges apply Special Detection Limit(s) Date Results Needed	Method ☑ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc
CASTEX	JENNINGS, LA			

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575834	530-379-6098	MICHAEL.GOODMAN@ERM.COM		

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235 Highpoint Dr.
Ridgeland, MS 39157
(601) 957-2676

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCl pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification		Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative									Comments/Notes
							% MOISTURE	EC	CEC/ESP/SAR	29 B METALS	SPLP CL.	SOLUABLE CL.				
4/12	1420	CD-6	6-8'	1	S	G	X	X	X	X		X		67092		METALS: As, Ba, TlBa,
4/12	1430	CD-6	10-12'	1	S	G	X	X	X	X		X		67093		Cd, Cr, Sr, Zn, Pb,
4/12	1520	CD-6	28-30'	1	S	G	X	X	KMB ~~X~~	KMB ~~X~~	X	~~X~~	KMB			Hg 67094-67095
4/13	0955	CD-6	52-54'	1	S	G	X	X			X					67096-67097
4/13	1155	CD-6	76-78'	1	S	G	X	X								67098
4/19	0950	CD-7	4-6'	1	S	G	X	X	X	X		X				67099
4/19	1000	CD-7	8-10'	1	S	G	X	X	X	X		X				67100
4/19	1045	CD-7	26-28'	1	S	G	X	X			X	X				67101-67102
4/19	1130	CD-7	36-38'	1	S	G	X	X			X	X				67103-67104
4/19	1225	CD-7	58-60'	1	S	G	X	X				X				67105

For Laboratory Use Only			Sampled by (Name – Print)	Client Remarks/Comments
Ice	Custody Seals	Lab Comments	KURT BOEHRINGER	
Y/N	Y/N	FedEx 3723 7630 6267		
Blank/Cooler Temp				
N/A				

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
	4/25/22 0930		4-26-22 1359
Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time

BP/Castex-Ltd Adm-Apx E-000863

Safeguard LITHO USA Form No. 811-2/E15CS000387 10/19

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5/26/2022

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 22-130-0020
Project Description: Castex Development
Project Number: 0575834
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 5/10/2022 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2022
Louisiana	State Program - NELAP	02041	06/30/2022

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2023
Arkansas	State Program	88-0650	02/07/2023
California	State Program	2904	06/30/2022
Florida	State Program - NELAP	E871157	06/30/2022
Georgia	State Program	C044	02/18/2023
Georgia	State Program	04015	06/30/2022
Illinois	State Program - NELAP	200078	10/10/2022
Kentucky	State Program	80215	06/30/2022
Kentucky	State Program	KY90047	12/31/2022
Louisiana	State Program - NELAP	LA037	12/31/2022
Louisiana	State Program - NELAP	04015	06/30/2022
Mississippi	State Program	MS	02/11/2023
North Carolina	State Program	415	12/31/2022
Pennsylvania	State Program - NELAP	68-03195	05/31/2022
South Carolina	State Program	84002	06/30/2022
South Carolina	State Program	84002	06/30/2022
Tennessee	State Program	02027	02/11/2023
Texas	State Program - NELAP	T104704180	09/30/2022
Virginia	State Program	00106	06/30/2022
Virginia	State Program - NELAP	460181	09/14/2022

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Sample Summary Table

Report Number: **22-130-0020**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
67704	CD-5 72-74'	Solids	04/26/2022 08:05	05/10/2022		
67705	CD-5 88-90'	Solids	04/26/2022 09:40	05/10/2022		
67706	CD-5 88-90'	TCLP	04/26/2022 09:40	05/10/2022	9056	WP MTN
67706	CD-5 88-90'	TCLP	04/26/2022 09:40	05/10/2022	1312	WP MTN
67707	CD-5 94-96'	Solids	04/26/2022 10:35	05/10/2022		
67708	CD-9 6-8'	Solids	04/27/2022 15:05	05/10/2022		
67708	CD-9 6-8'	Solids	04/27/2022 15:05	05/10/2022	29B	WP MTN
67708	CD-9 6-8'	Solids	04/27/2022 15:05	05/10/2022	6010D	WP MTN
67708	CD-9 6-8'	Solids	04/27/2022 15:05	05/10/2022	7471A	WP MTN
67709	CD-9 10-12'	Solids	04/27/2022 15:15	05/10/2022		
67709	CD-9 10-12'	Solids	04/27/2022 15:15	05/10/2022	7471A	WP MTN
67709	CD-9 10-12'	Solids	04/27/2022 15:15	05/10/2022	6010D	WP MTN
67709	CD-9 10-12'	Solids	04/27/2022 15:15	05/10/2022	29B	WP MTN
67710	CD-9 22-24'	Solids	04/27/2022 15:45	05/10/2022		
67711	CD-9 22-24'	TCLP	04/27/2022 15:45	05/10/2022	1312	WP MTN
67711	CD-9 22-24'	TCLP	04/27/2022 15:45	05/10/2022	9056	WP MTN
67712	CD-9 56-58'	Solids	04/28/2022 08:55	05/10/2022		
67713	CD-9 56-58'	TCLP	04/28/2022 08:55	05/10/2022	9056	WP MTN
67713	CD-9 56-58'	TCLP	04/28/2022 08:55	05/10/2022	1312	WP MTN
67714	CD-9 58-60'	Solids	04/28/2022 09:00	05/10/2022		
67715	CD-11 4-6'	Solids	05/02/2022 15:10	05/10/2022		
67715	CD-11 4-6'	Solids	05/02/2022 15:10	05/10/2022	7471A	WP MTN
67715	CD-11 4-6'	Solids	05/02/2022 15:10	05/10/2022	6010D	WP MTN
67715	CD-11 4-6'	Solids	05/02/2022 15:10	05/10/2022	29B	WP MTN
67716	CD-11 10-12'	Solids	05/02/2022 15:25	05/10/2022		
67716	CD-11 10-12'	Solids	05/02/2022 15:25	05/10/2022	7471A	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Sample Summary Table

Report Number: **22-130-0020**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
67716	CD-11 10-12'	Solids	05/02/2022 15:25	05/10/2022	6010D	WP MTN
67716	CD-11 10-12'	Solids	05/02/2022 15:25	05/10/2022	29B	WP MTN
67717	CD-11 58-60'	Solids	05/03/2022 10:10	05/10/2022		
67718	CD-11 58-60'	TCLP	05/03/2022 10:10	05/10/2022	9056	WP MTN
67718	CD-11 58-60'	TCLP	05/03/2022 10:10	05/10/2022	1312	WP MTN
67719	CD-11 64-66'	Solids	05/03/2022 10:55	05/10/2022		
67720	CD-10 6-8'	Solids	05/04/2022 10:20	05/10/2022		
67720	CD-10 6-8'	Solids	05/04/2022 10:20	05/10/2022	7471A	WP MTN
67720	CD-10 6-8'	Solids	05/04/2022 10:20	05/10/2022	6010D	WP MTN
67720	CD-10 6-8'	Solids	05/04/2022 10:20	05/10/2022	29B	WP MTN
67721	CD-10 8-10'	Solids	05/04/2022 10:25	05/10/2022		
67721	CD-10 8-10'	Solids	05/04/2022 10:25	05/10/2022	7471A	WP MTN
67721	CD-10 8-10'	Solids	05/04/2022 10:25	05/10/2022	6010D	WP MTN
67721	CD-10 8-10'	Solids	05/04/2022 10:25	05/10/2022	29B	WP MTN
67722	CD-10 28-30'	Solids	05/04/2022 13:15	05/10/2022		
67723	CD-10 28-30'	TCLP	05/04/2022 13:15	05/10/2022	9056	WP MTN
67723	CD-10 28-30'	TCLP	05/04/2022 13:15	05/10/2022	1312	WP MTN
67724	CD-10 52-54'	Solids	05/04/2022 15:15	05/10/2022		
67725	CD-10 52-54'	TCLP	05/04/2022 15:15	05/10/2022	9056	WP MTN
67725	CD-10 52-54'	TCLP	05/04/2022 15:15	05/10/2022	1312	WP MTN
67726	CD-10 60-62'	Solids	05/04/2022 16:10	05/10/2022		

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Client: ERM
Project: Castex Development
Lab Report Number: 22-130-0020
Date: 6/1/2022

CASE NARRATIVE

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
- True Total Barium results are reported dry weight
- Oil & Grease results are reported dry weight
- VPH/EPH results reported as received
- PAH results reported as received

Metals Analysis Method 6010D
Sample 67721 (CD-10 8-10')
QC Batch No: L617957/L617632
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 67721 (CD-10 8-10')
Analyte: Arsenic
QC Batch No: L617957/L617632
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 67721 (CD-10 8-10')
Analyte: Barium
QC Batch No: L617957/L617632
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 67721 (CD-10 8-10')
Analyte: Lead
QC Batch No: L617957/L617632
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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Sample 67721 (CD-10 8-10')
Analyte: Strontium
QC Batch No: L617957/L617632
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Solids Total Mercury Analysis - CVAA Method 7471A
Sample 95197 (Frederick City)
Analyte: Mercury
QC Batch No: L618174/L617784
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 06/01/2022
Received : 05/10/2022

Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67704**
Sample ID : **CD-5 72-74'**

Matrix: **Solids**
Sampled: **4/26/2022 8:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	26.3	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	99.8	%		1	05/17/22 14:09	BMB	29B
Chloride	844	mg/Kg	8.00	2	05/20/22 10:41	MJM	9056
Electrical Conductivity (Sat Paste)	4.20	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67705**
Sample ID : **CD-5 88-90'**

Matrix: **Solids**
Sampled: **4/26/2022 9:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	29.1	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	63.4	%		1	05/17/22 14:09	BMB	29B
Chloride	17.0	mg/Kg	4.00	1	05/20/22 11:18	MJM	9056
Electrical Conductivity (Sat Paste)	0.757	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67706**
Sample ID : **CD-5 88-90'**

Matrix: **TCLP**
Sampled: **4/26/2022 9:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/16/22 14:00	PHE	1312
SPLP Chloride	0.865	mg/L	0.400	1	05/23/22 22:22	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67707**
Sample ID : **CD-5 94-96'**

Matrix: **Solids**
Sampled: **4/26/2022 10:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.0	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	77.0	%		1	05/17/22 14:09	BMB	29B
Chloride	12.5	mg/Kg	4.00	1	05/20/22 11:31	MJM	9056
Electrical Conductivity (Sat Paste)	0.648	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67708**
Sample ID : **CD-9 6-8'**

Matrix: **Solids**
Sampled: **4/27/2022 15:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	15.5	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	63.9	%		1	05/17/22 14:09	BMB	29B
Chloride	10.9	mg/Kg	4.00	1	05/20/22 11:43	MJM	9056
Electrical Conductivity (Sat Paste)	0.307	mmhos/cm		1	05/17/22 14:09	BMB	29B
pH (Sat Paste)	7.81	s.u.		1	05/17/22 14:09	BMB	29B
Cation Exchange Capacity	27.9	meq/100g	0.100	10	05/18/22 10:09		29B
Exchangeable Sodium Percentage	2.22	%	0.100	1	05/17/22 14:09		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	1.59	Calc	0.430	10	05/18/22 10:36		29B
Calcium (Sat Paste)	2.17	meq/L	0.500	10	05/18/22 11:58	APB	29B
Magnesium (Sat Paste)	1.14	meq/L	0.820	10	05/18/22 12:12	APB	29B
Sodium (Sat Paste)	2.05	meq/L	0.430	10	05/18/22 10:36	APB	29B
True Total Barium	<500	mg/Kg	500	1	05/23/22 16:30	EAL	29B
Arsenic	2.28	mg/Kg	1.00	1	05/24/22 10:31	EAL	6010D
Barium	114	mg/Kg	1.00	1	05/24/22 10:31	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	05/24/22 10:31	EAL	6010D
Chromium	7.31	mg/Kg	0.500	1	05/24/22 10:31	EAL	6010D
Lead	5.06	mg/Kg	0.600	1	05/24/22 10:31	EAL	6010D
Mercury	<0.160	mg/Kg	0.160	1	05/19/22 14:20	ZMT	7471A
Strontium	21.0	mg/Kg	0.500	1	05/24/22 10:31	EAL	6010D
Zinc	18.6	mg/Kg	2.50	1	05/24/22 10:31	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 06/01/2022
Received : 05/10/2022

Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67709**
Sample ID : **CD-9 10-12'**

Matrix: **Solids**
Sampled: **4/27/2022 15:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	16.4	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	65.5	%		1	05/17/22 14:09	BMB	29B
Chloride	22.9	mg/Kg	4.00	1	05/20/22 11:55	MJM	9056
Electrical Conductivity (Sat Paste)	0.370	mmhos/cm		1	05/17/22 14:09	BMB	29B
pH (Sat Paste)	7.98	s.u.		1	05/17/22 14:09	BMB	29B
Cation Exchange Capacity	30.0	meq/100g	0.100	10	05/18/22 10:32		29B
Exchangeable Sodium Percentage	1.69	%	0.100	1	05/17/22 14:09		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	2.19	Calc	0.430	10	05/18/22 10:37		29B
Calcium (Sat Paste)	1.72	meq/L	0.500	10	05/18/22 11:59	APB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	05/18/22 12:12	APB	29B
Sodium (Sat Paste)	2.03	meq/L	0.430	10	05/18/22 10:37	APB	29B
True Total Barium	2350	mg/Kg	500	1	05/23/22 16:46	EAL	29B
Arsenic	3.93	mg/Kg	1.00	1	05/24/22 10:36	EAL	6010D
Barium	193	mg/Kg	1.00	1	05/24/22 10:36	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	05/24/22 10:36	EAL	6010D
Chromium	8.06	mg/Kg	0.500	1	05/24/22 10:36	EAL	6010D
Lead	9.88	mg/Kg	0.600	1	05/24/22 10:36	EAL	6010D
Mercury	<0.148	mg/Kg	0.148	1	05/19/22 14:22	ZMT	7471A
Strontium	25.4	mg/Kg	0.500	1	05/24/22 10:36	EAL	6010D
Zinc	27.5	mg/Kg	2.50	1	05/24/22 10:36	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 06/01/2022
Received : 05/10/2022

Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67710**
Sample ID : **CD-9 22-24'**

Matrix: **Solids**
Sampled: **4/27/2022 15:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	28.9	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	67.1	%		1	05/17/22 14:09	BMB	29B
Chloride	7.05	mg/Kg	4.00	1	05/20/22 12:08	MJM	9056
Electrical Conductivity (Sat Paste)	0.337	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000876

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Project Castex Development

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67711**
Sample ID : **CD-9 22-24'**

Matrix: **TCLP**
Sampled: **4/27/2022 15:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/16/22 14:00	PHE	1312
SPLP Chloride	0.410	mg/L	0.400	1	05/23/22 23:18	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 06/01/2022
Received : 05/10/2022

Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67712**
Sample ID : **CD-9 56-58'**

Matrix: **Solids**
Sampled: **4/28/2022 8:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.2	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	90.8	%		1	05/17/22 14:09	BMB	29B
Chloride	17.7	mg/Kg	4.00	1	05/20/22 12:20	MJM	9056
Electrical Conductivity (Sat Paste)	0.651	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-000878

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67713**
Sample ID : **CD-9 56-58'**

Matrix: **TCLP**
Sampled: **4/28/2022 8:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/16/22 14:00	PHE	1312
SPLP Chloride	0.990	mg/L	0.400	1	05/24/22 00:13	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67714**
Sample ID : **CD-9 58-60'**

Matrix: **Solids**
Sampled: **4/28/2022 9:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.5	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	30.7	%		1	05/17/22 14:09	BMB	29B
Chloride	14.4	mg/Kg	4.00	1	05/20/22 12:32	MJM	9056
Electrical Conductivity (Sat Paste)	0.671	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67715**
Sample ID : **CD-11 4-6'**

Matrix: **Solids**
Sampled: **5/2/2022 15:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	16.8	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	111	%		1	05/17/22 14:09	BMB	29B
Chloride	132	mg/Kg	4.00	1	05/20/22 13:22	MJM	9056
Electrical Conductivity (Sat Paste)	0.839	mmhos/cm		1	05/17/22 14:09	BMB	29B
pH (Sat Paste)	7.36	s.u.		1	05/17/22 14:09	BMB	29B
Cation Exchange Capacity	33.5	meq/100g	0.100	10	05/18/22 10:33		29B
Exchangeable Sodium Percentage	4.62	%	0.100	1	05/17/22 14:09		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	3.96	Calc	0.430	10	05/18/22 10:38		29B
Calcium (Sat Paste)	2.79	meq/L	0.500	10	05/18/22 12:00	APB	29B
Magnesium (Sat Paste)	1.61	meq/L	0.820	10	05/18/22 12:13	APB	29B
Sodium (Sat Paste)	5.88	meq/L	0.430	10	05/18/22 10:38	APB	29B
True Total Barium	541	mg/Kg	500	1	05/23/22 16:51	EAL	29B
Arsenic	3.61	mg/Kg	1.00	1	05/24/22 10:42	EAL	6010D
Barium	155	mg/Kg	1.00	1	05/24/22 10:42	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	05/24/22 10:42	EAL	6010D
Chromium	6.99	mg/Kg	0.500	1	05/24/22 10:42	EAL	6010D
Lead	15.7	mg/Kg	0.600	1	05/24/22 10:42	EAL	6010D
Mercury	<0.136	mg/Kg	0.136	1	05/19/22 14:23	ZMT	7471A
Strontium	16.8	mg/Kg	0.500	1	05/24/22 10:42	EAL	6010D
Zinc	12.1	mg/Kg	2.50	1	05/24/22 10:42	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67716**
Sample ID : **CD-11 10-12'**

Matrix: **Solids**
Sampled: **5/2/2022 15:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	25.7	%		1	05/13/22 15:40	BXH	SW-DRYWT
% Saturation (Sat Paste)	172	%		1	05/17/22 14:09	BMB	29B
Chloride	110	mg/Kg	4.00	1	05/20/22 13:34	MJM	9056
Electrical Conductivity (Sat Paste)	0.571	mmhos/cm		1	05/17/22 14:09	BMB	29B
pH (Sat Paste)	8.40	s.u.		1	05/17/22 14:09	BMB	29B
Cation Exchange Capacity	57.4	meq/100g	0.100	50	05/18/22 10:34		29B
Exchangeable Sodium Percentage	3.21	%	0.100	1	05/17/22 14:09		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	2.87	Calc	0.430	10	05/18/22 10:38		29B
Calcium (Sat Paste)	2.46	meq/L	0.500	10	05/18/22 12:01	APB	29B
Magnesium (Sat Paste)	1.62	meq/L	0.820	10	05/18/22 12:14	APB	29B
Sodium (Sat Paste)	4.10	meq/L	0.430	10	05/18/22 10:38	APB	29B
True Total Barium	697	mg/Kg	500	1	05/23/22 16:57	EAL	29B
Arsenic	19.6	mg/Kg	1.00	1	05/24/22 10:47	EAL	6010D
Barium	338	mg/Kg	1.00	1	05/24/22 10:47	EAL	6010D
Cadmium	0.897	mg/Kg	0.200	1	05/24/22 10:47	EAL	6010D
Chromium	17.7	mg/Kg	0.500	1	05/24/22 10:47	EAL	6010D
Lead	19.6	mg/Kg	0.600	1	05/24/22 10:47	EAL	6010D
Mercury	<0.144	mg/Kg	0.144	1	05/25/22 11:08	JTR	7471A
Strontium	68.4	mg/Kg	0.500	1	05/24/22 10:47	EAL	6010D
Zinc	77.4	mg/Kg	2.50	1	05/24/22 10:47	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 06/01/2022
Received : 05/10/2022

Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67717**
Sample ID : **CD-11 58-60'**

Matrix: **Solids**
Sampled: **5/3/2022 10:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	31.9	%		1	05/13/22 15:58	BXH	SW-DRYWT
% Saturation (Sat Paste)	86.0	%		1	05/17/22 14:09	BMB	29B
Chloride	16.6	mg/Kg	4.00	1	05/20/22 13:46	MJM	9056
Electrical Conductivity (Sat Paste)	0.457	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67718**
Sample ID : **CD-11 58-60'**

Matrix: **TCLP**
Sampled: **5/3/2022 10:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/16/22 14:00	PHE	1312
SPLP Chloride	0.787	mg/L	0.400	1	05/23/22 22:50	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67719**
Sample ID : **CD-11 64-66'**

Matrix: **Solids**
Sampled: **5/3/2022 10:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.4	%		1	05/13/22 15:58	BXH	SW-DRYWT
% Saturation (Sat Paste)	39.8	%		1	05/17/22 14:09	BMB	29B
Chloride	11.5	mg/Kg	4.00	1	05/20/22 13:59	MJM	9056
Electrical Conductivity (Sat Paste)	0.654	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67720**
Sample ID : **CD-10 6-8'**

Matrix: **Solids**
Sampled: **5/4/2022 10:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	14.4	%		1	05/13/22 15:58	BXH	SW-DRYWT
% Saturation (Sat Paste)	85.3	%		1	05/17/22 14:09	BMB	29B
Chloride	6.28	mg/Kg	4.00	1	05/20/22 14:11	MJM	9056
Electrical Conductivity (Sat Paste)	0.414	mmhos/cm		1	05/17/22 14:09	BMB	29B
pH (Sat Paste)	8.69	s.u.		1	05/17/22 14:09	BMB	29B
Cation Exchange Capacity	28.4	meq/100g	0.100	10	05/18/22 10:35		29B
Exchangeable Sodium Percentage	2.42	%	0.100	1	05/17/22 14:09		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	2.31	Calc	0.430	10	05/18/22 10:41		29B
Calcium (Sat Paste)	2.50	meq/L	0.500	10	05/18/22 12:02	APB	29B
Magnesium (Sat Paste)	1.40	meq/L	0.820	10	05/18/22 12:15	APB	29B
Sodium (Sat Paste)	3.22	meq/L	0.430	10	05/18/22 10:41	APB	29B
True Total Barium	<500	mg/Kg	500	1	05/23/22 17:02	EAL	29B
Arsenic	1.71	mg/Kg	1.00	1	05/24/22 10:53	EAL	6010D
Barium	134	mg/Kg	1.00	1	05/24/22 10:53	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	05/24/22 10:53	EAL	6010D
Chromium	7.81	mg/Kg	0.500	1	05/24/22 10:53	EAL	6010D
Lead	7.73	mg/Kg	0.600	1	05/24/22 10:53	EAL	6010D
Mercury	<0.141	mg/Kg	0.141	1	05/25/22 11:09	JTR	7471A
Strontium	14.3	mg/Kg	0.500	1	05/24/22 10:53	EAL	6010D
Zinc	14.8	mg/Kg	2.50	1	05/24/22 10:53	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Report Date : 06/01/2022
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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67721**
Sample ID : **CD-10 8-10'**

Matrix: **Solids**
Sampled: **5/4/2022 10:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	19.3	%		1	05/13/22 15:58	BXH	SW-DRYWT
% Saturation (Sat Paste)	120	%		1	05/17/22 14:09	BMB	29B
Chloride	6.48	mg/Kg	4.00	1	05/20/22 14:23	MJM	9056
Electrical Conductivity (Sat Paste)	0.188	mmhos/cm		1	05/17/22 14:09	BMB	29B
pH (Sat Paste)	8.16	s.u.		1	05/17/22 14:09	BMB	29B
Cation Exchange Capacity	51.7	meq/100g	0.100	20	05/18/22 10:35		29B
Exchangeable Sodium Percentage	2.52	%	0.100	1	05/17/22 14:09		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	2.29	Calc	0.430	10	05/18/22 10:41		29B
Calcium (Sat Paste)	0.585	meq/L	0.500	10	05/18/22 12:02	APB	29B
Magnesium (Sat Paste)	<0.820	meq/L	0.820	10	05/18/22 12:15	APB	29B
Sodium (Sat Paste)	1.24	meq/L	0.430	10	05/18/22 10:41	APB	29B
True Total Barium	<500	mg/Kg	500	1	05/23/22 17:07	EAL	29B
Arsenic	7.01	mg/Kg	5.00	5	05/24/22 11:38	EAL	6010D
Barium	277	mg/Kg	5.00	5	05/24/22 11:38	EAL	6010D
Cadmium	<1.00	mg/Kg	1.00	5	05/24/22 11:38	EAL	6010D
Chromium	13.7	mg/Kg	2.50	5	05/24/22 11:38	EAL	6010D
Lead	9.04	mg/Kg	3.00	5	05/24/22 11:38	EAL	6010D
Mercury	<0.144	mg/Kg	0.144	1	05/25/22 11:10	JTR	7471A
Strontium	27.4	mg/Kg	2.50	5	05/24/22 11:38	EAL	6010D
Zinc	42.1	mg/Kg	12.5	5	05/24/22 11:38	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67722**
Sample ID : **CD-10 28-30'**

Matrix: **Solids**
Sampled: **5/4/2022 13:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.0	%		1	05/13/22 15:58	BXH	SW-DRYWT
% Saturation (Sat Paste)	42.8	%		1	05/17/22 14:09	BMB	29B
Chloride	8.89	mg/Kg	4.00	1	05/20/22 14:36	MJM	9056
Electrical Conductivity (Sat Paste)	0.291	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67723**
Sample ID : **CD-10 28-30'**

Matrix: **TCLP**
Sampled: **5/4/2022 13:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/16/22 14:00	PHE	1312
SPLP Chloride	0.418	mg/L	0.400	1	05/23/22 21:55	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67724**
Sample ID : **CD-10 52-54'**

Matrix: **Solids**
Sampled: **5/4/2022 15:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	29.7	%		1	05/13/22 15:58	BXH	SW-DRYWT
% Saturation (Sat Paste)	56.9	%		1	05/17/22 14:09	BMB	29B
Chloride	6.73	mg/Kg	4.00	1	05/20/22 14:48	MJM	9056
Electrical Conductivity (Sat Paste)	0.762	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Information : Project Number: 0575834
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Report Date : 06/01/2022
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Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67725**
Sample ID : **CD-10 52-54'**

Matrix: **TCLP**
Sampled: **5/4/2022 15:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	05/16/22 14:00	PHE	1312
SPLP Chloride	0.491	mg/L	0.400	1	05/24/22 00:41	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Report Date : 06/01/2022
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Report Number : **22-130-0020**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **67726**
Sample ID : **CD-10 60-62'**

Matrix: **Solids**
Sampled: **5/4/2022 16:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.9	%		1	05/13/22 15:58	BXH	SW-DRYWT
% Saturation (Sat Paste)	36.9	%		1	05/17/22 14:09	BMB	29B
Chloride	11.6	mg/Kg	4.00	1	05/20/22 15:00	MJM	9056
Electrical Conductivity (Sat Paste)	0.428	mmhos/cm		1	05/17/22 14:09	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: L617559
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): L617820
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-L617559 Matrix: SOL
Associated Lab Samples: 67708, 67709, 67715, 67716, 67720, 67721

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 500	500	05/23/22 16:20

Laboratory Control Sample LCS-L617559

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	9090	8620	95.0	80-120

Matrix Spike & Matrix Spike Duplicate A 67708-A73933-MS-L617559 A 67708-A73933-MSD-L617559

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	< 500	8770	8200	8540	7980	97.0	97.0	75-125	6.7	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: A73948
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A74001
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A73948 Matrix: SOL
Associated Lab Samples: 67708, 67709, 67715, 67716, 67720, 67721

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	05/18/22 10:08

Duplicate A 67709-A73933-DUP-A73948

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	6900	6740	2.3	30.0	05/18/22 10:32

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: A73949
QC Prep Batch Method: 29B
QC Analytical Batch(es): A74000
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 67709-A73933-DUP-A73949

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	0.640	0.626	2.2	30.0	05/18/22 10:04

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: A73950
QC Prep Batch Method: 29B
QC Analytical Batch(es): A74030,A74031
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 67721-A73933-DUP-A73950

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	120	117	2.5	30.0	05/17/22 14:09
Electrical Conductivity (Sat Paste)	mmhos/cm	0.188	0.221	16.1	30.0	05/17/22 14:09
pH (Sat Paste)	s.u.	8.16	8.24	0.9	30.0	05/17/22 14:09

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: A73950
QC Prep Batch Method: 29B
QC Analytical Batch(es): A74030,A74031
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 67721-A73933-DUP-A73950

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	0.585	0.646	9.9	30.0	05/18/22 12:03
Magnesium (Sat Paste)	meq/L	< 0.820	< 0.820	0.0	30.0	05/18/22 12:16
Sodium (Sat Paste)	meq/L	1.24	1.47	16.9	30.0	05/18/22 10:42

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: L617632
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L617957
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-L617632 Matrix: SOL
Associated Lab Samples: 67708, 67709, 67715, 67716, 67720, 67721

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 1.00	1.00	05/24/22 10:26
Barium	mg/Kg	< 1.00	1.00	05/24/22 10:26
Cadmium	mg/Kg	< 0.200	0.200	05/24/22 10:26
Chromium	mg/Kg	< 0.500	0.500	05/24/22 10:26
Lead	mg/Kg	< 0.600	0.600	05/24/22 10:26
Strontium	mg/Kg	< 0.500	0.500	05/24/22 10:26
Zinc	mg/Kg	< 2.50	2.50	05/24/22 10:26

Laboratory Control Sample LCS-L617632

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/Kg	10.0	10.2	102	80-120
Barium	mg/Kg	100	100	100	80-120
Cadmium	mg/Kg	10.0	9.96	100	80-120
Chromium	mg/Kg	100	102	102	80-120
Lead	mg/Kg	10.0	10.2	102	80-120
Strontium	mg/Kg	10.0	10.2	102	80-120
Zinc	mg/Kg	100	99.6	100	80-120

Matrix Spike & Matrix Spike Duplicate A 67721-MS-L617632 A 67721-MSD-L617632

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	7.01	9.40	9.89	24.3	17.7	184*	108	75-125	31.4*	20.0
Barium	mg/Kg	277	94.0	98.9	312	310	37.0*	33.0*	75-125	0.6	20.0
Cadmium	mg/Kg	< 1.00	9.40	9.89	8.69	8.65	92.0	87.0	75-125	0.4	20.0
Chromium	mg/Kg	13.7	94.0	98.9	104	102	96.0	89.0	75-125	1.9	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: L617632
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L617957
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 67721-MS-L617632 A 67721-MSD-L617632

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Lead	mg/Kg	9.04	9.40	9.89	22.0	21.7	138*	128*	75-125	1.3	20.0
Strontium	mg/Kg	27.4	9.40	9.89	30.6	28.5	34.0*	11.0*	75-125	7.1	20.0
Zinc	mg/Kg	42.1	94.0	98.9	131	122	95.0	81.0	75-125	7.1	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: L616997
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L617218
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L616997 Matrix: SOL
Associated Lab Samples: 67708, 67709, 67715

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.160	0.160	05/19/22 14:00

Laboratory Control Sample LCS-L616997

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.338	85.0	80-120

Matrix Spike & Matrix Spike Duplicate A 67715-MS-L616997 A 67715-MSD-L616997

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	< 0.137	0.343	0.339	0.321	0.318	93.0	94.0	80-120	0.9	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: L617784
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L618174
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L617784 Matrix: SOL
Associated Lab Samples: 67716, 67720, 67721

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.160	0.160	05/25/22 11:05

Laboratory Control Sample LCS-L617784

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.397	99.0	80-120

Matrix Spike & Matrix Spike Duplicate L 95197-MS-L617784 L 95197-MSD-L617784

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	< 0.156	0.391	0.367	0.297	0.477	76.0*	130*	80-120	46.5*	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: A73953
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A74067
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A73953 Matrix: SOL

Associated Lab Samples: 67704, 67705, 67707, 67708, 67709, 67710, 67712, 67714, 67715, 67716, 67717, 67719, 67720, 67721, 67722, 67724, 67726

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	05/20/22 10:16

Laboratory Control Sample LCS-A73953

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	515	103	80-120

Matrix Spike & Matrix Spike Duplicate A 67704-MS-A73953 A 67704-MSD-A73953

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	844	464	466	1400	1380	120	115	80-120	1.4	15.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-130-0020

QC Prep: L617789
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L617840
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L617789 Matrix: TCL
Associated Lab Samples: 67706, 67711, 67713, 67718, 67723, 67725

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	05/23/22 20:45

Laboratory Control Sample LCS-L617789

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	50.3	101	90-110

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-130-0020**

QC Analytical Batch: A73951
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 67704-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	26.3	25.9	1.5	20.0	05/13/22 15:40

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-130-0020**

QC Analytical Batch: A73952
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 67717-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	31.9	32.3	1.2	20.0	05/13/22 15:58

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **22-130-0020**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 05/10/2022 16:16:50

22-130-0020
10485
05-10-2022
16:16:26
ERM (Sugar Land)
Castex Development

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM 840 W. Sam Houston Pkwy N. Suite 600 Houston, TX 77024	Dave Upthegrove Michael Goodman	SAME

Project Description	Project/Site Location (City/State)	
Castex	Jeff Davis Parish Louisiana	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed

Method: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off ☐ Other

Matrix Key: WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
057584	Dave Upthegrove - 504.484.6770 Michael Goodman 530.379.6498	david.upthegrove@erm.com Michael.Goodman@erm.com		

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(504) 371-8560

Unless noted, all containers per Table II of 40 CFR Part 136.

A Cool < 10C Na2S2O3 (Micro Only)
B Cool <= 6C
C H2SO4 pH<2
D None Required
E NaOH pH>10
F HNO3 pH<2
G HCl pH<2
H H3PO4 pH<2
I Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative: TCL	% Moisture	Soluble Cl	SPLP Cl	29B Metals	CEC, ESP, SAR				Comments/Notes
4/26/22	0805	CD-5 72-74'	1	S	G	X	X	X							67704
"	0940	CD-5 88-90'	"	"	"	X	X	X	X						67705 - 67706
↓	1035	CD-5 94-96'	"	"	"	X	X	X							67707
4/27/22	1505	CD-9 6-8'	"	"	"	X	X	X		X	X				67708
"	1515	CD-9 10-12'	"	"	"	X	X	X		X	X				67709
↓	1545	CD-9 22-24'	"	"	"	X	X	X	X						67710 - 67711
4/28/22	0855	CD-9 56-58'	"	"	"	X	X	X	X						67712 - 67713
↓	0900	CD-9 58-60'	"	"	"	X	X	X							67714 - 6[illegible]
5/2/22	1510	CD-11 4-6'	"	"	"	X	X	X		X	X				67715
↓	1525	CD-11 10-12'	↓	↓	↓	X	X	X		X	X				67716

For Laboratory Use Only		
Ice: Y/N (N/A)	Custody Seals: Y/N	Lab Comments
Blank/Cooler Temp: N/A		

Sampled by (Name – Print): R. Charles Trahan

Client Remarks/Comments: 29B Metals: As, Ba, TTBa, Cd, Cr, Sr, ZN, Pb, Hg

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
[signature]	5/9/22 1235	P. Howard	5/9/22 1235
T. Howard	5/10/22 1012	[signature]	5/10/22 1012
[signature]	5/10/22 1212	[signature]	5.10-22 1212

BP/Castex-Ltd Adm-Apx E-000907

Client Name/Address	Client Project Manager/Contact	Billing Information	For Laboratory Use Only
ERM 5416 W. Sam Houston Pkwy N. Suite 600 Houston, TX 77024	Dave Upthegrove Michael Goodman	SAME	

Project Description	Project/Site Location (City/State)		Method of Shipment	Matrix Key
Castex	Jeff Davis Parish, Louisiana	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0575834	Dave Upthegrove 504.784.6470 Michael Goodman 530.379.6985	david.upthegrove@erm.com Michael.Goodman@erm.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	EC	% Moisture	Soluble Cl	SPLP Cl	29A Metals	Cl, EC, ESP, SAR				Comments/Notes
			Required Analysis / Preservative												
5/3/22	1010	CD-11 58-60'	1	S	G	X	X	X	X						67717 - 67718
↓	1055	CD-11 64-66'	1	1	1	X	X	X							67719
5/4/22	1020	CD-10 6-8'	1	1	1	X	X	X		X	X				67720
1	1025	CD-10 8-10'	1	1	1	X	X	X		X	X				67721
1	1315	CD-10 28-30'	1	1	1	X	X	X	X						67722 - 67723
1	1515	CD-10 52-54'	1	1	1	X	X	X	X						67724 - 67725
↓	1610	CD-10 60-62'	1	1	1	X	X	X							67726

For Laboratory Use Only			Sampled by (Name – Print)	Client Remarks/Comments
Ice Y/N: Y	Custody Seals Y/N: Y	Lab Comments	R. Charles Trahan	29A Metals: As, Ba, TTBa, Cd, Cr, Sr, Zn, Pb, Hg
Blank/Cooler Temp: N/A				

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
[signature]	5/9/22 1235	[signature]	5/9/22 1235
[signature]	5/9/22	[signature]	5/10/22 1012
[signature]	5/10/22 1212	[signature]	5/10/22 1312 1212

Alan R. Langenfeld
1308 Parkland Ct.
Champaign, IL 61821
6/08/2022

Wade Pigott
Chief Hydrogeologist
PO Box 60295
Lafayette, LA 70596-0295

Dear Wade Pigott:

On behalf of everyone at Isotech Laboratories, thank you for choosing us for your analytical needs. Attached with this document are the reports you requested. These documents relate to Castex / 1009.A75 (Job 51040). We will hold your sample material until 7/8/2022. If you would like us to hold it longer please let us know.

Note that we were unable to obtain some requested isotopic values due to insufficient concentration.

We are committed to providing you with the highest level of customer satisfaction possible. If for any reason you have questions or comments, we are delighted to hear from you.

Again, thank you for your patronage. We look forward to serving you again in the future.

Best Regards,

Alan R. Langenfeld
Lab Manager

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Isotech Gas Data

Job 51040
CoreTrac IS-78329

Isotech Lab No.	Sample Name	Sample Date	Sample Time	Field Name	Location	GC Date	He %	H_2 %	Ar %	O_2 %	CO_2 %	N_2 %	CO %	C_1 %	C_2 %	C_2H_4 %	C_3 %	C_3H_6 %	iC_4 %	nC_4 %	iC_5 %	nC_5 %	C_6+ %	MS Date	$\delta^{13}CO_2$ ‰	$\delta^{13}C_1$ ‰	δDC_1 ‰	$\delta^{13}C_2$ ‰	δDC_2 ‰	$\delta^{13}C_3$ ‰	δDC_3 ‰	$\delta^{13}nC_4$ ‰	Specific Gravity	BTU	Comments
828855	CD-6C (75-80')	5/13/2022	8:00	Castex / 1009.A75	Mermentau. Louisiana	5/26/2022	nd	nd	0.184	3.58	0.39	14.68	nd	75.54	3.09	nd	1.38	nd	0.495	0.313	0.170	0.0723	0.109	6/6/2022	-16.26	-45.33	-173.5	-29.86	-147.9	-27.52	-127.7	-26.29	0.687	897	
828856	CD-5B (65-70')	5/13/2022	8:45	Castex / 1009.A75	Mermentau. Louisiana	5/26/2022	nd	nd	0.631	1.97	2.71	45.16	nd	49.49	0.0132	nd	0.0093	nd	0.0107	0.0035	nd	0.0007	0.0034	6/6/2022	-17.00	-51.93	-258.4						0.783	502	Insufficient ethane, propane, and butane concentrations for isotopic analysis.
828857	CD-2A (33-43')	5/13/2022	9:20	Castex / 1009.A75	Mermentau. Louisiana	5/26/2022	nd	nd	0.664	11.55	1.92	51.70	nd	31.59	1.33	0.0003	0.617	0.0001	0.292	0.144	0.0936	0.0426	0.0599	6/6/2022	-16.87	-40.14	-174.1	-27.10	-145.4	-25.12	-120.9	-25.93	0.878	382	

All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19
nd = not detected, na = not analyzed

Lowest Quantifiable limits		
C_1	2 ppm	0.0002%
C_2-C_6^+	1 ppm	0.0001%
Ar	50 ppm	0.0050%
O_2	100 ppm	0.0100%
N_2	100 ppm	0.0100%
He	50 ppm	0.0050%
H_2	100 ppm	0.0100%
CO_2	50 ppm	0.0050%
CO	100 ppm	0.0100%

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Lab #:	828855	Job #:	51040	IS-78329	Co. Job#:
Sample Name:	CD-6C (75-80')				Co. Lab#:
Company:	Hydro-Environmental Technology, Inc.				
API/Well:					
Container:	IsoBag				
Field/Site Name:	Castex / 1009.A75				
Location:	Mermentau. Louisiana				
Formation:					
Sampling Point:					
Date Sampled:	5/13/2022 8:00	Date Received:	5/18/2022	Date Reported:	6/08/2022

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.184			
Oxygen	3.58			
Nitrogen	14.68			
Carbon Dioxide	0.39	-16.26		
Methane	75.54	-45.33	-173.5	
Ethane	3.09	-29.86	-147.9	
Ethylene	nd			
Propane	1.38	-27.52	-127.7	
Propylene	nd			
Iso-butane	0.495			
N-butane	0.313	-26.29		
Iso-pentane	0.170			
N-pentane	0.0723			
Hexanes +	0.109			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 897
Specific gravity, calculated: 0.687

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	828856	Job #:	51040	IS-78329	Co. Job#:
Sample Name:	CD-5B (65-70')				Co. Lab#:
Company:	Hydro-Environmental Technology, Inc.				
API/Well:					
Container:	IsoBag				
Field/Site Name:	Castex / 1009.A75				
Location:	Mermentau. Louisiana				
Formation:					
Sampling Point:					
Date Sampled:	5/13/2022	8:45	Date Received:	5/18/2022	Date Reported: 6/08/2022

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.631			
Oxygen	1.97			
Nitrogen	45.16			
Carbon Dioxide	2.71	-17.00		
Methane	49.49	-51.93	-258.4	
Ethane	0.0132			
Ethylene	nd			
Propane	0.0093			
Propylene	nd			
Iso-butane	0.0107			
N-butane	0.0035			
Iso-pentane	nd			
N-pentane	0.0007			
Hexanes +	0.0034			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 502
Specific gravity, calculated: 0.783

Remarks: Insufficient ethane, propane, and butane concentrations for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	828857	Job #:	51040	IS-78329	Co. Job#:
Sample Name:	CD-2A (33-43')				Co. Lab#:
Company:	Hydro-Environmental Technology, Inc.				
API/Well:					
Container:	IsoBag				
Field/Site Name:	Castex / 1009.A75				
Location:	Mermentau. Louisiana				
Formation:					
Sampling Point:					
Date Sampled:	5/13/2022 9:20	Date Received:	5/18/2022	Date Reported:	6/08/2022

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.664			
Oxygen	11.55			
Nitrogen	51.70			
Carbon Dioxide	1.92	-16.87		
Methane	31.59	-40.14	-174.1	
Ethane	1.33	-27.10	-145.4	
Ethylene	0.0003			
Propane	0.617	-25.12	-120.9	
Propylene	0.0001			
Iso-butane	0.292			
N-butane	0.144	-25.93		
Iso-pentane	0.0936			
N-pentane	0.0426			
Hexanes +	0.0599			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 382

Specific gravity, calculated: 0.878

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

ISOTECH

Job 51040
Compositional QA/QC

Job	Lab	Sample Name	Analysis Order	Instrument	Run Time	Raw Total	C1	%RPD	C2	%RPD	C3	%RPD	iC4	%RPD	nC4	%RPD	iC5	%RPD	nC5	%RPD	C6+	%RPD	C2H4	%RPD	C2H2	%RPD	C3H6	%RPD	Ar	%RPD	O2	%RPD	N2	%RPD	CO2	%RPD	H2	%RPD	He	%RPD	CO	%RPD
51040	828855	CD-SC (TS-80°)	2531212	Shimadzu16	5/26/2022 8:20	98.23787	75.5418		3.08603		1.37963		0.49516		0.31308		0.16969		0.07232		0.10869		0		0		0		0.1838		3.57519		14.6772		0.39319		0.00045		0.00384		0	
51040	828856	CD-SB (65-70°)	2531211	Shimadzu16	5/26/2022 8:43	97.74654	49.5084		0.81325		0.00926		0.0107		0.00912		0.00908		0.00909		0.00341		0		0		0		0.61097		1.98575		45.1543		2.70576		0.00183		0		0
51040	828857	CD-2A (33-41°)	2531236	Shimadzu16	5/26/2022 9:07	98.01403	31.5915		1.33851		0.61719		0.29244		0.14362		0.09338		0.04257		0.05993		0.00926		0		0.0001		0.66384		11.5459		51.7011		1.91648		0.00137		0.00187		0	

Standards

Job	Lab	Sample Name	Analysis Order	Instrument	Run Time	Raw Total	C1	%RPD	C2	%RPD	C3	%RPD	iC4	%RPD	nC4	%RPD	iC5	%RPD	nC5	%RPD	C6+	%RPD	C2H4	%RPD	C2H2	%RPD	C3H6	%RPD	Ar	%RPD	O2	%RPD	N2	%RPD	CO2	%RPD	H2	%RPD	He	%RPD	CO	%RPD
	642196	Isoechlorid	2525206	Shimadzu16	5/26/2022 7:54	100.4035	0.00055	21.73	0.00011	6.56	0.00008	-20.32	0.00008	-20.32	0.00009	-10.36	0.0001	-0.4	0.0001	-0.4	0.0001	-0.4	0.00009	-10.36	0		0.00009	-10.36	0.0406	3.16	0.00194	10.49	99.9065	-0.05	0.04762	-1.79	0	-100	0	-100	0	-100
		Reference Values					**0.00045**		**0.0001**		**0.0001**		**0.0001**		**0.0001**		**0.0001**		**0.0001**		**0.0001**		**0.0001**		**0**		**0.0001**		**0.03935**		**0.00537**		**99.9503**		**0.04847**		**0.00001**		**0.00005**		**0.00018**	
	815532	Mid Check Std	2535196	Shimadzu16	5/26/2022 9:46	98.58528	38.8727	-0.04	3.01565	-0.05	1.77408	-0.14	0.7378	-0.34	0.76755	-0.62	0.35736	-1.36	0.25251	-1.84	0.09386	-4.98	0.11016	0.02	0		0.13191	-0.1	0.02134	1.52	0.02237	-0.71	51.9415	0.07	1.5268	-0.4	0.00918	-0.22	0.01041	1.57	0.00996	8.79
		Reference Values					**38.8723**		**3.01725**		**1.77752**		**0.74029**		**0.77276**		**0.36092**		**0.25703**		**0.09877**		**0.11028**		**0**		**0.13695**		**0.02401**		**0.02233**		**51.909**		**1.53287**		**0.0096**		**0.01027**		**0.04429**	

ISOTECH
a Stratum Reservoir brand
www.isotechlabs.com

Results of Daily Instrument Check

Job 51040 HYE

Delta Q: Dual Inlet Carbon Isotope Analysis

	zero	check standard	
Date Ran	enrichment	expected	measured
6/6/2022	-0.01	-11.30	-11.32
6/6/2022		-11.30	-11.30
6/6/2022		-11.30	-11.34

Delta O: Dual Inlet Carbon Isotope Analysis

	zero	check standard	
Date Ran	enrichment	expected	measured
6/6/2022	-0.02	-10.70	-10.74
6/6/2022		-10.70	-10.72
6/6/2022		-10.70	-10.77

Delta R: Dual Inlet Hydrogen Isotope Analysis

	zero	check standard	
Date Ran	enrichment	expected	measured
6/6/2022	-0.2	-218.6	-218.8
6/6/2022		-218.6	-219.1
6/6/2022		-218.6	-218.8
6/6/2022		-218.6	-218.6

ORCA Standard

Bench	Date Prepped	Date Ran	C_1	C_2	C_3	i-C_4	n-C_4	i-C_5	n-C_5	CO_2
Zeta	6/3/2022	6/6/2022	-41.61	-31.75	-32.65	-28.84	-28.73	-29.10	-26.88	-3.59
	Expected Value		**-41.60**	**-31.76**	**-32.69**	**-28.89**	**-28.77**	**-29.07**	**-26.82**	**-3.56**

Bench	Date Prepped	Date Ran	$2C_1$	$2C_2$	$2C_3$
Zeta	6/3/2022	6/6/2022	-172.4	-188.0	-138.2
	Expected Value		**-175.3**	**-188.7**	**-136.1**

Thomas Standard

Bench	Date Prepped	Date Ran	C_1	C_2	C_3	i-C_4	n-C_4	i-C_5	n-C_5	CO_2
Zeta	6/6/2022	6/6/2022	-54.98	-30.13	-27.35	-28.32	-26.13	-26.84	-25.85	-11.35
	Expected Value		**-54.87**	**-30.11**	**-27.23**	**-28.15**	**-26.07**	**-26.62**	**-25.73**	**-11.31**

Bench	Date Prepped	Date Ran	$2C_1$	$2C_2$	$2C_3$
Zeta	6/6/2022	6/6/2022	-191.9	-129.3	-116.7
	Expected Value		**-189.8**	**-128.2**	**-115.7**

HYDRO-ENVIRONMENTAL TECHNOLOGY, INC.
Environmental Consultants
P.O. Box 60295
Lafayette, LA 70596-0295
Phone (337) 261-1963 FAX (337) 261-1953

SAMPLE CHAIN-OF-CUSTODY RECORD

Laboratory:	Isotech		
Project Name:	Castex	*Collected By:*	LV
Project Number:	1009.A75	*Company:*	Hydro-Environmental Technology, Inc.
Project Location:	Mermentau, Louisiana	*Date:*	5/13/2022

Sample I.D.	Type	Date/Time Sampled	Containers	Analysis Requested/Method	Comments
CD-6C (75-80')	Air	5/13/2022 8:00	(1) IsoBag	NG2D plus nC4	
CD-5B (65-70')	Air	5/13/2022 8:45	(1) IsoBag	NG2D plus nC4	
CD-2A (33-43')	Air	5/13/2022 9:20	(1) IsoBag	NG2D plus nC4	

Note: Report concentrations of all fixed gases & where possible both mol ratios & concentrations of all gases.
For the NG2 analyses, please include dD for C2 and C3 gases.

Relinquished By: Ship Via Fedex	Received ~~Relinquished~~ By:
Date/Time: 5/16/22	Date/Time: 5/18/22 11:15 Les Schluter / SR Isotech
Relinquished By:	Relinquished By:
Date/Time:	Date/Time:
Analysis Due: Verbal:	Written:

ERM

0575834 CASTEX

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #22-05072-OR

June 21, 2022

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

BP/Castex-Ltd Adm-Apx E-000917

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XI	Analytical Data (Total Dissolved Solids)	0225
	Last Page Number	0227

BP/Castex-Ltd Adm-Apx E-000918

Eberline Services – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Services Work Order # 22-05072

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		5/18/22	KB	Sample Log-In
		6/12/22		Data Compilation
		6-9-22	MLT	First Technical Data Review
		6/10/22	MM	Second Technical Data Review
		6/20/22		Data Entry/Electronic Deliverable
		6/20/22		Case Narrative
		6/21/22	EJT	Electronic Deliverable Proof
		6/21/22	MM	Samples Analyzed within Holding Time Yes? ☑ No? ☐
		6/21/22	MM	QA/QC Review
				Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by: _____ 6/21/22

Laboratory Manager Date

Copy No. _____

Radiochemistry Services

SECTION I

CHAIN OF CUSTODY
& pH CHECK

Chain of Custody Record

№ 22-05072

Eberline Services
601 Scarboro Road
Oak Ridge, TN 37830
(865) 481-0683 Phone • (865) 483-4621 Fax

EBERLINE SERVICES

Project Name: Castex	Project Number: 0575834
Send Report To: Dave Upthegrove Michael Goodman	Sampler (Print Name): R. Charles Trahan
Address: 840 W. Sam Houston Pkwy N. Suite 600 Houston, TX 77024	Sampler (Print Name):
	Shipment Method: FedEx
	Airbill Number:
Phone: 504.481.6470	Laboratory Receiving:
Fax: david.upthegrove@prm.com	Michael.Goodman@prm.com

Page 1 of 1

REC'D MAY 18 2022

Purchase Order #:

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	Analysis Requested: Ra 226 / 228	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
4 CD-9B	5/9/22	1215	W	1	X		
5 CD-9A		1425			X		
6 CD-5C		1700			X		
7 CD-10A	5/10/22	0945			X		
8 CD-8A		1430			X		

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Michael Goodman 5/16/22 1200	K. Bannister	5/18/22	1320
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level	Turnaround
Level I ☐	Routine ☐
Level II ☐	24 Hour ☐
Level III ☐	1 Week ☐
Other ☐	Other _____

Sample Receipt	
Total # Containers Received?	
COC Seals Present?	
COC Seals Intact?	
Received Containers Intact?	
Temperature?	

0005

BP/Castex-Ltd Adm-Apx E-000921

22-05072

Chain of Custody Record

№

Eberline Services
501 Scarboro Road
Oak Ridge, TN 37830
(865) 481-0683 Phone • (865) 483-4621 Fax

EBERLINE SERVICES

Project Name: Castex	Project Number: 0575834
Send Report To: Dave Uptheegrove Michael Goodman	Sampler (Print Name): R. Charles Trahan
Address: 5444 W. Sam Houston Pkwy N.,	Sampler (Print Name):
Suite 600	Shipment Method: FedEX
Houston, TX 77024	Airbill Number:
Phone: 504.481.6470	Laboratory Receiving:
Fax: david.uptheegrove@pbrm.com	Michael.Goodman@pbrm.com

Page 1 of 1

REC'D MAY 18 2022

Purchase Order #: _____

	Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	Analysis Requested: RA 226/228	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
9	CD-11A	5/10/22	1550	W	1	X		
10	CD-7B	5/11/22	1435			X		
11	CD-7C	5/12/22	0855			X		
12	CD-6A		1025			X		
13	CD-6B		1300			X		

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Charles Trahan 5/16/22 1205	K Bannister	5/18/22	1320
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level	Turnaround	Sample Receipt	
		Total # Containers Received?	
Level I ☐	Routine ☐	COC Seals Present?	
Level II ☐	24 Hour ☐	COC Seals Intact?	
Level III ☐	1 Week ☐	Received Containers Intact?	
Other ☐	Other _____	Temperature?	

0006

BP/Castex-Ltd Adm-Apx E-000922

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	**22-05072**
Lab Deadline	**6/2/2022**
Analysis	**Ra226 - Level 4**
Sample Matrix	**Water**

Comments

Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
04	28	U1.5
05	30	U1.5
06	30	U1.5
07	29	U1.5
08	36	U1.5
09	30	U1.5
10	40	U1.5
11	25	U1.5
12	33	U1.5
13	28	U1.5

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	5/31/22 1026
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	0740
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	MB	5/26/22 0741
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	MB	5/31/22 0919
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	MP	5/31/22 0923
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	MP	6/1/22 0925
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

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EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	22-05072
Lab Deadline	6/2/2022
Analysis	Ra228 - Level 4
Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	28	U1.5
	05	30	U1.5
	06	30	U1.5
	07	29	U1.5
	08	36	U1.5
	09	30	U1.5
	10	40	U1.5
	11	25	U1.5
	12	33	U1.5
	13	28	U1.5

	Location (circle one)					Initials	Date
Received by	(Sample Storage)	Rough Prep	Prep	Separations	Count Room	[illegible]	5/25/22 1109
Relinquished by	Sample Storage	Rough Prep	(Prep)	Separations	Count Room	[illegible]	0740
Received by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	5/26/22 0741
Relinquished by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	5/31/22 0919
Received by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KP	5/31/22 0923
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KP	6/1/22 0925
Received by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	6/1/22 0926
Relinquished by	Sample Storage	Rough Prep	Prep	(Separations)	Count Room	MD	6/2/22 1059
Received by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KP	6/2/22 1100
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KP	6/2/22 1304
Received by	(Sample Storage)	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

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EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	**22-05072**
Lab Deadline	**5/18/2022**
Analysis	**TDS - Level 4**
Sample Matrix	**Water**

Comments

Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
04	28	U1.5
05	30	U1.5
06	30	U1.5
07	29	U1.5
08	36	U1.5
09	30	U1.5
10	40	U1.5
11	25	U1.5
12	33	U1.5
13	28	U1.5

	Location (circle one)					Initials	Date
Received by	(Sample Storage)	(Rough Prep)	Prep	Separations	Count Room 1430	KMJ SMJ	5-18-22
Relinquished by	Sample Storage	(Rough Prep)	Prep	Separations	Count Room 1130	KMJ SMJ	5-19-22
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

EBERLINE SERVICES

Sample Receiving Report
(Volumes, pH, & CPM)

Internal Work Order
22-05072
Received By
CCONNER

FR	ClientID	# Btls	Comments	Matrix	Storage	Rec Vol Ttl	CPM Max
01	LCS	0		WA	U1.5		
02	BLANK	0		WA	U1.5		
03	DUP	0		WA	U1.5		
04	CD-9B	1		WA	U1.5	3.75	28
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	28
05	CD-9A	1		WA	U1.5	3.75	30
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	30
06	CD-5C	1		WA	U1.5	3.75	30
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	30
07	CD-10A	1		WA	U1.5	3.75	29
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	29
08	CD-8A	1		WA	U1.5	3.75	36
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	36
09	CD-11A	1		WA	U1.5	3.75	30
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	30
10	CD-7B	1		WA	U1.5	3.75	40
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	40
11	CD-7C	1		WA	U1.5	3.75	25
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	25
12	CD-6A	1		WA	U1.5	3.75	33
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	33
13	CD-6B	1		WA	U1.5	3.75	28
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7500	28

Received by: _____ Date: 5/18/22

MP-001, Rev 5
Effective: 11/22/02

0010

SECTION II

SAMPLE ACKNOWLEDGEMENT

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
ERM	0575834	Environmental	05/18/2022	21	22-05072
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
575834	CASTEX	W	06/02/2022	06/08/2022	06/09/2022

Internal ID	Client ID	Sample Date	Matrix	Storage	Ra226	Ra228	TDS																				Ttl
01	LCS	05/18/22	WA	U1.5	X	X	X																				3
02	BLANK	05/18/22	WA	U1.5	X	X	X																				3
03	DUP	05/18/22	WA	U1.5	X	X	X																				3
04	CD-9B	05/09/22 12:15	WA	U1.5	X	X	X																				3
05	CD-9A	05/09/22 14:25	WA	U1.5	X	X	X																				3
06	CD-5C	05/09/22 17:00	WA	U1.5	X	X	X																				3
07	CD-10A	05/10/22 09:45	WA	U1.5	X	X	X																				3
08	CD-8A	05/10/22 14:30	WA	U1.5	X	X	X																				3
09	CD-11A	05/10/22 15:50	WA	U1.5	X	X	X																				3
10	CD-7B	05/11/22 14:35	WA	U1.5	X	X	X																				3
11	CD-7C	05/12/22 10:55	WA	U1.5	X	X	X																				3
12	CD-6A	05/12/22 10:25	WA	U1.5	X	X	X																				3
13	CD-6B	05/12/22 13:00	WA	U1.5	X	X	X																				3
																											0
																											0
																											0
																											0
																											0
																											0
																											0
Totals Per Analysis (non QA samples)					10	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice	Accounts Payable ERM 840 W Sam Houston Pkwy N, Suite 600 Houston, TX 77024 Voice 281-242-5700 Fax 281-520-4625	**Report Data**	Dave Upthegrove ERM 840 W. Sam Houston Pkwy N #600 Houston, TX 77024 *Voice* 504-481-6470 *Fax*
Contact	Dave Upthegrove Voice 504-481-6470 Fax		

Printed: 5/18/2022 2:51 PM

BP/Castex-Ltd Adm-Apx E-000928

0012

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 22-05072

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

(AQUEOUS) NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	(Y)	N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: K Bannister DATE: 5/18/22

SECTION III

CASE NARRATIVE

BP/Castex-Ltd Adm-Apx E-000930

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-49780

June 21, 2022

Dave Upthegrove
ERM
840 W Sam Houston Pkwy N #600
Houston, TX 77478

CASE NARRATIVE
Work Order # 22-05072-OR

SAMPLE RECEIPT

This work order contains ten water samples received 05/18/2022. Samples were analyzed for Radium-226/228 and Total Dissolved Solids.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
CD-9B	22-05072-04	CD-11A	22-05072-09
CD-9A	22-05072-05	CD-7B	22-05072-10
CD-5C	22-05072-06	CD-7C	22-05072-11
CD-10A	22-05072-07	CD-6A	22-05072-12
CD-8A	22-05072-08	CD-6B	22-05072-13

ANALYTICAL METHODS

Radium-226 was analyzed using EPA Method 903.0 Modified. Radium-228 was analyzed using EPA Method 904.0. Total Dissolved Solids were performed using Standard Methods 2540C.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

SPECIAL CIRCUMSTANCES

Sample fraction -06 (Client ID: CD-5C) was filtered prior to chemical preparations.

RADIUM-226

Samples were prepared by removing representative aliquots followed by mixed acid digestions as appropriate. This was followed by precipitations of Radium/Barium Sulfate. Precipitates were dissolved in alkaline EDTA. Radium was selectively precipitated and mounted on micro-porous filter media. Samples were counted by alpha spectroscopy using an energy specific region of interest for Radium-226.

ANALYTICAL RESULTS CONTINUED

RADIUM-226 CONTINUED

The final result was corrected for inherent self-absorption from elemental Barium. Chemical recovery was calculated using a Barium-133 tracer, which was determined by HPGe gamma spectroscopy.

Samples demonstrated acceptable results for all Radium-226 analyses. Chemical recovery was acceptable for all analyses. The Radium-226 method blank demonstrated an acceptable result. Results for the Radium-226 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Radium-226 laboratory control sample demonstrated an acceptable percent recovery.

RADIUM-228

Following alpha spectroscopy analysis of Radium-226, Barium/Radium Sulfate precipitates were redissolved and allowed for sufficient ingrowth of the Actinium-228 daughter. After ingrowth, Actinium-228 was selectively precipitated. Precipitates were filtered and beta emissions for Actinium-228 were then counted on a gas proportional counter. Chemical recovery was determined by the use of a Barium-133 tracer, the activity of which was determined by HPGe gamma spectroscopy and an elemental Yttrium carrier by gravimetric measurements. The product of these two recoveries was used to calculate chemical yield.

Samples demonstrated acceptable results for all Radium-228 analyses. Chemical recovery was acceptable for all analyses. The Radium-228 method blank demonstrated an acceptable result. Results for the Radium-228 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Radium-228 laboratory control sample demonstrated an acceptable percent recovery.

TOTAL DISSOLVED SOLIDS (TDS)

A volumetric aliquot of each sample was filtered through 0.45µm filter media into a tared 250 ml beaker. Samples were dried on a hot plate and allowed to cool. The TDS content was determined by reweighing tared beakers.

Samples demonstrated Total Dissolved Solids content that ranged from 289.0 to 10,396.0 mg/L

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

M.R. McDougall
Laboratory Manager

Date: 6/21/2022

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

SECTION IV

ANALYTICAL RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-000933

Eberline Analytical
Final Report of Analysis

Report To:
Dave Upthegrove
ERM
840 W. Sam Houston Pkwy N #600
Houston, TX 77024

Work Order Details:

SDG:	22-05072
Purchase Order:	0575834
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	WA

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-05072-01	LCS	KNOWN	05/18/22 00:00	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	1.01E+01	4.64E-01			pCi/l
22-05072-01	LCS	SPIKE	05/18/22 00:00	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	1.13E+01	1.35E+00	2.75E+00	2.29E-01	pCi/l
22-05072-02	MBL	BLANK	05/18/22 00:00	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	6.75E-02	1.46E-01	1.46E-01	2.88E-01	pCi/l
22-05072-03	DUP	CD-9B	05/09/22 12:15	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	3.03E-01	2.26E-01	2.35E-01	2.39E-01	pCi/l
22-05072-04	DO	CD-9B	05/09/22 12:15	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	2.81E-01	2.26E-01	2.34E-01	2.54E-01	pCi/l
22-05072-05	TRG	CD-9A	05/09/22 14:25	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	3.68E-01	2.08E-01	2.22E-01	1.70E-01	pCi/l
22-05072-06	TRG	CD-5C	05/09/22 17:00	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	1.94E-01	1.94E-01	1.98E-01	2.69E-01	pCi/l
22-05072-07	TRG	CD-10A	05/10/22 09:45	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	2.29E-01	1.70E-01	1.77E-01	1.60E-01	pCi/l
22-05072-08	TRG	CD-8A	05/10/22 14:30	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	4.12E-01	2.14E-01	2.31E-01	1.35E-01	pCi/l
22-05072-09	TRG	CD-11A	05/10/22 15:50	5/18/2022	5/31/2022	22-05072	Radium-226	EPA 903.0 Modified	2.42E-01	2.41E-01	2.46E-01	3.60E-01	pCi/l
22-05072-10	TRG	CD-7B	05/11/22 14:35	5/18/2022	6/1/2022	22-05072	Radium-226	EPA 903.0 Modified	5.00E-01	3.02E-01	3.20E-01	2.99E-01	pCi/l
22-05072-11	TRG	CD-7C	05/12/22 10:55	5/18/2022	6/1/2022	22-05072	Radium-226	EPA 903.0 Modified	5.76E-01	3.27E-01	3.49E-01	2.42E-01	pCi/l
22-05072-12	TRG	CD-6A	05/12/22 10:25	5/18/2022	6/1/2022	22-05072	Radium-226	EPA 903.0 Modified	3.86E-01	1.94E-01	2.10E-01	1.18E-01	pCi/l
22-05072-13	TRG	CD-6B	05/12/22 13:00	5/18/2022	6/1/2022	22-05072	Radium-226	EPA 903.0 Modified	1.77E-01	1.98E-01	2.01E-01	3.10E-01	pCi/l
22-05072-01	LCS	KNOWN	05/18/22 00:00	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	9.22E+00	4.70E-01			pCi/l
22-05072-01	LCS	SPIKE	05/18/22 00:00	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	9.18E+00	9.83E-01	2.30E+00	8.55E-01	pCi/l
22-05072-02	MBL	BLANK	05/18/22 00:00	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	4.67E-01	3.58E-01	3.74E-01	7.10E-01	pCi/l
22-05072-03	DUP	CD-9B	05/09/22 12:15	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	4.01E-01	6.11E-01	6.17E-01	1.26E+00	pCi/l
22-05072-04	DO	CD-9B	05/09/22 12:15	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	1.09E+00	4.49E-01	5.12E-01	8.27E-01	pCi/l
22-05072-05	TRG	CD-9A	05/09/22 14:25	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	3.28E-01	4.52E-01	4.58E-01	9.29E-01	pCi/l
22-05072-06	TRG	CD-5C	05/09/22 17:00	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	1.34E+00	4.64E-01	5.54E-01	8.41E-01	pCi/l
22-05072-07	TRG	CD-10A	05/10/22 09:45	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	5.98E-01	5.49E-01	5.65E-01	1.10E+00	pCi/l
22-05072-08	TRG	CD-8A	05/10/22 14:30	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	6.01E-01	3.86E-01	4.09E-01	7.52E-01	pCi/l
22-05072-09	TRG	CD-11A	05/10/22 15:50	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	5.88E-01	4.34E-01	4.54E-01	8.62E-01	pCi/l
22-05072-10	TRG	CD-7B	05/11/22 14:35	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	6.28E-01	4.80E-01	5.01E-01	9.57E-01	pCi/l
22-05072-11	TRG	CD-7C	05/12/22 10:55	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	3.76E-01	5.12E-01	5.19E-01	1.05E+00	pCi/l
22-05072-12	TRG	CD-6A	05/12/22 10:25	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	8.15E-01	4.43E-01	4.80E-01	8.52E-01	pCi/l
22-05072-13	TRG	CD-6B	05/12/22 13:00	5/18/2022	6/2/2022	22-05072	Radium-228	EPA 904.0	-5.83E-01	5.30E-01	5.46E-01	1.20E+00	pCi/l

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

Eberline Analytical
Final Report of Analysis

Report To:	
Dave Upthegrove	
ERM	
840 W. Sam Houston Pkwy N #600	
Houston, TX 77024	

Work Order Details:	
SDG:	22-05072
Purchase Order:	0575834
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	WA

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-05072-04	TRG	CD-9B	05/09/22 12:15	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	3.79E+02				mg/l
22-05072-05	TRG	CD-9A	05/09/22 14:25	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	5.16E+02				mg/l
22-05072-06	TRG	CD-5C	05/09/22 17:00	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	7.04E+02				mg/l
22-05072-07	TRG	CD-10A	05/10/22 09:45	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	2.89E+02				mg/l
22-05072-08	TRG	CD-8A	05/10/22 14:30	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	1.04E+04				mg/l
22-05072-09	TRG	CD-11A	05/10/22 15:50	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	9.11E+02				mg/l
22-05072-10	TRG	CD-7B	05/11/22 14:35	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	5.83E+02				mg/l
22-05072-11	TRG	CD-7C	05/12/22 10:55	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	4.44E+02				mg/l
22-05072-12	TRG	CD-6A	05/12/22 10:25	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	8.99E+02				mg/l
22-05072-13	TRG	CD-6B	05/12/22 13:00	5/18/2022	5/19/2022	22-05072	TDS	SM2540C	4.15E+02				mg/l

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

SECTION V

ANALYTICAL STANDARD

BP/Castex-Ltd Adm-Apx E-000936

SRS Number: 110755
Source Description: 5 mL Liquid in Flame Sealed Ampoule
Product Code: 8133
Customer: Eberline Analytical Corporation
P.O. Number: MCDOUGAL14AUG18/VS, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution calibrated with an ionization chamber. The ionization chamber was calibrated by the National Physical Laboratory (NPL), Teddington, U.K., and is traceable to national standards. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology (NIST) through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Reference Date: 06-September-2018 12:00 PM EST

Isotope	Half-Life, d	Activity, Bq	Uncertainty u_A, %	Uncertainty u_B, %	Uncertainty U, %*	Calibration Method**
Ba-133	3.854E+03	1.834E+05	0.1	0.9	1.8	IC

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results." ****Calibration Methods:** 4π LS - 4π Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber.

(Certificate continued on reverse side)

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

QCP-009

Rev.8; 11/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
QCP 009-1

mm

CURRENT DATE 10/19/2021 0:00

SOLUTION REFERENCE # EZA 100755 **SOLUTION #** Ba-7

Principal Radionuclide	Half Life, Years	Half Life, Days
^{133}Barium	1.048E+01	3.828E+03

Radionuclide ^{133}Barium

Reference Date 9/6/2018 12:00

Certified Activity 1.834E+05 **Total Bq**

Ampoule /Solution Gross		**Weight, Grams**
Empty Ampoule		**Weight, Grams**
Solution Net		**Weight, Grams**
Total Activity in Ampoule	4.9568	**µCi**

Chemical Composition of Standard Solution

$^{133}BaCl_2$ in 1M HCl

Dilution Instructions:

Dilution Solvent Used 1M HCl

Dilute to a volume of 1000.00 **milliliters**

Certified Total Activity of 4.9568 **µCi** **Which Equals** 1.100E+07 **dpm at the date listed above**

And after dilution the activity of this solution is 1.100E+04 **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: October 19, 2022

Verified & Approved By _____ Date: 10/19/21

QC Approval Marianne Mey Date: 10-19-21

BP/Castex-Ltd Adm-Apx E-000938

Ra-5

QA/QC REVIEWED
Date 2/8/94 Initials WT

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	Ra-226	Customer:	TMA EBERLINE
Half Life:	1600 ± 7 years	P.O.No.:	VH1888
Catalog No.:	7226	Reference Date:	February 1 1994 12:00 PST.
Source No.:	453-26	Contained Radioactivity: (Ra-226)	1.001 μCi.
		Contained Radioactivity: (Ra-226)	37.0 kBq.

Description of Solution

a. Mass of solution:	5.1864 g (in a 5 ml Flame Sealed Ampoule)
b. Chemical form:	Ra(NO3)2 in 1 N HNO3
c. Carrier content:	None added
d. Density:	1.0318 g/ml @ 20°C.

Radioimpurities: None detected(other than daughters)

Radioactive Daughters
Rn-222, Po-218, At-218, Pb-214, Bi-214, Po-214, Tl-210, Pb-210, Bi-210, Po-210 and Tl-206.

Radionuclide Concentration

(Ra-226) 0.1929 μCi/g.

Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry:
Energy peak(s) integrated under: 186 keV.
Branching ratio(s) used: 0.0351 gamma rays per decay.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:	±3.4%
b. Random uncertainty in assay:	±3.1%
c. Random uncertainty in weighing(s):	±0.2%
d. Total uncertainty at the 99% confidence level:	±4.6%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

Anna U. Kwan
QUALITY CONTROL

Feb. 3, 1994
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 North Keystone Street
Burbank, California 91504
(818) 843 - 7000

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

CURRENT DATE 8/18/2021 0:00

SOLUTION REFERENCE # IPL 453-26 **SOLUTION #** Ra-5

Principal Radionuclide	Half Life, Years	Half Life, Days
^{226}Radium	1.600E+03	5.844E+05

Radionuclide ^{226}Radium
Certified Activity 1.001E+00 µCi
Certified Concentration µCi per gram

Reference Date 2/1/1994 0:00

Ampoule /Solution Gross Weight, Grams
Empty Ampoule Weight, Grams
Solution Net Weight, Grams
Total Activity in Ampoule 1.0010 µCi

Chemical Composition of Standard Solution
$^{226}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions:

Dilution Solvent Used 1M HNO_3

Dilute to a volume of 1000.00 **milliliters**

Certified Total Activity of 1.0010 µCi **Which Equals** 2.222E+06 **dpm at the date listed above**

And after dilution the activity of this solution is 2.222E+03 **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: August 18, 2022

Verified & Approved By _____ Date: 8/18/2021

QC Approval Marianne Mary Date: 8-30-21

BP/Castex-Ltd Adm-Apx E-000940

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP 009

Rev.8; 11/01/03
Title: **Radioactive Reference Standards Solutions & Records**

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

	MP 009	Date	8/18/2021 0:00
Solution Reference #	IPL-453-26	Solution #	Ra-5b

Principal Radionuclide	Half Life, Years	Half Life, Days
^{226}Radium	1.600E+03	5.844E+05

Radionuclide of Interest	^{226}Radium	Reference Date	2/1/1994 0:00
Parent Solution Conc.	2.22E+03 dpm/ml		

Chemical Composition of Standard Solution
$^{226}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions: **Dilution Solvent Used** 1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution:	20.0000 ml	Final Activity Concentration:	4.4440E+01 dpm/ml
Total Activity:	4.4440E+04 dpm		
Final Volume:	1000.00 ml		

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: 18-Aug-22

Verified & Approved By _____ Date: 8/18/2021 0:00

QC Approval Manan Jay Date: 8-30-21

ANALYTICS #411 Rec'd 2/15/06 R Prentice

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 • U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

Ra 228

72325-207

Ra-228 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Ra-228
ACTIVITY (dps):	4.022 E3
HALF-LIFE:	5.75 years
CALIBRATION DATE:	February 10, 2006 12:00 EST
RELATIIVE EXPANDED UNCERTAINTY (k=2):	4.0%

Impurities: γ-impurities <0.1%

5.10721 grams 0.1M HCl solution with 50 µg/g Ba carrier.

P O NUMBER 00003181, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: WM. 2-13-06

0026

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP-009

Rev.8; 1/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
RECERTIFICATION
MP 009

		CURRENT DATE	1/7/2022 0:00
SOLUTION REFERENCE #	Analytics 7235-207	**SOLUTION #**	Ra-12

Principal Radionuclide	**Half Life, Years**	**Half Life, Days**
^{228}Ra	5.750E+00	2.100E+03

Radionuclide	^{228}Ra	**Reference Date**	2/10/2006 0:00
Certified Activity	1.087E-01	µCi	
Certified Concentration		µCi per gram	

Ampoule /Solution Gross	9.0741	**Weight, Grams**
Empty Ampoule	3.9858	**Weight, Grams**
Solution Net	5.0883	**Weight, Grams**
Total Activity in Ampoule	0.1087	µCi

Chemical Composition of Standard Solution

$^{228}Ra(NO_3)_2$ in 0.5 M HCl

Dilution Instructions: **Dilution Solvent Used** 0.5 M HCl

Dilute to a volume of 991.00 **Kg**

Certified Total Activity of 0.1087 µCi **Which Equals** 2.413E+05 **dpm at the date listed above**

And after dilution the activity of this solution is 2.435E+02 **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 4, 2023

Recertified By _____ Date: 1/7/22

QC Approval Manarthe Mau Date: 1-7-22

0027

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-000944

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-05072	Ra226	1	pCi	l	ERM

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-226		112.08%	24.27%	100.00%	4.60%	1.01E+01	4.64E-01	1.13E+01	2.75E+00	Ra-5b	4.39E+01	4.60E+00	5.10E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-226	0.13	7.47	2.81E-01	2.34E-01	3.03E-01	2.35E-01

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.12	OK				NA	OK

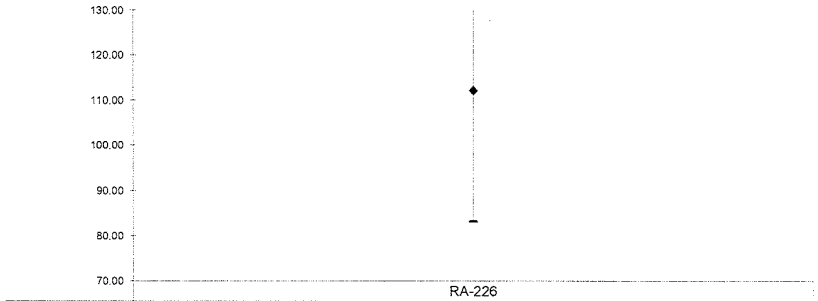
BP/Castex-Ltd Adm-Apx E-000945

0029

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-05072	Ra226	1	pCi	I	ERM

LCS % Recovery

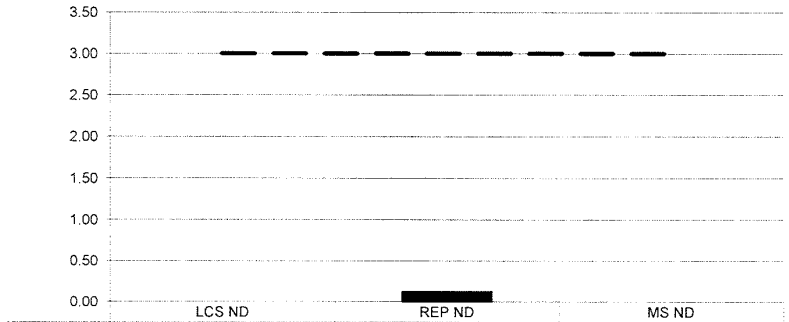


	RA-226
Lower Error	83.22
Upper Error	140.95
%R	112.08
LCL	75
Mean	100
UCL	125

Replicate Sample RPD

	RA-226
Lower Error	10.46
Upper Error	4.48
RPD	7.47
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
RA-226	0.00	0.13	0.00
UCL	3	3	3

No Matrix Spike

BP/Castex-Ltd Adm-Apx E-000946

0030

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-05072	Ra228	1	pCi	l	ERM

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-228		99.55%	25.05%	100.00%	5.10%	9.22E+00	4.70E-01	9.18E+00	2.30E+00	Ra-12	3.41E+01	5.10E+00	6.01E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-228	1.68	92.36	1.09E+00	5.12E-01	4.01E-01	6.17E-01

QC Summary

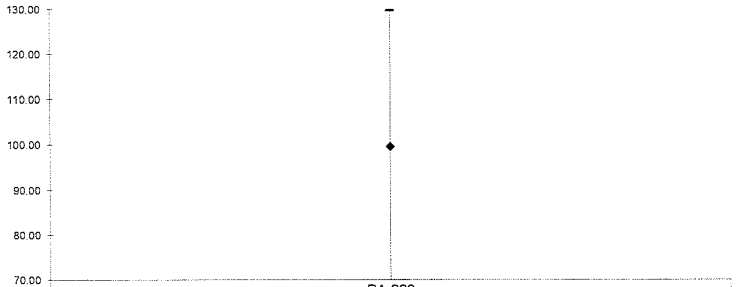
LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.00	OK				NA	OK

BP/Castex-Ltd Adm-Apx E-000947

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-05072	Ra228	1	pCi	l	ERM

LCS % Recovery

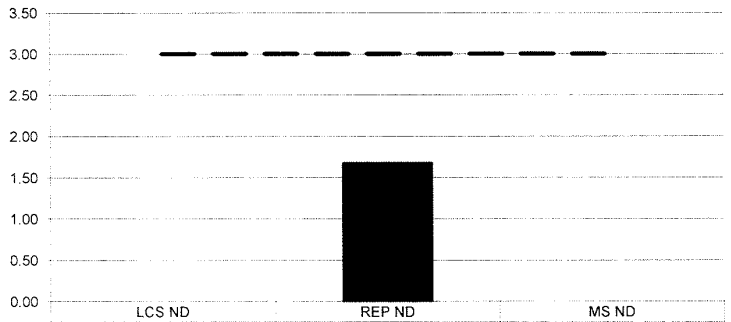


	RA-228
Lower Error	69.41
Upper Error	129.70
%R	99.55
LCL	75
Mean	100
UCL	125

Replicate Sample RPD

	RA-228
Lower Error	127.37
Upper Error	57.35
RPD	92.36
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
RA-228	0.00	1.68	0.00
UCL	3	3	3

No Matrix Spike

BP/Castex-Ltd Adm-Apx E-000948

0032

Version

SECTION VII

LABORATORY TECHNICIAN'S NOTES

BP/Castex-Ltd Adm-Apx E-000949

RA-226 NOTES

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-05072
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	05/25/22 12:43	PREP	JHARVEY	ALIQUOTED AND FILTERED FRACTION 6- ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS

JHarvey 5/25/22

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-05072
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	05/25/22 12:43	PREP	JHARVEY	ALIQUOTED AND FILTERED FRACTION 6- ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	05/31/22 08:54	CHEM	MDAVIS	ADDED EDTA TO SAMPLES AND LET SIT. ADDED AMMONIUM SULFATE AND ACETIC ACID TO SAMPLES. RECORDED T0. FILTERED ONTO TARED FILTER PAPERS, LET DRY UNDER HEAT LAMP, REWEIGHED, AND SUBMITTED TO COUNT.

MD
5/31/22

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
22-05072	
Analysis Code	Run
Ra226	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
024396P	Ammonium Hydroxide	Reagent Grade	JHARVEY	5/25/2022
023625D06	Ammonium Sulfate	200 mg/ml	JHARVEY	5/25/2022
023237D06	Barium Carrier	1 mg/ml	JHARVEY	5/25/2022
023967D01	Lead Carrier	166 mg/ml	JHARVEY	5/25/2022
024303P	Nitric Acid	Reagent Grade	JHARVEY	5/25/2022
024243P	Acedic Acid, Glacial	Reagent Grade	MDAVIS	5/31/2022
023625D02	Ammonium Sulfate	200 mg/ml	MDAVIS	5/31/2022
024431S	EDTA	0.25M	MDAVIS	5/31/2022

Alpha Banks

Date	Sample #	Client	Load Time	Count Time	Analysis	Tech
5/27/22	220S042A (5)	UCOR	1131	2hr50min	UUNT	ICP
5/27/22	220S042A (1-3,5)	UCOR	1131	2hr50 min	Th	ICP
5/27/22	220S042A (1,2)	UCOR	1132	2hr50 min	UU	ICP
5/27/22	220S042A (3-5)	UCOR	1402	2hr50min	UU	KB
5/27/22	220S055A (1-4)	Fruit Growers	1402	2hr50 -	UU	KB
5/27/22	220S031A (1-4)	Unitech	1404	2hr50 min	UU	KB
5/27/22	220S058A (1-4)	UCOR	1404	2hr50 -	UU	KB
5/27/22	220S058A (6, 8, 10, 12, 14)	UCOR	1426	2hr50 -	UU	KB
5/27/22	System Bkgd	Lab	1723	16.40hr	NA	KB
5/31/22	Daily Pulser	Lab	0520	10 min	NA	ICP
5/31/22	220S108A (3-5)	Unitech	0812	2hr50min	UU	ICP
5/31/22	220S042A (1-3,5 8)	UCOR	0813	2hr50 min	Pu	ICP
5/31/22	220S042A (1-3,5)	UCOR	0814	2hr50 min	Am^{241}	ICP
5/31/22	220S042A (1-3,5)	UCOR	0815	2hr50 min	Am^{243}	ICP
5/31/22	220S066A (1-4)	UCOR	0815	2hr50 min	Th	ICP
5/31/22	220S042A (1,2)	UCOR	0816	2hr50 min	Pu^{242}	ICP
5/31/22	220S042A (1-3,5)	UCOR	1116	2hr50 min	Np	ICP
5/31/22	220S066A (1-4)	UCOR	1116	2hr50 min	Th^{229}	ICP
5/31/22	220S066A (1-4)	UCOR	1117	2hr50 min	UU	ICP
5/31/22	220S066A (4)	UCOR	1117	2hr50 min	UUNT	ICP
5/31/22	220S072A (1-9)	ERM	1119	2hr50 min	Ra^{6}	ICP
6/1/22	Daily Pulser	Lab	0528	10 min	NA	ICP
6/1/22	220S072A (10-13)	ERM	0544	~~Ra~~ 2hr50 min	Ra^{6}	ICP

BP/Castex-Ltd Adm-Apx E-000954

RA-228 NOTES

BP/Castex-Ltd Adm-Apx E-000955

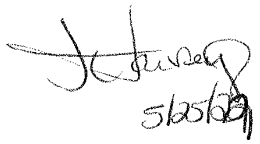
EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-05072
Analysis Code	Ra228
Run Number	1

#	Date	Dept	User	Notes
1	05/25/22 12:44	PREP	JHARVEY	ALIQUOTED AND FILTERED FRACTION 6- ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS



EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-05072
Analysis Code	Ra228
Run Number	1

#	Date	Dept	User	Notes
1	05/25/22 12:44	PREP	JHARVEY	ALIQUOTED AND FILTERED FRACTION 6- ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	06/02/22 10:37	CHEM	MDAVIS	ADDED FILTER PAPERS FROM COUNT ROOM TO LABELED C-TUBES, FILLED WITH EDTA SOLUTION AND LET SIT OVERNIGHT. REMOVED FILTER FROM EDTA-ADDED 2MLS YTTRIUM 9MG/ML CARRIER ADDED 18N NAOH TO SAMPLES AND RECORDED T1. HOT BATHED FOR 15 MIN, CENTRIFUGED AND DISCARDED SUPERNANT. ADDED 6N HNO3, DI WATER AND 10N NAOH. HOT BATHED FOR 15 MIN, CENTRIFUED AND DISCARDED SUPERNTANT. ADDED IN HNO3, DI WATER, AND AMMONIUM OXALATE. FILTERED ONTO TARED FILTER PAPERS. LET DRY UNDER HEAT LAMP, REWEIGHED AND SUBMITTED TO COUNT.

MD
6/2/22

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order: 22-05072

Analysis Code: Ra228

Run: 1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
024396P	Ammonium Hydroxide	Reagent Grade	JHARVEY	5/25/2022
023237D06	Barium Carrier	1 mg/ml	JHARVEY	5/25/2022
023967D01	Lead Carrier	166 mg/ml	JHARVEY	5/25/2022
024303P	Nitric Acid	Reagent Grade	JHARVEY	5/25/2022
023625D06	Ammonium Sulfate	200 mg/ml	JHARVEY	5/25/2022
023894D03	Ammonium Oxalate	5%	MDAVIS	6/2/2022
024225S	EDTA	0.25M	MDAVIS	6/2/2022
024041D26	Nitric Acid	1N	MDAVIS	6/2/2022
023733D08	Nitric Acid	6N	MDAVIS	6/2/2022
024355S	Sodium Hydroxide	10M	MDAVIS	6/2/2022
024354S	Sodium Hydroxide	18M	MDAVIS	6/2/2022
024295S	Yttrium Carrier	9 mg/ml	MDAVIS	6/2/2022

BP/Castex-Ltd Adm-Apx E-000958

Aqua LB4110

Date	Sample #	Client	Load Time	Count Time	Analysis	Tech
5/27/22	220504PPb (1-5)	USA	0754	1hr	Pb	ICP
5/27/22	220504Sr (2,3,5,7)	UCOR	0804	2hrs	Sr^{90}	ICP
5/27/22	220504 2Pb (1)	UCOR	0825	30 min	Pb	ICP
5/27/22	220504 2Pb (2,3,5)	UCOR	0856	2hr	Pb	ICP
5/27/22	220503 1AB (1)	Unitech	0857	30 min	$\alpha\beta$	ICP
5/27/22	220503 1AB (2-4)	Unitech	0857	1hr	$\alpha\beta$	ICP
5/27/22	Weekly Bkgd	Lab	1716	12hrs	$\alpha\beta$	$\alpha\beta$
5/31/22	Daily Bkgd/QC	Lab	0526/0647	1hr/30min	$\alpha\beta$	ICP
5/31/22	Cross Talk	Lab	0720	5 min	$\alpha\beta$	ICP
5/31/22	Cross Talk	Lab	0728	5 min	$\alpha\beta$	ICP
5/31/22	220503 5Sr (1,4,6,8,9,12 Pb 2,3,5,7,10,11)	UCOR	0755	2hrs	Sr^{90}	ICP
6/1/22	Daily Bkgd/QC	Lab	0526/0648	1hr/30min	$\alpha\beta$	ICP
6/1/22	Cross Talk	Lab	0725	5 min	$\alpha\beta$	ICP
6/1/22	Cross Talk	Lab	0734	5 min	$\alpha\beta$	ICP
6/1/22	220503 1Np (1-4)	Unitech	0745	10 min	Np	ICP
6/1/22	220507 12AB (1-4)	UCOR	0747	1hr	$\alpha\beta$	ICP
6/1/22	220507 15AB (2-5)	UCOR	0748	1hr	$\alpha\beta$	ICP
6/1/22	220506 06Pb (1-4)	UCOR	0759	2hrs	Pb	ICP
6/1/22	220509 05Pb (1-4)	UCOR	0851	2hrs	Pb	ICP
6/2/22	Daily Bkgd/QC	Lab	0643/0731	1hr/30min	$\alpha\beta$	ICP
6/2/22	Cross Talk	Lab	0809	5 min	$\alpha\beta$	ICP
6/2/22	Cross Talk	Lab	0820	5 min	$\alpha\beta$	ICP
6/2/22	220511 7Sr (1-4,6)	UCOR	0839	2hrs	Tot Sr	ICP
6/2/22	220506 7AB (1-5)	Utah Div	0841	2hrs	$\alpha\beta$	ICP
6/2/22	220507 2Ra (1)	ERM	1103	1hr	Ra^{88}	ICP
6/2/22	220507 2Ra (2-9)	ERM	1103	2hrs	Ra^{88}	ICP

BP/Castex-Ltd Adm-Apx E-000959

Red LB4110

Date	Sample #	Client	Load Time	Count Time	Analysis	Tech
5/27/22	220504ZAB(1-4)	UCOR	0742	2hrs	KB	KP
5/27/22	220504ZRa(1-3,5)	UCOR	1053	2hrs	RaP	KB
5/27/22	Weekly Bkgd	Lab	1715	12hrs	αβ	KB
5/31/22	Daily Bkgd/QC	Lab	0645/0612	1hr/30min	KB	ICP
5/31/22	Cross Talk	Lab	0746	5min	KB	ICP
5/31/22	Cross Talk	Lab	0753	5min	KB	ICP
5/31/22	220504ZNp(1-3,5)	UCOR	0800	10 min	Np	ICP
6/1/22	Daily Bkgd/QC	Lab	0613/0540	1hr/30min	KB	ICP
6/1/22	Cross Talk	Lab	0715	5 min	KB	KP
6/1/22	Cross Talk	Lab	0723	5min	KB	KP
6/1/22	A/B 7 Recert(1-3)	Lab	0749	15 Min	KB	ICP
6/1/22	A/B 7 Recert(4,5)	Lab	0808	15 min	KB	KP
6/1/22	220571524B(1)	UCOR	0824	30 min	KB	KP
6/2/22	Daily Bkgd/QC	Lab	0557/0613	1hr/30min	KB	ICP
6/2/22	Cross Talk	Lab	0807	5min	KB	ICP
6/2/22	Cross Talk	Lab	0826	5 min	KB	ICP
6/2/22	220506ANp(1-4)	UCOR	0833	10min	Np	ICP
6/2/22	220506SAB(1-4)	Environdyne	0845	2hrs	KB	ICP
6/2/22	220507ZRa(10-13)	ERM	1103	2hrs	Ra8	KP

BP/Castex-Ltd Adm-Apx E-000960

TDS NOTES

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	22-05072
Analysis Code	TDS
Run Number	1

#	Date	Dept	User	Notes
1	05/19/22 11:41	PREP	KSALLINGS	filtered saples into tared beaker,dried,reweighed

SECTION VIII

ANALYTICAL DATA (RADIUM-226)

BP/Castex-Ltd Adm-Apx E-000963

Work Order	22-05072
Analysis Code	Ra226
Run	1
Date Received	5/18/2022
Lab Deadline	6/2/2022
Client	ERM
Project	575834
Report Level	4
Activity Units	pCi
Aliquot Units	l
Matrix	WA
Method	EPA 903.0 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-7
Tracer Act (dpm/g)	8606.72
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		05/18/22 00:00	1.0000E+00
02	MBL	BLANK		05/18/22 00:00	1.0000E+00
03	DUP	CD-9B	28	05/09/22 12:15	1.0000E+00
04	DO	CD-9B	28	05/09/22 12:15	1.0000E+00
05	TRG	CD-9A	30	05/09/22 14:25	1.0000E+00
06	TRG	CD-5C	30	05/09/22 17:00	1.0000E+00
07	TRG	CD-10A	29	05/10/22 09:45	1.0000E+00
08	TRG	CD-8A	36	05/10/22 14:30	1.0000E+00
09	TRG	CD-11A	30	05/10/22 15:50	1.0000E+00
10	TRG	CD-7B	40	05/11/22 14:35	1.0000E+00
11	TRG	CD-7C	25	05/12/22 10:55	1.0000E+00
12	TRG	CD-6A	33	05/12/22 10:25	1.0000E+00
13	TRG	CD-6B	28	05/12/22 13:00	1.0000E+00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.1287	1107.7	502.0	100.61		0.0213	0.0285	0.0072		100.61	2.55	1.00
02	MBL	0.1329	1143.8	533.0	103.45		0.0209	0.0283	0.0074		103.45	2.61	1.00
03	DUP	0.1330	1144.7	512.0	99.30		0.0211	0.0271	0.0060		99.30	2.16	1.00
04	DO	0.1330	1144.7	471.0	91.34		0.0206	0.0263	0.0057		91.34	2.04	1.00
05	TRG	0.1326	1141.3	483.0	93.95		0.0211	0.0260	0.0049		93.95	1.66	1.00
06	TRG	0.1334	1148.1	502.0	97.07		0.0209	0.0263	0.0054		97.07	1.91	1.00
07	TRG	0.1326	1141.3	507.0	98.62		0.0208	0.0265	0.0057		98.62	2.04	1.00
08	TRG	0.1330	1144.7	550.0	106.67		0.0209	0.0262	0.0053		106.67	1.86	1.00
09	TRG	0.1340	1153.3	505.0	97.21		0.0208	0.0263	0.0055		97.21	1.95	1.00
10	TRG	0.1326	1141.3	470.0	91.43		0.0206	0.0262	0.0056		91.43	2.00	1.00
11	TRG	0.1336	1149.9	498.0	96.15		0.0208	0.0304	0.0096		96.15	3.00^	1.00
12	TRG	0.1333	1147.3	511.0	98.88		0.0205	0.0253	0.0048		98.88	1.61	1.00
13	TRG	0.1327	1142.1	445.0	86.50		0.0211	0.0257	0.0046		86.50	1.49	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
02	MBL			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
03	DUP			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
04	DO			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
05	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
06	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
07	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
08	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
09	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
10	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
11	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
12	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		
13	TRG			05/25/22 11:00	JHARVEY	05/31/22 08:29	MDAVIS		

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Preliminary Data Report & Analytical Calculations

Work Order: 22-05072-Ra226-1

Run: 1
Analysis Code: Ra226
Eberline Services Work Order: 22-05072
Client: ERM

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-226	LCS	LCS	pCi/l	1.13E+01	1.35E+00	2.29E-01	1.01E+01	112.08	OK		OK	
02	RA-226	MBL	BLANK	pCi/l	6.75E-02	1.46E-01	2.88E-01					OK	OK
03	RA-226	DUP	CD-9B	pCi/l	3.03E-01	2.26E-01	2.39E-01				NA	OK	
04	RA-226	DO	CD-9B	pCi/l	2.81E-01	2.26E-01	2.54E-01					OK	
05	RA-226	TRG	CD-9A	pCi/l	3.68E-01	2.08E-01	1.70E-01					OK	
06	RA-226	TRG	CD-5C	pCi/l	1.94E-01	1.94E-01	2.69E-01					OK	
07	RA-226	TRG	CD-10A	pCi/l	2.29E-01	1.70E-01	1.60E-01					OK	
08	RA-226	TRG	CD-8A	pCi/l	4.12E-01	2.14E-01	1.35E-01					OK	
09	RA-226	TRG	CD-11A	pCi/l	2.42E-01	2.41E-01	3.60E-01					OK	
10	RA-226	TRG	CD-7B	pCi/l	5.00E-01	3.02E-01	2.99E-01					OK	
11	RA-226	TRG	CD-7C	pCi/l	5.76E-01	3.27E-01	2.42E-01					OK	
12	RA-226	TRG	CD-6A	pCi/l	3.86E-01	1.94E-01	1.18E-01					OK	
13	RA-226	TRG	CD-6B	pCi/l	1.77E-01	1.98E-01	3.10E-01					OK	

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Run: 1
Analysis Code: Ra226
Eberline Services Work Order: 22-05072
Client: ERM

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-226	LCS	05/18/22 00:00	1.00E+00	100.00	0.00	100.61		5/31/2022 8:29	
02	RA-226	MBL	05/18/22 00:00	1.00E+00	100.00	0.00	103.45		5/31/2022 8:29	
03	RA-226	DUP	05/09/22 12:15	1.00E+00	99.30	0.00	99.30		5/31/2022 8:29	
04	RA-226	DO	05/09/22 12:15	1.00E+00	91.34	0.00	91.34		5/31/2022 8:29	
05	RA-226	TRG	05/09/22 14:25	1.00E+00	93.95	0.00	93.95		5/31/2022 8:29	
06	RA-226	TRG	05/09/22 17:00	1.00E+00	97.07	0.00	97.07		5/31/2022 8:29	
07	RA-226	TRG	05/10/22 09:45	1.00E+00	98.62	0.00	98.62		5/31/2022 8:29	
08	RA-226	TRG	05/10/22 14:30	1.00E+00	100.00	0.00	106.67		5/31/2022 8:29	
09	RA-226	TRG	05/10/22 15:50	1.00E+00	97.21	0.00	97.21		5/31/2022 8:29	
10	RA-226	TRG	05/11/22 14:35	1.00E+00	91.43	0.00	91.43		5/31/2022 8:29	
11	RA-226	TRG	05/12/22 10:55	1.00E+00	96.15	0.00	96.15		5/31/2022 8:29	
12	RA-226	TRG	05/12/22 10:25	1.00E+00	98.88	0.00	98.88		5/31/2022 8:29	
13	RA-226	TRG	05/12/22 13:00	1.00E+00	86.50	0.00	86.50		5/31/2022 8:29	

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Preliminary Data Report & Analytical Calculations

Work Order: 22-05072-Ra226-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	22-05072	ERM

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff	A to B, Cor
01	RA-226	LCS	05/31/22 11:19		A_Spec	Alpha_052	170	2.96 E+02	0.00 E+00	17.7	
02	RA-226	MBL	05/31/22 11:19		A_Spec	Alpha_053	170	1.32 E+00	4.00 E-03	13.5	
03	RA-226	DUP	05/31/22 11:19		A_Spec	Alpha_054	170	7.98 E+00	6.00 E-03	15.2	
04	RA-226	DO	05/31/22 11:19		A_Spec	Alpha_055	170	6.98 E+00	6.00 E-03	14.7	
05	RA-226	TRG	05/31/22 11:19		A_Spec	Alpha_056	170	1.30 E+01	0.00 E+00	16.5	
06	RA-226	TRG	05/31/22 11:19		A_Spec	Alpha_057	170	5.30 E+00	1.00 E-02	14.3	
07	RA-226	TRG	05/31/22 11:19		A_Spec	Alpha_058	170	7.49 E+00	3.00 E-03	17.9	
08	RA-226	TRG	05/31/22 11:19		A_Spec	Alpha_059	170	1.47 E+01	2.00 E-03	17.5	
09	RA-226	TRG	05/31/22 11:19		A_Spec	Alpha_060	170	6.75 E+00	2.50 E-02	14.8	
10	RA-226	TRG	06/01/22 05:44		A_Spec	Alpha_057	170	1.23 E+01	1.00 E-02	14.3	
11	RA-226	TRG	06/01/22 05:44		A_Spec	Alpha_058	170	1.25 E+01	3.00 E-03	17.9	
12	RA-226	TRG	06/01/22 05:44		A_Spec	Alpha_059	170	1.57 E+01	2.00 E-03	17.5	
13	RA-226	TRG	06/01/22 05:44		A_Spec	Alpha_060	170	5.75 E+00	2.50 E-02	14.8	

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Count Room Report
Client: ERM

22-05072-Ra226-1 (pCi/l) in WA
Tracer ID: Ba-7

Printed: 5/31/2022 11:08 AM
Page 1 of 1

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	05/18/22 00:00	1.0000	0.1287	1107.6849	502.0000	100.61	2.55	1.00
02	MBL	BLANK	05/18/22 00:00	1.0000	0.1329	1143.8331	533.0000	103.45	2.61	1.00
03	DUP	CD-9B	05/09/22 12:15	1.0000	0.1330	1144.6938	512.0000	99.30	2.16	1.00
04	DO	CD-9B	05/09/22 12:15	1.0000	0.1330	1144.6938	471.0000	91.34	2.04	1.00
05	TRG	CD-9A	05/09/22 14:25	1.0000	0.1326	1141.2511	483.0000	93.95	1.66	1.00
06	TRG	CD-5C	05/09/22 17:00	1.0000	0.1334	1148.1364	502.0000	97.07	1.91	1.00
07	TRG	CD-10A	05/10/22 09:45	1.0000	0.1326	1141.2511	507.0000	98.62	2.04	1.00
08	TRG	CD-8A	05/10/22 14:30	1.0000	0.1330	1144.6938	550.0000	106.67	1.86	1.00
09	TRG	CD-11A	05/10/22 15:50	1.0000	0.1340	1153.3005	505.0000	97.21	1.95	1.00
10	TRG	CD-7B	05/11/22 14:35	1.0000	0.1326	1141.2511	470.0000	91.43	2.00	1.00
11	TRG	CD-7C	05/12/22 10:55	1.0000	0.1336	1149.8578	498.0000	96.15	3.00^	1.00
12	TRG	CD-6A	05/12/22 10:25	1.0000	0.1333	1147.2758	511.0000	98.88	1.61	1.00
13	TRG	CD-6B	05/12/22 13:00	1.0000	0.1327	1142.1117	445.0000	86.50	1.49	1.00

52-60

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0054

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 5/25/2022 11:00

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
22-05072	1	Ra226	5/25/2022 10:54	JHARVEY	JHL	

LCS & Matrix Spikes

Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	LCS Volume Used (g)	MS Volume Used (g)	LCSD Volume Used (g)	MSD Volume Used (g)	LCS Known pCi	LCS Error Estimate	MS Added pCi	MS Error Estimate	LCSD Known pCi	LCSD Error Estimate	MSD Added pCi	MSD Error Estimate
Ra-226	Ra-5b	43.900	5/25/2022	0.500	0.5104				10.09	0.464	0.00	0.000	0.00	0.000	0.00	0.000
Tc-99 MS	Tc-2a	22043.07	5/24/2022	0.1												

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	Ba-133	Ba-7	8606.720	5/25/2022	0.1287	0.1200
02	Ba-133	Ba-7	8606.720	5/25/2022	0.1329	0.1200
03	Ba-133	Ba-7	8606.720	5/25/2022	0.1330	0.1200
04	Ba-133	Ba-7	8606.720	5/25/2022	0.1330	0.1200
05	Ba-133	Ba-7	8606.720	5/25/2022	0.1326	0.1200
06	Ba-133	Ba-7	8606.720	5/25/2022	0.1334	0.1200
07	Ba-133	Ba-7	8606.720	5/25/2022	0.1326	0.1200
08	Ba-133	Ba-7	8606.720	5/25/2022	0.1330	0.1200
09	Ba-133	Ba-7	8606.720	5/25/2022	0.1340	0.1200
10	Ba-133	Ba-7	8606.720	5/25/2022	0.1326	0.1200
11	Ba-133	Ba-7	8606.720	5/25/2022	0.1336	0.1200
12	Ba-133	Ba-7	8606.720	5/25/2022	0.1333	0.1200
13	Ba-133	Ba-7	8606.720	5/25/2022	0.1327	0.1200

Balance Printer Tapes

Tracer

LCS

Matrix Spike

0055

BP/Castex-Ltd Adm-Apx E-000971

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 5/25/2022 12:22

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
22-05072	1	Ra226	liters	6/2/2022	JHARVEY

Lab Fraction	ERM Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-9B	DUP					1.0000E+00	1.0000E+00				
04	CD-9B	DO					1.0000E+00	1.0000E+00				
05	CD-9A	TRG					1.0000E+00	1.0000E+00				
06	CD-5C	TRG					1.0000E+00	1.0000E+00				
07	CD-10A	TRG					1.0000E+00	1.0000E+00				
08	CD-8A	TRG					1.0000E+00	1.0000E+00				
09	CD-11A	TRG					1.0000E+00	1.0000E+00				
10	CD-7B	TRG					1.0000E+00	1.0000E+00				
11	CD-7C	TRG					1.0000E+00	1.0000E+00				
12	CD-6A	TRG					1.0000E+00	1.0000E+00				
13	CD-6B	TRG					1.0000E+00	1.0000E+00				

Comments	

Technician: JHarvey Date: 5/25/22

BP/Castex-Ltd Adm-Apx E-000972

Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Printed: 5/31/2022 9:17 AM

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
22-05072	1	Ra226			MDAVIS

TRetec Fraction	ERM Client ID	Sample Type	Carrier Data Carrier Added (ml)	Filter Data Filter Tare (g)	Filter Final (g)	Filter Net (g)	Gravimetric % Recovery
01	LCS	LCS		0.0213	0.0285	**0.0072**	
02	BLANK	MBL		0.0209	0.0283	**0.0074**	
03	DUP	DUP		0.0211	0.0271	**0.0060**	
04	CD-9B	DO		0.0206	0.0263	**0.0057**	
05	CD-9A	TRG		0.0211	0.0260	**0.0049**	
06	CD-5C	TRG		0.0209	0.0263	**0.0054**	
07	CD-10A	TRG		0.0208	0.0265	**0.0057**	
08	CD-8A	TRG		0.0209	0.0262	**0.0053**	
09	CD-11A	TRG		0.0208	0.0263	**0.0055**	
10	CD-7B	TRG		0.0206	0.0262	**0.0056**	
11	CD-7C	TRG		0.0208	0.0304	**0.0096**	
12	CD-6A	TRG		0.0205	0.0253	**0.0048**	
13	CD-6B	TRG		0.0211	0.0257	**0.0046**	

Technician: Megan Daw Date: 5/31/22

BP/Castex-Ltd Adm-Apx E-000973

0057

ICP
6/1/22

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_052
Chamber Serial Number: 10006123B
Detector Serial Number: 52
Env. Background: System Bkgd 321763
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.550E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/31/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:24 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1768 +/- 0.0031 on 5/21/2021 3:25:37 PM
Effective Efficiency: 0.1768 +/- 0.0031

Control Certificate Name: Ra226_Ra-5b
Chem. Recov. of Control: RA-226 0.439543 +/- 0.029806
Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.486	4.15	107.12	0.85	0.00E+000	6.0
RA-226	4.587	296.00	11.41	0.00	0.00E+000	4.0

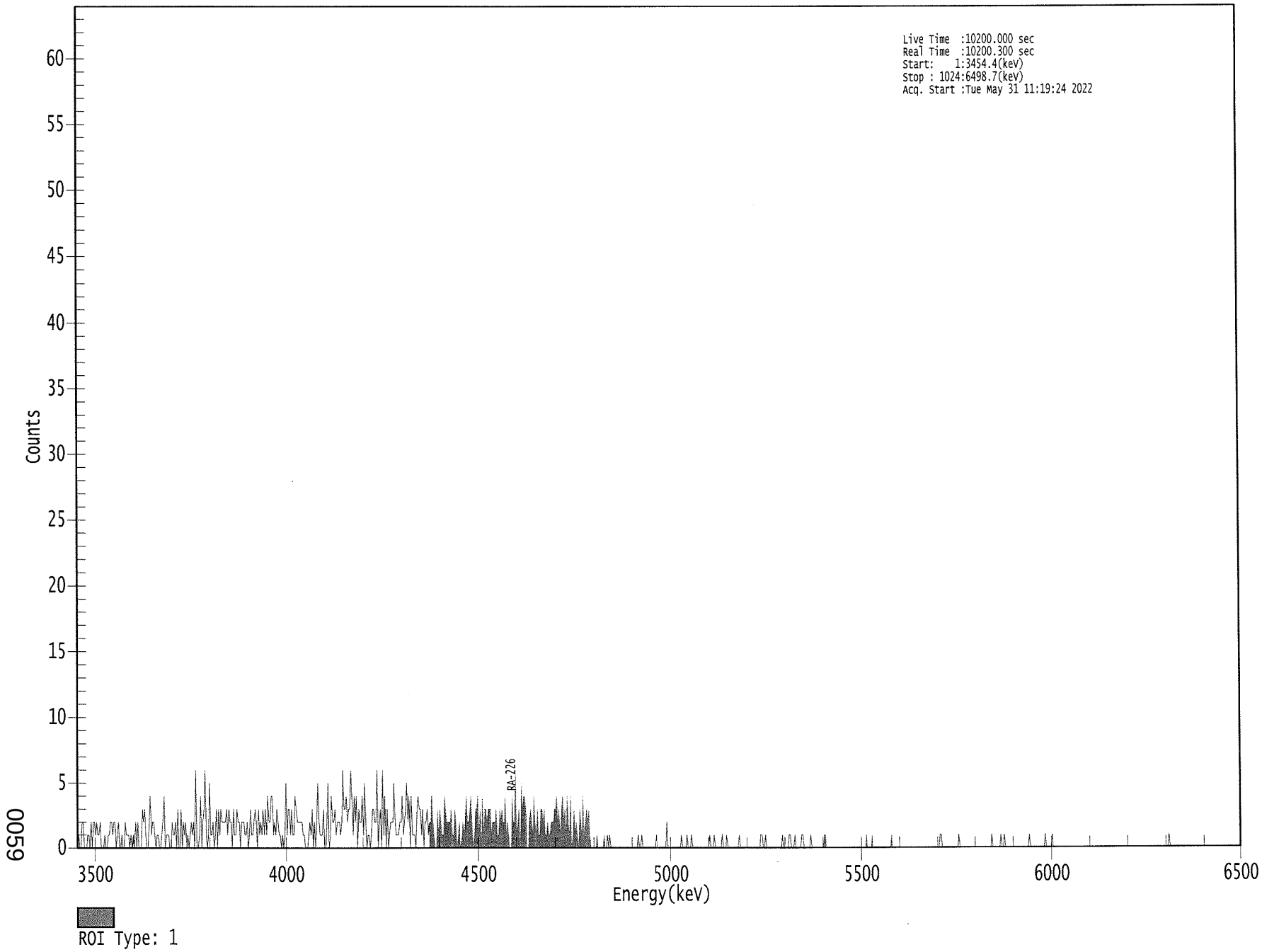
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.950	5685.50*	1.67E-001 +/- 1.79E-001	2.41E-001 +/- 8.28E-003
RA-226	0.950	4785.00*	1.13E+001 +/- 1.35E+000	2.29E-001 +/- 7.89E-003

AG
6/1/22

BP/Castex-Ltd Adm-Apx E-000974

0000314838.CNF



0059

BP/Castex-Ltd Adm-Apx E-000975

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 01

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	1	1	0	0	2	2	0	0
9:	0	1	1	0	2	0	2	2
17:	1	2	1	1	2	0	0	0
25:	1	0	0	1	1	2	2	1
33:	2	2	0	1	2	0	0	1
41:	0	0	2	1	1	1	0	1
49:	0	1	0	2	0	2	0	0
57:	0	3	2	3	1	0	0	2
65:	4	1	2	2	1	0	1	1
73:	0	0	1	2	4	0	1	1
81:	1	0	0	2	1	1	2	0
89:	3	0	0	3	0	2	1	2
97:	0	1	0	1	2	1	2	0
105:	6	0	0	1	4	0	2	3
113:	6	1	0	1	5	1	1	2
121:	0	1	3	0	3	1	3	2
129:	2	2	2	3	1	3	2	2
137:	0	3	1	1	3	2	2	0
145:	2	2	2	1	1	2	0	1
153:	3	1	1	2	3	2	0	3
161:	1	2	1	3	1	3	1	4
169:	2	2	4	4	1	2	1	3
177:	2	1	1	0	1	0	1	5
185:	1	3	3	1	3	1	1	4
193:	3	2	2	2	2	2	1	1
201:	0	0	0	1	2	1	3	0
209:	2	0	2	5	2	1	1	1
217:	3	0	0	2	5	0	1	4
225:	2	2	3	1	2	2	2	1
233:	2	6	3	3	4	2	3	3
241:	6	4	1	4	2	4	0	3
249:	2	2	4	1	5	2	0	1
257:	1	0	1	3	3	2	2	6
265:	0	2	3	0	6	1	4	0
273:	3	0	1	2	2	2	5	2
281:	1	1	1	2	2	4	1	2
289:	3	5	2	4	0	4	1	1
297:	1	0	3	4	3	3	1	3
305:	0	2	2	3	1	2	2	4
313:	2	1	0	0	3	1	3	2
321:	1	1	4	3	2	2	2	2
329:	3	1	1	3	2	0	1	2
337:	0	1	2	1	2	4	2	2
345:	3	4	2	0	1	3	3	4
353:	1	3	0	4	1	3	3	2
361:	3	3	3	1	2	2	2	3

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369:	1	1	3	2	3	2	2	4

Sample Title: 01

Channel								
377:	1	2	1	0	0	4	2	2
385:	6	1	2	3	0	5	3	4
393:	4	3	0	0	2	3	2	1
401:	4	2	1	3	1	1	3	3
409:	2	3	1	1	2	1	1	2
417:	2	2	3	3	4	2	3	1
425:	3	4	2	3	1	4	2	1
433:	4	0	1	3	1	2	1	0
441:	3	2	1	4	1	2	3	2
449:	3	1	0	0	0	0	0	1
457:	0	0	0	0	0	1	0	0
465:	1	0	1	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	1	0	0	1	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	1	0	0	0	0
513:	0	0	0	0	2	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	1	0	0	0	0	1	0
537:	0	0	1	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	1	0	0	0	1	0
561:	0	0	0	0	0	1	0	0
569:	0	1	0	0	0	0	0	0
577:	0	0	0	0	1	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	1
601:	1	0	0	1	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	1	0	0	0	0	0
625:	1	1	0	0	0	1	0	0
633:	0	0	0	1	1	0	0	0
641:	0	0	0	1	0	0	0	0
649:	0	0	0	0	0	0	0	1
657:	1	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	1	0	0	0
697:	0	1	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	1	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	1	1	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	1	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000977

801:	0	0	0	1	0	0	0	0

Sample Title: 01

Channel								
809:	0	0	0	1	0	0	1	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	1	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	1	0	0	0	0	0
857:	1	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	1
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000978

Apex-Alpha™

MP
6/1/22

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_053
Chamber Serial Number: 10006122A
Detector Serial Number: 53
Env. Background: System Bkgd 321764
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.610E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/31/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:18 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1353 +/- 0.0025 on 5/25/2021 4:02:23 PM
Effective Efficiency: 0.1353 +/- 0.0025

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.512	1.49	190.02	0.51	0.00E+000	3.0
RA-226	4.716	1.32	215.97	0.68	0.00E+000	3.0

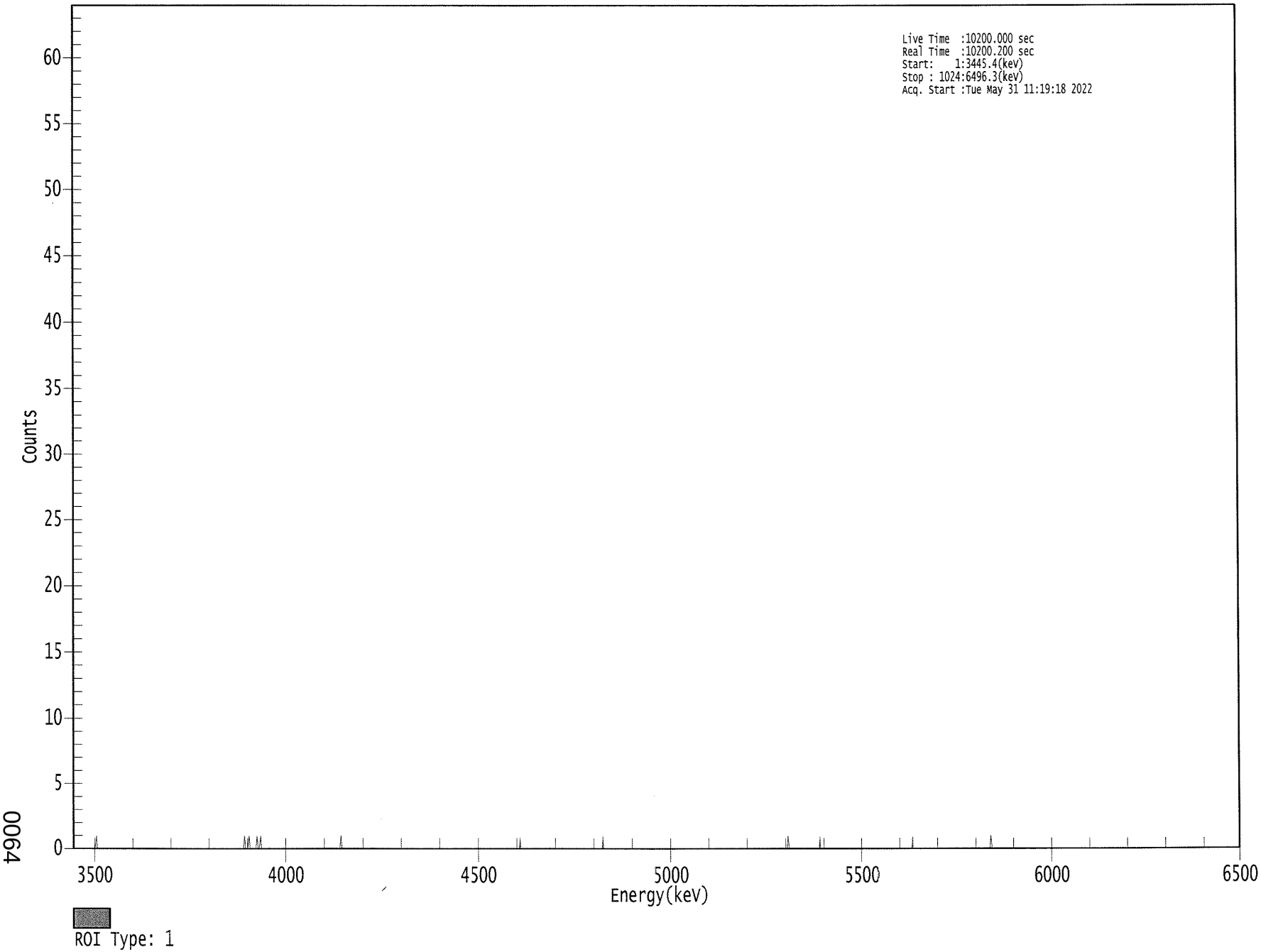
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.961	5685.50*	8.01E-002 +/- 1.52E-001	2.82E-001 +/- 1.01E-002
RA-226	0.994	4785.00*	6.75E-002 +/- 1.46E-001	2.88E-001 +/- 1.03E-002

AG
6/1/22

BP/Castex-Ltd Adm-Apx E-000979

0000314840.CNF



0064

BP/Castex-Ltd Adm-Apx E-000980

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 02

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	1	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	1	0
153:	0	0	1	0	0	0	0	0
161:	0	1	0	0	1	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	1	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000981

369:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	1	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	1	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	1	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	1	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	1	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	1	0	0	0	0

Sample Title: 02

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

ICP
6/1/22

Apex-Alpha™

Sample Description: CD-9B DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_054
Chamber Serial Number: 10006122B
Detector Serial Number: 54
Env. Background: System Bkgd 321765
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.160E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/9/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:19 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9930 +/- 0.0000
Counting Efficiency: 0.1516 +/- 0.0027 on 5/21/2021 3:25:35 PM
Effective Efficiency: 0.1506 +/- 0.0027

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

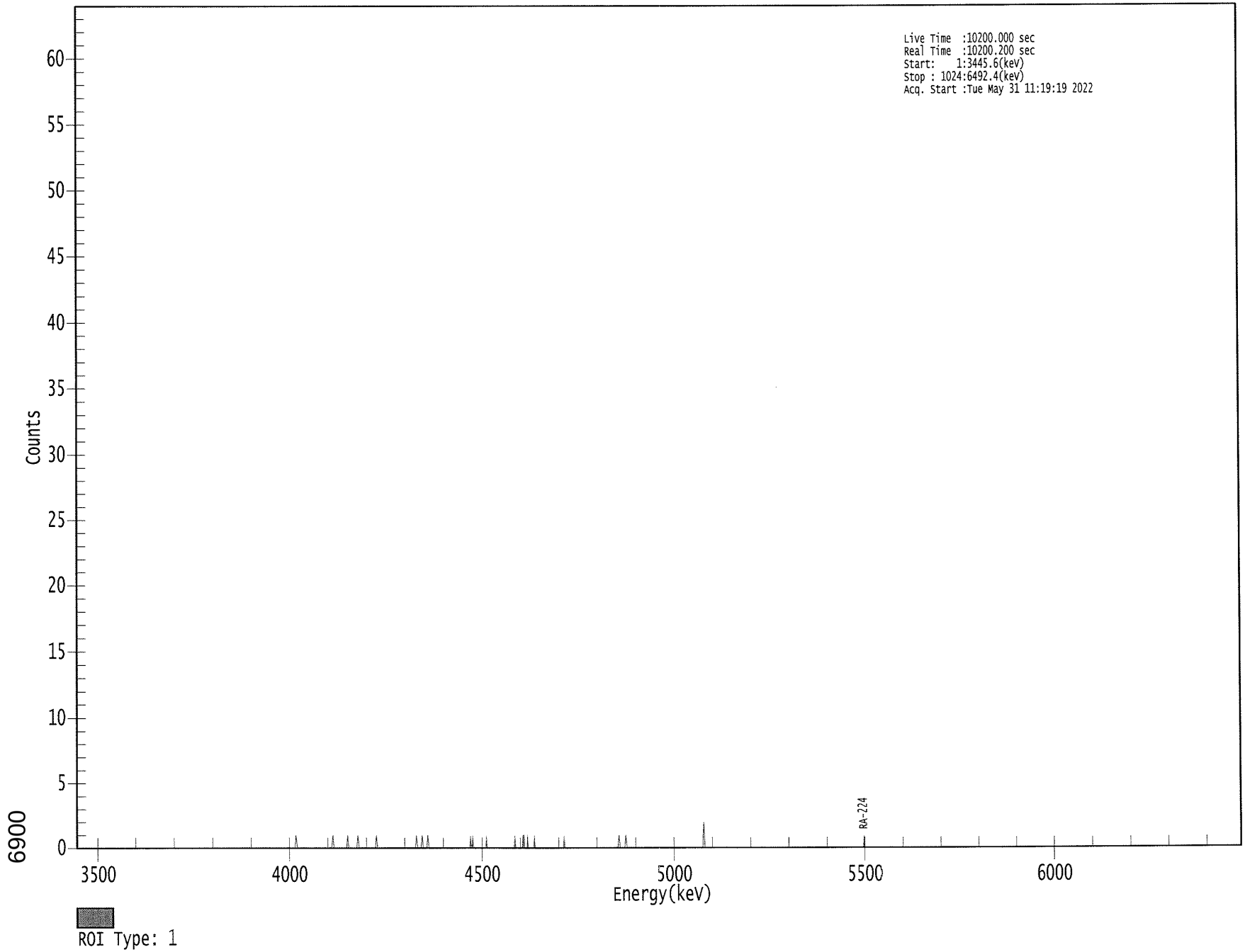
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.498	0.66	305.43	0.34	0.00E+000	3.0
RA-226	4.581	7.98	74.39	1.02	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.955	5685.50*	2.66E-002 +/- 8.12E-002	1.92E-001 +/- 6.77E-003
RA-226	0.947	4785.00*	3.03E-001 +/- 2.26E-001	2.39E-001 +/- 8.40E-003

AG
6/1/22

0000314841.CNF



0069

BP/Castex-Ltd Adm-Apx E-000985

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 03

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	1	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	1	0	0	0	0	0	0	0
233:	0	0	0	0	0	1	0	0
241:	0	0	0	0	0	0	1	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	1	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	1	0	0	0	0	1	0
305:	0	0	0	1	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	1	0	1	0	0	0	0	0
353:	0	0	0	0	0	0	1	0
361:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000986

369:	0	0	0	0	0	0	0	0

Sample Title: 03

Channel								
377:	0	0	0	0	0	0	0	1
385:	0	0	0	0	0	0	1	1
393:	0	0	1	0	0	0	0	0
401:	1	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	1	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	1	0	0	0	0	0
481:	1	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	2	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	1	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000987

801:	0	0	0	0	0	0	0	0

Sample Title: 03

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000988

Apex-Alpha™

MP
6/1/22

Sample Description: CD-9B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_055
Chamber Serial Number: 10006124A
Detector Serial Number: 55
Env. Background: System Bkgd 321766
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.040E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/9/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:21 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9134 +/- 0.0000
Counting Efficiency: 0.1467 +/- 0.0026 on 11/29/2021 5:27:30 PM
Effective Efficiency: 0.1340 +/- 0.0024

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.530	-0.34	592.90	0.34	0.00E+000	0.0
RA-226	4.623	6.98	80.28	1.02	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.969	5685.50*	-1.45E-002 +/- 8.61E-002	2.04E-001 +/- 7.23E-003
RA-226	0.966	4785.00*	2.81E-001 +/- 2.26E-001	2.54E-001 +/- 8.97E-003

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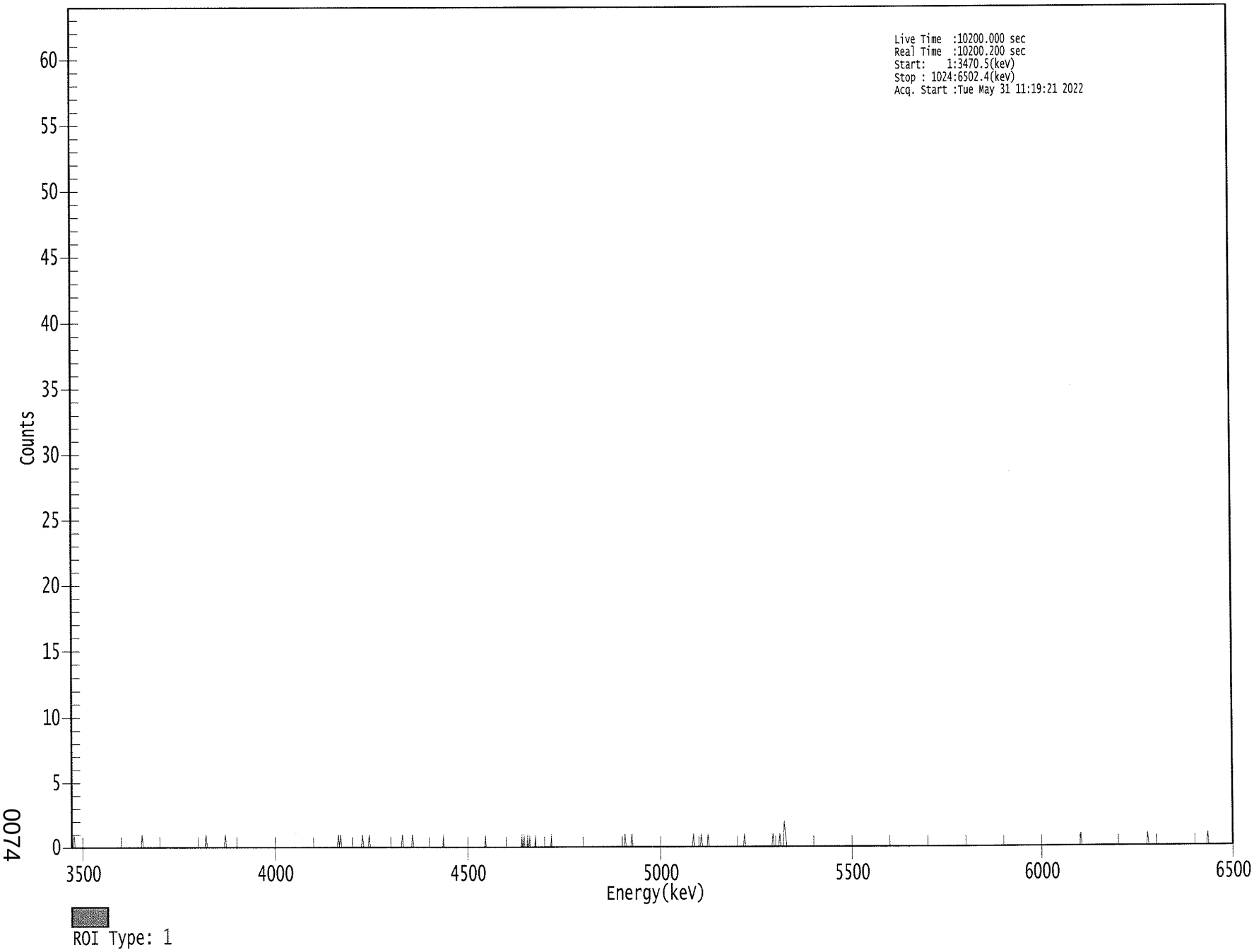
6/1/22

BP/Castex-Ltd Adm-Apx E-000989

0000314842.CNF



0074

BP/Castex-Ltd Adm-Apx E-000990

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 04

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	1	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	1	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	1	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	1
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	1	0	1	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	1
257:	0	0	0	0	0	1	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	1	0	0	0	0	0
297:	0	0	0	1	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	1	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	1	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000991

369:	0	0	0	0	0	0	0	0

Sample Title: 04

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	1	0	1	0	0
401:	1	0	1	0	0	0	0	1
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	1	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	1	0	0
489:	0	0	0	1	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	1	0	0	0	0	0	0
553:	1	0	0	0	0	0	1	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	1	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	1
617:	0	0	0	0	0	1	0	0
625:	0	2	1	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000992

801:	0	0	0	0	0	0	0	0

Sample Title: 04

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	1	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	1	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	1	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000993

Apex-Alpha™

KP
6/1/22

Sample Description: CD-9A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_056
Chamber Serial Number: 10006124B
Detector Serial Number: 56
Env. Background: System Bkgd 321767
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.660E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/9/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:23 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9395 +/- 0.0000
Counting Efficiency: 0.1654 +/- 0.0029 on 11/29/2021 5:27:51 PM
Effective Efficiency: 0.1554 +/- 0.0027

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.530	-0.17	1169.4	0.17	0.00E+000	0.0
RA-226	4.560	13.00	56.41	0.00	0.00E+000	3.0

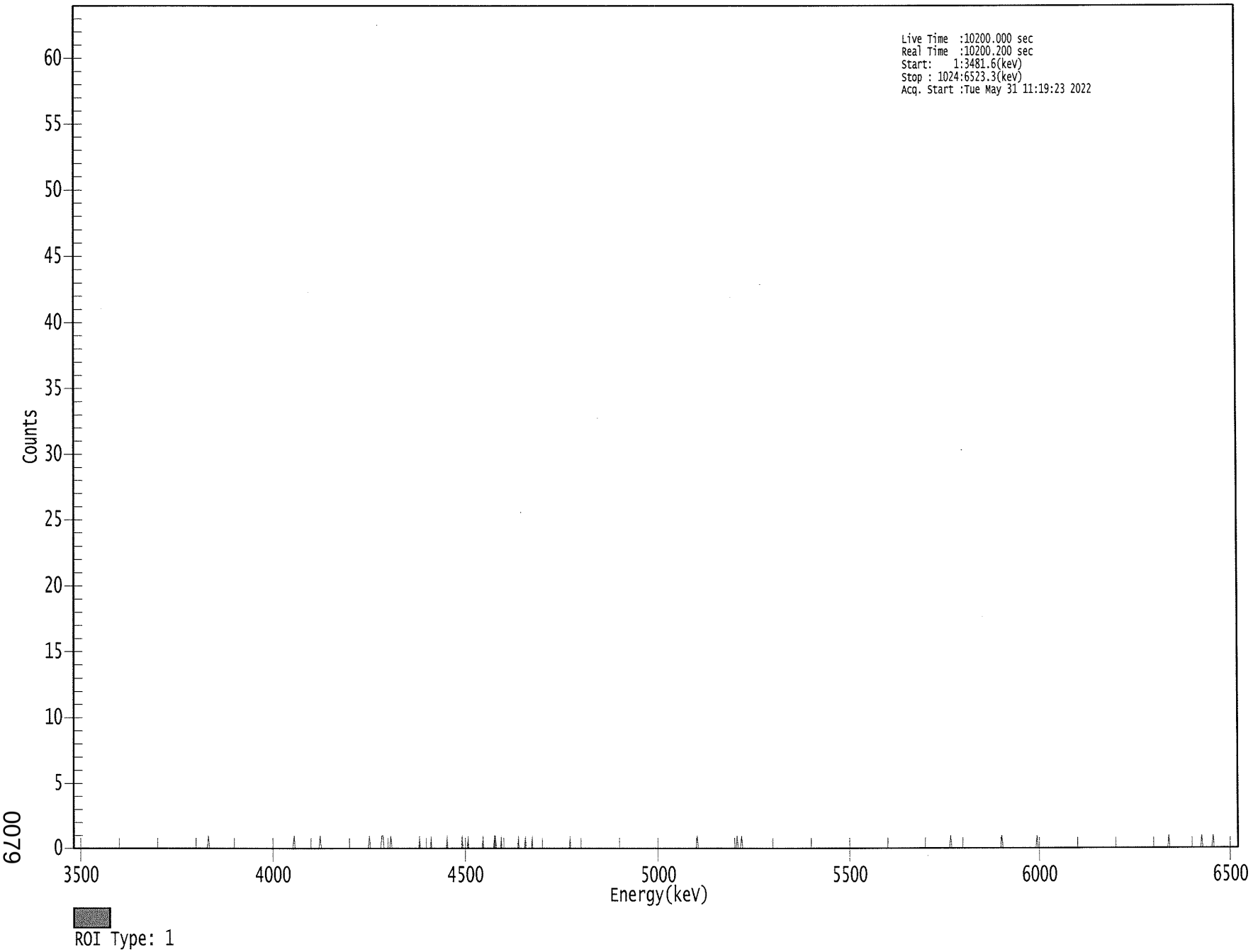
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.969	5685.50*	-5.10E-003 +/- 5.96E-002	1.25E-001 +/- 4.34E-003
RA-226	0.936	4785.00*	3.68E-001 +/- 2.08E-001	1.70E-001 +/- 5.88E-003

AG
6/1/22

BP/Castex-Ltd Adm-Apx E-000994

0000314843.CNF



0079

BP/Castex-Ltd Adm-Apx E-000995

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 05

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	1	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	1	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	1	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	1	0	0	0	0
265:	0	0	0	0	0	0	1	1
273:	0	0	0	0	0	0	1	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	1
305:	0	0	0	0	0	0	0	0
313:	0	1	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	1
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	1	0	0	0
345:	0	1	0	0	0	0	0	0
353:	0	0	0	0	0	0	1	0
361:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000996

369:	1	1	0	0	0	0	1	0

Sample Title: 05

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	1	0	0
393:	0	0	0	1	0	0	0	0
401:	0	1	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	1	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	1	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	1	0	0	0
585:	1	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	1	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000997

801:	0	0	0	0	0	0	0	0

Sample Title: 05

Channel								
809:	0	0	0	0	0	0	1	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	1	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	1	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	1	0
993:	0	0	0	0	0	0	0	0
1001:	1	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-000998

Apex-Alpha™

MP 6/1/22

Sample Description: CD-5C
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_057
Chamber Serial Number: 01017326A
Detector Serial Number: 57
Env. Background: System Bkgd 321768
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.910E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/9/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:10 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9707 +/- 0.0000
Counting Efficiency: 0.1426 +/- 0.0026 on 5/21/2021 3:25:34 PM
Effective Efficiency: 0.1385 +/- 0.0025

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.514	4.98	97.79	1.02	0.00E+000	3.0
RA-226	4.550	5.30	99.84	1.70	0.00E+000	3.0

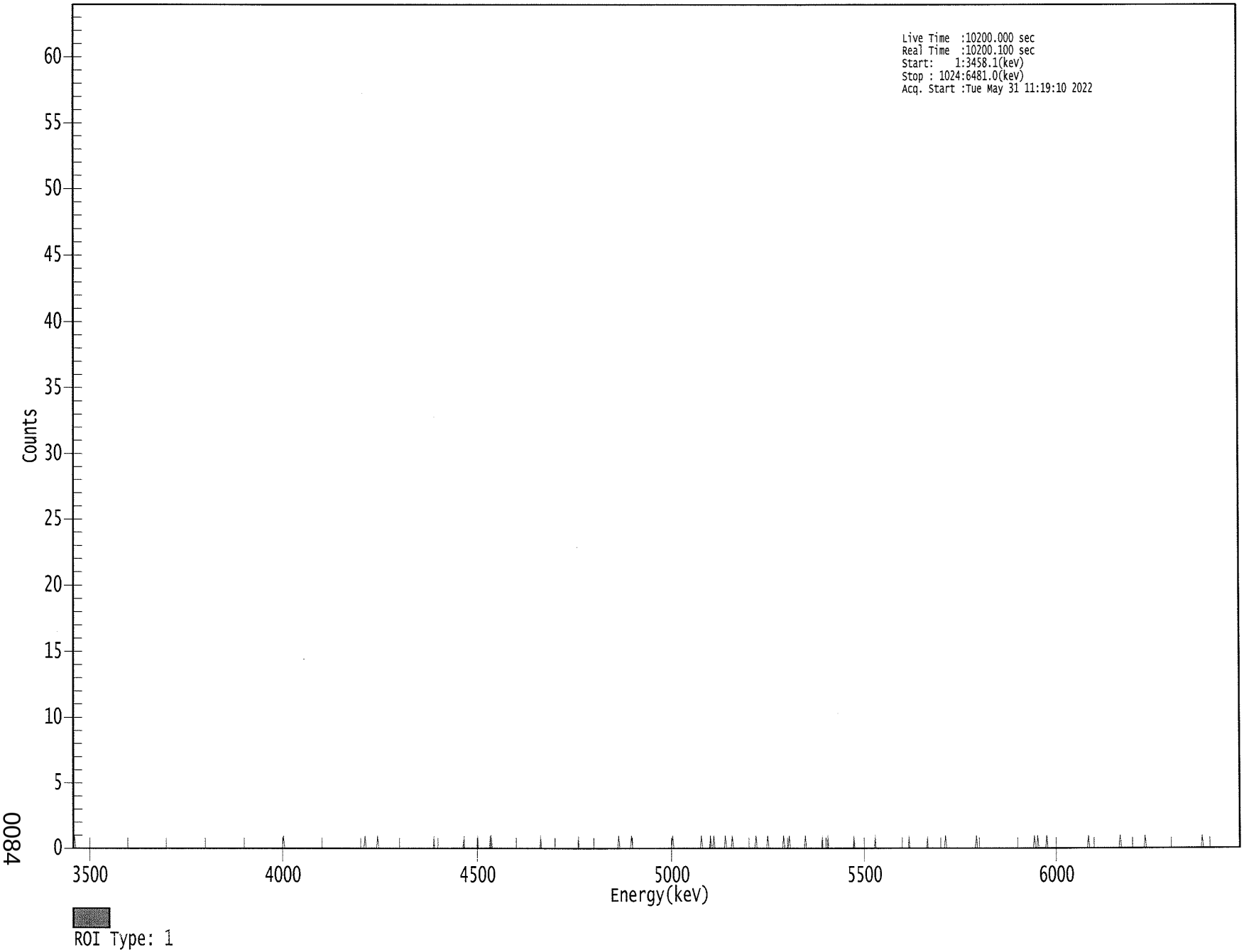
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.962	5685.50*	1.93E-001 +/- 1.89E-001	2.44E-001 +/- 8.65E-003
RA-226	0.930	4785.00*	1.94E-001 +/- 1.94E-001	2.69E-001 +/- 9.50E-003

AG 6/1/22

BP/Castex-Ltd Adm-Apx E-000999

0000314844.CNF



0084

BP/Castex-Ltd Adm-Apx E-001000

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 06

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	1	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	1	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	1
257:	0	0	0	0	0	0	0	0
265:	0	0	1	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	1	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	1	0	0
345:	0	0	0	0	0	0	0	0
353:	0	1	0	0	0	0	0	0
361:	0	0	0	0	1	1	0	0

BP/Castex-Ltd Adm-Apx E-001001

369:	0	0	0	0	0	0	0	0

Sample Title: 06

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	1	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	1	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	1	0	0	0
481:	0	0	0	0	0	0	0	1
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	1	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	1	0	0	0
553:	0	0	0	0	1	0	0	1
561:	0	0	0	0	0	0	0	0
569:	0	1	0	0	0	0	0	1
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	1	0	0	0
601:	0	0	0	0	0	0	1	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	1	0	0	0
625:	0	1	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	1
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	1	0
657:	0	0	0	1	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	1	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	1	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	1	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	1	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	1	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	1	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 06

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	1	0	0	1	0	0	0
849:	0	0	0	0	1	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	1	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	1	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	1	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	1	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KP
6/1/22

Sample Description: CD-10A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 07
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_058
Chamber Serial Number: 01017326B
Detector Serial Number: 58
Env. Background: System Bkgd 321769
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.040E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/10/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:12 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9862 +/- 0.0000
Counting Efficiency: 0.1794 +/- 0.0031 on 5/21/2021 3:25:32 PM
Effective Efficiency: 0.1769 +/- 0.0031

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.529	-0.85	246.69	0.85	0.00E+000	0.0
RA-226	4.689	7.49	74.41	0.51	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.969	5685.50*	-2.75E-002 +/- 6.78E-002	1.94E-001 +/- 6.64E-003
RA-226	0.988	4785.00*	2.29E-001 +/- 1.70E-001	1.60E-001 +/- 5.49E-003

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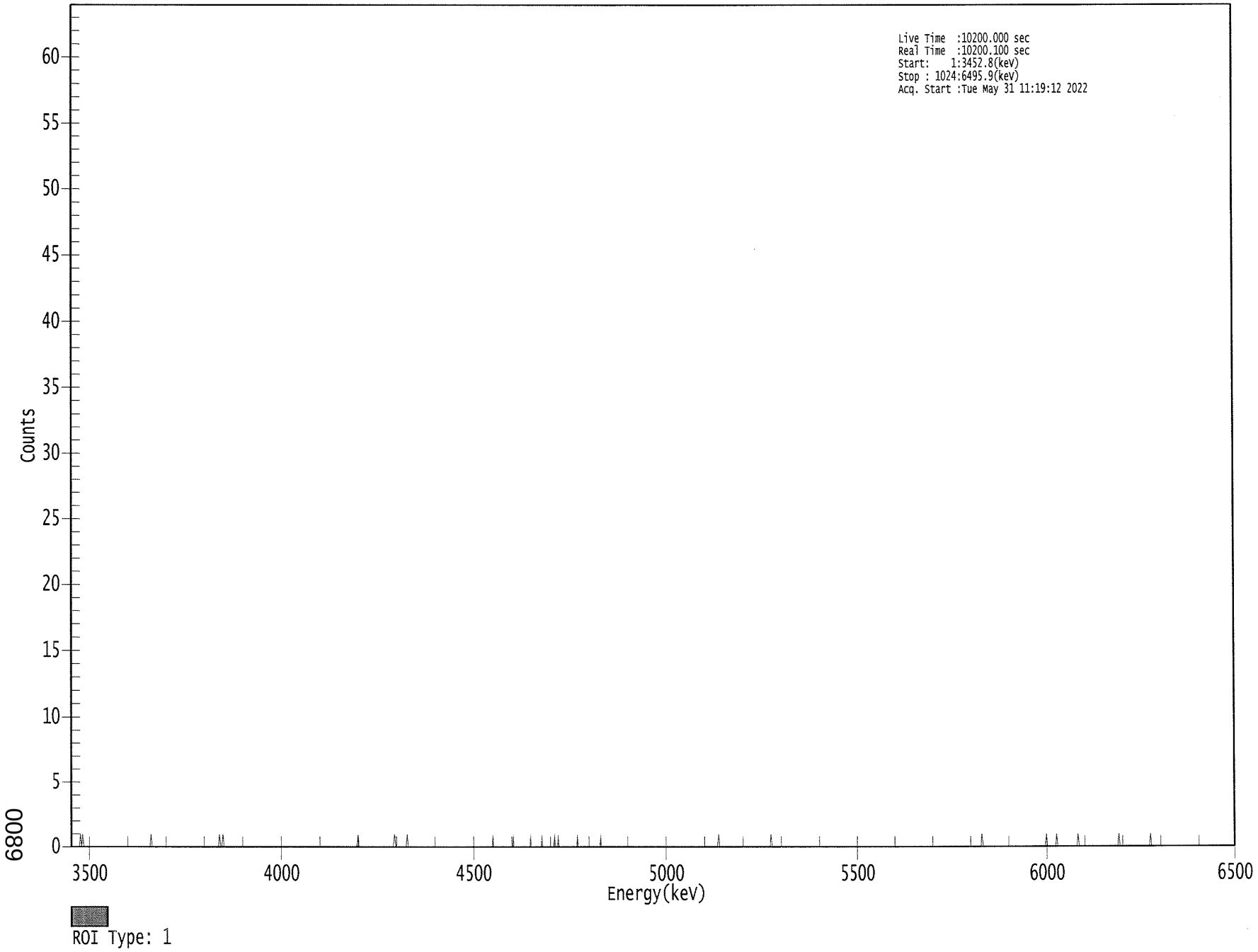
6/1/22

BP/Castex-Ltd Adm-Apx E-001004

0000314839.CNF



0089

BP/Castex-Ltd Adm-Apx E-001005

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 07

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0	0
9:	1	0	1	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	1	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	1	0	0	1	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	1	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	1	0	0	0	0
289:	0	0	0	0	0	0	1	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001006

369:	0	1	0	0	0	0	0	0

Sample Title: 07

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	1	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	1	0	0	0	0	0
409:	0	0	0	0	1	0	0	0
417:	0	0	0	0	0	0	0	1
425:	0	0	1	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	1	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	1
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	1	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	1	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	1

801:	0	0	0	0	0	0	0	0

Sample Title: 07

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	1	0	0	0	0	0	0	0
865:	0	1	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	1	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	1	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	1	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

KP
6/1/22

Apex-Alpha™

Sample Description: CD-8A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 08
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_059
Chamber Serial Number: 02030596A
Detector Serial Number: 59
Env. Background: System Bkgd 321770
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.860E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/10/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:14 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1752 +/- 0.0031 on 5/21/2021 3:25:31 PM
Effective Efficiency: 0.1752 +/- 0.0031

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.552	1.49	190.02	0.51	0.00E+000	3.0
RA-226	4.595	14.66	51.88	0.34	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.977	5685.50*	4.44E-002 +/- 8.44E-002	1.56E-001 +/- 5.41E-003
RA-226	0.954	4785.00*	4.12E-001 +/- 2.14E-001	1.35E-001 +/- 4.64E-003

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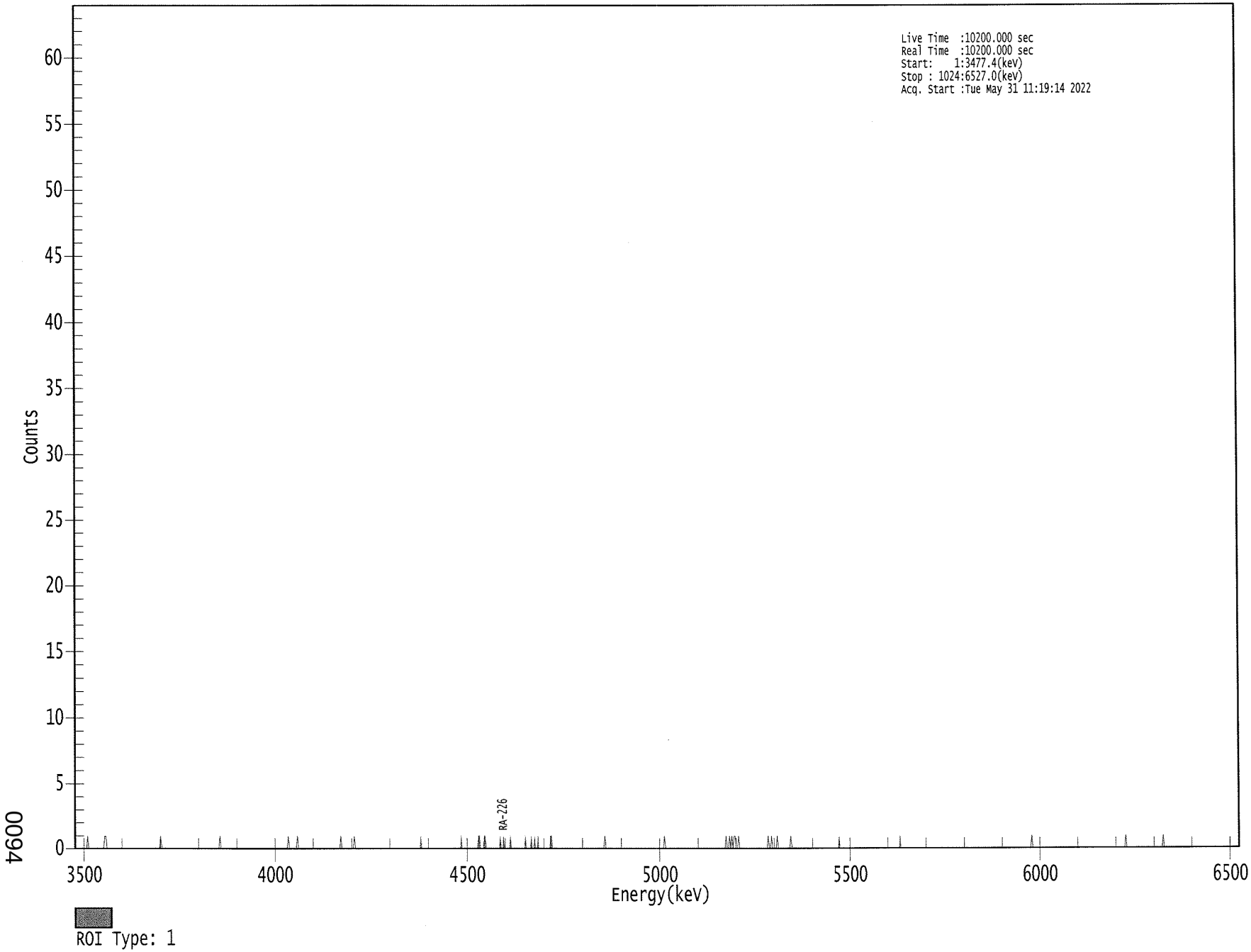
6/1/22

BP/Castex-Ltd Adm-Apx E-001009

0000314845.CNF



0094

BP/Castex-Ltd Adm-Apx E-001010

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 08

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0	0
9:	0	0	0	1	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	1	1	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	1	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	1
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	1	0	0	0	0
193:	0	0	0	1	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	1	0	0	0	0	0	0
241:	0	0	0	0	0	1	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	1
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	1	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	1	1	0	0	0	1	1
361:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001011

369:	0	0	0	0	1	0	0	1

Sample Title: 08

Channel								
377:	0	0	0	0	0	1	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	1	0	0	0	0	1
401:	0	0	1	0	0	1	0	0
409:	0	0	0	0	0	0	0	0
417:	1	1	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	1
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	1	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	1	0	0	1	0	1	0
577:	1	1	0	0	1	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	1	0
609:	0	1	0	0	0	0	1	0
617:	0	0	0	0	0	0	0	0
625:	0	0	1	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	1	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	1	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 08

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	1
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	1	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	1	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KP
6/1/22

Sample Description: CD-11A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 09
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_060
Chamber Serial Number: 02030596B
Detector Serial Number: 60
Env. Background: System Bkgd 321771
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.950E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/10/2022 8:41:57 AM
Acquisition Date/Time: 5/31/2022 11:19:16 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9721 +/- 0.0000
Counting Efficiency: 0.1481 +/- 0.0027 on 5/21/2021 3:25:29 PM
Effective Efficiency: 0.1440 +/- 0.0026

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.492	0.64	457.45	1.36	0.00E+000	3.0
RA-226	4.598	6.75	99.42	4.25	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.952	5685.50*	2.43E-002 +/- 1.11E-001	2.61E-001 +/- 9.23E-003
RA-226	0.955	4785.00*	2.42E-001 +/- 2.41E-001	3.60E-001 +/- 1.27E-002

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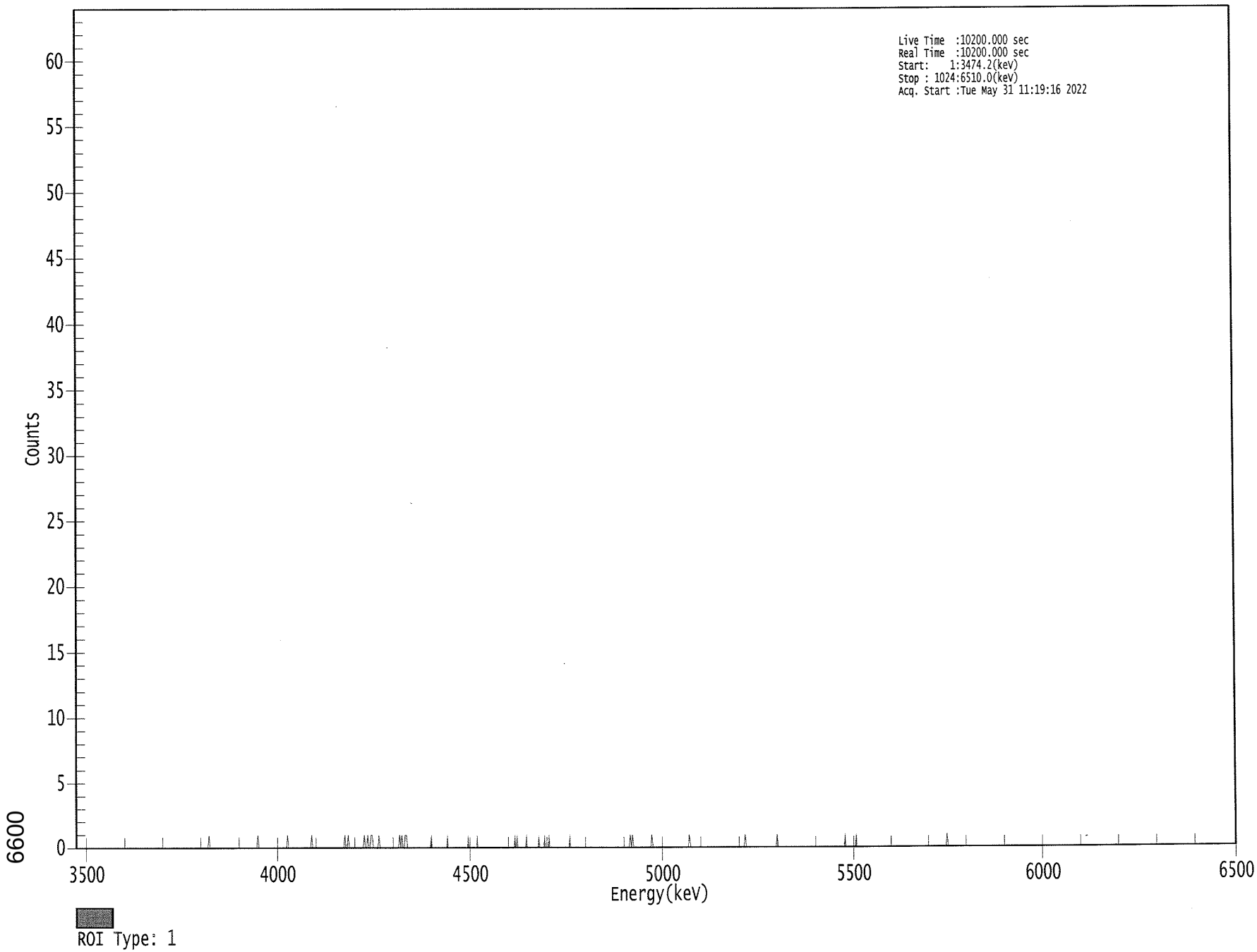
6/1/22

BP/Castex-Ltd Adm-Apx E-001014

0000314846.CNF



6900

BP/Castex-Ltd Adm-Apx E-001015

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 09

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	1	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	1	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	1	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	1
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	1	0	0	1
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	1	0	0
257:	1	0	0	1	1	0	0	0
265:	0	0	1	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	1	0	1	0
289:	0	1	1	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	1	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	1	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	1	0	0	0	0	0	0	0
353:	1	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001016

369:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	1	0	1	0	0	0	0
393:	0	0	0	1	0	0	0	0
401:	0	0	0	0	0	0	1	0
409:	0	0	0	1	0	0	0	1
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	1	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	1	0
489:	1	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	1	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	1	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	1	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	1
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	1	0	0	0	0
681:	0	0	0	0	0	1	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	1
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001017

801:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KP
6/1/22

Sample Description: CD-7B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 10
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_057
Chamber Serial Number: 01017326A
Detector Serial Number: 57
Env. Background: System Bkgd 321768
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.000E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/11/2022 8:41:57 AM
Acquisition Date/Time: 6/1/2022 5:44:27 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9143 +/- 0.0000
Counting Efficiency: 0.1426 +/- 0.0026 on 5/21/2021 3:25:34 PM
Effective Efficiency: 0.1304 +/- 0.0024

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.500	4.98	97.79	1.02	0.00E+000	3.0
RA-226	4.575	12.30	60.24	1.70	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.956	5685.50*	2.14E-001 +/- 2.10E-001	2.71E-001 +/- 9.61E-003
RA-226	0.944	4785.00*	5.00E-001 +/- 3.02E-001	2.99E-001 +/- 1.06E-002

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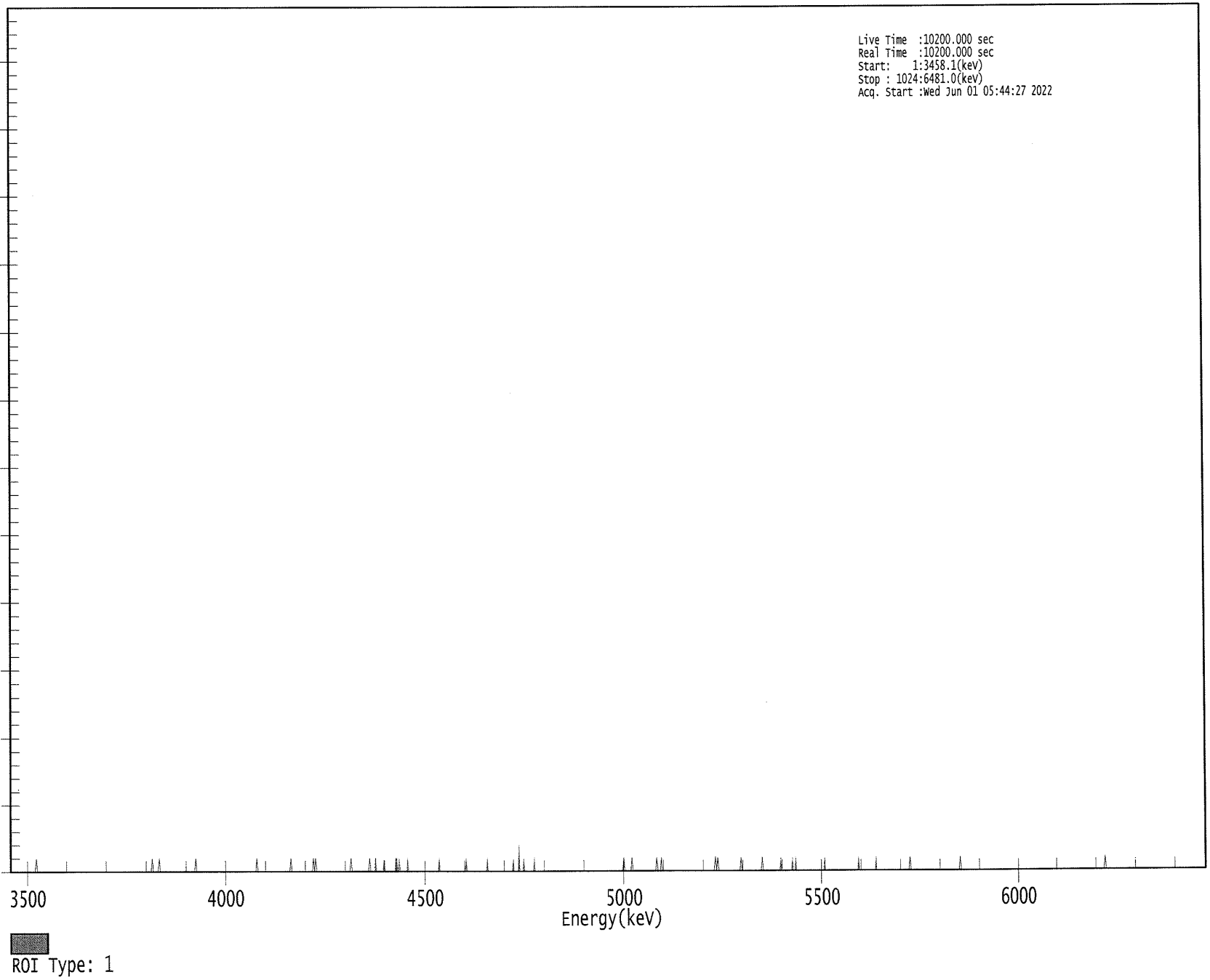
0000314875.CNF



0104

BP/Castex-Ltd Adm-Apx E-001020

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 10

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0
17:	0	0	0	0	0	1	0
25:	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0
121:	0	1	0	0	0	0	1
129:	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0
153:	0	0	0	0	0	1	0
161:	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0
209:	0	0	1	0	0	0	0
217:	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	1
241:	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0
257:	0	0	1	0	1	0	0
265:	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0
289:	0	0	1	0	0	0	0
297:	0	0	0	0	0	0	0
305:	0	0	1	0	0	0	1
313:	0	0	0	0	0	1	0
321:	0	0	0	0	0	0	0
329:	1	1	0	1	0	0	0
337:	0	0	1	0	0	0	0
345:	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0
361:	0	0	0	0	0	1	0	0

BP/Castex-Ltd Adm-Apx E-001021

369:	0	0	0	0	0	0	0	0

Sample Title: 10

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	1	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	1	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	1	0	0	0
433:	0	2	0	0	0	1	0	0
441:	0	0	0	0	0	0	1	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	1	0	0	0	0	0
529:	0	1	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	1	0
553:	0	0	1	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	1	0	1	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	1	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	1	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	1	0	0	0	0	0	0	0
665:	0	0	1	0	0	1	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	1	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	1	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	1	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	1
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 10

Channel								
809:	0	0	1	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	1	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

KP
6/1/22

Apex-Alpha™

Sample Description: CD-7C
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 11
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_058
Chamber Serial Number: 01017326B
Detector Serial Number: 58
Env. Background: System Bkgd 321769
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 3.000E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/12/2022 8:41:57 AM
Acquisition Date/Time: 6/1/2022 5:44:29 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9615 +/- 0.0000
Counting Efficiency: 0.1794 +/- 0.0031 on 5/21/2021 3:25:32 PM
Effective Efficiency: 0.1725 +/- 0.0030

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.470	2.15	161.66	0.85	0.00E+000	3.0
RA-226	4.611	12.49	56.77	0.51	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.941	5685.50*	1.05E-001 +/- 1.70E-001	2.92E-001 +/- 1.00E-002
RA-226	0.961	4785.00*	5.76E-001 +/- 3.27E-001	2.42E-001 +/- 8.27E-003

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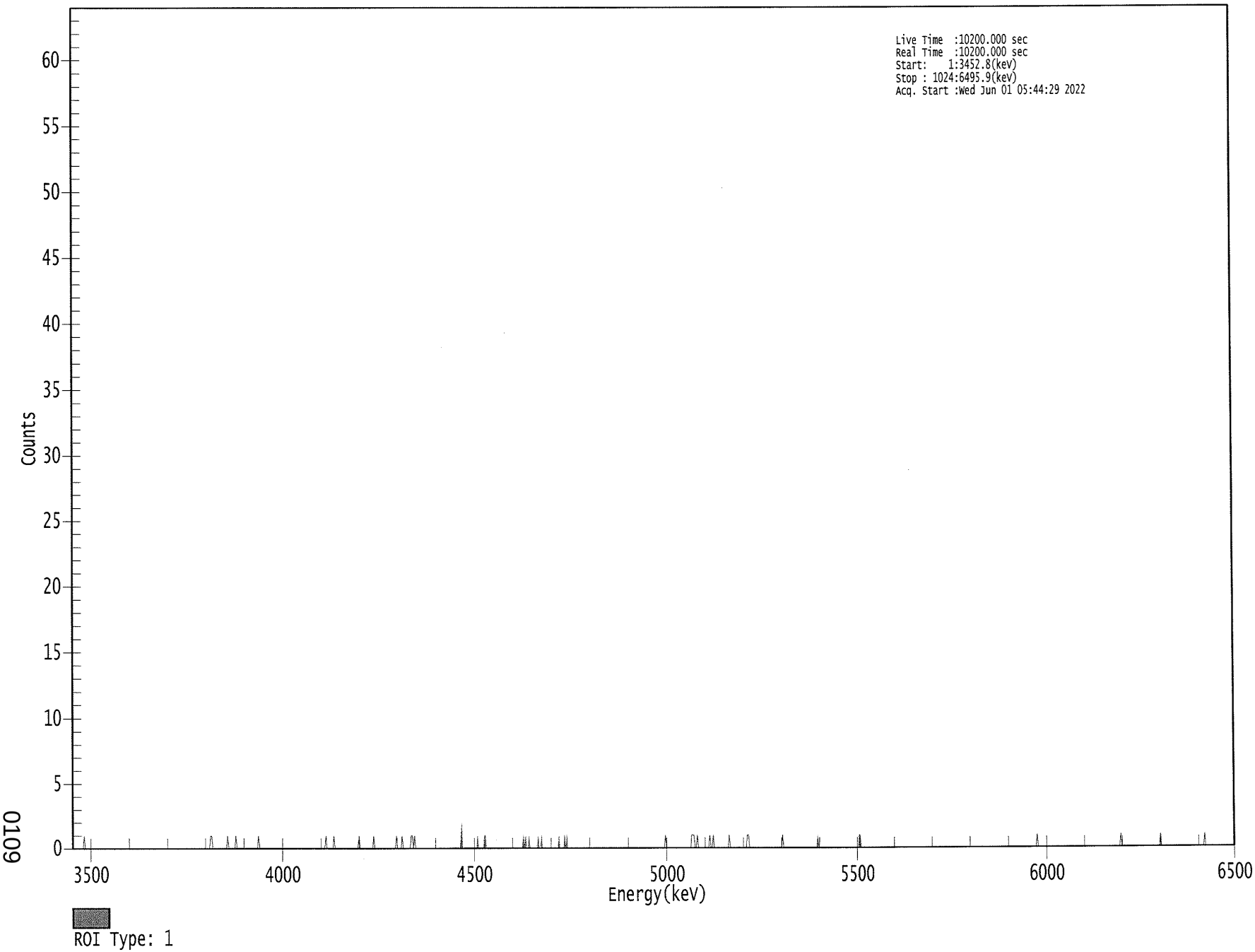
6/1/22

BP/Castex-Ltd Adm-Apx E-001024

0000314876.CNF



0109

BP/Castex-Ltd Adm-Apx E-001025

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 11

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0
9:	0	0	1	0	0	0	0
17:	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0
121:	0	1	1	0	0	0	0
129:	0	0	0	0	0	0	0
137:	1	0	0	0	0	0	1
145:	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0
161:	0	0	0	1	0	0	0
169:	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	1	0
225:	0	0	0	0	0	1	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	1	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	1	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	1	0	0	0
289:	0	1	0	0	0	0	0	0
297:	0	1	1	0	1	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	2	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	1	0	0	0	0
361:	0	1	1	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001026

369:	0	0	0	0	0	0	0	0

Sample Title: 11

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	1	0	1	0	0
401:	1	0	0	0	0	0	0	0
409:	1	0	0	1	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	1	0	0	0	0	1
433:	0	1	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	1
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	1	1
545:	1	0	0	1	0	0	0	0
553:	0	0	0	0	0	0	1	0
561:	0	1	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	1
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	1
593:	1	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	1	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	1	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	1	1	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001027

801:	0	0	0	0	0	0	0	0

Sample Title: 11

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	1	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	1	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	1	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	1	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

MP
6/1/22

Sample Description: CD-6A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 12
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_059
Chamber Serial Number: 02030596A
Detector Serial Number: 59
Env. Background: System Bkgd 321770
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.610E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/12/2022 8:41:57 AM
Acquisition Date/Time: 6/1/2022 5:44:30 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.9888 +/- 0.0000
Counting Efficiency: 0.1752 +/- 0.0031 on 5/21/2021 3:25:31 PM
Effective Efficiency: 0.1732 +/- 0.0031

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

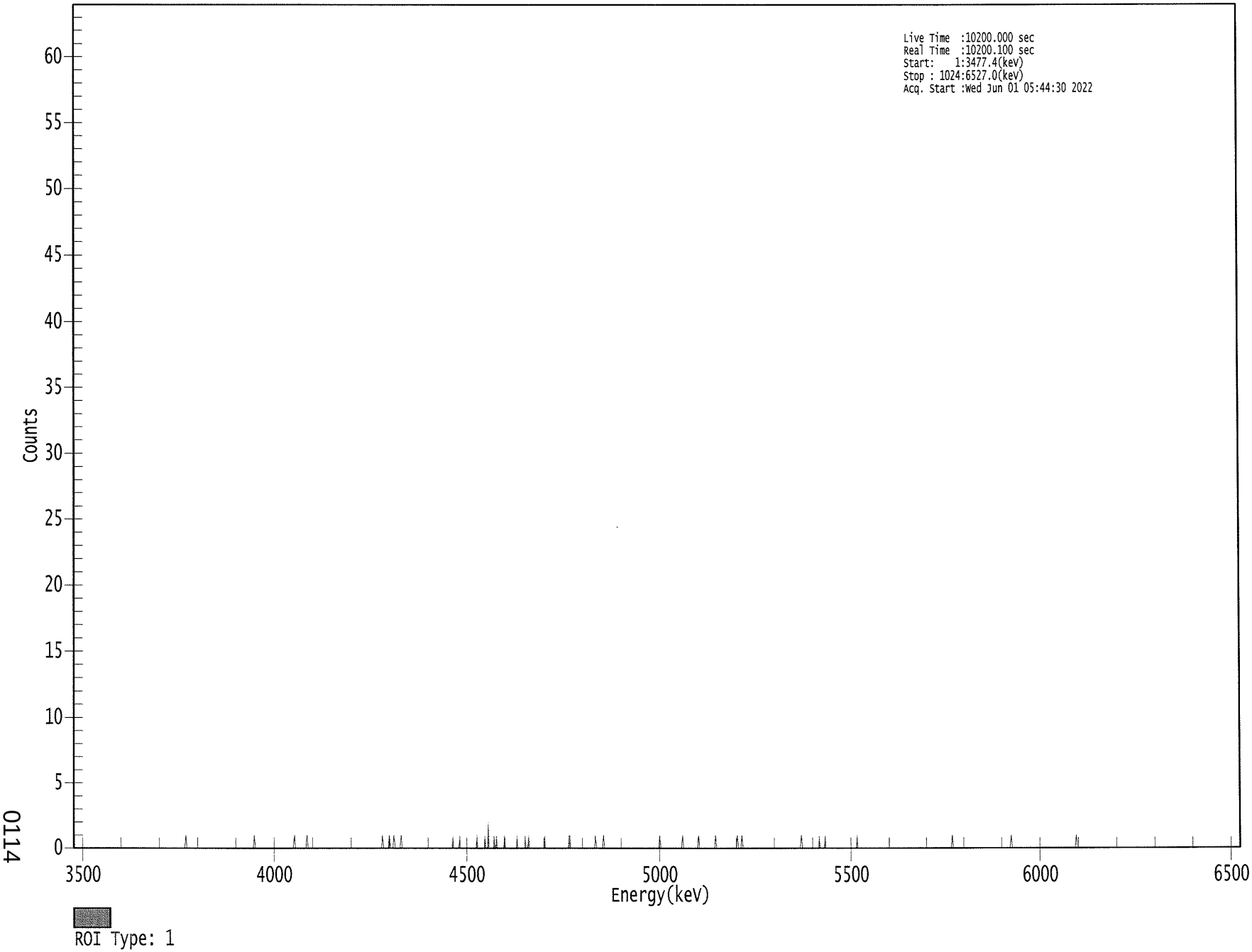
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.456	2.49	138.29	0.51	0.00E+000	3.0
RA-226	4.618	15.66	50.15	0.34	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.933	5685.50*	6.49E-002 +/- 8.98E-002	1.37E-001 +/- 4.73E-003
RA-226	0.964	4785.00*	3.86E-001 +/- 1.94E-001	1.18E-001 +/- 4.07E-003

AG
6/1/22

0000314878.CNF



0114

BP/Castex-Ltd Adm-Apx E-001030

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 12

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel							
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	1	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	1	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	1	0	0	0	0	0	0
201:	0	0	0	0	1	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	1	0
273:	0	0	0	0	1	0	0	0
281:	1	0	0	0	0	0	1	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	1	0	0	0	0
337:	0	1	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	1	0	0	0	0	0	0	1
361:	0	0	2	0	0	0	0	1

BP/Castex-Ltd Adm-Apx E-001031

369:	0	1	0	0	0	0	0	0

Sample Title: 12

Channel								
377:	1	0	0	0	0	0	0	0
385:	0	0	0	1	0	0	0	0
393:	0	0	1	0	0	1	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	1	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	1	1	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	1
457:	0	0	0	0	0	0	1	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	1
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	1	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	1	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	1	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	1	0	0	0	1
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	1	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	1	0	0	0	0
657:	1	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	1	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	1	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001032

801:	0	0	0	0	0	0	0	0

Sample Title: 12

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	1	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	1	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

LP
6/1/22

Sample Description: CD-6B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003148
Batch Identification: 2205072A-RA
Sample Identification: 13
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_060
Chamber Serial Number: 02030596B
Detector Serial Number: 60
Env. Background: System Bkgd 321771
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.490E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 5/12/2022 8:41:57 AM
Acquisition Date/Time: 6/1/2022 5:44:32 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Chem. Recovery Factor: 0.8650 +/- 0.0000
Counting Efficiency: 0.1481 +/- 0.0027 on 5/21/2021 3:25:29 PM
Effective Efficiency: 0.1281 +/- 0.0023

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.531	-1.36	159.91	1.36	0.00E+000	0.0
RA-226	4.600	5.75	111.62	4.25	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.969	5685.50*	-4.44E-002 +/- 7.10E-002	2.24E-001 +/- 7.92E-003
RA-226	0.956	4785.00*	1.77E-001 +/- 1.98E-001	3.10E-001 +/- 1.09E-002

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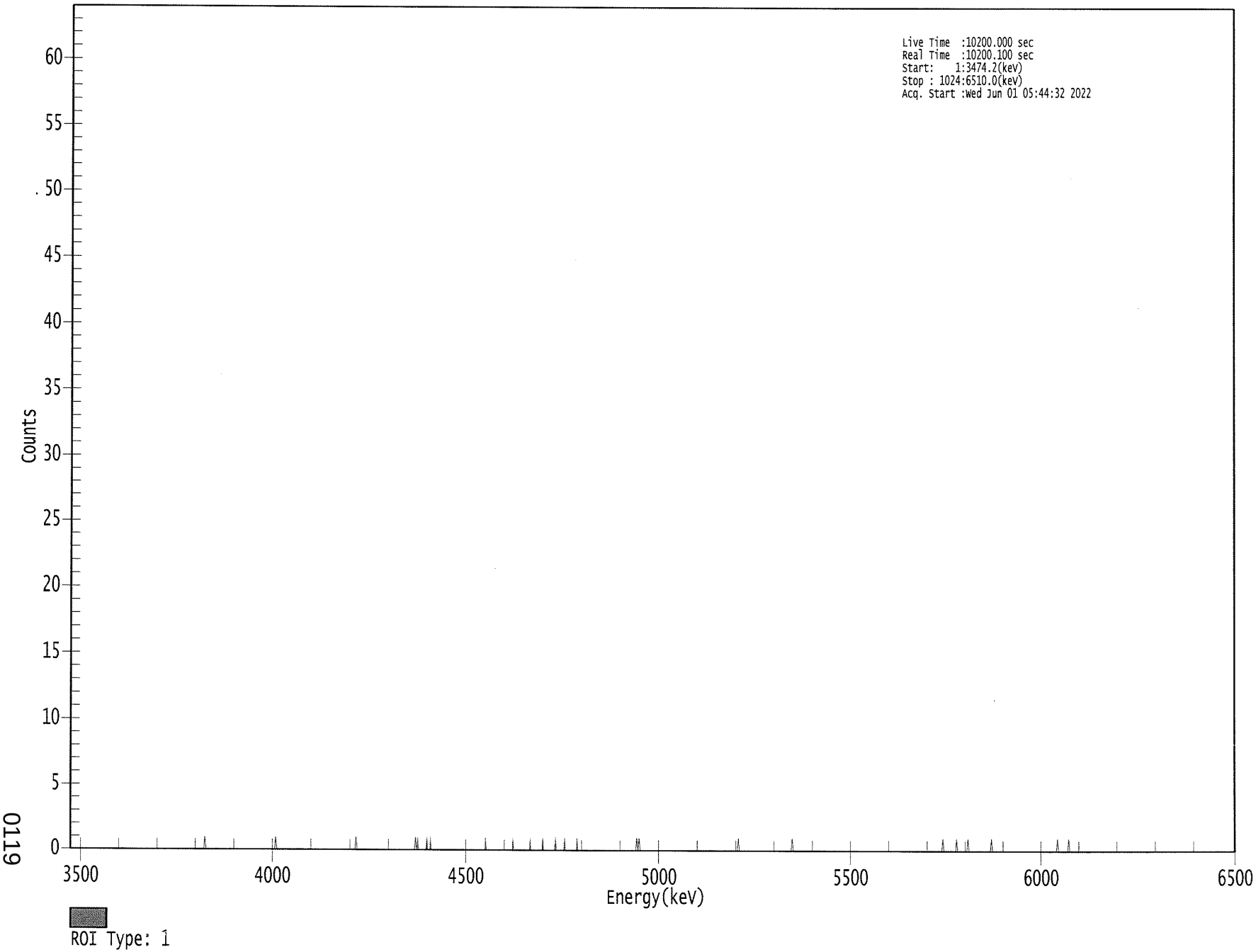
6/1/22

BP/Castex-Ltd Adm-Apx E-001034

0000314877.CNF



0119

BP/Castex-Ltd Adm-Apx E-001035

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 13

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	1	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	1	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	1	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	1	0
305:	1	0	0	0	0	0	0	0
313:	1	0	0	1	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	1	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001036

369:	0	0	0	0	0	0	0	0

Sample Title: 13

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	1	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	1	0	0	0	0	0
409:	0	0	0	0	0	1	0	0
417:	0	0	0	0	0	0	0	0
425:	1	0	0	0	0	0	0	0
433:	1	0	0	0	0	0	0	0
441:	0	0	0	1	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	1
497:	0	1	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	1	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	1
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	1	0	0	0
769:	0	0	0	0	0	0	0	0
777:	1	0	0	0	0	0	0	0
785:	0	0	1	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001037

801:	0	0	0	0	0	0	0	1

Sample Title: 13

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	1	0	0	0	0	0
873:	0	0	0	0	1	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

5/31/2022 6:27:09 AM

Apex-Alpha™

QA SUMMARY REPORT
Review Of QA Results - Pulser Check

Date : 5/31/2022
Time : 6:27:09 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Not Done	
Alpha_004	21f	ALL	Not Done	
Alpha_005	21f	ALL	Not Done	
Alpha_006	21f	ALL	Not Done	
Alpha_007	21f	ALL	Not Done	
Alpha_008	21f	ALL	Not Done	
Alpha_009	21f	ALL	Not Done	
Alpha_010	21f	ALL	Not Done	
Alpha_011	21f	ALL	Passed	5/31/2022 6:07:02 AM
Alpha_012	21f	ALL	Passed	5/31/2022 6:07:03 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Not Done	
Alpha_015	21f	ALL	Not Done	
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:12 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:14 AM
Alpha_035	Alpha Analyst100DC	ALL	Not Done	
Alpha_036	Alpha Analyst100DC	ALL	Not Done	
Alpha_037	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:16 AM
Alpha_038	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:18 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:20 AM
Alpha_040	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:21 AM
Alpha_041	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:23 AM
Alpha_042	Alpha Analyst100DC	ALL	Not Done	
Alpha_043	Alpha Analyst100DC	ALL	Not Done	
Alpha_044	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:26 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:28 AM
Alpha_046	Alpha Analyst100DC	Peak FWHM	Action	5/31/2022 5:20:30 AM
Alpha_047	Alpha Analyst100DC	ALL	Not Done	
Alpha_048	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:33 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:35 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:38 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:40 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:43 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:46 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:48 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	5/27/2022 5:37:13 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed LP 5/31/22	5/31/2022 5:20:54 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:58 AM
Alpha_058	Alpha Analyst100DC	Peak FWHM	Action	5/31/2022 5:21:01 AM

5/31/2022 6:27:09 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:21:03 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:21:06 AM

APPROVED BY: KP

APPROVAL DATE: 5/31/22

6/1/2022 5:45:15 AM

Apex-Alpha™

QA SUMMARY REPORT
Review Of QA Results - Pulser Check

Date : 6/1/2022
Time : 5:45:15 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Not Done	
Alpha_004	21f	ALL	Not Done	
Alpha_005	21f	ALL	Not Done	
Alpha_006	21f	ALL	Not Done	
Alpha_007	21f	ALL	Not Done	
Alpha_008	21f	ALL	Not Done	
Alpha_009	21f	ALL	Not Done	
Alpha_010	21f	ALL	Not Done	
Alpha_011	21f	ALL	Passed	6/1/2022 5:26:58 AM
Alpha_012	21f	ALL	Passed	6/1/2022 5:26:59 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Not Done	
Alpha_015	21f	ALL	Not Done	
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:00 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:02 AM
Alpha_035	Alpha Analyst100DC	ALL	Not Done	
Alpha_036	Alpha Analyst100DC	ALL	Not Done	
Alpha_037	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:03 AM
Alpha_038	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:05 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:06 AM
Alpha_040	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:08 AM
Alpha_041	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:10 AM
Alpha_042	Alpha Analyst100DC	ALL	Not Done	
Alpha_043	Alpha Analyst100DC	ALL	Not Done	
Alpha_044	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:13 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	5/31/2022 5:20:28 AM
Alpha_046	Alpha Analyst100DC	Peak FWHM	Action	6/1/2022 5:27:15 AM
Alpha_047	Alpha Analyst100DC	ALL	Not Done	
Alpha_048	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:18 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:21 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:23 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:26 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:29 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:32 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:35 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:37 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:40 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:43 AM
Alpha_058	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:46 AM

6/1/2022 5:45:15 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:49 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	6/1/2022 5:27:52 AM

APPROVED BY: KP

APPROVAL DATE: 6/1/22

****
***** L I B R A R Y L I S T I N G R E P O R T *****
****

Nuclide Library Title: Radium

Nuclide Library Description: Ra-226, Po-218, Rn-222

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert.(Abs.+-)
PO-218	5.049E+010	6003.000*	0.000	99.9800	0.0000
RN-222	5.049E+010	5490.000*	0.000	99.9200	0.0000
RA-226	5.049E+010	4785.000*	0.000	100.0000	0.0000

* = key line

TOTALS: 3 Nuclides 3 Energy Lines

BP/Castex-Ltd Adm-Apx E-001043

SECTION IX

ANALYTICAL DATA (RADIUM-228)

BP/Castex-Ltd Adm-Apx E-001044

22-05072
Ra228
Run 1

Work Order	22-05072
Analysis Code	Ra228
Run	1
Date Received	5/18/2022
Lab Deadline	6/2/2022
Client	ERM
Project	575834
Report Level	4
Activity Units	pCi
Aliquot Units	l
Matrix	WA
Method	EPA 904.0
Instrument Type	Alpha/Beta GPC
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-7
Tracer Act (dpm/g)	8594.26
Carrier	Yttrium
Carrier Conc (mg/ml)	28.5333

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		05/18/22 00:00	1.0000E+00
02	MBL	BLANK		05/18/22 00:00	1.0000E+00
03	DUP	CD-9B	28	05/09/22 12:15	1.0000E+00
04	DO	CD-9B	28	05/09/22 12:15	1.0000E+00
05	TRG	CD-9A	30	05/09/22 14:25	1.0000E+00
06	TRG	CD-5C	30	05/09/22 17:00	1.0000E+00
07	TRG	CD-10A	29	05/10/22 09:45	1.0000E+00
08	TRG	CD-8A	36	05/10/22 14:30	1.0000E+00
09	TRG	CD-11A	30	05/10/22 15:50	1.0000E+00
10	TRG	CD-7B	40	05/11/22 14:35	1.0000E+00
11	TRG	CD-7C	25	05/12/22 10:55	1.0000E+00
12	TRG	CD-6A	33	05/12/22 10:25	1.0000E+00
13	TRG	CD-6B	28	05/12/22 13:00	1.0000E+00

BP/Castex-Ltd Adm-Apx E-001045

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.1287	1106.1	502.0	100.76	2.000	0.0841	0.1416	0.0575	100.76	101.52	1.00	1.00
02	MBL	0.1329	1142.2	533.0	103.60	2.000	0.0841	0.1408	0.0567	99.36	102.93	1.00	1.00
03	DUP	0.1330	1143.0	512.0	99.44	2.000	0.0845	0.1245	0.0400	70.09	69.70	1.00	1.00
04	DO	0.1330	1143.0	471.0	91.48	2.000	0.0849	0.1431	0.0582	101.99	93.29	1.00	1.00
05	TRG	0.1326	1139.6	483.0	94.09	2.000	0.0848	0.1412	0.0564	98.83	92.99	1.00	1.00
06	TRG	0.1334	1146.5	502.0	97.21	2.000	0.0846	0.1431	0.0585	102.51	99.65	1.00	1.00
07	TRG	0.1326	1139.6	507.0	98.77	2.000	0.0844	0.1254	0.0410	71.85	70.96	1.00	1.00
08	TRG	0.1330	1143.0	550.0	106.82	2.000	0.0847	0.1392	0.0545	95.50	102.02	1.00	1.00
09	TRG	0.1340	1151.6	505.0	97.35	2.000	0.0847	0.1419	0.0572	100.23	97.58	1.00	1.00
10	TRG	0.1326	1139.6	470.0	91.56	2.000	0.0844	0.1412	0.0568	99.53	91.13	1.00	1.00
11	TRG	0.1336	1148.2	498.0	96.29	2.000	0.0851	0.1407	0.0556	97.43	93.81	1.00	1.00
12	TRG	0.1333	1145.6	511.0	99.02	2.000	0.0853	0.1409	0.0556	97.43	96.48	1.00	1.00
13	TRG	0.1327	1140.5	445.0	86.62	2.000	0.0854	0.1381	0.0527	92.35	79.99	1.00	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-001046

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
02	MBL			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
03	DUP			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
04	DO			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
05	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
06	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
07	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
08	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
09	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
10	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
11	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
12	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS
13	TRG			06/02/22 08:17	MDAVIS	05/31/22 08:29	MDAVIS	06/02/22 08:43	MDAVIS

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra228	22-05072	ERM

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-228	LCS	LCS	pCi/l	9.18E+00	9.83E-01	8.55E-01	9.22E+00	99.55	OK		OK	
02	RA-228	MBL	BLANK	pCi/l	4.67E-01	3.58E-01	7.10E-01					OK	OK
03	RA-228	DUP	CD-9B	pCi/l	4.01E-01	6.11E-01	1.26E+00				NA	OK	
04	RA-228	DO	CD-9B	pCi/l	1.09E+00	4.49E-01	8.27E-01					OK	
05	RA-228	TRG	CD-9A	pCi/l	3.28E-01	4.52E-01	9.29E-01					OK	
06	RA-228	TRG	CD-5C	pCi/l	1.34E+00	4.64E-01	8.41E-01					OK	
07	RA-228	TRG	CD-10A	pCi/l	5.98E-01	5.49E-01	1.10E+00					OK	
08	RA-228	TRG	CD-8A	pCi/l	6.01E-01	3.86E-01	7.52E-01					OK	
09	RA-228	TRG	CD-11A	pCi/l	5.88E-01	4.34E-01	8.62E-01					OK	
10	RA-228	TRG	CD-7B	pCi/l	6.28E-01	4.80E-01	9.57E-01					OK	
11	RA-228	TRG	CD-7C	pCi/l	3.76E-01	5.12E-01	1.05E+00					OK	
12	RA-228	TRG	CD-6A	pCi/l	8.15E-01	4.43E-01	8.52E-01					OK	
13	RA-228	TRG	CD-6B	pCi/l	-5.83E-01	5.30E-01	1.20E+00					OK	

BP/Castex-Ltd Adm-Apx E-001048

Preliminary Data Report & Analytical Calculations

Work Order: 22-05072-Ra228-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra228	22-05072	ERM

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-228	LCS	05/18/22 00:00	1.00E+00	100.76	100.76	101.52	1.00	5/31/2022 8:29	6/2/2022 8:43
02	RA-228	MBL	05/18/22 00:00	1.00E+00	103.60	99.36	102.93	1.00	5/31/2022 8:29	6/2/2022 8:43
03	RA-228	DUP	05/09/22 12:15	1.00E+00	99.44	70.09	69.70	1.00	5/31/2022 8:29	6/2/2022 8:43
04	RA-228	DO	05/09/22 12:15	1.00E+00	91.48	101.99	93.29	1.00	5/31/2022 8:29	6/2/2022 8:43
05	RA-228	TRG	05/09/22 14:25	1.00E+00	94.09	98.83	92.99	1.00	5/31/2022 8:29	6/2/2022 8:43
06	RA-228	TRG	05/09/22 17:00	1.00E+00	97.21	102.51	99.65	1.00	5/31/2022 8:29	6/2/2022 8:43
07	RA-228	TRG	05/10/22 09:45	1.00E+00	98.77	71.85	70.96	1.00	5/31/2022 8:29	6/2/2022 8:43
08	RA-228	TRG	05/10/22 14:30	1.00E+00	106.82	95.50	102.02	1.00	5/31/2022 8:29	6/2/2022 8:43
09	RA-228	TRG	05/10/22 15:50	1.00E+00	97.35	100.23	97.58	1.00	5/31/2022 8:29	6/2/2022 8:43
10	RA-228	TRG	05/11/22 14:35	1.00E+00	91.56	99.53	91.13	1.00	5/31/2022 8:29	6/2/2022 8:43
11	RA-228	TRG	05/12/22 10:55	1.00E+00	96.29	97.43	93.81	1.00	5/31/2022 8:29	6/2/2022 8:43
12	RA-228	TRG	05/12/22 10:25	1.00E+00	99.02	97.43	96.48	1.00	5/31/2022 8:29	6/2/2022 8:43
13	RA-228	TRG	05/12/22 13:00	1.00E+00	86.62	92.35	79.99	1.00	5/31/2022 8:29	6/2/2022 8:43

BP/Castex-Ltd Adm-Apx E-001049

Preliminary Data Report & Analytical Calculations

Work Order: 22-05072-Ra228-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra228	22-05072	ERM

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	RA-228	LCS	06/02/22 11:03		LB4110A	D1	60	500	1.083333333	0.4924
02	RA-228	MBL	06/02/22 11:03		LB4110A	A1	120	156	0.95	0.4803
03	RA-228	DUP	06/02/22 11:03		LB4110A	A2	120	186	1.35	0.4724
04	RA-228	DO	06/02/22 11:03		LB4110A	A4	120	198	0.95	0.4548
05	RA-228	TRG	06/02/22 11:03		LB4110A	B2	120	180	1.283333333	0.4691
06	RA-228	TRG	06/02/22 11:03		LB4110A	B4	120	252	1.166666667	0.4619
07	RA-228	TRG	06/02/22 11:03		LB4110A	C1	120	160	1.033333333	0.4667
08	RA-228	TRG	06/02/22 11:03		LB4110A	C2	120	165	0.95	0.4578
09	RA-228	TRG	06/02/22 11:03		LB4110A	C3	120	195	1.216666667	0.4699
10	RA-228	TRG	06/02/22 11:03		LB4110A	G1	120	207	1.316666667	0.4705
11	RA-228	TRG	06/02/22 11:03		LB4110A	G2	120	232	1.683333333	0.4676
12	RA-228	TRG	06/02/22 11:03		LB4110A	G3	120	200	1.116666667	0.4614
13	RA-228	TRG	06/02/22 11:03		LB4110A	G4	120	152	1.6	0.4714

BP/Castex-Ltd Adm-Apx E-001050

Count Room Report
Client: ERM

22-05072-Ra228-1 (pCi/l) in WA
Tracer ID: Ba-7

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	05/18/22 00:00	1.0000	0.1287	1106.0813	502.0000	100.76	1.00	1.00
02	MBL	BLANK	05/18/22 00:00	1.0000	0.1329	1142.1772	533.0000	103.60	1.00	1.00
03	DUP	CD-9B	05/09/22 12:15	1.0000	0.1330	1143.0366	512.0000	99.44	1.00	1.00
04	DO	CD-9B	05/09/22 12:15	1.0000	0.1330	1143.0366	471.0000	91.48	1.00	1.00
05	TRG	CD-9A	05/09/22 14:25	1.0000	0.1326	1139.5989	483.0000	94.09	1.00	1.00
06	TRG	CD-5C	05/09/22 17:00	1.0000	0.1334	1146.4743	502.0000	97.21	1.00	1.00
07	TRG	CD-10A	05/10/22 09:45	1.0000	0.1326	1139.5989	507.0000	98.77	1.00	1.00
08	TRG	CD-8A	05/10/22 14:30	1.0000	0.1330	1143.0366	550.0000	106.82	1.00	1.00
09	TRG	CD-11A	05/10/22 15:50	1.0000	0.1340	1151.6308	505.0000	97.35	1.00	1.00
10	TRG	CD-7B	05/11/22 14:35	1.0000	0.1326	1139.5989	470.0000	91.56	1.00	1.00
11	TRG	CD-7C	05/12/22 10:55	1.0000	0.1336	1148.1931	498.0000	96.29	1.00	1.00
12	TRG	CD-6A	05/12/22 10:25	1.0000	0.1333	1145.6149	511.0000	99.02	1.00	1.00
13	TRG	CD-6B	05/12/22 13:00	1.0000	0.1327	1140.4583	445.0000	86.62	1.00	1.00

Spike and Tracer Worksheet

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
22-05072	1	Ra228	6/2/2022 8:16	MDAVIS	MD	

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
Ra-228	Ra-12	34.100	6/2/2022	0.590	0.6005				9.22	0.470	0.00	0.000	0.00	0.000	0.00	0.000

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	Ba-133	Ba-7	8594.260	6/2/2022	0.1287	0.1200
02	Ba-133	Ba-7	8594.260	6/2/2022	0.1329	0.1200
03	Ba-133	Ba-7	8594.260	6/2/2022	0.1330	0.1200
04	Ba-133	Ba-7	8594.260	6/2/2022	0.1330	0.1200
05	Ba-133	Ba-7	8594.260	6/2/2022	0.1326	0.1200
06	Ba-133	Ba-7	8594.260	6/2/2022	0.1334	0.1200
07	Ba-133	Ba-7	8594.260	6/2/2022	0.1326	0.1200
08	Ba-133	Ba-7	8594.260	6/2/2022	0.1330	0.1200
09	Ba-133	Ba-7	8594.260	6/2/2022	0.1340	0.1200
10	Ba-133	Ba-7	8594.260	6/2/2022	0.1326	0.1200
11	Ba-133	Ba-7	8594.260	6/2/2022	0.1336	0.1200
12	Ba-133	Ba-7	8594.260	6/2/2022	0.1333	0.1200
13	Ba-133	Ba-7	8594.260	6/2/2022	0.1327	0.1200

Balance Printer Tapes

Tracer	LCS

Matrix Spike

BP/Castex-Ltd Adm-Apx E-001052

0136

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 5/25/2022 12:23

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
22-05072	1	Ra228	liters	6/2/2022	JHARVEY

Lab Fraction	ERM Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-9B	DUP					1.0000E+00	1.0000E+00				
04	CD-9B	DO					1.0000E+00	1.0000E+00				
05	CD-9A	TRG					1.0000E+00	1.0000E+00				
06	CD-5C	TRG					1.0000E+00	1.0000E+00				
07	CD-10A	TRG					1.0000E+00	1.0000E+00				
08	CD-8A	TRG					1.0000E+00	1.0000E+00				
09	CD-11A	TRG					1.0000E+00	1.0000E+00				
10	CD-7B	TRG					1.0000E+00	1.0000E+00				
11	CD-7C	TRG					1.0000E+00	1.0000E+00				
12	CD-6A	TRG					1.0000E+00	1.0000E+00				
13	CD-6B	TRG					1.0000E+00	1.0000E+00				

Comments	

BP/Castex-Ltd Adm-Apx E-001053

0137

Technician: Harvey Date: 5 25 22

Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Printed: 6/2/2022 10:45 AM

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
22-05072	1	Ra228	Yttrium	28.5333	MDAVIS

TRetec Fraction	ERM Client ID	Sample Type	Carrier Data Carrier Added (ml)	Filter Data Filter Tare (g)	Filter Final (g)	Filter Net (g)	Gravimetric % Recovery
01	LCS	LCS	2.0000	0.0841	0.1416	0.0575	100.76
02	BLANK	MBL	2.0000	0.0841	0.1408	0.0567	99.36
03	DUP	DUP	2.0000	0.0845	0.1245	0.0400	70.09
04	CD-9B	DO	2.0000	0.0849	0.1431	0.0582	101.99
05	CD-9A	TRG	2.0000	0.0848	0.1412	0.0564	98.83
06	CD-5C	TRG	2.0000	0.0846	0.1431	0.0585	102.51
07	CD-10A	TRG	2.0000	0.0844	0.1254	0.0410	71.85
08	CD-8A	TRG	2.0000	0.0847	0.1392	0.0545	95.50
09	CD-11A	TRG	2.0000	0.0847	0.1419	0.0572	100.23
10	CD-7B	TRG	2.0000	0.0844	0.1412	0.0568	99.53
11	CD-7C	TRG	2.0000	0.0851	0.1407	0.0556	97.43
12	CD-6A	TRG	2.0000	0.0853	0.1409	0.0556	97.43
13	CD-6B	TRG	2.0000	0.0854	0.1381	0.0527	92.35

Technician: Meyan Dow Date: 6/2/22

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
D1	2205072-01	12	500	60	1410	6/2/2022 11:03:03 AM
A1	2205072-02	33	156	120	1410	6/2/2022 11:03:02 AM
A2	2205072-03	13	186	120	1410	6/2/2022 11:03:02 AM
A4	2205072-04	21	198	120	1410	6/2/2022 11:03:02 AM
B2	2205072-05	16	180	120	1410	6/2/2022 11:03:02 AM
B4	2205072-06	19	252	120	1410	6/2/2022 11:03:02 AM
C1	2205072-07	22	160	120	1410	6/2/2022 11:03:02 AM
C2	2205072-08	27	165	120	1410	6/2/2022 11:03:02 AM
C3	2205072-09	14	195	120	1410	6/2/2022 11:03:02 AM
G1	2205072-10	30	207	120	1410	6/2/2022 11:03:03 AM
G2	2205072-11	14	232	120	1410	6/2/2022 11:03:03 AM
G3	2205072-12	19	200	120	1410	6/2/2022 11:03:03 AM
G4	2205072-13	16	152	120	1410	6/2/2022 11:03:03 AM

AG
6/2/22

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Backgrounds)

Printed: 6/2/2022 8:28 AM

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/2/2019	6/2/2022	1.67E-01	P	8.02E-03	1.65E-01	3.22E-01
LB4110A - A2	Alpha	11/2/2019	6/2/2022	2.00E-01	P	8.22E-03	1.52E-01	2.96E-01
LB4110A - A3	Alpha	11/2/2019	6/2/2022	2.17E-01	P	1.73E-02	1.63E-01	3.09E-01
LB4110A - A4	Alpha	11/2/2019	6/2/2022	2.00E-01	P	1.36E-02	1.65E-01	3.16E-01
LB4110A - B1	Alpha	11/2/2019	6/2/2022	2.17E-01	P	-2.48E-02	1.41E-01	3.06E-01
LB4110A - B2	Alpha	11/2/2019	6/2/2022	1.00E-01	P	-1.90E-02	1.92E-01	4.04E-01
LB4110A - B3	Alpha	11/2/2019	6/2/2022	2.17E-01	P	9.49E-03	1.66E-01	3.22E-01
LB4110A - B4	Alpha	11/2/2019	6/2/2022	1.17E-01	P	-9.75E-03	1.14E-01	2.38E-01
LB4110A - C1	Alpha	11/2/2019	6/2/2022	1.83E-01	P	-1.90E-02	1.16E-01	2.52E-01
LB4110A - C2	Alpha	11/2/2019	6/2/2022	8.33E-02	P	-1.80E-02	1.09E-01	2.37E-01
LB4110A - C3	Alpha	11/2/2019	6/2/2022	1.17E-01	P	-2.12E-02	8.73E-02	1.96E-01
LB4110A - C4	Alpha	11/2/2019	6/2/2022	3.00E-01	P	3.17E-02	2.20E-01	4.08E-01
LB4110A - D1	Alpha	11/2/2019	6/2/2022	3.33E-02	P	-2.49E-02	7.09E-02	1.67E-01
LB4110A - D2	Alpha	11/2/2019	6/2/2022	6.67E-02	P	-9.31E-03	1.06E-01	2.22E-01
LB4110A - D3	Alpha	11/2/2019	6/2/2022	2.17E-01	P	1.36E-03	1.26E-01	2.50E-01
LB4110A - D4	Alpha	11/2/2019	6/2/2022	1.00E-01	P	2.61E-02	1.64E-01	3.02E-01
LB4110A - E1	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E2	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E3	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E4	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - F1	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-3.26E-02	1.31E-01	2.95E-01
LB4110A - F2	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-3.95E-02	1.19E-01	2.77E-01
LB4110A - F3	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-2.28E-02	1.05E-01	2.34E-01
LB4110A - F4	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-4.44E-02	7.07E-02	1.86E-01
LB4110A - G1	Alpha	11/2/2019	6/2/2022	1.33E-01	P	-1.82E-02	8.99E-02	1.98E-01
LB4110A - G2	Alpha	11/2/2019	6/2/2022	1.00E-01	P	-2.65E-02	9.28E-02	2.12E-01
LB4110A - G3	Alpha	11/2/2019	6/2/2022	8.33E-02	P	-3.74E-02	1.62E-01	3.62E-01
LB4110A - G4	Alpha	11/2/2019	6/2/2022	1.83E-01	P	-2.88E-02	1.06E-01	2.40E-01

KP
6/2/22

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Backgrounds)

Printed: 6/2/2022 8:28 AM

KP
6/2/22

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/2/2019	6/2/2022	9.50E-01	P	-1.36E+00	1.36E+00	4.09E+00
LB4110A - A2	Beta	11/2/2019	6/2/2022	1.35E+00	P	-1.15E+00	1.64E+00	4.42E+00
LB4110A - A3	Beta	11/2/2019	6/2/2022	1.33E+00	P	-1.13E+00	1.44E+00	4.02E+00
LB4110A - A4	Beta	11/2/2019	6/2/2022	9.50E-01	P	-1.24E+00	1.48E+00	4.20E+00
LB4110A - B1	Beta	11/2/2019	6/2/2022	1.57E+00	P	1.02E+00	1.39E+00	1.77E+00
LB4110A - B2	Beta	11/2/2019	6/2/2022	1.28E+00	P	6.96E-01	1.36E+00	2.03E+00
LB4110A - B3	Beta	11/2/2019	6/2/2022	1.63E+00	P	8.94E-01	1.31E+00	1.72E+00
LB4110A - B4	Beta	11/2/2019	6/2/2022	1.17E+00	P	5.77E-01	1.51E+00	2.45E+00
LB4110A - C1	Beta	11/2/2019	6/2/2022	1.03E+00	P	7.85E-01	1.16E+00	1.53E+00
LB4110A - C2	Beta	11/2/2019	6/2/2022	9.50E-01	P	6.48E-01	1.01E+00	1.37E+00
LB4110A - C3	Beta	11/2/2019	6/2/2022	1.22E+00	P	7.11E-01	1.30E+00	1.88E+00
LB4110A - C4	Beta	11/2/2019	6/2/2022	1.05E+00	P	8.55E-01	1.28E+00	1.70E+00
LB4110A - D1	Beta	11/2/2019	6/2/2022	1.08E+00	P	6.69E-01	1.06E+00	1.46E+00
LB4110A - D2	Beta	11/2/2019	6/2/2022	1.83E+00	P	-1.21E+00	2.27E+00	5.75E+00
LB4110A - D3	Beta	11/2/2019	6/2/2022	9.17E-01	P	7.29E-01	1.11E+00	1.49E+00
LB4110A - D4	Beta	11/2/2019	6/2/2022	1.50E+00	P	1.03E+00	1.46E+00	1.89E+00
LB4110A - E1	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E2	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E3	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E4	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - F1	Beta	11/2/2019	1/10/2022	1.67E-02	P	2.10E-01	1.28E+00	2.35E+00
LB4110A - F2	Beta	11/2/2019	1/10/2022	0.00E+00	P	-5.04E-01	1.19E+00	2.88E+00
LB4110A - F3	Beta	11/2/2019	1/10/2022	0.00E+00	P	-2.58E-01	1.18E+00	2.62E+00
LB4110A - F4	Beta	11/2/2019	1/10/2022	0.00E+00	P	-1.30E+00	1.60E+00	4.50E+00
LB4110A - G1	Beta	11/2/2019	6/2/2022	1.32E+00	P	7.52E-01	1.19E+00	1.63E+00
LB4110A - G2	Beta	11/2/2019	6/2/2022	1.68E+00	P	1.12E+00	1.58E+00	2.04E+00
LB4110A - G3	Beta	11/2/2019	6/2/2022	1.12E+00	P	7.67E-01	1.19E+00	1.61E+00
LB4110A - G4	Beta	11/2/2019	6/2/2022	1.60E+00	P	-5.45E-02	1.27E+00	2.60E+00

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Efficiencies)

Printed: 6/2/2022 8:28 AM

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/2/2019	6/2/2022	0.2095	W	0.2077	0.2325	0.2573
LB4110A - A2	Alpha	11/2/2019	6/2/2022	0.1844	W	0.1803	0.2018	0.2234
LB4110A - A3	Alpha	11/2/2019	6/2/2022	0.1909	P	0.1753	0.1967	0.2181
LB4110A - A4	Alpha	11/2/2019	6/2/2022	0.2143	P	0.2016	0.2263	0.2510
LB4110A - B1	Alpha	11/2/2019	6/2/2022	0.2138	P	0.1867	0.2115	0.2363
LB4110A - B2	Alpha	11/2/2019	6/2/2022	0.1888	P	0.1709	0.1964	0.2219
LB4110A - B3	Alpha	11/2/2019	6/2/2022	0.2173	P	0.2003	0.2315	0.2627
LB4110A - B4	Alpha	11/2/2019	6/2/2022	0.2130	P	0.1967	0.2260	0.2553
LB4110A - C1	Alpha	11/2/2019	6/2/2022	0.1912	P	0.1733	0.1970	0.2206
LB4110A - C2	Alpha	11/2/2019	6/2/2022	0.1967	P	0.1743	0.1987	0.2232
LB4110A - C3	Alpha	11/2/2019	6/2/2022	0.2112	P	0.1922	0.2230	0.2538
LB4110A - C4	Alpha	11/2/2019	6/2/2022	0.2046	P	0.1785	0.2086	0.2386
LB4110A - D1	Alpha	11/2/2019	6/2/2022	0.1906	P	0.1737	0.1967	0.2196
LB4110A - D2	Alpha	11/2/2019	6/2/2022	0.2177	P	0.2069	0.2339	0.2610
LB4110A - D3	Alpha	11/2/2019	6/2/2022	0.2345	P	0.2134	0.2402	0.2669
LB4110A - D4	Alpha	11/2/2019	6/2/2022	0.1740	P	0.1621	0.1835	0.2049
LB4110A - E1	Alpha	11/2/2017	5/19/2020	0.2075	P	0.1686	0.2257	0.2828
LB4110A - E2	Alpha	11/2/2017	5/19/2020	0.1778	P	0.1514	0.2049	0.2583
LB4110A - E3	Alpha	11/2/2017	5/19/2020	0.2234	P	0.1549	0.2076	0.2604
LB4110A - E4	Alpha	11/2/2017	5/19/2020	0.2155	P	0.1746	0.2353	0.2961
LB4110A - F1	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1419	0.2082	0.2746
LB4110A - F2	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1190	0.1738	0.2286
LB4110A - F3	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1494	0.2173	0.2853
LB4110A - F4	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1457	0.2123	0.2788
LB4110A - G1	Alpha	11/2/2019	6/2/2022	0.1877	P	0.1766	0.1872	0.1978
LB4110A - G2	Alpha	11/2/2019	6/2/2022	0.1843	P	0.1729	0.1834	0.1940
LB4110A - G3	Alpha	11/2/2019	6/2/2022	0.2088	P	0.2026	0.2145	0.2265
LB4110A - G4	Alpha	11/2/2019	6/2/2022	0.1834	P	0.1650	0.1834	0.2019

ICP 6/2/22

KP 6/2/22 out of service

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Efficiencies)

Printed: 6/2/2022 8:28 AM

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/2/2019	6/2/2022	0.5061	W	0.5044	0.5650	0.6256
LB4110A - A2	Beta	11/2/2019	6/2/2022	0.4400	P	0.3964	0.4438	0.4912
LB4110A - A3	Beta	11/2/2019	6/2/2022	0.4571	P	0.4279	0.4802	0.5324
LB4110A - A4	Beta	11/2/2019	6/2/2022	0.5116	P	0.4948	0.5558	0.6168
LB4110A - B1	Beta	11/2/2019	6/2/2022	0.4960	P	0.4363	0.4948	0.5532
LB4110A - B2	Beta	11/2/2019	6/2/2022	0.4382	P	0.3945	0.4823	0.5702
LB4110A - B3	Beta	11/2/2019	6/2/2022	0.5276	P	0.4921	0.5766	0.6610
LB4110A - B4	Beta	11/2/2019	6/2/2022	0.5032	P	0.4696	0.5544	0.6392
LB4110A - C1	Beta	11/2/2019	6/2/2022	0.4444	P	0.4178	0.4742	0.5305
LB4110A - C2	Beta	11/2/2019	6/2/2022	0.4511	P	0.4180	0.4761	0.5342
LB4110A - C3	Beta	11/2/2019	6/2/2022	0.5389	P	0.4902	0.5654	0.6406
LB4110A - C4	Beta	11/2/2019	6/2/2022	0.5033	P	0.4406	0.5103	0.5799
LB4110A - D1	Beta	11/2/2019	6/2/2022	0.5452	P	0.5094	0.5755	0.6416
LB4110A - D2	Beta	11/2/2019	6/2/2022	0.5609	P	0.5236	0.5912	0.6588
LB4110A - D3	Beta	11/2/2019	6/2/2022	0.5736	P	0.5354	0.6012	0.6670
LB4110A - D4	Beta	11/2/2019	6/2/2022	0.4559	P	0.4290	0.4817	0.5344
LB4110A - E1	Beta	11/2/2017	5/19/2020	0.5360	P	0.4167	0.5408	0.6649
LB4110A - E2	Beta	11/2/2017	5/19/2020	0.4520	P	0.3728	0.4910	0.6092
LB4110A - E3	Beta	11/2/2017	5/19/2020	0.5775	P	0.3848	0.5001	0.6154
LB4110A - E4	Beta	11/2/2017	5/19/2020	0.5466	P	0.4532	0.5887	0.7241
LB4110A - F1	Beta	11/2/2019	1/10/2022	0.0044	F	0.3744	0.5247	0.6751
LB4110A - F2	Beta	11/2/2019	1/10/2022	0.0009	F	0.3099	0.4365	0.5632
LB4110A - F3	Beta	11/2/2019	1/10/2022	0.0002	F	0.4027	0.5661	0.7294
LB4110A - F4	Beta	11/2/2019	1/10/2022	0.0003	F	0.3883	0.5461	0.7040
LB4110A - G1	Beta	11/2/2019	6/2/2022	0.4467	P	0.4195	0.4439	0.4684
LB4110A - G2	Beta	11/2/2019	6/2/2022	0.4343	P	0.4074	0.4340	0.4606
LB4110A - G3	Beta	11/2/2019	6/2/2022	0.4949	W	0.4903	0.5172	0.5442
LB4110A - G4	Beta	11/2/2019	6/2/2022	0.4380	P	0.3978	0.4395	0.4812

KP 6/2/22

KP 6/2/22 out of service

BP/Castex-Ltd Adm-Apx E-001059

SECTION X

BARIUM-133 ANALYTICAL TRACER DATA

BP/Castex-Ltd Adm-Apx E-001060

 KP 5/31/22

Apex-Gamma

Analysis Report for 2205072-01
SPIKE

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-01
Sample Description	: SPIKE
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:39:24AM
Acquisition Started	: 5/31/2022 10:00:31AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124946

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:15:34AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-01

SPIKE

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.65	37 -	41	37.25	4.24E+02	79.59	4.61E+02	1.75
	2	52.94	51 -	58	54.50	8.00E+01	37.84	1.88E+02	1.90
m	3	62.37	60 -	70	63.92	2.02E+02	37.58	1.26E+02	1.34
m	4	66.23	60 -	70	67.77	8.42E+01	31.62	1.27E+02	1.35
	5	81.31	79 -	86	82.81	9.70E+02	72.64	2.34E+02	1.24
	6	112.02	109 -	116	113.46	2.28E+02	49.56	2.75E+02	1.70
	7	116.97	117 -	122	118.40	4.93E+01	31.81	1.55E+02	2.04
	8	268.34	267 -	273	269.48	1.31E+01	16.21	3.78E+01	2.11
	9	277.11	274 -	285	278.23	9.50E+01	31.81	8.19E+01	1.47
M	10	303.24	300 -	317	304.30	2.02E+02	30.68	3.19E+01	1.68
m	11	307.83	300 -	317	308.89	3.71E+01	17.81	3.39E+01	1.76
m	12	313.16	300 -	317	314.21	1.44E+01	14.60	3.47E+01	1.77
	13	333.93	331 -	337	334.94	9.15E+01	23.63	3.50E+01	1.46
	14	338.51	338 -	342	339.50	1.79E+01	15.35	3.82E+01	1.84
	15	356.45	352 -	362	357.41	6.65E+02	54.29	3.87E+01	1.97
M	16	377.76	373 -	397	378.68	1.27E+01	13.53	2.37E+01	1.85
m	17	384.41	373 -	397	385.32	1.36E+02	35.20	2.20E+01	1.85
m	18	387.31	373 -	397	388.21	2.37E+02	39.18	2.05E+01	1.86
m	19	391.12	373 -	397	392.02	4.47E+01	25.83	1.85E+01	1.86
M	20	415.31	412 -	425	416.16	4.59E+01	17.68	3.19E+01	1.72
m	21	419.00	412 -	425	419.84	2.05E+01	16.02	1.94E+01	1.72
	22	437.62	433 -	443	438.43	1.23E+02	25.63	2.20E+01	1.93
	23	467.94	463 -	472	468.69	2.45E+01	16.40	2.31E+01	2.46
	24	716.51	714 -	719	716.80	5.43E+00	6.08	3.14E+00	1.82

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:15:34AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124921.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.65	4.24E+02	79.59	2.96E+01	1.95E+00	3.94E+02	7.96E+01
	2	52.94	8.00E+01	37.84			8.00E+01	3.78E+01
m	3	62.37	2.02E+02	37.58	8.10E+00	1.22E+00	1.94E+02	3.76E+01
m	4	66.23	8.42E+01	31.62	2.24E+00	8.36E-01	8.19E+01	3.16E+01
	5	81.31	9.70E+02	72.64			9.70E+02	7.26E+01

BP/Castex-Ltd Adm-Apx E-001062

Analysis Report for 2205072-01

SPIKE

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	6	112.02	2.28E+02	49.56			2.28E+02	4.96E+01
	7	116.97	4.93E+01	31.81			4.93E+01	3.18E+01
	8	268.34	1.31E+01	16.21			1.31E+01	1.62E+01
	9	277.11	9.50E+01	31.81			9.50E+01	3.18E+01
M	10	303.24	2.02E+02	30.68			2.02E+02	3.07E+01
m	11	307.83	3.71E+01	17.81			3.71E+01	1.78E+01
m	12	313.16	1.44E+01	14.60			1.44E+01	1.46E+01
	13	333.93	9.15E+01	23.63			9.15E+01	2.36E+01
	14	338.51	1.79E+01	15.35	1.83E+00	1.26E+00	1.61E+01	1.54E+01
	15	356.45	6.65E+02	54.29			6.65E+02	5.43E+01
M	16	377.76	1.27E+01	13.53			1.27E+01	1.35E+01
m	17	384.41	1.36E+02	35.20			1.36E+02	3.52E+01
m	18	387.31	2.37E+02	39.18			2.37E+02	3.92E+01
m	19	391.12	4.47E+01	25.83			4.47E+01	2.58E+01
M	20	415.31	4.59E+01	17.68			4.59E+01	1.77E+01
m	21	419.00	2.05E+01	16.02			2.05E+01	1.60E+01
	22	437.62	1.23E+02	25.63			1.23E+02	2.56E+01
	23	467.94	2.45E+01	16.40			2.45E+01	1.64E+01
	24	716.51	5.43E+00	6.08			5.43E+00	6.08E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.94	255.12		1.93		
		391.69	*	61.90	3.26E+01	1.89E+01
BA-133	0.99	81.00	*	34.06	5.01E+02	4.29E+01
		302.84	*	18.33	5.22E+02	8.41E+01
		356.01	*	62.05	4.96E+02	4.54E+01
HG-203	0.89	279.19	*	77.30	5.82E+01	1.98E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	5.45E+01	1.10E+01
TH-234	0.97	63.29	*	3.80	5.73E+02	1.12E+02

BP/Castex-Ltd Adm-Apx E-001063

Analysis Report for 2205072-01

SPIKE

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.944	3.26E+01	1.89E+01	
BA-133	0.996	5.02E+02	2.92E+01	
HG-203	0.895	5.82E+01	1.98E+01	
PA-234M	0.982	5.45E+01	1.10E+01	
TH-234	0.979	5.73E+02	1.12E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001064

Analysis Report for 2205072-01
SPIKE

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:15:34AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	52.94	8.89080E-02	23.65		
m	4	66.23	9.10262E-02	19.31		
	6	112.02	2.53847E-01	10.85	Tol.	U-237
	7	116.97	5.48119E-02	32.24	Sum	
	8	268.34	1.45486E-02	61.90		
m	11	307.83	4.12454E-02	23.99		
m	12	313.16	1.60380E-02	50.59	Sum	
	13	333.93	1.01667E-01	12.91		
	14	338.51	1.78644E-02	47.89	Sum	
M	16	377.76	1.41195E-02	53.23		
m	17	384.41	1.51517E-01	12.91	Sum	
m	18	387.31	2.63746E-01	8.25		
M	20	415.31	5.09905E-02	19.27		
m	21	419.00	2.27492E-02	39.13	Sum	
	22	437.62	1.36667E-01	10.42	Sum	
	23	467.94	2.71759E-02	33.53		
	24	716.51	6.03175E-03	56.03		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Analysis Report for 2205072-01

SPIKE

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.39E+01	1.39E+01	3.92E+00	6.49E+00
		136.48		10.60	1.16E+02		-2.56E+00	5.37E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.08E+02	2.08E+02	5.22E+01	9.68E+01
+	SN-113	255.12		1.93	7.43E+02	4.23E+01	-3.94E+02	3.39E+02
		391.69	*	61.90	4.23E+01		3.26E+01	2.02E+01
	SN-119M	23.87		16.10	1.82E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-129	29.78		57.00	8.59E+00	8.59E+00	8.19E+01	4.25E+00
		33.60		13.20	5.16E+01		9.10E+01	2.55E+01
		39.58		7.52	2.74E+01		-7.81E+00	1.29E+01
+	BA-133	81.00	*	34.06	3.32E+01	2.29E+01	5.01E+02	1.59E+01
		302.84	*	18.33	1.49E+02		5.22E+02	7.10E+01
		356.01	*	62.05	2.29E+01		4.96E+02	1.04E+01
	CE-139	165.85		80.35	1.88E+01	1.88E+01	5.50E+00	8.74E+00
	CE-144	133.54		10.80	1.22E+02	1.22E+02	2.99E+01	5.71E+01
+	HG-203	279.19	*	77.30	2.70E+01	2.70E+01	5.82E+01	1.27E+01
	PB-210	46.50		4.25	5.40E+01	5.40E+01	-1.54E+01	2.50E+01
	TH-231	25.64		14.70	2.52E+00	2.52E+00	-4.45E+00	1.14E+00
		84.21		6.40	1.65E+02		-3.56E+01	7.84E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.61E+01		5.45E+01	7.85E+00
+	TH-234	63.29	*	3.80	2.35E+02	2.35E+02	5.73E+02	1.14E+02
	NP-237	29.37		14.00	3.37E+01	3.37E+01	3.21E+02	1.66E+01
		86.50		12.60	6.38E+01		-4.44E+00	2.98E+01
	U-237	97.08		16.30	5.60E+01	3.99E+01	-2.01E+01	2.61E+01
		101.07		26.30	3.99E+01		8.30E+00	1.87E+01
		114.00		12.30	1.90E+02		2.88E+02	9.21E+01
		208.01		22.00	8.12E+01		1.19E+01	3.78E+01
	AM-241	59.54		35.90	1.77E+01	1.77E+01	-6.15E+01	8.47E+00
	AM-243	74.67		66.00	9.56E+00	9.56E+00	3.15E-01	4.47E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-001066

KP
5/31/22

Apex-Gamma

Analysis Report for 2205072-02
BLANK

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-02
Sample Description	: BLANK
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:39:37AM
Acquisition Started	: 5/31/2022 10:00:52AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE3
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 912.5 seconds
Dead Time	: 1.37 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 8 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124948

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:16:07AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-02

BLANK

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	21.11	16 -	41	21.76	1.71E+02	60.56	4.35E+02	4.90
m	2	31.29	16 -	41	31.93	3.51E+03	140.03	5.64E+02	5.38
M	3	51.93	42 -	74	52.56	1.43E+02	70.62	4.56E+02	4.86
m	4	61.82	42 -	74	62.44	4.55E+02	72.55	3.53E+02	3.96
m	5	66.49	42 -	74	67.11	2.59E+02	79.34	4.01E+02	4.73
	6	81.04	75 -	87	81.64	1.20E+03	89.22	3.70E+02	3.53
	7	113.73	104 -	125	114.31	5.03E+02	88.48	4.28E+02	4.46
m	8	193.47	184 -	196	194.00	2.31E+01	31.49	1.46E+02	2.35
	9	274.79	267 -	281	275.27	9.38E+01	40.70	1.34E+02	3.33
	10	303.73	294 -	313	304.19	2.47E+02	52.80	1.50E+02	3.51
	11	334.56	326 -	343	334.99	1.39E+02	51.35	1.89E+02	3.25
	12	356.08	348 -	364	356.50	5.56E+02	59.70	1.27E+02	3.90
	13	386.63	379 -	396	387.03	4.35E+02	51.20	7.54E+01	5.22
	14	417.77	409 -	427	418.15	9.01E+01	33.40	6.18E+01	3.74
	15	436.96	429 -	443	437.33	1.19E+02	28.87	3.81E+01	3.29
	16	468.19	462 -	474	468.54	5.40E+01	14.70	0.00E+00	4.40
	17	490.91	484 -	495	491.25	8.00E+00	5.66	0.00E+00	1.98
	18	834.76	828 -	839	834.90	1.00E+01	6.32	0.00E+00	2.75
	19	999.35	995 -	1001	999.40	5.00E+00	4.47	0.00E+00	1.24

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:16:07AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124920.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	21.11	1.71E+02	60.56	5.53E+01	3.06E+00	1.15E+02	6.06E+01
m	2	31.29	3.51E+03	140.03			3.51E+03	1.40E+02
M	3	51.93	1.43E+02	70.62			1.43E+02	7.06E+01
m	4	61.82	4.55E+02	72.55	1.39E+01	1.49E+00	4.42E+02	7.26E+01
m	5	66.49	2.59E+02	79.34			2.59E+02	7.93E+01
	6	81.04	1.20E+03	89.22			1.20E+03	8.92E+01
	7	113.73	5.03E+02	88.48			5.03E+02	8.85E+01
m	8	193.47	2.31E+01	31.49			2.31E+01	3.15E+01
	9	274.79	9.38E+01	40.70			9.38E+01	4.07E+01
	10	303.73	2.47E+02	52.80			2.47E+02	5.28E+01

Analysis Report for 2205072-02

BLANK

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
11	334.56	1.39E+02	51.35			1.39E+02	5.14E+01
12	356.08	5.56E+02	59.70			5.56E+02	5.97E+01
13	386.63	4.35E+02	51.20			4.35E+02	5.12E+01
14	417.77	9.01E+01	33.40			9.01E+01	3.34E+01
15	436.96	1.19E+02	28.87			1.19E+02	2.89E+01
16	468.19	5.40E+01	14.70			5.40E+01	1.47E+01
17	490.91	8.00E+00	5.66			8.00E+00	5.66E+00
18	834.76	1.00E+01	6.32			1.00E+01	6.32E+00
19	999.35	5.00E+00	4.47	3.58E-01	8.08E-01	4.64E+00	4.54E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.59	29.78	*	57.00	1.16E+02	4.68E+00
		33.60		13.20		
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	5.28E+02	4.40E+01
		302.84	*	18.33	7.47E+02	1.64E+02
		356.01	*	62.05	5.14E+02	5.90E+01
TH-234	0.94	63.29	*	3.80	1.06E+03	1.76E+02
NP-237	0.60	29.37	*	14.00	4.74E+02	1.91E+01
		86.50		12.60		
AM-241	0.87	59.54	*	35.90	1.12E+02	1.87E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

Analysis Report for 2205072-02

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INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
?	I-129	0.599	1.16E+02	4.68E+00	
	BA-133	0.997	5.33E+02	3.45E+01	
?	TH-234	0.946	1.06E+03	1.76E+02	
?	NP-237	0.603	4.74E+02	1.91E+01	
?	AM-241	0.875	1.12E+02	1.87E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-02
BLANK

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:16:07AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	21.11	1.28139E-01	26.29	Tol.	PA-234M
M	3	51.93	1.58623E-01	24.73		
m	5	66.49	2.87718E-01	15.32		
	7	113.73	5.59037E-01	8.79	Sum	
m	8	193.47	2.56584E-02	68.19		
	9	274.79	1.04224E-01	21.69		
	11	334.56	1.54934E-01	18.41	Sum	
	13	386.63	4.83674E-01	5.88	Sum	
	14	417.77	1.00129E-01	18.53	Sum	
	15	436.96	1.32154E-01	12.13	Sum	
	16	468.19	6.00000E-02	13.61		
	17	490.91	8.88889E-03	35.36		
	18	834.76	1.11111E-02	31.62		
	19	999.35	5.15814E-03	48.95		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	1.47E-04	1.47E-04	2.31E-04	6.99E-05
	3.31	12.30	1.51E-03		2.37E-03	7.19E-04

Analysis Report for 2205072-02

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	FE-55	5.89		24.50	1.43E-02	1.43E-02	2.35E-02	6.86E-03
	CO-57	122.06		85.51	2.52E+01	2.52E+01	-3.77E+00	1.22E+01
		136.48		10.60	1.96E+02		-5.43E+01	9.39E+01
	NI-59	6.92		29.80	2.48E-02	2.48E-02	4.11E-02	1.19E-02
	MO-93	16.59		52.90	5.86E-01	5.86E-01	5.90E-01	2.86E-01
		18.60		10.00	4.27E+00		-3.29E-01	2.08E+00
	NB-93M	16.57		9.43	3.27E+00	3.27E+00	3.30E+00	1.60E+00
	CD-109	88.03		3.72	6.52E+02	6.52E+02	-4.83E+02	3.20E+02
	SN-113	255.12		1.93	1.25E+03	8.18E+01	-6.13E+02	5.91E+02
		391.69		61.90	8.18E+01		-3.58E+00	3.96E+01
	SN-119M	23.87		16.10	1.32E+01	1.17E+01	7.57E+01	6.52E+00
		25.10		22.70	1.17E+01		9.20E+01	5.81E+00
+	I-129	29.78	*	57.00	6.35E+00	6.35E+00	1.16E+02	3.13E+00
		33.60		13.20	4.94E+01		5.77E+02	2.45E+01
		39.58		7.52	8.55E+01		-5.27E+01	4.21E+01
+	BA-133	81.00	*	34.06	4.17E+01	4.17E+01	5.28E+02	2.03E+01
		302.84	*	18.33	2.19E+02		7.47E+02	1.05E+02
		356.01	*	62.05	5.81E+01		5.14E+02	2.78E+01
	CE-139	165.85		80.35	3.41E+01	3.41E+01	4.87E+00	1.64E+01
	CE-144	133.54		10.80	1.84E+02	1.84E+02	6.56E+00	8.80E+01
	HG-203	279.19		77.30	3.92E+01	3.92E+01	-7.20E+00	1.87E+01
	PB-210	46.50		4.25	1.10E+02	1.10E+02	-8.02E+02	5.33E+01
	TH-231	25.64		14.70	1.93E+01	1.93E+01	1.51E+02	9.54E+00
		84.21		6.40	4.45E+02		-1.38E+02	2.19E+02
	PA-234M	9.89		89.00	3.99E-02	3.99E-02	5.85E-02	1.93E-02
		21.72		64.90	1.32E+00		-3.05E+01	6.44E-01
		37.93		23.75	2.96E+01		1.59E+02	1.46E+01
+	TH-234	63.29	*	3.80	5.20E+02	5.20E+02	1.06E+03	2.57E+02
+	NP-237	29.37	*	14.00	2.58E+01	2.58E+01	4.74E+02	1.27E+01
		86.50		12.60	2.31E+02		-1.16E+02	1.14E+02
	U-237	97.08		16.30	9.71E+01	6.38E+01	4.90E+01	4.69E+01
		101.07		26.30	6.38E+01		8.73E-01	3.08E+01
		114.00		12.30	2.42E+02		8.99E+02	1.18E+02
		208.01		22.00	1.40E+02		3.31E+01	6.74E+01
+	AM-241	59.54	*	35.90	5.50E+01	5.50E+01	1.12E+02	2.72E+01
	AM-243	74.67		66.00	3.18E+01	3.18E+01	-3.46E+00	1.56E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

Apex-Gamma

Analysis Report for 2205072-03
CD-9B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-03
Sample Description	: CD-9B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:39:48AM
Acquisition Started	: 5/31/2022 10:00:38AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.6 seconds
Dead Time	: 0.07 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124947

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:15:48AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-03

CD-9B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.65	16 -	24	20.62	1.11E+02	55.48	4.05E+02	1.66
M	2	30.75	25 -	39	30.72	2.66E+03	110.71	2.62E+02	2.32
m	3	34.97	25 -	39	34.93	6.73E+02	102.94	2.14E+02	2.59
M	4	52.55	47 -	73	52.50	8.05E+01	53.07	3.19E+02	3.97
m	5	61.54	47 -	73	61.49	2.90E+02	47.84	1.79E+02	2.23
m	6	65.79	47 -	73	65.73	1.55E+02	63.05	2.73E+02	3.63
	7	80.95	75 -	86	80.88	1.08E+03	84.31	3.49E+02	2.32
	8	112.35	106 -	118	112.27	3.12E+02	63.34	3.25E+02	2.23
	9	276.11	269 -	281	275.92	1.01E+02	31.82	7.13E+01	2.24
	10	303.47	298 -	309	303.26	1.44E+02	35.38	8.52E+01	2.63
	11	334.33	329 -	339	334.10	8.18E+01	31.43	8.85E+01	1.98
	12	356.14	352 -	362	355.90	4.77E+02	45.02	1.49E+01	2.42
	13	386.45	379 -	399	386.19	2.69E+02	44.45	6.38E+01	5.87
	14	415.33	410 -	422	415.05	3.66E+01	29.48	8.68E+01	3.10
	15	436.84	430 -	440	436.55	1.01E+02	23.04	1.74E+01	2.61
	16	469.55	460 -	474	469.24	1.48E+01	18.57	3.04E+01	6.46

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:15:48AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124919.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	20.65	1.11E+02	55.48	1.11E+01	1.11E-01	1.00E+02	5.55E+01
M	2	30.75	2.66E+03	110.71			2.66E+03	1.11E+02
m	3	34.97	6.73E+02	102.94			6.73E+02	1.03E+02
M	4	52.55	8.05E+01	53.07			8.05E+01	5.31E+01
m	5	61.54	2.90E+02	47.84	1.36E+01	2.51E+00	2.77E+02	4.79E+01
m	6	65.79	1.55E+02	63.05			1.55E+02	6.30E+01
	7	80.95	1.08E+03	84.31			1.08E+03	8.43E+01
	8	112.35	3.12E+02	63.34			3.12E+02	6.33E+01
	9	276.11	1.01E+02	31.82			1.01E+02	3.18E+01
	10	303.47	1.44E+02	35.38			1.44E+02	3.54E+01
	11	334.33	8.18E+01	31.43	0.00E+00	0.00E+00	8.18E+01	3.14E+01
	12	356.14	4.77E+02	45.02			4.77E+02	4.50E+01
	13	386.45	2.69E+02	44.45			2.69E+02	4.44E+01

BP/Castex-Ltd Adm-Apx E-001074

Analysis Report for 2205072-03

CD-9B

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
14	415.33	3.66E+01	29.48	7.58E-02	9.28E-01	3.65E+01	2.95E+01
15	436.84	1.01E+02	23.04			1.01E+02	2.30E+01
16	469.55	1.48E+01	18.57			1.48E+01	1.86E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.87	29.78	*	57.00	5.39E+01	2.25E+00
		33.60	*	13.20	9.06E+01	1.39E+01
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	5.20E+02	4.52E+01
		302.84	*	18.33	5.17E+02	1.30E+02
		356.01	*	62.05	5.00E+02	5.17E+01
TH-234	0.92	63.29	*	3.80	6.48E+02	1.13E+02
AM-241	0.90	59.54	*	35.90	6.86E+01	1.20E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

BP/Castex-Ltd Adm-Apx E-001075

Analysis Report for 2205072-03

CD-9B

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.870	5.49E+01	2.22E+00	
	BA-133	0.998	5.12E+02	3.29E+01	
?	TH-234	0.925	6.48E+02	1.13E+02	
X	NP-237	0.701			
?	AM-241	0.902	6.86E+01	1.20E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001076

Analysis Report for 2205072-03
CD-9B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:15:48AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.65	1.11275E-01	27.70	Tol.	PA-234M
M	4	52.55	8.94929E-02	32.94		
m	6	65.79	1.72710E-01	20.28	Sum	
	8	112.35	3.46957E-01	10.14	Sum	
	9	276.11	1.12616E-01	15.70		
	11	334.33	9.08377E-02	19.22	Sum	
	13	386.45	2.99001E-01	8.26	Sum	
	14	415.33	4.05755E-02	40.39	Sum	
	15	436.84	1.12550E-01	11.37	Sum	
	16	469.55	1.64444E-02	62.75		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
	3.31	12.30	2.92E-06		0.00E+00	0.00E+00
FE-55	5.89	24.50	6.01E-04	6.01E-04	-1.12E-04	2.73E-04
CO-57	122.06	85.51	1.90E+01	1.90E+01	-2.34E+01	8.95E+00
	136.48	10.60	1.94E+02		5.26E+00	9.20E+01

BP/Castex-Ltd Adm-Apx E-001077

Analysis Report for 2205072-03

CD-9B

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	NI-59	6.92		29.80	1.62E-03	1.62E-03	7.57E-05	7.53E-04
	MO-93	16.59		52.90	1.64E-01	1.64E-01	1.82E-02	7.93E-02
		18.60		10.00	1.43E+00		1.37E+00	6.95E-01
	NB-93M	16.57		9.43	9.15E-01	9.15E-01	1.02E-01	4.43E-01
	CD-109	88.03		3.72	3.07E+02	3.07E+02	-1.84E+02	1.47E+02
	SN-113	255.12		1.93	1.24E+03	5.55E+01	3.72E+02	5.77E+02
		391.69		61.90	5.55E+01		3.69E+01	2.63E+01
	SN-119M	23.87		16.10	2.57E+00	2.57E+00	-7.41E+01	1.25E+00
		25.10		22.70	2.73E+00		-7.84E+01	1.33E+00
+	I-129	29.78	*	57.00	2.28E+00	2.28E+00	5.39E+01	1.11E+00
		33.60	*	13.20	1.50E+01		9.06E+01	7.32E+00
		39.58		7.52	2.91E+01		-2.82E+00	1.41E+01
+	BA-133	81.00	*	34.06	4.31E+01	2.18E+01	5.20E+02	2.09E+01
		302.84	*	18.33	1.63E+02		5.17E+02	7.64E+01
		356.01	*	62.05	2.18E+01		5.00E+02	9.48E+00
	CE-139	165.85		80.35	3.15E+01	3.15E+01	2.61E+00	1.49E+01
	CE-144	133.54		10.80	1.80E+02	1.80E+02	-1.12E+01	8.52E+01
	HG-203	279.19		77.30	4.44E+01	4.44E+01	3.92E+00	2.10E+01
	PB-210	46.50		4.25	5.19E+01	5.19E+01	-5.50E+00	2.46E+01
	TH-231	25.64		14.70	6.96E+00	6.96E+00	-2.91E+01	3.43E+00
		84.21		6.40	4.41E+02		2.45E+01	2.17E+02
	PA-234M	9.89		89.00	5.86E-03	5.86E-03	7.76E-03	2.79E-03
		21.72		64.90	4.21E-01		-4.02E-02	2.04E-01
		37.93		23.75	1.25E+01		7.93E-01	6.09E+00
+	TH-234	63.29	*	3.80	3.86E+02	3.86E+02	6.48E+02	1.90E+02
	NP-237	29.37	*	14.00	9.29E+00	9.29E+00	2.20E+02	4.53E+00
		86.50		12.60	1.46E+02		-2.88E+01	7.11E+01
	U-237	97.08		16.30	8.35E+01	5.05E+01	2.38E+01	3.98E+01
		101.07		26.30	5.05E+01		-1.50E+01	2.40E+01
		114.00		12.30	2.42E+02		8.06E+02	1.18E+02
		208.01		22.00	1.33E+02		9.09E+00	6.29E+01
+	AM-241	59.54	*	35.90	4.08E+01	4.08E+01	6.86E+01	2.01E+01
	AM-243	74.67		66.00	1.49E+01	1.49E+01	-2.40E+02	7.16E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

KP 5/31/22

Apex-Gamma

Analysis Report for 2205072-04
CD-9B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-04
Sample Description	: CD-9B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:40:04AM
Acquisition Started	: 5/31/2022 10:16:30AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124949

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:31:33AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-04

CD-9B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.72	37 -	41	37.31	4.66E+02	78.77	4.20E+02	1.83
	2	52.78	51 -	57	54.34	7.49E+01	34.11	1.56E+02	1.41
M	3	62.29	59 -	74	63.83	2.81E+02	39.47	1.04E+02	1.62
m	4	66.28	59 -	74	67.81	1.58E+02	36.55	1.14E+02	1.98
M	5	81.36	78 -	88	82.86	8.82E+02	64.06	7.51E+01	1.39
m	6	84.26	78 -	88	85.76	2.43E+01	27.42	6.09E+01	1.40
M	7	112.33	109 -	121	113.77	2.18E+02	35.55	8.98E+01	1.46
m	8	116.82	109 -	121	118.25	5.27E+01	24.17	7.44E+01	1.47
	9	144.92	142 -	150	146.30	3.77E+01	37.45	1.91E+02	3.11
	10	178.85	178 -	182	180.16	2.76E+01	21.54	7.67E+01	1.17
	11	192.99	183 -	206	194.28	1.50E+02	71.67	3.25E+02	20.13
	12	276.78	274 -	282	277.89	7.50E+01	26.67	6.41E+01	1.78
M	13	303.08	299 -	317	304.14	2.11E+02	31.02	2.07E+01	1.60
m	14	308.08	299 -	317	309.14	3.72E+01	15.94	1.65E+01	1.60
m	15	311.95	299 -	317	313.00	9.96E+00	10.58	1.25E+01	1.46
M	16	334.00	321 -	342	335.00	7.58E+01	21.94	3.36E+01	1.79
	17	356.53	353 -	361	357.50	6.30E+02	53.32	4.93E+01	1.96
	18	368.32	364 -	375	369.26	2.54E+01	18.44	2.93E+01	3.28
M	19	384.35	381 -	398	385.26	1.18E+02	27.53	3.78E+01	1.85
m	20	387.35	381 -	398	388.26	2.21E+02	34.73	2.60E+01	1.84
m	21	391.90	381 -	398	392.79	3.19E+01	18.06	1.97E+01	1.86
M	22	411.99	412 -	427	412.84	1.06E+01	0.71	1.00E+00	1.71
m	23	415.31	412 -	427	416.16	4.00E+01	14.44	5.00E+00	1.72
m	24	418.31	412 -	427	419.16	2.21E+01	13.44	5.00E+00	1.72
	25	437.37	434 -	442	438.18	9.66E+01	26.66	5.08E+01	1.79
	26	469.01	465 -	474	469.75	2.57E+01	16.64	2.45E+01	1.49
	27	511.68	508 -	517	512.34	3.89E+01	13.75	4.27E+00	2.25
	28	548.30	546 -	551	548.90	8.60E+00	7.00	2.80E+00	1.39
	29	620.24	617 -	624	620.70	1.00E+01	6.32	0.00E+00	3.51
	30	1040.10	1037 -	1042	1039.80	5.00E+00	4.47	0.00E+00	2.76
	31	1462.41	1458 -	1463	1461.40	5.00E+00	4.47	0.00E+00	1.70

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:31:33AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124921.CNF

BP/Castex-Ltd Adm-Apx E-001080

Analysis Report for 2205072-04

CD-9B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.72	4.66E+02	78.77	2.96E+01	1.95E+00	4.36E+02	7.88E+01
	2	52.78	7.49E+01	34.11			7.49E+01	3.41E+01
M	3	62.29	2.81E+02	39.47	4.60E+00	9.36E-01	2.77E+02	3.95E+01
m	4	66.28	1.58E+02	36.55	2.24E+00	8.36E-01	1.56E+02	3.66E+01
M	5	81.36	8.82E+02	64.06			8.82E+02	6.41E+01
m	6	84.26	2.43E+01	27.42			2.43E+01	2.74E+01
M	7	112.33	2.18E+02	35.55			2.18E+02	3.56E+01
m	8	116.82	5.27E+01	24.17			5.27E+01	2.42E+01
	9	144.92	3.77E+01	37.45			3.77E+01	3.75E+01
	10	178.85	2.76E+01	21.54			2.76E+01	2.15E+01
	11	192.99	1.50E+02	71.67			1.50E+02	7.17E+01
	12	276.78	7.50E+01	26.67			7.50E+01	2.67E+01
M	13	303.08	2.11E+02	31.02			2.11E+02	3.10E+01
m	14	308.08	3.72E+01	15.94			3.72E+01	1.59E+01
m	15	311.95	9.96E+00	10.58			9.96E+00	1.06E+01
M	16	334.00	7.58E+01	21.94			7.58E+01	2.19E+01
	17	356.53	6.30E+02	53.32			6.30E+02	5.33E+01
	18	368.32	2.54E+01	18.44			2.54E+01	1.84E+01
M	19	384.35	1.18E+02	27.53			1.18E+02	2.75E+01
m	20	387.35	2.21E+02	34.73			2.21E+02	3.47E+01
m	21	391.90	3.19E+01	18.06			3.19E+01	1.81E+01
M	22	411.99	1.06E+01	0.71			1.06E+01	7.07E-01
m	23	415.31	4.00E+01	14.44			4.00E+01	1.44E+01
m	24	418.31	2.21E+01	13.44			2.21E+01	1.34E+01
	25	437.37	9.66E+01	26.66			9.66E+01	2.67E+01
	26	469.01	2.57E+01	16.64			2.57E+01	1.66E+01
	27	511.68	3.89E+01	13.75	1.73E+01	1.23E+00	2.16E+01	1.38E+01
	28	548.30	8.60E+00	7.00			8.60E+00	7.00E+00
	29	620.24	1.00E+01	6.32			1.00E+01	6.32E+00
	30	1040.10	5.00E+00	4.47			5.00E+00	4.47E+00
	31	1462.41	5.00E+00	4.47	1.27E+00	5.71E-01	3.73E+00	4.51E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

BP/Castex-Ltd Adm-Apx E-001081

Analysis Report for 2205072-04
CD-9B

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	2.33E+01	1.32E+01
BA-133	0.99	81.00	*	34.06	4.56E+02	3.81E+01
		302.84	*	18.33	5.45E+02	8.53E+01
		356.01	*	62.05	4.71E+02	4.43E+01
HG-203	0.86	279.19	*	77.30	4.59E+01	1.66E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	6.06E+01	1.10E+01
TH-234	0.97	63.29	*	3.80	8.14E+02	1.18E+02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.951	2.33E+01	1.32E+01	
BA-133	0.995	4.71E+02	2.74E+01	
HG-203	0.861	4.59E+01	1.66E+01	
PA-234M	0.983	6.06E+01	1.10E+01	
TH-234	0.975	8.14E+02	1.18E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-04
CD-9B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:31:33AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	52.78	8.32026E-02	22.77		
m	4	66.28	1.73121E-01	11.73		
m	6	84.26	2.70132E-02	56.40	Tol.	TH-231
						NP-237
M	7	112.33	2.41843E-01	8.17	Tol.	U-237
m	8	116.82	5.85943E-02	22.91	Sum	
	9	144.92	4.18755E-02	49.69	Sum	
	10	178.85	3.07071E-02	38.97		
	11	192.99	1.66332E-01	23.94		
m	14	308.08	4.13306E-02	21.42		
m	15	311.95	1.10720E-02	53.10	Sum	
M	16	334.00	8.42093E-02	14.47		
	18	368.32	2.81667E-02	36.37		
M	19	384.35	1.30727E-01	11.70	Sum	
m	20	387.35	2.45747E-01	7.85		
M	22	411.99	1.17720E-02	3.34		
m	23	415.31	4.44523E-02	18.05		
m	24	418.31	2.45353E-02	30.42	Sum	
	25	437.37	1.07350E-01	13.80	Sum	
	26	469.01	2.85965E-02	32.33		
	27	511.68	2.39666E-02	31.99		
	28	548.30	9.55556E-03	40.70		
	29	620.24	1.11111E-02	31.62		
	30	1040.10	5.55556E-03	44.72		
	31	1462.41	4.14748E-03	60.39		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 2205072-04

CD-9B

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.32E+01	1.32E+01	5.91E-01	6.13E+00
		136.48		10.60	1.35E+02		6.54E+01	6.33E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	1.97E+02	1.97E+02	7.64E+01	9.11E+01
+	SN-113	255.12		1.93	7.43E+02	3.69E+01	8.09E+01	3.39E+02
		391.69	*	61.90	3.69E+01		2.33E+01	1.75E+01
	SN-119M	23.87		16.10	1.82E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-129	29.78		57.00	8.74E+00	8.74E+00	8.51E+01	4.32E+00
		33.60		13.20	5.23E+01		1.03E+02	2.58E+01
		39.58		7.52	2.78E+01		2.73E-01	1.31E+01
+	BA-133	81.00	*	34.06	3.21E+01	2.40E+01	4.56E+02	1.53E+01
		302.84	*	18.33	1.24E+02		5.45E+02	5.87E+01
		356.01	*	62.05	2.40E+01		4.71E+02	1.10E+01
	CE-139	165.85		80.35	1.91E+01	1.91E+01	8.24E+00	8.88E+00
	CE-144	133.54		10.80	1.28E+02	1.28E+02	8.32E+01	6.01E+01
+	HG-203	279.19	*	77.30	2.21E+01	2.21E+01	4.59E+01	1.02E+01
	PB-210	46.50		4.25	6.28E+01	6.28E+01	8.32E+00	2.94E+01
	TH-231	25.64		14.70	2.09E+00	2.09E+00	-3.72E+00	9.21E-01
		84.21		6.40	1.76E+02		-1.12E+03	8.43E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.56E+01		6.06E+01	7.63E+00
+	TH-234	63.29	*	3.80	2.64E+02	2.64E+02	8.14E+02	1.28E+02
	NP-237	29.37		14.00	3.43E+01	3.43E+01	3.34E+02	1.69E+01
		86.50		12.60	5.94E+01		-4.11E+00	2.76E+01
	U-237	97.08		16.30	5.72E+01	3.84E+01	-1.43E+01	2.67E+01
		101.07		26.30	3.84E+01		1.29E+01	1.80E+01
		114.00		12.30	1.84E+02		1.40E+02	8.87E+01
		208.01		22.00	6.99E+01		6.02E+00	3.22E+01
	AM-241	59.54		35.90	1.61E+01	1.61E+01	-7.20E+01	7.68E+00
	AM-243	74.67		66.00	8.52E+00	8.52E+00	6.99E-01	3.94E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

Analysis Report for 2205072-04

CD-9B

JLP 5/31/22

Apex-Gamma

Analysis Report for 2205072-05
CD-9A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-05
Sample Description	: CD-9A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:40:14AM
Acquisition Started	: 5/31/2022 10:16:36AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE3
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 912.3 seconds
Dead Time	: 1.35 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124950

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:31:58AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-05

CD-9A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	31.67	25 -	41	32.31	3.25E+03	148.73	8.48E+02	3.60
M	2	52.18	46 -	75	52.81	1.31E+02	68.10	4.50E+02	5.34
m	3	62.31	46 -	75	62.92	5.10E+02	88.27	5.21E+02	5.33
	4	81.12	76 -	87	81.73	1.05E+03	87.29	4.27E+02	3.32
	5	112.49	107 -	120	113.07	3.85E+02	70.70	3.82E+02	3.91
	6	275.98	273 -	283	276.46	3.91E+01	36.68	1.56E+02	2.93
	7	303.31	297 -	311	303.76	2.07E+02	49.01	1.67E+02	2.87
	8	334.06	326 -	342	334.50	1.28E+02	39.69	9.78E+01	4.03
	9	355.88	346 -	365	356.30	5.43E+02	63.91	1.57E+02	3.41
	10	386.74	380 -	401	387.14	4.35E+02	51.99	5.75E+01	6.02
	11	415.87	408 -	423	416.25	7.02E+01	35.10	9.17E+01	4.05
	12	437.66	429 -	447	438.03	1.23E+02	32.18	4.57E+01	3.85
	13	511.14	505 -	518	511.46	2.80E+01	10.58	0.00E+00	5.88
	14	523.14	519 -	527	523.45	1.10E+01	6.63	0.00E+00	5.00
	15	787.64	784 -	791	787.80	5.00E+00	4.47	0.00E+00	2.41

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:31:58AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124920.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	31.67	3.25E+03	148.73			3.25E+03	1.49E+02
M	2	52.18	1.31E+02	68.10			1.31E+02	6.81E+01
m	3	62.31	5.10E+02	88.27	1.39E+01	1.49E+00	4.96E+02	8.83E+01
	4	81.12	1.05E+03	87.29			1.05E+03	8.73E+01
	5	112.49	3.85E+02	70.70			3.85E+02	7.07E+01
	6	275.98	3.91E+01	36.68			3.91E+01	3.67E+01
	7	303.31	2.07E+02	49.01			2.07E+02	4.90E+01
	8	334.06	1.28E+02	39.69			1.28E+02	3.97E+01
	9	355.88	5.43E+02	63.91			5.43E+02	6.39E+01
	10	386.74	4.35E+02	51.99			4.35E+02	5.20E+01
	11	415.87	7.02E+01	35.10			7.02E+01	3.51E+01
	12	437.66	1.23E+02	32.18			1.23E+02	3.22E+01
	13	511.14	2.80E+01	10.58	1.29E+01	1.43E+00	1.51E+01	1.07E+01
	14	523.14	1.10E+01	6.63			1.10E+01	6.63E+00

BP/Castex-Ltd Adm-Apx E-001087

Analysis Report for 2205072-05
CD-9A

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
15	787.64	5.00E+00	4.47			5.00E+00	4.47E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.57	29.78	*	57.00	1.11E+02	5.12E+00
		33.60		13.20		
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	4.63E+02	4.22E+01
		302.84	*	18.33	6.26E+02	1.51E+02
		356.01	*	62.05	5.01E+02	6.24E+01
TH-234	0.97	63.29	*	3.80	1.21E+03	2.17E+02
NP-237	0.58	29.37	*	14.00	4.53E+02	2.09E+01
		86.50		12.60		

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Analysis Report for 2205072-05
CD-9A

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
?	I-129	0.577	1.11E+02	5.12E+00	
	BA-133	0.999	4.83E+02	3.41E+01	
	TH-234	0.976	1.21E+03	2.17E+02	
?	NP-237	0.583	4.53E+02	2.09E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-05
CD-9A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:31:58AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	2	52.18	1.45125E-01	26.07		
	5	112.49	4.27523E-01	9.19	Sum	
	6	275.98	4.34473E-02	46.90		
	8	334.06	1.42345E-01	15.49	Sum	
	10	386.74	4.83590E-01	5.97	Sum	
	11	415.87	7.79693E-02	25.01	Sum	
	12	437.66	1.36838E-01	13.06	Sum	
	13	511.14	1.68266E-02	35.26		
	14	523.14	1.22222E-02	30.15		
	15	787.64	5.55556E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	1.55E-04	1.55E-04	1.58E-04	7.38E-05
	3.31	12.30	1.59E-03		1.63E-03	7.59E-04
FE-55	5.89	24.50	1.76E-02	1.76E-02	3.92E-02	8.52E-03
CO-57	122.06	85.51	2.45E+01	2.45E+01	-1.60E+01	1.18E+01
	136.48	10.60	2.00E+02		1.06E+02	9.61E+01
NI-59	6.92	29.80	3.14E-02	3.14E-02	8.08E-02	1.52E-02

Analysis Report for 2205072-05

CD-9A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	MO-93	16.59		52.90	6.80E-01	6.80E-01	1.76E+00	3.33E-01
		18.60		10.00	4.97E+00		2.77E+00	2.43E+00
	NB-93M	16.57		9.43	3.80E+00	3.80E+00	9.86E+00	1.86E+00
	CD-109	88.03		3.72	6.50E+02	6.50E+02	-3.62E+02	3.19E+02
	SN-113	255.12		1.93	1.40E+03	7.81E+01	6.59E+02	6.62E+02
		391.69		61.90	7.81E+01		1.77E+02	3.78E+01
	SN-119M	23.87		16.10	1.31E+01	1.16E+01	-1.09E+00	6.46E+00
		25.10		22.70	1.16E+01		3.85E-01	5.72E+00
+	I-129	29.78	*	57.00	5.48E+00	5.48E+00	1.11E+02	2.69E+00
		33.60		13.20	4.88E+01		5.61E+02	2.41E+01
		39.58		7.52	8.42E+01		-1.72E+01	4.15E+01
+	BA-133	81.00	*	34.06	4.34E+01	4.34E+01	4.63E+02	2.11E+01
		302.84	*	18.33	2.05E+02		6.26E+02	9.85E+01
		356.01	*	62.05	6.90E+01		5.01E+02	3.32E+01
	CE-139	165.85		80.35	3.32E+01	3.32E+01	8.37E+00	1.60E+01
	CE-144	133.54		10.80	1.90E+02	1.90E+02	7.41E+01	9.11E+01
	HG-203	279.19		77.30	3.95E+01	3.95E+01	6.84E+00	1.88E+01
	PB-210	46.50		4.25	1.08E+02	1.08E+02	-4.45E+01	5.23E+01
	TH-231	25.64		14.70	1.90E+01	1.90E+01	6.33E-01	9.40E+00
		84.21		6.40	4.30E+02		-1.42E+02	2.11E+02
	PA-234M	9.89		89.00	5.06E-02	5.06E-02	9.90E-02	2.46E-02
		21.72		64.90	1.37E+00		-8.87E-01	6.72E-01
		37.93		23.75	2.89E+01		-4.92E+00	1.43E+01
+	TH-234	63.29	*	3.80	5.10E+02	5.10E+02	1.21E+03	2.52E+02
+	NP-237	29.37	*	14.00	2.23E+01	2.23E+01	4.53E+02	1.10E+01
		86.50		12.60	2.24E+02		-8.29E+01	1.10E+02
	U-237	97.08		16.30	9.81E+01	6.23E+01	-2.28E+00	4.74E+01
		101.07		26.30	6.23E+01		-7.54E+01	3.00E+01
		114.00		12.30	2.37E+02		-1.58E+00	1.16E+02
		208.01		22.00	1.29E+02		3.18E+01	6.15E+01
	AM-241	59.54		35.90	3.32E+01	3.32E+01	9.89E+01	1.63E+01
	AM-243	74.67		66.00	3.09E+01	3.09E+01	-1.39E+01	1.52E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-001091

Apex-Gamma

5/31/22

Analysis Report for 2205072-06
CD-5C

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-06
Sample Description	: CD-5C
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:40:25AM
Acquisition Started	: 5/31/2022 10:16:43AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.6 seconds
Dead Time	: 0.07 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124951

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:31:47AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-06

CD-5C

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.55	17 -	24	20.52	7.69E+01	52.35	4.08E+02	1.99
M	2	30.85	25 -	44	30.81	2.67E+03	110.32	2.87E+02	2.43
m	3	35.02	25 -	44	34.99	6.58E+02	103.15	1.87E+02	2.61
M	4	52.87	44 -	74	52.82	1.14E+02	45.25	1.88E+02	3.28
m	5	61.91	44 -	74	61.85	2.98E+02	51.95	1.98E+02	2.92
m	6	66.20	44 -	74	66.14	1.50E+02	46.77	1.72E+02	2.47
m	7	71.19	44 -	74	71.13	3.03E+01	31.92	1.86E+02	3.01
M	8	80.95	76 -	94	80.88	1.05E+03	71.55	1.64E+02	2.46
M	9	111.79	104 -	125	111.70	2.61E+02	46.73	1.87E+02	2.56
m	10	116.56	104 -	125	116.47	6.53E+01	46.30	1.72E+02	3.05
	11	134.80	132 -	137	134.69	3.20E+01	24.58	9.41E+01	2.12
	12	141.92	138 -	146	141.81	4.12E+01	34.12	1.56E+02	6.43
	13	276.36	271 -	281	276.17	7.01E+01	28.38	6.58E+01	3.31
M	14	302.93	298 -	315	302.72	1.53E+02	28.54	3.73E+01	2.36
m	15	307.66	298 -	315	307.45	4.49E+01	30.17	4.38E+01	3.18
	16	335.18	329 -	342	334.95	8.14E+01	30.63	6.12E+01	2.70
	17	356.10	348 -	361	355.86	4.59E+02	47.78	5.12E+01	2.67
M	18	386.31	379 -	395	386.05	1.72E+02	36.55	4.16E+01	3.22
m	19	390.92	379 -	395	390.66	4.94E+01	31.56	1.75E+01	3.29
	20	416.94	411 -	425	416.67	6.70E+01	22.02	2.40E+01	5.88
	21	437.12	433 -	440	436.83	6.71E+01	18.44	1.18E+01	2.95
	22	486.94	482 -	489	486.63	6.00E+00	8.49	8.00E+00	2.68
	23	499.72	495 -	502	499.40	6.94E+00	7.21	4.11E+00	1.55

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:31:47AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124919.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	20.55	7.69E+01	52.35			7.69E+01	5.23E+01
M	2	30.85	2.67E+03	110.32			2.67E+03	1.10E+02
m	3	35.02	6.58E+02	103.15			6.58E+02	1.03E+02
M	4	52.87	1.14E+02	45.25			1.14E+02	4.53E+01
m	5	61.91	2.98E+02	51.95	1.36E+01	2.51E+00	2.85E+02	5.20E+01
m	6	66.20	1.50E+02	46.77			1.50E+02	4.68E+01

BP/Castex-Ltd Adm-Apx E-001093

Analysis Report for 2205072-06

CD-5C

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	7	71.19	3.03E+01	31.92			3.03E+01	3.19E+01
M	8	80.95	1.05E+03	71.55			1.05E+03	7.16E+01
M	9	111.79	2.61E+02	46.73			2.61E+02	4.67E+01
m	10	116.56	6.53E+01	46.30			6.53E+01	4.63E+01
	11	134.80	3.20E+01	24.58			3.20E+01	2.46E+01
	12	141.92	4.12E+01	34.12	1.74E+00	1.99E+00	3.95E+01	3.42E+01
	13	276.36	7.01E+01	28.38			7.01E+01	2.84E+01
M	14	302.93	1.53E+02	28.54			1.53E+02	2.85E+01
m	15	307.66	4.49E+01	30.17			4.49E+01	3.02E+01
	16	335.18	8.14E+01	30.63			8.14E+01	3.06E+01
	17	356.10	4.59E+02	47.78			4.59E+02	4.78E+01
M	18	386.31	1.72E+02	36.55			1.72E+02	3.66E+01
m	19	390.92	4.94E+01	31.56			4.94E+01	3.16E+01
	20	416.94	6.70E+01	22.02			6.70E+01	2.20E+01
	21	437.12	6.71E+01	18.44			6.71E+01	1.84E+01
	22	486.94	6.00E+00	8.49			6.00E+00	8.49E+00
	23	499.72	6.94E+00	7.21			6.94E+00	7.21E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.93	255.12		1.93		
		391.69	*	61.90	5.09E+01	3.26E+01
I-129	0.86	29.78	*	57.00	5.48E+01	2.26E+00
		33.60	*	13.20	8.91E+01	1.40E+01
		39.58		7.52		
BA-133	1.00	81.00	*	34.06	5.06E+02	3.96E+01
		302.84	*	18.33	5.47E+02	1.06E+02
		356.01	*	62.05	4.82E+02	5.40E+01
CE-144	0.96	133.54	*	10.80	1.12E+02	8.69E+01
TH-234	0.95	63.29	*	3.80	6.77E+02	1.24E+02
AM-241	0.86	59.54	*	35.90	7.16E+01	1.32E+01

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Analysis Report for 2205072-06
CD-5C

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	SN-113	0.937	5.09E+01	3.26E+01	
	I-129	0.866	5.56E+01	2.23E+00	
	BA-133	1.000	5.02E+02	3.06E+01	
	CE-144	0.960	1.12E+02	8.69E+01	
?	TH-234	0.952	6.77E+02	1.24E+02	
X	NP-237	0.697			
?	AM-241	0.866	7.16E+01	1.32E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-06
CD-5C

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:31:47AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.55	8.54824E-02	34.02		
M	4	52.87	1.26229E-01	19.92		
m	6	66.20	1.66499E-01	15.60	Sum	
m	7	71.19	3.36219E-02	52.75	Sum	
M	9	111.79	2.89561E-01	8.97	Sum	
m	10	116.56	7.25828E-02	35.43	Sum	
	12	141.92	4.38736E-02	43.28	Sum	
	13	276.36	7.78749E-02	20.24		
m	15	307.66	4.99291E-02	33.57		
	16	335.18	9.04365E-02	18.81	Sum	
M	18	386.31	1.91633E-01	10.60	Sum	
	20	416.94	7.44515E-02	16.43	Sum	
	21	437.12	7.45434E-02	13.74	Sum	
	22	486.94	6.66667E-03	70.71		
	23	499.72	7.71605E-03	51.92		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

BP/Castex-Ltd Adm-Apx E-001096

Analysis Report for 2205072-06

CD-5C

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
		3.31		12.30	2.92E-06		0.00E+00	0.00E+00
	FE-55	5.89		24.50	6.43E-04	6.43E-04	9.89E-05	2.93E-04
	CO-57	122.06		85.51	1.96E+01	1.96E+01	-2.47E+01	9.27E+00
		136.48		10.60	1.91E+02		-2.23E+01	9.05E+01
	NI-59	6.92		29.80	1.81E-03	1.81E-03	1.37E-03	8.47E-04
	MO-93	16.59		52.90	1.63E-01	1.63E-01	1.06E-02	7.90E-02
		18.60		10.00	1.42E+00		2.95E-02	6.86E-01
	NB-93M	16.57		9.43	9.12E-01	9.12E-01	5.91E-02	4.41E-01
	CD-109	88.03		3.72	3.10E+02	3.10E+02	-2.64E+03	1.48E+02
+	SN-113	255.12		1.93	1.18E+03	4.47E+01	6.44E-01	5.46E+02
		391.69	*	61.90	4.47E+01		5.09E+01	2.10E+01
	SN-119M	23.87		16.10	2.55E+00	2.55E+00	-7.38E+01	1.24E+00
		25.10		22.70	2.63E+00		-7.35E+01	1.28E+00
+	I-129	29.78	*	57.00	3.04E+00	3.04E+00	5.48E+01	1.49E+00
		33.60	*	13.20	1.99E+01		8.91E+01	9.76E+00
		39.58		7.52	2.98E+01		-1.31E+01	1.44E+01
+	BA-133	81.00	*	34.06	5.48E+01	3.93E+01	5.06E+02	2.67E+01
		302.84	*	18.33	1.85E+02		5.47E+02	8.75E+01
		356.01	*	62.05	3.93E+01		4.82E+02	1.82E+01
	CE-139	165.85		80.35	3.11E+01	3.11E+01	-2.67E+00	1.48E+01
+	CE-144	133.54	*	10.80	1.36E+02	1.36E+02	1.12E+02	6.32E+01
	HG-203	279.19		77.30	3.81E+01	3.81E+01	2.80E-01	1.79E+01
	PB-210	46.50		4.25	5.41E+01	5.41E+01	-8.70E+01	2.57E+01
	TH-231	25.64		14.70	6.85E+00	6.85E+00	-3.16E+01	3.37E+00
		84.21		6.40	4.34E+02		2.49E+03	2.13E+02
	PA-234M	9.89		89.00	5.78E-03	5.78E-03	6.27E-03	2.76E-03
		21.72		64.90	4.22E-01		1.51E-01	2.05E-01
		37.93		23.75	1.24E+01		9.43E+00	6.07E+00
+	TH-234	63.29	*	3.80	4.17E+02	4.17E+02	6.77E+02	2.05E+02
	NP-237	29.37	*	14.00	1.24E+01	1.24E+01	2.23E+02	6.08E+00
		86.50		12.60	1.45E+02		-3.54E+02	7.03E+01
	U-237	97.08		16.30	8.02E+01	5.42E+01	1.37E+00	3.82E+01
		101.07		26.30	5.42E+01		1.94E+01	2.58E+01
		114.00		12.30	2.38E+02		6.83E+02	1.16E+02
		208.01		22.00	1.19E+02		-1.05E+01	5.57E+01
+	AM-241	59.54	*	35.90	4.41E+01	4.41E+01	7.16E+01	2.17E+01
	AM-243	74.67		66.00	1.50E+01	1.50E+01	-2.51E+02	7.22E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

KP 5/31/22

Apex-Gamma

Analysis Report for 2205072-07
CD-10A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-07
Sample Description	: CD-10A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:40:33AM
Acquisition Started	: 5/31/2022 10:32:16AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124952

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:47:19AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-07

CD-10A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.62	37 -	40	37.22	4.33E+02	69.34	3.79E+02	1.70
	2	52.44	50 -	57	54.01	9.07E+01	37.63	1.75E+02	1.38
M	3	62.16	59 -	71	63.70	2.48E+02	40.64	1.36E+02	1.47
m	4	66.44	59 -	71	67.98	8.98E+01	31.50	1.81E+02	1.48
M	5	81.38	78 -	92	82.89	9.73E+02	66.96	9.36E+01	1.26
m	6	84.59	78 -	92	86.09	1.72E+01	27.20	7.84E+01	1.27
	7	111.83	109 -	116	113.27	2.14E+02	47.62	2.33E+02	1.83
	8	116.66	117 -	120	118.09	4.32E+01	24.08	9.35E+01	1.72
	9	141.71	139 -	148	143.10	4.77E+01	37.95	1.75E+02	4.88
	10	161.06	159 -	166	162.41	5.24E+01	34.81	1.65E+02	2.35
	11	225.16	224 -	229	226.38	2.00E+01	21.77	8.00E+01	3.25
	12	276.82	275 -	280	277.94	8.88E+01	22.78	3.24E+01	1.29
M	13	303.30	301 -	311	304.37	1.97E+02	29.05	1.83E+01	1.68
m	14	307.92	301 -	311	308.98	3.47E+01	15.59	1.35E+01	1.94
	15	312.44	312 -	316	313.48	1.34E+01	12.66	2.52E+01	1.28
	16	334.29	331 -	338	335.29	4.00E+01	27.06	9.39E+01	1.66
	17	338.75	338 -	343	339.75	2.70E+01	16.06	3.00E+01	1.76
	18	356.44	352 -	362	357.40	6.86E+02	55.82	4.99E+01	1.92
M	19	384.11	381 -	397	385.02	1.40E+02	25.48	1.70E+01	1.68
m	20	387.25	381 -	397	388.15	1.72E+02	32.14	7.28E+00	1.69
m	21	391.95	381 -	397	392.85	4.18E+01	16.28	1.62E+00	1.69
M	22	414.93	411 -	430	415.78	3.56E+01	16.82	2.52E+01	1.89
m	23	418.83	411 -	430	419.67	2.19E+01	15.84	1.91E+01	1.89
m	24	422.49	411 -	430	423.33	1.42E+01	15.07	1.57E+01	1.89
	25	437.64	435 -	443	438.45	1.16E+02	24.76	2.35E+01	1.95
	26	469.17	466 -	475	469.91	2.05E+01	14.97	2.10E+01	1.88
	27	523.27	521 -	526	523.92	5.00E+00	7.07	6.00E+00	1.45
	28	542.39	539 -	546	543.00	1.10E+01	6.63	0.00E+00	1.46
	29	610.05	608 -	613	610.53	8.30E+00	7.00	3.40E+00	2.28

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:47:19AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124921.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.

BP/Castex-Ltd Adm-Apx E-001099

Analysis Report for 2205072-07

CD-10A

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.62	4.33E+02	69.34	2.96E+01	1.95E+00	4.03E+02	6.94E+01
	2	52.44	9.07E+01	37.63			9.07E+01	3.76E+01
M	3	62.16	2.48E+02	40.64	4.60E+00	9.36E-01	2.43E+02	4.07E+01
m	4	66.44	8.98E+01	31.50	2.24E+00	8.36E-01	8.76E+01	3.15E+01
M	5	81.38	9.73E+02	66.96			9.73E+02	6.70E+01
m	6	84.59	1.72E+01	27.20			1.72E+01	2.72E+01
	7	111.83	2.14E+02	47.62			2.14E+02	4.76E+01
	8	116.66	4.32E+01	24.08			4.32E+01	2.41E+01
	9	141.71	4.77E+01	37.95			4.77E+01	3.79E+01
	10	161.06	5.24E+01	34.81			5.24E+01	3.48E+01
	11	225.16	2.00E+01	21.77			2.00E+01	2.18E+01
	12	276.82	8.88E+01	22.78			8.88E+01	2.28E+01
M	13	303.30	1.97E+02	29.05			1.97E+02	2.90E+01
m	14	307.92	3.47E+01	15.59			3.47E+01	1.56E+01
	15	312.44	1.34E+01	12.66			1.34E+01	1.27E+01
	16	334.29	4.00E+01	27.06			4.00E+01	2.71E+01
	17	338.75	2.70E+01	16.06	1.83E+00	1.26E+00	2.52E+01	1.61E+01
	18	356.44	6.86E+02	55.82			6.86E+02	5.58E+01
M	19	384.11	1.40E+02	25.48			1.40E+02	2.55E+01
m	20	387.25	1.72E+02	32.14			1.72E+02	3.21E+01
m	21	391.95	4.18E+01	16.28			4.18E+01	1.63E+01
M	22	414.93	3.56E+01	16.82			3.56E+01	1.68E+01
m	23	418.83	2.19E+01	15.84			2.19E+01	1.58E+01
m	24	422.49	1.42E+01	15.07			1.42E+01	1.51E+01
	25	437.64	1.16E+02	24.76			1.16E+02	2.48E+01
	26	469.17	2.05E+01	14.97			2.05E+01	1.50E+01
	27	523.27	5.00E+00	7.07			5.00E+00	7.07E+00
	28	542.39	1.10E+01	6.63			1.10E+01	6.63E+00
	29	610.05	8.30E+00	7.00	1.88E+00	8.05E-01	6.42E+00	7.05E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/units)	Activity Uncertainty

Analysis Report for 2205072-07
CD-10A

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.04E+01	1.19E+01
BA-133	0.99	81.00	*	34.06	5.03E+02	4.04E+01
		302.84	*	18.33	5.09E+02	7.98E+01
		356.01	*	62.05	5.12E+02	4.67E+01
HG-203	0.86	279.19	*	77.30	5.44E+01	1.43E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	5.56E+01	9.58E+00
TH-234	0.96	63.29	*	3.80	7.12E+02	1.21E+02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.951	3.04E+01	1.19E+01	
BA-133	0.996	5.07E+02	2.85E+01	
HG-203	0.866	5.44E+01	1.43E+01	
PA-234M	0.982	5.56E+01	9.58E+00	
TH-234	0.968	7.12E+02	1.21E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-07
CD-10A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:47:19AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	52.44	1.00724E-01	20.76		
m	4	66.44	9.73193E-02	17.99		
m	6	84.59	1.91159E-02	79.06	Tol.	TH-231 NP-237
	7	111.83	2.38294E-01	11.10	Tol.	U-237
	8	116.66	4.80370E-02	27.85	Sum	
	9	141.71	5.29877E-02	39.79	Sum	
	10	161.06	5.81975E-02	33.23	Sum	
	11	225.16	2.22222E-02	54.43		
m	14	307.92	3.86019E-02	22.43		
	15	312.44	1.48932E-02	47.22	Sum	
	16	334.29	4.44828E-02	33.79		
	17	338.75	2.79695E-02	32.00	Sum	
M	19	384.11	1.55969E-01	9.07	Sum	
m	20	387.25	1.91614E-01	9.32		
M	22	414.93	3.95664E-02	23.62		
m	23	418.83	2.43690E-02	36.12	Sum	
m	24	422.49	1.57579E-02	53.12		
	25	437.64	1.29167E-01	10.65	Sum	
	26	469.17	2.27599E-02	36.53		
	27	523.27	5.55556E-03	70.71		
	28	542.39	1.22222E-02	30.15		
	29	610.05	7.13697E-03	54.85		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 2205072-07
CD-10A

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.22E+01	1.22E+01	5.71E+00	5.62E+00
		136.48		10.60	1.22E+02		1.70E+00	5.66E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	1.97E+02	1.97E+02	-4.44E+01	9.11E+01
+	SN-113	255.12		1.93	7.24E+02	2.25E+01	1.53E+02	3.29E+02
		391.69	*	61.90	2.25E+01		3.04E+01	1.02E+01
	SN-119M	23.87		16.10	1.82E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-129	29.78		57.00	8.79E+00	8.79E+00	8.61E+01	4.35E+00
		33.60		13.20	5.22E+01		9.62E+01	2.58E+01
		39.58		7.52	2.91E+01		1.15E+01	1.38E+01
+	BA-133	81.00	*	34.06	4.67E+01	2.57E+01	5.03E+02	2.26E+01
		302.84	*	18.33	7.40E+01		5.09E+02	3.35E+01
		356.01	*	62.05	2.57E+01		5.12E+02	1.18E+01
	CE-139	165.85		80.35	1.71E+01	1.71E+01	1.68E+00	7.90E+00
	CE-144	133.54		10.80	1.12E+02	1.12E+02	-2.03E+01	5.21E+01
+	HG-203	279.19	*	77.30	1.46E+01	1.46E+01	5.44E+01	6.45E+00
	PB-210	46.50		4.25	6.47E+01	6.47E+01	1.60E+01	3.04E+01
	TH-231	25.64		14.70	2.48E+00	2.48E+00	-3.00E+00	1.12E+00
		84.21		6.40	1.73E+02		-1.95E+03	8.24E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.57E+01		5.56E+01	7.65E+00
+	TH-234	63.29	*	3.80	2.95E+02	2.95E+02	7.12E+02	1.44E+02
	NP-237	29.37		14.00	3.45E+01	3.45E+01	3.37E+02	1.70E+01
		86.50		12.60	6.59E+01		3.07E+01	3.09E+01
	U-237	97.08		16.30	5.89E+01	3.90E+01	1.04E+01	2.75E+01
		101.07		26.30	3.90E+01		1.20E+01	1.82E+01
		114.00		12.30	1.81E+02		2.04E+02	8.74E+01
		208.01		22.00	7.33E+01		-2.40E+01	3.39E+01
	AM-241	59.54		35.90	1.89E+01	1.89E+01	-5.80E+01	9.08E+00
	AM-243	74.67		66.00	9.23E+00	9.23E+00	6.60E-01	4.30E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

Analysis Report for 2205072-07
CD-10A

BP/Castex-Ltd Adm-Apx E-001104

IUP 5/31/22

Apex-Gamma

Analysis Report for 2205072-08
CD-8A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-08
Sample Description	: CD-8A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:40:40AM
Acquisition Started	: 5/31/2022 10:32:22AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE3
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 911.5 seconds
Dead Time	: 1.27 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124953

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:47:44AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-08

CD-8A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	20.90	17 -	47	21.55	1.85E+02	50.80	2.72E+02	4.30
m	2	31.29	17 -	47	31.93	3.37E+03	137.56	5.20E+02	5.38
M	3	53.41	47 -	98	54.04	1.19E+02	72.02	4.59E+02	4.86
m	4	61.94	47 -	98	62.56	4.03E+02	81.75	4.48E+02	4.84
m	5	66.50	47 -	98	67.12	1.67E+02	70.88	3.52E+02	3.96
m	6	81.16	47 -	98	81.77	1.27E+03	86.56	3.31E+02	3.94
M	7	101.78	99 -	120	102.37	4.18E+01	34.20	1.83E+02	4.32
m	8	112.33	99 -	120	112.91	4.07E+02	76.47	4.35E+02	5.27
	9	160.18	157 -	165	160.73	7.33E+01	36.34	1.59E+02	3.28
	10	276.33	266 -	284	276.80	1.04E+02	48.83	1.72E+02	1.56
	11	303.62	295 -	312	304.07	2.08E+02	51.13	1.62E+02	3.22
	12	334.51	325 -	344	334.95	1.75E+02	40.74	7.99E+01	5.11
	13	356.18	348 -	361	356.60	5.64E+02	56.67	1.09E+02	3.34
	14	365.37	362 -	371	365.79	2.80E+01	23.07	6.00E+01	1.98
	15	386.75	379 -	397	387.15	4.44E+02	58.19	1.29E+02	4.89
	16	416.96	408 -	432	417.34	1.18E+02	31.95	4.01E+01	8.36
	17	437.16	432 -	442	437.53	1.38E+02	24.38	5.49E+00	3.88
	18	467.82	462 -	477	468.17	3.27E+01	19.39	2.66E+01	4.79

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:47:44AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124920.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	20.90	1.85E+02	50.80			1.85E+02	5.08E+01
m	2	31.29	3.37E+03	137.56			3.37E+03	1.38E+02
M	3	53.41	1.19E+02	72.02			1.19E+02	7.20E+01
m	4	61.94	4.03E+02	81.75	1.39E+01	1.49E+00	3.89E+02	8.18E+01
m	5	66.50	1.67E+02	70.88			1.67E+02	7.09E+01
m	6	81.16	1.27E+03	86.56			1.27E+03	8.66E+01
M	7	101.78	4.18E+01	34.20			4.18E+01	3.42E+01
m	8	112.33	4.07E+02	76.47			4.07E+02	7.65E+01
	9	160.18	7.33E+01	36.34			7.33E+01	3.63E+01
	10	276.33	1.04E+02	48.83			1.04E+02	4.88E+01
	11	303.62	2.08E+02	51.13			2.08E+02	5.11E+01

BP/Castex-Ltd Adm-Apx E-001106

Analysis Report for 2205072-08

CD-8A

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
12	334.51	1.75E+02	40.74			1.75E+02	4.07E+01
13	356.18	5.64E+02	56.67			5.64E+02	5.67E+01
14	365.37	2.80E+01	23.07			2.80E+01	2.31E+01
15	386.75	4.44E+02	58.19			4.44E+02	5.82E+01
16	416.96	1.18E+02	31.95			1.18E+02	3.19E+01
17	437.16	1.38E+02	24.38			1.38E+02	2.44E+01
18	467.82	3.27E+01	19.39			3.27E+01	1.94E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.59	29.78	*	57.00	1.12E+02	4.60E+00
		33.60		13.20		
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	5.61E+02	4.36E+01
		302.84	*	18.33	6.29E+02	1.58E+02
		356.01	*	62.05	5.22E+02	5.65E+01
TH-234	0.95	63.29	*	3.80	9.40E+02	1.99E+02
NP-237	0.60	29.37	*	14.00	4.55E+02	1.87E+01
		86.50		12.60		
AM-241	0.86	59.54	*	35.90	9.95E+01	2.10E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001107

Analysis Report for 2205072-08
CD-8A

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
?	I-129	0.599	1.12E+02	4.60E+00	
	BA-133	0.997	5.50E+02	3.37E+01	
?	TH-234	0.954	9.40E+02	1.99E+02	
?	NP-237	0.603	4.55E+02	1.87E+01	
?	AM-241	0.863	9.95E+01	2.10E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-08
CD-8A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:47:44AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	20.90	2.05910E-01	13.71	Tol.	MO-93 PA-234M
M	3	53.41	1.32147E-01	30.28		
m	5	66.50	1.85358E-01	21.24		
M	7	101.78	4.64297E-02	40.92	Tol.	U-237
m	8	112.33	4.52462E-01	9.39	Sum	
	9	160.18	8.14597E-02	24.79	Sum	
	10	276.33	1.15690E-01	23.45		
	12	334.51	1.94486E-01	11.64	Sum	
	14	365.37	3.11111E-02	41.19	Sum	
	15	386.75	4.92817E-01	6.56	Sum	
	16	416.96	1.31047E-01	13.54	Sum	
	17	437.16	1.53617E-01	8.82	Sum	
	18	467.82	3.63285E-02	29.65		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	1.41E-04	1.41E-04	2.05E-04	6.70E-05
	3.31	12.30	1.45E-03		2.11E-03	6.89E-04

Analysis Report for 2205072-08

CD-8A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	FE-55	5.89		24.50	1.40E-02	1.40E-02	2.38E-02	6.73E-03
	CO-57	122.06		85.51	2.46E+01	2.46E+01	-1.38E+01	1.19E+01
		136.48		10.60	2.03E+02		5.22E+01	9.73E+01
	NI-59	6.92		29.80	2.43E-02	2.43E-02	4.20E-02	1.17E-02
	MO-93	16.59		52.90	5.72E-01	5.72E-01	4.80E-01	2.79E-01
		18.60		10.00	4.17E+00		-8.01E-01	2.03E+00
	NB-93M	16.57		9.43	3.20E+00	3.20E+00	2.68E+00	1.56E+00
	CD-109	88.03		3.72	6.65E+02	6.65E+02	1.59E+03	3.26E+02
	SN-113	255.12		1.93	1.44E+03	8.48E+01	9.70E+02	6.83E+02
		391.69		61.90	8.48E+01		2.38E+02	4.11E+01
	SN-119M	23.87		16.10	1.30E+01	1.15E+01	7.39E+01	6.42E+00
		25.10		22.70	1.15E+01		8.49E+01	5.68E+00
+	I-129	29.78	*	57.00	7.14E+00	7.14E+00	1.12E+02	3.52E+00
		33.60		13.20	4.90E+01		5.69E+02	2.43E+01
		39.58		7.52	8.51E+01		-1.11E+00	4.19E+01
+	BA-133	81.00	*	34.06	1.45E+02	4.94E+01	5.61E+02	7.17E+01
		302.84	*	18.33	2.18E+02		6.29E+02	1.05E+02
		356.01	*	62.05	4.94E+01		5.22E+02	2.35E+01
	CE-139	165.85		80.35	3.36E+01	3.36E+01	-1.10E+00	1.62E+01
	CE-144	133.54		10.80	1.84E+02	1.84E+02	0.00E+00	8.82E+01
	HG-203	279.19		77.30	4.22E+01	4.22E+01	3.49E+00	2.02E+01
	PB-210	46.50		4.25	1.06E+02	1.06E+02	-9.72E+02	5.16E+01
	TH-231	25.64		14.70	1.88E+01	1.88E+01	1.39E+02	9.32E+00
		84.21		6.40	4.43E+02		2.75E+03	2.18E+02
	PA-234M	9.89		89.00	3.85E-02	3.85E-02	4.85E-02	1.86E-02
		21.72		64.90	1.32E+00		-1.78E-01	6.44E-01
		37.93		23.75	2.90E+01		1.42E+02	1.43E+01
+	TH-234	63.29	*	3.80	7.96E+02	7.96E+02	9.40E+02	3.95E+02
+	NP-237	29.37	*	14.00	2.91E+01	2.91E+01	4.55E+02	1.43E+01
		86.50		12.60	2.30E+02		1.37E+03	1.13E+02
	U-237	97.08		16.30	9.87E+01	6.37E+01	1.21E+01	4.77E+01
		101.07		26.30	6.37E+01		-3.67E+02	3.08E+01
		114.00		12.30	2.37E+02		1.11E+01	1.15E+02
		208.01		22.00	1.36E+02		3.74E+01	6.53E+01
+	AM-241	59.54	*	35.90	8.42E+01	8.42E+01	9.95E+01	4.18E+01
	AM-243	74.67		66.00	3.13E+01	3.13E+01	-2.67E+01	1.54E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

IGP 5/31/22

Apex-Gamma

Analysis Report for 2205072-09
CD-11A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-09
Sample Description	: CD-11A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:40:56AM
Acquisition Started	: 5/31/2022 10:32:29AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.6 seconds
Dead Time	: 0.07 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124954

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:47:33AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-09

CD-11A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
m	1	30.80	17 -	40	30.76	2.59E+03	109.92	2.71E+02	2.38
m	2	35.07	17 -	40	35.04	6.20E+02	78.43	2.14E+02	2.20
M	3	52.60	48 -	71	52.55	5.89E+01	45.69	2.88E+02	2.99
m	4	61.47	48 -	71	61.41	2.98E+02	49.96	2.24E+02	2.33
m	5	65.54	48 -	71	65.48	1.47E+02	58.99	2.88E+02	3.00
	6	80.94	76 -	87	80.87	1.04E+03	83.64	3.53E+02	2.44
	7	112.23	107 -	118	112.14	3.01E+02	58.82	2.81E+02	2.54
	8	276.41	269 -	282	276.21	5.35E+01	39.05	1.41E+02	2.23
	9	286.16	283 -	289	285.96	1.84E+01	15.56	2.92E+01	3.53
	10	302.61	298 -	307	302.40	1.03E+02	40.99	1.84E+02	2.01
	11	334.85	330 -	341	334.62	8.95E+01	29.93	7.10E+01	2.86
	12	356.00	350 -	361	355.76	5.04E+02	48.00	3.64E+01	2.47
	13	366.00	362 -	372	365.75	1.94E+01	19.07	3.72E+01	2.98
M	14	385.97	379 -	394	385.71	2.22E+02	38.24	5.52E+01	4.95
m	15	391.56	379 -	394	391.29	3.04E+01	20.45	1.60E+01	2.44
	16	416.66	407 -	425	416.39	3.30E+01	37.99	1.14E+02	5.20
	17	436.70	431 -	440	436.41	8.93E+01	19.82	5.35E+00	2.22
	18	469.15	462 -	474	468.84	2.83E+01	16.70	1.94E+01	1.18

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:47:33AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124919.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	1	30.80	2.59E+03	109.92			2.59E+03	1.10E+02
m	2	35.07	6.20E+02	78.43			6.20E+02	7.84E+01
M	3	52.60	5.89E+01	45.69			5.89E+01	4.57E+01
m	4	61.47	2.98E+02	49.96	1.36E+01	2.51E+00	2.85E+02	5.00E+01
m	5	65.54	1.47E+02	58.99	1.36E+01	2.51E+00	1.33E+02	5.90E+01
	6	80.94	1.04E+03	83.64			1.04E+03	8.36E+01
	7	112.23	3.01E+02	58.82			3.01E+02	5.88E+01
	8	276.41	5.35E+01	39.05			5.35E+01	3.91E+01
	9	286.16	1.84E+01	15.56			1.84E+01	1.56E+01
	10	302.61	1.03E+02	40.99			1.03E+02	4.10E+01
	11	334.85	8.95E+01	29.93			8.95E+01	2.99E+01

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Analysis Report for 2205072-09

CD-11A

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	12	356.00	5.04E+02	48.00			5.04E+02	4.80E+01
	13	366.00	1.94E+01	19.07			1.94E+01	1.91E+01
M	14	385.97	2.22E+02	38.24			2.22E+02	3.82E+01
m	15	391.56	3.04E+01	20.45			3.04E+01	2.04E+01
	16	416.66	3.30E+01	37.99			3.30E+01	3.80E+01
	17	436.70	8.93E+01	19.82			8.93E+01	1.98E+01
	18	469.15	2.83E+01	16.70			2.83E+01	1.67E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.13E+01	2.11E+01
I-129	0.86	29.78	*	57.00	5.28E+01	2.24E+00
		33.60	*	13.20	8.44E+01	1.07E+01
		39.58		7.52		
BA-133	1.00	81.00	*	34.06	5.01E+02	4.46E+01
		302.84	*	18.33	3.68E+02	1.48E+02
		356.01	*	62.05	5.29E+02	5.50E+01
TH-234	0.91	63.29	*	3.80	6.65E+02	1.18E+02
AM-241	0.90	59.54	*	35.90	7.04E+01	1.24E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001113

Analysis Report for 2205072-09
CD-11A

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	SN-113	0.951	3.13E+01	2.11E+01	
	I-129	0.868	5.41E+01	2.19E+00	
	BA-133	1.000	5.05E+02	3.37E+01	
?	TH-234	0.919	6.65E+02	1.18E+02	
X	NP-237	0.699			
?	AM-241	0.909	7.04E+01	1.24E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001114

Analysis Report for 2205072-09
CD-11A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:47:33AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	3	52.60	6.54770E-02	38.77		
m	5	65.54	1.47650E-01	22.22	Sum	
	7	112.23	3.34857E-01	9.76	Sum	
	8	276.41	5.94176E-02	36.51		
	9	286.16	2.04545E-02	42.27		
	11	334.85	9.94667E-02	16.72	Sum	
	13	366.00	2.15643E-02	49.14	Sum	
M	14	385.97	2.47092E-01	8.60	Sum	
	16	416.66	3.66667E-02	57.56	Sum	
	17	436.70	9.92512E-02	11.10	Sum	
	18	469.15	3.14181E-02	29.52		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
	3.31	12.30	2.92E-06		0.00E+00	0.00E+00
FE-55	5.89	24.50	6.81E-04	6.81E-04	2.93E-04	3.12E-04
CO-57	122.06	85.51	1.81E+01	1.81E+01	-1.10E+01	8.53E+00
	136.48	10.60	1.77E+02		-9.23E+01	8.34E+01

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Analysis Report for 2205072-09

CD-11A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	NI-59	6.92		29.80	1.80E-03	1.80E-03	1.82E-03	8.41E-04
	MO-93	16.59		52.90	1.47E-01	1.47E-01	1.85E-02	7.11E-02
		18.60		10.00	1.33E+00		2.58E-01	6.42E-01
	NB-93M	16.57		9.43	8.23E-01	8.23E-01	1.03E-01	3.97E-01
	CD-109	88.03		3.72	2.99E+02	2.99E+02	-5.73E+01	1.42E+02
+	SN-113	255.12		1.93	1.33E+03	4.23E+01	6.61E+02	6.21E+02
		391.69	*	61.90	4.23E+01		3.13E+01	1.98E+01
	SN-119M	23.87		16.10	2.49E+00	2.49E+00	-6.64E+01	1.21E+00
		25.10		22.70	2.71E+00		-6.47E+01	1.32E+00
+	I-129	29.78	*	57.00	3.62E+00	3.62E+00	5.28E+01	1.78E+00
		33.60	*	13.20	2.41E+01		8.44E+01	1.19E+01
		39.58		7.52	3.03E+01		-1.90E+00	1.47E+01
+	BA-133	81.00	*	34.06	4.34E+01	3.22E+01	5.01E+02	2.10E+01
		302.84	*	18.33	2.19E+02		3.68E+02	1.05E+02
		356.01	*	62.05	3.22E+01		5.29E+02	1.47E+01
	CE-139	165.85		80.35	3.09E+01	3.09E+01	-1.13E+01	1.46E+01
	CE-144	133.54		10.80	1.65E+02	1.65E+02	3.96E+00	7.80E+01
	HG-203	279.19		77.30	3.83E+01	3.83E+01	2.44E+01	1.80E+01
	PB-210	46.50		4.25	6.00E+01	6.00E+01	9.89E-02	2.87E+01
	TH-231	25.64		14.70	6.92E+00	6.92E+00	-2.40E+01	3.41E+00
		84.21		6.40	4.29E+02		2.49E+03	2.11E+02
	PA-234M	9.89		89.00	5.40E-03	5.40E-03	3.81E-03	2.57E-03
		21.72		64.90	3.98E-01		-3.10E-01	1.92E-01
		37.93		23.75	1.25E+01		-7.88E-01	6.12E+00
+	TH-234	63.29	*	3.80	3.85E+02	3.85E+02	6.65E+02	1.89E+02
	NP-237	29.37	*	14.00	1.47E+01	1.47E+01	2.15E+02	7.26E+00
		86.50		12.60	1.41E+02		-2.58E+01	6.85E+01
	U-237	97.08		16.30	7.85E+01	4.93E+01	-5.53E+00	3.73E+01
		101.07		26.30	4.93E+01		-1.10E+01	2.34E+01
		114.00		12.30	2.36E+02		7.18E+02	1.14E+02
		208.01		22.00	1.27E+02		2.01E+01	5.97E+01
+	AM-241	59.54	*	35.90	4.08E+01	4.08E+01	7.04E+01	2.00E+01
	AM-243	74.67		66.00	1.59E+01	1.59E+01	1.36E+00	7.67E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0200

KP 5/31/22

Apex-Gamma

Analysis Report for 2205072-10
CD-7B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-10
Sample Description	: CD-7B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:41:04AM
Acquisition Started	: 5/31/2022 10:36:27AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE5
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 1021.0 seconds
Dead Time	: 11.85 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 2 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124955

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 10:53:30AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-10

CD-7B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.90	190 -	214	202.32	1.40E+02	43.99	1.33E+02	0.47
	2	30.82	285 -	315	302.24	2.97E+03	123.22	2.73E+02	0.78
M	3	35.00	332 -	364	344.45	6.58E+02	57.76	6.95E+01	0.73
m	4	35.95	332 -	364	354.00	1.35E+02	53.52	5.10E+01	0.72
M	5	50.98	499 -	533	505.46	1.89E+01	15.32	3.57E+01	0.92
m	6	51.75	499 -	533	513.25	3.05E+01	30.80	6.74E+01	1.01
m	7	53.22	499 -	533	528.00	8.29E+01	21.09	2.24E+01	0.76
	8	61.75	600 -	627	614.03	3.39E+02	46.91	7.47E+01	0.64
	9	66.05	639 -	670	657.39	1.59E+02	47.51	1.28E+02	0.71
	10	70.21	680 -	717	699.33	8.12E+01	29.69	3.76E+01	1.35
M	11	79.82	778 -	820	796.19	5.64E+01	71.34	1.11E+02	1.08
m	12	81.13	778 -	820	809.30	1.13E+03	69.01	5.62E+01	0.64
	13	112.11	1112 -	1132	1121.60	2.35E+02	44.14	1.32E+02	0.90
	14	116.36	1152 -	1176	1164.40	7.52E+01	28.47	5.95E+01	1.26
m	15	161.06	1597 -	1622	1615.00	5.03E+01	18.76	3.70E+01	0.93
M	16	276.43	2769 -	2794	2778.00	4.47E+01	16.97	1.44E+01	1.04
m	17	277.12	2769 -	2794	2785.00	6.06E+01	18.87	1.60E+01	1.05
	18	303.51	3035 -	3063	3051.07	1.47E+02	27.61	2.03E+01	0.96
	19	307.74	3078 -	3105	3093.70	4.30E+01	13.11	0.00E+00	0.64
	20	334.54	3348 -	3374	3363.93	9.67E+01	24.96	3.05E+01	0.76
	21	356.85	3571 -	3602	3588.83	5.28E+02	49.83	4.25E+01	0.88
	22	384.76	3852 -	3883	3870.20	1.24E+02	25.51	1.62E+01	1.01
M	23	387.82	3884 -	3911	3901.15	2.05E+02	32.03	3.92E+01	1.25
m	24	388.11	3884 -	3911	3904.00	1.22E+01	28.64	2.74E+01	1.14
	25	392.01	3925 -	3953	3943.35	4.18E+01	17.11	1.23E+01	0.66

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 10:53:30AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124918.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	20.90	1.40E+02	43.99	9.78E+00	1.98E+00	1.30E+02	4.40E+01
	2	30.82	2.97E+03	123.22	4.79E+00	8.09E-01	2.96E+03	1.23E+02
M	3	35.00	6.58E+02	57.76	1.01E+00	5.71E-01	6.57E+02	5.78E+01
m	4	35.95	1.35E+02	53.52	1.01E+00	5.71E-01	1.34E+02	5.35E+01

BP/Castex-Ltd Adm-Apx E-001118

Analysis Report for 2205072-10

CD-7B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	5	50.98	1.89E+01	15.32			1.89E+01	1.53E+01
m	6	51.75	3.05E+01	30.80			3.05E+01	3.08E+01
m	7	53.22	8.29E+01	21.09			8.29E+01	2.11E+01
	8	61.75	3.39E+02	46.91	3.89E+00	6.43E-01	3.35E+02	4.69E+01
	9	66.05	1.59E+02	47.51			1.59E+02	4.75E+01
	10	70.21	8.12E+01	29.69			8.12E+01	2.97E+01
M	11	79.82	5.64E+01	71.34			5.64E+01	7.13E+01
m	12	81.13	1.13E+03	69.01			1.13E+03	6.90E+01
	13	112.11	2.35E+02	44.14	7.03E-01	4.50E-01	2.34E+02	4.41E+01
	14	116.36	7.52E+01	28.47	1.28E-01	4.09E-01	7.51E+01	2.85E+01
m	15	161.06	5.03E+01	18.76	3.15E-01	4.34E-01	5.00E+01	1.88E+01
M	16	276.43	4.47E+01	16.97			4.47E+01	1.70E+01
m	17	277.12	6.06E+01	18.87	5.17E-01	3.55E-01	6.00E+01	1.89E+01
	18	303.51	1.47E+02	27.61			1.47E+02	2.76E+01
	19	307.74	4.30E+01	13.11			4.30E+01	1.31E+01
	20	334.54	9.67E+01	24.96			9.67E+01	2.50E+01
	21	356.85	5.28E+02	49.83			5.28E+02	4.98E+01
	22	384.76	1.24E+02	25.51			1.24E+02	2.55E+01
M	23	387.82	2.05E+02	32.03			2.05E+02	3.20E+01
m	24	388.11	1.22E+01	28.64			1.22E+01	2.86E+01
	25	392.01	4.18E+01	17.11	2.27E-01	2.73E-01	4.16E+01	1.71E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.43E+01	1.42E+01
I-129	0.87	29.78	*	57.00	4.15E+01	1.73E+00
		33.60	*	13.20	6.38E+01	5.61E+00
		39.58		7.52		
BA-133	0.98	81.00	*	34.06	4.83E+02	3.48E+01
		302.84	*	18.33	4.45E+02	8.68E+01
		356.01	*	62.05	4.53E+02	4.68E+01

BP/Castex-Ltd Adm-Apx E-001119

Analysis Report for 2205072-10
CD-7B

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
HG-203	0.89	279.19	*	77.30	4.34E+01	1.39E+01
TH-234	0.94	63.29	*	3.80	6.64E+02	9.40E+01
AM-241	0.88	59.54	*	35.90	7.03E+01	9.95E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	SN-113	0.951	3.43E+01	1.42E+01	
	I-129	0.872	4.34E+01	1.65E+00	
	BA-133	0.988	4.70E+02	2.66E+01	
	HG-203	0.896	4.34E+01	1.39E+01	
?	TH-234	0.941	6.64E+02	9.40E+01	
X	NP-237	0.728			
?	AM-241	0.882	7.03E+01	9.95E+00	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-10
CD-7B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 10:53:30AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.90	1.44200E-01	16.97	Tol.	MO-93
m	4	35.95	1.48575E-01	20.01	Tol.	I-129
M	5	50.98	2.09706E-02	40.58		
m	6	51.75	3.38434E-02	50.56		
m	7	53.22	9.21151E-02	12.72		
	9	66.05	1.76667E-01	14.94	Sum	
	10	70.21	9.02370E-02	18.28	Sum	
M	11	79.82	6.26530E-02	63.25	Tol.	BA-133
	13	112.11	2.60153E-01	9.43	Sum	
	14	116.36	8.34451E-02	18.96	Sum	
m	15	161.06	5.55681E-02	18.76	Sum	
M	16	276.43	4.96731E-02	18.98		
	19	307.74	4.77778E-02	15.25	Sum	
	20	334.54	1.07480E-01	12.90	Sum	
	22	384.76	1.37662E-01	10.30	Sum	
M	23	387.82	2.28197E-01	7.80	Sum	
m	24	388.11	1.35048E-02	117.81	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

BP/Castex-Ltd Adm-Apx E-001121

Analysis Report for 2205072-10

CD-7B

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	4.63E-07	4.63E-07	-4.46E-07	2.14E-07
		3.31		12.30	6.33E-06		5.57E-07	2.93E-06
	FE-55	5.89		24.50	1.66E-04	1.66E-04	-3.74E-05	7.56E-05
	CO-57	122.06		85.51	9.99E+00	9.99E+00	2.71E+00	4.51E+00
		136.48		10.60	1.04E+02		-4.07E+01	4.77E+01
	NI-59	6.92		29.80	3.60E-04	3.60E-04	-2.15E-04	1.63E-04
	MO-93	16.59		52.90	2.72E-02	2.72E-02	1.60E-03	1.22E-02
		18.60		10.00	3.04E-01		1.62E-02	1.40E-01
	NB-93M	16.57		9.43	1.52E-01	1.52E-01	8.95E-03	6.82E-02
	CD-109	88.03		3.72	1.40E+02	1.40E+02	-2.60E+01	6.36E+01
+	SN-113	255.12		1.93	6.74E+02	1.75E+01	1.58E+01	2.98E+02
		391.69	*	61.90	1.75E+01		3.43E+01	7.62E+00
	SN-119M	23.87		16.10	5.79E-01	5.79E-01	-2.25E-01	2.66E-01
		25.10		22.70	5.89E-01		5.06E-01	2.74E-01
+	I-129	29.78	*	57.00	1.37E+00	1.37E+00	4.15E+01	6.66E-01
		33.60	*	13.20	5.87E+00		6.38E+01	2.80E+00
		39.58		7.52	6.93E+00		3.86E-01	3.11E+00
+	BA-133	81.00	*	34.06	2.82E+01	2.82E+01	4.83E+02	1.35E+01
		302.84	*	18.33	7.42E+01		4.45E+02	3.30E+01
		356.01	*	62.05	2.96E+01		4.53E+02	1.36E+01
	CE-139	165.85		80.35	1.99E+01	1.99E+01	1.06E+01	9.19E+00
	CE-144	133.54		10.80	1.01E+02	1.01E+02	-3.76E+01	4.61E+01
+	HG-203	279.19	*	77.30	1.61E+01	1.61E+01	4.34E+01	7.09E+00
	PB-210	46.50		4.25	2.11E+01	2.11E+01	6.58E+00	9.48E+00
	TH-231	25.64		14.70	9.45E-01	9.45E-01	1.56E-01	4.37E-01
		84.21		6.40	9.85E+01		8.36E+01	4.59E+01
	PA-234M	9.89		89.00	1.17E-03	1.17E-03	-1.81E-04	5.35E-04
		21.72		64.90	1.75E-01		-3.73E-03	8.34E-02
		37.93		23.75	1.79E+00		-8.25E-01	8.00E-01
+	TH-234	63.29	*	3.80	1.01E+02	1.01E+02	6.64E+02	4.79E+01
	NP-237	29.37	*	14.00	5.58E+00	5.58E+00	1.69E+02	2.71E+00
		86.50		12.60	3.59E+01		-3.75E+01	1.62E+01
	U-237	97.08		16.30	4.44E+01	3.08E+01	2.34E+01	2.05E+01
		101.07		26.30	3.08E+01		1.38E+01	1.42E+01
		114.00		12.30	8.12E+01		-2.03E+02	3.76E+01
		208.01		22.00	7.75E+01		2.93E+01	3.55E+01
+	AM-241	59.54	*	35.90	1.07E+01	1.07E+01	7.03E+01	5.07E+00
	AM-243	74.67		66.00	5.79E+00	5.79E+00	3.23E-01	2.65E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

KP
5/31/22

Apex-Gamma

Analysis Report for 2205072-11
CD-7C

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-11
Sample Description	: CD-7C
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:41:12AM
Acquisition Started	: 5/31/2022 10:48:03AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124956

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 11:03:07AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-11

CD-7C

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.72	37 -	41	37.32	4.10E+02	75.72	4.21E+02	1.95
	2	53.05	51 -	58	54.62	7.11E+01	38.57	2.02E+02	1.23
M	3	62.09	60 -	72	63.63	2.03E+02	38.88	1.10E+02	1.47
m	4	66.10	60 -	72	67.63	9.25E+01	32.25	1.38E+02	1.48
	5	81.34	79 -	86	82.84	9.75E+02	72.94	2.37E+02	1.22
	6	112.00	110 -	116	113.44	2.03E+02	45.25	2.26E+02	1.66
	7	116.38	117 -	121	117.82	3.84E+01	28.20	1.27E+02	1.28
	8	161.96	161 -	167	163.30	4.55E+01	29.41	1.27E+02	1.67
	9	199.74	198 -	206	201.01	3.37E+01	34.19	1.63E+02	3.52
	10	276.81	274 -	282	277.93	7.11E+01	26.30	6.19E+01	1.43
	11	303.26	302 -	306	304.33	1.74E+02	30.35	5.09E+01	1.73
M	12	334.06	332 -	349	335.07	8.51E+01	20.93	2.15E+01	1.68
	13	356.54	352 -	362	357.50	6.79E+02	56.67	6.60E+01	1.97
M	14	384.17	381 -	396	385.07	1.46E+02	28.71	3.15E+01	1.85
m	15	387.40	381 -	396	388.30	2.29E+02	35.27	2.02E+01	1.86
m	16	391.43	381 -	396	392.32	4.28E+01	20.20	1.36E+01	1.86
M	17	415.14	412 -	425	415.99	4.45E+01	15.35	2.08E+01	1.72
m	18	418.31	412 -	425	419.16	2.08E+01	13.85	1.38E+01	1.72
m	19	422.01	412 -	425	422.84	8.15E+00	10.94	1.11E+01	1.72
	20	437.51	434 -	441	438.32	1.26E+02	23.49	8.00E+00	1.91
	21	449.90	447 -	453	450.69	7.15E+00	10.05	1.17E+01	1.03
	22	457.65	456 -	461	458.42	4.63E+00	7.07	6.75E+00	1.77
	23	468.50	466 -	472	469.25	9.40E+00	12.39	2.12E+01	1.20
	24	511.41	508 -	518	512.07	3.00E+01	12.58	4.00E+00	3.40
	25	850.28	847 -	853	850.32	7.39E+00	6.95	3.22E+00	4.34

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 11:03:07AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124921.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.72	4.10E+02	75.72	2.96E+01	1.95E+00	3.81E+02	7.57E+01
	2	53.05	7.11E+01	38.57			7.11E+01	3.86E+01
M	3	62.09	2.03E+02	38.88	4.60E+00	9.36E-01	1.98E+02	3.89E+01
m	4	66.10	9.25E+01	32.25	8.10E+00	1.22E+00	8.44E+01	3.23E+01

BP/Castex-Ltd Adm-Apx E-001124

Analysis Report for 2205072-11

CD-7C

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	5	81.34	9.75E+02	72.94			9.75E+02	7.29E+01
	6	112.00	2.03E+02	45.25			2.03E+02	4.53E+01
	7	116.38	3.84E+01	28.20			3.84E+01	2.82E+01
	8	161.96	4.55E+01	29.41	3.88E-01	1.79E+00	4.51E+01	2.95E+01
	9	199.74	3.37E+01	34.19	4.52E+00	1.65E+00	2.92E+01	3.42E+01
	10	276.81	7.11E+01	26.30			7.11E+01	2.63E+01
	11	303.26	1.74E+02	30.35			1.74E+02	3.03E+01
M	12	334.06	8.51E+01	20.93			8.51E+01	2.09E+01
	13	356.54	6.79E+02	56.67			6.79E+02	5.67E+01
M	14	384.17	1.46E+02	28.71			1.46E+02	2.87E+01
m	15	387.40	2.29E+02	35.27			2.29E+02	3.53E+01
m	16	391.43	4.28E+01	20.20			4.28E+01	2.02E+01
M	17	415.14	4.45E+01	15.35			4.45E+01	1.54E+01
m	18	418.31	2.08E+01	13.85			2.08E+01	1.38E+01
m	19	422.01	8.15E+00	10.94			8.15E+00	1.09E+01
	20	437.51	1.26E+02	23.49			1.26E+02	2.35E+01
	21	449.90	7.15E+00	10.05			7.15E+00	1.00E+01
	22	457.65	4.63E+00	7.07			4.63E+00	7.07E+00
	23	468.50	9.40E+00	12.39			9.40E+00	1.24E+01
	24	511.41	3.00E+01	12.58	1.73E+01	1.23E+00	1.27E+01	1.26E+01
	25	850.28	7.39E+00	6.95			7.39E+00	6.95E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.12E+01	1.48E+01
BA-133	0.99	81.00	*	34.06	5.04E+02	4.31E+01
		302.84	*	18.33	4.48E+02	8.20E+01
		356.01	*	62.05	5.07E+02	4.72E+01
HG-203	0.86	279.19	*	77.30	4.35E+01	1.63E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		

BP/Castex-Ltd Adm-Apx E-001125

Analysis Report for 2205072-11

CD-7C

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
PA-234M	0.98	37.93	*	23.75	5.29E+01	1.05E+01
TH-234	0.96	63.29	*	3.80	5.80E+02	1.15E+02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.951	3.12E+01	1.48E+01	
BA-133	0.995	4.98E+02	2.97E+01	
HG-203	0.865	4.35E+01	1.63E+01	
PA-234M	0.983	5.29E+01	1.05E+01	
TH-234	0.964	5.80E+02	1.15E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-11
CD-7C

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 11:03:07AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.05	7.90052E-02	27.13		
m	4	66.10	9.37989E-02	19.11		
	6	112.00	2.25682E-01	11.14	Tol.	U-237
	7	116.38	4.26797E-02	36.71	Sum	
	8	161.96	5.00730E-02	32.69	Sum	
	9	199.74	3.24587E-02	58.58		
M	12	334.06	9.45834E-02	12.29		
M	14	384.17	1.61917E-01	9.85	Sum	
m	15	387.40	2.54103E-01	7.71		
M	17	415.14	4.94424E-02	17.25		
m	18	418.31	2.30752E-02	33.34	Sum	
m	19	422.01	9.05022E-03	67.17		
	20	437.51	1.40000E-01	9.32	Sum	
	21	449.90	7.94872E-03	70.24		
	22	457.65	5.13889E-03	76.44		
	23	468.50	1.04444E-02	65.90		
	24	511.41	1.41156E-02	49.75		
	25	850.28	8.20988E-03	47.00		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

BP/Castex-Ltd Adm-Apx E-001127

Analysis Report for 2205072-11

CD-7C

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.40E+01	1.40E+01	4.71E+00	6.54E+00
		136.48		10.60	1.17E+02		-5.96E+01	5.42E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.22E+02	2.22E+02	8.30E+01	1.04E+02
+	SN-113	255.12		1.93	7.80E+02	2.98E+01	1.44E+02	3.57E+02
		391.69	*	61.90	2.98E+01		3.12E+01	1.39E+01
	SN-119M	23.87		16.10	1.82E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-129	29.78		57.00	8.58E+00	8.58E+00	8.20E+01	4.24E+00
		33.60		13.20	5.15E+01		1.31E+02	2.55E+01
		39.58		7.52	2.68E+01		2.94E+00	1.26E+01
+	BA-133	81.00	*	34.06	3.34E+01	2.93E+01	5.04E+02	1.60E+01
		302.84	*	18.33	7.10E+01		4.48E+02	3.20E+01
		356.01	*	62.05	2.93E+01		5.07E+02	1.37E+01
	CE-139	165.85		80.35	1.98E+01	1.98E+01	2.18E+00	9.23E+00
	CE-144	133.54		10.80	1.15E+02	1.15E+02	3.06E+01	5.35E+01
+	HG-203	279.19	*	77.30	2.20E+01	2.20E+01	4.35E+01	1.02E+01
	PB-210	46.50		4.25	5.96E+01	5.96E+01	-1.19E+00	2.78E+01
	TH-231	25.64		14.70	2.32E+00	2.32E+00	-3.18E+00	1.04E+00
		84.21		6.40	1.69E+02		-4.31E+01	8.07E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.52E+01		5.29E+01	7.42E+00
+	TH-234	63.29	*	3.80	2.67E+02	2.67E+02	5.80E+02	1.30E+02
	NP-237	29.37		14.00	3.36E+01	3.36E+01	3.21E+02	1.66E+01
		86.50		12.60	6.51E+01		-2.82E+01	3.05E+01
	U-237	97.08		16.30	5.82E+01	3.45E+01	1.57E+01	2.72E+01
		101.07		26.30	3.45E+01		2.10E+00	1.60E+01
		114.00		12.30	1.86E+02		2.02E+02	8.98E+01
		208.01		22.00	7.90E+01		1.21E+01	3.68E+01
	AM-241	59.54		35.90	1.92E+01	1.92E+01	-3.20E+01	9.22E+00
	AM-243	74.67		66.00	9.02E+00	9.02E+00	-5.94E+00	4.20E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

MD 5/31/22

Apex-Gamma

Analysis Report for 2205072-12
CD-6A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-12
Sample Description	: CD-6A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:41:19AM
Acquisition Started	: 5/31/2022 10:48:09AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE3
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 911.7 seconds
Dead Time	: 1.29 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124957

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 11:03:31AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-12

CD-6A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	20.59	16 -	41	21.24	1.63E+02	57.69	3.80E+02	4.08
m	2	31.29	16 -	41	31.93	3.53E+03	140.87	6.08E+02	5.38
M	3	52.30	44 -	74	52.93	8.55E+01	80.50	6.19E+02	5.34
m	4	62.31	44 -	74	62.92	4.89E+02	91.48	6.06E+02	5.33
	5	81.20	76 -	90	81.80	1.08E+03	95.90	4.93E+02	3.28
	6	112.24	106 -	119	112.82	3.30E+02	76.92	5.10E+02	4.16
	7	162.41	158 -	170	162.96	6.59E+01	53.96	3.10E+02	4.64
M	8	277.73	267 -	287	278.20	6.46E+01	49.33	1.81E+02	6.21
m	9	284.68	267 -	287	285.15	1.72E+01	18.11	4.00E+01	2.78
	10	302.88	293 -	313	303.34	2.07E+02	62.03	2.41E+02	3.86
	11	334.22	328 -	343	334.65	9.06E+01	46.95	1.85E+02	2.48
	12	356.19	350 -	361	356.61	5.95E+02	53.48	6.00E+01	4.26
	13	387.10	379 -	399	387.50	4.10E+02	58.48	1.19E+02	4.84
M	14	416.20	406 -	424	416.58	5.04E+01	34.09	9.72E+01	4.57
m	15	421.62	406 -	424	422.00	2.11E+01	14.95	3.08E+01	4.17
	16	436.86	427 -	442	437.23	9.72E+01	32.25	6.95E+01	3.41
	17	467.67	460 -	473	468.03	2.02E+01	22.87	4.95E+01	5.23
	18	597.04	590 -	602	597.31	8.32E+00	9.29	5.36E+00	3.36
	19	908.30	905 -	910	908.40	5.00E+00	4.47	0.00E+00	1.24

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 11:03:31AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124920.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	20.59	1.63E+02	57.69			1.63E+02	5.77E+01
m	2	31.29	3.53E+03	140.87			3.53E+03	1.41E+02
M	3	52.30	8.55E+01	80.50			8.55E+01	8.05E+01
m	4	62.31	4.89E+02	91.48	1.39E+01	1.49E+00	4.75E+02	9.15E+01
	5	81.20	1.08E+03	95.90			1.08E+03	9.59E+01
	6	112.24	3.30E+02	76.92			3.30E+02	7.69E+01
	7	162.41	6.59E+01	53.96			6.59E+01	5.40E+01
M	8	277.73	6.46E+01	49.33			6.46E+01	4.93E+01
m	9	284.68	1.72E+01	18.11			1.72E+01	1.81E+01
	10	302.88	2.07E+02	62.03			2.07E+02	6.20E+01

BP/Castex-Ltd Adm-Apx E-001130

Analysis Report for 2205072-12

CD-6A

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	11	334.22	9.06E+01	46.95			9.06E+01	4.69E+01
	12	356.19	5.95E+02	53.48			5.95E+02	5.35E+01
	13	387.10	4.10E+02	58.48			4.10E+02	5.85E+01
M	14	416.20	5.04E+01	34.09			5.04E+01	3.41E+01
m	15	421.62	2.11E+01	14.95			2.11E+01	1.49E+01
	16	436.86	9.72E+01	32.25			9.72E+01	3.22E+01
	17	467.67	2.02E+01	22.87			2.02E+01	2.29E+01
	18	597.04	8.32E+00	9.29			8.32E+00	9.29E+00
	19	908.30	5.00E+00	4.47	6.57E-01	5.51E-01	4.34E+00	4.51E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.59	29.78	*	57.00	1.17E+02	4.71E+00
		33.60		13.20		
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	4.77E+02	4.60E+01
		302.84	*	18.33	6.26E+02	1.90E+02
		356.01	*	62.05	5.50E+02	5.42E+01
HG-203	0.94	279.19	*	77.30	4.49E+01	3.44E+01
TH-234	0.97	63.29	*	3.80	1.16E+03	2.25E+02
NP-237	0.60	29.37	*	14.00	4.76E+02	1.92E+01
		86.50		12.60		

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001131

Analysis Report for 2205072-12
CD-6A

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
?	I-129	0.599	1.17E+02	4.71E+00	
	BA-133	0.999	5.11E+02	3.45E+01	
	HG-203	0.947	4.49E+01	3.44E+01	
	TH-234	0.976	1.16E+03	2.25E+02	
?	NP-237	0.603	4.76E+02	1.92E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-12
CD-6A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 11:03:31AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	20.59	1.81569E-01	17.65	Tol.	PA-234M
M	3	52.30	9.49890E-02	47.08		
	6	112.24	3.66695E-01	11.65	Sum	
	7	162.41	7.31800E-02	40.97	Sum	
m	9	284.68	1.90902E-02	52.71		
	11	334.22	1.00659E-01	25.91	Sum	
	13	387.10	4.55244E-01	7.14	Sum	
M	14	416.20	5.60515E-02	33.79	Sum	
m	15	421.62	2.34211E-02	35.46		
	16	436.86	1.08030E-01	16.58	Sum	
	17	467.67	2.24938E-02	56.48		
	18	597.04	9.24242E-03	55.82		
	19	908.30	4.82572E-03	51.87		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	1.14E-04	1.14E-04	8.28E-05	5.35E-05
	3.31	12.30	1.18E-03		8.52E-04	5.50E-04

Analysis Report for 2205072-12

CD-6A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	FE-55	5.89		24.50	1.32E-02	1.32E-02	1.97E-02	6.31E-03
	CO-57	122.06		85.51	2.47E+01	2.47E+01	-2.03E+01	1.19E+01
		136.48		10.60	2.10E+02		4.34E+01	1.01E+02
	NI-59	6.92		29.80	2.29E-02	2.29E-02	3.18E-02	1.10E-02
	MO-93	16.59		52.90	5.76E-01	5.76E-01	4.71E-01	2.81E-01
		18.60		10.00	4.34E+00		9.78E-01	2.12E+00
	NB-93M	16.57		9.43	3.22E+00	3.22E+00	2.63E+00	1.57E+00
	CD-109	88.03		3.72	6.35E+02	6.35E+02	8.44E+01	3.11E+02
	SN-113	255.12		1.93	1.39E+03	8.17E+01	3.05E+02	6.60E+02
		391.69		61.90	8.17E+01		2.27E+02	3.96E+01
	SN-119M	23.87		16.10	1.31E+01	1.17E+01	7.57E+01	6.50E+00
		25.10		22.70	1.17E+01		9.21E+01	5.79E+00
+	I-129	29.78	*	57.00	6.56E+00	6.56E+00	1.17E+02	3.24E+00
		33.60		13.20	4.94E+01		5.78E+02	2.44E+01
		39.58		7.52	8.55E+01		-3.81E-01	4.21E+01
+	BA-133	81.00	*	34.06	5.17E+01	3.58E+01	4.77E+02	2.53E+01
		302.84	*	18.33	2.81E+02		6.26E+02	1.36E+02
		356.01	*	62.05	3.58E+01		5.50E+02	1.67E+01
	CE-139	165.85		80.35	3.39E+01	3.39E+01	-3.03E+00	1.63E+01
	CE-144	133.54		10.80	1.98E+02	1.98E+02	6.97E+01	9.52E+01
+	HG-203	279.19	*	77.30	5.98E+01	5.98E+01	4.49E+01	2.90E+01
	PB-210	46.50		4.25	1.02E+02	1.02E+02	-9.83E-01	4.95E+01
	TH-231	25.64		14.70	1.92E+01	1.92E+01	1.51E+02	9.50E+00
		84.21		6.40	4.29E+02		1.42E+00	2.11E+02
	PA-234M	9.89		89.00	3.72E-02	3.72E-02	4.52E-02	1.79E-02
		21.72		64.90	1.29E+00		-3.20E+01	6.29E-01
		37.93		23.75	2.93E+01		-1.09E-01	1.45E+01
+	TH-234	63.29	*	3.80	5.68E+02	5.68E+02	1.16E+03	2.81E+02
+	NP-237	29.37	*	14.00	2.67E+01	2.67E+01	4.76E+02	1.32E+01
		86.50		12.60	2.22E+02		2.41E+01	1.09E+02
	U-237	97.08		16.30	9.72E+01	6.34E+01	3.64E+01	4.69E+01
		101.07		26.30	6.34E+01		-1.09E+01	3.06E+01
		114.00		12.30	2.39E+02		-1.92E+00	1.17E+02
		208.01		22.00	1.29E+02		-4.32E+00	6.17E+01
	AM-241	59.54		35.90	3.26E+01	3.26E+01	1.03E+02	1.60E+01
	AM-243	74.67		66.00	3.10E+01	3.10E+01	-9.96E+00	1.53E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

KP 5/31/22

Analysis Report for 2205072-13
CD-6B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2205072-13
Sample Description	: CD-6B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 5/31/2022 8:41:28AM
Acquisition Started	: 5/31/2022 10:48:16AM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.6 seconds
Dead Time	: 0.07 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 124958

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 5/31/2022 11:03:21AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2205072-13

CD-6B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
m	1	20.64	14 -	43	20.61	1.28E+02	43.73	2.80E+02	2.67
m	2	30.74	14 -	43	30.70	2.48E+03	106.08	2.02E+02	2.39
m	3	35.14	14 -	43	35.10	5.88E+02	95.66	1.57E+02	2.43
	4	51.98	47 -	56	51.93	1.05E+02	44.23	2.18E+02	2.88
M	5	61.70	57 -	71	61.64	3.42E+02	53.33	2.48E+02	2.83
m	6	66.18	57 -	71	66.13	1.27E+02	49.31	2.17E+02	2.43
	7	81.01	76 -	86	80.94	9.09E+02	77.55	3.11E+02	2.32
	8	112.43	106 -	118	112.34	2.94E+02	58.69	2.67E+02	2.47
	9	276.38	274 -	280	276.19	6.50E+01	23.83	5.60E+01	2.34
	10	303.20	298 -	309	302.99	1.46E+02	32.98	7.15E+01	3.43
M	11	333.54	325 -	341	333.31	7.33E+01	24.10	2.37E+01	3.19
m	12	338.68	325 -	341	338.45	1.95E+01	18.76	1.09E+01	2.79
	13	356.08	349 -	360	355.84	4.21E+02	48.62	8.82E+01	2.32
	14	386.61	378 -	394	386.35	2.94E+02	41.35	4.95E+01	4.03
	15	415.80	409 -	420	415.52	5.29E+01	25.38	5.43E+01	4.90
	16	437.15	432 -	442	436.87	7.35E+01	19.40	1.10E+01	1.85
	17	557.36	554 -	559	557.00	6.00E+00	4.90	0.00E+00	2.88

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 5/31/2022 11:03:21AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000124919.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	1	20.64	1.28E+02	43.73	1.11E+01	1.11E-01	1.17E+02	4.37E+01
m	2	30.74	2.48E+03	106.08			2.48E+03	1.06E+02
m	3	35.14	5.88E+02	95.66			5.88E+02	9.57E+01
	4	51.98	1.05E+02	44.23			1.05E+02	4.42E+01
M	5	61.70	3.42E+02	53.33	1.36E+01	2.51E+00	3.29E+02	5.34E+01
m	6	66.18	1.27E+02	49.31			1.27E+02	4.93E+01
	7	81.01	9.09E+02	77.55			9.09E+02	7.76E+01
	8	112.43	2.94E+02	58.69			2.94E+02	5.87E+01
	9	276.38	6.50E+01	23.83			6.50E+01	2.38E+01
	10	303.20	1.46E+02	32.98			1.46E+02	3.30E+01
M	11	333.54	7.33E+01	24.10	0.00E+00	0.00E+00	7.33E+01	2.41E+01
m	12	338.68	1.95E+01	18.76			1.95E+01	1.88E+01

BP/Castex-Ltd Adm-Apx E-001136

Analysis Report for 2205072-13

CD-6B

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
13	356.08	4.21E+02	48.62			4.21E+02	4.86E+01
14	386.61	2.94E+02	41.35			2.94E+02	4.13E+01
15	415.80	5.29E+01	25.38	7.58E-02	9.28E-01	5.28E+01	2.54E+01
16	437.15	7.35E+01	19.40			7.35E+01	1.94E+01
17	557.36	6.00E+00	4.90	0.00E+00	0.00E+00	6.00E+00	4.90E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.86	29.78	*	57.00	5.01E+01	2.15E+00
		33.60	*	13.20	8.05E+01	1.31E+01
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	4.38E+02	4.10E+01
		302.84	*	18.33	5.23E+02	1.21E+02
		356.01	*	62.05	4.42E+02	5.43E+01
TH-234	0.93	63.29	*	3.80	7.74E+02	1.27E+02
AM-241	0.88	59.54	*	35.90	8.19E+01	1.34E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001137

Analysis Report for 2205072-13
CD-6B

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.869	5.09E+01	2.12E+00	
	BA-133	0.999	4.45E+02	3.16E+01	
?	TH-234	0.937	7.74E+02	1.27E+02	
X	NP-237	0.701			
?	AM-241	0.888	8.19E+01	1.34E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2205072-13
CD-6B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 5/31/2022 11:03:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	1	20.64	1.30411E-01	18.63	Tol.	PA-234M
	4	51.98	1.16911E-01	21.02		
m	6	66.18	1.40608E-01	19.48	Sum	
	8	112.43	3.27039E-01	9.97	Sum	
	9	276.38	7.22222E-02	18.33		
M	11	333.54	8.14545E-02	16.44	Sum	
m	12	338.68	2.16967E-02	48.04	Sum	
	14	386.61	3.26958E-01	7.03	Sum	
	15	415.80	5.86519E-02	24.05	Sum	
	16	437.15	8.16667E-02	13.20	Sum	
	17	557.36	6.66667E-03	40.82		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
	3.31	12.30	2.92E-06		0.00E+00	0.00E+00
FE-55	5.89	24.50	6.26E-04	6.26E-04	-1.60E-04	2.85E-04
CO-57	122.06	85.51	1.78E+01	1.78E+01	-2.09E+01	8.39E+00

BP/Castex-Ltd Adm-Apx E-001139

Analysis Report for 2205072-13

CD-6B

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CO-57	136.48		10.60	2.04E+02	1.78E+01	6.66E+01	9.70E+01
	NI-59	6.92		29.80	1.82E-03	1.82E-03	1.52E-03	8.53E-04
	MO-93	16.59		52.90	1.60E-01	1.60E-01	3.68E-02	7.75E-02
		18.60		10.00	1.43E+00		2.29E+00	6.90E-01
	NB-93M	16.57		9.43	8.94E-01	8.94E-01	2.05E-01	4.32E-01
	CD-109	88.03		3.72	2.77E+02	2.77E+02	-6.41E+01	1.31E+02
	SN-113	255.12		1.93	1.29E+03	6.07E+01	5.34E+02	6.02E+02
		391.69		61.90	6.07E+01		8.03E+01	2.89E+01
	SN-119M	23.87		16.10	2.44E+00	2.44E+00	-7.29E+01	1.18E+00
		25.10		22.70	2.64E+00		-6.50E+01	1.29E+00
+	I-129	29.78	*	57.00	3.85E+00	3.85E+00	5.01E+01	1.90E+00
		33.60	*	13.20	2.60E+01		8.05E+01	1.28E+01
		39.58		7.52	3.01E+01		-2.59E+01	1.46E+01
+	BA-133	81.00	*	34.06	4.00E+01	4.00E+01	4.38E+02	1.93E+01
		302.84	*	18.33	1.95E+02		5.23E+02	9.25E+01
		356.01	*	62.05	4.79E+01		4.42E+02	2.25E+01
	CE-139	165.85		80.35	2.99E+01	2.99E+01	-1.79E+01	1.42E+01
	CE-144	133.54		10.80	1.92E+02	1.92E+02	9.08E+01	9.15E+01
	HG-203	279.19		77.30	4.37E+01	4.37E+01	4.76E+00	2.07E+01
	PB-210	46.50		4.25	5.08E+01	5.08E+01	1.10E+01	2.41E+01
	TH-231	25.64		14.70	6.79E+00	6.79E+00	-2.17E+01	3.34E+00
		84.21		6.40	4.08E+02		6.16E-01	2.00E+02
	PA-234M	9.89		89.00	5.66E-03	5.66E-03	5.23E-03	2.70E-03
		21.72		64.90	3.92E-01		-3.57E-01	1.89E-01
		37.93		23.75	1.21E+01		1.14E+01	5.89E+00
+	TH-234	63.29	*	3.80	2.53E+02	2.53E+02	7.74E+02	1.23E+02
	NP-237	29.37	*	14.00	1.57E+01	1.57E+01	2.04E+02	7.72E+00
		86.50		12.60	1.34E+02		2.97E+00	6.50E+01
	U-237	97.08		16.30	7.77E+01	5.08E+01	1.23E+01	3.69E+01
		101.07		26.30	5.08E+01		1.58E+01	2.41E+01
		114.00		12.30	2.28E+02		6.54E+02	1.11E+02
		208.01		22.00	1.13E+02		1.03E+01	5.31E+01
+	AM-241	59.54	*	35.90	2.68E+01	2.68E+01	8.19E+01	1.30E+01
	AM-243	74.67		66.00	1.48E+01	1.48E+01	-4.42E-01	7.14E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-001140

SECTION XI

ANALYTICAL DATA (TOTAL DISSOLVED SOLIDS)

BP/Castex-Ltd Adm-Apx E-001141

Eberline Services - Oak Ridge
Version 1.0 9/1999

TDS / TSS Worksheet

Printed: 5/19/2022 11:36 AM

Work Order	Run	Analysis Code	Technician
22-05072	1	TDS	KSALLINGS

TRetec Fraction	ERM Client ID	Aliquot ml	Filter Data: Filter Tare (g)	Filter Data: Filter Final (g)	Filter Data: Filter Net (g)	TDS/TSS (mg/L)	Maximum Aliq (mL)
04	CD-9B	100.0000	79.9615	79.9994	0.0379	379.0000	263.85
05	CD-9A	100.0000	120.3053	120.3569	0.0516	516.0000	193.80
06	CD-5C	100.0000	115.0885	115.1589	0.0704	704.0000	142.05
07	CD-10A	100.0000	99.2862	99.3151	0.0289	289.0000	346.02
08	CD-8A	100.0000	118.9507	119.9903	1.0396	10396.0000	9.62
09	CD-11A	100.0000	90.1773	90.2684	0.0911	911.0000	109.77
10	CD-7B	100.0000	103.2369	103.2952	0.0583	583.0000	171.53
11	CD-7C	100.0000	123.5488	123.5932	0.0444	444.0000	225.23
12	CD-6A	100.0000	99.4762	99.5661	0.0899	899.0000	111.23
13	CD-6B	100.0000	121.4294	121.4709	0.0415	415.0000	240.96

Technician: Kenny Sas Date: 5/19/22

BP/Castex-Ltd Adm-Apx E-001142

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 5/19/2022 2:57 PM

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
22-05072	1	TDS	liters	6/2/2022	JPACHELLA

Lab Fraction	ERM Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	DUP	DUP					1.0000E-01	1.0000E-01				
04	CD-9B	TRG					1.0000E-01	1.0000E-01				
05	CD-9A	TRG					1.0000E-01	1.0000E-01				
06	CD-5C	TRG					1.0000E-01	1.0000E-01				
07	CD-10A	TRG					1.0000E-01	1.0000E-01				
08	CD-8A	TRG					1.0000E-01	1.0000E-01				
09	CD-11A	TRG					1.0000E-01	1.0000E-01				
10	CD-7B	TRG					1.0000E-01	1.0000E-01				
11	CD-7C	TRG					1.0000E-01	1.0000E-01				
12	CD-6A	TRG					1.0000E-01	1.0000E-01				
13	CD-6B	TRG					1.0000E-01	1.0000E-01				

Comments	

0227

Technician: JPachella Date: 5/19/22

BP/Castex-Ltd Adm-Apx E-001143

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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June 24, 2022

David Upthegrove
ERM Southwest, Inc.
804 Main Street
Baton Rouge, LA 70802

Work Order: **HS22060796**

Laboratory Results for: **Castex 0575834**

Dear David Upthegrove,

ALS Environmental received 8 sample(s) on Jun 15, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Anna Kinchen
Project Manager

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22060796

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22060796-01	CD-12A	Water		13-Jun-2022 12:00	15-Jun-2022 09:35	☐
HS22060796-02	CD-12B	Water		13-Jun-2022 13:50	15-Jun-2022 09:35	☐
HS22060796-03	CD-13A	Water		13-Jun-2022 15:45	15-Jun-2022 09:35	☐
HS22060796-04	CD-13B	Water		13-Jun-2022 17:00	15-Jun-2022 09:35	☐
HS22060796-05	CD-13C	Water		14-Jun-2022 09:00	15-Jun-2022 09:35	☐
HS22060796-06	CD-14A	Water		14-Jun-2022 11:05	15-Jun-2022 09:35	☐
HS22060796-07	Trip Blank 1	Water	CG-041822-224	13-Jun-2022 00:00	15-Jun-2022 09:35	☑
HS22060796-08	Trip Blank 2	Water	CG-041822-225	13-Jun-2022 00:00	15-Jun-2022 09:35	☑

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc. **CASE NARRATIVE**
Project: Castex 0575834
Work Order: HS22060796

GC Semivolatiles by Method MA EPH

Batch ID: 180095

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method MA VPH

Batch ID: R410933,R410934

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R411132

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R410863

Sample ID: HS22060764-09MS

- MS and MSD are for an unrelated sample

Metals by Method SW6020A

Batch ID: 180278

Sample ID: CD-12B (HS22060796-02MSD)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Barium,Calcium,Manganese,Sodium)

Sample ID: CD-12B (HS22060796-02PDS)

- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. (Sodium)

Batch ID: 180227

Sample ID: HS22060426-04MS

- MS/MSD and DUPs are for an unrelated sample

Metals by Method SW7470A

Batch ID: 180103,180270

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R411271

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M2540C

Batch ID: R411088,R411312

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22060796

CASE NARRATIVE

WetChemistry by Method SW9056

Batch ID: R410857

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-12A
Collection Date: 13-Jun-2022 12:00

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	17-Jun-2022 02:04
Ethylbenzene	ND		1.0	ug/L	1	17-Jun-2022 02:04
Toluene	ND		1.0	ug/L	1	17-Jun-2022 02:04
Xylenes, Total	ND		1.0	ug/L	1	17-Jun-2022 02:04
Surr: 1,2-Dichloroethane-d4	*105*		*70-126*	*%REC*	*1*	*17-Jun-2022 02:04*
Surr: 4-Bromofluorobenzene	*99.2*		*77-113*	*%REC*	*1*	*17-Jun-2022 02:04*
Surr: Dibromofluoromethane	*100*		*77-123*	*%REC*	*1*	*17-Jun-2022 02:04*
Surr: Toluene-d8	*101*		*82-127*	*%REC*	*1*	*17-Jun-2022 02:04*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	17-Jun-2022 17:55
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 17:55
Aromatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 17:55
Surr: 2,5-Dibromotoluene (Aliphatic)	*89.5*		*70-130*	*%REC*	*1*	*17-Jun-2022 17:55*
Surr: 2,5-Dibromotoluene (Aliphatic)	*95.4*		*70-130*	*%REC*	*1*	*17-Jun-2022 17:55*
Surr: 2,5-Dibromotoluene (Aromatic)	*89.5*		*70-130*	*%REC*	*1*	*17-Jun-2022 17:55*
Surr: 2,5-Dibromotoluene (Aromatic)	*95.4*		*70-130*	*%REC*	*1*	*17-Jun-2022 17:55*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 17-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 20:02
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	21-Jun-2022 20:02
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	21-Jun-2022 20:02
Aromatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 20:02
Aromatics >C12 - C16	ND		0.00400	mg/L	1	21-Jun-2022 20:02
Aromatics >C16 - C21	ND		0.00300	mg/L	1	21-Jun-2022 20:02
Aromatics >C21 - C35	ND		0.00900	mg/L	1	21-Jun-2022 20:02
Surr: 1-Chlorooctadecane	*80.9*		*40-140*	*%REC*	*1*	*21-Jun-2022 20:02*
Surr: 2-Bromonaphthalene	*117*		*40-140*	*%REC*	*1*	*21-Jun-2022 20:02*
Surr: 2-Fluorobiphenyl	*114*		*40-140*	*%REC*	*1*	*21-Jun-2022 20:02*
Surr: o-Terphenyl	*79.9*		*40-140*	*%REC*	*1*	*21-Jun-2022 20:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-12A
Collection Date: 13-Jun-2022 12:00

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 22-Jun-2022		Analyst: JHD
Arsenic	ND		0.00200	mg/L	1	23-Jun-2022 22:38
Barium	**0.152**		**0.00400**	**mg/L**	1	23-Jun-2022 22:38
Cadmium	ND		0.00200	mg/L	1	23-Jun-2022 22:38
Calcium	**15.7**		**0.500**	**mg/L**	1	23-Jun-2022 22:38
Chromium	**0.00859**		**0.00400**	**mg/L**	1	23-Jun-2022 22:38
Iron	**0.931**		**0.200**	**mg/L**	1	23-Jun-2022 22:38
Lead	ND		0.00200	mg/L	1	23-Jun-2022 22:38
Magnesium	**5.63**		**0.200**	**mg/L**	1	23-Jun-2022 22:38
Manganese	**0.521**		**0.00500**	**mg/L**	1	23-Jun-2022 22:38
Potassium	**0.709**		**0.200**	**mg/L**	1	23-Jun-2022 22:38
Sodium	**67.9**		**0.200**	**mg/L**	1	23-Jun-2022 22:38
Strontium	**0.0842**		**0.00500**	**mg/L**	1	23-Jun-2022 22:38
Zinc	ND		0.00400	mg/L	1	23-Jun-2022 22:38
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 21-Jun-2022		Analyst: JHD
Arsenic	ND		0.00200	mg/L	1	21-Jun-2022 21:46
Barium	**0.107**		**0.00400**	**mg/L**	1	21-Jun-2022 21:46
Cadmium	ND		0.00200	mg/L	1	21-Jun-2022 21:46
Chromium	ND		0.00400	mg/L	1	21-Jun-2022 21:46
Iron	ND		0.200	mg/L	1	21-Jun-2022 21:46
Lead	ND		0.00200	mg/L	1	21-Jun-2022 21:46
Manganese	**0.244**		**0.00500**	**mg/L**	1	21-Jun-2022 21:46
Strontium	**0.0664**		**0.00500**	**mg/L**	1	21-Jun-2022 21:46
Zinc	ND		0.00400	mg/L	1	21-Jun-2022 21:46
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	22-Jun-2022 12:46
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 17-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	17-Jun-2022 15:20
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**422**		**10.0**	**mg/L**	1	17-Jun-2022 17:06
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**123**		**5.00**	**mg/L**	1	21-Jun-2022 18:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	21-Jun-2022 18:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**25.8**		**0.500**	**mg/L**	1	16-Jun-2022 15:38
Sulfate	**15.9**		**0.500**	**mg/L**	1	16-Jun-2022 15:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-12B
Collection Date: 13-Jun-2022 13:50

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	17-Jun-2022 02:26
Ethylbenzene	ND		1.0	ug/L	1	17-Jun-2022 02:26
Toluene	ND		1.0	ug/L	1	17-Jun-2022 02:26
Xylenes, Total	ND		1.0	ug/L	1	17-Jun-2022 02:26
Surr: 1,2-Dichloroethane-d4	*103*		*70-126*	*%REC*	*1*	*17-Jun-2022 02:26*
Surr: 4-Bromofluorobenzene	*95.5*		*77-113*	*%REC*	*1*	*17-Jun-2022 02:26*
Surr: Dibromofluoromethane	*101*		*77-123*	*%REC*	*1*	*17-Jun-2022 02:26*
Surr: Toluene-d8	*99.6*		*82-127*	*%REC*	*1*	*17-Jun-2022 02:26*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	17-Jun-2022 18:23
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 18:23
Aromatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 18:23
Surr: 2,5-Dibromotoluene (Aliphatic)	*87.9*		*70-130*	*%REC*	*1*	*17-Jun-2022 18:23*
Surr: 2,5-Dibromotoluene (Aliphatic)	*91.0*		*70-130*	*%REC*	*1*	*17-Jun-2022 18:23*
Surr: 2,5-Dibromotoluene (Aromatic)	*87.9*		*70-130*	*%REC*	*1*	*17-Jun-2022 18:23*
Surr: 2,5-Dibromotoluene (Aromatic)	*91.0*		*70-130*	*%REC*	*1*	*17-Jun-2022 18:23*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 17-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 20:33
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	21-Jun-2022 20:33
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	21-Jun-2022 20:33
Aromatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 20:33
Aromatics >C12 - C16	ND		0.00400	mg/L	1	21-Jun-2022 20:33
Aromatics >C16 - C21	ND		0.00300	mg/L	1	21-Jun-2022 20:33
Aromatics >C21 - C35	ND		0.00900	mg/L	1	21-Jun-2022 20:33
Surr: 1-Chlorooctadecane	*60.6*		*40-140*	*%REC*	*1*	*21-Jun-2022 20:33*
Surr: 2-Bromonaphthalene	*106*		*40-140*	*%REC*	*1*	*21-Jun-2022 20:33*
Surr: 2-Fluorobiphenyl	*82.7*		*40-140*	*%REC*	*1*	*21-Jun-2022 20:33*
Surr: o-Terphenyl	*65.0*		*40-140*	*%REC*	*1*	*21-Jun-2022 20:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-12B
Collection Date: 13-Jun-2022 13:50

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 22-Jun-2022		Analyst: JHD
Arsenic	**0.00774**		**0.00200**	**mg/L**	1	23-Jun-2022 22:22
Barium	**0.259**		**0.00400**	**mg/L**	1	23-Jun-2022 22:22
Cadmium	ND		0.00200	mg/L	1	23-Jun-2022 22:22
Calcium	**46.8**		**0.500**	**mg/L**	1	23-Jun-2022 22:22
Chromium	ND		0.00400	mg/L	1	23-Jun-2022 22:22
Iron	**0.306**		**0.200**	**mg/L**	1	23-Jun-2022 22:22
Lead	ND		0.00200	mg/L	1	23-Jun-2022 22:22
Magnesium	**12.0**		**0.200**	**mg/L**	1	23-Jun-2022 22:22
Manganese	**0.349**		**0.00500**	**mg/L**	1	23-Jun-2022 22:22
Potassium	**2.35**		**0.200**	**mg/L**	1	23-Jun-2022 22:22
Sodium	**69.4**		**0.200**	**mg/L**	1	23-Jun-2022 22:22
Strontium	**0.213**		**0.00500**	**mg/L**	1	23-Jun-2022 22:22
Zinc	ND		0.00400	mg/L	1	23-Jun-2022 22:22
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 21-Jun-2022		Analyst: JHD
Arsenic	**0.00759**		**0.00200**	**mg/L**	1	21-Jun-2022 21:48
Barium	**0.244**		**0.00400**	**mg/L**	1	21-Jun-2022 21:48
Cadmium	ND		0.00200	mg/L	1	21-Jun-2022 21:48
Chromium	ND		0.00400	mg/L	1	21-Jun-2022 21:48
Iron	**0.246**		**0.200**	**mg/L**	1	21-Jun-2022 21:48
Lead	ND		0.00200	mg/L	1	21-Jun-2022 21:48
Manganese	**0.308**		**0.00500**	**mg/L**	1	21-Jun-2022 21:48
Strontium	**0.198**		**0.00500**	**mg/L**	1	21-Jun-2022 21:48
Zinc	ND		0.00400	mg/L	1	21-Jun-2022 21:48
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	22-Jun-2022 12:48
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 17-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	17-Jun-2022 15:25
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**388**		**10.0**	**mg/L**	1	17-Jun-2022 17:06
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**268**		**5.00**	**mg/L**	1	21-Jun-2022 18:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	21-Jun-2022 18:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**28.8**		**0.500**	**mg/L**	1	16-Jun-2022 15:54
Sulfate	**17.5**		**0.500**	**mg/L**	1	16-Jun-2022 15:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-13A
Collection Date: 13-Jun-2022 15:45

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	17-Jun-2022 02:47
Ethylbenzene	ND		1.0	ug/L	1	17-Jun-2022 02:47
Toluene	**2.6**		**1.0**	**ug/L**	1	17-Jun-2022 02:47
Xylenes, Total	ND		1.0	ug/L	1	17-Jun-2022 02:47
Surr: 1,2-Dichloroethane-d4	*103*		*70-126*	*%REC*	*1*	*17-Jun-2022 02:47*
Surr: 4-Bromofluorobenzene	*95.4*		*77-113*	*%REC*	*1*	*17-Jun-2022 02:47*
Surr: Dibromofluoromethane	*99.2*		*77-123*	*%REC*	*1*	*17-Jun-2022 02:47*
Surr: Toluene-d8	*101*		*82-127*	*%REC*	*1*	*17-Jun-2022 02:47*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	17-Jun-2022 18:51
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 18:51
Aromatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 18:51
Surr: 2,5-Dibromotoluene (Aliphatic)	*87.8*		*70-130*	*%REC*	*1*	*17-Jun-2022 18:51*
Surr: 2,5-Dibromotoluene (Aliphatic)	*94.4*		*70-130*	*%REC*	*1*	*17-Jun-2022 18:51*
Surr: 2,5-Dibromotoluene (Aromatic)	*87.8*		*70-130*	*%REC*	*1*	*17-Jun-2022 18:51*
Surr: 2,5-Dibromotoluene (Aromatic)	*94.4*		*70-130*	*%REC*	*1*	*17-Jun-2022 18:51*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 17-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 21:05
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	21-Jun-2022 21:05
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	21-Jun-2022 21:05
Aromatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 21:05
Aromatics >C12 - C16	ND		0.00400	mg/L	1	21-Jun-2022 21:05
Aromatics >C16 - C21	ND		0.00300	mg/L	1	21-Jun-2022 21:05
Aromatics >C21 - C35	ND		0.00900	mg/L	1	21-Jun-2022 21:05
Surr: 1-Chlorooctadecane	*78.7*		*40-140*	*%REC*	*1*	*21-Jun-2022 21:05*
Surr: 2-Bromonaphthalene	*111*		*40-140*	*%REC*	*1*	*21-Jun-2022 21:05*
Surr: 2-Fluorobiphenyl	*115*		*40-140*	*%REC*	*1*	*21-Jun-2022 21:05*
Surr: o-Terphenyl	*65.0*		*40-140*	*%REC*	*1*	*21-Jun-2022 21:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-13A
Collection Date: 13-Jun-2022 15:45

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 22-Jun-2022		Analyst: JHD
Arsenic	**0.0116**		**0.00200**	**mg/L**	1	23-Jun-2022 22:40
Barium	**0.610**		**0.00400**	**mg/L**	1	23-Jun-2022 22:40
Cadmium	ND		0.00200	mg/L	1	23-Jun-2022 22:40
Calcium	**112**		**0.500**	**mg/L**	1	23-Jun-2022 22:40
Chromium	ND		0.00400	mg/L	1	23-Jun-2022 22:40
Iron	**0.861**		**0.200**	**mg/L**	1	23-Jun-2022 22:40
Lead	ND		0.00200	mg/L	1	23-Jun-2022 22:40
Magnesium	**30.0**		**0.200**	**mg/L**	1	23-Jun-2022 22:40
Manganese	**0.423**		**0.00500**	**mg/L**	1	23-Jun-2022 22:40
Potassium	**3.46**		**0.200**	**mg/L**	1	23-Jun-2022 22:40
Sodium	**111**		**0.200**	**mg/L**	1	23-Jun-2022 22:40
Strontium	**0.538**		**0.00500**	**mg/L**	1	23-Jun-2022 22:40
Zinc	ND		0.00400	mg/L	1	23-Jun-2022 22:40
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 21-Jun-2022		Analyst: JHD
Arsenic	**0.0147**		**0.00200**	**mg/L**	1	21-Jun-2022 21:50
Barium	**0.717**		**0.00400**	**mg/L**	1	21-Jun-2022 21:50
Cadmium	ND		0.00200	mg/L	1	21-Jun-2022 21:50
Chromium	ND		0.00400	mg/L	1	21-Jun-2022 21:50
Iron	**1.04**		**0.200**	**mg/L**	1	21-Jun-2022 21:50
Lead	ND		0.00200	mg/L	1	21-Jun-2022 21:50
Manganese	**0.417**		**0.00500**	**mg/L**	1	21-Jun-2022 21:50
Strontium	**0.578**		**0.00500**	**mg/L**	1	21-Jun-2022 21:50
Zinc	ND		0.00400	mg/L	1	21-Jun-2022 21:50
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	22-Jun-2022 12:50
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 17-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	17-Jun-2022 15:32
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**726**		**10.0**	**mg/L**	1	17-Jun-2022 17:06
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**572**		**5.00**	**mg/L**	1	21-Jun-2022 18:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	21-Jun-2022 18:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**75.1**		**0.500**	**mg/L**	1	16-Jun-2022 15:59
Sulfate	**11.3**		**0.500**	**mg/L**	1	16-Jun-2022 15:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-13B
Collection Date: 13-Jun-2022 17:00

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	17-Jun-2022 03:09
Ethylbenzene	ND		1.0	ug/L	1	17-Jun-2022 03:09
Toluene	**1.3**		**1.0**	**ug/L**	1	17-Jun-2022 03:09
Xylenes, Total	ND		1.0	ug/L	1	17-Jun-2022 03:09
Surr: 1,2-Dichloroethane-d4	*100*		*70-126*	*%REC*	*1*	*17-Jun-2022 03:09*
Surr: 4-Bromofluorobenzene	*99.8*		*77-113*	*%REC*	*1*	*17-Jun-2022 03:09*
Surr: Dibromofluoromethane	*99.3*		*77-123*	*%REC*	*1*	*17-Jun-2022 03:09*
Surr: Toluene-d8	*102*		*82-127*	*%REC*	*1*	*17-Jun-2022 03:09*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	17-Jun-2022 19:18
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 19:18
Aromatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 19:18
Surr: 2,5-Dibromotoluene (Aliphatic)	*94.4*		*70-130*	*%REC*	*1*	*17-Jun-2022 19:18*
Surr: 2,5-Dibromotoluene (Aliphatic)	*101*		*70-130*	*%REC*	*1*	*17-Jun-2022 19:18*
Surr: 2,5-Dibromotoluene (Aromatic)	*94.4*		*70-130*	*%REC*	*1*	*17-Jun-2022 19:18*
Surr: 2,5-Dibromotoluene (Aromatic)	*101*		*70-130*	*%REC*	*1*	*17-Jun-2022 19:18*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 17-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 21:37
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	21-Jun-2022 21:37
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	21-Jun-2022 21:37
Aromatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 21:37
Aromatics >C12 - C16	ND		0.00400	mg/L	1	21-Jun-2022 21:37
Aromatics >C16 - C21	ND		0.00300	mg/L	1	21-Jun-2022 21:37
Aromatics >C21 - C35	ND		0.00900	mg/L	1	21-Jun-2022 21:37
Surr: 1-Chlorooctadecane	*76.6*		*40-140*	*%REC*	*1*	*21-Jun-2022 21:37*
Surr: 2-Bromonaphthalene	*116*		*40-140*	*%REC*	*1*	*21-Jun-2022 21:37*
Surr: 2-Fluorobiphenyl	*94.5*		*40-140*	*%REC*	*1*	*21-Jun-2022 21:37*
Surr: o-Terphenyl	*68.4*		*40-140*	*%REC*	*1*	*21-Jun-2022 21:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-13B
Collection Date: 13-Jun-2022 17:00

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 22-Jun-2022		Analyst: JHD
Arsenic	**0.00866**		**0.00200**	**mg/L**	1	23-Jun-2022 22:42
Barium	**0.756**		**0.00400**	**mg/L**	1	23-Jun-2022 22:42
Cadmium	ND		0.00200	mg/L	1	23-Jun-2022 22:42
Calcium	**135**		**0.500**	**mg/L**	1	23-Jun-2022 22:42
Chromium	ND		0.00400	mg/L	1	23-Jun-2022 22:42
Iron	**4.36**		**0.200**	**mg/L**	1	23-Jun-2022 22:42
Lead	ND		0.00200	mg/L	1	23-Jun-2022 22:42
Magnesium	**37.3**		**0.200**	**mg/L**	1	23-Jun-2022 22:42
Manganese	**0.443**		**0.00500**	**mg/L**	1	23-Jun-2022 22:42
Potassium	**5.92**		**0.200**	**mg/L**	1	23-Jun-2022 22:42
Sodium	**89.4**		**0.200**	**mg/L**	1	23-Jun-2022 22:42
Strontium	**0.795**		**0.00500**	**mg/L**	1	23-Jun-2022 22:42
Zinc	ND		0.00400	mg/L	1	23-Jun-2022 22:42
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 21-Jun-2022		Analyst: JHD
Arsenic	**0.00930**		**0.00200**	**mg/L**	1	21-Jun-2022 21:52
Barium	**0.789**		**0.00400**	**mg/L**	1	21-Jun-2022 21:52
Cadmium	ND		0.00200	mg/L	1	21-Jun-2022 21:52
Chromium	ND		0.00400	mg/L	1	21-Jun-2022 21:52
Iron	**3.91**		**0.200**	**mg/L**	1	21-Jun-2022 21:52
Lead	ND		0.00200	mg/L	1	21-Jun-2022 21:52
Manganese	**0.449**		**0.00500**	**mg/L**	1	21-Jun-2022 21:52
Strontium	**0.789**		**0.00500**	**mg/L**	1	21-Jun-2022 21:52
Zinc	**0.00453**		**0.00400**	**mg/L**	1	21-Jun-2022 21:52
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	22-Jun-2022 12:51
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 17-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	17-Jun-2022 15:33
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**870**		**10.0**	**mg/L**	1	17-Jun-2022 17:06
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**447**		**5.00**	**mg/L**	1	21-Jun-2022 18:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	21-Jun-2022 18:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**178**		**1.00**	**mg/L**	2	16-Jun-2022 16:09
Sulfate	**15.0**		**0.500**	**mg/L**	1	16-Jun-2022 16:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-13C
Collection Date: 14-Jun-2022 09:00

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	20-Jun-2022 23:02
Ethylbenzene	ND		1.0	ug/L	1	20-Jun-2022 23:02
Toluene	ND		1.0	ug/L	1	20-Jun-2022 23:02
Xylenes, Total	ND		1.0	ug/L	1	20-Jun-2022 23:02
Surr: 1,2-Dichloroethane-d4	*99.6*		*70-126*	*%REC*	*1*	*20-Jun-2022 23:02*
Surr: 4-Bromofluorobenzene	*96.8*		*77-113*	*%REC*	*1*	*20-Jun-2022 23:02*
Surr: Dibromofluoromethane	*100*		*77-123*	*%REC*	*1*	*20-Jun-2022 23:02*
Surr: Toluene-d8	*99.8*		*82-127*	*%REC*	*1*	*20-Jun-2022 23:02*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	17-Jun-2022 19:46
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 19:46
Aromatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 19:46
Surr: 2,5-Dibromotoluene (Aliphatic)	*87.1*		*70-130*	*%REC*	*1*	*17-Jun-2022 19:46*
Surr: 2,5-Dibromotoluene (Aliphatic)	*92.3*		*70-130*	*%REC*	*1*	*17-Jun-2022 19:46*
Surr: 2,5-Dibromotoluene (Aromatic)	*87.1*		*70-130*	*%REC*	*1*	*17-Jun-2022 19:46*
Surr: 2,5-Dibromotoluene (Aromatic)	*92.3*		*70-130*	*%REC*	*1*	*17-Jun-2022 19:46*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 17-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 22:08
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	21-Jun-2022 22:08
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	21-Jun-2022 22:08
Aromatics >C10 - C12	ND		0.00100	mg/L	1	21-Jun-2022 22:08
Aromatics >C12 - C16	ND		0.00400	mg/L	1	21-Jun-2022 22:08
Aromatics >C16 - C21	ND		0.00300	mg/L	1	21-Jun-2022 22:08
Aromatics >C21 - C35	ND		0.00900	mg/L	1	21-Jun-2022 22:08
Surr: 1-Chlorooctadecane	*85.1*		*40-140*	*%REC*	*1*	*21-Jun-2022 22:08*
Surr: 2-Bromonaphthalene	*136*		*40-140*	*%REC*	*1*	*21-Jun-2022 22:08*
Surr: 2-Fluorobiphenyl	*125*		*40-140*	*%REC*	*1*	*21-Jun-2022 22:08*
Surr: o-Terphenyl	*81.4*		*40-140*	*%REC*	*1*	*21-Jun-2022 22:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-13C
Collection Date: 14-Jun-2022 09:00

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 22-Jun-2022		Analyst: JHD
Arsenic	**0.0101**		**0.00200**	**mg/L**	1	23-Jun-2022 22:44
Barium	**0.208**		**0.00400**	**mg/L**	1	23-Jun-2022 22:44
Cadmium	ND		0.00200	mg/L	1	23-Jun-2022 22:44
Calcium	**63.9**		**0.500**	**mg/L**	1	23-Jun-2022 22:44
Chromium	**0.0103**		**0.00400**	**mg/L**	1	23-Jun-2022 22:44
Iron	**7.58**		**0.200**	**mg/L**	1	23-Jun-2022 22:44
Lead	**0.00620**		**0.00200**	**mg/L**	1	23-Jun-2022 22:44
Magnesium	**16.1**		**0.200**	**mg/L**	1	23-Jun-2022 22:44
Manganese	**0.423**		**0.00500**	**mg/L**	1	23-Jun-2022 22:44
Potassium	**3.58**		**0.200**	**mg/L**	1	23-Jun-2022 22:44
Sodium	**105**		**0.200**	**mg/L**	1	23-Jun-2022 22:44
Strontium	**0.343**		**0.00500**	**mg/L**	1	23-Jun-2022 22:44
Zinc	**0.0246**		**0.00400**	**mg/L**	1	23-Jun-2022 22:44
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 21-Jun-2022		Analyst: JHD
Arsenic	**0.00908**		**0.00200**	**mg/L**	1	21-Jun-2022 21:54
Barium	**0.159**		**0.00400**	**mg/L**	1	21-Jun-2022 21:54
Cadmium	ND		0.00200	mg/L	1	21-Jun-2022 21:54
Chromium	**0.0101**		**0.00400**	**mg/L**	1	21-Jun-2022 21:54
Iron	**4.03**		**0.200**	**mg/L**	1	21-Jun-2022 21:54
Lead	**0.00292**		**0.00200**	**mg/L**	1	21-Jun-2022 21:54
Manganese	**0.326**		**0.00500**	**mg/L**	1	21-Jun-2022 21:54
Strontium	**0.353**		**0.00500**	**mg/L**	1	21-Jun-2022 21:54
Zinc	**0.0167**		**0.00400**	**mg/L**	1	21-Jun-2022 21:54
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	22-Jun-2022 12:53
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 17-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	17-Jun-2022 15:35
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**520**		**10.0**	**mg/L**	1	21-Jun-2022 14:10
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**245**		**5.00**	**mg/L**	1	21-Jun-2022 18:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	21-Jun-2022 18:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**68.9**		**0.500**	**mg/L**	1	16-Jun-2022 16:15
Sulfate	**96.0**		**0.500**	**mg/L**	1	16-Jun-2022 16:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-14A
Collection Date: 14-Jun-2022 11:05

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	20-Jun-2022 23:22
Ethylbenzene	ND		1.0	ug/L	1	20-Jun-2022 23:22
Toluene	ND		1.0	ug/L	1	20-Jun-2022 23:22
Xylenes, Total	ND		1.0	ug/L	1	20-Jun-2022 23:22
Surr: 1,2-Dichloroethane-d4	*98.7*		*70-126*	*%REC*	*1*	*20-Jun-2022 23:22*
Surr: 4-Bromofluorobenzene	*97.7*		*77-113*	*%REC*	*1*	*20-Jun-2022 23:22*
Surr: Dibromofluoromethane	*99.3*		*77-123*	*%REC*	*1*	*20-Jun-2022 23:22*
Surr: Toluene-d8	*101*		*82-127*	*%REC*	*1*	*20-Jun-2022 23:22*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	17-Jun-2022 20:16
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 20:16
Aromatics >C8 - C10	ND		0.0100	mg/L	1	17-Jun-2022 20:16
Surr: 2,5-Dibromotoluene (Aliphatic)	*86.7*		*70-130*	*%REC*	*1*	*17-Jun-2022 20:16*
Surr: 2,5-Dibromotoluene (Aliphatic)	*92.3*		*70-130*	*%REC*	*1*	*17-Jun-2022 20:16*
Surr: 2,5-Dibromotoluene (Aromatic)	*86.7*		*70-130*	*%REC*	*1*	*17-Jun-2022 20:16*
Surr: 2,5-Dibromotoluene (Aromatic)	*92.3*		*70-130*	*%REC*	*1*	*17-Jun-2022 20:16*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 17-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	22-Jun-2022 01:18
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	22-Jun-2022 01:18
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	22-Jun-2022 01:18
Aromatics >C10 - C12	ND		0.00100	mg/L	1	22-Jun-2022 01:18
Aromatics >C12 - C16	ND		0.00400	mg/L	1	22-Jun-2022 01:18
Aromatics >C16 - C21	ND		0.00300	mg/L	1	22-Jun-2022 01:18
Aromatics >C21 - C35	ND		0.00900	mg/L	1	22-Jun-2022 01:18
Surr: 1-Chlorooctadecane	*72.7*		*40-140*	*%REC*	*1*	*22-Jun-2022 01:18*
Surr: 2-Bromonaphthalene	*85.2*		*40-140*	*%REC*	*1*	*22-Jun-2022 01:18*
Surr: 2-Fluorobiphenyl	*47.7*		*40-140*	*%REC*	*1*	*22-Jun-2022 01:18*
Surr: o-Terphenyl	*56.5*		*40-140*	*%REC*	*1*	*22-Jun-2022 01:18*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-14A
Collection Date: 14-Jun-2022 11:05

ANALYTICAL REPORT
WorkOrder:HS22060796
Lab ID:HS22060796-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 22-Jun-2022		Analyst: JHD
Arsenic	**0.0638**		**0.00200**	**mg/L**	1	23-Jun-2022 22:47
Barium	**0.487**		**0.00400**	**mg/L**	1	23-Jun-2022 22:47
Cadmium	ND		0.00200	mg/L	1	23-Jun-2022 22:47
Calcium	**67.6**		**0.500**	**mg/L**	1	23-Jun-2022 22:47
Chromium	ND		0.00400	mg/L	1	23-Jun-2022 22:47
Iron	**2.39**		**0.200**	**mg/L**	1	23-Jun-2022 22:47
Lead	ND		0.00200	mg/L	1	23-Jun-2022 22:47
Magnesium	**28.6**		**0.200**	**mg/L**	1	23-Jun-2022 22:47
Manganese	**0.407**		**0.00500**	**mg/L**	1	23-Jun-2022 22:47
Potassium	**4.00**		**0.200**	**mg/L**	1	23-Jun-2022 22:47
Sodium	**118**		**0.200**	**mg/L**	1	23-Jun-2022 22:47
Strontium	**0.471**		**0.00500**	**mg/L**	1	23-Jun-2022 22:47
Zinc	ND		0.00400	mg/L	1	23-Jun-2022 22:47
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 21-Jun-2022		Analyst: JHD
Arsenic	**0.0716**		**0.00200**	**mg/L**	1	21-Jun-2022 22:01
Barium	**0.570**		**0.00400**	**mg/L**	1	21-Jun-2022 22:01
Cadmium	ND		0.00200	mg/L	1	21-Jun-2022 22:01
Chromium	ND		0.00400	mg/L	1	21-Jun-2022 22:01
Iron	**2.58**		**0.200**	**mg/L**	1	21-Jun-2022 22:01
Lead	ND		0.00200	mg/L	1	21-Jun-2022 22:01
Manganese	**0.454**		**0.00500**	**mg/L**	1	21-Jun-2022 22:01
Strontium	**0.528**		**0.00500**	**mg/L**	1	21-Jun-2022 22:01
Zinc	ND		0.00400	mg/L	1	21-Jun-2022 22:01
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	22-Jun-2022 12:55
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 17-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	17-Jun-2022 15:37
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**624**		**10.0**	**mg/L**	1	21-Jun-2022 14:10
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**356**		**5.00**	**mg/L**	1	21-Jun-2022 18:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	21-Jun-2022 18:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**180**		**1.00**	**mg/L**	2	16-Jun-2022 16:25
Sulfate	**1.14**		**0.500**	**mg/L**	1	16-Jun-2022 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

Batch ID: 180095 **Start Date:** 17 Jun 2022 08:04 **End Date:** 17 Jun 2022 13:30
Method: MA EPH EXTRACTION-FRACTIONATION **Prep Code:** MA EPH_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060796-01	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22060796-02	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22060796-03	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22060796-04	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22060796-05	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22060796-06	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2

Batch ID: 180103 **Start Date:** 17 Jun 2022 09:00 **End Date:** 17 Jun 2022 12:00
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060796-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-06		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 180227 **Start Date:** 21 Jun 2022 10:00 **End Date:** 21 Jun 2022 14:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060796-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-06		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 180270 **Start Date:** 22 Jun 2022 09:00 **End Date:** 22 Jun 2022 12:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060796-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-06		10 (mL)	10 (mL)	1	120 plastic HNO3

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

Batch ID: 180278 **Start Date:** 22 Jun 2022 10:00 **End Date:** 22 Jun 2022 14:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060796-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060796-06		10 (mL)	10 (mL)	1	120 plastic HNO3

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 180095 (0)	**Test Name :** MASSACHUSETTS EPH R2.1, DEC 2019				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00		17 Jun 2022 08:04	21 Jun 2022 20:02	1
HS22060796-01	CD-12A	13 Jun 2022 12:00		17 Jun 2022 08:04	21 Jun 2022 20:02	1
HS22060796-02	CD-12B	13 Jun 2022 13:50		17 Jun 2022 08:04	21 Jun 2022 20:33	1
HS22060796-02	CD-12B	13 Jun 2022 13:50		17 Jun 2022 08:04	21 Jun 2022 20:33	1
HS22060796-03	CD-13A	13 Jun 2022 15:45		17 Jun 2022 08:04	21 Jun 2022 21:05	1
HS22060796-03	CD-13A	13 Jun 2022 15:45		17 Jun 2022 08:04	21 Jun 2022 21:05	1
HS22060796-04	CD-13B	13 Jun 2022 17:00		17 Jun 2022 08:04	21 Jun 2022 21:37	1
HS22060796-04	CD-13B	13 Jun 2022 17:00		17 Jun 2022 08:04	21 Jun 2022 21:37	1
HS22060796-05	CD-13C	14 Jun 2022 09:00		17 Jun 2022 08:04	21 Jun 2022 22:08	1
HS22060796-05	CD-13C	14 Jun 2022 09:00		17 Jun 2022 08:04	21 Jun 2022 22:08	1
HS22060796-06	CD-14A	14 Jun 2022 11:05		17 Jun 2022 08:04	22 Jun 2022 01:18	1
HS22060796-06	CD-14A	14 Jun 2022 11:05		17 Jun 2022 08:04	22 Jun 2022 01:18	1
Batch ID: 180103 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00		17 Jun 2022 09:00	17 Jun 2022 15:20	1
HS22060796-02	CD-12B	13 Jun 2022 13:50		17 Jun 2022 09:00	17 Jun 2022 15:25	1
HS22060796-03	CD-13A	13 Jun 2022 15:45		17 Jun 2022 09:00	17 Jun 2022 15:32	1
HS22060796-04	CD-13B	13 Jun 2022 17:00		17 Jun 2022 09:00	17 Jun 2022 15:33	1
HS22060796-05	CD-13C	14 Jun 2022 09:00		17 Jun 2022 09:00	17 Jun 2022 15:35	1
HS22060796-06	CD-14A	14 Jun 2022 11:05		17 Jun 2022 09:00	17 Jun 2022 15:37	1
Batch ID: 180227 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00		21 Jun 2022 10:00	21 Jun 2022 21:46	1
HS22060796-02	CD-12B	13 Jun 2022 13:50		21 Jun 2022 10:00	21 Jun 2022 21:48	1
HS22060796-03	CD-13A	13 Jun 2022 15:45		21 Jun 2022 10:00	21 Jun 2022 21:50	1
HS22060796-04	CD-13B	13 Jun 2022 17:00		21 Jun 2022 10:00	21 Jun 2022 21:52	1
HS22060796-05	CD-13C	14 Jun 2022 09:00		21 Jun 2022 10:00	21 Jun 2022 21:54	1
HS22060796-06	CD-14A	14 Jun 2022 11:05		21 Jun 2022 10:00	21 Jun 2022 22:01	1
Batch ID: 180270 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00		22 Jun 2022 09:00	22 Jun 2022 12:46	1
HS22060796-02	CD-12B	13 Jun 2022 13:50		22 Jun 2022 09:00	22 Jun 2022 12:48	1
HS22060796-03	CD-13A	13 Jun 2022 15:45		22 Jun 2022 09:00	22 Jun 2022 12:50	1
HS22060796-04	CD-13B	13 Jun 2022 17:00		22 Jun 2022 09:00	22 Jun 2022 12:51	1
HS22060796-05	CD-13C	14 Jun 2022 09:00		22 Jun 2022 09:00	22 Jun 2022 12:53	1
HS22060796-06	CD-14A	14 Jun 2022 11:05		22 Jun 2022 09:00	22 Jun 2022 12:55	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 180278 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00		22 Jun 2022 10:00	23 Jun 2022 22:38	1
HS22060796-02	CD-12B	13 Jun 2022 13:50		22 Jun 2022 10:00	23 Jun 2022 22:22	1
HS22060796-03	CD-13A	13 Jun 2022 15:45		22 Jun 2022 10:00	23 Jun 2022 22:40	1
HS22060796-04	CD-13B	13 Jun 2022 17:00		22 Jun 2022 10:00	23 Jun 2022 22:42	1
HS22060796-05	CD-13C	14 Jun 2022 09:00		22 Jun 2022 10:00	23 Jun 2022 22:44	1
HS22060796-06	CD-14A	14 Jun 2022 11:05		22 Jun 2022 10:00	23 Jun 2022 22:47	1
Batch ID: R410857 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00			16 Jun 2022 15:38	1
HS22060796-02	CD-12B	13 Jun 2022 13:50			16 Jun 2022 15:54	1
HS22060796-03	CD-13A	13 Jun 2022 15:45			16 Jun 2022 15:59	1
HS22060796-04	CD-13B	13 Jun 2022 17:00			16 Jun 2022 16:09	2
HS22060796-04	CD-13B	13 Jun 2022 17:00			16 Jun 2022 16:04	1
HS22060796-05	CD-13C	14 Jun 2022 09:00			16 Jun 2022 16:15	1
HS22060796-06	CD-14A	14 Jun 2022 11:05			16 Jun 2022 16:25	2
HS22060796-06	CD-14A	14 Jun 2022 11:05			16 Jun 2022 16:20	1
Batch ID: R410863 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00			17 Jun 2022 02:04	1
HS22060796-02	CD-12B	13 Jun 2022 13:50			17 Jun 2022 02:26	1
HS22060796-03	CD-13A	13 Jun 2022 15:45			17 Jun 2022 02:47	1
HS22060796-04	CD-13B	13 Jun 2022 17:00			17 Jun 2022 03:09	1
Batch ID: R410933 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00			17 Jun 2022 17:55	1
HS22060796-02	CD-12B	13 Jun 2022 13:50			17 Jun 2022 18:23	1
HS22060796-03	CD-13A	13 Jun 2022 15:45			17 Jun 2022 18:51	1
HS22060796-04	CD-13B	13 Jun 2022 17:00			17 Jun 2022 19:18	1
HS22060796-05	CD-13C	14 Jun 2022 09:00			17 Jun 2022 19:46	1
HS22060796-06	CD-14A	14 Jun 2022 11:05			17 Jun 2022 20:16	1
Batch ID: R410934 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00			17 Jun 2022 17:55	1
HS22060796-02	CD-12B	13 Jun 2022 13:50			17 Jun 2022 18:23	1
HS22060796-03	CD-13A	13 Jun 2022 15:45			17 Jun 2022 18:51	1
HS22060796-04	CD-13B	13 Jun 2022 17:00			17 Jun 2022 19:18	1
HS22060796-05	CD-13C	14 Jun 2022 09:00			17 Jun 2022 19:46	1
HS22060796-06	CD-14A	14 Jun 2022 11:05			17 Jun 2022 20:16	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R411088 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00			17 Jun 2022 17:06	1
HS22060796-02	CD-12B	13 Jun 2022 13:50			17 Jun 2022 17:06	1
HS22060796-03	CD-13A	13 Jun 2022 15:45			17 Jun 2022 17:06	1
HS22060796-04	CD-13B	13 Jun 2022 17:00			17 Jun 2022 17:06	1
Batch ID: R411132 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS22060796-05	CD-13C	14 Jun 2022 09:00			20 Jun 2022 23:02	1
HS22060796-06	CD-14A	14 Jun 2022 11:05			20 Jun 2022 23:22	1
Batch ID: R411271 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS22060796-01	CD-12A	13 Jun 2022 12:00			21 Jun 2022 18:15	1
HS22060796-02	CD-12B	13 Jun 2022 13:50			21 Jun 2022 18:15	1
HS22060796-03	CD-13A	13 Jun 2022 15:45			21 Jun 2022 18:15	1
HS22060796-04	CD-13B	13 Jun 2022 17:00			21 Jun 2022 18:15	1
HS22060796-05	CD-13C	14 Jun 2022 09:00			21 Jun 2022 18:15	1
HS22060796-06	CD-14A	14 Jun 2022 11:05			21 Jun 2022 18:15	1
Batch ID: R411312 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22060796-05	CD-13C	14 Jun 2022 09:00			21 Jun 2022 14:10	1
HS22060796-06	CD-14A	14 Jun 2022 11:05			21 Jun 2022 14:10	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180095 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MBLK Sample ID: **MBLK-180095** Units: **mg/L** Analysis Date: **21-Jun-2022 23:43**
Client ID: Run ID: **FID-7_411281** SeqNo: **6707299** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	ND	0.00100								
Aliphatics >C12 - C16	ND	0.00200								
Aliphatics >C16 - C35	ND	0.00800								
Surr: 1-Chlorooctadecane	*0.01915*	*0*	*0.04*	*0*	*47.9*	*40 - 140*				

MBLK Sample ID: **MBLK-180095** Units: **mg/L** Analysis Date: **21-Jun-2022 23:43**
Client ID: Run ID: **FID-8_411279** SeqNo: **6707244** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	ND	0.00100								
Aromatics >C12 - C16	ND	0.00400								
Aromatics >C16 - C21	ND	0.00300								
Aromatics >C21 - C35	ND	0.00900								
Surr: 2-Bromonaphthalene	*0.05343*	*0*	*0.04*	*0*	*134*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.05498*	*0*	*0.04*	*0*	*137*	*40 - 140*				
Surr: o-Terphenyl	*0.03027*	*0*	*0.04*	*0*	*75.7*	*40 - 140*				

LCS Sample ID: **LCS-180095** Units: **mg/L** Analysis Date: **22-Jun-2022 00:15**
Client ID: Run ID: **FID-7_411281** SeqNo: **6707300** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.06151	0.00100	0.05	0	123	40 - 140				
Aliphatics >C12 - C16	0.126	0.00200	0.1	0	126	40 - 140				
Aliphatics >C16 - C35	0.4539	0.00800	0.4	0	113	40 - 140				
Surr: 1-Chlorooctadecane	*0.03259*	*0*	*0.04*	*0*	*81.5*	*40 - 140*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180095 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS-180095** Units: **mg/L** Analysis Date: **22-Jun-2022 00:15**
Client ID: Run ID: **FID-8_411279** SeqNo: **6707245** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.06627	0.00100	0.05	0	133	40 - 140				
Aromatics >C12 - C16	0.2356	0.00400	0.2	0	118	40 - 140				
Aromatics >C16 - C21	0.172	0.00300	0.15	0	115	40 - 140				
Aromatics >C21 - C35	0.4763	0.00900	0.45	0	106	40 - 140				
Surr: 2-Bromonaphthalene	*0.05043*	*0*	*0.04*	*0*	*126*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.04478*	*0*	*0.04*	*0*	*112*	*40 - 140*				
Surr: o-Terphenyl	*0.02978*	*0*	*0.04*	*0*	*74.4*	*40 - 140*				

LCSD Sample ID: **LCSD-180095** Units: **mg/L** Analysis Date: **22-Jun-2022 00:46**
Client ID: Run ID: **FID-7_411281** SeqNo: **6707301** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.05719	0.00100	0.05	0	114	40 - 140	0.06151	7.29	50	
Aliphatics >C12 - C16	0.1149	0.00200	0.1	0	115	40 - 140	0.126	9.23	50	
Aliphatics >C16 - C35	0.4404	0.00800	0.4	0	110	40 - 140	0.4539	3.01	50	
Surr: 1-Chlorooctadecane	*0.03278*	*0*	*0.04*	*0*	*81.9*	*40 - 140*	*0.03259*	*0.57*	*50*	

LCSD Sample ID: **LCSD-180095** Units: **mg/L** Analysis Date: **22-Jun-2022 00:46**
Client ID: Run ID: **FID-8_411279** SeqNo: **6707246** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.06042	0.00100	0.05	0	121	40 - 140	0.06627	9.24	50	
Aromatics >C12 - C16	0.2273	0.00400	0.2	0	114	40 - 140	0.2356	3.59	50	
Aromatics >C16 - C21	0.1627	0.00300	0.15	0	108	40 - 140	0.172	5.55	50	
Aromatics >C21 - C35	0.4699	0.00900	0.45	0	104	40 - 140	0.4763	1.34	50	
Surr: 2-Bromonaphthalene	*0.04571*	*0*	*0.04*	*0*	*114*	*40 - 140*	*0.05043*	*9.83*	*50*	
Surr: 2-Fluorobiphenyl	*0.04167*	*0*	*0.04*	*0*	*104*	*40 - 140*	*0.04478*	*7.21*	*50*	
Surr: o-Terphenyl	*0.02968*	*0*	*0.04*	*0*	*74.2*	*40 - 140*	*0.02978*	*0.317*	*50*	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R410933 (0) **Instrument:** FID-15 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-220610** Units: **mg/L** Analysis Date: **17-Jun-2022 13:19**
Client ID: Run ID: **FID-15_410933** SeqNo: **6699327** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.201*	*0.0100*	*0.25*	*0*	*80.4*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.201*	*0.0100*	*0.25*	*0*	*80.4*	*70 - 130*				

LCS Sample ID: **LCS-220616** Units: **mg/L** Analysis Date: **17-Jun-2022 12:24**
Client ID: Run ID: **FID-15_410933** SeqNo: **6699325** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08878	0.0100	0.1	0	88.8	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2542*	*0.0100*	*0.25*	*0*	*102*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2542*	*0.0100*	*0.25*	*0*	*102*	*70 - 130*				

LCSD Sample ID: **LCSD-220616** Units: **mg/L** Analysis Date: **17-Jun-2022 12:51**
Client ID: Run ID: **FID-15_410933** SeqNo: **6699326** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.0891	0.0100	0.1	0	89.1	70 - 130	0.08878	0.363	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2685*	*0.0100*	*0.25*	*0*	*107*	*70 - 130*	*0.2542*	*5.49*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2685*	*0.0100*	*0.25*	*0*	*107*	*70 - 130*	*0.2542*	*5.49*	*25*	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R410934 (0) **Instrument: FID-14** **Method: MASSACHUSETTS VPH, FEB 2018, REV 2.1**

MBLK Sample ID: **MBLK-220610** Units: **mg/L** Analysis Date: **17-Jun-2022 13:19**
Client ID: Run ID: **FID-14_410934** SeqNo: **6699333** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	ND	0.0100								
Aliphatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.214*	*0.0100*	*0.25*	*0*	*85.6*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.214*	*0.0100*	*0.25*	*0*	*85.6*	*70 - 130*				

LCS Sample ID: **LCS-220616** Units: **mg/L** Analysis Date: **17-Jun-2022 12:24**
Client ID: Run ID: **FID-14_410934** SeqNo: **6699331** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02235	0.0100	0.025	0	89.4	70 - 130				
Aliphatics >C8 - C10	0.02116	0.0100	0.025	0	84.7	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2479*	*0.0100*	*0.25*	*0*	*99.2*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2479*	*0.0100*	*0.25*	*0*	*99.2*	*70 - 130*				

LCSD Sample ID: **LCSD-220616** Units: **mg/L** Analysis Date: **17-Jun-2022 12:51**
Client ID: Run ID: **FID-14_410934** SeqNo: **6699332** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02276	0.0100	0.025	0	91.0	70 - 130	0.02235	1.8	25	
Aliphatics >C8 - C10	0.02218	0.0100	0.025	0	88.7	70 - 130	0.02116	4.71	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2585*	*0.0100*	*0.25*	*0*	*103*	*70 - 130*	*0.2479*	*4.18*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2585*	*0.0100*	*0.25*	*0*	*103*	*70 - 130*	*0.2479*	*4.18*	*25*	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180103 (0) **Instrument:** HG03 **Method:** DISSOLVED MERCURY BY SW7470A (DISSOLVED)

MBLK Sample ID: **MBLKF1-180103** Units: **mg/L** Analysis Date: **17-Jun-2022 15:17**
Client ID: Run ID: **HG03_410912** SeqNo: **6699606** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

MBLK Sample ID: **MBLK-180103** Units: **mg/L** Analysis Date: **17-Jun-2022 15:15**
Client ID: Run ID: **HG03_410912** SeqNo: **6699605** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-180103** Units: **mg/L** Analysis Date: **17-Jun-2022 15:19**
Client ID: Run ID: **HG03_410912** SeqNo: **6699607** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00519	0.000200	0.005	0	104	80 - 120				

MS Sample ID: **HS22060796-01MS** Units: **mg/L** Analysis Date: **17-Jun-2022 15:22**
Client ID: **CD-12A** Run ID: **HG03_410912** SeqNo: **6699609** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00495	0.000200	0.005	-0.000088	101	80 - 120				

MSD Sample ID: **HS22060796-01MSD** Units: **mg/L** Analysis Date: **17-Jun-2022 15:24**
Client ID: **CD-12A** Run ID: **HG03_410912** SeqNo: **6699610** PrepDate: **17-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00488	0.000200	0.005	-0.000088	99.4	80 - 120	0.00495	1.42	20	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180227 (0) **Instrument:** ICPMS07 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLKF1-180227** Units: **mg/L** Analysis Date: **21-Jun-2022 21:22**
Client ID: Run ID: **ICPMS07_411173** SeqNo: **6705881** PrepDate: **21-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

MBLK Sample ID: **MBLK-180227** Units: **mg/L** Analysis Date: **21-Jun-2022 21:19**
Client ID: Run ID: **ICPMS07_411173** SeqNo: **6705880** PrepDate: **21-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180227 (0) **Instrument: ICPMS07** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

LCS Sample ID: **LCS-180227** Units: **mg/L** Analysis Date: **21-Jun-2022 21:24**
Client ID: Run ID: **ICPMS07_411173** SeqNo: **6705882** PrepDate: **21-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05467	0.00200	0.05	0	109	80 - 120				
Barium	0.05364	0.00400	0.05	0	107	80 - 120				
Cadmium	0.0544	0.00200	0.05	0	109	80 - 120				
Chromium	0.05354	0.00400	0.05	0	107	80 - 120				
Iron	5.375	0.200	5	0	107	80 - 120				
Lead	0.04895	0.00200	0.05	0	97.9	80 - 120				
Manganese	0.05388	0.00500	0.05	0	108	80 - 120				
Strontium	0.1081	0.00500	0.1	0	108	80 - 120				
Zinc	0.05752	0.00400	0.05	0	115	80 - 120				

MS Sample ID: **HS22060426-04MS** Units: **mg/L** Analysis Date: **21-Jun-2022 21:30**
Client ID: Run ID: **ICPMS07_411173** SeqNo: **6705885** PrepDate: **21-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05903	0.00200	0.05	0.004301	109	75 - 125				
Barium	0.1866	0.00400	0.05	0.1377	97.7	75 - 125				
Cadmium	0.05197	0.00200	0.05	0	104	75 - 125				
Chromium	0.05322	0.00400	0.05	0.000469	105	75 - 125				
Iron	5.279	0.200	5	0	106	75 - 125				
Lead	0.05076	0.00200	0.05	0	102	75 - 125				
Manganese	0.5263	0.00500	0.05	0.48	92.5	75 - 125				O
Strontium	1.318	0.00500	0.05	1.242	151	75 - 125				SO
Zinc	0.05398	0.00400	0.05	0.002892	102	75 - 125				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180227 (0) **Instrument: ICPMS07** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MSD Sample ID: **HS22060426-04MSD** Units: **mg/L** Analysis Date: **21-Jun-2022 21:32**
Client ID: Run ID: **ICPMS07_411173** SeqNo: **6705886** PrepDate: **21-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05941	0.00200	0.05	0.004301	110	75 - 125	0.05903	0.645	20	
Barium	0.1806	0.00400	0.05	0.1377	85.7	75 - 125	0.1866	3.27	20	
Cadmium	0.05415	0.00200	0.05	0	108	75 - 125	0.05197	4.11	20	
Chromium	0.05461	0.00400	0.05	0.000469	108	75 - 125	0.05322	2.58	20	
Iron	5.429	0.200	5	0	109	75 - 125	5.279	2.8	20	
Lead	0.05209	0.00200	0.05	0	104	75 - 125	0.05076	2.59	20	
Manganese	0.495	0.00500	0.05	0.48	29.9	75 - 125	0.5263	6.13	20	SO
Strontium	1.24	0.00500	0.05	1.242	-3.09	75 - 125	1.318	6.04	20	SO
Zinc	0.05488	0.00400	0.05	0.002892	104	75 - 125	0.05398	1.65	20	

PDS Sample ID: **HS22060426-04PDS** Units: **mg/L** Analysis Date: **21-Jun-2022 21:34**
Client ID: Run ID: **ICPMS07_411173** SeqNo: **6705887** PrepDate: **21-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1104	0.00200	0.1	0.004301	106	75 - 125				
Barium	0.2383	0.00400	0.1	0.1377	101	75 - 125				
Cadmium	0.1017	0.00200	0.1	0.000111	102	75 - 125				
Chromium	0.1019	0.00400	0.1	0.000469	101	75 - 125				
Iron	10.23	0.200	10	0.00685	102	75 - 125				
Lead	0.09957	0.00200	0.1	0.000098	99.5	75 - 125				
Manganese	0.5719	0.00500	0.1	0.48	91.9	75 - 125				O
Strontium	1.315	0.00500	0.1	1.242	73.4	75 - 125				SO
Zinc	0.1004	0.00400	0.1	0.002892	97.6	75 - 125				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180227 (0) **Instrument:** ICPMS07 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

SD Sample ID: **HS22060426-04SD** Units: **mg/L** Analysis Date: **21-Jun-2022 21:28**
Client ID: Run ID: **ICPMS07_411173** SeqNo: **6705884** PrepDate: **21-Jun-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.004302	0.0100					0.004301	0	10	J
Barium	0.1377	0.0200					0.1377	0.0421	10	
Cadmium	ND	0.0100					0.000111	0	10	
Chromium	ND	0.0200					0.000469	0	10	
Iron	ND	1.00					0.00685	0	10	
Lead	ND	0.0100					0.000098	0	10	
Manganese	0.4424	0.0250					0.48	7.83	10	
Strontium	1.266	0.0250					1.242	1.93	10	
Zinc	ND	0.0200					0.002892	0	10	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180270 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-180270** Units: **mg/L** Analysis Date: **22-Jun-2022 12:30**
Client ID: Run ID: **HG03_411298** SeqNo: **6707651** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-180270** Units: **mg/L** Analysis Date: **22-Jun-2022 12:33**
Client ID: Run ID: **HG03_411298** SeqNo: **6707652** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00538	0.000200	0.005	0	108	80 - 120				

MS Sample ID: **HS22060764-09MS** Units: **mg/L** Analysis Date: **22-Jun-2022 12:36**
Client ID: Run ID: **HG03_411298** SeqNo: **6707654** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00522	0.000200	0.005	-0.000023	105	75 - 125				

MSD Sample ID: **HS22060764-09MSD** Units: **mg/L** Analysis Date: **22-Jun-2022 12:38**
Client ID: Run ID: **HG03_411298** SeqNo: **6707655** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0052	0.000200	0.005	-0.000023	104	75 - 125	0.00522	0.384	20	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180278 (0) **Instrument: ICPMS07** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLKF1-180278** Units: **mg/L** Analysis Date: **24-Jun-2022 12:56**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6712505** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Calcium	ND	0.500								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Magnesium	ND	0.200								
Manganese	ND	0.00500								
Potassium	ND	0.200								
Sodium	ND	0.200								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

MBLK Sample ID: **MBLK-180278** Units: **mg/L** Analysis Date: **23-Jun-2022 22:16**
Client ID: Run ID: **ICPMS07_411395** SeqNo: **6710835** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Calcium	ND	0.500								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Magnesium	ND	0.200								
Manganese	ND	0.00500								
Potassium	ND	0.200								
Sodium	ND	0.200								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180278 (0) **Instrument: ICPMS07** **Method: ICP-MS METALS BY SW6020A**

LCS Sample ID: **LCS-180278** Units: **mg/L** Analysis Date: **23-Jun-2022 22:20**
Client ID: Run ID: **ICPMS07_411395** SeqNo: **6710837** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04587	0.00200	0.05	0	91.7	80 - 120				
Barium	0.05026	0.00400	0.05	0	101	80 - 120				
Cadmium	0.0508	0.00200	0.05	0	102	80 - 120				
Calcium	5.34	0.500	5	0	107	80 - 120				
Chromium	0.0426	0.00400	0.05	0	85.2	80 - 120				
Iron	4.716	0.200	5	0	94.3	80 - 120				
Lead	0.04603	0.00200	0.05	0	92.1	80 - 120				
Magnesium	5.305	0.200	5	0	106	80 - 120				
Manganese	0.0495	0.00500	0.05	0	99.0	80 - 120				
Potassium	5.34	0.200	5	0	107	80 - 120				
Sodium	5.304	0.200	5	0	106	80 - 120				
Strontium	0.1031	0.00500	0.1	0	103	80 - 120				
Zinc	0.05239	0.00400	0.05	0	105	80 - 120				

MS Sample ID: **HS22060796-02MS** Units: **mg/L** Analysis Date: **23-Jun-2022 22:26**
Client ID: **CD-12B** Run ID: **ICPMS07_411395** SeqNo: **6710840** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05722	0.00200	0.05	0.007737	99.0	80 - 120				
Barium	0.3101	0.00400	0.05	0.2591	102	80 - 120				O
Cadmium	0.05093	0.00200	0.05	0.000028	102	80 - 120				
Calcium	52.71	0.500	5	46.83	117	80 - 120				O
Chromium	0.04547	0.00400	0.05	0.000464	90.0	80 - 120				
Iron	5.212	0.200	5	0.3058	98.1	80 - 120				
Lead	0.04815	0.00200	0.05	0.000084	96.1	80 - 120				
Magnesium	17.26	0.200	5	11.99	105	80 - 120				
Manganese	0.3957	0.00500	0.05	0.3491	93.1	80 - 120				O
Potassium	7.569	0.200	5	2.348	104	80 - 120				
Sodium	74.56	0.200	5	69.43	103	80 - 120				O
Strontium	0.3128	0.00500	0.1	0.2128	100	80 - 120				
Zinc	0.05593	0.00400	0.05	0.002568	107	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180278 (0) **Instrument: ICPMS07** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS22060796-02MSD** Units: **mg/L** Analysis Date: **23-Jun-2022 22:28**
Client ID: **CD-12B** Run ID: **ICPMS07_411395** SeqNo: **6710841** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0569	0.00200	0.05	0.007737	98.3	80 - 120	0.05722	0.563	20	
Barium	0.2926	0.00400	0.05	0.2591	66.9	80 - 120	0.3101	5.81	20	SO
Cadmium	0.04933	0.00200	0.05	0.000028	98.6	80 - 120	0.05093	3.2	20	
Calcium	49.37	0.500	5	46.83	50.6	80 - 120	52.71	6.54	20	SO
Chromium	0.04557	0.00400	0.05	0.000464	90.2	80 - 120	0.04547	0.211	20	
Iron	5.188	0.200	5	0.3058	97.6	80 - 120	5.212	0.47	20	
Lead	0.04562	0.00200	0.05	0.000084	91.1	80 - 120	0.04815	5.41	20	
Magnesium	16.03	0.200	5	11.99	80.7	80 - 120	17.26	7.41	20	
Manganese	0.3726	0.00500	0.05	0.3491	47.0	80 - 120	0.3957	6.01	20	SO
Potassium	7.059	0.200	5	2.348	94.2	80 - 120	7.569	6.97	20	
Sodium	69.53	0.200	5	69.43	2.05	80 - 120	74.56	6.99	20	SO
Strontium	0.2934	0.00500	0.1	0.2128	80.6	80 - 120	0.3128	6.41	20	
Zinc	0.05328	0.00400	0.05	0.002568	101	80 - 120	0.05593	4.87	20	

PDS Sample ID: **HS22060796-02PDS** Units: **mg/L** Analysis Date: **23-Jun-2022 22:30**
Client ID: **CD-12B** Run ID: **ICPMS07_411395** SeqNo: **6710842** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1096	0.00200	0.1	0.007737	102	75 - 125				
Barium	0.3592	0.00400	0.1	0.2591	100	75 - 125				
Cadmium	0.09916	0.00200	0.1	0.000028	99.1	75 - 125				
Calcium	55.66	0.500	10	46.83	88.2	75 - 125				O
Chromium	0.09255	0.00400	0.1	0.000464	92.1	75 - 125				
Iron	10.4	0.200	10	0.3058	101	75 - 125				
Lead	0.09743	0.00200	0.1	0.000084	97.3	75 - 125				
Magnesium	21.59	0.200	10	11.99	96.0	75 - 125				
Manganese	0.4357	0.00500	0.1	0.3491	86.6	75 - 125				
Potassium	12.25	0.200	10	2.348	99.0	75 - 125				
Sodium	76.74	0.200	10	69.43	73.1	75 - 125				SO
Strontium	0.3124	0.00500	0.1	0.2128	99.5	75 - 125				
Zinc	0.1024	0.00400	0.1	0.002568	99.8	75 - 125				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: 180278 (0) **Instrument: ICPMS07** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS22060796-02SD** Units: **mg/L** Analysis Date: **23-Jun-2022 22:24**
Client ID: **CD-12B** Run ID: **ICPMS07_411395** SeqNo: **6710839** PrepDate: **22-Jun-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.007961	0.0100					0.007737	0	10	J
Barium	0.2594	0.0200					0.2591	0.0973	10	
Cadmium	ND	0.0100					0.000028	0	10	
Calcium	45.77	2.50					46.83	2.27	10	
Chromium	ND	0.0200					0.000464	0	10	
Iron	0.2821	1.00					0.3058	0	10	J
Lead	ND	0.0100					0.000084	0	10	
Magnesium	12.67	1.00					11.99	5.66	10	
Manganese	0.3175	0.0250					0.3491	9.06	10	
Sodium	70.59	1.00					69.43	1.67	10	
Strontium	0.2034	0.0250					0.2128	4.42	10	
Zinc	ND	0.0200					0.002568	0	10	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R410863 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-220616** Units: **ug/L** Analysis Date: **16-Jun-2022 22:06**
Client ID: Run ID: **VOA4_410863** SeqNo: **6697892** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*51.22*	*1.0*	*50*	*0*	*102*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.58*	*1.0*	*50*	*0*	*97.2*	*77 - 113*				
Surr: Dibromofluoromethane	*50.39*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.22*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-220616** Units: **ug/L** Analysis Date: **16-Jun-2022 21:23**
Client ID: Run ID: **VOA4_410863** SeqNo: **6697891** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.16	1.0	20	0	106	74 - 120				
Ethylbenzene	21.31	1.0	20	0	107	77 - 117				
Toluene	20.34	1.0	20	0	102	77 - 118				
Xylenes, Total	64.9	1.0	60	0	108	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.16*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.69*	*1.0*	*50*	*0*	*101*	*77 - 113*				
Surr: Dibromofluoromethane	*50.21*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*50.35*	*1.0*	*50*	*0*	*101*	*81 - 120*				

MS Sample ID: **HS22060764-09MS** Units: **ug/L** Analysis Date: **17-Jun-2022 05:43**
Client ID: Run ID: **VOA4_410863** SeqNo: **6697913** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	388.6	1.0	20	0.4019	1940	70 - 127				SE
Ethylbenzene	22.49	1.0	20	0	112	70 - 124				
Toluene	21.03	1.0	20	0	105	70 - 123				
Xylenes, Total	71.2	1.0	60	1.454	116	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.52*	*1.0*	*50*	*0*	*99.0*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.97*	*1.0*	*50*	*0*	*102*	*77 - 113*				
Surr: Dibromofluoromethane	*48.34*	*1.0*	*50*	*0*	*96.7*	*77 - 123*				
Surr: Toluene-d8	*49.33*	*1.0*	*50*	*0*	*98.7*	*82 - 127*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R410863 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS22060764-09MSD** Units: **ug/L** Analysis Date: **17-Jun-2022 06:04**
Client ID: Run ID: **VOA4_410863** SeqNo: **6697914** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	225.7	1.0	20	0.4019	1130	70 - 127	388.6	53	20	SRE
Ethylbenzene	22.44	1.0	20	0	112	70 - 124	22.49	0.2	20	
Toluene	21.18	1.0	20	0	106	70 - 123	21.03	0.694	20	
Xylenes, Total	72.88	1.0	60	1.454	119	70 - 130	71.2	2.34	20	
Surr: 1,2-Dichloroethane-d4	*49.24*	*1.0*	*50*	*0*	*98.5*	*70 - 126*	*49.52*	*0.578*	*20*	
Surr: 4-Bromofluorobenzene	*51.18*	*1.0*	*50*	*0*	*102*	*77 - 113*	*50.97*	*0.408*	*20*	
Surr: Dibromofluoromethane	*49.62*	*1.0*	*50*	*0*	*99.2*	*77 - 123*	*48.34*	*2.61*	*20*	
Surr: Toluene-d8	*50.16*	*1.0*	*50*	*0*	*100*	*82 - 127*	*49.33*	*1.67*	*20*	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R411132 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-220620** Units: **ug/L** Analysis Date: **20-Jun-2022 20:25**
Client ID: Run ID: **VOA7_411132** SeqNo: **6704273** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*48.72*	*1.0*	*50*	*0*	*97.4*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.51*	*1.0*	*50*	*0*	*97.0*	*77 - 113*				
Surr: Dibromofluoromethane	*49.72*	*1.0*	*50*	*0*	*99.4*	*73 - 126*				
Surr: Toluene-d8	*50.13*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-220620** Units: **ug/L** Analysis Date: **20-Jun-2022 19:46**
Client ID: Run ID: **VOA7_411132** SeqNo: **6704272** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.26	1.0	20	0	101	74 - 120				
Ethylbenzene	20.08	1.0	20	0	100	77 - 117				
Toluene	19.88	1.0	20	0	99.4	77 - 118				
Xylenes, Total	61.45	1.0	60	0	102	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.83*	*1.0*	*50*	*0*	*102*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.71*	*1.0*	*50*	*0*	*99.4*	*77 - 113*				
Surr: Dibromofluoromethane	*50.95*	*1.0*	*50*	*0*	*102*	*73 - 126*				
Surr: Toluene-d8	*50.25*	*1.0*	*50*	*0*	*100*	*81 - 120*				

MS Sample ID: **HS22060796-06MS** Units: **ug/L** Analysis Date: **21-Jun-2022 03:28**
Client ID: **CD-14A** Run ID: **VOA7_411132** SeqNo: **6704310** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.85	1.0	20	0	94.3	70 - 127				
Ethylbenzene	18.66	1.0	20	0	93.3	70 - 124				
Toluene	18.6	1.0	20	0	93.0	70 - 123				
Xylenes, Total	56.9	1.0	60	0	94.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.79*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.91*	*1.0*	*50*	*0*	*99.8*	*77 - 113*				
Surr: Dibromofluoromethane	*51.03*	*1.0*	*50*	*0*	*102*	*77 - 123*				
Surr: Toluene-d8	*49.83*	*1.0*	*50*	*0*	*99.7*	*82 - 127*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R411132 (0) **Instrument:** VOA7 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD Sample ID: **HS22060796-06MSD** Units: **ug/L** Analysis Date: **21-Jun-2022 03:48**
Client ID: **CD-14A** Run ID: **VOA7_411132** SeqNo: **6704311** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	18.42	1.0	20	0	92.1	70 - 127	18.85	2.3	20	
Ethylbenzene	17.82	1.0	20	0	89.1	70 - 124	18.66	4.61	20	
Toluene	17.89	1.0	20	0	89.5	70 - 123	18.6	3.89	20	
Xylenes, Total	55.09	1.0	60	0	91.8	70 - 130	56.9	3.23	20	
Surr: 1,2-Dichloroethane-d4	*49.56*	*1.0*	*50*	*0*	*99.1*	*70 - 126*	*50.79*	*2.44*	*20*	
Surr: 4-Bromofluorobenzene	*49.39*	*1.0*	*50*	*0*	*98.8*	*77 - 113*	*49.91*	*1.04*	*20*	
Surr: Dibromofluoromethane	*50.42*	*1.0*	*50*	*0*	*101*	*77 - 123*	*51.03*	*1.19*	*20*	
Surr: Toluene-d8	*50.14*	*1.0*	*50*	*0*	*100*	*82 - 127*	*49.83*	*0.617*	*20*	

The following samples were analyzed in this batch: HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R410857 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **16-Jun-2022 11:18**
Client ID: Run ID: **ICS-Integrion_410857** SeqNo: **6697455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Sulfate	ND	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **16-Jun-2022 11:23**
Client ID: Run ID: **ICS-Integrion_410857** SeqNo: **6697456** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.41	0.500	20	0	97.0	80 - 120				
Sulfate	19.14	0.500	20	0	95.7	80 - 120				

MS Sample ID: **HS22060796-01MS** Units: **mg/L** Analysis Date: **16-Jun-2022 15:43**
Client ID: **CD-12A** Run ID: **ICS-Integrion_410857** SeqNo: **6697476** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	35.79	0.500	10	25.77	100	80 - 120				
Sulfate	25.73	0.500	10	15.85	98.8	80 - 120				

MSD Sample ID: **HS22060796-01MSD** Units: **mg/L** Analysis Date: **16-Jun-2022 15:48**
Client ID: **CD-12A** Run ID: **ICS-Integrion_410857** SeqNo: **6697477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	35.75	0.500	10	25.77	99.8	80 - 120	35.79	0.0951	20	
Sulfate	25.72	0.500	10	15.85	98.7	80 - 120	25.73	0.0194	20	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R411088 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-061722** Units: **mg/L** Analysis Date: **17-Jun-2022 17:06**
Client ID: Run ID: **Balance1_411088** SeqNo: **6703082** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-061722** Units: **mg/L** Analysis Date: **17-Jun-2022 17:06**
Client ID: Run ID: **Balance1_411088** SeqNo: **6703083** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1068	10.0	1000	0	107	85 - 115				

DUP Sample ID: **HS22060862-03DUP** Units: **mg/L** Analysis Date: **17-Jun-2022 17:06**
Client ID: Run ID: **Balance1_411088** SeqNo: **6703080** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	770	10.0					770	0	5	

DUP Sample ID: **HS22060764-02DUP** Units: **mg/L** Analysis Date: **17-Jun-2022 17:06**
Client ID: Run ID: **Balance1_411088** SeqNo: **6703071** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	390	10.0					372	4.72	5	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R411271 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **MBLK-R411271** Units: **mg/L** Analysis Date: **21-Jun-2022 18:15**
Client ID: Run ID: **ManTech01_411271** SeqNo: **6707122** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-R411271** Units: **mg/L** Analysis Date: **21-Jun-2022 18:15**
Client ID: Run ID: **ManTech01_411271** SeqNo: **6707121** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	996	5.00	1000	0	99.6	85 - 115				

LCSD Sample ID: **LCSD-R411271** Units: **mg/L** Analysis Date: **21-Jun-2022 18:15**
Client ID: Run ID: **ManTech01_411271** SeqNo: **6707120** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1008	5.00	1000	0	101	85 - 115	996	1.22	20	

DUP Sample ID: **HS22060651-01DUP** Units: **mg/L** Analysis Date: **21-Jun-2022 18:15**
Client ID: Run ID: **ManTech01_411271** SeqNo: **6707123** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	231.5	5.00					234	1.1	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	

The following samples were analyzed in this batch: HS22060796-01 HS22060796-02 HS22060796-03 HS22060796-04 HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060796

QC BATCH REPORT

Batch ID: R411312 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-062122** Units: **mg/L** Analysis Date: **21-Jun-2022 14:10**
Client ID: Run ID: **Balance1_411312** SeqNo: **6708014** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-062122** Units: **mg/L** Analysis Date: **21-Jun-2022 14:10**
Client ID: Run ID: **Balance1_411312** SeqNo: **6708015** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1010	10.0	1000	0	101	85 - 115				

DUP Sample ID: **HS22060764-09DUP** Units: **mg/L** Analysis Date: **21-Jun-2022 14:10**
Client ID: Run ID: **Balance1_411312** SeqNo: **6707999** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	340	10.0					334	1.78	5	

DUP Sample ID: **HS22060764-05DUP** Units: **mg/L** Analysis Date: **21-Jun-2022 14:10**
Client ID: Run ID: **Balance1_411312** SeqNo: **6707994** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	350	10.0					346	1.15	5	

The following samples were analyzed in this batch: HS22060796-05 HS22060796-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: **HS22060796**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-34	30-Jun-2022
Illinois	2000322022-9	09-May-2023
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2021-2022	30-Jun-2022
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
Oklahoma	2021-080	31-Aug-2022
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932021-12	30-Jul-2022

Sample Receipt Checklist

Work Order ID: HS22060796 **Date/Time Received:** **15-Jun-2022 09:35**

Client Name: ERMSW-BRLA **Received by:** **Paresh M. Giga**

Completed By:	/S/ Paresh M. Giga	15-Jun-2022 15:07	**Reviewed by:**	/S/ Anna Kinchen	16-Jun-2022 09:07
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:273243
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	5.1C/5.6C; 5.4C/5.9C U/C	IR31
Cooler(s)/Kit(s):	48937/48961	
Date/Time sample(s) sent to storage:	6/15/22 15:25	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Trip Blanks logged in on hold

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 273243

HS22060796

ERM Southwest, Inc.
Castex 0575834

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	0575834	Project Name	Castex 0575834	A	8260_LL_W - BTEX
Work Order		Project Number		B	MA EPH_W_La
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	MA VPH_LA_W
Send Report To	David Upthegrove	Invoice Attn	Accounts Payable	D	ICP_TW - Total Metals
Address	804 Main Street	Address	804 Main Street	E	ICP_DISS - Diss Metals
				F	9056_anions_W - Cl/SO4
City/State/Zip	Baton Rouge, LA 70802	City/State/Zip	Baton Rouge LA 70802	G	ALK_W 2320B - ALKB, ALKC
Phone	(225) 955-018	Phone	(225) 955-018	H	TDS_W 2540C
Fax	(225) 292-3011	Fax	(225) 292-3011	I	
e-Mail Address	david.upthegrove@erm.com	e-Mail Address	ermnaaccountspayable@erm.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	CD-12A	6/13/22	1200	W		18	X	X	X	X	X	X	X	X			
2	CD-12B		1350														
3	CD-13A		1515														
4	CD-13B		1700														
5	CD-13C	6/14/22	0900														
6	CD-14A	6/14/22	1105														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: DAVID SANGUINETTI

Shipment Method: FedEx Ground

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

	Date:	Time:	
Relinquished by:	6/15/22	0935	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory): 6/15/2022 09:35
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp.
48937	5.1°
48961	5.4°

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Date
[ ] Level IV SW846/CLP
[ ] Other
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 28, 2022

David Upthegrove
ERM Southwest, Inc.
804 Main Street
Baton Rouge, LA 70802

Work Order: **HS22060969**

Laboratory Results for: **Castex 0575834**

Dear David Upthegrove,

ALS Environmental received 2 sample(s) on Jun 17, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Anna Kinchen
Project Manager

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22060969

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22060969-01	CD-14B	Water		13-Jun-2022 14:30	17-Jun-2022 13:08	☐
HS22060969-02	CD-5D	Water		16-Jun-2022 15:10	17-Jun-2022 13:08	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc. **CASE NARRATIVE**
Project: Castex 0575834
Work Order: HS22060969

GC Semivolatiles by Method MA EPH

Batch ID: 180318

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method MA VPH

Batch ID: R411248,R411250

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R411221,R411353

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020A

Batch ID: 180360

Sample ID: CD-14B (HS22060969-01)

- Sample ran at 5x due to high concentration of Sodium.

Sample ID: HS22061006-01MS

- MS and MSD are for an unrelated sample

Batch ID: 180418

Sample ID: HS22060812-01MS

- MS and MSD are for an unrelated sample

Sample ID: HS22060812-01PDS

- PDS is for an unrelated sample

Metals by Method SW7470A

Batch ID: 180271,180271

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 180331

Sample ID: CD-14B (HS22060969-01MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: CD-14B (HS22060969-01MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22060969

CASE NARRATIVE

WetChemistry by Method SM2320B

Batch ID: R411271

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M2540C

Batch ID: R411088,R411509

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R411008

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-14B
Collection Date: 13-Jun-2022 14:30

ANALYTICAL REPORT
WorkOrder:HS22060969
Lab ID:HS22060969-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	**350**		**5.0**	**ug/L**	5	23-Jun-2022 01:26
Ethylbenzene	**11**		**1.0**	**ug/L**	1	21-Jun-2022 14:39
Toluene	**150**		**1.0**	**ug/L**	1	21-Jun-2022 14:39
Xylenes, Total	**60**		**1.0**	**ug/L**	1	21-Jun-2022 14:39
Surr: 1,2-Dichloroethane-d4	*101*		*70-126*	*%REC*	*1*	*21-Jun-2022 14:39*
Surr: 1,2-Dichloroethane-d4	*105*		*70-126*	*%REC*	*5*	*23-Jun-2022 01:26*
Surr: 4-Bromofluorobenzene	*97.4*		*77-113*	*%REC*	*1*	*21-Jun-2022 14:39*
Surr: 4-Bromofluorobenzene	*98.5*		*77-113*	*%REC*	*5*	*23-Jun-2022 01:26*
Surr: Dibromofluoromethane	*101*		*77-123*	*%REC*	*1*	*21-Jun-2022 14:39*
Surr: Dibromofluoromethane	*104*		*77-123*	*%REC*	*5*	*23-Jun-2022 01:26*
Surr: Toluene-d8	*99.4*		*82-127*	*%REC*	*1*	*21-Jun-2022 14:39*
Surr: Toluene-d8	*100.0*		*82-127*	*%REC*	*5*	*23-Jun-2022 01:26*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	**0.0989**		**0.0100**	**mg/L**	1	21-Jun-2022 17:54
Aliphatics >C8 - C10	**0.0140**		**0.0100**	**mg/L**	1	21-Jun-2022 17:54
Aromatics >C8 - C10	**0.0489**		**0.0100**	**mg/L**	1	21-Jun-2022 17:54
Surr: 2,5-Dibromotoluene (Aliphatic)	*92.7*		*70-130*	*%REC*	*1*	*21-Jun-2022 17:54*
Surr: 2,5-Dibromotoluene (Aliphatic)	*91.7*		*70-130*	*%REC*	*1*	*21-Jun-2022 17:54*
Surr: 2,5-Dibromotoluene (Aromatic)	*92.7*		*70-130*	*%REC*	*1*	*21-Jun-2022 17:54*
Surr: 2,5-Dibromotoluene (Aromatic)	*91.7*		*70-130*	*%REC*	*1*	*21-Jun-2022 17:54*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 22-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	23-Jun-2022 17:35
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	23-Jun-2022 17:35
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	23-Jun-2022 17:35
Aromatics >C10 - C12	**0.0365**		**0.00100**	**mg/L**	1	23-Jun-2022 18:39
Aromatics >C12 - C16	**0.0283**		**0.00400**	**mg/L**	1	23-Jun-2022 18:39
Aromatics >C16 - C21	ND		0.00300	mg/L	1	23-Jun-2022 18:39
Aromatics >C21 - C35	ND		0.00900	mg/L	1	23-Jun-2022 18:39
Surr: 1-Chlorooctadecane	*78.4*		*40-140*	*%REC*	*1*	*23-Jun-2022 17:35*
Surr: 2-Bromonaphthalene	*122*		*40-140*	*%REC*	*1*	*23-Jun-2022 18:39*
Surr: 2-Fluorobiphenyl	*75.3*		*40-140*	*%REC*	*1*	*23-Jun-2022 18:39*
Surr: o-Terphenyl	*67.4*		*40-140*	*%REC*	*1*	*23-Jun-2022 18:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-14B
Collection Date: 13-Jun-2022 14:30

ANALYTICAL REPORT
WorkOrder:HS22060969
Lab ID:HS22060969-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 23-Jun-2022		Analyst: JC
Arsenic	**0.0286**		**0.0100**	**mg/L**	5	27-Jun-2022 17:19
Barium	**10.7**		**0.0800**	**mg/L**	20	27-Jun-2022 13:21
Cadmium	ND		0.0100	mg/L	5	27-Jun-2022 17:19
Calcium	**790**		**10.0**	**mg/L**	20	27-Jun-2022 13:21
Chromium	ND		0.0200	mg/L	5	27-Jun-2022 17:19
Iron	**18.3**		**1.00**	**mg/L**	5	27-Jun-2022 17:19
Lead	ND		0.0100	mg/L	5	27-Jun-2022 17:19
Magnesium	**208**		**4.00**	**mg/L**	20	27-Jun-2022 13:21
Manganese	**1.99**		**0.0250**	**mg/L**	5	27-Jun-2022 17:19
Potassium	**19.8**		**1.00**	**mg/L**	5	27-Jun-2022 17:19
Sodium	**4,870**		**20.0**	**mg/L**	100	28-Jun-2022 15:53
Strontium	**19.5**		**0.100**	**mg/L**	20	27-Jun-2022 13:21
Zinc	ND		0.0200	mg/L	5	27-Jun-2022 17:19
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 24-Jun-2022		Analyst: JHD
Arsenic	**0.0332**		**0.00200**	**mg/L**	1	24-Jun-2022 21:16
Barium	**11.3**		**0.0800**	**mg/L**	20	27-Jun-2022 13:25
Cadmium	ND		0.00200	mg/L	1	24-Jun-2022 21:16
Chromium	ND		0.00400	mg/L	1	24-Jun-2022 21:16
Iron	**19.0**		**0.200**	**mg/L**	1	24-Jun-2022 21:16
Lead	ND		0.00200	mg/L	1	24-Jun-2022 21:16
Manganese	**2.45**		**0.100**	**mg/L**	20	27-Jun-2022 13:25
Strontium	**20.8**		**0.100**	**mg/L**	20	27-Jun-2022 13:25
Zinc	**0.00727**		**0.00400**	**mg/L**	1	24-Jun-2022 21:16
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	22-Jun-2022 14:32
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 23-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-Jun-2022 12:12
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**16,500**		**10.0**	**mg/L**	1	17-Jun-2022 17:06
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**345**		**5.00**	**mg/L**	1	21-Jun-2022 18:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	21-Jun-2022 18:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**7,960**		**100**	**mg/L**	200	19-Jun-2022 08:44
Sulfate	ND		5.00	mg/L	10	19-Jun-2022 08:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-5D
Collection Date: 16-Jun-2022 15:10

ANALYTICAL REPORT
WorkOrder:HS22060969
Lab ID:HS22060969-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-Jun-2022 14:58
Ethylbenzene	ND		1.0	ug/L	1	21-Jun-2022 14:58
Toluene	ND		1.0	ug/L	1	21-Jun-2022 14:58
Xylenes, Total	ND		1.0	ug/L	1	21-Jun-2022 14:58
Surr: 1,2-Dichloroethane-d4	*99.4*		*70-126*	*%REC*	*1*	*21-Jun-2022 14:58*
Surr: 4-Bromofluorobenzene	*97.3*		*77-113*	*%REC*	*1*	*21-Jun-2022 14:58*
Surr: Dibromofluoromethane	*102*		*77-123*	*%REC*	*1*	*21-Jun-2022 14:58*
Surr: Toluene-d8	*100*		*82-127*	*%REC*	*1*	*21-Jun-2022 14:58*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	21-Jun-2022 18:22
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	21-Jun-2022 18:22
Aromatics >C8 - C10	ND		0.0100	mg/L	1	21-Jun-2022 18:22
Surr: 2,5-Dibromotoluene (Aliphatic)	*84.0*		*70-130*	*%REC*	*1*	*21-Jun-2022 18:22*
Surr: 2,5-Dibromotoluene (Aliphatic)	*80.1*		*70-130*	*%REC*	*1*	*21-Jun-2022 18:22*
Surr: 2,5-Dibromotoluene (Aromatic)	*84.0*		*70-130*	*%REC*	*1*	*21-Jun-2022 18:22*
Surr: 2,5-Dibromotoluene (Aromatic)	*80.1*		*70-130*	*%REC*	*1*	*21-Jun-2022 18:22*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 22-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	23-Jun-2022 18:07
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	23-Jun-2022 18:07
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	23-Jun-2022 18:07
Aromatics >C10 - C12	ND		0.00100	mg/L	1	23-Jun-2022 19:10
Aromatics >C12 - C16	ND		0.00400	mg/L	1	23-Jun-2022 19:10
Aromatics >C16 - C21	ND		0.00300	mg/L	1	23-Jun-2022 19:10
Aromatics >C21 - C35	ND		0.00900	mg/L	1	23-Jun-2022 19:10
Surr: 1-Chlorooctadecane	*96.4*		*40-140*	*%REC*	*1*	*23-Jun-2022 18:07*
Surr: 2-Bromonaphthalene	*133*		*40-140*	*%REC*	*1*	*23-Jun-2022 19:10*
Surr: 2-Fluorobiphenyl	*103*		*40-140*	*%REC*	*1*	*23-Jun-2022 19:10*
Surr: o-Terphenyl	*89.1*		*40-140*	*%REC*	*1*	*23-Jun-2022 19:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-5D
Collection Date: 16-Jun-2022 15:10

ANALYTICAL REPORT
WorkOrder:HS22060969
Lab ID:HS22060969-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 23-Jun-2022		Analyst: JHD
Arsenic	ND		0.00200	mg/L	1	24-Jun-2022 15:29
Barium	**0.351**		**0.00400**	**mg/L**	1	24-Jun-2022 15:29
Cadmium	ND		0.00200	mg/L	1	24-Jun-2022 15:29
Calcium	**59.7**		**0.500**	**mg/L**	1	24-Jun-2022 15:29
Chromium	**0.0153**		**0.00400**	**mg/L**	1	24-Jun-2022 15:29
Iron	**7.59**		**0.200**	**mg/L**	1	24-Jun-2022 15:29
Lead	**0.00414**		**0.00200**	**mg/L**	1	24-Jun-2022 15:29
Magnesium	**15.6**		**0.200**	**mg/L**	1	24-Jun-2022 15:29
Manganese	**0.405**		**0.00500**	**mg/L**	1	24-Jun-2022 15:29
Potassium	**4.58**		**0.200**	**mg/L**	1	24-Jun-2022 15:29
Sodium	**57.6**		**0.200**	**mg/L**	1	24-Jun-2022 15:29
Strontium	**0.245**		**0.00500**	**mg/L**	1	24-Jun-2022 15:29
Zinc	**0.0210**		**0.00400**	**mg/L**	1	24-Jun-2022 15:29
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 24-Jun-2022		Analyst: JHD
Arsenic	ND		0.00200	mg/L	1	24-Jun-2022 21:18
Barium	**0.367**		**0.00400**	**mg/L**	1	24-Jun-2022 21:18
Cadmium	ND		0.00200	mg/L	1	24-Jun-2022 21:18
Chromium	**0.00544**		**0.00400**	**mg/L**	1	24-Jun-2022 21:18
Iron	**3.23**		**0.200**	**mg/L**	1	24-Jun-2022 21:18
Lead	ND		0.00200	mg/L	1	24-Jun-2022 21:18
Manganese	**0.241**		**0.00500**	**mg/L**	1	24-Jun-2022 21:18
Strontium	**0.275**		**0.00500**	**mg/L**	1	24-Jun-2022 21:18
Zinc	**0.00535**		**0.00400**	**mg/L**	1	24-Jun-2022 21:18
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	22-Jun-2022 15:56
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 22-Jun-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-Jun-2022 12:27
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**392**		**10.0**	**mg/L**	1	23-Jun-2022 14:59
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**232**		**5.00**	**mg/L**	1	21-Jun-2022 18:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	21-Jun-2022 18:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**54.7**		**0.500**	**mg/L**	1	19-Jun-2022 08:49
Sulfate	**0.736**		**0.500**	**mg/L**	1	19-Jun-2022 08:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

Batch ID: 180271 **Start Date:** 22 Jun 2022 09:00 **End Date:** 22 Jun 2022 12:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060969-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060969-02		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 180318 **Start Date:** 22 Jun 2022 13:00 **End Date:** 22 Jun 2022 16:30
Method: MA EPH EXTRACTION-FRACTIONATION **Prep Code:** MA EPH_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060969-01		1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22060969-02		1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2

Batch ID: 180331 **Start Date:** 23 Jun 2022 09:00 **End Date:** 23 Jun 2022 12:00
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060969-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060969-02		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 180360 **Start Date:** 23 Jun 2022 12:30 **End Date:** 23 Jun 2022 16:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060969-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060969-02		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 180418 **Start Date:** 24 Jun 2022 09:30 **End Date:** 24 Jun 2022 13:30
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060969-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22060969-02		10 (mL)	10 (mL)	1	120 plastic HNO3

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 180271 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30		22 Jun 2022 09:00	22 Jun 2022 14:32	1
HS22060969-02	CD-5D	16 Jun 2022 15:10		22 Jun 2022 09:00	23 Jun 2022 12:27	1
HS22060969-02	CD-5D	16 Jun 2022 15:10		22 Jun 2022 09:00	22 Jun 2022 15:56	1
Batch ID: 180318 (0)	**Test Name :** MASSACHUSETTS EPH R2.1, DEC 2019				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30		22 Jun 2022 13:00	23 Jun 2022 18:39	1
HS22060969-01	CD-14B	13 Jun 2022 14:30		22 Jun 2022 13:00	23 Jun 2022 17:35	1
HS22060969-02	CD-5D	16 Jun 2022 15:10		22 Jun 2022 13:00	23 Jun 2022 19:10	1
HS22060969-02	CD-5D	16 Jun 2022 15:10		22 Jun 2022 13:00	23 Jun 2022 18:07	1
Batch ID: 180331 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30		23 Jun 2022 09:00	23 Jun 2022 12:12	1
Batch ID: 180360 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30		23 Jun 2022 12:30	28 Jun 2022 15:53	100
HS22060969-01	CD-14B	13 Jun 2022 14:30		23 Jun 2022 12:30	27 Jun 2022 17:19	5
HS22060969-01	CD-14B	13 Jun 2022 14:30		23 Jun 2022 12:30	27 Jun 2022 13:21	20
HS22060969-02	CD-5D	16 Jun 2022 15:10		23 Jun 2022 12:30	24 Jun 2022 15:29	1
Batch ID: 180418 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30		24 Jun 2022 09:30	27 Jun 2022 13:25	20
HS22060969-01	CD-14B	13 Jun 2022 14:30		24 Jun 2022 09:30	24 Jun 2022 21:16	1
HS22060969-02	CD-5D	16 Jun 2022 15:10		24 Jun 2022 09:30	24 Jun 2022 21:18	1
Batch ID: R411008 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30			19 Jun 2022 08:44	200
HS22060969-01	CD-14B	13 Jun 2022 14:30			19 Jun 2022 08:39	10
HS22060969-02	CD-5D	16 Jun 2022 15:10			19 Jun 2022 08:49	1
Batch ID: R411088 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30			17 Jun 2022 17:06	1
Batch ID: R411221 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30			21 Jun 2022 14:39	1
HS22060969-02	CD-5D	16 Jun 2022 15:10			21 Jun 2022 14:58	1
Batch ID: R411248 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30			21 Jun 2022 17:54	1
HS22060969-02	CD-5D	16 Jun 2022 15:10			21 Jun 2022 18:22	1
Batch ID: R411250 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30			21 Jun 2022 17:54	1
HS22060969-02	CD-5D	16 Jun 2022 15:10			21 Jun 2022 18:22	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R411271 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30			21 Jun 2022 18:15	1
HS22060969-02	CD-5D	16 Jun 2022 15:10			21 Jun 2022 18:15	1
Batch ID: R411353 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS22060969-01	CD-14B	13 Jun 2022 14:30			23 Jun 2022 01:26	5
Batch ID: R411509 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22060969-02	CD-5D	16 Jun 2022 15:10			23 Jun 2022 14:59	1

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180318 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MBLK Sample ID: **MBLK-180318** Units: **mg/L** Analysis Date: **23-Jun-2022 16:00**
Client ID: Run ID: **FID-7_411439** SeqNo: **6711238** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	ND	0.00100								
Aliphatics >C12 - C16	ND	0.00200								
Aliphatics >C16 - C35	ND	0.00800								
Surr: 1-Chlorooctadecane	*0.02905*	*0*	*0.04*	*0*	*72.6*	*40 - 140*				

MBLK Sample ID: **MBLK-180318** Units: **mg/L** Analysis Date: **23-Jun-2022 17:04**
Client ID: Run ID: **FID-8_411453** SeqNo: **6711498** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	ND	0.00100								
Aromatics >C12 - C16	ND	0.00400								
Aromatics >C16 - C21	ND	0.00300								
Aromatics >C21 - C35	ND	0.00900								
Surr: 2-Bromonaphthalene	*0.04983*	*0*	*0.04*	*0*	*125*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.04894*	*0*	*0.04*	*0*	*122*	*40 - 140*				
Surr: o-Terphenyl	*0.02801*	*0*	*0.04*	*0*	*70.0*	*40 - 140*				

LCS Sample ID: **LCS-180318** Units: **mg/L** Analysis Date: **23-Jun-2022 16:32**
Client ID: Run ID: **FID-7_411439** SeqNo: **6711239** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.05345	0.00100	0.05	0	107	40 - 140				
Aliphatics >C12 - C16	0.1026	0.00200	0.1	0	103	40 - 140				
Aliphatics >C16 - C35	0.3925	0.00800	0.4	0	98.1	40 - 140				
Surr: 1-Chlorooctadecane	*0.02838*	*0*	*0.04*	*0*	*71.0*	*40 - 140*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180318 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS-180318** Units: **mg/L** Analysis Date: **23-Jun-2022 17:35**
Client ID: Run ID: **FID-8_411453** SeqNo: **6711499** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.06505	0.00100	0.05	0	130	40 - 140				
Aromatics >C12 - C16	0.2178	0.00400	0.2	0	109	40 - 140				
Aromatics >C16 - C21	0.1549	0.00300	0.15	0	103	40 - 140				
Aromatics >C21 - C35	0.4314	0.00900	0.45	0	95.9	40 - 140				
Surr: 2-Bromonaphthalene	*0.04624*	*0*	*0.04*	*0*	*116*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03873*	*0*	*0.04*	*0*	*96.8*	*40 - 140*				
Surr: o-Terphenyl	*0.02691*	*0*	*0.04*	*0*	*67.3*	*40 - 140*				

LCSD Sample ID: **LCSD-180318** Units: **mg/L** Analysis Date: **23-Jun-2022 17:04**
Client ID: Run ID: **FID-7_411439** SeqNo: **6711240** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.06955	0.00100	0.05	0	139	40 - 140	0.05345	26.2	50	
Aliphatics >C12 - C16	0.1357	0.00200	0.1	0	136	40 - 140	0.1026	27.8	50	
Aliphatics >C16 - C35	0.5172	0.00800	0.4	0	129	40 - 140	0.3925	27.4	50	
Surr: 1-Chlorooctadecane	*0.03771*	*0*	*0.04*	*0*	*94.3*	*40 - 140*	*0.02838*	*28.2*	*50*	

LCSD Sample ID: **LCSD-180318** Units: **mg/L** Analysis Date: **23-Jun-2022 18:07**
Client ID: Run ID: **FID-8_411453** SeqNo: **6711566** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.06717	0.00100	0.05	0	134	40 - 140	0.06505	3.2	50	
Aromatics >C12 - C16	0.2685	0.00400	0.2	0	134	40 - 140	0.2178	20.8	50	
Aromatics >C16 - C21	0.2076	0.00300	0.15	0	138	40 - 140	0.1549	29.1	50	
Aromatics >C21 - C35	0.6111	0.00900	0.45	0	136	40 - 140	0.4314	34.5	50	
Surr: 2-Bromonaphthalene	*0.05435*	*0*	*0.04*	*0*	*136*	*40 - 140*	*0.04624*	*16.1*	*50*	
Surr: 2-Fluorobiphenyl	*0.04528*	*0*	*0.04*	*0*	*113*	*40 - 140*	*0.03873*	*15.6*	*50*	
Surr: o-Terphenyl	*0.03698*	*0*	*0.04*	*0*	*92.5*	*40 - 140*	*0.02691*	*31.5*	*50*	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411248 (0) **Instrument:** FID-15 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-220621** Units: **mg/L** Analysis Date: **21-Jun-2022 17:26**
Client ID: Run ID: **FID-15_411248** SeqNo: **6706644** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2122*	*0.0100*	*0.25*	*0*	*84.9*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2122*	*0.0100*	*0.25*	*0*	*84.9*	*70 - 130*				

LCS Sample ID: **LCS-220621** Units: **mg/L** Analysis Date: **21-Jun-2022 16:31**
Client ID: Run ID: **FID-15_411248** SeqNo: **6706642** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.09221	0.0100	0.1	0	92.2	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2537*	*0.0100*	*0.25*	*0*	*101*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2537*	*0.0100*	*0.25*	*0*	*101*	*70 - 130*				

LCSD Sample ID: **LCSD-220621** Units: **mg/L** Analysis Date: **21-Jun-2022 16:59**
Client ID: Run ID: **FID-15_411248** SeqNo: **6706643** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08699	0.0100	0.1	0	87.0	70 - 130	0.09221	5.82	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2527*	*0.0100*	*0.25*	*0*	*101*	*70 - 130*	*0.2537*	*0.375*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2527*	*0.0100*	*0.25*	*0*	*101*	*70 - 130*	*0.2537*	*0.375*	*25*	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411250 (0) **Instrument:** FID-14 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-220621** Units: **mg/L** Analysis Date: **21-Jun-2022 17:26**
Client ID: Run ID: **FID-14_411250** SeqNo: **6706699** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	ND	0.0100								
Aliphatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2098*	*0.0100*	*0.25*	*0*	*83.9*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2098*	*0.0100*	*0.25*	*0*	*83.9*	*70 - 130*				

LCS Sample ID: **LCS-220621** Units: **mg/L** Analysis Date: **21-Jun-2022 16:31**
Client ID: Run ID: **FID-14_411250** SeqNo: **6706697** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02311	0.0100	0.025	0	92.4	70 - 130				
Aliphatics >C8 - C10	0.01814	0.0100	0.025	0	72.5	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2444*	*0.0100*	*0.25*	*0*	*97.8*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2444*	*0.0100*	*0.25*	*0*	*97.8*	*70 - 130*				

LCSD Sample ID: **LCSD-220621** Units: **mg/L** Analysis Date: **21-Jun-2022 16:59**
Client ID: Run ID: **FID-14_411250** SeqNo: **6706698** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.0228	0.0100	0.025	0	91.2	70 - 130	0.02311	1.33	25	
Aliphatics >C8 - C10	0.0216	0.0100	0.025	0	86.4	70 - 130	0.01814	17.4	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2502*	*0.0100*	*0.25*	*0*	*100*	*70 - 130*	*0.2444*	*2.34*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2502*	*0.0100*	*0.25*	*0*	*100*	*70 - 130*	*0.2444*	*2.34*	*25*	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180271 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-180271** Units: **mg/L** Analysis Date: **22-Jun-2022 13:23**
Client ID: Run ID: **HG03_411298** SeqNo: **6707628** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-180271** Units: **mg/L** Analysis Date: **22-Jun-2022 13:25**
Client ID: Run ID: **HG03_411298** SeqNo: **6707629** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00516	0.000200	0.005	0	103	80 - 120				

MS Sample ID: **HS22060969-02MS** Units: **mg/L** Analysis Date: **22-Jun-2022 16:01**
Client ID: **CD-5D** Run ID: **HG03_411298** SeqNo: **6708053** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0045	0.000200	0.005	0	90.0	75 - 125				

MSD Sample ID: **HS22060969-02MSD** Units: **mg/L** Analysis Date: **22-Jun-2022 16:02**
Client ID: **CD-5D** Run ID: **HG03_411298** SeqNo: **6708054** PrepDate: **22-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00432	0.000200	0.005	0	86.4	75 - 125	0.0045	4.08	20	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180331 (0) **Instrument:** HG03 **Method:** DISSOLVED MERCURY BY SW7470A (DISSOLVED)

MBLK Sample ID: **MBLKF2-180331** Units: **mg/L** Analysis Date: **23-Jun-2022 12:08**
Client ID: Run ID: **HG03_411376** SeqNo: **6709603** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

MBLK Sample ID: **MBLKF1-180331** Units: **mg/L** Analysis Date: **23-Jun-2022 12:07**
Client ID: Run ID: **HG03_411376** SeqNo: **6709602** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

MBLK Sample ID: **MBLK-180331** Units: **mg/L** Analysis Date: **23-Jun-2022 12:05**
Client ID: Run ID: **HG03_411376** SeqNo: **6709601** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-180331** Units: **mg/L** Analysis Date: **23-Jun-2022 12:10**
Client ID: Run ID: **HG03_411376** SeqNo: **6709604** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0052	0.000200	0.005	0	104	80 - 120				

MS Sample ID: **HS22060969-01MS** Units: **mg/L** Analysis Date: **23-Jun-2022 12:18**
Client ID: **CD-14B** Run ID: **HG03_411376** SeqNo: **6709606** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00365	0.000200	0.005	-0.000042	73.8	80 - 120				S

MSD Sample ID: **HS22060969-01MSD** Units: **mg/L** Analysis Date: **23-Jun-2022 12:23**
Client ID: **CD-14B** Run ID: **HG03_411376** SeqNo: **6709609** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00376	0.000200	0.005	-0.000042	76.0	80 - 120	0.00365	2.97	20	S

The following samples were analyzed in this batch: HS22060969-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180360 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-180360** Units: **mg/L** Analysis Date: **27-Jun-2022 17:17**
Client ID: Run ID: **ICPMS06_411586** SeqNo: **6716172** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Calcium	ND	0.500								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Magnesium	ND	0.200								
Manganese	ND	0.00500								
Potassium	ND	0.200								
Sodium	ND	0.200								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

LCS Sample ID: **LCS-180360** Units: **mg/L** Analysis Date: **24-Jun-2022 14:02**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6712976** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05611	0.00200	0.05	0	112	80 - 120				
Barium	0.05496	0.00400	0.05	0	110	80 - 120				
Cadmium	0.05539	0.00200	0.05	0	111	80 - 120				
Chromium	0.05568	0.00400	0.05	0	111	80 - 120				
Iron	5.818	0.200	5	0	116	80 - 120				
Lead	0.0524	0.00200	0.05	0	105	80 - 120				
Magnesium	5.922	0.200	5	0	118	80 - 120				
Manganese	0.0569	0.00500	0.05	0	114	80 - 120				
Sodium	5.812	0.200	5	0	116	80 - 120				
Strontium	0.1125	0.00500	0.1	0	113	80 - 120				
Zinc	0.05792	0.00400	0.05	0	116	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180360 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

LCS Sample ID: **LCS-180360** Units: **mg/L** Analysis Date: **27-Jun-2022 12:54**
Client ID: Run ID: **ICPMS07_411614** SeqNo: **6715738** PrepDate: **23-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5.332	0.500	5	0	107	80 - 120				
Potassium	5.602	0.200	5	0	112	80 - 120				

MS Sample ID: **HS22061006-01MS** Units: **mg/L** Analysis Date: **24-Jun-2022 14:22**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6712979** PrepDate: **23-Jun-2022** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05843	0.0200	0.05	0.001986	113	80 - 120				
Barium	0.1687	0.0400	0.05	0.1122	113	80 - 120				
Cadmium	0.05288	0.0200	0.05	0.001152	103	80 - 120				
Calcium	6719	5.00	5	6588	2620	80 - 120				SEO
Chromium	0.08148	0.0400	0.05	0.001312	160	80 - 120				S
Iron	6.156	2.00	5	0.02325	123	80 - 120				S
Lead	0.05233	0.0200	0.05	0.000011	105	80 - 120				
Magnesium	689.2	2.00	5	670.1	382	80 - 120				SO
Manganese	0.102	0.0500	0.05	0.04346	117	80 - 120				
Potassium	50.12	2.00	5	42.54	152	80 - 120				SO
Sodium	14330	2.00	5	14020	6030	80 - 120				SEO
Strontium	107.4	0.0500	0.1	103.9	3500	80 - 120				SEO
Zinc	0.05134	0.0400	0.05	0.002916	96.9	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180360 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS22061006-01MSD** Units: **mg/L** Analysis Date: **24-Jun-2022 14:24**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6712980** PrepDate: **23-Jun-2022** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05879	0.0200	0.05	0.001986	114	80 - 120	0.05843	0.618	20	
Barium	0.1625	0.0400	0.05	0.1122	101	80 - 120	0.1687	3.69	20	
Cadmium	0.05205	0.0200	0.05	0.001152	102	80 - 120	0.05288	1.58	20	
Calcium	6445	5.00	5	6588	-2860	80 - 120	6719	4.16	20	SEO
Chromium	0.07809	0.0400	0.05	0.001312	154	80 - 120	0.08148	4.24	20	S
Iron	6.255	2.00	5	0.02325	125	80 - 120	6.156	1.59	20	S
Lead	0.05216	0.0200	0.05	0.000011	104	80 - 120	0.05233	0.331	20	
Magnesium	666.8	2.00	5	670.1	-65.8	80 - 120	689.2	3.3	20	SO
Manganese	0.09932	0.0500	0.05	0.04346	112	80 - 120	0.102	2.68	20	
Potassium	49.45	2.00	5	42.54	138	80 - 120	50.12	1.33	20	SO
Sodium	13770	2.00	5	14020	-5010	80 - 120	14330	3.93	20	SEO
Strontium	101.9	0.0500	0.1	103.9	-2060	80 - 120	107.4	5.31	20	SEO
Zinc	0.05316	0.0400	0.05	0.002916	100	80 - 120	0.05134	3.47	20	

PDS Sample ID: **HS22061006-01PDS** Units: **mg/L** Analysis Date: **24-Jun-2022 14:28**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6712982** PrepDate: **23-Jun-2022** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.9693	0.0200	1	0.001986	96.7	75 - 125				
Barium	1.05	0.0400	1	0.1122	93.8	75 - 125				
Cadmium	0.8814	0.0200	1	0.001152	88.0	75 - 125				
Chromium	0.9473	0.0400	1	0.001312	94.6	75 - 125				
Iron	98.28	2.00	100	0.02325	98.3	75 - 125				
Lead	0.9457	0.0200	1	0.000011	94.6	75 - 125				
Magnesium	762.6	2.00	100	670.1	92.5	75 - 125				O
Manganese	1.007	0.0500	1	0.04346	96.3	75 - 125				
Potassium	149.5	2.00	100	42.54	107	75 - 125				
Zinc	0.876	0.0400	1	0.002916	87.3	75 - 125				

PDS Sample ID: **HS22061006-01PDS** Units: **mg/L** Analysis Date: **27-Jun-2022 13:00**
Client ID: Run ID: **ICPMS07_411614** SeqNo: **6715741** PrepDate: **23-Jun-2022** DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	24980	200	10000	15190	97.8	75 - 125				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180360 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS22061006-01SD** Units: **mg/L** Analysis Date: **24-Jun-2022 14:20**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6712978** PrepDate: **23-Jun-2022** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	ND	0.100					0.001986	0	10	
Barium	0.1073	0.200					0.1122	0	10	J
Cadmium	ND	0.100					0.001152	0	10	
Chromium	ND	0.200					0.001312	0	10	
Iron	ND	10.0					0.02325	0	10	
Lead	ND	0.100					0.000011	0	10	
Magnesium	675	10.0					670.1	0.729	10	
Manganese	0.04413	0.250					0.04346	0	10	J
Potassium	39.4	10.0					42.54	7.39	10	
Zinc	ND	0.200					0.002916	0	10	

SD Sample ID: **HS22061006-01SD** Units: **mg/L** Analysis Date: **27-Jun-2022 12:58**
Client ID: Run ID: **ICPMS07_411614** SeqNo: **6715740** PrepDate: **23-Jun-2022** DF: **5000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	15220	1000					15190	0.182	10	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180418 (0) **Instrument:** ICPMS07 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLKF1-180418** Units: **mg/L** Analysis Date: **24-Jun-2022 17:08**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6713436** PrepDate: **24-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	0.01425	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

MBLK Sample ID: **MBLK-180418** Units: **mg/L** Analysis Date: **24-Jun-2022 17:06**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6713435** PrepDate: **24-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180418 (0) **Instrument:** ICPMS07 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

LCS Sample ID: **LCS-180418** Units: **mg/L** Analysis Date: **24-Jun-2022 17:10**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6713437** PrepDate: **24-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05201	0.00200	0.05	0	104	80 - 120				
Barium	0.05139	0.00400	0.05	0	103	80 - 120				
Cadmium	0.05214	0.00200	0.05	0	104	80 - 120				
Chromium	0.04809	0.00400	0.05	0	96.2	80 - 120				
Iron	5.22	0.200	5	0	104	80 - 120				
Lead	0.04762	0.00200	0.05	0	95.2	80 - 120				
Manganese	0.04789	0.00500	0.05	0	95.8	80 - 120				
Strontium	0.1034	0.00500	0.1	0	103	80 - 120				
Zinc	0.05266	0.00400	0.05	0	105	80 - 120				

MS Sample ID: **HS22060812-01MS** Units: **mg/L** Analysis Date: **24-Jun-2022 20:55**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6713446** PrepDate: **24-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05373	0.00200	0.05	0.001114	105	75 - 125				
Barium	0.3323	0.00400	0.05	0.2577	149	75 - 125				SO
Cadmium	0.05181	0.00200	0.05	0	104	75 - 125				
Chromium	0.0482	0.00400	0.05	0	96.4	75 - 125				
Iron	5.211	0.200	5	0	104	75 - 125				
Lead	0.0483	0.00200	0.05	0	96.6	75 - 125				
Manganese	0.05202	0.00500	0.05	0.004066	95.9	75 - 125				
Strontium	0.5971	0.00500	0.1	0.5024	94.7	75 - 125				O
Zinc	0.05234	0.00400	0.05	0	105	75 - 125				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180418 (0) **Instrument: ICPMS07** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MSD Sample ID: **HS22060812-01MSD** Units: **mg/L** Analysis Date: **24-Jun-2022 20:57**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6713447** PrepDate: **24-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05221	0.00200	0.05	0.001114	102	75 - 125	0.05373	2.88	20	
Barium	0.3069	0.00400	0.05	0.2577	98.3	75 - 125	0.3323	7.97	20	O
Cadmium	0.04961	0.00200	0.05	0	99.2	75 - 125	0.05181	4.33	20	
Chromium	0.04555	0.00400	0.05	0	91.1	75 - 125	0.0482	5.65	20	
Iron	4.961	0.200	5	0	99.2	75 - 125	5.211	4.92	20	
Lead	0.04649	0.00200	0.05	0	93.0	75 - 125	0.0483	3.81	20	
Manganese	0.04992	0.00500	0.05	0.004066	91.7	75 - 125	0.05202	4.12	20	
Strontium	0.5768	0.00500	0.1	0.5024	74.4	75 - 125	0.5971	3.46	20	SO
Zinc	0.05252	0.00400	0.05	0	105	75 - 125	0.05234	0.351	20	

PDS Sample ID: **HS22060812-01PDS** Units: **mg/L** Analysis Date: **24-Jun-2022 20:59**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6713448** PrepDate: **24-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1043	0.00200	0.1	0.001114	103	75 - 125				
Cadmium	0.1017	0.00200	0.1	0.000008	102	75 - 125				
Chromium	0.0919	0.00400	0.1	0.000358	91.5	75 - 125				
Iron	10.05	0.200	10	0.008425	100	75 - 125				
Lead	0.09891	0.00200	0.1	0.00003	98.9	75 - 125				
Manganese	0.09695	0.00500	0.1	0.004066	92.9	75 - 125				
Strontium	0.494	0.00500	0.1	0.5024	-8.37	75 - 125				SO
Zinc	0.1003	0.00400	0.1	0.001554	98.7	75 - 125				

PDS Sample ID: **HS22060812-01PDS** Units: **mg/L** Analysis Date: **27-Jun-2022 13:23**
Client ID: Run ID: **ICPMS07_411614** SeqNo: **6715821** PrepDate: **24-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.4079	0.00400	0.2	0.2577	75.1	75 - 125				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: 180418 (0) **Instrument:** ICPMS07 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

SD Sample ID: **HS22060812-01SD** Units: **mg/L** Analysis Date: **24-Jun-2022 20:53**
Client ID: Run ID: **ICPMS07_411504** SeqNo: **6713445** PrepDate: **24-Jun-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	ND	0.0100					0.001114	0	10	
Barium	0.2565	0.0200					0.2577	0.487	10	
Cadmium	ND	0.0100					0.000008	0	10	
Chromium	ND	0.0200					0.000358	0	10	
Iron	ND	1.00					0.008425	0	10	
Lead	ND	0.0100					0.00003	0	10	
Manganese	0.004365	0.0250					0.004066	0	10	J
Strontium	0.5203	0.0250					0.5024	3.55	10	
Zinc	ND	0.0200					0.001554	0	10	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411221 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-220621** Units: **ug/L** Analysis Date: **21-Jun-2022 10:30**
Client ID: Run ID: **VOA7_411221** SeqNo: **6706021** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*49.51*	*1.0*	*50*	*0*	*99.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.77*	*1.0*	*50*	*0*	*97.5*	*77 - 113*				
Surr: Dibromofluoromethane	*47.83*	*1.0*	*50*	*0*	*95.7*	*73 - 126*				
Surr: Toluene-d8	*49.62*	*1.0*	*50*	*0*	*99.2*	*81 - 120*				

LCS Sample ID: **VLCSW-220621** Units: **ug/L** Analysis Date: **21-Jun-2022 09:51**
Client ID: Run ID: **VOA7_411221** SeqNo: **6706020** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.33	1.0	20	0	96.7	74 - 120				
Ethylbenzene	18.74	1.0	20	0	93.7	77 - 117				
Toluene	18.94	1.0	20	0	94.7	77 - 118				
Xylenes, Total	58.32	1.0	60	0	97.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.67*	*1.0*	*50*	*0*	*101*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.71*	*1.0*	*50*	*0*	*99.4*	*77 - 113*				
Surr: Dibromofluoromethane	*50.32*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.65*	*1.0*	*50*	*0*	*99.3*	*81 - 120*				

MS Sample ID: **HS22061038-07MS** Units: **ug/L** Analysis Date: **21-Jun-2022 18:44**
Client ID: Run ID: **VOA7_411221** SeqNo: **6706042** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.99	1.0	20	0	99.9	70 - 127				
Ethylbenzene	19.27	1.0	20	0	96.4	70 - 124				
Toluene	19.17	1.0	20	0	95.9	70 - 123				
Xylenes, Total	59.52	1.0	60	0	99.2	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.08*	*1.0*	*50*	*0*	*100*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.36*	*1.0*	*50*	*0*	*98.7*	*77 - 113*				
Surr: Dibromofluoromethane	*51.07*	*1.0*	*50*	*0*	*102*	*77 - 123*				
Surr: Toluene-d8	*50.18*	*1.0*	*50*	*0*	*100*	*82 - 127*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411221 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS22061038-07MSD** Units: **ug/L** Analysis Date: **21-Jun-2022 19:04**
Client ID: Run ID: **VOA7_411221** SeqNo: **6706043** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.03	1.0	20	0	95.1	70 - 127	19.99	4.93	20	
Ethylbenzene	18.54	1.0	20	0	92.7	70 - 124	19.27	3.9	20	
Toluene	18.57	1.0	20	0	92.9	70 - 123	19.17	3.19	20	
Xylenes, Total	57.35	1.0	60	0	95.6	70 - 130	59.52	3.72	20	
Surr: 1,2-Dichloroethane-d4	*51.31*	*1.0*	*50*	*0*	*103*	*70 - 126*	*50.08*	*2.41*	*20*	
Surr: 4-Bromofluorobenzene	*49.52*	*1.0*	*50*	*0*	*99.0*	*77 - 113*	*49.36*	*0.324*	*20*	
Surr: Dibromofluoromethane	*49.87*	*1.0*	*50*	*0*	*99.7*	*77 - 123*	*51.07*	*2.38*	*20*	
Surr: Toluene-d8	*49.87*	*1.0*	*50*	*0*	*99.7*	*82 - 127*	*50.18*	*0.618*	*20*	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411353 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-220622** Units: **ug/L** Analysis Date: **22-Jun-2022 23:06**
Client ID: Run ID: **VOA7_411353** SeqNo: **6709114** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*50.79*	*1.0*	*50*	*0*	*102*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.67*	*1.0*	*50*	*0*	*97.3*	*77 - 113*				
Surr: Dibromofluoromethane	*50.36*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.74*	*1.0*	*50*	*0*	*99.5*	*81 - 120*				

LCS Sample ID: **VLCSW-220622** Units: **ug/L** Analysis Date: **22-Jun-2022 22:27**
Client ID: Run ID: **VOA7_411353** SeqNo: **6709113** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.14	1.0	20	0	95.7	74 - 120				
Surr: 1,2-Dichloroethane-d4	*50.82*	*1.0*	*50*	*0*	*102*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.11*	*1.0*	*50*	*0*	*98.2*	*77 - 113*				
Surr: Dibromofluoromethane	*49.92*	*1.0*	*50*	*0*	*99.8*	*73 - 126*				
Surr: Toluene-d8	*49.85*	*1.0*	*50*	*0*	*99.7*	*81 - 120*				

MS Sample ID: **HS22060886-18MS** Units: **ug/L** Analysis Date: **23-Jun-2022 06:19**
Client ID: Run ID: **VOA7_411353** SeqNo: **6709135** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	173.3	1.0	20	148.8	123	70 - 127				O
Surr: 1,2-Dichloroethane-d4	*52.36*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.91*	*1.0*	*50*	*0*	*99.8*	*77 - 113*				
Surr: Dibromofluoromethane	*50.67*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*49.75*	*1.0*	*50*	*0*	*99.5*	*82 - 127*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411353 (0) **Instrument:** VOA7 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD Sample ID: **HS22060886-18MSD** Units: **ug/L** Analysis Date: **23-Jun-2022 06:39**
Client ID: Run ID: **VOA7_411353** SeqNo: **6709136** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	167	1.0	20	148.8	91.2	70 - 127	173.3	3.68	20	O
Surr: 1,2-Dichloroethane-d4	*52.53*	*1.0*	*50*	*0*	*105*	*70 - 126*	*52.36*	*0.319*	*20*	
Surr: 4-Bromofluorobenzene	*49.17*	*1.0*	*50*	*0*	*98.3*	*77 - 113*	*49.91*	*1.49*	*20*	
Surr: Dibromofluoromethane	*51.87*	*1.0*	*50*	*0*	*104*	*77 - 123*	*50.67*	*2.33*	*20*	
Surr: Toluene-d8	*49.97*	*1.0*	*50*	*0*	*99.9*	*82 - 127*	*49.75*	*0.444*	*20*	

The following samples were analyzed in this batch: HS22060969-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411008 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **19-Jun-2022 07:25**
Client ID: Run ID: **ICS-Integrion_411008** SeqNo: **6701165** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Sulfate	ND	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **19-Jun-2022 07:30**
Client ID: Run ID: **ICS-Integrion_411008** SeqNo: **6701166** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.39	0.500	20	0	97.0	80 - 120				
Sulfate	19.08	0.500	20	0	95.4	80 - 120				

MS Sample ID: **HS22060969-02MS** Units: **mg/L** Analysis Date: **19-Jun-2022 08:55**
Client ID: **CD-5D** Run ID: **ICS-Integrion_411008** SeqNo: **6701179** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	64.14	0.500	10	54.73	94.1	80 - 120				O
Sulfate	10.75	0.500	10	0.7362	100	80 - 120				

MSD Sample ID: **HS22060969-02MSD** Units: **mg/L** Analysis Date: **19-Jun-2022 09:00**
Client ID: **CD-5D** Run ID: **ICS-Integrion_411008** SeqNo: **6701180** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	64.2	0.500	10	54.73	94.7	80 - 120	64.14	0.0904	20	O
Sulfate	10.76	0.500	10	0.7362	100	80 - 120	10.75	0.0576	20	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411088 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-061722** Units: **mg/L** Analysis Date: **17-Jun-2022 17:06**
Client ID: Run ID: **Balance1_411088** SeqNo: **6703082** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-061722** Units: **mg/L** Analysis Date: **17-Jun-2022 17:06**
Client ID: Run ID: **Balance1_411088** SeqNo: **6703083** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1068	10.0	1000	0	107	85 - 115				

DUP Sample ID: **HS22060862-03DUP** Units: **mg/L** Analysis Date: **17-Jun-2022 17:06**
Client ID: Run ID: **Balance1_411088** SeqNo: **6703080** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	770	10.0					770	0	5	

DUP Sample ID: **HS22060764-02DUP** Units: **mg/L** Analysis Date: **17-Jun-2022 17:06**
Client ID: Run ID: **Balance1_411088** SeqNo: **6703071** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	390	10.0					372	4.72	5	

The following samples were analyzed in this batch: HS22060969-01

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Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411271 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **MBLK-R411271** Units: **mg/L** Analysis Date: **21-Jun-2022 18:15**
Client ID: Run ID: **ManTech01_411271** SeqNo: **6707122** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-R411271** Units: **mg/L** Analysis Date: **21-Jun-2022 18:15**
Client ID: Run ID: **ManTech01_411271** SeqNo: **6707121** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	996	5.00	1000	0	99.6	85 - 115				

LCSD Sample ID: **LCSD-R411271** Units: **mg/L** Analysis Date: **21-Jun-2022 18:15**
Client ID: Run ID: **ManTech01_411271** SeqNo: **6707120** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1008	5.00	1000	0	101	85 - 115	996	1.22	20	

DUP Sample ID: **HS22060651-01DUP** Units: **mg/L** Analysis Date: **21-Jun-2022 18:15**
Client ID: Run ID: **ManTech01_411271** SeqNo: **6707123** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	231.5	5.00					234	1.1	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	

The following samples were analyzed in this batch: HS22060969-01 HS22060969-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22060969

QC BATCH REPORT

Batch ID: R411509 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-062322** Units: **mg/L** Analysis Date: **23-Jun-2022 14:59**
Client ID: Run ID: **Balance1_411509** SeqNo: **6713055** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-062322** Units: **mg/L** Analysis Date: **23-Jun-2022 14:59**
Client ID: Run ID: **Balance1_411509** SeqNo: **6713056** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1080	10.0	1000	0	108	85 - 115				

DUP Sample ID: **HS22061038-07DUP** Units: **mg/L** Analysis Date: **23-Jun-2022 14:59**
Client ID: Run ID: **Balance1_411509** SeqNo: **6713053** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	504	10.0					502	0.398	5	

DUP Sample ID: **HS22061038-01DUP** Units: **mg/L** Analysis Date: **23-Jun-2022 14:59**
Client ID: Run ID: **Balance1_411509** SeqNo: **6713046** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1522	10.0					1526	0.262	5	

The following samples were analyzed in this batch: HS22060969-02

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Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: **HS22060969**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-34	30-Jun-2022
Illinois	2000322022-9	09-May-2023
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2021-2022	30-Jun-2022
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
Oklahoma	2021-080	31-Aug-2022
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932021-12	30-Jul-2022

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Sample Receipt Checklist

Work Order ID: HS22060969 **Date/Time Received:** 17-Jun-2022 13:08

Client Name: ERMSW-BRLA **Received by:** Paresh M. Giga

Completed By:	/S/ Nilesh D. Ranchod	17-Jun-2022 17:41	**Reviewed by:**	/S/ Anna Kinchen	20-Jun-2022 09:10
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:270688
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.3C/1.8C UC/C	IR31
Cooler(s)/Kit(s):	47977	
Date/Time sample(s) sent to storage:	6/17/22 18:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 270688

HS22060969 VV

ERM Southwest, Inc.
Castex 0575834

Customer Information		Project Information		ALS Project Manager:	
Purchase Order	0575834	Project Name	Castex 0575834	A	8260_LL_W - BTEX
Work Order		Project Number	0575834	B	MA EPH_W_La
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	MA VPH_LA_W
Send Report To	David Upthegrove	Invoice Attn	Accounts Payable	D	ICP_TW - Total Metals
Address	804 Main Street	Address	804 Main Street	E	ICP_DISS - Diss Metals
				F	9056_anions_W - Cl/SO4
City/State/Zip	Baton Rouge, LA 70802	City/State/Zip	Baton Rouge LA 70802	G	ALK_W 2320B - ALKB, ALKC
Phone	(225) 955--018	Phone	(225) 955--018	H	TDS_W 2540C
Fax	(225) 292-3011	Fax	(225) 292-3011	I	
e-Mail Address	david.upthegrove@erm.com	e-Mail Address	ermnaaccountspayable@erm.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	CD-14B	6/13/22	1430	GW	1,2	10	X	X	X	X	X	X	X	X			
2	CD-5D	6/16/22	1510	GW	1,2	10	X	X	X	X	X	X	X	X			
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: R. Chandler Tinnon / Robert Charles Tinnon

Shipment Method: FedEx Ground

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Robert Charles Tinnon Date: 6/17/22 Time: 1308 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 6/17/2022 13:08

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp.
47977	0.1 C 1.3 C +3.1 C

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] TRRP Checklist
[ ] TRRP Level IV
[ ] Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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July 08, 2022

David Upthegrove
ERM Southwest, Inc.
804 Main Street
Baton Rouge, LA 70802

Work Order: **HS22050622**

Laboratory Results for: **Castex 0575834**

Dear David Upthegrove,

ALS Environmental received 13 sample(s) on May 13, 2022 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: JUMOKE.LAWAL
Anna Kinchen
Project Manager

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22050622

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22050622-01	CD-9B	Groundwater	11	09-May-2022 12:15	13-May-2022 14:15	☐
HS22050622-02	CD-9A	Groundwater	11	09-May-2022 14:25	13-May-2022 14:15	☐
HS22050622-03	CD-5C	Groundwater	11	09-May-2022 17:00	13-May-2022 14:15	☐
HS22050622-04	CD-10A	Groundwater	11	10-May-2022 09:45	13-May-2022 14:15	☐
HS22050622-05	CD-8B	Groundwater	11	10-May-2022 11:35	13-May-2022 14:15	☐
HS22050622-06	CD-8A	Groundwater	11	10-May-2022 14:30	13-May-2022 14:15	☐
HS22050622-07	CD-11A	Groundwater	11	10-May-2022 15:50	13-May-2022 14:15	☐
HS22050622-08	CD-11B	Groundwater	11	11-May-2022 10:00	13-May-2022 14:15	☐
HS22050622-09	CD-7B	Groundwater	11	11-May-2022 14:35	13-May-2022 14:15	☐
HS22050622-10	CD-7C	Groundwater	11	12-May-2022 08:55	13-May-2022 14:15	☐
HS22050622-11	CD-6A	Groundwater	11	12-May-2022 10:25	13-May-2022 14:15	☐
HS22050622-12	CD-6B	Groundwater	11	12-May-2022 13:00	13-May-2022 14:15	☐
HS22050622-13	Trip Blank	Water	CG-020822-602	09-May-2022 00:00	13-May-2022 14:15	☐

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc. **CASE NARRATIVE**
Project: Castex 0575834
Work Order: HS22050622

Work Order Comments

• Revised this report on 07-08-22. Corrected the sample ID for HS22050622-08. Sample ID should be CD-11B per client.

GC Semivolatiles by Method MA EPH

Batch ID: 179013

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method MA VPH

Batch ID: R408667,R408672

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R409070,R409104

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020A

Batch ID: 179159

Sample ID: CD-9A (HS22050622-02MSD)

• The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Calcium)

Sample ID: CD-9A (HS22050622-02PDS)

• The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. (Barium,Calcium,Sodium,Strontium)

Batch ID: 179233

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7470A

Batch ID: 178852

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 179119

Sample ID: CD-9B (HS22050622-01MSD)

• The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

WetChemistry by Method SW9056

Batch ID: R409511

Sample ID: HS22051182-02MS

• MS and MSD are for an unrelated sample (Sulfate)

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22050622

CASE NARRATIVE

WetChemistry by Method SM2320B

Batch ID: R408804

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M2540C

Batch ID: R408774,R408848,R408949,R408984

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-9B
Collection Date: 09-May-2022 12:15

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	20-May-2022 22:07
Ethylbenzene	ND		1.0	ug/L	1	20-May-2022 22:07
Toluene	**1.5**		**1.0**	**ug/L**	1	20-May-2022 22:07
Xylenes, Total	ND		1.0	ug/L	1	20-May-2022 22:07
Surr: 1,2-Dichloroethane-d4	*117*		*70-126*	*%REC*	*1*	*20-May-2022 22:07*
Surr: 4-Bromofluorobenzene	*102*		*77-113*	*%REC*	*1*	*20-May-2022 22:07*
Surr: Dibromofluoromethane	*109*		*77-123*	*%REC*	*1*	*20-May-2022 22:07*
Surr: Toluene-d8	*94.2*		*82-127*	*%REC*	*1*	*20-May-2022 22:07*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 12:18
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 12:18
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 12:18
Surr: 2,5-Dibromotoluene (Aliphatic)	*72.6*		*70-130*	*%REC*	*1*	*16-May-2022 12:18*
Surr: 2,5-Dibromotoluene (Aromatic)	*94.8*		*70-130*	*%REC*	*1*	*16-May-2022 12:18*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 20:06
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	25-May-2022 20:06
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	25-May-2022 20:06
Aromatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 20:38
Aromatics >C12 - C16	ND		0.00400	mg/L	1	25-May-2022 20:38
Aromatics >C16 - C21	ND		0.00300	mg/L	1	25-May-2022 20:38
Aromatics >C21 - C35	ND		0.00900	mg/L	1	25-May-2022 20:38
Surr: 1-Chlorooctadecane	*73.7*		*40-140*	*%REC*	*1*	*25-May-2022 20:06*
Surr: 2-Bromonaphthalene	*104*		*40-140*	*%REC*	*1*	*25-May-2022 20:38*
Surr: 2-Fluorobiphenyl	*77.9*		*40-140*	*%REC*	*1*	*25-May-2022 20:38*
Surr: o-Terphenyl	*69.2*		*40-140*	*%REC*	*1*	*25-May-2022 20:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

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Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-9B
Collection Date: 09-May-2022 12:15

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.00931**		**0.00200**	**mg/L**	1	26-May-2022 20:35
Barium	**0.242**		**0.00400**	**mg/L**	1	26-May-2022 20:35
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:35
Calcium	**52.3**		**0.500**	**mg/L**	1	26-May-2022 20:35
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:35
Iron	**1.07**		**0.200**	**mg/L**	1	26-May-2022 20:35
Lead	ND		0.00200	mg/L	1	26-May-2022 20:35
Magnesium	**14.7**		**0.200**	**mg/L**	1	26-May-2022 20:35
Manganese	**0.189**		**0.00500**	**mg/L**	1	26-May-2022 20:35
Potassium	**2.52**		**0.200**	**mg/L**	1	26-May-2022 20:35
Sodium	**63.4**		**0.200**	**mg/L**	1	26-May-2022 20:35
Strontium	**0.334**		**0.00500**	**mg/L**	1	26-May-2022 20:35
Zinc	ND		0.00400	mg/L	1	26-May-2022 20:35
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.00990**		**0.00200**	**mg/L**	1	26-May-2022 15:29
Barium	**0.259**		**0.00400**	**mg/L**	1	26-May-2022 15:29
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:29
Chromium	ND		0.00400	mg/L	1	26-May-2022 15:29
Iron	**1.18**		**0.200**	**mg/L**	1	26-May-2022 15:29
Lead	ND		0.00200	mg/L	1	26-May-2022 15:29
Manganese	**0.203**		**0.00500**	**mg/L**	1	26-May-2022 15:29
Strontium	**0.359**		**0.00500**	**mg/L**	1	26-May-2022 15:29
Zinc	ND		0.00400	mg/L	1	26-May-2022 15:29
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 15:56
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:04
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**386**		**10.0**	**mg/L**	1	16-May-2022 15:39
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**233**		**5.00**	**mg/L**	1	17-May-2022 19:06
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 19:06
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**94.2**		**0.500**	**mg/L**	1	26-May-2022 17:53
Sulfate	ND		0.500	mg/L	1	26-May-2022 17:53

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-9A
Collection Date: 09-May-2022 14:25

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 00:05
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 00:05
Toluene	**2.0**		**1.0**	**ug/L**	1	21-May-2022 00:05
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 00:05
Surr: 1,2-Dichloroethane-d4	*114*		*70-126*	*%REC*	*1*	*21-May-2022 00:05*
Surr: 4-Bromofluorobenzene	*100*		*77-113*	*%REC*	*1*	*21-May-2022 00:05*
Surr: Dibromofluoromethane	*110*		*77-123*	*%REC*	*1*	*21-May-2022 00:05*
Surr: Toluene-d8	*94.4*		*82-127*	*%REC*	*1*	*21-May-2022 00:05*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 12:45
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 12:45
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 12:45
Surr: 2,5-Dibromotoluene (Aliphatic)	*76.7*		*70-130*	*%REC*	*1*	*16-May-2022 12:45*
Surr: 2,5-Dibromotoluene (Aromatic)	*90.1*		*70-130*	*%REC*	*1*	*16-May-2022 12:45*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 20:38
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	25-May-2022 20:38
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	25-May-2022 20:38
Aromatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 21:09
Aromatics >C12 - C16	ND		0.00400	mg/L	1	25-May-2022 21:09
Aromatics >C16 - C21	ND		0.00300	mg/L	1	25-May-2022 21:09
Aromatics >C21 - C35	ND		0.00900	mg/L	1	25-May-2022 21:09
Surr: 1-Chlorooctadecane	*78.4*		*40-140*	*%REC*	*1*	*25-May-2022 20:38*
Surr: 2-Bromonaphthalene	*102*		*40-140*	*%REC*	*1*	*25-May-2022 21:09*
Surr: 2-Fluorobiphenyl	*80.7*		*40-140*	*%REC*	*1*	*25-May-2022 21:09*
Surr: o-Terphenyl	*71.4*		*40-140*	*%REC*	*1*	*25-May-2022 21:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-9A
Collection Date: 09-May-2022 14:25

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.0160**		**0.00200**	**mg/L**	1	26-May-2022 20:21
Barium	**0.523**		**0.00400**	**mg/L**	1	26-May-2022 20:21
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:21
Calcium	**84.8**		**0.500**	**mg/L**	1	26-May-2022 20:21
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:21
Iron	**1.62**		**0.200**	**mg/L**	1	26-May-2022 20:21
Lead	ND		0.00200	mg/L	1	26-May-2022 20:21
Magnesium	**25.9**		**0.200**	**mg/L**	1	26-May-2022 20:21
Manganese	**0.361**		**0.00500**	**mg/L**	1	26-May-2022 20:21
Potassium	**1.98**		**0.200**	**mg/L**	1	26-May-2022 20:21
Sodium	**78.7**		**0.200**	**mg/L**	1	26-May-2022 20:21
Strontium	**0.542**		**0.00500**	**mg/L**	1	26-May-2022 20:21
Zinc	ND		0.00400	mg/L	1	26-May-2022 20:21
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.0175**		**0.00200**	**mg/L**	1	26-May-2022 15:31
Barium	**0.561**		**0.00400**	**mg/L**	1	26-May-2022 15:31
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:31
Chromium	ND		0.00400	mg/L	1	26-May-2022 15:31
Iron	**1.65**		**0.200**	**mg/L**	1	26-May-2022 15:31
Lead	ND		0.00200	mg/L	1	26-May-2022 15:31
Manganese	**0.380**		**0.00500**	**mg/L**	1	26-May-2022 15:31
Strontium	**0.579**		**0.00500**	**mg/L**	1	26-May-2022 15:31
Zinc	ND		0.00400	mg/L	1	26-May-2022 15:31
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:09
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:18
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**536**		**10.0**	**mg/L**	1	16-May-2022 15:39
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**469**		**5.00**	**mg/L**	1	17-May-2022 19:42
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 19:42
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**45.8**		**0.500**	**mg/L**	1	26-May-2022 18:40
Sulfate	**13.4**		**0.500**	**mg/L**	1	26-May-2022 18:40

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-5C
Collection Date: 09-May-2022 17:00

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 00:25
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 00:25
Toluene	**16**		**1.0**	**ug/L**	1	21-May-2022 00:25
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 00:25
Surr: 1,2-Dichloroethane-d4	*114*		*70-126*	*%REC*	*1*	*21-May-2022 00:25*
Surr: 4-Bromofluorobenzene	*101*		*77-113*	*%REC*	*1*	*21-May-2022 00:25*
Surr: Dibromofluoromethane	*111*		*77-123*	*%REC*	*1*	*21-May-2022 00:25*
Surr: Toluene-d8	*95.7*		*82-127*	*%REC*	*1*	*21-May-2022 00:25*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 13:13
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 13:13
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 13:13
Surr: 2,5-Dibromotoluene (Aliphatic)	*86.1*		*70-130*	*%REC*	*1*	*16-May-2022 13:13*
Surr: 2,5-Dibromotoluene (Aromatic)	*82.3*		*70-130*	*%REC*	*1*	*16-May-2022 13:13*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 21:09
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	25-May-2022 21:09
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	25-May-2022 21:09
Aromatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 21:41
Aromatics >C12 - C16	ND		0.00400	mg/L	1	25-May-2022 21:41
Aromatics >C16 - C21	ND		0.00300	mg/L	1	25-May-2022 21:41
Aromatics >C21 - C35	ND		0.00900	mg/L	1	25-May-2022 21:41
Surr: 1-Chlorooctadecane	*69.6*		*40-140*	*%REC*	*1*	*25-May-2022 21:09*
Surr: 2-Bromonaphthalene	*101*		*40-140*	*%REC*	*1*	*25-May-2022 21:41*
Surr: 2-Fluorobiphenyl	*81.2*		*40-140*	*%REC*	*1*	*25-May-2022 21:41*
Surr: o-Terphenyl	*73.9*		*40-140*	*%REC*	*1*	*25-May-2022 21:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-5C
Collection Date: 09-May-2022 17:00

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.00920**		**0.00200**	**mg/L**	1	26-May-2022 20:37
Barium	**0.679**		**0.00400**	**mg/L**	1	26-May-2022 20:37
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:37
Calcium	**101**		**0.500**	**mg/L**	1	26-May-2022 20:37
Chromium	**0.0451**		**0.00400**	**mg/L**	1	26-May-2022 20:37
Iron	**15.2**		**0.200**	**mg/L**	1	26-May-2022 20:37
Lead	**0.00596**		**0.00200**	**mg/L**	1	26-May-2022 20:37
Magnesium	**30.2**		**0.200**	**mg/L**	1	26-May-2022 20:37
Manganese	**0.540**		**0.00500**	**mg/L**	1	26-May-2022 20:37
Potassium	**4.50**		**0.200**	**mg/L**	1	26-May-2022 20:37
Sodium	**104**		**0.200**	**mg/L**	1	26-May-2022 20:37
Strontium	**0.743**		**0.00500**	**mg/L**	1	26-May-2022 20:37
Zinc	**0.0547**		**0.00400**	**mg/L**	1	26-May-2022 20:37
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.00634**		**0.00200**	**mg/L**	1	26-May-2022 15:33
Barium	**0.506**		**0.00400**	**mg/L**	1	26-May-2022 15:33
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:33
Chromium	ND		0.00400	mg/L	1	26-May-2022 15:33
Iron	**1.47**		**0.200**	**mg/L**	1	26-May-2022 15:33
Lead	ND		0.00200	mg/L	1	26-May-2022 15:33
Manganese	**0.268**		**0.00500**	**mg/L**	1	26-May-2022 15:33
Strontium	**0.628**		**0.00500**	**mg/L**	1	26-May-2022 15:33
Zinc	**0.00556**		**0.00400**	**mg/L**	1	26-May-2022 15:33
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:11
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:19
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**666**		**10.0**	**mg/L**	1	16-May-2022 15:39
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**239**		**5.00**	**mg/L**	1	17-May-2022 19:48
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 19:48
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**208**		**5.00**	**mg/L**	10	26-May-2022 19:06
Sulfate	ND		0.500	mg/L	1	26-May-2022 19:01

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-10A
Collection Date: 10-May-2022 09:45

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 00:44
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 00:44
Toluene	ND		1.0	ug/L	1	21-May-2022 00:44
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 00:44
Surr: 1,2-Dichloroethane-d4	*116*		*70-126*	*%REC*	*1*	*21-May-2022 00:44*
Surr: 4-Bromofluorobenzene	*99.5*		*77-113*	*%REC*	*1*	*21-May-2022 00:44*
Surr: Dibromofluoromethane	*109*		*77-123*	*%REC*	*1*	*21-May-2022 00:44*
Surr: Toluene-d8	*94.2*		*82-127*	*%REC*	*1*	*21-May-2022 00:44*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 13:40
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 13:40
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 13:40
Surr: 2,5-Dibromotoluene (Aliphatic)	*76.2*		*70-130*	*%REC*	*1*	*16-May-2022 13:40*
Surr: 2,5-Dibromotoluene (Aromatic)	*101*		*70-130*	*%REC*	*1*	*16-May-2022 13:40*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 21:41
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	25-May-2022 21:41
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	25-May-2022 21:41
Aromatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 22:13
Aromatics >C12 - C16	ND		0.00400	mg/L	1	25-May-2022 22:13
Aromatics >C16 - C21	ND		0.00300	mg/L	1	25-May-2022 22:13
Aromatics >C21 - C35	ND		0.00900	mg/L	1	25-May-2022 22:13
Surr: 1-Chlorooctadecane	*82.3*		*40-140*	*%REC*	*1*	*25-May-2022 21:41*
Surr: 2-Bromonaphthalene	*99.1*		*40-140*	*%REC*	*1*	*25-May-2022 22:13*
Surr: 2-Fluorobiphenyl	*69.5*		*40-140*	*%REC*	*1*	*25-May-2022 22:13*
Surr: o-Terphenyl	*65.3*		*40-140*	*%REC*	*1*	*25-May-2022 22:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-10A
Collection Date: 10-May-2022 09:45

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.00880**		**0.00200**	**mg/L**	1	26-May-2022 20:39
Barium	**0.193**		**0.00400**	**mg/L**	1	26-May-2022 20:39
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:39
Calcium	**39.6**		**0.500**	**mg/L**	1	26-May-2022 20:39
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:39
Iron	**0.404**		**0.200**	**mg/L**	1	26-May-2022 20:39
Lead	ND		0.00200	mg/L	1	26-May-2022 20:39
Magnesium	**9.01**		**0.200**	**mg/L**	1	26-May-2022 20:39
Manganese	**0.147**		**0.00500**	**mg/L**	1	26-May-2022 20:39
Potassium	**1.73**		**0.200**	**mg/L**	1	26-May-2022 20:39
Sodium	**56.9**		**0.200**	**mg/L**	1	26-May-2022 20:39
Strontium	**0.166**		**0.00500**	**mg/L**	1	26-May-2022 20:39
Zinc	**0.00475**		**0.00400**	**mg/L**	1	26-May-2022 20:39
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.00871**		**0.00200**	**mg/L**	1	26-May-2022 15:35
Barium	**0.190**		**0.00400**	**mg/L**	1	26-May-2022 15:35
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:35
Chromium	ND		0.00400	mg/L	1	26-May-2022 15:35
Iron	**0.367**		**0.200**	**mg/L**	1	26-May-2022 15:35
Lead	ND		0.00200	mg/L	1	26-May-2022 15:35
Manganese	**0.148**		**0.00500**	**mg/L**	1	26-May-2022 15:35
Strontium	**0.164**		**0.00500**	**mg/L**	1	26-May-2022 15:35
Zinc	ND		0.00400	mg/L	1	26-May-2022 15:35
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:13
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:21
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**294**		**10.0**	**mg/L**	1	17-May-2022 15:39
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**256**		**5.00**	**mg/L**	1	17-May-2022 19:56
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 19:56
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**35.6**		**0.500**	**mg/L**	1	26-May-2022 19:27
Sulfate	**10.4**		**0.500**	**mg/L**	1	26-May-2022 19:27

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-8B
Collection Date: 10-May-2022 11:35

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 01:04
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 01:04
Toluene	**10**		**1.0**	**ug/L**	1	21-May-2022 01:04
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 01:04
Surr: 1,2-Dichloroethane-d4	*116*		*70-126*	*%REC*	*1*	*21-May-2022 01:04*
Surr: 4-Bromofluorobenzene	*102*		*77-113*	*%REC*	*1*	*21-May-2022 01:04*
Surr: Dibromofluoromethane	*109*		*77-123*	*%REC*	*1*	*21-May-2022 01:04*
Surr: Toluene-d8	*93.9*		*82-127*	*%REC*	*1*	*21-May-2022 01:04*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 14:08
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 14:08
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 14:08
Surr: 2,5-Dibromotoluene (Aliphatic)	*76.7*		*70-130*	*%REC*	*1*	*16-May-2022 14:08*
Surr: 2,5-Dibromotoluene (Aromatic)	*89.8*		*70-130*	*%REC*	*1*	*16-May-2022 14:08*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 22:13
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	25-May-2022 22:13
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	25-May-2022 22:13
Aromatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 22:45
Aromatics >C12 - C16	ND		0.00400	mg/L	1	25-May-2022 22:45
Aromatics >C16 - C21	ND		0.00300	mg/L	1	25-May-2022 22:45
Aromatics >C21 - C35	ND		0.00900	mg/L	1	25-May-2022 22:45
Surr: 1-Chlorooctadecane	*98.8*		*40-140*	*%REC*	*1*	*25-May-2022 22:13*
Surr: 2-Bromonaphthalene	*130*		*40-140*	*%REC*	*1*	*25-May-2022 22:45*
Surr: 2-Fluorobiphenyl	*115*		*40-140*	*%REC*	*1*	*25-May-2022 22:45*
Surr: o-Terphenyl	*102*		*40-140*	*%REC*	*1*	*25-May-2022 22:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-8B
Collection Date: 10-May-2022 11:35

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.00860**		**0.00200**	**mg/L**	1	26-May-2022 20:41
Barium	**1.75**		**0.00400**	**mg/L**	1	26-May-2022 20:41
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:41
Calcium	**273**		**10.0**	**mg/L**	20	27-May-2022 14:29
Chromium	**0.0349**		**0.00400**	**mg/L**	1	26-May-2022 20:41
Iron	**31.4**		**0.200**	**mg/L**	1	26-May-2022 20:41
Lead	**0.0232**		**0.00200**	**mg/L**	1	26-May-2022 20:41
Magnesium	**60.7**		**0.200**	**mg/L**	1	26-May-2022 20:41
Manganese	**2.06**		**0.100**	**mg/L**	20	27-May-2022 14:29
Potassium	**5.60**		**0.200**	**mg/L**	1	26-May-2022 20:41
Sodium	**79.0**		**0.200**	**mg/L**	1	26-May-2022 20:41
Strontium	**0.729**		**0.00500**	**mg/L**	1	26-May-2022 20:41
Zinc	**0.117**		**0.00400**	**mg/L**	1	26-May-2022 20:41
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	ND		0.00200	mg/L	1	26-May-2022 15:37
Barium	**1.22**		**0.00400**	**mg/L**	1	26-May-2022 15:37
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:37
Chromium	ND		0.00400	mg/L	1	26-May-2022 15:37
Iron	**0.970**		**0.200**	**mg/L**	1	26-May-2022 15:37
Lead	ND		0.00200	mg/L	1	26-May-2022 15:37
Manganese	**0.383**		**0.00500**	**mg/L**	1	26-May-2022 15:37
Strontium	**0.541**		**0.00500**	**mg/L**	1	26-May-2022 15:37
Zinc	**0.00491**		**0.00400**	**mg/L**	1	26-May-2022 15:37
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:14
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:23
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**744**		**10.0**	**mg/L**	1	17-May-2022 15:39
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**371**		**5.00**	**mg/L**	1	17-May-2022 20:02
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 20:02
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**199**		**5.00**	**mg/L**	10	26-May-2022 19:43
Sulfate	**2.71**		**0.500**	**mg/L**	1	26-May-2022 19:38

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-8A
Collection Date: 10-May-2022 14:30

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 01:23
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 01:23
Toluene	**2.0**		**1.0**	**ug/L**	1	21-May-2022 01:23
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 01:23
Surr: 1,2-Dichloroethane-d4	*109*		*70-126*	*%REC*	*1*	*21-May-2022 01:23*
Surr: 4-Bromofluorobenzene	*99.7*		*77-113*	*%REC*	*1*	*21-May-2022 01:23*
Surr: Dibromofluoromethane	*108*		*77-123*	*%REC*	*1*	*21-May-2022 01:23*
Surr: Toluene-d8	*94.5*		*82-127*	*%REC*	*1*	*21-May-2022 01:23*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 14:36
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 14:36
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 14:36
Surr: 2,5-Dibromotoluene (Aliphatic)	*82.8*		*70-130*	*%REC*	*1*	*16-May-2022 14:36*
Surr: 2,5-Dibromotoluene (Aromatic)	*101*		*70-130*	*%REC*	*1*	*16-May-2022 14:36*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 22:45
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	25-May-2022 22:45
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	25-May-2022 22:45
Aromatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 23:16
Aromatics >C12 - C16	ND		0.00400	mg/L	1	25-May-2022 23:16
Aromatics >C16 - C21	ND		0.00300	mg/L	1	25-May-2022 23:16
Aromatics >C21 - C35	ND		0.00900	mg/L	1	25-May-2022 23:16
Surr: 1-Chlorooctadecane	*74.0*		*40-140*	*%REC*	*1*	*25-May-2022 22:45*
Surr: 2-Bromonaphthalene	*99.6*		*40-140*	*%REC*	*1*	*25-May-2022 23:16*
Surr: 2-Fluorobiphenyl	*76.6*		*40-140*	*%REC*	*1*	*25-May-2022 23:16*
Surr: o-Terphenyl	*74.2*		*40-140*	*%REC*	*1*	*25-May-2022 23:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-8A
Collection Date: 10-May-2022 14:30

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.0736**		**0.00200**	**mg/L**	1	26-May-2022 20:43
Barium	**0.575**		**0.00400**	**mg/L**	1	26-May-2022 20:43
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:43
Calcium	**70.5**		**0.500**	**mg/L**	1	26-May-2022 20:43
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:43
Iron	**3.24**		**0.200**	**mg/L**	1	26-May-2022 20:43
Lead	ND		0.00200	mg/L	1	26-May-2022 20:43
Magnesium	**18.8**		**0.200**	**mg/L**	1	26-May-2022 20:43
Manganese	**0.381**		**0.00500**	**mg/L**	1	26-May-2022 20:43
Potassium	**3.69**		**0.200**	**mg/L**	1	26-May-2022 20:43
Sodium	**54.5**		**0.200**	**mg/L**	1	26-May-2022 20:43
Strontium	**0.401**		**0.00500**	**mg/L**	1	26-May-2022 20:43
Zinc	**0.00538**		**0.00400**	**mg/L**	1	26-May-2022 20:43
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.0811**		**0.00200**	**mg/L**	1	26-May-2022 15:39
Barium	**0.587**		**0.00400**	**mg/L**	1	26-May-2022 15:39
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:39
Chromium	ND		0.00400	mg/L	1	26-May-2022 15:39
Iron	**3.42**		**0.200**	**mg/L**	1	26-May-2022 15:39
Lead	ND		0.00200	mg/L	1	26-May-2022 15:39
Manganese	**0.416**		**0.00500**	**mg/L**	1	26-May-2022 15:39
Strontium	**0.421**		**0.00500**	**mg/L**	1	26-May-2022 15:39
Zinc	ND		0.00400	mg/L	1	26-May-2022 15:39
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:16
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:28
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**428**		**10.0**	**mg/L**	1	17-May-2022 15:39
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**388**		**5.00**	**mg/L**	1	17-May-2022 20:09
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 20:09
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**11.0**		**0.500**	**mg/L**	1	26-May-2022 19:49
Sulfate	**9.84**		**0.500**	**mg/L**	1	26-May-2022 19:49

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-11A
Collection Date: 10-May-2022 15:50

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 01:43
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 01:43
Toluene	**12**		**1.0**	**ug/L**	1	21-May-2022 01:43
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 01:43
Surr: 1,2-Dichloroethane-d4	*122*		*70-126*	*%REC*	*1*	*21-May-2022 01:43*
Surr: 4-Bromofluorobenzene	*102*		*77-113*	*%REC*	*1*	*21-May-2022 01:43*
Surr: Dibromofluoromethane	*114*		*77-123*	*%REC*	*1*	*21-May-2022 01:43*
Surr: Toluene-d8	*92.2*		*82-127*	*%REC*	*1*	*21-May-2022 01:43*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 15:03
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 15:03
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 15:03
Surr: 2,5-Dibromotoluene (Aliphatic)	*81.8*		*70-130*	*%REC*	*1*	*16-May-2022 15:03*
Surr: 2,5-Dibromotoluene (Aromatic)	*104*		*70-130*	*%REC*	*1*	*16-May-2022 15:03*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 23:16
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	25-May-2022 23:16
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	25-May-2022 23:16
Aromatics >C10 - C12	ND		0.00100	mg/L	1	25-May-2022 23:48
Aromatics >C12 - C16	ND		0.00400	mg/L	1	25-May-2022 23:48
Aromatics >C16 - C21	ND		0.00300	mg/L	1	25-May-2022 23:48
Aromatics >C21 - C35	ND		0.00900	mg/L	1	25-May-2022 23:48
Surr: 1-Chlorooctadecane	*75.9*		*40-140*	*%REC*	*1*	*25-May-2022 23:16*
Surr: 2-Bromonaphthalene	*91.8*		*40-140*	*%REC*	*1*	*25-May-2022 23:48*
Surr: 2-Fluorobiphenyl	*71.3*		*40-140*	*%REC*	*1*	*25-May-2022 23:48*
Surr: o-Terphenyl	*74.8*		*40-140*	*%REC*	*1*	*25-May-2022 23:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-11A
Collection Date: 10-May-2022 15:50

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.0973**		**0.00200**	**mg/L**	1	26-May-2022 20:45
Barium	**0.640**		**0.00400**	**mg/L**	1	26-May-2022 20:45
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:45
Calcium	**87.5**		**0.500**	**mg/L**	1	26-May-2022 20:45
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:45
Iron	**4.99**		**0.200**	**mg/L**	1	26-May-2022 20:45
Lead	ND		0.00200	mg/L	1	26-May-2022 20:45
Magnesium	**42.3**		**0.200**	**mg/L**	1	26-May-2022 20:45
Manganese	**0.573**		**0.00500**	**mg/L**	1	26-May-2022 20:45
Potassium	**4.18**		**0.200**	**mg/L**	1	26-May-2022 20:45
Sodium	**136**		**0.200**	**mg/L**	1	26-May-2022 20:45
Strontium	**0.753**		**0.00500**	**mg/L**	1	26-May-2022 20:45
Zinc	**0.00684**		**0.00400**	**mg/L**	1	26-May-2022 20:45
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.0979**		**0.00200**	**mg/L**	1	26-May-2022 15:41
Barium	**0.639**		**0.00400**	**mg/L**	1	26-May-2022 15:41
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:41
Chromium	ND		0.00400	mg/L	1	26-May-2022 15:41
Iron	**4.82**		**0.200**	**mg/L**	1	26-May-2022 15:41
Lead	ND		0.00200	mg/L	1	26-May-2022 15:41
Manganese	**0.570**		**0.00500**	**mg/L**	1	26-May-2022 15:41
Strontium	**0.752**		**0.00500**	**mg/L**	1	26-May-2022 15:41
Zinc	ND		0.00400	mg/L	1	26-May-2022 15:41
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:18
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:30
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**864**		**10.0**	**mg/L**	1	17-May-2022 15:39
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**360**		**5.00**	**mg/L**	1	17-May-2022 20:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 20:15
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**291**		**5.00**	**mg/L**	10	26-May-2022 20:04
Sulfate	ND		0.500	mg/L	1	26-May-2022 19:59

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-11B
Collection Date: 11-May-2022 10:00

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 02:03
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 02:03
Toluene	**5.9**		**1.0**	**ug/L**	1	21-May-2022 02:03
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 02:03
Surr: 1,2-Dichloroethane-d4	*122*		*70-126*	*%REC*	*1*	*21-May-2022 02:03*
Surr: 4-Bromofluorobenzene	*102*		*77-113*	*%REC*	*1*	*21-May-2022 02:03*
Surr: Dibromofluoromethane	*113*		*77-123*	*%REC*	*1*	*21-May-2022 02:03*
Surr: Toluene-d8	*91.6*		*82-127*	*%REC*	*1*	*21-May-2022 02:03*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 16:26
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 16:26
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 16:26
Surr: 2,5-Dibromotoluene (Aliphatic)	*76.9*		*70-130*	*%REC*	*1*	*16-May-2022 16:26*
Surr: 2,5-Dibromotoluene (Aromatic)	*90.4*		*70-130*	*%REC*	*1*	*16-May-2022 16:26*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 00:51
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	26-May-2022 00:51
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	26-May-2022 00:51
Aromatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 01:23
Aromatics >C12 - C16	ND		0.00400	mg/L	1	26-May-2022 01:23
Aromatics >C16 - C21	ND		0.00300	mg/L	1	26-May-2022 01:23
Aromatics >C21 - C35	ND		0.00900	mg/L	1	26-May-2022 01:23
Surr: 1-Chlorooctadecane	*66.0*		*40-140*	*%REC*	*1*	*26-May-2022 00:51*
Surr: 2-Bromonaphthalene	*98.4*		*40-140*	*%REC*	*1*	*26-May-2022 01:23*
Surr: 2-Fluorobiphenyl	*87.0*		*40-140*	*%REC*	*1*	*26-May-2022 01:23*
Surr: o-Terphenyl	*65.3*		*40-140*	*%REC*	*1*	*26-May-2022 01:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-11B
Collection Date: 11-May-2022 10:00

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.00632**		**0.00200**	**mg/L**	1	26-May-2022 20:47
Barium	**0.316**		**0.00400**	**mg/L**	1	26-May-2022 20:47
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:47
Calcium	**57.2**		**0.500**	**mg/L**	1	26-May-2022 20:47
Chromium	**0.0123**		**0.00400**	**mg/L**	1	26-May-2022 20:47
Iron	**7.40**		**0.200**	**mg/L**	1	26-May-2022 20:47
Lead	**0.00403**		**0.00200**	**mg/L**	1	26-May-2022 20:47
Magnesium	**18.6**		**0.200**	**mg/L**	1	26-May-2022 20:47
Manganese	**0.400**		**0.00500**	**mg/L**	1	26-May-2022 20:47
Potassium	**4.53**		**0.200**	**mg/L**	1	26-May-2022 20:47
Sodium	**69.6**		**0.200**	**mg/L**	1	26-May-2022 20:47
Strontium	**0.342**		**0.00500**	**mg/L**	1	26-May-2022 20:47
Zinc	**0.0364**		**0.00400**	**mg/L**	1	26-May-2022 20:47
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.00613**		**0.00200**	**mg/L**	1	26-May-2022 15:43
Barium	**0.318**		**0.00400**	**mg/L**	1	26-May-2022 15:43
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:43
Chromium	**0.0174**		**0.00400**	**mg/L**	1	26-May-2022 15:43
Iron	**6.25**		**0.200**	**mg/L**	1	26-May-2022 15:43
Lead	**0.00399**		**0.00200**	**mg/L**	1	26-May-2022 15:43
Manganese	**0.275**		**0.00500**	**mg/L**	1	26-May-2022 15:43
Strontium	**0.339**		**0.00500**	**mg/L**	1	26-May-2022 15:43
Zinc	**0.0526**		**0.00400**	**mg/L**	1	26-May-2022 15:43
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:20
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:32
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**390**		**10.0**	**mg/L**	1	18-May-2022 16:24
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**283**		**5.00**	**mg/L**	1	17-May-2022 20:22
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 20:22
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**62.7**		**0.500**	**mg/L**	1	26-May-2022 20:10
Sulfate	**1.43**		**0.500**	**mg/L**	1	26-May-2022 20:10

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-7B
Collection Date: 11-May-2022 14:35

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 02:22
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 02:22
Toluene	ND		1.0	ug/L	1	21-May-2022 02:22
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 02:22
Surr: 1,2-Dichloroethane-d4	*115*		*70-126*	*%REC*	*1*	*21-May-2022 02:22*
Surr: 4-Bromofluorobenzene	*99.9*		*77-113*	*%REC*	*1*	*21-May-2022 02:22*
Surr: Dibromofluoromethane	*111*		*77-123*	*%REC*	*1*	*21-May-2022 02:22*
Surr: Toluene-d8	*95.1*		*82-127*	*%REC*	*1*	*21-May-2022 02:22*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 16:54
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 16:54
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 16:54
Surr: 2,5-Dibromotoluene (Aliphatic)	*73.1*		*70-130*	*%REC*	*1*	*16-May-2022 16:54*
Surr: 2,5-Dibromotoluene (Aromatic)	*98.3*		*70-130*	*%REC*	*1*	*16-May-2022 16:54*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 01:23
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	26-May-2022 01:23
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	26-May-2022 01:23
Aromatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 01:54
Aromatics >C12 - C16	ND		0.00400	mg/L	1	26-May-2022 01:54
Aromatics >C16 - C21	ND		0.00300	mg/L	1	26-May-2022 01:54
Aromatics >C21 - C35	ND		0.00900	mg/L	1	26-May-2022 01:54
Surr: 1-Chlorooctadecane	*67.6*		*40-140*	*%REC*	*1*	*26-May-2022 01:23*
Surr: 2-Bromonaphthalene	*109*		*40-140*	*%REC*	*1*	*26-May-2022 01:54*
Surr: 2-Fluorobiphenyl	*76.8*		*40-140*	*%REC*	*1*	*26-May-2022 01:54*
Surr: o-Terphenyl	*70.0*		*40-140*	*%REC*	*1*	*26-May-2022 01:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-7B
Collection Date: 11-May-2022 14:35

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.0885**		**0.00200**	**mg/L**	1	26-May-2022 20:49
Barium	**0.394**		**0.00400**	**mg/L**	1	26-May-2022 20:49
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:49
Calcium	**60.4**		**0.500**	**mg/L**	1	26-May-2022 20:49
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:49
Iron	**1.05**		**0.200**	**mg/L**	1	26-May-2022 20:49
Lead	ND		0.00200	mg/L	1	26-May-2022 20:49
Magnesium	**22.2**		**0.200**	**mg/L**	1	26-May-2022 20:49
Manganese	**0.403**		**0.00500**	**mg/L**	1	26-May-2022 20:49
Potassium	**1.76**		**0.200**	**mg/L**	1	26-May-2022 20:49
Sodium	**90.4**		**0.200**	**mg/L**	1	26-May-2022 20:49
Strontium	**0.343**		**0.00500**	**mg/L**	1	26-May-2022 20:49
Zinc	ND		0.00400	mg/L	1	26-May-2022 20:49
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.0923**		**0.00200**	**mg/L**	1	26-May-2022 15:54
Barium	**0.438**		**0.00400**	**mg/L**	1	26-May-2022 15:54
Cadmium	ND		0.00200	mg/L	1	26-May-2022 15:54
Chromium	ND		0.00400	mg/L	1	26-May-2022 15:54
Iron	**0.508**		**0.200**	**mg/L**	1	26-May-2022 15:54
Lead	ND		0.00200	mg/L	1	26-May-2022 15:54
Manganese	**0.461**		**0.00500**	**mg/L**	1	26-May-2022 15:54
Strontium	**0.400**		**0.00500**	**mg/L**	1	26-May-2022 15:54
Zinc	ND		0.00400	mg/L	1	26-May-2022 15:54
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:21
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:33
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**588**		**10.0**	**mg/L**	1	18-May-2022 16:24
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**339**		**5.00**	**mg/L**	1	17-May-2022 20:29
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 20:29
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**151**		**2.50**	**mg/L**	5	26-May-2022 20:41
Sulfate	**9.50**		**0.500**	**mg/L**	1	26-May-2022 20:36

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-7C
Collection Date: 12-May-2022 08:55

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 02:42
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 02:42
Toluene	**1.3**		**1.0**	**ug/L**	1	21-May-2022 02:42
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 02:42
Surr: 1,2-Dichloroethane-d4	*118*		*70-126*	*%REC*	*1*	*21-May-2022 02:42*
Surr: 4-Bromofluorobenzene	*98.6*		*77-113*	*%REC*	*1*	*21-May-2022 02:42*
Surr: Dibromofluoromethane	*107*		*77-123*	*%REC*	*1*	*21-May-2022 02:42*
Surr: Toluene-d8	*94.4*		*82-127*	*%REC*	*1*	*21-May-2022 02:42*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 17:22
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 17:22
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 17:22
Surr: 2,5-Dibromotoluene (Aliphatic)	*74.3*		*70-130*	*%REC*	*1*	*16-May-2022 17:22*
Surr: 2,5-Dibromotoluene (Aromatic)	*108*		*70-130*	*%REC*	*1*	*16-May-2022 17:22*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 01:54
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	26-May-2022 01:54
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	26-May-2022 01:54
Aromatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 02:26
Aromatics >C12 - C16	ND		0.00400	mg/L	1	26-May-2022 02:26
Aromatics >C16 - C21	ND		0.00300	mg/L	1	26-May-2022 02:26
Aromatics >C21 - C35	ND		0.00900	mg/L	1	26-May-2022 02:26
Surr: 1-Chlorooctadecane	*77.8*		*40-140*	*%REC*	*1*	*26-May-2022 01:54*
Surr: 2-Bromonaphthalene	*93.0*		*40-140*	*%REC*	*1*	*26-May-2022 02:26*
Surr: 2-Fluorobiphenyl	*75.1*		*40-140*	*%REC*	*1*	*26-May-2022 02:26*
Surr: o-Terphenyl	*64.6*		*40-140*	*%REC*	*1*	*26-May-2022 02:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-7C
Collection Date: 12-May-2022 08:55

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.0137**		**0.00200**	**mg/L**	1	26-May-2022 20:51
Barium	**0.297**		**0.00400**	**mg/L**	1	26-May-2022 20:51
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:51
Calcium	**46.8**		**0.500**	**mg/L**	1	26-May-2022 20:51
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:51
Iron	**1.71**		**0.200**	**mg/L**	1	26-May-2022 20:51
Lead	ND		0.00200	mg/L	1	26-May-2022 20:51
Magnesium	**14.7**		**0.200**	**mg/L**	1	26-May-2022 20:51
Manganese	**0.166**		**0.00500**	**mg/L**	1	26-May-2022 20:51
Potassium	**2.91**		**0.200**	**mg/L**	1	26-May-2022 20:51
Sodium	**74.2**		**0.200**	**mg/L**	1	26-May-2022 20:51
Strontium	**0.293**		**0.00500**	**mg/L**	1	26-May-2022 20:51
Zinc	**0.00461**		**0.00400**	**mg/L**	1	26-May-2022 20:51
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.0147**		**0.00200**	**mg/L**	1	26-May-2022 16:02
Barium	**0.331**		**0.00400**	**mg/L**	1	26-May-2022 16:02
Cadmium	ND		0.00200	mg/L	1	26-May-2022 16:02
Chromium	ND		0.00400	mg/L	1	26-May-2022 16:02
Iron	**1.84**		**0.200**	**mg/L**	1	26-May-2022 16:02
Lead	ND		0.00200	mg/L	1	26-May-2022 16:02
Manganese	**0.180**		**0.00500**	**mg/L**	1	26-May-2022 16:02
Strontium	**0.326**		**0.00500**	**mg/L**	1	26-May-2022 16:02
Zinc	**0.00562**		**0.00400**	**mg/L**	1	26-May-2022 16:02
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:28
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:44
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**476**		**10.0**	**mg/L**	1	19-May-2022 10:59
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**287**		**5.00**	**mg/L**	1	17-May-2022 20:53
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 20:53
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**82.1**		**2.50**	**mg/L**	5	26-May-2022 20:52
Sulfate	**25.5**		**2.50**	**mg/L**	5	26-May-2022 20:52

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-6A
Collection Date: 12-May-2022 10:25

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 03:02
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 03:02
Toluene	**9.5**		**1.0**	**ug/L**	1	21-May-2022 03:02
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 03:02
Surr: 1,2-Dichloroethane-d4	*116*		*70-126*	*%REC*	*1*	*21-May-2022 03:02*
Surr: 4-Bromofluorobenzene	*103*		*77-113*	*%REC*	*1*	*21-May-2022 03:02*
Surr: Dibromofluoromethane	*113*		*77-123*	*%REC*	*1*	*21-May-2022 03:02*
Surr: Toluene-d8	*92.0*		*82-127*	*%REC*	*1*	*21-May-2022 03:02*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 17:49
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 17:49
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 17:49
Surr: 2,5-Dibromotoluene (Aliphatic)	*80.1*		*70-130*	*%REC*	*1*	*16-May-2022 17:49*
Surr: 2,5-Dibromotoluene (Aromatic)	*116*		*70-130*	*%REC*	*1*	*16-May-2022 17:49*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 02:26
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	26-May-2022 02:26
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	26-May-2022 02:26
Aromatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 02:58
Aromatics >C12 - C16	ND		0.00400	mg/L	1	26-May-2022 02:58
Aromatics >C16 - C21	ND		0.00300	mg/L	1	26-May-2022 02:58
Aromatics >C21 - C35	ND		0.00900	mg/L	1	26-May-2022 02:58
Surr: 1-Chlorooctadecane	*68.6*		*40-140*	*%REC*	*1*	*26-May-2022 02:26*
Surr: 2-Bromonaphthalene	*101*		*40-140*	*%REC*	*1*	*26-May-2022 02:58*
Surr: 2-Fluorobiphenyl	*75.0*		*40-140*	*%REC*	*1*	*26-May-2022 02:58*
Surr: o-Terphenyl	*62.4*		*40-140*	*%REC*	*1*	*26-May-2022 02:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-6A
Collection Date: 12-May-2022 10:25

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.0210**		**0.00200**	**mg/L**	1	26-May-2022 20:53
Barium	**0.537**		**0.00400**	**mg/L**	1	26-May-2022 20:53
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:53
Calcium	**106**		**0.500**	**mg/L**	1	26-May-2022 20:53
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:53
Iron	**3.62**		**0.200**	**mg/L**	1	26-May-2022 20:53
Lead	ND		0.00200	mg/L	1	26-May-2022 20:53
Magnesium	**36.3**		**0.200**	**mg/L**	1	26-May-2022 20:53
Manganese	**0.538**		**0.00500**	**mg/L**	1	26-May-2022 20:53
Potassium	**4.49**		**0.200**	**mg/L**	1	26-May-2022 20:53
Sodium	**126**		**0.200**	**mg/L**	1	26-May-2022 20:53
Strontium	**0.681**		**0.00500**	**mg/L**	1	26-May-2022 20:53
Zinc	ND		0.00400	mg/L	1	26-May-2022 20:53
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.0214**		**0.00200**	**mg/L**	1	26-May-2022 16:04
Barium	**0.520**		**0.00400**	**mg/L**	1	26-May-2022 16:04
Cadmium	ND		0.00200	mg/L	1	26-May-2022 16:04
Chromium	ND		0.00400	mg/L	1	26-May-2022 16:04
Iron	**3.61**		**0.200**	**mg/L**	1	26-May-2022 16:04
Lead	ND		0.00200	mg/L	1	26-May-2022 16:04
Manganese	**0.545**		**0.00500**	**mg/L**	1	26-May-2022 16:04
Strontium	**0.670**		**0.00500**	**mg/L**	1	26-May-2022 16:04
Zinc	ND		0.00400	mg/L	1	26-May-2022 16:04
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:29
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:46
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**928**		**10.0**	**mg/L**	1	19-May-2022 10:59
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**373**		**5.00**	**mg/L**	1	17-May-2022 21:00
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 21:00
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**295**		**5.00**	**mg/L**	10	26-May-2022 21:02
Sulfate	**3.35**		**0.500**	**mg/L**	1	26-May-2022 20:57

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-6B
Collection Date: 12-May-2022 13:00

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 03:21
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 03:21
Toluene	**3.5**		**1.0**	**ug/L**	1	21-May-2022 03:21
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 03:21
Surr: 1,2-Dichloroethane-d4	*115*		*70-126*	*%REC*	*1*	*21-May-2022 03:21*
Surr: 4-Bromofluorobenzene	*101*		*77-113*	*%REC*	*1*	*21-May-2022 03:21*
Surr: Dibromofluoromethane	*110*		*77-123*	*%REC*	*1*	*21-May-2022 03:21*
Surr: Toluene-d8	*93.5*		*82-127*	*%REC*	*1*	*21-May-2022 03:21*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	16-May-2022 18:17
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 18:17
Aromatics >C8 - C10	ND		0.0100	mg/L	1	16-May-2022 18:17
Surr: 2,5-Dibromotoluene (Aliphatic)	*83.2*		*70-130*	*%REC*	*1*	*16-May-2022 18:17*
Surr: 2,5-Dibromotoluene (Aromatic)	*103*		*70-130*	*%REC*	*1*	*16-May-2022 18:17*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 19-May-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 02:58
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	26-May-2022 02:58
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	26-May-2022 02:58
Aromatics >C10 - C12	ND		0.00100	mg/L	1	26-May-2022 03:29
Aromatics >C12 - C16	ND		0.00400	mg/L	1	26-May-2022 03:29
Aromatics >C16 - C21	ND		0.00300	mg/L	1	26-May-2022 03:29
Aromatics >C21 - C35	ND		0.00900	mg/L	1	26-May-2022 03:29
Surr: 1-Chlorooctadecane	*67.5*		*40-140*	*%REC*	*1*	*26-May-2022 02:58*
Surr: 2-Bromonaphthalene	*119*		*40-140*	*%REC*	*1*	*26-May-2022 03:29*
Surr: 2-Fluorobiphenyl	*87.4*		*40-140*	*%REC*	*1*	*26-May-2022 03:29*
Surr: o-Terphenyl	*76.1*		*40-140*	*%REC*	*1*	*26-May-2022 03:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-6B
Collection Date: 12-May-2022 13:00

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 24-May-2022		Analyst: JHD
Arsenic	**0.0157**		**0.00200**	**mg/L**	1	26-May-2022 20:58
Barium	**0.242**		**0.00400**	**mg/L**	1	26-May-2022 20:58
Cadmium	ND		0.00200	mg/L	1	26-May-2022 20:58
Calcium	**47.5**		**0.500**	**mg/L**	1	26-May-2022 20:58
Chromium	ND		0.00400	mg/L	1	26-May-2022 20:58
Iron	**1.30**		**0.200**	**mg/L**	1	26-May-2022 20:58
Lead	ND		0.00200	mg/L	1	26-May-2022 20:58
Magnesium	**14.2**		**0.200**	**mg/L**	1	26-May-2022 20:58
Manganese	**0.163**		**0.00500**	**mg/L**	1	26-May-2022 20:58
Potassium	**3.11**		**0.200**	**mg/L**	1	26-May-2022 20:58
Sodium	**76.2**		**0.200**	**mg/L**	1	26-May-2022 20:58
Strontium	**0.308**		**0.00500**	**mg/L**	1	26-May-2022 20:58
Zinc	ND		0.00400	mg/L	1	26-May-2022 20:58
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 25-May-2022		Analyst: JHD
Arsenic	**0.0171**		**0.00200**	**mg/L**	1	26-May-2022 16:06
Barium	**0.250**		**0.00400**	**mg/L**	1	26-May-2022 16:06
Cadmium	ND		0.00200	mg/L	1	26-May-2022 16:06
Chromium	ND		0.00400	mg/L	1	26-May-2022 16:06
Iron	**1.19**		**0.200**	**mg/L**	1	26-May-2022 16:06
Lead	ND		0.00200	mg/L	1	26-May-2022 16:06
Manganese	**0.174**		**0.00500**	**mg/L**	1	26-May-2022 16:06
Strontium	**0.323**		**0.00500**	**mg/L**	1	26-May-2022 16:06
Zinc	ND		0.00400	mg/L	1	26-May-2022 16:06
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 23-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	23-May-2022 16:31
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 16-May-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	16-May-2022 13:48
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**454**		**10.0**	**mg/L**	1	19-May-2022 10:59
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**253**		**5.00**	**mg/L**	1	17-May-2022 21:06
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	17-May-2022 21:06
ANIONS BY SW9056A		**Method:SW9056**				Analyst: YP
Chloride	**75.2**		**0.500**	**mg/L**	1	26-May-2022 21:08
Sulfate	**46.0**		**0.500**	**mg/L**	1	26-May-2022 21:08

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: Trip Blank
Collection Date: 09-May-2022 00:00

ANALYTICAL REPORT
WorkOrder:HS22050622
Lab ID:HS22050622-13
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	ND		1.0	ug/L	1	21-May-2022 11:10
Ethylbenzene	ND		1.0	ug/L	1	21-May-2022 11:10
Toluene	ND		1.0	ug/L	1	21-May-2022 11:10
Xylenes, Total	ND		1.0	ug/L	1	21-May-2022 11:10
Surr: 1,2-Dichloroethane-d4	*102*		*70-126*	*%REC*	*1*	*21-May-2022 11:10*
Surr: 4-Bromofluorobenzene	*99.0*		*77-113*	*%REC*	*1*	*21-May-2022 11:10*
Surr: Dibromofluoromethane	*94.6*		*77-123*	*%REC*	*1*	*21-May-2022 11:10*
Surr: Toluene-d8	*101*		*82-127*	*%REC*	*1*	*21-May-2022 11:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

Batch ID: 178852 **Start Date:** 16 May 2022 08:00 **End Date:** 16 May 2022 11:00
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22050622-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-11		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-12		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 179013 **Start Date:** 19 May 2022 10:30 **End Date:** 19 May 2022 15:00
Method: MA EPH EXTRACTION-FRACTIONATION **Prep Code:** MA EPH_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22050622-01		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-02		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-03		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-04		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-05		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-06		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-07		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-08		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-09		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-10		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-11		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat
HS22050622-12		1000 (mL)	2 (mL)	0.002	1-liter amber glass, Neat

Batch ID: 179119 **Start Date:** 23 May 2022 08:30 **End Date:** 23 May 2022 11:30
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22050622-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-11		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-12		10 (mL)	10 (mL)	1	120 plastic HNO3

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

Batch ID: 179159 **Start Date:** 24 May 2022 10:00 **End Date:** 24 May 2022 14:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22050622-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-11		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-12		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 179233 **Start Date:** 25 May 2022 12:30 **End Date:** 25 May 2022 16:30
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22050622-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-11		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22050622-12		10 (mL)	10 (mL)	1	120 plastic HNO3

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 178852 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15		16 May 2022 08:00	16 May 2022 13:04	1
HS22050622-02	CD-9A	09 May 2022 14:25		16 May 2022 08:00	16 May 2022 13:18	1
HS22050622-03	CD-5C	09 May 2022 17:00		16 May 2022 08:00	16 May 2022 13:19	1
HS22050622-04	CD-10A	10 May 2022 09:45		16 May 2022 08:00	16 May 2022 13:21	1
HS22050622-05	CD-8B	10 May 2022 11:35		16 May 2022 08:00	16 May 2022 13:23	1
HS22050622-06	CD-8A	10 May 2022 14:30		16 May 2022 08:00	16 May 2022 13:28	1
HS22050622-07	CD-11A	10 May 2022 15:50		16 May 2022 08:00	16 May 2022 13:30	1
HS22050622-08	CD-11B	11 May 2022 10:00		16 May 2022 08:00	16 May 2022 13:32	1
HS22050622-09	CD-7B	11 May 2022 14:35		16 May 2022 08:00	16 May 2022 13:33	1
HS22050622-10	CD-7C	12 May 2022 08:55		16 May 2022 08:00	16 May 2022 13:44	1
HS22050622-11	CD-6A	12 May 2022 10:25		16 May 2022 08:00	16 May 2022 13:46	1
HS22050622-12	CD-6B	12 May 2022 13:00		16 May 2022 08:00	16 May 2022 13:48	1
Batch ID: 179013 (0)	**Test Name :** MASSACHUSETTS EPH R2.1, DEC 2019				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15		19 May 2022 10:30	25 May 2022 20:38	1
HS22050622-01	CD-9B	09 May 2022 12:15		19 May 2022 10:30	25 May 2022 20:06	1
HS22050622-02	CD-9A	09 May 2022 14:25		19 May 2022 10:30	25 May 2022 21:09	1
HS22050622-02	CD-9A	09 May 2022 14:25		19 May 2022 10:30	25 May 2022 20:38	1
HS22050622-03	CD-5C	09 May 2022 17:00		19 May 2022 10:30	25 May 2022 21:41	1
HS22050622-03	CD-5C	09 May 2022 17:00		19 May 2022 10:30	25 May 2022 21:09	1
HS22050622-04	CD-10A	10 May 2022 09:45		19 May 2022 10:30	25 May 2022 22:13	1
HS22050622-04	CD-10A	10 May 2022 09:45		19 May 2022 10:30	25 May 2022 21:41	1
HS22050622-05	CD-8B	10 May 2022 11:35		19 May 2022 10:30	25 May 2022 22:45	1
HS22050622-05	CD-8B	10 May 2022 11:35		19 May 2022 10:30	25 May 2022 22:13	1
HS22050622-06	CD-8A	10 May 2022 14:30		19 May 2022 10:30	25 May 2022 23:16	1
HS22050622-06	CD-8A	10 May 2022 14:30		19 May 2022 10:30	25 May 2022 22:45	1
HS22050622-07	CD-11A	10 May 2022 15:50		19 May 2022 10:30	25 May 2022 23:48	1
HS22050622-07	CD-11A	10 May 2022 15:50		19 May 2022 10:30	25 May 2022 23:16	1
HS22050622-08	CD-11B	11 May 2022 10:00		19 May 2022 10:30	26 May 2022 01:23	1
HS22050622-08	CD-11B	11 May 2022 10:00		19 May 2022 10:30	26 May 2022 00:51	1
HS22050622-09	CD-7B	11 May 2022 14:35		19 May 2022 10:30	26 May 2022 01:54	1
HS22050622-09	CD-7B	11 May 2022 14:35		19 May 2022 10:30	26 May 2022 01:23	1
HS22050622-10	CD-7C	12 May 2022 08:55		19 May 2022 10:30	26 May 2022 02:26	1
HS22050622-10	CD-7C	12 May 2022 08:55		19 May 2022 10:30	26 May 2022 01:54	1
HS22050622-11	CD-6A	12 May 2022 10:25		19 May 2022 10:30	26 May 2022 02:58	1
HS22050622-11	CD-6A	12 May 2022 10:25		19 May 2022 10:30	26 May 2022 02:26	1
HS22050622-12	CD-6B	12 May 2022 13:00		19 May 2022 10:30	26 May 2022 03:29	1
HS22050622-12	CD-6B	12 May 2022 13:00		19 May 2022 10:30	26 May 2022 02:58	1

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 179119 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15		23 May 2022 08:30	23 May 2022 15:56	1
HS22050622-02	CD-9A	09 May 2022 14:25		23 May 2022 08:30	23 May 2022 16:09	1
HS22050622-03	CD-5C	09 May 2022 17:00		23 May 2022 08:30	23 May 2022 16:11	1
HS22050622-04	CD-10A	10 May 2022 09:45		23 May 2022 08:30	23 May 2022 16:13	1
HS22050622-05	CD-8B	10 May 2022 11:35		23 May 2022 08:30	23 May 2022 16:14	1
HS22050622-06	CD-8A	10 May 2022 14:30		23 May 2022 08:30	23 May 2022 16:16	1
HS22050622-07	CD-11A	10 May 2022 15:50		23 May 2022 08:30	23 May 2022 16:18	1
HS22050622-08	CD-11B	11 May 2022 10:00		23 May 2022 08:30	23 May 2022 16:20	1
HS22050622-09	CD-7B	11 May 2022 14:35		23 May 2022 08:30	23 May 2022 16:21	1
HS22050622-10	CD-7C	12 May 2022 08:55		23 May 2022 08:30	23 May 2022 16:28	1
HS22050622-11	CD-6A	12 May 2022 10:25		23 May 2022 08:30	23 May 2022 16:29	1
HS22050622-12	CD-6B	12 May 2022 13:00		23 May 2022 08:30	23 May 2022 16:31	1
Batch ID: 179159 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15		24 May 2022 10:00	26 May 2022 20:35	1
HS22050622-02	CD-9A	09 May 2022 14:25		24 May 2022 10:00	26 May 2022 20:21	1
HS22050622-03	CD-5C	09 May 2022 17:00		24 May 2022 10:00	26 May 2022 20:37	1
HS22050622-04	CD-10A	10 May 2022 09:45		24 May 2022 10:00	26 May 2022 20:39	1
HS22050622-05	CD-8B	10 May 2022 11:35		24 May 2022 10:00	27 May 2022 14:29	20
HS22050622-05	CD-8B	10 May 2022 11:35		24 May 2022 10:00	26 May 2022 20:41	1
HS22050622-06	CD-8A	10 May 2022 14:30		24 May 2022 10:00	26 May 2022 20:43	1
HS22050622-07	CD-11A	10 May 2022 15:50		24 May 2022 10:00	26 May 2022 20:45	1
HS22050622-08	CD-11B	11 May 2022 10:00		24 May 2022 10:00	26 May 2022 20:47	1
HS22050622-09	CD-7B	11 May 2022 14:35		24 May 2022 10:00	26 May 2022 20:49	1
HS22050622-10	CD-7C	12 May 2022 08:55		24 May 2022 10:00	26 May 2022 20:51	1
HS22050622-11	CD-6A	12 May 2022 10:25		24 May 2022 10:00	26 May 2022 20:53	1
HS22050622-12	CD-6B	12 May 2022 13:00		24 May 2022 10:00	26 May 2022 20:58	1

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 179233 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15		25 May 2022 12:30	26 May 2022 15:29	1
HS22050622-02	CD-9A	09 May 2022 14:25		25 May 2022 12:30	26 May 2022 15:31	1
HS22050622-03	CD-5C	09 May 2022 17:00		25 May 2022 12:30	26 May 2022 15:33	1
HS22050622-04	CD-10A	10 May 2022 09:45		25 May 2022 12:30	26 May 2022 15:35	1
HS22050622-05	CD-8B	10 May 2022 11:35		25 May 2022 12:30	26 May 2022 15:37	1
HS22050622-06	CD-8A	10 May 2022 14:30		25 May 2022 12:30	26 May 2022 15:39	1
HS22050622-07	CD-11A	10 May 2022 15:50		25 May 2022 12:30	26 May 2022 15:41	1
HS22050622-08	CD-11B	11 May 2022 10:00		25 May 2022 12:30	26 May 2022 15:43	1
HS22050622-09	CD-7B	11 May 2022 14:35		25 May 2022 12:30	26 May 2022 15:54	1
HS22050622-10	CD-7C	12 May 2022 08:55		25 May 2022 12:30	26 May 2022 16:02	1
HS22050622-11	CD-6A	12 May 2022 10:25		25 May 2022 12:30	26 May 2022 16:04	1
HS22050622-12	CD-6B	12 May 2022 13:00		25 May 2022 12:30	26 May 2022 16:06	1
Batch ID: R408667 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15			16 May 2022 12:18	1
HS22050622-02	CD-9A	09 May 2022 14:25			16 May 2022 12:45	1
HS22050622-03	CD-5C	09 May 2022 17:00			16 May 2022 13:13	1
HS22050622-04	CD-10A	10 May 2022 09:45			16 May 2022 13:40	1
HS22050622-05	CD-8B	10 May 2022 11:35			16 May 2022 14:08	1
HS22050622-06	CD-8A	10 May 2022 14:30			16 May 2022 14:36	1
HS22050622-07	CD-11A	10 May 2022 15:50			16 May 2022 15:03	1
HS22050622-08	CD-11B	11 May 2022 10:00			16 May 2022 16:26	1
HS22050622-09	CD-7B	11 May 2022 14:35			16 May 2022 16:54	1
HS22050622-10	CD-7C	12 May 2022 08:55			16 May 2022 17:22	1
HS22050622-11	CD-6A	12 May 2022 10:25			16 May 2022 17:49	1
HS22050622-12	CD-6B	12 May 2022 13:00			16 May 2022 18:17	1
Batch ID: R408672 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15			16 May 2022 12:18	1
HS22050622-02	CD-9A	09 May 2022 14:25			16 May 2022 12:45	1
HS22050622-03	CD-5C	09 May 2022 17:00			16 May 2022 13:13	1
HS22050622-04	CD-10A	10 May 2022 09:45			16 May 2022 13:40	1
HS22050622-05	CD-8B	10 May 2022 11:35			16 May 2022 14:08	1
HS22050622-06	CD-8A	10 May 2022 14:30			16 May 2022 14:36	1
HS22050622-07	CD-11A	10 May 2022 15:50			16 May 2022 15:03	1
HS22050622-08	CD-11B	11 May 2022 10:00			16 May 2022 16:26	1
HS22050622-09	CD-7B	11 May 2022 14:35			16 May 2022 16:54	1
HS22050622-10	CD-7C	12 May 2022 08:55			16 May 2022 17:22	1
HS22050622-11	CD-6A	12 May 2022 10:25			16 May 2022 17:49	1
HS22050622-12	CD-6B	12 May 2022 13:00			16 May 2022 18:17	1

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R408774 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15			16 May 2022 15:39	1
HS22050622-02	CD-9A	09 May 2022 14:25			16 May 2022 15:39	1
HS22050622-03	CD-5C	09 May 2022 17:00			16 May 2022 15:39	1
Batch ID: R408804 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15			17 May 2022 19:06	1
HS22050622-02	CD-9A	09 May 2022 14:25			17 May 2022 19:42	1
HS22050622-03	CD-5C	09 May 2022 17:00			17 May 2022 19:48	1
HS22050622-04	CD-10A	10 May 2022 09:45			17 May 2022 19:56	1
HS22050622-05	CD-8B	10 May 2022 11:35			17 May 2022 20:02	1
HS22050622-06	CD-8A	10 May 2022 14:30			17 May 2022 20:09	1
HS22050622-07	CD-11A	10 May 2022 15:50			17 May 2022 20:15	1
HS22050622-08	CD-11B	11 May 2022 10:00			17 May 2022 20:22	1
HS22050622-09	CD-7B	11 May 2022 14:35			17 May 2022 20:29	1
HS22050622-10	CD-7C	12 May 2022 08:55			17 May 2022 20:53	1
HS22050622-11	CD-6A	12 May 2022 10:25			17 May 2022 21:00	1
HS22050622-12	CD-6B	12 May 2022 13:00			17 May 2022 21:06	1
Batch ID: R408848 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Groundwater	
HS22050622-04	CD-10A	10 May 2022 09:45			17 May 2022 15:39	1
HS22050622-05	CD-8B	10 May 2022 11:35			17 May 2022 15:39	1
HS22050622-06	CD-8A	10 May 2022 14:30			17 May 2022 15:39	1
HS22050622-07	CD-11A	10 May 2022 15:50			17 May 2022 15:39	1
Batch ID: R408949 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Groundwater	
HS22050622-08	CD-11B	11 May 2022 10:00			18 May 2022 16:24	1
HS22050622-09	CD-7B	11 May 2022 14:35			18 May 2022 16:24	1
Batch ID: R408984 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Groundwater	
HS22050622-10	CD-7C	12 May 2022 08:55			19 May 2022 10:59	1
HS22050622-11	CD-6A	12 May 2022 10:25			19 May 2022 10:59	1
HS22050622-12	CD-6B	12 May 2022 13:00			19 May 2022 10:59	1

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R409070 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15			20 May 2022 22:07	1
HS22050622-02	CD-9A	09 May 2022 14:25			21 May 2022 00:05	1
HS22050622-03	CD-5C	09 May 2022 17:00			21 May 2022 00:25	1
HS22050622-04	CD-10A	10 May 2022 09:45			21 May 2022 00:44	1
HS22050622-05	CD-8B	10 May 2022 11:35			21 May 2022 01:04	1
HS22050622-06	CD-8A	10 May 2022 14:30			21 May 2022 01:23	1
HS22050622-07	CD-11A	10 May 2022 15:50			21 May 2022 01:43	1
HS22050622-08	CD-11B	11 May 2022 10:00			21 May 2022 02:03	1
HS22050622-09	CD-7B	11 May 2022 14:35			21 May 2022 02:22	1
HS22050622-10	CD-7C	12 May 2022 08:55			21 May 2022 02:42	1
HS22050622-11	CD-6A	12 May 2022 10:25			21 May 2022 03:02	1
HS22050622-12	CD-6B	12 May 2022 13:00			21 May 2022 03:21	1
Batch ID: R409104 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS22050622-13	Trip Blank	09 May 2022 00:00			21 May 2022 11:10	1
Batch ID: R409511 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS22050622-01	CD-9B	09 May 2022 12:15			26 May 2022 17:53	1
HS22050622-02	CD-9A	09 May 2022 14:25			26 May 2022 18:40	1
HS22050622-03	CD-5C	09 May 2022 17:00			26 May 2022 19:06	10
HS22050622-03	CD-5C	09 May 2022 17:00			26 May 2022 19:01	1
HS22050622-04	CD-10A	10 May 2022 09:45			26 May 2022 19:27	1
HS22050622-05	CD-8B	10 May 2022 11:35			26 May 2022 19:43	10
HS22050622-05	CD-8B	10 May 2022 11:35			26 May 2022 19:38	1
HS22050622-06	CD-8A	10 May 2022 14:30			26 May 2022 19:49	1
HS22050622-07	CD-11A	10 May 2022 15:50			26 May 2022 20:04	10
HS22050622-07	CD-11A	10 May 2022 15:50			26 May 2022 19:59	1
HS22050622-08	CD-11B	11 May 2022 10:00			26 May 2022 20:10	1
HS22050622-09	CD-7B	11 May 2022 14:35			26 May 2022 20:41	5
HS22050622-09	CD-7B	11 May 2022 14:35			26 May 2022 20:36	1
HS22050622-10	CD-7C	12 May 2022 08:55			26 May 2022 20:52	5
HS22050622-11	CD-6A	12 May 2022 10:25			26 May 2022 21:02	10
HS22050622-11	CD-6A	12 May 2022 10:25			26 May 2022 20:57	1
HS22050622-12	CD-6B	12 May 2022 13:00			26 May 2022 21:08	1

Revision: 1

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Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179013 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MBLK Sample ID: **MBLK-179013** Units: **mg/L** Analysis Date: **25-May-2022 18:31**
Client ID: Run ID: **FID-7_409555** SeqNo: **6668206** PrepDate: **19-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	ND	0.00100								
Aliphatics >C12 - C16	ND	0.00200								
Aliphatics >C16 - C35	ND	0.00800								
Surr: 1-Chlorooctadecane	*0.02881*	*0*	*0.04*	*0*	*72.0*	*40 - 140*				

MBLK Sample ID: **MBLK-179013** Units: **mg/L** Analysis Date: **25-May-2022 19:03**
Client ID: Run ID: **FID-8_409561** SeqNo: **6668378** PrepDate: **19-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	ND	0.00100								
Aromatics >C12 - C16	ND	0.00400								
Aromatics >C16 - C21	ND	0.00300								
Aromatics >C21 - C35	ND	0.00900								
Surr: 2-Bromonaphthalene	*0.0407*	*0*	*0.04*	*0*	*102*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.04385*	*0*	*0.04*	*0*	*110*	*40 - 140*				
Surr: o-Terphenyl	*0.02965*	*0*	*0.04*	*0*	*74.1*	*40 - 140*				

LCS Sample ID: **LCS-179013** Units: **mg/L** Analysis Date: **25-May-2022 19:03**
Client ID: Run ID: **FID-7_409555** SeqNo: **6668207** PrepDate: **19-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.03769	0.00100	0.05	0	75.4	40 - 140				
Aliphatics >C12 - C16	0.07639	0.00200	0.1	0	76.4	40 - 140				
Aliphatics >C16 - C35	0.3113	0.00800	0.4	0	77.8	40 - 140				
Surr: 1-Chlorooctadecane	*0.02289*	*0*	*0.04*	*0*	*57.2*	*40 - 140*				

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179013 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS-179013** Units: **mg/L** Analysis Date: **25-May-2022 19:35**
Client ID: Run ID: **FID-8_409561** SeqNo: **6668379** PrepDate: **19-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.04198	0.00100	0.05	0	84.0	40 - 140				
Aromatics >C12 - C16	0.1776	0.00400	0.2	0	88.8	40 - 140				
Aromatics >C16 - C21	0.1588	0.00300	0.15	0	106	40 - 140				
Aromatics >C21 - C35	0.4201	0.00900	0.45	0	93.3	40 - 140				
Surr: 2-Bromonaphthalene	*0.04552*	*0*	*0.04*	*0*	*114*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.04516*	*0*	*0.04*	*0*	*113*	*40 - 140*				
Surr: o-Terphenyl	*0.02659*	*0*	*0.04*	*0*	*66.5*	*40 - 140*				

LCSD Sample ID: **LCSD-179013** Units: **mg/L** Analysis Date: **25-May-2022 19:35**
Client ID: Run ID: **FID-7_409555** SeqNo: **6668208** PrepDate: **19-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.03206	0.00100	0.05	0	64.1	40 - 140	0.03769	16.1	50	
Aliphatics >C12 - C16	0.0664	0.00200	0.1	0	66.4	40 - 140	0.07639	14	50	
Aliphatics >C16 - C35	0.2719	0.00800	0.4	0	68.0	40 - 140	0.3113	13.5	50	
Surr: 1-Chlorooctadecane	*0.01949*	*0*	*0.04*	*0*	*48.7*	*40 - 140*	*0.02289*	*16*	*50*	

LCSD Sample ID: **LCSD-179013** Units: **mg/L** Analysis Date: **25-May-2022 20:06**
Client ID: Run ID: **FID-8_409561** SeqNo: **6668380** PrepDate: **19-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.04096	0.00100	0.05	0	81.9	40 - 140	0.04198	2.48	50	
Aromatics >C12 - C16	0.1785	0.00400	0.2	0	89.2	40 - 140	0.1776	0.522	50	
Aromatics >C16 - C21	0.1564	0.00300	0.15	0	104	40 - 140	0.1588	1.49	50	
Aromatics >C21 - C35	0.4384	0.00900	0.45	0	97.4	40 - 140	0.4201	4.26	50	
Surr: 2-Bromonaphthalene	*0.04428*	*0*	*0.04*	*0*	*111*	*40 - 140*	*0.04552*	*2.76*	*50*	
Surr: 2-Fluorobiphenyl	*0.04373*	*0*	*0.04*	*0*	*109*	*40 - 140*	*0.04516*	*3.21*	*50*	
Surr: o-Terphenyl	*0.02647*	*0*	*0.04*	*0*	*66.2*	*40 - 140*	*0.02659*	*0.462*	*50*	

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R408667 (0) **Instrument:** FID-14 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-220516** Units: **mg/L** Analysis Date: **16-May-2022 11:50**
Client ID: Run ID: **FID-14_408667** SeqNo: **6647418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	ND	0.0100								
Aliphatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2062*	*0.0100*	*0.25*	*0*	*82.5*	*70 - 130*				

LCS Sample ID: **LCS-220516** Units: **mg/L** Analysis Date: **16-May-2022 10:55**
Client ID: Run ID: **FID-14_408667** SeqNo: **6647416** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02327	0.0100	0.025	0	93.1	70 - 130				
Aliphatics >C8 - C10	0.02608	0.0100	0.025	0	104	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.1937*	*0.0100*	*0.25*	*0*	*77.5*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.1937*	*0.0100*	*0.25*	*0*	*77.5*	*70 - 130*				

LCSD Sample ID: **LCSD-220516** Units: **mg/L** Analysis Date: **16-May-2022 11:22**
Client ID: Run ID: **FID-14_408667** SeqNo: **6647417** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.0219	0.0100	0.025	0	87.6	70 - 130	0.02327	6.11	25	
Aliphatics >C8 - C10	0.02627	0.0100	0.025	0	105	70 - 130	0.02608	0.737	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.1961*	*0.0100*	*0.25*	*0*	*78.5*	*70 - 130*	*0.1937*	*1.23*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.1961*	*0.0100*	*0.25*	*0*	*78.5*	*70 - 130*	*0.1937*	*1.23*	*25*	

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R408672 (0) **Instrument:** FID-15 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-220516** Units: **mg/L** Analysis Date: **16-May-2022 11:50**
Client ID: Run ID: **FID-15_408672** SeqNo: **6647579** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2112*	*0.0100*	*0.25*	*0*	*84.5*	*70 - 130*				

LCS Sample ID: **LCS-220516** Units: **mg/L** Analysis Date: **16-May-2022 10:55**
Client ID: Run ID: **FID-15_408672** SeqNo: **6647577** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08621	0.0100	0.1	0	86.2	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2061*	*0.0100*	*0.25*	*0*	*82.4*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2061*	*0.0100*	*0.25*	*0*	*82.4*	*70 - 130*				

LCSD Sample ID: **LCSD-220516** Units: **mg/L** Analysis Date: **16-May-2022 11:22**
Client ID: Run ID: **FID-15_408672** SeqNo: **6647578** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08875	0.0100	0.1	0	88.8	70 - 130	0.08621	2.9	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.313*	*0.0100*	*0.25*	*0*	*125*	*70 - 130*	*0.2061*	*41.2*	*25*	R
Surr: 2,5-Dibromotoluene (Aromatic)	*0.313*	*0.0100*	*0.25*	*0*	*125*	*70 - 130*	*0.2061*	*41.2*	*25*	R

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 178852 (0) **Instrument:** HG03 **Method:** DISSOLVED MERCURY BY SW7470A (DISSOLVED)

MBLK Sample ID: **MBLKF2-178852** Units: **mg/L** Analysis Date: **16-May-2022 12:59**
Client ID: Run ID: **HG03_408662** SeqNo: **6647319** PrepDate: **16-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

MBLK Sample ID: **MBLKF1-178852** Units: **mg/L** Analysis Date: **16-May-2022 12:57**
Client ID: Run ID: **HG03_408662** SeqNo: **6647318** PrepDate: **16-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

MBLK Sample ID: **MBLK-178852** Units: **mg/L** Analysis Date: **16-May-2022 12:54**
Client ID: Run ID: **HG03_408662** SeqNo: **6647317** PrepDate: **16-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-178852** Units: **mg/L** Analysis Date: **16-May-2022 13:03**
Client ID: Run ID: **HG03_408662** SeqNo: **6647290** PrepDate: **16-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00461	0.000200	0.005	0	92.2	80 - 120				

MS Sample ID: **HS22050622-01MS** Units: **mg/L** Analysis Date: **16-May-2022 13:06**
Client ID: **CD-9B** Run ID: **HG03_408662** SeqNo: **6647292** PrepDate: **16-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00466	0.000200	0.005	0.00014	90.4	80 - 120				

MSD Sample ID: **HS22050622-01MSD** Units: **mg/L** Analysis Date: **16-May-2022 13:14**
Client ID: **CD-9B** Run ID: **HG03_408662** SeqNo: **6647295** PrepDate: **16-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00479	0.000200	0.005	0.00014	93.0	80 - 120	0.00466	2.75	20	

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179119 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-179119** Units: **mg/L** Analysis Date: **23-May-2022 15:52**
Client ID: Run ID: **HG03_409130** SeqNo: **6659107** PrepDate: **23-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-179119** Units: **mg/L** Analysis Date: **23-May-2022 15:54**
Client ID: Run ID: **HG03_409130** SeqNo: **6659108** PrepDate: **23-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00566	0.000200	0.005	0	113	80 - 120				

MS Sample ID: **HS22050622-01MS** Units: **mg/L** Analysis Date: **23-May-2022 15:58**
Client ID: **CD-9B** Run ID: **HG03_409130** SeqNo: **6659110** PrepDate: **23-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00614	0.000200	0.005	-0.000037	124	75 - 125				

MSD Sample ID: **HS22050622-01MSD** Units: **mg/L** Analysis Date: **23-May-2022 15:59**
Client ID: **CD-9B** Run ID: **HG03_409130** SeqNo: **6659111** PrepDate: **23-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00623	0.000200	0.005	-0.000037	125	75 - 125	0.00614	1.46	20	S

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179159 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-179159** Units: **mg/L** Analysis Date: **26-May-2022 20:17**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6666100** PrepDate: **24-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Calcium	ND	0.500								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Magnesium	ND	0.200								
Manganese	ND	0.00500								
Potassium	ND	0.200								
Sodium	ND	0.200								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

LCS Sample ID: **LCS-179159** Units: **mg/L** Analysis Date: **26-May-2022 20:19**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6666101** PrepDate: **24-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05048	0.00200	0.05	0	101	80 - 120				
Barium	0.04819	0.00400	0.05	0	96.4	80 - 120				
Cadmium	0.04985	0.00200	0.05	0	99.7	80 - 120				
Calcium	5.125	0.500	5	0	102	80 - 120				
Chromium	0.04752	0.00400	0.05	0	95.0	80 - 120				
Iron	5.145	0.200	5	0	103	80 - 120				
Lead	0.0486	0.00200	0.05	0	97.2	80 - 120				
Magnesium	5.126	0.200	5	0	103	80 - 120				
Manganese	0.04892	0.00500	0.05	0	97.8	80 - 120				
Potassium	5.055	0.200	5	0	101	80 - 120				
Sodium	5.14	0.200	5	0	103	80 - 120				
Strontium	0.09982	0.00500	0.1	0	99.8	80 - 120				
Zinc	0.05153	0.00400	0.05	0	103	80 - 120				

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179159 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

MS Sample ID: **HS22050622-02MS** Units: **mg/L** Analysis Date: **26-May-2022 20:25**
Client ID: **CD-9A** Run ID: **ICPMS06_409429** SeqNo: **6666104** PrepDate: **24-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06649	0.00200	0.05	0.01596	101	80 - 120				
Barium	0.5633	0.00400	0.05	0.5231	80.5	80 - 120				O
Cadmium	0.05018	0.00200	0.05	-0.000005	100	80 - 120				
Calcium	89.07	0.500	5	84.77	86.0	80 - 120				O
Chromium	0.04742	0.00400	0.05	0.000565	93.7	80 - 120				
Iron	6.512	0.200	5	1.623	97.8	80 - 120				
Lead	0.04884	0.00200	0.05	-0.000062	97.8	80 - 120				
Magnesium	30.98	0.200	5	25.95	101	80 - 120				O
Manganese	0.4047	0.00500	0.05	0.3614	86.4	80 - 120				O
Potassium	6.991	0.200	5	1.978	100	80 - 120				
Sodium	83.26	0.200	5	78.67	91.7	80 - 120				O
Strontium	0.6235	0.00500	0.1	0.5424	81.1	80 - 120				O
Zinc	0.05167	0.00400	0.05	0.00172	99.9	80 - 120				

MSD Sample ID: **HS22050622-02MSD** Units: **mg/L** Analysis Date: **26-May-2022 20:27**
Client ID: **CD-9A** Run ID: **ICPMS06_409429** SeqNo: **6666105** PrepDate: **24-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06665	0.00200	0.05	0.01596	101	80 - 120	0.06649	0.236	20	
Barium	0.567	0.00400	0.05	0.5231	87.9	80 - 120	0.5633	0.655	20	O
Cadmium	0.04976	0.00200	0.05	-0.000005	99.5	80 - 120	0.05018	0.846	20	
Calcium	90.95	0.500	5	84.77	124	80 - 120	89.07	2.08	20	SO
Chromium	0.04749	0.00400	0.05	0.000565	93.8	80 - 120	0.04742	0.129	20	
Iron	6.679	0.200	5	1.623	101	80 - 120	6.512	2.52	20	
Lead	0.0509	0.00200	0.05	-0.000062	102	80 - 120	0.04884	4.13	20	
Magnesium	31.32	0.200	5	25.95	107	80 - 120	30.98	1.09	20	O
Manganese	0.4088	0.00500	0.05	0.3614	94.8	80 - 120	0.4047	1.03	20	O
Potassium	7.063	0.200	5	1.978	102	80 - 120	6.991	1.01	20	
Sodium	84.29	0.200	5	78.67	112	80 - 120	83.26	1.23	20	O
Strontium	0.6396	0.00500	0.1	0.5424	97.2	80 - 120	0.6235	2.56	20	O
Zinc	0.05132	0.00400	0.05	0.00172	99.2	80 - 120	0.05167	0.672	20	

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179159 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

PDS Sample ID: **HS22050622-02PDS** Units: **mg/L** Analysis Date: **26-May-2022 20:29**
Client ID: **CD-9A** Run ID: **ICPMS06_409429** SeqNo: **6666106** PrepDate: **24-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1095	0.00200	0.1	0.01596	93.6	75 - 125				
Barium	0.5813	0.00400	0.1	0.5231	58.2	75 - 125				SO
Cadmium	0.09398	0.00200	0.1	-0.000005	94.0	75 - 125				
Calcium	88.14	0.500	10	84.77	33.7	75 - 125				SO
Chromium	0.0879	0.00400	0.1	0.000565	87.3	75 - 125				
Iron	10.83	0.200	10	1.623	92.1	75 - 125				
Lead	0.09458	0.00200	0.1	-0.000062	94.6	75 - 125				
Magnesium	33.51	0.200	10	25.95	75.7	75 - 125				
Potassium	11.2	0.200	10	1.978	92.2	75 - 125				
Sodium	82.9	0.200	10	78.67	42.3	75 - 125				SO
Strontium	0.6012	0.00500	0.1	0.5424	58.8	75 - 125				SO
Zinc	0.09344	0.00400	0.1	0.00172	91.7	75 - 125				

SD Sample ID: **HS22050622-02SD** Units: **mg/L** Analysis Date: **26-May-2022 20:23**
Client ID: **CD-9A** Run ID: **ICPMS06_409429** SeqNo: **6666103** PrepDate: **24-May-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.01611	0.0100					0.01596	0.984	10	
Barium	0.5131	0.0200					0.5231	1.91	10	
Cadmium	ND	0.0100					-0.000005	0	10	
Calcium	86.04	2.50					84.77	1.49	10	
Chromium	ND	0.0200					0.000565	0	10	
Iron	1.691	1.00					1.623	4.22	10	
Lead	ND	0.0100					-0.000062	0	10	
Magnesium	26.79	1.00					25.95	3.24	10	
Manganese	0.3692	0.0250					0.3614	2.16	10	
Potassium	2.049	1.00					1.978	3.63	10	
Sodium	80.53	1.00					78.67	2.36	10	
Strontium	0.5334	0.0250					0.5424	1.67	10	
Zinc	ND	0.0200					0.00172	0	10	

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179233 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLKF1-179233** Units: **mg/L** Analysis Date: **26-May-2022 14:45**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6665812** PrepDate: **25-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

MBLK Sample ID: **MBLK-179233** Units: **mg/L** Analysis Date: **26-May-2022 14:44**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6665811** PrepDate: **25-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179233 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

LCS Sample ID: **LCS-179233** Units: **mg/L** Analysis Date: **26-May-2022 14:51**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6665813** PrepDate: **25-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04868	0.00200	0.05	0	97.4	80 - 120				
Barium	0.04707	0.00400	0.05	0	94.1	80 - 120				
Cadmium	0.04962	0.00200	0.05	0	99.2	80 - 120				
Chromium	0.04634	0.00400	0.05	0	92.7	80 - 120				
Iron	4.916	0.200	5	0	98.3	80 - 120				
Lead	0.04791	0.00200	0.05	0	95.8	80 - 120				
Manganese	0.04706	0.00500	0.05	0	94.1	80 - 120				
Strontium	0.09876	0.00500	0.1	0	98.8	80 - 120				
Zinc	0.05149	0.00400	0.05	0	103	80 - 120				

MS Sample ID: **HS22050493-01MS** Units: **mg/L** Analysis Date: **26-May-2022 14:57**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6665816** PrepDate: **25-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06327	0.00200	0.05	0.01215	102	75 - 125				
Barium	0.4661	0.00400	0.05	0.4062	120	75 - 125				O
Cadmium	0.05004	0.00200	0.05	0	100	75 - 125				
Chromium	0.04811	0.00400	0.05	0	96.2	75 - 125				
Iron	5.045	0.200	5	0.02602	100	75 - 125				
Lead	0.05022	0.00200	0.05	0	100	75 - 125				
Manganese	0.3686	0.00500	0.05	0.3286	80.0	75 - 125				O
Strontium	0.9059	0.00500	0.1	0.796	110	75 - 125				O
Zinc	0.06315	0.00400	0.05	0.01307	100	75 - 125				

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179233 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MSD Sample ID: **HS22050493-01MSD** Units: **mg/L** Analysis Date: **26-May-2022 14:59**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6665817** PrepDate: **25-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06431	0.00200	0.05	0.01215	104	75 - 125	0.06327	1.63	20	
Barium	0.4646	0.00400	0.05	0.4062	117	75 - 125	0.4661	0.332	20	O
Cadmium	0.04959	0.00200	0.05	0	99.2	75 - 125	0.05004	0.903	20	
Chromium	0.04902	0.00400	0.05	0	98.0	75 - 125	0.04811	1.87	20	
Iron	5.265	0.200	5	0.02602	105	75 - 125	5.045	4.26	20	
Lead	0.05083	0.00200	0.05	0	102	75 - 125	0.05022	1.22	20	
Manganese	0.3835	0.00500	0.05	0.3286	110	75 - 125	0.3686	3.96	20	O
Strontium	0.919	0.00500	0.1	0.796	123	75 - 125	0.9059	1.43	20	O
Zinc	0.06442	0.00400	0.05	0.01307	103	75 - 125	0.06315	1.99	20	

PDS Sample ID: **HS22050493-01PDS** Units: **mg/L** Analysis Date: **26-May-2022 15:01**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6665818** PrepDate: **25-May-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1149	0.00200	0.1	0.01215	103	75 - 125				
Barium	0.4898	0.00400	0.1	0.4062	83.6	75 - 125				O
Cadmium	0.101	0.00200	0.1	-0.000002	101	75 - 125				
Chromium	0.09866	0.00400	0.1	0.000311	98.4	75 - 125				
Iron	10.33	0.200	10	0.02602	103	75 - 125				
Lead	0.1041	0.00200	0.1	-0.000115	104	75 - 125				
Manganese	0.4064	0.00500	0.1	0.3286	77.8	75 - 125				
Strontium	0.8889	0.00500	0.1	0.796	92.9	75 - 125				O
Zinc	0.1124	0.00400	0.1	0.01307	99.3	75 - 125				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: 179233 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

SD Sample ID: **HS22050493-01SD** Units: **mg/L** Analysis Date: **26-May-2022 14:55**
Client ID: Run ID: **ICPMS06_409429** SeqNo: **6665815** PrepDate: **25-May-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.01216	0.0100					0.01215	0.14	10	
Barium	0.3931	0.0200					0.4062	3.23	10	
Cadmium	ND	0.0100					-0.000002	0	10	
Chromium	ND	0.0200					0.000311	0	10	
Iron	ND	1.00					0.02602	0	10	
Lead	ND	0.0100					-0.000115	0	10	
Manganese	0.3161	0.0250					0.3286	3.8	10	
Strontium	0.7871	0.0250					0.796	1.12	10	
Zinc	0.01331	0.0200					0.01307	0	10	J

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R409070 (0) **Instrument:** VOA7 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-220520** Units: **ug/L** Analysis Date: **20-May-2022 21:28**
Client ID: Run ID: **VOA7_409070** SeqNo: **6657477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*58.24*	*1.0*	*50*	*0*	*116*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.29*	*1.0*	*50*	*0*	*101*	*77 - 113*				
Surr: Dibromofluoromethane	*54.85*	*1.0*	*50*	*0*	*110*	*73 - 126*				
Surr: Toluene-d8	*47.15*	*1.0*	*50*	*0*	*94.3*	*81 - 120*				

LCS Sample ID: **VLCSW-220520** Units: **ug/L** Analysis Date: **20-May-2022 20:48**
Client ID: Run ID: **VOA7_409070** SeqNo: **6657476** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.74	1.0	20	0	98.7	74 - 120				
Ethylbenzene	18.33	1.0	20	0	91.7	77 - 117				
Toluene	17.51	1.0	20	0	87.6	77 - 118				
Xylenes, Total	56.03	1.0	60	0	93.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*57.33*	*1.0*	*50*	*0*	*115*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.26*	*1.0*	*50*	*0*	*103*	*77 - 113*				
Surr: Dibromofluoromethane	*54.4*	*1.0*	*50*	*0*	*109*	*73 - 126*				
Surr: Toluene-d8	*48.21*	*1.0*	*50*	*0*	*96.4*	*81 - 120*				

MS Sample ID: **HS22050622-12MS** Units: **ug/L** Analysis Date: **21-May-2022 04:20**
Client ID: **CD-6B** Run ID: **VOA7_409070** SeqNo: **6657498** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	24.54	1.0	20	0	123	70 - 127				
Ethylbenzene	20.96	1.0	20	0	105	70 - 124				
Toluene	25.25	1.0	20	3.499	109	70 - 123				
Xylenes, Total	65.4	1.0	60	0	109	70 - 130				
Surr: 1,2-Dichloroethane-d4	*53.86*	*1.0*	*50*	*0*	*108*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.7*	*1.0*	*50*	*0*	*99.4*	*77 - 113*				
Surr: Dibromofluoromethane	*51.45*	*1.0*	*50*	*0*	*103*	*77 - 123*				
Surr: Toluene-d8	*47.49*	*1.0*	*50*	*0*	*95.0*	*82 - 127*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: **R409070 (0)** **Instrument:** **VOA7** **Method:** **LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS22050622-12MSD** Units: **ug/L** Analysis Date: **21-May-2022 04:40**
Client ID: **CD-6B** Run ID: **VOA7_409070** SeqNo: **6657499** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22.82	1.0	20	0	114	70 - 127	24.54	7.28	20	
Ethylbenzene	20.02	1.0	20	0	100	70 - 124	20.96	4.59	20	
Toluene	21.46	1.0	20	3.499	89.8	70 - 123	25.25	16.2	20	
Xylenes, Total	60.47	1.0	60	0	101	70 - 130	65.4	7.83	20	
Surr: 1,2-Dichloroethane-d4	*58.97*	*1.0*	*50*	*0*	*118*	*70 - 126*	*53.86*	*9.05*	*20*	
Surr: 4-Bromofluorobenzene	*51.59*	*1.0*	*50*	*0*	*103*	*77 - 113*	*49.7*	*3.72*	*20*	
Surr: Dibromofluoromethane	*54.3*	*1.0*	*50*	*0*	*109*	*77 - 123*	*51.45*	*5.39*	*20*	
Surr: Toluene-d8	*47.17*	*1.0*	*50*	*0*	*94.3*	*82 - 127*	*47.49*	*0.675*	*20*	

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R409104 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-220521** Units: **ug/L** Analysis Date: **21-May-2022 10:48**
Client ID: Run ID: **VOA4_409104** SeqNo: **6658180** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*49.43*	*1.0*	*50*	*0*	*98.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.71*	*1.0*	*50*	*0*	*95.4*	*77 - 113*				
Surr: Dibromofluoromethane	*46.39*	*1.0*	*50*	*0*	*92.8*	*73 - 126*				
Surr: Toluene-d8	*50.58*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-220521** Units: **ug/L** Analysis Date: **21-May-2022 10:05**
Client ID: Run ID: **VOA4_409104** SeqNo: **6658205** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.82	1.0	20	0	94.1	74 - 120				
Ethylbenzene	19.64	1.0	20	0	98.2	77 - 117				
Toluene	18.99	1.0	20	0	94.9	77 - 118				
Xylenes, Total	64.23	1.0	60	0	107	75 - 122				
Surr: 1,2-Dichloroethane-d4	*54.02*	*1.0*	*50*	*0*	*108*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.14*	*1.0*	*50*	*0*	*100*	*77 - 113*				
Surr: Dibromofluoromethane	*51.83*	*1.0*	*50*	*0*	*104*	*73 - 126*				
Surr: Toluene-d8	*50.28*	*1.0*	*50*	*0*	*101*	*81 - 120*				

MS Sample ID: **HS22050694-07MS** Units: **ug/L** Analysis Date: **21-May-2022 18:50**
Client ID: Run ID: **VOA4_409104** SeqNo: **6658202** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	17.19	1.0	20	0	85.9	70 - 127				
Ethylbenzene	17.54	1.0	20	0	87.7	70 - 124				
Toluene	17.24	1.0	20	0	86.2	70 - 123				
Xylenes, Total	56.22	1.0	60	0	93.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.72*	*1.0*	*50*	*0*	*101*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.71*	*1.0*	*50*	*0*	*101*	*77 - 113*				
Surr: Dibromofluoromethane	*48.08*	*1.0*	*50*	*0*	*96.2*	*77 - 123*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*82 - 127*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R409104 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD Sample ID: **HS22050694-07MSD** Units: **ug/L** Analysis Date: **21-May-2022 19:11**
Client ID: Run ID: **VOA4_409104** SeqNo: **6658203** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	17.34	1.0	20	0	86.7	70 - 127	17.19	0.862	20	
Ethylbenzene	17.92	1.0	20	0	89.6	70 - 124	17.54	2.13	20	
Toluene	17.31	1.0	20	0	86.5	70 - 123	17.24	0.403	20	
Xylenes, Total	56.61	1.0	60	0	94.3	70 - 130	56.22	0.693	20	
Surr: 1,2-Dichloroethane-d4	*51.43*	*1.0*	*50*	*0*	*103*	*70 - 126*	*50.72*	*1.39*	*20*	
Surr: 4-Bromofluorobenzene	*51.11*	*1.0*	*50*	*0*	*102*	*77 - 113*	*50.71*	*0.776*	*20*	
Surr: Dibromofluoromethane	*48.04*	*1.0*	*50*	*0*	*96.1*	*77 - 123*	*48.08*	*0.0738*	*20*	
Surr: Toluene-d8	*49.93*	*1.0*	*50*	*0*	*99.9*	*82 - 127*	*49.9*	*0.0746*	*20*	

The following samples were analyzed in this batch: HS22050622-13

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R408774 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-051622** Units: **mg/L** Analysis Date: **16-May-2022 15:39**
Client ID: Run ID: **Balance1_408774** SeqNo: **6650165** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-051622** Units: **mg/L** Analysis Date: **16-May-2022 15:39**
Client ID: Run ID: **Balance1_408774** SeqNo: **6650166** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1042	10.0	1000	0	104	85 - 115				

DUP Sample ID: **HS22050525-08DUP** Units: **mg/L** Analysis Date: **16-May-2022 15:39**
Client ID: Run ID: **Balance1_408774** SeqNo: **6650155** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	3390	10.0					3388	0.059	5	

The following samples were analyzed in this batch: HS22050622-01 HS22050622-02 HS22050622-03

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R408804 (0) **Instrument:** ManTech01 **Method:** ALKALINITY BY SM 2320B-2011

MBLK Sample ID: **WBLKW2-220517** Units: **mg/L** Analysis Date: **17-May-2022 19:28**
Client ID: Run ID: **ManTech01_408804** SeqNo: **6650910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS2-220517** Units: **mg/L** Analysis Date: **17-May-2022 18:50**
Client ID: Run ID: **ManTech01_408804** SeqNo: **6650905** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	990.1	5.00	1000	0	99.0	85 - 115				

LCSD Sample ID: **LCSD2-220517** Units: **mg/L** Analysis Date: **17-May-2022 19:00**
Client ID: Run ID: **ManTech01_408804** SeqNo: **6650906** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1011	5.00	1000	0	101	85 - 115	990.1	2.07	20	

DUP Sample ID: **HS22050622-01DUP** Units: **mg/L** Analysis Date: **17-May-2022 19:35**
Client ID: **CD-9B** Run ID: **ManTech01_408804** SeqNo: **6650911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	231.5	5.00					233.3	0.775	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R408848 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-051722** Units: **mg/L** Analysis Date: **17-May-2022 15:39**
Client ID: Run ID: **Balance1_408848** SeqNo: **6652052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-051722** Units: **mg/L** Analysis Date: **17-May-2022 15:39**
Client ID: Run ID: **Balance1_408848** SeqNo: **6652053** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1044	10.0	1000	0	104	85 - 115				

DUP Sample ID: **HS22050641-02DUP** Units: **mg/L** Analysis Date: **17-May-2022 15:39**
Client ID: Run ID: **Balance1_408848** SeqNo: **6652046** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	18230	10.0					18250	0.121	5	

DUP Sample ID: **HS22050568-01DUP** Units: **mg/L** Analysis Date: **17-May-2022 15:39**
Client ID: Run ID: **Balance1_408848** SeqNo: **6652033** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	488	10.0					490	0.409	5	

The following samples were analyzed in this batch: HS22050622-04 HS22050622-05 HS22050622-06 HS22050622-07

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R408949 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-051822** Units: **mg/L** Analysis Date: **18-May-2022 16:24**
Client ID: Run ID: **Balance1_408949** SeqNo: **6654482** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-051822** Units: **mg/L** Analysis Date: **18-May-2022 16:24**
Client ID: Run ID: **Balance1_408949** SeqNo: **6654483** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1046	10.0	1000	0	105	85 - 115				

DUP Sample ID: **HS22050622-09DUP** Units: **mg/L** Analysis Date: **18-May-2022 16:24**
Client ID: **CD-7B** Run ID: **Balance1_408949** SeqNo: **6654475** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	590	10.0					588	0.34	5	

DUP Sample ID: **HS22050515-01DUP** Units: **mg/L** Analysis Date: **18-May-2022 16:24**
Client ID: Run ID: **Balance1_408949** SeqNo: **6654461** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	622	10.0					626	0.641	5	

The following samples were analyzed in this batch: HS22050622-08 HS22050622-09

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R408984 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-051922** Units: **mg/L** Analysis Date: **19-May-2022 10:59**
Client ID: Run ID: **Balance1_408984** SeqNo: **6655616** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-051922** Units: **mg/L** Analysis Date: **19-May-2022 10:59**
Client ID: Run ID: **Balance1_408984** SeqNo: **6655617** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1060	10.0	1000	0	106	85 - 115				

DUP Sample ID: **HS22050835-01DUP** Units: **mg/L** Analysis Date: **19-May-2022 10:59**
Client ID: Run ID: **Balance1_408984** SeqNo: **6655615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	972	10.0					976	0.411	5	

DUP Sample ID: **HS22050591-02DUP** Units: **mg/L** Analysis Date: **19-May-2022 10:59**
Client ID: Run ID: **Balance1_408984** SeqNo: **6656967** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2386	10.0					2382	0.168	5	

The following samples were analyzed in this batch: HS22050622-10 HS22050622-11 HS22050622-12

Revision: 1

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Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R409511 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **26-May-2022 10:13**
Client ID: Run ID: **ICS-Integrion_409511** SeqNo: **6667287** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Sulfate	ND	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **26-May-2022 10:18**
Client ID: Run ID: **ICS-Integrion_409511** SeqNo: **6667288** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.45	0.500	20	0	102	80 - 120				
Sulfate	20.27	0.500	20	0	101	80 - 120				

MS Sample ID: **HS22051182-02MS** Units: **mg/L** Analysis Date: **26-May-2022 14:01**
Client ID: Run ID: **ICS-Integrion_409511** SeqNo: **6667294** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	115.3	2.50	50	62.45	106	80 - 120				
Sulfate	1776	2.50	50	1785	-17.9	80 - 120				SEO

MS Sample ID: **HS22050622-02MS** Units: **mg/L** Analysis Date: **26-May-2022 18:45**
Client ID: **CD-9A** Run ID: **ICS-Integrion_409511** SeqNo: **6667320** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	55.12	0.500	10	45.76	93.5	80 - 120				O
Sulfate	23.36	0.500	10	13.45	99.1	80 - 120				

MSD Sample ID: **HS22051182-02MSD** Units: **mg/L** Analysis Date: **26-May-2022 14:06**
Client ID: Run ID: **ICS-Integrion_409511** SeqNo: **6667295** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	115.5	2.50	50	62.45	106	80 - 120	115.3	0.156	20	
Sulfate	1774	2.50	50	1785	-20.5	80 - 120	1776	0.0735	20	SEO

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22050622

QC BATCH REPORT

Batch ID: R409511 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MSD Sample ID: **HS22050622-02MSD** Units: **mg/L** Analysis Date: **26-May-2022 18:51**
Client ID: **CD-9A** Run ID: **ICS-Integrion_409511** SeqNo: **6667321** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	55.17	0.500	10	45.76	94.1	80 - 120	55.12	0.102	20	O
Sulfate	23.46	0.500	10	13.45	100	80 - 120	23.36	0.422	20	

The following samples were analyzed in this batch:

HS22050622-01	HS22050622-02	HS22050622-03	HS22050622-04
HS22050622-05	HS22050622-06	HS22050622-07	HS22050622-08
HS22050622-09	HS22050622-10	HS22050622-11	HS22050622-12

Revision: 1

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Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: **HS22050622**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-35	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2021-080	31-Aug-2022
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932021-12	30-Jul-2022

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Sample Receipt Checklist

Work Order ID: HS22050622 **Date/Time Received:** **13-May-2022 14:15**

Client Name: ERMSW-BRLA **Received by:** **Desmond Wacasey**

Completed By:	/S/ Corey Grandits	13-May-2022 15:56	**Reviewed by:**	/S/ Anna Kinchen	16-May-2022 10:08
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:266671, 266670
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.5uc/1.0c, 2.5uc/3.0c, 3.8uc/4.3c, 3.7uc/4.2c	IR31
Cooler(s)/Kit(s):	48035, 47889, Lg Green, 5765	
Date/Time sample(s) sent to storage:	05/13/2022	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Trip Blank received, not listed on COC and was placed on hold.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of

COC ID: 266671

HS22050622

ERM Southwest, Inc.
Castex 0575834

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	0575834	Project Name	Castex 0575834
Work Order		Project Number	
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.
Send Report To	David Upthegrove	Invoice Attn	Accounts Payable
Address	804 Main Street	Address	804 Main Street
City/State/Zip	Baton Rouge, LA 70802	City/State/Zip	Baton Rouge LA 70802
Phone	(225) 955-018 504.481.6170	Phone	(225) 955-018
Fax	(225) 292-3011	Fax	(225) 292-3011
e-Mail Address	david.upthegrove@erm.com	e-Mail Address	ermnaaccountspayable@erm.com

A	8260_LL_W - BTEX
B	MA EPH_W_La
C	MA VPH_LA_W
D	ICP_TW - Total Metals
E	ICP_DISS - Diss Metals
F	9056_anions_W - Cl/SO4
G	ALK_W 2320B - ALKB, ALKC
H	TDS_W 2540C
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	CD-9B	5/9/22	1215	GW	1,2,18	10	X	X	X	X	X	X	X	X			
2	CD-9A		1425				X	X	X	X	X	X	X	X			
3	CD-5C		1700				X	X	X	X	X	X	X	X			
4	CD-10A	5/10/22	0945				X	X	X	X	X	X	X	X			
5	CD-8B		1135				X	X	X	X	X	X	X	X			
6	CD-8A		1430				X	X	X	X	X	X	X	X			
7	CD-11A		1550				X	X	X	X	X	X	X	X			
8	CD-11B	5/11/22	1000				X	X	X	X	X	X	X	X			
9	CD-7B		1435				X	X	X	X	X	X	X	X			
10	CD-7C	5/12/22	0855				X	X	X	X	X	X	X	X			

Sampler(s) Please Print & Sign: M. Charles Trahan / Michael Charles Trahan

Shipment Method: FedEx Ground

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Michael Charles Trahan Date: 5/13/22 Time: 1415

Received by: DW 5/13/22 1415

Relinquished by: Date: Time:

Received by (Laboratory):

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: Copy of report to Michael.GoodMan@erm.com

Cooler ID	Cooler Temp.
	ic
5765	3.7
Green	3.8
47889	2.5
48035	6.5

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of ____

COC ID: 266670

HS22050622

ERM Southwest, Inc.
Castex 0575834

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	0575834	Project Name	Castex 0575834
Work Order		Project Number	
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.
Send Report To	David Upthegrove	Invoice Attn	Accounts Payable
Address	804 Main Street	Address	804 Main Street
City/State/Zip	Baton Rouge, LA 70802	City/State/Zip	Baton Rouge LA 70802
Phone	(225) 955--018 504, 481, 6470	Phone	(225) 955--018
Fax	(225) 292-3011	Fax	(225) 292-3011
e-Mail Address	david.upthegrove@erm.com	e-Mail Address	emnaaccountspayable@erm.com

A	8260_LL_W - BTEX
B	MA EPH_W_La
C	MA VPH_LA_W
D	ICP_TW - Total Metals
E	ICP_DISS - Diss Metals
F	9056_anions_W - Cl/SO4
G	ALK_W 2320B - ALKB, ALKC
H	TDS_W 2540C
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	CD-6A	5/12/22	1025	GW	H2SO4	10	X	X	X	X	X	X	X	X			
2	CD-6B	↓	1300	↓	↓	↓	X	X	X	X	X	X	X	X			
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: R. Charles Trahan

Shipment Method: FedEx Ground

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
R. Charles Trahan	5/13/22	1415	Dw 5/13/22 1415
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: copy of report to Michael.Goodman@erm.com

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
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July 11, 2022

David Upthegrove
ERM Southwest, Inc.
804 Main Street
Baton Rouge, LA 70802

Work Order: **HS22061465**

Laboratory Results for: **Castex 0575834**

Dear David Upthegrove,

ALS Environmental received 4 sample(s) on Jun 25, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Anna Kinchen
Project Manager

Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22061465

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22061465-01	CD-15B	Water		23-Jun-2022 11:30	25-Jun-2022 08:20	☐
HS22061465-02	CD-15C	Water		23-Jun-2022 12:10	25-Jun-2022 08:20	☐
HS22061465-03	CD-15A	Water		23-Jun-2022 15:30	25-Jun-2022 08:20	☐
HS22061465-04	CD-10D	Water		21-Jun-2022 10:00	25-Jun-2022 08:20	☐

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Client: ERM Southwest, Inc. **CASE NARRATIVE**
Project: Castex 0575834
Work Order: HS22061465

Work Order Comments

- The samples were received at 13.2 °C which is outside of the recommended temperature acceptance (0 to 6 °C). The client was notified via email on 06-27-22 and asked that we proceed with analysis.

GC Semivolatiles by Method MA EPH

Batch ID: 180705

Sample ID: CD-15C (HS22061465-02)

- Surrogate recoveries were outside of the control limits due to matrix interference. o-Terphenyl
- The surrogate recoveries could not be determined due to dilution below the calibration range.

GC Volatiles by Method MA VPH

Batch ID: R411747,R411749

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R411865

Sample ID: HS22061468-04MSD

- MSD is for an unrelated sample

Metals by Method SW6020A

Batch ID: 180738

Sample ID: HS22061548-01MS

- MS and MSD are for an unrelated sample

Sample ID: HS22061548-01PDS

- PDS is for an unrelated sample

Batch ID: 180807

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7470A

Batch ID: 180737,180789

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R412159

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

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Client: ERM Southwest, Inc.
Project: Castex 0575834
Work Order: HS22061465

CASE NARRATIVE

WetChemistry by Method SM2320B

Batch ID: R411967,R412361

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M2540C

Batch ID: R411814,R412101

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-15B
Collection Date: 23-Jun-2022 11:30

ANALYTICAL REPORT
WorkOrder:HS22061465
Lab ID:HS22061465-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: FT
Benzene	ND		1.0	ug/L	1	30-Jun-2022 03:10
Ethylbenzene	ND		1.0	ug/L	1	30-Jun-2022 03:10
Toluene	**14**		**1.0**	**ug/L**	1	30-Jun-2022 03:10
Xylenes, Total	ND		1.0	ug/L	1	30-Jun-2022 03:10
Surr: 1,2-Dichloroethane-d4	*103*		*70-126*	*%REC*	*1*	*30-Jun-2022 03:10*
Surr: 4-Bromofluorobenzene	*102*		*77-113*	*%REC*	*1*	*30-Jun-2022 03:10*
Surr: Dibromofluoromethane	*110*		*77-123*	*%REC*	*1*	*30-Jun-2022 03:10*
Surr: Toluene-d8	*101*		*82-127*	*%REC*	*1*	*30-Jun-2022 03:10*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	28-Jun-2022 18:29
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	28-Jun-2022 18:29
Aromatics >C8 - C10	ND		0.0100	mg/L	1	28-Jun-2022 18:29
Surr: 2,5-Dibromotoluene (Aliphatic)	*113*		*70-130*	*%REC*	*1*	*28-Jun-2022 18:29*
Surr: 2,5-Dibromotoluene (Aliphatic)	*114*		*70-130*	*%REC*	*1*	*28-Jun-2022 18:29*
Surr: 2,5-Dibromotoluene (Aromatic)	*113*		*70-130*	*%REC*	*1*	*28-Jun-2022 18:29*
Surr: 2,5-Dibromotoluene (Aromatic)	*114*		*70-130*	*%REC*	*1*	*28-Jun-2022 18:29*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 30-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Jul-2022 17:35
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Jul-2022 17:35
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Jul-2022 17:35
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Jul-2022 17:35
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Jul-2022 17:35
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Jul-2022 17:35
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Jul-2022 17:35
Surr: 1-Chlorooctadecane	*86.3*		*40-140*	*%REC*	*1*	*01-Jul-2022 17:35*
Surr: 2-Bromonaphthalene	*119*		*40-140*	*%REC*	*1*	*01-Jul-2022 17:35*
Surr: 2-Fluorobiphenyl	*84.8*		*40-140*	*%REC*	*1*	*01-Jul-2022 17:35*
Surr: o-Terphenyl	*90.9*		*40-140*	*%REC*	*1*	*01-Jul-2022 17:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-15B
Collection Date: 23-Jun-2022 11:30

ANALYTICAL REPORT
WorkOrder:HS22061465
Lab ID:HS22061465-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Jul-2022		Analyst: JHD
Arsenic	**0.00831**		**0.00200**	**mg/L**	1	07-Jul-2022 00:27
Barium	**0.613**		**0.00400**	**mg/L**	1	07-Jul-2022 00:27
Cadmium	ND		0.00200	mg/L	1	07-Jul-2022 00:27
Calcium	**86.3**		**0.500**	**mg/L**	1	07-Jul-2022 00:27
Chromium	**0.0106**		**0.00400**	**mg/L**	1	07-Jul-2022 00:27
Iron	**2.76**		**0.200**	**mg/L**	1	07-Jul-2022 00:27
Lead	ND		0.00200	mg/L	1	07-Jul-2022 00:27
Magnesium	**29.7**		**0.200**	**mg/L**	1	07-Jul-2022 00:27
Manganese	**0.392**		**0.00500**	**mg/L**	1	07-Jul-2022 00:27
Potassium	**5.00**		**0.200**	**mg/L**	1	07-Jul-2022 00:27
Sodium	**121**		**0.200**	**mg/L**	1	07-Jul-2022 00:27
Strontium	**0.544**		**0.00500**	**mg/L**	1	07-Jul-2022 00:27
Zinc	ND		0.00400	mg/L	1	07-Jul-2022 00:27
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 01-Jul-2022		Analyst: JHD
Arsenic	**0.0126**		**0.00200**	**mg/L**	1	01-Jul-2022 18:40
Barium	**0.611**		**0.00400**	**mg/L**	1	01-Jul-2022 18:40
Cadmium	ND		0.00200	mg/L	1	01-Jul-2022 18:40
Chromium	**0.00457**		**0.00400**	**mg/L**	1	01-Jul-2022 18:40
Iron	**2.72**		**0.200**	**mg/L**	1	01-Jul-2022 18:40
Lead	ND		0.00200	mg/L	1	01-Jul-2022 18:40
Manganese	**0.402**		**0.00500**	**mg/L**	1	01-Jul-2022 18:40
Strontium	**0.595**		**0.00500**	**mg/L**	1	01-Jul-2022 18:40
Zinc	ND		0.00400	mg/L	1	01-Jul-2022 18:40
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 05-Jul-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	05-Jul-2022 14:40
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 01-Jul-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	01-Jul-2022 13:53
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**782**		**10.0**	**mg/L**	1	30-Jun-2022 15:35
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	**368**		**5.00**	**mg/L**	1	02-Jul-2022 12:58
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	02-Jul-2022 12:58
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**234**		**2.50**	**mg/L**	5	04-Jul-2022 11:58
Sulfate	ND		0.500	mg/L	1	04-Jul-2022 11:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-15C
Collection Date: 23-Jun-2022 12:10

ANALYTICAL REPORT
WorkOrder:HS22061465
Lab ID:HS22061465-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: FT
Benzene	ND		1.0	ug/L	1	30-Jun-2022 03:31
Ethylbenzene	ND		1.0	ug/L	1	30-Jun-2022 03:31
Toluene	ND		1.0	ug/L	1	30-Jun-2022 03:31
Xylenes, Total	ND		1.0	ug/L	1	30-Jun-2022 03:31
Surr: 1,2-Dichloroethane-d4	*103*		*70-126*	*%REC*	*1*	*30-Jun-2022 03:31*
Surr: 4-Bromofluorobenzene	*101*		*77-113*	*%REC*	*1*	*30-Jun-2022 03:31*
Surr: Dibromofluoromethane	*111*		*77-123*	*%REC*	*1*	*30-Jun-2022 03:31*
Surr: Toluene-d8	*98.1*		*82-127*	*%REC*	*1*	*30-Jun-2022 03:31*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	28-Jun-2022 18:57
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	28-Jun-2022 18:57
Aromatics >C8 - C10	ND		0.0100	mg/L	1	28-Jun-2022 18:57
Surr: 2,5-Dibromotoluene (Aliphatic)	*89.3*		*70-130*	*%REC*	*1*	*28-Jun-2022 18:57*
Surr: 2,5-Dibromotoluene (Aliphatic)	*88.4*		*70-130*	*%REC*	*1*	*28-Jun-2022 18:57*
Surr: 2,5-Dibromotoluene (Aromatic)	*89.3*		*70-130*	*%REC*	*1*	*28-Jun-2022 18:57*
Surr: 2,5-Dibromotoluene (Aromatic)	*88.4*		*70-130*	*%REC*	*1*	*28-Jun-2022 18:57*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 30-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Jul-2022 14:58
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Jul-2022 14:58
Aliphatics >C16 - C35	**0.849**		**0.00800**	**mg/L**	1	01-Jul-2022 14:58
Aromatics >C10 - C12	**0.00741**		**0.00100**	**mg/L**	1	01-Jul-2022 14:58
Aromatics >C12 - C16	**0.0921**		**0.00400**	**mg/L**	1	01-Jul-2022 14:58
Aromatics >C16 - C21	**0.0928**		**0.00300**	**mg/L**	1	01-Jul-2022 14:58
Aromatics >C21 - C35	**10.9**		**0.0900**	**mg/L**	10	11-Jul-2022 11:25
Surr: 1-Chlorooctadecane	*74.2*		*40-140*	*%REC*	*1*	*01-Jul-2022 14:58*
Surr: 2-Bromonaphthalene	*0*	*S*	*40-140*	*%REC*	*10*	*11-Jul-2022 11:25*
Surr: 2-Bromonaphthalene	*103*		*40-140*	*%REC*	*1*	*01-Jul-2022 14:58*
Surr: 2-Fluorobiphenyl	*86.2*		*40-140*	*%REC*	*1*	*01-Jul-2022 14:58*
Surr: 2-Fluorobiphenyl	*0*	*S*	*40-140*	*%REC*	*10*	*11-Jul-2022 11:25*
Surr: o-Terphenyl	*149*	*S*	*40-140*	*%REC*	*10*	*11-Jul-2022 11:25*
Surr: o-Terphenyl	*60.9*		*40-140*	*%REC*	*1*	*01-Jul-2022 14:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-15C
Collection Date: 23-Jun-2022 12:10

ANALYTICAL REPORT
WorkOrder:HS22061465
Lab ID:HS22061465-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Jul-2022		Analyst: JHD
Arsenic	**0.0155**		**0.00200**	**mg/L**	1	07-Jul-2022 00:29
Barium	**0.540**		**0.00400**	**mg/L**	1	07-Jul-2022 00:29
Cadmium	ND		0.00200	mg/L	1	07-Jul-2022 00:29
Calcium	**73.6**		**0.500**	**mg/L**	1	07-Jul-2022 00:29
Chromium	**0.0111**		**0.00400**	**mg/L**	1	07-Jul-2022 00:29
Iron	**11.0**		**0.200**	**mg/L**	1	07-Jul-2022 00:29
Lead	**0.00861**		**0.00200**	**mg/L**	1	07-Jul-2022 00:29
Magnesium	**20.7**		**0.200**	**mg/L**	1	07-Jul-2022 00:29
Manganese	**0.648**		**0.00500**	**mg/L**	1	07-Jul-2022 00:29
Potassium	**3.75**		**0.200**	**mg/L**	1	07-Jul-2022 00:29
Sodium	**65.7**		**0.200**	**mg/L**	1	07-Jul-2022 00:29
Strontium	**0.339**		**0.00500**	**mg/L**	1	07-Jul-2022 00:29
Zinc	**0.0564**		**0.00400**	**mg/L**	1	07-Jul-2022 00:29
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 01-Jul-2022		Analyst: JHD
Arsenic	**0.0150**		**0.00200**	**mg/L**	1	01-Jul-2022 18:48
Barium	**0.286**		**0.00400**	**mg/L**	1	01-Jul-2022 18:48
Cadmium	ND		0.00200	mg/L	1	01-Jul-2022 18:48
Chromium	ND		0.00400	mg/L	1	01-Jul-2022 18:48
Iron	**0.768**		**0.200**	**mg/L**	1	01-Jul-2022 18:48
Lead	ND		0.00200	mg/L	1	01-Jul-2022 18:48
Manganese	**0.190**		**0.00500**	**mg/L**	1	01-Jul-2022 18:48
Strontium	**0.338**		**0.00500**	**mg/L**	1	01-Jul-2022 18:48
Zinc	ND		0.00400	mg/L	1	01-Jul-2022 18:48
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 05-Jul-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	05-Jul-2022 14:42
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 01-Jul-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	01-Jul-2022 13:59
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**440**		**10.0**	**mg/L**	1	30-Jun-2022 15:35
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	**314**		**5.00**	**mg/L**	1	02-Jul-2022 12:58
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	02-Jul-2022 12:58
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**77.1**		**0.500**	**mg/L**	1	04-Jul-2022 12:03
Sulfate	**9.45**		**0.500**	**mg/L**	1	04-Jul-2022 12:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-15A
Collection Date: 23-Jun-2022 15:30

ANALYTICAL REPORT
WorkOrder:HS22061465
Lab ID:HS22061465-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: FT
Benzene	ND		1.0	ug/L	1	30-Jun-2022 03:53
Ethylbenzene	ND		1.0	ug/L	1	30-Jun-2022 03:53
Toluene	**13**		**1.0**	**ug/L**	1	30-Jun-2022 03:53
Xylenes, Total	ND		1.0	ug/L	1	30-Jun-2022 03:53
Surr: 1,2-Dichloroethane-d4	*102*		*70-126*	*%REC*	*1*	*30-Jun-2022 03:53*
Surr: 4-Bromofluorobenzene	*101*		*77-113*	*%REC*	*1*	*30-Jun-2022 03:53*
Surr: Dibromofluoromethane	*110*		*77-123*	*%REC*	*1*	*30-Jun-2022 03:53*
Surr: Toluene-d8	*97.6*		*82-127*	*%REC*	*1*	*30-Jun-2022 03:53*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	28-Jun-2022 19:24
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	28-Jun-2022 19:24
Aromatics >C8 - C10	ND		0.0100	mg/L	1	28-Jun-2022 19:24
Surr: 2,5-Dibromotoluene (Aliphatic)	*88.7*		*70-130*	*%REC*	*1*	*28-Jun-2022 19:24*
Surr: 2,5-Dibromotoluene (Aliphatic)	*88.7*		*70-130*	*%REC*	*1*	*28-Jun-2022 19:24*
Surr: 2,5-Dibromotoluene (Aromatic)	*88.7*		*70-130*	*%REC*	*1*	*28-Jun-2022 19:24*
Surr: 2,5-Dibromotoluene (Aromatic)	*88.7*		*70-130*	*%REC*	*1*	*28-Jun-2022 19:24*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 30-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Jul-2022 18:07
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Jul-2022 18:07
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Jul-2022 18:07
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Jul-2022 18:07
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Jul-2022 18:07
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Jul-2022 18:07
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Jul-2022 18:07
Surr: 1-Chlorooctadecane	*77.7*		*40-140*	*%REC*	*1*	*01-Jul-2022 18:07*
Surr: 2-Bromonaphthalene	*109*		*40-140*	*%REC*	*1*	*01-Jul-2022 18:07*
Surr: 2-Fluorobiphenyl	*62.5*		*40-140*	*%REC*	*1*	*01-Jul-2022 18:07*
Surr: o-Terphenyl	*70.1*		*40-140*	*%REC*	*1*	*01-Jul-2022 18:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-15A
Collection Date: 23-Jun-2022 15:30

ANALYTICAL REPORT
WorkOrder:HS22061465
Lab ID:HS22061465-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Jul-2022		Analyst: JHD
Arsenic	**0.0216**		**0.00200**	**mg/L**	1	07-Jul-2022 00:31
Barium	**0.662**		**0.00400**	**mg/L**	1	07-Jul-2022 00:31
Cadmium	ND		0.00200	mg/L	1	07-Jul-2022 00:31
Calcium	**85.4**		**0.500**	**mg/L**	1	07-Jul-2022 00:31
Chromium	ND		0.00400	mg/L	1	07-Jul-2022 00:31
Iron	**1.75**		**0.200**	**mg/L**	1	07-Jul-2022 00:31
Lead	ND		0.00200	mg/L	1	07-Jul-2022 00:31
Magnesium	**30.0**		**0.200**	**mg/L**	1	07-Jul-2022 00:31
Manganese	**0.485**		**0.00500**	**mg/L**	1	07-Jul-2022 00:31
Potassium	**3.79**		**0.200**	**mg/L**	1	07-Jul-2022 00:31
Sodium	**149**		**0.200**	**mg/L**	1	07-Jul-2022 00:31
Strontium	**0.502**		**0.00500**	**mg/L**	1	07-Jul-2022 00:31
Zinc	ND		0.00400	mg/L	1	07-Jul-2022 00:31
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 01-Jul-2022		Analyst: JHD
Arsenic	**0.0265**		**0.00200**	**mg/L**	1	01-Jul-2022 18:50
Barium	**0.677**		**0.00400**	**mg/L**	1	01-Jul-2022 18:50
Cadmium	ND		0.00200	mg/L	1	01-Jul-2022 18:50
Chromium	**0.00580**		**0.00400**	**mg/L**	1	01-Jul-2022 18:50
Iron	**1.78**		**0.200**	**mg/L**	1	01-Jul-2022 18:50
Lead	ND		0.00200	mg/L	1	01-Jul-2022 18:50
Manganese	**0.513**		**0.00500**	**mg/L**	1	01-Jul-2022 18:50
Strontium	**0.581**		**0.00500**	**mg/L**	1	01-Jul-2022 18:50
Zinc	ND		0.00400	mg/L	1	01-Jul-2022 18:50
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 05-Jul-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	05-Jul-2022 14:43
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 01-Jul-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	01-Jul-2022 14:06
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**908**		**10.0**	**mg/L**	1	30-Jun-2022 15:35
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	**411**		**5.00**	**mg/L**	1	02-Jul-2022 12:58
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	02-Jul-2022 12:58
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**302**		**5.00**	**mg/L**	10	04-Jul-2022 12:24
Sulfate	**1.14**		**0.500**	**mg/L**	1	04-Jul-2022 12:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-10D
Collection Date: 21-Jun-2022 10:00

ANALYTICAL REPORT
WorkOrder:HS22061465
Lab ID:HS22061465-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: FT
Benzene	ND		1.0	ug/L	1	30-Jun-2022 04:14
Ethylbenzene	ND		1.0	ug/L	1	30-Jun-2022 04:14
Toluene	**2.5**		**1.0**	**ug/L**	1	30-Jun-2022 04:14
Xylenes, Total	ND		1.0	ug/L	1	30-Jun-2022 04:14
Surr: 1,2-Dichloroethane-d4	*102*		*70-126*	*%REC*	*1*	*30-Jun-2022 04:14*
Surr: 4-Bromofluorobenzene	*100.0*		*77-113*	*%REC*	*1*	*30-Jun-2022 04:14*
Surr: Dibromofluoromethane	*110*		*77-123*	*%REC*	*1*	*30-Jun-2022 04:14*
Surr: Toluene-d8	*98.8*		*82-127*	*%REC*	*1*	*30-Jun-2022 04:14*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**				Analyst: FT
Aliphatics >C6 - C8	ND		0.0100	mg/L	1	28-Jun-2022 19:51
Aliphatics >C8 - C10	ND		0.0100	mg/L	1	28-Jun-2022 19:51
Aromatics >C8 - C10	ND		0.0100	mg/L	1	28-Jun-2022 19:51
Surr: 2,5-Dibromotoluene (Aliphatic)	*82.4*		*70-130*	*%REC*	*1*	*28-Jun-2022 19:51*
Surr: 2,5-Dibromotoluene (Aliphatic)	*85.8*		*70-130*	*%REC*	*1*	*28-Jun-2022 19:51*
Surr: 2,5-Dibromotoluene (Aromatic)	*82.4*		*70-130*	*%REC*	*1*	*28-Jun-2022 19:51*
Surr: 2,5-Dibromotoluene (Aromatic)	*85.8*		*70-130*	*%REC*	*1*	*28-Jun-2022 19:51*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**		Prep:SW3510 / 30-Jun-2022		Analyst: PPM
Aliphatics >C10 - C12	ND		0.00100	mg/L	1	01-Jul-2022 18:38
Aliphatics >C12 - C16	ND		0.00200	mg/L	1	01-Jul-2022 18:38
Aliphatics >C16 - C35	ND		0.00800	mg/L	1	01-Jul-2022 18:38
Aromatics >C10 - C12	ND		0.00100	mg/L	1	01-Jul-2022 18:38
Aromatics >C12 - C16	ND		0.00400	mg/L	1	01-Jul-2022 18:38
Aromatics >C16 - C21	ND		0.00300	mg/L	1	01-Jul-2022 18:38
Aromatics >C21 - C35	ND		0.00900	mg/L	1	01-Jul-2022 18:38
Surr: 1-Chlorooctadecane	*84.8*		*40-140*	*%REC*	*1*	*01-Jul-2022 18:38*
Surr: 2-Bromonaphthalene	*112*		*40-140*	*%REC*	*1*	*01-Jul-2022 18:38*
Surr: 2-Fluorobiphenyl	*64.8*		*40-140*	*%REC*	*1*	*01-Jul-2022 18:38*
Surr: o-Terphenyl	*72.8*		*40-140*	*%REC*	*1*	*01-Jul-2022 18:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
Sample ID: CD-10D
Collection Date: 21-Jun-2022 10:00

ANALYTICAL REPORT
WorkOrder:HS22061465
Lab ID:HS22061465-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**		Prep:SW3010A / 05-Jul-2022		Analyst: JHD
Arsenic	**0.00453**		**0.00200**	**mg/L**	1	07-Jul-2022 00:33
Barium	**0.289**		**0.00400**	**mg/L**	1	07-Jul-2022 00:33
Cadmium	ND		0.00200	mg/L	1	07-Jul-2022 00:33
Calcium	**37.3**		**0.500**	**mg/L**	1	07-Jul-2022 00:33
Chromium	**0.0332**		**0.00400**	**mg/L**	1	07-Jul-2022 00:33
Iron	**8.37**		**0.200**	**mg/L**	1	07-Jul-2022 00:33
Lead	**0.00836**		**0.00200**	**mg/L**	1	07-Jul-2022 00:33
Magnesium	**9.33**		**0.200**	**mg/L**	1	07-Jul-2022 00:33
Manganese	**0.474**		**0.00500**	**mg/L**	1	07-Jul-2022 00:33
Potassium	**3.38**		**0.200**	**mg/L**	1	07-Jul-2022 00:33
Sodium	**52.2**		**0.200**	**mg/L**	1	07-Jul-2022 00:33
Strontium	**0.131**		**0.00500**	**mg/L**	1	07-Jul-2022 00:33
Zinc	**0.0463**		**0.00400**	**mg/L**	1	07-Jul-2022 00:33
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**		Prep:SW3010A / 01-Jul-2022		Analyst: JHD
Arsenic	**0.00217**		**0.00200**	**mg/L**	1	01-Jul-2022 18:52
Barium	**0.158**		**0.00400**	**mg/L**	1	01-Jul-2022 18:52
Cadmium	ND		0.00200	mg/L	1	01-Jul-2022 18:52
Chromium	ND		0.00400	mg/L	1	01-Jul-2022 18:52
Iron	ND		0.200	mg/L	1	01-Jul-2022 18:52
Lead	ND		0.00200	mg/L	1	01-Jul-2022 18:52
Manganese	**0.0866**		**0.00500**	**mg/L**	1	01-Jul-2022 18:52
Strontium	**0.117**		**0.00500**	**mg/L**	1	01-Jul-2022 18:52
Zinc	ND		0.00400	mg/L	1	01-Jul-2022 18:52
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 05-Jul-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	05-Jul-2022 14:45
DISSOLVED MERCURY BY SW7470A		**Method:SW7470A (dissolved)**		Prep:SW7470A / 01-Jul-2022		Analyst: MSC
Mercury	ND		0.000200	mg/L	1	01-Jul-2022 14:07
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: CWG
Total Dissolved Solids (Residue, Filterable)	**342**		**10.0**	**mg/L**	1	28-Jun-2022 15:36
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**				Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	**179**		**5.00**	**mg/L**	1	30-Jun-2022 12:57
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	30-Jun-2022 12:57
ANIONS BY SW9056A		**Method:SW9056**				Analyst: TH
Chloride	**20.1**		**0.500**	**mg/L**	1	04-Jul-2022 12:30
Sulfate	**12.1**		**0.500**	**mg/L**	1	04-Jul-2022 12:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

Batch ID: 180705 **Start Date:** 30 Jun 2022 11:30 **End Date:** 30 Jun 2022 19:30
Method: MA EPH EXTRACTION-FRACTIONATION **Prep Code:** MA EPH_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22061465-01		1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22061465-02		1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22061465-03		1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS22061465-04		1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2

Batch ID: 180737 **Start Date:** 01 Jul 2022 09:00 **End Date:** 01 Jul 2022 12:00
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22061465-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-04		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 180738 **Start Date:** 01 Jul 2022 11:00 **End Date:** 01 Jul 2022 15:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22061465-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-04		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 180789 **Start Date:** 05 Jul 2022 09:00 **End Date:** 05 Jul 2022 12:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22061465-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-04		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 180807 **Start Date:** 05 Jul 2022 12:30 **End Date:** 05 Jul 2022 16:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22061465-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22061465-04		10 (mL)	10 (mL)	1	120 plastic HNO3

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 180705 (0)	**Test Name :** MASSACHUSETTS EPH R2.1, DEC 2019				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30		30 Jun 2022 11:30	01 Jul 2022 17:35	1
HS22061465-01	CD-15B	23 Jun 2022 11:30		30 Jun 2022 11:30	01 Jul 2022 17:35	1
HS22061465-02	CD-15C	23 Jun 2022 12:10		30 Jun 2022 11:30	11 Jul 2022 11:25	10
HS22061465-02	CD-15C	23 Jun 2022 12:10		30 Jun 2022 11:30	01 Jul 2022 14:58	1
HS22061465-02	CD-15C	23 Jun 2022 12:10		30 Jun 2022 11:30	01 Jul 2022 14:58	1
HS22061465-03	CD-15A	23 Jun 2022 15:30		30 Jun 2022 11:30	01 Jul 2022 18:07	1
HS22061465-03	CD-15A	23 Jun 2022 15:30		30 Jun 2022 11:30	01 Jul 2022 18:07	1
HS22061465-04	CD-10D	21 Jun 2022 10:00		30 Jun 2022 11:30	01 Jul 2022 18:38	1
HS22061465-04	CD-10D	21 Jun 2022 10:00		30 Jun 2022 11:30	01 Jul 2022 18:38	1
Batch ID: 180737 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30		01 Jul 2022 09:00	01 Jul 2022 13:53	1
HS22061465-02	CD-15C	23 Jun 2022 12:10		01 Jul 2022 09:00	01 Jul 2022 13:59	1
HS22061465-03	CD-15A	23 Jun 2022 15:30		01 Jul 2022 09:00	01 Jul 2022 14:06	1
HS22061465-04	CD-10D	21 Jun 2022 10:00		01 Jul 2022 09:00	01 Jul 2022 14:07	1
Batch ID: 180738 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30		01 Jul 2022 11:00	01 Jul 2022 18:40	1
HS22061465-02	CD-15C	23 Jun 2022 12:10		01 Jul 2022 11:00	01 Jul 2022 18:48	1
HS22061465-03	CD-15A	23 Jun 2022 15:30		01 Jul 2022 11:00	01 Jul 2022 18:50	1
HS22061465-04	CD-10D	21 Jun 2022 10:00		01 Jul 2022 11:00	01 Jul 2022 18:52	1
Batch ID: 180789 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30		05 Jul 2022 09:00	05 Jul 2022 14:40	1
HS22061465-02	CD-15C	23 Jun 2022 12:10		05 Jul 2022 09:00	05 Jul 2022 14:42	1
HS22061465-03	CD-15A	23 Jun 2022 15:30		05 Jul 2022 09:00	05 Jul 2022 14:43	1
HS22061465-04	CD-10D	21 Jun 2022 10:00		05 Jul 2022 09:00	05 Jul 2022 14:45	1
Batch ID: 180807 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30		05 Jul 2022 12:30	07 Jul 2022 00:27	1
HS22061465-02	CD-15C	23 Jun 2022 12:10		05 Jul 2022 12:30	07 Jul 2022 00:29	1
HS22061465-03	CD-15A	23 Jun 2022 15:30		05 Jul 2022 12:30	07 Jul 2022 00:31	1
HS22061465-04	CD-10D	21 Jun 2022 10:00		05 Jul 2022 12:30	07 Jul 2022 00:33	1
Batch ID: R411747 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30			28 Jun 2022 18:29	1
HS22061465-02	CD-15C	23 Jun 2022 12:10			28 Jun 2022 18:57	1
HS22061465-03	CD-15A	23 Jun 2022 15:30			28 Jun 2022 19:24	1
HS22061465-04	CD-10D	21 Jun 2022 10:00			28 Jun 2022 19:51	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R411749 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30			28 Jun 2022 18:29	1
HS22061465-02	CD-15C	23 Jun 2022 12:10			28 Jun 2022 18:57	1
HS22061465-03	CD-15A	23 Jun 2022 15:30			28 Jun 2022 19:24	1
HS22061465-04	CD-10D	21 Jun 2022 10:00			28 Jun 2022 19:51	1
Batch ID: R411814 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22061465-04	CD-10D	21 Jun 2022 10:00			28 Jun 2022 15:36	1
Batch ID: R411865 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30			30 Jun 2022 03:10	1
HS22061465-02	CD-15C	23 Jun 2022 12:10			30 Jun 2022 03:31	1
HS22061465-03	CD-15A	23 Jun 2022 15:30			30 Jun 2022 03:53	1
HS22061465-04	CD-10D	21 Jun 2022 10:00			30 Jun 2022 04:14	1
Batch ID: R411967 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS22061465-04	CD-10D	21 Jun 2022 10:00			30 Jun 2022 12:57	1
Batch ID: R412101 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30			30 Jun 2022 15:35	1
HS22061465-02	CD-15C	23 Jun 2022 12:10			30 Jun 2022 15:35	1
HS22061465-03	CD-15A	23 Jun 2022 15:30			30 Jun 2022 15:35	1
Batch ID: R412159 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30			04 Jul 2022 11:58	5
HS22061465-01	CD-15B	23 Jun 2022 11:30			04 Jul 2022 11:52	1
HS22061465-02	CD-15C	23 Jun 2022 12:10			04 Jul 2022 12:03	1
HS22061465-03	CD-15A	23 Jun 2022 15:30			04 Jul 2022 12:24	10
HS22061465-03	CD-15A	23 Jun 2022 15:30			04 Jul 2022 12:19	1
HS22061465-04	CD-10D	21 Jun 2022 10:00			04 Jul 2022 12:30	1
Batch ID: R412361 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS22061465-01	CD-15B	23 Jun 2022 11:30			02 Jul 2022 12:58	1
HS22061465-02	CD-15C	23 Jun 2022 12:10			02 Jul 2022 12:58	1
HS22061465-03	CD-15A	23 Jun 2022 15:30			02 Jul 2022 12:58	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180705 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MBLK Sample ID: **MBLK-180705** Units: **mg/L** Analysis Date: **01-Jul-2022 15:29**
Client ID: Run ID: **FID-7_412581** SeqNo: **6738652** PrepDate: **30-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	ND	0.00100								
Aliphatics >C12 - C16	ND	0.00200								
Aliphatics >C16 - C35	ND	0.00800								
Surr: 1-Chlorooctadecane	*0.02766*	*0*	*0.04*	*0*	*69.1*	*40 - 140*				

MBLK Sample ID: **MBLK-180705** Units: **mg/L** Analysis Date: **01-Jul-2022 15:29**
Client ID: Run ID: **FID-8_412579** SeqNo: **6738576** PrepDate: **30-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	ND	0.00100								
Aromatics >C12 - C16	ND	0.00400								
Aromatics >C16 - C21	ND	0.00300								
Aromatics >C21 - C35	ND	0.00900								
Surr: 2-Bromonaphthalene	*0.04729*	*0*	*0.04*	*0*	*118*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.02794*	*0*	*0.04*	*0*	*69.8*	*40 - 140*				
Surr: o-Terphenyl	*0.02977*	*0*	*0.04*	*0*	*74.4*	*40 - 140*				

LCS Sample ID: **LCS-180705** Units: **mg/L** Analysis Date: **01-Jul-2022 16:01**
Client ID: Run ID: **FID-7_412581** SeqNo: **6738653** PrepDate: **30-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.06109	0.00100	0.05	0	122	40 - 140				
Aliphatics >C12 - C16	0.1163	0.00200	0.1	0	116	40 - 140				
Aliphatics >C16 - C35	0.458	0.00800	0.4	0	114	40 - 140				
Surr: 1-Chlorooctadecane	*0.03516*	*0*	*0.04*	*0*	*87.9*	*40 - 140*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180705 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS-180705** Units: **mg/L** Analysis Date: **01-Jul-2022 16:01**
Client ID: Run ID: **FID-8_412579** SeqNo: **6738577** PrepDate: **30-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.06308	0.00100	0.05	0	126	40 - 140				
Aromatics >C12 - C16	0.225	0.00400	0.2	0	113	40 - 140				
Aromatics >C16 - C21	0.1644	0.00300	0.15	0	110	40 - 140				
Aromatics >C21 - C35	0.4509	0.00900	0.45	0	100	40 - 140				
Surr: 2-Bromonaphthalene	*0.04272*	*0*	*0.04*	*0*	*107*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.02869*	*0*	*0.04*	*0*	*71.7*	*40 - 140*				
Surr: o-Terphenyl	*0.03097*	*0*	*0.04*	*0*	*77.4*	*40 - 140*				

LCSD Sample ID: **LCSD-180705** Units: **mg/L** Analysis Date: **01-Jul-2022 16:32**
Client ID: Run ID: **FID-7_412581** SeqNo: **6738654** PrepDate: **30-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.0675	0.00100	0.05	0	135	40 - 140	0.06109	9.97	50	
Aliphatics >C12 - C16	0.1244	0.00200	0.1	0	124	40 - 140	0.1163	6.74	50	
Aliphatics >C16 - C35	0.5002	0.00800	0.4	0	125	40 - 140	0.458	8.81	50	
Surr: 1-Chlorooctadecane	*0.03542*	*0*	*0.04*	*0*	*88.5*	*40 - 140*	*0.03516*	*0.725*	*50*	

LCSD Sample ID: **LCSD-180705** Units: **mg/L** Analysis Date: **01-Jul-2022 16:32**
Client ID: Run ID: **FID-8_412579** SeqNo: **6738578** PrepDate: **30-Jun-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.05742	0.00100	0.05	0	115	40 - 140	0.06308	9.39	50	
Aromatics >C12 - C16	0.2075	0.00400	0.2	0	104	40 - 140	0.225	8.13	50	
Aromatics >C16 - C21	0.1487	0.00300	0.15	0	99.1	40 - 140	0.1644	10	50	
Aromatics >C21 - C35	0.4138	0.00900	0.45	0	92.0	40 - 140	0.4509	8.59	50	
Surr: 2-Bromonaphthalene	*0.04378*	*0*	*0.04*	*0*	*109*	*40 - 140*	*0.04272*	*2.45*	*50*	
Surr: 2-Fluorobiphenyl	*0.02728*	*0*	*0.04*	*0*	*68.2*	*40 - 140*	*0.02869*	*5.03*	*50*	
Surr: o-Terphenyl	*0.02709*	*0*	*0.04*	*0*	*67.7*	*40 - 140*	*0.03097*	*13.4*	*50*	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R411747 (0) **Instrument:** FID-14 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-220628** Units: **mg/L** Analysis Date: **28-Jun-2022 17:34**
Client ID: Run ID: **FID-14_411747** SeqNo: **6719277** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	ND	0.0100								
Aliphatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.1931*	*0.0100*	*0.25*	*0*	*77.2*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.1931*	*0.0100*	*0.25*	*0*	*77.2*	*70 - 130*				

LCS Sample ID: **LCS-220628** Units: **mg/L** Analysis Date: **28-Jun-2022 16:11**
Client ID: Run ID: **FID-14_411747** SeqNo: **6719275** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02651	0.0100	0.025	0	106	70 - 130				
Aliphatics >C8 - C10	0.01979	0.0100	0.025	0	79.2	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2008*	*0.0100*	*0.25*	*0*	*80.3*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2008*	*0.0100*	*0.25*	*0*	*80.3*	*70 - 130*				

LCSD Sample ID: **LCSD-220628** Units: **mg/L** Analysis Date: **28-Jun-2022 16:39**
Client ID: Run ID: **FID-14_411747** SeqNo: **6719276** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02134	0.0100	0.025	0	85.4	70 - 130	0.02651	21.6	25	
Aliphatics >C8 - C10	0.01823	0.0100	0.025	0	72.9	70 - 130	0.01979	8.2	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2005*	*0.0100*	*0.25*	*0*	*80.2*	*70 - 130*	*0.2008*	*0.178*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2005*	*0.0100*	*0.25*	*0*	*80.2*	*70 - 130*	*0.2008*	*0.178*	*25*	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R411749 (0) **Instrument:** FID-15 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-220628** Units: **mg/L** Analysis Date: **28-Jun-2022 17:34**
Client ID: Run ID: **FID-15_411749** SeqNo: **6719377** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	ND	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.1885*	*0.0100*	*0.25*	*0*	*75.4*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.1885*	*0.0100*	*0.25*	*0*	*75.4*	*70 - 130*				

LCS Sample ID: **LCS-220628** Units: **mg/L** Analysis Date: **28-Jun-2022 16:11**
Client ID: Run ID: **FID-15_411749** SeqNo: **6719375** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.1059	0.0100	0.1	0	106	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2286*	*0.0100*	*0.25*	*0*	*91.5*	*70 - 130*				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2286*	*0.0100*	*0.25*	*0*	*91.5*	*70 - 130*				

LCSD Sample ID: **LCSD-220628** Units: **mg/L** Analysis Date: **28-Jun-2022 16:39**
Client ID: Run ID: **FID-15_411749** SeqNo: **6719376** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08366	0.0100	0.1	0	83.7	70 - 130	0.1059	23.5	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2078*	*0.0100*	*0.25*	*0*	*83.1*	*70 - 130*	*0.2286*	*9.57*	*25*	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2078*	*0.0100*	*0.25*	*0*	*83.1*	*70 - 130*	*0.2286*	*9.57*	*25*	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180737 (0) **Instrument:** HG03 **Method:** DISSOLVED MERCURY BY SW7470A (DISSOLVED)

MBLK Sample ID: **MBLKF1-180737** Units: **mg/L** Analysis Date: **01-Jul-2022 13:49**
Client ID: Run ID: **HG03_412042** SeqNo: **6726376** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

MBLK Sample ID: **MBLK-180737** Units: **mg/L** Analysis Date: **01-Jul-2022 13:48**
Client ID: Run ID: **HG03_412042** SeqNo: **6726375** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-180737** Units: **mg/L** Analysis Date: **01-Jul-2022 13:51**
Client ID: Run ID: **HG03_412042** SeqNo: **6726377** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00568	0.000200	0.005	0	114	80 - 120				

MS Sample ID: **HS22061465-01MS** Units: **mg/L** Analysis Date: **01-Jul-2022 13:55**
Client ID: **CD-15B** Run ID: **HG03_412042** SeqNo: **6726379** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00528	0.000200	0.005	-0.000049	107	80 - 120				

MSD Sample ID: **HS22061465-01MSD** Units: **mg/L** Analysis Date: **01-Jul-2022 13:57**
Client ID: **CD-15B** Run ID: **HG03_412042** SeqNo: **6726380** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0053	0.000200	0.005	-0.000049	107	80 - 120	0.00528	0.378	20	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180738 (0) **Instrument:** ICPMS07 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLKF2-180738** Units: **mg/L** Analysis Date: **05-Jul-2022 15:14**
Client ID: Run ID: **ICPMS07_412207** SeqNo: **6729862** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

MBLK Sample ID: **MBLKF3-180738** Units: **mg/L** Analysis Date: **05-Jul-2022 15:16**
Client ID: Run ID: **ICPMS07_412207** SeqNo: **6729863** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180738 (0) **Instrument:** ICPMS07 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLKF1-180738** Units: **mg/L** Analysis Date: **05-Jul-2022 15:12**
Client ID: Run ID: **ICPMS07_412207** SeqNo: **6729861** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

MBLK Sample ID: **MBLK-180738** Units: **mg/L** Analysis Date: **05-Jul-2022 14:37**
Client ID: Run ID: **ICPMS07_412207** SeqNo: **6729782** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Manganese	ND	0.00500								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180738 (0) **Instrument: ICPMS07** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

LCS Sample ID: **LCS-180738** Units: **mg/L** Analysis Date: **01-Jul-2022 18:07**
Client ID: Run ID: **ICPMS07_412076** SeqNo: **6728996** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05651	0.00200	0.05	0	113	80 - 120				
Barium	0.05343	0.00400	0.05	0	107	80 - 120				
Cadmium	0.05232	0.00200	0.05	0	105	80 - 120				
Chromium	0.05193	0.00400	0.05	0	104	80 - 120				
Iron	5.237	0.200	5	0	105	80 - 120				
Lead	0.04717	0.00200	0.05	0	94.3	80 - 120				
Manganese	0.05176	0.00500	0.05	0	104	80 - 120				
Strontium	0.1087	0.00500	0.1	0	109	80 - 120				
Zinc	0.05389	0.00400	0.05	0	108	80 - 120				

MS Sample ID: **HS22061548-01MS** Units: **mg/L** Analysis Date: **01-Jul-2022 18:27**
Client ID: Run ID: **ICPMS07_412076** SeqNo: **6729006** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0565	0.00200	0.05	0.000166	113	75 - 125				
Barium	0.05703	0.00400	0.05	0.005694	103	75 - 125				
Cadmium	0.05178	0.00200	0.05	0.000005	104	75 - 125				
Chromium	0.05232	0.00400	0.05	0.002624	99.4	75 - 125				
Iron	5.086	0.200	5	0.0137	101	75 - 125				
Lead	0.0482	0.00200	0.05	0.000015	96.4	75 - 125				
Manganese	0.05253	0.00500	0.05	0.002166	101	75 - 125				
Strontium	0.5383	0.00500	0.1	0.4103	128	75 - 125				SO
Zinc	0.05479	0.00400	0.05	0.001202	107	75 - 125				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180738 (0) **Instrument: ICPMS07** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MSD Sample ID: **HS22061548-01MSD** Units: **mg/L** Analysis Date: **01-Jul-2022 18:29**
Client ID: Run ID: **ICPMS07_412076** SeqNo: **6729007** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05993	0.00200	0.05	0.000166	120	75 - 125	0.0565	5.89	20	
Barium	0.06033	0.00400	0.05	0.005694	109	75 - 125	0.05703	5.62	20	
Cadmium	0.05479	0.00200	0.05	0.000005	110	75 - 125	0.05178	5.64	20	
Chromium	0.0561	0.00400	0.05	0.002624	107	75 - 125	0.05232	6.97	20	
Iron	5.383	0.200	5	0.0137	107	75 - 125	5.086	5.67	20	
Lead	0.05034	0.00200	0.05	0.000015	101	75 - 125	0.0482	4.35	20	
Manganese	0.05617	0.00500	0.05	0.002166	108	75 - 125	0.05253	6.7	20	
Strontium	0.5683	0.00500	0.1	0.4103	158	75 - 125	0.5383	5.42	20	SO
Zinc	0.05768	0.00400	0.05	0.001202	113	75 - 125	0.05479	5.15	20	

PDS Sample ID: **HS22061548-01PDS** Units: **mg/L** Analysis Date: **01-Jul-2022 18:31**
Client ID: Run ID: **ICPMS07_412076** SeqNo: **6729008** PrepDate: **01-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1129	0.00200	0.1	0.000166	113	75 - 125				
Barium	0.1151	0.00400	0.1	0.005694	109	75 - 125				
Cadmium	0.1057	0.00200	0.1	0.000005	106	75 - 125				
Chromium	0.1175	0.00400	0.1	0.002624	115	75 - 125				
Iron	10.22	0.200	10	0.0137	102	75 - 125				
Lead	0.1034	0.00200	0.1	0.000015	103	75 - 125				
Manganese	0.1124	0.00500	0.1	0.002166	110	75 - 125				
Strontium	0.5354	0.00500	0.1	0.4103	125	75 - 125				SO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180738 (0) **Instrument:** ICPMS07 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

SD Sample ID: **HS22061548-01SD** Units: **mg/L** Analysis Date: **01-Jul-2022 18:25**
Client ID: Run ID: **ICPMS07_412076** SeqNo: **6729005** PrepDate: **01-Jul-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	ND	0.0100					0.000166	0	10	
Barium	ND	0.0200					0.005694	0	10	
Cadmium	ND	0.0100					0.000005	0	10	
Chromium	0.00255	0.0200					0.002624	0	10	J
Iron	ND	1.00					0.0137	0	10	
Lead	ND	0.0100					0.000015	0	10	
Manganese	ND	0.0250					0.002166	0	10	
Strontium	0.4352	0.0250					0.4103	6.05	10	
Zinc	ND	0.0200					0.001202	0	10	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180789 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-180789** Units: **mg/L** Analysis Date: **05-Jul-2022 14:14**
Client ID: Run ID: **HG03_412209** SeqNo: **6729622** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-180789** Units: **mg/L** Analysis Date: **05-Jul-2022 14:15**
Client ID: Run ID: **HG03_412209** SeqNo: **6729623** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00556	0.000200	0.005	0	111	80 - 120				

MS Sample ID: **HS22061369-04MS** Units: **mg/L** Analysis Date: **05-Jul-2022 14:19**
Client ID: Run ID: **HG03_412209** SeqNo: **6729625** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00533	0.000200	0.005	0	107	75 - 125				

MSD Sample ID: **HS22061369-04MSD** Units: **mg/L** Analysis Date: **05-Jul-2022 14:21**
Client ID: Run ID: **HG03_412209** SeqNo: **6729626** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00555	0.000200	0.005	0	111	75 - 125	0.00533	4.04	20	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180807 (0) **Instrument: ICPMS07** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-180807** Units: **mg/L** Analysis Date: **06-Jul-2022 23:27**
Client ID: Run ID: **ICPMS07_412274** SeqNo: **6733043** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.00200								
Barium	ND	0.00400								
Cadmium	ND	0.00200								
Calcium	ND	0.500								
Chromium	ND	0.00400								
Iron	ND	0.200								
Lead	ND	0.00200								
Magnesium	ND	0.200								
Manganese	ND	0.00500								
Potassium	ND	0.200								
Sodium	ND	0.200								
Strontium	ND	0.00500								
Zinc	ND	0.00400								

LCS Sample ID: **LCS-180807** Units: **mg/L** Analysis Date: **06-Jul-2022 23:29**
Client ID: Run ID: **ICPMS07_412274** SeqNo: **6733044** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05273	0.00200	0.05	0	105	80 - 120				
Barium	0.05253	0.00400	0.05	0	105	80 - 120				
Cadmium	0.05244	0.00200	0.05	0	105	80 - 120				
Calcium	5.211	0.500	5	0	104	80 - 120				
Chromium	0.05216	0.00400	0.05	0	104	80 - 120				
Iron	5.21	0.200	5	0	104	80 - 120				
Lead	0.04878	0.00200	0.05	0	97.6	80 - 120				
Magnesium	5.201	0.200	5	0	104	80 - 120				
Manganese	0.05064	0.00500	0.05	0	101	80 - 120				
Potassium	5.151	0.200	5	0	103	80 - 120				
Sodium	5.081	0.200	5	0	102	80 - 120				
Strontium	0.1026	0.00500	0.1	0	103	80 - 120				
Zinc	0.05283	0.00400	0.05	0	106	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180807 (0) **Instrument: ICPMS07** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS22061167-11MS** Units: **mg/L** Analysis Date: **06-Jul-2022 23:35**
Client ID: Run ID: **ICPMS07_412274** SeqNo: **6733047** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05334	0.00200	0.05	0.001559	104	80 - 120				
Barium	0.1032	0.00400	0.05	0.05231	102	80 - 120				
Cadmium	0.05071	0.00200	0.05	0.00001	101	80 - 120				
Calcium	12.76	0.500	5	8.004	95.2	80 - 120				
Chromium	0.05131	0.00400	0.05	0.002455	97.7	80 - 120				
Iron	5.616	0.200	5	0.6386	99.6	80 - 120				
Lead	0.04803	0.00200	0.05	0.00068	94.7	80 - 120				
Magnesium	7.688	0.200	5	2.849	96.8	80 - 120				
Manganese	0.153	0.00500	0.05	0.1078	90.5	80 - 120				
Potassium	7.339	0.200	5	2.646	93.8	80 - 120				
Sodium	15.13	0.200	5	10.65	89.5	80 - 120				
Strontium	0.172	0.00500	0.1	0.0786	93.4	80 - 120				
Zinc	0.05398	0.00400	0.05	0.001784	104	80 - 120				

MSD Sample ID: **HS22061167-11MSD** Units: **mg/L** Analysis Date: **06-Jul-2022 23:37**
Client ID: Run ID: **ICPMS07_412274** SeqNo: **6733048** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05215	0.00200	0.05	0.001559	101	80 - 120	0.05334	2.24	20	
Barium	0.1002	0.00400	0.05	0.05231	95.9	80 - 120	0.1032	2.93	20	
Cadmium	0.05007	0.00200	0.05	0.00001	100	80 - 120	0.05071	1.28	20	
Calcium	12.48	0.500	5	8.004	89.5	80 - 120	12.76	2.24	20	
Chromium	0.05698	0.00400	0.05	0.002455	109	80 - 120	0.05131	10.5	20	
Iron	5.597	0.200	5	0.6386	99.2	80 - 120	5.616	0.352	20	
Lead	0.0479	0.00200	0.05	0.00068	94.4	80 - 120	0.04803	0.275	20	
Magnesium	7.494	0.200	5	2.849	92.9	80 - 120	7.688	2.55	20	
Manganese	0.1515	0.00500	0.05	0.1078	87.4	80 - 120	0.153	0.999	20	
Potassium	7.219	0.200	5	2.646	91.5	80 - 120	7.339	1.64	20	
Sodium	14.92	0.200	5	10.65	85.3	80 - 120	15.13	1.39	20	
Strontium	0.1697	0.00500	0.1	0.0786	91.1	80 - 120	0.172	1.31	20	
Zinc	0.05291	0.00400	0.05	0.001784	102	80 - 120	0.05398	1.99	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: 180807 (0) **Instrument: ICPMS07** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS22061167-11PDS** Units: **mg/L** Analysis Date: **06-Jul-2022 23:39**
Client ID: Run ID: **ICPMS07_412274** SeqNo: **6733049** PrepDate: **05-Jul-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09673	0.00200	0.1	0.001559	95.2	75 - 125				
Barium	0.1386	0.00400	0.1	0.05231	86.3	75 - 125				
Cadmium	0.09202	0.00200	0.1	0.00001	92.0	75 - 125				
Calcium	16.48	0.500	10	8.004	84.8	75 - 125				
Chromium	0.09303	0.00400	0.1	0.002455	90.6	75 - 125				
Iron	9.689	0.200	10	0.6386	90.5	75 - 125				
Lead	0.09368	0.00200	0.1	0.00068	93.0	75 - 125				
Magnesium	11.51	0.200	10	2.849	86.6	75 - 125				
Manganese	0.1972	0.00500	0.1	0.1078	89.4	75 - 125				
Potassium	11.12	0.200	10	2.646	84.8	75 - 125				
Sodium	18.61	0.200	10	10.65	79.5	75 - 125				
Strontium	0.1791	0.00500	0.1	0.0786	100	75 - 125				
Zinc	0.09538	0.00400	0.1	0.001784	93.6	75 - 125				

SD Sample ID: **HS22061167-11SD** Units: **mg/L** Analysis Date: **06-Jul-2022 23:33**
Client ID: Run ID: **ICPMS07_412274** SeqNo: **6733046** PrepDate: **05-Jul-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	ND	0.0100					0.001559	0	10	
Barium	0.052	0.0200					0.05231	0.6	10	
Cadmium	ND	0.0100					0.00001	0	10	
Calcium	8.134	2.50					8.004	1.63	10	
Chromium	0.005062	0.0200					0.002455	0	10	J
Iron	0.6108	1.00					0.6386	0	10	J
Lead	ND	0.0100					0.00068	0	10	
Magnesium	2.776	1.00					2.849	2.55	10	
Manganese	0.1079	0.0250					0.1078	0.167	10	
Potassium	2.412	1.00					2.646	8.86	10	
Sodium	11.27	1.00					10.65	5.78	10	
Strontium	0.07267	0.0250					0.0786	7.55	10	
Zinc	ND	0.0200					0.001784	0	10	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R411865 (0) **Instrument: VOA10** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-220629** Units: **ug/L** Analysis Date: **29-Jun-2022 23:35**
Client ID: Run ID: **VOA10_411865** SeqNo: **6722286** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*50.24*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.89*	*1.0*	*50*	*0*	*99.8*	*77 - 113*				
Surr: Dibromofluoromethane	*54.38*	*1.0*	*50*	*0*	*109*	*73 - 126*				
Surr: Toluene-d8	*49.49*	*1.0*	*50*	*0*	*99.0*	*81 - 120*				

LCS Sample ID: **VLCSW-220629** Units: **ug/L** Analysis Date: **29-Jun-2022 22:52**
Client ID: Run ID: **VOA10_411865** SeqNo: **6722285** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	17.48	1.0	20	0	87.4	74 - 120				
Ethylbenzene	16.56	1.0	20	0	82.8	77 - 117				
Toluene	17.05	1.0	20	0	85.3	77 - 118				
Xylenes, Total	54.26	1.0	60	0	90.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*51.41*	*1.0*	*50*	*0*	*103*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.47*	*1.0*	*50*	*0*	*96.9*	*77 - 113*				
Surr: Dibromofluoromethane	*52.55*	*1.0*	*50*	*0*	*105*	*73 - 126*				
Surr: Toluene-d8	*49.91*	*1.0*	*50*	*0*	*99.8*	*81 - 120*				

MS Sample ID: **HS22061468-04MS** Units: **ug/L** Analysis Date: **30-Jun-2022 01:22**
Client ID: Run ID: **VOA10_411865** SeqNo: **6722291** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	4064	50	1000	3262	80.2	70 - 127				
Ethylbenzene	946.3	50	1000	0	94.6	70 - 124				
Toluene	977.7	50	1000	0	97.8	70 - 123				
Xylenes, Total	3105	50	3000	0	103	70 - 130				
Surr: 1,2-Dichloroethane-d4	*2565*	*50*	*2500*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*2390*	*50*	*2500*	*0*	*95.6*	*77 - 113*				
Surr: Dibromofluoromethane	*2632*	*50*	*2500*	*0*	*105*	*77 - 123*				
Surr: Toluene-d8	*2517*	*50*	*2500*	*0*	*101*	*82 - 127*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R411865 (0) **Instrument: VOA10** **Method: LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS22061468-04MSD** Units: **ug/L** Analysis Date: **30-Jun-2022 01:44**
Client ID: Run ID: **VOA10_411865** SeqNo: **6722292** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	3924	50	1000	3262	66.2	70 - 127	4064	3.52	20	S
Ethylbenzene	855.3	50	1000	0	85.5	70 - 124	946.3	10.1	20	
Toluene	872.4	50	1000	0	87.2	70 - 123	977.7	11.4	20	
Xylenes, Total	2761	50	3000	0	92.0	70 - 130	3105	11.7	20	
Surr: 1,2-Dichloroethane-d4	*2638*	*50*	*2500*	*0*	*106*	*70 - 126*	*2565*	*2.79*	*20*	
Surr: 4-Bromofluorobenzene	*2407*	*50*	*2500*	*0*	*96.3*	*77 - 113*	*2390*	*0.68*	*20*	
Surr: Dibromofluoromethane	*2633*	*50*	*2500*	*0*	*105*	*77 - 123*	*2632*	*0.0423*	*20*	
Surr: Toluene-d8	*2512*	*50*	*2500*	*0*	*100*	*82 - 127*	*2517*	*0.191*	*20*	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R411814 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-062822** Units: **mg/L** Analysis Date: **28-Jun-2022 15:36**
Client ID: Run ID: **Balance1_411814** SeqNo: **6720833** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-062822** Units: **mg/L** Analysis Date: **28-Jun-2022 15:36**
Client ID: Run ID: **Balance1_411814** SeqNo: **6720834** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1040	10.0	1000	0	104	85 - 115				

DUP Sample ID: **HS22061428-01DUP** Units: **mg/L** Analysis Date: **28-Jun-2022 15:36**
Client ID: Run ID: **Balance1_411814** SeqNo: **6720823** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	850	10.0					854	0.469	5	

DUP Sample ID: **HS22061281-08DUP** Units: **mg/L** Analysis Date: **28-Jun-2022 15:36**
Client ID: Run ID: **Balance1_411814** SeqNo: **6720813** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2004	10.0					2000	0.2	5	

The following samples were analyzed in this batch: HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R411967 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **WBLK2-220609** Units: **mg/L** Analysis Date: **30-Jun-2022 10:52**
Client ID: Run ID: **ManTech01_411967** SeqNo: **6724378** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS2-220609** Units: **mg/L** Analysis Date: **30-Jun-2022 11:01**
Client ID: Run ID: **ManTech01_411967** SeqNo: **6724379** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	975.8	5.00	1000	0	97.6	85 - 115				

LCSD Sample ID: **LCSD2-220609** Units: **mg/L** Analysis Date: **30-Jun-2022 11:10**
Client ID: Run ID: **ManTech01_411967** SeqNo: **6724380** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	958.7	5.00	1000	0	95.9	85 - 115	975.8	1.77	20	

DUP Sample ID: **HS22061260-18DUP** Units: **mg/L** Analysis Date: **30-Jun-2022 11:25**
Client ID: Run ID: **ManTech01_411967** SeqNo: **6724382** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Carbonate (As CaCO3)	122.5	5.00					125.6	2.51	20	

The following samples were analyzed in this batch: HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R412101 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-063022** Units: **mg/L** Analysis Date: **30-Jun-2022 15:35**
Client ID: Run ID: **Balance1_412101** SeqNo: **6727132** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-063022** Units: **mg/L** Analysis Date: **30-Jun-2022 15:35**
Client ID: Run ID: **Balance1_412101** SeqNo: **6727133** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1054	10.0	1000	0	105	85 - 115				

DUP Sample ID: **HS22061465-01DUP** Units: **mg/L** Analysis Date: **30-Jun-2022 15:35**
Client ID: **CD-15B** Run ID: **Balance1_412101** SeqNo: **6727128** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	776	10.0					782	0.77	5	

DUP Sample ID: **HS22061396-03DUP** Units: **mg/L** Analysis Date: **30-Jun-2022 15:35**
Client ID: Run ID: **Balance1_412101** SeqNo: **6727126** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	7560	10.0					768	163	5	R

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R412159 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **04-Jul-2022 08:59**
Client ID: Run ID: **ICS-Integrion_412159** SeqNo: **6728562** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Sulfate	ND	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **04-Jul-2022 09:04**
Client ID: Run ID: **ICS-Integrion_412159** SeqNo: **6728563** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.42	0.500	20	0	97.1	80 - 120				
Sulfate	19.23	0.500	20	0	96.2	80 - 120				

MS Sample ID: **HS22061465-02MS** Units: **mg/L** Analysis Date: **04-Jul-2022 12:08**
Client ID: **CD-15C** Run ID: **ICS-Integrion_412159** SeqNo: **6728585** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	87.13	0.500	10	77.13	100.0	80 - 120				O
Sulfate	19.75	0.500	10	9.449	103	80 - 120				

MSD Sample ID: **HS22061465-02MSD** Units: **mg/L** Analysis Date: **04-Jul-2022 12:14**
Client ID: **CD-15C** Run ID: **ICS-Integrion_412159** SeqNo: **6728586** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	87.65	0.500	10	77.13	105	80 - 120	87.13	0.595	20	O
Sulfate	19.86	0.500	10	9.449	104	80 - 120	19.75	0.563	20	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03 HS22061465-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: HS22061465

QC BATCH REPORT

Batch ID: R412361 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **MBLK-R412361** Units: **mg/L** Analysis Date: **02-Jul-2022 12:58**
Client ID: Run ID: **ManTech01_412361** SeqNo: **6733192** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-R412361** Units: **mg/L** Analysis Date: **02-Jul-2022 12:58**
Client ID: Run ID: **ManTech01_412361** SeqNo: **6733191** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	977.3	5.00	1000	0	97.7	85 - 115				

LCSD Sample ID: **LCSD-R412361** Units: **mg/L** Analysis Date: **02-Jul-2022 12:58**
Client ID: Run ID: **ManTech01_412361** SeqNo: **6733190** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	969	5.00	1000	0	96.9	85 - 115	977.3	0.845	20	

DUP Sample ID: **HS22061428-21DUP** Units: **mg/L** Analysis Date: **02-Jul-2022 12:58**
Client ID: Run ID: **ManTech01_412361** SeqNo: **6733193** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	564	5.00					577.5	2.37	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	

The following samples were analyzed in this batch: HS22061465-01 HS22061465-02 HS22061465-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ERM Southwest, Inc.
Project: Castex 0575834
WorkOrder: **HS22061465**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2021-080	31-Aug-2022
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932021-12	30-Jul-2022

RIGHT SOLUTIONS | RIGHT PARTNER

Sample Receipt Checklist

Work Order ID: HS22061465 **Date/Time Received:** **25-Jun-2022 08:20**

Client Name: ERMSW-BRLA **Received by:** **Paresh M. Giga**

Completed By:	/S/ Nilesh D. Ranchod	28-Jun-2022 10:10	**Reviewed by:**	/S/ Anna Kinchen	28-Jun-2022 17:00
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:266669
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑	
Temperature(s)/Thermometer(s):	13.2C/13.7C UC/C	IR31	
Cooler(s)/Kit(s):	49132		
Date/Time sample(s) sent to storage:	6/25/22 11300		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Sx count differ CD-15B COC= 10 btls Rec'd = 11 Btls, CD-15A COC= 11Btls Rec'd = 10 Btls , CD-15A 1 X voa vial rec'd empty.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTIONS | RIGHT PARTNER

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 266669

HS22061465 WV

ERM Southwest, Inc.
Castex 0575834

Customer Information		Project Information		ALS Project Manager:	
Purchase Order	0575834	Project Name	Castex 0575834	A	8260_LL_W - BTEX
Work Order		Project Number		B	MA EPH_W_La
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	MA VPH_LA_W
Send Report To	David Upthegrove	Invoice Attn	Accounts Payable	D	ICP_TW - Total Metals
Address	804 Main Street	Address	804 Main Street	E	ICP_DISS - Diss Metals
				F	9056_anions_W - Cl/SO4
City/State/Zip	Baton Rouge, LA 70802	City/State/Zip	Baton Rouge LA 70802	G	ALK_W 2320B - ALKB, ALKC
Phone	(225) 955--018	Phone	(225) 955--018	H	TDS_W 2540C
Fax	(225) 292-3011	Fax	(225) 292-3011	I	
e-Mail Address	david.upthegrove@erm.com	e-Mail Address	ermnaaccountspayable@erm.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	CD-15B	6/23/22	1130	GW		10	✓	✓	✓	✓	✓	✓	✓	✓			
2	CD-15C	6/23/22	1210	GW		10	✓	✓	✓	✓	✓	✓	✓	✓			
3	CD-15A	6/22/22	1530	GW		11	✓	✓	✓	✓	✓	✓	✓	✓			
4	CD-10D	6/21/22	1000	GW		10	✓	✓	✓	✓	✓	✓	✓	✓			
5																	
6																	
7																	
8																	
9																	
0																	

Sampler(s) Please Print & Sign: Marcus Smith MS

Shipment Method: FedEx Ground

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by: MS Date: 6/24/22 Time: 1015 Received by: [signature] ALS

Relinquished by: Date: 6/25/22 Time: 0810 Received by (Laboratory): [signature]

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp.
4A432	13.2c
CR51	CR105

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other _____
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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7/12/2022

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 22-172-0001
Project Description: Castex Development
Project Number: 0575834
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 6/21/2022 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Amy Jackson
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2023
Louisiana	State Program - NELAP	02041	06/30/2023

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2023
Arkansas	State Program	88-0650	02/07/2023
California	State Program	2904	06/30/2023
Florida	State Program - NELAP	E871157	06/30/2023
Georgia	State Program	C044	02/18/2023
Georgia	State Program	04015	06/30/2023
Illinois	State Program - NELAP	200078	10/10/2022
Kentucky	State Program	80215	06/30/2022
Kentucky	State Program	KY90047	12/31/2022
Louisiana	State Program - NELAP	LA037	12/31/2022
Louisiana	State Program - NELAP	04015	06/30/2023
Mississippi	State Program	MS	02/11/2023
North Carolina	State Program	415	12/31/2022
Pennsylvania	State Program - NELAP	68-03195	05/31/2023
South Carolina	State Program	84002	06/30/2022
Tennessee	State Program	02027	02/11/2023
Texas	State Program - NELAP	T104704180	09/30/2022
Virginia	State Program	00106	06/30/2023
Virginia	State Program - NELAP	460181	09/14/2022

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Sample Summary Table

Report Number: **22-172-0001**

Client Project Description: **Castex Development**
Project Number: 0575834
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
70004	CD-14 4-6'	Solids	06/10/2022 08:10	06/21/2022		
70004	CD-14 4-6'	Solids	06/10/2022 08:10	06/21/2022	6010D	WP MTN
70004	CD-14 4-6'	Solids	06/10/2022 08:10	06/21/2022	7471A	WP MTN
70004	CD-14 4-6'	Solids	06/10/2022 08:10	06/21/2022	29B	WP MTN
70005	CD-14 6-8'	Solids	06/10/2022 08:15	06/21/2022		
70005	CD-14 6-8'	Solids	06/10/2022 08:15	06/21/2022	6010D	WP MTN
70005	CD-14 6-8'	Solids	06/10/2022 08:15	06/21/2022	29B	WP MTN
70005	CD-14 6-8'	Solids	06/10/2022 08:15	06/21/2022	7471A	WP MTN
70006	CD-14 8-10'	Solids	06/10/2022 08:20	06/21/2022		
70006	CD-14 8-10'	Solids	06/10/2022 08:20	06/21/2022	7471A	WP MTN
70006	CD-14 8-10'	Solids	06/10/2022 08:20	06/21/2022	6010D	WP MTN
70006	CD-14 8-10'	Solids	06/10/2022 08:20	06/21/2022	29B	WP MTN
70007	CD-14 26-28'	Solids	06/10/2022 09:05	06/21/2022		
70008	CD-14 26-28'	TCLP	06/10/2022 09:05	06/21/2022	9056	WP MTN
70008	CD-14 26-28'	TCLP	06/10/2022 09:05	06/21/2022	1312	WP MTN
70009	CD-14 64-66'	Solids	06/10/2022 10:40	06/21/2022		

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Client: ERM
Project: Castex Development
Lab Report Number: 22-172-0001
Date: 7/12/2022

CASE NARRATIVE

Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.

Results

- 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
- True Total Barium results are reported dry weight
- Oil & Grease results are reported dry weight
- VPH/EPH results reported as received
- PAH results reported as received

Metals Analysis Method 6010D
Sample 70006 (CD-14 8-10')
Analyte: Barium
QC Batch No: L623858/L623270
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 70006 (CD-14 8-10')
Analyte: Lead
QC Batch No: L623858/L623270
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 70006 (CD-14 8-10')
Analyte: Strontium
QC Batch No: L623858/L623270
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Solids Total Mercury Analysis - CVAA Method 7471A
Sample 84398
Analyte: Mercury
QC Batch No: L623662/L623381
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston , TX 77024

Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 07/12/2022
Received : 06/21/2022

Report Number : **22-172-0001**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **70004**
Sample ID : **CD-14 4-6'**

Matrix: **Solids**
Sampled: **6/10/2022 8:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	20.7	%		1	06/24/22 08:31	JMB	SW-DRYWT
% Saturation (Sat Paste)	80.1	%		1	06/24/22 09:28	BMB	29B
Chloride	1150	mg/Kg	8.00	2	07/05/22 16:02	MJM	9056
Electrical Conductivity (Sat Paste)	5.02	mmhos/cm		1	06/24/22 09:28	BMB	29B
pH (Sat Paste)	7.09	s.u.		1	06/24/22 09:28	BMB	29B
Cation Exchange Capacity	32.6	meq/100g	0.100	50	06/27/22 12:50		29B
Exchangeable Sodium Percentage	3.74	%	0.100	1	06/24/22 09:28		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	5.58	Calc	2.15	50	06/27/22 12:46		29B
Calcium (Sat Paste)	13.5	meq/L	2.50	50	06/27/22 15:25	APB	29B
Magnesium (Sat Paste)	11.2	meq/L	4.10	50	06/27/22 14:35	APB	29B
Sodium (Sat Paste)	19.6	meq/L	2.15	50	06/27/22 12:46	APB	29B
True Total Barium	532	mg/Kg	500	1	07/12/22 13:17		29B
Arsenic	4.34	mg/Kg	1.00	1	06/29/22 04:51	JTR	6010D
Barium	269	mg/Kg	1.00	1	06/27/22 17:37	EAL	6010D
Cadmium	<0.200	mg/Kg	0.200	1	06/27/22 17:37	EAL	6010D
Chromium	12.8	mg/Kg	0.500	1	06/27/22 17:37	EAL	6010D
Lead	11.2	mg/Kg	0.600	1	06/27/22 17:37	EAL	6010D
Mercury	<0.158	mg/Kg	0.158	1	06/24/22 17:03	JTR	7471A
Strontium	22.7	mg/Kg	0.500	1	06/27/22 17:37	EAL	6010D
Zinc	29.2	mg/Kg	2.50	1	06/27/22 17:37	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 07/12/2022
Received : 06/21/2022

Report Number : **22-172-0001**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **70005**
Sample ID : **CD-14 6-8'**

Matrix: **Solids**
Sampled: **6/10/2022 8:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	18.5	%		1	06/24/22 08:31	JMB	SW-DRYWT
% Saturation (Sat Paste)	82.4	%		1	06/24/22 09:28	BMB	29B
Chloride	499	mg/Kg	4.00	1	07/05/22 16:14	MJM	9056
Electrical Conductivity (Sat Paste)	2.47	mmhos/cm		1	06/24/22 09:28	BMB	29B
pH (Sat Paste)	7.51	s.u.		1	06/24/22 09:28	BMB	29B
Cation Exchange Capacity	31.1	meq/100g	0.100	20	06/27/22 12:52		29B
Exchangeable Sodium Percentage	1.96	%	0.100	1	06/24/22 09:28		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	2.62	Calc	0.860	20	06/27/22 12:48		29B
Calcium (Sat Paste)	8.54	meq/L	1.00	20	06/27/22 14:25	APB	29B
Magnesium (Sat Paste)	5.91	meq/L	1.64	20	06/27/22 14:36	APB	29B
Sodium (Sat Paste)	7.05	meq/L	0.860	20	06/27/22 12:48	APB	29B
True Total Barium	561	mg/Kg	500	1	07/12/22 13:32	TJS	29B
Arsenic	2.54	mg/Kg	1.00	1	06/27/22 17:53	JTR	6010D
Barium	238	mg/Kg	1.00	1	06/27/22 17:53	EAL	6010D
Cadmium	0.265	mg/Kg	0.200	1	06/27/22 17:53	EAL	6010D
Chromium	10.9	mg/Kg	0.500	1	06/27/22 17:53	EAL	6010D
Lead	9.18	mg/Kg	0.600	1	06/27/22 17:53	EAL	6010D
Mercury	<0.138	mg/Kg	0.138	1	06/24/22 17:05	JTR	7471A
Strontium	23.5	mg/Kg	0.500	1	06/27/22 17:53	EAL	6010D
Zinc	27.9	mg/Kg	2.50	1	06/27/22 17:53	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development

Information : Project Number: 0575834
Jennings, LA

Report Date : 07/12/2022
Received : 06/21/2022

Report Number : **22-172-0001**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **70006**
Sample ID : **CD-14 8-10'**

Matrix: **Solids**
Sampled: **6/10/2022 8:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	24.2	%		1	06/24/22 08:31	JMB	SW-DRYWT
% Saturation (Sat Paste)	122	%		1	06/24/22 09:28	BMB	29B
Chloride	477	mg/Kg	4.00	1	07/05/22 16:26	MJM	9056
Electrical Conductivity (Sat Paste)	1.74	mmhos/cm		1	06/24/22 09:28	BMB	29B
pH (Sat Paste)	7.68	s.u.		1	06/24/22 09:28	BMB	29B
Cation Exchange Capacity	49.1	meq/100g	0.100	20	06/27/22 12:59		29B
Exchangeable Sodium Percentage	2.12	%	0.100	1	06/24/22 09:28		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	3.19	Calc	0.430	10	06/27/22 12:49		29B
Calcium (Sat Paste)	4.98	meq/L	0.500	10	06/27/22 14:25	APB	29B
Magnesium (Sat Paste)	3.07	meq/L	0.820	10	06/27/22 14:37	APB	29B
Sodium (Sat Paste)	6.39	meq/L	0.430	10	06/27/22 12:49	APB	29B
True Total Barium	<500	mg/Kg	500	1	07/12/22 13:47	TJS	29B
Arsenic	5.79	mg/Kg	1.00	1	06/27/22 17:58	JTR	6010D
Barium	283	mg/Kg	1.00	1	06/27/22 17:58	EAL	6010D
Cadmium	0.522	mg/Kg	0.200	1	06/27/22 17:58	EAL	6010D
Chromium	19.3	mg/Kg	0.500	1	06/27/22 17:58	EAL	6010D
Lead	16.3	mg/Kg	0.600	1	06/27/22 17:58	EAL	6010D
Mercury	<0.135	mg/Kg	0.135	1	06/24/22 17:06	JTR	7471A
Strontium	48.5	mg/Kg	0.500	1	06/27/22 17:58	EAL	6010D
Zinc	51.4	mg/Kg	2.50	1	06/27/22 17:58	EAL	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 07/12/2022
Received : 06/21/2022

Report Number : **22-172-0001**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **70007**
Sample ID : **CD-14 26-28'**

Matrix: **Solids**
Sampled: **6/10/2022 9:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.8	%		1	06/24/22 08:31	JMB	SW-DRYWT
% Saturation (Sat Paste)	114	%		1	06/24/22 09:28	BMB	29B
Chloride	542	mg/Kg	4.00	1	07/05/22 16:39	MJM	9056
Electrical Conductivity (Sat Paste)	2.56	mmhos/cm		1	06/24/22 09:28	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 07/12/2022
Received : 06/21/2022

Report Number : **22-172-0001**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **70008**
Sample ID : **CD-14 26-28'**

Matrix: **TCLP**
Sampled: **6/10/2022 9:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	06/23/22 12:00	ALM	1312
SPLP Chloride	32.8	mg/L	0.400	1	06/30/22 10:28	JCA	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex Development
Information : Project Number: 0575834
Jennings, LA

Report Date : 07/12/2022
Received : 06/21/2022

Report Number : **22-172-0001**

REPORT OF ANALYSIS

Amy Jackson
Project Manager

Lab No : **70009**
Sample ID : **CD-14 64-66'**

Matrix: **Solids**
Sampled: **6/10/2022 10:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	23.9	%		1	06/24/22 08:31	JMB	SW-DRYWT
% Saturation (Sat Paste)	42.7	%		1	06/24/22 09:28	BMB	29B
Chloride	972	mg/Kg	20.0	5	07/05/22 16:51	MJM	9056
Electrical Conductivity (Sat Paste)	9.67	mmhos/cm		1	06/24/22 09:28	BMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-172-0001

QC Prep: L625943
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): L626351
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-L625943 Matrix: SOL
Associated Lab Samples: 70004, 70005, 70006

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 500	500	07/12/22 13:11

Laboratory Control Sample LCS-L625943

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	8930	9250	104	80-120

Matrix Spike & Matrix Spike Duplicate A 70004-A74715-MS-L625943 A 70004-A74715-MSD-L625943

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	532	8400	9090	9010	9760	101	102	75-125	7.9	20.0

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-172-0001**

QC Prep: A74716
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A74782
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A74716 Matrix: SOL
Associated Lab Samples: 70004, 70005, 70006

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	06/27/22 12:49

Duplicate A 70004-A74715-DUP-A74716

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	7490	7520	0.3	30.0	06/27/22 12:51

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-172-0001**

QC Prep: A74717
QC Prep Batch Method: 29B
QC Analytical Batch(es): A74783
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 70004-A74715-DUP-A74717

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	2.79	2.73	2.1	30.0	06/27/22 12:57

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-172-0001

QC Prep: A74718
QC Prep Batch Method: 29B
QC Analytical Batch(es): A74765,A74766
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 70004-A74715-DUP-A74718

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	80.1	81.4	1.6	30.0	06/24/22 09:28
Electrical Conductivity (Sat Paste)	mmhos/cm	5.02	5.02	0.0	30.0	06/24/22 09:28
pH (Sat Paste)	s.u.	7.09	7.01	1.1	30.0	06/24/22 09:28

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-172-0001

QC Prep: A74718
QC Prep Batch Method: 29B
QC Analytical Batch(es): A74765,A74766
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 70004-A74715-DUP-A74718

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	13.5	13.7	1.4	30.0	06/27/22 15:25
Magnesium (Sat Paste)	meq/L	11.2	10.9	2.7	30.0	06/27/22 14:35
Sodium (Sat Paste)	meq/L	19.6	19.8	1.0	30.0	06/27/22 12:47

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Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-172-0001

QC Prep: L623270
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L623858,L624083
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-L623270 Matrix: SOL
Associated Lab Samples: 70004, 70005, 70006

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 1.00	1.00	06/29/22 02:48
Barium	mg/Kg	< 1.00	1.00	06/27/22 15:51
Cadmium	mg/Kg	< 0.200	0.200	06/27/22 15:51
Chromium	mg/Kg	< 0.500	0.500	06/27/22 15:51
Lead	mg/Kg	< 0.600	0.600	06/27/22 15:51
Strontium	mg/Kg	< 0.500	0.500	06/27/22 15:51
Zinc	mg/Kg	< 2.50	2.50	06/27/22 15:51

Laboratory Control Sample LCS-L623270

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/Kg	10.0	11.2	112	80-120
Barium	mg/Kg	100	106	106	80-120
Cadmium	mg/Kg	10.0	10.6	106	80-120
Chromium	mg/Kg	100	112	112	80-120
Lead	mg/Kg	10.0	10.8	108	80-120
Strontium	mg/Kg	10.0	11.3	113	80-120
Zinc	mg/Kg	100	110	110	80-120

Matrix Spike & Matrix Spike Duplicate A 70006-MS-L623270 A 70006-MSD-L623270

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	5.79	8.73	9.96	12.8	15.1	80.0	93.0	75-125	16.4	20.0
Barium	mg/Kg	283	87.3	99.6	332	298	56.0*	15.0*	75-125	10.7	20.0
Cadmium	mg/Kg	0.522	8.73	9.96	8.64	9.61	93.0	91.0	75-125	10.6	20.0
Chromium	mg/Kg	19.3	87.3	99.6	105	117	98.0	98.0	75-125	10.8	20.0

* QC Fail

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-172-0001**

QC Prep: L623270
QC Prep Batch Method: 3050B
QC Analytical Batch(es): L623858,L624083
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 70006-MS-L623270 A 70006-MSD-L623270

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Lead	mg/Kg	16.3	8.73	9.96	20.1	19.4	44.0*	31.0*	75-125	3.5	20.0
Strontium	mg/Kg	48.5	8.73	9.96	59.7	62.9	128*	145*	75-125	5.2	20.0
Zinc	mg/Kg	51.4	87.3	99.6	132	145	92.0	94.0	75-125	9.3	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-172-0001

QC Prep: L623381
QC Prep Batch Method: 7471A
QC Analytical Batch(es): L623662
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-L623381 Matrix: SOL
Associated Lab Samples: 70004, 70005, 70006

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.160	0.160	06/24/22 16:47

Laboratory Control Sample LCS-L623381

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/Kg	0.400	0.406	102	80-120

Matrix Spike & Matrix Spike Duplicate G 84398-MS-L623381 G 84398-MSD-L623381

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	< 0.134	0.335	0.361	0.406	0.422	121*	117	80-120	3.8	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-172-0001

QC Prep: A74817
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A74898
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A74817 Matrix: SOL
Associated Lab Samples: 70004, 70005, 70006, 70007, 70009

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	07/05/22 15:37

Laboratory Control Sample LCS-A74817

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	510	102	80-120

Matrix Spike & Matrix Spike Duplicate A 70094-MS-A74817 A 70094-MSD-A74817

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	< 4.00	469	465	493	486	105	105	80-120	1.4	15.0

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Quality Control Data

Client ID: ERM
Project Description: Castex Development
Report No: 22-172-0001

QC Prep: L624580
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L624635
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L624580 Matrix: TCL
Associated Lab Samples: 70008

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	06/30/22 09:15

Laboratory Control Sample LCS-L624580

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	51.8	104	90-110

Matrix Spike & Matrix Spike Duplicate A 70008-MS-L624580 A 70008-MSD-L624580

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
SPLP Chloride	mg/L	32.8	55.6	55.6	87.1	88.4	98.0	100	80-120	1.4	15

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex Development**
Report No: **22-172-0001**

QC Analytical Batch: A74758
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 70004-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	20.7	20.5	0.9	20.0	06/24/22 08:31

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **22-172-0001**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 06/21/2022 15:23:33

Client Name/Address	Client Project Manager/Contact	Billing Information	For Laboratory Use Only
ERM 840 W. Sam Houston Pkwy N. Suite 600 Houston, TX 77024	Dave Upthegrove	SAME	

Project Description	Project/Site Location (City/State)		Method of Shipment	Matrix Key
Castex	Jeff Davis Parish, Louisiana	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
057583(4)	504.481.6170	david.upthegrove@erm.com		

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Marrero, LA 70072
504-371-8557

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification		Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	EC	%Moisture	Soluble Cl	9B Metals	CEC, ESP, SAR	SPLP Cl				Comments/Notes
				Required Analysis / Preservative												
6/10/22	0810	CD-14	4-6'	1	S	G	X	X	X	X	X					70005
	0815	CD-14	6-8'	1	S	G	X	X	X	X	X					70006
	0820	CD-14	8-10'	1	S	G	X	X	X	X	X					70004
	0905	CD-14	26-28'	1	S	G	X	X	X			X				70007 - 70008
	1040	CD-14	64-66'	1	S	G	X	X	X							70009

22-172-0001
10485
06-21-2022
09:45:38
ERM (Sugar Land)
Castex Development

For Laboratory Use Only		
Ice: Y / N	Custody Seals: Y / N	Lab Comments
Blank/Cooler Temp: N/A		

Sampled by (Name – Print): R. Charles Trahan

Client Remarks/Comments: 9B Metals: As, Ba, TTBe, Cd, Cr, Pb, Sr, Zn, Hg
Send copy of report to: Michael.Goodman@erm.com

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
R. Charles Trahan	6/21/22 0917	T. Howard	6/21/22 0917
T. Howard	6/21/22 1014	Brandi Hidalgo	6-21-22 1006
Brandi Hidalgo	6-21-22 1436		

BP/Castex-Ltd Adm-Apx E-001355

Safeguard LITHO USA Form No. 811-2/E15CS000388 07/15

ERM

0575834 CASTEX

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #22-06038-OR

July 25, 2022

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

BP/Castex-Ltd Adm-Apx E-001356

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BP/Castex-Ltd Adm-Apx E-001357

Eberline Services – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Services Work Order # 22-06038

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		6/13/22	[illegible]	Sample Log-In
		7/7/22	[illegible]	Data Compilation
		7/11/22	[illegible]	First Technical Data Review
		7/12/22	MM	Second Technical Data Review
		7/13/22	[illegible]	Data Entry/Electronic Deliverable
		7/13/22	[illegible]	Case Narrative
		7/18/22	[illegible]	Electronic Deliverable Proof
		7/18/22	MM	Samples Analyzed within Holding Time Yes? [✓] No? [ ]
		7/18/22	MM	QA/QC Review
				Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by: [signature] 7/25/22

Laboratory Manager Date

Copy No. _____

Radiochemistry Services

SECTION I

CHAIN OF CUSTODY

Chain of Custody Record

No

Eberline Services
601 Scarboro Road
Oak Ridge, TN 37830
(865) 481-0683 Phone • (865) 483-4621 Fax

EBERLINE SERVICES

Project Name: Castex Landing	Project Number: 0575834
Send Report To: Dave Uprhegrove	Sampler (Print Name): David Sanguinetti
Address: 846 N Sam Houston Pkwy N	Sampler (Print Name):
Suite 600 Houston, Tx 77024	Shipment Method:
	Airbill Number:
Phone: 832-786-5006	Laboratory Receiving:
Fax:	

REC'D JUN 13 2022

Page 1 of 1

22-06038

Purchase Order #: 0575834

	Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	Analysis Requested: Rad 226/Rad 228	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
4	R-1 (0-6")	6/10/22	0845	S	1	X		
5	R-1 (6-12")		0850					
6	R-1 (12-18")		0855					
7	R-1 (18-24")		0900					
8	R-2 (0-6")		0930					
9	R-2 (6-12")		0935					
10	R-3 (0-6")		1000					
11	R-3 (6-12")		1005					
12	R-3 (12-18")		1010					
13	R-4 (0-4")		1130					
14	R-5 (0-6")		1100					

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	Randolph Spencer 6-13-22 0910	6/10/22	1645
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level	Turnaround	Sample Receipt	
		Total # Containers Received?	
Level I ☐	Routine ☐	COC Seals Present?	
Level II ☐	24 Hour ☐	COC Seals Intact?	
Level III ☐	1 Week ☐	Received Containers Intact?	
Other ☐	Other _____	Temperature?	

0005

BP/Castex-Ltd Adm-Apx E-001360

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	22-06038
Lab Deadline	7/5/2022
Analysis	Gamma - Level 4
Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
21 day ingrowth: Report Ra226/228.	04	50	F1.4
	05	110	F1.4
	06	70	F1.4
	07	50	F1.4
	08	60	F1.4
	09	50	F1.4
	10	240	F1.4
	11	70	F1.4
	12	80	F1.4
	13	390	F1.4
	14	250	F1.4

	Location (circle one)					Initials	Date
Received by	(Sample Storage)	(Rough Prep)	Prep	Separations	Count Room 1030	Key Sam	6-13-22
Relinquished by	Sample Storage	(Rough Prep)	Prep	Separations	Count Room 1035	Key Sam	6-14-22
Received by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KB 6/14/22 1036	
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	(Count Room)	KB 7/6/22 1815	
Received by	(Sample Storage)	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

SECTION II

SAMPLE ACKNOWLEDGEMENT

BP/Castex-Ltd Adm-Apx E-001362

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
ERM	0575834	Environmental	06/13/2022	28	22-06038
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
575834	CASTEX LANDING	H	07/05/2022	07/11/2022	07/12/2022

Internal ID	Client ID	Sample Date	Matrix	Storage	Gamma																							TLI
01	LCS	06/13/22	SO	F1.4	X																							1
02	BLANK	06/13/22	SO	F1.4	X																							1
03	DUP	06/13/22	SO	F1.4	X																							1
04	R-1 0-6	06/10/22 08:45	SO	F1.4	X																							1
05	R-1 6-12	06/10/22 08:50	SO	F1.4	X																							1
06	R-1 12-18	06/10/22 08:55	SO	F1.4	X																							1
07	R-1 18-24	06/10/22 09:00	SO	F1.4	X																							1
08	R-2 0-6	06/10/22 09:30	SO	F1.4	X																							1
09	R-2 6-12	06/10/22 09:35	SO	F1.4	X																							1
10	R-3 0-6	06/10/22 10:00	SO	F1.4	X																							1
11	R-3 6-12	06/10/22 10:05	SO	F1.4	X																							1
12	R-3-12-18	06/10/22 10:10	SO	F1.4	X																							1
13	R-4 0-4	06/10/22 11:30	SO	F1.4	X																							1
14	R-5 0-6	06/10/22 11:00	SO	F1.4	X																							1
																												0
																												0
																												0
																												0
																												0
																												0
	Totals Per Analysis (non QA samples)				11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice	Accounts Payable ERM 840 W Sam Houston Pkwy N, Suite 600 Houston, TX 77024 Voice 281-242-5700 Fax 281-520-4625	**Report Data**	Dave Upthegrove ERM 840 W. Sam Houston Pkwy N #600 Houston, TX 77024 *Voice* 504-481-6470 *Fax*
Contact	Dave Upthegrove Voice 504-481-6470 Fax		

BP/Castex-Ltd Adm-Apx E-001363

0008

Printed: 6/13/2022 1:10 PM

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 22-06038

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS (NON-AQUEOUS)

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	Y	N	(N/A)

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: Randolph Spencer DATE: 6-13-22

SECTION III

CASE NARRATIVE

BP/Castex-Ltd Adm-Apx E-001365

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-49907

July 25, 2022

Dave Upthegrove
ERM
840 W Sam Houston Pkwy N #600
Houston, TX 77478

CASE NARRATIVE
Work Order # 22-06038-OR

SAMPLE RECEIPT

This work order contains eleven soil samples received 06/13/2022. Samples were analyzed for Radium-226/228 by Gamma Spectroscopy.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
R-1 0-6	22-06038-04	R-3 0-6	22-06038-10
R-1 6-12	22-06038-05	R-3 6-12	22-06038-11
R-1 12-18	22-06038-06	R-3-12-18	22-06038-12
R-1 18-24	22-06038-07	R-4 0-4	22-06038-13
R-2 0-6	22-06038-08	R-5 0-6	22-06038-14
R-2 6-12	22-06038-09		

ANALYTICAL METHODS

Gamma Spectroscopy was performed using EPA Method 901.1 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

GAMMA SPECTROSCOPY

Samples were dried, homogenized, and placed into appropriate gamma spectroscopy geometry containers. Samples were sealed for 21 days to allow for ingrowth of Radon-222 and progeny. Samples were counted on High Purity Germanium (HPGe) gamma ray detectors. Energy lines from Lead-214 and Bismuth-214 were analyzed for determinations of Radium-226 activity.

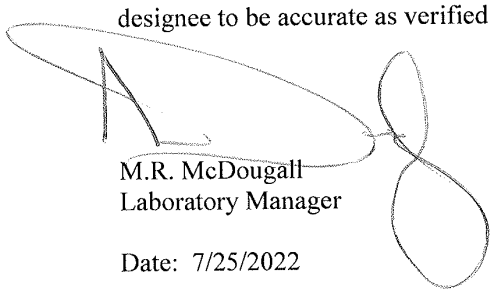
ANALYTICAL RESULTS CONTINUED

GAMMA SPECTROSCOPY CONTINUED

Samples demonstrated acceptable results for all gamma-emitting radionuclides as reported. The method blank demonstrated acceptable results for all radionuclides as reported. Results for the Radium-226 and Radium-228 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Cobalt-60 and Cesium-137 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall
Laboratory Manager

Date: 7/25/2022

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

SECTION IV

ANALYTICAL RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-001368

Eberline Analytical
Final Report of Analysis

Report To:
Dave Upthegrove
ERM
840 W. Sam Houston Pkwy N #600
Houston, TX 77024

Work Order Details:
SDG: 22-06038
Project: 0575834 CASTEX
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-06038-01	LCS	KNOWN	06/13/22 00:00	6/13/2022	7/6/2022	22-06038	Cobalt-60	EPA 901.1 Modified	1.34E+02	5.23E+00			pCi/g
22-06038-01	LCS	KNOWN	06/13/22 00:00	6/13/2022	7/6/2022	22-06038	Cesium-137	EPA 901.1 Modified	8.17E+01	3.35E+00			pCi/g
22-06038-01	LCS	SPIKE	06/13/22 00:00	6/13/2022	7/6/2022	22-06038	Cobalt-60	EPA 901.1 Modified	1.23E+02	7.27E+00	9.62E+00	1.42E+00	pCi/g
22-06038-01	LCS	SPIKE	06/13/22 00:00	6/13/2022	7/6/2022	22-06038	Cesium-137	EPA 901.1 Modified	7.78E+01	7.26E+00	8.29E+00	1.60E+00	pCi/g
22-06038-02	MBL	BLANK	06/13/22 00:00	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	4.64E-02	5.32E-02	5.32E-02	8.83E-02	pCi/g
22-06038-02	MBL	BLANK	06/13/22 00:00	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.16E-03	6.59E-02	6.59E-02	1.01E-01	pCi/g
22-06038-03	DUP	R-1 0-6	06/10/22 08:45	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.29E+00	3.14E-01	3.21E-01	5.10E-01	pCi/g
22-06038-03	DUP	R-1 0-6	06/10/22 08:45	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.25E+00	4.74E-01	4.78E-01	8.58E-01	pCi/g
22-06038-04	DO	R-1 0-6	06/10/22 08:45	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.36E+00	2.70E-01	2.79E-01	4.57E-01	pCi/g
22-06038-04	DO	R-1 0-6	06/10/22 08:45	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.52E+00	3.90E-01	3.98E-01	8.50E-01	pCi/g
22-06038-05	TRG	R-1 6-12	06/10/22 08:50	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.17E+00	1.71E-01	1.81E-01	2.03E-01	pCi/g
22-06038-05	TRG	R-1 6-12	06/10/22 08:50	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.53E+00	2.25E-01	2.39E-01	2.95E-01	pCi/g
22-06038-06	TRG	R-1 12-18	06/10/22 08:55	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.36E+00	3.74E-01	3.80E-01	5.74E-01	pCi/g
22-06038-06	TRG	R-1 12-18	06/10/22 08:55	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.54E+00	5.26E-01	5.32E-01	9.89E-01	pCi/g
22-06038-07	TRG	R-1 18-24	06/10/22 09:00	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.15E+00	3.19E-01	3.24E-01	5.46E-01	pCi/g
22-06038-07	TRG	R-1 18-24	06/10/22 09:00	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.81E+00	4.01E-01	4.12E-01	6.37E-01	pCi/g
22-06038-08	TRG	R-2 0-6	06/10/22 09:30	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.07E+01	7.07E-01	8.94E-01	5.26E-01	pCi/g
22-06038-08	TRG	R-2 0-6	06/10/22 09:30	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.34E+00	3.92E-01	3.98E-01	8.61E-01	pCi/g
22-06038-09	TRG	R-2 6-12	06/10/22 09:35	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.82E+00	2.23E-01	2.42E-01	7.13E-02	pCi/g
22-06038-09	TRG	R-2 6-12	06/10/22 09:35	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.22E+00	2.83E-01	2.90E-01	5.25E-01	pCi/g
22-06038-10	TRG	R-3 0-6	06/10/22 10:00	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	2.64E+01	1.65E+00	2.13E+00	1.02E+00	pCi/g
22-06038-10	TRG	R-3 0-6	06/10/22 10:00	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	2.46E+00	8.22E-01	8.32E-01	1.91E+00	pCi/g

0014

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Dave Upthegrove
ERM
840 W. Sam Houston Pkwy N #600
Houston, TX 77024

Work Order Details:
SDG: 22-06038
Project: 0575834 CASTEX
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-06038-11	TRG	R-3 6-12	06/10/22 10:05	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	3.52E+00	3.31E-01	3.77E-01	3.52E-01	pCi/g
22-06038-11	TRG	R-3 6-12	06/10/22 10:05	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.32E+00	2.76E-01	2.84E-01	7.81E-01	pCi/g
22-06038-12	TRG	R-3-12-18	06/10/22 10:10	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.11E+00	2.01E-01	2.09E-01	3.25E-01	pCi/g
22-06038-12	TRG	R-3-12-18	06/10/22 10:10	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	9.25E-01	1.96E-01	2.02E-01	3.53E-01	pCi/g
22-06038-13	TRG	R-4 0-4	06/10/22 11:30	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	4.16E+01	2.56E+00	3.33E+00	1.36E+00	pCi/g
22-06038-13	TRG	R-4 0-4	06/10/22 11:30	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	5.49E+01	3.23E+00	4.29E+00	3.59E+00	pCi/g
22-06038-14	TRG	R-5 0-6	06/10/22 11:00	6/13/2022	7/6/2022	22-06038	Radium-226	EPA 901.1 Modified	1.08E+01	7.45E-01	9.28E-01	7.01E-01	pCi/g
22-06038-14	TRG	R-5 0-6	06/10/22 11:00	6/13/2022	7/6/2022	22-06038	Radium-228	EPA 901.1 Modified	1.99E+01	1.32E+00	1.67E+00	1.25E+00	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE ANALYTICAL
EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

SECTION V

ANALYTICAL STANDARD

BP/Castex-Ltd Adm-Apx E-001371

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.ezag.com

CERTIFICATE OF CALIBRATION

Standard Reference Source

GAS-2102

SRS Number: 120258
Source Description: Sand in 16 Ounce PP Taral Jar Filled to Capacity
Product Code: 8401-EG-SAN
Customer: Eberlline Analytical Corporation
P.O. Number: OR-2107007, Item 4

This standard radionuclide source was prepared from an aliquot measured gravimetrically from a master radionuclide solution calibrated with a germanium gamma-ray spectrometer system. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using germanium gamma-ray spectrometry. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology (NIST) through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Reference Date: 01-July-2021 12:00 PM EST

MGS Mixture

Isotope	Gamma-Ray Energy, keV	Half-Life, d	Activity, Bq	Flux, s^{-1}	Uncertainty u_A, %	Uncertainty u_B, %	Uncertainty U, %*	Calibration Method**
Am-241	59.5	1.580E+05	5.495E+03	1.973E+03	0.1	1.8	3.7	4π LS
Cd-109	88.0	4.614E+02	7.694E+04	2.847E+03	0.5	2.0	4.2	HPGe
Co-57	122.1	2.717E+02	1.760E+03	1.506E+03	0.4	1.7	3.5	HPGe
Ce-139	165.9	1.376E+02	2.646E+03	2.117E+03	0.4	1.8	3.7	HPGe
Hg-203	279.2	4.659E+01	5.342E+03	4.357E+03	0.3	1.7	3.5	HPGe
Sn-113	391.7	1.151E+02	4.575E+03	2.973E+03	0.4	2.0	4.1	HPGe
Cs-137	661.7	1.099E+04	2.185E+03	1.860E+03	0.7	1.9	4.1	HPGe
Y-88	898.0	1.066E+02	7.710E+03	7.224E+03	0.7	1.7	3.7	HPGe
Y-88	1836.1	———	———	7.649E+03	0.7	1.7	3.7	———
Co-60	1173.2	1.925E+03	3.561E+03	3.556E+03	0.7	1.8	3.9	HPGe
Co-60	1332.5	———	———	3.561E+03	0.7	1.8	3.9	———

Mixed Gamma (MGS) master solution is EZA's eight isotope mixture which is calibrated quarterly and consists of Cd-109, Co-57, Ce-139, Hg-203, Sn-113, Cs-137, Y-88, and Co-60. ***Uncertainty:** U - Relative expanded uncertainty, $k = 2$. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results." ****Calibration Methods:** 4π LS - 4π Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber.

(Certificate continued on reverse side)

QA/QC REVIEWED

DATE 9-30-21 INITIALS MM

Corporate Office
24037 Avenue Tibbitts Valencia, California 91355

Laboratory 0017
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

BP/Castex-Ltd Adm-Apx E-001372

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.ezag.com

CERTIFICATE OF CALIBRATION

Standard Reference Source

GAS-1802

SRS Number: 109355
Source Description: Sand in 16 Ounce PP Omega Jar Filled to Capacity
Product Code: 8401-EG-SAN
Customer: Eberline Analytical Corporation
P.O. Number: OR-1802013, Item 4

This standard radionuclide source was prepared from an aliquot measured gravimetrically from a master radionuclide solution calibrated with a germanium gamma-ray spectrometer system. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using germanium gamma-ray spectrometry. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology (NIST) through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Reference Date: 01-April-2018 12:00 PM EST

MGS Mixture

Isotope	Gamma-Ray Energy, keV	Half-Life, d	Activity, Bq	Flux, s^{-1}	Uncertainty u_A, %	Uncertainty u_B, %	Uncertainty U, %*	Calibration Method**
Am-241	59.5	1.580E+05	5.506E+03	1.977E+03	0.1	1.8	3.6	4π LS
Cd-109	88.0	4.614E+02	7.811E+04	2.890E+03	0.5	2.0	4.1	HPGe
Co-57	122.1	2.717E+02	1.785E+03	1.528E+03	0.4	1.7	3.4	HPGe
Ce-139	165.9	1.376E+02	2.664E+03	2.131E+03	0.4	1.7	3.6	HPGe
Hg-203	279.2	4.659E+01	5.578E+03	4.549E+03	0.3	1.7	3.5	HPGe
Sn-113	391.7	1.151E+02	4.584E+03	2.979E+03	0.4	1.9	3.9	HPGe
Cs-137	661.7	1.099E+04	2.260E+03	1.923E+03	0.7	1.9	4.1	HPGe
Y-88	898.0	1.066E+02	7.491E+03	7.019E+03	0.7	1.7	3.7	HPGe
Y-88	1836.1	———	———	7.431E+03	0.7	1.7	3.7	———
Co-60	1173.2	1.925E+03	3.528E+03	3.523E+03	0.7	1.8	3.9	HPGe
Co-60	1332.5	———	———	3.527E+03	0.7	1.8	3.9	———

Mixed Gamma (MGS) master solution is EZA's eight isotope mixture which is calibrated quarterly and consists of Cd-109, Co-57, Ce-139, Hg-203, Sn-113, Cs-137, Y-88, and Co-60. ***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results." ****Calibration Methods:** 4π LS - 4π Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber.

(Certificate continued on reverse side)

BP/Castex-Ltd Adm-Apx E-001373

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-001374

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-06038	Gamma	1	pCi	g	ERM

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
CO-60		91.62%	7.84%	100.00%	3.91%	1.34E+02	5.23E+00	1.23E+02	9.62E+00	GAS-2002	1.34E+02	5.23E+00	7.36E+02
CS-137		95.23%	10.65%	100.00%	4.10%	8.17E+01	3.35E+00	7.78E+01	8.29E+00	GAS-2002	8.17E+01	3.35E+00	7.36E+02

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-226	0.33	5.46	1.36E+00	2.79E-01	1.29E+00	3.21E-01
RA-228	0.83	19.02	1.52E+00	3.98E-01	1.25E+00	4.78E-01

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.92	OK		<CS-137	RA-226>	OK	
0.95	OK		<CO-60	RA-228>	OK	OK

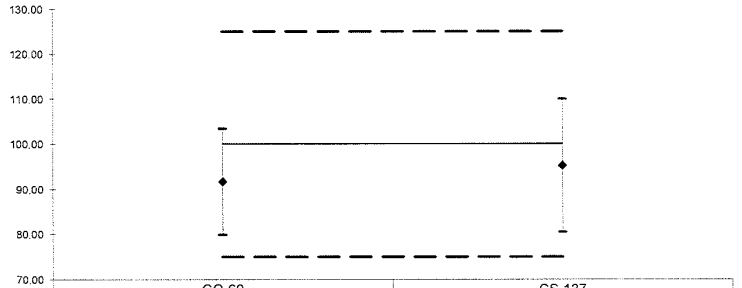
BP/Castex-Ltd Adm-Apx E-001375

0020

Version

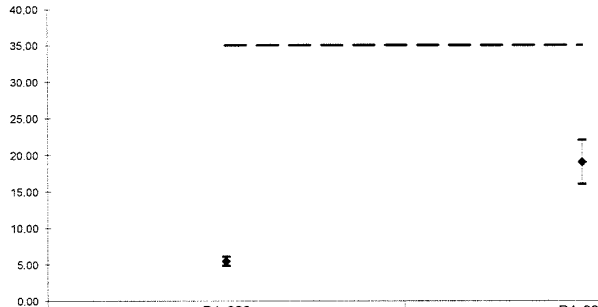
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
22-06038	Gamma	1	pCi	g	ERM

LCS % Recovery



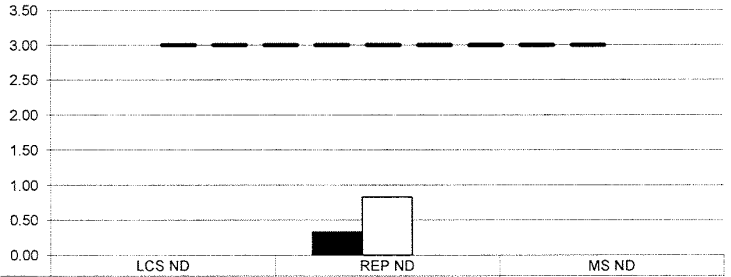
	CO-60	CS-137
Lower Error	79.87	80.48
Upper Error	103.36	109.98
%R	91.62	95.23
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	RA-226	RA-228
Lower Error	6.08	22.02
Upper Error	4.84	16.01
RPD	5.46	19.02
CL	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
CO-60	0.00	0.33	0.00
CS-137	0.00	0.83	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike

BP/Castex-Ltd Adm-Apx E-001376

0021

Version

SECTION VII

LABORATORY TECHNICIAN'S NOTES

BP/Castex-Ltd Adm-Apx E-001377

GE1

DATE	Sample #	Client	Load Time	CT. Time	Analysis	Tech
6/30/22	2206098-05	USA	1428	1hr	✓	KB
6/30/22	2206098-08	USA	1530	1 hr	✓	KB
6/30/22	2206098-12	USA	1630	1 hr	✓	KB
6/30/22	2206107-05	Eden Foods	1732	2 hrs	✓	KB
7/1/22	Daily Bkgd	Lab	0539	15 min	✓	KP
7/1/22	GAF-21	Lab	0556	15 min	✓	KP
7/1/22	2206099-01	USA	0852	30 min	✓	KP
7/1/22	2206099-02	USA	0904	1hr	✓	KP
7/1/22	2206098-01	USA	1005	30min	✓	KP
7/1/22	2206099-10	USA	1036	1hr	✓	KP
7/1/22	2206100-01	USA	1157	30min	✓	KP
7/1/22	2206100-05	USA	1208	1hr	✓	KP
7/1/22	2206100-08	USA	1308	1hr	✓	KP
7/1/22	2206100-12	USA	1409	1hr	✓	KB
7/1/22	2206100-16	USA	1510	1hr	✓	KB
7/1/22	2206100-20	USA	1610	1hr	✓	KB
7/1/22	System Bkgd	Lab	1711	24hrs	✓	KB
7/6/22	Daily Bkgd	Lab	0538	15 min	✓	KP
7/6/22	GAF-21	Lab	0556	15 min	✓	KP
7/6/22	2206038-08	ERM	1438	1hr	✓	KB
7/6/22	2206038-01	ERM	1539	30mins	✓	KB
7/6/22	2206038-11	ERM	1611	1hr	✓	KB
7/6/22	2206038-14	ERM	1713	1hr	✓	KB

GE 2

DATE	Sample #	Client	Lead Time	CT Time	Analysis	Tech
6/30/22	2206091-12	USA	1124	1hr	✓	LP
6/30/22	2206097-01	Eberline	1224	30min	✓	ILP
6/30/22	2206108-01	UCOR	1256	30 min	✓	ILP
6/30/22	2206108-05	UCOR	1326	1hr	✓	ILP
6/30/22	2206098-06	USA	1428	1hr	✓	KB
6/30/22	2206098-09	USA	1530	1hr	✓	KB
6/30/22	2206098-13	USA	1631	1hr	✓	KB
6/30/22	2206106-04	Eden Foods	1733	4hrs	✓	KB
7/1/22	Daily Bkgd	Lab	0539	15 min	✓	ILP
7/1/22	GAS-210	Lab	0556	15 min	✓	ILP
7/1/22	2206098-14	USA	0616	1hr	✓	ILP
7/1/22	2206098-16	USA	0719	1hr	✓	ILP
7/1/22	2206098-19	USA	0821	1hr	✓	ILP
7/1/22	2206099-05	USA	0922	1hr	✓	ILP
7/1/22	2206099-07	USA	1023	1hr	✓	ILP
7/1/22	2206099-11	USA	1123	1hr	✓	ILP
7/1/22	2206100-06	USA	1224	1hr	✓	ILP
7/1/22	2206100-09	USA	1325	1hr	✓	ILP
7/1/22	2206100-13	USA	1424	1hr	✓	KB
7/1/22	2206100-17	USA	1524	1hr	✓	KB
7/1/22	System Bkgd	Lab	1629	24 hrs	✓	KB
7/6/22	Daily Bkgd	Lab	0538	15 min	✓	ILP
7/6/22	GAS-210	Lab	0556	15 min	✓	ILP
7/6/22	2206101-02	USA	0617	1hr	✓	ILP
7/6/22	2206101-05	USA	0719	1hr	✓	ILP
7/6/22	2206101-07	USA	0821	1hr	✓	ILP
7/6/22	2206101-10	USA	0923	1hr	✓	ILP
7/6/22	2206101-12	USA	1039	1hr	✓	ILP
7/6/22	2206115-02	UCOR	1212	1hr	✓	ILP
7/6/22	2206038-02	ERM	1313	1hr	✓	ILP
7/6/22	2206038-05	ERM	1415	1hr	✓	KB
7/6/22	2206038-09	ERM	1514	1hr	✓	KB
7/6/22	2206038-12	ERM	1617	1hr	✓	KB

BP/Castex-Ltd Adm-Apx E-001379

GE 3

DATE	Sample #	Client	Load Time	CT Time	Analysis	Tech
6/30/22	Daily Bkgd	Lab	0538	15 Min	Y	ILP
6/30/22	GAS-2102	Lab	0535	15 min	Y	ILP
6/30/22	2206090-18	USA	0721	1hr	Y	ILP
6/30/22	2206091-01	USA	0825	30 min	Y	ILP
6/30/22	2206091-06	USA	0857	1hr	Y	ILP
6/30/22	2206091-11	USA	1059	1hr	Y	ILP
6/30/22	2206097-02	Eberline	1218	1hr	Y	ILP
6/30/22	2206108-02	UCOR	1320	1hr	Y	ILP
6/30/22	2206098-02	USA	1423	1hr	Y	KB
6/30/22	2206098-07	USA	1526	1hr	Y	KB
6/30/22	2206098-11	USA	1629	1hr	Y	KB
6/30/22	2206107-04	Eden Foods	1731	2hrs	Y	KB
7/1/22	Daily Bkgd	Lab	0539	15 Min	Y	ILP
7/1/22	GAS-2102	Lab	0556	15 Min	Y	ILP
7/1/22	2206098-15	USA	0616	1hr	Y	ILP
7/1/22	2206098-17	USA	0719	1hr	Y	ILP
7/1/22	2206098-20	USA	0821	1hr	Y	ILP
7/1/22	2206099-06	USA	0922	1hr	Y	ILP
7/1/22	2206099-08	USA	1024	1hr	Y	ILP
7/1/22	2206100-02	USA	1125	1hr	Y	ILP
7/1/22	2206100-07	USA	1227	1hr	Y	ILP
7/1/22	2206100-10	USA	1328	1hr	Y	ILP
7/1/22	2206100-14	USA	1429	1hr	Y	KB
7/1/22	2206100-18	USA	1531	1hr	Y	KB
7/1/22	System Purged	Lab	1635	24 hrs	Y	KB
7/6/22	Daily Bkgd	Lab	0538	15 Min	Y	ILP
7/6/22	GAS-2102	Lab	0556	15 min	Y	ILP
7/6/22	2206101-06	USA	0759	1hr	Y	ILP
7/6/22	2206101-09	USA	0901	1hr	Y	ILP
7/6/22	2206101-01	USA	1050	30 min	Y	ILP
7/6/22	2206115-01	UCOR	1122	30 min	Y	ILP
7/6/22	2206058-03	ERM	1211	1hr	Y	ILP
7/6/22	2206058-04	ERM	1312	1hr	Y	ILP
7/6/22	2206058-06	ERM	1415	1hr	Y	ILP

BP/Castex-Ltd Adm-Apx E-001380

GE 4

DATE	SAmple #	Client	Lead Time	C Time	Analysis	Tech
7/1/22	2206099-05	USA	0827	1 hr	Y	KP
7/1/22	2206099-04	USA	0928	1 hr	Y	KP
7/1/22	2206099-09	USA	1028	1 hr	Y	KP
7/1/22	2206100-03	USA	1129	1 hr	Y	KP
7/1/22	2206100-04	USA	1229	1 hr	Y	KP
7/1/22	2206100-11	USA	1330	1 hr	Y	KP
7/1/22	2206100-15	USA	1430	1 hr	Y	KB
7/1/22	2206100-19	USA	1531	1 hr	Y	KB
7/1/22	System Blkd	Lab	1635	24 hrs	Y	KB
7/6/22	Daily Blkd	Lab	0539	15 min	Y	KP
7/6/22	CAW-21	Lab	0550	15 min	Y	KP
7/6/22	2206101-05	USA	0617	1 hr	Y	KP
7/6/22	2206101-04	USA	0720	1 hr.	Y	KP
7/6/22	2206101-08	USA	0821	1 hr	Y	KP
7/6/22	2206101-11	USA	0923	1 hr	Y	KP
7/6/22	2206101-15	USA	1040	1 hr	Y	KP
7/6/22	2206115-03	UCOR	1212	1 hr	Y	KP
7/6/22	2206115-04	UCOR	1313	1 hr	Y	KP
7/6/22	2206038-07	ERM	1415	1 hr	Y	KB
7/6/22	2206038-10	ERM	1516	1 hr	Y	KB
7/6/22	2206038-13	ERM	1617	1 hr	Y	KB

BP/Castex-Ltd Adm-Apx E-001381

SECTION VIII

ANALYTICAL DATA (GAMMA SPECTROSCOPY)

BP/Castex-Ltd Adm-Apx E-001382

22-06038
Gamma
Run 1

Work Order	22-06038
Analysis Code	Gamma
Run	1
Date Received	6/13/2022
Lab Deadline	7/5/2022
Client	ERM
Project	575834
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EPA 901.1 Modified
Instrument Type	Gamma Spectroscopy
Radiometric Tracer	
Radiometric Sol#	
Tracer Act (dpm/g)	
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		06/13/22 00:00	1.0000E+00
02	MBL	BLANK		06/13/22 00:00	1.0000E+00
03	DUP	R-1 0-6	50	06/10/22 08:45	4.8260E+02
04	DO	R-1 0-6	50	06/10/22 08:45	4.8260E+02
05	TRG	R-1 6-12	110	06/10/22 08:50	4.8550E+02
06	TRG	R-1 12-18	70	06/10/22 08:55	4.5810E+02
07	TRG	R-1 18-24	50	06/10/22 09:00	4.3390E+02
08	TRG	R-2 0-6	60	06/10/22 09:30	6.0400E+02
09	TRG	R-2 6-12	50	06/10/22 09:35	5.0120E+02
10	TRG	R-3 0-6	240	06/10/22 10:00	5.8880E+02
11	TRG	R-3 6-12	70	06/10/22 10:05	5.0310E+02
12	TRG	R-3-12-18	80	06/10/22 10:10	5.8550E+02
13	TRG	R-4 0-4	390	06/10/22 11:30	7.3690E+02
14	TRG	R-5 0-6	250	06/10/22 11:00	6.4770E+02

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-001383

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS				0.00								
02	MBL				0.00								
03	DUP				0.00								
04	DO				0.00								
05	TRG				0.00								
06	TRG				0.00								
07	TRG				0.00								
08	TRG				0.00								
09	TRG				0.00								
10	TRG				0.00								
11	TRG				0.00								
12	TRG				0.00								
13	TRG				0.00								
14	TRG				0.00								

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS								
02	MBL								
03	DUP								
04	DO	06/14/22 07:05	KSALLINGS						
05	TRG	06/14/22 07:05	KSALLINGS						
06	TRG	06/14/22 07:05	KSALLINGS						
07	TRG	06/14/22 07:05	KSALLINGS						
08	TRG	06/14/22 07:05	KSALLINGS						
09	TRG	06/14/22 07:05	KSALLINGS						
10	TRG	06/14/22 07:05	KSALLINGS						
11	TRG	06/14/22 07:05	KSALLINGS						
12	TRG	06/14/22 07:05	KSALLINGS						
13	TRG	06/14/22 07:05	KSALLINGS						
14	TRG	06/14/22 07:05	KSALLINGS						

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Eberline Services
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 22-06038-Gamma-1

Printed: 7/7/2022 8:33 AM

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LSC Known	LCS %R	LCS Flag	RPD Flag	Sample Date	Sample Aliquot	Counting Date/Time	Identified
01	CO-60	LCS	LCS	pCi/g	1.23E+02	7.27E+00	1.42E+00	1.34E+02	91.62	OK		06/13/22 00:00	1.00E+00	07/06/22 15:39	YES
01	CS-137	LCS	LCS	pCi/g	7.78E+01	7.26E+00	1.60E+00	8.17E+01	95.23	OK		06/13/22 00:00	1.00E+00	07/06/22 15:39	YES
02	RA-228	MBL	BLANK	pCi/g	1.16E-03	6.59E-02	1.01E-01					06/13/22 00:00	1.00E+00	07/06/22 13:13	NO
02	RA-226	MBL	BLANK	pCi/g	4.64E-02	5.32E-02	8.83E-02					06/13/22 00:00	1.00E+00	07/06/22 13:13	YES
03	RA-228	DUP	R-1 0-6	pCi/g	1.25E+00	4.74E-01	8.58E-01				OK	06/10/22 08:45	4.83E+02	07/06/22 12:11	YES
03	RA-226	DUP	R-1 0-6	pCi/g	1.29E+00	3.14E-01	5.10E-01				OK	06/10/22 08:45	4.83E+02	07/06/22 12:11	YES
04	RA-228	DO	R-1 0-6	pCi/g	1.52E+00	3.90E-01	8.50E-01					06/10/22 08:45	4.83E+02	07/06/22 13:13	YES
04	RA-226	DO	R-1 0-6	pCi/g	1.36E+00	2.70E-01	4.57E-01					06/10/22 08:45	4.83E+02	07/06/22 13:13	YES
05	RA-228	TRG	R-1 6-12	pCi/g	1.53E+00	2.25E-01	2.95E-01					06/10/22 08:50	4.86E+02	07/06/22 14:15	YES
05	RA-226	TRG	R-1 6-12	pCi/g	1.17E+00	1.71E-01	2.03E-01					06/10/22 08:50	4.86E+02	07/06/22 14:15	YES
06	RA-228	TRG	R-1 12-18	pCi/g	1.54E+00	5.26E-01	9.89E-01					06/10/22 08:55	4.58E+02	07/06/22 14:15	YES
06	RA-226	TRG	R-1 12-18	pCi/g	1.36E+00	3.74E-01	5.74E-01					06/10/22 08:55	4.58E+02	07/06/22 14:15	YES
07	RA-228	TRG	R-1 18-24	pCi/g	1.81E+00	4.01E-01	6.37E-01					06/10/22 09:00	4.34E+02	07/06/22 14:15	YES
07	RA-226	TRG	R-1 18-24	pCi/g	1.15E+00	3.19E-01	5.46E-01					06/10/22 09:00	4.34E+02	07/06/22 14:15	YES
08	RA-228	TRG	R-2 0-6	pCi/g	1.34E+00	3.92E-01	8.61E-01					06/10/22 09:30	6.04E+02	07/06/22 14:38	YES
08	RA-226	TRG	R-2 0-6	pCi/g	1.07E+01	7.07E-01	5.26E-01					06/10/22 09:30	6.04E+02	07/06/22 14:38	YES
09	RA-228	TRG	R-2 6-12	pCi/g	1.22E+00	2.83E-01	5.25E-01					06/10/22 09:35	5.01E+02	07/06/22 15:16	YES
09	RA-226	TRG	R-2 6-12	pCi/g	1.82E+00	2.23E-01	7.13E-02					06/10/22 09:35	5.01E+02	07/06/22 15:16	YES
10	RA-228	TRG	R-3 0-6	pCi/g	2.46E+00	8.22E-01	1.91E+00					06/10/22 10:00	5.89E+02	07/06/22 15:16	YES
10	RA-226	TRG	R-3 0-6	pCi/g	2.64E+01	1.65E+00	1.02E+00					06/10/22 10:00	5.89E+02	07/06/22 15:16	YES
11	RA-228	TRG	R-3 6-12	pCi/g	1.32E+00	2.76E-01	7.81E-01					06/10/22 10:05	5.03E+02	07/06/22 16:11	YES
11	RA-226	TRG	R-3 6-12	pCi/g	3.52E+00	3.31E-01	3.52E-01					06/10/22 10:05	5.03E+02	07/06/22 16:11	YES
12	RA-228	TRG	R-3-12-18	pCi/g	9.25E-01	1.96E-01	3.53E-01					06/10/22 10:10	5.86E+02	07/06/22 16:17	YES
12	RA-226	TRG	R-3-12-18	pCi/g	1.11E+00	2.01E-01	3.25E-01					06/10/22 10:10	5.86E+02	07/06/22 16:17	YES
13	RA-228	TRG	R-4 0-4	pCi/g	5.49E+01	3.23E+00	3.59E+00					06/10/22 11:30	7.37E+02	07/06/22 16:17	YES
13	RA-226	TRG	R-4 0-4	pCi/g	4.16E+01	2.56E+00	1.36E+00					06/10/22 11:30	7.37E+02	07/06/22 16:17	YES
14	RA-228	TRG	R-5 0-6	pCi/g	1.99E+01	1.32E+00	1.25E+00					06/10/22 11:00	6.48E+02	07/06/22 17:13	YES
14	RA-226	TRG	R-5 0-6	pCi/g	1.08E+01	7.45E-01	7.01E-01					06/10/22 11:00	6.48E+02	07/06/22 17:13	YES

BP/Castex-Ltd Adm-Apx E-001386

0031

Count Room Report
Client: ERM

22-06038-Gamma-1 (pCi/g) in SO
Tracer ID:

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	06/13/22 00:00	1.0000				0.00		
02	MBL	BLANK	06/13/22 00:00	1.0000				0.00		
03	DUP	R-1 0-6	06/10/22 08:45	482.6000				0.00		
04	DO	R-1 0-6	06/10/22 08:45	482.6000				0.00		
05	TRG	R-1 6-12	06/10/22 08:50	485.5000				0.00		
06	TRG	R-1 12-18	06/10/22 08:55	458.1000				0.00		
07	TRG	R-1 18-24	06/10/22 09:00	433.9000				0.00		
08	TRG	R-2 0-6	06/10/22 09:30	604.0000				0.00		
09	TRG	R-2 6-12	06/10/22 09:35	501.2000				0.00		
10	TRG	R-3 0-6	06/10/22 10:00	588.8000				0.00		
11	TRG	R-3 6-12	06/10/22 10:05	503.1000				0.00		
12	TRG	R-3-12-18	06/10/22 10:10	585.5000				0.00		
13	TRG	R-4 0-4	06/10/22 11:30	736.9000				0.00		
14	TRG	R-5 0-6	06/10/22 11:00	647.7000				0.00		

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 6/14/2022 10:28 AM

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
22-06038	1	Gamma	grams	7/5/2022	KSALLINGS

Lab Fraction	ERM Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	R-1 0-6	DUP					4.8260E+02	4.8260E+02				
04	R-1 0-6	DO					4.8260E+02	4.8260E+02				
05	R-1 6-12	TRG					4.8550E+02	4.8550E+02				
06	R-1 12-18	TRG					4.5810E+02	4.5810E+02				
07	R-1 18-24	TRG					4.3390E+02	4.3390E+02				
08	R-2 0-6	TRG					6.0400E+02	6.0400E+02				
09	R-2 6-12	TRG					5.0120E+02	5.0120E+02				
10	R-3 0-6	TRG					5.8880E+02	5.8880E+02				
11	R-3 6-12	TRG					5.0310E+02	5.0310E+02				
12	R-3-12-18	TRG					5.8550E+02	5.8550E+02				
13	R-4 0-4	TRG					7.3690E+02	7.3690E+02				
14	R-5 0-6	TRG					6.4770E+02	6.4770E+02				

Comments	

0033

Technician: Kenny Sallings Date: 6/14/22

BP/Castex-Ltd Adm-Apx E-001388

Eberline Services - Oak Ridge
Prep Logbook
Version 2.0 8/1999

Rough Sample Preparation Log Book

Printed: 6/14/2022 7:05 AM

Work Order	Lab Deadline	Date Received In Prep	Date Sealed	Date Returned	Technician
22-06038	7/5/2022	6/13/2022	6/14/2022	6/15/2022	KSALLINGS

Eberline Fraction	ERM Client ID	Tare (g) Pan Wt	Gross (g) Wet Wt.	Gross (g) Dry Wt.	Net (g) Wet Wt.	Net (g) Dry Wt.	Percent Liquid	Percent Solid	Gamma Dry Wt.	Gamma LEPS Wt.	Special Info
04	R-1 0-6	14.2000	753.6000	651.9000	739.4000	637.7000	13.75%	86.25%			
05	R-1 6-12	14.1000	708.2000	571.0000	694.1000	556.9000	19.77%	80.23%			
06	R-1 12-18	14.0000	614.2000	489.4000	600.2000	475.4000	20.79%	79.21%			
07	R-1 18-24	14.1000	592.5000	459.7000	578.4000	445.6000	22.96%	77.04%			
08	R-2 0-6	14.2000	726.6000	625.3000	712.4000	611.1000	14.22%	85.78%			
09	R-2 6-12	14.2000	663.5000	536.6000	649.3000	522.4000	19.54%	80.46%			
10	R-3 0-6	14.1000	830.2000	766.0000	816.1000	751.9000	7.87%	92.13%			
11	R-3 6-12	14.2000	879.4000	746.0000	865.2000	731.8000	15.42%	84.58%			
12	R-3-12-18	14.2000	838.0000	675.9000	823.8000	661.7000	19.68%	80.32%			
13	R-4 0-4	14.2000	1207.4000	1191.1000	1193.2000	1176.9000	1.37%	98.63%			
14	R-5 0-6	14.3000	1207.7000	1143.0000	1193.4000	1128.7000	5.42%	94.58%			

Comments	
Special Codes	**H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)**

BP/Castex-Ltd Adm-Apx E-001389

0034

Technician: Kenny Sallings Date: Analysis: Rough Prep Logbook

Analysis: Gamma Page No. 12553

Apex-Gamma

Analysis Report for 2206038-01
GAS-2002

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-01
Sample Description	: GAS-2002
Sample Type	: SOIL
Sample Size	: 7.360E+02 grams
Facility	: Countroom
Sample Taken On	: 4/1/2020 11:41:53AM
Acquisition Started	: 7/6/2022 3:39:10PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-2102
Live Time	: 1800.0 seconds
Real Time	: 1822.9 seconds
Dead Time	: 1.26 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 31 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 7/1/2022
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126273

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
7/7/22

BP/Castex-Ltd Adm-Apx E-001390

Analysis Report for 2206038-01

GAS-2002

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 4:09:38PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	54.08	52.63	0.0000	0.00
2	59.66	58.21	0.0000	0.00
3	68.50	67.06	0.0000	0.00
4	87.98	86.55	0.0000	0.00
5	122.26	120.85	0.0000	0.00
6	136.50	135.10	0.0000	0.00
7	165.94	164.55	0.0000	0.00
8	391.80	390.51	0.0000	0.00
9	532.60	531.36	0.0000	0.00
10	609.87	608.65	0.0000	0.00
11	661.24	660.02	0.0000	0.00
12	806.03	804.83	0.0000	0.00
13	897.49	896.29	0.0000	0.00
14	1172.52	1171.29	0.0000	0.00
15	1186.66	1185.43	0.0000	0.00
16	1275.35	1274.09	0.0000	0.00
17	1292.82	1291.55	0.0000	0.00
18	1331.72	1330.44	0.0000	0.00
19	1406.71	1405.40	0.0000	0.00
20	1602.94	1601.54	0.0000	0.00
21	1745.28	1743.79	0.0000	0.00
22	1771.31	1769.81	0.0000	0.00
23	1835.16	1833.60	0.0000	0.00
24	2343.72	2341.70	0.0000	0.00
25	2445.14	2443.00	0.0000	0.00
26	2478.09	2475.91	0.0000	0.00
27	2487.40	2485.20	0.0000	0.00
28	2504.56	2502.34	0.0000	0.00
29	2613.35	2611.00	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001391

Analysis Report for 2206038-01

GAS-2002

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 4:09:38PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	54.08	40 -	73	52.63	2.63E+04	1196.32	7.43E+04	6.29
m	2	59.66	40 -	73	58.21	9.22E+04	818.24	3.87E+04	2.86
m	3	68.50	40 -	73	67.06	1.49E+03	772.63	6.63E+04	4.53
	4	87.98	79 -	94	86.55	4.70E+04	877.20	5.65E+04	2.96
	5	122.26	115 -	125	120.85	9.24E+03	470.79	2.46E+04	2.93
	6	136.50	132 -	139	135.10	1.10E+03	314.73	1.57E+04	2.66
	7	165.94	161 -	168	164.55	1.34E+03	298.53	1.40E+04	2.52
	8	391.80	387 -	395	390.51	4.17E+02	250.82	9.43E+03	3.11
	9	532.60	528 -	535	531.36	2.06E+02	179.74	5.25E+03	1.99
	10	609.87	605 -	612	608.65	1.70E+02	165.30	4.43E+03	3.21
	11	661.24	651 -	667	660.02	2.62E+04	459.37	1.01E+04	3.14
	12	806.03	802 -	808	804.83	2.01E+02	140.04	3.41E+03	4.33
	13	897.49	893 -	901	896.29	3.07E+02	198.16	5.88E+03	2.51
	14	1172.52	1164 -	1179	1171.29	2.32E+04	378.53	5.00E+03	3.33
	15	1186.66	1182 -	1189	1185.43	1.55E+02	105.15	1.71E+03	3.44
	16	1275.35	1271 -	1278	1274.09	5.96E+01	57.52	5.11E+02	3.04
	17	1292.82	1285 -	1297	1291.55	9.70E+01	85.08	8.06E+02	9.10
	18	1331.72	1322 -	1339	1330.44	2.12E+04	325.96	1.92E+03	3.43
	19	1406.71	1402 -	1409	1405.40	3.38E+01	36.77	2.00E+02	2.95
	20	1602.94	1597 -	1607	1601.54	3.99E+01	36.90	1.62E+02	7.67
	21	1745.28	1738 -	1752	1743.79	4.16E+01	42.54	1.75E+02	3.94
	22	1771.31	1763 -	1776	1769.81	3.22E+01	39.59	1.56E+02	8.11
	23	1835.16	1827 -	1840	1833.60	1.80E+02	55.22	2.59E+02	2.48
	24	2343.72	2336 -	2347	2341.70	1.68E+01	18.76	3.45E+01	7.18
	25	2445.14	2437 -	2447	2443.00	1.30E+01	7.21	0.00E+00	1.10
	26	2478.09	2472 -	2480	2475.91	7.55E+00	7.76	4.90E+00	6.53
	27	2487.40	2482 -	2487	2485.20	5.50E+00	6.08	3.00E+00	1.69
	28	2504.56	2496 -	2509	2502.34	2.31E+02	38.43	5.67E+01	3.58
	29	2613.35	2604 -	2616	2611.00	2.30E+01	9.59	0.00E+00	2.39

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001392

Analysis Report for 2206038-01

GAS-2002

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 4:09:38PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	1	54.08	40 -	73	2.63E+04	1196.32	7.43E+04	4.48E+02
m	2	59.66	40 -	73	9.22E+04	818.24	3.87E+04	3.23E+02
m	3	68.50	40 -	73	1.49E+03	772.63	6.63E+04	4.23E+02
	4	87.98	79 -	94	4.70E+04	877.20	5.65E+04	6.27E+02
	5	122.26	115 -	125	9.24E+03	470.79	2.46E+04	3.53E+02
	6	136.50	132 -	139	1.10E+03	314.73	1.57E+04	2.53E+02
	7	165.94	161 -	168	1.34E+03	298.53	1.40E+04	2.38E+02
	8	391.80	387 -	395	4.17E+02	250.82	9.43E+03	2.03E+02
	9	532.60	528 -	535	2.06E+02	179.74	5.25E+03	1.46E+02
	10	609.87	605 -	612	1.70E+02	165.30	4.43E+03	1.34E+02
	11	661.24	651 -	667	2.62E+04	459.37	1.01E+04	2.68E+02
	12	806.03	802 -	808	2.01E+02	140.04	3.41E+03	1.13E+02
	13	897.49	893 -	901	3.07E+02	198.16	5.88E+03	1.60E+02
	14	1172.52	1164 -	1179	2.32E+04	378.53	5.00E+03	1.85E+02
	15	1186.66	1182 -	1189	1.55E+02	105.15	1.71E+03	8.40E+01
	16	1275.35	1271 -	1278	5.96E+01	57.52	5.11E+02	4.55E+01
	17	1292.82	1285 -	1297	9.70E+01	85.08	8.06E+02	6.80E+01
	18	1331.72	1322 -	1339	2.12E+04	325.96	1.92E+03	1.20E+02
	19	1406.71	1402 -	1409	3.38E+01	36.77	2.00E+02	2.87E+01
	20	1602.94	1597 -	1607	3.99E+01	36.90	1.62E+02	2.85E+01
	21	1745.28	1738 -	1752	4.16E+01	42.54	1.75E+02	3.33E+01
	22	1771.31	1763 -	1776	3.22E+01	39.59	1.56E+02	3.12E+01
	23	1835.16	1827 -	1840	1.80E+02	55.22	2.59E+02	3.97E+01
	24	2343.72	2336 -	2347	1.68E+01	18.76	3.45E+01	1.39E+01
	25	2445.14	2437 -	2447	1.30E+01	7.21	0.00E+00	0.00E+00
	26	2478.09	2472 -	2480	7.55E+00	7.76	4.90E+00	4.51E+00
	27	2487.40	2482 -	2487	5.50E+00	6.08	3.00E+00	3.18E+00
	28	2504.56	2496 -	2509	2.31E+02	38.43	5.67E+01	1.94E+01
	29	2613.35	2604 -	2616	2.30E+01	9.59	0.00E+00	0.00E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001393

Analysis Report for 2206038-01

GAS-2002

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 4:09:38PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	1	54.08	40 -	73	52.63	2.63E+04	1196.32	7.43E+04	.....
m	2	59.66	40 -	73	58.21	9.22E+04	818.24	3.87E+04	AM-241 CE-143
m	3	68.50	40 -	73	67.06	1.49E+03	772.63	6.63E+04	TI-44 TA-182 TH-230 HF-172 TM-171
	4	87.98	79 -	94	86.55	4.70E+04	877.20	5.65E+04	CD-109 LU-176 SN-126 NP-237 EU-155
	5	122.26	115 -	125	120.85	9.24E+03	470.79	2.46E+04	CO-57 EU-152 EU-154 SE-75
	6	136.50	132 -	139	135.10	1.10E+03	314.73	1.57E+04	CO-57 SE-75
	7	165.94	161 -	168	164.55	1.34E+03	298.53	1.40E+04	CE-139 CS-136
	8	391.80	387 -	395	390.51	4.17E+02	250.82	9.43E+03	SN-113
	9	532.60	528 -	535	531.36	2.06E+02	179.74	5.25E+03	ND-147
	10	609.87	605 -	612	608.65	1.70E+02	165.30	4.43E+03	BI-214
	11	661.24	651 -	667	660.02	2.62E+04	459.37	1.01E+04	CS-137
	12	806.03	802 -	808	804.83	2.01E+02	140.04	3.41E+03	.....
	13	897.49	893 -	901	896.29	3.07E+02	198.16	5.88E+03	Y-88 TL-204
	14	1172.52	1164 -	1179	1171.29	2.32E+04	378.53	5.00E+03	CO-60
	15	1186.66	1182 -	1189	1185.43	1.55E+02	105.15	1.71E+03	TA-182
	16	1275.35	1271 -	1278	1274.09	5.96E+01	57.52	5.11E+02	NA-22 EU-154
	17	1292.82	1285 -	1297	1291.55	9.70E+01	85.08	8.06E+02	AR-41 FE-59
	18	1331.72	1322 -	1339	1330.44	2.12E+04	325.96	1.92E+03	CO-60
	19	1406.71	1402 -	1409	1405.40	3.38E+01	36.77	2.00E+02	EU-152
	20	1602.94	1597 -	1607	1601.54	3.99E+01	36.90	1.62E+02	.....
	21	1745.28	1738 -	1752	1743.79	4.16E+01	42.54	1.75E+02	.....
	22	1771.31	1763 -	1776	1769.81	3.22E+01	39.59	1.56E+02	CO-56
	23	1835.16	1827 -	1840	1833.60	1.80E+02	55.22	2.59E+02	Y-88
	24	2343.72	2336 -	2347	2341.70	1.68E+01	18.76	3.45E+01	.....

BP/Castex-Ltd Adm-Apx E-001394

Analysis Report for 2206038-01

GAS-2002

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
25	2445.14	2437 -	2447	2443.00	1.30E+01	7.21	0.00E+00	.....
26	2478.09	2472 -	2480	2475.91	7.55E+00	7.76	4.90E+00	.....
27	2487.40	2482 -	2487	2485.20	5.50E+00	6.08	3.00E+00	.....
28	2504.56	2496 -	2509	2502.34	2.31E+02	38.43	5.67E+01	.....
29	2613.35	2604 -	2616	2611.00	2.30E+01	9.59	0.00E+00	TL-208

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 4:09:38PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	54.08	2.63E+04	1196.32	2.08E-02	1.75E-03
m	2	59.66	9.22E+04	818.24	2.34E-02	1.75E-03
m	3	68.50	1.49E+03	772.63	2.64E-02	2.00E-03
	4	87.98	4.70E+04	877.20	2.90E-02	2.53E-03
	5	122.26	9.24E+03	470.79	2.79E-02	2.03E-03
	6	136.50	1.10E+03	314.73	2.67E-02	1.99E-03
	7	165.94	1.34E+03	298.53	2.42E-02	1.90E-03
	8	391.80	4.17E+02	250.82	1.31E-02	1.12E-03
	9	532.60	2.06E+02	179.74	1.02E-02	9.51E-04
	10	609.87	1.70E+02	165.30	9.11E-03	8.59E-04
	11	661.24	2.62E+04	459.37	8.52E-03	7.97E-04
	12	806.03	2.01E+02	140.04	7.20E-03	6.97E-04
	13	897.49	3.07E+02	198.16	6.57E-03	6.34E-04
	14	1172.52	2.32E+04	378.53	5.24E-03	4.28E-04
	15	1186.66	1.55E+02	105.15	5.19E-03	4.26E-04
	16	1275.35	5.96E+01	57.52	4.88E-03	4.15E-04
	17	1292.82	9.70E+01	85.08	4.83E-03	4.13E-04
	18	1331.72	2.12E+04	325.96	4.71E-03	4.08E-04
	19	1406.71	3.38E+01	36.77	4.51E-03	3.89E-04
	20	1602.94	3.99E+01	36.90	4.07E-03	3.41E-04
	21	1745.28	4.16E+01	42.54	3.82E-03	3.06E-04
	22	1771.31	3.22E+01	39.59	3.78E-03	3.00E-04
	23	1835.16	1.80E+02	55.22	3.69E-03	2.84E-04
	24	2343.72	1.68E+01	18.76	3.19E-03	2.84E-04
	25	2445.14	1.30E+01	7.21	3.12E-03	2.84E-04

BP/Castex-Ltd Adm-Apx E-001395

Analysis Report for 2206038-01

GAS-2002

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
26	2478.09	7.55E+00	7.76	3.11E-03	2.84E-04
27	2487.40	5.50E+00	6.08	3.10E-03	2.84E-04
28	2504.56	2.31E+02	38.43	3.09E-03	2.84E-04
29	2613.35	2.30E+01	9.59	3.04E-03	2.84E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 4:09:38PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126204.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	54.08	2.63E+04	1196.32			2.63E+04	1.20E+03
m	2	59.66	9.22E+04	818.24			9.22E+04	8.18E+02
m	3	68.50	1.49E+03	772.63			1.49E+03	7.73E+02
	4	87.98	4.70E+04	877.20			4.70E+04	8.77E+02
	5	122.26	9.24E+03	470.79			9.24E+03	4.71E+02
	6	136.50	1.10E+03	314.73			1.10E+03	3.15E+02
	7	165.94	1.34E+03	298.53			1.34E+03	2.99E+02
	8	391.80	4.17E+02	250.82			4.17E+02	2.51E+02
	9	532.60	2.06E+02	179.74			2.06E+02	1.80E+02
	10	609.87	1.70E+02	165.30	2.67E+00	1.94E+00	1.68E+02	1.65E+02
	11	661.24	2.62E+04	459.37			2.62E+04	4.59E+02
	12	806.03	2.01E+02	140.04			2.01E+02	1.40E+02
	13	897.49	3.07E+02	198.16			3.07E+02	1.98E+02
	14	1172.52	2.32E+04	378.53			2.32E+04	3.79E+02
	15	1186.66	1.55E+02	105.15			1.55E+02	1.05E+02
	16	1275.35	5.96E+01	57.52			5.96E+01	5.75E+01
	17	1292.82	9.70E+01	85.08			9.70E+01	8.51E+01
	18	1331.72	2.12E+04	325.96			2.12E+04	3.26E+02
	19	1406.71	3.38E+01	36.77			3.38E+01	3.68E+01
	20	1602.94	3.99E+01	36.90			3.99E+01	3.69E+01
	21	1745.28	4.16E+01	42.54			4.16E+01	4.25E+01
	22	1771.31	3.22E+01	39.59			3.22E+01	3.96E+01
	23	1835.16	1.80E+02	55.22			1.80E+02	5.52E+01
	24	2343.72	1.68E+01	18.76			1.68E+01	1.88E+01
	25	2445.14	1.30E+01	7.21			1.30E+01	7.21E+00
	26	2478.09	7.55E+00	7.76			7.55E+00	7.76E+00

BP/Castex-Ltd Adm-Apx E-001396

Analysis Report for 2206038-01

GAS-2002

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
27	2487.40	5.50E+00	6.08			5.50E+00	6.08E+00
28	2504.56	2.31E+02	38.43			2.31E+02	3.84E+01
29	2613.35	2.30E+01	9.59			2.30E+01	9.59E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 4:09:38PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126204.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	1	54.08	2.63E+04	1196.32			2.63E+04	1.20E+03
m	2	59.66	9.22E+04	818.24			9.22E+04	8.18E+02
m	3	68.50	1.49E+03	772.63			1.49E+03	7.73E+02
	4	87.98	4.70E+04	877.20			4.70E+04	8.77E+02
	5	122.26	9.24E+03	470.79			9.24E+03	4.71E+02
	6	136.50	1.10E+03	314.73			1.10E+03	3.15E+02
	7	165.94	1.34E+03	298.53			1.34E+03	2.99E+02
	8	391.80	4.17E+02	250.82			4.17E+02	2.51E+02
	9	532.60	2.06E+02	179.74			2.06E+02	1.80E+02
	10	609.87	1.70E+02	165.30	2.67E+00	1.94E+00	1.68E+02	1.65E+02
	11	661.24	2.62E+04	459.37			2.62E+04	4.59E+02
	12	806.03	2.01E+02	140.04			2.01E+02	1.40E+02
	13	897.49	3.07E+02	198.16			3.07E+02	1.98E+02
	14	1172.52	2.32E+04	378.53			2.32E+04	3.79E+02
	15	1186.66	1.55E+02	105.15			1.55E+02	1.05E+02
	16	1275.35	5.96E+01	57.52			5.96E+01	5.75E+01
	17	1292.82	9.70E+01	85.08			9.70E+01	8.51E+01
	18	1331.72	2.12E+04	325.96			2.12E+04	3.26E+02
	19	1406.71	3.38E+01	36.77			3.38E+01	3.68E+01
	20	1602.94	3.99E+01	36.90			3.99E+01	3.69E+01
	21	1745.28	4.16E+01	42.54			4.16E+01	4.25E+01
	22	1771.31	3.22E+01	39.59			3.22E+01	3.96E+01
	23	1835.16	1.80E+02	55.22			1.80E+02	5.52E+01
	24	2343.72	1.68E+01	18.76			1.68E+01	1.88E+01
	25	2445.14	1.30E+01	7.21			1.30E+01	7.21E+00

BP/Castex-Ltd Adm-Apx E-001397

Analysis Report for 2206038-01

GAS-2002

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
26	2478.09	7.55E+00	7.76			7.55E+00	7.76E+00
27	2487.40	5.50E+00	6.08			5.50E+00	6.08E+00
28	2504.56	2.31E+02	38.43			2.31E+02	3.84E+01
29	2613.35	2.30E+01	9.59			2.30E+01	9.59E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
NA-22	0.979	1274.54	*	99.94	4.55E-01	4.41E-01
CO-57	0.954	122.06	*	85.51	6.55E+01	5.81E+00
		136.48	*	10.60	6.53E+01	1.94E+01
CO-60	0.986	1173.22	*	100.00	1.22E+02	1.02E+01
		1332.49	*	100.00	1.24E+02	1.09E+01
Y-88	0.731	898.02	*	93.40	2.20E+02	1.43E+02
		1836.01	*	99.38	2.15E+02	6.82E+01
CD-109	0.984	88.03	*	3.72	3.05E+03	2.73E+02
SN-113	0.731	255.12		1.93		
		391.69	*	64.90	1.45E+02	8.81E+01
SN-126	0.996	87.57	*	37.00	8.93E+01	7.98E+00
CS-137	0.996	661.65	*	85.12	7.78E+01	7.41E+00
CE-139	0.835	165.85	*	80.35	8.99E+01	2.13E+01
EU-155	0.325	86.50	*	30.90	1.47E+02	1.31E+01
		105.30		20.70		
TM-171	0.916	66.72	*	0.14	1.87E+03	9.76E+02
BI-214	0.437	609.31	*	46.30	8.12E-01	8.04E-01
		1120.29		15.10		
		1764.49		15.80		
		2204.22		4.98		
NP-237	0.945	86.50	*	12.60	2.62E+02	2.34E+01
AM-241	1.000	59.54	*	35.90	2.25E+02	1.69E+01

BP/Castex-Ltd Adm-Apx E-001398

Analysis Report for 2206038-01

GAS-2002

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 4:09:38PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	54.08	1.46179E+01	2.27		
	9	532.60	1.14173E-01	43.73	Tol.	ND-147
	12	806.03	1.11603E-01	34.86		
	15	1186.66	8.62698E-02	33.86	Tol.	TA-182
	17	1292.82	5.38889E-02	43.86	Sum	
	19	1406.71	1.87832E-02	54.38	Tol.	EU-152
	20	1602.94	2.21648E-02	46.24		
	21	1745.28	2.31309E-02	51.09		
	22	1771.31	1.78914E-02	61.46	Tol.	CO-56
	24	2343.72	9.31372E-03	55.96	Sum	
	25	2445.14	7.22222E-03	27.74	Sum	
	26	2478.09	4.19444E-03	51.40		
	27	2487.40	3.05556E-03	55.30		
	28	2504.56	1.28138E-01	8.33	Sum	
	29	2613.35	1.27778E-02	20.85	Tol.	TL-208

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001399

Analysis Report for 2206038-01

GAS-2002

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
NA-22	0.97	1274.54	*	99.94	4.55E-01	4.41E-01
CO-57	0.95	122.06	*	85.51	6.55E+01	5.81E+00
		136.48	*	10.60	6.53E+01	1.94E+01
CO-60	0.98	1173.22	*	100.00	1.22E+02	1.02E+01
		1332.49	*	100.00	1.24E+02	1.09E+01
Y-88	0.73	898.02	*	93.40	2.20E+02	1.43E+02
		1836.01	*	99.38	2.15E+02	6.82E+01
CD-109	0.98	88.03	*	3.72	3.05E+03	2.73E+02
SN-113	0.73	255.12		1.93		
		391.69	*	64.90	1.45E+02	8.81E+01
SN-126	0.99	87.57	*	37.00	8.93E+01	7.98E+00
CS-137	0.99	661.65	*	85.12	7.78E+01	7.41E+00
CE-139	0.83	165.85	*	80.35	8.99E+01	2.13E+01
EU-155	0.32	86.50	*	30.90	1.47E+02	1.31E+01
		105.30		20.70		
TM-171	0.91	66.72	*	0.14	1.87E+03	9.76E+02
BI-214	0.43	609.31	*	46.30	8.12E-01	8.04E-01
		1120.29		15.10		
		1764.49		15.80		
		2204.22		4.98		
NP-237	0.94	86.50	*	12.60	2.62E+02	2.34E+01
AM-241	1.00	59.54	*	35.90	2.25E+02	1.69E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	NA-22	0.979	4.55E-01	4.41E-01	
	CO-57	0.954	6.54E+01	5.57E+00	
	CO-60	0.986	1.23E+02	7.42E+00	
	Y-88	0.731	2.16E+02	6.16E+01	
?	CD-109	0.984	3.05E+03	2.73E+02	
	SN-113	0.731	1.45E+02	8.81E+01	
?	SN-126	0.996	8.93E+01	7.98E+00	
	CS-137	0.996	7.78E+01	7.41E+00	
	CE-139	0.835	8.99E+01	2.13E+01	
X	EU-154	0.437			
?	EU-155	0.325	1.47E+02	1.31E+01	
	TM-171	0.916	1.87E+03	9.76E+02	
	BI-214	0.437	8.12E-01	8.04E-01	
?	NP-237	0.945	2.62E+02	2.34E+01	
	AM-241	1.000	2.25E+02	1.69E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-01
GAS-2002

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 4:09:38PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	54.08	1.46179E+01	2.27		
	9	532.60	1.14173E-01	43.73	Tol.	ND-147
	12	806.03	1.11603E-01	34.86		
	15	1186.66	8.62698E-02	33.86	Tol.	TA-182
	17	1292.82	5.38889E-02	43.86	Sum	
	19	1406.71	1.87832E-02	54.38	Tol.	EU-152
	20	1602.94	2.21648E-02	46.24		
	21	1745.28	2.31309E-02	51.09		
	22	1771.31	1.78914E-02	61.46	Tol.	CO-56
	24	2343.72	9.31372E-03	55.96	Sum	
	25	2445.14	7.22222E-03	27.74	Sum	
	26	2478.09	4.19444E-03	51.40		
	27	2487.40	3.05556E-03	55.30		
	28	2504.56	1.28138E-01	8.33	Sum	
	29	2613.35	1.27778E-02	20.85	Tol.	TL-208

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	1.03E+05	2.75E+05	2.75E+05

BP/Castex-Ltd Adm-Apx E-001402

Analysis Report for 2206038-01

GAS-2002

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		NA-22	1274.54	*	99.94	4.55E-01	7.17E-01	7.17E-01
+		NA-24	1368.53		99.99	-7.28E-02	6.35E-02	2.95E-01
			2754.09		99.86	1.37E-02		6.35E-02
+		AL-26	1808.65		99.76	-1.56E-02	2.51E-01	2.51E-01
+		K-40	1460.81		10.67	1.34E+00	2.74E+00	2.74E+00
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	-4.10E+01	5.34E-01	5.97E-01
			78.34		96.00	1.26E-01		5.34E-01
+		SC-46	889.25		98.98	-2.92E+01	7.74E+02	7.96E+02
			1120.51		99.90	-5.59E+01		7.74E+02
+		V-48	983.52		99.98	1.00E+15	1.55E+15	3.30E+15
			1312.10		97.50	-2.05E+15		1.55E+15
+		CR-51	320.08		9.83	-8.45E+08	4.30E+09	4.30E+09
+		MN-54	834.83		99.97	4.95E-01	4.80E+00	4.80E+00
+		CO-56	846.75		99.96	6.47E+02	1.26E+03	2.70E+03
			1037.75		14.03	2.09E+04		2.18E+04
			1238.25		67.00	1.10E+01		2.39E+03
			1771.40		15.51	9.07E+02		5.54E+03
			2587.48		16.90	-6.76E+01		1.26E+03
+		CO-57	122.06	*	85.51	6.55E+01	5.03E+00	5.03E+00
			136.48	*	10.60	6.53E+01		3.03E+01
+		CO-58	810.76		99.40	-1.32E+03	2.36E+03	2.36E+03
+		FE-59	1099.22		56.50	1.79E+05	3.63E+05	6.08E+05
			1291.56		43.20	2.20E+05		3.63E+05
+		CO-60	1173.22	*	100.00	1.22E+02	1.42E+00	1.95E+00
			1332.49	*	100.00	1.24E+02		1.42E+00
+		ZN-65	1115.52		50.75	4.82E+00	1.80E+01	1.80E+01
+	@	GA-67	93.31		35.70	1.00E+26	1.00E+26	1.00E+26
	@		208.95		2.24	1.00E+26		1.00E+26
	@		300.22		16.00	1.00E+26		1.00E+26
+		SE-75	121.11		16.70	4.86E+03	7.15E+01	3.38E+02
			136.00		59.50	1.66E+02		7.15E+01
			264.65		59.80	1.57E+01		8.53E+01
			279.53		25.20	-6.77E+01		2.03E+02
			400.65		11.40	6.12E+01		5.34E+02
+		RB-82	776.52		13.00	-1.69E+10	2.85E+10	2.85E+10
+		RB-83	520.41		46.00	2.93E+02	9.79E+02	9.79E+02
			529.64		30.30	-2.60E+01		1.47E+03
			552.65		16.40	2.00E+02		2.67E+03
+		KR-85	513.99		0.43	1.09E+02	1.60E+02	1.60E+02
+		SR-85	513.99		99.27	2.82E+03	4.13E+03	4.13E+03
+		Y-88	898.02	*	93.40	2.20E+02	9.83E+01	2.32E+02
			1836.01	*	99.38	2.15E+02		9.83E+01
+		MO-93	263.06		56.72	4.39E-01	3.17E-01	8.72E-01
			684.67		99.68	2.37E-01		7.16E-01
			1477.11		99.08	-2.75E-02		3.17E-01
+		NB-93M	16.57		9.43	0.00E+00	4.00E+05	4.00E+05

BP/Castex-Ltd Adm-Apx E-001403

Analysis Report for 2206038-01

GAS-2002

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		NB-94	702.63		100.00	7.31E-02	6.14E-01	6.14E-01
			871.10		100.00	1.29E-01		8.19E-01
+		NB-95	765.79		99.81	-3.80E+06	8.42E+06	8.42E+06
+	@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26
+		ZR-95	724.18		43.70	-3.98E+03	9.42E+03	1.12E+04
			756.72		55.30	6.04E+03		9.42E+03
+	@	MO-99	181.06		6.20	1.00E+26	1.00E+26	1.00E+26
	@		739.58		12.80	1.00E+26		1.00E+26
	@		778.00		4.50	1.00E+26		1.00E+26
+		TC-99M	140.51		89.00	1.01E-01	3.97E-01	3.97E-01
+		RU-103	497.08		89.00	1.87E+05	1.39E+06	1.39E+06
+		RU-106	621.84		9.80	1.29E+01	2.94E+01	2.94E+01
+		AG-108M	433.93		89.90	2.07E-01	6.19E-01	6.19E-01
			614.37		90.40	1.40E-01		6.81E-01
			722.95		90.50	2.22E-01		7.16E-01
+		CD-109	88.03	*	3.72	3.05E+03	8.16E+01	8.16E+01
+		AG-110M	657.75		93.14	6.16E+02	1.26E+01	2.00E+01
			677.61		10.53	2.77E+01		5.95E+01
			706.67		16.46	5.75E-01		3.69E+01
			763.93		21.98	-9.70E+00		3.04E+01
			884.67		21.98	1.48E+01		3.83E+01
			1384.27		23.94	3.01E+00		1.26E+01
+		CD-113M	263.70		0.02	1.05E+03	2.09E+03	2.09E+03
+		SN-113	255.12		1.93	-1.53E+02	1.43E+02	3.20E+03
			391.69	*	64.90	1.45E+02		1.43E+02
+		TE-123M	159.00		84.10	-6.75E+00	4.97E+01	4.97E+01
+		SB-124	602.71		97.87	-1.37E+03	7.02E+03	8.10E+03
			645.85		7.26	-7.02E+04		1.16E+05
			722.78		11.10	2.42E+04		7.80E+04
			1691.02		49.00	-2.21E+03		7.02E+03
+		I-125	35.49		6.49	2.08E+06	2.51E+05	2.51E+05
+		SB-125	176.33		6.89	-2.56E+00	3.20E+00	9.24E+00
			427.89		29.33	-2.27E+00		3.20E+00
			463.38		10.35	4.91E+00		1.00E+01
			600.56		17.80	5.21E-01		5.84E+00
			635.90		11.32	3.00E+00		9.37E+00
+		SB-126	414.70		83.30	2.03E-01	6.07E-01	6.34E-01
			666.33		99.60	-5.56E-02		1.63E+00
			695.00		99.60	-2.84E-01		6.07E-01
			720.50		53.80	-4.56E-01		1.17E+00
+		SN-126	87.57	*	37.00	8.93E+01	2.39E+00	2.39E+00
+	@	SB-127	473.00		25.00	1.00E+26	1.00E+26	1.00E+26
	@		685.00		35.70	1.00E+26		1.00E+26
	@		783.80		14.70	1.00E+26		1.00E+26
+		I-129	29.78		57.00	-1.40E+01	2.40E-01	2.40E-01
			33.60		13.20	4.60E+01		8.73E+00
			39.58		7.52	6.26E+01		1.45E+01
+	@	I-131	284.30		6.05	1.00E+26	1.00E+26	1.00E+26

BP/Castex-Ltd Adm-Apx E-001404

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	@ I-131	364.48		81.20	1.00E+26	1.00E+26	1.00E+26
	@	636.97		7.26	1.00E+26		1.00E+26
	@	722.89		1.80	1.00E+26		1.00E+26
+	@ TE-132	49.72		13.10	1.00E+26	1.00E+26	1.00E+26
	@	228.16		88.00	1.00E+26		1.00E+26
+	BA-133	81.00		34.06	4.56E-02	8.82E-01	1.78E+00
		302.84		18.33	-1.73E+00		2.77E+00
		356.01		62.05	-1.74E-01		8.82E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	@ XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26
+	CS-134	563.23		8.38	9.05E-01	1.30E+00	1.47E+01
		569.32		15.43	3.59E-01		8.02E+00
		604.70		97.60	-1.91E-01		1.30E+00
		795.84		85.40	-4.69E-01		1.77E+00
		801.93		8.73	2.64E+00		1.79E+01
+	CS-135	268.24		16.00	-1.34E+00	2.65E+00	2.65E+00
+	@ I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41		28.60	1.00E+26		1.00E+26
	@	1678.03		9.54	1.00E+26		1.00E+26
+	CS-136	153.22		7.46	3.47E+17	5.90E+18	3.63E+19
		163.89		4.61	-1.69E+19		6.48E+19
		176.55		13.56	-5.86E+18		2.11E+19
		273.65		12.66	-1.02E+18		2.68E+19
		340.57		48.50	5.23E+18		7.52E+18
		818.50		99.70	2.82E+18		5.90E+18
		1048.07		79.60	-9.25E+17		8.73E+18
		1235.34		19.70	1.51E+19		1.96E+19
+	CS-137	661.65	*	85.12	7.78E+01	1.60E+00	1.60E+00
+	LA-138	788.74		34.00	-5.95E-01	4.05E-01	2.05E+00
		1435.80		66.00	-9.95E-02		4.05E-01
+	CE-139	165.85	*	80.35	8.99E+01	3.22E+01	3.22E+01
+	BA-140	162.64		6.70	-4.71E+19	6.48E+19	1.55E+20
		304.84		4.50	2.57E+19		2.75E+20
		423.70		3.20	6.64E+19		4.65E+20
		437.55		2.00	2.79E+20		7.77E+20
		537.32		25.00	-1.59E+18		6.48E+19
+	LA-140	328.77		20.50	-2.52E+19	8.03E+18	6.12E+19
		487.03		45.50	-4.29E+18		3.65E+19
		815.85		23.50	3.11E+19		8.75E+19
		1596.49		95.49	2.39E+17		8.03E+18
+	CE-141	145.44		48.40	2.43E+06	3.14E+07	3.14E+07
+	@ CE-143	57.36		11.80	1.00E+26	1.00E+26	1.00E+26
	@	293.26		42.00	1.00E+26		1.00E+26
	@	664.55		5.20	1.00E+26		1.00E+26
+	CE-144	133.54		10.80	-9.91E+00	2.48E+01	2.48E+01
+	PM-144	476.78		42.00	2.75E+00	2.96E+00	7.31E+00
		618.01		98.60	1.09E+00		2.96E+00
		696.49		99.49	5.23E-01		2.97E+00

BP/Castex-Ltd Adm-Apx E-001405

Analysis Report for 2206038-01

GAS-2002

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		PM-145	36.85		21.70	4.88E+01	3.24E+00	5.77E+00
			37.36		39.70	2.55E+01		3.24E+00
			42.30		15.10	-1.17E+00		7.21E+00
			72.40		2.31	3.15E+00		2.48E+01
+		PM-146	453.90		39.94	2.26E-01	1.92E+00	1.92E+00
			735.90		14.01	-1.25E+00		6.17E+00
			747.13		13.10	-3.89E+00		6.62E+00
+	@	ND-147	91.11		28.90	1.00E+26	1.00E+26	1.00E+26
	@		531.02		13.10	1.00E+26		1.00E+26
+	@	PM-149	285.90		3.10	1.00E+26	1.00E+26	1.00E+26
+		EU-152	121.78		20.50	3.74E+01	2.21E+00	2.60E+00
			244.69		5.40	1.06E+00		8.96E+00
			344.27		19.13	-8.69E-01		2.69E+00
			778.89		9.10	9.24E-01		8.55E+00
			964.01		10.40	1.84E+00		1.03E+01
			1085.78		7.22	9.04E+00		1.43E+01
			1112.02		9.60	6.30E+00		1.05E+01
			1407.95		14.94	-6.21E-02		2.21E+00
+		GD-153	97.43		31.30	-6.27E+00	1.18E+01	1.18E+01
			103.18		22.20	6.09E+00		1.62E+01
+		EU-154	123.07	*	40.50	2.00E+01	1.32E+00	1.53E+00
			723.30		19.70	1.21E+00		3.88E+00
			873.19		11.50	-5.78E-01		8.55E+00
			996.32		10.30	-8.83E+00		1.01E+01
			1004.76		17.90	-1.17E+00		5.91E+00
			1274.45	*	35.50	8.38E-01		1.32E+00
+		EU-155	86.50	*	30.90	1.47E+02	2.22E+00	3.92E+00
			105.30		20.70	-7.29E-01		2.22E+00
+		EU-156	811.77		10.40	-1.15E+17	1.34E+17	1.65E+17
			1153.47		7.20	-2.14E+17		2.46E+17
			1230.71		8.90	5.72E+16		1.34E+17
+		HO-166M	184.41		72.60	3.36E-01	5.27E-01	5.27E-01
			280.45		29.60	-3.84E-01		1.45E+00
			410.94		11.10	1.76E+00		4.73E+00
			711.69		54.10	-2.45E-01		1.13E+00
+		TM-171	66.72	*	0.14	1.87E+03	3.28E+03	3.28E+03
+		HF-172	67.35		5.31	-1.65E+03	9.40E+00	2.41E+01
			125.82		11.30	-4.02E+00		9.40E+00
+	@	LU-172	181.53		20.60	1.00E+26	1.00E+26	1.00E+26
	@		900.72		29.81	1.00E+26		1.00E+26
	@		1093.66		62.50	1.00E+26		1.00E+26
+		LU-173	100.72		5.24	-5.86E+00	6.32E+00	2.04E+01
			272.11		21.20	-2.14E+00		6.32E+00
+		HF-175	343.40		84.00	-1.12E+03	1.94E+03	1.94E+03
+		LU-176	88.34		13.30	2.39E+02	4.64E-01	6.10E+00
			201.83		86.00	-1.68E-02		4.64E-01
			306.78		94.00	2.37E-01		4.74E-01
+		HF-181	133.02		41.70	-2.52E+05	5.43E+05	6.30E+05
			345.85		17.20	-1.03E+06		1.96E+06

BP/Castex-Ltd Adm-Apx E-001406

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	HF-181	482.03		82.80	-1.45E+05	5.43E+05	5.43E+05
+	TA-182	67.75		41.20	-1.37E+04	1.99E+02	1.99E+02
		1121.30		34.90	-1.96E+01		3.53E+02
		1189.05		16.23	-3.17E+01		6.12E+02
		1221.41		26.98	4.79E+01		2.82E+02
		1231.02		11.44	2.47E+02		6.45E+02
+	IR-192	308.46		29.68	7.21E+01	2.79E+03	3.43E+03
		468.07		48.10	-1.39E+03		2.79E+03
+	HG-203	279.19		77.30	-4.02E+04	1.21E+05	1.21E+05
+	TL-204	374.74		94.11	-3.22E-02	7.75E-01	7.75E-01
		899.15		99.16	1.28E-01		1.40E+00
		911.74		91.10	-7.17E-01		1.50E+00
+	BI-207	569.67		97.72	2.78E-02	6.21E-01	6.21E-01
		1063.62		74.90	-1.00E-01		1.24E+00
+	TL-208	583.14		30.22	1.15E+00	4.59E-01	1.96E+00
		860.37		4.48	4.04E-01		1.80E+01
		2614.66		35.85	3.92E-01		4.59E-01
+	BI-210M	262.00		45.00	2.00E-01	9.53E-01	9.53E-01
		300.00		23.00	5.42E-01		1.90E+00
+	PB-210	46.50		4.25	-1.82E+01	2.58E+01	2.58E+01
+	PB-211	404.84		2.90	-5.42E+00	1.77E+01	1.77E+01
		831.96		2.90	1.34E+01		2.65E+01
+	BI-212	727.17		11.80	2.01E+00	5.49E+00	5.49E+00
		1620.62		2.75	3.96E+00		1.02E+01
+	PB-212	238.63		44.60	-1.08E-01	9.72E-01	9.72E-01
		300.09		3.41	3.66E+00		1.28E+01
+	BI-214	609.31	*	46.30	8.12E-01	1.31E+00	1.31E+00
		1120.29		15.10	-4.00E-01		5.53E+00
		1764.49		15.80	1.03E-01		1.56E+00
		2204.22		4.98	5.47E-01		4.75E+00
+	PB-214	295.21		19.19	-2.83E-01	1.27E+00	2.27E+00
		351.92		37.19	7.05E-01		1.27E+00
+	RN-219	401.80		6.50	-1.91E+00	7.84E+00	7.84E+00
+	RA-223	323.87		3.88	5.28E+00	1.16E+01	1.16E+01
+	RA-224	240.98		3.95	7.73E+00	1.10E+01	1.10E+01
+	RA-225	40.00		31.00	3.88E+17	2.21E+17	2.21E+17
+	RA-226	186.21		3.28	2.89E+00	1.18E+01	1.18E+01
+	TH-227	50.10		8.40	-6.53E+01	3.77E+00	1.27E+01
		236.00		11.50	9.17E-01		3.77E+00
		256.20		6.30	-1.53E+00		6.77E+00
+	AC-228	338.32		11.40	4.24E+00	3.27E+00	4.06E+00
		911.07		27.70	-1.30E+00		3.27E+00
		969.11		16.60	2.30E+00		5.56E+00
+	TH-230	48.43		16.90	2.57E+01	6.19E+00	6.19E+00
		62.85		4.60	1.34E+03		2.76E+01
		67.67		0.37	-1.02E+04		1.49E+02
+	PA-231	283.67		1.60	-1.19E+01	1.91E+01	2.69E+01
		302.67		2.30	-1.01E+01		1.91E+01

BP/Castex-Ltd Adm-Apx E-001407

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TH-231	25.64		14.70	0.00E+00	1.98E-01	1.98E-01
		84.21		6.40	2.64E+02		1.20E+01
+	PA-233	311.98		38.60	8.34E+08	1.88E+09	1.88E+09
+	PA-234	131.20		20.40	-3.51E+00	1.69E+00	1.69E+00
		733.99		8.80	-5.32E+00		7.36E+00
		946.00		12.00	2.90E+00		8.19E+00
+	PA-234M	1001.03		0.92	1.04E+01	9.56E+01	9.56E+01
+	TH-234	63.29		3.80	1.07E+03	3.02E+01	3.02E+01
+	U-235	143.76		10.50	-7.01E-01	3.21E+00	3.21E+00
		163.35		4.70	-2.23E+00		8.01E+00
		205.31		4.70	-3.80E+00		8.54E+00
+	NP-237	86.50	*	12.60	2.62E+02	7.01E+00	7.01E+00
+	@ NP-239	106.10		22.70	1.00E+26	1.00E+26	1.00E+26
	@	228.18		10.70	1.00E+26		1.00E+26
	@	277.60		14.10	1.00E+26		1.00E+26
+	AM-241	59.54	*	35.90	2.25E+02	6.32E+00	6.32E+00
+	AM-243	74.67		66.00	2.47E-01	7.77E-01	7.77E-01
+	CM-243	209.75		3.29	-8.64E+00	3.26E+00	1.32E+01
		228.14		10.60	2.66E+00		4.38E+00
		277.60		14.00	2.25E+00		3.26E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	2.75E+05	2.75E+05	1.03E+05	1.36E+05

BP/Castex-Ltd Adm-Apx E-001408

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	NA-22	1274.54	*	99.94	7.17E-01	7.17E-01	4.55E-01	3.48E-01
	NA-24	1368.53		99.99	2.95E-01	6.35E-02	-7.28E-02	1.42E-01
		2754.09		99.86	6.35E-02		1.37E-02	2.25E-02
	AL-26	1808.65		99.76	2.51E-01	2.51E-01	-1.56E-02	1.18E-01
	K-40	1460.81		10.67	2.74E+00	2.74E+00	1.34E+00	1.31E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	5.97E-01	5.34E-01	-4.10E+01	2.97E-01
		78.34		96.00	5.34E-01		1.26E-01	2.66E-01
	SC-46	889.25		98.98	7.96E+02	7.74E+02	-2.92E+01	3.94E+02
		1120.51		99.90	7.74E+02		-5.59E+01	3.82E+02
	V-48	983.52		99.98	3.30E+15	1.55E+15	1.00E+15	1.63E+15
		1312.10		97.50	1.55E+15		-2.05E+15	7.52E+14
	CR-51	320.08		9.83	4.30E+09	4.30E+09	-8.45E+08	2.13E+09
	MN-54	834.83		99.97	4.80E+00	4.80E+00	4.95E-01	2.38E+00
	CO-56	846.75		99.96	2.70E+03	1.26E+03	6.47E+02	1.34E+03
		1037.75		14.03	2.18E+04		2.09E+04	1.08E+04
		1238.25		67.00	2.39E+03		1.10E+01	1.17E+03
		1771.40		15.51	5.54E+03		9.07E+02	2.61E+03
		2587.48		16.90	1.26E+03		-6.76E+01	4.45E+02
+	CO-57	122.06	*	85.51	5.03E+00	5.03E+00	6.55E+01	2.50E+00
		136.48	*	10.60	3.03E+01		6.53E+01	1.51E+01
	CO-58	810.76		99.40	2.36E+03	2.36E+03	-1.32E+03	1.17E+03
	FE-59	1099.22		56.50	6.08E+05	3.63E+05	1.79E+05	3.01E+05
		1291.56		43.20	3.63E+05		2.20E+05	1.77E+05
+	CO-60	1173.22	*	100.00	1.95E+00	1.42E+00	1.22E+02	9.68E-01
		1332.49	*	100.00	1.42E+00		1.24E+02	7.00E-01
	ZN-65	1115.52		50.75	1.80E+01	1.80E+01	4.82E+00	8.91E+00
@	GA-67	93.31		35.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		208.95		2.24	1.00E+26		1.00E+26	1.00E+20
@		300.22		16.00	1.00E+26		1.00E+26	1.00E+20
	SE-75	121.11		16.70	3.38E+02	7.15E+01	4.86E+03	1.68E+02
		136.00		59.50	7.15E+01		1.66E+02	3.55E+01
		264.65		59.80	8.53E+01		1.57E+01	4.23E+01
		279.53		25.20	2.03E+02		-6.77E+01	1.01E+02
		400.65		11.40	5.34E+02		6.12E+01	2.65E+02
	RB-82	776.52		13.00	2.85E+10	2.85E+10	-1.69E+10	1.41E+10
	RB-83	520.41		46.00	9.79E+02	9.79E+02	2.93E+02	4.85E+02
		529.64		30.30	1.47E+03		-2.60E+01	7.31E+02
		552.65		16.40	2.67E+03		2.00E+02	1.32E+03
	KR-85	513.99		0.43	1.60E+02	1.60E+02	1.09E+02	7.91E+01
	SR-85	513.99		99.27	4.13E+03	4.13E+03	2.82E+03	2.05E+03
+	Y-88	898.02	*	93.40	2.32E+02	9.83E+01	2.20E+02	1.15E+02
		1836.01	*	99.38	9.83E+01		2.15E+02	4.75E+01
	MO-93	263.06		56.72	8.72E-01	3.17E-01	4.39E-01	4.33E-01
		684.67		99.68	7.16E-01		2.37E-01	3.54E-01
		1477.11		99.08	3.17E-01		-2.75E-02	1.51E-01
	NB-93M	16.57		9.43	4.00E+05	4.00E+05	0.00E+00	0.00E+00
	NB-94	702.63		100.00	6.14E-01	6.14E-01	7.31E-02	3.03E-01
		871.10		100.00	8.19E-01		1.29E-01	4.05E-01
	NB-95	765.79		99.81	8.42E+06	8.42E+06	-3.80E+06	4.16E+06
@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	ZR-95	724.18		43.70	1.12E+04	9.42E+03	-3.98E+03	5.54E+03
		756.72		55.30	9.42E+03		6.04E+03	4.66E+03

BP/Castex-Ltd Adm-Apx E-001409

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@	MO-99	181.06		6.20	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		739.58		12.80	1.00E+26		1.00E+26	1.00E+20
@		778.00		4.50	1.00E+26		1.00E+26	1.00E+20
	TC-99M	140.51		89.00	3.97E-01	3.97E-01	1.01E-01	1.97E-01
	RU-103	497.08		89.00	1.39E+06	1.39E+06	1.87E+05	6.91E+05
	RU-106	621.84		9.80	2.94E+01	2.94E+01	1.29E+01	1.45E+01
	AG-108M	433.93		89.90	6.19E-01	6.19E-01	2.07E-01	3.07E-01
		614.37		90.40	6.81E-01		1.40E-01	3.37E-01
		722.95		90.50	7.16E-01		2.22E-01	3.54E-01
+	CD-109	88.03	*	3.72	8.16E+01	8.16E+01	3.05E+03	4.07E+01
	AG-110M	657.75		93.14	2.00E+01	1.26E+01	6.16E+02	9.97E+00
		677.61		10.53	5.95E+01		2.77E+01	2.94E+01
		706.67		16.46	3.69E+01		5.75E-01	1.82E+01
		763.93		21.98	3.04E+01		-9.70E+00	1.50E+01
		884.67		21.98	3.83E+01		1.48E+01	1.90E+01
		1384.27		23.94	1.26E+01		3.01E+00	6.04E+00
	CD-113M	263.70		0.02	2.09E+03	2.09E+03	1.05E+03	1.04E+03
+	SN-113	255.12		1.93	3.20E+03	1.43E+02	-1.53E+02	1.59E+03
		391.69	*	64.90	1.43E+02		1.45E+02	7.08E+01
	TE-123M	159.00		84.10	4.97E+01	4.97E+01	-6.75E+00	2.47E+01
	SB-124	602.71		97.87	8.10E+03	7.02E+03	-1.37E+03	4.01E+03
		645.85		7.26	1.16E+05		-7.02E+04	5.76E+04
		722.78		11.10	7.80E+04		2.42E+04	3.86E+04
		1691.02		49.00	7.02E+03		-2.21E+03	3.32E+03
	I-125	35.49		6.49	2.51E+05	2.51E+05	2.08E+06	1.25E+05
	SB-125	176.33		6.89	9.24E+00	3.20E+00	-2.56E+00	4.59E+00
		427.89		29.33	3.20E+00		-2.27E+00	1.58E+00
		463.38		10.35	1.00E+01		4.91E+00	4.97E+00
		600.56		17.80	5.84E+00		5.21E-01	2.89E+00
		635.90		11.32	9.37E+00		3.00E+00	4.64E+00
	SB-126	414.70		83.30	6.34E-01	6.07E-01	2.03E-01	3.14E-01
		666.33		99.60	1.63E+00		-5.56E-02	8.10E-01
		695.00		99.60	6.07E-01		-2.84E-01	3.00E-01
		720.50		53.80	1.17E+00		-4.56E-01	5.78E-01
+	SN-126	87.57	*	37.00	2.39E+00	2.39E+00	8.93E+01	1.19E+00
@	SB-127	473.00		25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		685.00		35.70	1.00E+26		1.00E+26	1.00E+20
@		783.80		14.70	1.00E+26		1.00E+26	1.00E+20
	I-129	29.78		57.00	2.40E-01	2.40E-01	-1.40E+01	1.08E-01
		33.60		13.20	8.73E+00		4.60E+01	4.33E+00
		39.58		7.52	1.45E+01		6.26E+01	7.21E+00
@	I-131	284.30		6.05	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		364.48		81.20	1.00E+26		1.00E+26	1.00E+20
@		636.97		7.26	1.00E+26		1.00E+26	1.00E+20
@		722.89		1.80	1.00E+26		1.00E+26	1.00E+20
@	TE-132	49.72		13.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		228.16		88.00	1.00E+26		1.00E+26	1.00E+20
	BA-133	81.00		34.06	1.78E+00	8.82E-01	4.56E-02	8.88E-01
		302.84		18.33	2.77E+00		-1.73E+00	1.37E+00
		356.01		62.05	8.82E-01		-1.74E-01	4.38E-01
@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	CS-134	563.23		8.38	1.47E+01	1.30E+00	9.05E-01	7.27E+00

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	569.32		15.43	8.02E+00	1.30E+00	3.59E-01	3.97E+00
		604.70		97.60	1.30E+00		-1.91E-01	6.43E-01
		795.84		85.40	1.77E+00		-4.69E-01	8.73E-01
		801.93		8.73	1.79E+01		2.64E+00	8.88E+00
	CS-135	268.24		16.00	2.65E+00	2.65E+00	-1.34E+00	1.32E+00
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	3.63E+19	5.90E+18	3.47E+17	1.80E+19
		163.89		4.61	6.48E+19		-1.69E+19	3.22E+19
		176.55		13.56	2.11E+19		-5.86E+18	1.05E+19
		273.65		12.66	2.68E+19		-1.02E+18	1.33E+19
		340.57		48.50	7.52E+18		5.23E+18	3.73E+18
		818.50		99.70	5.90E+18		2.82E+18	2.92E+18
		1048.07		79.60	8.73E+18		-9.25E+17	4.32E+18
		1235.34		19.70	1.96E+19		1.51E+19	9.57E+18
+	CS-137	661.65	*	85.12	1.60E+00	1.60E+00	7.78E+01	7.94E-01
	LA-138	788.74		34.00	2.05E+00	4.05E-01	-5.95E-01	1.01E+00
		1435.80		66.00	4.05E-01		-9.95E-02	1.93E-01
+	CE-139	165.85	*	80.35	3.22E+01	3.22E+01	8.99E+01	1.60E+01
	BA-140	162.64		6.70	1.55E+20	6.48E+19	-4.71E+19	7.72E+19
		304.84		4.50	2.75E+20		2.57E+19	1.36E+20
		423.70		3.20	4.65E+20		6.64E+19	2.30E+20
		437.55		2.00	7.77E+20		2.79E+20	3.85E+20
		537.32		25.00	6.48E+19		-1.59E+18	3.21E+19
	LA-140	328.77		20.50	6.12E+19	8.03E+18	-2.52E+19	3.03E+19
		487.03		45.50	3.65E+19		-4.29E+18	1.81E+19
		815.85		23.50	8.75E+19		3.11E+19	4.33E+19
		1596.49		95.49	8.03E+18		2.39E+17	3.82E+18
	CE-141	145.44		48.40	3.14E+07	3.14E+07	2.43E+06	1.56E+07
@	CE-143	57.36		11.80	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		293.26		42.00	1.00E+26		1.00E+26	1.00E+20
@		664.55		5.20	1.00E+26		1.00E+26	1.00E+20
	CE-144	133.54		10.80	2.48E+01	2.48E+01	-9.91E+00	1.23E+01
	PM-144	476.78		42.00	7.31E+00	2.96E+00	2.75E+00	3.63E+00
		618.01		98.60	2.96E+00		1.09E+00	1.46E+00
		696.49		99.49	2.97E+00		5.23E-01	1.47E+00
	PM-145	36.85		21.70	5.77E+00	3.24E+00	4.88E+01	2.87E+00
		37.36		39.70	3.24E+00		2.55E+01	1.61E+00
		42.30		15.10	7.21E+00		-1.17E+00	3.59E+00
		72.40		2.31	2.48E+01		3.15E+00	1.24E+01
	PM-146	453.90		39.94	1.92E+00	1.92E+00	2.26E-01	9.51E-01
		735.90		14.01	6.17E+00		-1.25E+00	3.05E+00
		747.13		13.10	6.62E+00		-3.89E+00	3.28E+00
@	ND-147	91.11		28.90	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		531.02		13.10	1.00E+26		1.00E+26	1.00E+20
@	PM-149	285.90		3.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	EU-152	121.78		20.50	2.60E+00	2.21E+00	3.74E+01	1.29E+00
		244.69		5.40	8.96E+00		1.06E+00	4.45E+00
		344.27		19.13	2.69E+00		-8.69E-01	1.33E+00
		778.89		9.10	8.55E+00		9.24E-01	4.23E+00
		964.01		10.40	1.03E+01		1.84E+00	5.12E+00
		1085.78		7.22	1.43E+01		9.04E+00	7.10E+00

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1112.02		9.60	1.05E+01	2.21E+00	6.30E+00	5.19E+00
		1407.95		14.94	2.21E+00		-6.21E-02	1.06E+00
	GD-153	97.43		31.30	1.18E+01	1.18E+01	-6.27E+00	5.85E+00
		103.18		22.20	1.62E+01		6.09E+00	8.08E+00
	EU-154	123.07	*	40.50	1.53E+00	1.32E+00	2.00E+01	7.63E-01
		723.30		19.70	3.88E+00		1.21E+00	1.92E+00
		873.19		11.50	8.55E+00		-5.78E-01	4.23E+00
		996.32		10.30	1.01E+01		-8.83E+00	4.99E+00
		1004.76		17.90	5.91E+00		-1.17E+00	2.93E+00
		1274.45	*	35.50	1.32E+00		8.38E-01	6.41E-01
+	EU-155	86.50	*	30.90	3.92E+00	2.22E+00	1.47E+02	1.96E+00
		105.30		20.70	2.22E+00		-7.29E-01	1.10E+00
	EU-156	811.77		10.40	1.65E+17	1.34E+17	-1.15E+17	8.16E+16
		1153.47		7.20	2.46E+17		-2.14E+17	1.21E+17
		1230.71		8.90	1.34E+17		5.72E+16	6.55E+16
	HO-166M	184.41		72.60	5.27E-01	5.27E-01	3.36E-01	2.62E-01
		280.45		29.60	1.45E+00		-3.84E-01	7.21E-01
		410.94		11.10	4.73E+00		1.76E+00	2.35E+00
		711.69		54.10	1.13E+00		-2.45E-01	5.60E-01
+	TM-171	66.72	*	0.14	3.28E+03	3.28E+03	1.87E+03	1.64E+03
	HF-172	67.35		5.31	2.41E+01	9.40E+00	-1.65E+03	1.20E+01
		125.82		11.30	9.40E+00		-4.02E+00	4.68E+00
@	LU-172	181.53		20.60	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		900.72		29.81	1.00E+26		1.00E+26	1.00E+20
@		1093.66		62.50	1.00E+26		1.00E+26	1.00E+20
	LU-173	100.72		5.24	2.04E+01	6.32E+00	-5.86E+00	1.01E+01
		272.11		21.20	6.32E+00		-2.14E+00	3.14E+00
	HF-175	343.40		84.00	1.94E+03	1.94E+03	-1.12E+03	9.61E+02
	LU-176	88.34		13.30	6.10E+00	4.64E-01	2.39E+02	3.04E+00
		201.83		86.00	4.64E-01		-1.68E-02	2.31E-01
		306.78		94.00	4.74E-01		2.37E-01	2.35E-01
	HF-181	133.02		41.70	6.30E+05	5.43E+05	-2.52E+05	3.13E+05
		345.85		17.20	1.96E+06		-1.03E+06	9.72E+05
		482.03		82.80	5.43E+05		-1.45E+05	2.69E+05
	TA-182	67.75		41.20	1.99E+02	1.99E+02	-1.37E+04	9.92E+01
		1121.30		34.90	3.53E+02		-1.96E+01	1.74E+02
		1189.05		16.23	6.12E+02		-3.17E+01	3.01E+02
		1221.41		26.98	2.82E+02		4.79E+01	1.38E+02
		1231.02		11.44	6.45E+02		2.47E+02	3.15E+02
	IR-192	308.46		29.68	3.43E+03	2.79E+03	7.21E+01	1.70E+03
		468.07		48.10	2.79E+03		-1.39E+03	1.38E+03
	HG-203	279.19		77.30	1.21E+05	1.21E+05	-4.02E+04	5.99E+04
	TL-204	374.74		94.11	7.75E-01	7.75E-01	-3.22E-02	3.84E-01
		899.15		99.16	1.40E+00		1.28E-01	6.95E-01
		911.74		91.10	1.50E+00		-7.17E-01	7.44E-01
	BI-207	569.67		97.72	6.21E-01	6.21E-01	2.78E-02	3.07E-01
		1063.62		74.90	1.24E+00		-1.00E-01	6.15E-01
	TL-208	583.14		30.22	1.96E+00	4.59E-01	1.15E+00	9.70E-01
		860.37		4.48	1.80E+01		4.04E-01	8.91E+00
		2614.66		35.85	4.59E-01		3.92E-01	2.04E-01
	BI-210M	262.00		45.00	9.53E-01	9.53E-01	2.00E-01	4.73E-01
		300.00		23.00	1.90E+00		5.42E-01	9.44E-01
	PB-210	46.50		4.25	2.58E+01	2.58E+01	-1.82E+01	1.29E+01

BP/Castex-Ltd Adm-Apx E-001412

Analysis Report for 2206038-01

GAS-2002

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PB-211	404.84		2.90	1.77E+01	1.77E+01	-5.42E+00	8.77E+00
		831.96		2.90	2.65E+01		1.34E+01	1.31E+01
	BI-212	727.17		11.80	5.49E+00	5.49E+00	2.01E+00	2.71E+00
		1620.62		2.75	1.02E+01		3.96E+00	4.85E+00
	PB-212	238.63		44.60	9.72E-01	9.72E-01	-1.08E-01	4.83E-01
		300.09		3.41	1.28E+01		3.66E+00	6.37E+00
+	BI-214	609.31	*	46.30	1.31E+00	1.31E+00	8.12E-01	6.50E-01
		1120.29		15.10	5.53E+00		-4.00E-01	2.73E+00
		1764.49		15.80	1.56E+00		1.03E-01	7.35E-01
		2204.22		4.98	4.75E+00		5.47E-01	2.21E+00
	PB-214	295.21		19.19	2.27E+00	1.27E+00	-2.83E-01	1.12E+00
		351.92		37.19	1.27E+00		7.05E-01	6.28E-01
	RN-219	401.80		6.50	7.84E+00	7.84E+00	-1.91E+00	3.89E+00
	RA-223	323.87		3.88	1.16E+01	1.16E+01	5.28E+00	5.75E+00
	RA-224	240.98		3.95	1.10E+01	1.10E+01	7.73E+00	5.45E+00
	RA-225	40.00		31.00	2.21E+17	2.21E+17	3.88E+17	1.10E+17
	RA-226	186.21		3.28	1.18E+01	1.18E+01	2.89E+00	5.86E+00
	TH-227	50.10		8.40	1.27E+01	3.77E+00	-6.53E+01	6.31E+00
		236.00		11.50	3.77E+00		9.17E-01	1.87E+00
		256.20		6.30	6.77E+00		-1.53E+00	3.36E+00
	AC-228	338.32		11.40	4.06E+00	3.27E+00	4.24E+00	2.01E+00
		911.07		27.70	3.27E+00		-1.30E+00	1.62E+00
		969.11		16.60	5.56E+00		2.30E+00	2.75E+00
	TH-230	48.43		16.90	6.19E+00	6.19E+00	2.57E+01	3.08E+00
		62.85		4.60	2.76E+01		1.34E+03	1.38E+01
		67.67		0.37	1.49E+02		-1.02E+04	7.42E+01
	PA-231	283.67		1.60	2.69E+01	1.91E+01	-1.19E+01	1.33E+01
		302.67		2.30	1.91E+01		-1.01E+01	9.45E+00
	TH-231	25.64		14.70	1.98E-01	1.98E-01	0.00E+00	0.00E+00
		84.21		6.40	1.20E+01		2.64E+02	6.01E+00
	PA-233	311.98		38.60	1.88E+09	1.88E+09	8.34E+08	9.34E+08
	PA-234	131.20		20.40	1.69E+00	1.69E+00	-3.51E+00	8.38E-01
		733.99		8.80	7.36E+00		-5.32E+00	3.64E+00
		946.00		12.00	8.19E+00		2.90E+00	4.06E+00
	PA-234M	1001.03		0.92	9.56E+01	9.56E+01	1.04E+01	4.73E+01
	TH-234	63.29		3.80	3.02E+01	3.02E+01	1.07E+03	1.51E+01
	U-235	143.76		10.50	3.21E+00	3.21E+00	-7.01E-01	1.59E+00
		163.35		4.70	8.01E+00		-2.23E+00	3.98E+00
		205.31		4.70	8.54E+00		-3.80E+00	4.24E+00
+	NP-237	86.50	*	12.60	7.01E+00	7.01E+00	2.62E+02	3.50E+00
@	NP-239	106.10		22.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		228.18		10.70	1.00E+26		1.00E+26	1.00E+20
@		277.60		14.10	1.00E+26		1.00E+26	1.00E+20
+	AM-241	59.54	*	35.90	6.32E+00	6.32E+00	2.25E+02	3.16E+00
	AM-243	74.67		66.00	7.77E-01	7.77E-01	2.47E-01	3.87E-01
	CM-243	209.75		3.29	1.32E+01	3.26E+00	-8.64E+00	6.55E+00
		228.14		10.60	4.38E+00		2.66E+00	2.18E+00
		277.60		14.00	3.26E+00		2.25E+00	1.62E+00

BP/Castex-Ltd Adm-Apx E-001413

Analysis Report for 2206038-01

GAS-2002

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	***Comment***	***User***

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: GAS-2002

Elapsed Live time: 1800
Elapsed Real Time: 1823

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	2	25
33:	1318	1551	1586	1735	1711	1869	1737	1740
41:	1875	2082	2273	2524	2930	3438	4357	5031
49:	5349	5345	5294	5319	5428	6038	7074	11330
57:	21445	32786	26910	12604	4575	2493	2391	2528
65:	2564	2575	2599	2645	2515	2573	2426	2448
73:	2371	2473	2493	2478	2423	2438	2392	2398
81:	2522	2728	2996	4156	7804	13766	15746	9664
89:	3976	1856	1376	1330	1302	1256	1233	1188
97:	1194	1144	1193	1183	1206	1204	1155	1153
105:	1139	1103	1034	1119	1138	1152	1158	1090
113:	1143	1164	1177	1148	1199	1409	2067	3405
121:	4072	2997	1791	1227	1046	1092	1037	1031
129:	1060	1005	1051	988	1109	1201	1362	1347
137:	1048	957	948	964	975	940	972	916
145:	870	924	903	975	901	898	884	894
153:	872	945	905	923	933	926	899	877
161:	872	927	1061	1248	1376	1094	908	830
169:	912	873	906	874	877	890	872	863
177:	839	807	888	911	867	888	940	944
185:	958	977	903	948	932	919	971	979
193:	903	911	911	923	873	929	918	840
201:	878	893	870	912	909	871	871	879
209:	870	902	917	944	940	959	1000	980
217:	917	971	937	918	943	933	956	994
225:	902	910	905	909	844	900	900	870
233:	873	803	824	806	884	843	846	809
241:	826	774	803	823	773	785	722	767
249:	752	728	811	722	675	731	708	721
257:	751	734	705	732	730	727	660	688
265:	681	704	663	704	595	672	692	689
273:	675	631	677	672	691	651	632	632
281:	642	603	609	691	627	629	632	618
289:	642	624	612	582	585	646	569	639
297:	623	613	570	597	641	606	576	587
305:	566	598	661	595	620	601	571	570
313:	599	576	568	575	596	554	519	580
321:	565	600	567	567	558	593	553	557
329:	519	513	538	525	560	581	561	547
337:	560	527	577	562	563	537	515	501
345:	515	484	553	559	535	546	528	552
353:	526	534	575	530	565	540	489	530
361:	549	551	548	506	607	487	526	506

BP/Castex-Ltd Adm-Apx E-001415

369:	493	571	504	523	498	463	533	538

Sample Title: GAS-2002

Channel								
377:	537	557	503	529	510	538	533	535
385:	519	493	544	537	575	658	625	609
393:	559	533	492	564	521	525	524	503
401:	526	532	516	496	519	536	498	539
409:	534	540	528	521	538	534	546	487
417:	531	523	504	508	580	528	515	496
425:	535	480	535	481	507	554	496	522
433:	516	564	534	572	523	529	542	541
441:	533	496	561	561	547	520	536	517
449:	556	566	526	516	560	568	565	548
457:	502	571	538	553	562	566	559	526
465:	523	550	489	545	546	554	505	572
473:	560	499	509	517	480	477	452	448
481:	463	444	438	434	417	408	414	393
489:	430	417	379	403	375	416	418	399
497:	451	407	424	402	408	419	369	398
505:	361	420	393	412	404	406	398	415
513:	377	384	373	362	373	408	377	340
521:	357	344	377	364	334	338	323	334
529:	358	355	391	362	341	343	345	310
537:	336	345	316	336	329	318	303	340
545:	324	314	326	322	322	326	299	332
553:	310	333	273	300	306	318	289	347
561:	300	324	276	339	289	313	314	323
569:	299	322	312	309	295	283	309	288
577:	306	307	292	318	303	288	317	315
585:	331	301	334	301	297	294	295	305
593:	286	323	299	283	314	278	276	279
601:	314	300	272	290	276	277	311	344
609:	321	316	284	258	287	302	279	287
617:	322	297	293	287	280	313	279	284
625:	289	301	286	272	276	270	273	267
633:	277	284	278	267	277	294	291	274
641:	274	251	264	277	319	302	283	333
649:	322	295	301	330	331	315	339	491
657:	1017	2583	5779	8049	6451	2939	992	436
665:	328	308	308	284	278	292	285	279
673:	279	279	281	269	269	281	276	273
681:	259	231	262	251	265	261	244	238
689:	250	224	225	233	256	250	249	224
697:	244	245	249	279	245	238	224	246
705:	261	220	218	227	249	246	209	275
713:	226	229	244	244	245	249	259	231
721:	258	220	264	246	280	264	257	218
729:	284	249	273	275	218	252	250	260
737:	253	236	267	250	289	252	243	249
745:	249	229	239	243	221	261	261	269
753:	250	293	264	244	268	255	280	286
761:	221	252	250	258	234	251	274	251
769:	277	260	262	256	276	244	252	246
777:	243	269	267	253	270	280	270	237
785:	277	259	262	279	262	231	256	262
793:	232	258	255	268	250	286	263	299

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801:	265	232	297	305	282	300	273	219

Sample Title: GAS-2002

Channel								
809:	262	243	264	250	239	304	250	266
817:	312	294	281	285	270	273	279	269
825:	262	246	295	303	301	266	304	286
833:	297	268	288	299	292	257	286	285
841:	274	296	297	302	286	281	309	312
849:	278	290	310	293	318	285	293	307
857:	294	315	318	278	323	284	304	284
865:	273	317	282	300	310	290	297	313
873:	315	307	311	304	304	302	340	306
881:	300	321	337	268	337	332	339	309
889:	302	299	325	329	280	356	344	438
897:	430	389	332	340	337	352	359	364
905:	333	335	337	331	368	357	339	350
913:	338	334	329	319	357	361	339	355
921:	346	339	333	373	336	346	336	361
929:	351	370	358	383	403	373	385	393
937:	369	332	374	359	362	388	384	398
945:	403	395	361	359	394	354	372	365
953:	392	355	419	368	406	402	356	364
961:	340	350	371	326	330	337	327	318
969:	331	295	273	309	298	265	285	279
977:	296	282	285	324	273	274	291	280
985:	260	285	298	285	281	277	281	266
993:	287	271	249	277	258	273	277	252
1001:	286	299	291	266	284	282	256	267
1009:	278	291	285	295	260	276	266	272
1017:	267	267	289	274	271	243	245	259
1025:	281	279	261	279	275	250	235	287
1033:	263	283	259	274	285	260	255	261
1041:	252	262	225	246	245	249	250	240
1049:	298	232	259	266	251	257	251	266
1057:	237	274	243	244	288	249	242	248
1065:	235	256	260	237	247	269	249	257
1073:	235	224	250	246	246	250	252	262
1081:	259	283	255	272	239	255	285	252
1089:	274	254	260	220	262	260	252	295
1097:	262	234	230	245	260	259	246	263
1105:	260	231	241	256	251	228	251	246
1113:	233	241	211	236	189	214	198	207
1121:	203	205	167	162	190	158	178	169
1129:	167	176	168	194	170	168	143	174
1137:	166	168	183	169	159	138	151	164
1145:	155	153	161	174	179	164	117	150
1153:	156	151	117	158	151	171	173	184
1161:	186	176	193	156	174	195	337	724
1169:	1889	4349	6437	6043	3191	1144	373	209
1177:	185	174	146	136	120	128	126	143
1185:	135	148	123	112	97	93	107	98
1193:	95	92	103	88	69	92	86	80
1201:	90	90	79	77	76	79	64	80
1209:	73	90	76	62	69	76	73	74
1217:	68	60	55	73	60	60	55	66
1225:	67	57	58	58	65	62	52	63

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1233:	55	67	54	62	47	46	59	41

Sample Title: GAS-2002

Channel								
1241:	46	40	52	52	39	50	43	50
1249:	32	53	45	41	55	52	43	52
1257:	47	40	34	37	44	36	37	43
1265:	45	46	52	40	43	30	35	37
1273:	46	42	54	39	31	31	32	35
1281:	35	26	44	34	28	42	41	38
1289:	34	29	39	40	47	52	42	37
1297:	31	31	41	45	37	33	41	38
1305:	39	33	35	28	29	28	34	40
1313:	43	46	33	43	43	55	65	64
1321:	64	63	69	66	137	197	506	1478
1329:	3426	5565	5394	3249	1250	360	122	91
1337:	98	72	45	44	31	48	50	41
1345:	42	43	30	37	32	24	23	19
1353:	27	15	22	24	21	15	25	18
1361:	21	12	23	25	16	20	14	14
1369:	21	14	18	12	12	14	24	14
1377:	11	18	15	18	16	28	19	20
1385:	18	11	21	14	14	18	18	14
1393:	24	12	14	19	21	17	15	17
1401:	14	14	18	18	22	22	17	15
1409:	8	15	14	17	20	10	22	13
1417:	15	23	15	13	10	12	17	13
1425:	12	18	10	12	16	11	6	12
1433:	13	13	14	15	14	14	14	12
1441:	18	15	17	8	13	8	20	7
1449:	9	12	5	14	12	7	13	11
1457:	11	16	19	20	17	24	15	13
1465:	17	13	13	12	12	17	16	17
1473:	3	13	21	21	14	9	9	12
1481:	6	11	17	11	6	10	14	18
1489:	15	12	14	14	14	13	17	6
1497:	8	13	8	11	15	11	11	18
1505:	13	11	14	14	9	20	10	14
1513:	8	11	11	14	11	10	11	7
1521:	12	13	11	15	11	21	11	12
1529:	11	16	15	11	16	12	14	14
1537:	10	16	9	14	13	16	8	13
1545:	19	12	11	9	12	15	19	10
1553:	12	16	10	6	14	14	12	9
1561:	16	16	16	19	14	20	13	13
1569:	14	13	10	11	12	15	12	7
1577:	10	15	14	12	8	9	7	18
1585:	11	13	17	14	10	13	20	2
1593:	17	7	15	6	6	10	13	17
1601:	14	10	8	12	10	15	6	11
1609:	10	11	13	10	8	15	13	17
1617:	7	14	7	10	8	11	16	11
1625:	7	6	15	15	13	7	8	16
1633:	8	15	8	9	11	5	11	13
1641:	11	10	9	17	9	10	10	8
1649:	10	12	7	7	10	5	10	9
1657:	9	11	7	12	7	3	10	7

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1665:	8	8	12	11	12	6	7	14

Sample Title: GAS-2002

Channel								
1673:	12	10	9	10	18	11	14	13
1681:	8	9	10	13	8	6	14	5
1689:	9	9	14	10	6	7	10	16
1697:	5	9	7	4	10	14	3	8
1705:	10	9	14	7	6	11	9	11
1713:	8	12	4	10	7	6	7	13
1721:	9	8	10	3	7	13	13	4
1729:	9	11	8	9	8	9	7	6
1737:	7	2	7	7	15	10	11	12
1745:	8	7	10	7	11	8	8	6
1753:	8	4	7	5	7	6	6	12
1761:	10	9	6	12	10	5	2	8
1769:	10	9	15	10	7	8	5	3
1777:	5	10	5	11	6	6	13	7
1785:	4	9	8	9	6	7	10	6
1793:	8	8	8	5	4	4	5	11
1801:	13	8	10	12	8	8	9	7
1809:	5	7	6	6	1	12	8	7
1817:	12	8	7	5	9	5	13	12
1825:	10	12	7	8	7	9	33	25
1833:	59	65	34	22	11	8	13	8
1841:	10	4	10	10	7	4	7	8
1849:	6	8	7	8	10	8	2	9
1857:	3	7	5	6	7	6	8	6
1865:	6	9	10	5	8	6	5	8
1873:	11	13	10	10	6	8	6	9
1881:	6	9	7	3	9	9	7	6
1889:	12	8	7	6	3	9	6	7
1897:	9	3	9	3	11	8	7	4
1905:	9	7	4	7	4	2	7	10
1913:	7	8	7	8	5	7	5	5
1921:	8	12	11	4	9	6	8	8
1929:	6	7	10	7	3	5	14	7
1937:	3	6	5	10	5	5	5	7
1945:	3	10	5	4	4	7	4	8
1953:	9	5	4	4	7	4	11	7
1961:	7	5	7	6	7	5	8	6
1969:	7	9	8	6	3	6	7	12
1977:	6	12	7	8	8	5	9	5
1985:	5	3	5	8	7	11	7	3
1993:	9	5	3	4	7	1	5	9
2001:	3	6	9	9	6	10	8	3
2009:	4	8	7	4	7	3	6	9
2017:	4	8	6	5	5	4	8	4
2025:	4	6	7	4	6	7	7	8
2033:	5	5	9	8	6	9	10	10
2041:	5	3	5	9	7	7	5	8
2049:	9	10	8	5	5	3	10	5
2057:	3	2	5	5	5	4	6	11
2065:	6	7	8	5	7	7	6	5
2073:	8	3	4	6	1	6	8	2
2081:	7	3	6	5	10	1	7	4
2089:	8	4	4	3	4	10	7	1

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2097:	3	8	5	1	9	3	7	7

Sample Title: GAS-2002

Channel								
2105:	8	4	4	8	5	3	4	3
2113:	7	10	9	4	8	2	6	5
2121:	9	6	5	4	2	6	5	5
2129:	3	7	8	4	2	2	5	4
2137:	10	4	8	3	4	3	7	4
2145:	4	1	6	8	3	1	1	7
2153:	7	7	4	6	6	4	6	6
2161:	7	6	4	2	5	5	5	3
2169:	7	3	4	1	3	4	8	8
2177:	6	3	6	6	7	8	5	4
2185:	4	5	5	4	3	2	9	4
2193:	6	4	4	6	4	3	5	5
2201:	6	7	4	6	6	5	7	6
2209:	5	4	4	7	3	6	9	3
2217:	4	3	4	5	7	3	1	5
2225:	6	7	9	4	5	8	3	7
2233:	0	6	3	4	5	5	8	2
2241:	5	7	3	4	13	2	9	6
2249:	4	3	9	6	3	4	10	5
2257:	6	6	1	4	2	6	4	2
2265:	2	7	6	6	8	4	5	7
2273:	0	6	5	6	4	6	3	10
2281:	6	5	5	6	5	4	9	3
2289:	6	7	6	10	3	6	5	5
2297:	4	3	0	1	3	4	5	3
2305:	3	6	2	4	4	1	5	0
2313:	1	6	4	3	7	2	3	6
2321:	1	2	2	2	2	4	2	3
2329:	3	2	2	5	2	1	3	1
2337:	3	7	2	2	1	3	4	6
2345:	2	3	0	2	5	3	2	0
2353:	1	2	3	2	4	5	2	4
2361:	4	1	2	2	0	1	2	3
2369:	4	0	2	0	3	2	2	0
2377:	2	2	2	4	0	2	1	1
2385:	2	3	1	0	5	2	1	1
2393:	1	1	1	0	2	1	2	1
2401:	1	0	1	2	1	1	1	0
2409:	0	0	1	0	2	1	2	1
2417:	0	1	1	1	0	1	1	1
2425:	1	0	1	1	0	2	1	0
2433:	2	1	0	0	0	1	0	0
2441:	2	0	6	1	1	2	0	0
2449:	1	1	3	0	1	3	1	0
2457:	0	1	1	1	2	3	0	0
2465:	1	1	0	0	0	0	0	0
2473:	3	1	0	0	2	2	2	0
2481:	1	0	1	1	2	3	0	0
2489:	0	1	2	1	3	2	4	4
2497:	3	2	17	22	41	60	53	33
2505:	12	8	2	2	0	1	0	1
2513:	1	0	1	0	2	1	0	0
2521:	1	0	0	0	1	1	0	0

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2529:	0	0	0	0	0	0	0	0

Sample Title: GAS-2002

Channel								
2537:	1	1	0	0	0	0	1	0
2545:	1	1	0	0	0	0	0	0
2553:	1	0	0	0	0	0	0	0
2561:	0	1	0	0	0	1	0	0
2569:	0	0	0	0	0	0	0	0
2577:	0	0	0	0	0	0	0	0
2585:	1	0	1	0	0	0	0	0
2593:	0	2	0	0	0	0	0	1
2601:	0	0	0	0	1	0	0	0
2609:	3	5	7	2	1	3	1	0
2617:	0	0	0	0	0	0	0	0
2625:	0	1	0	0	0	0	0	0
2633:	0	0	0	1	0	0	0	3
2641:	1	0	0	1	1	0	0	0
2649:	1	0	2	0	0	0	1	0
2657:	0	0	0	0	0	1	0	1
2665:	0	0	0	0	0	0	0	0
2673:	0	0	0	0	0	0	0	1
2681:	0	0	0	0	0	0	0	0
2689:	0	0	0	0	0	1	1	0
2697:	0	0	1	0	0	0	1	0
2705:	1	0	0	0	0	0	0	0
2713:	0	0	1	0	0	0	0	1
2721:	1	0	0	0	0	0	0	2
2729:	0	2	0	2	1	0	0	0
2737:	0	0	0	0	1	0	0	0
2745:	0	0	0	0	0	1	0	0
2753:	0	0	1	0	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	1	0	0	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	0	0	0	0	0	0	0	0
2793:	0	1	0	0	0	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	1	0	0	0
2817:	1	0	0	0	0	0	0	0
2825:	0	0	0	0	0	0	0	0
2833:	0	0	0	1	0	0	0	0
2841:	0	0	1	1	0	0	0	0
2849:	0	0	0	0	0	0	1	0
2857:	0	0	0	0	0	0	0	0
2865:	0	0	0	0	0	0	0	1
2873:	1	0	0	0	1	0	0	0
2881:	0	1	0	0	0	0	0	0
2889:	0	0	0	0	0	1	0	0
2897:	0	1	1	0	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	1	0	0	0	2
2921:	1	0	0	1	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	0	0	1	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	0	0	0

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2961:	0	0	0	0	0	1	0	0

Sample Title: GAS-2002

Channel								
2969:	0	0	0	0	0	0	0	0
2977:	0	0	0	0	0	1	0	0
2985:	1	1	0	0	0	0	0	0
2993:	0	0	0	0	0	0	0	0
3001:	0	0	0	0	0	1	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	0	0	0	1	0	1
3025:	0	0	0	1	0	0	1	0
3033:	0	0	0	0	0	0	0	0
3041:	1	0	0	0	1	0	0	0
3049:	0	0	1	0	0	0	0	0
3057:	0	0	0	0	0	0	0	0
3065:	0	0	0	1	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	1	0	0	0	0	0	0	1
3089:	0	1	0	0	0	0	0	0
3097:	0	1	0	0	0	0	0	0
3105:	0	0	0	0	0	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	1	0	0	0	0	0	0	0
3129:	0	0	0	0	0	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	0	0	0	0	0	1	0	0
3153:	0	0	0	0	0	0	0	0
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	0	0	0	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	0	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	0	1	0	0	0	0	0
3209:	0	0	0	1	0	0	0	0
3217:	0	2	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	1
3233:	0	0	0	0	0	0	1	0
3241:	0	0	0	0	0	0	0	1
3249:	0	0	0	0	0	0	0	0
3257:	1	0	0	0	0	0	0	0
3265:	0	0	0	0	0	1	0	0
3273:	0	0	0	1	0	0	0	0
3281:	0	0	1	1	0	0	0	0
3289:	0	0	0	0	0	0	0	0
3297:	0	0	1	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0
3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	1	0	0	0	0
3337:	0	1	0	0	0	0	0	0
3345:	0	0	0	0	0	1	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	1	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0

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3393:	0	0	0	0	0	0	0	0

Sample Title: GAS-2002

Channel								
3401:	0	0	0	1	0	0	0	0
3409:	0	0	0	0	0	1	0	1
3417:	1	0	0	0	0	0	0	1
3425:	0	0	0	0	0	0	0	0
3433:	0	0	1	0	0	1	0	0
3441:	0	0	0	0	0	0	0	0
3449:	1	0	0	0	0	0	0	1
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	1	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	1	0	0	0	0	1
3521:	0	0	0	1	0	0	0	0
3529:	0	0	0	0	0	1	0	0
3537:	0	0	0	0	0	0	0	0
3545:	0	1	0	0	0	0	0	1
3553:	0	0	1	1	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	0	0	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	0	0	0	0	1
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	0	1	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	1	1	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	1	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	1	1	1	0	0
3713:	0	0	1	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	1
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	1	0	0	0	0	0	0
3777:	0	0	0	0	0	0	0	1
3785:	0	0	0	0	0	1	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	1	0	0	0	0	0
3809:	0	0	1	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0

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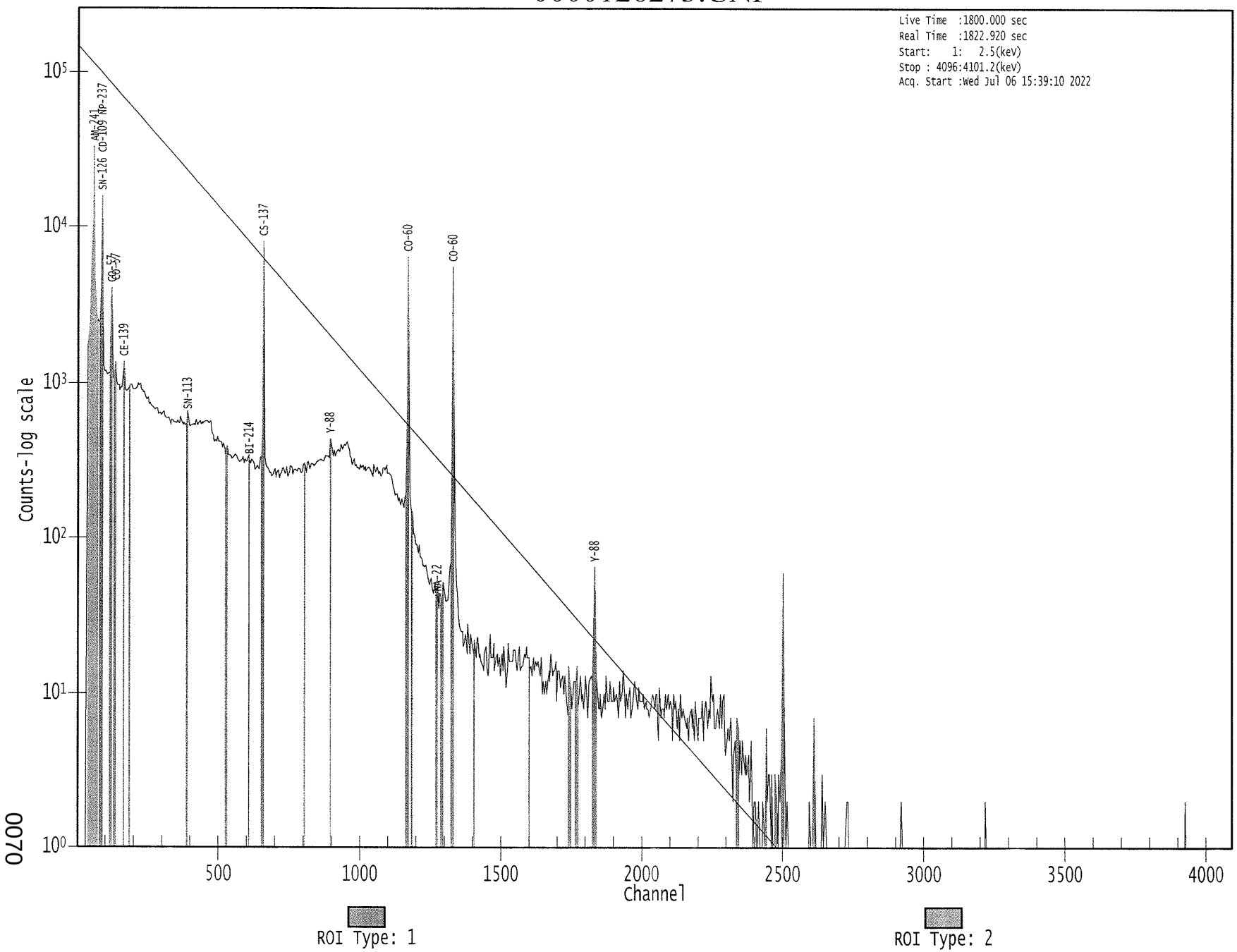
3825:	0	0	0	0	0	0	0	0

Sample Title: GAS-2002

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	1	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	0	0	2	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	1	0	1	0	0
3945:	0	0	0	1	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	1	0	0	0	0	0
3969:	0	0	0	0	0	0	0	1
3977:	0	0	0	0	0	1	0	1
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	1	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	1	0	1	0	1	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	1	0
4057:	0	0	1	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001424

0000126273.CNF



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BP/Castex-Ltd Adm-Apx E-001425

VB 7/6/22

Apex-Gamma

Analysis Report for 2206038-02
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GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-02
Sample Description	: BLANK
Sample Type	: SOIL
Sample Size	: 7.834E+02 grams
Facility	: Countroom
Sample Taken On	: 7/6/2022 11:42:19AM
Acquisition Started	: 7/6/2022 1:13:34PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3600.4 seconds
Dead Time	: 0.01 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 30 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126259

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

Analysis Report for 2206038-02

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PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 2:13:38PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	339.75	340.74	0.0000	0.00
2	414.90	415.75	0.0000	0.00
3	422.65	423.48	0.0000	0.00
4	428.19	429.01	0.0000	0.00
5	609.20	609.68	0.0000	0.00
6	688.50	688.83	0.0000	0.00
7	1042.94	1042.64	0.0000	0.00
8	1051.38	1051.07	0.0000	0.00
9	1186.47	1185.92	0.0000	0.00
10	1216.01	1215.41	0.0000	0.00
11	1396.88	1395.97	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

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Analysis Report for 2206038-02

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PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 2:13:38PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	339.75	338 -	343	340.74	2.13E+01	18.47	5.14E+01	3.71
M	2	414.90	408 -	433	415.75	9.12E+00	14.39	2.67E+01	2.08
m	3	422.65	408 -	433	423.48	1.11E+01	15.07	3.45E+01	2.08
m	4	428.19	408 -	433	429.01	1.19E+01	15.59	4.25E+01	2.09
	5	609.20	605 -	614	609.68	2.36E+01	21.12	5.07E+01	3.95
	6	688.50	687 -	691	688.83	7.94E+00	10.07	1.61E+01	2.68
	7	1042.94	1040 -	1046	1042.64	7.90E+00	7.23	4.20E+00	3.52
	8	1051.38	1047 -	1054	1051.07	9.14E+00	7.75	3.73E+00	1.40
	9	1186.47	1182 -	1189	1185.92	1.20E+01	6.93	0.00E+00	5.71
	10	1216.01	1211 -	1218	1215.41	1.12E+01	9.59	7.60E+00	1.06
	11	1396.88	1392 -	1398	1395.97	6.50E+00	6.65	3.00E+00	2.49

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 2:13:38PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	339.75	338 -	343	2.13E+01	18.47	5.14E+01	1.31E+01
M	2	414.90	408 -	433	9.12E+00	14.39	2.67E+01	8.50E+00
m	3	422.65	408 -	433	1.11E+01	15.07	3.45E+01	9.65E+00
m	4	428.19	408 -	433	1.19E+01	15.59	4.25E+01	1.07E+01

Analysis Report for 2206038-02

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Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
5	609.20	605 -	614	2.36E+01	21.12	5.07E+01	1.54E+01
6	688.50	687 -	691	7.94E+00	10.07	1.61E+01	6.87E+00
7	1042.94	1040 -	1046	7.90E+00	7.23	4.20E+00	3.74E+00
8	1051.38	1047 -	1054	9.14E+00	7.75	3.73E+00	3.98E+00
9	1186.47	1182 -	1189	1.20E+01	6.93	0.00E+00	0.00E+00
10	1216.01	1211 -	1218	1.12E+01	9.59	7.60E+00	5.65E+00
11	1396.88	1392 -	1398	6.50E+00	6.65	3.00E+00	3.51E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 2:13:38PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	339.75	338 -	343	340.74	2.13E+01	18.47	5.14E+01	CS-136 AC-228
M	2	414.90	408 -	433	415.75	9.12E+00	14.39	2.67E+01	SB-126
m	3	422.65	408 -	433	423.48	1.11E+01	15.07	3.45E+01	BA-140
m	4	428.19	408 -	433	429.01	1.19E+01	15.59	4.25E+01	SB-125
	5	609.20	605 -	614	609.68	2.36E+01	21.12	5.07E+01	BI-214
	6	688.50	687 -	691	688.83	7.94E+00	10.07	1.61E+01	.....
	7	1042.94	1040 -	1046	1042.64	7.90E+00	7.23	4.20E+00	.....
	8	1051.38	1047 -	1054	1051.07	9.14E+00	7.75	3.73E+00	.....
	9	1186.47	1182 -	1189	1185.92	1.20E+01	6.93	0.00E+00	.....
	10	1216.01	1211 -	1218	1215.41	1.12E+01	9.59	7.60E+00	.....
	11	1396.88	1392 -	1398	1395.97	6.50E+00	6.65	3.00E+00	.....

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Analysis Report for 2206038-02

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M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 2:13:38PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	339.75	2.13E+01	18.47	1.31E-02	1.12E-03
M	2	414.90	9.12E+00	14.39	1.12E-02	9.87E-04
m	3	422.65	1.11E+01	15.07	1.11E-02	9.78E-04
m	4	428.19	1.19E+01	15.59	1.10E-02	9.71E-04
	5	609.20	2.36E+01	21.12	8.23E-03	7.49E-04
	6	688.50	7.94E+00	10.07	7.45E-03	6.59E-04
	7	1042.94	7.90E+00	7.23	5.36E-03	4.26E-04
	8	1051.38	9.14E+00	7.75	5.33E-03	4.23E-04
	9	1186.47	1.20E+01	6.93	4.86E-03	3.89E-04
	10	1216.01	1.12E+01	9.59	4.77E-03	3.83E-04
	11	1396.88	6.50E+00	6.65	4.29E-03	3.47E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 2:13:38PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126201.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.

BP/Castex-Ltd Adm-Apx E-001430

Analysis Report for 2206038-02

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	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	339.75	2.13E+01	18.47			2.13E+01	1.85E+01
M	2	414.90	9.12E+00	14.39			9.12E+00	1.44E+01
m	3	422.65	1.11E+01	15.07			1.11E+01	1.51E+01
m	4	428.19	1.19E+01	15.59			1.19E+01	1.56E+01
	5	609.20	2.36E+01	21.12	5.18E+00	3.99E+00	1.84E+01	2.15E+01
	6	688.50	7.94E+00	10.07			7.94E+00	1.01E+01
	7	1042.94	7.90E+00	7.23			7.90E+00	7.23E+00
	8	1051.38	9.14E+00	7.75			9.14E+00	7.75E+00
	9	1186.47	1.20E+01	6.93			1.20E+01	6.93E+00
	10	1216.01	1.12E+01	9.59			1.12E+01	9.59E+00
	11	1396.88	6.50E+00	6.65			6.50E+00	6.65E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 2:13:38PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126201.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	339.75	2.13E+01	18.47			2.13E+01	1.85E+01
M	2	414.90	9.12E+00	14.39			9.12E+00	1.44E+01
m	3	422.65	1.11E+01	15.07			1.11E+01	1.51E+01
m	4	428.19	1.19E+01	15.59			1.19E+01	1.56E+01
	5	609.20	2.36E+01	21.12	5.18E+00	3.99E+00	1.84E+01	2.15E+01
	6	688.50	7.94E+00	10.07			7.94E+00	1.01E+01
	7	1042.94	7.90E+00	7.23			7.90E+00	7.23E+00
	8	1051.38	9.14E+00	7.75			9.14E+00	7.75E+00
	9	1186.47	1.20E+01	6.93			1.20E+01	6.93E+00
	10	1216.01	1.12E+01	9.59			1.12E+01	9.59E+00
	11	1396.88	6.50E+00	6.65			6.50E+00	6.65E+00

BP/Castex-Ltd Adm-Apx E-001431

Analysis Report for 2206038-02

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M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-214	0.434	609.31	*	46.30	4.64E-02	5.42E-02
		1120.29		15.10		
		1764.49		15.80		
		2204.22		4.98		

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 2:13:38PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	339.75	5.91312E-03	43.37	Tol.	CS-136 AC-228
M	2	414.90	2.53343E-03	78.88	Tol.	SB-126
m	3	422.65	3.08023E-03	67.94	Tol.	BA-140
m	4	428.19	3.29745E-03	65.66	Tol.	SB-125
	6	688.50	2.20486E-03	63.46		

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Analysis Report for 2206038-02

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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
7	1042.94	2.19444E-03	45.75		
8	1051.38	2.53788E-03	42.39		
9	1186.47	3.33333E-03	28.87		
10	1216.01	3.11111E-03	42.82	Sum	
11	1396.88	1.80556E-03	51.17		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-214	0.43	609.31	*	46.30	4.64E-02	5.42E-02
		1120.29		15.10		
		1764.49		15.80		
		2204.22		4.98		

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Analysis Report for 2206038-02

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Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
BI-214	0.434	4.64E-02	5.42E-02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001434

Analysis Report for 2206038-02

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 2:13:38PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	339.75	5.91312E-03	43.37	Tol.	CS-136
						AC-228
M	2	414.90	2.53343E-03	78.88	Tol.	SB-126
m	3	422.65	3.08023E-03	67.94	Tol.	BA-140
m	4	428.19	3.29745E-03	65.66	Tol.	SB-125
	6	688.50	2.20486E-03	63.46		
	7	1042.94	2.19444E-03	45.75		
	8	1051.38	2.53788E-03	42.39		
	9	1186.47	3.33333E-03	28.87		
	10	1216.01	3.11111E-03	42.82	Sum	
	11	1396.88	1.80556E-03	51.17		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	-8.43E-02	2.11E-01	2.11E-01
+	NA-22	1274.54	99.94	3.42E-03	3.13E-02	3.13E-02
+	NA-24	1368.53	99.99	-7.28E-03	3.49E-02	3.49E-02
		2754.09	99.86	-5.08E-03		3.54E-02
+	AL-26	1808.65	99.76	6.25E-03	3.56E-02	3.56E-02
+	K-40	1460.81	10.67	1.05E-01	3.77E-01	3.77E-01

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Analysis Report for 2206038-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	AR-41	1293.64	99.16	3.01E-02	7.21E-02	7.21E-02
+	TI-44	67.88	94.40	-4.81E-03	1.90E-02	1.98E-02
		78.34	96.00	-9.23E-04		1.90E-02
+	SC-46	889.25	98.98	1.60E-02	3.43E-02	3.49E-02
		1120.51	99.90	1.17E-02		3.43E-02
+	V-48	983.52	99.98	-1.93E-02	2.72E-02	2.72E-02
		1312.10	97.50	3.76E-03		3.29E-02
+	CR-51	320.08	9.83	7.14E-02	2.33E-01	2.33E-01
+	MN-54	834.83	99.97	9.86E-03	3.11E-02	3.11E-02
+	CO-56	846.75	99.96	-2.01E-03	3.06E-02	3.06E-02
		1037.75	14.03	-5.40E-02		1.52E-01
		1238.25	67.00	1.25E-02		5.07E-02
		1771.40	15.51	-3.45E-02		2.59E-01
		2587.48	16.90	6.40E-02		2.30E-01
+	CO-57	122.06	85.51	8.39E-04	2.13E-02	2.13E-02
		136.48	10.60	-3.72E-02		1.61E-01
+	CO-58	810.76	99.40	4.32E-03	2.97E-02	2.97E-02
+	FE-59	1099.22	56.50	1.67E-02	5.86E-02	7.03E-02
		1291.56	43.20	-1.58E-02		5.86E-02
+	CO-60	1173.22	100.00	1.12E-02	3.68E-02	3.68E-02
		1332.49	100.00	2.65E-03		4.20E-02
+	ZN-65	1115.52	50.75	-7.25E-03	6.73E-02	6.73E-02
+	GA-67	93.31	35.70	2.97E-02	6.08E-02	6.08E-02
		208.95	2.24	-2.63E-01		9.03E-01
		300.22	16.00	-1.68E-02		1.33E-01
+	SE-75	121.11	16.70	4.29E-03	2.90E-02	1.09E-01
		136.00	59.50	-4.56E-04		2.90E-02
		264.65	59.80	9.75E-03		3.44E-02
		279.53	25.20	-2.71E-02		7.67E-02
		400.65	11.40	-1.60E-02		1.51E-01
+	RB-82	776.52	13.00	1.64E-02	2.06E-01	2.06E-01
+	RB-83	520.41	46.00	-6.90E-04	5.36E-02	5.36E-02
		529.64	30.30	-1.92E-02		6.23E-02
		552.65	16.40	7.93E-03		1.67E-01
+	KR-85	513.99	0.43	1.07E+00	7.93E+00	7.93E+00
+	SR-85	513.99	99.27	4.69E-03	3.47E-02	3.47E-02
+	Y-88	898.02	93.40	-3.03E-03	2.57E-02	2.84E-02
		1836.01	99.38	-1.31E-02		2.57E-02
+	MO-93	263.06	56.72	2.21E-02	2.18E-02	3.72E-02
		684.67	99.68	3.47E-03		3.15E-02
		1477.11	99.08	-5.87E-03		2.18E-02
+	NB-93M	16.57	9.43	0.00E+00	7.62E-02	7.62E-02
+	NB-94	702.63	100.00	7.35E-03	2.82E-02	3.63E-02
		871.10	100.00	1.83E-03		2.82E-02
+	NB-95	765.79	99.81	-2.61E-03	3.08E-02	3.08E-02
+	NB-95M	235.69	25.00	-9.94E-02	7.58E-02	7.58E-02
+	ZR-95	724.18	43.70	1.19E-02	4.89E-02	7.22E-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	ZR-95	756.72	55.30	-1.66E-02	4.89E-02	4.89E-02
+	MO-99	181.06	6.20	-1.55E-01	2.32E-01	2.85E-01
		739.58	12.80	-2.72E-02		2.32E-01
		778.00	4.50	-4.25E-02		5.84E-01
+	TC-99M	140.51	89.00	-1.17E-03	2.00E-02	2.00E-02
+	RU-103	497.08	89.00	2.19E-03	2.67E-02	2.67E-02
+	RU-106	621.84	9.80	-1.11E-01	2.43E-01	2.43E-01
+	AG-108M	433.93	89.90	-1.64E-04	2.31E-02	2.31E-02
		614.37	90.40	6.49E-04		3.25E-02
		722.95	90.50	1.52E-03		3.24E-02
+	CD-109	88.03	3.72	-8.14E-02	4.97E-01	4.97E-01
+	AG-110M	657.75	93.14	-1.64E-02	2.59E-02	2.59E-02
		677.61	10.53	1.26E-02		2.90E-01
		706.67	16.46	2.34E-02		1.92E-01
		763.93	21.98	5.08E-02		1.50E-01
		884.67	21.98	-1.37E-02		1.57E-01
		1384.27	23.94	4.63E-02		1.39E-01
+	CD-113M	263.70	0.02	3.70E+01	8.93E+01	8.93E+01
+	SN-113	255.12	1.93	-1.57E-01	2.95E-02	9.63E-01
		391.69	64.90	5.12E-03		2.95E-02
+	TE-123M	159.00	84.10	7.37E-03	2.08E-02	2.08E-02
+	SB-124	602.71	97.87	8.30E-03	2.90E-02	2.90E-02
		645.85	7.26	-8.19E-02		3.05E-01
		722.78	11.10	1.24E-02		2.64E-01
		1691.02	49.00	-7.90E-03		4.89E-02
+	I-125	35.49	6.49	-7.33E-01	1.59E+00	1.59E+00
+	SB-125	176.33	6.89	5.10E-02	8.77E-02	2.65E-01
		427.89	29.33	4.62E-02		8.77E-02
		463.38	10.35	1.90E-02		2.25E-01
		600.56	17.80	8.88E-02		1.74E-01
		635.90	11.32	7.77E-02		2.45E-01
+	SB-126	414.70	83.30	1.02E-03	2.61E-02	2.61E-02
		666.33	99.60	8.18E-03		3.44E-02
		695.00	99.60	-1.36E-02		3.26E-02
		720.50	53.80	-1.65E-03		5.14E-02
+	SN-126	87.57	37.00	-5.69E-03	5.11E-02	5.11E-02
+	SB-127	473.00	25.00	1.92E-02	8.94E-02	1.00E-01
		685.00	35.70	9.84E-03		8.94E-02
		783.80	14.70	-2.96E-02		1.64E-01
+	I-129	29.78	57.00	2.00E-01	2.39E-01	2.39E-01
		33.60	13.20	5.25E+00		1.14E+00
		39.58	7.52	2.79E-01		7.80E-01
+	I-131	284.30	6.05	6.24E-02	2.29E-02	3.38E-01
		364.48	81.20	-1.01E-02		2.29E-02
		636.97	7.26	-1.12E-01		3.26E-01
		722.89	1.80	7.71E-02		1.64E+00
+	TE-132	49.72	13.10	-9.09E-03	2.18E-02	1.96E-01
		228.16	88.00	1.35E-03		2.18E-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BA-133	81.00	34.06	-2.38E-02	4.00E-02	4.88E-02
		302.84	18.33	5.56E-02		1.16E-01
		356.01	62.05	1.13E-02		4.00E-02
+	I-133	529.87	86.30	-2.58E-04	2.67E-02	2.67E-02
+	XE-133	81.00	38.00	-2.15E-02	4.42E-02	4.42E-02
+	CS-134	563.23	8.38	-2.41E-02	3.19E-02	3.51E-01
		569.32	15.43	1.73E-02		1.89E-01
		604.70	97.60	5.02E-03		3.19E-02
		795.84	85.40	-9.31E-03		3.19E-02
		801.93	8.73	1.77E-02		3.55E-01
+	CS-135	268.24	16.00	-4.83E-02	1.23E-01	1.23E-01
+	I-135	1131.51	22.50	5.08E-02	1.26E-01	1.89E-01
		1260.41	28.60	2.23E-02		1.26E-01
		1678.03	9.54	1.33E-01		3.99E-01
+	CS-136	153.22	7.46	3.60E-02	3.19E-02	2.43E-01
		163.89	4.61	-2.11E-02		3.59E-01
		176.55	13.56	2.60E-02		1.35E-01
		273.65	12.66	-8.00E-02		1.51E-01
		340.57	48.50	1.25E-02		4.75E-02
		818.50	99.70	-2.89E-03		3.26E-02
		1048.07	79.60	-3.07E-02		3.19E-02
		1235.34	19.70	2.90E-02		1.81E-01
+	CS-137	661.65	85.12	6.62E-03	3.66E-02	3.66E-02
+	LA-138	788.74	34.00	2.38E-02	4.15E-02	7.65E-02
		1435.80	66.00	-1.29E-02		4.15E-02
+	CE-139	165.85	80.35	-5.01E-03	2.22E-02	2.22E-02
+	BA-140	162.64	6.70	-7.26E-02	1.06E-01	2.41E-01
		304.84	4.50	-1.49E-01		4.59E-01
		423.70	3.20	-1.02E-01		7.68E-01
		437.55	2.00	-2.42E-01		1.03E+00
		537.32	25.00	3.44E-02		1.06E-01
+	LA-140	328.77	20.50	4.67E-02	2.79E-02	1.07E-01
		487.03	45.50	4.17E-03		4.81E-02
		815.85	23.50	-1.35E-03		1.27E-01
		1596.49	95.49	-8.65E-03		2.79E-02
+	CE-141	145.44	48.40	-2.10E-02	3.60E-02	3.60E-02
+	CE-143	57.36	11.80	-3.01E-02	5.56E-02	1.75E-01
		293.26	42.00	-6.56E-03		5.56E-02
		664.55	5.20	2.09E-01		6.96E-01
+	CE-144	133.54	10.80	1.42E-01	1.71E-01	1.71E-01
+	PM-144	476.78	42.00	-2.09E-02	2.68E-02	5.22E-02
		618.01	98.60	5.98E-04		2.68E-02
		696.49	99.49	1.22E-02		3.79E-02
+	PM-145	36.85	21.70	-6.14E-01	1.87E-01	3.77E-01
		37.36	39.70	8.70E-02		1.87E-01
		42.30	15.10	3.72E-02		2.98E-01
		72.40	2.31	1.27E-01		8.30E-01
+	PM-146	453.90	39.94	-1.15E-02	5.15E-02	5.15E-02
		735.90	14.01	-3.44E-02		2.23E-01

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-146	747.13	13.10	-5.31E-02	5.15E-02	2.30E-01
+	ND-147	91.11	28.90	-2.40E-04	7.24E-02	7.24E-02
		531.02	13.10	-2.14E-02		1.75E-01
+	PM-149	285.90	3.10	7.08E-02	6.50E-01	6.50E-01
+	EU-152	121.78	20.50	3.50E-03	8.89E-02	8.89E-02
		244.69	5.40	7.78E-02		3.65E-01
		344.27	19.13	1.92E-03		9.63E-02
		778.89	9.10	8.85E-02		2.94E-01
		964.01	10.40	-1.69E-02		2.93E-01
		1085.78	7.22	3.83E-02		3.35E-01
		1112.02	9.60	-6.63E-02		3.26E-01
		1407.95	14.94	1.12E-01		2.93E-01
+	GD-153	97.43	31.30	5.14E-03	6.14E-02	6.14E-02
		103.18	22.20	8.67E-03		7.09E-02
+	EU-154	123.07	40.50	2.80E-02	4.72E-02	4.72E-02
		723.30	19.70	2.63E-02		1.60E-01
		873.19	11.50	-1.62E-01		1.91E-01
		996.32	10.30	2.18E-02		3.47E-01
		1004.76	17.90	-2.42E-03		1.83E-01
		1274.45	35.50	9.64E-03		8.81E-02
+	EU-155	86.50	30.90	-3.04E-03	6.19E-02	6.19E-02
		105.30	20.70	2.17E-02		7.73E-02
+	EU-156	811.77	10.40	-4.96E-02	2.76E-01	2.76E-01
		1153.47	7.20	1.21E-01		4.27E-01
		1230.71	8.90	-1.39E-01		3.23E-01
+	HO-166M	184.41	72.60	9.63E-03	2.91E-02	2.91E-02
		280.45	29.60	-2.12E-02		6.37E-02
		410.94	11.10	2.58E-02		2.02E-01
		711.69	54.10	3.86E-03		5.61E-02
+	TM-171	66.72	0.14	2.42E+00	1.35E+01	1.35E+01
+	HF-172	67.35	5.31	-8.57E-02	1.55E-01	3.54E-01
		125.82	11.30	-3.32E-02		1.55E-01
+	LU-172	181.53	20.60	4.77E-02	3.59E-02	9.21E-02
		900.72	29.81	-1.19E-02		9.39E-02
		1093.66	62.50	-4.00E-02		3.59E-02
+	LU-173	100.72	5.24	-1.11E-01	9.38E-02	3.18E-01
		272.11	21.20	-7.44E-03		9.38E-02
+	HF-175	343.40	84.00	1.75E-03	2.54E-02	2.54E-02
+	LU-176	88.34	13.30	-2.28E-02	2.03E-02	1.39E-01
		201.83	86.00	-2.72E-02		2.03E-02
		306.78	94.00	-5.62E-03		2.20E-02
+	HF-181	133.02	41.70	-1.18E-02	2.80E-02	4.23E-02
		345.85	17.20	3.36E-02		1.16E-01
		482.03	82.80	7.62E-03		2.80E-02
+	TA-182	67.75	41.20	-1.10E-02	4.55E-02	4.55E-02
		1121.30	34.90	1.62E-02		9.02E-02
		1189.05	16.23	-2.44E-02		2.12E-01
		1221.41	26.98	-8.72E-02		8.05E-02
		1231.02	11.44	-1.08E-01		2.50E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	IR-192	308.46		29.68	4.34E-02	4.39E-02	7.75E-02
		468.07		48.10	5.87E-03		4.39E-02
+	HG-203	279.19		77.30	-4.25E-03	2.56E-02	2.56E-02
+	TL-204	374.74		94.11	-1.12E-02	1.97E-02	1.97E-02
		899.15		99.16	-4.73E-03		2.67E-02
		911.74		91.10	-1.38E-02		2.80E-02
+	BI-207	569.67		97.72	2.73E-03	2.98E-02	2.98E-02
		1063.62		74.90	-2.22E-02		3.42E-02
+	TL-208	583.14		30.22	4.41E-03	1.00E-01	1.00E-01
		860.37		4.48	-1.92E-01		6.46E-01
		2614.66		35.85	4.19E-02		1.33E-01
+	BI-210M	262.00		45.00	-1.13E-02	4.50E-02	4.50E-02
		300.00		23.00	-1.15E-02		9.06E-02
+	PB-210	46.50		4.25	4.30E-01	7.57E-01	7.57E-01
+	PB-211	404.84		2.90	9.85E-02	5.43E-01	5.43E-01
		831.96		2.90	1.88E-01		1.07E+00
+	BI-212	727.17		11.80	-3.99E-02	2.68E-01	2.68E-01
		1620.62		2.75	6.05E-02		9.77E-01
+	PB-212	238.63		44.60	8.39E-03	5.17E-02	5.17E-02
		300.09		3.41	-7.74E-02		6.11E-01
+	BI-214	609.31	*	46.30	4.64E-02	8.83E-02	8.83E-02
		1120.29		15.10	7.73E-02		2.27E-01
		1764.49		15.80	-1.23E-01		2.53E-01
		2204.22		4.98	-9.88E-02		6.84E-01
+	PB-214	295.21		19.19	-2.31E-02	6.32E-02	1.17E-01
		351.92		37.19	1.71E-02		6.32E-02
+	RN-219	401.80		6.50	-6.71E-02	2.57E-01	2.57E-01
+	RA-223	323.87		3.88	4.23E-02	4.87E-01	4.87E-01
+	RA-224	240.98		3.95	3.98E-01	6.24E-01	6.24E-01
+	RA-225	40.00		31.00	1.83E-01	1.81E-01	1.81E-01
+	RA-226	186.21		3.28	1.15E-01	6.36E-01	6.36E-01
+	TH-227	50.10		8.40	-1.76E-01	1.62E-01	2.73E-01
		236.00		11.50	-2.13E-01		1.62E-01
		256.20		6.30	-9.42E-02		2.99E-01
+	AC-228	338.32		11.40	-1.09E-01	1.01E-01	1.90E-01
		911.07		27.70	1.16E-03		1.01E-01
		969.11		16.60	4.49E-02		1.91E-01
+	TH-230	48.43		16.90	3.60E-02	1.64E-01	1.64E-01
		62.85		4.60	-1.41E-01		4.28E-01
		67.67		0.37	-1.23E+00		5.06E+00
+	PA-231	283.67		1.60	2.34E-01	9.23E-01	1.27E+00
		302.67		2.30	4.43E-01		9.23E-01
+	TH-231	25.64		14.70	0.00E+00	2.08E-02	2.08E-02
		84.21		6.40	6.29E-02		2.92E-01
+	PA-233	311.98		38.60	2.13E-02	5.50E-02	5.50E-02
+	PA-234	131.20		20.40	-2.72E-02	8.61E-02	8.61E-02
		733.99		8.80	4.44E-02		3.78E-01
		946.00		12.00	4.78E-03		2.69E-01

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-234M	1001.03	0.92	1.34E+00	4.32E+00	4.32E+00
+	TH-234	63.29	3.80	-1.46E-01	5.07E-01	5.07E-01
+	U-235	143.76	10.50	9.77E-02	1.73E-01	1.73E-01
		163.35	4.70	-2.06E-02		3.50E-01
		205.31	4.70	1.13E-01		4.44E-01
+	NP-237	86.50	12.60	-7.46E-03	1.52E-01	1.52E-01
+	NP-239	106.10	22.70	-1.39E-02	6.96E-02	6.96E-02
		228.18	10.70	1.12E-02		1.80E-01
		277.60	14.10	6.22E-02		1.50E-01
+	AM-241	59.54	35.90	7.37E-03	5.76E-02	5.76E-02
+	AM-243	74.67	66.00	4.78E-03	3.06E-02	3.06E-02
+	CM-243	209.75	3.29	-1.53E-01	1.47E-01	6.10E-01
		228.14	10.60	1.10E-02		1.78E-01
		277.60	14.00	6.12E-02		1.47E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	2.11E-01	2.11E-01	-8.43E-02	9.31E-02
NA-22	1274.54	99.94	3.13E-02	3.13E-02	3.42E-03	1.28E-02
NA-24	1368.53	99.99	3.49E-02	3.49E-02	-7.28E-03	1.45E-02
	2754.09	99.86	3.54E-02		-5.08E-03	1.25E-02
AL-26	1808.65	99.76	3.56E-02	3.56E-02	6.25E-03	1.41E-02
K-40	1460.81	10.67	3.77E-01	3.77E-01	1.05E-01	1.59E-01
AR-41	1293.64	99.16	7.21E-02	7.21E-02	3.01E-02	2.99E-02
TI-44	67.88	94.40	1.98E-02	1.90E-02	-4.81E-03	9.30E-03

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Analysis Report for 2206038-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
TI-44	78.34	96.00	1.90E-02	1.90E-02	-9.23E-04	8.94E-03
SC-46	889.25	98.98	3.49E-02	3.43E-02	1.60E-02	1.53E-02
	1120.51	99.90	3.43E-02		1.17E-02	1.46E-02
V-48	983.52	99.98	2.72E-02	2.72E-02	-1.93E-02	1.13E-02
	1312.10	97.50	3.29E-02		3.76E-03	1.35E-02
CR-51	320.08	9.83	2.33E-01	2.33E-01	7.14E-02	1.07E-01
MN-54	834.83	99.97	3.11E-02	3.11E-02	9.86E-03	1.35E-02
CO-56	846.75	99.96	3.06E-02	3.06E-02	-2.01E-03	1.32E-02
	1037.75	14.03	1.52E-01		-5.40E-02	5.91E-02
	1238.25	67.00	5.07E-02		1.25E-02	2.12E-02
	1771.40	15.51	2.59E-01		-3.45E-02	1.06E-01
	2587.48	16.90	2.30E-01		6.40E-02	8.60E-02
CO-57	122.06	85.51	2.13E-02	2.13E-02	8.39E-04	1.00E-02
	136.48	10.60	1.61E-01		-3.72E-02	7.49E-02
CO-58	810.76	99.40	2.97E-02	2.97E-02	4.32E-03	1.29E-02
FE-59	1099.22	56.50	7.03E-02	5.86E-02	1.67E-02	3.07E-02
	1291.56	43.20	5.86E-02		-1.58E-02	2.27E-02
CO-60	1173.22	100.00	3.68E-02	3.68E-02	1.12E-02	1.58E-02
	1332.49	100.00	4.20E-02		2.65E-03	1.81E-02
ZN-65	1115.52	50.75	6.73E-02	6.73E-02	-7.25E-03	2.86E-02
GA-67	93.31	35.70	6.08E-02	6.08E-02	2.97E-02	2.88E-02
	208.95	2.24	9.03E-01		-2.63E-01	4.19E-01
	300.22	16.00	1.33E-01		-1.68E-02	6.06E-02
SE-75	121.11	16.70	1.09E-01	2.90E-02	4.29E-03	5.12E-02
	136.00	59.50	2.90E-02		-4.56E-04	1.35E-02
	264.65	59.80	3.44E-02		9.75E-03	1.58E-02
	279.53	25.20	7.67E-02		-2.71E-02	3.50E-02
	400.65	11.40	1.51E-01		-1.60E-02	6.56E-02
RB-82	776.52	13.00	2.06E-01	2.06E-01	1.64E-02	8.80E-02
RB-83	520.41	46.00	5.36E-02	5.36E-02	-6.90E-04	2.38E-02
	529.64	30.30	6.23E-02		-1.92E-02	2.65E-02
	552.65	16.40	1.67E-01		7.93E-03	7.48E-02
KR-85	513.99	0.43	7.93E+00	7.93E+00	1.07E+00	3.65E+00
SR-85	513.99	99.27	3.47E-02	3.47E-02	4.69E-03	1.60E-02
Y-88	898.02	93.40	2.84E-02	2.57E-02	-3.03E-03	1.19E-02
	1836.01	99.38	2.57E-02		-1.31E-02	9.09E-03
MO-93	263.06	56.72	3.72E-02	2.18E-02	2.21E-02	1.72E-02
	684.67	99.68	3.15E-02		3.47E-03	1.40E-02
	1477.11	99.08	2.18E-02		-5.87E-03	7.73E-03
NB-93M	16.57	9.43	7.62E-02	7.62E-02	0.00E+00	0.00E+00
NB-94	702.63	100.00	3.63E-02	2.82E-02	7.35E-03	1.64E-02
	871.10	100.00	2.82E-02		1.83E-03	1.20E-02
NB-95	765.79	99.81	3.08E-02	3.08E-02	-2.61E-03	1.35E-02
NB-95M	235.69	25.00	7.58E-02	7.58E-02	-9.94E-02	3.48E-02
ZR-95	724.18	43.70	7.22E-02	4.89E-02	1.19E-02	3.19E-02
	756.72	55.30	4.89E-02		-1.66E-02	2.11E-02
MO-99	181.06	6.20	2.85E-01	2.32E-01	-1.55E-01	1.32E-01
	739.58	12.80	2.32E-01		-2.72E-02	1.01E-01
	778.00	4.50	5.84E-01		-4.25E-02	2.49E-01
TC-99M	140.51	89.00	2.00E-02	2.00E-02	-1.17E-03	9.36E-03
RU-103	497.08	89.00	2.67E-02	2.67E-02	2.19E-03	1.18E-02
RU-106	621.84	9.80	2.43E-01	2.43E-01	-1.11E-01	1.05E-01
AG-108M	433.93	89.90	2.31E-02	2.31E-02	-1.64E-04	1.02E-02

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Analysis Report for 2206038-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AG-108M	614.37	90.40	3.25E-02	2.31E-02	6.49E-04	1.45E-02
	722.95	90.50	3.24E-02		1.52E-03	1.42E-02
CD-109	88.03	3.72	4.97E-01	4.97E-01	-8.14E-02	2.34E-01
AG-110M	657.75	93.14	2.59E-02	2.59E-02	-1.64E-02	1.12E-02
	677.61	10.53	2.90E-01		1.26E-02	1.29E-01
	706.67	16.46	1.92E-01		2.34E-02	8.51E-02
	763.93	21.98	1.50E-01		5.08E-02	6.62E-02
	884.67	21.98	1.57E-01		-1.37E-02	6.86E-02
	1384.27	23.94	1.39E-01		4.63E-02	5.70E-02
CD-113M	263.70	0.02	8.93E+01	8.93E+01	3.70E+01	4.11E+01
SN-113	255.12	1.93	9.63E-01	2.95E-02	-1.57E-01	4.40E-01
	391.69	64.90	2.95E-02		5.12E-03	1.31E-02
TE-123M	159.00	84.10	2.08E-02	2.08E-02	7.37E-03	9.69E-03
SB-124	602.71	97.87	2.90E-02	2.90E-02	8.30E-03	1.29E-02
	645.85	7.26	3.05E-01		-8.19E-02	1.30E-01
	722.78	11.10	2.64E-01		1.24E-02	1.16E-01
	1691.02	49.00	4.89E-02		-7.90E-03	1.73E-02
I-125	35.49	6.49	1.59E+00	1.59E+00	-7.33E-01	7.79E-01
SB-125	176.33	6.89	2.65E-01	8.77E-02	5.10E-02	1.23E-01
	427.89	29.33	8.77E-02		4.62E-02	3.98E-02
	463.38	10.35	2.25E-01		1.90E-02	1.01E-01
	600.56	17.80	1.74E-01		8.88E-02	7.82E-02
	635.90	11.32	2.45E-01		7.77E-02	1.08E-01
SB-126	414.70	83.30	2.61E-02	2.61E-02	1.02E-03	1.17E-02
	666.33	99.60	3.44E-02		8.18E-03	1.55E-02
	695.00	99.60	3.26E-02		-1.36E-02	1.45E-02
	720.50	53.80	5.14E-02		-1.65E-03	2.23E-02
SN-126	87.57	37.00	5.11E-02	5.11E-02	-5.69E-03	2.41E-02
SB-127	473.00	25.00	1.00E-01	8.94E-02	1.92E-02	4.48E-02
	685.00	35.70	8.94E-02		9.84E-03	3.98E-02
	783.80	14.70	1.64E-01		-2.96E-02	6.88E-02
I-129	29.78	57.00	2.39E-01	2.39E-01	2.00E-01	1.17E-01
	33.60	13.20	1.14E+00		5.25E+00	5.61E-01
	39.58	7.52	7.80E-01		2.79E-01	3.79E-01
I-131	284.30	6.05	3.38E-01	2.29E-02	6.24E-02	1.54E-01
	364.48	81.20	2.29E-02		-1.01E-02	1.02E-02
	636.97	7.26	3.26E-01		-1.12E-01	1.41E-01
	722.89	1.80	1.64E+00		7.71E-02	7.18E-01
TE-132	49.72	13.10	1.96E-01	2.18E-02	-9.09E-03	9.25E-02
	228.16	88.00	2.18E-02		1.35E-03	1.00E-02
BA-133	81.00	34.06	4.88E-02	4.00E-02	-2.38E-02	2.28E-02
	302.84	18.33	1.16E-01		5.56E-02	5.30E-02
	356.01	62.05	4.00E-02		1.13E-02	1.84E-02
I-133	529.87	86.30	2.67E-02	2.67E-02	-2.58E-04	1.16E-02
XE-133	81.00	38.00	4.42E-02	4.42E-02	-2.15E-02	2.06E-02
CS-134	563.23	8.38	3.51E-01	3.19E-02	-2.41E-02	1.58E-01
	569.32	15.43	1.89E-01		1.73E-02	8.48E-02
	604.70	97.60	3.19E-02		5.02E-03	1.43E-02
	795.84	85.40	3.19E-02		-9.31E-03	1.36E-02
	801.93	8.73	3.55E-01		1.77E-02	1.55E-01
CS-135	268.24	16.00	1.23E-01	1.23E-01	-4.83E-02	5.63E-02
I-135	1131.51	22.50	1.89E-01	1.26E-01	5.08E-02	8.06E-02
	1260.41	28.60	1.26E-01		2.23E-02	5.08E-02

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Analysis Report for 2206038-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
I-135	1678.03	9.54	3.99E-01	1.26E-01	1.33E-01	1.54E-01
CS-136	153.22	7.46	2.43E-01	3.19E-02	3.60E-02	1.13E-01
	163.89	4.61	3.59E-01		-2.11E-02	1.66E-01
	176.55	13.56	1.35E-01		2.60E-02	6.28E-02
	273.65	12.66	1.51E-01		-8.00E-02	6.88E-02
	340.57	48.50	4.75E-02		1.25E-02	2.17E-02
	818.50	99.70	3.26E-02		-2.89E-03	1.43E-02
	1048.07	79.60	3.19E-02		-3.07E-02	1.29E-02
	1235.34	19.70	1.81E-01		2.90E-02	7.63E-02
CS-137	661.65	85.12	3.66E-02	3.66E-02	6.62E-03	1.63E-02
LA-138	788.74	34.00	7.65E-02	4.15E-02	2.38E-02	3.26E-02
	1435.80	66.00	4.15E-02		-1.29E-02	1.61E-02
CE-139	165.85	80.35	2.22E-02	2.22E-02	-5.01E-03	1.03E-02
BA-140	162.64	6.70	2.41E-01	1.06E-01	-7.26E-02	1.11E-01
	304.84	4.50	4.59E-01		-1.49E-01	2.09E-01
	423.70	3.20	7.68E-01		-1.02E-01	3.47E-01
	437.55	2.00	1.03E+00		-2.42E-01	4.53E-01
	537.32	25.00	1.06E-01		3.44E-02	4.71E-02
LA-140	328.77	20.50	1.07E-01	2.79E-02	4.67E-02	4.86E-02
	487.03	45.50	4.81E-02		4.17E-03	2.12E-02
	815.85	23.50	1.27E-01		-1.35E-03	5.48E-02
	1596.49	95.49	2.79E-02		-8.65E-03	1.05E-02
CE-141	145.44	48.40	3.60E-02	3.60E-02	-2.10E-02	1.68E-02
CE-143	57.36	11.80	1.75E-01	5.56E-02	-3.01E-02	8.19E-02
	293.26	42.00	5.56E-02		-6.56E-03	2.56E-02
	664.55	5.20	6.96E-01		2.09E-01	3.14E-01
CE-144	133.54	10.80	1.71E-01	1.71E-01	1.42E-01	8.01E-02
PM-144	476.78	42.00	5.22E-02	2.68E-02	-2.09E-02	2.30E-02
	618.01	98.60	2.68E-02		5.98E-04	1.18E-02
	696.49	99.49	3.79E-02		1.22E-02	1.72E-02
PM-145	36.85	21.70	3.77E-01	1.87E-01	-6.14E-01	1.84E-01
	37.36	39.70	1.87E-01		8.70E-02	9.14E-02
	42.30	15.10	2.98E-01		3.72E-02	1.44E-01
	72.40	2.31	8.30E-01		1.27E-01	3.91E-01
PM-146	453.90	39.94	5.15E-02	5.15E-02	-1.15E-02	2.27E-02
	735.90	14.01	2.23E-01		-3.44E-02	9.82E-02
	747.13	13.10	2.30E-01		-5.31E-02	1.01E-01
ND-147	91.11	28.90	7.24E-02	7.24E-02	-2.40E-04	3.43E-02
	531.02	13.10	1.75E-01		-2.14E-02	7.67E-02
PM-149	285.90	3.10	6.50E-01	6.50E-01	7.08E-02	2.96E-01
EU-152	121.78	20.50	8.89E-02	8.89E-02	3.50E-03	4.17E-02
	244.69	5.40	3.65E-01		7.78E-02	1.68E-01
	344.27	19.13	9.63E-02		1.92E-03	4.30E-02
	778.89	9.10	2.94E-01		8.85E-02	1.26E-01
	964.01	10.40	2.93E-01		-1.69E-02	1.25E-01
	1085.78	7.22	3.35E-01		3.83E-02	1.33E-01
	1112.02	9.60	3.26E-01		-6.63E-02	1.36E-01
	1407.95	14.94	2.93E-01		1.12E-01	1.26E-01
GD-153	97.43	31.30	6.14E-02	6.14E-02	5.14E-03	2.90E-02
	103.18	22.20	7.09E-02		8.67E-03	3.30E-02
EU-154	123.07	40.50	4.72E-02	4.72E-02	2.80E-02	2.22E-02
	723.30	19.70	1.60E-01		2.63E-02	7.07E-02
	873.19	11.50	1.91E-01		-1.62E-01	7.71E-02

Analysis Report for 2206038-02

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-154	996.32		10.30	3.47E-01	4.72E-02	2.18E-02	1.51E-01
		1004.76		17.90	1.83E-01		-2.42E-03	7.81E-02
		1274.45		35.50	8.81E-02		9.64E-03	3.61E-02
	EU-155	86.50		30.90	6.19E-02	6.19E-02	-3.04E-03	2.92E-02
		105.30		20.70	7.73E-02		2.17E-02	3.60E-02
	EU-156	811.77		10.40	2.76E-01	2.76E-01	-4.96E-02	1.19E-01
		1153.47		7.20	4.27E-01		1.21E-01	1.77E-01
		1230.71		8.90	3.23E-01		-1.39E-01	1.30E-01
	HO-166M	184.41		72.60	2.91E-02	2.91E-02	9.63E-03	1.36E-02
		280.45		29.60	6.37E-02		-2.12E-02	2.90E-02
		410.94		11.10	2.02E-01		2.58E-02	9.05E-02
		711.69		54.10	5.61E-02		3.86E-03	2.48E-02
	TM-171	66.72		0.14	1.35E+01	1.35E+01	2.42E+00	6.35E+00
	HF-172	67.35		5.31	3.54E-01	1.55E-01	-8.57E-02	1.66E-01
		125.82		11.30	1.55E-01		-3.32E-02	7.23E-02
	LU-172	181.53		20.60	9.21E-02	3.59E-02	4.77E-02	4.28E-02
		900.72		29.81	9.39E-02		-1.19E-02	3.97E-02
		1093.66		62.50	3.59E-02		-4.00E-02	1.39E-02
	LU-173	100.72		5.24	3.18E-01	9.38E-02	-1.11E-01	1.48E-01
		272.11		21.20	9.38E-02		-7.44E-03	4.29E-02
	HF-175	343.40		84.00	2.54E-02	2.54E-02	1.75E-03	1.15E-02
	LU-176	88.34		13.30	1.39E-01	2.03E-02	-2.28E-02	6.54E-02
		201.83		86.00	2.03E-02		-2.72E-02	9.36E-03
		306.78		94.00	2.20E-02		-5.62E-03	1.00E-02
	HF-181	133.02		41.70	4.23E-02	2.80E-02	-1.18E-02	1.98E-02
		345.85		17.20	1.16E-01		3.36E-02	5.20E-02
		482.03		82.80	2.80E-02		7.62E-03	1.24E-02
	TA-182	67.75		41.20	4.55E-02	4.55E-02	-1.10E-02	2.13E-02
		1121.30		34.90	9.02E-02		1.62E-02	3.78E-02
		1189.05		16.23	2.12E-01		-2.44E-02	8.96E-02
		1221.41		26.98	8.05E-02		-8.72E-02	3.01E-02
		1231.02		11.44	2.50E-01		-1.08E-01	1.01E-01
	IR-192	308.46		29.68	7.75E-02	4.39E-02	4.34E-02	3.57E-02
		468.07		48.10	4.39E-02		5.87E-03	1.93E-02
	HG-203	279.19		77.30	2.56E-02	2.56E-02	-4.25E-03	1.17E-02
	TL-204	374.74		94.11	1.97E-02	1.97E-02	-1.12E-02	8.70E-03
		899.15		99.16	2.67E-02		-4.73E-03	1.12E-02
		911.74		91.10	2.80E-02		-1.38E-02	1.16E-02
	BI-207	569.67		97.72	2.98E-02	2.98E-02	2.73E-03	1.34E-02
		1063.62		74.90	3.42E-02		-2.22E-02	1.38E-02
	TL-208	583.14		30.22	1.00E-01	1.00E-01	4.41E-03	4.50E-02
		860.37		4.48	6.46E-01		-1.92E-01	2.77E-01
		2614.66		35.85	1.33E-01		4.19E-02	5.28E-02
	BI-210M	262.00		45.00	4.50E-02	4.50E-02	-1.13E-02	2.07E-02
		300.00		23.00	9.06E-02		-1.15E-02	4.14E-02
	PB-210	46.50		4.25	7.57E-01	7.57E-01	4.30E-01	3.61E-01
	PB-211	404.84		2.90	5.43E-01	5.43E-01	9.85E-02	2.32E-01
		831.96		2.90	1.07E+00		1.88E-01	4.65E-01
	BI-212	727.17		11.80	2.68E-01	2.68E-01	-3.99E-02	1.19E-01
		1620.62		2.75	9.77E-01		6.05E-02	3.66E-01
	PB-212	238.63		44.60	5.17E-02	5.17E-02	8.39E-03	2.42E-02
		300.09		3.41	6.11E-01		-7.74E-02	2.79E-01
+	BI-214	609.31	*	46.30	8.83E-02	8.83E-02	4.64E-02	4.08E-02

Analysis Report for 2206038-02

BLANK

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BI-214	1120.29	15.10	2.27E-01	8.83E-02	7.73E-02	9.65E-02
	1764.49	15.80	2.53E-01		-1.23E-01	1.04E-01
	2204.22	4.98	6.84E-01		-9.88E-02	2.56E-01
PB-214	295.21	19.19	1.17E-01	6.32E-02	-2.31E-02	5.39E-02
	351.92	37.19	6.32E-02		1.71E-02	2.89E-02
RN-219	401.80	6.50	2.57E-01	2.57E-01	-6.71E-02	1.11E-01
RA-223	323.87	3.88	4.87E-01	4.87E-01	4.23E-02	2.19E-01
RA-224	240.98	3.95	6.24E-01	6.24E-01	3.98E-01	2.92E-01
RA-225	40.00	31.00	1.81E-01	1.81E-01	1.83E-01	8.77E-02
RA-226	186.21	3.28	6.36E-01	6.36E-01	1.15E-01	2.98E-01
TH-227	50.10	8.40	2.73E-01	1.62E-01	-1.76E-01	1.28E-01
	236.00	11.50	1.62E-01		-2.13E-01	7.45E-02
	256.20	6.30	2.99E-01		-9.42E-02	1.37E-01
AC-228	338.32	11.40	1.90E-01	1.01E-01	-1.09E-01	8.65E-02
	911.07	27.70	1.01E-01		1.16E-03	4.27E-02
	969.11	16.60	1.91E-01		4.49E-02	8.19E-02
TH-230	48.43	16.90	1.64E-01	1.64E-01	3.60E-02	7.77E-02
	62.85	4.60	4.28E-01		-1.41E-01	2.01E-01
	67.67	0.37	5.06E+00		-1.23E+00	2.38E+00
PA-231	283.67	1.60	1.27E+00	9.23E-01	2.34E-01	5.79E-01
	302.67	2.30	9.23E-01		4.43E-01	4.22E-01
TH-231	25.64	14.70	2.08E-02	2.08E-02	0.00E+00	0.00E+00
	84.21	6.40	2.92E-01		6.29E-02	1.37E-01
PA-233	311.98	38.60	5.50E-02	5.50E-02	2.13E-02	2.51E-02
PA-234	131.20	20.40	8.61E-02	8.61E-02	-2.72E-02	4.02E-02
	733.99	8.80	3.78E-01		4.44E-02	1.68E-01
	946.00	12.00	2.69E-01		4.78E-03	1.16E-01
PA-234M	1001.03	0.92	4.32E+00	4.32E+00	1.34E+00	1.91E+00
TH-234	63.29	3.80	5.07E-01	5.07E-01	-1.46E-01	2.38E-01
U-235	143.76	10.50	1.73E-01	1.73E-01	9.77E-02	8.11E-02
	163.35	4.70	3.50E-01		-2.06E-02	1.62E-01
	205.31	4.70	4.44E-01		1.13E-01	2.07E-01
NP-237	86.50	12.60	1.52E-01	1.52E-01	-7.46E-03	7.15E-02
NP-239	106.10	22.70	6.96E-02	6.96E-02	-1.39E-02	3.23E-02
	228.18	10.70	1.80E-01		1.12E-02	8.31E-02
	277.60	14.10	1.50E-01		6.22E-02	6.88E-02
AM-241	59.54	35.90	5.76E-02	5.76E-02	7.37E-03	2.71E-02
AM-243	74.67	66.00	3.06E-02	3.06E-02	4.78E-03	1.45E-02
CM-243	209.75	3.29	6.10E-01	1.47E-01	-1.53E-01	2.83E-01
	228.14	10.60	1.78E-01		1.10E-02	8.18E-02
	277.60	14.00	1.47E-01		6.12E-02	6.76E-02

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-001446

Analysis Report for 2206038-02
BLANK

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: BLANK

Elapsed Live time: 3600
Elapsed Real Time: 3600

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	10	193	348
33:	480	519	384	167	208	93	85	91
41:	69	70	67	56	34	27	40	29
49:	34	21	17	17	12	17	16	11
57:	11	9	17	16	21	21	10	20
65:	16	14	18	16	13	18	13	20
73:	9	17	14	26	18	23	25	12
81:	5	16	16	13	17	22	21	14
89:	15	20	20	17	17	34	23	24
97:	19	19	20	15	21	14	8	11
105:	15	12	15	9	12	10	12	16
113:	15	13	21	22	13	12	12	16
121:	7	18	17	21	16	15	15	12
129:	13	13	19	7	13	19	12	19
137:	14	9	12	10	16	12	16	15
145:	16	12	12	8	16	19	12	12
153:	11	14	15	13	13	12	14	12
161:	13	9	7	7	12	14	11	12
169:	11	18	14	14	9	16	11	16
177:	16	10	10	7	10	13	15	6
185:	17	9	21	24	10	10	11	13
193:	14	8	11	12	7	5	13	20
201:	5	10	11	8	12	17	15	12
209:	10	13	9	14	13	15	5	9
217:	12	11	8	11	7	11	10	10
225:	6	11	9	6	9	10	12	7
233:	14	10	4	15	10	7	7	22
241:	14	17	14	9	11	8	13	5
249:	4	13	11	5	8	8	8	8
257:	8	6	9	11	6	8	5	11
265:	14	10	5	5	8	14	8	11
273:	5	7	9	5	10	10	11	7
281:	4	6	8	9	7	10	5	7
289:	7	5	5	12	10	5	10	9
297:	13	9	11	4	6	9	8	8
305:	7	7	4	10	10	5	10	10
313:	6	4	7	5	6	5	15	7
321:	10	3	7	7	2	7	4	6
329:	4	7	7	12	5	9	6	6
337:	4	4	11	6	9	14	3	6
345:	3	6	5	6	7	2	3	10
353:	7	12	6	9	11	9	7	5
361:	4	8	5	6	2	4	4	4

BP/Castex-Ltd Adm-Apx E-001448

369:	9	5	4	7	7	7	4	1

Sample Title: BLANK

Channel								
377:	3	5	7	6	3	4	5	3
385:	6	6	4	3	4	3	6	3
393:	3	4	4	2	4	3	7	4
401:	1	0	5	5	3	1	3	0
409:	4	4	7	8	3	4	4	8
417:	4	4	6	2	3	5	8	10
425:	4	3	5	5	11	7	5	5
433:	2	6	6	2	4	4	6	3
441:	4	4	4	3	5	5	5	3
449:	6	6	9	2	2	7	3	1
457:	5	4	4	8	3	6	4	7
465:	3	3	4	3	3	3	5	4
473:	2	6	9	4	6	2	2	5
481:	3	6	5	3	4	4	1	6
489:	3	4	1	5	6	5	2	2
497:	7	6	2	4	2	6	2	6
505:	4	7	5	6	5	8	19	16
513:	18	9	7	5	6	5	4	6
521:	3	4	4	4	3	1	3	1
529:	2	3	2	3	5	4	4	8
537:	2	8	2	3	3	2	1	3
545:	4	2	5	3	3	2	5	3
553:	2	3	1	8	4	3	5	1
561:	2	5	4	4	5	4	3	4
569:	6	1	3	6	3	3	2	0
577:	3	2	2	0	6	8	2	3
585:	2	3	3	5	5	2	4	3
593:	3	4	5	3	2	5	3	6
601:	2	4	4	3	1	2	7	6
609:	5	11	6	6	5	0	6	2
617:	2	2	5	1	0	4	1	1
625:	2	2	6	1	3	4	3	1
633:	8	0	3	0	3	2	3	2
641:	1	1	0	2	1	4	1	0
649:	3	2	5	3	2	3	1	3
657:	2	0	4	1	2	5	4	5
665:	2	5	3	5	5	3	3	1
673:	2	3	3	6	4	3	4	1
681:	0	4	2	4	4	1	1	6
689:	3	5	1	3	1	3	4	3
697:	6	3	5	8	4	5	2	3
705:	5	2	4	2	2	3	1	3
713:	3	3	4	4	0	1	2	1
721:	3	1	4	3	2	3	4	2
729:	4	2	3	5	0	2	4	4
737:	4	4	1	1	4	1	1	2
745:	2	2	1	5	4	1	6	4
753:	1	3	2	1	3	0	1	3
761:	3	3	3	2	2	4	3	2
769:	1	4	1	1	2	3	0	3
777:	1	0	3	2	2	1	1	0
785:	1	1	3	1	1	0	2	3
793:	1	1	0	3	2	1	4	3

BP/Castex-Ltd Adm-Apx E-001449

801:	2	1	1	3	2	1	4	3

Sample Title: BLANK

Channel								
809:	3	1	1	2	2	2	2	0
817:	3	2	3	2	3	4	4	3
825:	2	2	2	3	1	1	2	1
833:	2	5	3	1	0	3	1	1
841:	2	2	3	3	1	3	2	2
849:	2	1	1	3	2	1	1	3
857:	2	1	1	1	3	1	3	2
865:	4	0	2	4	4	1	1	0
873:	0	1	1	2	1	1	2	4
881:	2	3	5	0	2	1	3	3
889:	2	3	3	2	2	0	0	2
897:	2	2	0	1	2	0	4	1
905:	3	0	1	3	0	1	2	1
913:	2	1	1	3	2	0	0	1
921:	2	4	2	1	3	0	3	2
929:	1	1	2	2	0	4	3	1
937:	2	2	0	1	3	0	1	4
945:	2	1	3	0	2	3	1	3
953:	2	1	1	3	2	1	1	3
961:	1	2	3	1	0	1	3	2
969:	1	1	3	1	3	0	3	3
977:	2	2	3	0	1	1	2	2
985:	1	1	2	4	2	3	1	0
993:	2	0	3	2	2	2	4	5
1001:	2	1	2	3	2	1	1	2
1009:	0	1	1	0	1	2	0	2
1017:	1	3	2	2	3	3	1	1
1025:	0	2	2	0	0	3	0	2
1033:	2	0	2	0	1	1	0	0
1041:	2	2	3	2	1	0	1	2
1049:	1	1	0	2	4	0	0	0
1057:	0	1	2	2	1	0	0	2
1065:	1	0	3	2	1	2	2	0
1073:	3	0	0	1	0	2	0	1
1081:	0	1	0	1	0	0	1	2
1089:	1	0	0	1	0	1	1	1
1097:	3	5	1	0	3	3	3	1
1105:	1	1	1	2	1	0	1	3
1113:	3	0	1	1	3	0	2	3
1121:	0	2	1	1	0	0	0	3
1129:	1	0	2	1	3	1	2	1
1137:	2	1	1	1	0	0	4	2
1145:	0	1	0	1	0	1	1	0
1153:	1	2	0	3	0	1	1	1
1161:	0	1	1	3	1	1	1	0
1169:	0	1	1	5	1	1	2	1
1177:	1	2	1	1	0	0	2	1
1185:	1	3	2	3	0	0	1	0
1193:	3	0	0	1	0	1	1	3
1201:	1	0	1	2	1	0	2	4
1209:	0	1	1	2	2	2	1	1
1217:	6	0	0	0	1	2	0	0
1225:	2	2	0	1	2	0	1	2

BP/Castex-Ltd Adm-Apx E-001450

1233:	0	2	1	1	2	2	1	2

Sample Title: BLANK

Channel								
1241:	0	0	1	1	1	3	0	0
1249:	0	2	1	1	1	1	1	0
1257:	0	0	1	0	1	2	2	1
1265:	0	3	0	1	2	0	0	1
1273:	0	2	2	1	1	1	0	0
1281:	2	4	0	0	1	0	1	0
1289:	0	1	0	0	2	1	0	4
1297:	1	0	0	0	0	0	1	0
1305:	0	2	0	0	1	1	1	1
1313:	3	0	1	0	0	0	1	1
1321:	1	1	3	1	2	0	3	3
1329:	2	0	5	3	3	0	0	2
1337:	0	0	0	1	0	1	3	1
1345:	2	1	0	0	2	1	1	1
1353:	2	0	2	1	0	2	2	0
1361:	0	0	2	4	1	1	1	2
1369:	0	2	1	0	1	1	0	0
1377:	2	1	1	3	1	0	1	1
1385:	0	1	0	0	1	0	0	0
1393:	0	1	2	1	4	0	1	0
1401:	1	0	1	3	1	1	2	2
1409:	3	1	2	0	1	0	1	0
1417:	3	1	0	0	1	0	2	1
1425:	1	1	0	1	3	1	2	1
1433:	0	0	0	0	1	2	0	1
1441:	1	0	1	3	0	1	1	0
1449:	2	0	0	0	0	0	0	2
1457:	0	0	2	4	3	1	0	0
1465:	1	1	1	0	1	0	0	1
1473:	0	0	0	0	0	2	0	2
1481:	0	0	0	0	1	2	0	0
1489:	1	1	1	0	0	0	0	1
1497:	1	2	2	1	0	3	0	0
1505:	0	0	2	2	0	0	1	1
1513:	1	2	0	0	0	1	1	1
1521:	1	0	0	0	0	2	1	0
1529:	1	1	0	1	0	0	0	1
1537:	1	0	0	0	1	1	1	1
1545:	1	1	0	1	0	1	2	0
1553:	0	1	0	0	1	1	0	0
1561:	0	0	1	1	1	0	0	0
1569:	0	1	1	1	0	1	2	1
1577:	0	1	1	2	0	0	2	0
1585:	1	1	0	2	0	0	0	1
1593:	2	0	0	0	0	0	1	1
1601:	0	0	1	0	0	0	1	0
1609:	1	1	1	1	2	0	0	0
1617:	0	1	0	0	0	2	1	1
1625:	0	0	1	1	2	1	1	2
1633:	0	2	0	0	1	1	2	0
1641:	0	1	0	1	0	1	0	0
1649:	0	1	1	0	1	0	0	0
1657:	0	0	0	0	1	0	1	1

BP/Castex-Ltd Adm-Apx E-001451

1665:	0	0	0	0	0	0	0	0

Sample Title: BLANK

Channel								
1673:	0	0	2	0	0	2	0	0
1681:	0	0	0	1	1	0	0	0
1689:	0	1	0	0	1	0	1	0
1697:	0	1	0	0	3	0	1	0
1705:	0	1	0	0	1	1	0	2
1713:	0	0	1	1	1	1	0	0
1721:	0	0	1	1	3	2	0	1
1729:	2	0	0	0	0	0	0	2
1737:	1	1	0	0	1	0	0	0
1745:	0	1	1	0	0	0	0	0
1753:	0	0	0	1	1	1	1	0
1761:	0	1	3	1	1	0	0	3
1769:	1	2	0	1	0	0	1	1
1777:	0	0	0	1	1	1	1	1
1785:	0	1	0	0	3	1	0	0
1793:	0	0	0	0	0	0	0	0
1801:	1	0	0	0	0	1	1	0
1809:	1	2	0	0	0	3	1	1
1817:	0	1	0	0	0	0	1	1
1825:	1	1	0	1	0	0	0	1
1833:	0	0	0	0	1	0	2	0
1841:	0	1	0	2	1	0	0	0
1849:	0	0	0	0	1	1	0	0
1857:	1	0	1	0	0	1	1	0
1865:	2	1	1	0	1	0	0	0
1873:	1	0	0	0	0	1	0	0
1881:	0	0	0	2	0	0	0	0
1889:	0	0	1	1	0	0	0	0
1897:	0	1	0	0	1	0	0	0
1905:	1	0	1	0	1	2	0	1
1913:	0	0	0	0	0	0	1	0
1921:	0	1	0	1	1	3	1	1
1929:	0	0	0	1	1	1	0	0
1937:	1	0	0	1	0	0	0	0
1945:	0	2	0	0	0	0	0	0
1953:	0	0	0	0	0	0	0	0
1961:	0	0	0	0	0	1	0	0
1969:	0	0	0	0	1	0	1	0
1977:	0	0	0	1	2	0	1	1
1985:	2	0	0	0	0	0	0	0
1993:	0	0	0	1	0	0	0	0
2001:	0	0	2	0	0	0	0	0
2009:	0	1	0	0	2	0	1	0
2017:	0	0	2	0	0	1	0	0
2025:	0	0	0	0	0	1	0	0
2033:	0	0	0	0	0	0	0	0
2041:	2	0	0	0	0	0	0	0
2049:	2	0	0	1	0	0	0	0
2057:	0	1	0	0	0	0	0	0
2065:	0	0	0	0	0	0	0	0
2073:	0	0	0	2	0	1	0	0
2081:	0	0	1	0	2	0	0	0
2089:	1	1	0	0	1	0	0	0

BP/Castex-Ltd Adm-Apx E-001452

2097:	0	0	1	0	0	0	1	2

Sample Title: BLANK

Channel								
2105:	1	2	0	0	0	0	0	0
2113:	1	0	0	0	0	0	0	0
2121:	0	0	0	0	0	3	0	0
2129:	0	1	0	0	0	0	0	0
2137:	1	0	1	1	0	0	1	0
2145:	0	0	0	0	1	0	0	1
2153:	1	0	0	0	0	0	0	1
2161:	0	0	0	0	0	0	0	0
2169:	1	0	1	0	0	0	0	0
2177:	1	1	0	0	0	0	0	0
2185:	1	0	1	1	0	0	0	1
2193:	0	0	0	1	0	1	0	0
2201:	0	0	0	1	1	0	0	1
2209:	1	1	0	0	0	2	0	1
2217:	0	0	1	1	0	0	0	0
2225:	0	2	1	0	0	2	0	0
2233:	0	0	0	0	0	0	0	1
2241:	0	0	1	0	0	1	0	1
2249:	0	0	1	0	0	0	0	0
2257:	0	0	0	0	0	0	1	0
2265:	0	0	0	0	0	0	0	0
2273:	0	1	0	0	0	0	0	0
2281:	0	0	1	0	0	0	0	0
2289:	0	1	0	0	0	0	0	0
2297:	1	2	0	0	0	1	0	0
2305:	0	0	0	1	0	0	1	0
2313:	0	0	0	0	1	0	0	0
2321:	0	0	0	0	0	0	1	0
2329:	0	2	1	0	1	0	1	0
2337:	0	0	0	0	1	0	1	0
2345:	0	0	1	0	0	0	0	0
2353:	0	0	0	0	1	0	0	0
2361:	0	0	0	0	0	0	0	2
2369:	0	0	0	0	0	0	0	0
2377:	0	0	1	0	0	0	1	0
2385:	1	0	0	0	0	0	0	0
2393:	0	0	0	1	0	0	0	1
2401:	0	0	0	0	0	0	0	0
2409:	0	0	0	0	0	0	0	0
2417:	0	0	0	0	0	0	0	0
2425:	1	2	0	0	0	0	0	0
2433:	0	0	0	0	1	0	1	0
2441:	0	0	0	0	0	0	0	2
2449:	1	0	2	0	0	0	1	0
2457:	0	0	0	0	0	0	0	0
2465:	0	0	0	0	0	0	0	0
2473:	0	2	1	0	0	0	0	0
2481:	2	0	0	1	1	0	0	0
2489:	0	0	0	0	1	1	0	0
2497:	1	0	0	0	0	0	1	0
2505:	1	0	0	1	0	0	0	1
2513:	0	0	0	0	0	0	0	0
2521:	0	1	0	0	1	0	0	0

BP/Castex-Ltd Adm-Apx E-001453

2529:	0	0	0	1	0	0	1	0

Sample Title: BLANK

Channel								
2537:	0	0	0	0	0	0	0	0
2545:	1	1	0	0	0	0	1	0
2553:	0	0	0	1	1	0	0	0
2561:	0	0	0	1	0	0	0	0
2569:	0	0	0	1	1	0	0	0
2577:	0	0	0	0	2	1	0	0
2585:	0	0	0	0	0	0	0	0
2593:	0	0	0	1	0	0	0	1
2601:	0	0	0	1	1	0	0	0
2609:	0	3	1	1	0	0	0	0
2617:	0	0	0	1	0	0	0	0
2625:	0	0	0	0	0	0	0	1
2633:	0	0	0	0	0	0	0	0
2641:	0	0	0	0	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	0	1	0	1	0
2665:	0	0	0	1	0	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	0	0	0	0	1	0	1	0
2689:	0	0	0	0	0	0	0	0
2697:	0	1	0	1	0	1	0	0
2705:	0	1	1	0	0	1	0	0
2713:	1	0	0	0	1	0	0	0
2721:	1	0	0	1	0	0	0	0
2729:	1	0	0	0	0	1	1	0
2737:	0	0	2	0	0	0	0	0
2745:	0	1	0	0	0	0	0	0
2753:	0	0	2	1	0	1	1	0
2761:	0	0	0	0	0	0	0	0
2769:	0	1	1	0	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	0	1	0	0	0	0	0	1
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	2	0	0	0	0
2825:	1	0	0	1	1	0	0	0
2833:	0	2	0	2	0	0	0	0
2841:	1	0	0	0	0	0	0	0
2849:	1	0	0	0	1	0	0	0
2857:	0	0	1	0	0	0	0	0
2865:	1	0	0	0	0	0	1	1
2873:	0	0	0	0	0	0	1	1
2881:	0	0	1	0	0	2	1	0
2889:	0	0	0	0	0	0	0	0
2897:	0	0	1	0	0	1	0	0
2905:	1	0	0	0	0	0	0	0
2913:	0	0	1	0	0	0	0	0
2921:	0	0	0	2	0	0	0	0
2929:	0	0	1	0	0	0	0	0
2937:	0	0	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001454

2961:	0	0	1	0	0	0	0	0

Sample Title: BLANK

Channel								
2969:	0	0	0	2	0	0	0	1
2977:	1	0	0	0	0	0	1	1
2985:	1	0	0	1	0	0	0	0
2993:	0	0	0	0	0	0	1	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	0	0	0	1	1	0
3025:	0	0	0	0	0	2	0	0
3033:	0	1	0	0	1	0	0	0
3041:	0	0	0	0	0	0	0	0
3049:	0	0	0	0	0	0	0	0
3057:	0	0	0	0	0	0	0	0
3065:	1	0	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	0	0	0	0	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	1	0	0	0	0	0
3113:	0	0	0	0	0	1	0	0
3121:	1	0	0	0	0	0	0	0
3129:	0	0	1	0	0	0	0	1
3137:	0	0	0	0	0	0	0	0
3145:	1	0	1	2	1	0	0	0
3153:	0	0	0	0	0	0	0	0
3161:	1	0	0	0	0	0	0	0
3169:	0	0	0	0	1	0	1	0
3177:	0	0	0	1	0	1	0	0
3185:	0	0	1	0	0	0	0	0
3193:	0	2	0	2	1	0	0	1
3201:	0	0	0	1	0	1	0	1
3209:	0	1	0	0	0	0	0	1
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	1
3233:	1	0	1	1	1	0	0	0
3241:	0	0	1	0	0	0	0	0
3249:	0	0	1	0	0	0	0	0
3257:	0	1	0	0	0	0	0	0
3265:	0	0	0	0	0	0	1	1
3273:	0	0	1	0	0	0	0	0
3281:	1	0	0	0	0	0	0	0
3289:	0	0	0	0	1	1	0	0
3297:	0	0	0	0	0	0	1	0
3305:	0	0	0	0	0	0	0	0
3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	1	0	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	1	0	0	0	1	0	0
3369:	0	0	0	0	0	0	0	1
3377:	0	0	0	0	0	0	0	0
3385:	1	0	0	0	0	0	0	0

3393:	0	0	0	0	0	0	0	0

Sample Title: BLANK

Channel								
3401:	0	0	0	0	0	0	0	0
3409:	1	0	0	0	0	0	0	1
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	1	0	1
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	1	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	1	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	1	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	1	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	1	0	0	0	0
3513:	1	0	2	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	0	0	1	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	0	1	0	0	2
3569:	0	0	0	1	1	0	0	0
3577:	0	0	0	0	0	1	0	0
3585:	0	0	0	0	0	1	0	0
3593:	1	1	0	0	0	0	0	0
3601:	0	1	0	0	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	2	0	0	0	0	0	0
3625:	0	0	0	0	0	0	0	0
3633:	0	1	0	0	1	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	0	0	1	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	1	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	1	0	0	0
3689:	0	0	1	0	0	0	0	0
3697:	0	1	0	1	0	0	0	0
3705:	1	0	0	0	1	0	0	0
3713:	0	0	0	1	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	1	0	0
3753:	0	0	0	1	1	0	0	1
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	1
3801:	0	0	0	0	0	0	0	0
3809:	0	0	1	0	0	1	1	0
3817:	0	0	0	0	0	0	0	0

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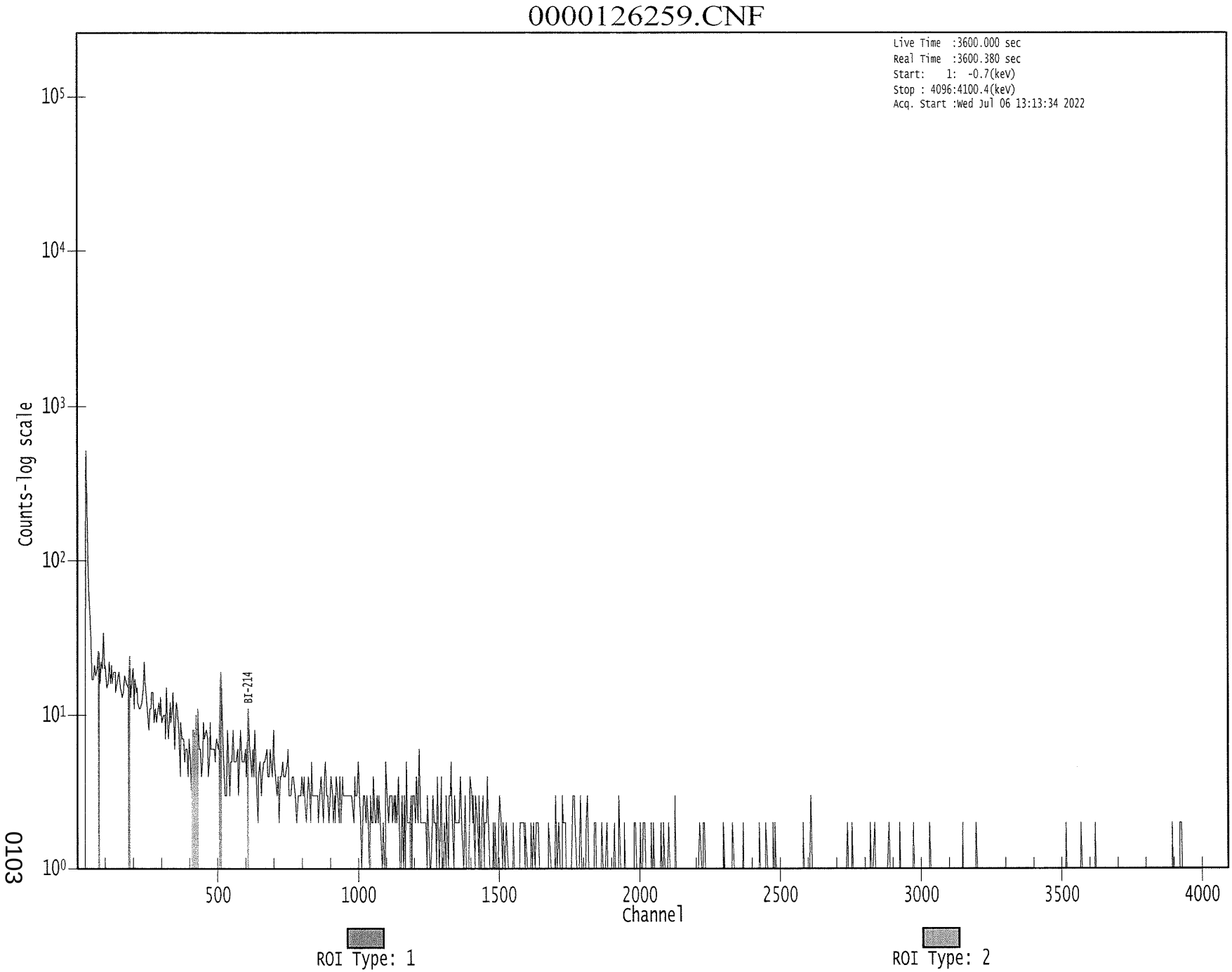
3825:	0	0	0	0	0	0	0	0

Sample Title: BLANK

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	1	1
3849:	0	0	0	1	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	1	0	0	0	0	0	1	0
3873:	1	0	0	1	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	2	1	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	1	0	0	0	0	0	0	0
3921:	2	0	0	0	1	0	2	0
3929:	0	0	0	0	0	0	1	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	1	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	1
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	1	0	0	0	0
4001:	1	0	1	0	0	1	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	1	0	1	0	0	0	0	0
4041:	0	0	0	0	1	0	0	0
4049:	0	0	0	0	0	0	1	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	1	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	1	0	0	0	0	0	0	0
4089:	0	0	0	0	0	1	0	0

BP/Castex-Ltd Adm-Apx E-001457



0103

BP/Castex-Ltd Adm-Apx E-001458

KP 7/6/22

Apex-Gamma

Analysis Report for 2206038-03
R-1 0-6

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-03
Sample Description	: R-1 0-6
Sample Type	: SOIL
Sample Size	: 4.826E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:42:36AM
Acquisition Started	: 7/6/2022 12:11:28PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3670.2 seconds
Dead Time	: 1.91 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 2 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 11/21/2021
Efficiency Calibration Description	:
Sample Number	: 126254

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

BP/Castex-Ltd Adm-Apx E-001459

Analysis Report for 2206038-03

R-1 0-6

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 1:13:19PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	11.18	11.83	0.0000	0.00
2	75.99	76.60	0.0000	0.00
3	185.96	186.50	0.0000	0.00
4	210.08	210.59	0.0000	0.00
5	238.90	239.40	0.0000	0.00
6	295.62	296.08	0.0000	0.00
7	339.05	339.48	0.0000	0.00
8	352.39	352.81	0.0000	0.00
9	511.48	511.80	0.0000	0.00
10	582.60	582.88	0.0000	0.00
11	609.34	609.60	0.0000	0.00
12	660.94	661.18	0.0000	0.00
13	707.62	707.83	0.0000	0.00
14	726.08	726.28	0.0000	0.00
15	855.58	855.70	0.0000	0.00
16	911.12	911.22	0.0000	0.00
17	931.40	931.49	0.0000	0.00
18	964.99	965.05	0.0000	0.00
19	1010.19	1010.24	0.0000	0.00
20	1120.14	1120.13	0.0000	0.00
21	1182.72	1182.68	0.0000	0.00
22	1282.43	1282.34	0.0000	0.00
23	1319.65	1319.54	0.0000	0.00
24	1459.21	1459.04	0.0000	0.00
25	1589.65	1589.43	0.0000	0.00
26	1659.11	1658.86	0.0000	0.00
27	1762.03	1761.75	0.0000	0.00
28	1828.62	1828.31	0.0000	0.00
29	2611.25	2610.74	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001460

Analysis Report for 2206038-03

R-1 0-6

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 1:13:19PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
1	11.18	6 -	19	11.83	2.18E+04	498.23	1.83E+04	2.74
2	75.99	71 -	82	76.60	9.72E+02	189.09	3.96E+03	5.24
3	185.96	181 -	191	186.50	1.56E+02	102.13	1.30E+03	2.79
4	210.08	206 -	216	210.59	8.70E+01	88.77	9.98E+02	1.65
5	238.90	232 -	245	239.40	7.78E+02	118.36	1.21E+03	4.46
6	295.62	289 -	303	296.08	1.67E+02	101.08	1.01E+03	2.74
7	339.05	334 -	345	339.48	1.09E+02	71.53	5.76E+02	4.97
8	352.39	347 -	363	352.81	3.61E+02	87.05	5.73E+02	3.85
9	511.48	506 -	519	511.80	1.17E+02	59.41	3.31E+02	3.23
10	582.60	576 -	589	582.88	1.90E+02	55.61	2.59E+02	3.34
11	609.34	602 -	618	609.60	2.46E+02	65.25	3.00E+02	3.82
12	660.94	652 -	666	661.18	5.25E+01	47.41	2.03E+02	3.76
13	707.62	701 -	713	707.83	3.34E+01	40.31	1.75E+02	7.21
14	726.08	722 -	730	726.28	2.51E+01	27.01	9.17E+01	8.10
15	855.58	835 -	873	855.70	1.36E+02	68.72	1.89E+02	28.95
16	911.12	907 -	921	911.22	9.40E+01	43.47	1.38E+02	3.08
17	931.40	921 -	939	931.49	5.36E+01	32.95	7.47E+01	12.69
18	964.99	950 -	972	965.05	9.76E+01	49.19	1.55E+02	10.35
19	1010.19	1005 -	1016	1010.24	2.36E+01	19.60	3.67E+01	5.79
20	1120.14	1111 -	1130	1120.13	5.24E+01	44.81	1.49E+02	4.68
21	1182.72	1179 -	1188	1182.68	1.64E+01	18.65	4.12E+01	1.10
22	1282.43	1276 -	1290	1282.34	3.44E+01	20.42	2.72E+01	11.31
23	1319.65	1314 -	1323	1319.54	1.58E+01	15.26	2.24E+01	5.57
24	1459.21	1450 -	1466	1459.04	1.81E+02	34.25	4.31E+01	4.20
25	1589.65	1583 -	1597	1589.43	3.25E+01	16.51	1.50E+01	7.10
26	1659.11	1656 -	1661	1658.86	6.44E+00	7.35	5.11E+00	1.90
27	1762.03	1753 -	1767	1761.75	2.73E+01	17.91	2.15E+01	3.02
28	1828.62	1823 -	1832	1828.31	8.50E+00	8.31	5.00E+00	7.54
29	2611.25	2605 -	2615	2610.74	5.30E+01	14.56	0.00E+00	5.58

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 2206038-03

R-1 0-6

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 1:13:19PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
1	11.18	6 -	19	2.18E+04	498.23	1.83E+04	3.30E+02
2	75.99	71 -	82	9.72E+02	189.09	3.96E+03	1.47E+02
3	185.96	181 -	191	1.56E+02	102.13	1.30E+03	8.14E+01
4	210.08	206 -	216	8.70E+01	88.77	9.98E+02	7.13E+01
5	238.90	232 -	245	7.78E+02	118.36	1.21E+03	8.58E+01
6	295.62	289 -	303	1.67E+02	101.08	1.01E+03	8.03E+01
7	339.05	334 -	345	1.09E+02	71.53	5.76E+02	5.62E+01
8	352.39	347 -	363	3.61E+02	87.05	5.73E+02	6.44E+01
9	511.48	506 -	519	1.17E+02	59.41	3.31E+02	4.55E+01
10	582.60	576 -	589	1.90E+02	55.61	2.59E+02	3.97E+01
11	609.34	602 -	618	2.46E+02	65.25	3.00E+02	4.70E+01
12	660.94	652 -	666	5.25E+01	47.41	2.03E+02	4.28E+01
13	707.62	701 -	713	3.34E+01	40.31	1.75E+02	3.17E+01
14	726.08	722 -	730	2.51E+01	27.01	9.17E+01	2.06E+01
15	855.58	835 -	873	1.36E+02	68.72	1.89E+02	5.31E+01
16	911.12	907 -	921	9.40E+01	43.47	1.38E+02	3.20E+01
17	931.40	921 -	939	5.36E+01	32.95	7.47E+01	2.43E+01
18	964.99	950 -	972	9.76E+01	49.19	1.55E+02	3.70E+01
19	1010.19	1005 -	1016	2.36E+01	19.60	3.67E+01	1.40E+01
20	1120.14	1111 -	1130	5.24E+01	44.81	1.49E+02	3.49E+01
21	1182.72	1179 -	1188	1.64E+01	18.65	4.12E+01	1.38E+01
22	1282.43	1276 -	1290	3.44E+01	20.42	2.72E+01	1.37E+01
23	1319.65	1314 -	1323	1.58E+01	15.26	2.24E+01	1.07E+01
24	1459.21	1450 -	1466	1.81E+02	34.25	4.31E+01	1.74E+01
25	1589.65	1583 -	1597	3.25E+01	16.51	1.50E+01	9.81E+00
26	1659.11	1656 -	1661	6.44E+00	7.35	5.11E+00	4.37E+00
27	1762.03	1753 -	1767	2.73E+01	17.91	2.15E+01	1.20E+01
28	1828.62	1823 -	1832	8.50E+00	8.31	5.00E+00	4.86E+00
29	2611.25	2605 -	2615	5.30E+01	14.56	0.00E+00	0.00E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001462

Analysis Report for 2206038-03

R-1 0-6

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 1:13:19PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
1	11.18	6 -	19	11.83	2.18E+04	498.23	1.83E+04	.....
2	75.99	71 -	82	76.60	9.72E+02	189.09	3.96E+03	AM-243 TI-44
3	185.96	181 -	191	186.50	1.56E+02	102.13	1.30E+03	RA-226 HO-166M
4	210.08	206 -	216	210.59	8.70E+01	88.77	9.98E+02	CM-243 GA-67
5	238.90	232 -	245	239.40	7.78E+02	118.36	1.21E+03	PB-212 RA-224
6	295.62	289 -	303	296.08	1.67E+02	101.08	1.01E+03	PB-214 CE-143
7	339.05	334 -	345	339.48	1.09E+02	71.53	5.76E+02	AC-228 CS-136
8	352.39	347 -	363	352.81	3.61E+02	87.05	5.73E+02	PB-214
9	511.48	506 -	519	511.80	1.17E+02	59.41	3.31E+02	.....
10	582.60	576 -	589	582.88	1.90E+02	55.61	2.59E+02	TL-208
11	609.34	602 -	618	609.60	2.46E+02	65.25	3.00E+02	BI-214
12	660.94	652 -	666	661.18	5.25E+01	47.41	2.03E+02	CS-137
13	707.62	701 -	713	707.83	3.34E+01	40.31	1.75E+02	AG-110M
14	726.08	722 -	730	726.28	2.51E+01	27.01	9.17E+01	BI-212 ZR-95
15	855.58	835 -	873	855.70	1.36E+02	68.72	1.89E+02	.....
16	911.12	907 -	921	911.22	9.40E+01	43.47	1.38E+02	AC-228 TL-204
17	931.40	921 -	939	931.49	5.36E+01	32.95	7.47E+01	.....
18	964.99	950 -	972	965.05	9.76E+01	49.19	1.55E+02	EU-152
19	1010.19	1005 -	1016	1010.24	2.36E+01	19.60	3.67E+01	.....
20	1120.14	1111 -	1130	1120.13	5.24E+01	44.81	1.49E+02	BI-214 SC-46 TA-182
21	1182.72	1179 -	1188	1182.68	1.64E+01	18.65	4.12E+01	.....
22	1282.43	1276 -	1290	1282.34	3.44E+01	20.42	2.72E+01	.....
23	1319.65	1314 -	1323	1319.54	1.58E+01	15.26	2.24E+01	.....
24	1459.21	1450 -	1466	1459.04	1.81E+02	34.25	4.31E+01	K-40
25	1589.65	1583 -	1597	1589.43	3.25E+01	16.51	1.50E+01	.....
26	1659.11	1656 -	1661	1658.86	6.44E+00	7.35	5.11E+00	.....
27	1762.03	1753 -	1767	1761.75	2.73E+01	17.91	2.15E+01	BI-214
28	1828.62	1823 -	1832	1828.31	8.50E+00	8.31	5.00E+00	.....
29	2611.25	2605 -	2615	2610.74	5.30E+01	14.56	0.00E+00	.....

BP/Castex-Ltd Adm-Apx E-001463

Analysis Report for 2206038-03

R-1 0-6

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 1:13:19PM

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
1	11.18	2.18E+04	498.23	1.51E-10	3.08E-03
2	75.99	9.72E+02	189.09	4.46E-02	3.95E-03
3	185.96	1.56E+02	102.13	2.03E-02	3.87E-03
4	210.08	8.70E+01	88.77	1.78E-02	3.24E-03
5	238.90	7.78E+02	118.36	1.54E-02	2.48E-03
6	295.62	1.67E+02	101.08	1.24E-02	1.36E-03
7	339.05	1.09E+02	71.53	1.09E-02	1.19E-03
8	352.39	3.61E+02	87.05	1.05E-02	1.14E-03
9	511.48	1.17E+02	59.41	7.46E-03	7.81E-04
10	582.60	1.90E+02	55.61	6.64E-03	6.61E-04
11	609.34	2.46E+02	65.25	6.38E-03	6.16E-04
12	660.94	5.25E+01	47.41	5.92E-03	5.28E-04
13	707.62	3.34E+01	40.31	5.56E-03	5.05E-04
14	726.08	2.51E+01	27.01	5.43E-03	4.96E-04
15	855.58	1.36E+02	68.72	4.64E-03	4.33E-04
16	911.12	9.40E+01	43.47	4.37E-03	4.07E-04
17	931.40	5.36E+01	32.95	4.27E-03	3.98E-04
18	964.99	9.76E+01	49.19	4.13E-03	3.82E-04
19	1010.19	2.36E+01	19.60	3.94E-03	3.62E-04
20	1120.14	5.24E+01	44.81	3.56E-03	3.11E-04
21	1182.72	1.64E+01	18.65	3.37E-03	2.86E-04
22	1282.43	3.44E+01	20.42	3.10E-03	2.80E-04
23	1319.65	1.58E+01	15.26	3.02E-03	2.78E-04
24	1459.21	1.81E+02	34.25	2.74E-03	2.52E-04
25	1589.65	3.25E+01	16.51	2.52E-03	2.26E-04
26	1659.11	6.44E+00	7.35	2.43E-03	2.12E-04
27	1762.03	2.73E+01	17.91	2.31E-03	1.92E-04
28	1828.62	8.50E+00	8.31	2.24E-03	1.79E-04
29	2611.25	5.30E+01	14.56	1.88E-03	1.77E-04

BP/Castex-Ltd Adm-Apx E-001464

Analysis Report for 2206038-03

R-1 0-6

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 1:13:19PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126202.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	11.18	2.18E+04	498.23			2.18E+04	4.98E+02
2	75.99	9.72E+02	189.09	2.97E+01	6.13E+00	9.43E+02	1.89E+02
3	185.96	1.56E+02	102.13	2.74E+01	1.86E+00	1.29E+02	1.02E+02
4	210.08	8.70E+01	88.77			8.70E+01	8.88E+01
5	238.90	7.78E+02	118.36	1.48E+01	1.49E+00	7.63E+02	1.18E+02
6	295.62	1.67E+02	101.08			1.67E+02	1.01E+02
7	339.05	1.09E+02	71.53			1.09E+02	7.15E+01
8	352.39	3.61E+02	87.05			3.61E+02	8.70E+01
9	511.48	1.17E+02	59.41	5.08E+01	5.67E+00	6.58E+01	5.97E+01
10	582.60	1.90E+02	55.61			1.90E+02	5.56E+01
11	609.34	2.46E+02	65.25			2.46E+02	6.52E+01
12	660.94	5.25E+01	47.41	2.64E+00	3.01E+00	4.99E+01	4.75E+01
13	707.62	3.34E+01	40.31			3.34E+01	4.03E+01
14	726.08	2.51E+01	27.01			2.51E+01	2.70E+01
15	855.58	1.36E+02	68.72			1.36E+02	6.87E+01
16	911.12	9.40E+01	43.47			9.40E+01	4.35E+01
17	931.40	5.36E+01	32.95	7.04E-01	1.78E+00	5.29E+01	3.30E+01
18	964.99	9.76E+01	49.19			9.76E+01	4.92E+01
19	1010.19	2.36E+01	19.60			2.36E+01	1.96E+01
20	1120.14	5.24E+01	44.81			5.24E+01	4.48E+01
21	1182.72	1.64E+01	18.65			1.64E+01	1.87E+01
22	1282.43	3.44E+01	20.42			3.44E+01	2.04E+01
23	1319.65	1.58E+01	15.26			1.58E+01	1.53E+01
24	1459.21	1.81E+02	34.25			1.81E+02	3.43E+01
25	1589.65	3.25E+01	16.51			3.25E+01	1.65E+01
26	1659.11	6.44E+00	7.35			6.44E+00	7.35E+00
27	1762.03	2.73E+01	17.91			2.73E+01	1.79E+01
28	1828.62	8.50E+00	8.31			8.50E+00	8.31E+00
29	2611.25	5.30E+01	14.56			5.30E+01	1.46E+01

BP/Castex-Ltd Adm-Apx E-001465

Analysis Report for 2206038-03

R-1 0-6

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 1:13:19PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126202.CNF

Corrected Area is: Original * Peak Ratio - Background

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
1	11.18	2.18E+04	498.23			2.18E+04	4.98E+02
2	75.99	9.72E+02	189.09	2.97E+01	6.13E+00	9.43E+02	1.89E+02
3	185.96	1.56E+02	102.13	2.74E+01	1.86E+00	1.29E+02	1.02E+02
4	210.08	8.70E+01	88.77			8.70E+01	8.88E+01
5	238.90	7.78E+02	118.36	1.48E+01	1.49E+00	7.63E+02	1.18E+02
6	295.62	1.67E+02	101.08			1.67E+02	1.01E+02
7	339.05	1.09E+02	71.53			1.09E+02	7.15E+01
8	352.39	3.61E+02	87.05			3.61E+02	8.70E+01
9	511.48	1.17E+02	59.41	5.08E+01	5.67E+00	6.58E+01	5.97E+01
10	582.60	1.90E+02	55.61			1.90E+02	5.56E+01
11	609.34	2.46E+02	65.25			2.46E+02	6.52E+01
12	660.94	5.25E+01	47.41	2.64E+00	3.01E+00	4.99E+01	4.75E+01
13	707.62	3.34E+01	40.31			3.34E+01	4.03E+01
14	726.08	2.51E+01	27.01			2.51E+01	2.70E+01
15	855.58	1.36E+02	68.72			1.36E+02	6.87E+01
16	911.12	9.40E+01	43.47			9.40E+01	4.35E+01
17	931.40	5.36E+01	32.95	7.04E-01	1.78E+00	5.29E+01	3.30E+01
18	964.99	9.76E+01	49.19			9.76E+01	4.92E+01
19	1010.19	2.36E+01	19.60			2.36E+01	1.96E+01
20	1120.14	5.24E+01	44.81			5.24E+01	4.48E+01
21	1182.72	1.64E+01	18.65			1.64E+01	1.87E+01
22	1282.43	3.44E+01	20.42			3.44E+01	2.04E+01
23	1319.65	1.58E+01	15.26			1.58E+01	1.53E+01
24	1459.21	1.81E+02	34.25			1.81E+02	3.43E+01
25	1589.65	3.25E+01	16.51			3.25E+01	1.65E+01
26	1659.11	6.44E+00	7.35			6.44E+00	7.35E+00
27	1762.03	2.73E+01	17.91			2.73E+01	1.79E+01
28	1828.62	8.50E+00	8.31			8.50E+00	8.31E+00
29	2611.25	5.30E+01	14.56			5.30E+01	1.46E+01

BP/Castex-Ltd Adm-Apx E-001466

Analysis Report for 2206038-03

R-1 0-6

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.936	1460.81	*	10.67	9.67E+00	2.03E+00
CS-137	0.987	661.65	*	85.12	1.54E-01	1.47E-01
TL-208	0.309	583.14	*	30.22	1.48E+00	4.55E-01
		860.37		4.48		
		2614.66		35.85		
BI-212	0.758	727.17	*	11.80	6.10E-01	6.58E-01
		1620.62		2.75		
PB-212	0.896	238.63	*	44.60	1.72E+00	3.85E-01
		300.09		3.41		
BI-214	0.907	609.31	*	46.30	1.30E+00	3.66E-01
		1120.29	*	15.10	1.52E+00	1.31E+00
		1764.49	*	15.80	1.16E+00	7.70E-01
		2204.22		4.98		
PB-214	0.995	295.21	*	19.19	1.09E+00	6.71E-01
		351.92	*	37.19	1.44E+00	3.81E-01
RA-224	0.895	240.98	*	3.95	1.95E+01	4.35E+00
RA-226	0.998	186.21	*	3.28	3.01E+00	2.45E+00
AC-228	0.580	338.32	*	11.40	1.37E+00	9.11E-01
		911.07	*	27.70	1.21E+00	5.70E-01
		969.11		16.60		
AM-243	0.956	74.67	*	66.00	4.98E-01	1.09E-01

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001467

Analysis Report for 2206038-03

R-1 0-6

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 1:13:19PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
1	11.18	6.05362E+00	1.14		
4	210.08	2.41785E-02	50.99	Tol.	GA-67 CM-243
9	511.48	1.82872E-02	45.32		
13	707.62	9.27112E-03	60.38	Tol.	AG-110M
15	855.58	3.76896E-02	25.32		
17	931.40	1.47007E-02	31.18		
18	964.99	2.71198E-02	25.19	Sum	
19	1010.19	6.56746E-03	41.44		
21	1182.72	4.54955E-03	56.95		
22	1282.43	9.56018E-03	29.67		
23	1319.65	4.38786E-03	48.32	Sum	
25	1589.65	9.02778E-03	25.40		
26	1659.11	1.79012E-03	57.01		
28	1828.62	2.36111E-03	48.86		
29	2611.25	1.47222E-02	13.74		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.93	1460.81	*	10.67	9.67E+00	2.03E+00
CS-137	0.98	661.65	*	85.12	1.54E-01	1.47E-01
TL-208	0.30	583.14	*	30.22	1.48E+00	4.55E-01

BP/Castex-Ltd Adm-Apx E-001468

Analysis Report for 2206038-03

R-1 0-6

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TL-208	0.30	860.37		4.48		
		2614.66		35.85		
BI-212	0.75	727.17	*	11.80	6.10E-01	6.58E-01
		1620.62		2.75		
PB-212	0.89	238.63	*	44.60	1.72E+00	3.85E-01
		300.09		3.41		
BI-214	0.90	609.31	*	46.30	1.30E+00	3.66E-01
		1120.29	*	15.10	1.52E+00	1.31E+00
		1764.49	*	15.80	1.16E+00	7.70E-01
		2204.22		4.98		
PB-214	0.99	295.21	*	19.19	1.09E+00	6.71E-01
		351.92	*	37.19	1.44E+00	3.81E-01
RA-224	0.89	240.98	*	3.95	1.95E+01	4.35E+00
RA-226	0.99	186.21	*	3.28	3.01E+00	2.45E+00
AC-228	0.58	338.32	*	11.40	1.37E+00	9.11E-01
		911.07	*	27.70	1.21E+00	5.70E-01
		969.11		16.60		
AM-243	0.95	74.67	*	66.00	4.98E-01	1.09E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.936	9.67E+00	2.03E+00	
	CS-137	0.987	1.54E-01	1.47E-01	
	TL-208	0.309	1.48E+00	4.55E-01	
	BI-212	0.758	6.10E-01	6.58E-01	
?	PB-212	0.896	1.72E+00	3.85E-01	
	BI-214	0.907	1.29E+00	3.20E-01	
	PB-214	0.995	1.36E+00	3.32E-01	
?	RA-224	0.895	1.95E+01	4.35E+00	
	RA-226	0.998	3.01E+00	2.45E+00	

Analysis Report for 2206038-03

R-1 0-6

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
AC-228	0.580	1.25E+00	4.83E-01	
AM-243	0.956	4.98E-01	1.09E-01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-03
R-1 0-6

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 1:13:19PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
1	11.18	6.05362E+00	1.14		
4	210.08	2.41785E-02	50.99	Tol.	GA-67 CM-243
9	511.48	1.82872E-02	45.32		
13	707.62	9.27112E-03	60.38	Tol.	AG-110M
15	855.58	3.76896E-02	25.32		
17	931.40	1.47007E-02	31.18		
18	964.99	2.71198E-02	25.19	Sum	
19	1010.19	6.56746E-03	41.44		
21	1182.72	4.54955E-03	56.95		
22	1282.43	9.56018E-03	29.67		
23	1319.65	4.38786E-03	48.32	Sum	
25	1589.65	9.02778E-03	25.40		
26	1659.11	1.79012E-03	57.01		
28	1828.62	2.36111E-03	48.86		
29	2611.25	1.47222E-02	13.74		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	9.31E-01	1.76E+00	1.76E+00

BP/Castex-Ltd Adm-Apx E-001471

Analysis Report for 2206038-03

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NA-22	1274.54		99.94	-2.25E-02	1.76E-01	1.76E-01
+	NA-24	1368.53		99.99	4.01E-03	9.99E-02	1.70E-01
		2754.09		99.86	2.08E-02		9.99E-02
+	AL-26	1808.65		99.76	2.76E-03	1.20E-01	1.20E-01
+	K-40	1460.81	*	10.67	9.67E+00	2.00E+00	2.00E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-7.32E-03	9.81E-02	9.81E-02
		78.34		96.00	-4.12E-02		1.00E-01
+	SC-46	889.25		98.98	-1.65E-02	1.77E-01	1.77E-01
		1120.51		99.90	2.63E-01		2.66E-01
+	V-48	983.52		99.98	-2.12E-01	3.78E-01	3.78E-01
		1312.10		97.50	-4.79E-04		4.59E-01
+	CR-51	320.08		9.83	-1.53E+00	2.27E+00	2.27E+00
+	MN-54	834.83		99.97	1.54E-02	1.40E-01	1.40E-01
+	CO-56	846.75		99.96	9.84E-02	1.71E-01	1.98E-01
		1037.75		14.03	7.37E-01		1.32E+00
		1238.25		67.00	1.53E-04		3.64E-01
		1771.40		15.51	-1.37E-01		1.27E+00
		2587.48		16.90	0.00E+00		1.71E-01
+	CO-57	122.06		85.51	-2.47E-02	1.02E-01	1.02E-01
		136.48		10.60	-4.90E-01		8.28E-01
+	CO-58	810.76		99.40	-4.32E-02	1.60E-01	1.60E-01
+	FE-59	1099.22		56.50	-5.49E-02	3.94E-01	3.94E-01
		1291.56		43.20	-4.19E-02		4.71E-01
+	CO-60	1173.22		100.00	-6.52E-02	1.32E-01	1.32E-01
		1332.49		100.00	2.55E-02		1.39E-01
+	ZN-65	1115.52		50.75	2.74E-01	4.37E-01	4.37E-01
+	GA-67	93.31		35.70	1.17E+02	6.00E+01	6.00E+01
		208.95		2.24	-1.12E+02		1.24E+03
		300.22		16.00	-7.77E+00		2.31E+02
+	SE-75	121.11		16.70	-2.38E-01	1.60E-01	5.61E-01
		136.00		59.50	-9.45E-02		1.60E-01
		264.65		59.80	-7.10E-02		2.25E-01
		279.53		25.20	-4.11E-01		5.17E-01
		400.65		11.40	-2.95E-01		1.29E+00
+	RB-82	776.52		13.00	-9.30E-01	2.22E+00	2.22E+00
+	RB-83	520.41		46.00	-9.11E-02	3.30E-01	3.30E-01
		529.64		30.30	2.45E-01		5.27E-01
		552.65		16.40	-3.42E-01		9.15E-01
+	KR-85	513.99		0.43	5.92E+01	3.80E+01	3.80E+01
+	SR-85	513.99		99.27	3.40E-01	2.19E-01	2.19E-01
+	Y-88	898.02		93.40	-1.19E-01	1.25E-01	1.73E-01
		1836.01		99.38	-9.97E-02		1.25E-01
+	MO-93	263.06		56.72	-1.10E-01	1.31E-01	2.02E-01
		684.67		99.68	-5.71E-02		1.31E-01
		1477.11		99.08	2.19E-02		1.37E-01
+	NB-93M	16.57		9.43	-1.78E+04	7.94E+04	7.94E+04

BP/Castex-Ltd Adm-Apx E-001472

Analysis Report for 2206038-03

R-1 0-6

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-94	702.63	100.00	2.34E-02	1.23E-01	1.47E-01
		871.10	100.00	-1.44E-02		1.23E-01
+	NB-95	765.79	99.81	-1.67E-02	2.42E-01	2.42E-01
+	NB-95M	235.69	25.00	9.58E-01	1.02E+02	1.02E+02
+	ZR-95	724.18	43.70	-1.11E-02	3.11E-01	4.27E-01
		756.72	55.30	-7.88E-02		3.11E-01
+	MO-99	181.06	6.20	-1.55E+02	7.78E+02	1.22E+03
		739.58	12.80	2.80E+02		7.78E+02
		778.00	4.50	-7.16E+02		2.23E+03
+	TC-99M	140.51	89.00	-9.39E-03	9.39E-02	9.39E-02
+	RU-103	497.08	89.00	-9.39E-02	2.20E-01	2.20E-01
+	RU-106	621.84	9.80	-4.12E-01	1.36E+00	1.36E+00
+	AG-108M	433.93	89.90	-4.82E-02	1.45E-01	1.45E-01
		614.37	90.40	-2.71E-02		2.14E-01
		722.95	90.50	-2.93E-02		1.55E-01
+	CD-109	88.03	3.72	3.00E+00	2.41E+00	2.41E+00
+	AG-110M	657.75	93.14	1.51E-01	1.78E-01	1.78E-01
		677.61	10.53	3.67E-02		1.33E+00
		706.67	16.46	1.06E-01		9.83E-01
		763.93	21.98	-1.01E-01		6.96E-01
		884.67	21.98	5.69E-02		6.86E-01
		1384.27	23.94	-3.03E-02		6.19E-01
+	CD-113M	263.70	0.02	-2.71E+02	5.00E+02	5.00E+02
+	SN-113	255.12	1.93	-2.49E+00	2.25E-01	6.66E+00
		391.69	64.90	-9.46E-02		2.25E-01
+	TE-123M	159.00	84.10	6.84E-02	1.28E-01	1.28E-01
+	SB-124	602.71	97.87	-1.95E-02	2.59E-01	2.59E-01
		645.85	7.26	-2.48E-01		2.30E+00
		722.78	11.10	-3.23E-01		1.70E+00
		1691.02	49.00	1.44E-02		2.99E-01
+	I-125	35.49	6.49	-2.35E+01	1.10E+01	1.10E+01
+	SB-125	176.33	6.89	-2.21E-01	4.68E-01	1.42E+00
		427.89	29.33	1.55E-01		4.68E-01
		463.38	10.35	8.30E-01		1.32E+00
		600.56	17.80	-3.86E-01		8.17E-01
		635.90	11.32	7.54E-01		1.20E+00
+	SB-126	414.70	83.30	-2.98E-02	1.49E-01	1.54E-01
		666.33	99.60	-1.46E-02		1.54E-01
		695.00	99.60	8.56E-02		1.49E-01
		720.50	53.80	5.77E-04		2.70E-01
+	SN-126	87.57	37.00	2.21E-01	2.33E-01	2.33E-01
+	SB-127	473.00	25.00	-3.20E+01	3.97E+01	5.48E+01
		685.00	35.70	-1.73E+01		3.97E+01
		783.80	14.70	-2.19E+01		1.03E+02
+	I-129	29.78	57.00	-8.04E+00	3.21E+00	3.21E+00
		33.60	13.20	-1.07E+01		5.66E+00
		39.58	7.52	-5.85E+00		4.01E+00
+	I-131	284.30	6.05	-6.60E+00	1.36E+00	1.75E+01

BP/Castex-Ltd Adm-Apx E-001473

Analysis Report for 2206038-03

R-1 0-6

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		I-131	364.48		81.20	-1.91E-02	1.36E+00	1.36E+00
			636.97		7.26	4.01E+00		1.66E+01
			722.89		1.80	-1.39E+01		7.33E+01
+		TE-132	49.72		13.10	2.69E+01	3.35E+01	2.64E+02
			228.16		88.00	8.56E+00		3.35E+01
+		BA-133	81.00		34.06	-1.33E-01	2.76E-01	2.81E-01
			302.84		18.33	-1.03E-01		7.41E-01
			356.01		62.05	7.71E-01		2.76E-01
+		I-133	529.87		86.30	7.74E+07	1.67E+08	1.67E+08
+		XE-133	81.00		38.00	-3.70E+00	7.84E+00	7.84E+00
+		CS-134	563.23		8.38	4.09E-01	1.89E-01	1.60E+00
			569.32		15.43	-1.55E-01		8.52E-01
			604.70		97.60	-3.86E-03		2.28E-01
			795.84		85.40	1.12E-01		1.89E-01
			801.93		8.73	-5.69E-01		1.63E+00
+		CS-135	268.24		16.00	7.29E-01	7.63E-01	7.63E-01
+	@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41		28.60	1.00E+26		1.00E+26
	@		1678.03		9.54	1.00E+26		1.00E+26
+		CS-136	153.22		7.46	-1.15E+00	4.80E-01	4.67E+00
			163.89		4.61	-1.68E+00		7.89E+00
			176.55		13.56	-4.36E-01		2.80E+00
			273.65		12.66	2.51E+00		3.79E+00
			340.57		48.50	-9.73E-01		1.13E+00
			818.50		99.70	-1.01E-01		4.80E-01
			1048.07		79.60	-1.52E-01		6.44E-01
			1235.34		19.70	9.95E-01		3.83E+00
+		CS-137	661.65	*	85.12	1.54E-01	2.74E-01	2.74E-01
+		LA-138	788.74		34.00	2.46E-01	2.63E-01	4.55E-01
			1435.80		66.00	1.91E-01		2.63E-01
+		CE-139	165.85		80.35	9.87E-03	1.32E-01	1.32E-01
+		BA-140	162.64		6.70	-1.35E+00	2.21E+00	5.64E+00
			304.84		4.50	-4.28E+00		1.17E+01
			423.70		3.20	4.11E+00		1.71E+01
			437.55		2.00	-9.22E+00		2.68E+01
			537.32		25.00	9.22E-01		2.21E+00
+		LA-140	328.77		20.50	-2.13E-01	7.14E-01	2.54E+00
			487.03		45.50	-4.15E-01		1.16E+00
			815.85		23.50	-3.67E-01		2.15E+00
			1596.49		95.49	9.96E-03		7.14E-01
+		CE-141	145.44		48.40	-4.02E-03	3.09E-01	3.09E-01
+		CE-143	57.36		11.80	-3.52E+05	1.72E+05	4.38E+05
			293.26		42.00	2.16E+05		1.72E+05
			664.55		5.20	-2.04E+05		1.48E+06
+		CE-144	133.54		10.80	-1.88E-01	8.10E-01	8.10E-01
+		PM-144	476.78		42.00	5.68E-02	1.46E-01	3.20E-01
			618.01		98.60	5.62E-03		1.46E-01
			696.49		99.49	3.07E-02		1.50E-01
+		PM-145	36.85		21.70	-4.61E+00	1.00E+00	2.00E+00

BP/Castex-Ltd Adm-Apx E-001474

Analysis Report for 2206038-03

R-1 0-6

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-145	37.36	39.70	-1.94E+00	1.00E+00	1.00E+00
		42.30	15.10	-1.40E+00		1.51E+00
		72.40	2.31	-2.02E+00		4.25E+00
+	PM-146	453.90	39.94	-3.29E-01	3.19E-01	3.19E-01
		735.90	14.01	-2.74E-01		9.53E-01
		747.13	13.10	-6.24E-02		1.03E+00
+	ND-147	91.11	28.90	3.76E+00	1.53E+00	1.53E+00
		531.02	13.10	1.93E+00		5.13E+00
+	PM-149	285.90	3.10	-2.38E+03	1.28E+04	1.28E+04
+	EU-152	121.78	20.50	-1.68E-01	3.97E-01	3.97E-01
		244.69	5.40	-1.21E+00		2.97E+00
		344.27	19.13	-2.22E+00		7.61E-01
		778.89	9.10	-5.67E-01		1.55E+00
		964.01	10.40	2.52E+00		2.03E+00
		1085.78	7.22	-6.76E-01		1.98E+00
		1112.02	9.60	-1.23E-01		1.89E+00
		1407.95	14.94	-3.51E-02		1.04E+00
+	GD-153	97.43	31.30	-2.90E-02	2.75E-01	2.75E-01
		103.18	22.20	-7.22E-01		3.56E-01
+	EU-154	123.07	40.50	-3.61E-02	2.03E-01	2.03E-01
		723.30	19.70	-1.36E-01		7.14E-01
		873.19	11.50	-1.21E-01		1.10E+00
		996.32	10.30	7.63E-01		1.49E+00
		1004.76	17.90	2.27E-01		8.13E-01
		1274.45	35.50	-6.24E-02		4.88E-01
+	EU-155	86.50	30.90	2.17E-01	2.83E-01	2.83E-01
		105.30	20.70	-3.86E-01		3.60E-01
+	EU-156	811.77	10.40	-3.70E-01	3.90E+00	3.90E+00
		1153.47	7.20	5.01E+00		7.77E+00
		1230.71	8.90	3.05E+00		7.33E+00
+	HO-166M	184.41	72.60	-4.45E-03	1.51E-01	1.51E-01
		280.45	29.60	-4.16E-01		3.76E-01
		410.94	11.10	-3.56E-01		1.13E+00
		711.69	54.10	-5.04E-02		2.80E-01
+	TM-171	66.72	0.14	-1.21E+00	6.69E+01	6.69E+01
+	HF-172	67.35	5.31	-1.34E-01	7.62E-01	1.79E+00
		125.82	11.30	2.61E-01		7.62E-01
+	LU-172	181.53	20.60	-9.80E-01	3.17E+00	7.70E+00
		900.72	29.81	-1.68E+01		6.93E+00
		1093.66	62.50	-2.49E+00		3.17E+00
+	LU-173	100.72	5.24	-2.19E+00	5.95E-01	1.51E+00
		272.11	21.20	5.18E-01		5.95E-01
+	HF-175	343.40	84.00	-9.11E-01	2.16E-01	2.16E-01
+	LU-176	88.34	13.30	8.08E-01	1.23E-01	6.50E-01
		201.83	86.00	1.89E-02		1.23E-01
		306.78	94.00	-3.62E-02		1.33E-01
+	HF-181	133.02	41.70	-6.96E-02	2.45E-01	3.00E-01
		345.85	17.20	-1.75E+00		1.37E+00
		482.03	82.80	1.33E-01		2.45E-01

BP/Castex-Ltd Adm-Apx E-001475

Analysis Report for 2206038-03

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TA-182	67.75		41.20	-1.96E-02	2.63E-01	2.63E-01
		1121.30		34.90	5.99E-01		7.10E-01
		1189.05		16.23	2.35E-01		1.17E+00
		1221.41		26.98	3.82E-02		7.77E-01
		1231.02		11.44	8.48E-01		2.04E+00
+	IR-192	308.46		29.68	-1.15E-01	3.42E-01	5.22E-01
		468.07		48.10	1.71E-02		3.42E-01
+	HG-203	279.19		77.30	-1.70E-01	2.13E-01	2.13E-01
+	TL-204	374.74		94.11	2.20E-02	1.36E-01	1.40E-01
		899.15		99.16	-2.32E-01		1.36E-01
		911.74		91.10	4.80E-01		2.44E-01
+	BI-207	569.67		97.72	-2.40E-02	1.32E-01	1.32E-01
		1063.62		74.90	1.10E-01		2.15E-01
+	TL-208	583.14	*	30.22	1.48E+00	6.37E-01	6.37E-01
		860.37		4.48	6.78E-01		3.37E+00
		2614.66		35.85	-1.97E-01		7.93E-01
+	BI-210M	262.00		45.00	-2.17E-01	2.49E-01	2.49E-01
		300.00		23.00	6.18E-03		6.47E-01
+	PB-210	46.50		4.25	6.52E-01	3.87E+00	3.87E+00
+	PB-211	404.84		2.90	9.40E-01	4.18E+00	4.47E+00
		831.96		2.90	5.45E-01		4.18E+00
+	BI-212	727.17	*	11.80	6.10E-01	1.07E+00	1.07E+00
		1620.62		2.75	3.62E+00		6.03E+00
+	PB-212	238.63	*	44.60	1.72E+00	3.95E-01	3.95E-01
		300.09		3.41	-1.44E-01		4.27E+00
+	BI-214	609.31	*	46.30	1.30E+00	5.10E-01	5.10E-01
		1120.29	*	15.10	1.52E+00		2.10E+00
		1764.49	*	15.80	1.16E+00		1.14E+00
		2204.22		4.98	2.55E+00		3.95E+00
+	PB-214	295.21	*	19.19	1.09E+00	5.25E-01	1.07E+00
		351.92	*	37.19	1.44E+00		5.25E-01
+	RN-219	401.80		6.50	-2.57E-02	1.97E+00	1.97E+00
+	RA-223	323.87		3.88	-8.15E-02	3.13E+00	3.13E+00
+	RA-224	240.98	*	3.95	1.95E+01	4.46E+00	4.46E+00
+	RA-225	40.00		31.00	-2.85E+00	3.11E+00	3.11E+00
+	RA-226	186.21	*	3.28	3.01E+00	3.88E+00	3.88E+00
+	TH-227	50.10		8.40	-1.45E-01	1.49E+00	1.58E+00
		236.00		11.50	1.40E-02		1.49E+00
		256.20		6.30	-7.80E-01		1.73E+00
+	AC-228	338.32	*	11.40	1.37E+00	8.58E-01	1.45E+00
		911.07	*	27.70	1.21E+00		8.58E-01
		969.11		16.60	-1.35E-01		1.18E+00
+	TH-230	48.43		16.90	1.09E-01	8.61E-01	8.61E-01
		62.85		4.60	-2.07E+00		2.01E+00
		67.67		0.37	-1.87E+00		2.50E+01
+	PA-231	283.67		1.60	-2.17E+00	5.87E+00	6.99E+00
		302.67		2.30	-8.13E-01		5.87E+00
+	TH-231	25.64		14.70	-1.80E+02	1.41E+00	5.03E+01

Analysis Report for 2206038-03

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TH-231	84.21		6.40	-9.95E-02	1.41E+00	1.41E+00
+	PA-233	311.98		38.60	-3.91E-01	5.87E-01	5.87E-01
+	PA-234	131.20		20.40	1.68E-01	4.25E-01	4.25E-01
		733.99		8.80	1.01E-01		1.53E+00
		946.00		12.00	7.42E-02		1.07E+00
+	PA-234M	1001.03		0.92	5.64E+00	1.51E+01	1.51E+01
+	TH-234	63.29		3.80	-1.47E+00	2.43E+00	2.43E+00
+	U-235	143.76		10.50	3.77E-01	8.14E-01	8.14E-01
		163.35		4.70	-4.17E-01		1.96E+00
		205.31		4.70	-1.44E-01		2.31E+00
+	NP-237	86.50		12.60	5.26E-01	6.87E-01	6.87E-01
+	NP-239	106.10		22.70	-6.97E+02	6.90E+02	6.90E+02
		228.18		10.70	5.88E+02		2.31E+03
		277.60		14.10	-5.52E+02		1.76E+03
+	AM-241	59.54		35.90	3.29E-02	2.73E-01	2.73E-01
+	AM-243	74.67	*	66.00	4.98E-01	1.57E-01	1.57E-01
+	CM-243	209.75		3.29	2.06E-01	8.33E-01	3.34E+00
		228.14		10.60	2.79E-01		1.10E+00
		277.60		14.00	-2.62E-01		8.33E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	1.76E+00	1.76E+00	9.31E-01	8.46E-01
NA-22	1274.54	99.94	1.76E-01	1.76E-01	-2.25E-02	8.10E-02
NA-24	1368.53	99.99	1.70E-01	9.99E-02	4.01E-03	7.76E-02

BP/Castex-Ltd Adm-Apx E-001477

Analysis Report for 2206038-03

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	NA-24	2754.09		99.86	9.99E-02	9.99E-02	2.08E-02	3.87E-02
	AL-26	1808.65		99.76	1.20E-01	1.20E-01	2.76E-03	5.08E-02
+	K-40	1460.81	*	10.67	2.00E+00	2.00E+00	9.67E+00	9.27E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	9.81E-02	9.81E-02	-7.32E-03	4.85E-02
		78.34		96.00	1.00E-01		-4.12E-02	4.96E-02
	SC-46	889.25		98.98	1.77E-01	1.77E-01	-1.65E-02	8.24E-02
		1120.51		99.90	2.66E-01		2.63E-01	1.26E-01
	V-48	983.52		99.98	3.78E-01	3.78E-01	-2.12E-01	1.73E-01
		1312.10		97.50	4.59E-01		-4.79E-04	2.07E-01
	CR-51	320.08		9.83	2.27E+00	2.27E+00	-1.53E+00	1.10E+00
	MN-54	834.83		99.97	1.40E-01	1.40E-01	1.54E-02	6.55E-02
	CO-56	846.75		99.96	1.98E-01	1.71E-01	9.84E-02	9.31E-02
		1037.75		14.03	1.32E+00		7.37E-01	6.08E-01
		1238.25		67.00	3.64E-01		1.53E-04	1.70E-01
		1771.40		15.51	1.27E+00		-1.37E-01	5.57E-01
		2587.48		16.90	1.71E-01		0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.02E-01	1.02E-01	-2.47E-02	5.00E-02
		136.48		10.60	8.28E-01		-4.90E-01	4.07E-01
	CO-58	810.76		99.40	1.60E-01	1.60E-01	-4.32E-02	7.44E-02
	FE-59	1099.22		56.50	3.94E-01	3.94E-01	-5.49E-02	1.82E-01
		1291.56		43.20	4.71E-01		-4.19E-02	2.12E-01
	CO-60	1173.22		100.00	1.32E-01	1.32E-01	-6.52E-02	5.99E-02
		1332.49		100.00	1.39E-01		2.55E-02	6.23E-02
	ZN-65	1115.52		50.75	4.37E-01	4.37E-01	2.74E-01	2.06E-01
	GA-67	93.31		35.70	6.00E+01	6.00E+01	1.17E+02	2.96E+01
		208.95		2.24	1.24E+03		-1.12E+02	6.05E+02
		300.22		16.00	2.31E+02		-7.77E+00	1.13E+02
	SE-75	121.11		16.70	5.61E-01	1.60E-01	-2.38E-01	2.76E-01
		136.00		59.50	1.60E-01		-9.45E-02	7.85E-02
		264.65		59.80	2.25E-01		-7.10E-02	1.10E-01
		279.53		25.20	5.17E-01		-4.11E-01	2.51E-01
		400.65		11.40	1.29E+00		-2.95E-01	6.21E-01
	RB-82	776.52		13.00	2.22E+00	2.22E+00	-9.30E-01	1.04E+00
	RB-83	520.41		46.00	3.30E-01	3.30E-01	-9.11E-02	1.57E-01
		529.64		30.30	5.27E-01		2.45E-01	2.52E-01
		552.65		16.40	9.15E-01		-3.42E-01	4.35E-01
	KR-85	513.99		0.43	3.80E+01	3.80E+01	5.92E+01	1.83E+01
	SR-85	513.99		99.27	2.19E-01	2.19E-01	3.40E-01	1.05E-01
	Y-88	898.02		93.40	1.73E-01	1.25E-01	-1.19E-01	8.03E-02
		1836.01		99.38	1.25E-01		-9.97E-02	5.11E-02
	MO-93	263.06		56.72	2.02E-01	1.31E-01	-1.10E-01	9.85E-02
		684.67		99.68	1.31E-01		-5.71E-02	6.20E-02
		1477.11		99.08	1.37E-01		2.19E-02	6.07E-02
	NB-93M	16.57		9.43	7.94E+04	7.94E+04	-1.78E+04	3.96E+04
	NB-94	702.63		100.00	1.47E-01	1.23E-01	2.34E-02	6.99E-02
		871.10		100.00	1.23E-01		-1.44E-02	5.66E-02
	NB-95	765.79		99.81	2.42E-01	2.42E-01	-1.67E-02	1.14E-01
	NB-95M	235.69		25.00	1.02E+02	1.02E+02	9.58E-01	5.01E+01
	ZR-95	724.18		43.70	4.27E-01	3.11E-01	-1.11E-02	2.02E-01
		756.72		55.30	3.11E-01		-7.88E-02	1.46E-01
	MO-99	181.06		6.20	1.22E+03	7.78E+02	-1.55E+02	5.98E+02
		739.58		12.80	7.78E+02		2.80E+02	3.67E+02

Analysis Report for 2206038-03

R-1 0-6

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
MO-99	778.00	4.50	2.23E+03	7.78E+02	-7.16E+02	1.05E+03
TC-99M	140.51	89.00	9.39E-02	9.39E-02	-9.39E-03	4.61E-02
RU-103	497.08	89.00	2.20E-01	2.20E-01	-9.39E-02	1.05E-01
RU-106	621.84	9.80	1.36E+00	1.36E+00	-4.12E-01	6.44E-01
AG-108M	433.93	89.90	1.45E-01	1.45E-01	-4.82E-02	6.97E-02
	614.37	90.40	2.14E-01		-2.71E-02	1.03E-01
	722.95	90.50	1.55E-01		-2.93E-02	7.30E-02
CD-109	88.03	3.72	2.41E+00	2.41E+00	3.00E+00	1.19E+00
AG-110M	657.75	93.14	1.78E-01	1.78E-01	1.51E-01	8.48E-02
	677.61	10.53	1.33E+00		3.67E-02	6.25E-01
	706.67	16.46	9.83E-01		1.06E-01	4.67E-01
	763.93	21.98	6.96E-01		-1.01E-01	3.28E-01
	884.67	21.98	6.86E-01		5.69E-02	3.20E-01
	1384.27	23.94	6.19E-01		-3.03E-02	2.77E-01
CD-113M	263.70	0.02	5.00E+02	5.00E+02	-2.71E+02	2.43E+02
SN-113	255.12	1.93	6.66E+00	2.25E-01	-2.49E+00	3.24E+00
	391.69	64.90	2.25E-01		-9.46E-02	1.09E-01
TE-123M	159.00	84.10	1.28E-01	1.28E-01	6.84E-02	6.27E-02
SB-124	602.71	97.87	2.59E-01	2.59E-01	-1.95E-02	1.25E-01
	645.85	7.26	2.30E+00		-2.48E-01	1.08E+00
	722.78	11.10	1.70E+00		-3.23E-01	8.03E-01
	1691.02	49.00	2.99E-01		1.44E-02	1.25E-01
I-125	35.49	6.49	1.10E+01	1.10E+01	-2.35E+01	5.47E+00
SB-125	176.33	6.89	1.42E+00	4.68E-01	-2.21E-01	6.95E-01
	427.89	29.33	4.68E-01		1.55E-01	2.26E-01
	463.38	10.35	1.32E+00		8.30E-01	6.34E-01
	600.56	17.80	8.17E-01		-3.86E-01	3.90E-01
	635.90	11.32	1.20E+00		7.54E-01	5.71E-01
SB-126	414.70	83.30	1.54E-01	1.49E-01	-2.98E-02	7.42E-02
	666.33	99.60	1.54E-01		-1.46E-02	7.34E-02
	695.00	99.60	1.49E-01		8.56E-02	7.07E-02
	720.50	53.80	2.70E-01		5.77E-04	1.28E-01
SN-126	87.57	37.00	2.33E-01	2.33E-01	2.21E-01	1.15E-01
SB-127	473.00	25.00	5.48E+01	3.97E+01	-3.20E+01	2.62E+01
	685.00	35.70	3.97E+01		-1.73E+01	1.88E+01
	783.80	14.70	1.03E+02		-2.19E+01	4.83E+01
I-129	29.78	57.00	3.21E+00	3.21E+00	-8.04E+00	1.60E+00
	33.60	13.20	5.66E+00		-1.07E+01	2.81E+00
	39.58	7.52	4.01E+00		-5.85E+00	1.99E+00
I-131	284.30	6.05	1.75E+01	1.36E+00	-6.60E+00	8.50E+00
	364.48	81.20	1.36E+00		-1.91E-02	6.55E-01
	636.97	7.26	1.66E+01		4.01E+00	7.83E+00
	722.89	1.80	7.33E+01		-1.39E+01	3.46E+01
TE-132	49.72	13.10	2.64E+02	3.35E+01	2.69E+01	1.31E+02
	228.16	88.00	3.35E+01		8.56E+00	1.64E+01
BA-133	81.00	34.06	2.81E-01	2.76E-01	-1.33E-01	1.39E-01
	302.84	18.33	7.41E-01		-1.03E-01	3.61E-01
	356.01	62.05	2.76E-01		7.71E-01	1.35E-01
I-133	529.87	86.30	1.67E+08	1.67E+08	7.74E+07	7.96E+07
XE-133	81.00	38.00	7.84E+00	7.84E+00	-3.70E+00	3.88E+00
CS-134	563.23	8.38	1.60E+00	1.89E-01	4.09E-01	7.62E-01
	569.32	15.43	8.52E-01		-1.55E-01	4.05E-01
	604.70	97.60	2.28E-01		-3.86E-03	1.10E-01

BP/Castex-Ltd Adm-Apx E-001479

Analysis Report for 2206038-03

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	795.84		85.40	1.89E-01	1.89E-01	1.12E-01	8.94E-02
		801.93		8.73	1.63E+00		-5.69E-01	7.64E-01
	CS-135	268.24		16.00	7.63E-01	7.63E-01	7.29E-01	3.72E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	4.67E+00	4.80E-01	-1.15E+00	2.29E+00
		163.89		4.61	7.89E+00		-1.68E+00	3.87E+00
		176.55		13.56	2.80E+00		-4.36E-01	1.37E+00
		273.65		12.66	3.79E+00		2.51E+00	1.85E+00
		340.57		48.50	1.13E+00		-9.73E-01	5.50E-01
		818.50		99.70	4.80E-01		-1.01E-01	2.23E-01
		1048.07		79.60	6.44E-01		-1.52E-01	2.94E-01
		1235.34		19.70	3.83E+00		9.95E-01	1.78E+00
+	CS-137	661.65	*	85.12	2.74E-01	2.74E-01	1.54E-01	1.33E-01
	LA-138	788.74		34.00	4.55E-01	2.63E-01	2.46E-01	2.15E-01
		1435.80		66.00	2.63E-01		1.91E-01	1.20E-01
	CE-139	165.85		80.35	1.32E-01	1.32E-01	9.87E-03	6.47E-02
	BA-140	162.64		6.70	5.64E+00	2.21E+00	-1.35E+00	2.77E+00
		304.84		4.50	1.17E+01		-4.28E+00	5.69E+00
		423.70		3.20	1.71E+01		4.11E+00	8.26E+00
		437.55		2.00	2.68E+01		-9.22E+00	1.29E+01
		537.32		25.00	2.21E+00		9.22E-01	1.06E+00
	LA-140	328.77		20.50	2.54E+00	7.14E-01	-2.13E-01	1.23E+00
		487.03		45.50	1.16E+00		-4.15E-01	5.55E-01
		815.85		23.50	2.15E+00		-3.67E-01	9.98E-01
		1596.49		95.49	7.14E-01		9.96E-03	3.21E-01
	CE-141	145.44		48.40	3.09E-01	3.09E-01	-4.02E-03	1.51E-01
	CE-143	57.36		11.80	4.38E+05	1.72E+05	-3.52E+05	2.17E+05
		293.26		42.00	1.72E+05		2.16E+05	8.38E+04
		664.55		5.20	1.48E+06		-2.04E+05	7.05E+05
	CE-144	133.54		10.80	8.10E-01	8.10E-01	-1.88E-01	3.98E-01
	PM-144	476.78		42.00	3.20E-01	1.46E-01	5.68E-02	1.53E-01
		618.01		98.60	1.46E-01		5.62E-03	6.96E-02
		696.49		99.49	1.50E-01		3.07E-02	7.11E-02
	PM-145	36.85		21.70	2.00E+00	1.00E+00	-4.61E+00	9.90E-01
		37.36		39.70	1.00E+00		-1.94E+00	4.98E-01
		42.30		15.10	1.51E+00		-1.40E+00	7.47E-01
		72.40		2.31	4.25E+00		-2.02E+00	2.10E+00
	PM-146	453.90		39.94	3.19E-01	3.19E-01	-3.29E-01	1.53E-01
		735.90		14.01	9.53E-01		-2.74E-01	4.48E-01
		747.13		13.10	1.03E+00		-6.24E-02	4.86E-01
	ND-147	91.11		28.90	1.53E+00	1.53E+00	3.76E+00	7.56E-01
		531.02		13.10	5.13E+00		1.93E+00	2.45E+00
	PM-149	285.90		3.10	1.28E+04	1.28E+04	-2.38E+03	6.20E+03
	EU-152	121.78		20.50	3.97E-01	3.97E-01	-1.68E-01	1.95E-01
		244.69		5.40	2.97E+00		-1.21E+00	1.46E+00
		344.27		19.13	7.61E-01		-2.22E+00	3.70E-01
		778.89		9.10	1.55E+00		-5.67E-01	7.29E-01
		964.01		10.40	2.03E+00		2.52E+00	9.64E-01
		1085.78		7.22	1.98E+00		-6.76E-01	9.10E-01
		1112.02		9.60	1.89E+00		-1.23E-01	8.84E-01
		1407.95		14.94	1.04E+00		-3.51E-02	4.70E-01

Analysis Report for 2206038-03

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	GD-153	97.43		31.30	2.75E-01	2.75E-01	-2.90E-02	1.36E-01
		103.18		22.20	3.56E-01		-7.22E-01	1.75E-01
	EU-154	123.07		40.50	2.03E-01	2.03E-01	-3.61E-02	9.99E-02
		723.30		19.70	7.14E-01		-1.36E-01	3.37E-01
		873.19		11.50	1.10E+00		-1.21E-01	5.11E-01
		996.32		10.30	1.49E+00		7.63E-01	6.96E-01
		1004.76		17.90	8.13E-01		2.27E-01	3.77E-01
		1274.45		35.50	4.88E-01		-6.24E-02	2.25E-01
	EU-155	86.50		30.90	2.83E-01	2.83E-01	2.17E-01	1.40E-01
		105.30		20.70	3.60E-01		-3.86E-01	1.77E-01
	EU-156	811.77		10.40	3.90E+00	3.90E+00	-3.70E-01	1.81E+00
		1153.47		7.20	7.77E+00		5.01E+00	3.61E+00
		1230.71		8.90	7.33E+00		3.05E+00	3.43E+00
	HO-166M	184.41		72.60	1.51E-01	1.51E-01	-4.45E-03	7.40E-02
		280.45		29.60	3.76E-01		-4.16E-01	1.83E-01
		410.94		11.10	1.13E+00		-3.56E-01	5.46E-01
		711.69		54.10	2.80E-01		-5.04E-02	1.33E-01
	TM-171	66.72		0.14	6.69E+01	6.69E+01	-1.21E+00	3.31E+01
	HF-172	67.35		5.31	1.79E+00	7.62E-01	-1.34E-01	8.87E-01
		125.82		11.30	7.62E-01		2.61E-01	3.75E-01
	LU-172	181.53		20.60	7.70E+00	3.17E+00	-9.80E-01	3.78E+00
		900.72		29.81	6.93E+00		-1.68E+01	3.23E+00
		1093.66		62.50	3.17E+00		-2.49E+00	1.45E+00
	LU-173	100.72		5.24	1.51E+00	5.95E-01	-2.19E+00	7.46E-01
		272.11		21.20	5.95E-01		5.18E-01	2.90E-01
	HF-175	343.40		84.00	2.16E-01	2.16E-01	-9.11E-01	1.05E-01
	LU-176	88.34		13.30	6.50E-01	1.23E-01	8.08E-01	3.21E-01
		201.83		86.00	1.23E-01		1.89E-02	6.01E-02
		306.78		94.00	1.33E-01		-3.62E-02	6.48E-02
	HF-181	133.02		41.70	3.00E-01	2.45E-01	-6.96E-02	1.47E-01
		345.85		17.20	1.37E+00		-1.75E+00	6.69E-01
		482.03		82.80	2.45E-01		1.33E-01	1.18E-01
	TA-182	67.75		41.20	2.63E-01	2.63E-01	-1.96E-02	1.30E-01
		1121.30		34.90	7.10E-01		5.99E-01	3.35E-01
		1189.05		16.23	1.17E+00		2.35E-01	5.40E-01
		1221.41		26.98	7.77E-01		3.82E-02	3.61E-01
		1231.02		11.44	2.04E+00		8.48E-01	9.51E-01
	IR-192	308.46		29.68	5.22E-01	3.42E-01	-1.15E-01	2.53E-01
		468.07		48.10	3.42E-01		1.71E-02	1.64E-01
	HG-203	279.19		77.30	2.13E-01	2.13E-01	-1.70E-01	1.03E-01
	TL-204	374.74		94.11	1.40E-01	1.36E-01	2.20E-02	6.78E-02
		899.15		99.16	1.36E-01		-2.32E-01	6.31E-02
		911.74		91.10	2.44E-01		4.80E-01	1.17E-01
	BI-207	569.67		97.72	1.32E-01	1.32E-01	-2.40E-02	6.26E-02
		1063.62		74.90	2.15E-01		1.10E-01	1.00E-01
+	TL-208	583.14	*	30.22	6.37E-01	6.37E-01	1.48E+00	3.08E-01
		860.37		4.48	3.37E+00		6.78E-01	1.58E+00
		2614.66		35.85	7.93E-01		-1.97E-01	3.65E-01
	BI-210M	262.00		45.00	2.49E-01	2.49E-01	-2.17E-01	1.21E-01
		300.00		23.00	6.47E-01		6.18E-03	3.16E-01
	PB-210	46.50		4.25	3.87E+00	3.87E+00	6.52E-01	1.92E+00
	PB-211	404.84		2.90	4.47E+00	4.18E+00	9.40E-01	2.15E+00
		831.96		2.90	4.18E+00		5.45E-01	1.94E+00

BP/Castex-Ltd Adm-Apx E-001481

Analysis Report for 2206038-03

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BI-212	727.17	*	11.80	1.07E+00	1.07E+00	6.10E-01	5.01E-01
		1620.62		2.75	6.03E+00		3.62E+00	2.71E+00
+	PB-212	238.63	*	44.60	3.95E-01	3.95E-01	1.72E+00	1.94E-01
		300.09		3.41	4.27E+00		-1.44E-01	2.09E+00
+	BI-214	609.31	*	46.30	5.10E-01	5.10E-01	1.30E+00	2.48E-01
		1120.29	*	15.10	2.10E+00		1.52E+00	1.01E+00
		1764.49	*	15.80	1.14E+00		1.16E+00	5.11E-01
		2204.22		4.98	3.95E+00		2.55E+00	1.76E+00
+	PB-214	295.21	*	19.19	1.07E+00	5.25E-01	1.09E+00	5.25E-01
		351.92	*	37.19	5.25E-01		1.44E+00	2.57E-01
	RN-219	401.80		6.50	1.97E+00	1.97E+00	-2.57E-02	9.51E-01
	RA-223	323.87		3.88	3.13E+00	3.13E+00	-8.15E-02	1.51E+00
+	RA-224	240.98	*	3.95	4.46E+00	4.46E+00	1.95E+01	2.20E+00
	RA-225	40.00		31.00	3.11E+00	3.11E+00	-2.85E+00	1.54E+00
+	RA-226	186.21	*	3.28	3.88E+00	3.88E+00	3.01E+00	1.91E+00
	TH-227	50.10		8.40	1.58E+00	1.49E+00	-1.45E-01	7.82E-01
		236.00		11.50	1.49E+00		1.40E-02	7.34E-01
		256.20		6.30	1.73E+00		-7.80E-01	8.41E-01
+	AC-228	338.32	*	11.40	1.45E+00	8.58E-01	1.37E+00	7.07E-01
		911.07	*	27.70	8.58E-01		1.21E+00	4.12E-01
		969.11		16.60	1.18E+00		-1.35E-01	5.59E-01
	TH-230	48.43		16.90	8.61E-01	8.61E-01	1.09E-01	4.26E-01
		62.85		4.60	2.01E+00		-2.07E+00	9.95E-01
		67.67		0.37	2.50E+01		-1.87E+00	1.24E+01
	PA-231	283.67		1.60	6.99E+00	5.87E+00	-2.17E+00	3.39E+00
		302.67		2.30	5.87E+00		-8.13E-01	2.86E+00
	TH-231	25.64		14.70	5.03E+01	1.41E+00	-1.80E+02	2.50E+01
		84.21		6.40	1.41E+00		-9.95E-02	6.95E-01
	PA-233	311.98		38.60	5.87E-01	5.87E-01	-3.91E-01	2.84E-01
	PA-234	131.20		20.40	4.25E-01	4.25E-01	1.68E-01	2.09E-01
		733.99		8.80	1.53E+00		1.01E-01	7.22E-01
		946.00		12.00	1.07E+00		7.42E-02	4.91E-01
	PA-234M	1001.03		0.92	1.51E+01	1.51E+01	5.64E+00	6.99E+00
	TH-234	63.29		3.80	2.43E+00	2.43E+00	-1.47E+00	1.20E+00
	U-235	143.76		10.50	8.14E-01	8.14E-01	3.77E-01	4.00E-01
		163.35		4.70	1.96E+00		-4.17E-01	9.59E-01
		205.31		4.70	2.31E+00		-1.44E-01	1.13E+00
	NP-237	86.50		12.60	6.87E-01	6.87E-01	5.26E-01	3.40E-01
	NP-239	106.10		22.70	6.90E+02	6.90E+02	-6.97E+02	3.40E+02
		228.18		10.70	2.31E+03		5.88E+02	1.13E+03
		277.60		14.10	1.76E+03		-5.52E+02	8.55E+02
	AM-241	59.54		35.90	2.73E-01	2.73E-01	3.29E-02	1.35E-01
+	AM-243	74.67	*	66.00	1.57E-01	1.57E-01	4.98E-01	7.77E-02
	CM-243	209.75		3.29	3.34E+00	8.33E-01	2.06E-01	1.64E+00
		228.14		10.60	1.10E+00		2.79E-01	5.35E-01
		277.60		14.00	8.33E-01		-2.62E-01	4.05E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-001482

Analysis Report for 2206038-03
R-1 0-6

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-1 0-6

Elapsed Live time: 3600
Elapsed Real Time: 3670

Channel								
1:	8	2	6	24	27	134	600	792
9:	529	5944	4883	3800	3119	2622	2236	1882
17:	1731	1443	1240	1138	1069	930	848	749
25:	742	687	617	583	545	507	457	478
33:	432	400	356	370	355	344	296	294
41:	295	283	275	265	292	239	302	286
49:	241	211	238	204	219	248	203	167
57:	185	202	197	189	191	209	211	221
65:	239	184	196	189	189	178	177	207
73:	180	276	301	328	371	341	282	196
81:	149	146	164	161	140	169	185	184
89:	169	193	187	170	168	176	142	143
97:	110	105	112	103	83	94	90	85
105:	106	105	89	83	82	97	88	91
113:	94	83	88	104	86	87	71	79
121:	67	71	89	92	71	90	80	98
129:	110	87	99	95	85	71	78	75
137:	66	75	72	69	84	72	89	106
145:	75	59	80	68	69	76	66	61
153:	77	76	86	71	76	63	72	61
161:	69	70	65	69	72	75	73	53
169:	56	63	69	57	65	54	67	54
177:	53	66	69	53	72	55	55	74
185:	69	101	113	90	76	55	48	65
193:	60	51	49	55	58	61	62	70
201:	51	48	39	56	55	43	61	44
209:	58	78	59	54	54	49	48	38
217:	47	47	49	35	46	50	54	52
225:	38	49	52	56	51	50	50	42
233:	61	54	36	67	117	169	188	220
241:	155	124	63	50	37	44	45	44
249:	29	43	28	35	43	35	37	34
257:	38	39	32	31	32	27	31	44
265:	28	40	29	43	47	38	46	47
273:	36	44	33	28	33	41	24	24
281:	20	33	29	36	23	21	37	36
289:	26	26	42	26	41	53	75	74
297:	52	51	41	43	40	43	37	35
305:	31	29	27	32	25	24	25	32
313:	26	29	24	19	24	19	24	26
321:	30	22	32	25	24	29	20	27
329:	28	34	30	27	32	25	30	33
337:	38	50	46	33	33	35	31	26
345:	17	24	14	17	36	45	79	100
353:	93	68	34	30	22	26	19	19
361:	19	17	10	21	15	26	17	18

BP/Castex-Ltd Adm-Apx E-001484

369:	22	25	22	20	20	33	26	29

Sample Title: R-1 0-6

Channel								
377:	23	20	18	17	21	20	22	29
385:	25	25	21	15	21	15	19	13
393:	27	19	13	16	29	17	19	17
401:	23	20	21	21	17	15	17	19
409:	18	15	31	18	14	24	15	11
417:	18	19	15	20	19	19	23	21
425:	22	18	17	16	22	17	22	19
433:	15	17	15	14	20	16	14	17
441:	23	15	21	16	23	24	16	12
449:	16	13	18	13	14	12	21	17
457:	13	13	19	13	17	19	32	15
465:	13	13	15	14	12	16	10	8
473:	11	13	9	11	22	13	24	15
481:	14	16	15	19	10	10	8	15
489:	23	10	12	8	16	14	13	13
497:	11	11	7	10	13	9	19	13
505:	16	14	13	16	27	30	43	34
513:	25	15	14	18	12	12	9	10
521:	11	6	5	15	13	10	7	17
529:	8	11	7	20	12	8	7	18
537:	15	10	8	11	14	10	18	11
545:	10	7	15	9	7	3	13	6
553:	12	10	6	7	12	10	14	8
561:	9	15	11	9	12	11	8	5
569:	12	15	9	9	11	12	9	9
577:	11	16	9	24	23	48	51	55
585:	26	16	14	13	5	14	13	9
593:	15	13	3	6	9	10	10	5
601:	13	12	7	8	19	16	30	58
609:	64	65	41	19	10	12	13	9
617:	9	4	8	7	6	10	14	8
625:	12	13	1	7	10	18	6	11
633:	6	5	10	10	4	8	6	7
641:	11	14	6	6	1	8	6	7
649:	7	7	9	6	10	10	8	3
657:	8	10	9	9	17	19	17	20
665:	4	4	10	11	5	6	10	12
673:	6	8	11	5	8	6	5	9
681:	5	9	6	6	9	6	5	7
689:	11	13	4	15	9	10	7	6
697:	13	6	13	5	9	5	8	5
705:	11	16	14	6	6	12	10	14
713:	5	8	15	9	2	4	10	11
721:	4	12	5	4	7	13	12	7
729:	8	3	3	10	6	10	8	7
737:	12	7	3	5	7	4	7	7
745:	10	9	8	4	6	8	5	5
753:	5	8	5	2	12	12	3	4
761:	7	6	3	5	8	7	8	8
769:	7	14	8	9	11	6	7	7
777:	9	6	6	8	4	2	6	7
785:	7	9	8	4	6	10	6	6
793:	6	10	18	12	6	3	6	4

BP/Castex-Ltd Adm-Apx E-001485

801:	9	9	2	7	4	7	6	4

Sample Title: R-1 0-6

Channel								
809:	2	5	8	6	10	2	1	3
817:	2	4	2	8	4	4	7	4
825:	6	4	3	7	5	6	5	3
833:	5	4	4	4	3	2	8	9
841:	8	12	6	7	2	5	4	11
849:	8	8	9	5	2	3	2	4
857:	9	7	8	11	8	5	11	7
865:	3	4	5	7	4	5	5	5
873:	0	2	3	4	4	5	5	4
881:	5	8	4	6	4	6	4	5
889:	6	5	4	7	6	4	5	5
897:	8	4	4	5	4	1	3	4
905:	4	6	10	11	21	29	23	15
913:	15	8	4	5	6	7	3	3
921:	3	3	10	4	6	1	3	2
929:	3	4	8	5	12	5	8	4
937:	6	4	0	2	9	2	1	5
945:	4	3	3	1	6	2	5	4
953:	2	2	7	5	7	5	5	11
961:	7	12	5	7	11	14	12	17
969:	14	10	9	2	3	2	5	2
977:	6	2	2	0	5	6	3	1
985:	2	3	5	3	4	3	4	6
993:	6	4	5	5	3	5	6	6
1001:	6	3	3	2	0	6	0	1
1009:	6	6	9	3	4	3	4	0
1017:	4	4	4	2	2	1	2	3
1025:	4	3	6	3	2	2	2	4
1033:	4	7	5	3	7	2	3	4
1041:	4	0	1	5	3	0	2	4
1049:	4	3	1	9	3	4	1	5
1057:	3	7	8	5	5	4	7	6
1065:	5	4	2	3	1	3	5	2
1073:	4	1	5	8	8	4	2	0
1081:	5	3	2	4	4	2	7	2
1089:	2	5	4	4	1	3	4	4
1097:	4	2	1	2	6	7	6	2
1105:	5	4	4	4	5	3	5	3
1113:	4	5	4	5	12	12	12	7
1121:	17	3	4	8	5	5	2	6
1129:	4	4	3	8	4	5	3	3
1137:	3	3	3	2	3	4	2	3
1145:	2	2	3	5	3	3	4	3
1153:	5	9	7	5	3	3	4	3
1161:	1	3	4	1	1	5	3	1
1169:	3	2	4	4	0	3	2	4
1177:	2	1	2	4	2	9	3	5
1185:	3	3	3	3	2	3	5	2
1193:	7	3	6	2	6	2	2	5
1201:	6	3	5	6	3	2	6	4
1209:	4	4	4	4	2	3	5	2
1217:	3	4	4	6	6	3	6	5
1225:	5	3	4	6	7	4	3	8

BP/Castex-Ltd Adm-Apx E-001486

1233:	5	6	6	8	4	4	2	4

Sample Title: R-1 0-6

Channel								
1241:	2	5	6	1	3	6	5	4
1249:	2	4	2	3	4	6	1	1
1257:	2	3	2	1	2	5	1	1
1265:	6	6	4	3	3	2	3	9
1273:	4	2	0	3	1	5	5	7
1281:	4	2	5	3	1	4	2	2
1289:	4	0	1	4	3	4	1	1
1297:	0	4	3	2	1	2	1	3
1305:	2	1	2	1	3	5	0	2
1313:	3	2	1	2	4	4	5	4
1321:	1	4	0	0	2	2	2	2
1329:	0	3	2	2	1	2	1	6
1337:	1	2	0	3	2	2	4	2
1345:	1	2	5	1	4	0	1	2
1353:	3	2	2	3	2	0	2	2
1361:	1	1	6	3	2	3	3	1
1369:	4	4	1	3	3	5	4	2
1377:	5	7	2	2	5	0	0	0
1385:	0	1	3	3	0	1	2	0
1393:	1	1	2	2	2	2	2	2
1401:	1	3	6	1	3	3	1	2
1409:	3	2	3	1	0	2	3	3
1417:	2	3	4	1	0	4	3	1
1425:	2	2	1	1	0	2	1	1
1433:	3	3	3	4	2	5	2	2
1441:	3	6	0	2	2	1	1	2
1449:	2	2	1	2	2	3	5	10
1457:	24	39	44	30	25	7	4	2
1465:	3	0	1	2	2	0	2	0
1473:	1	1	2	1	3	3	0	3
1481:	1	1	2	0	2	1	2	3
1489:	0	1	1	3	1	2	4	0
1497:	1	2	0	1	0	2	0	4
1505:	0	2	1	1	1	2	0	4
1513:	2	2	0	4	2	0	0	0
1521:	0	3	1	0	2	1	1	2
1529:	1	2	2	1	2	1	2	3
1537:	1	0	2	2	3	0	0	1
1545:	2	4	1	2	1	2	2	1
1553:	2	2	2	2	1	3	2	2
1561:	2	0	0	0	1	0	0	1
1569:	0	0	0	2	1	1	0	1
1577:	2	1	1	3	4	1	0	1
1585:	2	6	3	1	6	6	5	5
1593:	1	1	2	1	0	1	0	1
1601:	3	1	2	0	2	1	0	4
1609:	2	1	0	0	1	1	3	2
1617:	1	3	1	3	4	3	1	2
1625:	0	2	0	0	2	2	1	1
1633:	0	3	3	1	1	1	1	0
1641:	0	0	0	2	0	1	3	1
1649:	1	0	0	1	0	4	0	2
1657:	0	1	3	3	0	0	0	0

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1665:	1	2	0	0	2	0	1	2

Sample Title: R-1 0-6

Channel								
1673:	2	1	1	0	0	2	1	1
1681:	0	1	0	1	1	0	1	0
1689:	2	0	0	0	2	2	0	0
1697:	1	1	2	0	0	1	0	2
1705:	1	2	3	0	0	1	0	1
1713:	0	0	1	1	1	1	1	0
1721:	2	2	1	2	2	1	1	5
1729:	1	1	0	1	1	1	0	0
1737:	2	1	1	1	0	2	1	0
1745:	0	2	0	2	2	1	0	1
1753:	0	1	2	2	1	1	1	2
1761:	4	6	8	5	2	3	0	2
1769:	0	4	1	0	3	1	1	1
1777:	0	0	1	1	2	0	0	0
1785:	0	0	2	1	0	2	0	1
1793:	1	0	0	0	2	1	0	3
1801:	0	1	0	0	0	2	2	0
1809:	1	2	0	1	1	0	0	0
1817:	1	1	0	1	1	1	0	2
1825:	1	1	0	1	2	1	3	0
1833:	0	0	0	1	1	1	0	0
1841:	0	0	1	1	3	1	2	2
1849:	2	1	0	1	1	0	0	1
1857:	0	0	1	1	1	1	2	0
1865:	2	1	0	2	1	2	0	1
1873:	0	2	1	1	2	0	0	2
1881:	1	0	1	3	0	1	2	1
1889:	1	0	0	1	0	0	1	1
1897:	1	0	2	1	2	0	2	2
1905:	0	0	1	1	0	1	0	1
1913:	1	0	3	3	0	0	2	0
1921:	1	3	0	1	3	0	0	0
1929:	0	0	0	1	1	1	0	1
1937:	1	1	0	1	1	1	0	3
1945:	0	2	3	0	0	0	4	1
1953:	2	0	0	0	2	1	0	1
1961:	0	2	1	0	1	1	2	1
1969:	1	1	0	1	3	0	1	0
1977:	0	0	1	1	1	0	0	2
1985:	0	0	1	1	0	0	0	1
1993:	1	0	3	1	0	0	1	0
2001:	1	1	1	0	1	2	1	1
2009:	1	0	1	1	0	1	1	0
2017:	1	0	1	0	2	0	1	1
2025:	0	0	1	0	1	0	0	1
2033:	0	1	0	1	0	0	2	0
2041:	0	0	0	1	0	0	0	0
2049:	0	1	1	0	1	1	0	2
2057:	1	1	0	0	1	1	1	1
2065:	1	1	0	0	0	3	0	2
2073:	0	0	1	0	0	1	3	0
2081:	2	0	0	1	0	1	0	0
2089:	0	1	1	1	0	0	1	1

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2097:	0	2	3	2	3	0	3	0

Sample Title: R-1 0-6

Channel								
2105:	0	0	0	2	0	1	0	1
2113:	2	1	0	1	3	0	0	3
2121:	0	1	0	0	1	1	0	2
2129:	1	0	1	0	1	2	1	1
2137:	0	0	0	0	2	0	1	0
2145:	0	0	2	0	1	1	1	0
2153:	1	0	1	2	0	0	3	2
2161:	0	1	0	2	0	2	2	0
2169:	3	1	1	0	2	0	3	0
2177:	0	0	0	2	3	2	1	0
2185:	1	1	0	1	2	0	0	2
2193:	0	0	0	0	1	1	1	6
2201:	1	2	1	1	1	2	1	1
2209:	2	3	0	0	3	0	1	1
2217:	0	0	0	1	0	1	2	1
2225:	0	2	0	0	1	2	0	0
2233:	0	0	1	1	0	0	1	0
2241:	0	0	1	0	1	2	2	2
2249:	1	1	1	1	0	2	2	1
2257:	3	0	3	0	0	0	1	0
2265:	1	1	0	1	0	0	3	2
2273:	0	0	1	3	2	1	0	0
2281:	1	2	0	1	0	1	1	1
2289:	0	2	1	4	3	0	0	1
2297:	0	3	0	0	2	2	1	0
2305:	0	0	0	2	1	2	1	0
2313:	1	0	1	1	1	0	1	0
2321:	0	0	1	0	0	2	0	0
2329:	0	0	0	0	1	0	3	1
2337:	0	0	2	1	2	1	0	0
2345:	1	2	1	0	0	1	1	2
2353:	0	0	0	0	0	2	3	0
2361:	1	1	0	3	0	0	1	2
2369:	0	1	2	1	3	1	1	3
2377:	0	0	1	0	0	0	2	0
2385:	0	0	1	1	1	1	2	0
2393:	0	1	0	2	0	4	1	0
2401:	0	1	0	0	1	0	0	0
2409:	0	1	2	0	0	1	1	1
2417:	0	1	1	0	1	2	1	1
2425:	2	0	2	3	0	1	1	0
2433:	0	0	1	1	0	1	0	2
2441:	0	0	0	0	0	0	1	0
2449:	0	1	1	0	2	2	1	0
2457:	0	1	3	1	0	0	0	0
2465:	0	0	0	0	0	0	0	1
2473:	0	0	0	0	3	0	0	0
2481:	1	0	0	0	0	0	3	1
2489:	0	0	1	0	0	0	0	0
2497:	0	0	0	1	1	0	0	0
2505:	1	0	0	0	1	0	2	0
2513:	0	0	0	0	0	0	0	1
2521:	0	0	1	3	0	0	1	0

BP/Castex-Ltd Adm-Apx E-001489

2529:	0	0	0	0	0	0	0	0

Sample Title: R-1 0-6

Channel								
2537:	1	0	0	0	0	0	0	0
2545:	0	0	0	1	0	0	1	0
2553:	0	0	0	0	1	0	1	0
2561:	0	1	0	0	0	1	0	1
2569:	0	1	1	1	0	0	0	0
2577:	0	0	1	0	0	0	0	0
2585:	0	0	0	0	0	0	0	0
2593:	0	1	0	0	0	0	0	0
2601:	1	0	0	0	0	2	2	5
2609:	7	5	12	9	4	7	0	0
2617:	1	0	1	0	0	1	0	0
2625:	0	1	0	0	0	0	0	0
2633:	0	1	0	1	0	0	0	0
2641:	0	1	0	0	0	1	0	0
2649:	0	1	0	0	0	1	0	0
2657:	0	0	0	0	0	0	0	1
2665:	0	0	0	0	0	0	0	0
2673:	1	0	1	0	0	0	2	0
2681:	2	1	2	0	0	0	0	1
2689:	0	0	0	0	0	1	0	0
2697:	0	0	0	0	0	0	0	1
2705:	0	0	0	0	0	0	0	0
2713:	1	0	0	2	0	0	0	1
2721:	0	0	0	2	0	0	0	1
2729:	0	0	0	0	0	2	1	1
2737:	0	0	0	0	0	0	0	0
2745:	0	0	0	0	1	0	0	0
2753:	0	1	1	0	0	1	0	0
2761:	0	0	1	1	0	0	1	0
2769:	0	1	0	1	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	1	0	0	0	0	0	0	0
2793:	0	0	0	0	0	1	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	1	1	0	1	0	0
2825:	2	0	0	0	0	0	0	0
2833:	0	0	0	0	0	0	0	2
2841:	0	0	0	0	0	0	0	0
2849:	1	0	0	0	0	0	0	0
2857:	0	0	0	0	0	2	0	0
2865:	0	1	0	0	0	0	0	0
2873:	0	0	0	0	1	0	0	0
2881:	0	0	0	0	0	0	0	0
2889:	0	0	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	1	0	0	0	0	0	1
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	1	1
2937:	0	0	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	1	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001490

2961:	0	0	0	1	0	1	0	0

Sample Title: R-1 0-6

Channel								
2969:	0	0	0	1	0	0	0	0
2977:	0	0	0	0	0	0	0	0
2985:	0	0	2	0	0	1	0	0
2993:	0	0	0	0	0	1	0	0
3001:	0	0	1	0	0	0	0	0
3009:	0	2	0	0	0	0	0	0
3017:	0	0	1	0	0	0	0	0
3025:	1	0	0	0	1	0	0	0
3033:	0	0	0	0	0	1	0	0
3041:	0	0	0	0	1	0	0	0
3049:	0	0	1	0	0	0	0	0
3057:	0	0	0	0	0	0	0	0
3065:	0	0	0	0	0	0	1	0
3073:	0	0	0	0	0	0	1	0
3081:	0	1	0	0	1	0	0	0
3089:	0	1	0	1	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	0	0	2	0	0
3113:	0	0	0	1	0	1	1	0
3121:	0	0	2	0	0	0	0	0
3129:	0	0	0	0	0	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	0	0	2	0	0	1	0	0
3153:	0	0	0	0	0	0	1	0
3161:	0	0	0	0	0	0	0	1
3169:	0	0	0	0	0	0	0	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	0	0	0
3193:	0	0	0	1	0	0	1	0
3201:	0	0	0	0	0	0	0	0
3209:	0	0	0	0	0	1	0	0
3217:	0	0	0	0	0	0	0	0
3225:	0	0	2	0	0	0	1	0
3233:	0	0	1	0	0	0	0	0
3241:	0	0	0	1	0	0	1	1
3249:	0	0	0	0	0	0	0	0
3257:	1	0	1	0	0	1	1	0
3265:	0	0	1	0	0	0	0	0
3273:	0	0	0	1	0	0	0	0
3281:	0	0	0	0	0	0	1	0
3289:	0	0	0	0	0	0	1	0
3297:	1	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0
3313:	0	1	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	1
3329:	0	0	0	0	0	1	0	0
3337:	1	0	0	0	0	0	0	0
3345:	0	0	0	0	0	1	0	2
3353:	0	1	0	0	0	0	0	0
3361:	0	0	0	1	0	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	0	1	1	0

3393:	0	0	0	0	1	0	1	0

Sample Title: R-1 0-6

Channel								
3401:	0	1	1	0	0	0	0	0
3409:	0	1	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	1	0	0	0	0	0
3433:	0	0	0	0	0	1	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	1	0	0	0	0
3457:	0	1	0	0	0	1	1	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	1	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	1	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	1	0	0
3529:	1	1	0	0	1	0	0	1
3537:	0	0	0	0	0	0	0	0
3545:	0	0	1	0	0	0	1	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	1
3577:	0	1	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	1
3601:	0	0	0	0	0	0	0	1
3609:	0	0	0	0	0	0	0	1
3617:	0	0	0	0	1	0	0	0
3625:	0	0	0	0	0	0	0	0
3633:	0	0	0	0	1	2	0	0
3641:	0	0	0	0	0	1	0	0
3649:	0	1	0	0	0	0	1	0
3657:	0	0	0	0	0	1	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	1	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	1	0
3697:	0	0	0	0	0	0	0	0
3705:	2	0	0	0	0	0	0	0
3713:	0	0	0	1	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	1	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	2	0	1
3769:	0	0	0	0	0	0	0	0
3777:	0	0	1	1	0	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	1	0	0	0	0	0	0	0
3817:	0	0	0	0	0	1	0	0

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3825:	0	0	0	0	1	0	0	0

Sample Title: R-1 0-6

Channel								
3833:	1	0	0	0	0	0	0	0
3841:	1	0	0	0	0	0	1	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	1	1	0	0	0	0
3865:	0	0	0	0	1	0	0	1
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	1	0	0	0	0	0
3897:	0	1	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	1	0	0	0	0	0	0
3921:	0	0	0	0	0	0	0	1
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	1	0	0	0	0	0	0	0
3953:	1	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	1	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	1	0	0	0	0
4009:	1	0	0	0	0	0	1	1
4017:	0	0	1	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	1	0	0	0	0	0	0	0
4073:	1	0	0	0	1	0	0	0
4081:	0	0	0	1	0	0	0	0
4089:	0	0	0	0	0	0	0	0

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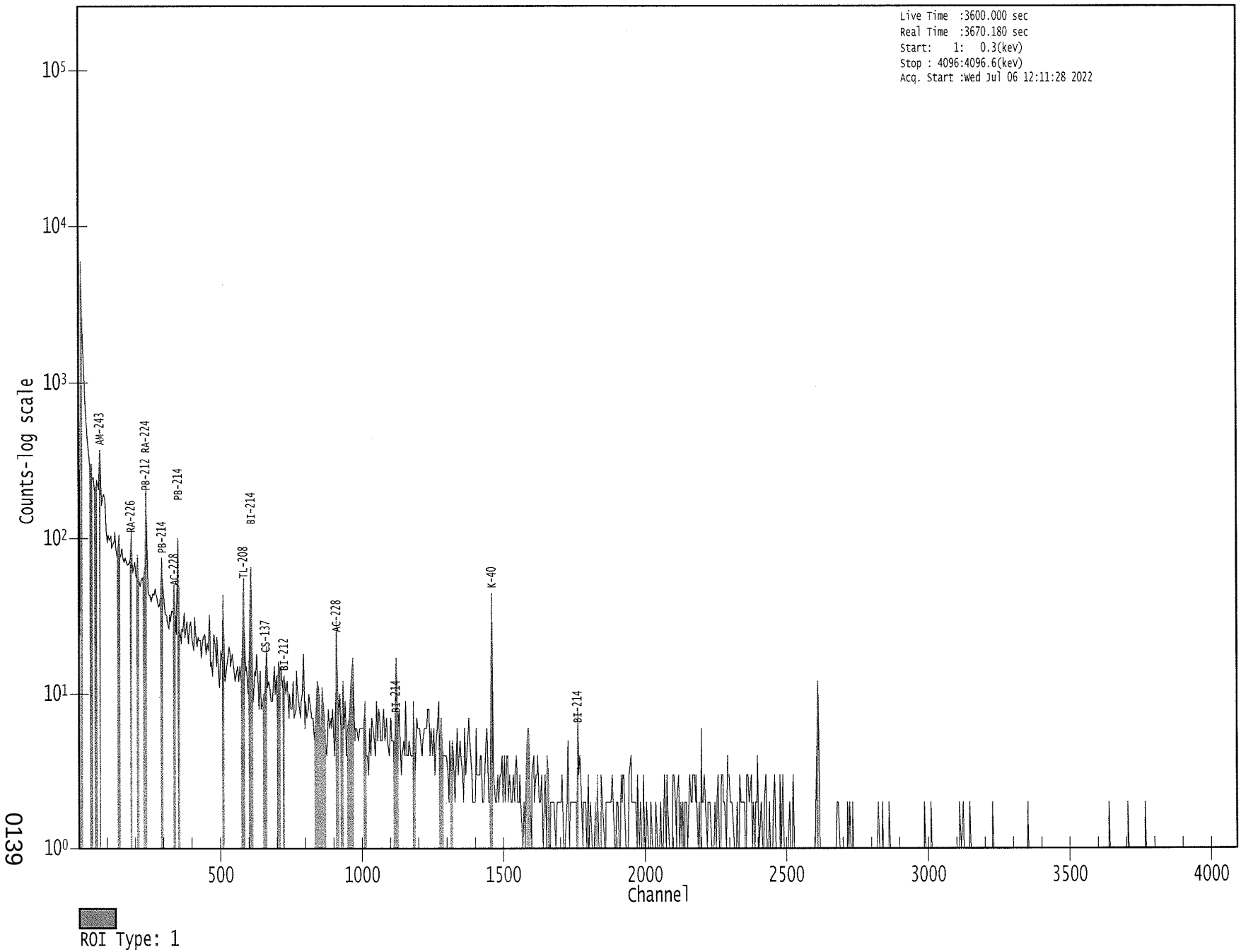
0000126254.CNF



0139

BP/Castex-Ltd Adm-Apx E-001494

KB 7/6/22

Apex-Gamma

Analysis Report for 2206038-04
R-1 0-6

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-04
Sample Description	: R-1 0-6
Sample Type	: SOIL
Sample Size	: 4.826E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:42:53AM
Acquisition Started	: 7/6/2022 1:13:02PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3645.5 seconds
Dead Time	: 1.25 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 2 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 11/21/2021
Efficiency Calibration Description	:
Sample Number	: 126258

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

BP/Castex-Ltd Adm-Apx E-001495

Analysis Report for 2206038-04
R-1 0-6

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 2:14:04PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	63.75	64.37	0.0000	0.00
2	76.38	76.99	0.0000	0.00
3	87.65	88.25	0.0000	0.00
4	186.84	187.37	0.0000	0.00
5	239.50	239.99	0.0000	0.00
6	296.17	296.63	0.0000	0.00
7	327.98	328.42	0.0000	0.00
8	338.46	338.89	0.0000	0.00
9	352.00	352.42	0.0000	0.00
10	408.35	408.74	0.0000	0.00
11	510.73	511.05	0.0000	0.00
12	545.66	545.96	0.0000	0.00
13	582.29	582.57	0.0000	0.00
14	609.34	609.60	0.0000	0.00
15	662.19	662.42	0.0000	0.00
16	725.83	726.02	0.0000	0.00
17	910.25	910.35	0.0000	0.00
18	934.07	934.15	0.0000	0.00
19	963.93	964.00	0.0000	0.00
20	968.93	969.00	0.0000	0.00
21	1120.59	1120.58	0.0000	0.00
22	1459.19	1459.02	0.0000	0.00
23	1570.55	1570.34	0.0000	0.00
24	1589.58	1589.36	0.0000	0.00
25	1647.88	1647.64	0.0000	0.00
26	1674.63	1674.38	0.0000	0.00
27	1687.25	1687.00	0.0000	0.00
28	1763.00	1762.72	0.0000	0.00
29	1931.67	1931.33	0.0000	0.00
30	2099.36	2098.97	0.0000	0.00
31	2114.86	2114.46	0.0000	0.00
32	2288.71	2288.27	0.0000	0.00
33	2304.19	2303.74	0.0000	0.00
34	2611.55	2611.04	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001496

Analysis Report for 2206038-04

R-1 0-6

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 2:14:04PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	63.75	56 -	102	64.37	4.78E+02	164.63	2.78E+03	7.30
m	2	76.38	56 -	102	76.99	1.62E+03	201.37	2.93E+03	6.36
m	3	87.65	56 -	102	88.25	6.62E+02	186.68	2.44E+03	5.97
	4	186.84	181 -	195	187.37	2.19E+02	111.43	1.22E+03	4.15
	5	239.50	231 -	248	239.99	9.29E+02	122.37	1.01E+03	4.00
	6	296.17	291 -	304	296.63	2.08E+02	82.85	6.65E+02	4.02
M	7	327.98	324 -	364	328.42	6.83E+01	42.47	2.81E+02	4.64
m	8	338.46	324 -	364	338.89	1.10E+02	59.19	3.96E+02	4.17
m	9	352.00	324 -	364	352.42	3.80E+02	71.99	4.16E+02	4.62
	10	408.35	403 -	414	408.74	5.19E+01	53.74	3.32E+02	2.90
	11	510.73	504 -	516	511.05	1.45E+02	46.03	1.79E+02	6.47
	12	545.66	538 -	557	545.96	5.47E+01	60.86	2.93E+02	5.45
	13	582.29	575 -	589	582.57	1.69E+02	55.03	2.48E+02	3.57
	14	609.34	604 -	619	609.60	2.10E+02	58.75	2.51E+02	3.67
	15	662.19	658 -	667	662.42	3.34E+01	38.56	1.89E+02	4.26
	16	725.83	718 -	732	726.02	6.31E+01	39.15	1.34E+02	2.16
	17	910.25	902 -	919	910.35	1.34E+02	44.98	1.36E+02	4.53
	18	934.07	927 -	939	934.15	2.39E+01	27.55	7.82E+01	3.24
M	19	963.93	959 -	976	964.00	3.30E+01	27.71	8.00E+01	3.98
m	20	968.93	959 -	976	969.00	5.86E+01	32.43	9.60E+01	3.98
	21	1120.59	1114 -	1128	1120.58	7.73E+01	28.17	4.55E+01	4.73
	22	1459.19	1450 -	1464	1459.02	1.68E+02	32.08	3.87E+01	4.13
	23	1570.55	1566 -	1574	1570.34	1.09E+01	8.50	4.15E+00	6.29
	24	1589.58	1583 -	1595	1589.36	2.94E+01	16.70	1.72E+01	6.40
	25	1647.88	1643 -	1651	1647.64	4.86E+00	6.95	4.29E+00	1.32
	26	1674.63	1668 -	1678	1674.38	5.81E+00	7.89	4.38E+00	3.09
	27	1687.25	1682 -	1690	1687.00	9.00E+00	6.00	0.00E+00	1.16
	28	1763.00	1756 -	1766	1762.72	4.27E+01	14.64	6.57E+00	2.80
	29	1931.67	1927 -	1935	1931.33	7.95E+00	7.76	4.10E+00	2.64
	30	2099.36	2091 -	2105	2098.97	1.91E+01	12.18	7.74E+00	8.63
	31	2114.86	2109 -	2119	2114.46	1.30E+01	7.21	0.00E+00	1.69
	32	2288.71	2283 -	2292	2288.27	7.50E+00	8.06	5.00E+00	3.14
	33	2304.19	2298 -	2308	2303.74	6.39E+00	8.14	5.22E+00	6.83
	34	2611.55	2605 -	2615	2611.04	5.10E+01	14.28	0.00E+00	4.99

BP/Castex-Ltd Adm-Apx E-001497

Analysis Report for 2206038-04

R-1 0-6

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 2:14:04PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	1	63.75	56 -	102	4.78E+02	164.63	2.78E+03	8.67E+01
m	2	76.38	56 -	102	1.62E+03	201.37	2.93E+03	8.90E+01
m	3	87.65	56 -	102	6.62E+02	186.68	2.44E+03	8.12E+01
	4	186.84	181 -	195	2.19E+02	111.43	1.22E+03	8.83E+01
	5	239.50	231 -	248	9.29E+02	122.37	1.01E+03	8.72E+01
	6	296.17	291 -	304	2.08E+02	82.85	6.65E+02	6.38E+01
M	7	327.98	324 -	364	6.83E+01	42.47	2.81E+02	2.76E+01
m	8	338.46	324 -	364	1.10E+02	59.19	3.96E+02	3.27E+01
m	9	352.00	324 -	364	3.80E+02	71.99	4.16E+02	3.35E+01
	10	408.35	403 -	414	5.19E+01	53.74	3.32E+02	4.26E+01
	11	510.73	504 -	516	1.45E+02	46.03	1.79E+02	3.23E+01
	12	545.66	538 -	557	5.47E+01	60.86	2.93E+02	4.85E+01
	13	582.29	575 -	589	1.69E+02	55.03	2.48E+02	3.99E+01
	14	609.34	604 -	619	2.10E+02	58.75	2.51E+02	4.20E+01
	15	662.19	658 -	667	3.34E+01	38.56	1.89E+02	3.02E+01
	16	725.83	718 -	732	6.31E+01	39.15	1.34E+02	2.94E+01
	17	910.25	902 -	919	1.34E+02	44.98	1.36E+02	3.17E+01
	18	934.07	927 -	939	2.39E+01	27.55	7.82E+01	2.12E+01
M	19	963.93	959 -	976	3.30E+01	27.71	8.00E+01	1.47E+01
m	20	968.93	959 -	976	5.86E+01	32.43	9.60E+01	1.61E+01
	21	1120.59	1114 -	1128	7.73E+01	28.17	4.55E+01	1.81E+01
	22	1459.19	1450 -	1464	1.68E+02	32.08	3.87E+01	1.56E+01
	23	1570.55	1566 -	1574	1.09E+01	8.50	4.15E+00	4.39E+00
	24	1589.58	1583 -	1595	2.94E+01	16.70	1.72E+01	1.04E+01
	25	1647.88	1643 -	1651	4.86E+00	6.95	4.29E+00	4.41E+00
	26	1674.63	1668 -	1678	5.81E+00	7.89	4.38E+00	5.13E+00
	27	1687.25	1682 -	1690	9.00E+00	6.00	0.00E+00	0.00E+00
	28	1763.00	1756 -	1766	4.27E+01	14.64	6.57E+00	5.41E+00
	29	1931.67	1927 -	1935	7.95E+00	7.76	4.10E+00	4.38E+00
	30	2099.36	2091 -	2105	1.91E+01	12.18	7.74E+00	6.96E+00
	31	2114.86	2109 -	2119	1.30E+01	7.21	0.00E+00	0.00E+00

BP/Castex-Ltd Adm-Apx E-001498

Analysis Report for 2206038-04

R-1 0-6

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
32	2288.71	2283 -	2292	7.50E+00	8.06	5.00E+00	4.86E+00
33	2304.19	2298 -	2308	6.39E+00	8.14	5.22E+00	5.24E+00
34	2611.55	2605 -	2615	5.10E+01	14.28	0.00E+00	0.00E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 2:14:04PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	1	63.75	56 -	102	64.37	4.78E+02	164.63	2.78E+03	TH-234 TH-230
m	2	76.38	56 -	102	76.99	1.62E+03	201.37	2.93E+03	AM-243 TI-44
m	3	87.65	56 -	102	88.25	6.62E+02	186.68	2.44E+03	SN-126 CD-109 LU-176 NP-237 EU-155
	4	186.84	181 -	195	187.37	2.19E+02	111.43	1.22E+03	RA-226 HO-166M
	5	239.50	231 -	248	239.99	9.29E+02	122.37	1.01E+03	PB-212 RA-224
	6	296.17	291 -	304	296.63	2.08E+02	82.85	6.65E+02	PB-214
M	7	327.98	324 -	364	328.42	6.83E+01	42.47	2.81E+02	LA-140
m	8	338.46	324 -	364	338.89	1.10E+02	59.19	3.96E+02	AC-228 CS-136
m	9	352.00	324 -	364	352.42	3.80E+02	71.99	4.16E+02	PB-214
	10	408.35	403 -	414	408.74	5.19E+01	53.74	3.32E+02	.....
	11	510.73	504 -	516	511.05	1.45E+02	46.03	1.79E+02	.....
	12	545.66	538 -	557	545.96	5.47E+01	60.86	2.93E+02	.....
	13	582.29	575 -	589	582.57	1.69E+02	55.03	2.48E+02	TL-208
	14	609.34	604 -	619	609.60	2.10E+02	58.75	2.51E+02	BI-214

BP/Castex-Ltd Adm-Apx E-001499

Analysis Report for 2206038-04

R-1 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	15	662.19	658 -	667	662.42	3.34E+01	38.56	1.89E+02	CS-137 CE-143
	16	725.83	718 -	732	726.02	6.31E+01	39.15	1.34E+02	BI-212 ZR-95
	17	910.25	902 -	919	910.35	1.34E+02	44.98	1.36E+02	AC-228 TL-204
	18	934.07	927 -	939	934.15	2.39E+01	27.55	7.82E+01	.....
M	19	963.93	959 -	976	964.00	3.30E+01	27.71	8.00E+01	EU-152
m	20	968.93	959 -	976	969.00	5.86E+01	32.43	9.60E+01	AC-228
	21	1120.59	1114 -	1128	1120.58	7.73E+01	28.17	4.55E+01	SC-46 BI-214 TA-182
	22	1459.19	1450 -	1464	1459.02	1.68E+02	32.08	3.87E+01	K-40
	23	1570.55	1566 -	1574	1570.34	1.09E+01	8.50	4.15E+00	.....
	24	1589.58	1583 -	1595	1589.36	2.94E+01	16.70	1.72E+01	.....
	25	1647.88	1643 -	1651	1647.64	4.86E+00	6.95	4.29E+00	.....
	26	1674.63	1668 -	1678	1674.38	5.81E+00	7.89	4.38E+00	.....
	27	1687.25	1682 -	1690	1687.00	9.00E+00	6.00	0.00E+00	.....
	28	1763.00	1756 -	1766	1762.72	4.27E+01	14.64	6.57E+00	BI-214
	29	1931.67	1927 -	1935	1931.33	7.95E+00	7.76	4.10E+00	.....
	30	2099.36	2091 -	2105	2098.97	1.91E+01	12.18	7.74E+00	.....
	31	2114.86	2109 -	2119	2114.46	1.30E+01	7.21	0.00E+00	.....
	32	2288.71	2283 -	2292	2288.27	7.50E+00	8.06	5.00E+00	.....
	33	2304.19	2298 -	2308	2303.74	6.39E+00	8.14	5.22E+00	.....
	34	2611.55	2605 -	2615	2611.04	5.10E+01	14.28	0.00E+00	.....

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 2:14:04PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	63.75	4.78E+02	164.63	4.33E-02	3.30E-03
m	2	76.38	1.62E+03	201.37	4.46E-02	3.97E-03
m	3	87.65	6.62E+02	186.68	4.25E-02	4.56E-03
	4	186.84	2.19E+02	111.43	2.02E-02	3.84E-03
	5	239.50	9.29E+02	122.37	1.54E-02	2.47E-03

BP/Castex-Ltd Adm-Apx E-001500

Analysis Report for 2206038-04

R-1 0-6

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	6	296.17	2.08E+02	82.85	1.24E-02	1.36E-03
M	7	327.98	6.83E+01	42.47	1.12E-02	1.24E-03
m	8	338.46	1.10E+02	59.19	1.09E-02	1.19E-03
m	9	352.00	3.80E+02	71.99	1.05E-02	1.14E-03
	10	408.35	5.19E+01	53.74	9.14E-03	9.56E-04
	11	510.73	1.45E+02	46.03	7.47E-03	7.82E-04
	12	545.66	5.47E+01	60.86	7.04E-03	7.23E-04
	13	582.29	1.69E+02	55.03	6.64E-03	6.61E-04
	14	609.34	2.10E+02	58.75	6.38E-03	6.16E-04
	15	662.19	3.34E+01	38.56	5.91E-03	5.27E-04
	16	725.83	6.31E+01	39.15	5.43E-03	4.96E-04
	17	910.25	1.34E+02	44.98	4.37E-03	4.07E-04
	18	934.07	2.39E+01	27.55	4.26E-03	3.96E-04
M	19	963.93	3.30E+01	27.71	4.13E-03	3.83E-04
m	20	968.93	5.86E+01	32.43	4.11E-03	3.80E-04
	21	1120.59	7.73E+01	28.17	3.55E-03	3.11E-04
	22	1459.19	1.68E+02	32.08	2.74E-03	2.52E-04
	23	1570.55	1.09E+01	8.50	2.55E-03	2.30E-04
	24	1589.58	2.94E+01	16.70	2.52E-03	2.26E-04
	25	1647.88	4.86E+00	6.95	2.44E-03	2.15E-04
	26	1674.63	5.81E+00	7.89	2.41E-03	2.09E-04
	27	1687.25	9.00E+00	6.00	2.39E-03	2.07E-04
	28	1763.00	4.27E+01	14.64	2.31E-03	1.92E-04
	29	1931.67	7.95E+00	7.76	2.15E-03	1.77E-04
	30	2099.36	1.91E+01	12.18	2.03E-03	1.77E-04
	31	2114.86	1.30E+01	7.21	2.02E-03	1.77E-04
	32	2288.71	7.50E+00	8.06	1.94E-03	1.77E-04
	33	2304.19	6.39E+00	8.14	1.94E-03	1.77E-04
	34	2611.55	5.10E+01	14.28	1.88E-03	1.77E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 2:14:04PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126202.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	63.75	4.78E+02	164.63	9.02E+01	1.45E+01	3.88E+02	1.65E+02

BP/Castex-Ltd Adm-Apx E-001501

Analysis Report for 2206038-04

R-1 0-6

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	2	76.38	1.62E+03	201.37			1.62E+03	2.01E+02
m	3	87.65	6.62E+02	186.68			6.62E+02	1.87E+02
	4	186.84	2.19E+02	111.43	2.74E+01	1.86E+00	1.91E+02	1.11E+02
	5	239.50	9.29E+02	122.37	1.48E+01	1.49E+00	9.14E+02	1.22E+02
	6	296.17	2.08E+02	82.85			2.08E+02	8.28E+01
M	7	327.98	6.83E+01	42.47			6.83E+01	4.25E+01
m	8	338.46	1.10E+02	59.19			1.10E+02	5.92E+01
m	9	352.00	3.80E+02	71.99			3.80E+02	7.20E+01
	10	408.35	5.19E+01	53.74			5.19E+01	5.37E+01
	11	510.73	1.45E+02	46.03	5.08E+01	5.67E+00	9.39E+01	4.64E+01
	12	545.66	5.47E+01	60.86			5.47E+01	6.09E+01
	13	582.29	1.69E+02	55.03			1.69E+02	5.50E+01
	14	609.34	2.10E+02	58.75			2.10E+02	5.88E+01
	15	662.19	3.34E+01	38.56	2.64E+00	3.01E+00	3.07E+01	3.87E+01
	16	725.83	6.31E+01	39.15			6.31E+01	3.91E+01
	17	910.25	1.34E+02	44.98			1.34E+02	4.50E+01
	18	934.07	2.39E+01	27.55			2.39E+01	2.75E+01
M	19	963.93	3.30E+01	27.71			3.30E+01	2.77E+01
m	20	968.93	5.86E+01	32.43			5.86E+01	3.24E+01
	21	1120.59	7.73E+01	28.17			7.73E+01	2.82E+01
	22	1459.19	1.68E+02	32.08			1.68E+02	3.21E+01
	23	1570.55	1.09E+01	8.50			1.09E+01	8.50E+00
	24	1589.58	2.94E+01	16.70			2.94E+01	1.67E+01
	25	1647.88	4.86E+00	6.95			4.86E+00	6.95E+00
	26	1674.63	5.81E+00	7.89			5.81E+00	7.89E+00
	27	1687.25	9.00E+00	6.00			9.00E+00	6.00E+00
	28	1763.00	4.27E+01	14.64			4.27E+01	1.46E+01
	29	1931.67	7.95E+00	7.76			7.95E+00	7.76E+00
	30	2099.36	1.91E+01	12.18			1.91E+01	1.22E+01
	31	2114.86	1.30E+01	7.21			1.30E+01	7.21E+00
	32	2288.71	7.50E+00	8.06			7.50E+00	8.06E+00
	33	2304.19	6.39E+00	8.14			6.39E+00	8.14E+00
	34	2611.55	5.10E+01	14.28			5.10E+01	1.43E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001502

Analysis Report for 2206038-04

R-1 0-6

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 2:14:04PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126202.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	1	63.75	4.78E+02	164.63	9.02E+01	1.45E+01	3.88E+02	1.65E+02
m	2	76.38	1.62E+03	201.37			1.62E+03	2.01E+02
m	3	87.65	6.62E+02	186.68			6.62E+02	1.87E+02
	4	186.84	2.19E+02	111.43	2.74E+01	1.86E+00	1.91E+02	1.11E+02
	5	239.50	9.29E+02	122.37	1.48E+01	1.49E+00	9.14E+02	1.22E+02
	6	296.17	2.08E+02	82.85			2.08E+02	8.28E+01
M	7	327.98	6.83E+01	42.47			6.83E+01	4.25E+01
m	8	338.46	1.10E+02	59.19			1.10E+02	5.92E+01
m	9	352.00	3.80E+02	71.99			3.80E+02	7.20E+01
	10	408.35	5.19E+01	53.74			5.19E+01	5.37E+01
	11	510.73	1.45E+02	46.03	5.08E+01	5.67E+00	9.39E+01	4.64E+01
	12	545.66	5.47E+01	60.86			5.47E+01	6.09E+01
	13	582.29	1.69E+02	55.03			1.69E+02	5.50E+01
	14	609.34	2.10E+02	58.75			2.10E+02	5.88E+01
	15	662.19	3.34E+01	38.56	2.64E+00	3.01E+00	3.07E+01	3.87E+01
	16	725.83	6.31E+01	39.15			6.31E+01	3.91E+01
	17	910.25	1.34E+02	44.98			1.34E+02	4.50E+01
	18	934.07	2.39E+01	27.55			2.39E+01	2.75E+01
M	19	963.93	3.30E+01	27.71			3.30E+01	2.77E+01
m	20	968.93	5.86E+01	32.43			5.86E+01	3.24E+01
	21	1120.59	7.73E+01	28.17			7.73E+01	2.82E+01
	22	1459.19	1.68E+02	32.08			1.68E+02	3.21E+01
	23	1570.55	1.09E+01	8.50			1.09E+01	8.50E+00
	24	1589.58	2.94E+01	16.70			2.94E+01	1.67E+01
	25	1647.88	4.86E+00	6.95			4.86E+00	6.95E+00
	26	1674.63	5.81E+00	7.89			5.81E+00	7.89E+00
	27	1687.25	9.00E+00	6.00			9.00E+00	6.00E+00
	28	1763.00	4.27E+01	14.64			4.27E+01	1.46E+01
	29	1931.67	7.95E+00	7.76			7.95E+00	7.76E+00
	30	2099.36	1.91E+01	12.18			1.91E+01	1.22E+01
	31	2114.86	1.30E+01	7.21			1.30E+01	7.21E+00
	32	2288.71	7.50E+00	8.06			7.50E+00	8.06E+00
	33	2304.19	6.39E+00	8.14			6.39E+00	8.14E+00
	34	2611.55	5.10E+01	14.28			5.10E+01	1.43E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001503

Analysis Report for 2206038-04

R-1 0-6

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.935	1460.81	*	10.67	8.93E+00	1.90E+00
CD-109	0.996	88.03	*	3.72	6.78E+00	2.04E+00
SN-126	1.000	87.57	*	37.00	6.55E-01	1.98E-01
CS-137	0.993	661.65	*	85.12	9.52E-02	1.20E-01
EU-155	0.364	86.50	*	30.90	7.93E-01	2.39E-01
		105.30		20.70		
TL-208	0.304	583.14	*	30.22	1.31E+00	4.46E-01
		860.37		4.48		
		2614.66		35.85		
BI-212	0.745	727.17	*	11.80	1.53E+00	9.61E-01
		1620.62		2.75		
PB-212	0.880	238.63	*	44.60	2.07E+00	4.32E-01
		300.09		3.41		
BI-214	0.925	609.31	*	46.30	1.11E+00	3.27E-01
		1120.29	*	15.10	2.24E+00	8.40E-01
		1764.49	*	15.80	1.82E+00	6.43E-01
		2204.22		4.98		
PB-214	0.992	295.21	*	19.19	1.36E+00	5.62E-01
		351.92	*	37.19	1.51E+00	3.31E-01
RA-224	0.945	240.98	*	3.95	2.34E+01	4.88E+00
RA-226	0.990	186.21	*	3.28	4.48E+00	2.75E+00
AC-228	0.991	338.32	*	11.40	1.37E+00	7.57E-01
		911.07	*	27.70	1.72E+00	6.00E-01
		969.11	*	16.60	1.33E+00	7.50E-01
TH-234	0.995	63.29	*	3.80	3.67E+00	1.59E+00
NP-237	0.967	86.50	*	12.60	1.92E+00	5.80E-01
AM-243	0.927	74.67	*	66.00	8.57E-01	1.31E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001504

Analysis Report for 2206038-04

R-1 0-6

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 2:14:04PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	7	327.98	1.89778E-02	31.08	Sum	
	10	408.35	1.44202E-02	51.76		
	11	510.73	2.60927E-02	24.69		
	12	545.66	1.51893E-02	55.65		
	18	934.07	6.63801E-03	57.64	Sum	
M	19	963.93	9.16063E-03	42.02	Sum	
	23	1570.55	3.03419E-03	38.91	Sum	
	24	1589.58	8.16520E-03	28.40		
	25	1647.88	1.34921E-03	71.51	Sum	
	26	1674.63	1.61458E-03	67.87		
	27	1687.25	2.50000E-03	33.33		
	29	1931.67	2.20833E-03	48.82		
	30	2099.36	5.31401E-03	31.82	Sum	
	31	2114.86	3.61111E-03	27.74	Sum	
	32	2288.71	2.08333E-03	53.75		
	33	2304.19	1.77469E-03	63.70		
	34	2611.55	1.41667E-02	14.00		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.93	1460.81	*	10.67	8.93E+00	1.90E+00
CD-109	0.99	88.03	*	3.72	6.78E+00	2.04E+00

BP/Castex-Ltd Adm-Apx E-001505

Analysis Report for 2206038-04

R-1 0-6

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
SN-126	1.00	87.57	*	37.00	6.55E-01	1.98E-01
CS-137	0.99	661.65	*	85.12	9.52E-02	1.20E-01
EU-155	0.36	86.50	*	30.90	7.93E-01	2.39E-01
		105.30		20.70		
TL-208	0.30	583.14	*	30.22	1.31E+00	4.46E-01
		860.37		4.48		
		2614.66		35.85		
BI-212	0.74	727.17	*	11.80	1.53E+00	9.61E-01
		1620.62		2.75		
PB-212	0.88	238.63	*	44.60	2.07E+00	4.32E-01
		300.09		3.41		
BI-214	0.92	609.31	*	46.30	1.11E+00	3.27E-01
		1120.29	*	15.10	2.24E+00	8.40E-01
		1764.49	*	15.80	1.82E+00	6.43E-01
		2204.22		4.98		
PB-214	0.99	295.21	*	19.19	1.36E+00	5.62E-01
		351.92	*	37.19	1.51E+00	3.31E-01
RA-224	0.94	240.98	*	3.95	2.34E+01	4.88E+00
RA-226	0.99	186.21	*	3.28	4.48E+00	2.75E+00
AC-228	0.99	338.32	*	11.40	1.37E+00	7.57E-01
		911.07	*	27.70	1.72E+00	6.00E-01
		969.11	*	16.60	1.33E+00	7.50E-01
TH-234	0.99	63.29	*	3.80	3.67E+00	1.59E+00
NP-237	0.96	86.50	*	12.60	1.92E+00	5.80E-01
AM-243	0.92	74.67	*	66.00	8.57E-01	1.31E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.935	8.93E+00	1.90E+00	
?	CD-109	0.996	6.78E+00	2.04E+00	

Analysis Report for 2206038-04

R-1 0-6

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
?	SN-126	1.000	6.55E-01	1.98E-01	
	CS-137	0.993	9.52E-02	1.20E-01	
?	EU-155	0.364	7.93E-01	2.39E-01	
	TL-208	0.304	1.31E+00	4.46E-01	
	BI-212	0.745	1.53E+00	9.61E-01	
?	PB-212	0.880	2.07E+00	4.32E-01	
	BI-214	0.925	1.36E+00	2.76E-01	
	PB-214	0.992	1.47E+00	2.85E-01	
?	RA-224	0.945	2.34E+01	4.88E+00	
	RA-226	0.990	4.48E+00	2.75E+00	
	AC-228	0.991	1.52E+00	3.98E-01	
	TH-234	0.995	3.67E+00	1.59E+00	
?	NP-237	0.967	1.92E+00	5.80E-01	
	AM-243	0.927	8.57E-01	1.31E-01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-04
R-1 0-6

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 2:14:04PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	7	327.98	1.89778E-02	31.08	Sum	
	10	408.35	1.44202E-02	51.76		
	11	510.73	2.60927E-02	24.69		
	12	545.66	1.51893E-02	55.65		
	18	934.07	6.63801E-03	57.64	Sum	
M	19	963.93	9.16063E-03	42.02	Sum	
	23	1570.55	3.03419E-03	38.91	Sum	
	24	1589.58	8.16520E-03	28.40		
	25	1647.88	1.34921E-03	71.51	Sum	
	26	1674.63	1.61458E-03	67.87		
	27	1687.25	2.50000E-03	33.33		
	29	1931.67	2.20833E-03	48.82		
	30	2099.36	5.31401E-03	31.82	Sum	
	31	2114.86	3.61111E-03	27.74	Sum	
	32	2288.71	2.08333E-03	53.75		
	33	2304.19	1.77469E-03	63.70		
	34	2611.55	1.41667E-02	14.00		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)

Analysis Report for 2206038-04

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	1.57E-01	1.63E+00	1.63E+00
+	NA-22	1274.54		99.94	2.97E-03	1.59E-01	1.59E-01
+	NA-24	1368.53		99.99	7.63E-02	6.12E-02	1.53E-01
		2754.09		99.86	-1.45E-02		6.12E-02
+	AL-26	1808.65		99.76	-1.41E-02	1.25E-01	1.25E-01
+	K-40	1460.81	*	10.67	8.93E+00	1.80E+00	1.80E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-2.95E-01	8.19E-02	8.19E-02
		78.34		96.00	1.98E-01		9.10E-02
+	SC-46	889.25		98.98	-8.75E-02	1.57E-01	1.57E-01
		1120.51		99.90	2.66E-01		2.59E-01
+	V-48	983.52		99.98	1.64E-01	4.12E-01	4.12E-01
		1312.10		97.50	1.22E-01		5.18E-01
+	CR-51	320.08		9.83	-4.70E-01	2.07E+00	2.07E+00
+	MN-54	834.83		99.97	1.70E-02	1.51E-01	1.51E-01
+	CO-56	846.75		99.96	6.62E-02	1.71E-01	1.71E-01
		1037.75		14.03	-4.00E-03		1.23E+00
		1238.25		67.00	-4.08E-03		3.26E-01
		1771.40		15.51	-8.54E-01		1.24E+00
		2587.48		16.90	2.41E-01		8.31E-01
+	CO-57	122.06		85.51	-1.39E-02	8.57E-02	8.57E-02
		136.48		10.60	-2.91E-01		7.18E-01
+	CO-58	810.76		99.40	-1.07E-02	1.72E-01	1.72E-01
+	FE-59	1099.22		56.50	-2.43E-02	3.58E-01	3.58E-01
		1291.56		43.20	1.35E-01		5.36E-01
+	CO-60	1173.22		100.00	-9.57E-02	1.47E-01	1.47E-01
		1332.49		100.00	9.20E-02		1.76E-01
+	ZN-65	1115.52		50.75	-5.48E-02	4.42E-01	4.42E-01
+	GA-67	93.31		35.70	1.54E+02	5.52E+01	5.52E+01
		208.95		2.24	6.63E+02		1.13E+03
		300.22		16.00	-3.74E+00		2.13E+02
+	SE-75	121.11		16.70	-2.34E-01	1.39E-01	4.72E-01
		136.00		59.50	-5.63E-02		1.39E-01
		264.65		59.80	-7.62E-02		2.02E-01
		279.53		25.20	-1.32E-01		4.93E-01
		400.65		11.40	1.22E-01		1.22E+00
+	RB-82	776.52		13.00	-1.11E+00	2.11E+00	2.11E+00
+	RB-83	520.41		46.00	-1.32E-01	3.09E-01	3.09E-01
		529.64		30.30	-4.18E-02		4.58E-01
		552.65		16.40	-9.94E-02		9.02E-01
+	KR-85	513.99		0.43	-5.56E+00	3.51E+01	3.51E+01
+	SR-85	513.99		99.27	-3.20E-02	2.02E-01	2.02E-01
+	Y-88	898.02		93.40	-9.10E-03	1.77E-01	1.77E-01
		1836.01		99.38	-6.60E-02		1.87E-01
+	MO-93	263.06		56.72	-3.80E-02	1.31E-01	1.83E-01
		684.67		99.68	-2.31E-02		1.31E-01
		1477.11		99.08	5.56E-02		1.40E-01

BP/Castex-Ltd Adm-Apx E-001509

Analysis Report for 2206038-04

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-93M	16.57		9.43	9.41E+04	2.28E+04	2.28E+04
+	NB-94	702.63		100.00	7.06E-02	1.26E-01	1.51E-01
		871.10		100.00	-3.41E-02		1.26E-01
+	NB-95	765.79		99.81	6.46E-02	2.45E-01	2.45E-01
+	NB-95M	235.69		25.00	4.14E+02	9.86E+01	9.86E+01
+	ZR-95	724.18		43.70	3.91E-01	3.38E-01	4.66E-01
		756.72		55.30	-3.24E-02		3.38E-01
+	MO-99	181.06		6.20	-1.79E+02	7.98E+02	1.08E+03
		739.58		12.80	3.34E+02		7.98E+02
		778.00		4.50	-6.76E+02		2.17E+03
+	TC-99M	140.51		89.00	1.31E-02	8.32E-02	8.32E-02
+	RU-103	497.08		89.00	-9.19E-02	1.95E-01	1.95E-01
+	RU-106	621.84		9.80	-6.08E-01	1.27E+00	1.27E+00
+	AG-108M	433.93		89.90	1.47E-02	1.28E-01	1.28E-01
		614.37		90.40	-9.97E-03		2.06E-01
		722.95		90.50	1.30E-01		1.70E-01
+	CD-109	88.03	*	3.72	6.78E+00	7.01E+00	7.01E+00
+	AG-110M	657.75		93.14	-2.47E-02	1.86E-01	1.86E-01
		677.61		10.53	-5.60E-01		1.27E+00
		706.67		16.46	3.50E-02		9.28E-01
		763.93		21.98	1.92E-01		7.20E-01
		884.67		21.98	2.98E-01		6.40E-01
		1384.27		23.94	1.55E-01		6.74E-01
+	CD-113M	263.70		0.02	-9.40E+01	4.53E+02	4.53E+02
+	SN-113	255.12		1.93	1.02E+00	2.02E-01	6.07E+00
		391.69		64.90	-7.46E-02		2.02E-01
+	TE-123M	159.00		84.10	-1.44E-02	1.08E-01	1.08E-01
+	SB-124	602.71		97.87	-7.98E-02	2.41E-01	2.41E-01
		645.85		7.26	-7.00E-01		2.42E+00
		722.78		11.10	1.43E+00		1.87E+00
		1691.02		49.00	-5.38E-02		3.50E-01
+	I-125	35.49		6.49	-8.43E+00	4.96E+00	4.96E+00
+	SB-125	176.33		6.89	5.18E-02	4.09E-01	1.27E+00
		427.89		29.33	1.03E-01		4.09E-01
		463.38		10.35	-3.54E-01		1.16E+00
		600.56		17.80	-2.95E-01		7.84E-01
		635.90		11.32	2.93E-01		1.22E+00
+	SB-126	414.70		83.30	-6.83E-03	1.42E-01	1.42E-01
		666.33		99.60	5.00E-03		1.56E-01
		695.00		99.60	1.92E-02		1.49E-01
		720.50		53.80	7.03E-03		2.74E-01
+	SN-126	87.57	*	37.00	6.55E-01	6.78E-01	6.78E-01
+	SB-127	473.00		25.00	3.63E+00	3.98E+01	5.38E+01
		685.00		35.70	-7.03E+00		3.98E+01
		783.80		14.70	-4.42E+01		1.00E+02
+	I-129	29.78		57.00	-7.25E-01	1.23E+00	1.23E+00
		33.60		13.20	-9.96E-01		2.44E+00
		39.58		7.52	-1.83E+00		2.03E+00

BP/Castex-Ltd Adm-Apx E-001510

Analysis Report for 2206038-04

R-1 0-6

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		I-131	284.30		6.05	-1.70E+01	1.20E+00	1.61E+01
			364.48		81.20	-2.64E-01		1.20E+00
			636.97		7.26	1.31E+00		1.76E+01
			722.89		1.80	6.20E+01		8.10E+01
+		TE-132	49.72		13.10	9.18E+01	2.90E+01	1.71E+02
			228.16		88.00	4.82E+00		2.90E+01
+		BA-133	81.00		34.06	5.08E-01	2.56E-01	2.59E-01
			302.84		18.33	-9.78E-02		6.56E-01
			356.01		62.05	7.09E-01		2.56E-01
+		I-133	529.87		86.30	-1.37E+07	1.50E+08	1.50E+08
+		XE-133	81.00		38.00	1.43E+01	7.27E+00	7.27E+00
+		CS-134	563.23		8.38	7.66E-01	1.77E-01	1.54E+00
			569.32		15.43	-2.58E-01		8.01E-01
			604.70		97.60	-4.58E-02		2.12E-01
			795.84		85.40	9.24E-02		1.77E-01
			801.93		8.73	-4.26E-01		1.62E+00
+		CS-135	268.24		16.00	1.61E-01	6.79E-01	6.79E-01
+	@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41		28.60	1.00E+26		1.00E+26
	@		1678.03		9.54	1.00E+26		1.00E+26
+		CS-136	153.22		7.46	-2.42E-01	5.12E-01	4.10E+00
			163.89		4.61	-3.88E+00		6.80E+00
			176.55		13.56	1.02E-01		2.50E+00
			273.65		12.66	4.01E+00		3.56E+00
			340.57		48.50	-4.82E-01		1.04E+00
			818.50		99.70	-2.88E-01		5.12E-01
			1048.07		79.60	1.62E-01		7.03E-01
			1235.34		19.70	1.64E+00		3.54E+00
+		CS-137	661.65	*	85.12	9.52E-02	1.97E-01	1.97E-01
+		LA-138	788.74		34.00	6.76E-02	1.76E-01	4.29E-01
			1435.80		66.00	2.97E-03		1.76E-01
+		CE-139	165.85		80.35	-9.20E-03	1.14E-01	1.14E-01
+		BA-140	162.64		6.70	-3.26E+00	1.86E+00	4.80E+00
			304.84		4.50	-1.20E+00		1.02E+01
			423.70		3.20	4.27E+00		1.50E+01
			437.55		2.00	-4.91E+00		2.24E+01
			537.32		25.00	-1.24E-01		1.86E+00
+		LA-140	328.77		20.50	-2.14E+00	7.39E-01	2.28E+00
			487.03		45.50	1.46E-01		1.05E+00
			815.85		23.50	-4.29E-01		2.30E+00
			1596.49		95.49	-6.66E-03		7.39E-01
+		CE-141	145.44		48.40	1.15E-01	2.77E-01	2.77E-01
+		CE-143	57.36		11.80	-1.18E+04	1.64E+05	3.27E+05
			293.26		42.00	-1.81E+04		1.64E+05
			664.55		5.20	1.60E+05		1.59E+06
+		CE-144	133.54		10.80	-2.35E-01	6.93E-01	6.93E-01
+		PM-144	476.78		42.00	1.45E-01	1.36E-01	3.10E-01
			618.01		98.60	6.58E-04		1.36E-01
			696.49		99.49	2.68E-02		1.57E-01

BP/Castex-Ltd Adm-Apx E-001511

Analysis Report for 2206038-04

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-145	36.85		21.70	-1.92E+00	4.75E-01	9.20E-01
		37.36		39.70	-9.96E-01		4.75E-01
		42.30		15.10	5.78E-02		8.30E-01
		72.40		2.31	1.40E+01		3.79E+00
+	PM-146	453.90		39.94	-2.46E-02	2.96E-01	2.96E-01
		735.90		14.01	4.18E-01		9.99E-01
		747.13		13.10	-4.32E-01		1.05E+00
+	ND-147	91.11		28.90	4.48E+00	1.40E+00	1.40E+00
		531.02		13.10	-2.72E-02		4.45E+00
+	PM-149	285.90		3.10	-1.41E+04	1.14E+04	1.14E+04
+	EU-152	121.78		20.50	-1.66E-01	3.33E-01	3.33E-01
		244.69		5.40	-1.31E-01		2.92E+00
		344.27		19.13	-1.98E+00		7.08E-01
		778.89		9.10	-2.93E-01		1.50E+00
		964.01		10.40	2.71E+00		2.00E+00
		1085.78		7.22	-7.37E-02		1.87E+00
		1112.02		9.60	-1.53E-01		1.72E+00
		1407.95		14.94	-6.95E-02		1.01E+00
+	GD-153	97.43		31.30	-1.10E-02	2.42E-01	2.42E-01
		103.18		22.20	1.18E-02		3.05E-01
+	EU-154	123.07		40.50	7.76E-03	1.72E-01	1.72E-01
		723.30		19.70	6.02E-01		7.86E-01
		873.19		11.50	-6.72E-02		1.09E+00
		996.32		10.30	-2.81E-01		1.26E+00
		1004.76		17.90	-1.62E-01		7.40E-01
		1274.45		35.50	8.26E-03		4.43E-01
+	EU-155	86.50	*	30.90	7.93E-01	3.08E-01	8.20E-01
		105.30		20.70	6.64E-02		3.08E-01
+	EU-156	811.77		10.40	-4.72E-01	4.17E+00	4.17E+00
		1153.47		7.20	-2.76E-01		7.33E+00
		1230.71		8.90	6.22E-01		6.27E+00
+	HO-166M	184.41		72.60	-1.46E-02	1.34E-01	1.34E-01
		280.45		29.60	6.95E-03		3.60E-01
		410.94		11.10	-2.60E-02		1.12E+00
		711.69		54.10	-2.90E-02		2.44E-01
+	TM-171	66.72		0.14	-2.39E+02	5.51E+01	5.51E+01
+	HF-172	67.35		5.31	-5.39E+00	6.52E-01	1.50E+00
		125.82		11.30	4.86E-01		6.52E-01
+	LU-172	181.53		20.60	-1.12E+00	3.26E+00	6.80E+00
		900.72		29.81	9.56E-01		7.41E+00
		1093.66		62.50	1.09E+00		3.26E+00
+	LU-173	100.72		5.24	3.90E-02	5.56E-01	1.31E+00
		272.11		21.20	5.53E-01		5.56E-01
+	HF-175	343.40		84.00	-8.15E-01	1.99E-01	1.99E-01
+	LU-176	88.34		13.30	-2.67E-01	1.12E-01	5.89E-01
		201.83		86.00	-2.14E-02		1.12E-01
		306.78		94.00	-1.33E-02		1.15E-01
+	HF-181	133.02		41.70	-8.73E-02	2.22E-01	2.57E-01
		345.85		17.20	-1.12E+00		1.29E+00

BP/Castex-Ltd Adm-Apx E-001512

Analysis Report for 2206038-04

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	HF-181	482.03		82.80	6.75E-03	2.22E-01	2.22E-01
+	TA-182	67.75		41.20	-7.91E-01	2.20E-01	2.20E-01
		1121.30		34.90	8.90E-01		7.13E-01
		1189.05		16.23	2.05E-01		1.14E+00
		1221.41		26.98	-1.34E-01		6.73E-01
		1231.02		11.44	1.72E-01		1.74E+00
+	IR-192	308.46		29.68	2.39E-02	3.28E-01	4.61E-01
		468.07		48.10	1.08E-01		3.28E-01
+	HG-203	279.19		77.30	-5.44E-02	2.03E-01	2.03E-01
+	TL-204	374.74		94.11	-3.91E-03	1.19E-01	1.19E-01
		899.15		99.16	1.08E-02		1.47E-01
		911.74		91.10	4.85E-01		2.55E-01
+	BI-207	569.67		97.72	-3.99E-02	1.24E-01	1.24E-01
		1063.62		74.90	7.87E-02		1.98E-01
+	TL-208	583.14	*	30.22	1.31E+00	6.39E-01	6.39E-01
		860.37		4.48	9.02E-02		3.21E+00
		2614.66		35.85	-3.59E-01		8.24E-01
+	BI-210M	262.00		45.00	-1.85E-01	2.25E-01	2.25E-01
		300.00		23.00	2.22E-02		6.01E-01
+	PB-210	46.50		4.25	1.82E+00	2.34E+00	2.34E+00
+	PB-211	404.84		2.90	4.30E-02	4.41E+00	4.41E+00
		831.96		2.90	3.35E+00		5.13E+00
+	BI-212	727.17	*	11.80	1.53E+00	1.49E+00	1.49E+00
		1620.62		2.75	-1.20E+00		5.81E+00
+	PB-212	238.63	*	44.60	2.07E+00	4.02E-01	4.02E-01
		300.09		3.41	-6.86E-02		3.91E+00
+	BI-214	609.31	*	46.30	1.11E+00	4.57E-01	4.57E-01
		1120.29	*	15.10	2.24E+00		1.13E+00
		1764.49	*	15.80	1.82E+00		5.78E-01
		2204.22		4.98	5.13E-01		3.08E+00
+	PB-214	295.21	*	19.19	1.36E+00	8.54E-01	8.54E-01
		351.92	*	37.19	1.51E+00		1.10E+00
+	RN-219	401.80		6.50	4.49E-01	1.93E+00	1.93E+00
+	RA-223	323.87		3.88	9.91E-02	2.93E+00	2.93E+00
+	RA-224	240.98	*	3.95	2.34E+01	4.54E+00	4.54E+00
+	RA-225	40.00		31.00	-7.89E-01	1.63E+00	1.63E+00
+	RA-226	186.21	*	3.28	4.48E+00	4.23E+00	4.23E+00
+	TH-227	50.10		8.40	8.52E-01	1.03E+00	1.03E+00
		236.00		11.50	6.03E+00		1.43E+00
		256.20		6.30	7.45E-01		1.62E+00
+	AC-228	338.32	*	11.40	1.37E+00	8.50E-01	3.44E+00
		911.07	*	27.70	1.72E+00		8.50E-01
		969.11	*	16.60	1.33E+00		1.51E+00
+	TH-230	48.43		16.90	3.21E-01	5.39E-01	5.39E-01
		62.85		4.60	-7.32E-01		1.58E+00
		67.67		0.37	-7.52E+01		2.09E+01
+	PA-231	283.67		1.60	-5.93E+00	5.20E+00	6.51E+00
		302.67		2.30	-7.75E-01		5.20E+00

BP/Castex-Ltd Adm-Apx E-001513

Analysis Report for 2206038-04

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TH-231	25.64		14.70	-1.25E+01	1.29E+00	1.72E+01
		84.21		6.40	-2.96E+00		1.29E+00
+	PA-233	311.98		38.60	-2.11E-01	5.33E-01	5.33E-01
+	PA-234	131.20		20.40	-6.78E-03	3.64E-01	3.64E-01
		733.99		8.80	6.93E-01		1.66E+00
		946.00		12.00	4.09E-01		1.14E+00
+	PA-234M	1001.03		0.92	7.76E+00	1.51E+01	1.51E+01
+	TH-234	63.29	*	3.80	3.67E+00	6.51E+00	6.51E+00
+	U-235	143.76		10.50	1.99E-01	7.21E-01	7.21E-01
		163.35		4.70	-9.59E-01		1.68E+00
		205.31		4.70	1.67E+00		2.11E+00
+	NP-237	86.50	*	12.60	1.92E+00	1.99E+00	1.99E+00
+	NP-239	106.10		22.70	2.36E+02	6.01E+02	6.01E+02
		228.18		10.70	3.33E+02		2.00E+03
		277.60		14.10	2.24E+02		1.66E+03
+	AM-241	59.54		35.90	-9.45E-03	2.05E-01	2.05E-01
+	AM-243	74.67	*	66.00	8.57E-01	3.63E-01	3.63E-01
+	CM-243	209.75		3.29	1.57E+00	7.78E-01	2.99E+00
		228.14		10.60	1.56E-01		9.38E-01
		277.60		14.00	1.05E-01		7.78E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	1.63E+00	1.63E+00	1.57E-01	7.79E-01

BP/Castex-Ltd Adm-Apx E-001514

Analysis Report for 2206038-04

R-1 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	NA-22	1274.54		99.94	1.59E-01	1.59E-01	2.97E-03	7.28E-02
	NA-24	1368.53		99.99	1.53E-01	6.12E-02	7.63E-02	6.92E-02
		2754.09		99.86	6.12E-02		-1.45E-02	1.93E-02
	AL-26	1808.65		99.76	1.25E-01	1.25E-01	-1.41E-02	5.33E-02
+	K-40	1460.81	*	10.67	1.80E+00	1.80E+00	8.93E+00	8.30E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	8.19E-02	8.19E-02	-2.95E-01	4.05E-02
		78.34		96.00	9.10E-02		1.98E-01	4.50E-02
	SC-46	889.25		98.98	1.57E-01	1.57E-01	-8.75E-02	7.24E-02
		1120.51		99.90	2.59E-01		2.66E-01	1.22E-01
	V-48	983.52		99.98	4.12E-01	4.12E-01	1.64E-01	1.90E-01
		1312.10		97.50	5.18E-01		1.22E-01	2.37E-01
	CR-51	320.08		9.83	2.07E+00	2.07E+00	-4.70E-01	9.99E-01
	MN-54	834.83		99.97	1.51E-01	1.51E-01	1.70E-02	7.08E-02
	CO-56	846.75		99.96	1.71E-01	1.71E-01	6.62E-02	7.99E-02
		1037.75		14.03	1.23E+00		-4.00E-03	5.63E-01
		1238.25		67.00	3.26E-01		-4.08E-03	1.50E-01
		1771.40		15.51	1.24E+00		-8.54E-01	5.41E-01
		2587.48		16.90	8.31E-01		2.41E-01	3.30E-01
	CO-57	122.06		85.51	8.57E-02	8.57E-02	-1.39E-02	4.20E-02
		136.48		10.60	7.18E-01		-2.91E-01	3.52E-01
	CO-58	810.76		99.40	1.72E-01	1.72E-01	-1.07E-02	8.04E-02
	FE-59	1099.22		56.50	3.58E-01	3.58E-01	-2.43E-02	1.63E-01
		1291.56		43.20	5.36E-01		1.35E-01	2.44E-01
	CO-60	1173.22		100.00	1.47E-01	1.47E-01	-9.57E-02	6.72E-02
		1332.49		100.00	1.76E-01		9.20E-02	8.11E-02
	ZN-65	1115.52		50.75	4.42E-01	4.42E-01	-5.48E-02	2.08E-01
	GA-67	93.31		35.70	5.52E+01	5.52E+01	1.54E+02	2.72E+01
		208.95		2.24	1.13E+03		6.63E+02	5.50E+02
		300.22		16.00	2.13E+02		-3.74E+00	1.04E+02
	SE-75	121.11		16.70	4.72E-01	1.39E-01	-2.34E-01	2.31E-01
		136.00		59.50	1.39E-01		-5.63E-02	6.79E-02
		264.65		59.80	2.02E-01		-7.62E-02	9.79E-02
		279.53		25.20	4.93E-01		-1.32E-01	2.39E-01
		400.65		11.40	1.22E+00		1.22E-01	5.86E-01
	RB-82	776.52		13.00	2.11E+00	2.11E+00	-1.11E+00	9.91E-01
	RB-83	520.41		46.00	3.09E-01	3.09E-01	-1.32E-01	1.47E-01
		529.64		30.30	4.58E-01		-4.18E-02	2.17E-01
		552.65		16.40	9.02E-01		-9.94E-02	4.28E-01
	KR-85	513.99		0.43	3.51E+01	3.51E+01	-5.56E+00	1.69E+01
	SR-85	513.99		99.27	2.02E-01	2.02E-01	-3.20E-02	9.72E-02
	Y-88	898.02		93.40	1.77E-01	1.77E-01	-9.10E-03	8.23E-02
		1836.01		99.38	1.87E-01		-6.60E-02	8.20E-02
	MO-93	263.06		56.72	1.83E-01	1.31E-01	-3.80E-02	8.90E-02
		684.67		99.68	1.31E-01		-2.31E-02	6.17E-02
		1477.11		99.08	1.40E-01		5.56E-02	6.22E-02
	NB-93M	16.57		9.43	2.28E+04	2.28E+04	9.41E+04	1.13E+04
	NB-94	702.63		100.00	1.51E-01	1.26E-01	7.06E-02	7.17E-02
		871.10		100.00	1.26E-01		-3.41E-02	5.83E-02
	NB-95	765.79		99.81	2.45E-01	2.45E-01	6.46E-02	1.16E-01
	NB-95M	235.69		25.00	9.86E+01	9.86E+01	4.14E+02	4.85E+01
	ZR-95	724.18		43.70	4.66E-01	3.38E-01	3.91E-01	2.21E-01
		756.72		55.30	3.38E-01		-3.24E-02	1.59E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	MO-99	181.06		6.20	1.08E+03	7.98E+02	-1.79E+02	5.30E+02
		739.58		12.80	7.98E+02		3.34E+02	3.77E+02
		778.00		4.50	2.17E+03		-6.76E+02	1.02E+03
	TC-99M	140.51		89.00	8.32E-02	8.32E-02	1.31E-02	4.08E-02
	RU-103	497.08		89.00	1.95E-01	1.95E-01	-9.19E-02	9.29E-02
	RU-106	621.84		9.80	1.27E+00	1.27E+00	-6.08E-01	5.97E-01
	AG-108M	433.93		89.90	1.28E-01	1.28E-01	1.47E-02	6.12E-02
		614.37		90.40	2.06E-01		-9.97E-03	9.92E-02
		722.95		90.50	1.70E-01		1.30E-01	8.07E-02
+	CD-109	88.03	*	3.72	7.01E+00	7.01E+00	6.78E+00	3.49E+00
	AG-110M	657.75		93.14	1.86E-01	1.86E-01	-2.47E-02	8.91E-02
		677.61		10.53	1.27E+00		-5.60E-01	5.99E-01
		706.67		16.46	9.28E-01		3.50E-02	4.39E-01
		763.93		21.98	7.20E-01		1.92E-01	3.40E-01
		884.67		21.98	6.40E-01		2.98E-01	2.97E-01
		1384.27		23.94	6.74E-01		1.55E-01	3.04E-01
	CD-113M	263.70		0.02	4.53E+02	4.53E+02	-9.40E+01	2.20E+02
	SN-113	255.12		1.93	6.07E+00	2.02E-01	1.02E+00	2.95E+00
		391.69		64.90	2.02E-01		-7.46E-02	9.69E-02
	TE-123M	159.00		84.10	1.08E-01	1.08E-01	-1.44E-02	5.26E-02
	SB-124	602.71		97.87	2.41E-01	2.41E-01	-7.98E-02	1.16E-01
		645.85		7.26	2.42E+00		-7.00E-01	1.15E+00
		722.78		11.10	1.87E+00		1.43E+00	8.88E-01
		1691.02		49.00	3.50E-01		-5.38E-02	1.51E-01
	I-125	35.49		6.49	4.96E+00	4.96E+00	-8.43E+00	2.44E+00
	SB-125	176.33		6.89	1.27E+00	4.09E-01	5.18E-02	6.19E-01
		427.89		29.33	4.09E-01		1.03E-01	1.96E-01
		463.38		10.35	1.16E+00		-3.54E-01	5.56E-01
		600.56		17.80	7.84E-01		-2.95E-01	3.74E-01
		635.90		11.32	1.22E+00		2.93E-01	5.79E-01
	SB-126	414.70		83.30	1.42E-01	1.42E-01	-6.83E-03	6.80E-02
		666.33		99.60	1.56E-01		5.00E-03	7.42E-02
		695.00		99.60	1.49E-01		1.92E-02	7.07E-02
		720.50		53.80	2.74E-01		7.03E-03	1.30E-01
+	SN-126	87.57	*	37.00	6.78E-01	6.78E-01	6.55E-01	3.38E-01
	SB-127	473.00		25.00	5.38E+01	3.98E+01	3.63E+00	2.58E+01
		685.00		35.70	3.98E+01		-7.03E+00	1.88E+01
		783.80		14.70	1.00E+02		-4.42E+01	4.69E+01
	I-129	29.78		57.00	1.23E+00	1.23E+00	-7.25E-01	6.06E-01
		33.60		13.20	2.44E+00		-9.96E-01	1.20E+00
		39.58		7.52	2.03E+00		-1.83E+00	9.99E-01
	I-131	284.30		6.05	1.61E+01	1.20E+00	-1.70E+01	7.78E+00
		364.48		81.20	1.20E+00		-2.64E-01	5.76E-01
		636.97		7.26	1.76E+01		1.31E+00	8.38E+00
		722.89		1.80	8.10E+01		6.20E+01	3.84E+01
	TE-132	49.72		13.10	1.71E+02	2.90E+01	9.18E+01	8.40E+01
		228.16		88.00	2.90E+01		4.82E+00	1.41E+01
	BA-133	81.00		34.06	2.59E-01	2.56E-01	5.08E-01	1.28E-01
		302.84		18.33	6.56E-01		-9.78E-02	3.19E-01
		356.01		62.05	2.56E-01		7.09E-01	1.25E-01
	I-133	529.87		86.30	1.50E+08	1.50E+08	-1.37E+07	7.11E+07
	XE-133	81.00		38.00	7.27E+00	7.27E+00	1.43E+01	3.60E+00
	CS-134	563.23		8.38	1.54E+00	1.77E-01	7.66E-01	7.34E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	569.32		15.43	8.01E-01	1.77E-01	-2.58E-01	3.80E-01
		604.70		97.60	2.12E-01		-4.58E-02	1.03E-01
		795.84		85.40	1.77E-01		9.24E-02	8.32E-02
		801.93		8.73	1.62E+00		-4.26E-01	7.59E-01
	CS-135	268.24		16.00	6.79E-01	6.79E-01	1.61E-01	3.30E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	4.10E+00	5.12E-01	-2.42E-01	2.01E+00
		163.89		4.61	6.80E+00		-3.88E+00	3.32E+00
		176.55		13.56	2.50E+00		1.02E-01	1.22E+00
		273.65		12.66	3.56E+00		4.01E+00	1.73E+00
		340.57		48.50	1.04E+00		-4.82E-01	5.06E-01
		818.50		99.70	5.12E-01		-2.88E-01	2.39E-01
		1048.07		79.60	7.03E-01		1.62E-01	3.24E-01
		1235.34		19.70	3.54E+00		1.64E+00	1.64E+00
+	CS-137	661.65	*	85.12	1.97E-01	1.97E-01	9.52E-02	9.44E-02
	LA-138	788.74		34.00	4.29E-01	1.76E-01	6.76E-02	2.02E-01
		1435.80		66.00	1.76E-01		2.97E-03	7.64E-02
	CE-139	165.85		80.35	1.14E-01	1.14E-01	-9.20E-03	5.59E-02
	BA-140	162.64		6.70	4.80E+00	1.86E+00	-3.26E+00	2.34E+00
		304.84		4.50	1.02E+01		-1.20E+00	4.96E+00
		423.70		3.20	1.50E+01		4.27E+00	7.21E+00
		437.55		2.00	2.24E+01		-4.91E+00	1.07E+01
		537.32		25.00	1.86E+00		-1.24E-01	8.82E-01
	LA-140	328.77		20.50	2.28E+00	7.39E-01	-2.14E+00	1.10E+00
		487.03		45.50	1.05E+00		1.46E-01	5.00E-01
		815.85		23.50	2.30E+00		-4.29E-01	1.07E+00
		1596.49		95.49	7.39E-01		-6.66E-03	3.34E-01
	CE-141	145.44		48.40	2.77E-01	2.77E-01	1.15E-01	1.36E-01
	CE-143	57.36		11.80	3.27E+05	1.64E+05	-1.18E+04	1.61E+05
		293.26		42.00	1.64E+05		-1.81E+04	7.98E+04
		664.55		5.20	1.59E+06		1.60E+05	7.60E+05
	CE-144	133.54		10.80	6.93E-01	6.93E-01	-2.35E-01	3.39E-01
	PM-144	476.78		42.00	3.10E-01	1.36E-01	1.45E-01	1.49E-01
		618.01		98.60	1.36E-01		6.58E-04	6.46E-02
		696.49		99.49	1.57E-01		2.68E-02	7.45E-02
	PM-145	36.85		21.70	9.20E-01	4.75E-01	-1.92E+00	4.52E-01
		37.36		39.70	4.75E-01		-9.96E-01	2.33E-01
		42.30		15.10	8.30E-01		5.78E-02	4.09E-01
		72.40		2.31	3.79E+00		1.40E+01	1.87E+00
	PM-146	453.90		39.94	2.96E-01	2.96E-01	-2.46E-02	1.41E-01
		735.90		14.01	9.99E-01		4.18E-01	4.71E-01
		747.13		13.10	1.05E+00		-4.32E-01	4.95E-01
	ND-147	91.11		28.90	1.40E+00	1.40E+00	4.48E+00	6.92E-01
		531.02		13.10	4.45E+00		-2.72E-02	2.11E+00
	PM-149	285.90		3.10	1.14E+04	1.14E+04	-1.41E+04	5.51E+03
	EU-152	121.78		20.50	3.33E-01	3.33E-01	-1.66E-01	1.64E-01
		244.69		5.40	2.92E+00		-1.31E-01	1.43E+00
		344.27		19.13	7.08E-01		-1.98E+00	3.44E-01
		778.89		9.10	1.50E+00		-2.93E-01	7.03E-01
		964.01		10.40	2.00E+00		2.71E+00	9.49E-01
		1085.78		7.22	1.87E+00		-7.37E-02	8.56E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1112.02		9.60	1.72E+00	3.33E-01	-1.53E-01	7.97E-01
		1407.95		14.94	1.01E+00		-6.95E-02	4.54E-01
	GD-153	97.43		31.30	2.42E-01	2.42E-01	-1.10E-02	1.19E-01
		103.18		22.20	3.05E-01		1.18E-02	1.50E-01
	EU-154	123.07		40.50	1.72E-01	1.72E-01	7.76E-03	8.46E-02
		723.30		19.70	7.86E-01		6.02E-01	3.73E-01
		873.19		11.50	1.09E+00		-6.72E-02	5.06E-01
		996.32		10.30	1.26E+00		-2.81E-01	5.80E-01
		1004.76		17.90	7.40E-01		-1.62E-01	3.40E-01
		1274.45		35.50	4.43E-01		8.26E-03	2.02E-01
+	EU-155	86.50	*	30.90	8.20E-01	3.08E-01	7.93E-01	4.08E-01
		105.30		20.70	3.08E-01		6.64E-02	1.51E-01
	EU-156	811.77		10.40	4.17E+00	4.17E+00	-4.72E-01	1.95E+00
		1153.47		7.20	7.33E+00		-2.76E-01	3.39E+00
		1230.71		8.90	6.27E+00		6.22E-01	2.89E+00
	HO-166M	184.41		72.60	1.34E-01	1.34E-01	-1.46E-02	6.57E-02
		280.45		29.60	3.60E-01		6.95E-03	1.75E-01
		410.94		11.10	1.12E+00		-2.60E-02	5.40E-01
		711.69		54.10	2.44E-01		-2.90E-02	1.15E-01
	TM-171	66.72		0.14	5.51E+01	5.51E+01	-2.39E+02	2.72E+01
	HF-172	67.35		5.31	1.50E+00	6.52E-01	-5.39E+00	7.40E-01
		125.82		11.30	6.52E-01		4.86E-01	3.20E-01
	LU-172	181.53		20.60	6.80E+00	3.26E+00	-1.12E+00	3.33E+00
		900.72		29.81	7.41E+00		9.56E-01	3.47E+00
		1093.66		62.50	3.26E+00		1.09E+00	1.49E+00
	LU-173	100.72		5.24	1.31E+00	5.56E-01	3.90E-02	6.47E-01
		272.11		21.20	5.56E-01		5.53E-01	2.70E-01
	HF-175	343.40		84.00	1.99E-01	1.99E-01	-8.15E-01	9.67E-02
	LU-176	88.34		13.30	5.89E-01	1.12E-01	-2.67E-01	2.91E-01
		201.83		86.00	1.12E-01		-2.14E-02	5.47E-02
		306.78		94.00	1.15E-01		-1.33E-02	5.58E-02
	HF-181	133.02		41.70	2.57E-01	2.22E-01	-8.73E-02	1.26E-01
		345.85		17.20	1.29E+00		-1.12E+00	6.25E-01
		482.03		82.80	2.22E-01		6.75E-03	1.06E-01
	TA-182	67.75		41.20	2.20E-01	2.20E-01	-7.91E-01	1.09E-01
		1121.30		34.90	7.13E-01		8.90E-01	3.37E-01
		1189.05		16.23	1.14E+00		2.05E-01	5.23E-01
		1221.41		26.98	6.73E-01		-1.34E-01	3.09E-01
		1231.02		11.44	1.74E+00		1.72E-01	8.02E-01
	IR-192	308.46		29.68	4.61E-01	3.28E-01	2.39E-02	2.23E-01
		468.07		48.10	3.28E-01		1.08E-01	1.57E-01
	HG-203	279.19		77.30	2.03E-01	2.03E-01	-5.44E-02	9.87E-02
	TL-204	374.74		94.11	1.19E-01	1.19E-01	-3.91E-03	5.71E-02
		899.15		99.16	1.47E-01		1.08E-02	6.84E-02
		911.74		91.10	2.55E-01		4.85E-01	1.22E-01
	BI-207	569.67		97.72	1.24E-01	1.24E-01	-3.99E-02	5.87E-02
		1063.62		74.90	1.98E-01		7.87E-02	9.14E-02
+	TL-208	583.14	*	30.22	6.39E-01	6.39E-01	1.31E+00	3.09E-01
		860.37		4.48	3.21E+00		9.02E-02	1.50E+00
		2614.66		35.85	8.24E-01		-3.59E-01	3.81E-01
	BI-210M	262.00		45.00	2.25E-01	2.25E-01	-1.85E-01	1.09E-01
		300.00		23.00	6.01E-01		2.22E-02	2.93E-01
	PB-210	46.50		4.25	2.34E+00	2.34E+00	1.82E+00	1.15E+00

BP/Castex-Ltd Adm-Apx E-001518

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PB-211	404.84		2.90	4.41E+00	4.41E+00	4.30E-02	2.12E+00
		831.96		2.90	5.13E+00		3.35E+00	2.41E+00
+	BI-212	727.17	*	11.80	1.49E+00	1.49E+00	1.53E+00	7.15E-01
		1620.62		2.75	5.81E+00		-1.20E+00	2.60E+00
+	PB-212	238.63	*	44.60	4.02E-01	4.02E-01	2.07E+00	1.98E-01
		300.09		3.41	3.91E+00		-6.86E-02	1.91E+00
+	BI-214	609.31	*	46.30	4.57E-01	4.57E-01	1.11E+00	2.22E-01
		1120.29	*	15.10	1.13E+00		2.24E+00	5.25E-01
		1764.49	*	15.80	5.78E-01		1.82E+00	2.31E-01
		2204.22		4.98	3.08E+00		5.13E-01	1.32E+00
+	PB-214	295.21	*	19.19	8.54E-01	8.54E-01	1.36E+00	4.18E-01
		351.92	*	37.19	1.10E+00		1.51E+00	5.42E-01
	RN-219	401.80		6.50	1.93E+00	1.93E+00	4.49E-01	9.32E-01
	RA-223	323.87		3.88	2.93E+00	2.93E+00	9.91E-02	1.42E+00
+	RA-224	240.98	*	3.95	4.54E+00	4.54E+00	2.34E+01	2.24E+00
	RA-225	40.00		31.00	1.63E+00	1.63E+00	-7.89E-01	8.02E-01
+	RA-226	186.21	*	3.28	4.23E+00	4.23E+00	4.48E+00	2.08E+00
	TH-227	50.10		8.40	1.03E+00	1.03E+00	8.52E-01	5.09E-01
		236.00		11.50	1.43E+00		6.03E+00	7.05E-01
		256.20		6.30	1.62E+00		7.45E-01	7.86E-01
+	AC-228	338.32	*	11.40	3.44E+00	8.50E-01	1.37E+00	1.70E+00
		911.07	*	27.70	8.50E-01		1.72E+00	4.07E-01
		969.11	*	16.60	1.51E+00		1.33E+00	7.23E-01
	TH-230	48.43		16.90	5.39E-01	5.39E-01	3.21E-01	2.66E-01
		62.85		4.60	1.58E+00		-7.32E-01	7.79E-01
		67.67		0.37	2.09E+01		-7.52E+01	1.03E+01
	PA-231	283.67		1.60	6.51E+00	5.20E+00	-5.93E+00	3.15E+00
		302.67		2.30	5.20E+00		-7.75E-01	2.53E+00
	TH-231	25.64		14.70	1.72E+01	1.29E+00	-1.25E+01	8.48E+00
		84.21		6.40	1.29E+00		-2.96E+00	6.35E-01
	PA-233	311.98		38.60	5.33E-01	5.33E-01	-2.11E-01	2.58E-01
	PA-234	131.20		20.40	3.64E-01	3.64E-01	-6.78E-03	1.79E-01
		733.99		8.80	1.66E+00		6.93E-01	7.84E-01
		946.00		12.00	1.14E+00		4.09E-01	5.27E-01
	PA-234M	1001.03		0.92	1.51E+01	1.51E+01	7.76E+00	6.99E+00
+	TH-234	63.29	*	3.80	6.51E+00	6.51E+00	3.67E+00	3.24E+00
	U-235	143.76		10.50	7.21E-01	7.21E-01	1.99E-01	3.53E-01
		163.35		4.70	1.68E+00		-9.59E-01	8.22E-01
		205.31		4.70	2.11E+00		1.67E+00	1.03E+00
+	NP-237	86.50	*	12.60	1.99E+00	1.99E+00	1.92E+00	9.92E-01
	NP-239	106.10		22.70	6.01E+02	6.01E+02	2.36E+02	2.95E+02
		228.18		10.70	2.00E+03		3.33E+02	9.75E+02
		277.60		14.10	1.66E+03		2.24E+02	8.08E+02
	AM-241	59.54		35.90	2.05E-01	2.05E-01	-9.45E-03	1.01E-01
+	AM-243	74.67	*	66.00	3.63E-01	3.63E-01	8.57E-01	1.81E-01
	CM-243	209.75		3.29	2.99E+00	7.78E-01	1.57E+00	1.46E+00
		228.14		10.60	9.38E-01		1.56E-01	4.57E-01
		277.60		14.00	7.78E-01		1.05E-01	3.78E-01

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Analysis Report for 2206038-04

R-1 0-6

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-1 0-6

Elapsed Live time: 3600
Elapsed Real Time: 3645

Channel								
1:	4	0	3	9	8	37	124	349
9:	239	674	425	272	190	141	159	124
17:	113	95	92	97	79	92	78	91
25:	86	87	79	92	79	74	80	78
33:	80	88	53	68	60	74	86	77
41:	84	83	64	79	84	120	115	116
49:	103	89	109	100	85	97	102	81
57:	101	102	101	106	115	119	147	160
65:	136	134	123	123	131	127	122	133
73:	155	218	245	285	348	315	246	149
81:	137	99	103	115	127	126	148	178
89:	168	177	124	154	150	170	111	95
97:	86	68	75	87	59	61	59	64
105:	78	71	70	67	69	63	67	61
113:	70	65	60	64	47	49	57	54
121:	63	72	48	65	74	58	54	64
129:	71	66	73	51	65	51	59	61
137:	50	53	65	56	66	50	70	73
145:	59	64	56	53	62	49	65	57
153:	47	64	58	49	45	54	53	48
161:	53	52	46	41	39	50	46	56
169:	41	53	57	53	53	52	49	42
177:	43	60	45	38	43	43	48	60
185:	55	79	79	75	66	49	52	51
193:	47	43	36	45	41	40	57	40
201:	45	38	41	37	54	55	45	43
209:	58	52	51	32	41	25	33	28
217:	42	31	33	38	42	29	38	29
225:	27	39	44	34	38	38	34	32
233:	33	30	54	58	82	164	233	208
241:	146	118	66	48	34	31	42	22
249:	20	22	40	28	31	29	23	31
257:	35	39	22	22	28	25	33	23
265:	29	22	31	24	31	47	36	40
273:	23	26	34	31	31	33	38	28
281:	14	27	26	21	21	23	22	24
289:	18	30	22	15	32	57	67	74
297:	59	45	31	35	31	28	28	16
305:	28	20	20	23	15	26	25	22
313:	19	30	19	17	18	20	21	31
321:	18	19	18	18	20	20	24	33
329:	38	18	28	17	13	13	28	18
337:	32	43	39	45	33	17	13	15
345:	21	13	28	24	16	39	73	91
353:	82	61	34	16	12	14	15	18
361:	19	13	13	10	17	11	20	13

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369:	13	20	10	18	20	18	21	10

Sample Title: R-1 0-6

Channel								
377:	19	16	14	14	17	15	19	16
385:	19	12	17	17	11	16	12	13
393:	18	16	8	15	26	18	17	18
401:	18	16	15	16	20	18	13	31
409:	21	25	18	14	16	11	14	14
417:	12	12	12	17	13	19	9	13
425:	12	14	20	14	16	17	18	9
433:	10	16	17	17	8	9	9	13
441:	19	6	7	13	13	9	12	6
449:	16	12	10	16	17	15	10	17
457:	12	9	20	5	10	17	14	16
465:	12	13	17	11	13	5	17	16
473:	11	13	14	14	16	6	16	12
481:	14	11	10	8	9	13	11	16
489:	10	10	12	10	8	17	4	7
497:	6	7	10	11	13	6	11	9
505:	14	11	10	16	28	36	28	29
513:	14	18	19	2	6	10	10	9
521:	13	9	12	8	8	11	7	6
529:	10	12	12	6	6	12	10	6
537:	7	5	10	9	5	13	12	11
545:	15	16	17	4	7	8	13	10
553:	10	10	10	9	7	10	5	10
561:	11	15	7	11	12	8	14	8
569:	6	12	4	10	7	6	8	9
577:	8	16	15	13	25	35	49	42
585:	28	18	7	10	10	9	13	8
593:	6	8	10	14	8	8	7	7
601:	9	11	8	12	3	12	27	47
609:	65	54	40	19	10	6	12	6
617:	9	8	5	8	4	10	8	6
625:	8	3	12	6	14	9	13	12
633:	11	10	8	11	8	8	7	8
641:	6	8	8	11	7	5	8	6
649:	12	7	15	5	10	13	11	6
657:	17	7	10	17	19	16	17	13
665:	11	9	9	6	15	8	7	8
673:	6	5	4	7	10	9	6	6
681:	5	7	6	9	8	9	5	9
689:	8	7	9	11	7	10	5	13
697:	7	15	7	13	9	6	9	12
705:	12	7	8	10	8	7	6	4
713:	9	6	8	6	5	6	7	7
721:	3	11	9	10	8	10	21	14
729:	10	4	8	2	5	6	8	12
737:	9	7	11	9	8	5	4	5
745:	6	9	10	5	8	5	3	10
753:	10	8	8	7	7	11	4	8
761:	6	7	3	7	8	8	8	8
769:	13	8	5	8	5	5	6	7
777:	9	4	5	4	7	5	10	6
785:	7	7	7	4	3	8	4	6
793:	12	10	7	11	9	6	4	4

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801:	5	5	7	3	4	6	8	6

Sample Title: R-1 0-6

Channel								
809:	6	10	1	5	8	7	4	4
817:	1	3	4	6	11	4	6	2
825:	5	8	4	7	12	6	7	4
833:	3	8	6	10	7	3	3	3
841:	5	6	5	7	3	4	3	4
849:	3	6	4	7	7	2	5	4
857:	3	12	7	10	7	7	5	3
865:	4	5	4	6	4	7	3	5
873:	4	2	3	2	5	1	7	2
881:	8	2	5	4	7	2	2	6
889:	4	4	4	3	3	4	3	5
897:	11	5	3	7	4	3	3	9
905:	7	4	8	13	24	28	33	19
913:	19	12	7	4	3	2	4	4
921:	2	3	8	3	5	7	0	3
929:	3	5	5	5	10	4	12	6
937:	3	5	2	3	7	2	8	3
945:	5	5	5	2	5	3	4	2
953:	1	2	5	2	6	5	3	6
961:	5	5	11	12	11	10	12	17
969:	18	11	5	5	4	3	2	0
977:	8	3	5	5	5	3	1	3
985:	4	3	4	6	2	3	3	1
993:	2	2	6	4	6	1	7	2
1001:	4	2	7	2	3	4	2	4
1009:	2	2	3	8	2	2	3	2
1017:	5	4	4	2	1	3	1	7
1025:	4	4	5	2	5	4	5	1
1033:	3	5	4	1	5	3	1	2
1041:	6	4	4	3	4	3	1	2
1049:	2	9	5	4	4	2	4	2
1057:	4	2	2	4	4	2	4	7
1065:	7	0	3	5	6	4	4	1
1073:	1	4	5	2	6	2	3	4
1081:	4	6	3	3	3	3	0	3
1089:	4	3	1	2	3	2	3	4
1097:	4	5	3	3	5	1	2	1
1105:	2	3	5	3	3	3	3	4
1113:	3	3	4	5	10	8	16	16
1121:	12	7	4	2	2	4	7	0
1129:	1	6	3	2	4	7	3	7
1137:	6	2	2	2	2	2	2	4
1145:	7	4	7	6	5	5	2	5
1153:	1	2	5	1	2	2	7	6
1161:	2	3	4	8	4	7	2	1
1169:	8	2	2	2	3	3	2	3
1177:	3	3	5	6	1	3	4	5
1185:	2	5	1	1	2	2	3	7
1193:	4	5	4	4	2	0	3	4
1201:	4	2	4	3	4	3	3	1
1209:	4	5	1	1	7	4	2	1
1217:	2	2	6	6	4	7	1	2
1225:	4	3	1	2	4	5	5	2

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1233:	0	5	5	4	9	4	6	3

Sample Title: R-1 0-6

Channel								
1241:	1	4	3	2	3	4	5	2
1249:	7	5	2	1	3	5	0	4
1257:	6	5	2	3	3	4	0	3
1265:	4	5	0	3	4	1	2	2
1273:	1	3	3	3	5	4	4	3
1281:	4	1	5	1	4	2	4	5
1289:	3	1	2	2	4	2	0	3
1297:	4	3	2	1	1	6	3	5
1305:	1	4	3	1	3	5	6	3
1313:	5	1	3	1	2	2	2	0
1321:	4	0	6	3	2	3	3	4
1329:	4	3	5	4	4	2	5	4
1337:	3	0	2	2	0	2	0	1
1345:	0	1	3	1	0	1	0	2
1353:	1	2	2	3	3	1	0	1
1361:	1	1	5	2	1	4	4	0
1369:	2	2	1	2	4	3	0	3
1377:	2	2	3	3	0	1	2	3
1385:	3	4	2	1	2	3	4	1
1393:	0	1	2	4	1	1	4	3
1401:	3	3	3	1	1	6	4	0
1409:	3	0	2	2	2	1	0	4
1417:	3	1	1	1	2	2	1	4
1425:	2	1	0	2	1	2	2	0
1433:	1	0	3	0	0	0	1	1
1441:	3	2	2	2	1	0	2	2
1449:	2	1	2	3	4	2	9	4
1457:	13	33	38	36	27	11	4	0
1465:	2	2	0	0	3	0	2	0
1473:	3	1	1	2	2	1	3	0
1481:	4	1	1	0	1	3	0	2
1489:	3	1	0	1	2	1	2	3
1497:	2	1	2	1	2	3	0	2
1505:	3	2	2	2	6	1	0	1
1513:	2	3	3	1	0	0	0	2
1521:	2	1	0	2	0	1	2	0
1529:	1	4	1	1	1	2	1	3
1537:	2	1	1	0	1	1	0	1
1545:	5	1	2	2	1	2	0	0
1553:	2	0	1	0	3	2	2	4
1561:	0	0	6	0	1	0	2	1
1569:	3	0	3	2	2	0	0	0
1577:	2	0	0	1	3	2	1	3
1585:	1	4	4	7	1	6	4	1
1593:	5	1	0	0	2	2	3	1
1601:	2	2	2	3	2	0	0	1
1609:	1	3	1	3	2	3	1	2
1617:	2	3	1	1	3	0	1	3
1625:	2	2	1	1	4	3	1	1
1633:	2	0	0	0	2	1	2	0
1641:	0	0	0	1	0	0	0	4
1649:	2	0	0	1	1	0	1	1
1657:	3	1	2	1	0	1	3	0

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1665:	0	0	0	0	0	0	0	0

Sample Title: R-1 0-6

Channel								
1673:	3	0	3	1	1	0	1	2
1681:	0	0	2	0	0	1	1	1
1689:	4	0	0	1	1	1	0	0
1697:	3	0	2	2	0	3	0	1
1705:	0	0	0	0	1	1	0	2
1713:	1	0	1	2	1	0	1	2
1721:	0	1	1	0	2	2	1	5
1729:	1	1	2	0	1	1	0	2
1737:	1	0	2	0	2	0	0	0
1745:	0	2	1	0	0	0	2	2
1753:	1	0	0	1	0	0	1	1
1761:	3	19	6	11	4	0	0	3
1769:	2	0	1	1	0	2	1	2
1777:	1	0	0	1	0	1	0	1
1785:	0	0	1	1	1	1	3	0
1793:	0	0	1	2	1	0	2	1
1801:	2	0	0	0	0	0	2	1
1809:	1	0	1	3	2	1	0	1
1817:	1	0	1	1	1	1	0	1
1825:	0	0	2	3	1	2	1	1
1833:	0	2	1	0	1	4	2	1
1841:	1	2	3	2	5	0	1	2
1849:	1	1	1	1	1	0	0	0
1857:	1	1	0	2	0	1	0	1
1865:	1	0	2	0	2	1	3	1
1873:	1	0	0	1	0	0	3	1
1881:	1	3	1	0	0	0	1	0
1889:	1	1	2	1	1	1	1	2
1897:	0	0	1	1	4	0	2	0
1905:	1	0	0	1	1	0	2	0
1913:	0	1	0	0	1	0	3	0
1921:	1	1	2	1	0	0	1	0
1929:	0	2	3	2	1	1	0	0
1937:	1	0	0	1	1	0	0	0
1945:	1	1	1	2	0	1	0	1
1953:	1	0	1	0	0	0	1	2
1961:	0	2	0	0	2	3	0	0
1969:	2	2	1	2	0	0	0	0
1977:	3	0	2	0	0	0	0	0
1985:	0	0	0	2	1	1	0	0
1993:	0	0	0	2	1	0	0	0
2001:	1	1	0	0	2	1	1	0
2009:	0	1	0	1	0	1	1	0
2017:	0	0	1	0	0	0	2	0
2025:	1	2	0	2	0	1	2	1
2033:	1	1	0	0	1	0	0	0
2041:	1	1	0	0	2	0	0	1
2049:	1	0	0	1	0	2	2	1
2057:	0	0	0	1	2	2	1	3
2065:	0	1	1	1	1	1	1	1
2073:	2	1	0	0	1	2	1	0
2081:	0	0	0	0	1	0	0	1
2089:	0	1	0	0	2	0	1	4

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2097:	3	2	1	2	2	2	2	2

Sample Title: R-1 0-6

Channel								
2105:	0	0	0	0	0	0	2	0
2113:	0	5	3	1	1	1	0	0
2121:	0	0	2	1	0	1	1	0
2129:	0	1	0	1	1	0	2	0
2137:	3	1	2	0	2	0	2	3
2145:	0	0	2	0	0	0	1	0
2153:	0	1	0	1	0	0	1	0
2161:	0	0	0	0	0	0	0	1
2169:	0	0	1	0	0	0	2	0
2177:	0	0	0	0	1	0	0	0
2185:	1	1	1	1	2	1	0	0
2193:	2	0	1	1	1	1	1	0
2201:	2	2	1	0	2	1	0	0
2209:	3	0	1	1	0	1	1	0
2217:	0	0	0	0	0	0	2	1
2225:	0	0	1	1	0	0	0	2
2233:	1	0	1	0	0	1	2	0
2241:	1	0	0	1	0	0	1	2
2249:	2	1	1	0	2	1	2	0
2257:	0	0	2	1	0	2	0	0
2265:	1	2	0	0	0	1	0	1
2273:	2	0	2	2	0	0	0	1
2281:	1	0	1	0	0	0	3	1
2289:	3	1	1	0	0	0	1	1
2297:	0	1	1	0	2	0	0	0
2305:	2	1	2	0	0	0	0	1
2313:	1	0	0	1	0	0	1	0
2321:	1	0	1	2	1	0	0	0
2329:	0	1	0	0	1	0	0	1
2337:	2	0	0	2	1	3	2	0
2345:	2	0	0	1	2	1	1	0
2353:	0	0	2	1	1	0	0	2
2361:	0	2	0	0	1	1	1	1
2369:	1	1	0	1	2	1	1	1
2377:	2	1	0	0	2	0	0	2
2385:	1	0	0	0	1	2	0	1
2393:	1	1	1	1	2	0	0	0
2401:	0	1	2	1	1	1	2	0
2409:	0	1	1	1	1	0	1	0
2417:	1	2	0	2	0	0	0	0
2425:	0	2	0	0	0	0	0	0
2433:	0	1	0	2	1	2	0	0
2441:	2	1	0	1	2	1	1	0
2449:	2	1	0	0	2	1	0	0
2457:	1	0	0	0	1	2	0	2
2465:	1	0	0	1	0	0	2	1
2473:	1	1	0	1	0	1	1	0
2481:	0	0	0	0	1	0	0	1
2489:	0	0	0	2	0	0	1	2
2497:	0	0	0	0	1	0	0	1
2505:	0	0	1	1	0	0	0	0
2513:	1	0	0	0	0	1	2	0
2521:	1	0	0	0	1	0	0	0

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2529:	0	1	0	1	1	0	0	0

Sample Title: R-1 0-6

Channel							
2537:	0	0	0	0	0	0	0	1
2545:	0	0	0	0	1	0	2	0
2553:	0	1	0	1	0	0	0	0
2561:	1	0	0	1	0	0	0	0
2569:	1	1	0	0	0	0	0	0
2577:	0	0	1	0	0	1	1	0
2585:	0	1	0	0	0	0	1	1
2593:	0	0	0	0	0	1	0	0
2601:	1	1	1	0	0	1	1	0
2609:	10	6	11	10	9	3	0	0
2617:	0	0	1	0	0	0	0	0
2625:	0	0	0	0	1	1	0	0
2633:	0	0	0	0	0	0	0	2
2641:	0	0	0	0	0	1	0	0
2649:	0	0	2	0	0	0	0	0
2657:	0	0	0	0	0	0	1	0
2665:	1	0	0	1	0	0	1	0
2673:	0	0	0	0	0	0	0	0
2681:	1	0	0	0	0	1	0	0
2689:	0	0	0	0	0	0	0	0
2697:	0	0	0	0	1	1	0	0
2705:	0	0	0	0	0	0	0	0
2713:	0	0	0	0	0	0	0	0
2721:	1	0	1	0	1	1	2	0
2729:	1	0	1	0	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	0	0	1	0	0	0	0	0
2753:	0	0	1	0	0	0	0	0
2761:	0	1	0	2	0	1	0	0
2769:	0	0	0	1	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	1	0	0	0	0	1	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	0	1	0
2809:	0	0	1	0	1	0	1	1
2817:	0	1	0	0	0	0	1	0
2825:	0	0	0	0	0	0	0	0
2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	1	0	0	0	0
2849:	0	0	1	0	1	0	0	0
2857:	0	0	0	1	0	0	0	0
2865:	0	0	0	2	2	0	0	0
2873:	0	0	0	0	0	0	0	1
2881:	0	0	0	0	0	1	0	0
2889:	0	0	0	0	0	0	0	0
2897:	0	0	0	1	0	0	0	0
2905:	0	0	0	0	1	0	0	0
2913:	0	1	0	0	0	0	2	0
2921:	0	0	0	0	0	0	1	0
2929:	0	0	0	0	0	0	0	0
2937:	0	0	0	0	0	1	0	0
2945:	1	0	0	0	1	1	0	0
2953:	0	0	0	0	0	1	0	0

BP/Castex-Ltd Adm-Apx E-001527

2961:	0	0	1	0	0	0	0	0

Sample Title: R-1 0-6

Channel								
2969:	0	0	0	0	2	0	0	0
2977:	0	1	1	0	0	0	0	0
2985:	0	0	0	0	0	2	0	0
2993:	0	0	1	1	0	0	0	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	0	1	0	0	0	0
3025:	0	0	0	2	0	0	0	0
3033:	0	0	1	0	0	0	0	0
3041:	0	0	0	0	0	0	1	0
3049:	0	0	0	0	0	0	1	1
3057:	0	0	0	0	0	0	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	1
3081:	0	0	0	0	0	0	1	0
3089:	1	1	0	0	0	0	0	0
3097:	0	0	0	0	0	0	1	0
3105:	0	0	0	0	1	0	0	0
3113:	0	1	0	0	0	0	1	0
3121:	0	0	1	0	0	0	0	0
3129:	0	0	0	0	0	0	0	1
3137:	0	0	0	0	0	0	0	0
3145:	0	0	0	0	0	0	0	0
3153:	0	1	0	0	0	0	0	0
3161:	0	0	0	0	0	0	0	0
3169:	0	1	1	0	0	0	0	0
3177:	0	0	0	0	1	0	0	0
3185:	0	0	0	1	0	0	0	1
3193:	0	0	0	0	0	0	0	0
3201:	0	0	1	0	0	0	0	0
3209:	0	0	0	0	1	0	0	0
3217:	1	0	1	0	0	0	1	0
3225:	0	1	0	0	0	0	0	0
3233:	0	0	0	0	1	0	0	0
3241:	0	0	0	0	0	0	0	0
3249:	0	0	2	0	0	1	0	0
3257:	1	0	0	0	0	0	1	1
3265:	0	0	0	0	1	0	0	0
3273:	0	1	0	1	0	0	0	0
3281:	0	0	0	0	0	0	0	0
3289:	0	0	1	0	0	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0
3313:	1	0	0	0	0	0	0	0
3321:	1	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	1	0	0	0	0	0	0	1
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	1	0	0	0
3361:	0	0	1	0	0	1	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	0	1	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001528

3393:	0	0	0	0	0	0	0	0

Sample Title: R-1 0-6

Channel								
3401:	0	0	1	0	1	1	0	0
3409:	0	0	0	0	1	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	1
3449:	0	0	0	0	0	0	0	0
3457:	1	0	0	1	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	1
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	1	1	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	1	1	1	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	1	1	0	0	0
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	1	0	0	0	0	0	0
3585:	0	0	1	0	0	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	1	0	0	0	1	0
3633:	1	0	0	0	0	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	1	0	0	0	0	0	1	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	1	0	0	0	0
3681:	0	1	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	1
3705:	1	0	0	0	0	0	0	0
3713:	0	0	0	1	0	0	0	0
3721:	0	0	1	0	0	0	0	0
3729:	1	0	0	0	0	0	0	1
3737:	0	1	0	0	1	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	1	0
3769:	0	0	1	0	0	0	0	0
3777:	0	0	2	0	0	0	0	0
3785:	0	0	0	0	0	1	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	1	0	0	0
3809:	0	0	0	0	0	0	0	1
3817:	0	0	0	0	0	0	1	1

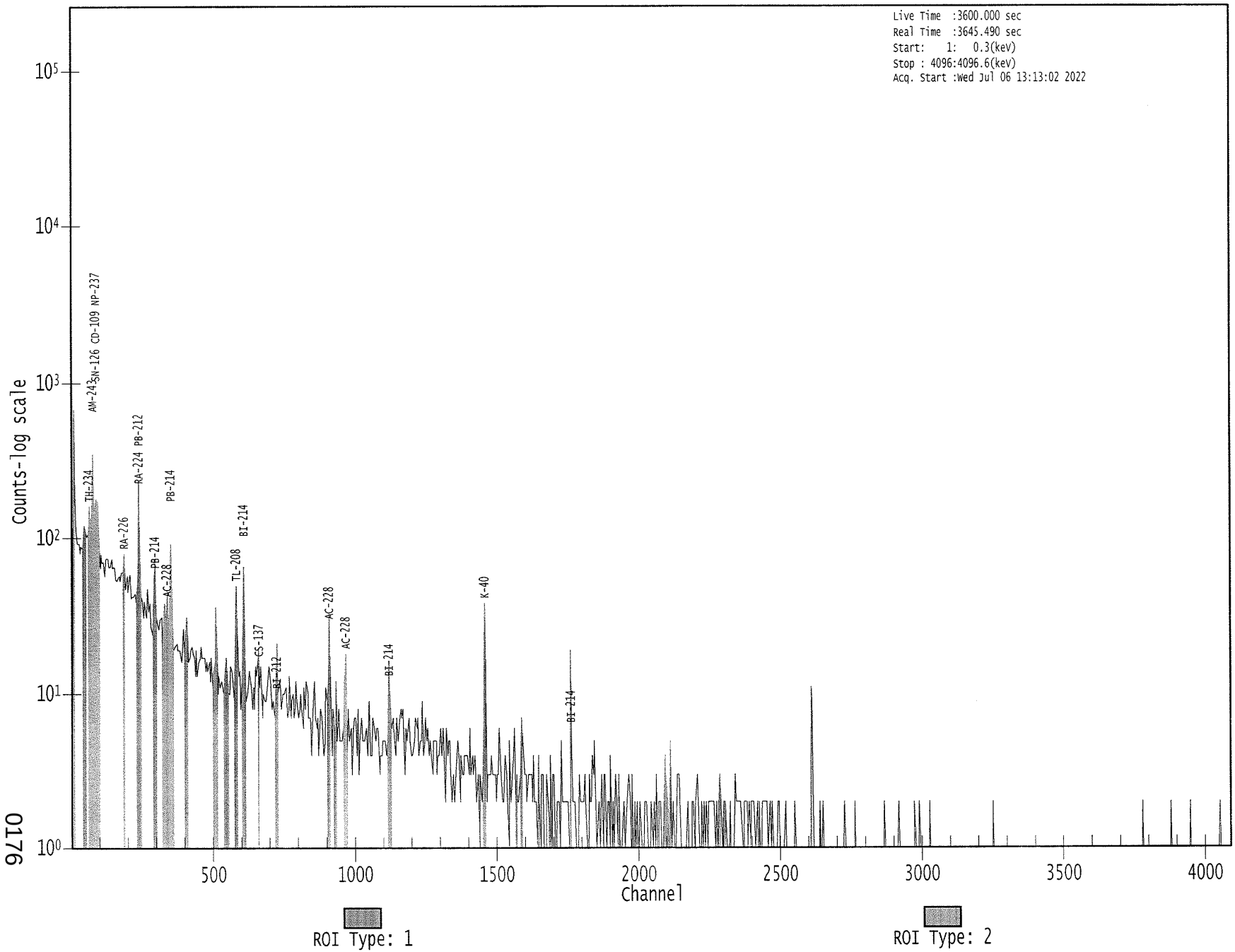
BP/Castex-Ltd Adm-Apx E-001529

3825:	0	1	1	0	0	0	0	0

Sample Title: R-1 0-6

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	1	0	0	0	0	1	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	1	0	0	0	0	0
3873:	0	0	0	0	0	0	2	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	1	0
3897:	0	0	0	0	0	0	0	1
3905:	0	0	0	0	0	0	0	1
3913:	0	0	0	1	0	0	0	0
3921:	1	0	0	0	1	0	0	0
3929:	0	1	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	2	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	1	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	1	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	1	1	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	1	0	0	0	0	2	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	1	1	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	1	0	0	1	0	0	0	0
4089:	0	1	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001530



0176

BP/Castex-Ltd Adm-Apx E-001531

VB 7/6/22

Apex-Gamma

Analysis Report for 2206038-05
R-1 6-12

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-05
Sample Description	: R-1 6-12
Sample Type	: SOIL
Sample Size	: 4.855E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:43:15AM
Acquisition Started	: 7/6/2022 2:15:32PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3600.9 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 30 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126264

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

BP/Castex-Ltd Adm-Apx E-001532

Analysis Report for 2206038-05

R-1 6-12

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 3:15:37PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	63.69	65.23	0.0000	0.00
2	72.71	74.24	0.0000	0.00
3	75.72	77.24	0.0000	0.00
4	92.72	94.20	0.0000	0.00
5	100.02	101.49	0.0000	0.00
6	186.28	187.58	0.0000	0.00
7	209.98	211.23	0.0000	0.00
8	239.07	240.26	0.0000	0.00
9	242.36	243.54	0.0000	0.00
10	270.45	271.58	0.0000	0.00
11	295.82	296.90	0.0000	0.00
12	300.93	302.00	0.0000	0.00
13	328.96	329.98	0.0000	0.00
14	338.94	339.93	0.0000	0.00
15	352.30	353.27	0.0000	0.00
16	455.85	456.62	0.0000	0.00
17	463.37	464.13	0.0000	0.00
18	511.18	511.85	0.0000	0.00
19	583.95	584.48	0.0000	0.00
20	609.74	610.22	0.0000	0.00
21	678.07	678.43	0.0000	0.00
22	697.61	697.93	0.0000	0.00
23	728.66	728.92	0.0000	0.00
24	755.48	755.69	0.0000	0.00
25	770.96	771.14	0.0000	0.00
26	841.30	841.35	0.0000	0.00
27	881.62	881.61	0.0000	0.00
28	893.63	893.60	0.0000	0.00
29	911.61	911.54	0.0000	0.00
30	934.73	934.62	0.0000	0.00
31	957.56	957.41	0.0000	0.00
32	965.57	965.41	0.0000	0.00
33	969.76	969.59	0.0000	0.00
34	1094.96	1094.57	0.0000	0.00
35	1120.44	1120.00	0.0000	0.00
36	1123.82	1123.38	0.0000	0.00
37	1203.73	1203.15	0.0000	0.00
38	1239.08	1238.44	0.0000	0.00
39	1245.09	1244.44	0.0000	0.00
40	1282.67	1281.96	0.0000	0.00
41	1409.28	1408.35	0.0000	0.00
42	1461.66	1460.65	0.0000	0.00

BP/Castex-Ltd Adm-Apx E-001533

Analysis Report for 2206038-05

R-1 6-12

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1477.85	1476.81	0.0000	0.00
44	1492.44	1491.38	0.0000	0.00
45	1497.94	1496.87	0.0000	0.00
46	1529.39	1528.27	0.0000	0.00
47	1533.44	1532.31	0.0000	0.00
48	1590.78	1589.56	0.0000	0.00
49	1600.08	1598.84	0.0000	0.00
50	1660.92	1659.58	0.0000	0.00
51	1765.17	1763.68	0.0000	0.00
52	2033.49	2031.59	0.0000	0.00
53	2051.62	2049.69	0.0000	0.00
54	2103.25	2101.24	0.0000	0.00
55	2106.53	2104.52	0.0000	0.00
56	2204.60	2202.45	0.0000	0.00
57	2340.04	2337.69	0.0000	0.00
58	2350.32	2347.96	0.0000	0.00
59	2434.39	2431.92	0.0000	0.00
60	2615.07	2612.36	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001534

Analysis Report for 2206038-05

R-1 6-12

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 3:15:37PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	63.69	62 -	68	65.23	1.25E+02	85.01	1.23E+03	1.31
M	2	72.71	73 -	82	74.24	7.12E+01	35.37	3.71E+02	1.37
m	3	75.72	73 -	82	77.24	4.44E+02	69.51	7.08E+02	1.37
	4	92.72	91 -	97	94.20	2.66E+02	85.34	1.09E+03	1.94
	5	100.02	99 -	104	101.49	6.05E+01	60.77	6.77E+02	1.41
	6	186.28	185 -	191	187.58	1.15E+02	62.36	6.19E+02	1.76
	7	209.98	208 -	214	211.23	8.17E+01	53.94	4.65E+02	1.37
M	8	239.07	236 -	249	240.26	7.13E+02	65.66	3.22E+02	1.67
m	9	242.36	236 -	249	243.54	1.35E+02	58.05	3.25E+02	1.84
	10	270.45	267 -	276	271.58	7.03E+01	62.90	5.25E+02	2.06
M	11	295.82	292 -	306	296.90	2.20E+02	41.16	1.82E+02	1.59
m	12	300.93	292 -	306	302.00	5.80E+01	31.84	1.56E+02	1.59
	13	328.96	327 -	333	329.98	4.90E+01	40.33	2.62E+02	2.53
	14	338.94	336 -	344	339.93	1.58E+02	55.03	3.68E+02	1.60
	15	352.30	350 -	357	353.27	4.08E+02	56.39	2.63E+02	1.84
	16	455.85	451 -	460	456.62	3.84E+01	39.29	1.95E+02	4.93
	17	463.37	460 -	467	464.13	3.00E+01	35.33	1.88E+02	1.15
	18	511.18	509 -	516	511.85	1.16E+02	38.11	1.67E+02	1.74
	19	583.95	580 -	590	584.48	2.15E+02	50.10	2.20E+02	1.84
	20	609.74	606 -	613	610.22	2.96E+02	44.45	1.32E+02	1.99
	21	678.07	676 -	681	678.43	1.66E+01	18.84	5.88E+01	2.88
	22	697.61	694 -	701	697.93	2.49E+01	25.53	9.22E+01	4.11
	23	728.66	723 -	734	728.92	7.73E+01	34.23	1.07E+02	2.03
	24	755.48	753 -	759	755.69	2.06E+01	20.90	6.08E+01	1.16
	25	770.96	765 -	781	771.14	4.80E+01	50.86	2.22E+02	1.95
	26	841.30	839 -	844	841.35	2.25E+01	18.71	4.90E+01	3.21
	27	881.62	880 -	884	881.61	1.01E+01	13.61	3.18E+01	1.85
	28	893.63	891 -	897	893.60	2.05E+01	18.75	4.90E+01	1.69
	29	911.61	907 -	914	911.54	1.73E+02	31.30	4.71E+01	2.17
	30	934.73	931 -	938	934.62	1.65E+01	20.69	6.11E+01	2.16
M	31	957.56	955 -	973	957.41	1.80E+01	14.33	3.04E+01	2.35
m	32	965.57	955 -	973	965.41	2.79E+01	21.24	4.47E+01	2.36
m	33	969.76	955 -	973	969.59	8.52E+01	23.52	4.07E+01	2.04
	34	1094.96	1088 -	1101	1094.57	3.58E+01	24.15	4.83E+01	5.79
M	35	1120.44	1116 -	1128	1120.00	4.80E+01	20.32	4.57E+01	2.04
m	36	1123.82	1116 -	1128	1123.38	1.23E+01	26.78	5.52E+01	3.28
	37	1203.73	1198 -	1209	1203.15	3.90E+01	21.07	3.60E+01	5.56
M	38	1239.08	1232 -	1255	1238.44	2.98E+01	20.00	5.12E+01	2.54
m	39	1245.09	1232 -	1255	1244.44	1.04E+01	17.20	3.57E+01	2.54
	40	1282.67	1278 -	1286	1281.96	1.66E+01	20.77	5.08E+01	2.88

BP/Castex-Ltd Adm-Apx E-001535

Analysis Report for 2206038-05

R-1 6-12

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1409.28	1405 -	1412	1408.35	1.90E+01	14.83	2.40E+01	1.65
	42	1461.66	1456 -	1464	1460.65	2.29E+02	34.73	4.50E+01	2.30
	43	1477.85	1475 -	1480	1476.81	1.00E+01	8.37	6.00E+00	1.24
M	44	1492.44	1489 -	1499	1491.38	7.99E+00	5.29	3.48E+00	3.94
m	45	1497.94	1489 -	1499	1496.87	1.34E+01	8.31	1.48E+00	2.75
M	46	1529.39	1527 -	1535	1528.27	6.75E+00	5.17	3.50E+00	3.13
m	47	1533.44	1527 -	1535	1532.31	9.80E+00	9.63	1.18E+01	3.68
	48	1590.78	1584 -	1594	1589.56	1.75E+01	17.82	3.30E+01	5.03
	49	1600.08	1595 -	1601	1598.84	1.13E+01	11.00	1.34E+01	0.97
	50	1660.92	1655 -	1663	1659.58	1.28E+01	8.96	4.33E+00	1.55
	51	1765.17	1758 -	1768	1763.68	4.77E+01	17.74	1.65E+01	3.21
	52	2033.49	2028 -	2035	2031.59	8.86E+00	7.75	4.27E+00	3.71
	53	2051.62	2047 -	2052	2049.69	6.38E+00	6.40	3.25E+00	3.14
M	54	2103.25	2099 -	2110	2101.24	1.02E+01	7.75	8.00E+00	2.78
m	55	2106.53	2099 -	2110	2104.52	1.01E+01	13.60	1.80E+01	3.01
	56	2204.60	2198 -	2205	2202.45	1.58E+01	11.49	1.04E+01	3.05
	57	2340.04	2334 -	2341	2337.69	1.30E+01	7.21	0.00E+00	3.12
	58	2350.32	2344 -	2350	2347.96	6.50E+00	6.65	3.00E+00	1.66
	59	2434.39	2427 -	2435	2431.92	1.20E+01	6.93	0.00E+00	2.00
	60	2615.07	2606 -	2616	2612.36	7.60E+01	17.44	0.00E+00	3.47

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 3:15:37PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	63.69	62 -	68	1.25E+02	85.01	1.23E+03	6.74E+01
M	2	72.71	73 -	82	7.12E+01	35.37	3.71E+02	3.17E+01
m	3	75.72	73 -	82	4.44E+02	69.51	7.08E+02	4.37E+01
	4	92.72	91 -	97	2.66E+02	85.34	1.09E+03	6.48E+01
	5	100.02	99 -	104	6.05E+01	60.77	6.77E+02	4.83E+01
	6	186.28	185 -	191	1.15E+02	62.36	6.19E+02	4.81E+01
	7	209.98	208 -	214	8.17E+01	53.94	4.65E+02	4.18E+01
M	8	239.07	236 -	249	7.13E+02	65.66	3.22E+02	2.95E+01

BP/Castex-Ltd Adm-Apx E-001536

Analysis Report for 2206038-05

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	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
m	9	242.36	236 -	249	1.35E+02	58.05	3.25E+02	2.97E+01
	10	270.45	267 -	276	7.03E+01	62.90	5.25E+02	4.98E+01
M	11	295.82	292 -	306	2.20E+02	41.16	1.82E+02	2.22E+01
m	12	300.93	292 -	306	5.80E+01	31.84	1.56E+02	2.05E+01
	13	328.96	327 -	333	4.90E+01	40.33	2.62E+02	3.11E+01
	14	338.94	336 -	344	1.58E+02	55.03	3.68E+02	4.02E+01
	15	352.30	350 -	357	4.08E+02	56.39	2.63E+02	3.24E+01
	16	455.85	451 -	460	3.84E+01	39.29	1.95E+02	3.07E+01
	17	463.37	460 -	467	3.00E+01	35.33	1.88E+02	2.76E+01
	18	511.18	509 -	516	1.16E+02	38.11	1.67E+02	2.59E+01
	19	583.95	580 -	590	2.15E+02	50.10	2.20E+02	1.64E+01
	20	609.74	606 -	613	2.96E+02	44.45	1.32E+02	2.31E+01
	21	678.07	676 -	681	1.66E+01	18.84	5.88E+01	1.40E+01
	22	697.61	694 -	701	2.49E+01	25.53	9.22E+01	1.93E+01
	23	728.66	723 -	734	7.73E+01	34.23	1.07E+02	2.41E+01
	24	755.48	753 -	759	2.06E+01	20.90	6.08E+01	1.55E+01
	25	770.96	765 -	781	4.80E+01	50.86	2.22E+02	1.53E+01
	26	841.30	839 -	844	2.25E+01	18.71	4.90E+01	1.33E+01
	27	881.62	880 -	884	1.01E+01	13.61	3.18E+01	9.89E+00
	28	893.63	891 -	897	2.05E+01	18.75	4.90E+01	1.35E+01
	29	911.61	907 -	914	1.73E+02	31.30	4.71E+01	1.39E+01
	30	934.73	931 -	938	1.65E+01	20.69	6.11E+01	1.56E+01
M	31	957.56	955 -	973	1.80E+01	14.33	3.04E+01	9.07E+00
m	32	965.57	955 -	973	2.79E+01	21.24	4.47E+01	1.10E+01
m	33	969.76	955 -	973	8.52E+01	23.52	4.07E+01	1.05E+01
	34	1094.96	1088 -	1101	3.58E+01	24.15	4.83E+01	1.72E+01
M	35	1120.44	1116 -	1128	4.80E+01	20.32	4.57E+01	1.11E+01
m	36	1123.82	1116 -	1128	1.23E+01	26.78	5.52E+01	1.22E+01
	37	1203.73	1198 -	1209	3.90E+01	21.07	3.60E+01	1.39E+01
M	38	1239.08	1232 -	1255	2.98E+01	20.00	5.12E+01	1.18E+01
m	39	1245.09	1232 -	1255	1.04E+01	17.20	3.57E+01	9.82E+00
	40	1282.67	1278 -	1286	1.66E+01	20.77	5.08E+01	1.57E+01
	41	1409.28	1405 -	1412	1.90E+01	14.83	2.40E+01	9.86E+00
	42	1461.66	1456 -	1464	2.29E+02	34.73	4.50E+01	1.41E+01
	43	1477.85	1475 -	1480	1.00E+01	8.37	6.00E+00	4.50E+00
M	44	1492.44	1489 -	1499	7.99E+00	5.29	3.48E+00	3.07E+00
m	45	1497.94	1489 -	1499	1.34E+01	8.31	1.48E+00	2.00E+00
M	46	1529.39	1527 -	1535	6.75E+00	5.17	3.50E+00	3.08E+00
m	47	1533.44	1527 -	1535	9.80E+00	9.63	1.18E+01	5.64E+00
	48	1590.78	1584 -	1594	1.75E+01	17.82	3.30E+01	1.29E+01
	49	1600.08	1595 -	1601	1.13E+01	11.00	1.34E+01	7.16E+00
	50	1660.92	1655 -	1663	1.28E+01	8.96	4.33E+00	4.42E+00
	51	1765.17	1758 -	1768	4.77E+01	17.74	1.65E+01	9.15E+00
	52	2033.49	2028 -	2035	8.86E+00	7.75	4.27E+00	4.07E+00
	53	2051.62	2047 -	2052	6.38E+00	6.40	3.25E+00	3.24E+00
M	54	2103.25	2099 -	2110	1.02E+01	7.75	8.00E+00	4.65E+00
m	55	2106.53	2099 -	2110	1.01E+01	13.60	1.80E+01	6.97E+00
	56	2204.60	2198 -	2205	1.58E+01	11.49	1.04E+01	6.82E+00
	57	2340.04	2334 -	2341	1.30E+01	7.21	0.00E+00	0.00E+00
	58	2350.32	2344 -	2350	6.50E+00	6.65	3.00E+00	3.51E+00
	59	2434.39	2427 -	2435	1.20E+01	6.93	0.00E+00	0.00E+00

Analysis Report for 2206038-05

R-1 6-12

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
60	2615.07	2606 -	2616	7.60E+01	17.44	0.00E+00	0.00E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 3:15:37PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	63.69	62 -	68	65.23	1.25E+02	85.01	1.23E+03	TH-234 TH-230
M	2	72.71	73 -	82	74.24	7.12E+01	35.37	3.71E+02	PM-145 AM-243
m	3	75.72	73 -	82	77.24	4.44E+02	69.51	7.08E+02	AM-243
	4	92.72	91 -	97	94.20	2.66E+02	85.34	1.09E+03	GA-67 ND-147
	5	100.02	99 -	104	101.49	6.05E+01	60.77	6.77E+02	LU-173
	6	186.28	185 -	191	187.58	1.15E+02	62.36	6.19E+02	RA-226 HO-166M
	7	209.98	208 -	214	211.23	8.17E+01	53.94	4.65E+02	CM-243 GA-67
M	8	239.07	236 -	249	240.26	7.13E+02	65.66	3.22E+02	PB-212 RA-224
m	9	242.36	236 -	249	243.54	1.35E+02	58.05	3.25E+02	RA-224 EU-152
	10	270.45	267 -	276	271.58	7.03E+01	62.90	5.25E+02	LU-173 CS-135
M	11	295.82	292 -	306	296.90	2.20E+02	41.16	1.82E+02	PB-214
m	12	300.93	292 -	306	302.00	5.80E+01	31.84	1.56E+02	GA-67 PB-212 BI-210M PA-231 BA-133
	13	328.96	327 -	333	329.98	4.90E+01	40.33	2.62E+02	LA-140

BP/Castex-Ltd Adm-Apx E-001538

Analysis Report for 2206038-05

R-1 6-12

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	14	338.94	336 -	344	339.93	1.58E+02	55.03	3.68E+02	AC-228
									CS-136
	15	352.30	350 -	357	353.27	4.08E+02	56.39	2.63E+02	PB-214
	16	455.85	451 -	460	456.62	3.84E+01	39.29	1.95E+02	PM-146
	17	463.37	460 -	467	464.13	3.00E+01	35.33	1.88E+02	SB-125
	18	511.18	509 -	516	511.85	1.16E+02	38.11	1.67E+02	.....
	19	583.95	580 -	590	584.48	2.15E+02	50.10	2.20E+02	TL-208
	20	609.74	606 -	613	610.22	2.96E+02	44.45	1.32E+02	BI-214
	21	678.07	676 -	681	678.43	1.66E+01	18.84	5.88E+01	AG-110M
	22	697.61	694 -	701	697.93	2.49E+01	25.53	9.22E+01	PM-144
	23	728.66	723 -	734	728.92	7.73E+01	34.23	1.07E+02	BI-212
	24	755.48	753 -	759	755.69	2.06E+01	20.90	6.08E+01	ZR-95
	25	770.96	765 -	781	771.14	4.80E+01	50.86	2.22E+02	.....
	26	841.30	839 -	844	841.35	2.25E+01	18.71	4.90E+01	.....
	27	881.62	880 -	884	881.61	1.01E+01	13.61	3.18E+01	.....
	28	893.63	891 -	897	893.60	2.05E+01	18.75	4.90E+01	.....
	29	911.61	907 -	914	911.54	1.73E+02	31.30	4.71E+01	TL-204
									AC-228
	30	934.73	931 -	938	934.62	1.65E+01	20.69	6.11E+01	.....
M	31	957.56	955 -	973	957.41	1.80E+01	14.33	3.04E+01	.....
m	32	965.57	955 -	973	965.41	2.79E+01	21.24	4.47E+01	EU-152
m	33	969.76	955 -	973	969.59	8.52E+01	23.52	4.07E+01	AC-228
	34	1094.96	1088 -	1101	1094.57	3.58E+01	24.15	4.83E+01	LU-172
M	35	1120.44	1116 -	1128	1120.00	4.80E+01	20.32	4.57E+01	SC-46
									BI-214
									TA-182
m	36	1123.82	1116 -	1128	1123.38	1.23E+01	26.78	5.52E+01	.....
	37	1203.73	1198 -	1209	1203.15	3.90E+01	21.07	3.60E+01	.....
M	38	1239.08	1232 -	1255	1238.44	2.98E+01	20.00	5.12E+01	CO-56
m	39	1245.09	1232 -	1255	1244.44	1.04E+01	17.20	3.57E+01	.....
	40	1282.67	1278 -	1286	1281.96	1.66E+01	20.77	5.08E+01	.....
	41	1409.28	1405 -	1412	1408.35	1.90E+01	14.83	2.40E+01	EU-152
	42	1461.66	1456 -	1464	1460.65	2.29E+02	34.73	4.50E+01	K-40
	43	1477.85	1475 -	1480	1476.81	1.00E+01	8.37	6.00E+00	MO-93
M	44	1492.44	1489 -	1499	1491.38	7.99E+00	5.29	3.48E+00	.....
m	45	1497.94	1489 -	1499	1496.87	1.34E+01	8.31	1.48E+00	.....
M	46	1529.39	1527 -	1535	1528.27	6.75E+00	5.17	3.50E+00	.....
m	47	1533.44	1527 -	1535	1532.31	9.80E+00	9.63	1.18E+01	.....
	48	1590.78	1584 -	1594	1589.56	1.75E+01	17.82	3.30E+01	.....
	49	1600.08	1595 -	1601	1598.84	1.13E+01	11.00	1.34E+01	.....
	50	1660.92	1655 -	1663	1659.58	1.28E+01	8.96	4.33E+00	.....
	51	1765.17	1758 -	1768	1763.68	4.77E+01	17.74	1.65E+01	BI-214
	52	2033.49	2028 -	2035	2031.59	8.86E+00	7.75	4.27E+00	.....
	53	2051.62	2047 -	2052	2049.69	6.38E+00	6.40	3.25E+00	.....
M	54	2103.25	2099 -	2110	2101.24	1.02E+01	7.75	8.00E+00	.....
m	55	2106.53	2099 -	2110	2104.52	1.01E+01	13.60	1.80E+01	.....
	56	2204.60	2198 -	2205	2202.45	1.58E+01	11.49	1.04E+01	BI-214
	57	2340.04	2334 -	2341	2337.69	1.30E+01	7.21	0.00E+00	.....
	58	2350.32	2344 -	2350	2347.96	6.50E+00	6.65	3.00E+00	.....
	59	2434.39	2427 -	2435	2431.92	1.20E+01	6.93	0.00E+00	.....
	60	2615.07	2606 -	2616	2612.36	7.60E+01	17.44	0.00E+00	TL-208

BP/Castex-Ltd Adm-Apx E-001539

Analysis Report for 2206038-05

R-1 6-12

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 3:15:37PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	63.69	1.25E+02	85.01	2.18E-02	1.66E-03
M	2	72.71	7.12E+01	35.37	2.29E-02	1.80E-03
m	3	75.72	4.44E+02	69.51	2.32E-02	1.84E-03
	4	92.72	2.66E+02	85.34	2.38E-02	2.00E-03
	5	100.02	6.05E+01	60.77	2.38E-02	1.94E-03
	6	186.28	1.15E+02	62.36	1.96E-02	1.56E-03
	7	209.98	8.17E+01	53.94	1.84E-02	1.47E-03
M	8	239.07	7.13E+02	65.66	1.69E-02	1.37E-03
m	9	242.36	1.35E+02	58.05	1.68E-02	1.36E-03
	10	270.45	7.03E+01	62.90	1.56E-02	1.26E-03
M	11	295.82	2.20E+02	41.16	1.46E-02	1.20E-03
m	12	300.93	5.80E+01	31.84	1.44E-02	1.19E-03
	13	328.96	4.90E+01	40.33	1.35E-02	1.14E-03
	14	338.94	1.58E+02	55.03	1.32E-02	1.12E-03
	15	352.30	4.08E+02	56.39	1.28E-02	1.09E-03
	16	455.85	3.84E+01	39.29	1.04E-02	9.37E-04
	17	463.37	3.00E+01	35.33	1.03E-02	9.28E-04
	18	511.18	1.16E+02	38.11	9.49E-03	8.69E-04
	19	583.95	2.15E+02	50.10	8.52E-03	7.80E-04
	20	609.74	2.96E+02	44.45	8.22E-03	7.48E-04
	21	678.07	1.66E+01	18.84	7.54E-03	6.69E-04
	22	697.61	2.49E+01	25.53	7.37E-03	6.51E-04
	23	728.66	7.73E+01	34.23	7.12E-03	6.22E-04
	24	755.48	2.06E+01	20.90	6.91E-03	5.96E-04
	25	770.96	4.80E+01	50.86	6.80E-03	5.82E-04
	26	841.30	2.25E+01	18.71	6.35E-03	5.16E-04
	27	881.62	1.01E+01	13.61	6.12E-03	4.78E-04
	28	893.63	2.05E+01	18.75	6.05E-03	4.67E-04
	29	911.61	1.73E+02	31.30	5.96E-03	4.59E-04
	30	934.73	1.65E+01	20.69	5.84E-03	4.54E-04
M	31	957.56	1.80E+01	14.33	5.73E-03	4.48E-04
m	32	965.57	2.79E+01	21.24	5.69E-03	4.46E-04
m	33	969.76	8.52E+01	23.52	5.68E-03	4.44E-04
	34	1094.96	3.58E+01	24.15	5.17E-03	4.12E-04

BP/Castex-Ltd Adm-Apx E-001540

Analysis Report for 2206038-05

R-1 6-12

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	35	1120.44	4.80E+01	20.32	5.08E-03	4.06E-04
m	36	1123.82	1.23E+01	26.78	5.06E-03	4.05E-04
	37	1203.73	3.90E+01	21.07	4.81E-03	3.86E-04
M	38	1239.08	2.98E+01	20.00	4.70E-03	3.78E-04
m	39	1245.09	1.04E+01	17.20	4.68E-03	3.77E-04
	40	1282.67	1.66E+01	20.77	4.58E-03	3.69E-04
	41	1409.28	1.90E+01	14.83	4.27E-03	3.45E-04
	42	1461.66	2.29E+02	34.73	4.15E-03	3.36E-04
	43	1477.85	1.00E+01	8.37	4.12E-03	3.33E-04
M	44	1492.44	7.99E+00	5.29	4.09E-03	3.30E-04
m	45	1497.94	1.34E+01	8.31	4.07E-03	3.29E-04
M	46	1529.39	6.75E+00	5.17	4.01E-03	3.23E-04
m	47	1533.44	9.80E+00	9.63	4.00E-03	3.23E-04
	48	1590.78	1.75E+01	17.82	3.89E-03	3.12E-04
	49	1600.08	1.13E+01	11.00	3.88E-03	3.11E-04
	50	1660.92	1.28E+01	8.96	3.77E-03	3.00E-04
	51	1765.17	4.77E+01	17.74	3.60E-03	2.81E-04
	52	2033.49	8.86E+00	7.75	3.23E-03	2.69E-04
	53	2051.62	6.38E+00	6.40	3.21E-03	2.69E-04
M	54	2103.25	1.02E+01	7.75	3.14E-03	2.69E-04
m	55	2106.53	1.01E+01	13.60	3.14E-03	2.69E-04
	56	2204.60	1.58E+01	11.49	3.03E-03	2.69E-04
	57	2340.04	1.30E+01	7.21	2.89E-03	2.69E-04
	58	2350.32	6.50E+00	6.65	2.88E-03	2.69E-04
	59	2434.39	1.20E+01	6.93	2.80E-03	2.69E-04
	60	2615.07	7.60E+01	17.44	2.63E-03	2.69E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 3:15:37PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126201.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	63.69	1.25E+02	85.01	3.41E+01	7.77E+00	9.07E+01	8.54E+01
M	2	72.71	7.12E+01	35.37			7.12E+01	3.54E+01
m	3	75.72	4.44E+02	69.51	1.53E+01	8.05E+00	4.29E+02	7.00E+01
	4	92.72	2.66E+02	85.34	4.78E+01	8.53E+00	2.18E+02	8.58E+01

Analysis Report for 2206038-05

R-1 6-12

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	5	100.02	6.05E+01	60.77			6.05E+01	6.08E+01
	6	186.28	1.15E+02	62.36	3.65E+01	7.27E+00	7.81E+01	6.28E+01
	7	209.98	8.17E+01	53.94			8.17E+01	5.39E+01
M	8	239.07	7.13E+02	65.66	1.16E+01	6.70E+00	7.02E+02	6.60E+01
m	9	242.36	1.35E+02	58.05			1.35E+02	5.81E+01
	10	270.45	7.03E+01	62.90			7.03E+01	6.29E+01
M	11	295.82	2.20E+02	41.16	6.18E+00	5.51E+00	2.14E+02	4.15E+01
m	12	300.93	5.80E+01	31.84			5.80E+01	3.18E+01
	13	328.96	4.90E+01	40.33			4.90E+01	4.03E+01
	14	338.94	1.58E+02	55.03			1.58E+02	5.50E+01
	15	352.30	4.08E+02	56.39	9.32E+00	5.69E+00	3.98E+02	5.67E+01
	16	455.85	3.84E+01	39.29			3.84E+01	3.93E+01
	17	463.37	3.00E+01	35.33			3.00E+01	3.53E+01
	18	511.18	1.16E+02	38.11	6.77E+01	4.98E+00	4.80E+01	3.84E+01
	19	583.95	2.15E+02	50.10	6.36E+00	3.67E+00	2.09E+02	5.02E+01
	20	609.74	2.96E+02	44.45	5.18E+00	3.99E+00	2.91E+02	4.46E+01
	21	678.07	1.66E+01	18.84			1.66E+01	1.88E+01
	22	697.61	2.49E+01	25.53			2.49E+01	2.55E+01
	23	728.66	7.73E+01	34.23			7.73E+01	3.42E+01
	24	755.48	2.06E+01	20.90			2.06E+01	2.09E+01
	25	770.96	4.80E+01	50.86			4.80E+01	5.09E+01
	26	841.30	2.25E+01	18.71			2.25E+01	1.87E+01
	27	881.62	1.01E+01	13.61			1.01E+01	1.36E+01
	28	893.63	2.05E+01	18.75			2.05E+01	1.87E+01
	29	911.61	1.73E+02	31.30	3.54E+00	2.41E+00	1.70E+02	3.14E+01
	30	934.73	1.65E+01	20.69			1.65E+01	2.07E+01
M	31	957.56	1.80E+01	14.33			1.80E+01	1.43E+01
m	32	965.57	2.79E+01	21.24			2.79E+01	2.12E+01
m	33	969.76	8.52E+01	23.52	9.15E-01	2.46E+00	8.43E+01	2.36E+01
	34	1094.96	3.58E+01	24.15			3.58E+01	2.41E+01
M	35	1120.44	4.80E+01	20.32	5.91E-01	2.52E+00	4.74E+01	2.05E+01
m	36	1123.82	1.23E+01	26.78			1.23E+01	2.68E+01
	37	1203.73	3.90E+01	21.07			3.90E+01	2.11E+01
M	38	1239.08	2.98E+01	20.00			2.98E+01	2.00E+01
m	39	1245.09	1.04E+01	17.20			1.04E+01	1.72E+01
	40	1282.67	1.66E+01	20.77			1.66E+01	2.08E+01
	41	1409.28	1.90E+01	14.83			1.90E+01	1.48E+01
	42	1461.66	2.29E+02	34.73	7.20E+00	2.34E+00	2.21E+02	3.48E+01
	43	1477.85	1.00E+01	8.37			1.00E+01	8.37E+00
M	44	1492.44	7.99E+00	5.29			7.99E+00	5.29E+00
m	45	1497.94	1.34E+01	8.31			1.34E+01	8.31E+00
M	46	1529.39	6.75E+00	5.17			6.75E+00	5.17E+00
m	47	1533.44	9.80E+00	9.63			9.80E+00	9.63E+00
	48	1590.78	1.75E+01	17.82			1.75E+01	1.78E+01
	49	1600.08	1.13E+01	11.00			1.13E+01	1.10E+01
	50	1660.92	1.28E+01	8.96			1.28E+01	8.96E+00
	51	1765.17	4.77E+01	17.74			4.77E+01	1.77E+01
	52	2033.49	8.86E+00	7.75			8.86E+00	7.75E+00
	53	2051.62	6.38E+00	6.40			6.38E+00	6.40E+00
M	54	2103.25	1.02E+01	7.75			1.02E+01	7.75E+00
m	55	2106.53	1.01E+01	13.60			1.01E+01	1.36E+01
	56	2204.60	1.58E+01	11.49			1.58E+01	1.15E+01
	57	2340.04	1.30E+01	7.21			1.30E+01	7.21E+00
	58	2350.32	6.50E+00	6.65			6.50E+00	6.65E+00

Analysis Report for 2206038-05

R-1 6-12

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
59	2434.39	1.20E+01	6.93			1.20E+01	6.93E+00
60	2615.07	7.60E+01	17.44	4.10E+00	1.50E+00	7.19E+01	1.75E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 3:15:37PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126201.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	63.69	1.25E+02	85.01	3.41E+01	7.77E+00	9.07E+01	8.54E+01
M	2	72.71	7.12E+01	35.37			7.12E+01	3.54E+01
m	3	75.72	4.44E+02	69.51	1.53E+01	8.05E+00	4.29E+02	7.00E+01
	4	92.72	2.66E+02	85.34	4.78E+01	8.53E+00	2.18E+02	8.58E+01
	5	100.02	6.05E+01	60.77			6.05E+01	6.08E+01
	6	186.28	1.15E+02	62.36	3.65E+01	7.27E+00	7.81E+01	6.28E+01
	7	209.98	8.17E+01	53.94			8.17E+01	5.39E+01
M	8	239.07	7.13E+02	65.66	1.16E+01	6.70E+00	7.02E+02	6.60E+01
m	9	242.36	1.35E+02	58.05			1.35E+02	5.81E+01
	10	270.45	7.03E+01	62.90			7.03E+01	6.29E+01
M	11	295.82	2.20E+02	41.16	6.18E+00	5.51E+00	2.14E+02	4.15E+01
m	12	300.93	5.80E+01	31.84			5.80E+01	3.18E+01
	13	328.96	4.90E+01	40.33			4.90E+01	4.03E+01
	14	338.94	1.58E+02	55.03			1.58E+02	5.50E+01
	15	352.30	4.08E+02	56.39	9.32E+00	5.69E+00	3.98E+02	5.67E+01
	16	455.85	3.84E+01	39.29			3.84E+01	3.93E+01
	17	463.37	3.00E+01	35.33			3.00E+01	3.53E+01
	18	511.18	1.16E+02	38.11	6.77E+01	4.98E+00	4.80E+01	3.84E+01
	19	583.95	2.15E+02	50.10	6.36E+00	3.67E+00	2.09E+02	5.02E+01
	20	609.74	2.96E+02	44.45	5.18E+00	3.99E+00	2.91E+02	4.46E+01
	21	678.07	1.66E+01	18.84			1.66E+01	1.88E+01
	22	697.61	2.49E+01	25.53			2.49E+01	2.55E+01
	23	728.66	7.73E+01	34.23			7.73E+01	3.42E+01
	24	755.48	2.06E+01	20.90			2.06E+01	2.09E+01
	25	770.96	4.80E+01	50.86			4.80E+01	5.09E+01
	26	841.30	2.25E+01	18.71			2.25E+01	1.87E+01

BP/Castex-Ltd Adm-Apx E-001543

Analysis Report for 2206038-05

R-1 6-12

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	27	881.62	1.01E+01	13.61			1.01E+01	1.36E+01
	28	893.63	2.05E+01	18.75			2.05E+01	1.87E+01
	29	911.61	1.73E+02	31.30	3.54E+00	2.41E+00	1.70E+02	3.14E+01
	30	934.73	1.65E+01	20.69			1.65E+01	2.07E+01
M	31	957.56	1.80E+01	14.33			1.80E+01	1.43E+01
m	32	965.57	2.79E+01	21.24			2.79E+01	2.12E+01
m	33	969.76	8.52E+01	23.52	9.15E-01	2.46E+00	8.43E+01	2.36E+01
	34	1094.96	3.58E+01	24.15			3.58E+01	2.41E+01
M	35	1120.44	4.80E+01	20.32	5.91E-01	2.52E+00	4.74E+01	2.05E+01
m	36	1123.82	1.23E+01	26.78			1.23E+01	2.68E+01
	37	1203.73	3.90E+01	21.07			3.90E+01	2.11E+01
M	38	1239.08	2.98E+01	20.00			2.98E+01	2.00E+01
m	39	1245.09	1.04E+01	17.20			1.04E+01	1.72E+01
	40	1282.67	1.66E+01	20.77			1.66E+01	2.08E+01
	41	1409.28	1.90E+01	14.83			1.90E+01	1.48E+01
	42	1461.66	2.29E+02	34.73	7.20E+00	2.34E+00	2.21E+02	3.48E+01
	43	1477.85	1.00E+01	8.37			1.00E+01	8.37E+00
M	44	1492.44	7.99E+00	5.29			7.99E+00	5.29E+00
m	45	1497.94	1.34E+01	8.31			1.34E+01	8.31E+00
M	46	1529.39	6.75E+00	5.17			6.75E+00	5.17E+00
m	47	1533.44	9.80E+00	9.63			9.80E+00	9.63E+00
	48	1590.78	1.75E+01	17.82			1.75E+01	1.78E+01
	49	1600.08	1.13E+01	11.00			1.13E+01	1.10E+01
	50	1660.92	1.28E+01	8.96			1.28E+01	8.96E+00
	51	1765.17	4.77E+01	17.74			4.77E+01	1.77E+01
	52	2033.49	8.86E+00	7.75			8.86E+00	7.75E+00
	53	2051.62	6.38E+00	6.40			6.38E+00	6.40E+00
M	54	2103.25	1.02E+01	7.75			1.02E+01	7.75E+00
m	55	2106.53	1.01E+01	13.60			1.01E+01	1.36E+01
	56	2204.60	1.58E+01	11.49			1.58E+01	1.15E+01
	57	2340.04	1.30E+01	7.21			1.30E+01	7.21E+00
	58	2350.32	6.50E+00	6.65			6.50E+00	6.65E+00
	59	2434.39	1.20E+01	6.93			1.20E+01	6.93E+00
	60	2615.07	7.60E+01	17.44	4.10E+00	1.50E+00	7.19E+01	1.75E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

BP/Castex-Ltd Adm-Apx E-001544

Analysis Report for 2206038-05

R-1 6-12

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.982	1460.81	*	10.67	7.73E+00	1.37E+00
PM-146	0.372	453.90	*	39.94	1.44E-01	1.48E-01
		735.90		14.01		
		747.13		13.10		
ND-147	0.587	91.11	*	28.90	2.54E+00	1.02E+00
		531.02		13.10		
LU-173	0.943	100.72	*	5.24	7.77E-01	7.83E-01
		272.11	*	21.20	3.42E-01	3.07E-01
TL-208	0.877	583.14	*	30.22	1.25E+00	3.23E-01
		860.37		4.48		
		2614.66	*	35.85	1.18E+00	3.11E-01
BI-212	0.721	727.17	*	11.80	1.42E+00	6.42E-01
		1620.62		2.75		
PB-212	0.994	238.63	*	44.60	1.44E+00	1.79E-01
		300.09	*	3.41	1.83E+00	1.01E+00
BI-214	0.995	609.31	*	46.30	1.18E+00	2.11E-01
		1120.29	*	15.10	9.56E-01	4.20E-01
		1764.49	*	15.80	1.30E+00	4.93E-01
		2204.22	*	4.98	1.62E+00	1.19E+00
PB-214	0.994	295.21	*	19.19	1.18E+00	2.49E-01
		351.92	*	37.19	1.30E+00	2.15E-01
RA-224	0.953	240.98	*	3.95	3.15E+00	1.38E+00
RA-226	1.000	186.21	*	3.28	1.88E+00	1.51E+00
AC-228	0.991	338.32	*	11.40	1.63E+00	5.83E-01
		911.07	*	27.70	1.59E+00	3.19E-01
		969.11	*	16.60	1.38E+00	4.03E-01
TH-234	0.996	63.29	*	3.80	1.69E+00	1.60E+00
AM-243	0.972	74.67	*	66.00	4.33E-01	7.86E-02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 3:15:37PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.		Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	2	72.71	1.97855E-02	24.83	Tol.	PM-145

BP/Castex-Ltd Adm-Apx E-001545

Analysis Report for 2206038-05

R-1 6-12

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
						AM-243
	7	209.98	2.26920E-02	33.02	Tol.	GA-67
						CM-243
	13	328.96	1.36019E-02	41.18	Tol.	LA-140
	17	463.37	8.34677E-03	58.78	Tol.	SB-125
	18	511.18	1.33205E-02	40.07	Sum	
	21	678.07	4.60749E-03	56.80	Sum	
	22	697.61	6.91510E-03	51.29	Sum	
	24	755.48	5.72168E-03	50.73	Sum	
	25	770.96	1.33421E-02	52.94	Sum	
	26	841.30	6.24704E-03	41.59		
	27	881.62	2.80983E-03	67.28	Sum	
	28	893.63	5.69444E-03	45.73		
	30	934.73	4.57151E-03	62.85	Sum	
M	31	957.56	5.01265E-03	39.70		
m	32	965.57	7.74783E-03	38.08	Sum	
	34	1094.96	9.95370E-03	33.69	Tol.	LU-172
m	36	1123.82	3.40488E-03	109.23		
	37	1203.73	1.08333E-02	27.01		
M	38	1239.08	8.26727E-03	33.60	Sum	
m	39	1245.09	2.87854E-03	83.01		
	40	1282.67	4.60648E-03	62.61		
	41	1409.28	5.27778E-03	39.03	Tol.	EU-152
	43	1477.85	2.77778E-03	41.83	Tol.	MO-93
M	44	1492.44	2.21856E-03	33.13		
m	45	1497.94	3.72595E-03	30.96	Sum	
M	46	1529.39	1.87543E-03	38.30		
m	47	1533.44	2.72257E-03	49.13		
	48	1590.78	4.86111E-03	50.91	D-Esc	
	49	1600.08	3.13272E-03	48.77		
	50	1660.92	3.56481E-03	34.90		
	52	2033.49	2.46212E-03	43.70	Sum	
	53	2051.62	1.77083E-03	50.22		
M	54	2103.25	2.83289E-03	37.98	S-Esc	
m	55	2106.53	2.81510E-03	67.11	S-Esc	
	57	2340.04	3.61111E-03	27.74		
	58	2350.32	1.80556E-03	51.17	Sum	
	59	2434.39	3.33333E-03	28.87		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 2206038-05

R-1 6-12

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.98	1460.81	*	10.67	7.73E+00	1.37E+00
PM-146	0.37	453.90	*	39.94	1.44E-01	1.48E-01
		735.90		14.01		
		747.13		13.10		
ND-147	0.58	91.11	*	28.90	2.54E+00	1.02E+00
		531.02		13.10		
LU-173	0.94	100.72	*	5.24	7.77E-01	7.83E-01
		272.11	*	21.20	3.42E-01	3.07E-01
TL-208	0.87	583.14	*	30.22	1.25E+00	3.23E-01
		860.37		4.48		
		2614.66	*	35.85	1.18E+00	3.11E-01
BI-212	0.72	727.17	*	11.80	1.42E+00	6.42E-01
		1620.62		2.75		
PB-212	0.99	238.63	*	44.60	1.44E+00	1.79E-01
		300.09	*	3.41	1.83E+00	1.01E+00
BI-214	0.99	609.31	*	46.30	1.18E+00	2.11E-01
		1120.29	*	15.10	9.56E-01	4.20E-01
		1764.49	*	15.80	1.30E+00	4.93E-01
		2204.22	*	4.98	1.62E+00	1.19E+00
PB-214	0.99	295.21	*	19.19	1.18E+00	2.49E-01
		351.92	*	37.19	1.30E+00	2.15E-01
RA-224	0.95	240.98	*	3.95	3.15E+00	1.38E+00
RA-226	1.00	186.21	*	3.28	1.88E+00	1.51E+00
AC-228	0.99	338.32	*	11.40	1.63E+00	5.83E-01
		911.07	*	27.70	1.59E+00	3.19E-01
		969.11	*	16.60	1.38E+00	4.03E-01
TH-234	0.99	63.29	*	3.80	1.69E+00	1.60E+00
AM-243	0.97	74.67	*	66.00	4.33E-01	7.86E-02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001547

Analysis Report for 2206038-05

R-1 6-12

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.982	7.73E+00	1.37E+00	
X	GA-67	0.718			
X	CS-135	0.882			
	PM-146	0.372	1.44E-01	1.48E-01	
	ND-147	0.587	2.54E+00	1.02E+00	
	LU-173	0.943	4.00E-01	2.86E-01	
	TL-208	0.877	1.21E+00	2.24E-01	
	BI-212	0.721	1.42E+00	6.42E-01	
	PB-212	0.994	1.45E+00	1.76E-01	
	BI-214	0.995	1.17E+00	1.74E-01	
	PB-214	0.994	1.25E+00	1.63E-01	
	RA-224	0.953	3.15E+00	1.38E+00	
	RA-226	1.000	1.88E+00	1.51E+00	
	AC-228	0.991	1.53E+00	2.30E-01	
	TH-234	0.996	1.69E+00	1.60E+00	
	AM-243	0.972	4.33E-01	7.86E-02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-05

R-1 6-12

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 3:15:37PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	2	72.71	1.97855E-02	24.83	Tol.	PM-145
						AM-243
	7	209.98	2.26920E-02	33.02	Tol.	GA-67
						CM-243
	13	328.96	1.36019E-02	41.18	Tol.	LA-140
	17	463.37	8.34677E-03	58.78	Tol.	SB-125
	18	511.18	1.33205E-02	40.07	Sum	
	21	678.07	4.60749E-03	56.80	Sum	
	22	697.61	6.91510E-03	51.29	Sum	
	24	755.48	5.72168E-03	50.73	Sum	
	25	770.96	1.33421E-02	52.94	Sum	
	26	841.30	6.24704E-03	41.59		
	27	881.62	2.80983E-03	67.28	Sum	
	28	893.63	5.69444E-03	45.73		
	30	934.73	4.57151E-03	62.85	Sum	
M	31	957.56	5.01265E-03	39.70		
m	32	965.57	7.74783E-03	38.08	Sum	
	34	1094.96	9.95370E-03	33.69	Tol.	LU-172
m	36	1123.82	3.40488E-03	109.23		
	37	1203.73	1.08333E-02	27.01		
M	38	1239.08	8.26727E-03	33.60	Sum	
m	39	1245.09	2.87854E-03	83.01		
	40	1282.67	4.60648E-03	62.61		
	41	1409.28	5.27778E-03	39.03	Tol.	EU-152
	43	1477.85	2.77778E-03	41.83	Tol.	MO-93
M	44	1492.44	2.21856E-03	33.13		
m	45	1497.94	3.72595E-03	30.96	Sum	
M	46	1529.39	1.87543E-03	38.30		
m	47	1533.44	2.72257E-03	49.13		
	48	1590.78	4.86111E-03	50.91	D-Esc	
	49	1600.08	3.13272E-03	48.77		
	50	1660.92	3.56481E-03	34.90		
	52	2033.49	2.46212E-03	43.70	Sum	
	53	2051.62	1.77083E-03	50.22		
M	54	2103.25	2.83289E-03	37.98	S-Esc	

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	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	55	2106.53	2.81510E-03	67.11	S-Esc	
	57	2340.04	3.61111E-03	27.74		
	58	2350.32	1.80556E-03	51.17	Sum	
	59	2434.39	3.33333E-03	28.87		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	6.76E-02	8.41E-01	8.41E-01
+	NA-22	1274.54		99.94	-1.58E-02	8.90E-02	8.90E-02
+	NA-24	1368.53		99.99	3.27E-02	5.71E-02	7.96E-02
		2754.09		99.86	4.10E-03		5.71E-02
+	AL-26	1808.65		99.76	-2.85E-02	7.31E-02	7.31E-02
+	K-40	1460.81	*	10.67	7.73E+00	1.13E+00	1.13E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.38E-02	7.48E-02	7.48E-02
		78.34		96.00	1.43E-01		1.03E-01
+	SC-46	889.25		98.98	-9.58E-03	9.40E-02	9.40E-02
		1120.51		99.90	1.60E-01		1.67E-01
+	V-48	983.52		99.98	4.68E-02	2.06E-01	2.34E-01
		1312.10		97.50	-1.05E-02		2.06E-01
+	CR-51	320.08		9.83	-3.74E-01	1.05E+00	1.05E+00
+	MN-54	834.83		99.97	-7.54E-03	8.97E-02	8.97E-02
+	CO-56	846.75		99.96	4.98E-03	9.83E-02	9.83E-02
		1037.75		14.03	8.38E-02		7.46E-01
		1238.25		67.00	1.99E-01		2.34E-01
		1771.40		15.51	-3.59E-02		5.70E-01
		2587.48		16.90	1.34E-01		4.79E-01
+	CO-57	122.06		85.51	1.82E-02	6.83E-02	6.83E-02
		136.48		10.60	9.24E-02		5.65E-01
+	CO-58	810.76		99.40	3.95E-03	9.53E-02	9.53E-02
+	FE-59	1099.22		56.50	-6.23E-02	1.96E-01	1.96E-01
		1291.56		43.20	9.92E-02		2.95E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CO-60	1173.22		100.00	2.71E-02	8.84E-02	8.84E-02
		1332.49		100.00	1.70E-02		9.11E-02
+	ZN-65	1115.52		50.75	1.23E-02	1.90E-01	1.90E-01
+	GA-67	93.31	*	35.70	1.02E+02	6.33E+01	6.33E+01
		208.95	*	2.24	7.92E+02		8.37E+02
		300.22	*	16.00	1.00E+02		1.93E+02
+	SE-75	121.11		16.70	1.01E-01	1.08E-01	3.80E-01
		136.00		59.50	1.66E-02		1.09E-01
		264.65		59.80	3.24E-02		1.08E-01
		279.53		25.20	-2.97E-02		2.71E-01
		400.65		11.40	5.43E-01		6.66E-01
+	RB-82	776.52		13.00	-1.79E-02	1.27E+00	1.27E+00
+	RB-83	520.41		46.00	2.70E-02	1.65E-01	1.65E-01
		529.64		30.30	3.81E-02		2.45E-01
		552.65		16.40	-5.91E-02		5.69E-01
+	KR-85	513.99		0.43	-1.80E+01	1.62E+01	1.62E+01
+	SR-85	513.99		99.27	-1.03E-01	9.31E-02	9.31E-02
+	Y-88	898.02		93.40	2.67E-02	9.58E-02	1.05E-01
		1836.01		99.38	1.92E-03		9.58E-02
+	MO-93	263.06		56.72	-1.38E-02	7.88E-02	9.16E-02
		684.67		99.68	5.35E-03		7.88E-02
		1477.11		99.08	-1.90E-02		7.89E-02
+	NB-93M	16.57		9.43	0.00E+00	1.72E-01	1.72E-01
+	NB-94	702.63		100.00	3.61E-02	8.42E-02	8.42E-02
		871.10		100.00	2.97E-02		8.75E-02
+	NB-95	765.79		99.81	2.37E-04	1.60E-01	1.60E-01
+	NB-95M	235.69		25.00	-4.80E+02	4.31E+01	4.31E+01
+	ZR-95	724.18		43.70	2.23E-02	1.90E-01	2.40E-01
		756.72		55.30	-4.73E-02		1.90E-01
+	MO-99	181.06		6.20	5.19E+02	4.29E+02	6.85E+02
		739.58		12.80	-6.82E+01		4.29E+02
		778.00		4.50	-6.56E+02		1.25E+03
+	TC-99M	140.51		89.00	-1.74E-02	6.34E-02	6.34E-02
+	RU-103	497.08		89.00	2.96E-03	1.06E-01	1.06E-01
+	RU-106	621.84		9.80	-1.06E-01	7.49E-01	7.49E-01
+	AG-108M	433.93		89.90	-2.33E-02	6.06E-02	6.06E-02
		614.37		90.40	7.33E-03		9.50E-02
		722.95		90.50	4.77E-03		7.67E-02
+	CD-109	88.03		3.72	2.66E+00	2.19E+00	2.19E+00
+	AG-110M	657.75		93.14	-3.60E-02	9.42E-02	9.42E-02
		677.61		10.53	1.11E-01		7.38E-01
		706.67		16.46	1.24E-02		5.24E-01
		763.93		21.98	1.17E-01		4.28E-01
		884.67		21.98	2.55E-02		3.60E-01
		1384.27		23.94	-1.45E-01		3.61E-01
+	CD-113M	263.70		0.02	2.98E+01	2.26E+02	2.26E+02
+	SN-113	255.12		1.93	4.70E-01	1.07E-01	3.38E+00
		391.69		64.90	-3.76E-03		1.07E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TE-123M	159.00		84.10	-4.24E-03	7.80E-02	7.80E-02
+	SB-124	602.71		97.87	-1.03E-02	1.08E-01	1.08E-01
		645.85		7.26	-1.89E-01		1.42E+00
		722.78		11.10	5.25E-02		8.44E-01
		1691.02		49.00	3.25E-02		2.16E-01
+	I-125	35.49		6.49	-1.31E+00	2.87E+00	2.87E+00
+	SB-125	176.33		6.89	4.52E-02	1.87E-01	8.15E-01
		427.89		29.33	2.25E-02		1.87E-01
		463.38		10.35	6.91E-01		7.15E-01
		600.56		17.80	6.91E-02		4.57E-01
		635.90		11.32	7.29E-02		7.14E-01
+	SB-126	414.70		83.30	-8.26E-03	7.10E-02	7.10E-02
		666.33		99.60	4.52E-03		8.51E-02
		695.00		99.60	1.32E-02		8.01E-02
		720.50		53.80	-7.75E-03		1.34E-01
+	SN-126	87.57		37.00	9.37E-02	2.02E-01	2.02E-01
+	SB-127	473.00		25.00	3.06E+00	2.42E+01	2.72E+01
		685.00		35.70	1.64E+00		2.42E+01
		783.80		14.70	3.54E+01		6.70E+01
+	I-129	29.78		57.00	2.16E-01	2.59E-01	2.59E-01
		33.60		13.20	4.18E-01		1.21E+00
		39.58		7.52	-1.21E-01		1.53E+00
+	I-131	284.30		6.05	7.23E-01	6.06E-01	9.32E+00
		364.48		81.20	-6.63E-02		6.06E-01
		636.97		7.26	-6.93E-01		1.01E+01
		722.89		1.80	2.28E+00		3.66E+01
+	TE-132	49.72		13.10	-3.87E+01	1.68E+01	1.46E+02
		228.16		88.00	1.07E+00		1.68E+01
+	BA-133	81.00		34.06	-1.71E-01	9.35E-02	1.90E-01
		302.84		18.33	5.84E-02		3.21E-01
		356.01		62.05	6.44E-03		9.35E-02
+	I-133	529.87		86.30	2.42E+07	8.22E+07	8.22E+07
+	XE-133	81.00		38.00	-4.83E+00	5.37E+00	5.37E+00
+	CS-134	563.23		8.38	2.14E-01	8.05E-02	9.15E-01
		569.32		15.43	4.33E-02		4.85E-01
		604.70		97.60	-1.09E-02		8.05E-02
		795.84		85.40	3.45E-02		1.03E-01
		801.93		8.73	9.87E-02		9.52E-01
+	CS-135	268.24	*	16.00	4.37E-01	6.36E-01	6.36E-01
+	@ I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41		28.60	1.00E+26		1.00E+26
	@	1678.03		9.54	1.00E+26		1.00E+26
+	CS-136	153.22		7.46	2.18E-01	2.86E-01	3.12E+00
		163.89		4.61	2.67E+00		4.72E+00
		176.55		13.56	8.95E-02		1.61E+00
		273.65		12.66	-1.35E+00		1.85E+00
		340.57		48.50	7.54E-01		6.86E-01
		818.50		99.70	8.66E-03		2.86E-01
		1048.07		79.60	6.60E-03		3.67E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CS-136	1235.34		19.70	-1.06E+00	2.86E-01	2.17E+00
+	CS-137	661.65		85.12	-3.77E-02	1.03E-01	1.03E-01
+	LA-138	788.74		34.00	5.00E-03	1.15E-01	2.40E-01
		1435.80		66.00	9.84E-03		1.15E-01
+	CE-139	165.85		80.35	-2.74E-03	7.70E-02	7.70E-02
+	BA-140	162.64		6.70	7.44E-01	1.04E+00	3.40E+00
		304.84		4.50	-2.02E+00		4.45E+00
		423.70		3.20	4.63E+00		7.70E+00
		437.55		2.00	-1.33E+00		1.27E+01
		537.32		25.00	3.80E-01		1.04E+00
+	LA-140	328.77		20.50	1.64E+00	3.76E-01	1.37E+00
		487.03		45.50	-1.37E-01		4.66E-01
		815.85		23.50	1.96E-02		1.24E+00
		1596.49		95.49	-2.49E-01		3.76E-01
+	CE-141	145.44		48.40	-2.12E-02	1.98E-01	1.98E-01
+	CE-143	57.36		11.80	-9.58E+03	8.29E+04	3.15E+05
		293.26		42.00	-3.17E+05		8.29E+04
		664.55		5.20	-1.32E+04		8.86E+05
+	CE-144	133.54		10.80	-4.02E-01	5.28E-01	5.28E-01
+	PM-144	476.78		42.00	1.26E-02	8.38E-02	1.56E-01
		618.01		98.60	2.19E-02		8.38E-02
		696.49		99.49	3.35E-02		8.97E-02
+	PM-145	36.85		21.70	-8.54E-01	3.19E-01	5.72E-01
		37.36		39.70	2.24E-01		3.19E-01
		42.30		15.10	3.83E-01		6.79E-01
		72.40		2.31	-1.35E+01		3.50E+00
+	PM-146	453.90	*	39.94	1.44E-01	2.40E-01	2.40E-01
		735.90		14.01	-6.69E-03		5.18E-01
		747.13		13.10	-2.78E-01		6.08E-01
+	ND-147	91.11	*	28.90	2.54E+00	1.58E+00	1.58E+00
		531.02		13.10	5.95E-02		2.29E+00
+	PM-149	285.90		3.10	-2.61E+02	6.84E+03	6.84E+03
+	EU-152	121.78		20.50	7.14E-02	2.67E-01	2.67E-01
		244.69		5.40	3.40E-01		1.22E+00
		344.27		19.13	1.44E-03		3.18E-01
		778.89		9.10	-4.78E-01		8.58E-01
		964.01		10.40	-7.10E-01		1.06E+00
		1085.78		7.22	1.19E-01		9.93E-01
		1112.02		9.60	3.48E-01		1.01E+00
		1407.95		14.94	9.73E-02		6.32E-01
+	GD-153	97.43		31.30	-7.11E-02	1.98E-01	1.98E-01
		103.18		22.20	2.31E-02		2.58E-01
+	EU-154	123.07		40.50	-1.04E-02	1.35E-01	1.35E-01
		723.30		19.70	3.75E-02		4.03E-01
		873.19		11.50	-1.22E-01		6.89E-01
		996.32		10.30	1.32E-01		8.83E-01
		1004.76		17.90	2.26E-02		4.57E-01
		1274.45		35.50	-4.38E-02		2.47E-01
+	EU-155	86.50		30.90	4.05E-01	2.52E-01	2.52E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-155	105.30		20.70	1.20E-02	2.52E-01	2.56E-01
+	EU-156	811.77		10.40	-5.80E-01	2.27E+00	2.27E+00
		1153.47		7.20	-3.02E-02		3.77E+00
		1230.71		8.90	6.86E-01		3.71E+00
+	HO-166M	184.41		72.60	1.21E-01	9.71E-02	9.71E-02
		280.45		29.60	-4.11E-02		1.93E-01
		410.94		11.10	3.49E-01		5.91E-01
		711.69		54.10	4.24E-02		1.52E-01
+	TM-171	66.72		0.14	1.03E+01	5.47E+01	5.47E+01
+	HF-172	67.35		5.31	-2.52E-01	4.85E-01	1.37E+00
		125.82		11.30	-1.44E-01		4.85E-01
+	LU-172	181.53		20.60	3.65E-01	2.24E+00	4.20E+00
		900.72		29.81	2.37E-02		4.04E+00
		1093.66		62.50	1.19E+00		2.24E+00
+	LU-173	100.72	*	5.24	7.77E-01	4.98E-01	1.28E+00
		272.11	*	21.20	3.42E-01		4.98E-01
+	HF-175	343.40		84.00	-5.85E-02	8.92E-02	8.92E-02
+	LU-176	88.34		13.30	7.16E-01	5.40E-02	5.90E-01
		201.83		86.00	-5.03E-03		6.77E-02
		306.78		94.00	1.46E-02		5.40E-02
+	HF-181	133.02		41.70	-1.26E-01	1.09E-01	2.01E-01
		345.85		17.20	2.53E-01		5.28E-01
		482.03		82.80	3.62E-02		1.09E-01
+	TA-182	67.75		41.20	-3.69E-02	2.01E-01	2.01E-01
		1121.30		34.90	5.32E-01		4.64E-01
		1189.05		16.23	-2.65E-01		6.19E-01
		1221.41		26.98	3.95E-01		4.94E-01
		1231.02		11.44	1.90E-01		1.03E+00
+	IR-192	308.46		29.68	2.49E-02	1.54E-01	2.39E-01
		468.07		48.10	-1.21E-02		1.54E-01
+	HG-203	279.19		77.30	1.96E-02	1.13E-01	1.13E-01
+	TL-204	374.74		94.11	1.21E-02	6.57E-02	6.57E-02
		899.15		99.16	1.71E-02		8.24E-02
		911.74		91.10	4.63E-01		1.95E-01
+	BI-207	569.67		97.72	6.69E-03	7.49E-02	7.49E-02
		1063.62		74.90	3.91E-03		9.60E-02
+	TL-208	583.14	*	30.22	1.25E+00	1.61E-01	4.22E-01
		860.37		4.48	2.14E+00		2.24E+00
		2614.66	*	35.85	1.18E+00		1.61E-01
+	BI-210M	262.00		45.00	-8.56E-02	1.14E-01	1.14E-01
		300.00		23.00	-3.05E-02		2.73E-01
+	PB-210	46.50		4.25	8.88E-01	2.00E+00	2.00E+00
+	PB-211	404.84		2.90	-4.21E-01	2.03E+00	2.03E+00
		831.96		2.90	-2.32E+00		2.58E+00
+	BI-212	727.17	*	11.80	1.42E+00	9.40E-01	9.40E-01
		1620.62		2.75	3.82E-01		3.29E+00
+	PB-212	238.63	*	44.60	1.44E+00	2.86E-01	2.86E-01
		300.09	*	3.41	1.83E+00		3.51E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BI-214	609.31	*	46.30	1.18E+00	2.03E-01	2.03E-01
		1120.29	*	15.10	9.56E-01		9.00E-01
		1764.49	*	15.80	1.30E+00		5.71E-01
		2204.22	*	4.98	1.62E+00		1.68E+00
+	PB-214	295.21	*	19.19	1.18E+00	2.24E-01	6.23E-01
		351.92	*	37.19	1.30E+00		2.24E-01
+	RN-219	401.80		6.50	-1.80E-01	9.20E-01	9.20E-01
+	RA-223	323.87		3.88	4.22E-01	1.41E+00	1.41E+00
+	RA-224	240.98	*	3.95	3.15E+00	3.24E+00	3.24E+00
+	RA-225	40.00		31.00	3.49E-01	1.24E+00	1.24E+00
+	RA-226	186.21	*	3.28	1.88E+00	2.44E+00	2.44E+00
+	TH-227	50.10		8.40	-1.16E+00	6.22E-01	8.21E-01
		236.00		11.50	-6.92E+00		6.22E-01
		256.20		6.30	-3.51E-01		8.57E-01
+	AC-228	338.32	*	11.40	1.63E+00	2.95E-01	8.57E-01
		911.07	*	27.70	1.59E+00		2.95E-01
		969.11	*	16.60	1.38E+00		1.00E+00
+	TH-230	48.43		16.90	-4.89E-02	4.58E-01	4.58E-01
		62.85		4.60	2.19E+00		1.73E+00
		67.67		0.37	-3.51E+00		1.91E+01
+	PA-231	283.67		1.60	2.87E-01	2.55E+00	3.70E+00
		302.67		2.30	4.63E-01		2.55E+00
+	TH-231	25.64		14.70	0.00E+00	3.36E-02	3.36E-02
		84.21		6.40	-2.69E+00		1.06E+00
+	PA-233	311.98		38.60	7.82E-02	2.93E-01	2.93E-01
+	PA-234	131.20		20.40	1.34E-01	2.84E-01	2.84E-01
		733.99		8.80	1.65E-01		9.40E-01
		946.00		12.00	1.78E-01		6.82E-01
+	PA-234M	1001.03		0.92	6.63E+00	1.08E+01	1.08E+01
+	TH-234	63.29	*	3.80	1.69E+00	2.60E+00	2.60E+00
+	U-235	143.76		10.50	-8.61E-02	5.35E-01	5.35E-01
		163.35		4.70	6.60E-01		1.17E+00
		205.31		4.70	1.95E-01		1.19E+00
+	NP-237	86.50		12.60	9.83E-01	6.11E-01	6.11E-01
+	NP-239	106.10		22.70	-8.83E+01	5.15E+02	5.15E+02
		228.18		10.70	7.38E+01		1.16E+03
		277.60		14.10	3.30E+02		9.21E+02
+	AM-241	59.54		35.90	-3.03E-02	1.95E-01	1.95E-01
+	AM-243	74.67	*	66.00	4.33E-01	1.71E-01	1.71E-01
+	CM-243	209.75		3.29	1.82E+00	4.26E-01	1.93E+00
		228.14		10.60	3.42E-02		5.39E-01
		277.60		14.00	1.52E-01		4.26E-01

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+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	8.41E-01	8.41E-01	6.76E-02	3.92E-01
	NA-22	1274.54		99.94	8.90E-02	8.90E-02	-1.58E-02	3.99E-02
	NA-24	1368.53		99.99	7.96E-02	5.71E-02	3.27E-02	3.50E-02
		2754.09		99.86	5.71E-02		4.10E-03	2.02E-02
	AL-26	1808.65		99.76	7.31E-02	7.31E-02	-2.85E-02	3.06E-02
+	K-40	1460.81	*	10.67	1.13E+00	1.13E+00	7.73E+00	5.19E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	7.48E-02	7.48E-02	-1.38E-02	3.64E-02
		78.34		96.00	1.03E-01		1.43E-01	5.06E-02
	SC-46	889.25		98.98	9.40E-02	9.40E-02	-9.58E-03	4.27E-02
		1120.51		99.90	1.67E-01		1.60E-01	7.83E-02
	V-48	983.52		99.98	2.34E-01	2.06E-01	4.68E-02	1.05E-01
		1312.10		97.50	2.06E-01		-1.05E-02	8.82E-02
	CR-51	320.08		9.83	1.05E+00	1.05E+00	-3.74E-01	4.93E-01
	MN-54	834.83		99.97	8.97E-02	8.97E-02	-7.54E-03	4.14E-02
	CO-56	846.75		99.96	9.83E-02	9.83E-02	4.98E-03	4.49E-02
		1037.75		14.03	7.46E-01		8.38E-02	3.37E-01
		1238.25		67.00	2.34E-01		1.99E-01	1.08E-01
		1771.40		15.51	5.70E-01		-3.59E-02	2.36E-01
		2587.48		16.90	4.79E-01		1.34E-01	1.79E-01
	CO-57	122.06		85.51	6.83E-02	6.83E-02	1.82E-02	3.30E-02
		136.48		10.60	5.65E-01		9.24E-02	2.73E-01
	CO-58	810.76		99.40	9.53E-02	9.53E-02	3.95E-03	4.35E-02
	FE-59	1099.22		56.50	1.96E-01	1.96E-01	-6.23E-02	8.70E-02
		1291.56		43.20	2.95E-01		9.92E-02	1.32E-01
	CO-60	1173.22		100.00	8.84E-02	8.84E-02	2.71E-02	3.99E-02
		1332.49		100.00	9.11E-02		1.70E-02	4.08E-02
	ZN-65	1115.52		50.75	1.90E-01	1.90E-01	1.23E-02	8.61E-02
	GA-67	93.31	*	35.70	6.33E+01	6.33E+01	1.02E+02	3.10E+01

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Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
GA-67	208.95	*	2.24	8.37E+02	6.33E+01	7.92E+02	4.05E+02
	300.22	*	16.00	1.93E+02		1.00E+02	9.40E+01
SE-75	121.11		16.70	3.80E-01	1.08E-01	1.01E-01	1.84E-01
	136.00		59.50	1.09E-01		1.66E-02	5.27E-02
	264.65		59.80	1.08E-01		3.24E-02	5.13E-02
	279.53		25.20	2.71E-01		-2.97E-02	1.29E-01
	400.65		11.40	6.66E-01		5.43E-01	3.15E-01
RB-82	776.52		13.00	1.27E+00	1.27E+00	-1.79E-02	5.88E-01
RB-83	520.41		46.00	1.65E-01	1.65E-01	2.70E-02	7.65E-02
	529.64		30.30	2.45E-01		3.81E-02	1.13E-01
	552.65		16.40	5.69E-01		-5.91E-02	2.67E-01
KR-85	513.99		0.43	1.62E+01	1.62E+01	-1.80E+01	7.58E+00
SR-85	513.99		99.27	9.31E-02	9.31E-02	-1.03E-01	4.36E-02
Y-88	898.02		93.40	1.05E-01	9.58E-02	2.67E-02	4.79E-02
	1836.01		99.38	9.58E-02		1.92E-03	4.07E-02
MO-93	263.06		56.72	9.16E-02	7.88E-02	-1.38E-02	4.35E-02
	684.67		99.68	7.88E-02		5.35E-03	3.66E-02
	1477.11		99.08	7.89E-02		-1.90E-02	3.43E-02
NB-93M	16.57		9.43	1.72E-01	1.72E-01	0.00E+00	0.00E+00
NB-94	702.63		100.00	8.42E-02	8.42E-02	3.61E-02	3.93E-02
	871.10		100.00	8.75E-02		2.97E-02	4.04E-02
NB-95	765.79		99.81	1.60E-01	1.60E-01	2.37E-04	7.50E-02
NB-95M	235.69		25.00	4.31E+01	4.31E+01	-4.80E+02	2.08E+01
ZR-95	724.18		43.70	2.40E-01	1.90E-01	2.23E-02	1.11E-01
	756.72		55.30	1.90E-01		-4.73E-02	8.75E-02
MO-99	181.06		6.20	6.85E+02	4.29E+02	5.19E+02	3.30E+02
	739.58		12.80	4.29E+02		-6.82E+01	1.98E+02
	778.00		4.50	1.25E+03		-6.56E+02	5.74E+02
TC-99M	140.51		89.00	6.34E-02	6.34E-02	-1.74E-02	3.06E-02
RU-103	497.08		89.00	1.06E-01	1.06E-01	2.96E-03	4.89E-02
RU-106	621.84		9.80	7.49E-01	7.49E-01	-1.06E-01	3.47E-01
AG-108M	433.93		89.90	6.06E-02	6.06E-02	-2.33E-02	2.81E-02
	614.37		90.40	9.50E-02		7.33E-03	4.47E-02
	722.95		90.50	7.67E-02		4.77E-03	3.51E-02
CD-109	88.03		3.72	2.19E+00	2.19E+00	2.66E+00	1.07E+00
AG-110M	657.75		93.14	9.42E-02	9.42E-02	-3.60E-02	4.40E-02
	677.61		10.53	7.38E-01		1.11E-01	3.41E-01
	706.67		16.46	5.24E-01		1.24E-02	2.43E-01
	763.93		21.98	4.28E-01		1.17E-01	1.99E-01
	884.67		21.98	3.60E-01		2.55E-02	1.63E-01
	1384.27		23.94	3.61E-01		-1.45E-01	1.59E-01
CD-113M	263.70		0.02	2.26E+02	2.26E+02	2.98E+01	1.07E+02
SN-113	255.12		1.93	3.38E+00	1.07E-01	4.70E-01	1.61E+00
	391.69		64.90	1.07E-01		-3.76E-03	5.02E-02
TE-123M	159.00		84.10	7.80E-02	7.80E-02	-4.24E-03	3.76E-02
SB-124	602.71		97.87	1.08E-01	1.08E-01	-1.03E-02	5.04E-02
	645.85		7.26	1.42E+00		-1.89E-01	6.61E-01
	722.78		11.10	8.44E-01		5.25E-02	3.87E-01
	1691.02		49.00	2.16E-01		3.25E-02	9.24E-02
I-125	35.49		6.49	2.87E+00	2.87E+00	-1.31E+00	1.40E+00
SB-125	176.33		6.89	8.15E-01	1.87E-01	4.52E-02	3.92E-01
	427.89		29.33	1.87E-01		2.25E-02	8.68E-02
	463.38		10.35	7.15E-01		6.91E-01	3.37E-01

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Analysis Report for 2206038-05

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Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
SB-125	600.56		17.80	4.57E-01	1.87E-01	6.91E-02	2.14E-01
	635.90		11.32	7.14E-01		7.29E-02	3.33E-01
SB-126	414.70		83.30	7.10E-02	7.10E-02	-8.26E-03	3.33E-02
	666.33		99.60	8.51E-02		4.52E-03	3.98E-02
	695.00		99.60	8.01E-02		1.32E-02	3.72E-02
	720.50		53.80	1.34E-01		-7.75E-03	6.18E-02
SN-126	87.57		37.00	2.02E-01	2.02E-01	9.37E-02	9.84E-02
SB-127	473.00		25.00	2.72E+01	2.42E+01	3.06E+00	1.27E+01
	685.00		35.70	2.42E+01		1.64E+00	1.12E+01
	783.80		14.70	6.70E+01		3.54E+01	3.12E+01
I-129	29.78		57.00	2.59E-01	2.59E-01	2.16E-01	1.26E-01
	33.60		13.20	1.21E+00		4.18E-01	5.92E-01
	39.58		7.52	1.53E+00		-1.21E-01	7.49E-01
I-131	284.30		6.05	9.32E+00	6.06E-01	7.23E-01	4.44E+00
	364.48		81.20	6.06E-01		-6.63E-02	2.83E-01
	636.97		7.26	1.01E+01		-6.93E-01	4.71E+00
	722.89		1.80	3.66E+01		2.28E+00	1.68E+01
TE-132	49.72		13.10	1.46E+02	1.68E+01	-3.87E+01	7.08E+01
	228.16		88.00	1.68E+01		1.07E+00	8.04E+00
BA-133	81.00		34.06	1.90E-01	9.35E-02	-1.71E-01	9.26E-02
	302.84		18.33	3.21E-01		5.84E-02	1.53E-01
	356.01		62.05	9.35E-02		6.44E-03	4.41E-02
I-133	529.87		86.30	8.22E+07	8.22E+07	2.42E+07	3.80E+07
XE-133	81.00		38.00	5.37E+00	5.37E+00	-4.83E+00	2.61E+00
CS-134	563.23		8.38	9.15E-01	8.05E-02	2.14E-01	4.28E-01
	569.32		15.43	4.85E-01		4.33E-02	2.27E-01
	604.70		97.60	8.05E-02		-1.09E-02	3.76E-02
	795.84		85.40	1.03E-01		3.45E-02	4.78E-02
	801.93		8.73	9.52E-01		9.87E-02	4.39E-01
CS-135	268.24	*	16.00	6.36E-01	6.36E-01	4.37E-01	3.10E-01
@ I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22		7.46	3.12E+00	2.86E-01	2.18E-01	1.51E+00
	163.89		4.61	4.72E+00		2.67E+00	2.27E+00
	176.55		13.56	1.61E+00		8.95E-02	7.75E-01
	273.65		12.66	1.85E+00		-1.35E+00	8.84E-01
	340.57		48.50	6.86E-01		7.54E-01	3.30E-01
	818.50		99.70	2.86E-01		8.66E-03	1.30E-01
	1048.07		79.60	3.67E-01		6.60E-03	1.64E-01
	1235.34		19.70	2.17E+00		-1.06E+00	9.94E-01
CS-137	661.65		85.12	1.03E-01	1.03E-01	-3.77E-02	4.83E-02
LA-138	788.74		34.00	2.40E-01	1.15E-01	5.00E-03	1.11E-01
	1435.80		66.00	1.15E-01		9.84E-03	5.02E-02
CE-139	165.85		80.35	7.70E-02	7.70E-02	-2.74E-03	3.71E-02
BA-140	162.64		6.70	3.40E+00	1.04E+00	7.44E-01	1.64E+00
	304.84		4.50	4.45E+00		-2.02E+00	2.09E+00
	423.70		3.20	7.70E+00		4.63E+00	3.61E+00
	437.55		2.00	1.27E+01		-1.33E+00	5.96E+00
	537.32		25.00	1.04E+00		3.80E-01	4.83E-01
LA-140	328.77		20.50	1.37E+00	3.76E-01	1.64E+00	6.55E-01
	487.03		45.50	4.66E-01		-1.37E-01	2.14E-01
	815.85		23.50	1.24E+00		1.96E-02	5.66E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	LA-140	1596.49		95.49	3.76E-01	3.76E-01	-2.49E-01	1.65E-01
	CE-141	145.44		48.40	1.98E-01	1.98E-01	-2.12E-02	9.54E-02
	CE-143	57.36		11.80	3.15E+05	8.29E+04	-9.58E+03	1.53E+05
		293.26		42.00	8.29E+04		-3.17E+05	3.97E+04
		664.55		5.20	8.86E+05		-1.32E+04	4.15E+05
	CE-144	133.54		10.80	5.28E-01	5.28E-01	-4.02E-01	2.55E-01
	PM-144	476.78		42.00	1.56E-01	8.38E-02	1.26E-02	7.28E-02
		618.01		98.60	8.38E-02		2.19E-02	3.92E-02
		696.49		99.49	8.97E-02		3.35E-02	4.18E-02
	PM-145	36.85		21.70	5.72E-01	3.19E-01	-8.54E-01	2.79E-01
		37.36		39.70	3.19E-01		2.24E-01	1.56E-01
		42.30		15.10	6.79E-01		3.83E-01	3.31E-01
		72.40		2.31	3.50E+00		-1.35E+01	1.71E+00
+	PM-146	453.90	*	39.94	2.40E-01	2.40E-01	1.44E-01	1.15E-01
		735.90		14.01	5.18E-01		-6.69E-03	2.38E-01
		747.13		13.10	6.08E-01		-2.78E-01	2.81E-01
+	ND-147	91.11	*	28.90	1.58E+00	1.58E+00	2.54E+00	7.74E-01
		531.02		13.10	2.29E+00		5.95E-02	1.05E+00
	PM-149	285.90		3.10	6.84E+03	6.84E+03	-2.61E+02	3.26E+03
	EU-152	121.78		20.50	2.67E-01	2.67E-01	7.14E-02	1.29E-01
		244.69		5.40	1.22E+00		3.40E-01	5.84E-01
		344.27		19.13	3.18E-01		1.44E-03	1.51E-01
		778.89		9.10	8.58E-01		-4.78E-01	3.95E-01
		964.01		10.40	1.06E+00		-7.10E-01	4.95E-01
		1085.78		7.22	9.93E-01		1.19E-01	4.41E-01
		1112.02		9.60	1.01E+00		3.48E-01	4.60E-01
		1407.95		14.94	6.32E-01		9.73E-02	2.83E-01
	GD-153	97.43		31.30	1.98E-01	1.98E-01	-7.11E-02	9.58E-02
		103.18		22.20	2.58E-01		2.31E-02	1.25E-01
	EU-154	123.07		40.50	1.35E-01	1.35E-01	-1.04E-02	6.54E-02
		723.30		19.70	4.03E-01		3.75E-02	1.87E-01
		873.19		11.50	6.89E-01		-1.22E-01	3.15E-01
		996.32		10.30	8.83E-01		1.32E-01	4.05E-01
		1004.76		17.90	4.57E-01		2.26E-02	2.07E-01
		1274.45		35.50	2.47E-01		-4.38E-02	1.11E-01
	EU-155	86.50		30.90	2.52E-01	2.52E-01	4.05E-01	1.23E-01
		105.30		20.70	2.56E-01		1.20E-02	1.24E-01
	EU-156	811.77		10.40	2.27E+00	2.27E+00	-5.80E-01	1.03E+00
		1153.47		7.20	3.77E+00		-3.02E-02	1.69E+00
		1230.71		8.90	3.71E+00		6.86E-01	1.69E+00
	HO-166M	184.41		72.60	9.71E-02	9.71E-02	1.21E-01	4.71E-02
		280.45		29.60	1.93E-01		-4.11E-02	9.18E-02
		410.94		11.10	5.91E-01		3.49E-01	2.79E-01
		711.69		54.10	1.52E-01		4.24E-02	7.04E-02
	TM-171	66.72		0.14	5.47E+01	5.47E+01	1.03E+01	2.66E+01
	HF-172	67.35		5.31	1.37E+00	4.85E-01	-2.52E-01	6.66E-01
		125.82		11.30	4.85E-01		-1.44E-01	2.34E-01
	LU-172	181.53		20.60	4.20E+00	2.24E+00	3.65E-01	2.02E+00
		900.72		29.81	4.04E+00		2.37E-02	1.85E+00
		1093.66		62.50	2.24E+00		1.19E+00	1.02E+00
+	LU-173	100.72	*	5.24	1.28E+00	4.98E-01	7.77E-01	6.21E-01
		272.11	*	21.20	4.98E-01		3.42E-01	2.42E-01
	HF-175	343.40		84.00	8.92E-02	8.92E-02	-5.85E-02	4.21E-02

BP/Castex-Ltd Adm-Apx E-001559

Analysis Report for 2206038-05

R-1 6-12

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	LU-176	88.34		13.30	5.90E-01	5.40E-02	7.16E-01	2.88E-01
		201.83		86.00	6.77E-02		-5.03E-03	3.26E-02
		306.78		94.00	5.40E-02		1.46E-02	2.54E-02
	HF-181	133.02		41.70	2.01E-01	1.09E-01	-1.26E-01	9.71E-02
		345.85		17.20	5.28E-01		2.53E-01	2.50E-01
		482.03		82.80	1.09E-01		3.62E-02	5.05E-02
	TA-182	67.75		41.20	2.01E-01	2.01E-01	-3.69E-02	9.77E-02
		1121.30		34.90	4.64E-01		5.32E-01	2.18E-01
		1189.05		16.23	6.19E-01		-2.65E-01	2.78E-01
		1221.41		26.98	4.94E-01		3.95E-01	2.28E-01
		1231.02		11.44	1.03E+00		1.90E-01	4.68E-01
	IR-192	308.46		29.68	2.39E-01	1.54E-01	2.49E-02	1.13E-01
		468.07		48.10	1.54E-01		-1.21E-02	7.14E-02
	HG-203	279.19		77.30	1.13E-01	1.13E-01	1.96E-02	5.38E-02
	TL-204	374.74		94.11	6.57E-02	6.57E-02	1.21E-02	3.10E-02
		899.15		99.16	8.24E-02		1.71E-02	3.76E-02
		911.74		91.10	1.95E-01		4.63E-01	9.36E-02
	BI-207	569.67		97.72	7.49E-02	7.49E-02	6.69E-03	3.50E-02
		1063.62		74.90	9.60E-02		3.91E-03	4.27E-02
+	TL-208	583.14	*	30.22	4.22E-01	1.61E-01	1.25E+00	2.03E-01
		860.37		4.48	2.24E+00		2.14E+00	1.05E+00
		2614.66	*	35.85	1.61E-01		1.18E+00	5.82E-02
	BI-210M	262.00		45.00	1.14E-01	1.14E-01	-8.56E-02	5.41E-02
		300.00		23.00	2.73E-01		-3.05E-02	1.30E-01
	PB-210	46.50		4.25	2.00E+00	2.00E+00	8.88E-01	9.74E-01
	PB-211	404.84		2.90	2.03E+00	2.03E+00	-4.21E-01	9.50E-01
		831.96		2.90	2.58E+00		-2.32E+00	1.18E+00
+	BI-212	727.17	*	11.80	9.40E-01	9.40E-01	1.42E+00	4.45E-01
		1620.62		2.75	3.29E+00		3.82E-01	1.45E+00
+	PB-212	238.63	*	44.60	2.86E-01	2.86E-01	1.44E+00	1.40E-01
		300.09	*	3.41	3.51E+00		1.83E+00	1.71E+00
+	BI-214	609.31	*	46.30	2.03E-01	2.03E-01	1.18E+00	9.62E-02
		1120.29	*	15.10	9.00E-01		9.56E-01	4.23E-01
		1764.49	*	15.80	5.71E-01		1.30E+00	2.49E-01
		2204.22	*	4.98	1.68E+00		1.62E+00	6.99E-01
+	PB-214	295.21	*	19.19	6.23E-01	2.24E-01	1.18E+00	3.04E-01
		351.92	*	37.19	2.24E-01		1.30E+00	1.08E-01
	RN-219	401.80		6.50	9.20E-01	9.20E-01	-1.80E-01	4.32E-01
	RA-223	323.87		3.88	1.41E+00	1.41E+00	4.22E-01	6.66E-01
+	RA-224	240.98	*	3.95	3.24E+00	3.24E+00	3.15E+00	1.59E+00
	RA-225	40.00		31.00	1.24E+00	1.24E+00	3.49E-01	6.03E-01
+	RA-226	186.21	*	3.28	2.44E+00	2.44E+00	1.88E+00	1.19E+00
	TH-227	50.10		8.40	8.21E-01	6.22E-01	-1.16E+00	3.98E-01
		236.00		11.50	6.22E-01		-6.92E+00	3.00E-01
		256.20		6.30	8.57E-01		-3.51E-01	4.08E-01
+	AC-228	338.32	*	11.40	8.57E-01	2.95E-01	1.63E+00	4.15E-01
		911.07	*	27.70	2.95E-01		1.59E+00	1.35E-01
		969.11	*	16.60	1.00E+00		1.38E+00	4.80E-01
	TH-230	48.43		16.90	4.58E-01	4.58E-01	-4.89E-02	2.23E-01
		62.85		4.60	1.73E+00		2.19E+00	8.46E-01
		67.67		0.37	1.91E+01		-3.51E+00	9.29E+00
	PA-231	283.67		1.60	3.70E+00	2.55E+00	2.87E-01	1.76E+00
		302.67		2.30	2.55E+00		4.63E-01	1.21E+00

Analysis Report for 2206038-05

R-1 6-12

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TH-231	25.64		14.70	3.36E-02	3.36E-02	0.00E+00	0.00E+00
		84.21		6.40	1.06E+00		-2.69E+00	5.14E-01
	PA-233	311.98		38.60	2.93E-01	2.93E-01	7.82E-02	1.39E-01
	PA-234	131.20		20.40	2.84E-01	2.84E-01	1.34E-01	1.38E-01
		733.99		8.80	9.40E-01		1.65E-01	4.36E-01
		946.00		12.00	6.82E-01		1.78E-01	3.11E-01
	PA-234M	1001.03		0.92	1.08E+01	1.08E+01	6.63E+00	4.99E+00
+	TH-234	63.29	*	3.80	2.60E+00	2.60E+00	1.69E+00	1.27E+00
	U-235	143.76		10.50	5.35E-01	5.35E-01	-8.61E-02	2.58E-01
		163.35		4.70	1.17E+00		6.60E-01	5.62E-01
		205.31		4.70	1.19E+00		1.95E-01	5.72E-01
	NP-237	86.50		12.60	6.11E-01	6.11E-01	9.83E-01	2.99E-01
	NP-239	106.10		22.70	5.15E+02	5.15E+02	-8.83E+01	2.49E+02
		228.18		10.70	1.16E+03		7.38E+01	5.57E+02
		277.60		14.10	9.21E+02		3.30E+02	4.39E+02
	AM-241	59.54		35.90	1.95E-01	1.95E-01	-3.03E-02	9.47E-02
+	AM-243	74.67	*	66.00	1.71E-01	1.71E-01	4.33E-01	8.40E-02
	CM-243	209.75		3.29	1.93E+00	4.26E-01	1.82E+00	9.32E-01
		228.14		10.60	5.39E-01		3.42E-02	2.58E-01
		277.60		14.00	4.26E-01		1.52E-01	2.03E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

Analysis Report for 2206038-05

R-1 6-12

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-1 6-12

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	30	90	163
33:	174	191	182	77	128	130	122	107
41:	121	123	101	108	95	88	73	100
49:	101	58	63	50	78	60	75	76
57:	67	89	76	88	72	81	82	81
65:	179	129	91	98	97	92	80	95
73:	93	133	111	197	340	213	460	144
81:	106	70	89	80	76	130	78	104
89:	188	116	92	142	92	161	181	88
97:	57	64	70	66	83	64	58	58
105:	41	66	65	53	54	53	73	47
113:	68	58	64	56	66	50	52	45
121:	62	51	56	68	52	59	56	54
129:	50	53	95	59	53	60	48	56
137:	46	68	66	50	59	64	54	57
145:	58	54	54	54	41	52	33	45
153:	58	49	60	54	68	65	47	49
161:	54	42	43	48	50	58	38	37
169:	45	45	53	39	52	40	46	44
177:	45	52	29	52	42	52	50	51
185:	44	50	93	114	46	41	36	48
193:	42	40	38	37	43	43	37	47
201:	57	42	34	38	43	42	38	37
209:	33	49	81	43	38	33	27	40
217:	31	37	33	29	38	33	41	28
225:	41	30	30	37	37	43	28	37
233:	26	37	43	33	43	42	107	423
241:	249	60	92	88	36	34	27	27
249:	18	32	23	27	41	28	30	30
257:	31	24	18	33	29	22	17	30
265:	18	30	22	34	25	33	43	56
273:	39	34	21	26	27	28	39	21
281:	30	24	26	30	21	29	33	29
289:	24	26	22	21	22	29	19	77
297:	149	44	22	15	37	49	21	19
305:	22	12	17	12	28	20	19	28
313:	23	26	18	20	19	22	13	19
321:	29	19	13	22	27	19	15	21
329:	32	42	39	15	16	24	24	18
337:	22	27	58	105	45	24	22	21
345:	19	12	34	22	15	12	18	55
353:	236	164	26	17	11	26	12	20
361:	16	10	17	10	19	17	7	14

BP/Castex-Ltd Adm-Apx E-001563

369:	18	16	17	15	17	19	21	19

Sample Title: R-1 6-12

Channel								
377:	20	16	21	15	20	14	18	14
385:	17	16	24	20	12	23	17	11
393:	21	16	18	16	17	9	21	26
401:	17	16	14	25	9	10	19	14
409:	15	22	16	15	17	25	9	16
417:	12	13	16	16	6	9	14	17
425:	18	12	13	14	8	11	12	10
433:	6	17	10	18	7	23	11	16
441:	19	16	9	9	13	15	15	12
449:	16	12	13	12	10	13	20	13
457:	19	12	14	10	5	16	7	41
465:	21	11	13	10	9	12	14	14
473:	10	16	13	12	7	16	17	14
481:	8	14	9	15	11	5	3	16
489:	9	9	5	11	14	10	15	17
497:	11	13	6	8	11	9	14	14
505:	11	13	13	6	13	17	39	66
513:	26	19	7	12	10	15	10	10
521:	14	13	8	6	10	17	6	11
529:	9	11	10	10	10	5	10	7
537:	9	11	11	17	6	12	6	9
545:	10	9	13	10	11	9	12	9
553:	15	16	5	11	12	13	5	10
561:	11	9	11	17	9	11	5	9
569:	11	10	15	10	8	5	12	9
577:	11	7	10	10	14	8	29	117
585:	80	18	10	19	13	7	13	9
593:	12	8	14	9	14	7	14	10
601:	12	14	9	9	5	12	9	10
609:	49	149	104	22	7	9	14	10
617:	12	10	8	7	8	13	4	7
625:	6	7	6	7	7	13	11	12
633:	8	4	13	18	5	12	7	4
641:	10	8	13	5	14	4	9	8
649:	7	8	11	11	11	9	8	5
657:	8	12	10	13	11	13	14	8
665:	8	14	17	3	9	12	7	7
673:	4	5	3	3	8	10	10	7
681:	8	5	11	11	3	10	5	12
689:	5	11	2	9	8	3	7	11
697:	10	10	15	10	5	7	12	7
705:	10	13	6	5	8	8	9	5
713:	12	8	9	10	6	8	4	5
721:	11	4	6	6	3	5	18	29
729:	16	13	13	13	5	4	4	11
737:	7	7	4	7	9	6	7	8
745:	7	3	7	5	13	7	15	9
753:	4	10	8	17	4	4	4	2
761:	10	8	6	10	6	9	11	8
769:	22	22	8	6	13	9	7	7
777:	5	6	6	10	4	7	8	12
785:	8	6	15	5	5	5	8	5
793:	8	2	7	16	6	7	8	4

BP/Castex-Ltd Adm-Apx E-001564

801:	7	13	5	4	6	7	5	6

Sample Title: R-1 6-12

Channel								
809:	6	6	4	5	6	4	4	5
817:	8	1	6	5	5	5	5	6
825:	9	8	6	7	4	8	5	9
833:	3	5	3	6	16	6	6	10
841:	13	8	8	2	4	8	7	2
849:	8	6	5	7	1	3	3	9
857:	5	4	5	13	15	11	13	1
865:	2	10	4	8	10	7	1	11
873:	7	4	6	2	3	6	6	1
881:	10	10	4	1	5	4	2	6
889:	8	1	6	6	7	11	6	6
897:	3	4	10	3	8	4	4	5
905:	9	3	2	7	11	12	53	77
913:	34	1	6	6	4	7	4	4
921:	3	8	4	6	5	0	4	6
929:	4	3	3	5	5	7	11	9
937:	3	4	5	4	5	3	7	4
945:	4	8	4	7	2	6	2	5
953:	7	4	2	3	12	10	4	2
961:	7	9	4	6	17	17	6	14
969:	32	46	9	2	1	6	5	6
977:	3	3	4	4	5	2	2	8
985:	3	4	4	2	1	3	1	4
993:	3	9	3	8	3	7	8	5
1001:	10	8	9	3	3	3	4	2
1009:	6	0	9	2	1	3	4	3
1017:	3	5	5	1	4	5	1	1
1025:	7	6	1	4	1	5	6	4
1033:	1	2	4	6	5	4	3	6
1041:	6	4	3	7	3	7	6	1
1049:	1	4	2	5	0	4	3	5
1057:	3	1	5	3	2	3	0	4
1065:	6	4	3	3	4	4	4	3
1073:	7	6	2	6	7	2	4	4
1081:	2	3	5	2	4	3	2	2
1089:	3	6	3	4	6	8	8	3
1097:	4	3	5	4	1	2	3	1
1105:	4	3	3	5	3	5	9	7
1113:	5	5	5	5	3	3	3	26
1121:	28	11	5	8	3	7	4	2
1129:	1	4	4	5	4	1	4	6
1137:	3	3	4	3	5	2	4	5
1145:	3	5	5	2	5	3	3	4
1153:	1	3	5	7	5	3	5	6
1161:	1	2	8	8	3	6	1	3
1169:	4	5	5	4	3	2	3	7
1177:	1	4	4	3	10	4	4	7
1185:	3	4	4	5	5	4	2	2
1193:	9	6	3	3	1	2	2	6
1201:	9	7	6	6	6	4	3	5
1209:	1	2	4	4	4	4	4	6
1217:	4	9	6	7	11	5	2	8
1225:	1	2	5	3	6	8	3	6

BP/Castex-Ltd Adm-Apx E-001565

1233:	5	4	3	2	5	17	16	7

Sample Title: R-1 6-12

Channel								
1241:	4	2	2	7	1	4	4	6
1249:	4	6	6	5	4	2	2	0
1257:	2	3	4	4	1	4	4	3
1265:	4	7	3	4	3	6	0	6
1273:	4	4	6	0	5	5	3	5
1281:	8	8	8	2	2	1	2	1
1289:	5	4	4	4	4	1	3	2
1297:	3	4	2	3	3	4	3	0
1305:	1	2	1	3	3	1	1	3
1313:	1	0	2	2	2	4	2	3
1321:	0	1	2	3	2	4	3	5
1329:	3	5	1	5	4	3	4	2
1337:	2	0	1	2	3	1	4	2
1345:	2	5	4	2	3	1	2	0
1353:	4	1	2	5	1	1	1	6
1361:	5	0	0	2	4	1	1	2
1369:	1	5	4	0	3	0	3	5
1377:	7	7	4	1	1	3	3	2
1385:	5	3	3	1	0	5	1	2
1393:	2	0	1	3	1	1	3	3
1401:	6	4	2	0	3	1	6	9
1409:	2	4	5	1	2	2	2	3
1417:	1	2	3	2	3	2	1	2
1425:	0	1	0	4	3	0	1	3
1433:	3	3	3	1	2	0	3	2
1441:	4	0	2	1	1	2	2	1
1449:	2	5	1	4	3	4	4	1
1457:	7	9	25	63	91	41	14	0
1465:	5	0	1	1	3	1	1	7
1473:	2	0	1	6	2	2	2	0
1481:	1	4	1	1	1	2	2	1
1489:	0	1	4	1	2	2	1	6
1497:	3	3	0	0	3	2	0	3
1505:	1	1	2	0	2	7	4	1
1513:	1	2	2	1	2	2	1	1
1521:	0	0	2	1	0	1	0	4
1529:	1	2	0	8	1	2	0	2
1537:	2	1	3	1	2	0	2	1
1545:	4	2	1	2	1	3	0	2
1553:	1	0	2	1	1	1	3	1
1561:	1	1	0	3	3	1	2	3
1569:	2	2	0	2	3	3	6	3
1577:	1	1	1	2	2	1	2	1
1585:	1	3	3	5	4	5	4	6
1593:	1	1	2	2	3	2	1	8
1601:	0	1	0	4	2	0	2	3
1609:	1	3	2	2	1	3	2	3
1617:	2	3	3	4	1	2	0	4
1625:	4	3	3	2	3	2	1	2
1633:	2	4	1	1	5	1	0	1
1641:	0	1	1	0	3	1	0	1
1649:	1	1	0	1	2	0	0	1
1657:	2	1	2	2	5	2	0	1

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1665:	1	1	2	0	2	0	1	1

Sample Title: R-1 6-12

Channel								
1673:	0	0	2	0	2	1	4	0
1681:	2	1	0	0	1	1	3	0
1689:	4	1	1	1	2	1	2	1
1697:	0	0	1	3	0	0	2	0
1705:	0	0	1	2	0	1	1	1
1713:	2	2	2	2	0	1	0	1
1721:	1	1	1	1	0	0	2	5
1729:	2	3	3	1	1	0	2	1
1737:	2	1	3	0	1	1	1	1
1745:	1	1	3	0	1	1	1	0
1753:	0	2	0	0	2	0	2	1
1761:	4	5	14	14	10	5	1	0
1769:	1	0	0	1	0	0	0	1
1777:	0	1	0	0	0	0	3	1
1785:	1	0	1	2	0	4	0	0
1793:	2	0	2	2	0	1	0	0
1801:	2	1	0	0	1	2	2	1
1809:	0	0	3	2	2	0	0	1
1817:	1	1	0	0	0	1	0	2
1825:	0	2	2	1	0	1	0	1
1833:	1	0	4	1	1	2	3	1
1841:	0	3	1	0	2	2	2	1
1849:	2	2	2	1	1	2	1	1
1857:	1	3	0	1	0	2	1	1
1865:	1	0	0	0	0	1	0	0
1873:	0	0	1	0	0	2	3	0
1881:	1	2	1	0	3	1	1	2
1889:	0	1	0	0	1	0	0	1
1897:	0	1	0	2	0	0	0	0
1905:	0	1	0	0	1	0	2	0
1913:	0	0	2	1	0	1	0	1
1921:	0	1	1	2	1	1	1	1
1929:	1	1	3	0	2	1	1	1
1937:	2	1	0	2	1	2	1	3
1945:	0	0	3	3	1	0	2	0
1953:	0	1	1	1	0	1	3	0
1961:	2	3	0	2	1	0	3	2
1969:	2	1	1	0	2	0	2	2
1977:	1	1	2	1	3	2	0	2
1985:	0	1	1	0	1	1	2	1
1993:	2	3	0	0	1	2	0	1
2001:	3	1	1	3	2	2	0	3
2009:	1	1	0	0	1	0	2	1
2017:	2	1	1	1	1	0	0	0
2025:	1	1	0	0	1	1	3	3
2033:	1	2	0	1	0	0	0	0
2041:	1	1	2	1	1	0	0	1
2049:	3	1	3	0	1	0	1	2
2057:	1	0	0	2	0	0	1	0
2065:	0	0	1	0	0	1	0	0
2073:	2	0	0	0	0	0	0	1
2081:	2	0	0	0	1	0	1	2
2089:	0	0	1	2	2	1	1	0

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2097:	0	2	0	1	5	5	3	5

Sample Title: R-1 6-12

Channel								
2105:	3	2	1	1	1	0	2	1
2113:	0	3	1	1	3	1	2	0
2121:	0	0	1	1	0	0	0	2
2129:	0	1	0	1	0	0	1	1
2137:	0	3	1	0	0	0	1	1
2145:	0	3	0	0	2	2	2	0
2153:	1	2	1	1	1	2	1	0
2161:	0	2	1	1	0	2	1	1
2169:	1	0	1	2	0	0	2	1
2177:	0	1	1	3	1	0	2	2
2185:	1	0	1	1	0	1	0	1
2193:	1	1	1	1	0	0	1	1
2201:	2	6	4	7	0	3	1	1
2209:	1	0	0	2	2	1	0	1
2217:	1	0	1	2	0	0	3	0
2225:	0	1	3	1	0	1	1	1
2233:	0	0	0	1	0	0	1	0
2241:	1	1	2	3	0	1	0	0
2249:	2	1	0	0	3	1	1	1
2257:	2	2	1	0	1	2	2	1
2265:	1	0	1	1	1	0	0	0
2273:	3	0	0	0	1	0	0	0
2281:	0	1	1	2	0	0	2	1
2289:	0	1	1	2	1	1	1	1
2297:	0	1	1	1	0	2	0	1
2305:	0	1	1	1	2	0	0	0
2313:	1	2	0	0	0	0	1	0
2321:	1	0	2	0	0	0	1	0
2329:	1	3	1	1	0	0	1	1
2337:	4	3	3	1	0	0	0	0
2345:	1	0	0	4	3	0	1	1
2353:	0	1	0	2	0	2	0	1
2361:	2	0	0	2	0	0	2	3
2369:	0	0	0	2	0	0	1	1
2377:	0	1	1	2	0	0	0	3
2385:	0	1	0	0	2	1	0	1
2393:	2	0	1	0	1	1	1	2
2401:	0	0	1	0	0	0	3	1
2409:	0	2	2	1	0	1	0	0
2417:	0	1	0	1	0	0	1	1
2425:	1	0	0	1	1	0	2	2
2433:	4	2	0	0	0	1	0	0
2441:	1	0	0	1	3	0	1	0
2449:	0	0	1	1	0	0	1	0
2457:	0	1	0	2	0	0	0	1
2465:	0	0	0	0	2	0	2	1
2473:	0	1	0	1	0	0	1	1
2481:	1	0	1	0	0	2	1	0
2489:	2	0	0	0	0	0	0	1
2497:	0	0	1	1	0	0	0	0
2505:	0	1	3	0	1	0	1	0
2513:	0	0	0	0	0	0	0	0
2521:	0	0	0	1	0	2	0	0

BP/Castex-Ltd Adm-Apx E-001568

2529:	1	0	0	0	1	1	0	0

Sample Title: R-1 6-12

Channel								
2537:	0	0	1	1	0	0	0	1
2545:	0	0	0	3	1	0	0	1
2553:	0	1	0	0	0	1	1	0
2561:	1	0	0	0	1	0	0	0
2569:	0	1	0	0	0	0	1	2
2577:	0	0	0	0	0	0	0	0
2585:	0	0	0	0	3	0	0	0
2593:	1	0	0	1	0	0	0	0
2601:	0	0	0	1	0	0	1	2
2609:	0	5	11	19	20	13	5	0
2617:	0	0	0	2	0	0	0	1
2625:	0	0	1	0	0	0	0	0
2633:	1	0	0	1	0	0	0	1
2641:	0	0	0	0	1	0	0	1
2649:	0	0	0	0	0	1	1	0
2657:	0	0	0	0	0	0	0	0
2665:	0	0	0	0	0	0	0	0
2673:	0	0	0	0	0	0	1	0
2681:	0	0	1	0	0	0	0	0
2689:	0	1	1	1	0	0	0	1
2697:	0	0	0	0	0	0	1	1
2705:	0	1	1	0	0	0	1	0
2713:	0	1	0	0	2	0	0	0
2721:	0	0	0	0	0	0	0	0
2729:	0	0	0	0	0	2	0	1
2737:	0	0	0	0	2	0	1	1
2745:	0	0	0	1	0	0	0	0
2753:	0	1	0	0	0	0	0	0
2761:	0	0	1	0	1	0	1	0
2769:	0	0	1	0	0	0	0	1
2777:	0	0	0	0	2	0	0	0
2785:	0	0	0	1	0	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	1	1	1	0	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	1
2825:	0	1	0	0	1	0	0	0
2833:	0	0	0	0	0	0	0	0
2841:	2	0	0	0	0	0	0	0
2849:	0	0	1	1	1	0	1	0
2857:	0	0	1	0	0	0	0	0
2865:	0	0	0	0	0	0	0	1
2873:	0	1	0	0	0	0	0	0
2881:	0	1	0	0	0	0	0	0
2889:	0	0	1	0	0	0	1	0
2897:	0	1	1	0	0	0	0	0
2905:	0	1	0	0	1	1	0	1
2913:	0	0	0	0	0	0	0	0
2921:	0	0	1	0	0	0	1	1
2929:	0	1	0	1	0	0	0	0
2937:	0	1	1	1	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	1	0	0

BP/Castex-Ltd Adm-Apx E-001569

2961:	0	0	0	0	0	0	1	0

Sample Title: R-1 6-12

Channel								
2969:	0	2	0	0	0	0	0	0
2977:	0	0	0	0	0	0	0	1
2985:	0	0	0	1	0	0	0	0
2993:	0	0	0	0	0	1	1	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	1	0	0	0	1	0	0
3025:	0	1	0	0	0	0	0	0
3033:	0	0	0	1	0	0	0	0
3041:	0	0	0	0	0	0	0	0
3049:	0	0	0	0	0	0	0	0
3057:	0	0	0	0	0	0	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	1	0	0	1	0	0	1	1
3089:	0	0	0	0	0	0	0	0
3097:	0	0	0	0	0	1	0	1
3105:	0	0	0	2	0	0	1	0
3113:	3	0	0	0	0	0	1	0
3121:	1	0	1	0	0	0	0	0
3129:	0	0	1	0	0	0	0	0
3137:	1	0	0	0	0	0	1	1
3145:	0	0	0	0	0	0	0	0
3153:	0	0	0	0	0	0	0	0
3161:	0	0	1	0	0	0	0	0
3169:	0	0	0	0	0	0	0	0
3177:	0	0	0	0	0	1	0	0
3185:	0	0	0	0	1	0	0	1
3193:	0	1	1	1	1	0	1	0
3201:	1	1	0	0	0	0	0	0
3209:	1	0	0	0	0	0	0	0
3217:	1	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	2	0	0	0	0	0	0	0
3241:	1	0	0	0	0	0	0	0
3249:	0	0	0	0	0	0	1	0
3257:	0	0	0	0	1	1	0	0
3265:	0	0	1	0	0	0	0	0
3273:	0	0	1	1	0	1	0	0
3281:	1	0	1	0	0	2	0	1
3289:	0	0	0	1	0	1	0	0
3297:	0	0	2	0	0	0	0	0
3305:	0	1	0	1	0	0	0	0
3313:	0	0	0	0	0	0	1	0
3321:	0	0	0	1	0	0	0	1
3329:	0	0	0	0	0	0	0	0
3337:	1	0	0	0	0	0	0	1
3345:	0	0	1	1	0	0	0	0
3353:	0	0	0	0	0	0	0	1
3361:	0	1	0	1	0	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	1	0	0	1	0	0	0

BP/Castex-Ltd Adm-Apx E-001570

3393:	0	1	0	0	0	0	0	0

Sample Title: R-1 6-12

Channel							
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	1	0	0	1	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	2	0	0	0	0
3449:	0	0	1	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	2	0	0	0	0	1
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	1
3529:	1	1	0	0	1	0	0	0
3537:	0	0	0	0	1	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	1	0	0	0	0	0	0
3569:	0	0	0	0	0	1	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	1	0	0	0	0
3593:	1	1	2	0	1	0	0	0
3601:	0	0	0	1	0	0	0	0
3609:	0	0	1	1	0	0	0	0
3617:	0	1	0	0	0	2	0	0
3625:	0	0	0	0	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	1	0	0	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	1	0	0	0
3665:	0	0	0	0	0	0	0	1
3673:	0	0	1	0	0	0	0	0
3681:	1	1	1	0	0	0	1	1
3689:	0	0	0	0	1	0	1	1
3697:	0	0	0	0	1	0	0	1
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	1	0	0	0
3721:	0	0	0	0	0	1	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	1	1	0	0
3745:	0	1	0	0	0	1	0	0
3753:	0	0	0	0	0	0	1	0
3761:	0	0	0	1	0	0	0	1
3769:	0	1	0	0	0	0	0	1
3777:	1	0	0	0	0	0	1	2
3785:	0	0	1	0	0	0	0	0
3793:	0	1	0	0	0	1	1	0
3801:	0	0	0	0	0	0	0	0
3809:	0	0	0	1	0	0	0	0
3817:	0	0	0	0	0	0	0	0

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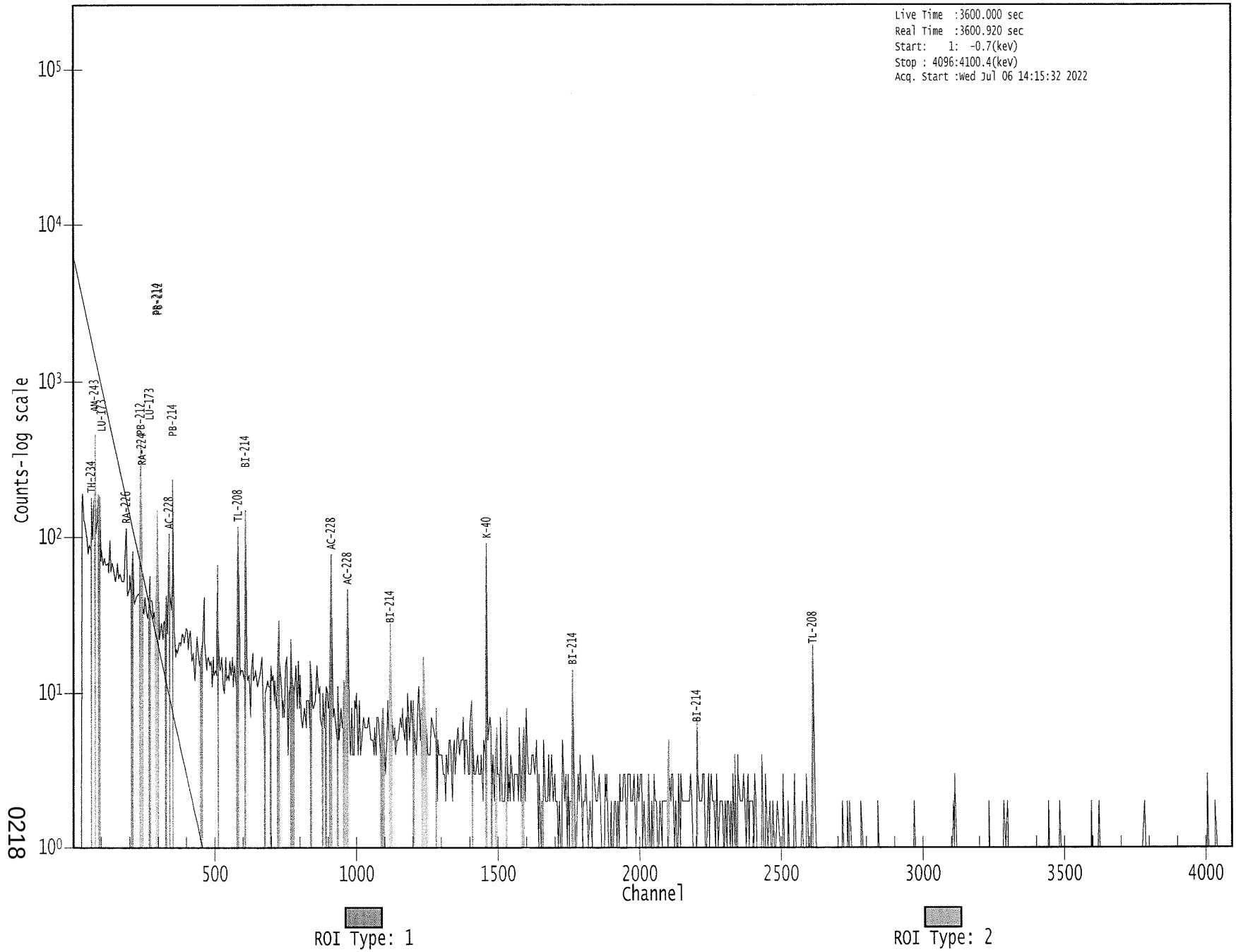
3825:	0	0	0	0	0	0	0	0

Sample Title: R-1 6-12

Channel								
3833:	0	1	0	1	1	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	1	0	0	1	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	1	0	0	0	0	0
3897:	1	0	0	0	0	0	0	1
3905:	0	0	0	0	0	0	0	0
3913:	0	0	1	0	0	0	0	0
3921:	0	1	0	0	0	1	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	1	1
3945:	0	0	1	0	0	0	0	0
3953:	0	0	1	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	0	1	0	0
3985:	1	0	0	1	0	0	0	0
3993:	1	0	0	0	0	1	0	0
4001:	0	0	1	1	0	3	0	0
4009:	0	1	0	0	0	1	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	2	0	0	0	0	0	0	1
4041:	0	0	0	0	0	0	0	1
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	1	0	0
4081:	1	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	1

BP/Castex-Ltd Adm-Apx E-001572



BP/Castex-Ltd Adm-Apx E-001573

KCB 7/6/22

Apex-Gamma

Analysis Report for 2206038-06
R-1 12-18

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-06
Sample Description	: R-1 12-18
Sample Type	: SOIL
Sample Size	: 4.581E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:43:38AM
Acquisition Started	: 7/6/2022 2:15:40PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3645.2 seconds
Dead Time	: 1.24 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 2 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 11/21/2021
Efficiency Calibration Description	:
Sample Number	: 126265

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

BP/Castex-Ltd Adm-Apx E-001574

Analysis Report for 2206038-06

R-1 12-18

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 3:16:43PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	76.16	76.77	0.0000	0.00
2	90.13	90.73	0.0000	0.00
3	186.21	186.74	0.0000	0.00
4	239.25	239.75	0.0000	0.00
5	295.62	296.08	0.0000	0.00
6	328.98	329.42	0.0000	0.00
7	338.63	339.06	0.0000	0.00
8	352.06	352.48	0.0000	0.00
9	582.57	582.85	0.0000	0.00
10	609.04	609.31	0.0000	0.00
11	726.64	726.84	0.0000	0.00
12	769.62	769.79	0.0000	0.00
13	912.00	912.09	0.0000	0.00
14	966.25	966.32	0.0000	0.00
15	1119.52	1119.51	0.0000	0.00
16	1189.61	1189.57	0.0000	0.00
17	1375.48	1375.35	0.0000	0.00
18	1459.31	1459.14	0.0000	0.00
19	1506.67	1506.49	0.0000	0.00
20	1513.47	1513.29	0.0000	0.00
21	1525.07	1524.88	0.0000	0.00
22	1611.19	1610.96	0.0000	0.00
23	1658.93	1658.68	0.0000	0.00
24	1726.85	1726.58	0.0000	0.00
25	1761.44	1761.15	0.0000	0.00
26	1970.99	1970.64	0.0000	0.00
27	2098.39	2098.00	0.0000	0.00
28	2103.07	2102.68	0.0000	0.00
29	2307.94	2307.49	0.0000	0.00
30	2611.20	2610.69	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001575

Analysis Report for 2206038-06

R-1 12-18

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 3:16:43PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	76.16	70 -	83	76.77	1.14E+03	196.85	3.79E+03	4.96
	2	90.13	83 -	99	90.73	6.66E+02	201.53	3.55E+03	9.20
	3	186.21	182 -	191	186.74	1.87E+02	87.37	9.80E+02	3.51
	4	239.25	229 -	248	239.75	9.94E+02	141.62	1.34E+03	4.25
	5	295.62	287 -	303	296.08	2.55E+02	100.17	8.57E+02	3.71
M	6	328.98	320 -	345	329.42	7.36E+01	67.95	4.86E+02	4.64
m	7	338.63	320 -	345	339.06	1.80E+02	71.67	4.80E+02	4.63
	8	352.06	347 -	358	352.48	3.49E+02	69.91	4.32E+02	3.03
	9	582.57	577 -	591	582.85	2.34E+02	57.45	2.55E+02	3.19
	10	609.04	602 -	618	609.31	2.52E+02	68.98	3.59E+02	3.62
	11	726.64	720 -	735	726.84	4.36E+01	50.00	2.35E+02	5.32
	12	769.62	762 -	777	769.79	5.57E+01	42.57	1.55E+02	5.55
	13	912.00	906 -	922	912.09	8.71E+01	46.58	1.52E+02	2.20
	14	966.25	958 -	973	966.32	1.24E+02	34.81	7.10E+01	7.23
	15	1119.52	1113 -	1125	1119.51	3.42E+01	36.63	1.38E+02	4.21
	16	1189.61	1185 -	1195	1189.57	2.90E+01	20.19	3.99E+01	8.62
	17	1375.48	1371 -	1381	1375.35	2.19E+01	18.37	3.42E+01	4.02
	18	1459.31	1453 -	1465	1459.14	1.93E+02	31.51	2.60E+01	3.65
	19	1506.67	1503 -	1509	1506.49	7.28E+00	6.95	3.44E+00	3.63
	20	1513.47	1510 -	1517	1513.29	6.00E+00	8.49	8.00E+00	2.25
	21	1525.07	1519 -	1529	1524.88	1.25E+01	9.50	5.00E+00	6.96
	22	1611.19	1608 -	1614	1610.96	7.06E+00	6.95	3.89E+00	2.44
	23	1658.93	1653 -	1664	1658.68	9.00E+00	11.49	1.20E+01	1.18
	24	1726.85	1721 -	1733	1726.58	1.51E+01	15.06	1.98E+01	1.29
	25	1761.44	1754 -	1766	1761.15	4.75E+01	17.33	1.30E+01	4.04
	26	1970.99	1967 -	1973	1970.64	5.36E+00	6.34	3.29E+00	1.82
M	27	2098.39	2091 -	2105	2098.00	1.17E+01	9.38	0.00E+00	3.71
m	28	2103.07	2091 -	2105	2102.68	1.22E+01	7.21	0.00E+00	3.30
	29	2307.94	2304 -	2309	2307.49	4.75E+00	5.74	2.50E+00	1.08
	30	2611.20	2604 -	2618	2610.69	5.50E+01	14.83	0.00E+00	5.24

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001576

Analysis Report for 2206038-06

R-1 12-18

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 3:16:43PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	76.16	70 -	83	1.14E+03	196.85	3.79E+03	1.52E+02
	2	90.13	83 -	99	6.66E+02	201.53	3.55E+03	1.60E+02
	3	186.21	182 -	191	1.87E+02	87.37	9.80E+02	6.82E+01
	4	239.25	229 -	248	9.94E+02	141.62	1.34E+03	1.04E+02
	5	295.62	287 -	303	2.55E+02	100.17	8.57E+02	7.80E+01
M	6	328.98	320 -	345	7.36E+01	67.95	4.86E+02	3.62E+01
m	7	338.63	320 -	345	1.80E+02	71.67	4.80E+02	3.60E+01
	8	352.06	347 -	358	3.49E+02	69.91	4.32E+02	4.86E+01
	9	582.57	577 -	591	2.34E+02	57.45	2.55E+02	4.00E+01
	10	609.04	602 -	618	2.52E+02	68.98	3.59E+02	5.03E+01
	11	726.64	720 -	735	4.36E+01	50.00	2.35E+02	3.96E+01
	12	769.62	762 -	777	5.57E+01	42.57	1.55E+02	3.28E+01
	13	912.00	906 -	922	8.71E+01	46.58	1.52E+02	3.51E+01
	14	966.25	958 -	973	1.24E+02	34.81	7.10E+01	2.20E+01
	15	1119.52	1113 -	1125	3.42E+01	36.63	1.38E+02	2.85E+01
	16	1189.61	1185 -	1195	2.90E+01	20.19	3.99E+01	1.40E+01
	17	1375.48	1371 -	1381	2.19E+01	18.37	3.42E+01	1.30E+01
	18	1459.31	1453 -	1465	1.93E+02	31.51	2.60E+01	1.22E+01
	19	1506.67	1503 -	1509	7.28E+00	6.95	3.44E+00	3.60E+00
	20	1513.47	1510 -	1517	6.00E+00	8.49	8.00E+00	5.70E+00
	21	1525.07	1519 -	1529	1.25E+01	9.50	5.00E+00	5.22E+00
	22	1611.19	1608 -	1614	7.06E+00	6.95	3.89E+00	3.68E+00
	23	1658.93	1653 -	1664	9.00E+00	11.49	1.20E+01	8.05E+00
	24	1726.85	1721 -	1733	1.51E+01	15.06	1.98E+01	1.06E+01
	25	1761.44	1754 -	1766	4.75E+01	17.33	1.30E+01	8.64E+00
	26	1970.99	1967 -	1973	5.36E+00	6.34	3.29E+00	3.57E+00
M	27	2098.39	2091 -	2105	1.17E+01	9.38	0.00E+00	0.00E+00
m	28	2103.07	2091 -	2105	1.22E+01	7.21	0.00E+00	0.00E+00
	29	2307.94	2304 -	2309	4.75E+00	5.74	2.50E+00	3.08E+00
	30	2611.20	2604 -	2618	5.50E+01	14.83	0.00E+00	0.00E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001577

Analysis Report for 2206038-06

R-1 12-18

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 3:16:43PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	76.16	70 -	83	76.77	1.14E+03	196.85	3.79E+03	AM-243 TI-44
	2	90.13	83 -	99	90.73	6.66E+02	201.53	3.55E+03	ND-147 LU-176 CD-109
	3	186.21	182 -	191	186.74	1.87E+02	87.37	9.80E+02	RA-226 HO-166M
	4	239.25	229 -	248	239.75	9.94E+02	141.62	1.34E+03	PB-212 RA-224
	5	295.62	287 -	303	296.08	2.55E+02	100.17	8.57E+02	PB-214 CE-143
M	6	328.98	320 -	345	329.42	7.36E+01	67.95	4.86E+02	LA-140
m	7	338.63	320 -	345	339.06	1.80E+02	71.67	4.80E+02	AC-228 CS-136
	8	352.06	347 -	358	352.48	3.49E+02	69.91	4.32E+02	PB-214
	9	582.57	577 -	591	582.85	2.34E+02	57.45	2.55E+02	TL-208
	10	609.04	602 -	618	609.31	2.52E+02	68.98	3.59E+02	BI-214
	11	726.64	720 -	735	726.84	4.36E+01	50.00	2.35E+02	BI-212 ZR-95
	12	769.62	762 -	777	769.79	5.57E+01	42.57	1.55E+02	.....
	13	912.00	906 -	922	912.09	8.71E+01	46.58	1.52E+02	TL-204 AC-228
	14	966.25	958 -	973	966.32	1.24E+02	34.81	7.10E+01	EU-152
	15	1119.52	1113 -	1125	1119.51	3.42E+01	36.63	1.38E+02	BI-214 SC-46 TA-182
	16	1189.61	1185 -	1195	1189.57	2.90E+01	20.19	3.99E+01	TA-182
	17	1375.48	1371 -	1381	1375.35	2.19E+01	18.37	3.42E+01	.....
	18	1459.31	1453 -	1465	1459.14	1.93E+02	31.51	2.60E+01	K-40
	19	1506.67	1503 -	1509	1506.49	7.28E+00	6.95	3.44E+00	.....
	20	1513.47	1510 -	1517	1513.29	6.00E+00	8.49	8.00E+00	.....
	21	1525.07	1519 -	1529	1524.88	1.25E+01	9.50	5.00E+00	.....
	22	1611.19	1608 -	1614	1610.96	7.06E+00	6.95	3.89E+00	.....
	23	1658.93	1653 -	1664	1658.68	9.00E+00	11.49	1.20E+01	.....
	24	1726.85	1721 -	1733	1726.58	1.51E+01	15.06	1.98E+01	.....
	25	1761.44	1754 -	1766	1761.15	4.75E+01	17.33	1.30E+01	.....
	26	1970.99	1967 -	1973	1970.64	5.36E+00	6.34	3.29E+00	.....
M	27	2098.39	2091 -	2105	2098.00	1.17E+01	9.38	0.00E+00	.....
m	28	2103.07	2091 -	2105	2102.68	1.22E+01	7.21	0.00E+00	.....
	29	2307.94	2304 -	2309	2307.49	4.75E+00	5.74	2.50E+00	.....
	30	2611.20	2604 -	2618	2610.69	5.50E+01	14.83	0.00E+00	.....

BP/Castex-Ltd Adm-Apx E-001578

Analysis Report for 2206038-06

R-1 12-18

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 3:16:43PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	76.16	1.14E+03	196.85	4.46E-02	3.95E-03
	2	90.13	6.66E+02	201.53	4.18E-02	4.64E-03
	3	186.21	1.87E+02	87.37	2.03E-02	3.86E-03
	4	239.25	9.94E+02	141.62	1.54E-02	2.47E-03
	5	295.62	2.55E+02	100.17	1.24E-02	1.36E-03
M	6	328.98	7.36E+01	67.95	1.12E-02	1.23E-03
m	7	338.63	1.80E+02	71.67	1.09E-02	1.19E-03
	8	352.06	3.49E+02	69.91	1.05E-02	1.14E-03
	9	582.57	2.34E+02	57.45	6.64E-03	6.61E-04
	10	609.04	2.52E+02	68.98	6.38E-03	6.16E-04
	11	726.64	4.36E+01	50.00	5.42E-03	4.96E-04
	12	769.62	5.57E+01	42.57	5.14E-03	4.75E-04
	13	912.00	8.71E+01	46.58	4.36E-03	4.07E-04
	14	966.25	1.24E+02	34.81	4.12E-03	3.82E-04
	15	1119.52	3.42E+01	36.63	3.56E-03	3.12E-04
	16	1189.61	2.90E+01	20.19	3.35E-03	2.86E-04
	17	1375.48	2.19E+01	18.37	2.90E-03	2.68E-04
	18	1459.31	1.93E+02	31.51	2.74E-03	2.52E-04
	19	1506.67	7.28E+00	6.95	2.65E-03	2.42E-04
	20	1513.47	6.00E+00	8.49	2.64E-03	2.41E-04
	21	1525.07	1.25E+01	9.50	2.62E-03	2.39E-04
	22	1611.19	7.06E+00	6.95	2.49E-03	2.22E-04
	23	1658.93	9.00E+00	11.49	2.43E-03	2.12E-04
	24	1726.85	1.51E+01	15.06	2.35E-03	1.99E-04
	25	1761.44	4.75E+01	17.33	2.31E-03	1.92E-04
	26	1970.99	5.36E+00	6.34	2.12E-03	1.77E-04
M	27	2098.39	1.17E+01	9.38	2.03E-03	1.77E-04
m	28	2103.07	1.22E+01	7.21	2.03E-03	1.77E-04
	29	2307.94	4.75E+00	5.74	1.94E-03	1.77E-04
	30	2611.20	5.50E+01	14.83	1.88E-03	1.77E-04

BP/Castex-Ltd Adm-Apx E-001579

Analysis Report for 2206038-06

R-1 12-18

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 3:16:43PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126202.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	76.16	1.14E+03	196.85			1.14E+03	1.97E+02
	2	90.13	6.66E+02	201.53			6.66E+02	2.02E+02
	3	186.21	1.87E+02	87.37	2.74E+01	1.86E+00	1.59E+02	8.74E+01
	4	239.25	9.94E+02	141.62	1.48E+01	1.49E+00	9.79E+02	1.42E+02
	5	295.62	2.55E+02	100.17			2.55E+02	1.00E+02
M	6	328.98	7.36E+01	67.95			7.36E+01	6.79E+01
m	7	338.63	1.80E+02	71.67			1.80E+02	7.17E+01
	8	352.06	3.49E+02	69.91			3.49E+02	6.99E+01
	9	582.57	2.34E+02	57.45			2.34E+02	5.74E+01
	10	609.04	2.52E+02	68.98			2.52E+02	6.90E+01
	11	726.64	4.36E+01	50.00			4.36E+01	5.00E+01
	12	769.62	5.57E+01	42.57			5.57E+01	4.26E+01
	13	912.00	8.71E+01	46.58			8.71E+01	4.66E+01
	14	966.25	1.24E+02	34.81			1.24E+02	3.48E+01
	15	1119.52	3.42E+01	36.63			3.42E+01	3.66E+01
	16	1189.61	2.90E+01	20.19			2.90E+01	2.02E+01
	17	1375.48	2.19E+01	18.37			2.19E+01	1.84E+01
	18	1459.31	1.93E+02	31.51			1.93E+02	3.15E+01
	19	1506.67	7.28E+00	6.95			7.28E+00	6.95E+00
	20	1513.47	6.00E+00	8.49			6.00E+00	8.49E+00
	21	1525.07	1.25E+01	9.50			1.25E+01	9.50E+00
	22	1611.19	7.06E+00	6.95			7.06E+00	6.95E+00
	23	1658.93	9.00E+00	11.49			9.00E+00	1.15E+01
	24	1726.85	1.51E+01	15.06			1.51E+01	1.51E+01
	25	1761.44	4.75E+01	17.33			4.75E+01	1.73E+01
	26	1970.99	5.36E+00	6.34			5.36E+00	6.34E+00
M	27	2098.39	1.17E+01	9.38			1.17E+01	9.38E+00
m	28	2103.07	1.22E+01	7.21			1.22E+01	7.21E+00
	29	2307.94	4.75E+00	5.74			4.75E+00	5.74E+00
	30	2611.20	5.50E+01	14.83			5.50E+01	1.48E+01

BP/Castex-Ltd Adm-Apx E-001580

Analysis Report for 2206038-06

R-1 12-18

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 3:16:43PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126202.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	76.16	1.14E+03	196.85			1.14E+03	1.97E+02
	2	90.13	6.66E+02	201.53			6.66E+02	2.02E+02
	3	186.21	1.87E+02	87.37	2.74E+01	1.86E+00	1.59E+02	8.74E+01
	4	239.25	9.94E+02	141.62	1.48E+01	1.49E+00	9.79E+02	1.42E+02
	5	295.62	2.55E+02	100.17			2.55E+02	1.00E+02
M	6	328.98	7.36E+01	67.95			7.36E+01	6.79E+01
m	7	338.63	1.80E+02	71.67			1.80E+02	7.17E+01
	8	352.06	3.49E+02	69.91			3.49E+02	6.99E+01
	9	582.57	2.34E+02	57.45			2.34E+02	5.74E+01
	10	609.04	2.52E+02	68.98			2.52E+02	6.90E+01
	11	726.64	4.36E+01	50.00			4.36E+01	5.00E+01
	12	769.62	5.57E+01	42.57			5.57E+01	4.26E+01
	13	912.00	8.71E+01	46.58			8.71E+01	4.66E+01
	14	966.25	1.24E+02	34.81			1.24E+02	3.48E+01
	15	1119.52	3.42E+01	36.63			3.42E+01	3.66E+01
	16	1189.61	2.90E+01	20.19			2.90E+01	2.02E+01
	17	1375.48	2.19E+01	18.37			2.19E+01	1.84E+01
	18	1459.31	1.93E+02	31.51			1.93E+02	3.15E+01
	19	1506.67	7.28E+00	6.95			7.28E+00	6.95E+00
	20	1513.47	6.00E+00	8.49			6.00E+00	8.49E+00
	21	1525.07	1.25E+01	9.50			1.25E+01	9.50E+00
	22	1611.19	7.06E+00	6.95			7.06E+00	6.95E+00
	23	1658.93	9.00E+00	11.49			9.00E+00	1.15E+01
	24	1726.85	1.51E+01	15.06			1.51E+01	1.51E+01
	25	1761.44	4.75E+01	17.33			4.75E+01	1.73E+01
	26	1970.99	5.36E+00	6.34			5.36E+00	6.34E+00
M	27	2098.39	1.17E+01	9.38			1.17E+01	9.38E+00
m	28	2103.07	1.22E+01	7.21			1.22E+01	7.21E+00
	29	2307.94	4.75E+00	5.74			4.75E+00	5.74E+00
	30	2611.20	5.50E+01	14.83			5.50E+01	1.48E+01

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M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.944	1460.81	*	10.67	1.08E+01	2.03E+00
CD-109	0.894	88.03	*	3.72	7.29E+00	2.35E+00
ND-147	0.709	91.11	*	28.90	4.70E+00	1.51E+00
		531.02		13.10		
TL-208	0.309	583.14	*	30.22	1.91E+00	5.06E-01
		860.37		4.48		
		2614.66		35.85		
BI-212	0.776	727.17	*	11.80	1.12E+00	1.28E+00
		1620.62		2.75		
PB-212	0.889	238.63	*	44.60	2.33E+00	5.04E-01
		300.09		3.41		
BI-214	0.715	609.31	*	46.30	1.40E+00	4.06E-01
		1120.29	*	15.10	1.04E+00	1.12E+00
		1764.49		15.80		
		2204.22		4.98		
PB-214	0.998	295.21	*	19.19	1.76E+00	7.16E-01
		351.92	*	37.19	1.47E+00	3.34E-01
RA-224	0.926	240.98	*	3.95	2.63E+01	5.69E+00
RA-226	1.000	186.21	*	3.28	3.92E+00	2.28E+00
AC-228	0.572	338.32	*	11.40	2.38E+00	9.83E-01
		911.07	*	27.70	1.18E+00	6.41E-01
		969.11		16.60		
AM-243	0.945	74.67	*	66.00	6.34E-01	1.23E-01

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

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Analysis Report for 2206038-06

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 3:16:43PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	6	328.98	2.04475E-02	46.15	Sum	
	12	769.62	1.54678E-02	38.22	Sum	
	14	966.25	3.43082E-02	14.09	Sum	
	16	1189.61	8.06406E-03	34.78	Sum	
	17	1375.48	6.08974E-03	41.90		
	19	1506.67	2.02160E-03	47.72		
	20	1513.47	1.66667E-03	70.71		
	21	1525.07	3.47222E-03	38.00		
	22	1611.19	1.95988E-03	49.23		
	23	1658.93	2.50000E-03	63.83		
	24	1726.85	4.19444E-03	49.86	Sum	
	25	1761.44	1.31944E-02	18.25		
	26	1970.99	1.48810E-03	59.21		
M	27	2098.39	3.25051E-03	40.08		
m	28	2103.07	3.40145E-03	29.44		
	29	2307.94	1.31944E-03	60.47		
	30	2611.20	1.52778E-02	13.48		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.94	1460.81	*	10.67	1.08E+01	2.03E+00
CD-109	0.89	88.03	*	3.72	7.29E+00	2.35E+00

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Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
ND-147	0.70	91.11	*	28.90	4.70E+00	1.51E+00
		531.02		13.10		
TL-208	0.30	583.14	*	30.22	1.91E+00	5.06E-01
		860.37		4.48		
		2614.66		35.85		
BI-212	0.77	727.17	*	11.80	1.12E+00	1.28E+00
		1620.62		2.75		
PB-212	0.88	238.63	*	44.60	2.33E+00	5.04E-01
		300.09		3.41		
BI-214	0.71	609.31	*	46.30	1.40E+00	4.06E-01
		1120.29	*	15.10	1.04E+00	1.12E+00
		1764.49		15.80		
		2204.22		4.98		
PB-214	0.99	295.21	*	19.19	1.76E+00	7.16E-01
		351.92	*	37.19	1.47E+00	3.34E-01
RA-224	0.92	240.98	*	3.95	2.63E+01	5.69E+00
RA-226	1.00	186.21	*	3.28	3.92E+00	2.28E+00
AC-228	0.57	338.32	*	11.40	2.38E+00	9.83E-01
		911.07	*	27.70	1.18E+00	6.41E-01
		969.11		16.60		
AM-243	0.94	74.67	*	66.00	6.34E-01	1.23E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.944	1.08E+01	2.03E+00	
?	CD-109	0.894	7.29E+00	2.35E+00	
?	ND-147	0.709	4.70E+00	1.51E+00	
	TL-208	0.309	1.91E+00	5.06E-01	
	BI-212	0.776	1.12E+00	1.28E+00	
?	PB-212	0.889	2.33E+00	5.04E-01	

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Analysis Report for 2206038-06

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	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	BI-214	0.715	1.36E+00	3.82E-01	
	PB-214	0.998	1.52E+00	3.03E-01	
?	RA-224	0.926	2.63E+01	5.69E+00	
	RA-226	1.000	3.92E+00	2.28E+00	
	AC-228	0.572	1.54E+00	5.37E-01	
	AM-243	0.945	6.34E-01	1.23E-01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

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Analysis Report for 2206038-06
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UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 3:16:43PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	6	328.98	2.04475E-02	46.15	Sum	
	12	769.62	1.54678E-02	38.22	Sum	
	14	966.25	3.43082E-02	14.09	Sum	
	16	1189.61	8.06406E-03	34.78	Sum	
	17	1375.48	6.08974E-03	41.90		
	19	1506.67	2.02160E-03	47.72		
	20	1513.47	1.66667E-03	70.71		
	21	1525.07	3.47222E-03	38.00		
	22	1611.19	1.95988E-03	49.23		
	23	1658.93	2.50000E-03	63.83		
	24	1726.85	4.19444E-03	49.86	Sum	
	25	1761.44	1.31944E-02	18.25		
	26	1970.99	1.48810E-03	59.21		
M	27	2098.39	3.25051E-03	40.08		
m	28	2103.07	3.40145E-03	29.44		
	29	2307.94	1.31944E-03	60.47		
	30	2611.20	1.52778E-02	13.48		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	2.81E-01	1.85E+00	1.85E+00
+	NA-22	1274.54		99.94	1.10E-01	2.01E-01	2.01E-01
+	NA-24	1368.53		99.99	-1.15E-02	1.15E-01	1.49E-01
		2754.09		99.86	2.54E-02		1.15E-01
+	AL-26	1808.65		99.76	-9.09E-02	1.27E-01	1.27E-01
+	K-40	1460.81	*	10.67	1.08E+01	1.53E+00	1.53E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	3.16E-02	9.14E-02	9.14E-02
		78.34		96.00	3.10E-01		1.02E-01
+	SC-46	889.25		98.98	-6.54E-02	1.56E-01	1.56E-01
		1120.51		99.90	1.42E-01		2.82E-01
+	V-48	983.52		99.98	-1.50E-01	4.39E-01	4.39E-01
		1312.10		97.50	-1.72E-01		4.78E-01
+	CR-51	320.08		9.83	-2.59E-01	2.16E+00	2.16E+00
+	MN-54	834.83		99.97	8.04E-02	1.63E-01	1.63E-01
+	CO-56	846.75		99.96	-3.58E-02	1.68E-01	1.68E-01
		1037.75		14.03	4.26E-01		1.51E+00
		1238.25		67.00	2.06E-01		4.18E-01
		1771.40		15.51	-6.90E-01		9.91E-01
		2587.48		16.90	-2.84E-01		4.92E-01
+	CO-57	122.06		85.51	3.72E-02	9.86E-02	9.86E-02
		136.48		10.60	-4.10E-01		7.99E-01
+	CO-58	810.76		99.40	-9.50E-02	1.81E-01	1.81E-01
+	FE-59	1099.22		56.50	-6.32E-02	4.20E-01	4.20E-01
		1291.56		43.20	8.31E-02		5.73E-01
+	CO-60	1173.22		100.00	-2.39E-02	1.56E-01	1.69E-01
		1332.49		100.00	-5.80E-02		1.56E-01
+	ZN-65	1115.52		50.75	4.87E-03	4.95E-01	4.95E-01
+	GA-67	93.31		35.70	5.39E+00	6.19E+01	6.19E+01
		208.95		2.24	2.81E+02		1.27E+03
		300.22		16.00	1.50E+00		2.37E+02
+	SE-75	121.11		16.70	-4.80E-02	1.54E-01	5.42E-01
		136.00		59.50	-7.91E-02		1.54E-01
		264.65		59.80	8.19E-02		2.35E-01
		279.53		25.20	-3.37E-01		5.32E-01
		400.65		11.40	-4.67E-01		1.27E+00
+	RB-82	776.52		13.00	2.58E-01	2.37E+00	2.37E+00
+	RB-83	520.41		46.00	-3.97E-01	3.75E-01	3.75E-01
		529.64		30.30	-4.17E-02		5.51E-01
		552.65		16.40	-3.01E-01		1.03E+00
+	KR-85	513.99		0.43	4.56E+01	3.94E+01	3.94E+01
+	SR-85	513.99		99.27	2.62E-01	2.27E-01	2.27E-01
+	Y-88	898.02		93.40	2.64E-03	1.46E-01	1.87E-01
		1836.01		99.38	-5.03E-02		1.46E-01
+	MO-93	263.06		56.72	2.26E-02	1.35E-01	2.10E-01
		684.67		99.68	5.87E-03		1.49E-01
		1477.11		99.08	-1.45E-03		1.35E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-93M	16.57		9.43	5.74E+04	2.21E+04	2.21E+04
+	NB-94	702.63		100.00	1.13E-01	1.30E-01	1.56E-01
		871.10		100.00	-5.94E-02		1.30E-01
+	NB-95	765.79		99.81	5.86E-03	2.90E-01	2.90E-01
+	NB-95M	235.69		25.00	4.89E+02	1.10E+02	1.10E+02
+	ZR-95	724.18		43.70	-1.62E-02	3.42E-01	5.08E-01
		756.72		55.30	-8.29E-02		3.42E-01
+	MO-99	181.06		6.20	-3.91E+02	7.77E+02	1.23E+03
		739.58		12.80	-3.34E+02		7.77E+02
		778.00		4.50	4.94E+02		2.36E+03
+	TC-99M	140.51		89.00	7.36E-03	9.17E-02	9.17E-02
+	RU-103	497.08		89.00	-1.50E-01	2.27E-01	2.27E-01
+	RU-106	621.84		9.80	-6.92E-01	1.54E+00	1.54E+00
+	AG-108M	433.93		89.90	2.58E-02	1.30E-01	1.30E-01
		614.37		90.40	-1.89E-02		2.40E-01
		722.95		90.50	-1.49E-02		1.80E-01
+	CD-109	88.03	*	3.72	7.29E+00	3.54E+00	3.54E+00
+	AG-110M	657.75		93.14	-4.86E-02	1.57E-01	1.57E-01
		677.61		10.53	4.14E-01		1.50E+00
		706.67		16.46	4.83E-01		9.90E-01
		763.93		21.98	6.20E-02		7.94E-01
		884.67		21.98	1.54E-01		6.52E-01
		1384.27		23.94	-2.47E-02		6.27E-01
+	CD-113M	263.70		0.02	5.58E+01	5.18E+02	5.18E+02
+	SN-113	255.12		1.93	-4.26E-01	2.24E-01	6.76E+00
		391.69		64.90	2.54E-02		2.24E-01
+	TE-123M	159.00		84.10	-2.11E-02	1.22E-01	1.22E-01
+	SB-124	602.71		97.87	2.21E-02	2.83E-01	2.83E-01
		645.85		7.26	4.87E-01		2.47E+00
		722.78		11.10	-1.64E-01		1.98E+00
		1691.02		49.00	-2.24E-02		3.43E-01
+	I-125	35.49		6.49	-5.88E+00	5.37E+00	5.37E+00
+	SB-125	176.33		6.89	-9.07E-01	4.02E-01	1.37E+00
		427.89		29.33	-4.00E-02		4.02E-01
		463.38		10.35	9.04E-01		1.40E+00
		600.56		17.80	1.21E-01		8.96E-01
		635.90		11.32	4.92E-01		1.24E+00
+	SB-126	414.70		83.30	8.78E-02	1.47E-01	1.59E-01
		666.33		99.60	3.17E-02		1.47E-01
		695.00		99.60	-2.13E-02		1.49E-01
		720.50		53.80	-6.75E-02		2.83E-01
+	SN-126	87.57		37.00	-6.54E-01	2.36E-01	2.36E-01
+	SB-127	473.00		25.00	-6.46E+01	4.58E+01	5.68E+01
		685.00		35.70	1.80E+00		4.58E+01
		783.80		14.70	4.57E+00		1.05E+02
+	I-129	29.78		57.00	-8.07E-01	1.32E+00	1.32E+00
		33.60		13.20	-1.76E-01		2.64E+00
		39.58		7.52	-1.28E+00		2.18E+00

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	I-131	284.30	6.05	-2.98E+00	1.41E+00	1.79E+01
		364.48	81.20	-2.00E-01		1.41E+00
		636.97	7.26	-4.25E+00		1.73E+01
		722.89	1.80	-7.12E+00		8.59E+01
+	TE-132	49.72	13.10	-7.64E+01	3.21E+01	1.84E+02
		228.16	88.00	-3.69E+00		3.21E+01
+	BA-133	81.00	34.06	6.37E-01	2.90E-01	2.90E-01
		302.84	18.33	-3.64E-02		7.18E-01
		356.01	62.05	-1.32E-02		2.92E-01
+	I-133	529.87	86.30	-1.41E+07	1.86E+08	1.86E+08
+	XE-133	81.00	38.00	1.80E+01	8.17E+00	8.17E+00
+	CS-134	563.23	8.38	4.61E-01	1.96E-01	1.71E+00
		569.32	15.43	-5.99E-01		8.85E-01
		604.70	97.60	-8.63E-03		2.45E-01
		795.84	85.40	7.87E-02		1.96E-01
		801.93	8.73	1.38E+00		1.98E+00
+	CS-135	268.24	16.00	1.16E-01	7.66E-01	7.66E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	-1.04E-01	5.55E-01	4.61E+00
		163.89	4.61	-3.82E+00		7.59E+00
		176.55	13.56	-1.79E+00		2.71E+00
		273.65	12.66	3.60E+00		3.87E+00
		340.57	48.50	1.47E-01		1.21E+00
		818.50	99.70	6.46E-02		5.55E-01
		1048.07	79.60	-5.52E-01		7.12E-01
		1235.34	19.70	3.47E-01		4.26E+00
+	CS-137	661.65	85.12	8.54E-02	1.67E-01	1.67E-01
+	LA-138	788.74	34.00	-2.88E-01	2.44E-01	4.23E-01
		1435.80	66.00	5.74E-02		2.44E-01
+	CE-139	165.85	80.35	1.51E-02	1.27E-01	1.27E-01
+	BA-140	162.64	6.70	-1.26E+00	2.30E+00	5.44E+00
		304.84	4.50	-2.37E+00		1.08E+01
		423.70	3.20	-1.15E+01		1.48E+01
		437.55	2.00	-6.37E+00		2.41E+01
		537.32	25.00	7.93E-01		2.30E+00
+	LA-140	328.77	20.50	-3.83E+00	7.17E-01	2.41E+00
		487.03	45.50	7.88E-01		1.29E+00
		815.85	23.50	-7.43E-01		2.43E+00
		1596.49	95.49	1.93E-01		7.17E-01
+	CE-141	145.44	48.40	2.17E-03	3.03E-01	3.03E-01
+	CE-143	57.36	11.80	1.26E+05	1.87E+05	3.73E+05
		293.26	42.00	3.83E+05		1.87E+05
		664.55	5.20	-4.75E+05		1.39E+06
+	CE-144	133.54	10.80	3.27E-01	7.86E-01	7.86E-01
+	PM-144	476.78	42.00	-8.85E-02	1.57E-01	3.36E-01
		618.01	98.60	-1.04E-02		1.65E-01
		696.49	99.49	-1.39E-02		1.57E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-145	36.85		21.70	-1.31E+00	5.14E-01	9.96E-01
		37.36		39.70	-6.40E-01		5.14E-01
		42.30		15.10	-1.74E-01		8.81E-01
		72.40		2.31	-8.13E-01		4.23E+00
+	PM-146	453.90		39.94	-4.86E-01	3.06E-01	3.06E-01
		735.90		14.01	2.06E-01		1.10E+00
		747.13		13.10	-4.36E-01		1.00E+00
+	ND-147	91.11	*	28.90	4.70E+00	2.28E+00	2.28E+00
		531.02		13.10	-5.81E-01		5.40E+00
+	PM-149	285.90		3.10	-5.57E+03	1.30E+04	1.30E+04
+	EU-152	121.78		20.50	-3.40E-02	3.83E-01	3.83E-01
		244.69		5.40	-8.46E-02		3.24E+00
		344.27		19.13	-3.18E+00		7.91E-01
		778.89		9.10	4.71E-01		1.52E+00
		964.01		10.40	3.56E+00		2.23E+00
		1085.78		7.22	5.84E-01		2.44E+00
		1112.02		9.60	-2.18E-01		2.03E+00
		1407.95		14.94	-2.47E-01		9.14E-01
+	GD-153	97.43		31.30	-8.68E-02	2.73E-01	2.73E-01
		103.18		22.20	2.46E-02		3.48E-01
+	EU-154	123.07		40.50	8.26E-02	1.98E-01	1.98E-01
		723.30		19.70	-6.89E-02		8.31E-01
		873.19		11.50	2.92E-01		1.20E+00
		996.32		10.30	1.04E+00		1.70E+00
		1004.76		17.90	1.44E-01		8.42E-01
		1274.45		35.50	3.06E-01		5.58E-01
+	EU-155	86.50		30.90	-1.23E+00	2.85E-01	2.85E-01
		105.30		20.70	-1.44E-01		3.49E-01
+	EU-156	811.77		10.40	-1.16E+00	4.51E+00	4.51E+00
		1153.47		7.20	-9.11E-01		7.95E+00
		1230.71		8.90	1.04E+00		7.65E+00
+	HO-166M	184.41		72.60	-7.69E-03	1.51E-01	1.51E-01
		280.45		29.60	-1.17E-01		3.88E-01
		410.94		11.10	8.48E-01		1.20E+00
		711.69		54.10	4.66E-02		2.61E-01
+	TM-171	66.72		0.14	4.07E+01	6.15E+01	6.15E+01
+	HF-172	67.35		5.31	5.78E-01	7.29E-01	1.67E+00
		125.82		11.30	-6.90E-02		7.29E-01
+	LU-172	181.53		20.60	-2.44E+00	3.93E+00	7.66E+00
		900.72		29.81	-2.12E-01		8.09E+00
		1093.66		62.50	2.99E-01		3.93E+00
+	LU-173	100.72		5.24	-9.15E-01	6.06E-01	1.48E+00
		272.11		21.20	4.95E-01		6.06E-01
+	HF-175	343.40		84.00	-1.20E+00	2.25E-01	2.25E-01
+	LU-176	88.34		13.30	-3.42E-01	1.22E-01	6.58E-01
		201.83		86.00	-1.24E-02		1.22E-01
		306.78		94.00	5.77E-03		1.26E-01
+	HF-181	133.02		41.70	1.21E-01	2.60E-01	2.92E-01
		345.85		17.20	-2.41E+00		1.44E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	HF-181	482.03		82.80	7.68E-02	2.60E-01	2.60E-01
+	TA-182	67.75		41.20	8.49E-02	2.45E-01	2.45E-01
		1121.30		34.90	4.31E-02		7.87E-01
		1189.05		16.23	-1.03E-01		1.31E+00
		1221.41		26.98	-4.96E-01		7.70E-01
		1231.02		11.44	2.87E-01		2.12E+00
+	IR-192	308.46		29.68	-2.24E-02	3.82E-01	4.96E-01
		468.07		48.10	2.79E-01		3.82E-01
+	HG-203	279.19		77.30	-1.39E-01	2.20E-01	2.20E-01
+	TL-204	374.74		94.11	-1.17E-02	1.31E-01	1.31E-01
		899.15		99.16	-2.79E-02		1.57E-01
		911.74		91.10	2.77E-01		2.45E-01
+	BI-207	569.67		97.72	-9.25E-02	1.37E-01	1.37E-01
		1063.62		74.90	-5.67E-02		2.16E-01
+	TL-208	583.14	*	30.22	1.91E+00	6.75E-01	6.75E-01
		860.37		4.48	1.19E+00		3.28E+00
		2614.66		35.85	9.95E-01		8.35E-01
+	BI-210M	262.00		45.00	-1.40E-01	2.55E-01	2.55E-01
		300.00		23.00	-4.37E-02		6.54E-01
+	PB-210	46.50		4.25	-2.97E-02	2.47E+00	2.47E+00
+	PB-211	404.84		2.90	-2.42E+00	4.34E+00	4.34E+00
		831.96		2.90	2.20E+00		5.31E+00
+	BI-212	727.17	*	11.80	1.12E+00	2.10E+00	2.10E+00
		1620.62		2.75	-1.37E+00		6.13E+00
+	PB-212	238.63	*	44.60	2.33E+00	5.04E-01	5.04E-01
		300.09		3.41	2.72E-02		4.31E+00
+	BI-214	609.31	*	46.30	1.40E+00	5.74E-01	5.74E-01
		1120.29	*	15.10	1.04E+00		1.82E+00
		1764.49		15.80	-5.63E-02		1.66E+00
		2204.22		4.98	5.40E-01		4.40E+00
+	PB-214	295.21	*	19.19	1.76E+00	4.20E-01	1.09E+00
		351.92	*	37.19	1.47E+00		4.20E-01
+	RN-219	401.80		6.50	-9.49E-01	1.89E+00	1.89E+00
+	RA-223	323.87		3.88	3.45E-02	3.02E+00	3.02E+00
+	RA-224	240.98	*	3.95	2.63E+01	5.70E+00	5.70E+00
+	RA-225	40.00		31.00	4.88E-01	1.76E+00	1.76E+00
+	RA-226	186.21	*	3.28	3.92E+00	3.45E+00	3.45E+00
+	TH-227	50.10		8.40	-4.41E-01	1.10E+00	1.10E+00
		236.00		11.50	7.05E+00		1.59E+00
		256.20		6.30	3.18E-01		1.79E+00
+	AC-228	338.32	*	11.40	2.38E+00	9.89E-01	2.48E+00
		911.07	*	27.70	1.18E+00		9.89E-01
		969.11		16.60	-6.69E-02		1.39E+00
+	TH-230	48.43		16.90	-4.06E-01	5.70E-01	5.70E-01
		62.85		4.60	1.03E+00		1.77E+00
		67.67		0.37	8.07E+00		2.33E+01
+	PA-231	283.67		1.60	-9.78E-01	5.69E+00	7.17E+00
		302.67		2.30	-2.88E-01		5.69E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TH-231	25.64		14.70	-1.37E+01	1.44E+00	1.79E+01
		84.21		6.40	-3.05E+00		1.44E+00
+	PA-233	311.98		38.60	1.11E-01	5.87E-01	5.87E-01
+	PA-234	131.20		20.40	1.80E-01	4.11E-01	4.11E-01
		733.99		8.80	3.12E-01		1.83E+00
		946.00		12.00	-2.59E-01		1.11E+00
+	PA-234M	1001.03		0.92	5.63E+00	1.76E+01	1.76E+01
+	TH-234	63.29		3.80	1.44E+00	2.16E+00	2.16E+00
+	U-235	143.76		10.50	-1.47E-01	7.91E-01	7.91E-01
		163.35		4.70	-9.43E-01		1.87E+00
		205.31		4.70	1.02E+00		2.33E+00
+	NP-237	86.50		12.60	-2.99E+00	6.91E-01	6.91E-01
+	NP-239	106.10		22.70	-5.27E+02	6.87E+02	6.87E+02
		228.18		10.70	-2.56E+02		2.22E+03
		277.60		14.10	-3.53E+02		1.81E+03
+	AM-241	59.54		35.90	2.48E-01	2.31E-01	2.31E-01
+	AM-243	74.67	*	66.00	6.34E-01	1.71E-01	1.71E-01
+	CM-243	209.75		3.29	1.60E+00	8.38E-01	3.38E+00
		228.14		10.60	-1.18E-01		1.03E+00
		277.60		14.00	-1.63E-01		8.38E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	1.85E+00	1.85E+00	2.81E-01	8.89E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	NA-22	1274.54		99.94	2.01E-01	2.01E-01	1.10E-01	9.31E-02
	NA-24	1368.53		99.99	1.49E-01	1.15E-01	-1.15E-02	6.68E-02
		2754.09		99.86	1.15E-01		2.54E-02	4.56E-02
	AL-26	1808.65		99.76	1.27E-01	1.27E-01	-9.09E-02	5.35E-02
+	K-40	1460.81	*	10.67	1.53E+00	1.53E+00	1.08E+01	6.87E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	9.14E-02	9.14E-02	3.16E-02	4.52E-02
		78.34		96.00	1.02E-01		3.10E-01	5.05E-02
	SC-46	889.25		98.98	1.56E-01	1.56E-01	-6.54E-02	7.17E-02
		1120.51		99.90	2.82E-01		1.42E-01	1.33E-01
	V-48	983.52		99.98	4.39E-01	4.39E-01	-1.50E-01	2.03E-01
		1312.10		97.50	4.78E-01		-1.72E-01	2.16E-01
	CR-51	320.08		9.83	2.16E+00	2.16E+00	-2.59E-01	1.04E+00
	MN-54	834.83		99.97	1.63E-01	1.63E-01	8.04E-02	7.65E-02
	CO-56	846.75		99.96	1.68E-01	1.68E-01	-3.58E-02	7.80E-02
		1037.75		14.03	1.51E+00		4.26E-01	7.03E-01
		1238.25		67.00	4.18E-01		2.06E-01	1.96E-01
		1771.40		15.51	9.91E-01		-6.90E-01	4.15E-01
		2587.48		16.90	4.92E-01		-2.84E-01	1.55E-01
	CO-57	122.06		85.51	9.86E-02	9.86E-02	3.72E-02	4.84E-02
		136.48		10.60	7.99E-01		-4.10E-01	3.92E-01
	CO-58	810.76		99.40	1.81E-01	1.81E-01	-9.50E-02	8.48E-02
	FE-59	1099.22		56.50	4.20E-01	4.20E-01	-6.32E-02	1.94E-01
		1291.56		43.20	5.73E-01		8.31E-02	2.61E-01
	CO-60	1173.22		100.00	1.69E-01	1.56E-01	-2.39E-02	7.77E-02
		1332.49		100.00	1.56E-01		-5.80E-02	7.05E-02
	ZN-65	1115.52		50.75	4.95E-01	4.95E-01	4.87E-03	2.34E-01
	GA-67	93.31		35.70	6.19E+01	6.19E+01	5.39E+00	3.05E+01
		208.95		2.24	1.27E+03		2.81E+02	6.23E+02
		300.22		16.00	2.37E+02		1.50E+00	1.16E+02
	SE-75	121.11		16.70	5.42E-01	1.54E-01	-4.80E-02	2.66E-01
		136.00		59.50	1.54E-01		-7.91E-02	7.57E-02
		264.65		59.80	2.35E-01		8.19E-02	1.14E-01
		279.53		25.20	5.32E-01		-3.37E-01	2.58E-01
		400.65		11.40	1.27E+00		-4.67E-01	6.10E-01
	RB-82	776.52		13.00	2.37E+00	2.37E+00	2.58E-01	1.12E+00
	RB-83	520.41		46.00	3.75E-01	3.75E-01	-3.97E-01	1.79E-01
		529.64		30.30	5.51E-01		-4.17E-02	2.63E-01
		552.65		16.40	1.03E+00		-3.01E-01	4.89E-01
	KR-85	513.99		0.43	3.94E+01	3.94E+01	4.56E+01	1.90E+01
	SR-85	513.99		99.27	2.27E-01	2.27E-01	2.62E-01	1.09E-01
	Y-88	898.02		93.40	1.87E-01	1.46E-01	2.64E-03	8.74E-02
		1836.01		99.38	1.46E-01		-5.03E-02	6.11E-02
	MO-93	263.06		56.72	2.10E-01	1.35E-01	2.26E-02	1.02E-01
		684.67		99.68	1.49E-01		5.87E-03	7.06E-02
		1477.11		99.08	1.35E-01		-1.45E-03	5.89E-02
	NB-93M	16.57		9.43	2.21E+04	2.21E+04	5.74E+04	1.09E+04
	NB-94	702.63		100.00	1.56E-01	1.30E-01	1.13E-01	7.40E-02
		871.10		100.00	1.30E-01		-5.94E-02	6.03E-02
	NB-95	765.79		99.81	2.90E-01	2.90E-01	5.86E-03	1.38E-01
	NB-95M	235.69		25.00	1.10E+02	1.10E+02	4.89E+02	5.42E+01
	ZR-95	724.18		43.70	5.08E-01	3.42E-01	-1.62E-02	2.42E-01
		756.72		55.30	3.42E-01		-8.29E-02	1.61E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	MO-99	181.06		6.20	1.23E+03	7.77E+02	-3.91E+02	6.02E+02
		739.58		12.80	7.77E+02		-3.34E+02	3.65E+02
		778.00		4.50	2.36E+03		4.94E+02	1.11E+03
	TC-99M	140.51		89.00	9.17E-02	9.17E-02	7.36E-03	4.49E-02
	RU-103	497.08		89.00	2.27E-01	2.27E-01	-1.50E-01	1.09E-01
	RU-106	621.84		9.80	1.54E+00	1.54E+00	-6.92E-01	7.33E-01
	AG-108M	433.93		89.90	1.30E-01	1.30E-01	2.58E-02	6.20E-02
		614.37		90.40	2.40E-01		-1.89E-02	1.16E-01
		722.95		90.50	1.80E-01		-1.49E-02	8.54E-02
+	CD-109	88.03	*	3.72	3.54E+00	3.54E+00	7.29E+00	1.75E+00
	AG-110M	657.75		93.14	1.57E-01	1.57E-01	-4.86E-02	7.40E-02
		677.61		10.53	1.50E+00		4.14E-01	7.09E-01
		706.67		16.46	9.90E-01		4.83E-01	4.69E-01
		763.93		21.98	7.94E-01		6.20E-02	3.76E-01
		884.67		21.98	6.52E-01		1.54E-01	3.02E-01
		1384.27		23.94	6.27E-01		-2.47E-02	2.79E-01
	CD-113M	263.70		0.02	5.18E+02	5.18E+02	5.58E+01	2.52E+02
	SN-113	255.12		1.93	6.76E+00	2.24E-01	-4.26E-01	3.29E+00
		391.69		64.90	2.24E-01		2.54E-02	1.08E-01
	TE-123M	159.00		84.10	1.22E-01	1.22E-01	-2.11E-02	5.96E-02
	SB-124	602.71		97.87	2.83E-01	2.83E-01	2.21E-02	1.37E-01
		645.85		7.26	2.47E+00		4.87E-01	1.17E+00
		722.78		11.10	1.98E+00		-1.64E-01	9.40E-01
		1691.02		49.00	3.43E-01		-2.24E-02	1.46E-01
	I-125	35.49		6.49	5.37E+00	5.37E+00	-5.88E+00	2.64E+00
	SB-125	176.33		6.89	1.37E+00	4.02E-01	-9.07E-01	6.70E-01
		427.89		29.33	4.02E-01		-4.00E-02	1.92E-01
		463.38		10.35	1.40E+00		9.04E-01	6.71E-01
		600.56		17.80	8.96E-01		1.21E-01	4.28E-01
		635.90		11.32	1.24E+00		4.92E-01	5.86E-01
	SB-126	414.70		83.30	1.59E-01	1.47E-01	8.78E-02	7.63E-02
		666.33		99.60	1.47E-01		3.17E-02	6.95E-02
		695.00		99.60	1.49E-01		-2.13E-02	7.07E-02
		720.50		53.80	2.83E-01		-6.75E-02	1.34E-01
	SN-126	87.57		37.00	2.36E-01	2.36E-01	-6.54E-01	1.17E-01
	SB-127	473.00		25.00	5.68E+01	4.58E+01	-6.46E+01	2.72E+01
		685.00		35.70	4.58E+01		1.80E+00	2.17E+01
		783.80		14.70	1.05E+02		4.57E+00	4.94E+01
	I-129	29.78		57.00	1.32E+00	1.32E+00	-8.07E-01	6.47E-01
		33.60		13.20	2.64E+00		-1.76E-01	1.30E+00
		39.58		7.52	2.18E+00		-1.28E+00	1.07E+00
	I-131	284.30		6.05	1.79E+01	1.41E+00	-2.98E+00	8.69E+00
		364.48		81.20	1.41E+00		-2.00E-01	6.81E-01
		636.97		7.26	1.73E+01		-4.25E+00	8.19E+00
		722.89		1.80	8.59E+01		-7.12E+00	4.08E+01
	TE-132	49.72		13.10	1.84E+02	3.21E+01	-7.64E+01	9.07E+01
		228.16		88.00	3.21E+01		-3.69E+00	1.56E+01
	BA-133	81.00		34.06	2.90E-01	2.90E-01	6.37E-01	1.43E-01
		302.84		18.33	7.18E-01		-3.64E-02	3.49E-01
		356.01		62.05	2.92E-01		-1.32E-02	1.43E-01
	I-133	529.87		86.30	1.86E+08	1.86E+08	-1.41E+07	8.89E+07
	XE-133	81.00		38.00	8.17E+00	8.17E+00	1.80E+01	4.04E+00
	CS-134	563.23		8.38	1.71E+00	1.96E-01	4.61E-01	8.14E-01

BP/Castex-Ltd Adm-Apx E-001594

Analysis Report for 2206038-06

R-1 12-18

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	569.32		15.43	8.85E-01	1.96E-01	-5.99E-01	4.21E-01
		604.70		97.60	2.45E-01		-8.63E-03	1.19E-01
		795.84		85.40	1.96E-01		7.87E-02	9.28E-02
		801.93		8.73	1.98E+00		1.38E+00	9.36E-01
	CS-135	268.24		16.00	7.66E-01	7.66E-01	1.16E-01	3.73E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	4.61E+00	5.55E-01	-1.04E-01	2.26E+00
		163.89		4.61	7.59E+00		-3.82E+00	3.71E+00
		176.55		13.56	2.71E+00		-1.79E+00	1.33E+00
		273.65		12.66	3.87E+00		3.60E+00	1.88E+00
		340.57		48.50	1.21E+00		1.47E-01	5.86E-01
		818.50		99.70	5.55E-01		6.46E-02	2.60E-01
		1048.07		79.60	7.12E-01		-5.52E-01	3.27E-01
		1235.34		19.70	4.26E+00		3.47E-01	1.99E+00
	CS-137	661.65		85.12	1.67E-01	1.67E-01	8.54E-02	7.92E-02
	LA-138	788.74		34.00	4.23E-01	2.44E-01	-2.88E-01	1.99E-01
		1435.80		66.00	2.44E-01		5.74E-02	1.10E-01
	CE-139	165.85		80.35	1.27E-01	1.27E-01	1.51E-02	6.20E-02
	BA-140	162.64		6.70	5.44E+00	2.30E+00	-1.26E+00	2.66E+00
		304.84		4.50	1.08E+01		-2.37E+00	5.23E+00
		423.70		3.20	1.48E+01		-1.15E+01	7.07E+00
		437.55		2.00	2.41E+01		-6.37E+00	1.15E+01
		537.32		25.00	2.30E+00		7.93E-01	1.10E+00
	LA-140	328.77		20.50	2.41E+00	7.17E-01	-3.83E+00	1.17E+00
		487.03		45.50	1.29E+00		7.88E-01	6.18E-01
		815.85		23.50	2.43E+00		-7.43E-01	1.13E+00
		1596.49		95.49	7.17E-01		1.93E-01	3.21E-01
	CE-141	145.44		48.40	3.03E-01	3.03E-01	2.17E-03	1.49E-01
	CE-143	57.36		11.80	3.73E+05	1.87E+05	1.26E+05	1.84E+05
		293.26		42.00	1.87E+05		3.83E+05	9.15E+04
		664.55		5.20	1.39E+06		-4.75E+05	6.59E+05
	CE-144	133.54		10.80	7.86E-01	7.86E-01	3.27E-01	3.86E-01
	PM-144	476.78		42.00	3.36E-01	1.57E-01	-8.85E-02	1.61E-01
		618.01		98.60	1.65E-01		-1.04E-02	7.85E-02
		696.49		99.49	1.57E-01		-1.39E-02	7.45E-02
	PM-145	36.85		21.70	9.96E-01	5.14E-01	-1.31E+00	4.90E-01
		37.36		39.70	5.14E-01		-6.40E-01	2.53E-01
		42.30		15.10	8.81E-01		-1.74E-01	4.34E-01
		72.40		2.31	4.23E+00		-8.13E-01	2.09E+00
	PM-146	453.90		39.94	3.06E-01	3.06E-01	-4.86E-01	1.46E-01
		735.90		14.01	1.10E+00		2.06E-01	5.22E-01
		747.13		13.10	1.00E+00		-4.36E-01	4.68E-01
+	ND-147	91.11	*	28.90	2.28E+00	2.28E+00	4.70E+00	1.13E+00
		531.02		13.10	5.40E+00		-5.81E-01	2.58E+00
	PM-149	285.90		3.10	1.30E+04	1.30E+04	-5.57E+03	6.30E+03
	EU-152	121.78		20.50	3.83E-01	3.83E-01	-3.40E-02	1.88E-01
		244.69		5.40	3.24E+00		-8.46E-02	1.59E+00
		344.27		19.13	7.91E-01		-3.18E+00	3.85E-01
		778.89		9.10	1.52E+00		4.71E-01	7.12E-01
		964.01		10.40	2.23E+00		3.56E+00	1.06E+00
		1085.78		7.22	2.44E+00		5.84E-01	1.14E+00

BP/Castex-Ltd Adm-Apx E-001595

Analysis Report for 2206038-06

R-1 12-18

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1112.02		9.60	2.03E+00	3.83E-01	-2.18E-01	9.51E-01
		1407.95		14.94	9.14E-01		-2.47E-01	4.05E-01
	GD-153	97.43		31.30	2.73E-01	2.73E-01	-8.68E-02	1.34E-01
		103.18		22.20	3.48E-01		2.46E-02	1.71E-01
	EU-154	123.07		40.50	1.98E-01	1.98E-01	8.26E-02	9.71E-02
		723.30		19.70	8.31E-01		-6.89E-02	3.95E-01
		873.19		11.50	1.20E+00		2.92E-01	5.58E-01
		996.32		10.30	1.70E+00		1.04E+00	7.95E-01
		1004.76		17.90	8.42E-01		1.44E-01	3.90E-01
		1274.45		35.50	5.58E-01		3.06E-01	2.59E-01
	EU-155	86.50		30.90	2.85E-01	2.85E-01	-1.23E+00	1.41E-01
		105.30		20.70	3.49E-01		-1.44E-01	1.72E-01
	EU-156	811.77		10.40	4.51E+00	4.51E+00	-1.16E+00	2.11E+00
		1153.47		7.20	7.95E+00		-9.11E-01	3.68E+00
		1230.71		8.90	7.65E+00		1.04E+00	3.57E+00
	HO-166M	184.41		72.60	1.51E-01	1.51E-01	-7.69E-03	7.39E-02
		280.45		29.60	3.88E-01		-1.17E-01	1.88E-01
		410.94		11.10	1.20E+00		8.48E-01	5.78E-01
		711.69		54.10	2.61E-01		4.66E-02	1.23E-01
	TM-171	66.72		0.14	6.15E+01	6.15E+01	4.07E+01	3.04E+01
	HF-172	67.35		5.31	1.67E+00	7.29E-01	5.78E-01	8.25E-01
		125.82		11.30	7.29E-01		-6.90E-02	3.58E-01
	LU-172	181.53		20.60	7.66E+00	3.93E+00	-2.44E+00	3.75E+00
		900.72		29.81	8.09E+00		-2.12E-01	3.79E+00
		1093.66		62.50	3.93E+00		2.99E-01	1.82E+00
	LU-173	100.72		5.24	1.48E+00	6.06E-01	-9.15E-01	7.29E-01
		272.11		21.20	6.06E-01		4.95E-01	2.95E-01
	HF-175	343.40		84.00	2.25E-01	2.25E-01	-1.20E+00	1.10E-01
	LU-176	88.34		13.30	6.58E-01	1.22E-01	-3.42E-01	3.25E-01
		201.83		86.00	1.22E-01		-1.24E-02	5.95E-02
		306.78		94.00	1.26E-01		5.77E-03	6.11E-02
	HF-181	133.02		41.70	2.92E-01	2.60E-01	1.21E-01	1.43E-01
		345.85		17.20	1.44E+00		-2.41E+00	7.03E-01
		482.03		82.80	2.60E-01		7.68E-02	1.25E-01
	TA-182	67.75		41.20	2.45E-01	2.45E-01	8.49E-02	1.21E-01
		1121.30		34.90	7.87E-01		4.31E-02	3.73E-01
		1189.05		16.23	1.31E+00		-1.03E-01	6.09E-01
		1221.41		26.98	7.70E-01		-4.96E-01	3.55E-01
		1231.02		11.44	2.12E+00		2.87E-01	9.88E-01
	IR-192	308.46		29.68	4.96E-01	3.82E-01	-2.24E-02	2.40E-01
		468.07		48.10	3.82E-01		2.79E-01	1.84E-01
	HG-203	279.19		77.30	2.20E-01	2.20E-01	-1.39E-01	1.07E-01
	TL-204	374.74		94.11	1.31E-01	1.31E-01	-1.17E-02	6.29E-02
		899.15		99.16	1.57E-01		-2.79E-02	7.31E-02
		911.74		91.10	2.45E-01		2.77E-01	1.17E-01
	BI-207	569.67		97.72	1.37E-01	1.37E-01	-9.25E-02	6.50E-02
		1063.62		74.90	2.16E-01		-5.67E-02	1.00E-01
+	TL-208	583.14	*	30.22	6.75E-01	6.75E-01	1.91E+00	3.27E-01
		860.37		4.48	3.28E+00		1.19E+00	1.53E+00
		2614.66		35.85	8.35E-01		9.95E-01	3.85E-01
	BI-210M	262.00		45.00	2.55E-01	2.55E-01	-1.40E-01	1.24E-01
		300.00		23.00	6.54E-01		-4.37E-02	3.19E-01
	PB-210	46.50		4.25	2.47E+00	2.47E+00	-2.97E-02	1.22E+00

BP/Castex-Ltd Adm-Apx E-001596

Analysis Report for 2206038-06

R-1 12-18

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PB-211	404.84		2.90	4.34E+00	4.34E+00	-2.42E+00	2.09E+00
		831.96		2.90	5.31E+00		2.20E+00	2.50E+00
+	BI-212	727.17	*	11.80	2.10E+00	2.10E+00	1.12E+00	1.02E+00
		1620.62		2.75	6.13E+00		-1.37E+00	2.74E+00
+	PB-212	238.63	*	44.60	5.04E-01	5.04E-01	2.33E+00	2.49E-01
		300.09		3.41	4.31E+00		2.72E-02	2.10E+00
+	BI-214	609.31	*	46.30	5.74E-01	5.74E-01	1.40E+00	2.79E-01
		1120.29	*	15.10	1.82E+00		1.04E+00	8.71E-01
		1764.49		15.80	1.66E+00		-5.63E-02	7.69E-01
		2204.22		4.98	4.40E+00		5.40E-01	1.97E+00
+	PB-214	295.21	*	19.19	1.09E+00	4.20E-01	1.76E+00	5.37E-01
		351.92	*	37.19	4.20E-01		1.47E+00	2.04E-01
	RN-219	401.80		6.50	1.89E+00	1.89E+00	-9.49E-01	9.07E-01
	RA-223	323.87		3.88	3.02E+00	3.02E+00	3.45E-02	1.46E+00
+	RA-224	240.98	*	3.95	5.70E+00	5.70E+00	2.63E+01	2.81E+00
	RA-225	40.00		31.00	1.76E+00	1.76E+00	4.88E-01	8.67E-01
+	RA-226	186.21	*	3.28	3.45E+00	3.45E+00	3.92E+00	1.69E+00
	TH-227	50.10		8.40	1.10E+00	1.10E+00	-4.41E-01	5.43E-01
		236.00		11.50	1.59E+00		7.05E+00	7.82E-01
		256.20		6.30	1.79E+00		3.18E-01	8.71E-01
+	AC-228	338.32	*	11.40	2.48E+00	9.89E-01	2.38E+00	1.22E+00
		911.07	*	27.70	9.89E-01		1.18E+00	4.76E-01
		969.11		16.60	1.39E+00		-6.69E-02	6.61E-01
	TH-230	48.43		16.90	5.70E-01	5.70E-01	-4.06E-01	2.81E-01
		62.85		4.60	1.77E+00		1.03E+00	8.74E-01
		67.67		0.37	2.33E+01		8.07E+00	1.15E+01
	PA-231	283.67		1.60	7.17E+00	5.69E+00	-9.78E-01	3.48E+00
		302.67		2.30	5.69E+00		-2.88E-01	2.76E+00
	TH-231	25.64		14.70	1.79E+01	1.44E+00	-1.37E+01	8.82E+00
		84.21		6.40	1.44E+00		-3.05E+00	7.12E-01
	PA-233	311.98		38.60	5.87E-01	5.87E-01	1.11E-01	2.84E-01
	PA-234	131.20		20.40	4.11E-01	4.11E-01	1.80E-01	2.02E-01
		733.99		8.80	1.83E+00		3.12E-01	8.68E-01
		946.00		12.00	1.11E+00		-2.59E-01	5.12E-01
	PA-234M	1001.03		0.92	1.76E+01	1.76E+01	5.63E+00	8.20E+00
	TH-234	63.29		3.80	2.16E+00	2.16E+00	1.44E+00	1.06E+00
	U-235	143.76		10.50	7.91E-01	7.91E-01	-1.47E-01	3.88E-01
		163.35		4.70	1.87E+00		-9.43E-01	9.16E-01
		205.31		4.70	2.33E+00		1.02E+00	1.14E+00
	NP-237	86.50		12.60	6.91E-01	6.91E-01	-2.99E+00	3.41E-01
	NP-239	106.10		22.70	6.87E+02	6.87E+02	-5.27E+02	3.38E+02
		228.18		10.70	2.22E+03		-2.56E+02	1.08E+03
		277.60		14.10	1.81E+03		-3.53E+02	8.81E+02
	AM-241	59.54		35.90	2.31E-01	2.31E-01	2.48E-01	1.14E-01
+	AM-243	74.67	*	66.00	1.71E-01	1.71E-01	6.34E-01	8.46E-02
	CM-243	209.75		3.29	3.38E+00	8.38E-01	1.60E+00	1.65E+00
		228.14		10.60	1.03E+00		-1.18E-01	5.01E-01
		277.60		14.00	8.38E-01		-1.63E-01	4.07E-01

BP/Castex-Ltd Adm-Apx E-001597

Analysis Report for 2206038-06

R-1 12-18

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-1 12-18

Elapsed Live time: 3600
Elapsed Real Time: 3645

Channel								
1:	5	0	1	2	5	27	124	336
9:	266	575	355	194	146	116	127	105
17:	104	78	80	96	77	96	78	80
25:	101	74	69	94	94	81	64	82
33:	67	80	87	74	79	86	79	83
41:	99	68	70	93	92	98	107	118
49:	87	88	110	95	98	102	113	97
57:	121	100	115	148	138	119	152	186
65:	167	150	147	125	140	141	141	148
73:	177	225	299	313	372	353	300	179
81:	135	122	131	131	137	153	172	160
89:	181	178	159	190	150	153	165	119
97:	86	88	88	86	86	74	64	75
105:	69	86	81	78	74	101	94	73
113:	56	66	68	78	79	86	64	59
121:	62	73	72	74	69	71	62	68
129:	89	79	79	75	58	71	72	67
137:	51	72	69	63	64	61	59	68
145:	79	69	62	49	64	65	62	76
153:	62	73	63	60	68	48	56	53
161:	47	54	62	58	51	61	56	47
169:	62	53	50	50	56	58	43	38
177:	53	47	42	66	50	53	53	58
185:	77	99	94	77	69	55	42	52
193:	55	56	32	37	37	34	55	60
201:	43	53	55	52	60	35	47	52
209:	47	61	45	41	55	45	48	53
217:	51	37	31	34	50	51	38	41
225:	27	53	33	42	35	54	38	36
233:	33	34	46	53	94	190	247	216
241:	204	116	67	61	47	35	30	28
249:	29	31	36	37	29	29	35	23
257:	37	26	30	47	26	34	38	33
265:	28	40	32	28	37	47	38	39
273:	38	28	33	31	32	30	43	25
281:	29	22	18	21	27	32	22	27
289:	30	30	24	27	39	55	76	93
297:	65	58	24	30	31	32	21	26
305:	18	26	29	24	25	20	19	28
313:	26	21	20	19	19	24	18	17
321:	26	19	21	13	20	24	17	25
329:	34	27	19	23	19	23	25	23
337:	47	47	58	51	32	20	31	26
345:	14	20	21	15	25	40	71	121
353:	115	73	35	19	17	13	19	17
361:	16	20	21	15	18	19	18	20

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369:	13	26	18	20	16	20	15	22

Sample Title: R-1 12-18

Channel								
377:	19	10	19	15	17	16	22	19
385:	14	17	16	19	12	14	22	12
393:	19	12	24	13	24	18	18	13
401:	13	17	9	18	11	19	16	17
409:	23	17	23	17	13	24	23	19
417:	12	17	16	8	14	14	15	15
425:	9	14	8	12	12	8	14	12
433:	19	10	18	13	9	9	6	18
441:	10	16	9	10	12	19	12	17
449:	9	13	18	10	12	15	19	12
457:	6	8	6	14	21	29	27	21
465:	15	17	13	8	21	13	15	6
473:	19	11	13	11	18	9	10	22
481:	20	10	16	24	15	8	19	11
489:	19	13	12	13	15	7	10	12
497:	9	10	13	10	12	15	12	9
505:	18	12	16	22	27	20	39	30
513:	22	17	15	12	10	12	16	14
521:	17	6	15	11	15	9	14	15
529:	12	8	6	18	12	14	5	11
537:	12	8	12	12	16	12	16	8
545:	12	11	12	7	15	9	12	14
553:	12	6	6	13	10	17	8	12
561:	13	15	10	14	13	7	16	5
569:	5	8	4	13	14	11	12	5
577:	8	9	15	19	29	54	71	56
585:	29	20	8	15	9	9	10	10
593:	6	15	7	14	13	14	10	5
601:	12	8	14	7	7	20	30	66
609:	75	69	42	19	11	11	10	10
617:	19	13	9	10	6	7	12	11
625:	8	6	9	6	10	11	7	9
633:	9	9	15	8	12	3	5	7
641:	7	8	2	9	3	11	11	7
649:	9	10	8	7	4	6	11	6
657:	7	8	5	4	15	5	9	13
665:	14	9	9	5	7	4	3	9
673:	12	10	9	5	13	10	7	4
681:	6	9	6	11	12	9	10	7
689:	13	7	10	10	10	5	5	5
697:	6	11	7	8	12	8	12	3
705:	11	11	8	12	9	8	6	8
713:	2	11	3	5	3	7	5	6
721:	4	6	13	7	18	16	14	15
729:	8	10	11	5	14	7	7	11
737:	12	5	6	5	4	7	4	5
745:	4	5	6	11	5	9	2	2
753:	7	9	4	8	6	9	7	7
761:	8	5	10	7	5	6	9	19
769:	8	9	13	17	10	5	4	4
777:	2	5	8	7	8	4	4	7
785:	6	6	5	5	4	7	3	9
793:	9	8	6	12	8	11	9	5

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801:	8	7	5	7	5	13	7	10

Sample Title: R-1 12-18

Channel								
809:	2	6	4	2	5	4	4	5
817:	3	8	4	10	7	6	3	5
825:	5	4	5	8	8	6	6	6
833:	4	5	10	8	2	10	7	3
841:	6	4	4	6	1	4	2	6
849:	2	3	6	6	5	3	5	3
857:	6	9	7	9	8	3	8	4
865:	3	1	5	3	5	1	4	7
873:	2	4	8	5	4	3	7	6
881:	3	1	4	5	5	5	4	3
889:	3	3	4	2	3	2	2	5
897:	3	4	7	5	4	9	10	8
905:	7	9	4	9	17	20	33	19
913:	15	3	5	3	3	5	2	6
921:	9	1	4	5	5	3	7	6
929:	5	5	6	5	6	7	6	3
937:	6	6	6	6	3	2	6	2
945:	5	0	4	2	2	5	8	1
953:	3	6	2	2	1	2	3	2
961:	4	15	10	10	17	14	14	25
969:	14	12	8	7	2	4	3	3
977:	3	5	6	2	2	6	2	4
985:	2	2	3	4	7	3	9	4
993:	5	5	6	4	6	4	7	10
1001:	3	7	3	4	0	6	2	2
1009:	4	1	3	6	2	3	0	2
1017:	4	2	1	4	3	3	1	1
1025:	1	1	5	4	2	4	7	6
1033:	5	5	2	3	3	6	6	6
1041:	6	3	4	4	4	2	3	4
1049:	3	4	6	5	0	1	9	4
1057:	4	2	4	4	5	4	6	7
1065:	3	4	4	3	2	6	4	9
1073:	3	5	1	5	6	7	6	7
1081:	3	9	3	7	2	4	3	5
1089:	5	3	4	7	3	2	2	3
1097:	8	4	2	5	3	9	2	1
1105:	4	5	1	5	3	3	4	7
1113:	8	2	5	6	8	16	14	13
1121:	14	7	4	4	2	5	9	5
1129:	7	3	10	4	2	6	7	5
1137:	7	2	4	9	3	4	6	4
1145:	4	5	2	2	5	0	3	5
1153:	3	8	4	5	11	3	2	5
1161:	4	4	3	4	5	3	1	5
1169:	1	5	4	2	5	1	3	5
1177:	8	3	4	2	4	6	5	1
1185:	1	5	7	5	6	4	4	3
1193:	5	7	2	3	7	5	3	5
1201:	4	4	4	4	3	1	10	8
1209:	2	4	6	7	6	5	2	3
1217:	7	2	2	3	4	3	3	5
1225:	1	8	6	5	6	3	6	1

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1233:	5	0	7	10	9	9	2	5

Sample Title: R-1 12-18

Channel								
1241:	7	8	5	5	3	2	4	3
1249:	6	3	3	4	3	4	3	1
1257:	4	6	3	2	7	2	0	3
1265:	3	3	3	4	4	3	6	5
1273:	6	3	7	3	3	4	4	4
1281:	3	1	4	2	3	1	5	5
1289:	2	0	3	3	2	6	1	3
1297:	3	4	5	1	0	2	4	4
1305:	6	1	2	0	4	3	2	5
1313:	1	1	1	3	4	2	2	2
1321:	2	2	3	5	4	3	2	0
1329:	2	4	1	3	2	2	5	1
1337:	3	2	3	2	4	2	0	3
1345:	2	3	4	0	4	0	0	0
1353:	1	4	1	1	1	2	1	2
1361:	0	2	3	2	2	2	0	1
1369:	2	2	0	1	5	4	8	8
1377:	5	2	2	3	1	3	2	2
1385:	2	1	1	2	0	1	0	3
1393:	0	3	1	4	0	2	2	5
1401:	4	1	3	4	1	1	2	0
1409:	3	0	2	0	2	1	1	3
1417:	1	0	1	3	0	0	3	3
1425:	3	1	1	2	1	1	3	4
1433:	0	3	1	4	1	4	1	3
1441:	1	2	2	2	0	4	2	1
1449:	0	1	0	2	0	0	3	9
1457:	22	36	50	44	24	13	4	1
1465:	0	2	2	1	1	3	0	0
1473:	5	1	2	0	2	3	1	0
1481:	1	0	2	1	1	1	1	1
1489:	1	0	1	0	4	4	3	3
1497:	2	5	0	2	0	0	0	0
1505:	2	3	1	3	0	1	0	2
1513:	3	2	0	1	1	0	0	1
1521:	1	2	0	1	2	3	2	3
1529:	0	1	1	1	1	0	0	3
1537:	3	2	2	1	1	1	5	3
1545:	1	2	2	2	0	3	2	0
1553:	0	0	1	0	1	0	2	1
1561:	2	1	1	1	1	1	0	1
1569:	2	0	1	0	1	0	0	1
1577:	0	2	2	2	2	1	0	1
1585:	0	4	1	1	2	4	3	4
1593:	2	2	0	2	1	3	0	2
1601:	1	0	1	1	1	1	0	0
1609:	0	3	3	2	1	0	1	1
1617:	5	2	4	3	4	3	1	0
1625:	0	0	1	5	4	2	1	0
1633:	3	2	1	2	0	0	5	3
1641:	2	0	1	0	3	1	1	0
1649:	1	4	0	0	1	2	1	1
1657:	2	0	1	0	5	2	0	0

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1665:	1	0	2	0	0	1	1	1

Sample Title: R-1 12-18

Channel								
1673:	0	2	2	0	1	1	3	1
1681:	1	1	3	3	1	0	2	1
1689:	1	0	1	0	2	0	0	2
1697:	1	0	0	0	0	1	0	2
1705:	1	3	2	0	1	0	0	1
1713:	0	1	0	1	0	1	2	1
1721:	0	2	1	1	3	2	3	7
1729:	1	2	1	1	1	1	1	1
1737:	0	3	3	1	0	1	0	0
1745:	0	1	2	0	0	2	1	1
1753:	1	0	2	1	1	3	5	6
1761:	10	11	9	5	1	0	1	3
1769:	0	0	2	0	1	0	1	0
1777:	0	0	1	1	2	2	1	1
1785:	2	1	2	0	1	0	2	0
1793:	1	3	1	0	0	0	3	2
1801:	1	1	0	1	2	0	0	0
1809:	0	0	2	1	2	1	1	4
1817:	1	2	0	2	0	2	1	0
1825:	1	2	2	1	0	1	0	0
1833:	1	0	0	2	1	1	1	0
1841:	0	2	1	1	0	2	3	2
1849:	1	0	1	0	2	0	0	1
1857:	2	0	1	1	0	0	0	2
1865:	1	1	1	0	0	1	0	2
1873:	0	2	2	1	1	0	0	0
1881:	0	0	0	2	1	0	1	1
1889:	1	2	1	2	1	0	2	1
1897:	0	1	1	0	1	1	1	0
1905:	2	0	1	0	1	0	1	0
1913:	0	2	0	0	1	1	1	1
1921:	0	0	3	2	0	1	1	1
1929:	1	1	1	0	0	1	1	2
1937:	2	1	0	0	2	2	0	0
1945:	0	1	5	0	4	2	0	1
1953:	0	1	0	0	1	0	0	0
1961:	2	1	1	0	1	0	0	1
1969:	0	1	3	2	0	1	0	0
1977:	1	0	1	1	1	2	2	0
1985:	1	1	2	1	0	1	1	1
1993:	1	1	0	1	0	1	1	0
2001:	0	0	2	1	2	1	0	0
2009:	2	1	0	0	1	1	1	0
2017:	0	1	1	1	1	3	1	2
2025:	1	1	1	1	1	2	0	0
2033:	0	0	0	0	1	2	1	0
2041:	0	0	0	0	2	1	1	2
2049:	0	0	1	1	0	0	1	3
2057:	0	1	0	3	1	1	0	0
2065:	0	1	1	1	3	0	0	0
2073:	1	2	1	0	0	1	2	2
2081:	0	1	0	0	2	0	0	0
2089:	1	0	0	1	1	1	0	1

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2097:	4	3	3	2	2	4	3	2

Sample Title: R-1 12-18

Channel								
2105:	0	0	2	0	0	0	0	1
2113:	1	0	1	3	0	1	0	1
2121:	0	0	1	1	1	3	1	0
2129:	1	1	0	2	1	1	0	0
2137:	0	1	2	1	0	0	0	1
2145:	1	0	1	0	1	0	1	0
2153:	0	2	2	1	0	1	0	0
2161:	1	2	1	1	1	0	3	1
2169:	1	1	1	1	0	2	0	1
2177:	0	1	0	0	0	0	0	3
2185:	1	1	0	0	1	1	1	0
2193:	1	1	2	2	2	1	5	1
2201:	3	2	4	0	3	2	1	2
2209:	2	0	2	2	1	2	1	0
2217:	1	1	0	1	1	0	0	2
2225:	0	2	0	1	1	2	2	0
2233:	2	3	0	0	0	1	2	0
2241:	4	2	1	1	0	1	1	0
2249:	1	0	2	0	0	2	1	1
2257:	0	0	1	2	1	0	0	1
2265:	0	0	0	0	1	0	0	0
2273:	0	0	1	2	0	0	2	0
2281:	0	2	0	2	0	0	1	2
2289:	2	1	1	0	0	1	0	0
2297:	0	0	1	0	1	0	0	0
2305:	0	1	1	4	0	1	1	2
2313:	1	1	4	1	0	2	0	0
2321:	1	0	0	0	1	1	1	1
2329:	3	0	1	0	0	0	1	1
2337:	0	2	1	0	1	2	0	0
2345:	3	0	0	1	1	2	1	2
2353:	1	1	3	1	1	1	0	1
2361:	1	3	2	1	0	0	2	0
2369:	3	0	1	1	1	1	1	0
2377:	0	0	0	1	2	0	0	1
2385:	1	0	1	1	0	1	0	1
2393:	0	1	0	0	1	2	1	2
2401:	1	1	2	0	0	2	1	1
2409:	0	1	0	0	1	3	0	1
2417:	1	0	1	1	1	1	1	2
2425:	0	1	0	0	0	1	0	1
2433:	0	0	1	2	0	0	0	0
2441:	0	1	2	0	0	2	0	2
2449:	1	2	0	1	1	1	1	1
2457:	0	2	1	1	0	0	1	0
2465:	1	0	0	0	0	1	1	2
2473:	0	1	1	0	0	0	0	0
2481:	0	1	1	2	0	1	1	0
2489:	1	1	0	0	1	0	0	2
2497:	0	1	0	0	1	1	0	0
2505:	2	1	1	1	0	0	0	0
2513:	0	1	0	0	0	0	0	0
2521:	0	0	1	0	0	0	0	1

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2529:	0	0	0	0	1	0	0	0

Sample Title: R-1 12-18

Channel								
2537:	0	0	0	0	0	0	0	0
2545:	1	0	0	1	1	0	0	1
2553:	0	0	0	0	0	0	1	0
2561:	0	0	0	0	0	0	0	1
2569:	0	0	1	0	0	0	0	0
2577:	0	2	0	0	0	0	0	0
2585:	0	0	0	0	0	0	0	1
2593:	0	1	0	0	0	1	0	3
2601:	1	1	0	0	0	1	2	6
2609:	10	8	10	7	5	2	2	1
2617:	1	0	0	0	0	0	0	1
2625:	0	0	0	0	0	0	0	0
2633:	0	0	0	1	0	1	0	0
2641:	0	1	0	0	0	0	0	0
2649:	0	0	0	0	0	0	0	1
2657:	0	0	0	0	0	0	0	0
2665:	0	1	1	1	0	0	0	1
2673:	0	0	0	1	0	0	0	0
2681:	1	0	0	0	0	0	0	1
2689:	0	0	0	1	0	1	1	0
2697:	0	0	0	1	0	0	0	0
2705:	0	1	0	0	0	1	0	0
2713:	0	0	0	0	0	0	0	0
2721:	0	0	0	0	0	0	0	1
2729:	1	0	0	1	0	0	0	0
2737:	0	0	0	1	0	0	0	0
2745:	0	1	0	1	1	0	0	1
2753:	1	0	1	0	1	0	0	0
2761:	0	0	0	1	0	0	0	0
2769:	0	0	0	1	0	0	0	0
2777:	0	0	1	0	0	0	1	0
2785:	1	1	0	0	0	0	0	0
2793:	0	0	0	1	1	0	0	1
2801:	0	0	0	1	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	1	0	0	0	0	0	0	1
2825:	0	0	1	0	0	0	1	0
2833:	0	0	0	1	0	0	1	0
2841:	0	0	1	0	0	0	1	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	0	0	0	1
2865:	0	0	1	0	0	0	0	0
2873:	1	0	0	1	0	0	0	0
2881:	0	0	1	0	0	0	0	0
2889:	0	2	0	0	0	0	0	0
2897:	0	0	0	0	1	0	0	0
2905:	0	0	0	1	0	1	0	0
2913:	0	0	1	0	0	0	0	0
2921:	0	0	0	1	0	0	0	0
2929:	0	0	0	0	0	1	0	1
2937:	0	0	0	0	0	0	0	1
2945:	0	0	0	0	0	0	0	0
2953:	1	0	0	0	0	0	0	0

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2961:	0	0	0	0	0	0	0	0

Sample Title: R-1 12-18

Channel								
2969:	0	0	0	1	0	0	0	1
2977:	0	0	1	0	1	0	0	0
2985:	0	1	0	0	0	0	0	0
2993:	0	0	0	0	0	0	0	0
3001:	0	0	0	1	0	0	1	0
3009:	0	0	0	0	0	0	1	0
3017:	0	1	0	0	0	1	0	2
3025:	1	0	1	0	0	0	0	0
3033:	0	0	0	0	0	0	1	0
3041:	0	0	0	0	0	0	0	0
3049:	0	0	0	0	0	1	0	0
3057:	1	1	0	0	1	0	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	1	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	0	0	0	0	0	0	0	1
3097:	0	0	0	0	0	0	0	0
3105:	1	0	0	0	0	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	0	0	0	0	0	0	0	0
3129:	0	0	0	0	0	0	0	1
3137:	0	0	0	2	0	0	0	0
3145:	0	0	0	1	0	0	0	0
3153:	0	0	0	0	0	0	0	0
3161:	0	0	0	0	0	0	1	0
3169:	0	0	0	0	0	0	0	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	1	0	1	0	1
3193:	1	0	0	0	0	0	0	0
3201:	1	0	0	4	0	0	1	0
3209:	0	0	0	0	0	0	0	0
3217:	1	0	0	0	0	0	0	0
3225:	0	0	0	0	0	1	0	0
3233:	0	0	1	1	0	0	1	0
3241:	0	0	0	0	0	1	0	0
3249:	0	0	0	0	0	0	0	0
3257:	0	0	0	0	0	0	0	0
3265:	0	0	0	0	0	0	0	0
3273:	0	0	0	0	0	1	0	0
3281:	1	0	0	0	0	0	0	0
3289:	0	0	0	0	0	1	0	0
3297:	0	0	0	0	0	0	0	1
3305:	0	0	0	0	0	0	0	2
3313:	0	0	1	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	1	1	0	0	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	0	1
3369:	0	0	0	0	0	0	0	0
3377:	0	1	1	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0

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3393:	0	1	0	0	1	0	1	0

Sample Title: R-1 12-18

Channel								
3401:	0	1	0	0	0	0	0	0
3409:	0	0	0	1	0	0	0	1
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	1	0	0	0
3433:	0	0	0	0	0	0	1	0
3441:	0	0	0	1	0	0	0	0
3449:	0	1	0	0	0	0	0	0
3457:	1	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	1	0
3473:	0	1	1	0	0	0	0	0
3481:	0	0	0	0	0	0	0	2
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	2	0	0	0	0	0	1	0
3521:	0	1	0	0	1	0	0	0
3529:	1	0	0	0	0	0	1	0
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	1	0	0	0	1	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	1	0	0	0	0	0	0
3577:	0	1	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	1	0	1	0	0	0	0	0
3609:	0	0	0	0	0	1	0	0
3617:	0	0	1	0	0	0	0	0
3625:	0	0	0	1	0	0	0	0
3633:	0	0	0	0	1	0	0	0
3641:	0	0	0	0	0	0	1	0
3649:	0	0	0	0	0	1	0	1
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	1	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	2	0
3689:	0	0	0	0	0	0	0	0
3697:	0	1	0	0	0	0	1	0
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	0	1	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	1	0	0	0	0	1
3745:	0	0	0	0	0	1	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	0	1	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	1	0	0	0	0	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001607

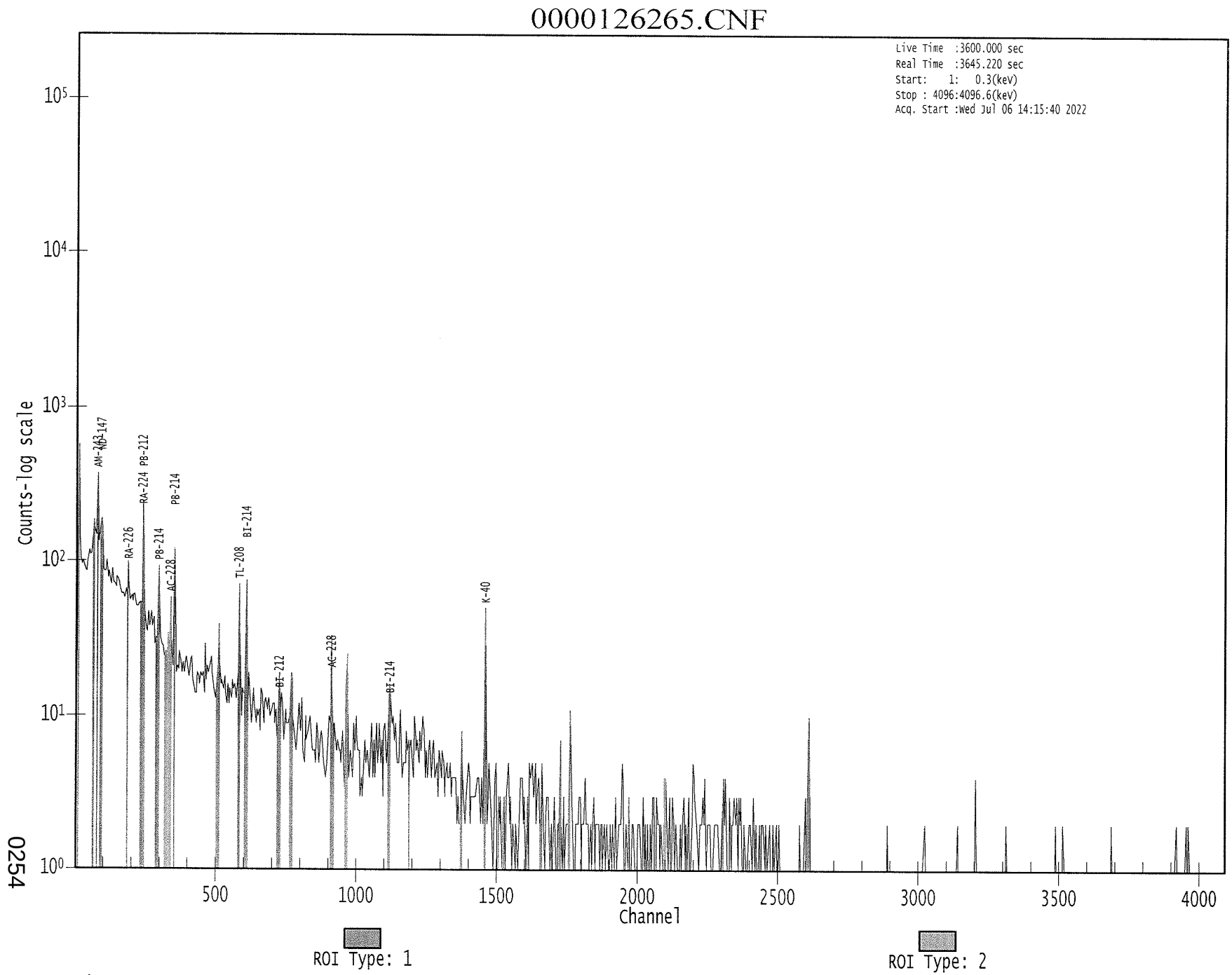
3825:	1	0	0	0	0	1	0	0

Sample Title: R-1 12-18

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	1	0	1	0
3849:	0	0	0	0	0	0	0	0
3857:	1	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	1
3873:	0	0	0	0	0	0	1	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	1	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	1	1
3913:	1	0	0	0	0	0	2	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	1	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	1	0	0	0
3953:	0	2	0	0	0	0	0	0
3961:	2	0	0	0	0	0	1	0
3969:	1	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	1	0	1	0
4009:	0	0	0	0	0	0	1	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	1	0	0
4033:	0	0	0	1	0	0	0	0
4041:	0	0	0	0	0	1	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	1	0	0	1	0	0
4065:	0	0	0	0	0	1	0	1
4073:	0	0	0	0	0	0	1	0
4081:	0	1	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001608

BP/Castex-Ltd Adm-Apx E-001609



0254

KB 7/6/22

Apex-Gamma

Analysis Report for 2206038-07
R-1 18-24

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-07
Sample Description	: R-1 18-24
Sample Type	: SOIL
Sample Size	: 4.339E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:43:57AM
Acquisition Started	: 7/6/2022 2:15:49PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3602.3 seconds
Dead Time	: 0.06 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126266

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

Analysis Report for 2206038-07

R-1 18-24

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 3:16:12PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	63.36	63.30	0.0000	0.00
2	76.09	76.02	0.0000	0.00
3	86.87	86.80	0.0000	0.00
4	92.99	92.92	0.0000	0.00
5	127.74	127.64	0.0000	0.00
6	185.57	185.43	0.0000	0.00
7	239.06	238.89	0.0000	0.00
8	295.09	294.89	0.0000	0.00
9	327.09	326.87	0.0000	0.00
10	338.72	338.49	0.0000	0.00
11	351.79	351.55	0.0000	0.00
12	463.89	463.59	0.0000	0.00
13	583.06	582.69	0.0000	0.00
14	609.33	608.95	0.0000	0.00
15	726.91	726.46	0.0000	0.00
16	765.84	765.38	0.0000	0.00
17	795.78	795.30	0.0000	0.00
18	911.70	911.16	0.0000	0.00
19	967.57	967.00	0.0000	0.00
20	1120.87	1120.24	0.0000	0.00
21	1155.52	1154.87	0.0000	0.00
22	1164.50	1163.85	0.0000	0.00
23	1238.63	1237.95	0.0000	0.00
24	1320.64	1319.93	0.0000	0.00
25	1335.58	1334.87	0.0000	0.00
26	1460.77	1460.01	0.0000	0.00
27	1522.74	1521.96	0.0000	0.00
28	1592.27	1591.47	0.0000	0.00
29	1764.39	1763.53	0.0000	0.00
30	1891.67	1890.78	0.0000	0.00
31	2076.77	2075.83	0.0000	0.00
32	2083.13	2082.20	0.0000	0.00
33	2101.60	2100.67	0.0000	0.00
34	2199.96	2199.00	0.0000	0.00
35	2309.50	2308.52	0.0000	0.00
36	2614.21	2613.20	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001611

Analysis Report for 2206038-07

R-1 18-24

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 3:16:12PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
1	63.36	57 -	68	63.30	1.95E+02	126.33	1.90E+03	2.99
2	76.09	70 -	82	76.02	8.88E+02	151.90	2.28E+03	4.05
3	86.87	83 -	90	86.80	1.21E+02	96.29	1.47E+03	2.18
4	92.99	90 -	97	92.92	2.06E+02	87.25	1.06E+03	3.02
5	127.74	123 -	132	127.64	8.25E+01	81.87	9.11E+02	4.38
6	185.57	180 -	190	185.43	1.35E+02	78.93	7.59E+02	1.83
7	239.06	232 -	246	238.89	7.07E+02	99.02	7.31E+02	2.82
8	295.09	290 -	299	294.89	1.69E+02	60.47	4.28E+02	2.59
9	327.09	322 -	331	326.87	5.90E+01	45.75	2.66E+02	1.60
10	338.72	333 -	344	338.49	1.21E+02	54.55	3.10E+02	2.88
11	351.79	345 -	358	351.55	3.02E+02	63.57	3.13E+02	2.92
12	463.89	457 -	468	463.59	4.26E+01	41.28	1.91E+02	3.67
13	583.06	578 -	589	582.69	1.35E+02	46.78	2.12E+02	2.37
14	609.33	602 -	615	608.95	1.64E+02	50.46	2.10E+02	2.49
15	726.91	723 -	729	726.46	2.44E+01	21.47	6.51E+01	2.78
16	765.84	749 -	779	765.38	8.15E+01	62.03	1.99E+02	21.98
17	795.78	789 -	799	795.30	2.55E+01	29.64	1.01E+02	5.56
18	911.70	907 -	917	911.16	9.57E+01	27.57	5.25E+01	2.55
19	967.57	962 -	973	967.00	5.64E+01	28.14	6.71E+01	2.37
20	1120.87	1115 -	1126	1120.24	4.35E+01	26.38	6.30E+01	3.37
21	1155.52	1152 -	1160	1154.87	1.40E+01	17.39	3.20E+01	2.41
22	1164.50	1160 -	1168	1163.85	1.20E+01	12.85	1.80E+01	1.95
23	1238.63	1233 -	1243	1237.95	1.80E+01	21.87	5.19E+01	2.84
24	1320.64	1315 -	1326	1319.93	1.28E+01	14.00	1.85E+01	6.89
25	1335.58	1331 -	1340	1334.87	1.40E+01	14.00	2.00E+01	1.58
26	1460.77	1453 -	1466	1460.01	1.55E+02	29.53	2.80E+01	3.19
27	1522.74	1518 -	1525	1521.96	7.00E+00	9.80	1.00E+01	1.90
28	1592.27	1589 -	1594	1591.47	8.80E+00	7.00	2.40E+00	2.29
29	1764.39	1759 -	1766	1763.53	1.40E+01	12.33	1.60E+01	3.10
30	1891.67	1888 -	1893	1890.78	9.00E+00	6.00	0.00E+00	2.36
31	2076.77	2073 -	2078	2075.83	6.00E+00	4.90	0.00E+00	2.74
32	2083.13	2079 -	2084	2082.20	5.00E+00	4.47	0.00E+00	2.75
33	2101.60	2095 -	2104	2100.67	1.10E+01	10.68	1.00E+01	2.99
34	2199.96	2195 -	2201	2199.00	8.00E+00	5.66	0.00E+00	1.16
35	2309.50	2304 -	2311	2308.52	6.89E+00	7.21	4.22E+00	2.53
36	2614.21	2608 -	2618	2613.20	4.00E+01	12.65	0.00E+00	4.09

BP/Castex-Ltd Adm-Apx E-001612

Analysis Report for 2206038-07

R-1 18-24

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 3:16:12PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
1	63.36	57 -	68	1.95E+02	126.33	1.90E+03	1.01E+02
2	76.09	70 -	82	8.88E+02	151.90	2.28E+03	1.15E+02
3	86.87	83 -	90	1.21E+02	96.29	1.47E+03	7.71E+01
4	92.99	90 -	97	2.06E+02	87.25	1.06E+03	6.77E+01
5	127.74	123 -	132	8.25E+01	81.87	9.11E+02	6.56E+01
6	185.57	180 -	190	1.35E+02	78.93	7.59E+02	6.20E+01
7	239.06	232 -	246	7.07E+02	99.02	7.31E+02	6.87E+01
8	295.09	290 -	299	1.69E+02	60.47	4.28E+02	4.49E+01
9	327.09	322 -	331	5.90E+01	45.75	2.66E+02	3.54E+01
10	338.72	333 -	344	1.21E+02	54.55	3.10E+02	4.10E+01
11	351.79	345 -	358	3.02E+02	63.57	3.13E+02	4.37E+01
12	463.89	457 -	468	4.26E+01	41.28	1.91E+02	3.22E+01
13	583.06	578 -	589	1.35E+02	46.78	2.12E+02	3.34E+01
14	609.33	602 -	615	1.64E+02	50.46	2.10E+02	3.57E+01
15	726.91	723 -	729	2.44E+01	21.47	6.51E+01	1.57E+01
16	765.84	749 -	779	8.15E+01	62.03	1.99E+02	4.88E+01
17	795.78	789 -	799	2.55E+01	29.64	1.01E+02	2.29E+01
18	911.70	907 -	917	9.57E+01	27.57	5.25E+01	1.60E+01
19	967.57	962 -	973	5.64E+01	28.14	6.71E+01	1.96E+01
20	1120.87	1115 -	1126	4.35E+01	26.38	6.30E+01	1.88E+01
21	1155.52	1152 -	1160	1.40E+01	17.39	3.20E+01	1.29E+01
22	1164.50	1160 -	1168	1.20E+01	12.85	1.80E+01	8.89E+00
23	1238.63	1233 -	1243	1.80E+01	21.87	5.19E+01	1.66E+01
24	1320.64	1315 -	1326	1.28E+01	14.00	1.85E+01	9.90E+00
25	1335.58	1331 -	1340	1.40E+01	14.00	2.00E+01	9.73E+00
26	1460.77	1453 -	1466	1.55E+02	29.53	2.80E+01	1.30E+01
27	1522.74	1518 -	1525	7.00E+00	9.80	1.00E+01	6.78E+00
28	1592.27	1589 -	1594	8.80E+00	7.00	2.40E+00	3.05E+00
29	1764.39	1759 -	1766	1.40E+01	12.33	1.60E+01	8.05E+00
30	1891.67	1888 -	1893	9.00E+00	6.00	0.00E+00	0.00E+00
31	2076.77	2073 -	2078	6.00E+00	4.90	0.00E+00	0.00E+00

BP/Castex-Ltd Adm-Apx E-001613

Analysis Report for 2206038-07

R-1 18-24

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
32	2083.13	2079 -	2084	5.00E+00	4.47	0.00E+00	0.00E+00
33	2101.60	2095 -	2104	1.10E+01	10.68	1.00E+01	6.88E+00
34	2199.96	2195 -	2201	8.00E+00	5.66	0.00E+00	0.00E+00
35	2309.50	2304 -	2311	6.89E+00	7.21	4.22E+00	4.06E+00
36	2614.21	2608 -	2618	4.00E+01	12.65	0.00E+00	0.00E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 3:16:12PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
1	63.36	57 -	68	63.30	1.95E+02	126.33	1.90E+03	TH-234 TH-230
2	76.09	70 -	82	76.02	8.88E+02	151.90	2.28E+03	AM-243 TI-44
3	86.87	83 -	90	86.80	1.21E+02	96.29	1.47E+03	NP-237 EU-155 SN-126 CD-109 LU-176
4	92.99	90 -	97	92.92	2.06E+02	87.25	1.06E+03	GA-67 ND-147
5	127.74	123 -	132	127.64	8.25E+01	81.87	9.11E+02	HF-172
6	185.57	180 -	190	185.43	1.35E+02	78.93	7.59E+02	RA-226 HO-166M
7	239.06	232 -	246	238.89	7.07E+02	99.02	7.31E+02	PB-212 RA-224
8	295.09	290 -	299	294.89	1.69E+02	60.47	4.28E+02	PB-214 CE-143
9	327.09	322 -	331	326.87	5.90E+01	45.75	2.66E+02	LA-140
10	338.72	333 -	344	338.49	1.21E+02	54.55	3.10E+02	AC-228 CS-136

BP/Castex-Ltd Adm-Apx E-001614

Analysis Report for 2206038-07

R-1 18-24

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
11	351.79	345 -	358	351.55	3.02E+02	63.57	3.13E+02	PB-214
12	463.89	457 -	468	463.59	4.26E+01	41.28	1.91E+02	SB-125
13	583.06	578 -	589	582.69	1.35E+02	46.78	2.12E+02	TL-208
14	609.33	602 -	615	608.95	1.64E+02	50.46	2.10E+02	BI-214
15	726.91	723 -	729	726.46	2.44E+01	21.47	6.51E+01	BI-212
16	765.84	749 -	779	765.38	8.15E+01	62.03	1.99E+02	NB-95
								AG-110M
17	795.78	789 -	799	795.30	2.55E+01	29.64	1.01E+02	CS-134
18	911.70	907 -	917	911.16	9.57E+01	27.57	5.25E+01	TL-204
								AC-228
19	967.57	962 -	973	967.00	5.64E+01	28.14	6.71E+01	AC-228
20	1120.87	1115 -	1126	1120.24	4.35E+01	26.38	6.30E+01	SC-46
								TA-182
								BI-214
21	1155.52	1152 -	1160	1154.87	1.40E+01	17.39	3.20E+01	EU-156
22	1164.50	1160 -	1168	1163.85	1.20E+01	12.85	1.80E+01	.....
23	1238.63	1233 -	1243	1237.95	1.80E+01	21.87	5.19E+01	CO-56
24	1320.64	1315 -	1326	1319.93	1.28E+01	14.00	1.85E+01	.....
25	1335.58	1331 -	1340	1334.87	1.40E+01	14.00	2.00E+01	.....
26	1460.77	1453 -	1466	1460.01	1.55E+02	29.53	2.80E+01	K-40
27	1522.74	1518 -	1525	1521.96	7.00E+00	9.80	1.00E+01	.....
28	1592.27	1589 -	1594	1591.47	8.80E+00	7.00	2.40E+00	.....
29	1764.39	1759 -	1766	1763.53	1.40E+01	12.33	1.60E+01	BI-214
30	1891.67	1888 -	1893	1890.78	9.00E+00	6.00	0.00E+00	.....
31	2076.77	2073 -	2078	2075.83	6.00E+00	4.90	0.00E+00	.....
32	2083.13	2079 -	2084	2082.20	5.00E+00	4.47	0.00E+00	.....
33	2101.60	2095 -	2104	2100.67	1.10E+01	10.68	1.00E+01	.....
34	2199.96	2195 -	2201	2199.00	8.00E+00	5.66	0.00E+00	.....
35	2309.50	2304 -	2311	2308.52	6.89E+00	7.21	4.22E+00	.....
36	2614.21	2608 -	2618	2613.20	4.00E+01	12.65	0.00E+00	TL-208

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 3:16:12PM

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty

BP/Castex-Ltd Adm-Apx E-001615

Analysis Report for 2206038-07

R-1 18-24

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
1	63.36	1.95E+02	126.33	2.40E-02	1.79E-03
2	76.09	8.88E+02	151.90	2.51E-02	1.97E-03
3	86.87	1.21E+02	96.29	2.51E-02	2.13E-03
4	92.99	2.06E+02	87.25	2.49E-02	2.08E-03
5	127.74	8.25E+01	81.87	2.19E-02	1.71E-03
6	185.57	1.35E+02	78.93	1.68E-02	1.56E-03
7	239.06	7.07E+02	99.02	1.34E-02	1.33E-03
8	295.09	1.69E+02	60.47	1.09E-02	1.10E-03
9	327.09	5.90E+01	45.75	9.81E-03	9.75E-04
10	338.72	1.21E+02	54.55	9.46E-03	9.29E-04
11	351.79	3.02E+02	63.57	9.10E-03	8.78E-04
12	463.89	4.26E+01	41.28	6.81E-03	6.38E-04
13	583.06	1.35E+02	46.78	5.36E-03	5.02E-04
14	609.33	1.64E+02	50.46	5.12E-03	4.72E-04
15	726.91	2.44E+01	21.47	4.27E-03	3.80E-04
16	765.84	8.15E+01	62.03	4.05E-03	3.61E-04
17	795.78	2.55E+01	29.64	3.89E-03	3.46E-04
18	911.70	9.57E+01	27.57	3.40E-03	2.96E-04
19	967.57	5.64E+01	28.14	3.21E-03	2.95E-04
20	1120.87	4.35E+01	26.38	2.78E-03	2.93E-04
21	1155.52	1.40E+01	17.39	2.70E-03	2.93E-04
22	1164.50	1.20E+01	12.85	2.68E-03	2.92E-04
23	1238.63	1.80E+01	21.87	2.53E-03	2.58E-04
24	1320.64	1.28E+01	14.00	2.39E-03	2.16E-04
25	1335.58	1.40E+01	14.00	2.36E-03	2.09E-04
26	1460.77	1.55E+02	29.53	2.18E-03	1.92E-04
27	1522.74	7.00E+00	9.80	2.10E-03	1.84E-04
28	1592.27	8.80E+00	7.00	2.02E-03	1.75E-04
29	1764.39	1.40E+01	12.33	1.85E-03	1.52E-04
30	1891.67	9.00E+00	6.00	1.75E-03	1.43E-04
31	2076.77	6.00E+00	4.90	1.62E-03	1.43E-04
32	2083.13	5.00E+00	4.47	1.62E-03	1.43E-04
33	2101.60	1.10E+01	10.68	1.61E-03	1.43E-04
34	2199.96	8.00E+00	5.66	1.55E-03	1.43E-04
35	2309.50	6.89E+00	7.21	1.49E-03	1.43E-04
36	2614.21	4.00E+01	12.65	1.36E-03	1.43E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 3:16:12PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126203.CNF

BP/Castex-Ltd Adm-Apx E-001616

Analysis Report for 2206038-07

R-1 18-24

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	63.36	1.95E+02	126.33	5.56E+01	1.51E+01	1.40E+02	1.27E+02
2	76.09	8.88E+02	151.90	2.03E+01	5.84E+00	8.67E+02	1.52E+02
3	86.87	1.21E+02	96.29			1.21E+02	9.63E+01
4	92.99	2.06E+02	87.25	6.50E+01	7.53E+00	1.41E+02	8.76E+01
5	127.74	8.25E+01	81.87			8.25E+01	8.19E+01
6	185.57	1.35E+02	78.93	1.96E+01	3.17E+00	1.15E+02	7.90E+01
7	239.06	7.07E+02	99.02	8.87E+00	6.28E+00	6.99E+02	9.92E+01
8	295.09	1.69E+02	60.47			1.69E+02	6.05E+01
9	327.09	5.90E+01	45.75			5.90E+01	4.57E+01
10	338.72	1.21E+02	54.55			1.21E+02	5.46E+01
11	351.79	3.02E+02	63.57			3.02E+02	6.36E+01
12	463.89	4.26E+01	41.28			4.26E+01	4.13E+01
13	583.06	1.35E+02	46.78	3.49E+00	3.56E+00	1.31E+02	4.69E+01
14	609.33	1.64E+02	50.46	4.60E+00	3.40E+00	1.59E+02	5.06E+01
15	726.91	2.44E+01	21.47			2.44E+01	2.15E+01
16	765.84	8.15E+01	62.03			8.15E+01	6.20E+01
17	795.78	2.55E+01	29.64			2.55E+01	2.96E+01
18	911.70	9.57E+01	27.57			9.57E+01	2.76E+01
19	967.57	5.64E+01	28.14			5.64E+01	2.81E+01
20	1120.87	4.35E+01	26.38			4.35E+01	2.64E+01
21	1155.52	1.40E+01	17.39			1.40E+01	1.74E+01
22	1164.50	1.20E+01	12.85			1.20E+01	1.28E+01
23	1238.63	1.80E+01	21.87			1.80E+01	2.19E+01
24	1320.64	1.28E+01	14.00			1.28E+01	1.40E+01
25	1335.58	1.40E+01	14.00			1.40E+01	1.40E+01
26	1460.77	1.55E+02	29.53	2.23E+00	1.49E+00	1.53E+02	2.96E+01
27	1522.74	7.00E+00	9.80			7.00E+00	9.80E+00
28	1592.27	8.80E+00	7.00			8.80E+00	7.00E+00
29	1764.39	1.40E+01	12.33			1.40E+01	1.23E+01
30	1891.67	9.00E+00	6.00			9.00E+00	6.00E+00
31	2076.77	6.00E+00	4.90			6.00E+00	4.90E+00
32	2083.13	5.00E+00	4.47			5.00E+00	4.47E+00
33	2101.60	1.10E+01	10.68			1.10E+01	1.07E+01
34	2199.96	8.00E+00	5.66			8.00E+00	5.66E+00
35	2309.50	6.89E+00	7.21			6.89E+00	7.21E+00
36	2614.21	4.00E+01	12.65	2.23E+00	1.06E+00	3.78E+01	1.27E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001617

Analysis Report for 2206038-07

R-1 18-24

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 3:16:12PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126203.CNF

Corrected Area is: Original * Peak Ratio - Background

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
1	63.36	1.95E+02	126.33	5.56E+01	1.51E+01	1.40E+02	1.27E+02
2	76.09	8.88E+02	151.90	2.03E+01	5.84E+00	8.67E+02	1.52E+02
3	86.87	1.21E+02	96.29			1.21E+02	9.63E+01
4	92.99	2.06E+02	87.25	6.50E+01	7.53E+00	1.41E+02	8.76E+01
5	127.74	8.25E+01	81.87			8.25E+01	8.19E+01
6	185.57	1.35E+02	78.93	1.96E+01	3.17E+00	1.15E+02	7.90E+01
7	239.06	7.07E+02	99.02	8.87E+00	6.28E+00	6.99E+02	9.92E+01
8	295.09	1.69E+02	60.47			1.69E+02	6.05E+01
9	327.09	5.90E+01	45.75			5.90E+01	4.57E+01
10	338.72	1.21E+02	54.55			1.21E+02	5.46E+01
11	351.79	3.02E+02	63.57			3.02E+02	6.36E+01
12	463.89	4.26E+01	41.28			4.26E+01	4.13E+01
13	583.06	1.35E+02	46.78	3.49E+00	3.56E+00	1.31E+02	4.69E+01
14	609.33	1.64E+02	50.46	4.60E+00	3.40E+00	1.59E+02	5.06E+01
15	726.91	2.44E+01	21.47			2.44E+01	2.15E+01
16	765.84	8.15E+01	62.03			8.15E+01	6.20E+01
17	795.78	2.55E+01	29.64			2.55E+01	2.96E+01
18	911.70	9.57E+01	27.57			9.57E+01	2.76E+01
19	967.57	5.64E+01	28.14			5.64E+01	2.81E+01
20	1120.87	4.35E+01	26.38			4.35E+01	2.64E+01
21	1155.52	1.40E+01	17.39			1.40E+01	1.74E+01
22	1164.50	1.20E+01	12.85			1.20E+01	1.28E+01
23	1238.63	1.80E+01	21.87			1.80E+01	2.19E+01
24	1320.64	1.28E+01	14.00			1.28E+01	1.40E+01
25	1335.58	1.40E+01	14.00			1.40E+01	1.40E+01
26	1460.77	1.55E+02	29.53	2.23E+00	1.49E+00	1.53E+02	2.96E+01
27	1522.74	7.00E+00	9.80			7.00E+00	9.80E+00
28	1592.27	8.80E+00	7.00			8.80E+00	7.00E+00
29	1764.39	1.40E+01	12.33			1.40E+01	1.23E+01
30	1891.67	9.00E+00	6.00			9.00E+00	6.00E+00
31	2076.77	6.00E+00	4.90			6.00E+00	4.90E+00
32	2083.13	5.00E+00	4.47			5.00E+00	4.47E+00
33	2101.60	1.10E+01	10.68			1.10E+01	1.07E+01
34	2199.96	8.00E+00	5.66			8.00E+00	5.66E+00
35	2309.50	6.89E+00	7.21			6.89E+00	7.21E+00
36	2614.21	4.00E+01	12.65	2.23E+00	1.06E+00	3.78E+01	1.27E+01

BP/Castex-Ltd Adm-Apx E-001618

Analysis Report for 2206038-07

R-1 18-24

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	1.000	1460.81	*	10.67	1.14E+01	2.42E+00
GA-67	0.428	93.31	*	35.70	7.10E+01	4.44E+01
		208.95		2.24		
		300.22		16.00		
NB-95	0.997	765.79	*	99.81	5.85E-01	4.48E-01
CD-109	0.966	88.03	*	3.72	2.33E+00	1.86E+00
SN-126	0.988	87.57	*	37.00	2.25E-01	1.80E-01
ND-147	0.632	91.11	*	28.90	1.77E+00	1.11E+00
		531.02		13.10		
EU-155	0.365	86.50	*	30.90	2.72E-01	2.18E-01
		105.30		20.70		
HF-172	0.408	67.35		5.31		
		125.82	*	11.30	5.92E-01	5.89E-01
TL-208	0.884	583.14	*	30.22	1.40E+00	5.18E-01
		860.37		4.48		
		2614.66	*	35.85	1.34E+00	4.70E-01
BI-212	0.779	727.17	*	11.80	8.40E-01	7.41E-01
		1620.62		2.75		
PB-212	0.893	238.63	*	44.60	2.02E+00	3.51E-01
		300.09		3.41		
BI-214	0.935	609.31	*	46.30	1.16E+00	3.84E-01
		1120.29	*	15.10	1.79E+00	1.10E+00
		1764.49	*	15.80	8.28E-01	7.32E-01
		2204.22		4.98		
PB-214	1.000	295.21	*	19.19	1.40E+00	5.20E-01
		351.92	*	37.19	1.55E+00	3.58E-01
RA-224	0.910	240.98	*	3.95	2.29E+01	3.96E+00
RA-226	0.989	186.21	*	3.28	3.61E+00	2.50E+00
AC-228	0.976	338.32	*	11.40	1.94E+00	8.96E-01
		911.07	*	27.70	1.76E+00	5.29E-01
		969.11	*	16.60	1.84E+00	9.31E-01
TH-234	1.000	63.29	*	3.80	2.65E+00	2.43E+00
NP-237	0.997	86.50	*	12.60	6.61E-01	5.29E-01
AM-243	0.950	74.67	*	66.00	9.04E-01	1.74E-01

BP/Castex-Ltd Adm-Apx E-001619

Analysis Report for 2206038-07

R-1 18-24

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 3:16:12PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
9	327.09	1.63954E-02	38.76	Sum	
12	463.89	1.18297E-02	48.46	Tol.	SB-125
17	795.78	7.07420E-03	58.20	Sum	
21	1155.52	3.88889E-03	62.09	Sum	
22	1164.50	3.33333E-03	53.52	Sum	
23	1238.63	5.01263E-03	60.61	Tol.	CO-56
24	1320.64	3.54798E-03	54.80	Sum	
25	1335.58	3.88889E-03	50.00	Sum	
27	1522.74	1.94444E-03	69.99	Sum	
28	1592.27	2.44444E-03	39.77	D-Esc	
30	1891.67	2.50000E-03	33.33	Sum	
31	2076.77	1.66667E-03	40.82		
32	2083.13	1.38889E-03	44.72		
33	2101.60	3.05556E-03	48.53	S-Esc	
34	2199.96	2.22222E-03	35.36		
35	2309.50	1.91358E-03	52.34		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001620

Analysis Report for 2206038-07

R-1 18-24

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	1.00	1460.81	*	10.67	1.14E+01	2.42E+00
GA-67	0.42	93.31	*	35.70	7.10E+01	4.44E+01
		208.95		2.24		
		300.22		16.00		
NB-95	0.99	765.79	*	99.81	5.85E-01	4.48E-01
CD-109	0.96	88.03	*	3.72	2.33E+00	1.86E+00
SN-126	0.98	87.57	*	37.00	2.25E-01	1.80E-01
ND-147	0.63	91.11	*	28.90	1.77E+00	1.11E+00
		531.02		13.10		
EU-155	0.36	86.50	*	30.90	2.72E-01	2.18E-01
		105.30		20.70		
HF-172	0.40	67.35		5.31		
		125.82	*	11.30	5.92E-01	5.89E-01
TL-208	0.88	583.14	*	30.22	1.40E+00	5.18E-01
		860.37		4.48		
		2614.66	*	35.85	1.34E+00	4.70E-01
BI-212	0.77	727.17	*	11.80	8.40E-01	7.41E-01
		1620.62		2.75		
PB-212	0.89	238.63	*	44.60	2.02E+00	3.51E-01
		300.09		3.41		
BI-214	0.93	609.31	*	46.30	1.16E+00	3.84E-01
		1120.29	*	15.10	1.79E+00	1.10E+00
		1764.49	*	15.80	8.28E-01	7.32E-01
		2204.22		4.98		
PB-214	1.00	295.21	*	19.19	1.40E+00	5.20E-01
		351.92	*	37.19	1.55E+00	3.58E-01
RA-224	0.91	240.98	*	3.95	2.29E+01	3.96E+00
RA-226	0.98	186.21	*	3.28	3.61E+00	2.50E+00
AC-228	0.97	338.32	*	11.40	1.94E+00	8.96E-01
		911.07	*	27.70	1.76E+00	5.29E-01
		969.11	*	16.60	1.84E+00	9.31E-01
TH-234	1.00	63.29	*	3.80	2.65E+00	2.43E+00
NP-237	0.99	86.50	*	12.60	6.61E-01	5.29E-01
AM-243	0.95	74.67	*	66.00	9.04E-01	1.74E-01

BP/Castex-Ltd Adm-Apx E-001621

Analysis Report for 2206038-07

R-1 18-24

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	1.000	1.14E+01	2.42E+00	
?	GA-67	0.428	7.10E+01	4.44E+01	
	NB-95	0.997	5.85E-01	4.48E-01	
?	CD-109	0.966	2.33E+00	1.86E+00	
?	SN-126	0.988	2.25E-01	1.80E-01	
?	ND-147	0.632	1.77E+00	1.11E+00	
?	EU-155	0.365	2.72E-01	2.18E-01	
	HF-172	0.408	5.92E-01	5.89E-01	
	TL-208	0.884	1.37E+00	3.48E-01	
	BI-212	0.779	8.40E-01	7.41E-01	
?	PB-212	0.893	2.02E+00	3.51E-01	
	BI-214	0.935	1.15E+00	3.25E-01	
	PB-214	1.000	1.50E+00	2.95E-01	
?	RA-224	0.910	2.29E+01	3.96E+00	
	RA-226	0.989	3.61E+00	2.50E+00	
	AC-228	0.976	1.81E+00	4.09E-01	
	TH-234	1.000	2.65E+00	2.43E+00	
?	NP-237	0.997	6.61E-01	5.29E-01	
	AM-243	0.950	9.04E-01	1.74E-01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-07
R-1 18-24

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 3:16:12PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
9	327.09	1.63954E-02	38.76	Sum	
12	463.89	1.18297E-02	48.46	Tol.	SB-125
17	795.78	7.07420E-03	58.20	Sum	
21	1155.52	3.88889E-03	62.09	Sum	
22	1164.50	3.33333E-03	53.52	Sum	
23	1238.63	5.01263E-03	60.61	Tol.	CO-56
24	1320.64	3.54798E-03	54.80	Sum	
25	1335.58	3.88889E-03	50.00	Sum	
27	1522.74	1.94444E-03	69.99	Sum	
28	1592.27	2.44444E-03	39.77	D-Esc	
30	1891.67	2.50000E-03	33.33	Sum	
31	2076.77	1.66667E-03	40.82		
32	2083.13	1.38889E-03	44.72		
33	2101.60	3.05556E-03	48.53	S-Esc	
34	2199.96	2.22222E-03	35.36		
35	2309.50	1.91358E-03	52.34		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	2.99E-01	1.72E+00	1.72E+00

Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NA-22	1274.54		99.94	1.81E-02	1.79E-01	1.79E-01
+	NA-24	1368.53		99.99	1.56E-03	9.69E-02	1.60E-01
		2754.09		99.86	1.32E-02		9.69E-02
+	AL-26	1808.65		99.76	-2.87E-02	1.52E-01	1.52E-01
+	K-40	1460.81	*	10.67	1.14E+01	2.19E+00	2.19E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-2.63E-01	1.08E-01	1.08E-01
		78.34		96.00	5.07E-01		1.35E-01
+	SC-46	889.25		98.98	-8.03E-02	1.76E-01	1.76E-01
		1120.51		99.90	3.22E-01		3.15E-01
+	V-48	983.52		99.98	2.68E-02	4.35E-01	4.35E-01
		1312.10		97.50	1.38E-01		5.74E-01
+	CR-51	320.08		9.83	1.80E-01	2.01E+00	2.01E+00
+	MN-54	834.83		99.97	-4.84E-02	1.55E-01	1.55E-01
+	CO-56	846.75		99.96	-4.73E-02	2.01E-01	2.01E-01
		1037.75		14.03	-4.67E-01		1.41E+00
		1238.25		67.00	2.69E-01		4.14E-01
		1771.40		15.51	-5.60E-01		1.36E+00
		2587.48		16.90	0.00E+00		2.61E-01
+	CO-57	122.06		85.51	7.62E-03	9.72E-02	9.72E-02
		136.48		10.60	5.01E-02		8.05E-01
+	CO-58	810.76		99.40	-3.23E-02	1.87E-01	1.87E-01
+	FE-59	1099.22		56.50	-2.25E-02	4.21E-01	4.21E-01
		1291.56		43.20	0.00E+00		6.29E-01
+	CO-60	1173.22		100.00	-4.60E-02	1.43E-01	1.43E-01
		1332.49		100.00	2.46E-03		1.81E-01
+	ZN-65	1115.52		50.75	-1.64E-02	4.46E-01	4.46E-01
+	GA-67	93.31	*	35.70	7.10E+01	7.11E+01	7.11E+01
		208.95		2.24	4.51E+02		1.18E+03
		300.22		16.00	3.27E+01		1.99E+02
+	SE-75	121.11		16.70	9.52E-03	1.56E-01	5.32E-01
		136.00		59.50	9.69E-03		1.56E-01
		264.65		59.80	-1.41E-01		1.90E-01
		279.53		25.20	2.32E-01		4.98E-01
		400.65		11.40	-2.89E-01		1.25E+00
+	RB-82	776.52		13.00	-4.19E-01	2.25E+00	2.25E+00
+	RB-83	520.41		46.00	-4.02E-02	3.45E-01	3.45E-01
		529.64		30.30	-1.55E-01		4.98E-01
		552.65		16.40	-3.21E-01		8.10E-01
+	KR-85	513.99		0.43	2.97E+01	3.85E+01	3.85E+01
+	SR-85	513.99		99.27	1.71E-01	2.21E-01	2.21E-01
+	Y-88	898.02		93.40	8.11E-02	1.51E-01	2.09E-01
		1836.01		99.38	-2.69E-02		1.51E-01
+	MO-93	263.06		56.72	-1.40E-01	1.33E-01	1.69E-01
		684.67		99.68	-7.33E-02		1.33E-01
		1477.11		99.08	1.52E-02		1.42E-01
+	NB-93M	16.57		9.43	3.88E+01	3.94E+01	3.94E+01

BP/Castex-Ltd Adm-Apx E-001624

Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-94	702.63		100.00	7.05E-02	1.45E-01	1.65E-01
		871.10		100.00	-3.69E-02		1.45E-01
+	NB-95	765.79	*	99.81	5.85E-01	7.20E-01	7.20E-01
+	NB-95M	235.69		25.00	3.86E+02	1.06E+02	1.06E+02
+	ZR-95	724.18		43.70	-2.76E-02	3.80E-01	5.11E-01
		756.72		55.30	1.85E-01		3.80E-01
+	MO-99	181.06		6.20	-3.80E+01	8.52E+02	1.08E+03
		739.58		12.80	-1.80E+02		8.52E+02
		778.00		4.50	-2.30E+02		2.19E+03
+	TC-99M	140.51		89.00	2.15E-02	9.21E-02	9.21E-02
+	RU-103	497.08		89.00	-1.18E-01	1.97E-01	1.97E-01
+	RU-106	621.84		9.80	-5.48E-01	1.24E+00	1.24E+00
+	AG-108M	433.93		89.90	9.98E-02	1.33E-01	1.33E-01
		614.37		90.40	-9.22E-03		1.93E-01
		722.95		90.50	1.02E-02		1.83E-01
+	CD-109	88.03	*	3.72	2.33E+00	3.02E+00	3.02E+00
+	AG-110M	657.75		93.14	-7.49E-02	1.62E-01	1.62E-01
		677.61		10.53	-1.16E-01		1.38E+00
		706.67		16.46	1.14E-01		1.02E+00
		763.93		21.98	2.43E-01		8.21E-01
		884.67		21.98	-1.00E-01		7.21E-01
		1384.27		23.94	2.86E-01		7.62E-01
+	CD-113M	263.70		0.02	-3.16E+02	4.25E+02	4.25E+02
+	SN-113	255.12		1.93	-3.13E+00	2.21E-01	5.46E+00
		391.69		64.90	-1.28E-02		2.21E-01
+	TE-123M	159.00		84.10	-2.81E-02	1.20E-01	1.20E-01
+	SB-124	602.71		97.87	1.47E-02	2.00E-01	2.00E-01
		645.85		7.26	-8.95E-01		2.33E+00
		722.78		11.10	-1.33E-01		1.89E+00
		1691.02		49.00	1.41E-01		3.73E-01
+	I-125	35.49		6.49	-1.54E-01	3.01E+00	3.01E+00
+	SB-125	176.33		6.89	-6.06E-02	3.79E-01	1.26E+00
		427.89		29.33	-9.61E-02		3.79E-01
		463.38		10.35	1.18E+00		1.32E+00
		600.56		17.80	1.79E-01		8.54E-01
		635.90		11.32	3.81E-01		1.26E+00
+	SB-126	414.70		83.30	-6.36E-02	1.39E-01	1.39E-01
		666.33		99.60	4.26E-02		1.54E-01
		695.00		99.60	4.26E-02		1.66E-01
		720.50		53.80	-1.00E-01		2.68E-01
+	SN-126	87.57	*	37.00	2.25E-01	2.92E-01	2.92E-01
+	SB-127	473.00		25.00	-1.21E+01	4.16E+01	5.22E+01
		685.00		35.70	-1.72E+01		4.16E+01
		783.80		14.70	1.38E+00		1.07E+02
+	I-129	29.78		57.00	1.97E-01	3.87E-01	3.87E-01
		33.60		13.20	-6.06E-02		1.23E+00
		39.58		7.52	-1.11E+00		1.58E+00
+	I-131	284.30		6.05	-1.29E+01	1.25E+00	1.54E+01

BP/Castex-Ltd Adm-Apx E-001625

Analysis Report for 2206038-07

R-1 18-24

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	I-131	364.48	81.20	2.83E-01	1.25E+00	1.25E+00
		636.97	7.26	-4.02E+00		1.73E+01
		722.89	1.80	-5.76E+00		8.19E+01
+	TE-132	49.72	13.10	9.76E+01	2.86E+01	1.98E+02
		228.16	88.00	1.21E+00		2.86E+01
+	BA-133	81.00	34.06	-7.03E-01	2.47E-01	3.27E-01
		302.84	18.33	1.54E-01		5.76E-01
		356.01	62.05	-1.54E-02		2.47E-01
+	I-133	529.87	86.30	8.51E+06	1.72E+08	1.72E+08
+	XE-133	81.00	38.00	-1.98E+01	9.22E+00	9.22E+00
+	CS-134	563.23	8.38	-6.76E-01	1.93E-01	1.56E+00
		569.32	15.43	-2.44E-02		9.32E-01
		604.70	97.60	2.54E-03		1.93E-01
		795.84	85.40	1.54E-01		2.19E-01
		801.93	8.73	-1.58E-01		1.84E+00
+	CS-135	268.24	16.00	3.69E-01	6.70E-01	6.70E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	1.30E+00	6.16E-01	4.73E+00
		163.89	4.61	1.64E-01		7.34E+00
		176.55	13.56	-1.20E-01		2.50E+00
		273.65	12.66	5.65E-01		3.47E+00
		340.57	48.50	1.32E+00		1.10E+00
		818.50	99.70	3.37E-01		6.16E-01
		1048.07	79.60	1.36E-01		8.30E-01
		1235.34	19.70	-5.93E-01		4.30E+00
+	CS-137	661.65	85.12	4.72E-02	1.83E-01	1.83E-01
+	LA-138	788.74	34.00	7.77E-02	2.23E-01	4.66E-01
		1435.80	66.00	3.55E-02		2.23E-01
+	CE-139	165.85	80.35	-1.88E-02	1.20E-01	1.20E-01
+	BA-140	162.64	6.70	-3.91E-01	2.09E+00	5.26E+00
		304.84	4.50	-5.20E-01		9.26E+00
		423.70	3.20	7.86E+00		1.51E+01
		437.55	2.00	-3.50E+00		2.36E+01
		537.32	25.00	4.98E-01		2.09E+00
+	LA-140	328.77	20.50	3.36E-01	7.45E-01	2.26E+00
		487.03	45.50	-8.90E-02		1.08E+00
		815.85	23.50	-1.96E-01		2.48E+00
		1596.49	95.49	2.60E-02		7.45E-01
+	CE-141	145.44	48.40	2.78E-02	3.03E-01	3.03E-01
+	CE-143	57.36	11.80	-1.22E+04	1.80E+05	4.10E+05
		293.26	42.00	3.24E+05		1.80E+05
		664.55	5.20	2.61E+04		1.56E+06
+	CE-144	133.54	10.80	-1.48E-02	8.01E-01	8.01E-01
+	PM-144	476.78	42.00	1.51E-01	1.33E-01	3.21E-01
		618.01	98.60	-3.63E-02		1.33E-01
		696.49	99.49	-1.22E-02		1.72E-01
+	PM-145	36.85	21.70	9.96E-03	3.31E-01	6.20E-01

BP/Castex-Ltd Adm-Apx E-001626

Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-145	37.36		39.70	5.31E-03	3.31E-01	3.31E-01
		42.30		15.10	-1.35E-01		7.45E-01
		72.40		2.31	-5.82E+00		5.18E+00
+	PM-146	453.90		39.94	1.53E-01	2.97E-01	2.97E-01
		735.90		14.01	7.89E-02		1.08E+00
		747.13		13.10	4.45E-01		1.16E+00
+	ND-147	91.11	*	28.90	1.77E+00	1.77E+00	1.77E+00
		531.02		13.10	7.76E-01		5.06E+00
+	PM-149	285.90		3.10	-3.54E+03	1.14E+04	1.14E+04
+	EU-152	121.78		20.50	2.98E-02	3.80E-01	3.80E-01
		244.69		5.40	-1.11E-01		2.05E+00
		344.27		19.13	-2.37E+00		5.99E-01
		778.89		9.10	-1.58E-01		1.51E+00
		964.01		10.40	-5.02E-01		1.98E+00
		1085.78		7.22	5.87E-01		2.54E+00
		1112.02		9.60	-4.11E-01		1.61E+00
		1407.95		14.94	2.97E-01		1.13E+00
+	GD-153	97.43		31.30	4.88E-02	2.90E-01	2.90E-01
		103.18		22.20	-2.90E-02		3.65E-01
+	EU-154	123.07		40.50	1.29E-02	1.96E-01	1.96E-01
		723.30		19.70	4.70E-02		8.46E-01
		873.19		11.50	-5.45E-01		1.24E+00
		996.32		10.30	3.31E-01		1.62E+00
		1004.76		17.90	1.72E-01		8.87E-01
		1274.45		35.50	5.04E-02		4.97E-01
+	EU-155	86.50	*	30.90	2.72E-01	3.53E-01	3.53E-01
		105.30		20.70	-4.57E-02		3.69E-01
+	EU-156	811.77		10.40	-7.21E-01	4.46E+00	4.46E+00
		1153.47		7.20	-1.46E+00		8.96E+00
		1230.71		8.90	3.72E-01		7.09E+00
+	HO-166M	184.41		72.60	1.43E-01	1.41E-01	1.41E-01
		280.45		29.60	1.73E-02		3.55E-01
		410.94		11.10	1.41E-01		1.11E+00
		711.69		54.10	7.49E-02		2.75E-01
+	TM-171	66.72		0.14	-1.69E+01	7.58E+01	7.58E+01
+	HF-172	67.35		5.31	-4.44E-01	9.61E-01	1.99E+00
		125.82	*	11.30	5.92E-01		9.61E-01
+	LU-172	181.53		20.60	-2.36E-01	3.90E+00	6.70E+00
		900.72		29.81	9.68E-01		7.90E+00
		1093.66		62.50	-7.97E-01		3.90E+00
+	LU-173	100.72		5.24	-2.89E-01	5.39E-01	1.46E+00
		272.11		21.20	-1.45E-02		5.39E-01
+	HF-175	343.40		84.00	-3.07E-01	1.83E-01	1.83E-01
+	LU-176	88.34		13.30	4.77E-01	1.03E-01	7.78E-01
		201.83		86.00	1.91E-02		1.14E-01
		306.78		94.00	-4.07E-02		1.03E-01
+	HF-181	133.02		41.70	-5.50E-03	2.36E-01	2.98E-01
		345.85		17.20	-4.90E+00		1.08E+00
		482.03		82.80	1.21E-01		2.36E-01

BP/Castex-Ltd Adm-Apx E-001627

Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TA-182	67.75		41.20	-7.07E-01	2.91E-01	2.91E-01
		1121.30		34.90	7.42E-01		8.46E-01
		1189.05		16.23	-2.67E-01		1.34E+00
		1221.41		26.98	-1.51E-01		8.00E-01
		1231.02		11.44	1.03E-01		1.96E+00
+	IR-192	308.46		29.68	-3.63E-02	3.21E-01	4.20E-01
		468.07		48.10	-8.34E-02		3.21E-01
+	HG-203	279.19		77.30	9.59E-02	2.06E-01	2.06E-01
+	TL-204	374.74		94.11	3.36E-03	1.23E-01	1.23E-01
		899.15		99.16	2.43E-02		1.63E-01
		911.74		91.10	4.38E-01		2.94E-01
+	BI-207	569.67		97.72	-3.77E-03	1.44E-01	1.44E-01
		1063.62		74.90	2.96E-02		1.98E-01
+	TL-208	583.14	*	30.22	1.40E+00	2.80E-01	7.48E-01
		860.37		4.48	5.17E-01		3.96E+00
		2614.66	*	35.85	1.34E+00		2.80E-01
+	BI-210M	262.00		45.00	-2.88E-02	2.13E-01	2.13E-01
		300.00		23.00	8.81E-02		5.37E-01
+	PB-210	46.50		4.25	8.36E-01	2.44E+00	2.44E+00
+	PB-211	404.84		2.90	1.69E+00	4.44E+00	4.44E+00
		831.96		2.90	-9.63E-01		4.65E+00
+	BI-212	727.17	*	11.80	8.40E-01	1.17E+00	1.17E+00
		1620.62		2.75	7.37E-01		5.50E+00
+	PB-212	238.63	*	44.60	2.02E+00	4.08E-01	4.08E-01
		300.09		3.41	5.94E-01		3.62E+00
+	BI-214	609.31	*	46.30	1.16E+00	5.46E-01	5.46E-01
		1120.29	*	15.10	1.79E+00		1.66E+00
		1764.49	*	15.80	8.28E-01		1.11E+00
		2204.22		4.98	-4.27E-01		4.51E+00
+	PB-214	295.21	*	19.19	1.40E+00	4.61E-01	7.66E-01
		351.92	*	37.19	1.55E+00		4.61E-01
+	RN-219	401.80		6.50	-7.54E-01	1.89E+00	1.89E+00
+	RA-223	323.87		3.88	-2.85E-01	2.84E+00	2.84E+00
+	RA-224	240.98	*	3.95	2.29E+01	4.61E+00	4.61E+00
+	RA-225	40.00		31.00	-8.96E-01	1.28E+00	1.28E+00
+	RA-226	186.21	*	3.28	3.61E+00	4.01E+00	4.01E+00
+	TH-227	50.10		8.40	5.82E-01	1.18E+00	1.18E+00
		236.00		11.50	5.57E+00		1.53E+00
		256.20		6.30	-6.37E-01		1.44E+00
+	AC-228	338.32	*	11.40	1.94E+00	6.37E-01	1.36E+00
		911.07	*	27.70	1.76E+00		6.37E-01
		969.11	*	16.60	1.84E+00		1.36E+00
+	TH-230	48.43		16.90	8.22E-02	5.96E-01	5.96E-01
		62.85		4.60	3.06E+00		2.27E+00
		67.67		0.37	-6.72E+01		2.77E+01
+	PA-231	283.67		1.60	-1.18E+00	4.63E+00	6.38E+00
		302.67		2.30	7.32E-01		4.63E+00
+	TH-231	25.64		14.70	-1.20E+00	1.53E+00	2.29E+00

BP/Castex-Ltd Adm-Apx E-001628

Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TH-231	84.21		6.40	-3.34E+00	1.53E+00	1.53E+00
+	PA-233	311.98		38.60	-3.90E-02	4.99E-01	4.99E-01
+	PA-234	131.20		20.40	-6.29E-02	4.06E-01	4.06E-01
		733.99		8.80	-1.96E-01		1.70E+00
		946.00		12.00	1.63E-01		1.48E+00
+	PA-234M	1001.03		0.92	2.10E+00	1.79E+01	1.79E+01
+	TH-234	63.29	*	3.80	2.65E+00	3.96E+00	3.96E+00
+	U-235	143.76		10.50	-2.10E-02	7.91E-01	7.91E-01
		163.35		4.70	-1.36E-01		1.82E+00
		205.31		4.70	-5.78E-01		2.12E+00
+	NP-237	86.50	*	12.60	6.61E-01	8.58E-01	8.58E-01
+	NP-239	106.10		22.70	1.51E+01	7.29E+02	7.29E+02
		228.18		10.70	8.36E+01		1.98E+03
		277.60		14.10	4.35E+02		1.67E+03
+	AM-241	59.54		35.90	-4.28E-02	2.68E-01	2.68E-01
+	AM-243	74.67	*	66.00	9.04E-01	2.43E-01	2.43E-01
+	CM-243	209.75		3.29	7.02E-01	7.74E-01	3.10E+00
		228.14		10.60	3.87E-02		9.17E-01
		277.60		14.00	2.01E-01		7.74E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	1.72E+00	1.72E+00	2.99E-01	8.12E-01
NA-22	1274.54	99.94	1.79E-01	1.79E-01	1.81E-02	7.98E-02
NA-24	1368.53	99.99	1.60E-01	9.69E-02	1.56E-03	6.97E-02

BP/Castex-Ltd Adm-Apx E-001629

Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	NA-24	2754.09		99.86	9.69E-02	9.69E-02	1.32E-02	3.06E-02
	AL-26	1808.65		99.76	1.52E-01	1.52E-01	-2.87E-02	6.29E-02
+	K-40	1460.81	*	10.67	2.19E+00	2.19E+00	1.14E+01	9.92E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	1.08E-01	1.08E-01	-2.63E-01	5.32E-02
		78.34		96.00	1.35E-01		5.07E-01	6.65E-02
	SC-46	889.25		98.98	1.76E-01	1.76E-01	-8.03E-02	7.94E-02
		1120.51		99.90	3.15E-01		3.22E-01	1.47E-01
	V-48	983.52		99.98	4.35E-01	4.35E-01	2.68E-02	1.94E-01
		1312.10		97.50	5.74E-01		1.38E-01	2.56E-01
	CR-51	320.08		9.83	2.01E+00	2.01E+00	1.80E-01	9.62E-01
	MN-54	834.83		99.97	1.55E-01	1.55E-01	-4.84E-02	7.09E-02
	CO-56	846.75		99.96	2.01E-01	2.01E-01	-4.73E-02	9.23E-02
		1037.75		14.03	1.41E+00		-4.67E-01	6.32E-01
		1238.25		67.00	4.14E-01		2.69E-01	1.89E-01
		1771.40		15.51	1.36E+00		-5.60E-01	5.75E-01
		2587.48		16.90	2.61E-01		0.00E+00	0.00E+00
	CO-57	122.06		85.51	9.72E-02	9.72E-02	7.62E-03	4.73E-02
		136.48		10.60	8.05E-01		5.01E-02	3.91E-01
	CO-58	810.76		99.40	1.87E-01	1.87E-01	-3.23E-02	8.55E-02
	FE-59	1099.22		56.50	4.21E-01	4.21E-01	-2.25E-02	1.89E-01
		1291.56		43.20	6.29E-01		0.00E+00	2.81E-01
	CO-60	1173.22		100.00	1.43E-01	1.43E-01	-4.60E-02	6.29E-02
		1332.49		100.00	1.81E-01		2.46E-03	8.05E-02
	ZN-65	1115.52		50.75	4.46E-01	4.46E-01	-1.64E-02	2.05E-01
+	GA-67	93.31	*	35.70	7.11E+01	7.11E+01	7.10E+01	3.49E+01
		208.95		2.24	1.18E+03		4.51E+02	5.74E+02
		300.22		16.00	1.99E+02		3.27E+01	9.60E+01
	SE-75	121.11		16.70	5.32E-01	1.56E-01	9.52E-03	2.59E-01
		136.00		59.50	1.56E-01		9.69E-03	7.57E-02
		264.65		59.80	1.90E-01		-1.41E-01	9.13E-02
		279.53		25.20	4.98E-01		2.32E-01	2.40E-01
		400.65		11.40	1.25E+00		-2.89E-01	5.96E-01
	RB-82	776.52		13.00	2.25E+00	2.25E+00	-4.19E-01	1.03E+00
	RB-83	520.41		46.00	3.45E-01	3.45E-01	-4.02E-02	1.62E-01
		529.64		30.30	4.98E-01		-1.55E-01	2.33E-01
		552.65		16.40	8.10E-01		-3.21E-01	3.74E-01
	KR-85	513.99		0.43	3.85E+01	3.85E+01	2.97E+01	1.83E+01
	SR-85	513.99		99.27	2.21E-01	2.21E-01	1.71E-01	1.06E-01
	Y-88	898.02		93.40	2.09E-01	1.51E-01	8.11E-02	9.60E-02
		1836.01		99.38	1.51E-01		-2.69E-02	5.99E-02
	MO-93	263.06		56.72	1.69E-01	1.33E-01	-1.40E-01	8.11E-02
		684.67		99.68	1.33E-01		-7.33E-02	6.13E-02
		1477.11		99.08	1.42E-01		1.52E-02	5.98E-02
	NB-93M	16.57		9.43	3.94E+01	3.94E+01	3.88E+01	1.93E+01
	NB-94	702.63		100.00	1.65E-01	1.45E-01	7.05E-02	7.73E-02
		871.10		100.00	1.45E-01		-3.69E-02	6.60E-02
+	NB-95	765.79	*	99.81	7.20E-01	7.20E-01	5.85E-01	3.50E-01
	NB-95M	235.69		25.00	1.06E+02	1.06E+02	3.86E+02	5.19E+01
	ZR-95	724.18		43.70	5.11E-01	3.80E-01	-2.76E-02	2.39E-01
		756.72		55.30	3.80E-01		1.85E-01	1.76E-01
	MO-99	181.06		6.20	1.08E+03	8.52E+02	-3.80E+01	5.22E+02
		739.58		12.80	8.52E+02		-1.80E+02	3.94E+02

Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	MO-99	778.00		4.50	2.19E+03	8.52E+02	-2.30E+02	1.00E+03
	TC-99M	140.51		89.00	9.21E-02	9.21E-02	2.15E-02	4.48E-02
	RU-103	497.08		89.00	1.97E-01	1.97E-01	-1.18E-01	9.19E-02
	RU-106	621.84		9.80	1.24E+00	1.24E+00	-5.48E-01	5.71E-01
	AG-108M	433.93		89.90	1.33E-01	1.33E-01	9.98E-02	6.28E-02
		614.37		90.40	1.93E-01		-9.22E-03	9.12E-02
		722.95		90.50	1.83E-01		1.02E-02	8.55E-02
+	CD-109	88.03	*	3.72	3.02E+00	3.02E+00	2.33E+00	1.48E+00
	AG-110M	657.75		93.14	1.62E-01	1.62E-01	-7.49E-02	7.55E-02
		677.61		10.53	1.38E+00		-1.16E-01	6.40E-01
		706.67		16.46	1.02E+00		1.14E-01	4.75E-01
		763.93		21.98	8.21E-01		2.43E-01	3.82E-01
		884.67		21.98	7.21E-01		-1.00E-01	3.28E-01
		1384.27		23.94	7.62E-01		2.86E-01	3.35E-01
	CD-113M	263.70		0.02	4.25E+02	4.25E+02	-3.16E+02	2.04E+02
	SN-113	255.12		1.93	5.46E+00	2.21E-01	-3.13E+00	2.62E+00
		391.69		64.90	2.21E-01		-1.28E-02	1.05E-01
	TE-123M	159.00		84.10	1.20E-01	1.20E-01	-2.81E-02	5.83E-02
	SB-124	602.71		97.87	2.00E-01	2.00E-01	1.47E-02	9.36E-02
		645.85		7.26	2.33E+00		-8.95E-01	1.08E+00
		722.78		11.10	1.89E+00		-1.33E-01	8.77E-01
		1691.02		49.00	3.73E-01		1.41E-01	1.53E-01
	I-125	35.49		6.49	3.01E+00	3.01E+00	-1.54E-01	1.47E+00
	SB-125	176.33		6.89	1.26E+00	3.79E-01	-6.06E-02	6.11E-01
		427.89		29.33	3.79E-01		-9.61E-02	1.79E-01
		463.38		10.35	1.32E+00		1.18E+00	6.28E-01
		600.56		17.80	8.54E-01		1.79E-01	4.01E-01
		635.90		11.32	1.26E+00		3.81E-01	5.87E-01
	SB-126	414.70		83.30	1.39E-01	1.39E-01	-6.36E-02	6.58E-02
		666.33		99.60	1.54E-01		4.26E-02	7.19E-02
		695.00		99.60	1.66E-01		4.26E-02	7.78E-02
		720.50		53.80	2.68E-01		-1.00E-01	1.24E-01
+	SN-126	87.57	*	37.00	2.92E-01	2.92E-01	2.25E-01	1.44E-01
	SB-127	473.00		25.00	5.22E+01	4.16E+01	-1.21E+01	2.46E+01
		685.00		35.70	4.16E+01		-1.72E+01	1.92E+01
		783.80		14.70	1.07E+02		1.38E+00	4.90E+01
	I-129	29.78		57.00	3.87E-01	3.87E-01	1.97E-01	1.89E-01
		33.60		13.20	1.23E+00		-6.06E-02	5.97E-01
		39.58		7.52	1.58E+00		-1.11E+00	7.71E-01
	I-131	284.30		6.05	1.54E+01	1.25E+00	-1.29E+01	7.38E+00
		364.48		81.20	1.25E+00		2.83E-01	5.91E-01
		636.97		7.26	1.73E+01		-4.02E+00	8.00E+00
		722.89		1.80	8.19E+01		-5.76E+00	3.81E+01
	TE-132	49.72		13.10	1.98E+02	2.86E+01	9.76E+01	9.66E+01
		228.16		88.00	2.86E+01		1.21E+00	1.38E+01
	BA-133	81.00		34.06	3.27E-01	2.47E-01	-7.03E-01	1.61E-01
		302.84		18.33	5.76E-01		1.54E-01	2.76E-01
		356.01		62.05	2.47E-01		-1.54E-02	1.19E-01
	I-133	529.87		86.30	1.72E+08	1.72E+08	8.51E+06	8.05E+07
	XE-133	81.00		38.00	9.22E+00	9.22E+00	-1.98E+01	4.53E+00
	CS-134	563.23		8.38	1.56E+00	1.93E-01	-6.76E-01	7.30E-01
		569.32		15.43	9.32E-01		-2.44E-02	4.38E-01
		604.70		97.60	1.93E-01		2.54E-03	9.15E-02

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Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	795.84		85.40	2.19E-01	1.93E-01	1.54E-01	1.02E-01
		801.93		8.73	1.84E+00		-1.58E-01	8.47E-01
	CS-135	268.24		16.00	6.70E-01	6.70E-01	3.69E-01	3.23E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	4.73E+00	6.16E-01	1.30E+00	2.30E+00
		163.89		4.61	7.34E+00		1.64E-01	3.56E+00
		176.55		13.56	2.50E+00		-1.20E-01	1.21E+00
		273.65		12.66	3.47E+00		5.65E-01	1.67E+00
		340.57		48.50	1.10E+00		1.32E+00	5.27E-01
		818.50		99.70	6.16E-01		3.37E-01	2.83E-01
		1048.07		79.60	8.30E-01		1.36E-01	3.76E-01
		1235.34		19.70	4.30E+00		-5.93E-01	1.96E+00
	CS-137	661.65		85.12	1.83E-01	1.83E-01	4.72E-02	8.55E-02
	LA-138	788.74		34.00	4.66E-01	2.23E-01	7.77E-02	2.15E-01
		1435.80		66.00	2.23E-01		3.55E-02	9.54E-02
	CE-139	165.85		80.35	1.20E-01	1.20E-01	-1.88E-02	5.80E-02
	BA-140	162.64		6.70	5.26E+00	2.09E+00	-3.91E-01	2.55E+00
		304.84		4.50	9.26E+00		-5.20E-01	4.42E+00
		423.70		3.20	1.51E+01		7.86E+00	7.16E+00
		437.55		2.00	2.36E+01		-3.50E+00	1.12E+01
		537.32		25.00	2.09E+00		4.98E-01	9.78E-01
	LA-140	328.77		20.50	2.26E+00	7.45E-01	3.36E-01	1.08E+00
		487.03		45.50	1.08E+00		-8.90E-02	5.07E-01
		815.85		23.50	2.48E+00		-1.96E-01	1.13E+00
		1596.49		95.49	7.45E-01		2.60E-02	3.22E-01
	CE-141	145.44		48.40	3.03E-01	3.03E-01	2.78E-02	1.47E-01
	CE-143	57.36		11.80	4.10E+05	1.80E+05	-1.22E+04	2.00E+05
		293.26		42.00	1.80E+05		3.24E+05	8.72E+04
		664.55		5.20	1.56E+06		2.61E+04	7.31E+05
	CE-144	133.54		10.80	8.01E-01	8.01E-01	-1.48E-02	3.90E-01
	PM-144	476.78		42.00	3.21E-01	1.33E-01	1.51E-01	1.51E-01
		618.01		98.60	1.33E-01		-3.63E-02	6.13E-02
		696.49		99.49	1.72E-01		-1.22E-02	8.04E-02
	PM-145	36.85		21.70	6.20E-01	3.31E-01	9.96E-03	3.02E-01
		37.36		39.70	3.31E-01		5.31E-03	1.61E-01
		42.30		15.10	7.45E-01		-1.35E-01	3.63E-01
		72.40		2.31	5.18E+00		-5.82E+00	2.55E+00
	PM-146	453.90		39.94	2.97E-01	2.97E-01	1.53E-01	1.40E-01
		735.90		14.01	1.08E+00		7.89E-02	5.01E-01
		747.13		13.10	1.16E+00		4.45E-01	5.39E-01
+	ND-147	91.11	*	28.90	1.77E+00	1.77E+00	1.77E+00	8.69E-01
		531.02		13.10	5.06E+00		7.76E-01	2.37E+00
	PM-149	285.90		3.10	1.14E+04	1.14E+04	-3.54E+03	5.45E+03
	EU-152	121.78		20.50	3.80E-01	3.80E-01	2.98E-02	1.85E-01
		244.69		5.40	2.05E+00		-1.11E-01	9.93E-01
		344.27		19.13	5.99E-01		-2.37E+00	2.86E-01
		778.89		9.10	1.51E+00		-1.58E-01	6.88E-01
		964.01		10.40	1.98E+00		-5.02E-01	9.20E-01
		1085.78		7.22	2.54E+00		5.87E-01	1.15E+00
		1112.02		9.60	1.61E+00		-4.11E-01	7.20E-01
		1407.95		14.94	1.13E+00		2.97E-01	4.95E-01

Analysis Report for 2206038-07

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	GD-153	97.43		31.30	2.90E-01	2.90E-01	4.88E-02	1.42E-01
		103.18		22.20	3.65E-01		-2.90E-02	1.78E-01
	EU-154	123.07		40.50	1.96E-01	1.96E-01	1.29E-02	9.56E-02
		723.30		19.70	8.46E-01		4.70E-02	3.95E-01
		873.19		11.50	1.24E+00		-5.45E-01	5.61E-01
		996.32		10.30	1.62E+00		3.31E-01	7.36E-01
		1004.76		17.90	8.87E-01		1.72E-01	4.01E-01
		1274.45		35.50	4.97E-01		5.04E-02	2.22E-01
+	EU-155	86.50	*	30.90	3.53E-01	3.53E-01	2.72E-01	1.74E-01
		105.30		20.70	3.69E-01		-4.57E-02	1.80E-01
	EU-156	811.77		10.40	4.46E+00	4.46E+00	-7.21E-01	2.03E+00
		1153.47		7.20	8.96E+00		-1.46E+00	4.08E+00
		1230.71		8.90	7.09E+00		3.72E-01	3.20E+00
	HO-166M	184.41		72.60	1.41E-01	1.41E-01	1.43E-01	6.86E-02
		280.45		29.60	3.55E-01		1.73E-02	1.71E-01
		410.94		11.10	1.11E+00		1.41E-01	5.26E-01
		711.69		54.10	2.75E-01		7.49E-02	1.28E-01
	TM-171	66.72		0.14	7.58E+01	7.58E+01	-1.69E+01	3.72E+01
+	HF-172	67.35		5.31	1.99E+00	9.61E-01	-4.44E-01	9.79E-01
		125.82	*	11.30	9.61E-01		5.92E-01	4.71E-01
	LU-172	181.53		20.60	6.70E+00	3.90E+00	-2.36E-01	3.25E+00
		900.72		29.81	7.90E+00		9.68E-01	3.61E+00
		1093.66		62.50	3.90E+00		-7.97E-01	1.75E+00
	LU-173	100.72		5.24	1.46E+00	5.39E-01	-2.89E-01	7.10E-01
		272.11		21.20	5.39E-01		-1.45E-02	2.60E-01
	HF-175	343.40		84.00	1.83E-01	1.83E-01	-3.07E-01	8.75E-02
	LU-176	88.34		13.30	7.78E-01	1.03E-01	4.77E-01	3.82E-01
		201.83		86.00	1.14E-01		1.91E-02	5.53E-02
		306.78		94.00	1.03E-01		-4.07E-02	4.91E-02
	HF-181	133.02		41.70	2.98E-01	2.36E-01	-5.50E-03	1.45E-01
		345.85		17.20	1.08E+00		-4.90E+00	5.18E-01
		482.03		82.80	2.36E-01		1.21E-01	1.12E-01
	TA-182	67.75		41.20	2.91E-01	2.91E-01	-7.07E-01	1.43E-01
		1121.30		34.90	8.46E-01		7.42E-01	3.95E-01
		1189.05		16.23	1.34E+00		-2.67E-01	6.05E-01
		1221.41		26.98	8.00E-01		-1.51E-01	3.60E-01
		1231.02		11.44	1.96E+00		1.03E-01	8.86E-01
	IR-192	308.46		29.68	4.20E-01	3.21E-01	-3.63E-02	2.00E-01
		468.07		48.10	3.21E-01		-8.34E-02	1.51E-01
	HG-203	279.19		77.30	2.06E-01	2.06E-01	9.59E-02	9.90E-02
	TL-204	374.74		94.11	1.23E-01	1.23E-01	3.36E-03	5.84E-02
		899.15		99.16	1.63E-01		2.43E-02	7.46E-02
		911.74		91.10	2.94E-01		4.38E-01	1.39E-01
	BI-207	569.67		97.72	1.44E-01	1.44E-01	-3.77E-03	6.76E-02
		1063.62		74.90	1.98E-01		2.96E-02	8.83E-02
+	TL-208	583.14	*	30.22	7.48E-01	2.80E-01	1.40E+00	3.60E-01
		860.37		4.48	3.96E+00		5.17E-01	1.83E+00
		2614.66	*	35.85	2.80E-01		1.34E+00	9.22E-02
	BI-210M	262.00		45.00	2.13E-01	2.13E-01	-2.88E-02	1.02E-01
		300.00		23.00	5.37E-01		8.81E-02	2.59E-01
	PB-210	46.50		4.25	2.44E+00	2.44E+00	8.36E-01	1.19E+00
	PB-211	404.84		2.90	4.44E+00	4.44E+00	1.69E+00	2.12E+00
		831.96		2.90	4.65E+00		-9.63E-01	2.11E+00

BP/Castex-Ltd Adm-Apx E-001633

Analysis Report for 2206038-07

R-1 18-24

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BI-212	727.17	*	11.80	1.17E+00	1.17E+00	8.40E-01	5.38E-01
		1620.62		2.75	5.50E+00		7.37E-01	2.32E+00
+	PB-212	238.63	*	44.60	4.08E-01	4.08E-01	2.02E+00	2.00E-01
		300.09		3.41	3.62E+00		5.94E-01	1.75E+00
+	BI-214	609.31	*	46.30	5.46E-01	5.46E-01	1.16E+00	2.63E-01
		1120.29	*	15.10	1.66E+00		1.79E+00	7.74E-01
		1764.49	*	15.80	1.11E+00		8.28E-01	4.76E-01
		2204.22		4.98	4.51E+00		-4.27E-01	1.95E+00
+	PB-214	295.21	*	19.19	7.66E-01	4.61E-01	1.40E+00	3.72E-01
		351.92	*	37.19	4.61E-01		1.55E+00	2.24E-01
	RN-219	401.80		6.50	1.89E+00	1.89E+00	-7.54E-01	8.98E-01
	RA-223	323.87		3.88	2.84E+00	2.84E+00	-2.85E-01	1.36E+00
+	RA-224	240.98	*	3.95	4.61E+00	4.61E+00	2.29E+01	2.26E+00
	RA-225	40.00		31.00	1.28E+00	1.28E+00	-8.96E-01	6.25E-01
+	RA-226	186.21	*	3.28	4.01E+00	4.01E+00	3.61E+00	1.96E+00
	TH-227	50.10		8.40	1.18E+00	1.18E+00	5.82E-01	5.76E-01
		236.00		11.50	1.53E+00		5.57E+00	7.49E-01
		256.20		6.30	1.44E+00		-6.37E-01	6.88E-01
+	AC-228	338.32	*	11.40	1.36E+00	6.37E-01	1.94E+00	6.59E-01
		911.07	*	27.70	6.37E-01		1.76E+00	2.94E-01
		969.11	*	16.60	1.36E+00		1.84E+00	6.36E-01
	TH-230	48.43		16.90	5.96E-01	5.96E-01	8.22E-02	2.91E-01
		62.85		4.60	2.27E+00		3.06E+00	1.11E+00
		67.67		0.37	2.77E+01		-6.72E+01	1.36E+01
	PA-231	283.67		1.60	6.38E+00	4.63E+00	-1.18E+00	3.06E+00
		302.67		2.30	4.63E+00		7.32E-01	2.22E+00
	TH-231	25.64		14.70	2.29E+00	1.53E+00	-1.20E+00	1.11E+00
		84.21		6.40	1.53E+00		-3.34E+00	7.50E-01
	PA-233	311.98		38.60	4.99E-01	4.99E-01	-3.90E-02	2.38E-01
	PA-234	131.20		20.40	4.06E-01	4.06E-01	-6.29E-02	1.98E-01
		733.99		8.80	1.70E+00		-1.96E-01	7.88E-01
		946.00		12.00	1.48E+00		1.63E-01	6.79E-01
	PA-234M	1001.03		0.92	1.79E+01	1.79E+01	2.10E+00	8.11E+00
+	TH-234	63.29	*	3.80	3.96E+00	3.96E+00	2.65E+00	1.95E+00
	U-235	143.76		10.50	7.91E-01	7.91E-01	-2.10E-02	3.85E-01
		163.35		4.70	1.82E+00		-1.36E-01	8.86E-01
		205.31		4.70	2.12E+00		-5.78E-01	1.03E+00
+	NP-237	86.50	*	12.60	8.58E-01	8.58E-01	6.61E-01	4.21E-01
	NP-239	106.10		22.70	7.29E+02	7.29E+02	1.51E+01	3.55E+02
		228.18		10.70	1.98E+03		8.36E+01	9.56E+02
		277.60		14.10	1.67E+03		4.35E+02	8.06E+02
	AM-241	59.54		35.90	2.68E-01	2.68E-01	-4.28E-02	1.31E-01
+	AM-243	74.67	*	66.00	2.43E-01	2.43E-01	9.04E-01	1.20E-01
	CM-243	209.75		3.29	3.10E+00	7.74E-01	7.02E-01	1.50E+00
		228.14		10.60	9.17E-01		3.87E-02	4.43E-01
		277.60		14.00	7.74E-01		2.01E-01	3.72E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

BP/Castex-Ltd Adm-Apx E-001634

Analysis Report for 2206038-07
R-1 18-24

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-1 18-24

Elapsed Live time: 3600
Elapsed Real Time: 3602

Channel								
1:	0	0	0	0	0	0	0	0
9:	31	107	107	94	110	93	87	104
17:	85	68	72	59	77	51	47	56
25:	54	66	52	49	62	48	53	54
33:	63	49	48	41	59	57	48	54
41:	49	57	44	63	60	81	79	56
49:	54	62	64	61	66	78	55	64
57:	68	70	81	83	81	112	125	134
65:	102	102	105	83	101	91	108	112
73:	125	200	243	263	304	200	142	81
81:	81	79	83	93	101	113	141	130
89:	91	106	97	129	129	106	69	60
97:	39	56	65	59	47	42	49	57
105:	57	55	51	65	58	47	62	42
113:	46	41	50	47	41	49	49	56
121:	45	47	43	45	58	54	61	70
129:	62	50	51	44	48	43	38	51
137:	52	42	44	51	44	46	39	51
145:	36	51	48	52	53	45	44	48
153:	55	42	46	57	51	42	44	41
161:	43	34	37	39	47	49	36	39
169:	32	35	41	42	32	46	38	27
177:	34	36	41	28	45	43	40	35
185:	62	91	58	34	43	35	34	34
193:	42	38	48	29	29	43	30	37
201:	34	31	38	50	40	38	37	29
209:	45	51	44	37	32	30	35	31
217:	26	28	36	31	17	24	40	23
225:	29	31	33	39	27	31	27	25
233:	30	40	23	43	97	216	228	138
241:	52	68	42	24	21	26	20	22
249:	27	27	24	24	18	19	18	21
257:	14	22	22	24	23	24	17	24
265:	26	14	19	29	32	41	31	20
273:	18	23	25	24	30	32	35	21
281:	16	18	19	12	25	26	18	19
289:	19	16	23	22	24	62	90	78
297:	27	19	22	28	29	12	18	18
305:	18	17	14	11	23	7	18	19
313:	13	14	16	23	14	13	23	16
321:	11	14	19	17	14	18	24	36
329:	19	16	15	13	15	14	19	23
337:	25	53	31	36	16	17	13	14
345:	10	18	18	17	20	52	78	106
353:	66	27	13	14	13	7	14	11
361:	19	11	18	9	17	10	8	18

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369:	12	8	18	23	6	20	10	19

Sample Title: R-1 18-24

Channel								
377:	14	14	15	22	11	10	17	12
385:	20	16	17	16	15	15	6	23
393:	15	14	18	16	18	13	13	13
401:	12	13	20	15	17	16	17	14
409:	20	13	17	12	6	14	13	10
417:	11	13	12	14	13	8	10	12
425:	11	12	15	4	5	12	14	5
433:	15	8	13	11	13	14	4	13
441:	4	13	11	12	10	7	8	4
449:	12	11	14	12	11	11	7	13
457:	6	7	10	12	8	20	16	17
465:	15	7	12	8	5	8	9	10
473:	16	11	11	9	6	9	9	18
481:	9	8	11	13	12	7	12	4
489:	6	10	6	8	5	11	12	7
497:	9	6	7	5	4	13	8	13
505:	13	11	9	16	21	26	28	24
513:	13	16	11	8	7	12	6	12
521:	9	12	7	9	9	7	4	8
529:	14	6	6	11	6	12	10	6
537:	7	9	12	9	3	5	9	6
545:	7	7	7	7	3	4	4	6
553:	6	3	10	6	6	14	1	8
561:	11	9	8	6	8	8	9	7
569:	10	14	9	10	6	10	7	14
577:	5	7	5	14	21	39	65	44
585:	11	9	12	5	9	13	7	3
593:	6	10	6	11	9	13	6	7
601:	11	4	11	10	9	5	14	54
609:	69	41	17	12	4	8	11	4
617:	2	9	6	5	2	5	6	5
625:	4	6	9	2	5	10	11	8
633:	9	6	7	6	6	5	5	6
641:	5	6	2	8	9	4	5	1
649:	8	8	6	10	4	6	11	0
657:	8	9	7	8	6	9	14	4
665:	7	7	10	6	7	5	11	2
673:	5	8	2	10	9	5	7	4
681:	1	6	6	6	6	9	4	5
689:	6	6	11	9	11	6	5	7
697:	6	8	11	8	5	11	10	8
705:	8	3	10	4	4	5	4	4
713:	9	10	6	5	5	2	9	8
721:	4	4	7	7	5	13	11	11
729:	3	5	5	4	9	5	7	7
737:	5	6	5	5	4	6	8	6
745:	13	3	5	5	4	7	1	12
753:	8	3	3	6	1	6	7	10
761:	5	4	4	7	10	7	8	7
769:	3	10	6	6	9	5	4	6
777:	3	6	3	1	6	4	5	8
785:	3	8	3	8	6	2	6	7
793:	10	12	7	8	8	8	2	3

BP/Castex-Ltd Adm-Apx E-001637

801:	3	5	9	0	10	6	4	5

Sample Title: R-1 18-24

Channel								
809:	2	4	1	3	3	11	4	5
817:	2	5	3	6	4	5	4	2
825:	4	3	5	2	3	3	3	4
833:	1	6	5	6	6	4	6	10
841:	6	6	1	6	6	5	4	0
849:	10	4	2	2	8	7	5	5
857:	5	9	9	7	7	6	3	3
865:	4	5	5	6	4	2	6	2
873:	3	4	2	3	6	6	5	3
881:	3	9	0	3	2	5	3	6
889:	2	3	4	1	4	7	4	5
897:	3	7	6	4	2	5	3	3
905:	6	2	1	7	6	27	34	20
913:	8	2	7	6	4	2	1	6
921:	4	5	3	4	2	2	5	8
929:	4	1	6	0	6	8	7	1
937:	3	7	2	6	3	2	6	5
945:	8	6	3	8	3	1	4	7
953:	6	2	3	4	5	3	5	5
961:	1	7	5	11	6	8	10	16
969:	18	5	1	1	2	2	1	5
977:	2	1	2	1	3	5	3	1
985:	2	4	3	2	3	2	2	4
993:	8	2	1	4	4	3	3	5
1001:	4	6	1	3	1	2	6	2
1009:	2	2	3	4	1	7	5	1
1017:	4	0	6	3	4	3	2	3
1025:	1	2	4	0	4	1	2	5
1033:	4	4	3	2	2	2	4	4
1041:	1	5	7	2	3	6	1	3
1049:	4	1	4	3	2	3	1	0
1057:	6	1	4	4	2	2	2	1
1065:	1	2	5	2	1	3	3	4
1073:	2	4	0	3	3	2	4	5
1081:	3	6	6	3	0	4	3	5
1089:	5	2	1	5	2	4	4	2
1097:	2	1	5	4	0	4	3	4
1105:	3	0	2	2	0	4	1	5
1113:	2	4	3	5	5	6	14	11
1121:	13	6	2	5	4	1	3	5
1129:	5	1	3	2	3	5	5	1
1137:	1	1	2	1	6	3	3	5
1145:	4	7	6	1	4	0	5	2
1153:	5	7	8	4	1	1	2	0
1161:	2	1	5	6	2	3	1	1
1169:	1	2	3	3	2	2	3	0
1177:	1	1	5	4	6	2	5	2
1185:	4	6	3	3	1	4	4	3
1193:	5	2	4	1	3	7	3	0
1201:	5	5	3	4	5	5	0	6
1209:	0	4	5	2	2	3	3	3
1217:	5	2	2	2	3	2	1	5
1225:	6	4	3	6	5	4	1	2

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1233:	5	0	4	2	7	8	9	4

Sample Title: R-1 18-24

Channel								
1241:	2	2	1	2	1	4	5	3
1249:	1	2	3	6	5	3	4	3
1257:	4	3	4	1	0	2	1	3
1265:	2	2	1	2	5	3	5	2
1273:	1	3	1	3	2	3	1	3
1281:	2	1	2	2	3	3	2	3
1289:	7	2	0	3	1	3	3	3
1297:	3	2	4	3	3	1	4	1
1305:	3	2	1	5	1	4	6	2
1313:	3	0	1	3	2	0	0	3
1321:	4	4	1	1	2	1	1	1
1329:	3	1	1	2	2	7	4	1
1337:	4	2	1	0	2	3	0	2
1345:	1	2	2	2	1	3	0	3
1353:	1	0	2	0	2	0	3	2
1361:	2	1	1	3	2	2	2	1
1369:	2	2	1	1	3	2	1	2
1377:	3	2	1	1	1	3	3	3
1385:	1	4	2	0	0	0	1	2
1393:	1	1	2	0	2	1	4	0
1401:	2	0	1	1	3	4	1	2
1409:	4	1	0	1	2	2	1	0
1417:	4	2	0	1	0	0	0	2
1425:	1	2	2	2	0	1	1	1
1433:	3	2	1	1	0	1	2	1
1441:	0	2	1	3	2	2	1	0
1449:	0	0	1	1	1	2	2	2
1457:	5	15	33	46	39	16	2	4
1465:	2	0	2	2	1	0	1	2
1473:	2	2	0	2	0	2	0	0
1481:	2	0	1	1	3	1	1	1
1489:	1	2	1	0	1	1	4	2
1497:	1	2	1	5	0	2	1	0
1505:	2	1	3	2	3	2	2	2
1513:	4	0	0	0	2	1	1	0
1521:	4	4	1	1	0	0	1	1
1529:	0	1	2	2	1	0	0	0
1537:	0	2	1	3	0	0	1	0
1545:	0	0	0	1	0	1	0	2
1553:	2	1	2	0	0	0	1	3
1561:	0	0	1	2	0	2	1	1
1569:	2	1	1	0	1	1	1	0
1577:	3	2	0	1	1	0	0	6
1585:	2	3	2	1	0	2	3	4
1593:	1	0	0	1	3	0	1	4
1601:	1	0	2	0	0	0	2	0
1609:	0	1	0	2	1	0	2	0
1617:	0	2	2	0	1	2	1	2
1625:	2	0	0	1	1	3	0	2
1633:	0	0	0	0	1	2	0	0
1641:	0	1	2	0	1	0	0	2
1649:	0	1	2	1	0	3	3	1
1657:	2	1	0	1	1	0	1	0

BP/Castex-Ltd Adm-Apx E-001639

1665:	0	1	0	0	0	1	1	2

Sample Title: R-1 18-24

Channel								
1673:	0	0	1	0	2	1	1	0
1681:	0	1	0	0	0	1	0	0
1689:	0	1	2	1	1	1	0	1
1697:	0	2	1	2	1	0	0	1
1705:	0	0	1	1	1	1	2	2
1713:	1	1	1	1	2	1	3	0
1721:	1	1	2	1	0	1	2	1
1729:	4	4	1	1	1	1	0	1
1737:	0	0	0	0	1	1	0	0
1745:	1	2	1	1	1	0	0	1
1753:	1	0	2	0	0	2	0	0
1761:	2	3	6	6	5	0	2	1
1769:	3	0	0	0	1	2	1	0
1777:	1	1	0	0	3	0	1	0
1785:	0	0	1	0	1	1	0	0
1793:	1	0	1	1	0	1	0	1
1801:	0	2	2	1	0	0	0	0
1809:	2	0	3	0	0	2	0	1
1817:	0	1	1	0	0	1	1	1
1825:	2	0	1	1	0	1	1	1
1833:	0	1	0	0	0	0	0	1
1841:	0	0	2	1	1	2	2	0
1849:	1	0	0	1	0	0	1	2
1857:	0	2	0	0	1	0	1	2
1865:	2	0	0	0	1	0	2	1
1873:	0	1	0	1	0	1	0	1
1881:	0	0	0	0	3	0	0	0
1889:	0	4	3	2	0	0	0	0
1897:	0	2	0	1	1	0	2	2
1905:	1	1	1	1	0	0	1	0
1913:	1	4	0	0	1	0	1	0
1921:	1	2	1	1	1	1	0	0
1929:	0	0	0	0	1	3	0	1
1937:	1	0	4	2	2	1	1	0
1945:	1	0	1	0	0	1	3	1
1953:	0	5	1	0	0	1	1	1
1961:	0	1	0	1	1	0	1	0
1969:	0	1	0	0	0	0	1	0
1977:	0	0	0	0	0	0	1	1
1985:	0	0	1	1	0	1	0	0
1993:	0	1	1	0	1	1	0	0
2001:	0	0	0	0	0	1	1	1
2009:	1	0	0	0	1	0	0	0
2017:	1	1	0	1	1	0	0	3
2025:	0	0	0	0	0	1	2	2
2033:	0	1	0	1	1	2	1	0
2041:	0	0	0	0	0	0	0	1
2049:	0	0	0	0	0	0	0	0
2057:	0	1	0	2	1	0	1	1
2065:	0	1	0	0	0	0	3	0
2073:	0	0	3	1	2	0	0	0
2081:	2	0	3	0	0	0	0	2
2089:	0	0	3	1	1	1	0	1

BP/Castex-Ltd Adm-Apx E-001640

2097:	1	1	2	3	1	5	2	0

Sample Title: R-1 18-24

Channel								
2105:	1	0	2	0	2	1	0	0
2113:	1	3	0	0	0	0	5	1
2121:	2	0	4	2	0	1	2	1
2129:	0	2	1	3	0	1	1	1
2137:	0	0	0	0	0	1	2	0
2145:	1	1	0	0	1	0	1	0
2153:	1	0	1	0	2	2	1	0
2161:	2	0	0	1	2	1	0	0
2169:	0	0	1	1	0	1	0	0
2177:	1	1	3	0	0	1	1	0
2185:	0	3	1	1	0	2	0	1
2193:	0	0	0	0	1	2	1	4
2201:	0	0	1	3	1	0	2	0
2209:	2	0	1	1	0	1	0	1
2217:	1	1	1	0	0	0	1	0
2225:	1	1	0	0	0	0	0	0
2233:	0	0	0	0	0	0	1	1
2241:	0	0	1	0	1	0	1	1
2249:	0	2	0	1	0	0	1	0
2257:	2	1	1	0	1	0	1	1
2265:	0	0	0	0	0	1	1	0
2273:	1	2	0	0	0	1	3	1
2281:	0	1	0	0	0	1	0	1
2289:	1	0	1	1	1	1	3	1
2297:	2	2	2	1	0	1	0	1
2305:	0	0	1	2	3	2	0	0
2313:	2	3	0	1	0	1	1	0
2321:	0	1	3	1	1	1	0	0
2329:	0	0	2	0	0	1	1	2
2337:	0	0	1	0	2	1	0	0
2345:	1	2	0	0	0	2	1	2
2353:	1	1	1	2	1	0	1	0
2361:	0	1	0	0	0	0	2	0
2369:	0	1	0	1	0	0	1	0
2377:	1	0	0	0	0	0	2	1
2385:	1	0	0	0	0	0	0	0
2393:	1	0	0	1	0	0	0	0
2401:	1	1	0	0	1	1	1	2
2409:	0	0	0	1	0	0	0	0
2417:	2	1	1	1	1	0	0	1
2425:	0	0	0	0	0	0	1	0
2433:	1	0	1	1	0	0	2	2
2441:	0	0	1	0	0	3	0	1
2449:	0	0	1	2	0	1	0	0
2457:	0	2	1	0	1	0	0	0
2465:	1	0	0	1	0	0	1	1
2473:	0	0	0	0	0	0	1	1
2481:	0	0	0	0	0	1	0	0
2489:	0	0	0	1	1	1	0	0
2497:	1	0	1	0	0	0	0	0
2505:	2	0	0	0	0	0	0	0
2513:	0	1	0	0	0	1	0	0
2521:	1	0	1	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001641

2529:	0	0	0	0	0	0	0	0

Sample Title: R-1 18-24

Channel								
2537:	0	0	0	0	1	0	0	0
2545:	0	0	0	0	0	0	0	0
2553:	0	0	0	0	0	0	0	0
2561:	1	1	1	0	0	0	0	0
2569:	0	0	0	0	0	0	0	1
2577:	0	1	0	0	0	0	0	0
2585:	0	0	0	0	0	0	0	0
2593:	0	0	1	1	0	0	1	2
2601:	0	0	0	0	0	0	0	0
2609:	1	1	4	8	7	10	7	1
2617:	1	0	0	1	1	2	0	0
2625:	1	0	2	0	1	0	0	0
2633:	0	0	0	0	1	0	0	0
2641:	0	0	0	0	0	1	1	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	1	0	0	0	0	1
2665:	0	0	0	1	0	0	0	0
2673:	0	0	0	1	0	0	0	0
2681:	0	1	0	0	0	0	0	0
2689:	0	1	0	0	0	0	1	1
2697:	0	0	0	0	0	0	0	0
2705:	0	0	1	1	1	0	0	0
2713:	0	0	0	1	0	1	0	1
2721:	0	0	0	0	0	0	0	0
2729:	0	0	0	1	1	0	0	1
2737:	0	0	1	0	0	0	1	0
2745:	0	0	0	0	0	0	0	0
2753:	0	0	0	1	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	0	0	0	0	0	0	0
2777:	0	0	0	0	0	0	1	0
2785:	0	0	1	0	0	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	2	0	0	1	1	0	1	0
2817:	1	0	0	1	1	0	0	0
2825:	0	0	0	0	0	1	0	0
2833:	0	0	0	0	0	0	0	1
2841:	0	0	0	1	0	0	0	1
2849:	1	0	2	1	0	0	0	0
2857:	0	0	1	0	0	0	0	0
2865:	0	0	0	0	0	0	0	0
2873:	0	0	0	0	0	0	0	0
2881:	0	0	0	1	0	0	0	0
2889:	1	0	0	0	1	0	0	1
2897:	0	0	0	1	0	0	0	0
2905:	0	0	0	0	0	0	1	1
2913:	0	0	1	0	0	0	0	0
2921:	0	0	0	2	0	0	0	0
2929:	1	0	0	1	0	0	0	0
2937:	0	0	0	0	0	0	1	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	1	0	0

BP/Castex-Ltd Adm-Apx E-001642

2961:	0	0	0	0	1	0	0	0

Sample Title: R-1 18-24

Channel								
2969:	0	0	0	0	0	0	0	0
2977:	0	0	1	0	0	0	1	1
2985:	0	0	0	0	0	0	1	1
2993:	0	0	0	0	0	1	1	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	1	0	1
3017:	0	0	0	0	0	0	0	0
3025:	0	0	0	0	0	0	0	0
3033:	0	1	0	1	0	0	1	0
3041:	0	0	0	0	1	0	0	0
3049:	0	0	0	0	0	0	0	0
3057:	0	0	0	0	0	0	0	0
3065:	0	0	0	0	0	1	0	0
3073:	0	0	1	1	0	0	0	1
3081:	0	1	0	0	0	0	1	0
3089:	0	0	0	0	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	0	0	0	0	0
3113:	0	0	0	0	0	1	0	0
3121:	0	0	1	0	0	0	0	0
3129:	0	1	0	0	0	0	0	0
3137:	0	0	1	0	0	0	1	0
3145:	0	0	0	0	0	0	1	0
3153:	0	0	0	0	0	0	0	0
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	1	0	0	1
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	0	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	0	0	0	0	0	0	0
3209:	1	1	0	0	0	0	0	0
3217:	0	0	0	1	0	0	0	0
3225:	0	0	1	0	0	0	0	0
3233:	0	0	0	0	0	1	0	0
3241:	0	0	0	0	0	0	0	0
3249:	0	0	0	0	0	0	1	1
3257:	0	0	0	1	0	0	0	1
3265:	1	0	0	0	0	0	0	0
3273:	0	0	0	0	0	2	0	0
3281:	0	1	0	0	0	0	0	0
3289:	0	0	0	0	0	0	0	0
3297:	1	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	1	0
3313:	0	0	1	0	0	0	1	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0	0
3345:	0	1	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	1	0	0	0	0	0	0
3369:	0	0	1	0	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	1	0	1	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001643

3393:	1	0	0	0	0	0	0	1

Sample Title: R-1 18-24

Channel								
3401:	1	0	0	0	1	0	0	0
3409:	0	1	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	1	0	0	1
3433:	0	0	0	1	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	1	0	0	0	0	0	0	0
3457:	2	0	0	0	0	1	1	0
3465:	0	0	0	0	0	1	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	1	1
3489:	0	0	0	0	0	1	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	1	1	0	1	1	1	0	0
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	0	1	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	1	2
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	2	0	0	0	0
3577:	0	0	0	1	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	1	0	0	0
3601:	0	0	1	0	0	0	1	0
3609:	0	0	1	0	0	0	0	1
3617:	0	0	0	0	0	0	0	0
3625:	0	1	0	0	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	0	0	0	0	1	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	1	0	0	0	0	0
3681:	0	0	0	0	0	0	0	1
3689:	0	0	1	0	1	0	1	0
3697:	1	0	0	1	0	0	0	0
3705:	0	0	0	0	0	0	0	1
3713:	0	0	0	0	0	0	0	0
3721:	0	0	0	0	0	1	0	1
3729:	0	0	0	0	0	0	1	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	1	0	0	1	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	0	1	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	1	0	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	1	0	0	0	0	1
3809:	1	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001644

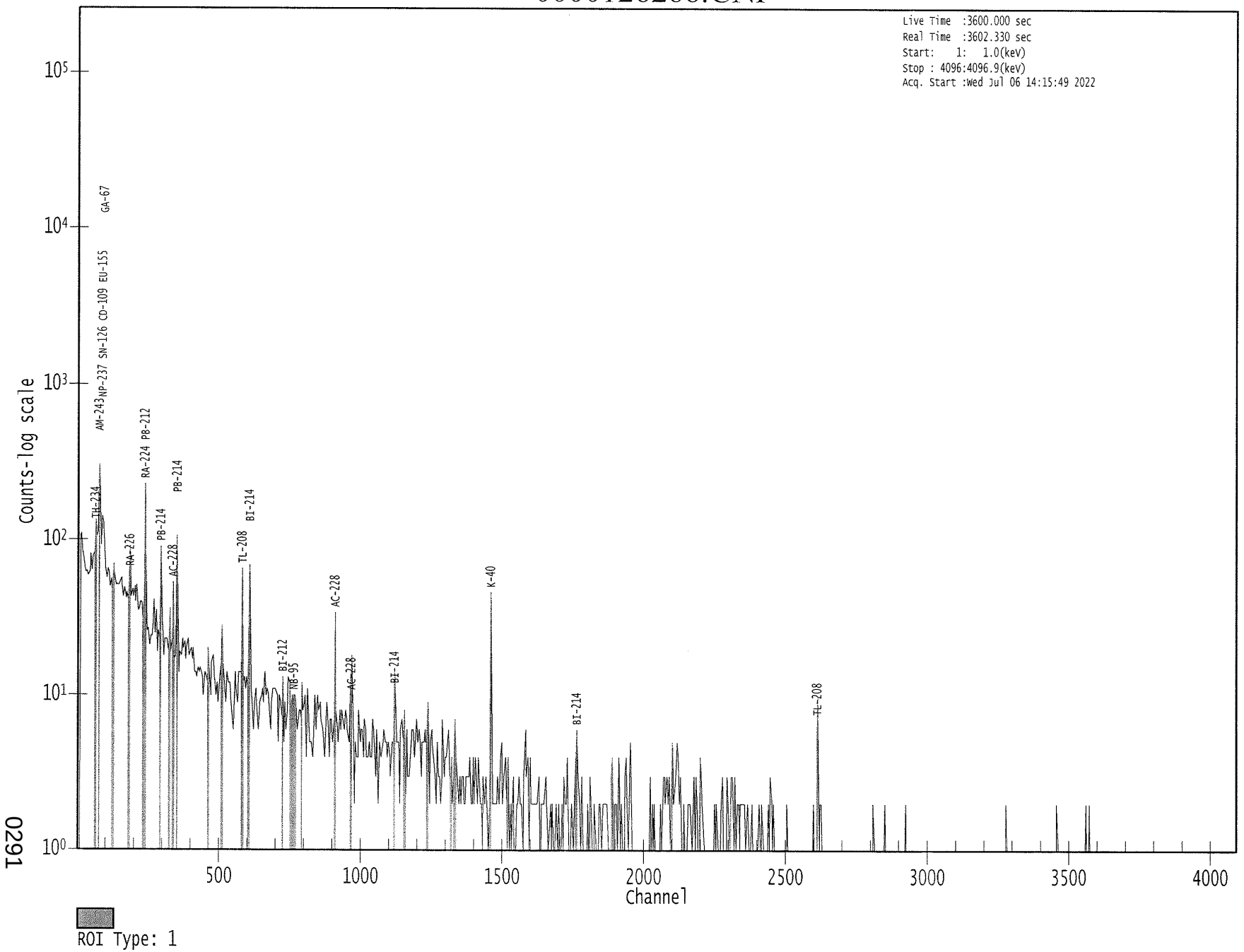
3825:	0	0	0	0	0	1	0	0

Sample Title: R-1 18-24

Channel								
3833:	1	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	1	0	0	0	0
3881:	1	0	1	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	1	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	1	0	1	1	0
3921:	1	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	1	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	1	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	1	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	1	0	0	1	0
4041:	0	0	0	0	0	0	1	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	1	0	0	0
4073:	0	0	0	1	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	1	0	0	0

BP/Castex-Ltd Adm-Apx E-001645

0000126266.CNF



0291

BP/Castex-Ltd Adm-Apx E-001646

KD 7/6/22

Apex-Gamma

Analysis Report for 2206038-08
R-2 0-6

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-08
Sample Description	: R-2 0-6
Sample Type	: SOIL
Sample Size	: 6.040E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:44:19AM
Acquisition Started	: 7/6/2022 2:38:30PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3603.5 seconds
Dead Time	: 0.10 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 31 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 7/1/2022
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126268

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

Analysis Report for 2206038-08

R-2 0-6

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 3:38:37PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	47.14	45.68	0.0000	0.00
2	67.01	65.57	0.0000	0.00
3	76.68	75.25	0.0000	0.00
4	88.09	86.66	0.0000	0.00
5	186.81	185.44	0.0000	0.00
6	240.92	239.57	0.0000	0.00
7	295.52	294.20	0.0000	0.00
8	339.52	338.21	0.0000	0.00
9	352.11	350.81	0.0000	0.00
10	462.14	460.88	0.0000	0.00
11	511.05	509.80	0.0000	0.00
12	582.73	581.50	0.0000	0.00
13	609.31	608.09	0.0000	0.00
14	665.72	664.51	0.0000	0.00
15	768.01	766.81	0.0000	0.00
16	785.08	783.88	0.0000	0.00
17	805.91	804.71	0.0000	0.00
18	840.65	839.46	0.0000	0.00
19	863.82	862.62	0.0000	0.00
20	881.02	879.82	0.0000	0.00
21	910.31	909.11	0.0000	0.00
22	934.35	933.15	0.0000	0.00
23	968.51	967.30	0.0000	0.00
24	1119.88	1118.66	0.0000	0.00
25	1154.76	1153.53	0.0000	0.00
26	1220.87	1219.63	0.0000	0.00
27	1237.96	1236.71	0.0000	0.00
28	1280.63	1279.37	0.0000	0.00
29	1377.29	1375.99	0.0000	0.00
30	1407.71	1406.40	0.0000	0.00
31	1460.37	1459.04	0.0000	0.00
32	1508.98	1507.63	0.0000	0.00
33	1661.77	1660.33	0.0000	0.00
34	1698.86	1697.40	0.0000	0.00
35	1728.81	1727.33	0.0000	0.00
36	1736.64	1735.16	0.0000	0.00
37	1764.30	1762.79	0.0000	0.00
38	1775.76	1774.25	0.0000	0.00
39	1846.48	1844.92	0.0000	0.00
40	1941.24	1939.60	0.0000	0.00
41	2064.53	2062.78	0.0000	0.00
42	2117.68	2115.89	0.0000	0.00

Analysis Report for 2206038-08

R-2 0-6

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	2204.23	2202.35	0.0000	0.00
44	2261.01	2259.07	0.0000	0.00
45	2292.61	2290.64	0.0000	0.00
46	2448.07	2445.92	0.0000	0.00
47	2498.59	2496.38	0.0000	0.00
48	2614.24	2611.88	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001649

Analysis Report for 2206038-08

R-2 0-6

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 3:38:37PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	47.14	43	49	45.68	1.93E+02	132.33	3.02E+03	1.45
m	2	67.01	56	95	65.57	2.70E+02	184.67	4.42E+03	3.26
m	3	76.68	56	95	75.25	4.37E+03	286.16	6.74E+03	4.99
m	4	88.09	56	95	86.66	1.62E+03	282.35	7.32E+03	5.30
	5	186.81	181	190	185.44	8.65E+02	185.48	4.40E+03	2.92
	6	240.92	233	246	239.57	2.43E+03	223.39	4.44E+03	5.84
	7	295.52	288	301	294.20	2.93E+03	202.45	3.24E+03	2.96
	8	339.52	332	343	338.21	2.11E+02	136.53	2.22E+03	4.26
	9	352.11	344	357	350.81	4.92E+03	203.31	2.40E+03	2.94
	10	462.14	456	465	460.88	1.35E+02	87.31	1.00E+03	5.33
	11	511.05	505	514	509.80	1.65E+02	83.18	8.91E+02	3.24
	12	582.73	574	590	581.50	3.27E+02	117.09	1.18E+03	3.07
	13	609.31	600	616	608.09	3.61E+03	160.77	1.08E+03	3.11
	14	665.72	657	671	664.51	2.33E+02	81.41	5.99E+02	9.09
	15	768.01	759	773	766.81	3.76E+02	85.70	6.14E+02	3.14
	16	785.08	779	789	783.88	7.03E+01	64.26	5.17E+02	4.46
	17	805.91	801	809	804.71	9.89E+01	53.23	3.68E+02	2.06
	18	840.65	834	847	839.46	6.53E+01	74.38	5.77E+02	9.71
	19	863.82	856	868	862.62	5.59E+01	69.07	5.20E+02	8.74
	20	881.02	877	884	879.82	3.68E+01	45.61	3.26E+02	1.89
	21	910.31	902	915	909.11	2.07E+02	79.42	6.09E+02	2.41
	22	934.35	928	941	933.15	1.23E+02	75.95	5.81E+02	3.25
	23	968.51	963	971	967.30	9.44E+01	54.83	3.93E+02	3.98
	24	1119.88	1114	1125	1118.66	7.21E+02	74.00	3.24E+02	3.17
	25	1154.76	1148	1158	1153.53	1.02E+02	47.99	2.52E+02	3.59
	26	1220.87	1215	1224	1219.63	3.26E+01	39.09	1.99E+02	6.64
	27	1237.96	1230	1243	1236.71	2.32E+02	59.20	2.84E+02	3.95
	28	1280.63	1274	1288	1279.37	5.06E+01	59.53	3.49E+02	3.21
	29	1377.29	1371	1381	1375.99	1.44E+02	52.20	2.89E+02	2.60
	30	1407.71	1399	1411	1406.40	1.08E+02	57.35	3.30E+02	2.38
	31	1460.37	1452	1465	1459.04	2.38E+02	56.17	2.44E+02	3.53
	32	1508.98	1501	1516	1507.63	9.46E+01	57.79	2.97E+02	3.05
	33	1661.77	1655	1664	1660.33	5.98E+01	25.61	5.84E+01	5.14
	34	1698.86	1695	1700	1697.40	1.69E+01	11.87	1.43E+01	3.32
M	35	1728.81	1719	1739	1727.33	1.22E+02	27.42	2.92E+01	3.96
m	36	1736.64	1719	1739	1735.16	1.62E+01	14.04	2.65E+01	4.17
M	37	1764.30	1753	1778	1762.79	5.32E+02	49.43	4.06E+01	3.76
m	38	1775.76	1753	1778	1774.25	2.88E+01	15.80	1.26E+00	3.80
	39	1846.48	1840	1850	1844.92	8.24E+01	28.01	6.11E+01	5.29
	40	1941.24	1925	1952	1939.60	3.93E+01	35.67	6.74E+01	18.72

BP/Castex-Ltd Adm-Apx E-001650

Analysis Report for 2206038-08

R-2 0-6

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	2064.53	2054 -	2069	2062.78	3.28E+01	14.56	8.41E+00	9.62
42	2117.68	2110 -	2122	2115.89	3.50E+01	24.12	5.21E+01	2.50
43	2204.23	2193 -	2211	2202.35	1.49E+02	35.35	5.52E+01	3.51
44	2261.01	2251 -	2265	2259.07	1.49E+01	16.52	2.22E+01	1.86
45	2292.61	2284 -	2298	2290.64	3.25E+01	16.51	1.50E+01	7.43
46	2448.07	2439 -	2451	2445.92	4.94E+01	17.56	1.31E+01	5.34
47	2498.59	2491 -	2501	2496.38	6.33E+00	8.14	5.33E+00	1.07
48	2614.24	2605 -	2618	2611.88	1.09E+02	22.29	6.82E+00	3.03

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 3:38:37PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	47.14	43 -	49	1.93E+02	132.33	3.02E+03	1.06E+02
m	2	67.01	56 -	95	2.70E+02	184.67	4.42E+03	1.09E+02
m	3	76.68	56 -	95	4.37E+03	286.16	6.74E+03	1.35E+02
m	4	88.09	56 -	95	1.62E+03	282.35	7.32E+03	1.41E+02
	5	186.81	181 -	190	8.65E+02	185.48	4.40E+03	1.45E+02
	6	240.92	233 -	246	2.43E+03	223.39	4.44E+03	1.65E+02
	7	295.52	288 -	301	2.93E+03	202.45	3.24E+03	1.41E+02
	8	339.52	332 -	343	2.11E+02	136.53	2.22E+03	1.10E+02
	9	352.11	344 -	357	4.92E+03	203.31	2.40E+03	1.21E+02
	10	462.14	456 -	465	1.35E+02	87.31	1.00E+03	6.92E+01
	11	511.05	505 -	514	1.65E+02	83.18	8.91E+02	6.50E+01
	12	582.73	574 -	590	3.27E+02	117.09	1.18E+03	9.15E+01
	13	609.31	600 -	616	3.61E+03	160.77	1.08E+03	8.78E+01
	14	665.72	657 -	671	2.33E+02	81.41	5.99E+02	6.20E+01
	15	768.01	759 -	773	3.76E+02	85.70	6.14E+02	6.28E+01
	16	785.08	779 -	789	7.03E+01	64.26	5.17E+02	5.10E+01
	17	805.91	801 -	809	9.89E+01	53.23	3.68E+02	4.06E+01
	18	840.65	834 -	847	6.53E+01	74.38	5.77E+02	5.97E+01
	19	863.82	856 -	868	5.59E+01	69.07	5.20E+02	5.54E+01

BP/Castex-Ltd Adm-Apx E-001651

Analysis Report for 2206038-08

R-2 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	20	881.02	877 -	884	3.68E+01	45.61	3.26E+02	3.61E+01
	21	910.31	902 -	915	2.07E+02	79.42	6.09E+02	6.09E+01
	22	934.35	928 -	941	1.23E+02	75.95	5.81E+02	5.97E+01
	23	968.51	963 -	971	9.44E+01	54.83	3.93E+02	4.21E+01
	24	1119.88	1114 -	1125	7.21E+02	74.00	3.24E+02	4.19E+01
	25	1154.76	1148 -	1158	1.02E+02	47.99	2.52E+02	3.58E+01
	26	1220.87	1215 -	1224	3.26E+01	39.09	1.99E+02	3.07E+01
	27	1237.96	1230 -	1243	2.32E+02	59.20	2.84E+02	4.17E+01
	28	1280.63	1274 -	1288	5.06E+01	59.53	3.49E+02	4.75E+01
	29	1377.29	1371 -	1381	1.44E+02	52.20	2.89E+02	3.81E+01
	30	1407.71	1399 -	1411	1.08E+02	57.35	3.30E+02	4.39E+01
	31	1460.37	1452 -	1465	2.38E+02	56.17	2.44E+02	3.86E+01
	32	1508.98	1501 -	1516	9.46E+01	57.79	2.97E+02	4.47E+01
	33	1661.77	1655 -	1664	5.98E+01	25.61	5.84E+01	1.68E+01
	34	1698.86	1695 -	1700	1.69E+01	11.87	1.43E+01	7.05E+00
M	35	1728.81	1719 -	1739	1.22E+02	27.42	2.92E+01	8.89E+00
m	36	1736.64	1719 -	1739	1.62E+01	14.04	2.65E+01	8.47E+00
M	37	1764.30	1753 -	1778	5.32E+02	49.43	4.06E+01	1.05E+01
m	38	1775.76	1753 -	1778	2.88E+01	15.80	1.26E+00	1.84E+00
	39	1846.48	1840 -	1850	8.24E+01	28.01	6.11E+01	1.75E+01
	40	1941.24	1925 -	1952	3.93E+01	35.67	6.74E+01	2.74E+01
	41	2064.53	2054 -	2069	3.28E+01	14.56	8.41E+00	7.39E+00
	42	2117.68	2110 -	2122	3.50E+01	24.12	5.21E+01	1.73E+01
	43	2204.23	2193 -	2211	1.49E+02	35.35	5.52E+01	2.10E+01
	44	2261.01	2251 -	2265	1.49E+01	16.52	2.22E+01	1.20E+01
	45	2292.61	2284 -	2298	3.25E+01	16.51	1.50E+01	9.81E+00
	46	2448.07	2439 -	2451	4.94E+01	17.56	1.31E+01	8.65E+00
	47	2498.59	2491 -	2501	6.33E+00	8.14	5.33E+00	5.26E+00
	48	2614.24	2605 -	2618	1.09E+02	22.29	6.82E+00	6.51E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 3:38:37PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

BP/Castex-Ltd Adm-Apx E-001652

Analysis Report for 2206038-08

R-2 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	47.14	43 -	49	45.68	1.93E+02	132.33	3.02E+03	PB-210 TH-230
m	2	67.01	56 -	95	65.57	2.70E+02	184.67	4.42E+03	TM-171 HF-172 TH-230 TA-182 TI-44
m	3	76.68	56 -	95	75.25	4.37E+03	286.16	6.74E+03	TI-44 AM-243
m	4	88.09	56 -	95	86.66	1.62E+03	282.35	7.32E+03	CD-109 LU-176 SN-126 NP-237 EU-155
	5	186.81	181 -	190	185.44	8.65E+02	185.48	4.40E+03	RA-226 HO-166M
	6	240.92	233 -	246	239.57	2.43E+03	223.39	4.44E+03	RA-224 PB-212
	7	295.52	288 -	301	294.20	2.93E+03	202.45	3.24E+03	PB-214 CE-143
	8	339.52	332 -	343	338.21	2.11E+02	136.53	2.22E+03	CS-136 AC-228
	9	352.11	344 -	357	350.81	4.92E+03	203.31	2.40E+03	PB-214
	10	462.14	456 -	465	460.88	1.35E+02	87.31	1.00E+03	SB-125
	11	511.05	505 -	514	509.80	1.65E+02	83.18	8.91E+02	.....
	12	582.73	574 -	590	581.50	3.27E+02	117.09	1.18E+03	TL-208
	13	609.31	600 -	616	608.09	3.61E+03	160.77	1.08E+03	BI-214
	14	665.72	657 -	671	664.51	2.33E+02	81.41	5.99E+02	SB-126 CE-143
	15	768.01	759 -	773	766.81	3.76E+02	85.70	6.14E+02	NB-95
	16	785.08	779 -	789	783.88	7.03E+01	64.26	5.17E+02	SB-127
	17	805.91	801 -	809	804.71	9.89E+01	53.23	3.68E+02	.....
	18	840.65	834 -	847	839.46	6.53E+01	74.38	5.77E+02	.....
	19	863.82	856 -	868	862.62	5.59E+01	69.07	5.20E+02	.....
	20	881.02	877 -	884	879.82	3.68E+01	45.61	3.26E+02	.....
	21	910.31	902 -	915	909.11	2.07E+02	79.42	6.09E+02	AC-228 TL-204
	22	934.35	928 -	941	933.15	1.23E+02	75.95	5.81E+02	.....
	23	968.51	963 -	971	967.30	9.44E+01	54.83	3.93E+02	AC-228
	24	1119.88	1114 -	1125	1118.66	7.21E+02	74.00	3.24E+02	BI-214 SC-46 TA-182
	25	1154.76	1148 -	1158	1153.53	1.02E+02	47.99	2.52E+02	EU-156
	26	1220.87	1215 -	1224	1219.63	3.26E+01	39.09	1.99E+02	TA-182
	27	1237.96	1230 -	1243	1236.71	2.32E+02	59.20	2.84E+02	CO-56
	28	1280.63	1274 -	1288	1279.37	5.06E+01	59.53	3.49E+02	.....
	29	1377.29	1371 -	1381	1375.99	1.44E+02	52.20	2.89E+02	.....
	30	1407.71	1399 -	1411	1406.40	1.08E+02	57.35	3.30E+02	EU-152
	31	1460.37	1452 -	1465	1459.04	2.38E+02	56.17	2.44E+02	K-40
	32	1508.98	1501 -	1516	1507.63	9.46E+01	57.79	2.97E+02	.....
	33	1661.77	1655 -	1664	1660.33	5.98E+01	25.61	5.84E+01	.....

BP/Castex-Ltd Adm-Apx E-001653

Analysis Report for 2206038-08

R-2 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	34	1698.86	1695 -	1700	1697.40	1.69E+01	11.87	1.43E+01	.....
M	35	1728.81	1719 -	1739	1727.33	1.22E+02	27.42	2.92E+01	.....
m	36	1736.64	1719 -	1739	1735.16	1.62E+01	14.04	2.65E+01	.....
M	37	1764.30	1753 -	1778	1762.79	5.32E+02	49.43	4.06E+01	BI-214
m	38	1775.76	1753 -	1778	1774.25	2.88E+01	15.80	1.26E+00	.....
	39	1846.48	1840 -	1850	1844.92	8.24E+01	28.01	6.11E+01	.....
	40	1941.24	1925 -	1952	1939.60	3.93E+01	35.67	6.74E+01	.....
	41	2064.53	2054 -	2069	2062.78	3.28E+01	14.56	8.41E+00	.....
	42	2117.68	2110 -	2122	2115.89	3.50E+01	24.12	5.21E+01	.....
	43	2204.23	2193 -	2211	2202.35	1.49E+02	35.35	5.52E+01	BI-214
	44	2261.01	2251 -	2265	2259.07	1.49E+01	16.52	2.22E+01	.....
	45	2292.61	2284 -	2298	2290.64	3.25E+01	16.51	1.50E+01	.....
	46	2448.07	2439 -	2451	2445.92	4.94E+01	17.56	1.31E+01	.....
	47	2498.59	2491 -	2501	2496.38	6.33E+00	8.14	5.33E+00	.....
	48	2614.24	2605 -	2618	2611.88	1.09E+02	22.29	6.82E+00	TL-208

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 3:38:37PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	47.14	1.93E+02	132.33	1.65E-02	1.75E-03
m	2	67.01	2.70E+02	184.67	2.60E-02	1.96E-03
m	3	76.68	4.37E+03	286.16	2.80E-02	2.22E-03
m	4	88.09	1.62E+03	282.35	2.90E-02	2.54E-03
	5	186.81	8.65E+02	185.48	2.25E-02	1.82E-03
	6	240.92	2.43E+03	223.39	1.90E-02	1.61E-03
	7	295.52	2.93E+03	202.45	1.63E-02	1.42E-03
	8	339.52	2.11E+02	136.53	1.47E-02	1.28E-03
	9	352.11	4.92E+03	203.31	1.42E-02	1.24E-03
	10	462.14	1.35E+02	87.31	1.15E-02	1.04E-03
	11	511.05	1.65E+02	83.18	1.06E-02	9.77E-04
	12	582.73	3.27E+02	117.09	9.47E-03	8.91E-04
	13	609.31	3.61E+03	160.77	9.12E-03	8.59E-04
	14	665.72	2.33E+02	81.41	8.47E-03	7.94E-04
	15	768.01	3.76E+02	85.70	7.50E-03	7.23E-04

BP/Castex-Ltd Adm-Apx E-001654

Analysis Report for 2206038-08

R-2 0-6

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	16	785.08	7.03E+01	64.26	7.36E-03	7.12E-04
	17	805.91	9.89E+01	53.23	7.20E-03	6.97E-04
	18	840.65	6.53E+01	74.38	6.95E-03	6.73E-04
	19	863.82	5.59E+01	69.07	6.79E-03	6.57E-04
	20	881.02	3.68E+01	45.61	6.68E-03	6.45E-04
	21	910.31	2.07E+02	79.42	6.49E-03	6.25E-04
	22	934.35	1.23E+02	75.95	6.35E-03	6.07E-04
	23	968.51	9.44E+01	54.83	6.16E-03	5.81E-04
	24	1119.88	7.21E+02	74.00	5.44E-03	4.68E-04
	25	1154.76	1.02E+02	47.99	5.31E-03	4.41E-04
	26	1220.87	3.26E+01	39.09	5.06E-03	4.22E-04
	27	1237.96	2.32E+02	59.20	5.01E-03	4.20E-04
	28	1280.63	5.06E+01	59.53	4.87E-03	4.14E-04
	29	1377.29	1.44E+02	52.20	4.59E-03	3.97E-04
	30	1407.71	1.08E+02	57.35	4.51E-03	3.89E-04
	31	1460.37	2.38E+02	56.17	4.38E-03	3.76E-04
	32	1508.98	9.46E+01	57.79	4.27E-03	3.64E-04
	33	1661.77	5.98E+01	25.61	3.96E-03	3.27E-04
	34	1698.86	1.69E+01	11.87	3.90E-03	3.17E-04
M	35	1728.81	1.22E+02	27.42	3.85E-03	3.10E-04
m	36	1736.64	1.62E+01	14.04	3.84E-03	3.08E-04
M	37	1764.30	5.32E+02	49.43	3.79E-03	3.01E-04
m	38	1775.76	2.88E+01	15.80	3.78E-03	2.98E-04
	39	1846.48	8.24E+01	28.01	3.68E-03	2.84E-04
	40	1941.24	3.93E+01	35.67	3.55E-03	2.84E-04
	41	2064.53	3.28E+01	14.56	3.42E-03	2.84E-04
	42	2117.68	3.50E+01	24.12	3.37E-03	2.84E-04
	43	2204.23	1.49E+02	35.35	3.29E-03	2.84E-04
	44	2261.01	1.49E+01	16.52	3.25E-03	2.84E-04
	45	2292.61	3.25E+01	16.51	3.22E-03	2.84E-04
	46	2448.07	4.94E+01	17.56	3.12E-03	2.84E-04
	47	2498.59	6.33E+00	8.14	3.09E-03	2.84E-04
	48	2614.24	1.09E+02	22.29	3.04E-03	2.84E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 3:38:37PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126204.CNF

BP/Castex-Ltd Adm-Apx E-001655

Analysis Report for 2206038-08

R-2 0-6

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	47.14	1.93E+02	132.33	3.33E+01	3.61E+00	1.60E+02	1.32E+02
m	2	67.01	2.70E+02	184.67			2.70E+02	1.85E+02
m	3	76.68	4.37E+03	286.16			4.37E+03	2.86E+02
m	4	88.09	1.62E+03	282.35			1.62E+03	2.82E+02
	5	186.81	8.65E+02	185.48	4.53E+01	1.25E+01	8.19E+02	1.86E+02
	6	240.92	2.43E+03	223.39	1.45E+01	5.40E+00	2.41E+03	2.23E+02
	7	295.52	2.93E+03	202.45			2.93E+03	2.02E+02
	8	339.52	2.11E+02	136.53	4.53E+00	4.32E+00	2.06E+02	1.37E+02
	9	352.11	4.92E+03	203.31	4.32E+00	3.84E+00	4.91E+03	2.03E+02
	10	462.14	1.35E+02	87.31			1.35E+02	8.73E+01
	11	511.05	1.65E+02	83.18	5.27E+01	5.41E+00	1.13E+02	8.34E+01
	12	582.73	3.27E+02	117.09			3.27E+02	1.17E+02
	13	609.31	3.61E+03	160.77	5.34E+00	3.89E+00	3.60E+03	1.61E+02
	14	665.72	2.33E+02	81.41			2.33E+02	8.14E+01
	15	768.01	3.76E+02	85.70			3.76E+02	8.57E+01
	16	785.08	7.03E+01	64.26			7.03E+01	6.43E+01
	17	805.91	9.89E+01	53.23			9.89E+01	5.32E+01
	18	840.65	6.53E+01	74.38			6.53E+01	7.44E+01
	19	863.82	5.59E+01	69.07			5.59E+01	6.91E+01
	20	881.02	3.68E+01	45.61			3.68E+01	4.56E+01
	21	910.31	2.07E+02	79.42	1.52E+00	2.64E+00	2.05E+02	7.95E+01
	22	934.35	1.23E+02	75.95			1.23E+02	7.59E+01
	23	968.51	9.44E+01	54.83			9.44E+01	5.48E+01
	24	1119.88	7.21E+02	74.00			7.21E+02	7.40E+01
	25	1154.76	1.02E+02	47.99			1.02E+02	4.80E+01
	26	1220.87	3.26E+01	39.09			3.26E+01	3.91E+01
	27	1237.96	2.32E+02	59.20			2.32E+02	5.92E+01
	28	1280.63	5.06E+01	59.53			5.06E+01	5.95E+01
	29	1377.29	1.44E+02	52.20			1.44E+02	5.22E+01
	30	1407.71	1.08E+02	57.35			1.08E+02	5.73E+01
	31	1460.37	2.38E+02	56.17	5.66E+00	2.29E+00	2.32E+02	5.62E+01
	32	1508.98	9.46E+01	57.79			9.46E+01	5.78E+01
	33	1661.77	5.98E+01	25.61			5.98E+01	2.56E+01
	34	1698.86	1.69E+01	11.87			1.69E+01	1.19E+01
M	35	1728.81	1.22E+02	27.42			1.22E+02	2.74E+01
m	36	1736.64	1.62E+01	14.04			1.62E+01	1.40E+01
M	37	1764.30	5.32E+02	49.43			5.32E+02	4.94E+01
m	38	1775.76	2.88E+01	15.80			2.88E+01	1.58E+01
	39	1846.48	8.24E+01	28.01			8.24E+01	2.80E+01
	40	1941.24	3.93E+01	35.67			3.93E+01	3.57E+01
	41	2064.53	3.28E+01	14.56			3.28E+01	1.46E+01
	42	2117.68	3.50E+01	24.12			3.50E+01	2.41E+01
	43	2204.23	1.49E+02	35.35			1.49E+02	3.53E+01
	44	2261.01	1.49E+01	16.52			1.49E+01	1.65E+01
	45	2292.61	3.25E+01	16.51			3.25E+01	1.65E+01
	46	2448.07	4.94E+01	17.56			4.94E+01	1.76E+01
	47	2498.59	6.33E+00	8.14			6.33E+00	8.14E+00
	48	2614.24	1.09E+02	22.29			1.09E+02	2.23E+01

BP/Castex-Ltd Adm-Apx E-001656

Analysis Report for 2206038-08

R-2 0-6

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 3:38:37PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126204.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	47.14	1.93E+02	132.33	3.33E+01	3.61E+00	1.60E+02	1.32E+02
m	2	67.01	2.70E+02	184.67			2.70E+02	1.85E+02
m	3	76.68	4.37E+03	286.16			4.37E+03	2.86E+02
m	4	88.09	1.62E+03	282.35			1.62E+03	2.82E+02
	5	186.81	8.65E+02	185.48	4.53E+01	1.25E+01	8.19E+02	1.86E+02
	6	240.92	2.43E+03	223.39	1.45E+01	5.40E+00	2.41E+03	2.23E+02
	7	295.52	2.93E+03	202.45			2.93E+03	2.02E+02
	8	339.52	2.11E+02	136.53	4.53E+00	4.32E+00	2.06E+02	1.37E+02
	9	352.11	4.92E+03	203.31	4.32E+00	3.84E+00	4.91E+03	2.03E+02
	10	462.14	1.35E+02	87.31			1.35E+02	8.73E+01
	11	511.05	1.65E+02	83.18	5.27E+01	5.41E+00	1.13E+02	8.34E+01
	12	582.73	3.27E+02	117.09			3.27E+02	1.17E+02
	13	609.31	3.61E+03	160.77	5.34E+00	3.89E+00	3.60E+03	1.61E+02
	14	665.72	2.33E+02	81.41			2.33E+02	8.14E+01
	15	768.01	3.76E+02	85.70			3.76E+02	8.57E+01
	16	785.08	7.03E+01	64.26			7.03E+01	6.43E+01
	17	805.91	9.89E+01	53.23			9.89E+01	5.32E+01
	18	840.65	6.53E+01	74.38			6.53E+01	7.44E+01
	19	863.82	5.59E+01	69.07			5.59E+01	6.91E+01
	20	881.02	3.68E+01	45.61			3.68E+01	4.56E+01
	21	910.31	2.07E+02	79.42	1.52E+00	2.64E+00	2.05E+02	7.95E+01
	22	934.35	1.23E+02	75.95			1.23E+02	7.59E+01
	23	968.51	9.44E+01	54.83			9.44E+01	5.48E+01
	24	1119.88	7.21E+02	74.00			7.21E+02	7.40E+01
	25	1154.76	1.02E+02	47.99			1.02E+02	4.80E+01
	26	1220.87	3.26E+01	39.09			3.26E+01	3.91E+01
	27	1237.96	2.32E+02	59.20			2.32E+02	5.92E+01
	28	1280.63	5.06E+01	59.53			5.06E+01	5.95E+01
	29	1377.29	1.44E+02	52.20			1.44E+02	5.22E+01
	30	1407.71	1.08E+02	57.35			1.08E+02	5.73E+01
	31	1460.37	2.38E+02	56.17	5.66E+00	2.29E+00	2.32E+02	5.62E+01
	32	1508.98	9.46E+01	57.79			9.46E+01	5.78E+01

Analysis Report for 2206038-08

R-2 0-6

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	33	1661.77	5.98E+01	25.61			5.98E+01	2.56E+01
	34	1698.86	1.69E+01	11.87			1.69E+01	1.19E+01
M	35	1728.81	1.22E+02	27.42			1.22E+02	2.74E+01
m	36	1736.64	1.62E+01	14.04			1.62E+01	1.40E+01
M	37	1764.30	5.32E+02	49.43			5.32E+02	4.94E+01
m	38	1775.76	2.88E+01	15.80			2.88E+01	1.58E+01
	39	1846.48	8.24E+01	28.01			8.24E+01	2.80E+01
	40	1941.24	3.93E+01	35.67			3.93E+01	3.57E+01
	41	2064.53	3.28E+01	14.56			3.28E+01	1.46E+01
	42	2117.68	3.50E+01	24.12			3.50E+01	2.41E+01
	43	2204.23	1.49E+02	35.35			1.49E+02	3.53E+01
	44	2261.01	1.49E+01	16.52			1.49E+01	1.65E+01
	45	2292.61	3.25E+01	16.51			3.25E+01	1.65E+01
	46	2448.07	4.94E+01	17.56			4.94E+01	1.76E+01
	47	2498.59	6.33E+00	8.14			6.33E+00	8.14E+00
	48	2614.24	1.09E+02	22.29			1.09E+02	2.23E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.995	1460.81	*	10.67	6.18E+00	1.59E+00
NB-95	0.879	765.79	*	99.81	1.05E+00	2.59E-01
CD-109	1.000	88.03	*	3.72	1.94E+01	3.78E+00
SN-126	0.993	87.57	*	37.00	1.88E+00	3.66E-01
EU-155	0.321	86.50	*	30.90	2.27E+00	4.42E-01
		105.30		20.70		
TA-182	0.739	67.75	*	41.20	3.68E-01	2.53E-01
		1121.30	*	34.90	5.53E+00	7.40E-01
		1189.05		16.23		
		1221.41	*	26.98	3.47E-01	4.18E-01
		1231.02		11.44		
TL-208	0.884	583.14	*	30.22	1.42E+00	5.26E-01
		860.37		4.48		
		2614.66	*	35.85	1.24E+00	2.79E-01
PB-210	0.990	46.50	*	4.25	2.83E+00	2.36E+00

Analysis Report for 2206038-08

R-2 0-6

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
PB-212	0.778	238.63	*	44.60	3.54E+00	4.45E-01
		300.09		3.41		
BI-214	0.999	609.31	*	46.30	1.06E+01	1.11E+00
		1120.29	*	15.10	1.09E+01	1.46E+00
		1764.49	*	15.80	1.10E+01	1.35E+00
		2204.22	*	4.98	1.13E+01	2.85E+00
PB-214	0.999	295.21	*	19.19	1.16E+01	1.29E+00
		351.92	*	37.19	1.15E+01	1.11E+00
RA-224	1.000	240.98	*	3.95	4.00E+01	5.03E+00
RA-226	0.991	186.21	*	3.28	1.38E+01	3.32E+00
AC-228	0.983	338.32	*	11.40	1.53E+00	1.03E+00
		911.07	*	27.70	1.42E+00	5.66E-01
		969.11	*	16.60	1.15E+00	6.76E-01
NP-237	0.938	86.50	*	12.60	5.51E+00	1.07E+00
AM-243	0.901	74.67	*	66.00	2.94E+00	3.02E-01

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 3:38:37PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
10	462.14	3.75839E-02	32.26		
11	511.05	3.13148E-02	36.97		
14	665.72	6.46345E-02	17.49	Tol.	SB-126 CE-143
16	785.08	1.95268E-02	45.71	Tol.	SB-127
17	805.91	2.74627E-02	26.92		
18	840.65	1.81458E-02	56.93		
19	863.82	1.55160E-02	61.83		
20	881.02	1.02111E-02	62.03		
22	934.35	3.40765E-02	30.95	Sum	
25	1154.76	2.82980E-02	23.56	Sum	
27	1237.96	6.43880E-02	12.77		
28	1280.63	1.40611E-02	58.80		
29	1377.29	3.99277E-02	18.16	Sum	

Analysis Report for 2206038-08

R-2 0-6

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	30	1407.71	3.00539E-02	26.50	Sum	
	32	1508.98	2.62894E-02	30.53	Sum	
	33	1661.77	1.66136E-02	21.41		
	34	1698.86	4.68171E-03	35.23	Sum	
M	35	1728.81	3.38960E-02	11.24	Sum	
m	36	1736.64	4.49445E-03	43.40	Sum	
m	38	1775.76	8.00550E-03	27.42		
	39	1846.48	2.29007E-02	16.99		
	40	1941.24	1.09151E-02	45.38		
	41	2064.53	9.11036E-03	22.20		
	42	2117.68	9.71084E-03	34.50	Sum	
	44	2261.01	4.13996E-03	55.41		
	45	2292.61	9.02778E-03	25.40	Sum	
	46	2448.07	1.37302E-02	17.77		
	47	2498.59	1.75926E-03	64.26	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	6.18E+00	1.59E+00
NB-95	0.87	765.79	*	99.81	1.05E+00	2.59E-01
CD-109	1.00	88.03	*	3.72	1.94E+01	3.78E+00
SN-126	0.99	87.57	*	37.00	1.88E+00	3.66E-01
EU-155	0.32	86.50	*	30.90	2.27E+00	4.42E-01
		105.30		20.70		
TA-182	0.73	67.75	*	41.20	3.68E-01	2.53E-01
		1121.30	*	34.90	5.53E+00	7.40E-01
		1189.05		16.23		
		1221.41	*	26.98	3.47E-01	4.18E-01
		1231.02		11.44		
TL-208	0.88	583.14	*	30.22	1.42E+00	5.26E-01
		860.37		4.48		

BP/Castex-Ltd Adm-Apx E-001660

Analysis Report for 2206038-08

R-2 0-6

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TL-208	0.88	2614.66	*	35.85	1.24E+00	2.79E-01
PB-210	0.99	46.50	*	4.25	2.83E+00	2.36E+00
PB-212	0.77	238.63	*	44.60	3.54E+00	4.45E-01
		300.09		3.41		
BI-214	0.99	609.31	*	46.30	1.06E+01	1.11E+00
		1120.29	*	15.10	1.09E+01	1.46E+00
		1764.49	*	15.80	1.10E+01	1.35E+00
		2204.22	*	4.98	1.13E+01	2.85E+00
PB-214	0.99	295.21	*	19.19	1.16E+01	1.29E+00
		351.92	*	37.19	1.15E+01	1.11E+00
RA-224	1.00	240.98	*	3.95	4.00E+01	5.03E+00
RA-226	0.99	186.21	*	3.28	1.38E+01	3.32E+00
AC-228	0.98	338.32	*	11.40	1.53E+00	1.03E+00
		911.07	*	27.70	1.42E+00	5.66E-01
		969.11	*	16.60	1.15E+00	6.76E-01
NP-237	0.93	86.50	*	12.60	5.51E+00	1.07E+00
AM-243	0.90	74.67	*	66.00	2.94E+00	3.02E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.995	6.18E+00	1.59E+00	
X	TI-44	0.956			
	NB-95	0.879	1.05E+00	2.59E-01	
?	CD-109	1.000	1.94E+01	3.78E+00	
?	SN-126	0.993	1.88E+00	3.66E-01	
?	EU-155	0.321	2.27E+00	4.42E-01	
X	TM-171	0.998			
	TA-182	0.739	3.43E-01	2.10E-01	
	TL-208	0.884	1.28E+00	2.47E-01	
	PB-210	0.990	2.83E+00	2.36E+00	

Analysis Report for 2206038-08

R-2 0-6

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
?	PB-212	0.778	3.54E+00	4.45E-01	
	BI-214	0.999	1.07E+01	7.21E-01	
	PB-214	0.999	1.16E+01	8.43E-01	
?	RA-224	1.000	4.00E+01	5.03E+00	
	RA-226	0.991	1.38E+01	3.32E+00	
	AC-228	0.983	1.34E+00	4.00E-01	
X	TH-230	0.584			
?	NP-237	0.938	5.51E+00	1.07E+00	
	AM-243	0.901	2.94E+00	3.02E-01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-08

R-2 0-6

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 3:38:37PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	10	462.14	3.75839E-02	32.26		
	11	511.05	3.13148E-02	36.97		
	14	665.72	6.46345E-02	17.49	Tol.	SB-126 CE-143
	16	785.08	1.95268E-02	45.71	Tol.	SB-127
	17	805.91	2.74627E-02	26.92		
	18	840.65	1.81458E-02	56.93		
	19	863.82	1.55160E-02	61.83		
	20	881.02	1.02111E-02	62.03		
	22	934.35	3.40765E-02	30.95	Sum	
	25	1154.76	2.82980E-02	23.56	Sum	
	27	1237.96	6.43880E-02	12.77		
	28	1280.63	1.40611E-02	58.80		
	29	1377.29	3.99277E-02	18.16	Sum	
	30	1407.71	3.00539E-02	26.50	Sum	
	32	1508.98	2.62894E-02	30.53	Sum	
	33	1661.77	1.66136E-02	21.41		
	34	1698.86	4.68171E-03	35.23	Sum	
M	35	1728.81	3.38960E-02	11.24	Sum	
m	36	1736.64	4.49445E-03	43.40	Sum	
m	38	1775.76	8.00550E-03	27.42		
	39	1846.48	2.29007E-02	16.99		
	40	1941.24	1.09151E-02	45.38		
	41	2064.53	9.11036E-03	22.20		
	42	2117.68	9.71084E-03	34.50	Sum	
	44	2261.01	4.13996E-03	55.41		
	45	2292.61	9.02778E-03	25.40	Sum	
	46	2448.07	1.37302E-02	17.77		
	47	2498.59	1.75926E-03	64.26	Sum	

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M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	3.21E-01	1.69E+00	1.69E+00
+	NA-22	1274.54		99.94	-1.47E-02	1.54E-01	1.54E-01
+	NA-24	1368.53		99.99	2.30E-02	3.87E-02	1.49E-01
		2754.09		99.86	1.04E-03		3.87E-02
+	AL-26	1808.65		99.76	1.97E-02	1.05E-01	1.05E-01
+	K-40	1460.81	*	10.67	6.18E+00	2.14E+00	2.14E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88	*	94.40	1.37E-01	4.66E-01	5.08E-01
		78.34	*	96.00	2.02E+00		4.66E-01
+	SC-46	889.25		98.98	2.01E-02	1.81E-01	1.81E-01
		1120.51		99.90	2.01E+00		3.97E-01
+	V-48	983.52		99.98	4.58E-02	4.28E-01	4.31E-01
		1312.10		97.50	-5.15E-02		4.28E-01
+	CR-51	320.08		9.83	-1.01E+00	2.14E+00	2.14E+00
+	MN-54	834.83		99.97	2.53E-02	1.61E-01	1.61E-01
+	CO-56	846.75		99.96	1.97E-02	1.73E-01	1.73E-01
		1037.75		14.03	-3.82E-01		1.30E+00
		1238.25		67.00	9.89E-01		4.23E-01
		1771.40		15.51	-5.40E+00		1.36E+00
		2587.48		16.90	1.01E-01		4.40E-01
+	CO-57	122.06		85.51	6.14E-03	1.22E-01	1.22E-01
		136.48		10.60	-2.09E-01		1.06E+00
+	CO-58	810.76		99.40	-2.78E-02	1.82E-01	1.82E-01
+	FE-59	1099.22		56.50	7.17E-02	3.88E-01	3.88E-01
		1291.56		43.20	1.28E-01		4.74E-01
+	CO-60	1173.22		100.00	-3.05E-02	1.44E-01	1.45E-01
		1332.49		100.00	5.70E-02		1.44E-01
+	ZN-65	1115.52		50.75	-2.86E-01	6.00E-01	6.00E-01
+	GA-67	93.31		35.70	-9.84E+01	7.57E+01	7.57E+01
		208.95		2.24	6.90E+02		1.37E+03
		300.22		16.00	-3.81E+01		2.70E+02
+	SE-75	121.11		16.70	-1.15E-01	2.06E-01	6.70E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00		59.50	-4.04E-02	2.06E-01	2.06E-01
		264.65		59.80	-1.33E-01		2.12E-01
		279.53		25.20	-5.84E-02		5.24E-01
		400.65		11.40	-1.49E-01		1.24E+00
+	RB-82	776.52		13.00	3.95E-02	2.10E+00	2.10E+00
+	RB-83	520.41		46.00	-1.39E-01	3.25E-01	3.25E-01
		529.64		30.30	3.01E-01		5.12E-01
		552.65		16.40	-1.70E-01		8.85E-01
+	KR-85	513.99		0.43	-6.64E-01	3.29E+01	3.29E+01
+	SR-85	513.99		99.27	-3.82E-03	1.90E-01	1.90E-01
+	Y-88	898.02		93.40	-1.43E-01	1.17E-01	1.75E-01
		1836.01		99.38	-8.90E-02		1.17E-01
+	MO-93	263.06		56.72	-4.30E-02	1.22E-01	1.95E-01
		684.67		99.68	-5.37E-02		1.22E-01
		1477.11		99.08	4.50E-02		1.58E-01
+	NB-93M	16.57		9.43	0.00E+00	7.41E+00	7.41E+00
+	NB-94	702.63		100.00	6.94E-02	1.36E-01	1.36E-01
		871.10		100.00	2.59E-02		1.40E-01
+	NB-95	765.79	*	99.81	1.05E+00	3.57E-01	3.57E-01
+	NB-95M	235.69		25.00	-4.44E+00	8.87E+01	8.87E+01
+	ZR-95	724.18		43.70	4.37E-01	3.15E-01	4.31E-01
		756.72		55.30	8.56E-02		3.15E-01
+	MO-99	181.06		6.20	1.64E+02	7.44E+02	1.43E+03
		739.58		12.80	2.50E+02		7.44E+02
		778.00		4.50	4.07E+01		2.13E+03
+	TC-99M	140.51		89.00	-2.52E-02	1.20E-01	1.20E-01
+	RU-103	497.08		89.00	-6.13E-02	2.16E-01	2.16E-01
+	RU-106	621.84		9.80	-4.75E-01	1.33E+00	1.33E+00
+	AG-108M	433.93		89.90	1.40E-02	1.30E-01	1.30E-01
		614.37		90.40	4.83E-03		3.74E-01
		722.95		90.50	1.31E-01		1.54E-01
+	CD-109	88.03	*	3.72	1.94E+01	1.21E+01	1.21E+01
+	AG-110M	657.75		93.14	6.65E-03	1.41E-01	1.41E-01
		677.61		10.53	-2.91E-02		1.26E+00
		706.67		16.46	6.27E-01		9.03E-01
		763.93		21.98	1.66E+00		8.87E-01
		884.67		21.98	7.80E-02		7.34E-01
		1384.27		23.94	1.29E-01		7.72E-01
+	CD-113M	263.70		0.02	-1.06E+02	4.81E+02	4.81E+02
+	SN-113	255.12		1.93	2.46E+00	2.21E-01	6.91E+00
		391.69		64.90	1.43E-01		2.21E-01
+	TE-123M	159.00		84.10	-2.38E-02	1.56E-01	1.56E-01
+	SB-124	602.71		97.87	3.22E-02	2.58E-01	2.58E-01
		645.85		7.26	7.52E-01		2.25E+00
		722.78		11.10	1.44E+00		1.70E+00
		1691.02		49.00	-1.87E-02		3.09E-01
+	I-125	35.49		6.49	4.78E+01	7.51E+00	7.51E+00
+	SB-125	176.33		6.89	-5.93E-01	4.23E-01	1.68E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-125	427.89		29.33	8.41E-02	4.23E-01	4.23E-01
		463.38		10.35	8.55E-01		1.22E+00
		600.56		17.80	1.44E-01		7.60E-01
		635.90		11.32	-4.26E-01		1.07E+00
+	SB-126	414.70		83.30	-8.68E-02	1.25E-01	1.46E-01
		666.33		99.60	2.24E-01		1.47E-01
		695.00		99.60	-7.80E-02		1.25E-01
		720.50		53.80	-1.34E-01		2.40E-01
+	SN-126	87.57	*	37.00	1.88E+00	1.17E+00	1.17E+00
+	SB-127	473.00		25.00	-3.42E+01	3.85E+01	4.84E+01
		685.00		35.70	-6.95E-01		3.85E+01
		783.80		14.70	7.66E+01		1.10E+02
+	I-129	29.78		57.00	-2.01E+00	1.16E-01	1.16E-01
		33.60		13.20	5.02E+00		2.57E+00
		39.58		7.52	2.22E+01		3.97E+00
+	I-131	284.30		6.05	3.66E-01	1.32E+00	1.78E+01
		364.48		81.20	2.86E-01		1.32E+00
		636.97		7.26	1.26E+00		1.58E+01
		722.89		1.80	6.27E+01		7.38E+01
+	TE-132	49.72		13.10	4.96E+01	3.36E+01	2.98E+02
		228.16		88.00	-6.46E+00		3.36E+01
+	BA-133	81.00		34.06	-2.00E+00	3.84E-01	3.84E-01
		302.84		18.33	-8.29E-02		6.35E-01
		356.01		62.05	-2.14E-02		4.09E-01
+	I-133	529.87		86.30	6.37E+07	1.74E+08	1.74E+08
+	XE-133	81.00		38.00	-5.64E+01	1.09E+01	1.09E+01
+	CS-134	563.23		8.38	2.20E-01	1.69E-01	1.57E+00
		569.32		15.43	3.44E-01		8.87E-01
		604.70		97.60	-1.00E-02		3.44E-01
		795.84		85.40	4.51E-03		1.69E-01
		801.93		8.73	-5.46E-02		1.82E+00
+	CS-135	268.24		16.00	-3.45E-01	6.94E-01	6.94E-01
+	@ I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41		28.60	1.00E+26		1.00E+26
	@	1678.03		9.54	1.00E+26		1.00E+26
+	CS-136	153.22		7.46	2.15E+00	5.24E-01	6.06E+00
		163.89		4.61	-1.82E+00		9.65E+00
		176.55		13.56	-1.17E+00		3.32E+00
		273.65		12.66	3.03E+00		3.65E+00
		340.57		48.50	1.38E+00		1.06E+00
		818.50		99.70	-9.00E-02		5.24E-01
		1048.07		79.60	9.44E-03		6.92E-01
		1235.34		19.70	8.49E+00		4.36E+00
+	CS-137	661.65		85.12	-1.31E-03	1.62E-01	1.62E-01
+	LA-138	788.74		34.00	1.45E-01	2.15E-01	4.43E-01
		1435.80		66.00	5.32E-02		2.15E-01
+	CE-139	165.85		80.35	-9.16E-03	1.60E-01	1.60E-01
+	BA-140	162.64		6.70	1.57E+00	2.08E+00	6.97E+00
		304.84		4.50	-4.15E-01		1.03E+01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BA-140	423.70		3.20	4.71E+00	2.08E+00	1.60E+01
		437.55		2.00	-6.05E+00		2.33E+01
		537.32		25.00	1.05E+00		2.08E+00
+	LA-140	328.77		20.50	8.97E-01	6.80E-01	2.37E+00
		487.03		45.50	-1.95E-01		1.11E+00
		815.85		23.50	3.04E-01		2.33E+00
		1596.49		95.49	1.57E-01		6.80E-01
+	CE-141	145.44		48.40	9.23E-02	4.02E-01	4.02E-01
+	CE-143	57.36		11.80	1.24E+05	2.79E+05	5.41E+05
		293.26		42.00	2.55E+06		2.79E+05
		664.55		5.20	1.91E+06		1.47E+06
+	CE-144	133.54		10.80	3.33E-01	1.04E+00	1.04E+00
+	PM-144	476.78		42.00	5.96E-02	1.33E-01	3.13E-01
		618.01		98.60	-2.39E-02		1.40E-01
		696.49		99.49	-8.70E-02		1.33E-01
+	PM-145	36.85		21.70	1.20E+01	8.69E-01	1.59E+00
		37.36		39.70	6.67E+00		8.69E-01
		42.30		15.10	2.00E+00		1.57E+00
		72.40		2.31	4.83E+00		6.33E+00
+	PM-146	453.90		39.94	6.31E-02	2.86E-01	2.86E-01
		735.90		14.01	-5.52E-01		9.21E-01
		747.13		13.10	-4.27E-01		1.02E+00
+	ND-147	91.11		28.90	5.86E+00	2.07E+00	2.07E+00
		531.02		13.10	-2.13E-01		4.93E+00
+	PM-149	285.90		3.10	4.41E+03	1.33E+04	1.33E+04
+	EU-152	121.78		20.50	-8.10E-02	4.72E-01	4.72E-01
		244.69		5.40	1.21E+01		3.17E+00
		344.27		19.13	-1.44E+01		6.51E-01
		778.89		9.10	2.79E-02		1.47E+00
		964.01		10.40	-6.76E-02		1.70E+00
		1085.78		7.22	1.76E-01		2.01E+00
		1112.02		9.60	-2.30E+00		1.76E+00
		1407.95		14.94	1.39E+00		1.35E+00
+	GD-153	97.43		31.30	-7.87E-02	3.23E-01	3.23E-01
		103.18		22.20	6.95E-02		4.48E-01
+	EU-154	123.07		40.50	-1.25E-01	2.42E-01	2.42E-01
		723.30		19.70	6.05E-01		7.12E-01
		873.19		11.50	-1.41E-01		1.17E+00
		996.32		10.30	-3.91E-01		1.34E+00
		1004.76		17.90	-2.12E-01		8.09E-01
		1274.45		35.50	-4.08E-02		4.29E-01
+	EU-155	86.50	*	30.90	2.27E+00	4.50E-01	1.41E+00
		105.30		20.70	-1.48E-01		4.50E-01
+	EU-156	811.77		10.40	-1.74E-02	4.23E+00	4.23E+00
		1153.47		7.20	7.48E+00		7.86E+00
		1230.71		8.90	-2.74E-01		5.50E+00
+	HO-166M	184.41		72.60	-6.61E-03	1.89E-01	1.89E-01
		280.45		29.60	-1.31E-01		3.81E-01
		410.94		11.10	2.21E-01		1.12E+00

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Analysis Report for 2206038-08

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	HO-166M	711.69		54.10	-5.67E-02	1.89E-01	2.35E-01
+	TM-171	66.72	*	0.14	9.48E+01	3.51E+02	3.51E+02
+	HF-172	67.35		5.31	-9.15E+00	9.05E-01	2.23E+00
		125.82		11.30	-6.67E-02		9.05E-01
+	LU-172	181.53		20.60	1.02E+00	3.43E+00	8.90E+00
		900.72		29.81	-5.39E+00		7.27E+00
		1093.66		62.50	-8.63E-02		3.43E+00
+	LU-173	100.72		5.24	-1.12E+00	5.69E-01	1.81E+00
		272.11		21.20	4.65E-01		5.69E-01
+	HF-175	343.40		84.00	-1.70E+00	1.92E-01	1.92E-01
+	LU-176	88.34		13.30	3.39E+00	1.18E-01	9.03E-01
		201.83		86.00	-1.10E-02		1.38E-01
		306.78		94.00	-2.55E-02		1.18E-01
+	HF-181	133.02		41.70	1.24E-01	2.39E-01	3.86E-01
		345.85		17.20	-2.71E+01		1.45E+00
		482.03		82.80	1.46E-01		2.39E-01
+	TA-182	67.75	*	41.20	3.68E-01	6.63E-01	1.36E+00
		1121.30	*	34.90	5.53E+00		6.63E-01
		1189.05		16.23	-4.14E-01		9.91E-01
		1221.41	*	26.98	3.47E-01		6.84E-01
		1231.02		11.44	-7.57E-02		1.68E+00
+	IR-192	308.46		29.68	-3.27E-01	3.03E-01	4.67E-01
		468.07		48.10	2.01E-02		3.03E-01
+	HG-203	279.19		77.30	-2.41E-02	2.17E-01	2.17E-01
+	TL-204	374.74		94.11	-2.68E-02	1.19E-01	1.19E-01
		899.15		99.16	-8.30E-02		1.46E-01
		911.74		91.10	2.84E-01		2.08E-01
+	BI-207	569.67		97.72	5.32E-02	1.37E-01	1.37E-01
		1063.62		74.90	-1.92E-02		1.90E-01
+	TL-208	583.14	*	30.22	1.42E+00	1.79E-01	8.08E-01
		860.37		4.48	2.98E-01		3.26E+00
		2614.66	*	35.85	1.24E+00		1.79E-01
+	BI-210M	262.00		45.00	6.04E-02	2.46E-01	2.46E-01
		300.00		23.00	-1.02E-01		7.27E-01
+	PB-210	46.50	*	4.25	2.83E+00	3.83E+00	3.83E+00
+	PB-211	404.84		2.90	1.12E+00	4.33E+00	4.33E+00
		831.96		2.90	-1.04E+00		4.83E+00
+	BI-212	727.17		11.80	8.10E-02	1.17E+00	1.17E+00
		1620.62		2.75	1.00E+00		4.53E+00
+	PB-212	238.63	*	44.60	3.54E+00	4.89E-01	4.89E-01
		300.09		3.41	-6.91E-01		4.90E+00
+	BI-214	609.31	*	46.30	1.06E+01	5.26E-01	5.26E-01
		1120.29	*	15.10	1.09E+01		1.31E+00
		1764.49	*	15.80	1.10E+01		1.27E+00
		2204.22	*	4.98	1.13E+01		3.39E+00
+	PB-214	295.21	*	19.19	1.16E+01	5.75E-01	1.13E+00
		351.92	*	37.19	1.15E+01		5.75E-01
+	RN-219	401.80		6.50	1.89E-01	1.90E+00	1.90E+00

BP/Castex-Ltd Adm-Apx E-001668

Analysis Report for 2206038-08

R-2 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	RA-223	323.87		3.88	-2.77E-01	2.94E+00	2.94E+00
+	RA-224	240.98	*	3.95	4.00E+01	5.52E+00	5.52E+00
+	RA-225	40.00		31.00	1.11E+01	3.12E+00	3.12E+00
+	RA-226	186.21	*	3.28	1.38E+01	4.94E+00	4.94E+00
+	TH-227	50.10		8.40	6.46E-01	1.35E+00	1.75E+00
		236.00		11.50	4.20E-02		1.35E+00
		256.20		6.30	7.49E-01		1.80E+00
+	AC-228	338.32	*	11.40	1.53E+00	8.61E-01	1.65E+00
		911.07	*	27.70	1.42E+00		8.61E-01
		969.11	*	16.60	1.15E+00		1.06E+00
+	TH-230	48.43	*	16.90	7.09E-01	9.62E-01	9.62E-01
		62.85		4.60	1.84E+00		2.55E+00
		67.67	*	0.37	3.50E+01		1.30E+02
+	PA-231	283.67		1.60	-3.33E+00	5.24E+00	7.01E+00
		302.67		2.30	-9.00E-01		5.24E+00
+	TH-231	25.64		14.70	0.00E+00	1.21E-01	1.21E-01
		84.21		6.40	-1.26E+01		1.81E+00
+	PA-233	311.98		38.60	-1.12E-01	5.51E-01	5.51E-01
+	PA-234	131.20		20.40	7.47E-02	5.07E-01	5.07E-01
		733.99		8.80	-1.29E+00		1.46E+00
		946.00		12.00	-1.37E-02		1.12E+00
+	PA-234M	1001.03		0.92	-1.24E+00	1.53E+01	1.53E+01
+	TH-234	63.29		3.80	3.12E+00	3.11E+00	3.11E+00
+	U-235	143.76		10.50	-2.78E-01	1.04E+00	1.04E+00
		163.35		4.70	1.14E-01		2.40E+00
		205.31		4.70	-2.06E-01		2.51E+00
+	NP-237	86.50	*	12.60	5.51E+00	3.43E+00	3.43E+00
+	NP-239	106.10		22.70	-3.40E+02	8.96E+02	8.96E+02
		228.18		10.70	-4.48E+02		2.33E+03
		277.60		14.10	-2.51E+02		1.78E+03
+	AM-241	59.54		35.90	-4.40E-02	3.30E-01	3.30E-01
+	AM-243	74.67	*	66.00	2.94E+00	6.78E-01	6.78E-01
+	CM-243	209.75		3.29	1.82E+00	8.20E-01	3.63E+00
		228.14		10.60	-2.06E-01		1.07E+00
		277.60		14.00	-1.15E-01		8.20E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

Analysis Report for 2206038-08

R-2 0-6

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	1.69E+00	1.69E+00	3.21E-01	8.23E-01
	NA-22	1274.54		99.94	1.54E-01	1.54E-01	-1.47E-02	7.37E-02
	NA-24	1368.53		99.99	1.49E-01	3.87E-02	2.30E-02	7.10E-02
		2754.09		99.86	3.87E-02		1.04E-03	1.37E-02
	AL-26	1808.65		99.76	1.05E-01	1.05E-01	1.97E-02	4.79E-02
+	K-40	1460.81	*	10.67	2.14E+00	2.14E+00	6.18E+00	1.03E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88	*	94.40	5.08E-01	4.66E-01	1.37E-01	2.53E-01
		78.34	*	96.00	4.66E-01		2.02E+00	2.33E-01
	SC-46	889.25		98.98	1.81E-01	1.81E-01	2.01E-02	8.74E-02
		1120.51		99.90	3.97E-01		2.01E+00	1.95E-01
	V-48	983.52		99.98	4.31E-01	4.28E-01	4.58E-02	2.07E-01
		1312.10		97.50	4.28E-01		-5.15E-02	2.03E-01
	CR-51	320.08		9.83	2.14E+00	2.14E+00	-1.01E+00	1.05E+00
	MN-54	834.83		99.97	1.61E-01	1.61E-01	2.53E-02	7.78E-02
	CO-56	846.75		99.96	1.73E-01	1.73E-01	1.97E-02	8.33E-02
		1037.75		14.03	1.30E+00		-3.82E-01	6.25E-01
		1238.25		67.00	4.23E-01		9.89E-01	2.05E-01
		1771.40		15.51	1.36E+00		-5.40E+00	6.41E-01
		2587.48		16.90	4.40E-01		1.01E-01	1.78E-01
	CO-57	122.06		85.51	1.22E-01	1.22E-01	6.14E-03	6.01E-02
		136.48		10.60	1.06E+00		-2.09E-01	5.26E-01
	CO-58	810.76		99.40	1.82E-01	1.82E-01	-2.78E-02	8.79E-02
	FE-59	1099.22		56.50	3.88E-01	3.88E-01	7.17E-02	1.86E-01
		1291.56		43.20	4.74E-01		1.28E-01	2.25E-01
	CO-60	1173.22		100.00	1.45E-01	1.44E-01	-3.05E-02	6.92E-02
		1332.49		100.00	1.44E-01		5.70E-02	6.81E-02
	ZN-65	1115.52		50.75	6.00E-01	6.00E-01	-2.86E-01	2.93E-01
	GA-67	93.31		35.70	7.57E+01	7.57E+01	-9.84E+01	3.75E+01
		208.95		2.24	1.37E+03		6.90E+02	6.76E+02
		300.22		16.00	2.70E+02		-3.81E+01	1.33E+02
	SE-75	121.11		16.70	6.70E-01	2.06E-01	-1.15E-01	3.31E-01
		136.00		59.50	2.06E-01		-4.04E-02	1.02E-01
		264.65		59.80	2.12E-01		-1.33E-01	1.04E-01
		279.53		25.20	5.24E-01		-5.84E-02	2.58E-01
		400.65		11.40	1.24E+00		-1.49E-01	6.05E-01
	RB-82	776.52		13.00	2.10E+00	2.10E+00	3.95E-02	1.01E+00
	RB-83	520.41		46.00	3.25E-01	3.25E-01	-1.39E-01	1.58E-01
		529.64		30.30	5.12E-01		3.01E-01	2.49E-01
		552.65		16.40	8.85E-01		-1.70E-01	4.30E-01
	KR-85	513.99		0.43	3.29E+01	3.29E+01	-6.64E-01	1.61E+01
	SR-85	513.99		99.27	1.90E-01	1.90E-01	-3.82E-03	9.26E-02

BP/Castex-Ltd Adm-Apx E-001670

Analysis Report for 2206038-08

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	Y-88	898.02		93.40	1.75E-01	1.17E-01	-1.43E-01	8.44E-02
		1836.01		99.38	1.17E-01		-8.90E-02	5.29E-02
	MO-93	263.06		56.72	1.95E-01	1.22E-01	-4.30E-02	9.57E-02
		684.67		99.68	1.22E-01		-5.37E-02	5.91E-02
		1477.11		99.08	1.58E-01		4.50E-02	7.50E-02
	NB-93M	16.57		9.43	7.41E+00	7.41E+00	0.00E+00	0.00E+00
	NB-94	702.63		100.00	1.36E-01	1.36E-01	6.94E-02	6.61E-02
		871.10		100.00	1.40E-01		2.59E-02	6.77E-02
+	NB-95	765.79	*	99.81	3.57E-01	3.57E-01	1.05E+00	1.75E-01
	NB-95M	235.69		25.00	8.87E+01	8.87E+01	-4.44E+00	4.38E+01
	ZR-95	724.18		43.70	4.31E-01	3.15E-01	4.37E-01	2.09E-01
		756.72		55.30	3.15E-01		8.56E-02	1.52E-01
	MO-99	181.06		6.20	1.43E+03	7.44E+02	1.64E+02	7.08E+02
		739.58		12.80	7.44E+02		2.50E+02	3.59E+02
		778.00		4.50	2.13E+03		4.07E+01	1.03E+03
	TC-99M	140.51		89.00	1.20E-01	1.20E-01	-2.52E-02	5.95E-02
	RU-103	497.08		89.00	2.16E-01	2.16E-01	-6.13E-02	1.05E-01
	RU-106	621.84		9.80	1.33E+00	1.33E+00	-4.75E-01	6.47E-01
	AG-108M	433.93		89.90	1.30E-01	1.30E-01	1.40E-02	6.36E-02
		614.37		90.40	3.74E-01		4.83E-03	1.85E-01
		722.95		90.50	1.54E-01		1.31E-01	7.47E-02
+	CD-109	88.03	*	3.72	1.21E+01	1.21E+01	1.94E+01	6.03E+00
	AG-110M	657.75		93.14	1.41E-01	1.41E-01	6.65E-03	6.84E-02
		677.61		10.53	1.26E+00		-2.91E-02	6.08E-01
		706.67		16.46	9.03E-01		6.27E-01	4.38E-01
		763.93		21.98	8.87E-01		1.66E+00	4.32E-01
		884.67		21.98	7.34E-01		7.80E-02	3.55E-01
		1384.27		23.94	7.72E-01		1.29E-01	3.70E-01
	CD-113M	263.70		0.02	4.81E+02	4.81E+02	-1.06E+02	2.36E+02
	SN-113	255.12		1.93	6.91E+00	2.21E-01	2.46E+00	3.40E+00
		391.69		64.90	2.21E-01		1.43E-01	1.08E-01
	TE-123M	159.00		84.10	1.56E-01	1.56E-01	-2.38E-02	7.68E-02
	SB-124	602.71		97.87	2.58E-01	2.58E-01	3.22E-02	1.26E-01
		645.85		7.26	2.25E+00		7.52E-01	1.09E+00
		722.78		11.10	1.70E+00		1.44E+00	8.23E-01
		1691.02		49.00	3.09E-01		-1.87E-02	1.43E-01
	I-125	35.49		6.49	7.51E+00	7.51E+00	4.78E+01	3.71E+00
	SB-125	176.33		6.89	1.68E+00	4.23E-01	-5.93E-01	8.28E-01
		427.89		29.33	4.23E-01		8.41E-02	2.07E-01
		463.38		10.35	1.22E+00		8.55E-01	5.96E-01
		600.56		17.80	7.60E-01		1.44E-01	3.69E-01
		635.90		11.32	1.07E+00		-4.26E-01	5.16E-01
	SB-126	414.70		83.30	1.46E-01	1.25E-01	-8.68E-02	7.14E-02
		666.33		99.60	1.47E-01		2.24E-01	7.16E-02
		695.00		99.60	1.25E-01		-7.80E-02	6.04E-02
		720.50		53.80	2.40E-01		-1.34E-01	1.16E-01
+	SN-126	87.57	*	37.00	1.17E+00	1.17E+00	1.88E+00	5.83E-01
	SB-127	473.00		25.00	4.84E+01	3.85E+01	-3.42E+01	2.35E+01
		685.00		35.70	3.85E+01		-6.95E-01	1.86E+01
		783.80		14.70	1.10E+02		7.66E+01	5.35E+01
	I-129	29.78		57.00	1.16E-01	1.16E-01	-2.01E+00	5.06E-02
		33.60		13.20	2.57E+00		5.02E+00	1.27E+00
		39.58		7.52	3.97E+00		2.22E+01	1.97E+00

BP/Castex-Ltd Adm-Apx E-001671

Analysis Report for 2206038-08

R-2 0-6

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
I-131	284.30	6.05	1.78E+01	1.32E+00	3.66E-01	8.73E+00
	364.48	81.20	1.32E+00		2.86E-01	6.48E-01
	636.97	7.26	1.58E+01		1.26E+00	7.65E+00
	722.89	1.80	7.38E+01		6.27E+01	3.58E+01
TE-132	49.72	13.10	2.98E+02	3.36E+01	4.96E+01	1.47E+02
	228.16	88.00	3.36E+01		-6.46E+00	1.66E+01
BA-133	81.00	34.06	3.84E-01	3.84E-01	-2.00E+00	1.90E-01
	302.84	18.33	6.35E-01		-8.29E-02	3.12E-01
	356.01	62.05	4.09E-01		-2.14E-02	2.03E-01
I-133	529.87	86.30	1.74E+08	1.74E+08	6.37E+07	8.47E+07
XE-133	81.00	38.00	1.09E+01	1.09E+01	-5.64E+01	5.38E+00
CS-134	563.23	8.38	1.57E+00	1.69E-01	2.20E-01	7.65E-01
	569.32	15.43	8.87E-01		3.44E-01	4.32E-01
	604.70	97.60	3.44E-01		-1.00E-02	1.70E-01
	795.84	85.40	1.69E-01		4.51E-03	8.17E-02
	801.93	8.73	1.82E+00		-5.46E-02	8.83E-01
CS-135	268.24	16.00	6.94E-01	6.94E-01	-3.45E-01	3.41E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	6.06E+00	5.24E-01	2.15E+00	3.00E+00
	163.89	4.61	9.65E+00		-1.82E+00	4.76E+00
	176.55	13.56	3.32E+00		-1.17E+00	1.64E+00
	273.65	12.66	3.65E+00		3.03E+00	1.79E+00
	340.57	48.50	1.06E+00		1.38E+00	5.19E-01
	818.50	99.70	5.24E-01		-9.00E-02	2.53E-01
	1048.07	79.60	6.92E-01		9.44E-03	3.32E-01
	1235.34	19.70	4.36E+00		8.49E+00	2.11E+00
CS-137	661.65	85.12	1.62E-01	1.62E-01	-1.31E-03	7.86E-02
LA-138	788.74	34.00	4.43E-01	2.15E-01	1.45E-01	2.15E-01
	1435.80	66.00	2.15E-01		5.32E-02	1.02E-01
CE-139	165.85	80.35	1.60E-01	1.60E-01	-9.16E-03	7.90E-02
BA-140	162.64	6.70	6.97E+00	2.08E+00	1.57E+00	3.44E+00
	304.84	4.50	1.03E+01		-4.15E-01	5.04E+00
	423.70	3.20	1.60E+01		4.71E+00	7.85E+00
	437.55	2.00	2.33E+01		-6.05E+00	1.14E+01
	537.32	25.00	2.08E+00		1.05E+00	1.01E+00
LA-140	328.77	20.50	2.37E+00	6.80E-01	8.97E-01	1.16E+00
	487.03	45.50	1.11E+00		-1.95E-01	5.40E-01
	815.85	23.50	2.33E+00		3.04E-01	1.13E+00
	1596.49	95.49	6.80E-01		1.57E-01	3.22E-01
CE-141	145.44	48.40	4.02E-01	4.02E-01	9.23E-02	1.99E-01
CE-143	57.36	11.80	5.41E+05	2.79E+05	1.24E+05	2.67E+05
	293.26	42.00	2.79E+05		2.55E+06	1.38E+05
	664.55	5.20	1.47E+06		1.91E+06	7.13E+05
CE-144	133.54	10.80	1.04E+00	1.04E+00	3.33E-01	5.12E-01
PM-144	476.78	42.00	3.13E-01	1.33E-01	5.96E-02	1.53E-01
	618.01	98.60	1.40E-01		-2.39E-02	6.79E-02
	696.49	99.49	1.33E-01		-8.70E-02	6.44E-02
PM-145	36.85	21.70	1.59E+00	8.69E-01	1.20E+01	7.86E-01
	37.36	39.70	8.69E-01		6.67E+00	4.30E-01
	42.30	15.10	1.57E+00		2.00E+00	7.76E-01
	72.40	2.31	6.33E+00		4.83E+00	3.14E+00

BP/Castex-Ltd Adm-Apx E-001672

Analysis Report for 2206038-08

R-2 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PM-146	453.90		39.94	2.86E-01	2.86E-01	6.31E-02	1.39E-01
		735.90		14.01	9.21E-01		-5.52E-01	4.45E-01
		747.13		13.10	1.02E+00		-4.27E-01	4.91E-01
	ND-147	91.11		28.90	2.07E+00	2.07E+00	5.86E+00	1.02E+00
		531.02		13.10	4.93E+00		-2.13E-01	2.40E+00
	PM-149	285.90		3.10	1.33E+04	1.33E+04	4.41E+03	6.56E+03
	EU-152	121.78		20.50	4.72E-01	4.72E-01	-8.10E-02	2.33E-01
		244.69		5.40	3.17E+00		1.21E+01	1.57E+00
		344.27		19.13	6.51E-01		-1.44E+01	3.19E-01
		778.89		9.10	1.47E+00		2.79E-02	7.12E-01
		964.01		10.40	1.70E+00		-6.76E-02	8.21E-01
		1085.78		7.22	2.01E+00		1.76E-01	9.62E-01
		1112.02		9.60	1.76E+00		-2.30E+00	8.48E-01
		1407.95		14.94	1.35E+00		1.39E+00	6.51E-01
	GD-153	97.43		31.30	3.23E-01	3.23E-01	-7.87E-02	1.60E-01
		103.18		22.20	4.48E-01		6.95E-02	2.21E-01
	EU-154	123.07		40.50	2.42E-01	2.42E-01	-1.25E-01	1.20E-01
		723.30		19.70	7.12E-01		6.05E-01	3.45E-01
		873.19		11.50	1.17E+00		-1.41E-01	5.63E-01
		996.32		10.30	1.34E+00		-3.91E-01	6.41E-01
		1004.76		17.90	8.09E-01		-2.12E-01	3.89E-01
		1274.45		35.50	4.29E-01		-4.08E-02	2.05E-01
+	EU-155	86.50	*	30.90	1.41E+00	4.50E-01	2.27E+00	7.05E-01
		105.30		20.70	4.50E-01		-1.48E-01	2.22E-01
	EU-156	811.77		10.40	4.23E+00	4.23E+00	-1.74E-02	2.04E+00
		1153.47		7.20	7.86E+00		7.48E+00	3.78E+00
		1230.71		8.90	5.50E+00		-2.74E-01	2.63E+00
	HO-166M	184.41		72.60	1.89E-01	1.89E-01	-6.61E-03	9.36E-02
		280.45		29.60	3.81E-01		-1.31E-01	1.87E-01
		410.94		11.10	1.12E+00		2.21E-01	5.47E-01
		711.69		54.10	2.35E-01		-5.67E-02	1.14E-01
	TM-171	66.72	*	0.14	3.51E+02	3.51E+02	9.48E+01	1.75E+02
	HF-172	67.35		5.31	2.23E+00	9.05E-01	-9.15E+00	1.10E+00
		125.82		11.30	9.05E-01		-6.67E-02	4.47E-01
	LU-172	181.53		20.60	8.90E+00	3.43E+00	1.02E+00	4.40E+00
		900.72		29.81	7.27E+00		-5.39E+00	3.51E+00
		1093.66		62.50	3.43E+00		-8.63E-02	1.64E+00
	LU-173	100.72		5.24	1.81E+00	5.69E-01	-1.12E+00	8.92E-01
		272.11		21.20	5.69E-01		4.65E-01	2.80E-01
	HF-175	343.40		84.00	1.92E-01	1.92E-01	-1.70E+00	9.44E-02
	LU-176	88.34		13.30	9.03E-01	1.18E-01	3.39E+00	4.47E-01
		201.83		86.00	1.38E-01		-1.10E-02	6.81E-02
		306.78		94.00	1.18E-01		-2.55E-02	5.80E-02
	HF-181	133.02		41.70	3.86E-01	2.39E-01	1.24E-01	1.91E-01
		345.85		17.20	1.45E+00		-2.71E+01	7.13E-01
		482.03		82.80	2.39E-01		1.46E-01	1.17E-01
+	TA-182	67.75	*	41.20	1.36E+00	6.63E-01	3.68E-01	6.80E-01
		1121.30	*	34.90	6.63E-01		5.53E+00	3.21E-01
		1189.05		16.23	9.91E-01		-4.14E-01	4.72E-01
		1221.41	*	26.98	6.84E-01		3.47E-01	3.28E-01
		1231.02		11.44	1.68E+00		-7.57E-02	8.07E-01
	IR-192	308.46		29.68	4.67E-01	3.03E-01	-3.27E-01	2.29E-01
		468.07		48.10	3.03E-01		2.01E-02	1.48E-01

BP/Castex-Ltd Adm-Apx E-001673

Analysis Report for 2206038-08

R-2 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	HG-203	279.19		77.30	2.17E-01	2.17E-01	-2.41E-02	1.06E-01
	TL-204	374.74		94.11	1.19E-01	1.19E-01	-2.68E-02	5.82E-02
		899.15		99.16	1.46E-01		-8.30E-02	7.03E-02
		911.74		91.10	2.08E-01		2.84E-01	1.01E-01
	BI-207	569.67		97.72	1.37E-01	1.37E-01	5.32E-02	6.67E-02
		1063.62		74.90	1.90E-01		-1.92E-02	9.10E-02
+	TL-208	583.14	*	30.22	8.08E-01	1.79E-01	1.42E+00	3.98E-01
		860.37		4.48	3.26E+00		2.98E-01	1.58E+00
		2614.66	*	35.85	1.79E-01		1.24E+00	7.43E-02
	BI-210M	262.00		45.00	2.46E-01	2.46E-01	6.04E-02	1.21E-01
		300.00		23.00	7.27E-01		-1.02E-01	3.59E-01
+	PB-210	46.50	*	4.25	3.83E+00	3.83E+00	2.83E+00	1.89E+00
	PB-211	404.84		2.90	4.33E+00	4.33E+00	1.12E+00	2.12E+00
		831.96		2.90	4.83E+00		-1.04E+00	2.33E+00
	BI-212	727.17		11.80	1.17E+00	1.17E+00	8.10E-02	5.66E-01
		1620.62		2.75	4.53E+00		1.00E+00	2.12E+00
+	PB-212	238.63	*	44.60	4.89E-01	4.89E-01	3.54E+00	2.43E-01
		300.09		3.41	4.90E+00		-6.91E-01	2.42E+00
+	BI-214	609.31	*	46.30	5.26E-01	5.26E-01	1.06E+01	2.59E-01
		1120.29	*	15.10	1.31E+00		1.09E+01	6.33E-01
		1764.49	*	15.80	1.27E+00		1.10E+01	6.06E-01
		2204.22	*	4.98	3.39E+00		1.13E+01	1.59E+00
+	PB-214	295.21	*	19.19	1.13E+00	5.75E-01	1.16E+01	5.59E-01
		351.92	*	37.19	5.75E-01		1.15E+01	2.84E-01
	RN-219	401.80		6.50	1.90E+00	1.90E+00	1.89E-01	9.31E-01
	RA-223	323.87		3.88	2.94E+00	2.94E+00	-2.77E-01	1.44E+00
+	RA-224	240.98	*	3.95	5.52E+00	5.52E+00	4.00E+01	2.74E+00
	RA-225	40.00		31.00	3.12E+00	3.12E+00	1.11E+01	1.54E+00
+	RA-226	186.21	*	3.28	4.94E+00	4.94E+00	1.38E+01	2.45E+00
	TH-227	50.10		8.40	1.75E+00	1.35E+00	6.46E-01	8.67E-01
		236.00		11.50	1.35E+00		4.20E-02	6.70E-01
		256.20		6.30	1.80E+00		7.49E-01	8.87E-01
+	AC-228	338.32	*	11.40	1.65E+00	8.61E-01	1.53E+00	8.17E-01
		911.07	*	27.70	8.61E-01		1.42E+00	4.21E-01
		969.11	*	16.60	1.06E+00		1.15E+00	5.13E-01
	TH-230	48.43	*	16.90	9.62E-01	9.62E-01	7.09E-01	4.75E-01
		62.85		4.60	2.55E+00		1.84E+00	1.26E+00
		67.67	*	0.37	1.30E+02		3.50E+01	6.46E+01
	PA-231	283.67		1.60	7.01E+00	5.24E+00	-3.33E+00	3.44E+00
		302.67		2.30	5.24E+00		-9.00E-01	2.57E+00
	TH-231	25.64		14.70	1.21E-01	1.21E-01	0.00E+00	0.00E+00
		84.21		6.40	1.81E+00		-1.26E+01	8.98E-01
	PA-233	311.98		38.60	5.51E-01	5.51E-01	-1.12E-01	2.70E-01
	PA-234	131.20		20.40	5.07E-01	5.07E-01	7.47E-02	2.50E-01
		733.99		8.80	1.46E+00		-1.29E+00	7.04E-01
		946.00		12.00	1.12E+00		-1.37E-02	5.40E-01
	PA-234M	1001.03		0.92	1.53E+01	1.53E+01	-1.24E+00	7.37E+00
	TH-234	63.29		3.80	3.11E+00	3.11E+00	3.12E+00	1.54E+00
	U-235	143.76		10.50	1.04E+00	1.04E+00	-2.78E-01	5.15E-01
		163.35		4.70	2.40E+00		1.14E-01	1.18E+00
		205.31		4.70	2.51E+00		-2.06E-01	1.24E+00
+	NP-237	86.50	*	12.60	3.43E+00	3.43E+00	5.51E+00	1.71E+00
	NP-239	106.10		22.70	8.96E+02	8.96E+02	-3.40E+02	4.42E+02

BP/Castex-Ltd Adm-Apx E-001674

Analysis Report for 2206038-08

R-2 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	NP-239	228.18		10.70	2.33E+03	8.96E+02	-4.48E+02	1.15E+03
		277.60		14.10	1.78E+03		-2.51E+02	8.76E+02
	AM-241	59.54		35.90	3.30E-01	3.30E-01	-4.40E-02	1.63E-01
+	AM-243	74.67	*	66.00	6.78E-01	6.78E-01	2.94E+00	3.38E-01
	CM-243	209.75		3.29	3.63E+00	8.20E-01	1.82E+00	1.79E+00
		228.14		10.60	1.07E+00		-2.06E-01	5.29E-01
		277.60		14.00	8.20E-01		-1.15E-01	4.03E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-2 0-6

Elapsed Live time: 3600
Elapsed Real Time: 3604

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	2	14
33:	290	360	377	387	383	576	380	252
41:	232	236	228	252	261	314	228	217
49:	204	205	229	265	238	200	232	206
57:	238	234	261	259	260	339	262	283
65:	298	314	266	278	285	316	366	492
73:	694	926	1024	1020	805	457	282	299
81:	272	299	291	326	484	528	496	416
89:	368	337	321	289	264	259	233	229
97:	220	243	233	212	220	231	236	253
105:	228	235	222	235	232	253	244	257
113:	221	222	231	236	238	214	225	245
121:	220	248	252	234	272	234	245	253
129:	294	233	264	254	279	248	251	267
137:	238	269	254	247	268	282	259	279
145:	248	278	271	309	283	275	267	267
153:	273	267	248	245	258	267	249	230
161:	227	275	255	247	233	223	244	240
169:	233	246	214	236	197	227	234	261
177:	225	230	223	249	222	227	274	402
185:	511	403	340	244	239	201	214	225
193:	222	239	215	246	214	219	217	184
201:	212	208	184	204	202	210	192	224
209:	201	202	178	188	162	187	189	168
217:	189	147	178	161	133	169	165	166
225:	145	168	154	162	167	152	178	183
233:	161	181	205	283	499	483	456	545
241:	638	486	267	170	142	132	163	137
249:	136	136	139	138	144	134	140	140
257:	134	139	122	120	120	130	128	119
265:	118	109	113	103	138	135	133	135
273:	138	136	146	107	116	127	107	96
281:	120	122	114	112	108	119	139	107
289:	117	116	182	357	699	1038	831	420
297:	187	152	112	117	115	104	78	100
305:	110	102	93	100	90	83	88	100
313:	108	88	81	89	94	83	98	106
321:	86	84	90	89	94	105	110	110
329:	93	110	102	90	91	108	115	106
337:	134	136	114	116	112	95	104	75
345:	92	102	121	241	652	1263	1653	1072
353:	409	155	99	99	87	78	78	94
361:	79	74	78	72	63	70	93	68

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369:	60	66	82	67	60	88	71	88

Sample Title: R-2 0-6

Channel								
377:	61	73	82	62	74	58	59	86
385:	87	68	108	92	93	64	83	75
393:	78	79	76	66	67	82	83	83
401:	88	71	78	83	85	72	87	89
409:	71	85	80	76	59	81	82	55
417:	72	92	71	79	70	76	70	75
425:	60	77	70	73	70	71	64	70
433:	55	59	47	60	72	53	50	56
441:	55	54	58	47	38	47	50	40
449:	60	47	49	47	66	61	50	62
457:	50	53	82	85	63	68	67	64
465:	43	48	59	53	54	44	44	38
473:	43	49	47	55	62	58	58	61
481:	41	46	42	53	60	46	50	42
489:	48	38	45	40	42	36	43	45
497:	56	32	50	54	45	47	56	50
505:	44	38	57	66	88	94	77	58
513:	49	40	45	50	42	29	40	32
521:	44	32	50	46	41	43	43	34
529:	36	44	40	47	47	43	37	35
537:	36	52	41	45	37	41	41	27
545:	40	33	28	53	28	34	36	33
553:	35	35	32	35	33	40	37	34
561:	40	47	42	45	43	35	48	39
569:	50	42	41	45	42	29	41	45
577:	39	44	65	68	109	114	80	63
585:	43	34	38	33	30	42	26	32
593:	27	34	29	53	35	32	36	32
601:	39	40	40	55	107	380	785	1107
609:	822	390	147	48	41	45	40	32
617:	28	39	36	28	23	34	33	26
625:	33	38	31	39	25	23	30	28
633:	33	21	22	35	28	20	30	35
641:	32	36	22	23	24	22	38	23
649:	27	26	22	27	26	27	29	22
657:	20	25	32	27	38	34	52	54
665:	54	49	29	29	32	38	19	19
673:	40	30	23	36	30	21	25	25
681:	27	27	26	26	33	21	23	27
689:	34	20	30	25	24	25	19	26
697:	23	34	29	40	33	38	35	30
705:	25	29	35	25	32	26	25	23
713:	24	17	28	17	24	29	41	25
721:	28	23	32	28	44	35	32	35
729:	23	24	26	24	30	29	28	16
737:	18	26	25	30	29	25	33	25
745:	23	21	24	31	22	24	30	32
753:	28	33	22	22	26	18	18	27
761:	22	26	27	28	63	83	123	96
769:	53	42	26	32	17	29	26	23
777:	24	17	23	19	26	33	37	38
785:	45	41	26	23	18	35	20	27
793:	33	22	20	21	31	29	31	25

BP/Castex-Ltd Adm-Apx E-001677

801:	23	34	33	40	54	33	33	19

Sample Title: R-2 0-6

Channel								
809:	14	22	25	19	20	22	20	27
817:	20	26	21	28	18	23	24	27
825:	27	17	20	23	25	26	22	31
833:	27	20	27	31	33	41	32	27
841:	21	23	15	20	19	33	12	25
849:	21	16	31	18	22	23	34	19
857:	32	25	35	27	28	19	17	18
865:	32	25	28	11	19	25	18	22
873:	18	28	23	12	20	24	22	29
881:	34	22	25	24	24	33	19	22
889:	26	13	26	18	25	27	20	15
897:	23	20	17	19	17	27	34	27
905:	32	17	23	31	85	73	52	33
913:	34	24	19	24	20	26	19	24
921:	17	18	21	21	23	15	24	21
929:	20	19	36	66	54	55	33	28
937:	14	19	13	14	21	18	23	11
945:	23	18	13	19	10	28	15	20
953:	25	14	17	12	20	18	15	32
961:	24	27	30	34	26	40	42	43
969:	33	28	15	19	23	16	20	23
977:	19	18	22	18	21	14	14	12
985:	17	21	19	19	14	12	16	18
993:	13	13	10	22	17	27	19	19
1001:	21	14	25	11	12	24	19	21
1009:	19	17	19	20	21	21	17	16
1017:	15	16	19	16	16	10	16	15
1025:	13	11	16	21	20	15	17	13
1033:	16	11	20	25	18	11	16	26
1041:	15	14	17	14	28	19	18	12
1049:	15	17	10	12	17	9	15	25
1057:	12	17	15	12	23	18	12	24
1065:	16	19	11	18	16	18	20	10
1073:	11	15	12	11	15	25	10	16
1081:	17	15	18	15	17	17	13	18
1089:	20	13	15	17	13	26	10	16
1097:	13	19	18	10	17	21	16	15
1105:	16	15	13	13	17	18	20	14
1113:	14	13	34	65	105	171	211	131
1121:	71	34	21	15	12	15	15	13
1129:	14	18	11	25	13	23	25	13
1137:	15	13	9	17	8	15	14	18
1145:	20	11	10	14	15	16	21	21
1153:	28	29	38	27	11	8	14	16
1161:	19	9	10	19	15	15	9	15
1169:	11	11	15	16	9	18	16	18
1177:	16	12	18	12	18	15	16	12
1185:	17	11	6	15	13	8	12	16
1193:	11	21	12	10	12	22	11	14
1201:	7	16	11	22	18	16	12	16
1209:	10	15	14	11	15	10	11	18
1217:	11	15	7	14	17	22	9	8
1225:	11	13	14	16	10	13	16	12

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1233:	18	21	44	62	59	44	32	16

Sample Title: R-2 0-6

Channel								
1241:	11	18	8	10	15	10	12	18
1249:	13	16	19	10	20	18	11	12
1257:	20	9	12	11	10	9	17	11
1265:	11	11	13	11	9	10	15	13
1273:	15	10	14	19	9	24	25	30
1281:	21	13	14	9	13	5	9	10
1289:	12	10	11	16	12	12	7	13
1297:	6	12	8	5	12	11	13	11
1305:	12	9	7	5	17	11	9	14
1313:	12	8	11	7	6	12	10	12
1321:	6	12	10	9	6	10	9	17
1329:	9	6	10	16	12	12	10	10
1337:	6	13	10	11	11	14	9	10
1345:	8	7	6	11	11	12	10	4
1353:	7	12	15	11	13	11	12	8
1361:	9	12	12	13	13	13	11	11
1369:	11	13	10	9	18	27	50	61
1377:	38	29	24	11	11	18	19	14
1385:	11	11	13	8	12	9	9	5
1393:	11	11	10	5	17	20	16	22
1401:	16	17	9	22	23	48	37	25
1409:	11	20	7	9	13	6	14	8
1417:	7	13	10	10	11	15	9	15
1425:	18	9	9	13	13	7	9	8
1433:	9	8	14	15	6	8	9	6
1441:	5	10	7	7	11	13	13	5
1449:	14	7	10	9	16	9	14	17
1457:	31	55	66	59	32	24	13	11
1465:	4	12	4	9	10	6	15	9
1473:	8	11	13	8	11	11	14	12
1481:	11	12	11	10	8	10	10	10
1489:	11	9	9	11	14	16	11	14
1497:	11	12	15	6	12	5	12	11
1505:	9	25	40	26	25	14	9	12
1513:	13	10	9	11	8	12	11	18
1521:	5	12	10	8	10	9	8	9
1529:	12	7	17	8	11	11	12	11
1537:	12	11	10	9	13	14	11	14
1545:	11	10	4	13	10	14	8	11
1553:	12	3	6	3	5	9	8	10
1561:	4	7	5	8	9	4	3	6
1569:	8	7	4	6	3	9	8	8
1577:	10	11	13	13	15	13	8	10
1585:	15	8	14	12	7	14	14	12
1593:	9	11	10	9	5	8	13	6
1601:	8	8	7	7	4	12	3	7
1609:	8	5	5	4	6	7	6	4
1617:	6	8	9	7	3	4	7	5
1625:	5	4	7	3	1	7	3	7
1633:	5	5	7	4	8	5	4	9
1641:	4	3	6	5	5	5	4	3
1649:	8	3	9	5	4	5	4	4
1657:	6	11	15	13	16	10	9	1

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1665:	2	5	3	0	4	3	2	0

Sample Title: R-2 0-6

Channel								
1673:	8	4	3	8	2	7	3	3
1681:	8	5	8	4	4	3	2	5
1689:	3	4	10	7	8	2	1	6
1697:	6	7	4	0	2	7	4	6
1705:	4	5	4	4	3	4	0	5
1713:	1	2	4	0	4	1	1	4
1721:	1	3	2	8	12	15	25	35
1729:	30	6	4	2	1	5	6	2
1737:	1	3	0	3	3	0	6	4
1745:	4	4	3	5	3	1	6	4
1753:	3	4	3	2	4	16	13	37
1761:	53	124	148	93	45	23	2	8
1769:	2	1	3	1	4	8	4	2
1777:	4	0	0	5	4	2	4	4
1785:	2	4	6	3	0	4	4	1
1793:	4	1	3	2	6	1	4	4
1801:	2	2	0	4	0	2	3	9
1809:	2	6	2	8	2	1	4	2
1817:	3	2	1	1	4	1	2	4
1825:	4	4	2	4	3	3	1	2
1833:	0	1	7	5	2	5	3	2
1841:	10	8	14	11	18	19	17	9
1849:	5	0	6	3	2	5	4	1
1857:	3	1	2	5	4	2	5	4
1865:	2	4	2	2	3	7	8	6
1873:	2	3	0	2	1	5	2	3
1881:	2	2	7	3	5	0	4	4
1889:	2	1	3	2	3	3	5	6
1897:	6	4	8	2	3	6	0	3
1905:	5	4	2	2	3	0	5	1
1913:	2	4	4	2	2	3	6	3
1921:	2	2	0	3	1	3	2	1
1929:	2	0	7	2	6	4	3	5
1937:	4	1	3	1	1	3	1	3
1945:	4	3	3	1	4	2	3	0
1953:	1	0	6	2	1	2	4	3
1961:	5	1	5	1	1	1	4	4
1969:	4	1	2	0	4	3	2	2
1977:	5	5	3	2	4	2	1	2
1985:	5	2	2	3	4	2	5	3
1993:	4	2	3	4	1	1	6	2
2001:	7	5	1	2	5	4	5	2
2009:	0	2	3	0	1	2	3	2
2017:	1	4	1	4	5	3	2	1
2025:	1	3	1	2	2	2	4	2
2033:	5	3	1	3	1	4	0	3
2041:	3	3	0	2	1	4	2	2
2049:	3	3	2	4	0	1	1	0
2057:	3	5	2	1	2	2	1	5
2065:	3	1	9	1	0	0	3	1
2073:	1	1	1	5	0	2	2	3
2081:	4	3	5	0	1	6	2	2
2089:	1	3	1	2	1	1	2	1

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2097:	2	2	3	3	3	6	1	3

Sample Title: R-2 0-6

Channel								
2105:	3	4	4	1	3	0	0	6
2113:	4	6	5	11	10	6	4	2
2121:	3	4	1	5	1	1	4	2
2129:	1	0	1	0	1	3	3	1
2137:	1	0	1	1	4	0	1	3
2145:	2	1	0	3	3	4	1	2
2153:	2	2	1	0	0	2	1	1
2161:	4	4	1	1	0	4	0	3
2169:	0	0	2	2	1	3	2	3
2177:	0	1	1	2	2	1	4	1
2185:	2	1	2	2	1	3	1	3
2193:	2	2	1	0	1	3	8	21
2201:	40	32	29	13	12	2	2	2
2209:	5	2	0	1	2	1	2	0
2217:	1	3	2	1	3	1	1	4
2225:	1	1	1	2	3	3	2	0
2233:	2	1	1	4	0	1	0	2
2241:	1	1	0	2	1	2	1	2
2249:	2	1	1	1	3	1	2	0
2257:	1	3	1	4	5	1	2	1
2265:	0	1	2	1	2	3	0	3
2273:	0	0	0	2	1	1	3	0
2281:	1	2	1	0	2	2	5	2
2289:	1	7	5	6	1	4	2	1
2297:	2	0	1	2	2	0	2	1
2305:	0	0	2	1	0	3	2	0
2313:	1	3	2	0	1	1	0	0
2321:	2	1	0	0	1	1	3	0
2329:	1	1	1	1	1	4	1	2
2337:	1	1	1	2	0	1	1	1
2345:	1	1	0	2	2	2	4	0
2353:	2	1	0	3	2	0	2	1
2361:	1	1	2	2	3	4	2	0
2369:	1	0	0	0	0	3	2	1
2377:	2	4	0	2	0	1	2	3
2385:	0	0	2	2	1	0	2	2
2393:	1	1	0	2	0	1	2	1
2401:	0	1	3	0	1	0	1	1
2409:	0	0	1	1	1	1	0	0
2417:	3	1	0	3	0	1	0	1
2425:	2	2	0	2	3	1	1	2
2433:	0	0	2	2	0	1	1	2
2441:	0	2	5	8	8	9	9	6
2449:	3	3	0	0	1	1	2	1
2457:	1	0	1	1	1	2	0	2
2465:	0	2	3	2	1	0	1	2
2473:	0	1	2	0	1	0	0	0
2481:	0	0	1	1	1	0	1	0
2489:	0	0	0	1	1	1	0	0
2497:	0	4	1	1	0	1	0	0
2505:	0	1	1	0	1	0	1	0
2513:	0	1	1	2	0	0	1	0
2521:	1	0	0	2	0	0	1	1

BP/Castex-Ltd Adm-Apx E-001681

2529:	0	0	0	0	0	0	1	0

Sample Title: R-2 0-6

Channel								
2537:	0	2	0	0	0	2	0	1
2545:	0	0	1	0	0	0	1	1
2553:	0	0	0	0	0	0	0	0
2561:	1	0	0	0	0	0	0	0
2569:	0	0	1	0	0	0	0	0
2577:	0	0	1	0	0	0	1	2
2585:	0	0	1	1	1	0	0	0
2593:	1	0	0	0	1	0	1	1
2601:	2	2	0	1	0	1	0	5
2609:	5	13	27	26	15	9	5	4
2617:	2	0	0	1	0	1	0	0
2625:	0	1	0	0	1	0	0	1
2633:	0	0	0	1	0	0	0	0
2641:	0	1	0	0	0	0	1	1
2649:	1	0	0	0	0	0	0	0
2657:	0	0	1	0	1	1	0	0
2665:	0	1	0	0	0	1	0	1
2673:	1	0	0	1	0	0	0	0
2681:	0	0	0	0	0	0	2	0
2689:	0	2	0	2	0	0	0	0
2697:	0	2	0	1	0	0	0	1
2705:	1	0	0	1	0	0	0	0
2713:	0	0	1	0	1	0	0	0
2721:	0	0	1	2	0	0	0	0
2729:	2	2	0	0	1	2	0	0
2737:	0	0	1	0	0	1	0	0
2745:	1	1	0	0	0	0	0	0
2753:	1	0	0	0	0	0	0	0
2761:	0	0	0	0	1	0	1	0
2769:	0	0	0	0	0	0	0	0
2777:	0	1	0	0	0	0	1	0
2785:	1	0	1	0	0	0	1	0
2793:	0	1	0	0	1	0	0	0
2801:	1	0	0	0	0	0	1	1
2809:	0	0	1	0	0	1	0	0
2817:	0	0	0	1	0	0	0	0
2825:	0	0	0	1	0	1	0	1
2833:	0	0	0	0	0	0	0	0
2841:	0	0	1	0	0	1	0	0
2849:	0	0	0	0	0	0	1	0
2857:	0	1	0	0	1	0	0	0
2865:	0	1	0	0	0	1	0	0
2873:	0	0	0	0	0	0	0	0
2881:	0	1	1	0	2	0	1	0
2889:	0	0	1	0	1	2	0	0
2897:	0	1	0	0	0	0	0	0
2905:	0	0	0	1	0	1	0	1
2913:	0	0	0	1	0	0	1	1
2921:	0	0	0	0	1	0	0	0
2929:	0	0	0	1	1	0	0	0
2937:	1	0	0	0	0	0	0	0
2945:	0	0	0	1	2	0	0	0
2953:	0	0	0	0	1	0	0	0

BP/Castex-Ltd Adm-Apx E-001682

2961:	0	0	0	1	0	0	0	0

Sample Title: R-2 0-6

Channel								
2969:	0	1	0	0	0	0	0	0
2977:	0	0	1	0	0	0	0	0
2985:	0	0	0	0	0	0	0	0
2993:	0	0	0	0	1	1	0	0
3001:	1	1	1	0	0	1	0	0
3009:	0	0	1	0	0	0	0	0
3017:	0	0	0	0	0	1	2	0
3025:	0	0	0	0	0	0	0	0
3033:	0	1	0	0	0	0	1	0
3041:	0	0	0	1	0	0	0	0
3049:	0	1	0	1	0	0	0	0
3057:	0	0	0	0	1	0	0	0
3065:	0	0	0	0	0	0	1	1
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	1	0
3089:	0	0	0	0	1	0	1	0
3097:	0	0	1	0	0	0	1	0
3105:	0	0	0	0	1	0	0	0
3113:	1	0	1	0	0	0	0	0
3121:	0	0	0	0	1	0	0	1
3129:	0	0	0	0	0	0	1	0
3137:	0	0	0	0	0	0	0	0
3145:	1	0	0	0	0	0	0	2
3153:	0	0	0	0	0	0	0	0
3161:	0	1	1	0	0	0	0	0
3169:	0	0	0	0	0	1	0	1
3177:	0	0	0	0	0	0	0	1
3185:	0	0	0	0	1	0	0	0
3193:	1	0	0	0	1	0	0	0
3201:	0	0	1	0	0	0	0	0
3209:	0	0	0	1	0	0	0	0
3217:	0	0	0	0	0	0	0	1
3225:	0	0	0	0	0	0	0	0
3233:	1	0	0	0	0	0	0	0
3241:	0	2	1	0	0	0	0	0
3249:	0	0	0	1	0	1	0	0
3257:	0	0	0	1	0	0	0	0
3265:	0	0	0	0	0	1	0	0
3273:	0	0	0	0	0	0	0	0
3281:	1	0	0	0	0	0	0	0
3289:	1	0	0	0	1	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	1	0	0	0	0	1	0	0
3313:	0	0	0	0	0	0	0	0
3321:	0	0	2	0	0	0	0	0
3329:	0	0	0	0	1	0	0	2
3337:	0	0	1	1	0	0	1	0
3345:	0	0	1	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	1	1
3369:	0	0	0	0	0	1	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	1	1	0	0

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3393:	0	1	0	1	0	0	0	0

Sample Title: R-2 0-6

Channel								
3401:	1	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	1	0	0	1	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	1	2	0	0	0	0
3449:	1	0	0	0	1	0	1	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	1	0	0	1	0
3473:	0	0	0	0	0	0	1	0
3481:	0	0	0	0	0	0	0	0
3489:	0	1	0	0	0	0	0	0
3497:	0	1	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	2	0	0
3521:	1	0	0	0	0	1	0	1
3529:	0	0	0	0	0	1	1	1
3537:	1	0	0	0	0	1	1	0
3545:	0	0	0	1	0	1	0	0
3553:	0	0	0	0	0	1	0	1
3561:	0	0	0	1	0	0	0	0
3569:	0	0	0	0	1	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	1	0	0	0	0	0	0
3593:	0	0	0	1	0	0	1	0
3601:	1	0	0	1	0	0	0	0
3609:	0	0	0	0	2	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	0	0	0	1	0	1
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	1	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	1	0	0	0	0
3673:	0	0	0	0	0	1	1	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	1	0	1	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	1	0	0	0
3713:	0	0	1	1	0	1	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	2	0	0	0	0	0
3753:	0	0	0	1	1	1	1	0
3761:	1	0	0	0	0	0	0	0
3769:	0	0	0	0	1	1	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	1	0	1
3793:	1	0	0	0	1	0	0	1
3801:	0	0	0	0	0	0	0	0
3809:	1	0	0	1	0	0	0	0
3817:	0	0	0	0	0	0	0	0

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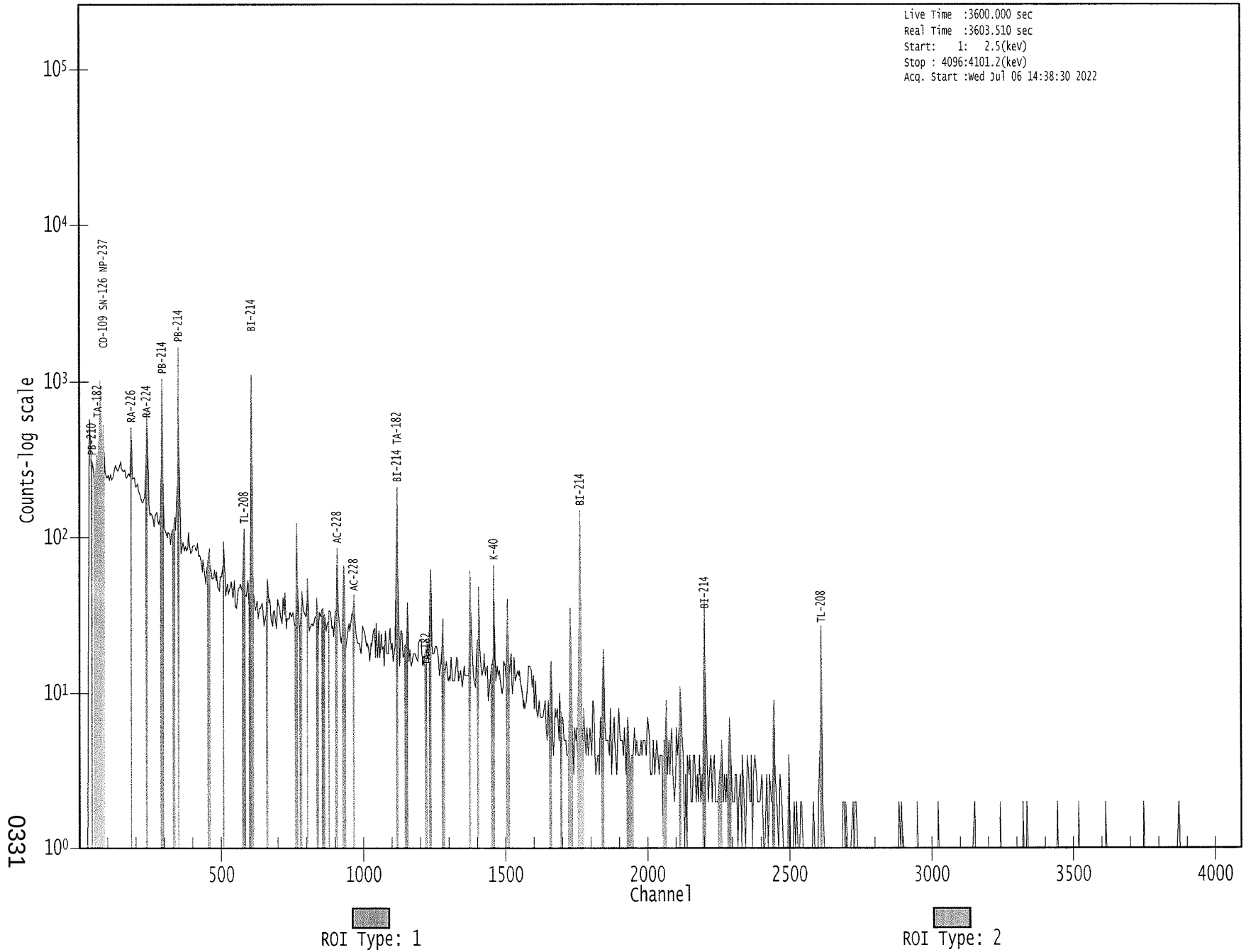
3825:	0	0	1	1	0	0	0	0

Sample Title: R-2 0-6

Channel								
3833:	0	1	1	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	1	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	1	0	0	0	0	0	2	0
3873:	0	0	1	0	0	1	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	1	0	0
3897:	0	0	0	1	0	1	0	0
3905:	0	0	0	0	0	0	1	0
3913:	0	0	0	0	0	0	0	1
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	1	1	0	0	0
3945:	0	1	0	1	0	1	0	0
3953:	1	0	0	0	0	0	0	0
3961:	0	1	0	0	0	0	0	0
3969:	0	1	0	0	1	1	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	1	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	1	0	0	0	0	0
4009:	0	0	0	0	0	1	0	0
4017:	0	0	0	0	0	0	0	0
4025:	1	1	0	0	1	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	1	0	1
4065:	0	0	0	0	0	1	1	1
4073:	0	1	0	0	0	0	0	1
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001685

0000126268.CNF



0331

BP/Castex-Ltd Adm-Apx E-001686

KB 7/6/22

Apex-Gamma

Analysis Report for 2206038-09
R-2 6-12

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-09
Sample Description	: R-2 6-12
Sample Type	: SOIL
Sample Size	: 5.012E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:44:36AM
Acquisition Started	: 7/6/2022 3:16:14PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3601.0 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 30 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126270

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

BP/Castex-Ltd Adm-Apx E-001687

Analysis Report for 2206038-09

R-2 6-12

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 4:16:18PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	63.91	65.45	0.0000	0.00
2	76.54	78.06	0.0000	0.00
3	87.40	88.89	0.0000	0.00
4	93.06	94.55	0.0000	0.00
5	128.92	130.33	0.0000	0.00
6	186.26	187.56	0.0000	0.00
7	210.49	211.74	0.0000	0.00
8	238.93	240.12	0.0000	0.00
9	241.93	243.11	0.0000	0.00
10	270.88	272.01	0.0000	0.00
11	295.54	296.63	0.0000	0.00
12	327.70	328.72	0.0000	0.00
13	339.21	340.20	0.0000	0.00
14	352.36	353.34	0.0000	0.00
15	410.74	411.60	0.0000	0.00
16	463.75	464.51	0.0000	0.00
17	511.26	511.93	0.0000	0.00
18	583.91	584.44	0.0000	0.00
19	609.85	610.33	0.0000	0.00
20	662.81	663.19	0.0000	0.00
21	728.48	728.75	0.0000	0.00
22	768.50	768.68	0.0000	0.00
23	786.23	786.39	0.0000	0.00
24	835.54	835.61	0.0000	0.00
25	840.33	840.39	0.0000	0.00
26	860.30	860.32	0.0000	0.00
27	911.76	911.69	0.0000	0.00
28	936.60	936.49	0.0000	0.00
29	970.37	970.20	0.0000	0.00
30	1121.24	1120.80	0.0000	0.00
31	1169.94	1169.42	0.0000	0.00
32	1238.38	1237.74	0.0000	0.00
33	1281.68	1280.97	0.0000	0.00
34	1378.18	1377.30	0.0000	0.00
35	1407.81	1406.89	0.0000	0.00
36	1461.57	1460.56	0.0000	0.00
37	1538.09	1536.95	0.0000	0.00
38	1623.34	1622.06	0.0000	0.00
39	1765.75	1764.25	0.0000	0.00
40	1774.08	1772.57	0.0000	0.00
41	1847.94	1846.32	0.0000	0.00
42	1873.60	1871.94	0.0000	0.00

Analysis Report for 2206038-09

R-2 6-12

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1909.20	1907.49	0.0000	0.00
44	1970.68	1968.87	0.0000	0.00
45	2076.56	2074.59	0.0000	0.00
46	2104.04	2102.03	0.0000	0.00
47	2190.13	2188.00	0.0000	0.00
48	2204.43	2202.27	0.0000	0.00
49	2615.33	2612.61	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001689

Analysis Report for 2206038-09

R-2 6-12

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 4:16:18PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	63.91	63 -	68	65.45	1.06E+02	78.49	1.15E+03	2.72
	2	76.54	74 -	82	78.06	1.05E+03	127.21	1.81E+03	2.96
	3	87.40	87 -	90	88.89	8.88E+01	62.83	8.98E+02	1.05
	4	93.06	92 -	98	94.55	1.71E+02	89.86	1.28E+03	1.77
	5	128.92	128 -	132	130.33	5.14E+01	55.03	6.27E+02	1.35
	6	186.26	184 -	191	187.56	1.74E+02	78.69	9.09E+02	1.86
	7	210.49	208 -	215	211.74	1.01E+02	65.21	6.36E+02	3.74
M	8	238.93	235 -	248	240.12	7.51E+02	71.10	3.98E+02	1.67
m	9	241.93	235 -	248	243.11	1.80E+02	59.49	3.73E+02	1.67
	10	270.88	269 -	275	272.01	5.07E+01	51.02	4.35E+02	1.79
	11	295.54	293 -	300	296.63	3.20E+02	62.86	4.48E+02	1.89
	12	327.70	325 -	332	328.72	5.42E+01	45.96	3.16E+02	2.07
	13	339.21	335 -	345	340.20	1.66E+02	64.10	4.53E+02	1.83
	14	352.36	349 -	358	353.34	6.06E+02	74.50	4.39E+02	2.07
	15	410.74	409 -	415	411.60	3.10E+01	34.96	2.00E+02	1.85
	16	463.75	461 -	467	464.51	3.51E+01	34.02	1.84E+02	3.21
	17	511.26	507 -	517	511.93	1.50E+02	49.53	2.46E+02	2.25
	18	583.91	580 -	589	584.44	2.37E+02	49.76	2.13E+02	2.14
	19	609.85	606 -	615	610.33	4.51E+02	57.79	2.17E+02	2.06
	20	662.81	657 -	669	663.19	1.20E+02	46.17	1.91E+02	2.38
	21	728.48	724 -	734	728.75	7.76E+01	34.11	1.09E+02	2.27
	22	768.50	764 -	773	768.68	4.83E+01	34.66	1.41E+02	1.74
M	23	786.23	784 -	800	786.39	2.54E+01	19.77	6.66E+01	2.22
M	24	835.54	832 -	843	835.61	1.44E+01	20.31	6.56E+01	2.26
m	25	840.33	832 -	843	840.39	1.60E+01	20.31	5.96E+01	2.26
	26	860.30	855 -	863	860.32	2.83E+01	25.86	8.54E+01	2.65
	27	911.76	907 -	918	911.69	1.30E+02	40.25	1.37E+02	2.27
	28	936.60	930 -	947	936.49	5.36E+01	37.52	1.11E+02	5.54
	29	970.37	966 -	975	970.20	6.59E+01	38.64	1.52E+02	2.15
	30	1121.24	1116 -	1127	1120.80	8.11E+01	38.31	1.40E+02	2.34
	31	1169.94	1167 -	1171	1169.42	1.20E+01	12.99	2.60E+01	1.71
	32	1238.38	1233 -	1244	1237.74	6.53E+01	27.35	6.34E+01	2.69
	33	1281.68	1276 -	1286	1280.97	2.00E+01	19.18	3.80E+01	2.10
	34	1378.18	1373 -	1380	1377.30	1.60E+01	16.73	3.59E+01	1.62
	35	1407.81	1402 -	1411	1406.89	2.23E+01	18.08	3.14E+01	5.86
	36	1461.57	1454 -	1466	1460.56	2.38E+02	38.76	6.44E+01	2.29
	37	1538.09	1533 -	1540	1536.95	1.71E+01	9.59	3.74E+00	4.25
	38	1623.34	1618 -	1628	1622.06	1.50E+01	15.00	2.20E+01	2.30
	39	1765.75	1760 -	1768	1764.25	8.00E+01	17.89	0.00E+00	3.15
	40	1774.08	1770 -	1774	1772.57	5.79E+00	5.85	2.43E+00	1.06

BP/Castex-Ltd Adm-Apx E-001690

Analysis Report for 2206038-09

R-2 6-12

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1847.94	1843 -	1848	1846.32	7.23E+00	9.38	1.15E+01	1.91
42	1873.60	1866 -	1877	1871.94	1.60E+01	12.65	1.20E+01	1.24
43	1909.20	1904 -	1911	1907.49	9.40E+00	11.14	1.12E+01	2.61
44	1970.68	1966 -	1972	1968.87	5.57E+00	6.34	2.86E+00	1.08
45	2076.56	2071 -	2077	2074.59	6.25E+00	6.65	3.50E+00	3.57
46	2104.04	2099 -	2106	2102.03	1.06E+01	10.77	1.27E+01	1.16
47	2190.13	2184 -	2190	2188.00	5.00E+00	4.47	0.00E+00	2.99
48	2204.43	2197 -	2205	2202.27	2.02E+01	11.85	9.52E+00	2.26
49	2615.33	2607 -	2617	2612.61	8.97E+01	21.97	1.65E+01	3.76

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 4:16:18PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	63.91	63 -	68	1.06E+02	78.49	1.15E+03	6.23E+01
	2	76.54	74 -	82	1.05E+03	127.21	1.81E+03	8.99E+01
	3	87.40	87 -	90	8.88E+01	62.83	8.98E+02	4.93E+01
	4	93.06	92 -	98	1.71E+02	89.86	1.28E+03	7.07E+01
	5	128.92	128 -	132	5.14E+01	55.03	6.27E+02	4.37E+01
	6	186.26	184 -	191	1.74E+02	78.69	9.09E+02	6.09E+01
	7	210.49	208 -	215	1.01E+02	65.21	6.36E+02	5.10E+01
M	8	238.93	235 -	248	7.51E+02	71.10	3.98E+02	3.28E+01
m	9	241.93	235 -	248	1.80E+02	59.49	3.73E+02	3.17E+01
	10	270.88	269 -	275	5.07E+01	51.02	4.35E+02	4.03E+01
	11	295.54	293 -	300	3.20E+02	62.86	4.48E+02	4.25E+01
	12	327.70	325 -	332	5.42E+01	45.96	3.16E+02	3.58E+01
	13	339.21	335 -	345	1.66E+02	64.10	4.53E+02	4.83E+01
	14	352.36	349 -	358	6.06E+02	74.50	4.39E+02	4.60E+01
	15	410.74	409 -	415	3.10E+01	34.96	2.00E+02	2.72E+01
	16	463.75	461 -	467	3.51E+01	34.02	1.84E+02	2.62E+01
	17	511.26	507 -	517	1.50E+02	49.53	2.46E+02	3.54E+01
	18	583.91	580 -	589	2.37E+02	49.76	2.13E+02	3.21E+01

BP/Castex-Ltd Adm-Apx E-001691

Analysis Report for 2206038-09

R-2 6-12

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	19	609.85	606 -	615	4.51E+02	57.79	2.17E+02	3.22E+01
	20	662.81	657 -	669	1.20E+02	46.17	1.91E+02	3.34E+01
	21	728.48	724 -	734	7.76E+01	34.11	1.09E+02	2.40E+01
	22	768.50	764 -	773	4.83E+01	34.66	1.41E+02	2.61E+01
M	23	786.23	784 -	800	2.54E+01	19.77	6.66E+01	1.34E+01
M	24	835.54	832 -	843	1.44E+01	20.31	6.56E+01	1.33E+01
m	25	840.33	832 -	843	1.60E+01	20.31	5.96E+01	1.27E+01
	26	860.30	855 -	863	2.83E+01	25.86	8.54E+01	1.94E+01
	27	911.76	907 -	918	1.30E+02	40.25	1.37E+02	2.73E+01
	28	936.60	930 -	947	5.36E+01	37.52	1.11E+02	2.84E+01
	29	970.37	966 -	975	6.59E+01	38.64	1.52E+02	2.88E+01
	30	1121.24	1116 -	1127	8.11E+01	38.31	1.40E+02	2.78E+01
	31	1169.94	1167 -	1171	1.20E+01	12.99	2.60E+01	9.03E+00
	32	1238.38	1233 -	1244	6.53E+01	27.35	6.34E+01	1.81E+01
	33	1281.68	1276 -	1286	2.00E+01	19.18	3.80E+01	1.39E+01
	34	1378.18	1373 -	1380	1.60E+01	16.73	3.59E+01	1.21E+01
	35	1407.81	1402 -	1411	2.23E+01	18.08	3.14E+01	1.27E+01
	36	1461.57	1454 -	1466	2.38E+02	38.76	6.44E+01	1.93E+01
	37	1538.09	1533 -	1540	1.71E+01	9.59	3.74E+00	3.98E+00
	38	1623.34	1618 -	1628	1.50E+01	15.00	2.20E+01	1.06E+01
	39	1765.75	1760 -	1768	8.00E+01	17.89	0.00E+00	0.00E+00
	40	1774.08	1770 -	1774	5.79E+00	5.85	2.43E+00	2.74E+00
	41	1847.94	1843 -	1848	7.23E+00	9.38	1.15E+01	6.32E+00
	42	1873.60	1866 -	1877	1.60E+01	12.65	1.20E+01	8.05E+00
	43	1909.20	1904 -	1911	9.40E+00	11.14	1.12E+01	7.64E+00
	44	1970.68	1966 -	1972	5.57E+00	6.34	2.86E+00	3.48E+00
	45	2076.56	2071 -	2077	6.25E+00	6.65	3.50E+00	3.61E+00
	46	2104.04	2099 -	2106	1.06E+01	10.77	1.27E+01	7.04E+00
	47	2190.13	2184 -	2190	5.00E+00	4.47	0.00E+00	0.00E+00
	48	2204.43	2197 -	2205	2.02E+01	11.85	9.52E+00	6.34E+00
	49	2615.33	2607 -	2617	8.97E+01	21.97	1.65E+01	9.15E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 4:16:18PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

BP/Castex-Ltd Adm-Apx E-001692

Analysis Report for 2206038-09

R-2 6-12

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	63.91	63 -	68	65.45	1.06E+02	78.49	1.15E+03	TH-234 TH-230
	2	76.54	74 -	82	78.06	1.05E+03	127.21	1.81E+03	TI-44 AM-243
	3	87.40	87 -	90	88.89	8.88E+01	62.83	8.98E+02	SN-126 CD-109 NP-237 EU-155 LU-176
	4	93.06	92 -	98	94.55	1.71E+02	89.86	1.28E+03	GA-67 ND-147
	5	128.92	128 -	132	130.33	5.14E+01	55.03	6.27E+02	PA-234
	6	186.26	184 -	191	187.56	1.74E+02	78.69	9.09E+02	RA-226 HO-166M
	7	210.49	208 -	215	211.74	1.01E+02	65.21	6.36E+02	CM-243 GA-67
M	8	238.93	235 -	248	240.12	7.51E+02	71.10	3.98E+02	PB-212 RA-224
m	9	241.93	235 -	248	243.11	1.80E+02	59.49	3.73E+02	RA-224
	10	270.88	269 -	275	272.01	5.07E+01	51.02	4.35E+02	LU-173
	11	295.54	293 -	300	296.63	3.20E+02	62.86	4.48E+02	PB-214 CE-143
	12	327.70	325 -	332	328.72	5.42E+01	45.96	3.16E+02	LA-140
	13	339.21	335 -	345	340.20	1.66E+02	64.10	4.53E+02	AC-228 CS-136
	14	352.36	349 -	358	353.34	6.06E+02	74.50	4.39E+02	PB-214
	15	410.74	409 -	415	411.60	3.10E+01	34.96	2.00E+02	HO-166M
	16	463.75	461 -	467	464.51	3.51E+01	34.02	1.84E+02	SB-125
	17	511.26	507 -	517	511.93	1.50E+02	49.53	2.46E+02	.....
	18	583.91	580 -	589	584.44	2.37E+02	49.76	2.13E+02	TL-208
	19	609.85	606 -	615	610.33	4.51E+02	57.79	2.17E+02	BI-214
	20	662.81	657 -	669	663.19	1.20E+02	46.17	1.91E+02	CS-137 CE-143
	21	728.48	724 -	734	728.75	7.76E+01	34.11	1.09E+02	BI-212
	22	768.50	764 -	773	768.68	4.83E+01	34.66	1.41E+02	.....
M	23	786.23	784 -	800	786.39	2.54E+01	19.77	6.66E+01	SB-127
M	24	835.54	832 -	843	835.61	1.44E+01	20.31	6.56E+01	MN-54
m	25	840.33	832 -	843	840.39	1.60E+01	20.31	5.96E+01	.....
	26	860.30	855 -	863	860.32	2.83E+01	25.86	8.54E+01	TL-208
	27	911.76	907 -	918	911.69	1.30E+02	40.25	1.37E+02	TL-204 AC-228
	28	936.60	930 -	947	936.49	5.36E+01	37.52	1.11E+02	.....
	29	970.37	966 -	975	970.20	6.59E+01	38.64	1.52E+02	AC-228
	30	1121.24	1116 -	1127	1120.80	8.11E+01	38.31	1.40E+02	TA-182 SC-46 BI-214
	31	1169.94	1167 -	1171	1169.42	1.20E+01	12.99	2.60E+01	.....
	32	1238.38	1233 -	1244	1237.74	6.53E+01	27.35	6.34E+01	CO-56
	33	1281.68	1276 -	1286	1280.97	2.00E+01	19.18	3.80E+01	.....
	34	1378.18	1373 -	1380	1377.30	1.60E+01	16.73	3.59E+01	.....
	35	1407.81	1402 -	1411	1406.89	2.23E+01	18.08	3.14E+01	EU-152

BP/Castex-Ltd Adm-Apx E-001693

Analysis Report for 2206038-09

R-2 6-12

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
36	1461.57	1454 -	1466	1460.56	2.38E+02	38.76	6.44E+01	K-40
37	1538.09	1533 -	1540	1536.95	1.71E+01	9.59	3.74E+00	.....
38	1623.34	1618 -	1628	1622.06	1.50E+01	15.00	2.20E+01	.....
39	1765.75	1760 -	1768	1764.25	8.00E+01	17.89	0.00E+00	BI-214
40	1774.08	1770 -	1774	1772.57	5.79E+00	5.85	2.43E+00	.....
41	1847.94	1843 -	1848	1846.32	7.23E+00	9.38	1.15E+01	.....
42	1873.60	1866 -	1877	1871.94	1.60E+01	12.65	1.20E+01	.....
43	1909.20	1904 -	1911	1907.49	9.40E+00	11.14	1.12E+01	.....
44	1970.68	1966 -	1972	1968.87	5.57E+00	6.34	2.86E+00	.....
45	2076.56	2071 -	2077	2074.59	6.25E+00	6.65	3.50E+00	.....
46	2104.04	2099 -	2106	2102.03	1.06E+01	10.77	1.27E+01	.....
47	2190.13	2184 -	2190	2188.00	5.00E+00	4.47	0.00E+00	.....
48	2204.43	2197 -	2205	2202.27	2.02E+01	11.85	9.52E+00	BI-214
49	2615.33	2607 -	2617	2612.61	8.97E+01	21.97	1.65E+01	TL-208

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 4:16:18PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	63.91	1.06E+02	78.49	2.19E-02	1.66E-03
	2	76.54	1.05E+03	127.21	2.33E-02	1.86E-03
	3	87.40	8.88E+01	62.83	2.38E-02	2.02E-03
	4	93.06	1.71E+02	89.86	2.38E-02	1.99E-03
	5	128.92	5.14E+01	55.03	2.28E-02	1.74E-03
	6	186.26	1.74E+02	78.69	1.96E-02	1.56E-03
	7	210.49	1.01E+02	65.21	1.83E-02	1.47E-03
M	8	238.93	7.51E+02	71.10	1.69E-02	1.37E-03
m	9	241.93	1.80E+02	59.49	1.68E-02	1.36E-03
	10	270.88	5.07E+01	51.02	1.55E-02	1.26E-03
	11	295.54	3.20E+02	62.86	1.46E-02	1.20E-03
	12	327.70	5.42E+01	45.96	1.35E-02	1.14E-03
	13	339.21	1.66E+02	64.10	1.32E-02	1.12E-03
	14	352.36	6.06E+02	74.50	1.28E-02	1.09E-03
	15	410.74	3.10E+01	34.96	1.13E-02	9.92E-04
	16	463.75	3.51E+01	34.02	1.03E-02	9.27E-04

BP/Castex-Ltd Adm-Apx E-001694

Analysis Report for 2206038-09

R-2 6-12

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	17	511.26	1.50E+02	49.53	9.49E-03	8.69E-04
	18	583.91	2.37E+02	49.76	8.52E-03	7.80E-04
	19	609.85	4.51E+02	57.79	8.22E-03	7.48E-04
	20	662.81	1.20E+02	46.17	7.68E-03	6.83E-04
	21	728.48	7.76E+01	34.11	7.12E-03	6.22E-04
	22	768.50	4.83E+01	34.66	6.82E-03	5.84E-04
M	23	786.23	2.54E+01	19.77	6.70E-03	5.68E-04
M	24	835.54	1.44E+01	20.31	6.38E-03	5.21E-04
m	25	840.33	1.60E+01	20.31	6.35E-03	5.17E-04
	26	860.30	2.83E+01	25.86	6.23E-03	4.98E-04
	27	911.76	1.30E+02	40.25	5.96E-03	4.59E-04
	28	936.60	5.36E+01	37.52	5.83E-03	4.53E-04
	29	970.37	6.59E+01	38.64	5.67E-03	4.44E-04
	30	1121.24	8.11E+01	38.31	5.07E-03	4.05E-04
	31	1169.94	1.20E+01	12.99	4.91E-03	3.93E-04
	32	1238.38	6.53E+01	27.35	4.70E-03	3.78E-04
	33	1281.68	2.00E+01	19.18	4.58E-03	3.69E-04
	34	1378.18	1.60E+01	16.73	4.34E-03	3.50E-04
	35	1407.81	2.23E+01	18.08	4.27E-03	3.45E-04
	36	1461.57	2.38E+02	38.76	4.15E-03	3.36E-04
	37	1538.09	1.71E+01	9.59	3.99E-03	3.22E-04
	38	1623.34	1.50E+01	15.00	3.83E-03	3.07E-04
	39	1765.75	8.00E+01	17.89	3.60E-03	2.81E-04
	40	1774.08	5.79E+00	5.85	3.59E-03	2.80E-04
	41	1847.94	7.23E+00	9.38	3.48E-03	2.69E-04
	42	1873.60	1.60E+01	12.65	3.44E-03	2.69E-04
	43	1909.20	9.40E+00	11.14	3.39E-03	2.69E-04
	44	1970.68	5.57E+00	6.34	3.31E-03	2.69E-04
	45	2076.56	6.25E+00	6.65	3.18E-03	2.69E-04
	46	2104.04	1.06E+01	10.77	3.14E-03	2.69E-04
	47	2190.13	5.00E+00	4.47	3.05E-03	2.69E-04
	48	2204.43	2.02E+01	11.85	3.03E-03	2.69E-04
	49	2615.33	8.97E+01	21.97	2.63E-03	2.69E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 4:16:18PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126201.CNF

BP/Castex-Ltd Adm-Apx E-001695

Analysis Report for 2206038-09

R-2 6-12

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	63.91	1.06E+02	78.49	3.41E+01	7.77E+00	7.18E+01	7.89E+01
	2	76.54	1.05E+03	127.21	1.53E+01	8.05E+00	1.04E+03	1.27E+02
	3	87.40	8.88E+01	62.83			8.88E+01	6.28E+01
	4	93.06	1.71E+02	89.86	4.78E+01	8.53E+00	1.23E+02	9.03E+01
	5	128.92	5.14E+01	55.03	3.29E+00	7.51E+00	4.82E+01	5.55E+01
	6	186.26	1.74E+02	78.69	3.65E+01	7.27E+00	1.37E+02	7.90E+01
	7	210.49	1.01E+02	65.21			1.01E+02	6.52E+01
M	8	238.93	7.51E+02	71.10	1.16E+01	6.70E+00	7.39E+02	7.14E+01
m	9	241.93	1.80E+02	59.49			1.80E+02	5.95E+01
	10	270.88	5.07E+01	51.02			5.07E+01	5.10E+01
	11	295.54	3.20E+02	62.86	6.18E+00	5.51E+00	3.14E+02	6.31E+01
	12	327.70	5.42E+01	45.96			5.42E+01	4.60E+01
	13	339.21	1.66E+02	64.10			1.66E+02	6.41E+01
	14	352.36	6.06E+02	74.50	9.32E+00	5.69E+00	5.96E+02	7.47E+01
	15	410.74	3.10E+01	34.96			3.10E+01	3.50E+01
	16	463.75	3.51E+01	34.02			3.51E+01	3.40E+01
	17	511.26	1.50E+02	49.53	6.77E+01	4.98E+00	8.24E+01	4.98E+01
	18	583.91	2.37E+02	49.76	6.36E+00	3.67E+00	2.31E+02	4.99E+01
	19	609.85	4.51E+02	57.79	5.18E+00	3.99E+00	4.46E+02	5.79E+01
	20	662.81	1.20E+02	46.17	4.58E+00	3.42E+00	1.16E+02	4.63E+01
	21	728.48	7.76E+01	34.11			7.76E+01	3.41E+01
	22	768.50	4.83E+01	34.66			4.83E+01	3.47E+01
M	23	786.23	2.54E+01	19.77			2.54E+01	1.98E+01
M	24	835.54	1.44E+01	20.31			1.44E+01	2.03E+01
m	25	840.33	1.60E+01	20.31			1.60E+01	2.03E+01
	26	860.30	2.83E+01	25.86			2.83E+01	2.59E+01
	27	911.76	1.30E+02	40.25	3.54E+00	2.41E+00	1.26E+02	4.03E+01
	28	936.60	5.36E+01	37.52			5.36E+01	3.75E+01
	29	970.37	6.59E+01	38.64	9.15E-01	2.46E+00	6.50E+01	3.87E+01
	30	1121.24	8.11E+01	38.31	5.91E-01	2.52E+00	8.05E+01	3.84E+01
	31	1169.94	1.20E+01	12.99			1.20E+01	1.30E+01
	32	1238.38	6.53E+01	27.35			6.53E+01	2.73E+01
	33	1281.68	2.00E+01	19.18			2.00E+01	1.92E+01
	34	1378.18	1.60E+01	16.73			1.60E+01	1.67E+01
	35	1407.81	2.23E+01	18.08			2.23E+01	1.81E+01
	36	1461.57	2.38E+02	38.76	7.20E+00	2.34E+00	2.31E+02	3.88E+01
	37	1538.09	1.71E+01	9.59			1.71E+01	9.59E+00
	38	1623.34	1.50E+01	15.00			1.50E+01	1.50E+01
	39	1765.75	8.00E+01	17.89			8.00E+01	1.79E+01
	40	1774.08	5.79E+00	5.85			5.79E+00	5.85E+00
	41	1847.94	7.23E+00	9.38			7.23E+00	9.38E+00
	42	1873.60	1.60E+01	12.65			1.60E+01	1.26E+01
	43	1909.20	9.40E+00	11.14			9.40E+00	1.11E+01
	44	1970.68	5.57E+00	6.34			5.57E+00	6.34E+00
	45	2076.56	6.25E+00	6.65			6.25E+00	6.65E+00
	46	2104.04	1.06E+01	10.77			1.06E+01	1.08E+01
	47	2190.13	5.00E+00	4.47			5.00E+00	4.47E+00
	48	2204.43	2.02E+01	11.85			2.02E+01	1.19E+01
	49	2615.33	8.97E+01	21.97	4.10E+00	1.50E+00	8.56E+01	2.20E+01

BP/Castex-Ltd Adm-Apx E-001696

Analysis Report for 2206038-09

R-2 6-12

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 4:16:18PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126201.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	63.91	1.06E+02	78.49	3.41E+01	7.77E+00	7.18E+01	7.89E+01
	2	76.54	1.05E+03	127.21	1.53E+01	8.05E+00	1.04E+03	1.27E+02
	3	87.40	8.88E+01	62.83			8.88E+01	6.28E+01
	4	93.06	1.71E+02	89.86	4.78E+01	8.53E+00	1.23E+02	9.03E+01
	5	128.92	5.14E+01	55.03	3.29E+00	7.51E+00	4.82E+01	5.55E+01
	6	186.26	1.74E+02	78.69	3.65E+01	7.27E+00	1.37E+02	7.90E+01
	7	210.49	1.01E+02	65.21			1.01E+02	6.52E+01
M	8	238.93	7.51E+02	71.10	1.16E+01	6.70E+00	7.39E+02	7.14E+01
m	9	241.93	1.80E+02	59.49			1.80E+02	5.95E+01
	10	270.88	5.07E+01	51.02			5.07E+01	5.10E+01
	11	295.54	3.20E+02	62.86	6.18E+00	5.51E+00	3.14E+02	6.31E+01
	12	327.70	5.42E+01	45.96			5.42E+01	4.60E+01
	13	339.21	1.66E+02	64.10			1.66E+02	6.41E+01
	14	352.36	6.06E+02	74.50	9.32E+00	5.69E+00	5.96E+02	7.47E+01
	15	410.74	3.10E+01	34.96			3.10E+01	3.50E+01
	16	463.75	3.51E+01	34.02			3.51E+01	3.40E+01
	17	511.26	1.50E+02	49.53	6.77E+01	4.98E+00	8.24E+01	4.98E+01
	18	583.91	2.37E+02	49.76	6.36E+00	3.67E+00	2.31E+02	4.99E+01
	19	609.85	4.51E+02	57.79	5.18E+00	3.99E+00	4.46E+02	5.79E+01
	20	662.81	1.20E+02	46.17	4.58E+00	3.42E+00	1.16E+02	4.63E+01
	21	728.48	7.76E+01	34.11			7.76E+01	3.41E+01
	22	768.50	4.83E+01	34.66			4.83E+01	3.47E+01
M	23	786.23	2.54E+01	19.77			2.54E+01	1.98E+01
M	24	835.54	1.44E+01	20.31			1.44E+01	2.03E+01
m	25	840.33	1.60E+01	20.31			1.60E+01	2.03E+01
	26	860.30	2.83E+01	25.86			2.83E+01	2.59E+01
	27	911.76	1.30E+02	40.25	3.54E+00	2.41E+00	1.26E+02	4.03E+01
	28	936.60	5.36E+01	37.52			5.36E+01	3.75E+01
	29	970.37	6.59E+01	38.64	9.15E-01	2.46E+00	6.50E+01	3.87E+01
	30	1121.24	8.11E+01	38.31	5.91E-01	2.52E+00	8.05E+01	3.84E+01
	31	1169.94	1.20E+01	12.99			1.20E+01	1.30E+01
	32	1238.38	6.53E+01	27.35			6.53E+01	2.73E+01

BP/Castex-Ltd Adm-Apx E-001697

Analysis Report for 2206038-09

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Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
33	1281.68	2.00E+01	19.18			2.00E+01	1.92E+01
34	1378.18	1.60E+01	16.73			1.60E+01	1.67E+01
35	1407.81	2.23E+01	18.08			2.23E+01	1.81E+01
36	1461.57	2.38E+02	38.76	7.20E+00	2.34E+00	2.31E+02	3.88E+01
37	1538.09	1.71E+01	9.59			1.71E+01	9.59E+00
38	1623.34	1.50E+01	15.00			1.50E+01	1.50E+01
39	1765.75	8.00E+01	17.89			8.00E+01	1.79E+01
40	1774.08	5.79E+00	5.85			5.79E+00	5.85E+00
41	1847.94	7.23E+00	9.38			7.23E+00	9.38E+00
42	1873.60	1.60E+01	12.65			1.60E+01	1.26E+01
43	1909.20	9.40E+00	11.14			9.40E+00	1.11E+01
44	1970.68	5.57E+00	6.34			5.57E+00	6.34E+00
45	2076.56	6.25E+00	6.65			6.25E+00	6.65E+00
46	2104.04	1.06E+01	10.77			1.06E+01	1.08E+01
47	2190.13	5.00E+00	4.47			5.00E+00	4.47E+00
48	2204.43	2.02E+01	11.85			2.02E+01	1.19E+01
49	2615.33	8.97E+01	21.97	4.10E+00	1.50E+00	8.56E+01	2.20E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.985	1460.81	*	10.67	7.80E+00	1.46E+00
MN-54	0.987	834.83	*	99.97	3.59E-02	5.06E-02
GA-67	0.434	93.31	*	35.70	5.63E+01	4.16E+01
		208.95	*	2.24	9.58E+02	6.24E+02
		300.22		16.00		
CD-109	0.990	88.03	*	3.72	1.57E+00	1.12E+00
SN-126	0.999	87.57	*	37.00	1.51E-01	1.08E-01
CS-137	0.966	661.65	*	85.12	2.65E-01	1.09E-01
EU-155	0.346	86.50	*	30.90	1.83E-01	1.30E-01
		105.30		20.70		
LU-173	0.594	100.72		5.24		
		272.11	*	21.20	2.39E-01	2.41E-01
TL-208	0.988	583.14	*	30.22	1.34E+00	3.15E-01
		860.37	*	4.48	1.52E+00	1.39E+00

BP/Castex-Ltd Adm-Apx E-001698

Analysis Report for 2206038-09

R-2 6-12

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TL-208	0.988	2614.66	*	35.85	1.36E+00	3.76E-01
BI-212	0.731	727.17	*	11.80	1.38E+00	6.20E-01
		1620.62		2.75		
PB-212	0.892	238.63	*	44.60	1.47E+00	1.85E-01
		300.09		3.41		
BI-214	0.984	609.31	*	46.30	1.76E+00	2.78E-01
		1120.29	*	15.10	1.57E+00	7.61E-01
		1764.49	*	15.80	2.11E+00	4.99E-01
		2204.22	*	4.98	2.01E+00	1.19E+00
PB-214	0.996	295.21	*	19.19	1.68E+00	3.65E-01
		351.92	*	37.19	1.88E+00	2.85E-01
RA-224	0.977	240.98	*	3.95	4.07E+00	1.38E+00
RA-226	1.000	186.21	*	3.28	3.19E+00	1.86E+00
AC-228	0.978	338.32	*	11.40	1.65E+00	6.55E-01
		911.07	*	27.70	1.14E+00	3.77E-01
		969.11	*	16.60	1.03E+00	6.21E-01
PA-234	0.377	131.20	*	20.40	1.55E-01	1.79E-01
		733.99		8.80		
		946.00		12.00		
TH-234	0.990	63.29	*	3.80	1.29E+00	1.42E+00
NP-237	0.980	86.50	*	12.60	4.45E-01	3.17E-01
AM-243	0.914	74.67	*	66.00	1.01E+00	1.48E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 4:16:18PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	12	327.70	1.50563E-02	42.39	Sum	
	15	410.74	8.60687E-03	56.42	Tol.	HO-166M
	16	463.75	9.75722E-03	48.42	Tol.	SB-125
	17	511.26	2.28797E-02	30.22	Sum	
	22	768.50	1.34127E-02	35.89	Sum	
M	23	786.23	7.05316E-03	38.94	Tol.	SB-127
m	25	840.33	4.43811E-03	63.56		

Analysis Report for 2206038-09

R-2 6-12

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
28	936.60	1.48777E-02	35.03	Sum	
31	1169.94	3.33333E-03	54.13	Sum	
32	1238.38	1.81386E-02	20.94	Tol.	CO-56
33	1281.68	5.55199E-03	47.97		
34	1378.18	4.45670E-03	52.15		
35	1407.81	6.18787E-03	40.59	Tol.	EU-152
37	1538.09	4.75877E-03	27.99	Sum	
38	1623.34	4.16667E-03	50.00		
40	1774.08	1.60714E-03	50.58	Sum	
41	1847.94	2.00855E-03	64.87	Sum	
42	1873.60	4.44444E-03	39.53		
43	1909.20	2.61111E-03	59.23		
44	1970.68	1.54762E-03	56.94		
45	2076.56	1.73611E-03	53.22		
46	2104.04	2.95752E-03	50.58	S-Esc	
47	2190.13	1.38889E-03	44.72	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.98	1460.81	*	10.67	7.80E+00	1.46E+00
MN-54	0.98	834.83	*	99.97	3.59E-02	5.06E-02
GA-67	0.43	93.31	*	35.70	5.63E+01	4.16E+01
		208.95	*	2.24	9.58E+02	6.24E+02
		300.22		16.00		
CD-109	0.99	88.03	*	3.72	1.57E+00	1.12E+00
SN-126	0.99	87.57	*	37.00	1.51E-01	1.08E-01
CS-137	0.96	661.65	*	85.12	2.65E-01	1.09E-01
EU-155	0.34	86.50	*	30.90	1.83E-01	1.30E-01
		105.30		20.70		
LU-173	0.59	100.72		5.24		
		272.11	*	21.20	2.39E-01	2.41E-01

BP/Castex-Ltd Adm-Apx E-001700

Analysis Report for 2206038-09

R-2 6-12

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TL-208	0.98	583.14	*	30.22	1.34E+00	3.15E-01
		860.37	*	4.48	1.52E+00	1.39E+00
		2614.66	*	35.85	1.36E+00	3.76E-01
BI-212	0.73	727.17	*	11.80	1.38E+00	6.20E-01
		1620.62		2.75		
PB-212	0.89	238.63	*	44.60	1.47E+00	1.85E-01
		300.09		3.41		
BI-214	0.98	609.31	*	46.30	1.76E+00	2.78E-01
		1120.29	*	15.10	1.57E+00	7.61E-01
		1764.49	*	15.80	2.11E+00	4.99E-01
		2204.22	*	4.98	2.01E+00	1.19E+00
PB-214	0.99	295.21	*	19.19	1.68E+00	3.65E-01
		351.92	*	37.19	1.88E+00	2.85E-01
RA-224	0.97	240.98	*	3.95	4.07E+00	1.38E+00
RA-226	1.00	186.21	*	3.28	3.19E+00	1.86E+00
AC-228	0.97	338.32	*	11.40	1.65E+00	6.55E-01
		911.07	*	27.70	1.14E+00	3.77E-01
		969.11	*	16.60	1.03E+00	6.21E-01
PA-234	0.37	131.20	*	20.40	1.55E-01	1.79E-01
		733.99		8.80		
		946.00		12.00		
TH-234	0.99	63.29	*	3.80	1.29E+00	1.42E+00
NP-237	0.98	86.50	*	12.60	4.45E-01	3.17E-01
AM-243	0.91	74.67	*	66.00	1.01E+00	1.48E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.985	7.80E+00	1.46E+00	
MN-54	0.987	3.59E-02	5.06E-02	
GA-67	0.434	6.03E+01	4.15E+01	

Analysis Report for 2206038-09

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	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
?	CD-109	0.990	1.57E+00	1.12E+00	
?	SN-126	0.999	1.51E-01	1.08E-01	
	CS-137	0.966	2.65E-01	1.09E-01	
X	ND-147	0.567			
?	EU-155	0.346	1.83E-01	1.30E-01	
	LU-173	0.594	2.39E-01	2.41E-01	
	TL-208	0.988	1.36E+00	2.38E-01	
	BI-212	0.731	1.38E+00	6.20E-01	
	PB-212	0.892	1.47E+00	1.85E-01	
	BI-214	0.984	1.82E+00	2.27E-01	
	PB-214	0.996	1.80E+00	2.25E-01	
	RA-224	0.977	4.07E+00	1.38E+00	
	RA-226	1.000	3.19E+00	1.86E+00	
	AC-228	0.978	1.22E+00	2.89E-01	
	PA-234	0.377	1.55E-01	1.79E-01	
	TH-234	0.990	1.29E+00	1.42E+00	
?	NP-237	0.980	4.45E-01	3.17E-01	
	AM-243	0.914	1.01E+00	1.48E-01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-09
R-2 6-12

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 4:16:18PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	12	327.70	1.50563E-02	42.39	Sum	
	15	410.74	8.60687E-03	56.42	Tol.	HO-166M
	16	463.75	9.75722E-03	48.42	Tol.	SB-125
	17	511.26	2.28797E-02	30.22	Sum	
	22	768.50	1.34127E-02	35.89	Sum	
M	23	786.23	7.05316E-03	38.94	Tol.	SB-127
m	25	840.33	4.43811E-03	63.56		
	28	936.60	1.48777E-02	35.03	Sum	
	31	1169.94	3.33333E-03	54.13	Sum	
	32	1238.38	1.81386E-02	20.94	Tol.	CO-56
	33	1281.68	5.55199E-03	47.97		
	34	1378.18	4.45670E-03	52.15		
	35	1407.81	6.18787E-03	40.59	Tol.	EU-152
	37	1538.09	4.75877E-03	27.99	Sum	
	38	1623.34	4.16667E-03	50.00		
	40	1774.08	1.60714E-03	50.58	Sum	
	41	1847.94	2.00855E-03	64.87	Sum	
	42	1873.60	4.44444E-03	39.53		
	43	1909.20	2.61111E-03	59.23		
	44	1970.68	1.54762E-03	56.94		
	45	2076.56	1.73611E-03	53.22		
	46	2104.04	2.95752E-03	50.58	S-Esc	
	47	2190.13	1.38889E-03	44.72	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001703

Analysis Report for 2206038-09

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NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	1.01E-01	8.92E-01	8.92E-01
+	NA-22	1274.54		99.94	8.71E-03	7.81E-02	7.81E-02
+	NA-24	1368.53		99.99	-1.47E-02	4.38E-02	7.90E-02
		2754.09		99.86	5.95E-03		4.38E-02
+	AL-26	1808.65		99.76	6.98E-03	6.38E-02	6.38E-02
+	K-40	1460.81	*	10.67	7.80E+00	1.44E+00	1.44E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.82E-02	7.84E-02	7.84E-02
		78.34		96.00	2.50E-01		1.06E-01
+	SC-46	889.25		98.98	-3.60E-02	8.85E-02	8.85E-02
		1120.51		99.90	2.83E-01		1.98E-01
+	V-48	983.52		99.98	1.75E-02	2.38E-01	2.73E-01
		1312.10		97.50	5.31E-03		2.38E-01
+	CR-51	320.08		9.83	2.35E-01	1.14E+00	1.14E+00
+	MN-54	834.83	*	99.97	3.59E-02	1.21E-01	1.21E-01
+	CO-56	846.75		99.96	2.13E-02	1.06E-01	1.06E-01
		1037.75		14.03	9.02E-02		7.86E-01
		1238.25		67.00	2.83E-01		2.66E-01
		1771.40		15.51	-1.48E+00		8.00E-01
		2587.48		16.90	0.00E+00		1.17E-01
+	CO-57	122.06		85.51	1.74E-02	6.82E-02	6.82E-02
		136.48		10.60	-1.28E-01		5.52E-01
+	CO-58	810.76		99.40	2.66E-02	1.09E-01	1.09E-01
+	FE-59	1099.22		56.50	2.97E-04	2.04E-01	2.04E-01
		1291.56		43.20	-7.86E-03		2.44E-01
+	CO-60	1173.22		100.00	-3.09E-03	7.99E-02	9.21E-02
		1332.49		100.00	-1.07E-02		7.99E-02
+	ZN-65	1115.52		50.75	-8.21E-03	1.89E-01	1.89E-01
+	GA-67	93.31	*	35.70	5.63E+01	6.71E+01	6.71E+01
		208.95	*	2.24	9.58E+02		9.94E+02
		300.22		16.00	4.27E+01		1.05E+02
+	SE-75	121.11		16.70	9.65E-02	1.07E-01	3.79E-01
		136.00		59.50	-4.55E-02		1.07E-01
		264.65		59.80	5.78E-03		1.12E-01
		279.53		25.20	-8.06E-02		2.80E-01
		400.65		11.40	3.92E-01		6.90E-01
+	RB-82	776.52		13.00	9.77E-02	1.27E+00	1.27E+00
+	RB-83	520.41		46.00	-3.01E-02	1.53E-01	1.53E-01
		529.64		30.30	-1.65E-02		2.36E-01
		552.65		16.40	-1.65E-01		5.23E-01
+	KR-85	513.99		0.43	-3.17E+00	1.82E+01	1.82E+01
+	SR-85	513.99		99.27	-1.83E-02	1.04E-01	1.04E-01

BP/Castex-Ltd Adm-Apx E-001704

Analysis Report for 2206038-09

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	Y-88	898.02		93.40	4.73E-02	5.51E-02	1.12E-01
		1836.01		99.38	-4.52E-02		5.51E-02
+	MO-93	263.06		56.72	-4.96E-03	6.69E-02	9.69E-02
		684.67		99.68	1.83E-02		8.45E-02
		1477.11		99.08	-4.46E-02		6.69E-02
+	NB-93M	16.57		9.43	0.00E+00	1.67E-01	1.67E-01
+	NB-94	702.63		100.00	1.75E-02	8.45E-02	8.45E-02
		871.10		100.00	1.60E-02		8.64E-02
+	NB-95	765.79		99.81	1.12E-01	1.77E-01	1.77E-01
+	NB-95M	235.69		25.00	-5.29E+02	4.59E+01	4.59E+01
+	ZR-95	724.18		43.70	2.84E-02	2.11E-01	2.70E-01
		756.72		55.30	4.28E-02		2.11E-01
+	MO-99	181.06		6.20	-1.01E+02	4.40E+02	7.35E+02
		739.58		12.80	3.73E+01		4.40E+02
		778.00		4.50	-2.44E+02		1.30E+03
+	TC-99M	140.51		89.00	-4.74E-02	6.40E-02	6.40E-02
+	RU-103	497.08		89.00	-5.62E-02	9.69E-02	9.69E-02
+	RU-106	621.84		9.80	4.74E-02	8.37E-01	8.37E-01
+	AG-108M	433.93		89.90	6.19E-04	6.90E-02	6.90E-02
		614.37		90.40	4.23E-03		1.03E-01
		722.95		90.50	7.79E-03		9.23E-02
+	CD-109	88.03	*	3.72	1.57E+00	1.79E+00	1.79E+00
+	AG-110M	657.75		93.14	1.62E-02	1.01E-01	1.01E-01
		677.61		10.53	-7.24E-01		7.28E-01
		706.67		16.46	9.20E-02		5.12E-01
		763.93		21.98	-5.25E-02		4.08E-01
		884.67		21.98	3.85E-02		3.90E-01
		1384.27		23.94	5.91E-02		3.32E-01
+	CD-113M	263.70		0.02	3.88E+01	2.46E+02	2.46E+02
+	SN-113	255.12		1.93	-3.89E-01	1.10E-01	3.55E+00
		391.69		64.90	2.55E-02		1.10E-01
+	TE-123M	159.00		84.10	2.47E-02	8.21E-02	8.21E-02
+	SB-124	602.71		97.87	4.33E-03	1.10E-01	1.10E-01
		645.85		7.26	-6.22E-01		1.25E+00
		722.78		11.10	8.58E-02		1.02E+00
		1691.02		49.00	4.45E-02		1.85E-01
+	I-125	35.49		6.49	-1.78E+00	2.99E+00	2.99E+00
+	SB-125	176.33		6.89	-1.85E-01	2.27E-01	8.63E-01
		427.89		29.33	1.22E-01		2.27E-01
		463.38		10.35	5.82E-01		7.25E-01
		600.56		17.80	-1.32E-01		4.45E-01
		635.90		11.32	-2.35E-01		6.87E-01
+	SB-126	414.70		83.30	6.68E-03	7.42E-02	7.42E-02
		666.33		99.60	-6.05E-02		8.92E-02
		695.00		99.60	-7.78E-04		8.35E-02
		720.50		53.80	3.74E-02		1.45E-01
+	SN-126	87.57	*	37.00	1.51E-01	1.73E-01	1.73E-01
+	SB-127	473.00		25.00	-2.68E+00	2.62E+01	2.84E+01

BP/Castex-Ltd Adm-Apx E-001705

Analysis Report for 2206038-09

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		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		SB-127	685.00		35.70	5.66E+00	2.62E+01	2.62E+01
			783.80		14.70	1.65E+01		7.03E+01
+		I-129	29.78		57.00	1.65E-01	2.75E-01	2.75E-01
			33.60		13.20	1.12E+00		1.29E+00
			39.58		7.52	2.59E-02		1.52E+00
+		I-131	284.30		6.05	-1.86E-01	6.23E-01	8.84E+00
			364.48		81.20	-2.46E-01		6.23E-01
			636.97		7.26	-7.13E-01		1.03E+01
			722.89		1.80	3.74E+00		4.43E+01
+		TE-132	49.72		13.10	-1.03E+02	1.78E+01	1.43E+02
			228.16		88.00	-6.49E-01		1.78E+01
+		BA-133	81.00		34.06	-9.30E-02	1.10E-01	1.95E-01
			302.84		18.33	6.10E-02		3.40E-01
			356.01		62.05	-5.94E-01		1.10E-01
+		I-133	529.87		86.30	1.01E+07	8.53E+07	8.53E+07
+		XE-133	81.00		38.00	-2.64E+00	5.52E+00	5.52E+00
+		CS-134	563.23		8.38	-1.53E-01	8.80E-02	9.52E-01
			569.32		15.43	1.94E-01		5.36E-01
			604.70		97.60	1.50E-02		8.80E-02
			795.84		85.40	7.74E-02		1.23E-01
			801.93		8.73	-1.44E-01		9.23E-01
+		CS-135	268.24		16.00	-2.93E-02	3.77E-01	3.77E-01
+	@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41		28.60	1.00E+26		1.00E+26
	@		1678.03		9.54	1.00E+26		1.00E+26
+		CS-136	153.22		7.46	3.15E-01	2.99E-01	3.14E+00
			163.89		4.61	2.78E+00		5.10E+00
			176.55		13.56	-3.67E-01		1.71E+00
			273.65		12.66	3.25E-02		1.86E+00
			340.57		48.50	4.89E-01		6.52E-01
			818.50		99.70	4.26E-03		2.99E-01
			1048.07		79.60	-1.47E-01		3.82E-01
			1235.34		19.70	-1.41E+00		2.24E+00
+		CS-137	661.65	*	85.12	2.65E-01	1.61E-01	1.61E-01
+		LA-138	788.74		34.00	2.33E-01	9.79E-02	2.84E-01
			1435.80		66.00	9.81E-04		9.79E-02
+		CE-139	165.85		80.35	2.75E-02	8.35E-02	8.35E-02
+		BA-140	162.64		6.70	-2.77E+00	9.21E-01	3.53E+00
			304.84		4.50	-5.38E-01		5.03E+00
			423.70		3.20	3.34E+00		8.70E+00
			437.55		2.00	-3.83E+00		1.29E+01
			537.32		25.00	-2.04E-01		9.21E-01
+		LA-140	328.77		20.50	1.09E+00	3.14E-01	1.32E+00
			487.03		45.50	-2.00E-01		5.29E-01
			815.85		23.50	9.15E-02		1.41E+00
			1596.49		95.49	-9.04E-03		3.14E-01
+		CE-141	145.44		48.40	1.36E-01	2.17E-01	2.17E-01
+		CE-143	57.36		11.80	-1.04E+04	1.01E+05	3.26E+05
			293.26		42.00	-2.93E+05		1.01E+05

BP/Castex-Ltd Adm-Apx E-001706

Analysis Report for 2206038-09

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CE-143	664.55		5.20	1.88E+06	1.01E+05	1.22E+06
+	CE-144	133.54		10.80	3.02E-01	5.58E-01	5.58E-01
+	PM-144	476.78		42.00	1.87E-02	8.70E-02	1.65E-01
		618.01		98.60	1.08E-02		8.70E-02
		696.49		99.49	1.02E-02		8.75E-02
+	PM-145	36.85		21.70	-6.48E-01	3.25E-01	5.95E-01
		37.36		39.70	2.80E-01		3.25E-01
		42.30		15.10	-1.19E-01		6.52E-01
		72.40		2.31	6.06E-01		3.75E+00
+	PM-146	453.90		39.94	5.82E-02	1.58E-01	1.58E-01
		735.90		14.01	4.13E-02		5.13E-01
		747.13		13.10	-1.92E-01		5.49E-01
+	ND-147	91.11	*	28.90	1.40E+00	1.66E+00	1.66E+00
		531.02		13.10	5.41E-01		2.39E+00
+	PM-149	285.90		3.10	-5.45E+03	6.42E+03	6.42E+03
+	EU-152	121.78		20.50	6.79E-02	2.67E-01	2.67E-01
		244.69		5.40	-1.36E+00		1.29E+00
		344.27		19.13	-1.60E-01		2.96E-01
		778.89		9.10	4.57E-01		9.56E-01
		964.01		10.40	6.59E-02		1.03E+00
		1085.78		7.22	-9.09E-02		1.02E+00
		1112.02		9.60	2.91E-01		9.27E-01
		1407.95		14.94	5.63E-01		6.94E-01
+	GD-153	97.43		31.30	3.89E-02	2.00E-01	2.00E-01
		103.18		22.20	3.28E-02		2.74E-01
+	EU-154	123.07		40.50	-7.01E-02	1.35E-01	1.35E-01
		723.30		19.70	4.77E-02		4.53E-01
		873.19		11.50	-2.24E-01		7.28E-01
		996.32		10.30	-1.89E-01		7.75E-01
		1004.76		17.90	5.21E-03		4.78E-01
		1274.45		35.50	2.42E-02		2.17E-01
+	EU-155	86.50	*	30.90	1.83E-01	2.09E-01	2.09E-01
		105.30		20.70	8.85E-02		2.85E-01
+	EU-156	811.77		10.40	1.36E+00	2.66E+00	2.66E+00
		1153.47		7.20	1.31E+00		4.29E+00
		1230.71		8.90	-5.92E-01		3.21E+00
+	HO-166M	184.41		72.60	1.49E-01	1.07E-01	1.07E-01
		280.45		29.60	-4.29E-03		2.02E-01
		410.94		11.10	4.10E-01		6.03E-01
		711.69		54.10	-1.22E-02		1.32E-01
+	TM-171	66.72		0.14	-1.52E+01	5.51E+01	5.51E+01
+	HF-172	67.35		5.31	-3.32E-01	5.07E-01	1.43E+00
		125.82		11.30	1.35E-01		5.07E-01
+	LU-172	181.53		20.60	1.44E-02	1.93E+00	4.63E+00
		900.72		29.81	2.61E-03		4.38E+00
		1093.66		62.50	4.54E-01		1.93E+00
+	LU-173	100.72		5.24	2.67E-01	3.93E-01	1.12E+00
		272.11	*	21.20	2.39E-01		3.93E-01
+	HF-175	343.40		84.00	-1.26E-02	9.25E-02	9.25E-02

BP/Castex-Ltd Adm-Apx E-001707

Analysis Report for 2206038-09

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	LU-176	88.34		13.30	9.24E-01	5.83E-02	5.94E-01
		201.83		86.00	-2.97E-02		6.95E-02
		306.78		94.00	-1.42E-02		5.83E-02
+	HF-181	133.02		41.70	5.36E-02	1.15E-01	2.06E-01
		345.85		17.20	1.32E-02		5.17E-01
		482.03		82.80	5.02E-02		1.15E-01
+	TA-182	67.75		41.20	-4.88E-02	2.10E-01	2.10E-01
		1121.30		34.90	7.74E-01		5.38E-01
		1189.05		16.23	1.78E-02		5.79E-01
		1221.41		26.98	-2.60E-01		3.74E-01
		1231.02		11.44	-1.64E-01		8.87E-01
+	IR-192	308.46		29.68	1.12E-01	1.70E-01	2.46E-01
		468.07		48.10	2.56E-02		1.70E-01
+	HG-203	279.19		77.30	4.45E-02	1.16E-01	1.16E-01
+	TL-204	374.74		94.11	-1.85E-02	6.39E-02	6.39E-02
		899.15		99.16	2.68E-02		8.80E-02
		911.74		91.10	3.77E-01		1.78E-01
+	BI-207	569.67		97.72	3.00E-02	8.28E-02	8.28E-02
		1063.62		74.90	3.50E-03		1.00E-01
+	TL-208	583.14	*	30.22	1.34E+00	3.54E-01	3.95E-01
		860.37	*	4.48	1.52E+00		2.22E+00
		2614.66	*	35.85	1.36E+00		3.54E-01
+	BI-210M	262.00		45.00	-1.09E-01	1.18E-01	1.18E-01
		300.00		23.00	1.14E-01		2.80E-01
+	PB-210	46.50		4.25	5.38E-01	1.99E+00	1.99E+00
+	PB-211	404.84		2.90	-5.88E-01	2.03E+00	2.03E+00
		831.96		2.90	-1.02E-01		2.71E+00
+	BI-212	727.17	*	11.80	1.38E+00	9.05E-01	9.05E-01
		1620.62		2.75	-2.13E-01		3.26E+00
+	PB-212	238.63	*	44.60	1.47E+00	3.09E-01	3.09E-01
		300.09		3.41	7.70E-01		1.89E+00
+	BI-214	609.31	*	46.30	1.76E+00	7.13E-02	2.67E-01
		1120.29	*	15.10	1.57E+00		1.14E+00
		1764.49	*	15.80	2.11E+00		7.13E-02
		2204.22	*	4.98	2.01E+00		1.53E+00
+	PB-214	295.21	*	19.19	1.68E+00	3.02E-01	4.74E-01
		351.92	*	37.19	1.88E+00		3.02E-01
+	RN-219	401.80		6.50	-2.15E-02	9.84E-01	9.84E-01
+	RA-223	323.87		3.88	1.96E-01	1.46E+00	1.46E+00
+	RA-224	240.98	*	3.95	4.07E+00	3.48E+00	3.48E+00
+	RA-225	40.00		31.00	-1.21E-01	1.20E+00	1.20E+00
+	RA-226	186.21	*	3.28	3.19E+00	2.95E+00	2.95E+00
+	TH-227	50.10		8.40	-1.25E+00	6.57E-01	8.19E-01
		236.00		11.50	-7.56E+00		6.57E-01
		256.20		6.30	-1.18E-01		9.33E-01
+	AC-228	338.32	*	11.40	1.65E+00	5.25E-01	9.91E-01
		911.07	*	27.70	1.14E+00		5.25E-01
		969.11	*	16.60	1.03E+00		9.64E-01

BP/Castex-Ltd Adm-Apx E-001708

Analysis Report for 2206038-09

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TH-230	48.43		16.90	2.77E-01	4.60E-01	4.60E-01
		62.85		4.60	-2.73E-01		1.69E+00
		67.67		0.37	-4.64E+00		2.00E+01
+	PA-231	283.67		1.60	-7.36E-02	2.69E+00	3.50E+00
		302.67		2.30	4.84E-01		2.69E+00
+	TH-231	25.64		14.70	0.00E+00	3.25E-02	3.25E-02
		84.21		6.40	5.60E-01		1.11E+00
+	PA-233	311.98		38.60	-1.40E-01	2.86E-01	2.86E-01
+	PA-234	131.20	*	20.40	1.55E-01	2.93E-01	2.93E-01
		733.99		8.80	-7.89E-02		8.72E-01
		946.00		12.00	4.72E-02		6.26E-01
+	PA-234M	1001.03		0.92	4.58E+00	1.01E+01	1.01E+01
+	TH-234	63.29	*	3.80	1.29E+00	2.33E+00	2.33E+00
+	U-235	143.76		10.50	4.57E-02	5.56E-01	5.56E-01
		163.35		4.70	6.87E-01		1.26E+00
		205.31		4.70	-5.23E-02		1.26E+00
+	NP-237	86.50	*	12.60	4.45E-01	5.07E-01	5.07E-01
+	NP-239	106.10		22.70	3.13E+02	5.75E+02	5.75E+02
		228.18		10.70	-4.51E+01		1.24E+03
		277.60		14.10	2.00E+02		9.47E+02
+	AM-241	59.54		35.90	1.57E-01	2.03E-01	2.03E-01
+	AM-243	74.67	*	66.00	1.01E+00	1.79E-01	1.79E-01
+	CM-243	209.75		3.29	1.10E+00	4.32E-01	2.05E+00
		228.14		10.60	-2.06E-02		5.65E-01
		277.60		14.00	9.14E-02		4.32E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Analysis Report for 2206038-09

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	8.92E-01	8.92E-01	1.01E-01	4.19E-01
	NA-22	1274.54		99.94	7.81E-02	7.81E-02	8.71E-03	3.45E-02
	NA-24	1368.53		99.99	7.90E-02	4.38E-02	-1.47E-02	3.48E-02
		2754.09		99.86	4.38E-02		5.95E-03	1.38E-02
	AL-26	1808.65		99.76	6.38E-02	6.38E-02	6.98E-03	2.62E-02
+	K-40	1460.81	*	10.67	1.44E+00	1.44E+00	7.80E+00	6.73E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	7.84E-02	7.84E-02	-1.82E-02	3.82E-02
		78.34		96.00	1.06E-01		2.50E-01	5.20E-02
	SC-46	889.25		98.98	8.85E-02	8.85E-02	-3.60E-02	4.01E-02
		1120.51		99.90	1.98E-01		2.83E-01	9.38E-02
	V-48	983.52		99.98	2.73E-01	2.38E-01	1.75E-02	1.25E-01
		1312.10		97.50	2.38E-01		5.31E-03	1.05E-01
	CR-51	320.08		9.83	1.14E+00	1.14E+00	2.35E-01	5.43E-01
+	MN-54	834.83	*	99.97	1.21E-01	1.21E-01	3.59E-02	5.71E-02
	CO-56	846.75		99.96	1.06E-01	1.06E-01	2.13E-02	4.90E-02
		1037.75		14.03	7.86E-01		9.02E-02	3.58E-01
		1238.25		67.00	2.66E-01		2.83E-01	1.25E-01
		1771.40		15.51	8.00E-01		-1.48E+00	3.53E-01
		2587.48		16.90	1.17E-01		0.00E+00	0.00E+00
	CO-57	122.06		85.51	6.82E-02	6.82E-02	1.74E-02	3.30E-02
		136.48		10.60	5.52E-01		-1.28E-01	2.67E-01
	CO-58	810.76		99.40	1.09E-01	1.09E-01	2.66E-02	5.05E-02
	FE-59	1099.22		56.50	2.04E-01	2.04E-01	2.97E-04	9.17E-02
		1291.56		43.20	2.44E-01		-7.86E-03	1.06E-01
	CO-60	1173.22		100.00	9.21E-02	7.99E-02	-3.09E-03	4.19E-02
		1332.49		100.00	7.99E-02		-1.07E-02	3.54E-02
	ZN-65	1115.52		50.75	1.89E-01	1.89E-01	-8.21E-03	8.59E-02
+	GA-67	93.31	*	35.70	6.71E+01	6.71E+01	5.63E+01	3.30E+01
		208.95	*	2.24	9.94E+02		9.58E+02	4.84E+02
		300.22		16.00	1.05E+02		4.27E+01	5.01E+01
	SE-75	121.11		16.70	3.79E-01	1.07E-01	9.65E-02	1.84E-01
		136.00		59.50	1.07E-01		-4.55E-02	5.16E-02
		264.65		59.80	1.12E-01		5.78E-03	5.33E-02
		279.53		25.20	2.80E-01		-8.06E-02	1.34E-01
		400.65		11.40	6.90E-01		3.92E-01	3.27E-01
	RB-82	776.52		13.00	1.27E+00	1.27E+00	9.77E-02	5.87E-01
	RB-83	520.41		46.00	1.53E-01	1.53E-01	-3.01E-02	7.07E-02
		529.64		30.30	2.36E-01		-1.65E-02	1.09E-01
		552.65		16.40	5.23E-01		-1.65E-01	2.45E-01
	KR-85	513.99		0.43	1.82E+01	1.82E+01	-3.17E+00	8.58E+00
	SR-85	513.99		99.27	1.04E-01	1.04E-01	-1.83E-02	4.94E-02
	Y-88	898.02		93.40	1.12E-01	5.51E-02	4.73E-02	5.19E-02
		1836.01		99.38	5.51E-02		-4.52E-02	2.06E-02
	MO-93	263.06		56.72	9.69E-02	6.69E-02	-4.96E-03	4.62E-02
		684.67		99.68	8.45E-02		1.83E-02	3.95E-02
		1477.11		99.08	6.69E-02		-4.46E-02	2.85E-02
	NB-93M	16.57		9.43	1.67E-01	1.67E-01	0.00E+00	0.00E+00
	NB-94	702.63		100.00	8.45E-02	8.45E-02	1.75E-02	3.95E-02
		871.10		100.00	8.64E-02		1.60E-02	3.99E-02
	NB-95	765.79		99.81	1.77E-01	1.77E-01	1.12E-01	8.35E-02
	NB-95M	235.69		25.00	4.59E+01	4.59E+01	-5.29E+02	2.22E+01
	ZR-95	724.18		43.70	2.70E-01	2.11E-01	2.84E-02	1.26E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	ZR-95	756.72		55.30	2.11E-01	2.11E-01	4.28E-02	9.84E-02
	MO-99	181.06		6.20	7.35E+02	4.40E+02	-1.01E+02	3.55E+02
		739.58		12.80	4.40E+02		3.73E+01	2.04E+02
		778.00		4.50	1.30E+03		-2.44E+02	6.04E+02
	TC-99M	140.51		89.00	6.40E-02	6.40E-02	-4.74E-02	3.10E-02
	RU-103	497.08		89.00	9.69E-02	9.69E-02	-5.62E-02	4.48E-02
	RU-106	621.84		9.80	8.37E-01	8.37E-01	4.74E-02	3.92E-01
	AG-108M	433.93		89.90	6.90E-02	6.90E-02	6.19E-04	3.24E-02
		614.37		90.40	1.03E-01		4.23E-03	4.86E-02
		722.95		90.50	9.23E-02		7.79E-03	4.30E-02
+	CD-109	88.03	*	3.72	1.79E+00	1.79E+00	1.57E+00	8.69E-01
	AG-110M	657.75		93.14	1.01E-01	1.01E-01	1.62E-02	4.74E-02
		677.61		10.53	7.28E-01		-7.24E-01	3.37E-01
		706.67		16.46	5.12E-01		9.20E-02	2.38E-01
		763.93		21.98	4.08E-01		-5.25E-02	1.89E-01
		884.67		21.98	3.90E-01		3.85E-02	1.79E-01
		1384.27		23.94	3.32E-01		5.91E-02	1.45E-01
	CD-113M	263.70		0.02	2.46E+02	2.46E+02	3.88E+01	1.17E+02
	SN-113	255.12		1.93	3.55E+00	1.10E-01	-3.89E-01	1.70E+00
		391.69		64.90	1.10E-01		2.55E-02	5.21E-02
	TE-123M	159.00		84.10	8.21E-02	8.21E-02	2.47E-02	3.97E-02
	SB-124	602.71		97.87	1.10E-01	1.10E-01	4.33E-03	5.15E-02
		645.85		7.26	1.25E+00		-6.22E-01	5.79E-01
		722.78		11.10	1.02E+00		8.58E-02	4.74E-01
		1691.02		49.00	1.85E-01		4.45E-02	7.76E-02
	I-125	35.49		6.49	2.99E+00	2.99E+00	-1.78E+00	1.46E+00
	SB-125	176.33		6.89	8.63E-01	2.27E-01	-1.85E-01	4.16E-01
		427.89		29.33	2.27E-01		1.22E-01	1.07E-01
		463.38		10.35	7.25E-01		5.82E-01	3.43E-01
		600.56		17.80	4.45E-01		-1.32E-01	2.09E-01
		635.90		11.32	6.87E-01		-2.35E-01	3.20E-01
	SB-126	414.70		83.30	7.42E-02	7.42E-02	6.68E-03	3.49E-02
		666.33		99.60	8.92E-02		-6.05E-02	4.19E-02
		695.00		99.60	8.35E-02		-7.78E-04	3.90E-02
		720.50		53.80	1.45E-01		3.74E-02	6.75E-02
+	SN-126	87.57	*	37.00	1.73E-01	1.73E-01	1.51E-01	8.40E-02
	SB-127	473.00		25.00	2.84E+01	2.62E+01	-2.68E+00	1.33E+01
		685.00		35.70	2.62E+01		5.66E+00	1.22E+01
		783.80		14.70	7.03E+01		1.65E+01	3.29E+01
	I-129	29.78		57.00	2.75E-01	2.75E-01	1.65E-01	1.34E-01
		33.60		13.20	1.29E+00		1.12E+00	6.32E-01
		39.58		7.52	1.52E+00		2.59E-02	7.42E-01
	I-131	284.30		6.05	8.84E+00	6.23E-01	-1.86E-01	4.21E+00
		364.48		81.20	6.23E-01		-2.46E-01	2.92E-01
		636.97		7.26	1.03E+01		-7.13E-01	4.83E+00
		722.89		1.80	4.43E+01		3.74E+00	2.06E+01
	TE-132	49.72		13.10	1.43E+02	1.78E+01	-1.03E+02	6.95E+01
		228.16		88.00	1.78E+01		-6.49E-01	8.55E+00
	BA-133	81.00		34.06	1.95E-01	1.10E-01	-9.30E-02	9.48E-02
		302.84		18.33	3.40E-01		6.10E-02	1.62E-01
		356.01		62.05	1.10E-01		-5.94E-01	5.25E-02
	I-133	529.87		86.30	8.53E+07	8.53E+07	1.01E+07	3.95E+07
	XE-133	81.00		38.00	5.52E+00	5.52E+00	-2.64E+00	2.69E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	563.23		8.38	9.52E-01	8.80E-02	-1.53E-01	4.48E-01
		569.32		15.43	5.36E-01		1.94E-01	2.52E-01
		604.70		97.60	8.80E-02		1.50E-02	4.15E-02
		795.84		85.40	1.23E-01		7.74E-02	5.78E-02
		801.93		8.73	9.23E-01		-1.44E-01	4.25E-01
	CS-135	268.24		16.00	3.77E-01	3.77E-01	-2.93E-02	1.80E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	3.14E+00	2.99E-01	3.15E-01	1.52E+00
		163.89		4.61	5.10E+00		2.78E+00	2.47E+00
		176.55		13.56	1.71E+00		-3.67E-01	8.25E-01
		273.65		12.66	1.86E+00		3.25E-02	8.90E-01
		340.57		48.50	6.52E-01		4.89E-01	3.13E-01
		818.50		99.70	2.99E-01		4.26E-03	1.37E-01
		1048.07		79.60	3.82E-01		-1.47E-01	1.72E-01
		1235.34		19.70	2.24E+00		-1.41E+00	1.03E+00
+	CS-137	661.65	*	85.12	1.61E-01	1.61E-01	2.65E-01	7.74E-02
	LA-138	788.74		34.00	2.84E-01	9.79E-02	2.33E-01	1.33E-01
		1435.80		66.00	9.79E-02		9.81E-04	4.16E-02
	CE-139	165.85		80.35	8.35E-02	8.35E-02	2.75E-02	4.04E-02
	BA-140	162.64		6.70	3.53E+00	9.21E-01	-2.77E+00	1.70E+00
		304.84		4.50	5.03E+00		-5.38E-01	2.38E+00
		423.70		3.20	8.70E+00		3.34E+00	4.11E+00
		437.55		2.00	1.29E+01		-3.83E+00	6.05E+00
		537.32		25.00	9.21E-01		-2.04E-01	4.24E-01
	LA-140	328.77		20.50	1.32E+00	3.14E-01	1.09E+00	6.31E-01
		487.03		45.50	5.29E-01		-2.00E-01	2.46E-01
		815.85		23.50	1.41E+00		9.15E-02	6.52E-01
		1596.49		95.49	3.14E-01		-9.04E-03	1.34E-01
	CE-141	145.44		48.40	2.17E-01	2.17E-01	1.36E-01	1.05E-01
	CE-143	57.36		11.80	3.26E+05	1.01E+05	-1.04E+04	1.59E+05
		293.26		42.00	1.01E+05		-2.93E+05	4.88E+04
		664.55		5.20	1.22E+06		1.88E+06	5.81E+05
	CE-144	133.54		10.80	5.58E-01	5.58E-01	3.02E-01	2.70E-01
	PM-144	476.78		42.00	1.65E-01	8.70E-02	1.87E-02	7.77E-02
		618.01		98.60	8.70E-02		1.08E-02	4.09E-02
		696.49		99.49	8.75E-02		1.02E-02	4.08E-02
	PM-145	36.85		21.70	5.95E-01	3.25E-01	-6.48E-01	2.91E-01
		37.36		39.70	3.25E-01		2.80E-01	1.59E-01
		42.30		15.10	6.52E-01		-1.19E-01	3.18E-01
		72.40		2.31	3.75E+00		6.06E-01	1.84E+00
	PM-146	453.90		39.94	1.58E-01	1.58E-01	5.82E-02	7.39E-02
		735.90		14.01	5.13E-01		4.13E-02	2.36E-01
		747.13		13.10	5.49E-01		-1.92E-01	2.52E-01
	ND-147	91.11	*	28.90	1.66E+00	1.66E+00	1.40E+00	8.16E-01
		531.02		13.10	2.39E+00		5.41E-01	1.11E+00
	PM-149	285.90		3.10	6.42E+03	6.42E+03	-5.45E+03	3.05E+03
	EU-152	121.78		20.50	2.67E-01	2.67E-01	6.79E-02	1.29E-01
		244.69		5.40	1.29E+00		-1.36E+00	6.22E-01
		344.27		19.13	2.96E-01		-1.60E-01	1.40E-01
		778.89		9.10	9.56E-01		4.57E-01	4.45E-01
		964.01		10.40	1.03E+00		6.59E-02	4.83E-01

Analysis Report for 2206038-09

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1085.78		7.22	1.02E+00	2.67E-01	-9.09E-02	4.56E-01
		1112.02		9.60	9.27E-01		2.91E-01	4.22E-01
		1407.95		14.94	6.94E-01		5.63E-01	3.15E-01
	GD-153	97.43		31.30	2.00E-01	2.00E-01	3.89E-02	9.71E-02
		103.18		22.20	2.74E-01		3.28E-02	1.33E-01
	EU-154	123.07		40.50	1.35E-01	1.35E-01	-7.01E-02	6.54E-02
		723.30		19.70	4.53E-01		4.77E-02	2.12E-01
		873.19		11.50	7.28E-01		-2.24E-01	3.35E-01
		996.32		10.30	7.75E-01		-1.89E-01	3.52E-01
		1004.76		17.90	4.78E-01		5.21E-03	2.19E-01
		1274.45		35.50	2.17E-01		2.42E-02	9.59E-02
+	EU-155	86.50	*	30.90	2.09E-01	2.09E-01	1.83E-01	1.02E-01
		105.30		20.70	2.85E-01		8.85E-02	1.38E-01
	EU-156	811.77		10.40	2.66E+00	2.66E+00	1.36E+00	1.23E+00
		1153.47		7.20	4.29E+00		1.31E+00	1.96E+00
		1230.71		8.90	3.21E+00		-5.92E-01	1.45E+00
	HO-166M	184.41		72.60	1.07E-01	1.07E-01	1.49E-01	5.21E-02
		280.45		29.60	2.02E-01		-4.29E-03	9.64E-02
		410.94		11.10	6.03E-01		4.10E-01	2.85E-01
		711.69		54.10	1.32E-01		-1.22E-02	6.09E-02
	TM-171	66.72		0.14	5.51E+01	5.51E+01	-1.52E+01	2.69E+01
	HF-172	67.35		5.31	1.43E+00	5.07E-01	-3.32E-01	7.00E-01
		125.82		11.30	5.07E-01		1.35E-01	2.46E-01
	LU-172	181.53		20.60	4.63E+00	1.93E+00	1.44E-02	2.24E+00
		900.72		29.81	4.38E+00		2.61E-03	2.02E+00
		1093.66		62.50	1.93E+00		4.54E-01	8.70E-01
+	LU-173	100.72		5.24	1.12E+00	3.93E-01	2.67E-01	5.42E-01
		272.11	*	21.20	3.93E-01		2.39E-01	1.90E-01
	HF-175	343.40		84.00	9.25E-02	9.25E-02	-1.26E-02	4.38E-02
	LU-176	88.34		13.30	5.94E-01	5.83E-02	9.24E-01	2.91E-01
		201.83		86.00	6.95E-02		-2.97E-02	3.35E-02
		306.78		94.00	5.83E-02		-1.42E-02	2.76E-02
	HF-181	133.02		41.70	2.06E-01	1.15E-01	5.36E-02	9.97E-02
		345.85		17.20	5.17E-01		1.32E-02	2.44E-01
		482.03		82.80	1.15E-01		5.02E-02	5.39E-02
	TA-182	67.75		41.20	2.10E-01	2.10E-01	-4.88E-02	1.03E-01
		1121.30		34.90	5.38E-01		7.74E-01	2.56E-01
		1189.05		16.23	5.79E-01		1.78E-02	2.59E-01
		1221.41		26.98	3.74E-01		-2.60E-01	1.68E-01
		1231.02		11.44	8.87E-01		-1.64E-01	4.00E-01
	IR-192	308.46		29.68	2.46E-01	1.70E-01	1.12E-01	1.17E-01
		468.07		48.10	1.70E-01		2.56E-02	7.97E-02
	HG-203	279.19		77.30	1.16E-01	1.16E-01	4.45E-02	5.55E-02
	TL-204	374.74		94.11	6.39E-02	6.39E-02	-1.85E-02	3.02E-02
		899.15		99.16	8.80E-02		2.68E-02	4.05E-02
		911.74		91.10	1.78E-01		3.77E-01	8.53E-02
	BI-207	569.67		97.72	8.28E-02	8.28E-02	3.00E-02	3.90E-02
		1063.62		74.90	1.00E-01		3.50E-03	4.50E-02
+	TL-208	583.14	*	30.22	3.95E-01	3.54E-01	1.34E+00	1.89E-01
		860.37	*	4.48	2.22E+00		1.52E+00	1.04E+00
		2614.66	*	35.85	3.54E-01		1.36E+00	1.56E-01
	BI-210M	262.00		45.00	1.18E-01	1.18E-01	-1.09E-01	5.64E-02
		300.00		23.00	2.80E-01		1.14E-01	1.34E-01

BP/Castex-Ltd Adm-Apx E-001713

Analysis Report for 2206038-09

R-2 6-12

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PB-210	46.50		4.25	1.99E+00	1.99E+00	5.38E-01	9.70E-01
	PB-211	404.84		2.90	2.03E+00	2.03E+00	-5.88E-01	9.55E-01
		831.96		2.90	2.71E+00		-1.02E-01	1.25E+00
+	BI-212	727.17	*	11.80	9.05E-01	9.05E-01	1.38E+00	4.28E-01
		1620.62		2.75	3.26E+00		-2.13E-01	1.44E+00
+	PB-212	238.63	*	44.60	3.09E-01	3.09E-01	1.47E+00	1.52E-01
		300.09		3.41	1.89E+00		7.70E-01	9.04E-01
+	BI-214	609.31	*	46.30	2.67E-01	7.13E-02	1.76E+00	1.28E-01
		1120.29	*	15.10	1.14E+00		1.57E+00	5.46E-01
		1764.49	*	15.80	7.13E-02		2.11E+00	0.00E+00
		2204.22	*	4.98	1.53E+00		2.01E+00	6.30E-01
+	PB-214	295.21	*	19.19	4.74E-01	3.02E-01	1.68E+00	2.30E-01
		351.92	*	37.19	3.02E-01		1.88E+00	1.47E-01
	RN-219	401.80		6.50	9.84E-01	9.84E-01	-2.15E-02	4.65E-01
	RA-223	323.87		3.88	1.46E+00	1.46E+00	1.96E-01	6.91E-01
+	RA-224	240.98	*	3.95	3.48E+00	3.48E+00	4.07E+00	1.71E+00
	RA-225	40.00		31.00	1.20E+00	1.20E+00	-1.21E-01	5.85E-01
+	RA-226	186.21	*	3.28	2.95E+00	2.95E+00	3.19E+00	1.44E+00
	TH-227	50.10		8.40	8.19E-01	6.57E-01	-1.25E+00	3.97E-01
		236.00		11.50	6.57E-01		-7.56E+00	3.18E-01
		256.20		6.30	9.33E-01		-1.18E-01	4.47E-01
+	AC-228	338.32	*	11.40	9.91E-01	5.25E-01	1.65E+00	4.82E-01
		911.07	*	27.70	5.25E-01		1.14E+00	2.50E-01
		969.11	*	16.60	9.64E-01		1.03E+00	4.61E-01
	TH-230	48.43		16.90	4.60E-01	4.60E-01	2.77E-01	2.24E-01
		62.85		4.60	1.69E+00		-2.73E-01	8.25E-01
		67.67		0.37	2.00E+01		-4.64E+00	9.76E+00
	PA-231	283.67		1.60	3.50E+00	2.69E+00	-7.36E-02	1.66E+00
		302.67		2.30	2.69E+00		4.84E-01	1.29E+00
	TH-231	25.64		14.70	3.25E-02	3.25E-02	0.00E+00	0.00E+00
		84.21		6.40	1.11E+00		5.60E-01	5.40E-01
	PA-233	311.98		38.60	2.86E-01	2.86E-01	-1.40E-01	1.36E-01
+	PA-234	131.20	*	20.40	2.93E-01	2.93E-01	1.55E-01	1.42E-01
		733.99		8.80	8.72E-01		-7.89E-02	4.04E-01
		946.00		12.00	6.26E-01		4.72E-02	2.84E-01
	PA-234M	1001.03		0.92	1.01E+01	1.01E+01	4.58E+00	4.64E+00
+	TH-234	63.29	*	3.80	2.33E+00	2.33E+00	1.29E+00	1.14E+00
	U-235	143.76		10.50	5.56E-01	5.56E-01	4.57E-02	2.69E-01
		163.35		4.70	1.26E+00		6.87E-01	6.09E-01
		205.31		4.70	1.26E+00		-5.23E-02	6.05E-01
+	NP-237	86.50	*	12.60	5.07E-01	5.07E-01	4.45E-01	2.47E-01
	NP-239	106.10		22.70	5.75E+02	5.75E+02	3.13E+02	2.79E+02
		228.18		10.70	1.24E+03		-4.51E+01	5.94E+02
		277.60		14.10	9.47E+02		2.00E+02	4.53E+02
	AM-241	59.54		35.90	2.03E-01	2.03E-01	1.57E-01	9.86E-02
+	AM-243	74.67	*	66.00	1.79E-01	1.79E-01	1.01E+00	8.83E-02
	CM-243	209.75		3.29	2.05E+00	4.32E-01	1.10E+00	9.89E-01
		228.14		10.60	5.65E-01		-2.06E-02	2.72E-01
		277.60		14.00	4.32E-01		9.14E-02	2.07E-01

BP/Castex-Ltd Adm-Apx E-001714

Analysis Report for 2206038-09

R-2 6-12

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-2 6-12

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	32	128	172
33:	219	248	201	108	139	151	142	112
41:	127	116	104	101	97	88	92	102
49:	100	62	75	61	56	74	87	70
57:	68	79	77	92	116	101	75	119
65:	137	127	115	110	95	103	116	115
73:	131	111	147	270	312	243	484	213
81:	98	82	88	99	103	130	94	124
89:	211	109	116	136	104	150	175	102
97:	78	67	75	78	74	71	57	70
105:	60	66	96	65	86	68	70	75
113:	65	66	62	74	76	53	77	62
121:	57	56	64	71	60	54	78	48
129:	78	82	102	55	70	68	62	55
137:	60	53	60	63	62	64	63	58
145:	84	60	56	62	74	55	63	63
153:	54	59	53	87	59	59	63	66
161:	68	49	54	63	54	57	68	51
169:	58	45	58	49	53	53	58	58
177:	53	53	53	50	56	67	59	66
185:	62	49	133	150	68	48	52	53
193:	50	43	41	49	43	58	41	54
201:	50	45	53	47	46	55	39	48
209:	42	55	69	68	59	51	27	47
217:	32	51	52	43	44	38	42	38
225:	58	35	54	30	48	41	34	46
233:	27	42	44	45	47	58	127	493
241:	250	89	141	104	54	32	34	32
249:	40	31	29	31	36	35	34	37
257:	35	29	35	36	31	19	29	30
265:	25	38	27	34	31	29	47	63
273:	43	32	23	37	23	31	44	35
281:	27	24	30	38	22	25	17	28
289:	32	31	29	25	25	33	35	142
297:	194	61	31	23	38	44	27	30
305:	22	25	22	14	22	29	27	29
313:	17	19	24	28	21	20	19	30
321:	24	25	22	23	17	29	19	28
329:	43	36	21	19	20	30	20	23
337:	29	29	63	91	38	31	23	25
345:	20	14	17	32	21	33	31	105
353:	290	224	45	38	19	19	18	16
361:	24	26	18	18	14	18	11	12

BP/Castex-Ltd Adm-Apx E-001716

369:	20	23	21	20	24	22	16	20

Sample Title: R-2 6-12

Channel								
377:	14	24	23	21	9	15	22	22
385:	21	22	15	28	14	14	21	24
393:	11	20	19	16	21	16	23	27
401:	20	24	25	17	14	16	19	17
409:	11	20	28	21	19	18	14	15
417:	21	20	16	20	14	18	18	27
425:	12	19	26	15	19	11	23	12
433:	13	22	15	12	20	12	19	19
441:	23	16	19	14	16	20	15	13
449:	14	15	8	14	12	17	21	10
457:	17	9	17	19	10	14	21	28
465:	21	22	11	13	27	14	12	9
473:	19	13	17	17	14	22	13	14
481:	16	14	8	16	15	7	9	16
489:	11	16	9	19	11	18	15	17
497:	7	6	10	9	10	15	9	11
505:	16	18	6	17	17	16	42	74
513:	52	17	12	12	8	13	11	8
521:	13	6	12	11	13	10	11	7
529:	10	16	7	10	11	10	11	8
537:	9	3	13	12	12	9	13	16
545:	13	14	15	12	12	11	7	10
553:	11	8	11	11	10	13	12	11
561:	9	10	18	13	13	9	13	10
569:	19	11	10	12	15	14	6	13
577:	11	6	15	12	18	15	39	104
585:	100	17	21	8	10	7	9	13
593:	5	5	7	12	15	9	12	10
601:	8	10	15	12	13	11	12	15
609:	74	218	159	37	14	9	11	9
617:	15	11	10	13	11	12	10	11
625:	5	8	8	5	5	13	10	15
633:	8	10	10	7	10	8	13	12
641:	9	10	6	8	9	6	7	5
649:	8	7	12	8	9	8	13	12
657:	6	12	10	11	19	39	43	20
665:	13	13	14	12	4	8	3	5
673:	9	10	10	5	5	8	9	8
681:	6	16	13	8	7	6	9	12
689:	7	13	12	10	6	10	10	13
697:	6	13	6	9	9	10	12	12
705:	10	7	5	11	5	8	5	5
713:	9	12	3	8	5	7	10	7
721:	9	9	10	4	11	14	16	27
729:	21	5	12	13	8	1	6	5
737:	7	10	7	8	8	5	7	5
745:	11	9	2	1	9	6	7	11
753:	8	11	13	12	9	5	6	10
761:	7	8	8	9	11	7	8	19
769:	33	17	6	5	4	8	3	6
777:	9	11	9	7	7	12	9	4
785:	6	20	12	12	7	7	10	7
793:	4	8	21	27	12	6	6	6

BP/Castex-Ltd Adm-Apx E-001717

801:	9	4	5	11	6	15	4	4

Sample Title: R-2 6-12

Channel								
809:	10	5	8	8	11	7	4	3
817:	8	7	8	5	6	4	10	2
825:	4	9	8	6	4	6	7	3
833:	8	9	7	12	6	3	5	11
841:	7	15	1	7	15	3	6	7
849:	6	3	3	6	3	4	5	8
857:	4	5	4	12	15	13	5	5
865:	5	5	12	7	6	10	7	5
873:	8	7	4	5	10	8	5	7
881:	6	7	1	8	8	3	8	6
889:	5	4	2	3	5	5	6	4
897:	5	12	10	4	9	3	7	3
905:	11	5	7	6	3	24	44	61
913:	25	7	8	2	7	4	7	3
921:	7	4	3	3	4	3	6	8
929:	1	4	5	6	9	6	13	9
937:	10	9	3	5	3	3	6	6
945:	7	3	2	5	3	4	2	1
953:	3	8	4	5	7	5	6	7
961:	4	5	6	11	19	12	10	12
969:	33	35	16	9	7	4	4	2
977:	3	10	4	3	3	8	11	4
985:	5	8	6	3	2	6	6	5
993:	3	3	6	2	5	6	8	5
1001:	7	6	7	7	4	6	4	4
1009:	4	6	2	6	6	7	3	3
1017:	1	5	6	2	8	2	3	11
1025:	3	5	3	3	7	5	5	4
1033:	8	4	5	6	5	5	3	8
1041:	4	3	4	7	3	3	9	5
1049:	1	4	3	7	4	9	8	2
1057:	10	0	6	4	4	6	2	0
1065:	6	4	2	6	4	7	5	8
1073:	5	8	5	7	6	5	9	4
1081:	4	3	1	2	3	7	5	3
1089:	4	3	4	7	5	3	2	5
1097:	4	2	6	2	4	3	5	4
1105:	2	7	2	0	7	6	3	4
1113:	4	5	6	8	3	5	16	40
1121:	28	20	9	5	6	8	3	7
1129:	3	4	5	4	6	4	8	5
1137:	9	5	6	3	4	2	5	4
1145:	3	1	5	4	5	6	6	3
1153:	7	4	4	7	4	3	3	0
1161:	4	10	6	6	1	3	4	3
1169:	8	9	1	3	5	6	6	4
1177:	5	5	5	4	4	9	3	1
1185:	3	4	3	5	5	2	3	5
1193:	4	3	5	2	5	2	7	5
1201:	1	4	5	2	1	6	0	3
1209:	3	3	3	7	3	5	1	4
1217:	8	5	10	3	4	3	2	1
1225:	5	9	3	5	4	8	6	0

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1233:	2	6	8	4	12	16	22	8

Sample Title: R-2 6-12

Channel								
1241:	6	5	4	4	4	5	4	2
1249:	2	6	9	4	6	5	3	2
1257:	2	1	7	4	4	2	2	3
1265:	3	5	2	1	3	4	1	4
1273:	4	4	3	1	3	1	4	9
1281:	7	3	4	3	2	2	1	3
1289:	3	4	0	0	1	5	1	5
1297:	2	4	4	2	5	5	2	3
1305:	3	4	1	2	2	4	1	2
1313:	3	4	2	3	3	3	2	4
1321:	2	5	7	1	5	4	5	1
1329:	4	2	3	3	5	1	2	4
1337:	3	2	3	2	5	2	2	3
1345:	2	2	0	1	1	0	2	3
1353:	3	0	1	2	5	4	3	5
1361:	3	2	5	4	1	6	2	3
1369:	2	2	3	1	4	2	0	5
1377:	6	11	5	1	3	1	4	1
1385:	3	3	1	1	2	3	1	2
1393:	3	2	1	1	3	1	0	4
1401:	5	1	4	6	5	3	5	5
1409:	7	2	0	1	1	3	4	2
1417:	4	3	1	4	1	4	2	2
1425:	2	2	6	1	1	1	1	1
1433:	1	3	2	1	0	3	1	3
1441:	4	1	1	1	2	1	0	3
1449:	1	4	1	7	2	5	6	7
1457:	5	9	31	56	90	42	11	4
1465:	3	1	2	1	2	1	3	3
1473:	2	2	1	1	3	0	2	3
1481:	4	4	0	2	4	0	2	3
1489:	2	1	1	3	4	1	4	1
1497:	3	2	0	3	4	4	1	0
1505:	3	1	2	2	1	6	8	4
1513:	0	5	2	1	3	2	0	4
1521:	2	2	0	3	2	1	0	3
1529:	0	3	2	0	1	1	3	2
1537:	5	4	3	0	0	1	3	0
1545:	4	2	2	2	2	1	4	3
1553:	1	1	5	3	3	0	2	4
1561:	1	3	3	1	2	1	2	2
1569:	2	1	0	3	3	1	3	1
1577:	2	2	1	3	2	4	5	0
1585:	3	0	4	4	5	4	5	4
1593:	1	4	2	1	0	0	0	2
1601:	3	2	2	0	1	1	2	1
1609:	1	4	4	1	2	2	3	1
1617:	1	1	2	3	6	5	2	1
1625:	2	2	2	0	2	2	2	4
1633:	0	0	1	2	2	1	3	1
1641:	0	0	2	2	0	3	1	1
1649:	0	1	2	1	1	1	2	2
1657:	2	0	2	1	2	0	2	2

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1665:	3	1	4	1	1	0	3	0

Sample Title: R-2 6-12

Channel								
1673:	0	1	1	0	0	0	1	0
1681:	0	0	3	2	2	0	1	1
1689:	1	2	3	0	1	0	1	1
1697:	0	0	0	1	2	3	1	2
1705:	0	2	1	1	1	2	3	0
1713:	1	0	0	1	0	2	1	1
1721:	0	1	4	2	1	0	3	4
1729:	5	5	6	2	2	0	6	0
1737:	2	1	2	1	0	2	1	3
1745:	2	0	3	1	3	1	0	4
1753:	0	1	1	2	1	3	0	0
1761:	2	2	17	25	22	11	1	0
1769:	0	0	1	1	5	0	1	0
1777:	2	3	1	0	2	6	0	0
1785:	2	1	0	0	1	2	2	1
1793:	0	1	0	0	1	0	0	1
1801:	1	2	0	0	3	1	1	0
1809:	2	0	0	0	0	1	1	0
1817:	0	0	0	1	0	0	0	1
1825:	2	1	2	0	1	0	1	2
1833:	0	0	0	0	0	0	2	1
1841:	0	2	1	1	2	5	4	0
1849:	1	1	1	0	0	2	1	0
1857:	2	0	1	0	0	1	1	1
1865:	0	1	0	1	3	1	6	2
1873:	1	2	2	3	0	1	0	2
1881:	1	1	1	2	0	1	0	1
1889:	1	1	0	0	3	2	1	1
1897:	1	2	0	0	3	2	2	2
1905:	1	3	4	3	1	1	0	0
1913:	0	2	0	0	1	1	0	1
1921:	1	2	1	0	2	0	0	3
1929:	0	0	2	0	2	0	2	1
1937:	1	1	0	0	0	1	0	2
1945:	0	0	0	1	1	1	0	0
1953:	3	0	2	1	0	0	0	1
1961:	0	0	1	2	1	0	0	4
1969:	1	1	1	0	0	1	1	1
1977:	1	0	0	0	1	1	2	2
1985:	1	0	0	1	2	0	1	0
1993:	1	1	0	1	0	0	1	1
2001:	1	0	1	1	1	0	2	0
2009:	1	0	1	0	0	0	1	0
2017:	0	2	3	0	0	0	1	1
2025:	2	0	0	2	2	0	0	1
2033:	1	0	0	1	0	1	1	1
2041:	1	1	0	0	1	0	1	1
2049:	1	1	0	0	1	2	1	1
2057:	1	2	0	2	0	0	0	0
2065:	2	3	0	1	0	1	0	0
2073:	2	3	0	3	0	0	0	0
2081:	0	0	0	1	1	0	1	0
2089:	1	3	0	0	1	1	1	2

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2097:	0	1	0	3	0	8	3	1

Sample Title: R-2 6-12

Channel								
2105:	2	0	2	0	0	0	0	1
2113:	2	0	1	1	1	1	0	2
2121:	0	0	2	0	2	1	2	1
2129:	2	0	0	1	1	0	1	1
2137:	0	1	0	1	0	1	3	1
2145:	0	1	1	0	1	3	0	1
2153:	1	1	0	0	0	0	0	1
2161:	0	0	2	1	0	0	1	2
2169:	1	1	0	1	0	2	0	0
2177:	4	0	0	1	1	0	0	0
2185:	0	0	2	1	2	0	0	0
2193:	4	1	1	1	1	1	1	0
2201:	4	9	8	1	0	0	0	0
2209:	1	2	0	2	1	0	1	0
2217:	2	2	0	2	2	1	0	1
2225:	1	0	0	0	1	0	0	0
2233:	1	3	0	1	1	3	2	0
2241:	2	4	0	1	1	0	0	0
2249:	0	0	2	1	0	0	0	0
2257:	0	0	2	1	1	1	0	0
2265:	1	0	0	0	0	1	2	0
2273:	0	1	0	1	1	0	0	0
2281:	0	0	1	0	1	0	0	2
2289:	0	1	1	3	0	1	0	0
2297:	1	0	2	1	1	1	2	2
2305:	0	0	0	1	2	1	1	4
2313:	1	0	2	1	1	2	0	0
2321:	0	2	1	0	1	2	1	2
2329:	1	0	0	1	0	0	1	0
2337:	2	0	2	1	1	1	2	0
2345:	0	2	0	2	0	1	1	1
2353:	0	4	1	0	1	2	0	1
2361:	0	1	0	1	1	0	1	3
2369:	1	1	0	2	1	2	1	1
2377:	1	1	0	1	0	2	2	2
2385:	0	1	2	0	1	1	2	2
2393:	0	1	0	1	1	1	3	2
2401:	0	0	1	0	2	1	1	1
2409:	1	0	1	1	0	4	1	2
2417:	1	0	1	0	0	0	0	0
2425:	1	0	0	0	1	2	0	2
2433:	0	1	0	0	1	1	0	0
2441:	0	1	2	2	1	0	4	1
2449:	1	3	0	0	0	0	3	1
2457:	1	1	0	0	0	0	0	0
2465:	0	1	1	0	1	0	0	1
2473:	1	0	0	0	1	0	0	1
2481:	0	0	0	1	0	0	0	1
2489:	0	2	0	0	0	1	1	0
2497:	1	0	0	0	1	0	2	0
2505:	1	0	0	0	0	0	0	2
2513:	2	0	0	0	0	0	0	0
2521:	0	1	1	0	0	1	0	0

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2529:	0	1	0	0	0	0	0	0

Sample Title: R-2 6-12

Channel								
2537:	0	0	1	0	0	1	0	0
2545:	1	1	1	0	0	1	0	1
2553:	0	0	0	1	1	0	0	0
2561:	0	1	0	0	0	0	0	2
2569:	0	1	0	1	0	0	0	0
2577:	1	1	0	1	0	0	0	0
2585:	0	0	0	0	0	0	0	0
2593:	1	0	0	0	0	0	0	0
2601:	0	0	0	1	0	2	0	2
2609:	3	4	15	22	22	23	5	2
2617:	0	1	0	1	1	0	0	0
2625:	1	1	0	0	1	0	0	1
2633:	1	0	0	1	0	0	0	1
2641:	0	1	1	0	1	0	0	2
2649:	0	0	0	1	0	0	1	0
2657:	0	0	0	0	0	0	1	0
2665:	0	1	1	0	0	0	1	0
2673:	0	0	1	0	0	0	0	0
2681:	0	0	1	0	0	1	1	0
2689:	0	1	0	0	0	1	0	0
2697:	0	0	0	0	1	0	0	0
2705:	0	0	1	0	0	0	1	0
2713:	0	0	1	0	0	0	0	0
2721:	0	0	2	0	0	0	0	0
2729:	0	0	0	0	1	1	1	0
2737:	0	0	0	0	0	0	0	0
2745:	0	0	0	0	0	0	0	0
2753:	1	0	0	0	0	0	0	0
2761:	1	0	0	2	0	1	0	0
2769:	0	0	0	0	0	0	0	1
2777:	0	1	1	0	1	0	0	0
2785:	0	2	0	1	1	0	0	1
2793:	0	0	0	0	0	0	0	0
2801:	0	0	1	1	0	0	1	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	1	0	1
2825:	0	0	0	0	0	0	0	0
2833:	0	0	0	0	0	1	0	0
2841:	0	0	0	0	0	0	0	0
2849:	0	2	0	0	0	0	0	0
2857:	0	0	0	2	0	0	0	0
2865:	0	0	0	0	0	1	0	0
2873:	1	0	0	0	0	0	0	0
2881:	0	0	0	1	0	0	1	1
2889:	0	1	0	1	0	0	0	0
2897:	0	0	0	1	0	1	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	1	0	0	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	2	0	0	1
2937:	0	0	0	0	0	1	2	0
2945:	0	1	1	0	0	0	0	0
2953:	0	0	0	0	1	1	0	0

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2961:	0	0	0	0	0	0	0	0

Sample Title: R-2 6-12

Channel								
2969:	0	0	0	0	1	0	1	0
2977:	0	0	0	0	1	0	1	0
2985:	0	0	0	0	0	0	0	0
2993:	0	0	0	1	1	0	1	1
3001:	0	0	0	1	0	0	0	0
3009:	0	0	0	0	0	0	0	1
3017:	0	0	0	0	0	0	0	0
3025:	0	0	0	2	0	0	1	0
3033:	0	0	1	0	2	0	1	0
3041:	0	0	0	0	2	0	0	0
3049:	0	0	1	0	0	0	0	1
3057:	0	0	0	0	0	0	0	0
3065:	0	1	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	0	0	1	1	0	0	0	1
3089:	1	0	0	0	0	1	0	0
3097:	0	0	1	0	0	0	0	0
3105:	0	0	0	0	0	0	0	1
3113:	1	0	0	0	2	0	0	0
3121:	0	0	0	0	0	0	0	0
3129:	0	0	0	0	0	2	0	0
3137:	1	0	0	0	0	0	0	0
3145:	0	1	0	0	0	0	0	0
3153:	0	0	0	1	0	0	0	0
3161:	0	1	0	2	0	0	0	0
3169:	0	0	0	1	0	0	0	0
3177:	1	0	0	0	0	0	0	0
3185:	0	1	0	0	0	1	0	1
3193:	0	1	0	0	1	0	0	2
3201:	0	1	0	0	0	0	1	0
3209:	0	0	0	0	0	0	0	1
3217:	0	1	0	0	0	0	0	0
3225:	0	2	0	1	1	0	0	0
3233:	0	0	0	0	0	0	0	0
3241:	0	0	0	1	0	0	1	0
3249:	0	1	0	0	0	0	0	0
3257:	0	1	1	0	0	0	0	0
3265:	0	0	0	0	0	1	2	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	0	0	0	0
3289:	0	0	0	0	1	0	0	0
3297:	0	1	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0
3313:	0	1	0	0	0	0	0	2
3321:	0	0	0	0	0	0	0	1
3329:	0	0	1	0	2	0	1	0
3337:	0	0	0	0	0	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	2	0	0	0	1	0	0	0
3361:	0	0	0	0	0	1	0	1
3369:	0	0	0	1	0	0	1	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	1	0	0	0

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3393:	0	1	0	0	0	0	0	0

Sample Title: R-2 6-12

Channel								
3401:	0	0	0	0	0	0	2	0
3409:	1	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	1
3433:	1	1	0	0	0	0	0	1
3441:	0	0	0	0	0	1	0	0
3449:	0	0	1	0	1	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	1	0	0	0	0	0	1
3473:	0	0	0	0	0	0	1	0
3481:	0	0	0	0	0	0	0	0
3489:	0	1	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	1	0	0	0	1	0	0
3513:	0	1	0	0	0	0	2	0
3521:	1	0	0	0	0	1	0	1
3529:	1	0	0	1	0	0	1	0
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	1	0	0	0	0	0	0
3569:	0	0	0	0	0	1	0	0
3577:	0	1	0	1	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	1	0	0	0	0	0	0	0
3609:	0	0	2	0	0	0	1	0
3617:	0	0	1	0	0	0	0	0
3625:	0	0	0	0	0	0	0	1
3633:	0	0	1	0	0	0	1	0
3641:	0	0	0	0	0	0	0	0
3649:	1	1	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	0	1	1
3713:	0	0	0	0	0	0	0	0
3721:	0	1	0	0	0	1	1	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	1	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	2	0	0	0	1
3761:	0	0	0	0	0	0	0	0
3769:	0	0	1	0	0	0	0	0
3777:	0	0	0	0	0	0	0	1
3785:	1	0	0	0	1	0	0	0
3793:	0	0	0	0	0	0	0	1
3801:	0	1	0	0	0	0	1	0
3809:	1	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	1

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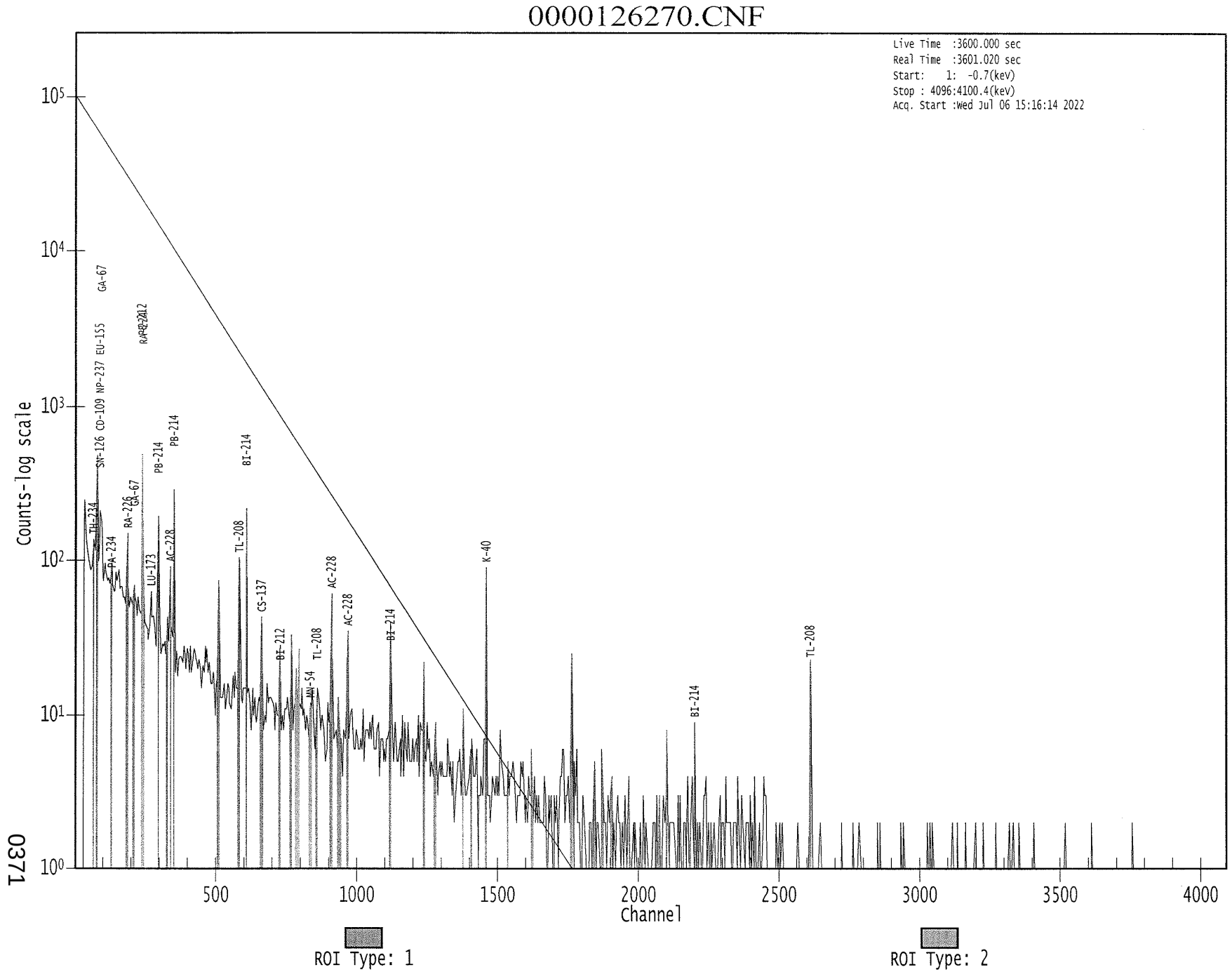
3825:	0	1	0	0	0	0	0	0

Sample Title: R-2 6-12

Channel								
3833:	0	0	0	0	0	1	0	0
3841:	0	0	0	1	1	0	0	0
3849:	0	0	1	0	0	0	0	0
3857:	0	0	0	0	0	1	0	0
3865:	0	0	0	1	0	1	0	0
3873:	0	0	1	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	1	0	0	0	0	0
3897:	0	0	0	0	0	0	0	1
3905:	0	0	0	0	0	0	0	1
3913:	0	1	0	0	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	1	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	1
3985:	0	0	0	1	0	0	0	0
3993:	0	0	1	0	0	0	0	1
4001:	0	0	0	0	1	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	1	0	0	0	0	0	0
4041:	0	0	0	0	0	1	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	1	0
4065:	0	0	0	1	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	1	0	0	0	2	0	1	1

BP/Castex-Ltd Adm-Apx E-001725

BP/Castex-Ltd Adm-Apx E-001726



RB 7/6/22

Apex-Gamma

Analysis Report for 2206038-10
R-3 0-6

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-10
Sample Description	: R-3 0-6
Sample Type	: SOIL
Sample Size	: 5.888E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:44:59AM
Acquisition Started	: 7/6/2022 3:16:24PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3610.0 seconds
Dead Time	: 0.28 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 8 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126271

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

BP/Castex-Ltd Adm-Apx E-001727

Analysis Report for 2206038-10

R-3 0-6

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 4:16:51PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	31.98	31.95	0.0000	0.00
2	36.34	36.30	0.0000	0.00
3	46.71	46.67	0.0000	0.00
4	53.23	53.18	0.0000	0.00
5	76.29	76.23	0.0000	0.00
6	88.42	88.35	0.0000	0.00
7	139.52	139.41	0.0000	0.00
8	150.24	150.13	0.0000	0.00
9	186.25	186.11	0.0000	0.00
10	240.66	240.49	0.0000	0.00
11	258.23	258.05	0.0000	0.00
12	295.20	294.99	0.0000	0.00
13	339.28	339.05	0.0000	0.00
14	351.95	351.72	0.0000	0.00
15	510.88	510.55	0.0000	0.00
16	582.67	582.30	0.0000	0.00
17	609.36	608.98	0.0000	0.00
18	664.78	664.37	0.0000	0.00
19	727.55	727.11	0.0000	0.00
20	734.44	733.99	0.0000	0.00
21	768.72	768.25	0.0000	0.00
22	785.88	785.41	0.0000	0.00
23	795.30	794.82	0.0000	0.00
24	805.10	804.61	0.0000	0.00
25	838.95	838.45	0.0000	0.00
26	911.09	910.55	0.0000	0.00
27	933.99	933.44	0.0000	0.00
28	965.16	964.59	0.0000	0.00
29	969.36	968.80	0.0000	0.00
30	1120.37	1119.74	0.0000	0.00
31	1155.19	1154.55	0.0000	0.00
32	1167.21	1166.56	0.0000	0.00
33	1238.18	1237.50	0.0000	0.00
34	1279.57	1278.88	0.0000	0.00
35	1377.25	1376.52	0.0000	0.00
36	1401.60	1400.86	0.0000	0.00
37	1407.67	1406.93	0.0000	0.00
38	1460.58	1459.81	0.0000	0.00
39	1509.41	1508.63	0.0000	0.00
40	1558.88	1558.08	0.0000	0.00
41	1663.90	1663.08	0.0000	0.00
42	1691.94	1691.10	0.0000	0.00

Analysis Report for 2206038-10

R-3 0-6

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1729.50	1728.65	0.0000	0.00
44	1756.37	1755.51	0.0000	0.00
45	1764.62	1763.76	0.0000	0.00
46	1847.72	1846.84	0.0000	0.00
47	1934.38	1933.48	0.0000	0.00
48	2118.22	2117.28	0.0000	0.00
49	2204.24	2203.28	0.0000	0.00
50	2348.45	2347.47	0.0000	0.00
51	2407.94	2406.95	0.0000	0.00
52	2447.85	2446.85	0.0000	0.00
53	2504.20	2503.20	0.0000	0.00
54	2614.75	2613.74	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001729

Analysis Report for 2206038-10

R-3 0-6

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 4:16:51PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	31.98	26 -	40	31.95	1.80E+03	187.93	4.98E+03	2.21
m	2	36.34	26 -	40	36.30	6.96E+02	204.13	5.53E+03	2.75
	3	46.71	43 -	50	46.67	4.39E+02	178.78	5.03E+03	2.77
	4	53.23	51 -	55	53.18	1.01E+02	120.84	3.16E+03	1.74
	5	76.29	70 -	82	76.23	5.01E+03	332.36	1.06E+04	3.95
	6	88.42	83 -	95	88.35	1.93E+03	300.71	9.68E+03	3.19
	7	139.52	137 -	142	139.41	1.34E+02	159.16	4.95E+03	1.92
	8	150.24	147 -	153	150.13	1.56E+02	184.20	6.06E+03	2.22
	9	186.25	181 -	191	186.11	1.33E+03	256.74	8.06E+03	2.32
	10	240.66	234 -	246	240.49	3.48E+03	250.32	5.72E+03	5.32
	11	258.23	255 -	262	258.05	2.01E+02	140.84	3.18E+03	4.05
	12	295.20	289 -	299	294.99	4.29E+03	213.75	3.80E+03	2.59
	13	339.28	334 -	345	339.05	2.59E+02	168.52	3.39E+03	2.24
	14	351.95	346 -	356	351.72	6.77E+03	218.58	2.76E+03	2.49
	15	510.88	506 -	517	510.55	2.51E+02	113.89	1.50E+03	2.27
	16	582.67	576 -	587	582.30	4.09E+02	107.11	1.23E+03	3.39
	17	609.36	601 -	614	608.98	4.73E+03	178.63	1.46E+03	2.61
	18	664.78	659 -	668	664.37	1.47E+02	78.45	7.97E+02	1.70
M	19	727.55	723 -	737	727.11	1.34E+02	62.58	5.35E+02	3.52
m	20	734.44	723 -	737	733.99	7.57E+01	60.73	4.75E+02	3.69
	21	768.72	763 -	774	768.25	3.87E+02	90.49	8.18E+02	2.52
	22	785.88	779 -	790	785.41	7.31E+01	83.14	8.26E+02	2.94
	23	795.30	792 -	797	794.82	6.47E+01	44.54	3.41E+02	3.04
	24	805.10	799 -	810	804.61	9.44E+01	79.92	7.55E+02	4.59
	25	838.95	834 -	844	838.45	1.18E+02	70.49	6.00E+02	3.62
	26	911.09	903 -	915	910.55	1.64E+02	87.84	8.26E+02	2.62
	27	933.99	925 -	939	933.44	2.98E+02	90.34	7.28E+02	2.92
M	28	965.16	960 -	972	964.59	8.54E+01	52.80	4.13E+02	3.43
m	29	969.36	960 -	972	968.80	1.04E+02	59.00	4.15E+02	2.94
	30	1120.37	1114 -	1125	1119.74	8.82E+02	89.44	5.61E+02	2.99
	31	1155.19	1149 -	1160	1154.55	1.27E+02	64.31	4.46E+02	2.45
	32	1167.21	1161 -	1170	1166.56	5.54E+01	45.89	2.67E+02	4.03
	33	1238.18	1231 -	1243	1237.50	3.15E+02	65.54	3.57E+02	2.36
	34	1279.57	1270 -	1284	1278.88	9.73E+01	69.83	4.71E+02	3.64
	35	1377.25	1365 -	1381	1376.52	1.71E+02	78.35	5.24E+02	3.05
M	36	1401.60	1395 -	1412	1400.86	5.10E+01	47.37	2.67E+02	3.23
m	37	1407.67	1395 -	1412	1406.93	1.30E+02	50.16	2.91E+02	3.23
	38	1460.58	1453 -	1464	1459.81	7.13E+01	56.25	3.59E+02	2.53
	39	1509.41	1503 -	1513	1508.63	1.03E+02	54.86	3.47E+02	2.95
	40	1558.88	1554 -	1562	1558.08	3.37E+01	32.99	1.43E+02	4.57

BP/Castex-Ltd Adm-Apx E-001730

Analysis Report for 2206038-10

R-3 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1663.90	1654 -	1672	1663.08	9.45E+01	42.39	1.23E+02	8.86
	42	1691.94	1682 -	1698	1691.10	3.16E+01	38.21	1.25E+02	7.48
	43	1729.50	1723 -	1734	1728.65	1.33E+02	36.77	1.03E+02	2.70
M	44	1756.37	1748 -	1779	1755.51	2.75E+01	26.76	5.04E+01	4.00
m	45	1764.62	1748 -	1779	1763.76	6.06E+02	52.49	5.31E+01	3.00
	46	1847.72	1840 -	1854	1846.84	8.42E+01	35.54	1.26E+02	3.34
	47	1934.38	1929 -	1937	1933.48	2.08E+01	18.61	4.05E+01	4.89
	48	2118.22	2112 -	2124	2117.28	4.46E+01	22.66	4.08E+01	2.94
	49	2204.24	2198 -	2210	2203.28	1.82E+02	29.06	1.52E+01	3.30
	50	2348.45	2343 -	2352	2347.47	1.13E+01	13.27	1.54E+01	4.87
	51	2407.94	2404 -	2410	2406.95	5.07E+00	6.34	3.86E+00	1.89
	52	2447.85	2441 -	2452	2446.85	4.97E+01	18.44	1.66E+01	3.42
	53	2504.20	2498 -	2506	2503.20	1.00E+01	6.32	0.00E+00	1.47
	54	2614.75	2609 -	2618	2613.74	8.67E+01	19.52	4.70E+00	2.61

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 4:16:51PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	1	31.98	26 -	40	1.80E+03	187.93	4.98E+03	1.16E+02
m	2	36.34	26 -	40	6.96E+02	204.13	5.53E+03	1.22E+02
	3	46.71	43 -	50	4.39E+02	178.78	5.03E+03	1.43E+02
	4	53.23	51 -	55	1.01E+02	120.84	3.16E+03	9.79E+01
	5	76.29	70 -	82	5.01E+03	332.36	1.06E+04	2.47E+02
	6	88.42	83 -	95	1.93E+03	300.71	9.68E+03	2.36E+02
	7	139.52	137 -	142	1.34E+02	159.16	4.95E+03	1.29E+02
	8	150.24	147 -	153	1.56E+02	184.20	6.06E+03	1.50E+02
	9	186.25	181 -	191	1.33E+03	256.74	8.06E+03	2.02E+02
	10	240.66	234 -	246	3.48E+03	250.32	5.72E+03	1.82E+02
	11	258.23	255 -	262	2.01E+02	140.84	3.18E+03	1.13E+02
	12	295.20	289 -	299	4.29E+03	213.75	3.80E+03	1.39E+02
	13	339.28	334 -	345	2.59E+02	168.52	3.39E+03	1.36E+02
	14	351.95	346 -	356	6.77E+03	218.58	2.76E+03	1.18E+02

BP/Castex-Ltd Adm-Apx E-001731

Analysis Report for 2206038-10

R-3 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	15	510.88	506 -	517	2.51E+02	113.89	1.50E+03	8.99E+01
	16	582.67	576 -	587	4.09E+02	107.11	1.23E+03	8.15E+01
	17	609.36	601 -	614	4.73E+03	178.63	1.46E+03	9.37E+01
	18	664.78	659 -	668	1.47E+02	78.45	7.97E+02	6.13E+01
M	19	727.55	723 -	737	1.34E+02	62.58	5.35E+02	3.80E+01
m	20	734.44	723 -	737	7.57E+01	60.73	4.75E+02	3.58E+01
	21	768.72	763 -	774	3.87E+02	90.49	8.18E+02	6.70E+01
	22	785.88	779 -	790	7.31E+01	83.14	8.26E+02	6.69E+01
	23	795.30	792 -	797	6.47E+01	44.54	3.41E+02	3.41E+01
	24	805.10	799 -	810	9.44E+01	79.92	7.55E+02	6.37E+01
	25	838.95	834 -	844	1.18E+02	70.49	6.00E+02	5.51E+01
	26	911.09	903 -	915	1.64E+02	87.84	8.26E+02	6.91E+01
	27	933.99	925 -	939	2.98E+02	90.34	7.28E+02	6.86E+01
M	28	965.16	960 -	972	8.54E+01	52.80	4.13E+02	3.34E+01
m	29	969.36	960 -	972	1.04E+02	59.00	4.15E+02	3.35E+01
	30	1120.37	1114 -	1125	8.82E+02	89.44	5.61E+02	5.50E+01
	31	1155.19	1149 -	1160	1.27E+02	64.31	4.46E+02	4.95E+01
	32	1167.21	1161 -	1170	5.54E+01	45.89	2.67E+02	3.57E+01
	33	1238.18	1231 -	1243	3.15E+02	65.54	3.57E+02	4.53E+01
	34	1279.57	1270 -	1284	9.73E+01	69.83	4.71E+02	5.51E+01
	35	1377.25	1365 -	1381	1.71E+02	78.35	5.24E+02	2.64E+01
M	36	1401.60	1395 -	1412	5.10E+01	47.37	2.67E+02	2.68E+01
m	37	1407.67	1395 -	1412	1.30E+02	50.16	2.91E+02	2.80E+01
	38	1460.58	1453 -	1464	7.13E+01	56.25	3.59E+02	4.41E+01
	39	1509.41	1503 -	1513	1.03E+02	54.86	3.47E+02	4.19E+01
	40	1558.88	1554 -	1562	3.37E+01	32.99	1.43E+02	2.54E+01
	41	1663.90	1654 -	1672	9.45E+01	42.39	1.23E+02	3.10E+01
	42	1691.94	1682 -	1698	3.16E+01	38.21	1.25E+02	3.00E+01
	43	1729.50	1723 -	1734	1.33E+02	36.77	1.03E+02	2.35E+01
M	44	1756.37	1748 -	1779	2.75E+01	26.76	5.04E+01	1.17E+01
m	45	1764.62	1748 -	1779	6.06E+02	52.49	5.31E+01	1.20E+01
	46	1847.72	1840 -	1854	8.42E+01	35.54	1.26E+02	3.22E+01
	47	1934.38	1929 -	1937	2.08E+01	18.61	4.05E+01	1.33E+01
	48	2118.22	2112 -	2124	4.46E+01	22.66	4.08E+01	1.50E+01
	49	2204.24	2198 -	2210	1.82E+02	29.06	1.52E+01	8.81E+00
	50	2348.45	2343 -	2352	1.13E+01	13.27	1.54E+01	9.40E+00
	51	2407.94	2404 -	2410	5.07E+00	6.34	3.86E+00	3.67E+00
	52	2447.85	2441 -	2452	4.97E+01	18.44	1.66E+01	9.77E+00
	53	2504.20	2498 -	2506	1.00E+01	6.32	0.00E+00	0.00E+00
	54	2614.75	2609 -	2618	8.67E+01	19.52	4.70E+00	4.82E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001732

Analysis Report for 2206038-10

R-3 0-6

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 4:16:51PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	1	31.98	26 -	40	31.95	1.80E+03	187.93	4.98E+03	I-129
									I-129
m	2	36.34	26 -	40	36.30	6.96E+02	204.13	5.53E+03	PM-145
									I-125
									PM-145
	3	46.71	43 -	50	46.67	4.39E+02	178.78	5.03E+03	PB-210
									TH-230
	4	53.23	51 -	55	53.18	1.01E+02	120.84	3.16E+03	.....
	5	76.29	70 -	82	76.23	5.01E+03	332.36	1.06E+04	AM-243
									TI-44
	6	88.42	83 -	95	88.35	1.93E+03	300.71	9.68E+03	LU-176
									CD-109
									SN-126
									NP-237
									EU-155
	7	139.52	137 -	142	139.41	1.34E+02	159.16	4.95E+03	TC-99M
	8	150.24	147 -	153	150.13	1.56E+02	184.20	6.06E+03	.....
	9	186.25	181 -	191	186.11	1.33E+03	256.74	8.06E+03	RA-226
									HO-166M
	10	240.66	234 -	246	240.49	3.48E+03	250.32	5.72E+03	RA-224
									PB-212
	11	258.23	255 -	262	258.05	2.01E+02	140.84	3.18E+03	TH-227
	12	295.20	289 -	299	294.99	4.29E+03	213.75	3.80E+03	PB-214
									CE-143
	13	339.28	334 -	345	339.05	2.59E+02	168.52	3.39E+03	AC-228
									CS-136
	14	351.95	346 -	356	351.72	6.77E+03	218.58	2.76E+03	PB-214
	15	510.88	506 -	517	510.55	2.51E+02	113.89	1.50E+03	.....
	16	582.67	576 -	587	582.30	4.09E+02	107.11	1.23E+03	TL-208
	17	609.36	601 -	614	608.98	4.73E+03	178.63	1.46E+03	BI-214
	18	664.78	659 -	668	664.37	1.47E+02	78.45	7.97E+02	CE-143
									SB-126
M	19	727.55	723 -	737	727.11	1.34E+02	62.58	5.35E+02	BI-212
m	20	734.44	723 -	737	733.99	7.57E+01	60.73	4.75E+02	PA-234
									PM-146
	21	768.72	763 -	774	768.25	3.87E+02	90.49	8.18E+02	.....
	22	785.88	779 -	790	785.41	7.31E+01	83.14	8.26E+02	SB-127
	23	795.30	792 -	797	794.82	6.47E+01	44.54	3.41E+02	CS-134
	24	805.10	799 -	810	804.61	9.44E+01	79.92	7.55E+02	.....
	25	838.95	834 -	844	838.45	1.18E+02	70.49	6.00E+02	.....
	26	911.09	903 -	915	910.55	1.64E+02	87.84	8.26E+02	AC-228

BP/Castex-Ltd Adm-Apx E-001733

Analysis Report for 2206038-10

R-3 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									TL-204
	27	933.99	925 -	939	933.44	2.98E+02	90.34	7.28E+02	.....
M	28	965.16	960 -	972	964.59	8.54E+01	52.80	4.13E+02	EU-152
m	29	969.36	960 -	972	968.80	1.04E+02	59.00	4.15E+02	AC-228
	30	1120.37	1114 -	1125	1119.74	8.82E+02	89.44	5.61E+02	BI-214
									SC-46
									TA-182
	31	1155.19	1149 -	1160	1154.55	1.27E+02	64.31	4.46E+02	EU-156
	32	1167.21	1161 -	1170	1166.56	5.54E+01	45.89	2.67E+02	.....
	33	1238.18	1231 -	1243	1237.50	3.15E+02	65.54	3.57E+02	CO-56
	34	1279.57	1270 -	1284	1278.88	9.73E+01	69.83	4.71E+02	.....
	35	1377.25	1365 -	1381	1376.52	1.71E+02	78.35	5.24E+02	.....
M	36	1401.60	1395 -	1412	1400.86	5.10E+01	47.37	2.67E+02	.....
m	37	1407.67	1395 -	1412	1406.93	1.30E+02	50.16	2.91E+02	EU-152
	38	1460.58	1453 -	1464	1459.81	7.13E+01	56.25	3.59E+02	K-40
	39	1509.41	1503 -	1513	1508.63	1.03E+02	54.86	3.47E+02	.....
	40	1558.88	1554 -	1562	1558.08	3.37E+01	32.99	1.43E+02	.....
	41	1663.90	1654 -	1672	1663.08	9.45E+01	42.39	1.23E+02	.....
	42	1691.94	1682 -	1698	1691.10	3.16E+01	38.21	1.25E+02	SB-124
	43	1729.50	1723 -	1734	1728.65	1.33E+02	36.77	1.03E+02	.....
M	44	1756.37	1748 -	1779	1755.51	2.75E+01	26.76	5.04E+01	.....
m	45	1764.62	1748 -	1779	1763.76	6.06E+02	52.49	5.31E+01	BI-214
	46	1847.72	1840 -	1854	1846.84	8.42E+01	35.54	1.26E+02	.....
	47	1934.38	1929 -	1937	1933.48	2.08E+01	18.61	4.05E+01	.....
	48	2118.22	2112 -	2124	2117.28	4.46E+01	22.66	4.08E+01	.....
	49	2204.24	2198 -	2210	2203.28	1.82E+02	29.06	1.52E+01	BI-214
	50	2348.45	2343 -	2352	2347.47	1.13E+01	13.27	1.54E+01	.....
	51	2407.94	2404 -	2410	2406.95	5.07E+00	6.34	3.86E+00	.....
	52	2447.85	2441 -	2452	2446.85	4.97E+01	18.44	1.66E+01	.....
	53	2504.20	2498 -	2506	2503.20	1.00E+01	6.32	0.00E+00	.....
	54	2614.75	2609 -	2618	2613.74	8.67E+01	19.52	4.70E+00	TL-208

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 4:16:51PM

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty

BP/Castex-Ltd Adm-Apx E-001734

Analysis Report for 2206038-10

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M	1	31.98	1.80E+03	187.93	9.93E-03	1.74E-03
m	2	36.34	6.96E+02	204.13	1.30E-02	1.74E-03
	3	46.71	4.39E+02	178.78	1.89E-02	1.74E-03
	4	53.23	1.01E+02	120.84	2.15E-02	1.74E-03
	5	76.29	5.01E+03	332.36	2.52E-02	1.98E-03
	6	88.42	1.93E+03	300.71	2.51E-02	2.14E-03
	7	139.52	1.34E+02	159.16	2.08E-02	1.68E-03
	8	150.24	1.56E+02	184.20	1.98E-02	1.67E-03
	9	186.25	1.33E+03	256.74	1.67E-02	1.55E-03
	10	240.66	3.48E+03	250.32	1.33E-02	1.33E-03
	11	258.23	2.01E+02	140.84	1.24E-02	1.25E-03
	12	295.20	4.29E+03	213.75	1.09E-02	1.10E-03
	13	339.28	2.59E+02	168.52	9.44E-03	9.27E-04
	14	351.95	6.77E+03	218.58	9.09E-03	8.77E-04
	15	510.88	2.51E+02	113.89	6.16E-03	5.85E-04
	16	582.67	4.09E+02	107.11	5.36E-03	5.03E-04
	17	609.36	4.73E+03	178.63	5.12E-03	4.72E-04
	18	664.78	1.47E+02	78.45	4.68E-03	4.11E-04
M	19	727.55	1.34E+02	62.58	4.26E-03	3.80E-04
m	20	734.44	7.57E+01	60.73	4.22E-03	3.76E-04
	21	768.72	3.87E+02	90.49	4.03E-03	3.59E-04
	22	785.88	7.31E+01	83.14	3.94E-03	3.51E-04
	23	795.30	6.47E+01	44.54	3.89E-03	3.46E-04
	24	805.10	9.44E+01	79.92	3.85E-03	3.41E-04
	25	838.95	1.18E+02	70.49	3.69E-03	3.25E-04
	26	911.09	1.64E+02	87.84	3.40E-03	2.96E-04
	27	933.99	2.98E+02	90.34	3.32E-03	2.95E-04
M	28	965.16	8.54E+01	52.80	3.21E-03	2.95E-04
m	29	969.36	1.04E+02	59.00	3.20E-03	2.95E-04
	30	1120.37	8.82E+02	89.44	2.78E-03	2.93E-04
	31	1155.19	1.27E+02	64.31	2.70E-03	2.93E-04
	32	1167.21	5.54E+01	45.89	2.68E-03	2.92E-04
	33	1238.18	3.15E+02	65.54	2.53E-03	2.59E-04
	34	1279.57	9.73E+01	69.83	2.46E-03	2.37E-04
	35	1377.25	1.71E+02	78.35	2.30E-03	2.04E-04
M	36	1401.60	5.10E+01	47.37	2.26E-03	2.00E-04
m	37	1407.67	1.30E+02	50.16	2.25E-03	2.00E-04
	38	1460.58	7.13E+01	56.25	2.18E-03	1.93E-04
	39	1509.41	1.03E+02	54.86	2.12E-03	1.86E-04
	40	1558.88	3.37E+01	32.99	2.06E-03	1.79E-04
	41	1663.90	9.45E+01	42.39	1.95E-03	1.66E-04
	42	1691.94	3.16E+01	38.21	1.92E-03	1.62E-04
	43	1729.50	1.33E+02	36.77	1.88E-03	1.57E-04
M	44	1756.37	2.75E+01	26.76	1.86E-03	1.53E-04
m	45	1764.62	6.06E+02	52.49	1.85E-03	1.52E-04
	46	1847.72	8.42E+01	35.54	1.78E-03	1.43E-04
	47	1934.38	2.08E+01	18.61	1.72E-03	1.43E-04
	48	2118.22	4.46E+01	22.66	1.60E-03	1.43E-04
	49	2204.24	1.82E+02	29.06	1.55E-03	1.43E-04
	50	2348.45	1.13E+01	13.27	1.48E-03	1.43E-04
	51	2407.94	5.07E+00	6.34	1.45E-03	1.43E-04
	52	2447.85	4.97E+01	18.44	1.43E-03	1.43E-04
	53	2504.20	1.00E+01	6.32	1.41E-03	1.43E-04
	54	2614.75	8.67E+01	19.52	1.36E-03	1.43E-04

BP/Castex-Ltd Adm-Apx E-001735

Analysis Report for 2206038-10

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M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 4:16:51PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126203.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	31.98	1.80E+03	187.93			1.80E+03	1.88E+02
m	2	36.34	6.96E+02	204.13			6.96E+02	2.04E+02
	3	46.71	4.39E+02	178.78	2.20E+01	9.72E+00	4.17E+02	1.79E+02
	4	53.23	1.01E+02	120.84			1.01E+02	1.21E+02
	5	76.29	5.01E+03	332.36	2.03E+01	5.84E+00	4.99E+03	3.32E+02
	6	88.42	1.93E+03	300.71			1.93E+03	3.01E+02
	7	139.52	1.34E+02	159.16			1.34E+02	1.59E+02
	8	150.24	1.56E+02	184.20			1.56E+02	1.84E+02
	9	186.25	1.33E+03	256.74	1.96E+01	3.17E+00	1.31E+03	2.57E+02
	10	240.66	3.48E+03	250.32	8.87E+00	6.28E+00	3.47E+03	2.50E+02
	11	258.23	2.01E+02	140.84			2.01E+02	1.41E+02
	12	295.20	4.29E+03	213.75			4.29E+03	2.14E+02
	13	339.28	2.59E+02	168.52			2.59E+02	1.69E+02
	14	351.95	6.77E+03	218.58			6.77E+03	2.19E+02
	15	510.88	2.51E+02	113.89	4.35E+01	4.93E+00	2.08E+02	1.14E+02
	16	582.67	4.09E+02	107.11	3.49E+00	3.56E+00	4.05E+02	1.07E+02
	17	609.36	4.73E+03	178.63	4.60E+00	3.40E+00	4.72E+03	1.79E+02
	18	664.78	1.47E+02	78.45			1.47E+02	7.85E+01
M	19	727.55	1.34E+02	62.58			1.34E+02	6.26E+01
m	20	734.44	7.57E+01	60.73			7.57E+01	6.07E+01
	21	768.72	3.87E+02	90.49			3.87E+02	9.05E+01
	22	785.88	7.31E+01	83.14			7.31E+01	8.31E+01
	23	795.30	6.47E+01	44.54			6.47E+01	4.45E+01
	24	805.10	9.44E+01	79.92	3.53E+00	2.46E+00	9.09E+01	8.00E+01
	25	838.95	1.18E+02	70.49			1.18E+02	7.05E+01
	26	911.09	1.64E+02	87.84			1.64E+02	8.78E+01
	27	933.99	2.98E+02	90.34			2.98E+02	9.03E+01
M	28	965.16	8.54E+01	52.80			8.54E+01	5.28E+01
m	29	969.36	1.04E+02	59.00			1.04E+02	5.90E+01
	30	1120.37	8.82E+02	89.44			8.82E+02	8.94E+01
	31	1155.19	1.27E+02	64.31			1.27E+02	6.43E+01
	32	1167.21	5.54E+01	45.89			5.54E+01	4.59E+01
	33	1238.18	3.15E+02	65.54			3.15E+02	6.55E+01
	34	1279.57	9.73E+01	69.83			9.73E+01	6.98E+01
	35	1377.25	1.71E+02	78.35			1.71E+02	7.84E+01

BP/Castex-Ltd Adm-Apx E-001736

Analysis Report for 2206038-10

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	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	36	1401.60	5.10E+01	47.37			5.10E+01	4.74E+01
m	37	1407.67	1.30E+02	50.16			1.30E+02	5.02E+01
	38	1460.58	7.13E+01	56.25	2.23E+00	1.49E+00	6.91E+01	5.63E+01
	39	1509.41	1.03E+02	54.86			1.03E+02	5.49E+01
	40	1558.88	3.37E+01	32.99			3.37E+01	3.30E+01
	41	1663.90	9.45E+01	42.39			9.45E+01	4.24E+01
	42	1691.94	3.16E+01	38.21			3.16E+01	3.82E+01
	43	1729.50	1.33E+02	36.77			1.33E+02	3.68E+01
M	44	1756.37	2.75E+01	26.76			2.75E+01	2.68E+01
m	45	1764.62	6.06E+02	52.49			6.06E+02	5.25E+01
	46	1847.72	8.42E+01	35.54			8.42E+01	3.55E+01
	47	1934.38	2.08E+01	18.61			2.08E+01	1.86E+01
	48	2118.22	4.46E+01	22.66			4.46E+01	2.27E+01
	49	2204.24	1.82E+02	29.06			1.82E+02	2.91E+01
	50	2348.45	1.13E+01	13.27			1.13E+01	1.33E+01
	51	2407.94	5.07E+00	6.34			5.07E+00	6.34E+00
	52	2447.85	4.97E+01	18.44			4.97E+01	1.84E+01
	53	2504.20	1.00E+01	6.32			1.00E+01	6.32E+00
	54	2614.75	8.67E+01	19.52	2.23E+00	1.06E+00	8.44E+01	1.95E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 4:16:51PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126203.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	1	31.98	1.80E+03	187.93			1.80E+03	1.88E+02
m	2	36.34	6.96E+02	204.13			6.96E+02	2.04E+02
	3	46.71	4.39E+02	178.78	2.20E+01	9.72E+00	4.17E+02	1.79E+02
	4	53.23	1.01E+02	120.84			1.01E+02	1.21E+02
	5	76.29	5.01E+03	332.36	2.03E+01	5.84E+00	4.99E+03	3.32E+02
	6	88.42	1.93E+03	300.71			1.93E+03	3.01E+02
	7	139.52	1.34E+02	159.16			1.34E+02	1.59E+02
	8	150.24	1.56E+02	184.20			1.56E+02	1.84E+02
	9	186.25	1.33E+03	256.74	1.96E+01	3.17E+00	1.31E+03	2.57E+02

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	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	10	240.66	3.48E+03	250.32	8.87E+00	6.28E+00	3.47E+03	2.50E+02
	11	258.23	2.01E+02	140.84			2.01E+02	1.41E+02
	12	295.20	4.29E+03	213.75			4.29E+03	2.14E+02
	13	339.28	2.59E+02	168.52			2.59E+02	1.69E+02
	14	351.95	6.77E+03	218.58			6.77E+03	2.19E+02
	15	510.88	2.51E+02	113.89	4.35E+01	4.93E+00	2.08E+02	1.14E+02
	16	582.67	4.09E+02	107.11	3.49E+00	3.56E+00	4.05E+02	1.07E+02
	17	609.36	4.73E+03	178.63	4.60E+00	3.40E+00	4.72E+03	1.79E+02
	18	664.78	1.47E+02	78.45			1.47E+02	7.85E+01
M	19	727.55	1.34E+02	62.58			1.34E+02	6.26E+01
m	20	734.44	7.57E+01	60.73			7.57E+01	6.07E+01
	21	768.72	3.87E+02	90.49			3.87E+02	9.05E+01
	22	785.88	7.31E+01	83.14			7.31E+01	8.31E+01
	23	795.30	6.47E+01	44.54			6.47E+01	4.45E+01
	24	805.10	9.44E+01	79.92	3.53E+00	2.46E+00	9.09E+01	8.00E+01
	25	838.95	1.18E+02	70.49			1.18E+02	7.05E+01
	26	911.09	1.64E+02	87.84			1.64E+02	8.78E+01
	27	933.99	2.98E+02	90.34			2.98E+02	9.03E+01
M	28	965.16	8.54E+01	52.80			8.54E+01	5.28E+01
m	29	969.36	1.04E+02	59.00			1.04E+02	5.90E+01
	30	1120.37	8.82E+02	89.44			8.82E+02	8.94E+01
	31	1155.19	1.27E+02	64.31			1.27E+02	6.43E+01
	32	1167.21	5.54E+01	45.89			5.54E+01	4.59E+01
	33	1238.18	3.15E+02	65.54			3.15E+02	6.55E+01
	34	1279.57	9.73E+01	69.83			9.73E+01	6.98E+01
	35	1377.25	1.71E+02	78.35			1.71E+02	7.84E+01
M	36	1401.60	5.10E+01	47.37			5.10E+01	4.74E+01
m	37	1407.67	1.30E+02	50.16			1.30E+02	5.02E+01
	38	1460.58	7.13E+01	56.25	2.23E+00	1.49E+00	6.91E+01	5.63E+01
	39	1509.41	1.03E+02	54.86			1.03E+02	5.49E+01
	40	1558.88	3.37E+01	32.99			3.37E+01	3.30E+01
	41	1663.90	9.45E+01	42.39			9.45E+01	4.24E+01
	42	1691.94	3.16E+01	38.21			3.16E+01	3.82E+01
	43	1729.50	1.33E+02	36.77			1.33E+02	3.68E+01
M	44	1756.37	2.75E+01	26.76			2.75E+01	2.68E+01
m	45	1764.62	6.06E+02	52.49			6.06E+02	5.25E+01
	46	1847.72	8.42E+01	35.54			8.42E+01	3.55E+01
	47	1934.38	2.08E+01	18.61			2.08E+01	1.86E+01
	48	2118.22	4.46E+01	22.66			4.46E+01	2.27E+01
	49	2204.24	1.82E+02	29.06			1.82E+02	2.91E+01
	50	2348.45	1.13E+01	13.27			1.13E+01	1.33E+01
	51	2407.94	5.07E+00	6.34			5.07E+00	6.34E+00
	52	2447.85	4.97E+01	18.44			4.97E+01	1.84E+01
	53	2504.20	1.00E+01	6.32			1.00E+01	6.32E+00
	54	2614.75	8.67E+01	19.52	2.23E+00	1.06E+00	8.44E+01	1.95E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001738

Analysis Report for 2206038-10

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NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.999	1460.81	*	10.67	3.78E+00	3.10E+00
TC-99M	0.975	140.51	*	89.00	9.24E-02	1.10E-01
CD-109	0.996	88.03	*	3.72	2.74E+01	4.87E+00
I-125	0.981	35.49	*	6.49	1.42E+01	4.59E+00
SN-126	0.982	87.57	*	37.00	2.65E+00	4.71E-01
EU-155	0.312	86.50	*	30.90	3.20E+00	5.70E-01
		105.30		20.70		
TL-208	0.884	583.14	*	30.22	3.19E+00	8.94E-01
		860.37		4.48		
		2614.66	*	35.85	2.20E+00	5.59E-01
PB-210	0.999	46.50	*	4.25	6.63E+00	2.91E+00
BI-212	0.777	727.17	*	11.80	3.40E+00	1.61E+00
		1620.62		2.75		
PB-212	0.804	238.63	*	44.60	7.45E+00	9.17E-01
		300.09		3.41		
BI-214	1.000	609.31	*	46.30	2.54E+01	2.53E+00
		1120.29	*	15.10	2.68E+01	3.91E+00
		1764.49	*	15.80	2.64E+01	3.15E+00
		2204.22	*	4.98	3.02E+01	5.55E+00
PB-214	1.000	295.21	*	19.19	2.62E+01	2.95E+00
		351.92	*	37.19	2.55E+01	2.60E+00
RA-224	0.997	240.98	*	3.95	8.41E+01	1.04E+01
RA-226	1.000	186.21	*	3.28	3.05E+01	6.60E+00
AC-228	0.995	338.32	*	11.40	3.07E+00	2.02E+00
		911.07	*	27.70	2.22E+00	1.20E+00
		969.11	*	16.60	2.50E+00	1.43E+00
TH-230	0.552	48.43	*	16.90	1.66E+00	7.30E-01
		62.85		4.60		
		67.67		0.37		
NP-237	0.910	86.50	*	12.60	7.77E+00	1.38E+00
AM-243	0.935	74.67	*	66.00	3.84E+00	3.95E-01

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001739

Analysis Report for 2206038-10

R-3 0-6

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 4:16:51PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	31.98	5.00994E-01	5.21	Tol.	I-129
						I-129
	4	53.23	2.81010E-02	59.72		
	8	150.24	4.33399E-02	59.03	Sum	
	11	258.23	5.59390E-02	34.97	Tol.	TH-227
	15	510.88	5.76579E-02	27.46		
	18	664.78	4.07301E-02	26.75	Tol.	SB-126
						CE-143
m	20	734.44	2.10313E-02	40.11	Tol.	PM-146
						PA-234
	21	768.72	1.07440E-01	11.70	Sum	
	22	785.88	2.03109E-02	56.85	Tol.	SB-127
	23	795.30	1.79787E-02	34.41	Sum	
	24	805.10	2.52403E-02	44.00	Sum	
	25	838.95	3.27582E-02	29.89		
	27	933.99	8.27396E-02	15.16	Sum	
M	28	965.16	2.37340E-02	30.90	Tol.	EU-152
	31	1155.19	3.53444E-02	25.27	Sum	
	32	1167.21	1.53880E-02	41.42	Sum	
	33	1238.18	8.73960E-02	10.42		
	34	1279.57	2.70199E-02	35.89		
	35	1377.25	4.74901E-02	22.92		
M	36	1401.60	1.41553E-02	46.48		
m	37	1407.67	3.61027E-02	19.30	Tol.	EU-152
	39	1509.41	2.85210E-02	26.72	Sum	
	40	1558.88	9.36905E-03	48.90		
	41	1663.90	2.62589E-02	22.42		
	42	1691.94	8.76477E-03	60.54	S-Esc	
	43	1729.50	3.70691E-02	13.78	Sum	
M	44	1756.37	7.63090E-03	48.70	Sum	
	46	1847.72	2.33988E-02	21.09	Sum	
	47	1934.38	5.76897E-03	44.80		
	48	2118.22	1.23846E-02	25.41	Sum	
	50	2348.45	3.14328E-03	58.62	Sum	
	51	2407.94	1.40873E-03	62.55		
	52	2447.85	1.38051E-02	18.55		
	53	2504.20	2.77778E-03	31.62		

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Analysis Report for 2206038-10

R-3 0-6

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	3.78E+00	3.10E+00
TC-99M	0.97	140.51	*	89.00	9.24E-02	1.10E-01
CD-109	0.99	88.03	*	3.72	2.74E+01	4.87E+00
I-125	0.98	35.49	*	6.49	1.42E+01	4.59E+00
SN-126	0.98	87.57	*	37.00	2.65E+00	4.71E-01
EU-155	0.31	86.50	*	30.90	3.20E+00	5.70E-01
		105.30		20.70		
TL-208	0.88	583.14	*	30.22	3.19E+00	8.94E-01
		860.37		4.48		
		2614.66	*	35.85	2.20E+00	5.59E-01
PB-210	0.99	46.50	*	4.25	6.63E+00	2.91E+00
BI-212	0.77	727.17	*	11.80	3.40E+00	1.61E+00
		1620.62		2.75		
PB-212	0.80	238.63	*	44.60	7.45E+00	9.17E-01
		300.09		3.41		
BI-214	1.00	609.31	*	46.30	2.54E+01	2.53E+00
		1120.29	*	15.10	2.68E+01	3.91E+00
		1764.49	*	15.80	2.64E+01	3.15E+00
		2204.22	*	4.98	3.02E+01	5.55E+00
PB-214	1.00	295.21	*	19.19	2.62E+01	2.95E+00
		351.92	*	37.19	2.55E+01	2.60E+00
RA-224	0.99	240.98	*	3.95	8.41E+01	1.04E+01
RA-226	1.00	186.21	*	3.28	3.05E+01	6.60E+00
AC-228	0.99	338.32	*	11.40	3.07E+00	2.02E+00
		911.07	*	27.70	2.22E+00	1.20E+00
		969.11	*	16.60	2.50E+00	1.43E+00
TH-230	0.55	48.43	*	16.90	1.66E+00	7.30E-01
		62.85		4.60		
		67.67		0.37		
NP-237	0.91	86.50	*	12.60	7.77E+00	1.38E+00
AM-243	0.93	74.67	*	66.00	3.84E+00	3.95E-01

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Analysis Report for 2206038-10

R-3 0-6

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.999	3.78E+00	3.10E+00	
	TC-99M	0.975	9.24E-02	1.10E-01	
?	CD-109	0.996	2.74E+01	4.87E+00	
	I-125	0.981	1.42E+01	4.59E+00	
?	SN-126	0.982	2.65E+00	4.71E-01	
?	EU-155	0.312	3.20E+00	5.70E-01	
	TL-208	0.884	2.48E+00	4.74E-01	
?	PB-210	0.999	6.63E+00	2.91E+00	
	BI-212	0.777	3.40E+00	1.61E+00	
?	PB-212	0.804	7.45E+00	9.17E-01	
	BI-214	1.000	2.64E+01	1.68E+00	
	PB-214	1.000	2.58E+01	1.95E+00	
?	RA-224	0.997	8.41E+01	1.04E+01	
	RA-226	1.000	3.05E+01	6.60E+00	
	AC-228	0.995	2.46E+00	8.39E-01	
?	TH-230	0.552	1.66E+00	7.30E-01	
?	NP-237	0.910	7.77E+00	1.38E+00	
	AM-243	0.935	3.84E+00	3.95E-01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-10
R-3 0-6

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 4:16:51PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	31.98	5.00994E-01	5.21	Tol.	I-129
						I-129
	4	53.23	2.81010E-02	59.72		
	8	150.24	4.33399E-02	59.03	Sum	
	11	258.23	5.59390E-02	34.97	Tol.	TH-227
	15	510.88	5.76579E-02	27.46		
	18	664.78	4.07301E-02	26.75	Tol.	SB-126
						CE-143
m	20	734.44	2.10313E-02	40.11	Tol.	PM-146
						PA-234
	21	768.72	1.07440E-01	11.70	Sum	
	22	785.88	2.03109E-02	56.85	Tol.	SB-127
	23	795.30	1.79787E-02	34.41	Sum	
	24	805.10	2.52403E-02	44.00	Sum	
	25	838.95	3.27582E-02	29.89		
	27	933.99	8.27396E-02	15.16	Sum	
M	28	965.16	2.37340E-02	30.90	Tol.	EU-152
	31	1155.19	3.53444E-02	25.27	Sum	
	32	1167.21	1.53880E-02	41.42	Sum	
	33	1238.18	8.73960E-02	10.42		
	34	1279.57	2.70199E-02	35.89		
	35	1377.25	4.74901E-02	22.92		
M	36	1401.60	1.41553E-02	46.48		
m	37	1407.67	3.61027E-02	19.30	Tol.	EU-152
	39	1509.41	2.85210E-02	26.72	Sum	
	40	1558.88	9.36905E-03	48.90		
	41	1663.90	2.62589E-02	22.42		
	42	1691.94	8.76477E-03	60.54	S-Esc	
	43	1729.50	3.70691E-02	13.78	Sum	
M	44	1756.37	7.63090E-03	48.70	Sum	
	46	1847.72	2.33988E-02	21.09	Sum	
	47	1934.38	5.76897E-03	44.80		
	48	2118.22	1.23846E-02	25.41	Sum	
	50	2348.45	3.14328E-03	58.62	Sum	
	51	2407.94	1.40873E-03	62.55		

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Analysis Report for 2206038-10
R-3 0-6

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
52	2447.85	1.38051E-02	18.55		
53	2504.20	2.77778E-03	31.62		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	-7.87E-01	3.16E+00	3.16E+00
+	NA-22	1274.54		99.94	-4.41E-01	3.23E-01	3.23E-01
+	NA-24	1368.53		99.99	-8.58E-02	9.01E-02	3.19E-01
		2754.09		99.86	1.94E-02		9.01E-02
+	AL-26	1808.65		99.76	-1.82E-02	2.34E-01	2.34E-01
+	K-40	1460.81	*	10.67	3.78E+00	4.99E+00	4.99E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.57E-02	1.56E-01	1.56E-01
		78.34		96.00	2.28E+00		2.27E-01
+	SC-46	889.25		98.98	1.40E-01	4.01E-01	4.01E-01
		1120.51		99.90	5.03E+00		8.94E-01
+	V-48	983.52		99.98	1.28E-01	9.49E-01	9.49E-01
		1312.10		97.50	2.94E-01		1.01E+00
+	CR-51	320.08		9.83	5.83E-01	4.32E+00	4.32E+00
+	MN-54	834.83		99.97	1.92E-02	3.22E-01	3.22E-01
+	CO-56	846.75		99.96	4.77E-02	3.65E-01	3.65E-01
		1037.75		14.03	-8.36E-01		2.64E+00
		1238.25		67.00	2.86E+00		9.68E-01
		1771.40		15.51	-2.58E+01		2.61E+00
		2587.48		16.90	-1.10E-01		1.00E+00
+	CO-57	122.06		85.51	-8.78E-02	1.95E-01	1.95E-01
		136.48		10.60	-7.24E-01		1.78E+00
+	CO-58	810.76		99.40	-8.43E-02	3.71E-01	3.71E-01
+	FE-59	1099.22		56.50	-2.80E-01	8.23E-01	8.23E-01
		1291.56		43.20	-3.40E-01		1.06E+00
+	CO-60	1173.22		100.00	3.17E-02	3.06E-01	3.06E-01
		1332.49		100.00	7.91E-02		3.18E-01

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Analysis Report for 2206038-10

R-3 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	ZN-65	1115.52		50.75	-5.05E-02	1.07E+00	1.07E+00
+	GA-67	93.31		35.70	-1.64E+01	1.10E+02	1.10E+02
		208.95		2.24	-4.55E+02		2.44E+03
		300.22		16.00	-3.06E+02		4.92E+02
+	SE-75	121.11		16.70	-3.62E-01	3.43E-01	1.08E+00
		136.00		59.50	-1.40E-01		3.43E-01
		264.65		59.80	3.30E-04		4.16E-01
		279.53		25.20	-6.08E-02		1.01E+00
		400.65		11.40	1.14E+00		2.57E+00
+	RB-82	776.52		13.00	-1.10E-01	4.12E+00	4.12E+00
+	RB-83	520.41		46.00	4.41E-02	6.47E-01	6.47E-01
		529.64		30.30	-7.34E-02		9.89E-01
		552.65		16.40	1.25E-02		1.85E+00
+	KR-85	513.99		0.43	9.86E+01	6.45E+01	6.45E+01
+	SR-85	513.99		99.27	5.68E-01	3.71E-01	3.71E-01
+	Y-88	898.02		93.40	-5.59E-02	3.18E-01	4.01E-01
		1836.01		99.38	1.06E-01		3.18E-01
+	MO-93	263.06		56.72	1.96E-02	2.57E-01	3.82E-01
		684.67		99.68	5.71E-02		2.57E-01
		1477.11		99.08	-3.77E-02		3.12E-01
+	NB-93M	16.57		9.43	-7.50E+01	6.43E+01	6.43E+01
+	NB-94	702.63		100.00	2.12E-01	2.90E-01	2.90E-01
		871.10		100.00	8.45E-02		3.13E-01
+	NB-95	765.79		99.81	4.13E-02	6.51E-01	6.51E-01
+	NB-95M	235.69		25.00	5.52E+00	1.62E+02	1.62E+02
+	ZR-95	724.18		43.70	7.79E-02	6.19E-01	8.70E-01
		756.72		55.30	-2.35E-01		6.19E-01
+	MO-99	181.06		6.20	3.12E+02	1.51E+03	2.52E+03
		739.58		12.80	4.68E+01		1.51E+03
		778.00		4.50	-1.15E+02		4.16E+03
+	TC-99M	140.51	*	89.00	9.24E-02	1.80E-01	1.80E-01
+	RU-103	497.08		89.00	2.40E-02	4.20E-01	4.20E-01
+	RU-106	621.84		9.80	-5.30E-01	2.51E+00	2.51E+00
+	AG-108M	433.93		89.90	-9.19E-02	2.64E-01	2.64E-01
		614.37		90.40	2.51E-02		5.75E-01
		722.95		90.50	3.16E-02		3.05E-01
+	CD-109	88.03	*	3.72	2.74E+01	6.77E+00	6.77E+00
+	AG-110M	657.75		93.14	-7.17E-02	2.81E-01	2.81E-01
		677.61		10.53	-1.59E-01		2.61E+00
		706.67		16.46	9.49E-01		1.90E+00
		763.93		21.98	1.75E-01		1.54E+00
		884.67		21.98	-1.97E-01		1.50E+00
		1384.27		23.94	5.40E-01		1.56E+00
+	CD-113M	263.70		0.02	7.37E-01	9.29E+02	9.29E+02
+	SN-113	255.12		1.93	-3.33E+00	4.41E-01	1.29E+01
		391.69		64.90	-1.32E-01		4.41E-01
+	TE-123M	159.00		84.10	7.91E-02	2.70E-01	2.70E-01

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Analysis Report for 2206038-10

R-3 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	SB-124	602.71		97.87	-1.49E-02	3.84E-01	3.84E-01
		645.85		7.26	-3.58E-01		4.60E+00
		722.78		11.10	3.70E-01		3.26E+00
		1691.02		49.00	7.67E-02		6.82E-01
+	I-125	35.49	*	6.49	1.42E+01	1.02E+01	1.02E+01
+	SB-125	176.33		6.89	-6.90E-01	8.73E-01	2.92E+00
		427.89		29.33	3.99E-01		8.73E-01
		463.38		10.35	1.26E+00		2.46E+00
		600.56		17.80	2.05E-01		1.52E+00
		635.90		11.32	-1.16E-01		2.25E+00
+	SB-126	414.70		83.30	1.95E-01	2.64E-01	3.19E-01
		666.33		99.60	-2.86E-02		2.93E-01
		695.00		99.60	-5.86E-02		2.64E-01
		720.50		53.80	-1.22E-01		4.76E-01
+	SN-126	87.57	*	37.00	2.65E+00	6.54E-01	6.54E-01
+	SB-127	473.00		25.00	-5.24E+01	7.76E+01	1.03E+02
		685.00		35.70	-1.33E+01		7.76E+01
		783.80		14.70	2.21E+02		2.30E+02
+	I-129	29.78		57.00	2.84E+00	9.02E-01	9.02E-01
		33.60		13.20	2.06E+01		3.07E+00
		39.58		7.52	-4.53E-02		3.15E+00
+	I-131	284.30		6.05	-1.45E+01	2.61E+00	3.42E+01
		364.48		81.20	-6.61E-01		2.61E+00
		636.97		7.26	2.01E+01		3.33E+01
		722.89		1.80	1.61E+01		1.42E+02
+	TE-132	49.72		13.10	4.16E+02	6.18E+01	3.41E+02
		228.16		88.00	5.19E+00		6.18E+01
+	BA-133	81.00		34.06	-3.30E+00	5.44E-01	5.44E-01
		302.84		18.33	-2.09E+00		1.19E+00
		356.01		62.05	-2.67E-01		7.72E-01
+	I-133	529.87		86.30	-9.99E+07	3.44E+08	3.44E+08
+	XE-133	81.00		38.00	-9.35E+01	1.54E+01	1.54E+01
+	CS-134	563.23		8.38	-8.30E-02	3.40E-01	3.00E+00
		569.32		15.43	1.25E-01		1.67E+00
		604.70		97.60	-2.49E+00		5.42E-01
		795.84		85.40	1.29E-01		3.40E-01
		801.93		8.73	-3.88E+00		3.34E+00
+	CS-135	268.24		16.00	-1.94E-01	1.34E+00	1.34E+00
+	@ I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41		28.60	1.00E+26		1.00E+26
	@	1678.03		9.54	1.00E+26		1.00E+26
+	CS-136	153.22		7.46	-5.94E-01	1.14E+00	1.04E+01
		163.89		4.61	3.55E+00		1.67E+01
		176.55		13.56	-1.37E+00		5.79E+00
		273.65		12.66	4.64E-01		6.85E+00
		340.57		48.50	2.12E+00		2.02E+00
		818.50		99.70	2.11E-01		1.14E+00
		1048.07		79.60	-1.04E-02		1.50E+00
		1235.34		19.70	2.69E+01		9.98E+00

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Analysis Report for 2206038-10

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CS-137	661.65		85.12	-6.86E-03	3.25E-01	3.25E-01
+	LA-138	788.74		34.00	3.07E-01	4.70E-01	9.05E-01
		1435.80		66.00	-8.05E-02		4.70E-01
+	CE-139	165.85		80.35	-7.82E-02	2.74E-01	2.74E-01
+	BA-140	162.64		6.70	3.88E+00	3.93E+00	1.20E+01
		304.84		4.50	-1.37E+01		1.97E+01
		423.70		3.20	5.62E+00		3.34E+01
		437.55		2.00	2.75E+00		4.91E+01
		537.32		25.00	-4.97E-01		3.93E+00
+	LA-140	328.77		20.50	1.13E+00	1.40E+00	4.68E+00
		487.03		45.50	-8.67E-02		2.23E+00
		815.85		23.50	-6.18E-01		4.82E+00
		1596.49		95.49	2.93E-02		1.40E+00
+	CE-141	145.44		48.40	-2.33E-02	6.69E-01	6.69E-01
+	CE-143	57.36		11.80	-8.81E+04	5.32E+05	6.77E+05
		293.26		42.00	6.27E+06		5.32E+05
		664.55		5.20	4.11E+06		3.03E+06
+	CE-144	133.54		10.80	-3.43E-01	1.70E+00	1.70E+00
+	PM-144	476.78		42.00	-2.12E-01	2.52E-01	5.89E-01
		618.01		98.60	-1.23E-01		2.52E-01
		696.49		99.49	-2.40E-01		2.73E-01
+	PM-145	36.85		21.70	-3.63E+00	7.24E-01	1.36E+00
		37.36		39.70	-1.94E+00		7.24E-01
		42.30		15.10	-2.04E-02		1.36E+00
		72.40		2.31	9.04E-01		8.33E+00
+	PM-146	453.90		39.94	2.48E-01	6.21E-01	6.21E-01
		735.90		14.01	-4.43E-01		1.88E+00
		747.13		13.10	-2.93E-01		2.06E+00
+	ND-147	91.11		28.90	9.39E+00	3.00E+00	3.00E+00
		531.02		13.10	-3.20E+00		9.56E+00
+	PM-149	285.90		3.10	2.72E+03	2.56E+04	2.56E+04
+	EU-152	121.78		20.50	-3.43E-01	7.64E-01	7.64E-01
		244.69		5.40	-2.63E-01		5.27E+00
		344.27		19.13	-3.38E+01		1.22E+00
		778.89		9.10	-7.81E-02		2.83E+00
		964.01		10.40	-9.77E-01		3.36E+00
		1085.78		7.22	-1.94E+00		4.06E+00
		1112.02		9.60	-5.15E-01		3.19E+00
		1407.95		14.94	1.88E+00		2.89E+00
+	GD-153	97.43		31.30	-3.22E-01	4.85E-01	4.85E-01
		103.18		22.20	1.66E-01		7.02E-01
+	EU-154	123.07		40.50	-1.69E-01	3.92E-01	3.92E-01
		723.30		19.70	1.46E-01		1.41E+00
		873.19		11.50	3.03E-01		2.73E+00
		996.32		10.30	9.90E-01		3.10E+00
		1004.76		17.90	2.54E-01		1.68E+00
		1274.45		35.50	-1.22E+00		8.96E-01
+	EU-155	86.50	*	30.90	3.20E+00	7.16E-01	7.91E-01
		105.30		20.70	7.42E-02		7.16E-01

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Analysis Report for 2206038-10

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	EU-156	811.77		10.40	7.92E-01	8.85E+00	8.85E+00
		1153.47		7.20	2.80E+01		1.80E+01
		1230.71		8.90	1.72E+00		1.13E+01
+	HO-166M	184.41		72.60	1.43E+00	3.34E-01	3.34E-01
		280.45		29.60	-1.32E-01		7.40E-01
		410.94		11.10	-4.82E-01		2.34E+00
		711.69		54.10	1.87E-01		5.17E-01
+	TM-171	66.72		0.14	-1.02E+01	1.08E+02	1.08E+02
+	HF-172	67.35		5.31	-2.69E-01	1.48E+00	2.84E+00
		125.82		11.30	-2.03E-01		1.48E+00
+	LU-172	181.53		20.60	1.93E+00	7.35E+00	1.56E+01
		900.72		29.81	2.55E+00		1.60E+01
		1093.66		62.50	1.76E+00		7.35E+00
+	LU-173	100.72		5.24	-1.37E+00	1.06E+00	2.80E+00
		272.11		21.20	-6.39E-02		1.06E+00
+	HF-175	343.40		84.00	-2.83E+00	3.66E-01	3.66E-01
+	LU-176	88.34		13.30	5.61E+00	2.32E-01	1.29E+00
		201.83		86.00	-3.23E-02		2.45E-01
		306.78		94.00	1.25E-02		2.32E-01
+	HF-181	133.02		41.70	-1.28E-01	4.51E-01	6.33E-01
		345.85		17.20	-7.80E+01		2.56E+00
		482.03		82.80	4.02E-02		4.51E-01
+	TA-182	67.75		41.20	-4.22E-02	4.20E-01	4.20E-01
		1121.30		34.90	1.39E+01		2.42E+00
		1189.05		16.23	2.52E-01		2.22E+00
		1221.41		26.98	3.33E-01		1.39E+00
		1231.02		11.44	4.74E-01		3.11E+00
+	IR-192	308.46		29.68	4.84E-01	6.42E-01	9.43E-01
		468.07		48.10	-1.57E-01		6.42E-01
+	HG-203	279.19		77.30	-2.51E-02	4.18E-01	4.18E-01
+	TL-204	374.74		94.11	-1.11E-01	2.44E-01	2.44E-01
		899.15		99.16	2.35E-02		3.26E-01
		911.74		91.10	5.85E-01		4.16E-01
+	BI-207	569.67		97.72	1.93E-02	2.58E-01	2.58E-01
		1063.62		74.90	5.78E-02		4.07E-01
+	TL-208	583.14	*	30.22	3.19E+00	3.56E-01	1.31E+00
		860.37		4.48	3.45E+00		6.83E+00
		2614.66	*	35.85	2.20E+00		3.56E-01
+	BI-210M	262.00		45.00	1.80E-02	4.84E-01	4.84E-01
		300.00		23.00	-8.18E-01		1.31E+00
+	PB-210	46.50	*	4.25	6.63E+00	4.60E+00	4.60E+00
+	PB-211	404.84		2.90	-2.64E-01	8.81E+00	8.81E+00
		831.96		2.90	-2.64E+00		9.60E+00
+	BI-212	727.17	*	11.80	3.40E+00	3.67E+00	3.67E+00
		1620.62		2.75	2.79E+00		1.07E+01
+	PB-212	238.63	*	44.60	7.45E+00	7.87E-01	7.87E-01
		300.09		3.41	-5.52E+00		8.87E+00
+	BI-214	609.31	*	46.30	2.54E+01	1.02E+00	1.02E+00

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Analysis Report for 2206038-10

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BI-214	1120.29	*	15.10	2.68E+01	1.02E+00	3.42E+00
		1764.49	*	15.80	2.64E+01		4.16E+00
		2204.22	*	4.98	3.02E+01		3.36E+00
+	PB-214	295.21	*	19.19	2.62E+01	9.03E-01	1.71E+00
		351.92	*	37.19	2.55E+01		9.03E-01
+	RN-219	401.80		6.50	1.77E+00	3.92E+00	3.92E+00
+	RA-223	323.87		3.88	-1.06E+00	5.83E+00	5.83E+00
+	RA-224	240.98	*	3.95	8.41E+01	8.89E+00	8.89E+00
+	RA-225	40.00		31.00	-3.68E-02	2.56E+00	2.56E+00
+	RA-226	186.21	*	3.28	3.05E+01	9.47E+00	9.47E+00
+	TH-227	50.10		8.40	2.46E+00	2.02E+00	2.02E+00
		236.00		11.50	7.90E-02		2.32E+00
		256.20		6.30	-3.46E-01		3.41E+00
+	AC-228	338.32	*	11.40	3.07E+00	1.91E+00	3.25E+00
		911.07	*	27.70	2.22E+00		1.91E+00
		969.11	*	16.60	2.50E+00		2.85E+00
+	TH-230	48.43	*	16.90	1.66E+00	1.15E+00	1.15E+00
		62.85		4.60	-1.62E+00		3.19E+00
		67.67		0.37	-4.01E+00		3.99E+01
+	PA-231	283.67		1.60	1.65E+00	9.44E+00	1.37E+01
		302.67		2.30	-1.37E+01		9.44E+00
+	TH-231	25.64		14.70	1.49E+00	2.57E+00	4.51E+00
		84.21		6.40	-1.39E+01		2.57E+00
+	PA-233	311.98		38.60	5.00E-02	1.10E+00	1.10E+00
+	PA-234	131.20		20.40	3.35E-01	8.36E-01	8.36E-01
		733.99		8.80	-3.28E+00		2.93E+00
		946.00		12.00	7.78E-01		2.47E+00
+	PA-234M	1001.03		0.92	1.22E+01	3.40E+01	3.40E+01
+	TH-234	63.29		3.80	-1.95E+00	3.85E+00	3.85E+00
+	U-235	143.76		10.50	-6.10E-02	1.75E+00	1.75E+00
		163.35		4.70	1.34E+00		4.15E+00
		205.31		4.70	-3.57E-01		4.48E+00
+	NP-237	86.50	*	12.60	7.77E+00	1.92E+00	1.92E+00
+	NP-239	106.10		22.70	3.13E+02	1.44E+03	1.44E+03
		228.18		10.70	3.61E+02		4.29E+03
		277.60		14.10	2.80E+02		3.44E+03
+	AM-241	59.54		35.90	7.63E-02	4.08E-01	4.08E-01
+	AM-243	74.67	*	66.00	3.84E+00	3.82E-01	3.82E-01
+	CM-243	209.75		3.29	1.87E+00	1.57E+00	6.44E+00
		228.14		10.60	1.65E-01		1.96E+00
		277.60		14.00	1.28E-01		1.57E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

BP/Castex-Ltd Adm-Apx E-001749

Analysis Report for 2206038-10

R-3 0-6

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	3.16E+00	3.16E+00	-7.87E-01	1.54E+00
	NA-22	1274.54		99.94	3.23E-01	3.23E-01	-4.41E-01	1.54E-01
	NA-24	1368.53		99.99	3.19E-01	9.01E-02	-8.58E-02	1.52E-01
		2754.09		99.86	9.01E-02		1.94E-02	3.19E-02
	AL-26	1808.65		99.76	2.34E-01	2.34E-01	-1.82E-02	1.07E-01
+	K-40	1460.81	*	10.67	4.99E+00	4.99E+00	3.78E+00	2.42E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	1.56E-01	1.56E-01	-1.57E-02	7.75E-02
		78.34		96.00	2.27E-01		2.28E+00	1.13E-01
	SC-46	889.25		98.98	4.01E-01	4.01E-01	1.40E-01	1.94E-01
		1120.51		99.90	8.94E-01		5.03E+00	4.39E-01
	V-48	983.52		99.98	9.49E-01	9.49E-01	1.28E-01	4.57E-01
		1312.10		97.50	1.01E+00		2.94E-01	4.85E-01
	CR-51	320.08		9.83	4.32E+00	4.32E+00	5.83E-01	2.13E+00
	MN-54	834.83		99.97	3.22E-01	3.22E-01	1.92E-02	1.56E-01
	CO-56	846.75		99.96	3.65E-01	3.65E-01	4.77E-02	1.76E-01
		1037.75		14.03	2.64E+00		-8.36E-01	1.27E+00
		1238.25		67.00	9.68E-01		2.86E+00	4.71E-01
		1771.40		15.51	2.61E+00		-2.58E+01	1.23E+00
		2587.48		16.90	1.00E+00		-1.10E-01	4.05E-01
	CO-57	122.06		85.51	1.95E-01	1.95E-01	-8.78E-02	9.67E-02
		136.48		10.60	1.78E+00		-7.24E-01	8.79E-01
	CO-58	810.76		99.40	3.71E-01	3.71E-01	-8.43E-02	1.79E-01
	FE-59	1099.22		56.50	8.23E-01	8.23E-01	-2.80E-01	3.95E-01
		1291.56		43.20	1.06E+00		-3.40E-01	5.04E-01
	CO-60	1173.22		100.00	3.06E-01	3.06E-01	3.17E-02	1.47E-01
		1332.49		100.00	3.18E-01		7.91E-02	1.52E-01
	ZN-65	1115.52		50.75	1.07E+00	1.07E+00	-5.05E-02	5.24E-01
	GA-67	93.31		35.70	1.10E+02	1.10E+02	-1.64E+01	5.47E+01
		208.95		2.24	2.44E+03		-4.55E+02	1.21E+03
		300.22		16.00	4.92E+02		-3.06E+02	2.43E+02
	SE-75	121.11		16.70	1.08E+00	3.43E-01	-3.62E-01	5.36E-01
		136.00		59.50	3.43E-01		-1.40E-01	1.70E-01
		264.65		59.80	4.16E-01		3.30E-04	2.05E-01
		279.53		25.20	1.01E+00		-6.08E-02	4.99E-01
		400.65		11.40	2.57E+00		1.14E+00	1.26E+00

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Analysis Report for 2206038-10

R-3 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	RB-82	776.52		13.00	4.12E+00	4.12E+00	-1.10E-01	1.99E+00
	RB-83	520.41		46.00	6.47E-01	6.47E-01	4.41E-02	3.16E-01
		529.64		30.30	9.89E-01		-7.34E-02	4.83E-01
		552.65		16.40	1.85E+00		1.25E-02	9.01E-01
	KR-85	513.99		0.43	6.45E+01	6.45E+01	9.86E+01	3.16E+01
	SR-85	513.99		99.27	3.71E-01	3.71E-01	5.68E-01	1.82E-01
	Y-88	898.02		93.40	4.01E-01	3.18E-01	-5.59E-02	1.94E-01
		1836.01		99.38	3.18E-01		1.06E-01	1.48E-01
	MO-93	263.06		56.72	3.82E-01	2.57E-01	1.96E-02	1.89E-01
		684.67		99.68	2.57E-01		5.71E-02	1.25E-01
		1477.11		99.08	3.12E-01		-3.77E-02	1.48E-01
	NB-93M	16.57		9.43	6.43E+01	6.43E+01	-7.50E+01	3.19E+01
	NB-94	702.63		100.00	2.90E-01	2.90E-01	2.12E-01	1.41E-01
		871.10		100.00	3.13E-01		8.45E-02	1.52E-01
	NB-95	765.79		99.81	6.51E-01	6.51E-01	4.13E-02	3.18E-01
	NB-95M	235.69		25.00	1.62E+02	1.62E+02	5.52E+00	8.03E+01
	ZR-95	724.18		43.70	8.70E-01	6.19E-01	7.79E-02	4.23E-01
		756.72		55.30	6.19E-01		-2.35E-01	3.00E-01
	MO-99	181.06		6.20	2.52E+03	1.51E+03	3.12E+02	1.25E+03
		739.58		12.80	1.51E+03		4.68E+01	7.31E+02
		778.00		4.50	4.16E+03		-1.15E+02	2.01E+03
+	TC-99M	140.51	*	89.00	1.80E-01	1.80E-01	9.24E-02	8.93E-02
	RU-103	497.08		89.00	4.20E-01	4.20E-01	2.40E-02	2.05E-01
	RU-106	621.84		9.80	2.51E+00	2.51E+00	-5.30E-01	1.22E+00
	AG-108M	433.93		89.90	2.64E-01	2.64E-01	-9.19E-02	1.30E-01
		614.37		90.40	5.75E-01		2.51E-02	2.84E-01
		722.95		90.50	3.05E-01		3.16E-02	1.48E-01
+	CD-109	88.03	*	3.72	6.77E+00	6.77E+00	2.74E+01	3.36E+00
	AG-110M	657.75		93.14	2.81E-01	2.81E-01	-7.17E-02	1.36E-01
		677.61		10.53	2.61E+00		-1.59E-01	1.27E+00
		706.67		16.46	1.90E+00		9.49E-01	9.26E-01
		763.93		21.98	1.54E+00		1.75E-01	7.48E-01
		884.67		21.98	1.50E+00		-1.97E-01	7.27E-01
		1384.27		23.94	1.56E+00		5.40E-01	7.46E-01
	CD-113M	263.70		0.02	9.29E+02	9.29E+02	7.37E-01	4.59E+02
	SN-113	255.12		1.93	1.29E+01	4.41E-01	-3.33E+00	6.34E+00
		391.69		64.90	4.41E-01		-1.32E-01	2.17E-01
	TE-123M	159.00		84.10	2.70E-01	2.70E-01	7.91E-02	1.34E-01
	SB-124	602.71		97.87	3.84E-01	3.84E-01	-1.49E-02	1.87E-01
		645.85		7.26	4.60E+00		-3.58E-01	2.23E+00
		722.78		11.10	3.26E+00		3.70E-01	1.58E+00
		1691.02		49.00	6.82E-01		7.67E-02	3.16E-01
+	I-125	35.49	*	6.49	1.02E+01	1.02E+01	1.42E+01	5.07E+00
	SB-125	176.33		6.89	2.92E+00	8.73E-01	-6.90E-01	1.45E+00
		427.89		29.33	8.73E-01		3.99E-01	4.28E-01
		463.38		10.35	2.46E+00		1.26E+00	1.20E+00
		600.56		17.80	1.52E+00		2.05E-01	7.42E-01
		635.90		11.32	2.25E+00		-1.16E-01	1.09E+00
	SB-126	414.70		83.30	3.19E-01	2.64E-01	1.95E-01	1.57E-01
		666.33		99.60	2.93E-01		-2.86E-02	1.43E-01
		695.00		99.60	2.64E-01		-5.86E-02	1.28E-01
		720.50		53.80	4.76E-01		-1.22E-01	2.30E-01
+	SN-126	87.57	*	37.00	6.54E-01	6.54E-01	2.65E+00	3.25E-01

BP/Castex-Ltd Adm-Apx E-001751

Analysis Report for 2206038-10

R-3 0-6

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
SB-127	473.00	25.00	1.03E+02	7.76E+01	-5.24E+01	5.06E+01
	685.00	35.70	7.76E+01		-1.33E+01	3.76E+01
	783.80	14.70	2.30E+02		2.21E+02	1.12E+02
I-129	29.78	57.00	9.02E-01	9.02E-01	2.84E+00	4.48E-01
	33.60	13.20	3.07E+00		2.06E+01	1.52E+00
	39.58	7.52	3.15E+00		-4.53E-02	1.56E+00
I-131	284.30	6.05	3.42E+01	2.61E+00	-1.45E+01	1.68E+01
	364.48	81.20	2.61E+00		-6.61E-01	1.28E+00
	636.97	7.26	3.33E+01		2.01E+01	1.62E+01
	722.89	1.80	1.42E+02		1.61E+01	6.88E+01
TE-132	49.72	13.10	3.41E+02	6.18E+01	4.16E+02	1.69E+02
	228.16	88.00	6.18E+01		5.19E+00	3.05E+01
BA-133	81.00	34.06	5.44E-01	5.44E-01	-3.30E+00	2.70E-01
	302.84	18.33	1.19E+00		-2.09E+00	5.85E-01
	356.01	62.05	7.72E-01		-2.67E-01	3.83E-01
I-133	529.87	86.30	3.44E+08	3.44E+08	-9.99E+07	1.68E+08
XE-133	81.00	38.00	1.54E+01	1.54E+01	-9.35E+01	7.65E+00
CS-134	563.23	8.38	3.00E+00	3.40E-01	-8.30E-02	1.46E+00
	569.32	15.43	1.67E+00		1.25E-01	8.15E-01
	604.70	97.60	5.42E-01		-2.49E+00	2.68E-01
	795.84	85.40	3.40E-01		1.29E-01	1.65E-01
	801.93	8.73	3.34E+00		-3.88E+00	1.62E+00
CS-135	268.24	16.00	1.34E+00	1.34E+00	-1.94E-01	6.61E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	1.04E+01	1.14E+00	-5.94E-01	5.15E+00
	163.89	4.61	1.67E+01		3.55E+00	8.27E+00
	176.55	13.56	5.79E+00		-1.37E+00	2.87E+00
	273.65	12.66	6.85E+00		4.64E-01	3.38E+00
	340.57	48.50	2.02E+00		2.12E+00	9.95E-01
	818.50	99.70	1.14E+00		2.11E-01	5.51E-01
	1048.07	79.60	1.50E+00		-1.04E-02	7.19E-01
	1235.34	19.70	9.98E+00		2.69E+01	4.85E+00
CS-137	661.65	85.12	3.25E-01	3.25E-01	-6.86E-03	1.58E-01
LA-138	788.74	34.00	9.05E-01	4.70E-01	3.07E-01	4.40E-01
	1435.80	66.00	4.70E-01		-8.05E-02	2.23E-01
CE-139	165.85	80.35	2.74E-01	2.74E-01	-7.82E-02	1.36E-01
BA-140	162.64	6.70	1.20E+01	3.93E+00	3.88E+00	5.93E+00
	304.84	4.50	1.97E+01		-1.37E+01	9.69E+00
	423.70	3.20	3.34E+01		5.62E+00	1.64E+01
	437.55	2.00	4.91E+01		2.75E+00	2.41E+01
	537.32	25.00	3.93E+00		-4.97E-01	1.92E+00
LA-140	328.77	20.50	4.68E+00	1.40E+00	1.13E+00	2.30E+00
	487.03	45.50	2.23E+00		-8.67E-02	1.09E+00
	815.85	23.50	4.82E+00		-6.18E-01	2.33E+00
	1596.49	95.49	1.40E+00		2.93E-02	6.61E-01
CE-141	145.44	48.40	6.69E-01	6.69E-01	-2.33E-02	3.31E-01
CE-143	57.36	11.80	6.77E+05	5.32E+05	-8.81E+04	3.35E+05
	293.26	42.00	5.32E+05		6.27E+06	2.64E+05
	664.55	5.20	3.03E+06		4.11E+06	1.48E+06
CE-144	133.54	10.80	1.70E+00	1.70E+00	-3.43E-01	8.43E-01
PM-144	476.78	42.00	5.89E-01	2.52E-01	-2.12E-01	2.88E-01

Analysis Report for 2206038-10

R-3 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PM-144	618.01		98.60	2.52E-01	2.52E-01	-1.23E-01	1.22E-01
		696.49		99.49	2.73E-01		-2.40E-01	1.33E-01
	PM-145	36.85		21.70	1.36E+00	7.24E-01	-3.63E+00	6.73E-01
		37.36		39.70	7.24E-01		-1.94E+00	3.59E-01
		42.30		15.10	1.36E+00		-2.04E-02	6.75E-01
		72.40		2.31	8.33E+00		9.04E-01	4.14E+00
	PM-146	453.90		39.94	6.21E-01	6.21E-01	2.48E-01	3.04E-01
		735.90		14.01	1.88E+00		-4.43E-01	9.12E-01
		747.13		13.10	2.06E+00		-2.93E-01	9.96E-01
	ND-147	91.11		28.90	3.00E+00	3.00E+00	9.39E+00	1.49E+00
		531.02		13.10	9.56E+00		-3.20E+00	4.66E+00
	PM-149	285.90		3.10	2.56E+04	2.56E+04	2.72E+03	1.26E+04
	EU-152	121.78		20.50	7.64E-01	7.64E-01	-3.43E-01	3.78E-01
		244.69		5.40	5.27E+00		-2.63E-01	2.61E+00
		344.27		19.13	1.22E+00		-3.38E+01	6.03E-01
		778.89		9.10	2.83E+00		-7.81E-02	1.37E+00
		964.01		10.40	3.36E+00		-9.77E-01	1.63E+00
		1085.78		7.22	4.06E+00		-1.94E+00	1.95E+00
		1112.02		9.60	3.19E+00		-5.15E-01	1.53E+00
		1407.95		14.94	2.89E+00		1.88E+00	1.40E+00
	GD-153	97.43		31.30	4.85E-01	4.85E-01	-3.22E-01	2.40E-01
		103.18		22.20	7.02E-01		1.66E-01	3.48E-01
	EU-154	123.07		40.50	3.92E-01	3.92E-01	-1.69E-01	1.94E-01
		723.30		19.70	1.41E+00		1.46E-01	6.85E-01
		873.19		11.50	2.73E+00		3.03E-01	1.32E+00
		996.32		10.30	3.10E+00		9.90E-01	1.50E+00
		1004.76		17.90	1.68E+00		2.54E-01	8.09E-01
		1274.45		35.50	8.96E-01		-1.22E+00	4.28E-01
+	EU-155	86.50	*	30.90	7.91E-01	7.16E-01	3.20E+00	3.93E-01
		105.30		20.70	7.16E-01		7.42E-02	3.55E-01
	EU-156	811.77		10.40	8.85E+00	8.85E+00	7.92E-01	4.28E+00
		1153.47		7.20	1.80E+01		2.80E+01	8.73E+00
		1230.71		8.90	1.13E+01		1.72E+00	5.38E+00
	HO-166M	184.41		72.60	3.34E-01	3.34E-01	1.43E+00	1.66E-01
		280.45		29.60	7.40E-01		-1.32E-01	3.65E-01
		410.94		11.10	2.34E+00		-4.82E-01	1.15E+00
		711.69		54.10	5.17E-01		1.87E-01	2.51E-01
	TM-171	66.72		0.14	1.08E+02	1.08E+02	-1.02E+01	5.35E+01
	HF-172	67.35		5.31	2.84E+00	1.48E+00	-2.69E-01	1.41E+00
		125.82		11.30	1.48E+00		-2.03E-01	7.34E-01
	LU-172	181.53		20.60	1.56E+01	7.35E+00	1.93E+00	7.73E+00
		900.72		29.81	1.60E+01		2.55E+00	7.74E+00
		1093.66		62.50	7.35E+00		1.76E+00	3.53E+00
	LU-173	100.72		5.24	2.80E+00	1.06E+00	-1.37E+00	1.39E+00
		272.11		21.20	1.06E+00		-6.39E-02	5.24E-01
	HF-175	343.40		84.00	3.66E-01	3.66E-01	-2.83E+00	1.80E-01
	LU-176	88.34		13.30	1.29E+00	2.32E-01	5.61E+00	6.40E-01
		201.83		86.00	2.45E-01		-3.23E-02	1.21E-01
		306.78		94.00	2.32E-01		1.25E-02	1.14E-01
	HF-181	133.02		41.70	6.33E-01	4.51E-01	-1.28E-01	3.13E-01
		345.85		17.20	2.56E+00		-7.80E+01	1.26E+00
		482.03		82.80	4.51E-01		4.02E-02	2.21E-01
	TA-182	67.75		41.20	4.20E-01	4.20E-01	-4.22E-02	2.08E-01

BP/Castex-Ltd Adm-Apx E-001753

Analysis Report for 2206038-10

R-3 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TA-182	1121.30		34.90	2.42E+00	4.20E-01	1.39E+01	1.19E+00
		1189.05		16.23	2.22E+00		2.52E-01	1.06E+00
		1221.41		26.98	1.39E+00		3.33E-01	6.64E-01
		1231.02		11.44	3.11E+00		4.74E-01	1.48E+00
	IR-192	308.46		29.68	9.43E-01	6.42E-01	4.84E-01	4.64E-01
		468.07		48.10	6.42E-01		-1.57E-01	3.14E-01
	HG-203	279.19		77.30	4.18E-01	4.18E-01	-2.51E-02	2.06E-01
	TL-204	374.74		94.11	2.44E-01	2.44E-01	-1.11E-01	1.20E-01
		899.15		99.16	3.26E-01		2.35E-02	1.58E-01
		911.74		91.10	4.16E-01		5.85E-01	2.02E-01
	BI-207	569.67		97.72	2.58E-01	2.58E-01	1.93E-02	1.26E-01
		1063.62		74.90	4.07E-01		5.78E-02	1.96E-01
+	TL-208	583.14	*	30.22	1.31E+00	3.56E-01	3.19E+00	6.43E-01
		860.37		4.48	6.83E+00		3.45E+00	3.31E+00
		2614.66	*	35.85	3.56E-01		2.20E+00	1.43E-01
	BI-210M	262.00		45.00	4.84E-01	4.84E-01	1.80E-02	2.39E-01
		300.00		23.00	1.31E+00		-8.18E-01	6.50E-01
+	PB-210	46.50	*	4.25	4.60E+00	4.60E+00	6.63E+00	2.28E+00
	PB-211	404.84		2.90	8.81E+00	8.81E+00	-2.64E-01	4.33E+00
		831.96		2.90	9.60E+00		-2.64E+00	4.64E+00
+	BI-212	727.17	*	11.80	3.67E+00	3.67E+00	3.40E+00	1.80E+00
		1620.62		2.75	1.07E+01		2.79E+00	5.05E+00
+	PB-212	238.63	*	44.60	7.87E-01	7.87E-01	7.45E+00	3.91E-01
		300.09		3.41	8.87E+00		-5.52E+00	4.39E+00
+	BI-214	609.31	*	46.30	1.02E+00	1.02E+00	2.54E+01	5.05E-01
		1120.29	*	15.10	3.42E+00		2.68E+01	1.67E+00
		1764.49	*	15.80	4.16E+00		2.64E+01	2.02E+00
		2204.22	*	4.98	3.36E+00		3.02E+01	1.46E+00
+	PB-214	295.21	*	19.19	1.71E+00	9.03E-01	2.62E+01	8.48E-01
		351.92	*	37.19	9.03E-01		2.55E+01	4.46E-01
	RN-219	401.80		6.50	3.92E+00	3.92E+00	1.77E+00	1.93E+00
	RA-223	323.87		3.88	5.83E+00	5.83E+00	-1.06E+00	2.87E+00
+	RA-224	240.98	*	3.95	8.89E+00	8.89E+00	8.41E+01	4.41E+00
	RA-225	40.00		31.00	2.56E+00	2.56E+00	-3.68E-02	1.27E+00
+	RA-226	186.21	*	3.28	9.47E+00	9.47E+00	3.05E+01	4.70E+00
	TH-227	50.10		8.40	2.02E+00	2.02E+00	2.46E+00	9.98E-01
		236.00		11.50	2.32E+00		7.90E-02	1.15E+00
		256.20		6.30	3.41E+00		-3.46E-01	1.68E+00
+	AC-228	338.32	*	11.40	3.25E+00	1.91E+00	3.07E+00	1.61E+00
		911.07	*	27.70	1.91E+00		2.22E+00	9.36E-01
		969.11	*	16.60	2.85E+00		2.50E+00	1.39E+00
+	TH-230	48.43	*	16.90	1.15E+00	1.15E+00	1.66E+00	5.71E-01
		62.85		4.60	3.19E+00		-1.62E+00	1.58E+00
		67.67		0.37	3.99E+01		-4.01E+00	1.98E+01
	PA-231	283.67		1.60	1.37E+01	9.44E+00	1.65E+00	6.74E+00
		302.67		2.30	9.44E+00		-1.37E+01	4.65E+00
	TH-231	25.64		14.70	4.51E+00	2.57E+00	1.49E+00	2.23E+00
		84.21		6.40	2.57E+00		-1.39E+01	1.27E+00
	PA-233	311.98		38.60	1.10E+00	1.10E+00	5.00E-02	5.43E-01
	PA-234	131.20		20.40	8.36E-01	8.36E-01	3.35E-01	4.14E-01
		733.99		8.80	2.93E+00		-3.28E+00	1.42E+00
		946.00		12.00	2.47E+00		7.78E-01	1.19E+00
	PA-234M	1001.03		0.92	3.40E+01	3.40E+01	1.22E+01	1.64E+01

BP/Castex-Ltd Adm-Apx E-001754

Analysis Report for 2206038-10

R-3 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TH-234	63.29		3.80	3.85E+00	3.85E+00	-1.95E+00	1.90E+00
	U-235	143.76		10.50	1.75E+00	1.75E+00	-6.10E-02	8.65E-01
		163.35		4.70	4.15E+00		1.34E+00	2.05E+00
		205.31		4.70	4.48E+00		-3.57E-01	2.21E+00
+	NP-237	86.50	*	12.60	1.92E+00	1.92E+00	7.77E+00	9.55E-01
	NP-239	106.10		22.70	1.44E+03	1.44E+03	3.13E+02	7.11E+02
		228.18		10.70	4.29E+03		3.61E+02	2.12E+03
		277.60		14.10	3.44E+03		2.80E+02	1.70E+03
	AM-241	59.54		35.90	4.08E-01	4.08E-01	7.63E-02	2.02E-01
+	AM-243	74.67	*	66.00	3.82E-01	3.82E-01	3.84E+00	1.90E-01
	CM-243	209.75		3.29	6.44E+00	1.57E+00	1.87E+00	3.18E+00
		228.14		10.60	1.96E+00		1.65E-01	9.70E-01
		277.60		14.00	1.57E+00		1.28E-01	7.75E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

Analysis Report for 2206038-10

R-3 0-6

BP/Castex-Ltd Adm-Apx E-001756

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-3 0-6

Elapsed Live time: 3600
Elapsed Real Time: 3610

Channel								
1:	0	0	0	0	0	0	0	1
9:	197	514	486	519	465	448	435	414
17:	409	380	416	404	419	416	434	390
25:	383	363	369	406	377	455	810	1137
33:	757	468	483	570	539	430	361	333
41:	339	323	311	346	355	465	420	397
49:	331	330	295	332	388	358	307	329
57:	354	354	317	387	403	370	403	405
65:	355	377	395	420	436	404	426	447
73:	604	975	1253	1466	1675	1172	633	455
81:	408	407	390	458	450	662	785	772
89:	552	530	510	459	445	401	349	354
97:	345	380	345	363	361	371	383	388
105:	375	434	381	369	394	377	406	404
113:	382	372	364	373	368	347	398	376
121:	370	412	362	400	385	381	395	444
129:	411	434	443	386	456	402	408	412
137:	430	423	471	449	424	412	401	458
145:	438	448	416	452	468	493	459	452
153:	444	422	444	429	439	415	437	436
161:	409	391	416	410	391	385	389	384
169:	387	349	365	378	383	368	360	324
177:	367	354	417	392	369	416	379	405
185:	659	905	678	484	338	385	344	365
193:	351	372	336	384	376	344	370	323
201:	332	328	345	334	309	320	311	334
209:	304	350	284	300	308	323	309	283
217:	275	287	290	302	288	290	270	281
225:	285	239	247	255	250	269	249	268
233:	244	223	250	276	405	672	723	585
241:	834	997	651	298	213	211	205	229
249:	209	223	195	207	209	197	188	241
257:	209	262	257	230	202	202	205	221
265:	196	200	205	200	192	202	205	202
273:	184	221	219	194	203	212	203	186
281:	165	185	189	202	179	195	192	163
289:	170	183	195	184	384	1164	1815	1325
297:	431	171	167	192	154	149	165	159
305:	145	163	163	160	149	169	167	158
313:	147	157	126	147	157	151	139	156
321:	157	133	146	164	136	146	170	173
329:	176	155	160	142	157	160	165	144
337:	168	223	216	161	163	153	131	130
345:	138	117	142	163	219	760	2087	2664
353:	1383	345	152	116	131	105	128	103
361:	122	106	111	109	118	128	116	124

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369:	124	111	119	112	105	129	98	112

Sample Title: R-3 0-6

Channel								
377:	130	109	115	119	131	114	110	128
385:	142	126	137	139	132	109	131	120
393:	114	107	98	127	107	131	119	125
401:	125	115	132	117	121	134	107	124
409:	132	143	118	106	123	130	127	128
417:	138	122	109	111	112	134	101	118
425:	122	114	109	96	114	82	103	93
433:	83	91	83	92	111	84	93	86
441:	87	77	99	83	84	106	89	83
449:	73	77	82	100	95	94	95	104
457:	76	79	93	77	83	110	103	83
465:	81	78	85	79	82	67	82	88
473:	59	87	71	53	65	68	67	101
481:	81	77	79	63	71	83	98	70
489:	88	62	73	76	63	69	64	56
497:	76	72	79	64	62	70	72	48
505:	59	60	53	77	93	158	134	93
513:	76	72	67	62	57	73	57	67
521:	57	57	74	70	64	74	58	62
529:	57	62	48	70	66	59	62	60
537:	65	57	49	56	47	48	77	52
545:	60	65	59	60	55	51	61	63
553:	50	62	67	54	49	63	54	50
561:	43	60	56	57	56	52	75	59
569:	54	58	48	56	59	62	53	52
577:	53	61	77	81	95	145	152	139
585:	67	49	52	48	36	67	59	55
593:	49	46	66	61	59	61	46	62
601:	50	49	68	61	63	101	366	1146
609:	1809	1216	363	73	44	45	49	49
617:	43	42	41	35	37	40	48	45
625:	37	42	35	41	40	40	46	49
633:	53	44	50	54	33	41	32	55
641:	51	40	32	33	49	36	45	46
649:	48	51	40	39	37	38	40	36
657:	43	36	34	40	50	59	38	57
665:	97	70	51	49	40	41	48	37
673:	41	50	50	37	32	35	38	48
681:	38	39	37	48	35	32	44	38
689:	30	36	53	28	46	46	36	35
697:	37	46	42	40	53	57	57	52
705:	44	52	50	49	37	43	51	41
713:	35	49	44	36	26	39	36	49
721:	33	34	31	40	39	52	62	64
729:	50	28	36	38	45	41	39	41
737:	27	22	35	48	26	46	44	41
745:	37	33	32	35	29	40	36	34
753:	34	40	28	32	37	24	31	37
761:	33	40	40	32	28	56	140	181
769:	118	45	53	40	35	28	31	26
777:	31	40	33	30	31	27	38	56
785:	67	58	46	32	37	31	34	31
793:	40	44	50	48	22	29	27	38

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801:	34	28	47	45	53	57	55	28

Sample Title: R-3 0-6

Channel								
809:	29	31	38	23	24	31	42	39
817:	28	25	38	31	41	37	31	38
825:	41	37	29	31	32	39	39	28
833:	29	25	33	42	53	52	43	38
841:	40	30	36	26	29	29	27	43
849:	34	28	31	38	19	35	30	40
857:	26	36	31	59	46	32	26	27
865:	25	38	37	40	36	48	30	30
873:	44	29	37	31	41	40	32	26
881:	43	32	34	32	42	35	33	31
889:	34	40	27	44	45	24	36	42
897:	21	52	30	39	27	41	34	33
905:	33	43	36	34	57	70	87	55
913:	36	31	28	25	29	36	21	30
921:	31	28	28	36	27	35	29	25
929:	33	34	48	66	93	105	62	39
937:	26	24	16	19	25	22	28	27
945:	27	28	29	29	35	32	31	27
953:	32	26	26	31	37	21	29	27
961:	32	24	42	51	45	42	42	53
969:	52	45	29	15	27	27	23	29
977:	20	35	27	31	25	24	21	33
985:	24	31	28	22	27	24	22	28
993:	22	40	26	42	25	23	18	35
1001:	27	27	28	23	16	20	27	22
1009:	20	25	30	38	23	21	24	25
1017:	17	26	20	26	19	26	28	19
1025:	17	25	38	28	25	23	27	22
1033:	19	23	23	21	30	21	22	16
1041:	18	23	25	23	21	22	18	19
1049:	27	29	24	28	35	17	21	17
1057:	24	15	27	18	19	15	29	21
1065:	21	28	30	24	26	25	21	17
1073:	17	24	24	33	17	33	22	17
1081:	23	21	20	24	16	13	22	24
1089:	20	17	31	23	14	29	18	25
1097:	23	20	20	23	23	23	27	27
1105:	35	21	22	22	25	22	17	19
1113:	20	20	25	12	30	131	267	322
1121:	220	66	29	22	19	34	24	16
1129:	23	18	20	22	24	22	19	14
1137:	22	24	26	24	17	21	14	20
1145:	13	20	23	24	21	24	25	26
1153:	32	52	61	37	24	15	17	16
1161:	15	21	13	16	19	27	28	11
1169:	23	16	7	27	20	19	22	20
1177:	16	22	16	18	24	22	20	24
1185:	26	18	15	15	11	17	22	23
1193:	13	17	16	11	23	14	17	19
1201:	12	19	15	19	20	24	28	27
1209:	20	7	12	21	25	17	16	19
1217:	23	17	23	29	19	18	13	22
1225:	11	19	20	15	20	15	14	23

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1233:	12	17	36	33	115	118	57	22

Sample Title: R-3 0-6

Channel								
1241:	12	24	10	16	19	23	11	15
1249:	14	14	21	20	26	20	27	23
1257:	16	13	12	26	13	21	12	16
1265:	11	21	20	12	16	13	25	14
1273:	25	14	13	20	17	17	29	37
1281:	40	36	22	11	23	19	15	21
1289:	11	15	17	21	12	11	19	17
1297:	22	15	17	14	22	17	14	21
1305:	20	14	22	14	17	17	23	12
1313:	17	15	14	20	13	4	10	16
1321:	12	14	16	14	16	16	15	17
1329:	17	11	18	18	13	15	17	18
1337:	8	14	18	21	10	13	13	12
1345:	10	12	17	15	18	15	21	22
1353:	14	20	10	14	13	8	16	17
1361:	19	12	8	20	13	11	17	20
1369:	24	17	8	10	14	16	31	57
1377:	68	70	27	18	12	16	14	25
1385:	27	27	16	9	16	16	10	15
1393:	14	16	9	16	18	10	15	33
1401:	30	30	17	14	28	41	57	39
1409:	25	10	18	12	19	15	9	10
1417:	12	20	18	10	12	23	18	23
1425:	13	14	14	12	10	18	10	19
1433:	15	12	17	11	12	10	15	10
1441:	15	21	14	10	14	17	15	14
1449:	14	12	20	15	17	16	11	15
1457:	27	12	30	38	38	14	21	12
1465:	16	16	18	13	10	13	14	14
1473:	13	13	11	13	9	12	11	17
1481:	15	14	13	15	22	9	9	18
1489:	18	14	14	19	24	20	15	14
1497:	23	14	18	16	11	20	11	12
1505:	18	22	29	48	49	37	11	24
1513:	15	17	18	17	14	16	17	18
1521:	13	13	12	19	10	20	11	17
1529:	9	9	19	15	12	15	8	17
1537:	20	18	19	21	15	16	16	11
1545:	9	11	12	18	12	17	10	14
1553:	14	7	11	18	12	18	10	12
1561:	10	7	5	13	11	12	11	10
1569:	6	12	14	11	11	16	11	9
1577:	10	12	9	9	12	18	18	10
1585:	14	5	15	15	18	13	16	11
1593:	25	14	9	8	6	10	11	14
1601:	6	8	14	14	13	11	12	10
1609:	6	11	11	7	7	11	7	9
1617:	7	13	13	7	9	14	4	11
1625:	7	5	13	6	8	10	16	8
1633:	6	11	5	6	8	10	4	5
1641:	8	9	4	5	10	7	7	5
1649:	2	11	7	6	2	5	5	6
1657:	6	4	9	12	16	13	12	12

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1665:	7	11	8	10	4	6	7	3

Sample Title: R-3 0-6

Channel								
1673:	3	9	3	6	6	4	5	3
1681:	7	3	4	7	7	4	3	8
1689:	2	11	8	12	5	2	5	3
1697:	8	2	3	5	5	7	8	4
1705:	2	8	7	8	5	3	6	2
1713:	2	7	5	8	4	5	10	3
1721:	6	2	5	7	4	10	13	44
1729:	45	27	16	4	8	2	8	3
1737:	7	6	6	6	5	3	4	6
1745:	6	3	2	2	6	3	3	1
1753:	2	7	11	3	6	4	3	5
1761:	23	76	151	195	134	32	9	6
1769:	5	3	4	5	8	3	4	5
1777:	4	4	3	5	2	4	5	3
1785:	2	1	5	3	7	4	3	1
1793:	4	1	1	4	5	3	2	7
1801:	4	4	0	5	5	4	3	4
1809:	4	8	4	1	5	3	5	2
1817:	2	5	6	3	6	2	3	4
1825:	6	3	3	2	2	3	5	6
1833:	7	3	7	5	7	5	4	4
1841:	5	7	5	7	13	27	25	24
1849:	10	4	3	3	9	1	3	9
1857:	1	3	1	2	5	6	2	2
1865:	1	1	7	4	4	9	5	2
1873:	3	7	4	4	1	3	5	4
1881:	4	3	4	5	1	8	7	3
1889:	7	4	6	3	5	2	6	6
1897:	4	1	2	3	3	6	4	4
1905:	4	2	4	5	5	4	3	1
1913:	2	1	6	3	4	3	4	5
1921:	3	3	4	8	6	7	3	2
1929:	1	2	4	6	8	6	5	7
1937:	2	4	2	2	2	3	2	2
1945:	6	4	5	4	8	4	4	8
1953:	5	1	2	4	6	7	4	4
1961:	1	10	3	3	8	2	3	4
1969:	2	2	7	5	3	6	3	0
1977:	5	0	4	2	4	2	5	3
1985:	4	2	4	4	4	3	6	2
1993:	2	7	5	5	3	8	4	3
2001:	1	5	3	1	4	5	1	3
2009:	6	6	2	7	3	4	3	1
2017:	2	1	2	2	2	3	3	1
2025:	7	2	1	1	1	3	3	5
2033:	4	3	4	1	4	2	3	4
2041:	3	3	2	4	3	2	1	2
2049:	0	2	1	3	5	6	5	1
2057:	4	2	1	4	3	1	3	3
2065:	2	2	3	5	2	2	2	2
2073:	2	3	4	4	3	4	3	2
2081:	2	5	2	1	3	3	3	1
2089:	5	2	1	2	0	3	1	6

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2097:	1	5	6	1	3	5	2	8

Sample Title: R-3 0-6

Channel								
2105:	1	2	2	3	1	7	1	1
2113:	6	2	2	7	11	15	10	2
2121:	5	2	1	1	3	1	4	2
2129:	1	2	2	0	1	0	1	4
2137:	2	4	2	3	1	1	2	3
2145:	2	3	2	2	0	1	2	2
2153:	1	3	4	1	5	4	1	2
2161:	1	4	4	2	1	3	2	0
2169:	2	3	1	1	3	1	4	1
2177:	2	1	2	3	0	3	4	2
2185:	2	3	0	1	3	1	1	2
2193:	4	4	2	2	0	0	5	4
2201:	12	35	49	45	22	7	2	4
2209:	4	1	1	3	2	2	1	0
2217:	3	1	2	3	3	1	4	0
2225:	2	1	3	2	2	2	5	0
2233:	0	2	1	0	0	1	2	1
2241:	2	1	4	3	1	0	1	2
2249:	0	2	3	3	1	1	1	2
2257:	3	1	1	1	0	1	3	2
2265:	1	5	0	0	2	0	2	2
2273:	3	2	2	1	1	0	0	1
2281:	2	1	2	2	2	2	1	2
2289:	0	1	3	6	6	4	4	1
2297:	2	2	1	5	2	2	5	2
2305:	2	2	3	1	0	1	1	2
2313:	4	2	3	0	2	2	1	2
2321:	2	1	0	0	2	2	0	3
2329:	1	3	1	4	2	1	1	4
2337:	0	1	3	2	1	3	1	4
2345:	3	0	1	5	2	2	1	0
2353:	0	1	1	0	1	2	0	1
2361:	4	2	1	3	2	2	4	2
2369:	2	1	1	5	0	0	3	3
2377:	2	3	0	5	0	2	1	0
2385:	0	1	2	1	0	1	1	1
2393:	2	0	1	2	2	1	1	1
2401:	1	0	0	0	0	2	3	1
2409:	1	0	1	2	1	0	1	0
2417:	0	2	0	1	0	0	1	1
2425:	2	3	0	1	0	2	0	0
2433:	2	0	1	3	1	0	2	1
2441:	2	1	0	1	9	15	14	9
2449:	5	1	1	0	0	3	1	3
2457:	1	1	3	0	1	0	1	0
2465:	2	1	1	1	0	1	0	0
2473:	0	0	0	0	0	0	0	1
2481:	0	1	2	0	1	0	0	1
2489:	0	1	0	1	1	0	0	1
2497:	0	0	1	1	0	1	1	2
2505:	4	0	0	0	2	0	0	0
2513:	0	0	0	1	1	0	2	0
2521:	0	1	1	3	1	0	1	0

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2529:	0	1	3	0	1	2	1	0

Sample Title: R-3 0-6

Channel								
2537:	0	0	0	0	1	0	0	0
2545:	0	0	0	0	0	0	1	0
2553:	1	0	0	0	0	0	1	0
2561:	1	0	0	0	0	1	0	0
2569:	0	1	0	0	1	2	0	0
2577:	0	2	1	0	0	0	1	1
2585:	0	0	2	0	1	0	1	0
2593:	0	1	0	1	1	0	1	0
2601:	1	1	1	0	0	0	1	1
2609:	0	1	7	9	18	29	17	7
2617:	1	0	0	0	0	2	0	1
2625:	0	0	0	0	0	0	0	0
2633:	0	1	0	0	0	1	0	1
2641:	0	0	1	1	0	0	0	0
2649:	1	0	0	0	0	0	0	1
2657:	0	0	1	0	0	0	1	0
2665:	0	0	1	0	0	1	0	0
2673:	0	0	0	1	0	0	0	0
2681:	0	0	2	0	0	0	1	0
2689:	0	0	0	0	0	1	1	0
2697:	0	0	0	0	0	0	0	0
2705:	0	0	0	0	1	0	0	0
2713:	0	0	0	0	0	1	0	0
2721:	1	0	0	0	0	1	0	0
2729:	0	2	0	1	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	0	0	0	0	0	1	0	0
2753:	0	1	0	0	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	1	1	0	0	0	0	1
2777:	0	1	1	2	0	0	0	0
2785:	0	0	0	0	1	0	0	0
2793:	0	0	0	0	1	0	0	0
2801:	0	0	1	0	0	0	0	0
2809:	0	0	0	0	1	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	0	0	1	1	0	0	1	0
2833:	0	0	0	0	1	0	0	0
2841:	0	0	0	0	0	0	1	1
2849:	0	0	1	0	1	0	0	0
2857:	0	0	1	0	1	0	1	0
2865:	0	0	0	0	0	1	0	0
2873:	0	1	1	2	0	0	0	0
2881:	0	0	0	0	0	1	0	0
2889:	1	1	0	0	0	3	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	1
2913:	0	0	0	0	0	0	0	1
2921:	0	0	0	0	0	0	0	0
2929:	0	0	1	0	1	0	0	0
2937:	0	0	0	0	0	0	0	0
2945:	1	0	0	0	0	1	1	0
2953:	0	0	0	0	1	0	0	1

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2961:	0	0	1	0	0	0	0	0

Sample Title: R-3 0-6

Channel								
2969:	0	0	1	0	0	0	1	0
2977:	0	1	0	0	1	0	0	0
2985:	0	0	0	0	0	1	1	0
2993:	0	0	0	0	1	0	1	0
3001:	0	0	1	0	0	1	0	0
3009:	0	0	1	0	0	0	0	0
3017:	0	0	0	1	0	0	0	1
3025:	0	1	0	0	0	0	0	0
3033:	1	1	0	0	0	0	0	0
3041:	0	0	1	0	0	0	1	1
3049:	0	0	0	0	0	0	0	0
3057:	1	0	0	0	0	0	0	0
3065:	0	0	0	0	1	0	0	0
3073:	1	0	0	0	0	0	0	0
3081:	1	0	0	0	0	0	0	1
3089:	0	0	0	0	0	0	0	0
3097:	1	0	0	0	0	0	0	1
3105:	0	1	0	0	0	0	0	0
3113:	0	0	0	0	0	3	0	0
3121:	0	0	0	0	0	0	0	0
3129:	0	0	0	0	1	0	0	0
3137:	0	0	0	1	1	0	0	0
3145:	0	0	0	0	1	0	0	0
3153:	0	0	0	1	0	1	0	0
3161:	0	0	0	0	0	1	0	0
3169:	0	0	0	0	0	1	0	0
3177:	0	0	0	0	0	0	0	0
3185:	1	0	0	0	0	0	0	0
3193:	0	0	1	0	0	0	0	0
3201:	0	0	0	0	0	0	0	0
3209:	0	2	0	0	0	0	1	1
3217:	0	0	0	1	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	0	1	0	1
3241:	0	1	0	0	0	0	0	0
3249:	0	0	0	0	0	0	1	0
3257:	1	1	0	0	0	1	0	0
3265:	1	0	0	0	0	0	0	0
3273:	0	0	0	0	0	0	0	1
3281:	0	0	0	0	0	1	0	1
3289:	0	0	0	0	0	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	1	0	0
3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	0	1
3369:	0	0	0	0	0	0	0	0
3377:	0	0	0	1	1	0	0	0
3385:	0	0	0	0	0	0	1	0

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3393:	0	0	0	0	0	0	0	0

Sample Title: R-3 0-6

Channel								
3401:	1	0	1	0	0	1	0	0
3409:	0	0	0	0	0	1	0	0
3417:	0	1	0	0	1	0	0	1
3425:	1	1	0	0	0	0	0	0
3433:	1	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	1	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	1	0	0	0	0	1	0	0
3481:	0	1	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	1	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	1
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	0	0	1	0	1
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	0	1	0	1	0
3569:	0	1	0	0	1	0	1	1
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	1	0	1	1	0	0
3601:	1	0	1	0	0	0	0	0
3609:	0	0	1	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	1	0	0	0	0	0	0	0
3633:	0	0	0	0	1	0	1	0
3641:	0	0	0	1	0	0	1	0
3649:	0	0	0	0	0	0	0	0
3657:	0	1	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	1	0	0	0	1
3713:	0	0	0	0	0	0	0	0
3721:	1	0	0	1	0	0	0	0
3729:	0	0	0	0	0	1	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	1	0	0	0	0	0	0
3777:	0	0	0	0	1	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	1	1	0	0	0	0
3809:	0	0	0	1	0	0	0	0
3817:	0	0	0	0	0	0	0	0

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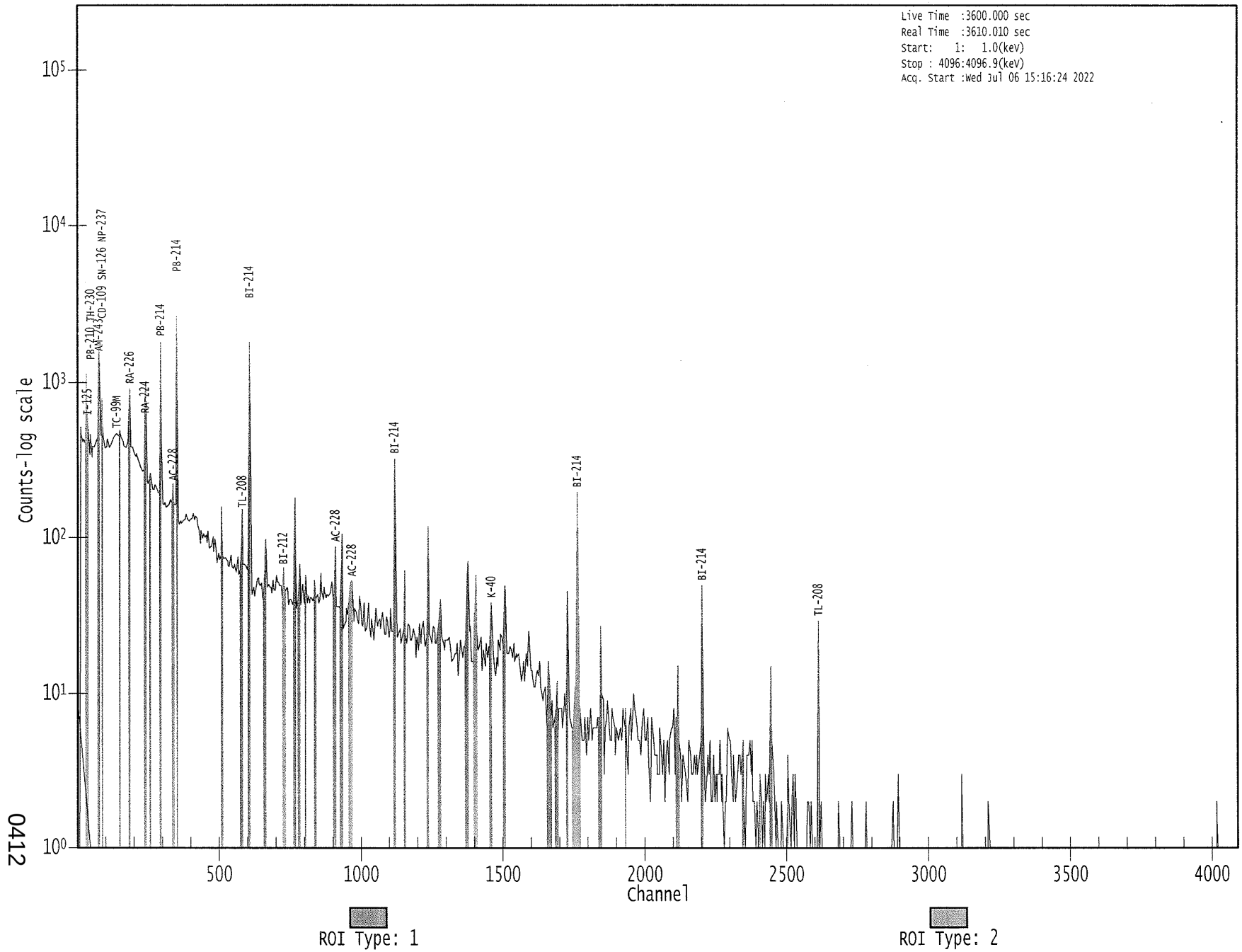
3825:	0	0	1	0	0	0	0	0

Sample Title: R-3 0-6

Channel								
3833:	0	0	0	0	1	0	0	0
3841:	0	0	0	0	1	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	1	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	1	0	0	0	0
3881:	0	1	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	1	0	0	0	0	0	0
3929:	0	0	0	1	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	1	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	2	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	1	0
4033:	1	0	0	0	0	0	0	0
4041:	0	0	1	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	1	0
4081:	0	0	0	1	0	0	0	0
4089:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001766

0000126271.CNF



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BP/Castex-Ltd Adm-Apx E-001767

KB 7/6/22

Apex-Gamma

Analysis Report for 2206038-11
R-3 6-12

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-11
Sample Description	: R-3 6-12
Sample Type	: SOIL
Sample Size	: 5.031E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:45:18AM
Acquisition Started	: 7/6/2022 4:11:46PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3601.5 seconds
Dead Time	: 0.04 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 32 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 7/1/2022
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126274

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
7/7/22

BP/Castex-Ltd Adm-Apx E-001768

Analysis Report for 2206038-11

R-3 6-12

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 5:11:53PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	46.45	44.99	0.0000	0.00
2	63.32	61.88	0.0000	0.00
3	76.37	74.93	0.0000	0.00
4	88.22	86.79	0.0000	0.00
5	92.99	91.56	0.0000	0.00
6	129.47	128.07	0.0000	0.00
7	186.18	184.80	0.0000	0.00
8	210.13	208.77	0.0000	0.00
9	240.10	238.75	0.0000	0.00
10	295.49	294.17	0.0000	0.00
11	338.38	337.07	0.0000	0.00
12	351.92	350.62	0.0000	0.00
13	462.50	461.24	0.0000	0.00
14	479.96	478.70	0.0000	0.00
15	486.95	485.70	0.0000	0.00
16	511.03	509.79	0.0000	0.00
17	582.82	581.59	0.0000	0.00
18	608.92	607.70	0.0000	0.00
19	662.74	661.53	0.0000	0.00
20	673.22	672.00	0.0000	0.00
21	680.43	679.22	0.0000	0.00
22	768.58	767.38	0.0000	0.00
23	783.91	782.71	0.0000	0.00
24	794.52	793.32	0.0000	0.00
25	805.66	804.46	0.0000	0.00
26	840.33	839.13	0.0000	0.00
27	910.97	909.77	0.0000	0.00
28	921.01	919.81	0.0000	0.00
29	933.12	931.92	0.0000	0.00
30	968.58	967.38	0.0000	0.00
31	1119.85	1118.63	0.0000	0.00
32	1159.38	1158.15	0.0000	0.00
33	1171.32	1170.08	0.0000	0.00
34	1236.83	1235.58	0.0000	0.00
35	1279.00	1277.74	0.0000	0.00
36	1333.49	1332.21	0.0000	0.00
37	1376.90	1375.60	0.0000	0.00
38	1459.71	1458.37	0.0000	0.00
39	1512.30	1510.95	0.0000	0.00
40	1544.71	1543.33	0.0000	0.00
41	1659.77	1658.34	0.0000	0.00
42	1668.40	1666.95	0.0000	0.00

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Analysis Report for 2206038-11

R-3 6-12

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1694.59	1693.13	0.0000	0.00
44	1728.58	1727.10	0.0000	0.00
45	1763.06	1761.56	0.0000	0.00
46	1804.81	1803.28	0.0000	0.00
47	1847.06	1845.49	0.0000	0.00
48	2071.67	2069.92	0.0000	0.00
49	2102.79	2101.01	0.0000	0.00
50	2116.00	2114.21	0.0000	0.00
51	2121.67	2119.87	0.0000	0.00
52	2179.95	2178.09	0.0000	0.00
53	2187.06	2185.20	0.0000	0.00
54	2203.33	2201.46	0.0000	0.00
55	2323.69	2321.69	0.0000	0.00
56	2446.27	2444.13	0.0000	0.00
57	2613.09	2610.74	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001770

Analysis Report for 2206038-11

R-3 6-12

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 5:11:53PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	46.45	42 -	48	44.99	1.87E+02	86.60	1.23E+03	3.78
	2	63.32	59 -	66	61.88	2.01E+02	114.93	2.08E+03	3.11
	3	76.37	67 -	82	74.93	2.07E+03	228.98	4.41E+03	4.95
M	4	88.22	82 -	95	86.79	5.31E+02	144.33	2.63E+03	3.48
m	5	92.99	82 -	95	91.56	3.15E+02	118.19	1.85E+03	2.69
	6	129.47	124 -	131	128.07	8.52E+01	98.08	1.55E+03	1.34
	7	186.18	180 -	190	184.80	3.21E+02	124.07	1.88E+03	2.59
	8	210.13	204 -	213	208.77	9.95E+01	100.20	1.37E+03	4.81
	9	240.10	232 -	248	238.75	1.47E+03	154.70	1.70E+03	5.16
	10	295.49	287 -	301	294.17	9.17E+02	121.34	1.17E+03	2.74
	11	338.38	332 -	341	337.07	1.79E+02	74.39	6.83E+02	3.03
	12	351.92	343 -	358	350.62	1.38E+03	122.29	9.35E+02	2.89
	13	462.50	456 -	466	461.24	8.56E+01	54.94	3.55E+02	3.90
M	14	479.96	473 -	488	478.70	4.27E+01	49.54	3.40E+02	3.30
m	15	486.95	473 -	488	485.70	3.28E+01	31.97	1.64E+02	2.70
	16	511.03	504 -	516	509.79	1.86E+02	59.03	3.14E+02	3.23
	17	582.82	577 -	587	581.59	2.02E+02	59.04	3.57E+02	3.12
	18	608.92	601 -	615	607.70	9.84E+02	85.84	3.65E+02	2.88
	19	662.74	655 -	667	661.53	1.25E+02	50.31	2.35E+02	6.44
M	20	673.22	668 -	682	672.00	2.96E+01	30.53	1.22E+02	4.53
m	21	680.43	668 -	682	679.22	2.81E+01	28.15	1.35E+02	3.13
	22	768.58	761 -	773	767.38	9.54E+01	49.10	2.33E+02	2.77
	23	783.91	777 -	787	782.71	3.77E+01	41.44	2.09E+02	4.04
M	24	794.52	788 -	808	793.32	4.86E+01	38.72	1.78E+02	5.06
m	25	805.66	788 -	808	804.46	4.12E+01	32.30	1.18E+02	5.07
	26	840.33	835 -	843	839.13	5.28E+01	32.73	1.26E+02	5.77
M	27	910.97	904 -	924	909.77	1.47E+02	42.72	1.75E+02	3.80
m	28	921.01	904 -	924	919.81	2.76E+01	35.00	1.06E+02	5.14
	29	933.12	925 -	939	931.92	9.17E+01	43.19	1.59E+02	2.90
	30	968.58	963 -	971	967.38	9.51E+01	36.50	1.42E+02	2.92
	31	1119.85	1111 -	1125	1118.63	2.07E+02	41.85	9.64E+01	2.94
	32	1159.38	1154 -	1161	1158.15	2.66E+01	25.38	8.48E+01	1.18
	33	1171.32	1163 -	1177	1170.08	5.41E+01	34.81	1.04E+02	11.89
	34	1236.83	1230 -	1240	1235.58	6.39E+01	28.80	9.02E+01	2.05
	35	1279.00	1270 -	1284	1277.74	3.49E+01	31.54	9.02E+01	4.61
	36	1333.49	1329 -	1335	1332.21	1.81E+01	14.90	2.57E+01	3.00
	37	1376.90	1369 -	1383	1375.60	4.14E+01	36.17	1.21E+02	3.24
	38	1459.71	1451 -	1467	1458.37	1.90E+02	41.79	9.56E+01	3.65
	39	1512.30	1502 -	1523	1510.95	6.03E+01	40.52	9.54E+01	10.33
	40	1544.71	1538 -	1550	1543.33	2.88E+01	21.01	3.64E+01	8.39

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Analysis Report for 2206038-11

R-3 6-12

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1659.77	1654 -	1662	1658.34	1.56E+01	13.30	1.68E+01	6.23
42	1668.40	1663 -	1672	1666.95	1.41E+01	9.43	3.81E+00	1.61
43	1694.59	1687 -	1699	1693.13	1.50E+01	18.31	3.19E+01	6.25
44	1728.58	1721 -	1731	1727.10	3.70E+01	13.79	5.95E+00	3.34
45	1763.06	1755 -	1767	1761.56	1.35E+02	26.58	1.94E+01	3.47
46	1804.81	1800 -	1807	1803.28	8.00E+00	8.94	8.00E+00	3.78
47	1847.06	1840 -	1852	1845.49	3.07E+01	19.78	2.87E+01	5.07
48	2071.67	2065 -	2074	2069.92	1.20E+01	6.93	0.00E+00	6.99
49	2102.79	2095 -	2106	2101.01	2.41E+01	15.49	1.78E+01	1.46
50	2116.00	2108 -	2117	2114.21	1.43E+01	12.77	1.55E+01	1.29
51	2121.67	2117 -	2122	2119.87	5.38E+00	7.07	5.25E+00	2.91
52	2179.95	2172 -	2181	2178.09	9.60E+00	10.49	1.08E+01	2.97
53	2187.06	2182 -	2189	2185.20	1.00E+01	6.32	0.00E+00	1.12
54	2203.33	2196 -	2207	2201.46	4.87E+01	19.60	2.26E+01	3.36
55	2323.69	2314 -	2327	2321.69	1.54E+01	13.64	1.33E+01	3.03
56	2446.27	2439 -	2448	2444.13	1.36E+01	9.43	4.75E+00	3.16
57	2613.09	2605 -	2616	2610.74	1.03E+02	20.30	0.00E+00	2.99

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 5:11:53PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	46.45	42 -	48	1.87E+02	86.60	1.23E+03	6.76E+01
	2	63.32	59 -	66	2.01E+02	114.93	2.08E+03	9.16E+01
	3	76.37	67 -	82	2.07E+03	228.98	4.41E+03	1.73E+02
M	4	88.22	82 -	95	5.31E+02	144.33	2.63E+03	8.43E+01
m	5	92.99	82 -	95	3.15E+02	118.19	1.85E+03	7.08E+01
	6	129.47	124 -	131	8.52E+01	98.08	1.55E+03	7.92E+01
	7	186.18	180 -	190	3.21E+02	124.07	1.88E+03	9.76E+01
	8	210.13	204 -	213	9.95E+01	100.20	1.37E+03	8.07E+01
	9	240.10	232 -	248	1.47E+03	154.70	1.70E+03	1.10E+02
	10	295.49	287 -	301	9.17E+02	121.34	1.17E+03	8.64E+01
	11	338.38	332 -	341	1.79E+02	74.39	6.83E+02	5.70E+01

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Analysis Report for 2206038-11

R-3 6-12

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	12	351.92	343 -	358	1.38E+03	122.29	9.35E+02	7.98E+01
	13	462.50	456 -	466	8.56E+01	54.94	3.55E+02	4.25E+01
M	14	479.96	473 -	488	4.27E+01	49.54	3.40E+02	3.03E+01
m	15	486.95	473 -	488	3.28E+01	31.97	1.64E+02	2.10E+01
	16	511.03	504 -	516	1.86E+02	59.03	3.14E+02	4.30E+01
	17	582.82	577 -	587	2.02E+02	59.04	3.57E+02	4.26E+01
	18	608.92	601 -	615	9.84E+02	85.84	3.65E+02	4.81E+01
	19	662.74	655 -	667	1.25E+02	50.31	2.35E+02	3.71E+01
M	20	673.22	668 -	682	2.96E+01	30.53	1.22E+02	1.81E+01
m	21	680.43	668 -	682	2.81E+01	28.15	1.35E+02	1.91E+01
	22	768.58	761 -	773	9.54E+01	49.10	2.33E+02	3.70E+01
	23	783.91	777 -	787	3.77E+01	41.44	2.09E+02	3.25E+01
M	24	794.52	788 -	808	4.86E+01	38.72	1.78E+02	2.19E+01
m	25	805.66	788 -	808	4.12E+01	32.30	1.18E+02	1.79E+01
	26	840.33	835 -	843	5.28E+01	32.73	1.26E+02	2.41E+01
M	27	910.97	904 -	924	1.47E+02	42.72	1.75E+02	2.18E+01
m	28	921.01	904 -	924	2.76E+01	35.00	1.06E+02	1.69E+01
	29	933.12	925 -	939	9.17E+01	43.19	1.59E+02	3.18E+01
	30	968.58	963 -	971	9.51E+01	36.50	1.42E+02	2.54E+01
	31	1119.85	1111 -	1125	2.07E+02	41.85	9.64E+01	2.50E+01
	32	1159.38	1154 -	1161	2.66E+01	25.38	8.48E+01	1.91E+01
	33	1171.32	1163 -	1177	5.41E+01	34.81	1.04E+02	2.59E+01
	34	1236.83	1230 -	1240	6.39E+01	28.80	9.02E+01	2.37E+01
	35	1279.00	1270 -	1284	3.49E+01	31.54	9.02E+01	2.40E+01
	36	1333.49	1329 -	1335	1.81E+01	14.90	2.57E+01	1.01E+01
	37	1376.90	1369 -	1383	4.14E+01	36.17	1.21E+02	2.78E+01
	38	1459.71	1451 -	1467	1.90E+02	41.79	9.56E+01	3.26E+01
	39	1512.30	1502 -	1523	6.03E+01	40.52	9.54E+01	3.08E+01
	40	1544.71	1538 -	1550	2.88E+01	21.01	3.64E+01	1.48E+01
	41	1659.77	1654 -	1662	1.56E+01	13.30	1.68E+01	8.80E+00
	42	1668.40	1663 -	1672	1.41E+01	9.43	3.81E+00	4.70E+00
	43	1694.59	1687 -	1699	1.50E+01	18.31	3.19E+01	1.36E+01
	44	1728.58	1721 -	1731	3.70E+01	13.79	5.95E+00	5.34E+00
	45	1763.06	1755 -	1767	1.35E+02	26.58	1.94E+01	1.06E+01
	46	1804.81	1800 -	1807	8.00E+00	8.94	8.00E+00	5.70E+00
	47	1847.06	1840 -	1852	3.07E+01	19.78	2.87E+01	1.35E+01
	48	2071.67	2065 -	2074	1.20E+01	6.93	0.00E+00	0.00E+00
	49	2102.79	2095 -	2106	2.41E+01	15.49	1.78E+01	9.85E+00
	50	2116.00	2108 -	2117	1.43E+01	12.77	1.55E+01	8.46E+00
	51	2121.67	2117 -	2122	5.38E+00	7.07	5.25E+00	4.39E+00
	52	2179.95	2172 -	2181	9.60E+00	10.49	1.08E+01	6.96E+00
	53	2187.06	2182 -	2189	1.00E+01	6.32	0.00E+00	0.00E+00
	54	2203.33	2196 -	2207	4.87E+01	19.60	2.26E+01	1.13E+01
	55	2323.69	2314 -	2327	1.54E+01	13.64	1.33E+01	9.17E+00
	56	2446.27	2439 -	2448	1.36E+01	9.43	4.75E+00	4.83E+00
	57	2613.09	2605 -	2616	1.03E+02	20.30	0.00E+00	0.00E+00

BP/Castex-Ltd Adm-Apx E-001773

Analysis Report for 2206038-11

R-3 6-12

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 5:11:53PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	46.45	42 -	48	44.99	1.87E+02	86.60	1.23E+03	PB-210 TH-230
	2	63.32	59 -	66	61.88	2.01E+02	114.93	2.08E+03	TH-234 TH-230
	3	76.37	67 -	82	74.93	2.07E+03	228.98	4.41E+03	AM-243 TI-44
M	4	88.22	82 -	95	86.79	5.31E+02	144.33	2.63E+03	LU-176 CD-109 SN-126 NP-237 EU-155
m	5	92.99	82 -	95	91.56	3.15E+02	118.19	1.85E+03	GA-67 ND-147
	6	129.47	124 -	131	128.07	8.52E+01	98.08	1.55E+03	PA-234
	7	186.18	180 -	190	184.80	3.21E+02	124.07	1.88E+03	RA-226 HO-166M
	8	210.13	204 -	213	208.77	9.95E+01	100.20	1.37E+03	CM-243 GA-67
	9	240.10	232 -	248	238.75	1.47E+03	154.70	1.70E+03	RA-224 PB-212
	10	295.49	287 -	301	294.17	9.17E+02	121.34	1.17E+03	PB-214 CE-143
	11	338.38	332 -	341	337.07	1.79E+02	74.39	6.83E+02	AC-228 CS-136
	12	351.92	343 -	358	350.62	1.38E+03	122.29	9.35E+02	PB-214
	13	462.50	456 -	466	461.24	8.56E+01	54.94	3.55E+02	SB-125
M	14	479.96	473 -	488	478.70	4.27E+01	49.54	3.40E+02	HF-181 BE-7
m	15	486.95	473 -	488	485.70	3.28E+01	31.97	1.64E+02	LA-140
	16	511.03	504 -	516	509.79	1.86E+02	59.03	3.14E+02	.....

BP/Castex-Ltd Adm-Apx E-001774

Analysis Report for 2206038-11

R-3 6-12

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	17	582.82	577 -	587	581.59	2.02E+02	59.04	3.57E+02	TL-208
	18	608.92	601 -	615	607.70	9.84E+02	85.84	3.65E+02	BI-214
	19	662.74	655 -	667	661.53	1.25E+02	50.31	2.35E+02	CS-137
									CE-143
M	20	673.22	668 -	682	672.00	2.96E+01	30.53	1.22E+02	.....
m	21	680.43	668 -	682	679.22	2.81E+01	28.15	1.35E+02	.....
	22	768.58	761 -	773	767.38	9.54E+01	49.10	2.33E+02	.....
	23	783.91	777 -	787	782.71	3.77E+01	41.44	2.09E+02	SB-127
M	24	794.52	788 -	808	793.32	4.86E+01	38.72	1.78E+02	CS-134
m	25	805.66	788 -	808	804.46	4.12E+01	32.30	1.18E+02	.....
	26	840.33	835 -	843	839.13	5.28E+01	32.73	1.26E+02	.....
M	27	910.97	904 -	924	909.77	1.47E+02	42.72	1.75E+02	AC-228
									TL-204
m	28	921.01	904 -	924	919.81	2.76E+01	35.00	1.06E+02	.....
	29	933.12	925 -	939	931.92	9.17E+01	43.19	1.59E+02	.....
	30	968.58	963 -	971	967.38	9.51E+01	36.50	1.42E+02	AC-228
	31	1119.85	1111 -	1125	1118.63	2.07E+02	41.85	9.64E+01	BI-214
									SC-46
									TA-182
	32	1159.38	1154 -	1161	1158.15	2.66E+01	25.38	8.48E+01	.....
	33	1171.32	1163 -	1177	1170.08	5.41E+01	34.81	1.04E+02	CO-60
	34	1236.83	1230 -	1240	1235.58	6.39E+01	28.80	9.02E+01	CO-56
									CS-136
	35	1279.00	1270 -	1284	1277.74	3.49E+01	31.54	9.02E+01	.....
	36	1333.49	1329 -	1335	1332.21	1.81E+01	14.90	2.57E+01	CO-60
	37	1376.90	1369 -	1383	1375.60	4.14E+01	36.17	1.21E+02	.....
	38	1459.71	1451 -	1467	1458.37	1.90E+02	41.79	9.56E+01	K-40
	39	1512.30	1502 -	1523	1510.95	6.03E+01	40.52	9.54E+01	.....
	40	1544.71	1538 -	1550	1543.33	2.88E+01	21.01	3.64E+01	.....
	41	1659.77	1654 -	1662	1658.34	1.56E+01	13.30	1.68E+01	.....
	42	1668.40	1663 -	1672	1666.95	1.41E+01	9.43	3.81E+00	.....
	43	1694.59	1687 -	1699	1693.13	1.50E+01	18.31	3.19E+01	.....
	44	1728.58	1721 -	1731	1727.10	3.70E+01	13.79	5.95E+00	.....
	45	1763.06	1755 -	1767	1761.56	1.35E+02	26.58	1.94E+01	BI-214
	46	1804.81	1800 -	1807	1803.28	8.00E+00	8.94	8.00E+00	.....
	47	1847.06	1840 -	1852	1845.49	3.07E+01	19.78	2.87E+01	.....
	48	2071.67	2065 -	2074	2069.92	1.20E+01	6.93	0.00E+00	.....
	49	2102.79	2095 -	2106	2101.01	2.41E+01	15.49	1.78E+01	.....
	50	2116.00	2108 -	2117	2114.21	1.43E+01	12.77	1.55E+01	.....
	51	2121.67	2117 -	2122	2119.87	5.38E+00	7.07	5.25E+00	.....
	52	2179.95	2172 -	2181	2178.09	9.60E+00	10.49	1.08E+01	.....
	53	2187.06	2182 -	2189	2185.20	1.00E+01	6.32	0.00E+00	.....
	54	2203.33	2196 -	2207	2201.46	4.87E+01	19.60	2.26E+01	BI-214
	55	2323.69	2314 -	2327	2321.69	1.54E+01	13.64	1.33E+01	.....
	56	2446.27	2439 -	2448	2444.13	1.36E+01	9.43	4.75E+00	.....
	57	2613.09	2605 -	2616	2610.74	1.03E+02	20.30	0.00E+00	TL-208

BP/Castex-Ltd Adm-Apx E-001775

Analysis Report for 2206038-11

R-3 6-12

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 5:11:53PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.45	1.87E+02	86.60	1.61E-02	1.75E-03
	2	63.32	2.01E+02	114.93	2.48E-02	1.85E-03
	3	76.37	2.07E+03	228.98	2.80E-02	2.21E-03
M	4	88.22	5.31E+02	144.33	2.90E-02	2.53E-03
m	5	92.99	3.15E+02	118.19	2.92E-02	2.46E-03
	6	129.47	8.52E+01	98.08	2.73E-02	2.01E-03
	7	186.18	3.21E+02	124.07	2.26E-02	1.82E-03
	8	210.13	9.95E+01	100.20	2.09E-02	1.73E-03
	9	240.10	1.47E+03	154.70	1.90E-02	1.62E-03
	10	295.49	9.17E+02	121.34	1.63E-02	1.42E-03
	11	338.38	1.79E+02	74.39	1.47E-02	1.28E-03
	12	351.92	1.38E+03	122.29	1.42E-02	1.24E-03
	13	462.50	8.56E+01	54.94	1.14E-02	1.04E-03
M	14	479.96	4.27E+01	49.54	1.11E-02	1.01E-03
m	15	486.95	3.28E+01	31.97	1.10E-02	1.01E-03
	16	511.03	1.86E+02	59.03	1.06E-02	9.77E-04
	17	582.82	2.02E+02	59.04	9.47E-03	8.91E-04
	18	608.92	9.84E+02	85.84	9.13E-03	8.60E-04
	19	662.74	1.25E+02	50.31	8.50E-03	7.96E-04
M	20	673.22	2.96E+01	30.53	8.39E-03	7.89E-04
m	21	680.43	2.81E+01	28.15	8.31E-03	7.84E-04
	22	768.58	9.54E+01	49.10	7.50E-03	7.23E-04
	23	783.91	3.77E+01	41.44	7.37E-03	7.12E-04
M	24	794.52	4.86E+01	38.72	7.29E-03	7.05E-04
m	25	805.66	4.12E+01	32.30	7.20E-03	6.97E-04
	26	840.33	5.28E+01	32.73	6.95E-03	6.74E-04
M	27	910.97	1.47E+02	42.72	6.49E-03	6.24E-04
m	28	921.01	2.76E+01	35.00	6.43E-03	6.17E-04
	29	933.12	9.17E+01	43.19	6.36E-03	6.07E-04
	30	968.58	9.51E+01	36.50	6.16E-03	5.81E-04
	31	1119.85	2.07E+02	41.85	5.44E-03	4.68E-04
	32	1159.38	2.66E+01	25.38	5.29E-03	4.38E-04
	33	1171.32	5.41E+01	34.81	5.24E-03	4.29E-04
	34	1236.83	6.39E+01	28.80	5.01E-03	4.20E-04

BP/Castex-Ltd Adm-Apx E-001776

Analysis Report for 2206038-11

R-3 6-12

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
35	1279.00	3.49E+01	31.54	4.87E-03	4.14E-04
36	1333.49	1.81E+01	14.90	4.71E-03	4.08E-04
37	1376.90	4.14E+01	36.17	4.59E-03	3.97E-04
38	1459.71	1.90E+02	41.79	4.38E-03	3.76E-04
39	1512.30	6.03E+01	40.52	4.26E-03	3.63E-04
40	1544.71	2.88E+01	21.01	4.19E-03	3.55E-04
41	1659.77	1.56E+01	13.30	3.97E-03	3.27E-04
42	1668.40	1.41E+01	9.43	3.95E-03	3.25E-04
43	1694.59	1.50E+01	18.31	3.91E-03	3.18E-04
44	1728.58	3.70E+01	13.79	3.85E-03	3.10E-04
45	1763.06	1.35E+02	26.58	3.80E-03	3.02E-04
46	1804.81	8.00E+00	8.94	3.73E-03	2.91E-04
47	1847.06	3.07E+01	19.78	3.68E-03	2.84E-04
48	2071.67	1.20E+01	6.93	3.41E-03	2.84E-04
49	2102.79	2.41E+01	15.49	3.38E-03	2.84E-04
50	2116.00	1.43E+01	12.77	3.37E-03	2.84E-04
51	2121.67	5.38E+00	7.07	3.36E-03	2.84E-04
52	2179.95	9.60E+00	10.49	3.31E-03	2.84E-04
53	2187.06	1.00E+01	6.32	3.31E-03	2.84E-04
54	2203.33	4.87E+01	19.60	3.29E-03	2.84E-04
55	2323.69	1.54E+01	13.64	3.20E-03	2.84E-04
56	2446.27	1.36E+01	9.43	3.12E-03	2.84E-04
57	2613.09	1.03E+02	20.30	3.04E-03	2.84E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 5:11:53PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126204.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	46.45	1.87E+02	86.60	3.33E+01	3.61E+00	1.53E+02	8.67E+01
	2	63.32	2.01E+02	114.93	8.49E+01	1.08E+01	1.16E+02	1.15E+02
	3	76.37	2.07E+03	228.98			2.07E+03	2.29E+02
M	4	88.22	5.31E+02	144.33			5.31E+02	1.44E+02
m	5	92.99	3.15E+02	118.19	1.06E+02	9.79E+00	2.08E+02	1.19E+02
	6	129.47	8.52E+01	98.08			8.52E+01	9.81E+01
	7	186.18	3.21E+02	124.07	4.53E+01	1.25E+01	2.76E+02	1.25E+02

BP/Castex-Ltd Adm-Apx E-001777

Analysis Report for 2206038-11

R-3 6-12

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	8	210.13	9.95E+01	100.20			9.95E+01	1.00E+02
	9	240.10	1.47E+03	154.70	1.45E+01	5.40E+00	1.45E+03	1.55E+02
	10	295.49	9.17E+02	121.34			9.17E+02	1.21E+02
	11	338.38	1.79E+02	74.39	4.53E+00	4.32E+00	1.75E+02	7.45E+01
	12	351.92	1.38E+03	122.29	4.32E+00	3.84E+00	1.38E+03	1.22E+02
	13	462.50	8.56E+01	54.94			8.56E+01	5.49E+01
M	14	479.96	4.27E+01	49.54			4.27E+01	4.95E+01
m	15	486.95	3.28E+01	31.97			3.28E+01	3.20E+01
	16	511.03	1.86E+02	59.03	5.27E+01	5.41E+00	1.33E+02	5.93E+01
	17	582.82	2.02E+02	59.04			2.02E+02	5.90E+01
	18	608.92	9.84E+02	85.84	5.34E+00	3.89E+00	9.79E+02	8.59E+01
	19	662.74	1.25E+02	50.31			1.25E+02	5.03E+01
M	20	673.22	2.96E+01	30.53			2.96E+01	3.05E+01
m	21	680.43	2.81E+01	28.15			2.81E+01	2.82E+01
	22	768.58	9.54E+01	49.10			9.54E+01	4.91E+01
	23	783.91	3.77E+01	41.44			3.77E+01	4.14E+01
M	24	794.52	4.86E+01	38.72			4.86E+01	3.87E+01
m	25	805.66	4.12E+01	32.30			4.12E+01	3.23E+01
	26	840.33	5.28E+01	32.73			5.28E+01	3.27E+01
M	27	910.97	1.47E+02	42.72	1.52E+00	2.64E+00	1.46E+02	4.28E+01
m	28	921.01	2.76E+01	35.00			2.76E+01	3.50E+01
	29	933.12	9.17E+01	43.19			9.17E+01	4.32E+01
	30	968.58	9.51E+01	36.50			9.51E+01	3.65E+01
	31	1119.85	2.07E+02	41.85			2.07E+02	4.18E+01
	32	1159.38	2.66E+01	25.38			2.66E+01	2.54E+01
	33	1171.32	5.41E+01	34.81			5.41E+01	3.48E+01
	34	1236.83	6.39E+01	28.80			6.39E+01	2.88E+01
	35	1279.00	3.49E+01	31.54			3.49E+01	3.15E+01
	36	1333.49	1.81E+01	14.90			1.81E+01	1.49E+01
	37	1376.90	4.14E+01	36.17			4.14E+01	3.62E+01
	38	1459.71	1.90E+02	41.79			1.90E+02	4.18E+01
	39	1512.30	6.03E+01	40.52			6.03E+01	4.05E+01
	40	1544.71	2.88E+01	21.01			2.88E+01	2.10E+01
	41	1659.77	1.56E+01	13.30			1.56E+01	1.33E+01
	42	1668.40	1.41E+01	9.43			1.41E+01	9.43E+00
	43	1694.59	1.50E+01	18.31			1.50E+01	1.83E+01
	44	1728.58	3.70E+01	13.79			3.70E+01	1.38E+01
	45	1763.06	1.35E+02	26.58			1.35E+02	2.66E+01
	46	1804.81	8.00E+00	8.94			8.00E+00	8.94E+00
	47	1847.06	3.07E+01	19.78			3.07E+01	1.98E+01
	48	2071.67	1.20E+01	6.93			1.20E+01	6.93E+00
	49	2102.79	2.41E+01	15.49			2.41E+01	1.55E+01
	50	2116.00	1.43E+01	12.77			1.43E+01	1.28E+01
	51	2121.67	5.38E+00	7.07			5.38E+00	7.07E+00
	52	2179.95	9.60E+00	10.49			9.60E+00	1.05E+01
	53	2187.06	1.00E+01	6.32			1.00E+01	6.32E+00
	54	2203.33	4.87E+01	19.60			4.87E+01	1.96E+01
	55	2323.69	1.54E+01	13.64			1.54E+01	1.36E+01
	56	2446.27	1.36E+01	9.43			1.36E+01	9.43E+00
	57	2613.09	1.03E+02	20.30			1.03E+02	2.03E+01

BP/Castex-Ltd Adm-Apx E-001778

Analysis Report for 2206038-11

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M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 5:11:53PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126204.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	46.45	1.87E+02	86.60	3.33E+01	3.61E+00	1.53E+02	8.67E+01
	2	63.32	2.01E+02	114.93	8.49E+01	1.08E+01	1.16E+02	1.15E+02
	3	76.37	2.07E+03	228.98			2.07E+03	2.29E+02
M	4	88.22	5.31E+02	144.33			5.31E+02	1.44E+02
m	5	92.99	3.15E+02	118.19	1.06E+02	9.79E+00	2.08E+02	1.19E+02
	6	129.47	8.52E+01	98.08			8.52E+01	9.81E+01
	7	186.18	3.21E+02	124.07	4.53E+01	1.25E+01	2.76E+02	1.25E+02
	8	210.13	9.95E+01	100.20			9.95E+01	1.00E+02
	9	240.10	1.47E+03	154.70	1.45E+01	5.40E+00	1.45E+03	1.55E+02
	10	295.49	9.17E+02	121.34			9.17E+02	1.21E+02
	11	338.38	1.79E+02	74.39	4.53E+00	4.32E+00	1.75E+02	7.45E+01
	12	351.92	1.38E+03	122.29	4.32E+00	3.84E+00	1.38E+03	1.22E+02
	13	462.50	8.56E+01	54.94			8.56E+01	5.49E+01
M	14	479.96	4.27E+01	49.54			4.27E+01	4.95E+01
m	15	486.95	3.28E+01	31.97			3.28E+01	3.20E+01
	16	511.03	1.86E+02	59.03	5.27E+01	5.41E+00	1.33E+02	5.93E+01
	17	582.82	2.02E+02	59.04			2.02E+02	5.90E+01
	18	608.92	9.84E+02	85.84	5.34E+00	3.89E+00	9.79E+02	8.59E+01
	19	662.74	1.25E+02	50.31			1.25E+02	5.03E+01
M	20	673.22	2.96E+01	30.53			2.96E+01	3.05E+01
m	21	680.43	2.81E+01	28.15			2.81E+01	2.82E+01
	22	768.58	9.54E+01	49.10			9.54E+01	4.91E+01
	23	783.91	3.77E+01	41.44			3.77E+01	4.14E+01
M	24	794.52	4.86E+01	38.72			4.86E+01	3.87E+01
m	25	805.66	4.12E+01	32.30			4.12E+01	3.23E+01
	26	840.33	5.28E+01	32.73			5.28E+01	3.27E+01
M	27	910.97	1.47E+02	42.72	1.52E+00	2.64E+00	1.46E+02	4.28E+01
m	28	921.01	2.76E+01	35.00			2.76E+01	3.50E+01
	29	933.12	9.17E+01	43.19			9.17E+01	4.32E+01
	30	968.58	9.51E+01	36.50			9.51E+01	3.65E+01
	31	1119.85	2.07E+02	41.85			2.07E+02	4.18E+01
	32	1159.38	2.66E+01	25.38			2.66E+01	2.54E+01

Analysis Report for 2206038-11

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Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
33	1171.32	5.41E+01	34.81			5.41E+01	3.48E+01
34	1236.83	6.39E+01	28.80			6.39E+01	2.88E+01
35	1279.00	3.49E+01	31.54			3.49E+01	3.15E+01
36	1333.49	1.81E+01	14.90			1.81E+01	1.49E+01
37	1376.90	4.14E+01	36.17			4.14E+01	3.62E+01
38	1459.71	1.90E+02	41.79			1.90E+02	4.18E+01
39	1512.30	6.03E+01	40.52			6.03E+01	4.05E+01
40	1544.71	2.88E+01	21.01			2.88E+01	2.10E+01
41	1659.77	1.56E+01	13.30			1.56E+01	1.33E+01
42	1668.40	1.41E+01	9.43			1.41E+01	9.43E+00
43	1694.59	1.50E+01	18.31			1.50E+01	1.83E+01
44	1728.58	3.70E+01	13.79			3.70E+01	1.38E+01
45	1763.06	1.35E+02	26.58			1.35E+02	2.66E+01
46	1804.81	8.00E+00	8.94			8.00E+00	8.94E+00
47	1847.06	3.07E+01	19.78			3.07E+01	1.98E+01
48	2071.67	1.20E+01	6.93			1.20E+01	6.93E+00
49	2102.79	2.41E+01	15.49			2.41E+01	1.55E+01
50	2116.00	1.43E+01	12.77			1.43E+01	1.28E+01
51	2121.67	5.38E+00	7.07			5.38E+00	7.07E+00
52	2179.95	9.60E+00	10.49			9.60E+00	1.05E+01
53	2187.06	1.00E+01	6.32			1.00E+01	6.32E+00
54	2203.33	4.87E+01	19.60			4.87E+01	1.96E+01
55	2323.69	1.54E+01	13.64			1.54E+01	1.36E+01
56	2446.27	1.36E+01	9.43			1.36E+01	9.43E+00
57	2613.09	1.03E+02	20.30			1.03E+02	2.03E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.865	477.59	*	10.42	7.74E-01	9.00E-01
K-40	0.969	1460.81	*	10.67	6.08E+00	1.43E+00
CO-60	0.943	1173.22	*	100.00	1.56E-01	1.01E-01
		1332.49	*	100.00	5.80E-02	4.79E-02
GA-67	0.444	93.31	*	35.70	7.83E+01	4.51E+01
		208.95	*	2.24	8.33E+02	8.42E+02

Analysis Report for 2206038-11

R-3 6-12

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
GA-67	0.444	300.22		16.00		
CD-109	0.999	88.03	*	3.72	7.63E+00	2.18E+00
SN-126	0.989	87.57	*	37.00	7.38E-01	2.11E-01
CS-137	0.970	661.65	*	85.12	2.57E-01	1.07E-01
EU-155	0.314	86.50	*	30.90	8.93E-01	2.55E-01
		105.30		20.70		
TL-208	0.856	583.14	*	30.22	1.05E+00	3.24E-01
		860.37		4.48		
		2614.66	*	35.85	1.41E+00	3.08E-01
PB-212	0.845	238.63	*	44.60	2.56E+00	3.48E-01
		300.09		3.41		
BI-214	0.986	609.31	*	46.30	3.46E+00	4.45E-01
		1120.29	*	15.10	3.75E+00	8.25E-01
		1764.49	*	15.80	3.37E+00	7.13E-01
		2204.22	*	4.98	4.43E+00	1.82E+00
PB-214	0.999	295.21	*	19.19	4.37E+00	6.92E-01
		351.92	*	37.19	3.88E+00	4.83E-01
RA-224	0.980	240.98	*	3.95	2.89E+01	3.93E+00
RA-226	1.000	186.21	*	3.28	5.55E+00	2.55E+00
AC-228	0.998	338.32	*	11.40	1.56E+00	6.78E-01
		911.07	*	27.70	1.21E+00	3.74E-01
		969.11	*	16.60	1.39E+00	5.49E-01
TH-230	0.892	48.43	*	16.90	8.42E-01	4.85E-01
		62.85	*	4.60	1.52E+00	1.51E+00
		67.67		0.37		
PA-234	0.420	131.20	*	20.40	2.28E-01	2.63E-01
		733.99		8.80		
		946.00		12.00		
NP-237	0.927	86.50	*	12.60	2.17E+00	6.18E-01
AM-243	0.929	74.67	*	66.00	1.67E+00	2.28E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 5:11:53PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

BP/Castex-Ltd Adm-Apx E-001781

Analysis Report for 2206038-11

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	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	13	462.50	2.37738E-02	32.10	Tol.	SB-125
m	15	486.95	9.10273E-03	48.78	Tol.	LA-140
	16	511.03	3.70320E-02	22.23		
M	20	673.22	8.22001E-03	51.58	Sum	
m	21	680.43	7.79294E-03	50.17		
	22	768.58	2.65094E-02	25.73	Sum	
	23	783.91	1.04754E-02	54.95	Tol.	SB-127
M	24	794.52	1.34965E-02	39.85	Sum	
m	25	805.66	1.14311E-02	39.25		
	26	840.33	1.46576E-02	31.02		
m	28	921.01	7.66358E-03	63.44	Sum	
	29	933.12	2.54727E-02	23.55	Sum	
	32	1159.38	7.38527E-03	47.72		
	34	1236.83	1.77548E-02	22.53	Sum	
	35	1279.00	9.69097E-03	45.21		
	37	1376.90	1.14924E-02	43.71		
	39	1512.30	1.67515E-02	33.60		
	40	1544.71	8.00236E-03	36.47	Sum	
	41	1659.77	4.32870E-03	42.69		
	42	1668.40	3.91493E-03	33.47	Sum	
	43	1694.59	4.17563E-03	60.90	S-Esc	
	44	1728.58	1.02847E-02	18.63	Sum	
	46	1804.81	2.22222E-03	55.90		
	47	1847.06	8.51852E-03	32.25		
	48	2071.67	3.33333E-03	28.87		
	49	2102.79	6.70034E-03	32.11	S-Esc	
	50	2116.00	3.95833E-03	44.80	Sum	
	51	2121.67	1.49306E-03	65.78	Sum	
	52	2179.95	2.66667E-03	54.63		
	53	2187.06	2.77778E-03	31.62		
	55	2323.69	4.26768E-03	44.38		
	56	2446.27	3.78472E-03	34.62		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

BP/Castex-Ltd Adm-Apx E-001782

Analysis Report for 2206038-11

R-3 6-12

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.86	477.59	*	10.42	7.74E-01	9.00E-01
K-40	0.96	1460.81	*	10.67	6.08E+00	1.43E+00
CO-60	0.94	1173.22	*	100.00	1.56E-01	1.01E-01
		1332.49	*	100.00	5.80E-02	4.79E-02
GA-67	0.44	93.31	*	35.70	7.83E+01	4.51E+01
		208.95	*	2.24	8.33E+02	8.42E+02
		300.22		16.00		
CD-109	0.99	88.03	*	3.72	7.63E+00	2.18E+00
SN-126	0.98	87.57	*	37.00	7.38E-01	2.11E-01
CS-137	0.97	661.65	*	85.12	2.57E-01	1.07E-01
EU-155	0.31	86.50	*	30.90	8.93E-01	2.55E-01
		105.30		20.70		
TL-208	0.85	583.14	*	30.22	1.05E+00	3.24E-01
		860.37		4.48		
		2614.66	*	35.85	1.41E+00	3.08E-01
PB-212	0.84	238.63	*	44.60	2.56E+00	3.48E-01
		300.09		3.41		
BI-214	0.98	609.31	*	46.30	3.46E+00	4.45E-01
		1120.29	*	15.10	3.75E+00	8.25E-01
		1764.49	*	15.80	3.37E+00	7.13E-01
		2204.22	*	4.98	4.43E+00	1.82E+00
PB-214	0.99	295.21	*	19.19	4.37E+00	6.92E-01
		351.92	*	37.19	3.88E+00	4.83E-01
RA-224	0.98	240.98	*	3.95	2.89E+01	3.93E+00
RA-226	1.00	186.21	*	3.28	5.55E+00	2.55E+00
AC-228	0.99	338.32	*	11.40	1.56E+00	6.78E-01
		911.07	*	27.70	1.21E+00	3.74E-01
		969.11	*	16.60	1.39E+00	5.49E-01
TH-230	0.89	48.43	*	16.90	8.42E-01	4.85E-01
		62.85	*	4.60	1.52E+00	1.51E+00
		67.67		0.37		
PA-234	0.42	131.20	*	20.40	2.28E-01	2.63E-01
		733.99		8.80		
		946.00		12.00		
NP-237	0.92	86.50	*	12.60	2.17E+00	6.18E-01
AM-243	0.92	74.67	*	66.00	1.67E+00	2.28E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001783

Analysis Report for 2206038-11

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INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	BE-7	0.865	7.74E-01	9.00E-01	
	K-40	0.969	6.08E+00	1.43E+00	
	CO-60	0.943	7.60E-02	4.33E-02	
	GA-67	0.444	8.05E+01	4.50E+01	
?	CD-109	0.999	7.63E+00	2.18E+00	
?	SN-126	0.989	7.38E-01	2.11E-01	
	CS-137	0.970	2.57E-01	1.07E-01	
X	ND-147	0.584			
?	EU-155	0.314	8.93E-01	2.55E-01	
	TL-208	0.856	1.24E+00	2.23E-01	
X	PB-210	1.000			
?	PB-212	0.845	2.56E+00	3.48E-01	
	BI-214	0.986	3.52E+00	3.38E-01	
	PB-214	0.999	4.04E+00	3.96E-01	
?	RA-224	0.980	2.89E+01	3.93E+00	
	RA-226	1.000	5.55E+00	2.55E+00	
	AC-228	0.998	1.32E+00	2.81E-01	
	TH-230	0.892	9.05E-01	4.62E-01	
	PA-234	0.420	2.28E-01	2.63E-01	
X	TH-234	1.000			
?	NP-237	0.927	2.17E+00	6.18E-01	
	AM-243	0.929	1.67E+00	2.28E-01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001784

Analysis Report for 2206038-11
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UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 5:11:53PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	13	462.50	2.37738E-02	32.10	Tol.	SB-125
m	15	486.95	9.10273E-03	48.78	Tol.	LA-140
	16	511.03	3.70320E-02	22.23		
M	20	673.22	8.22001E-03	51.58	Sum	
m	21	680.43	7.79294E-03	50.17		
	22	768.58	2.65094E-02	25.73	Sum	
	23	783.91	1.04754E-02	54.95	Tol.	SB-127
M	24	794.52	1.34965E-02	39.85	Sum	
m	25	805.66	1.14311E-02	39.25		
	26	840.33	1.46576E-02	31.02		
m	28	921.01	7.66358E-03	63.44	Sum	
	29	933.12	2.54727E-02	23.55	Sum	
	32	1159.38	7.38527E-03	47.72		
	34	1236.83	1.77548E-02	22.53	Sum	
	35	1279.00	9.69097E-03	45.21		
	37	1376.90	1.14924E-02	43.71		
	39	1512.30	1.67515E-02	33.60		
	40	1544.71	8.00236E-03	36.47	Sum	
	41	1659.77	4.32870E-03	42.69		
	42	1668.40	3.91493E-03	33.47	Sum	
	43	1694.59	4.17563E-03	60.90	S-Esc	
	44	1728.58	1.02847E-02	18.63	Sum	
	46	1804.81	2.22222E-03	55.90		
	47	1847.06	8.51852E-03	32.25		
	48	2071.67	3.33333E-03	28.87		
	49	2102.79	6.70034E-03	32.11	S-Esc	
	50	2116.00	3.95833E-03	44.80	Sum	
	51	2121.67	1.49306E-03	65.78	Sum	
	52	2179.95	2.66667E-03	54.63		
	53	2187.06	2.77778E-03	31.62		
	55	2323.69	4.26768E-03	44.38		
	56	2446.27	3.78472E-03	34.62		

BP/Castex-Ltd Adm-Apx E-001785

Analysis Report for 2206038-11

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M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	*	10.42	7.74E-01	2.14E+00	2.14E+00
+	NA-22	1274.54		99.94	4.15E-03	1.14E-01	1.14E-01
+	NA-24	1368.53		99.99	-2.16E-03	7.94E-02	1.05E-01
		2754.09		99.86	1.75E-02		7.94E-02
+	AL-26	1808.65		99.76	-3.21E-03	8.55E-02	8.55E-02
+	K-40	1460.81	*	10.67	6.08E+00	2.17E+00	2.17E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-4.13E-01	1.06E-01	1.06E-01
		78.34		96.00	8.53E-01		1.43E-01
+	SC-46	889.25		98.98	-3.30E-02	1.33E-01	1.33E-01
		1120.51		99.90	6.67E-01		2.54E-01
+	V-48	983.52		99.98	-2.30E-02	3.27E-01	3.27E-01
		1312.10		97.50	-1.45E-01		3.46E-01
+	CR-51	320.08		9.83	-2.83E-01	1.64E+00	1.64E+00
+	MN-54	834.83		99.97	-1.71E-02	1.32E-01	1.32E-01
+	CO-56	846.75		99.96	-1.87E-03	1.46E-01	1.46E-01
		1037.75		14.03	-2.70E-01		9.94E-01
		1238.25		67.00	2.18E-02		2.99E-01
		1771.40		15.51	-1.35E-01		7.57E-01
		2587.48		16.90	-1.78E-01		2.76E-01
+	CO-57	122.06		85.51	-3.35E-02	9.35E-02	9.35E-02
		136.48		10.60	-3.84E-03		8.29E-01
+	CO-58	810.76		99.40	-1.08E-02	1.43E-01	1.43E-01
+	FE-59	1099.22		56.50	2.38E-02	3.10E-01	3.10E-01
		1291.56		43.20	-5.35E-02		3.93E-01
+	CO-60	1173.22	*	100.00	1.56E-01	7.30E-02	1.57E-01
		1332.49	*	100.00	5.80E-02		7.30E-02
+	ZN-65	1115.52		50.75	1.41E-03	3.96E-01	3.96E-01
+	GA-67	93.31	*	35.70	7.83E+01	1.07E+02	1.07E+02
		208.95	*	2.24	8.33E+02		1.37E+03
		300.22		16.00	-4.74E+01		1.90E+02
+	SE-75	121.11		16.70	-1.59E-01	1.57E-01	5.21E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00		59.50	-7.43E-04	1.57E-01	1.60E-01
		264.65		59.80	-1.58E-01		1.57E-01
		279.53		25.20	-3.36E-02		3.88E-01
		400.65		11.40	-4.64E-01		9.02E-01
+	RB-82	776.52		13.00	-6.55E-02	1.64E+00	1.64E+00
+	RB-83	520.41		46.00	-3.42E-02	2.34E-01	2.34E-01
		529.64		30.30	1.73E-01		3.95E-01
		552.65		16.40	1.70E-02		7.05E-01
+	KR-85	513.99		0.43	-4.35E+00	2.68E+01	2.68E+01
+	SR-85	513.99		99.27	-2.51E-02	1.54E-01	1.54E-01
+	Y-88	898.02		93.40	-3.38E-02	1.13E-01	1.40E-01
		1836.01		99.38	1.61E-04		1.13E-01
+	MO-93	263.06		56.72	-1.08E-01	1.08E-01	1.41E-01
		684.67		99.68	-8.85E-04		1.08E-01
		1477.11		99.08	3.43E-02		1.20E-01
+	NB-93M	16.57		9.43	0.00E+00	8.90E+00	8.90E+00
+	NB-94	702.63		100.00	7.32E-02	1.13E-01	1.13E-01
		871.10		100.00	-8.68E-03		1.14E-01
+	NB-95	765.79		99.81	2.34E-01	2.24E-01	2.24E-01
+	NB-95M	235.69		25.00	-3.01E+00	7.96E+01	7.96E+01
+	ZR-95	724.18		43.70	3.17E-01	2.48E-01	3.74E-01
		756.72		55.30	4.89E-02		2.48E-01
+	MO-99	181.06		6.20	-3.62E+01	6.34E+02	1.08E+03
		739.58		12.80	2.06E+02		6.34E+02
		778.00		4.50	-6.86E+01		1.77E+03
+	TC-99M	140.51		89.00	3.29E-02	9.41E-02	9.41E-02
+	RU-103	497.08		89.00	6.49E-02	1.68E-01	1.68E-01
+	RU-106	621.84		9.80	-3.44E-01	1.03E+00	1.03E+00
+	AG-108M	433.93		89.90	5.85E-03	9.72E-02	9.72E-02
		614.37		90.40	-9.66E-03		2.31E-01
		722.95		90.50	8.52E-02		1.33E-01
+	CD-109	88.03	*	3.72	7.63E+00	4.15E+00	4.15E+00
+	AG-110M	657.75		93.14	1.14E-02	1.36E-01	1.36E-01
		677.61		10.53	4.76E-01		1.09E+00
		706.67		16.46	6.41E-02		6.87E-01
		763.93		21.98	4.20E-02		6.38E-01
		884.67		21.98	-1.85E-01		5.25E-01
		1384.27		23.94	3.42E-02		5.46E-01
+	CD-113M	263.70		0.02	-2.66E+02	3.49E+02	3.49E+02
+	SN-113	255.12		1.93	1.99E+00	1.63E-01	5.07E+00
		391.69		64.90	4.38E-02		1.63E-01
+	TE-123M	159.00		84.10	-4.55E-02	1.15E-01	1.15E-01
+	SB-124	602.71		97.87	1.31E-02	1.89E-01	1.89E-01
		645.85		7.26	6.05E-01		1.96E+00
		722.78		11.10	9.39E-01		1.46E+00
		1691.02		49.00	2.34E-03		2.73E-01
+	I-125	35.49		6.49	2.45E+01	6.04E+00	6.04E+00
+	SB-125	176.33		6.89	2.59E-01	2.98E-01	1.25E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-125	427.89		29.33	-7.94E-02	2.98E-01	2.98E-01
		463.38		10.35	6.96E-01		9.25E-01
		600.56		17.80	1.23E-01		6.01E-01
		635.90		11.32	-5.10E-02		9.25E-01
+	SB-126	414.70		83.30	2.87E-02	1.08E-01	1.11E-01
		666.33		99.60	4.28E-02		1.20E-01
		695.00		99.60	-4.41E-02		1.08E-01
		720.50		53.80	-9.18E-02		1.99E-01
+	SN-126	87.57	*	37.00	7.38E-01	4.01E-01	4.01E-01
+	SB-127	473.00		25.00	5.07E+00	3.33E+01	3.97E+01
		685.00		35.70	-2.05E+00		3.33E+01
		783.80		14.70	3.30E+01		9.03E+01
+	I-129	29.78		57.00	-7.87E-01	7.03E-02	7.03E-02
		33.60		13.20	-2.44E+00		1.85E+00
		39.58		7.52	1.44E+01		3.28E+00
+	I-131	284.30		6.05	-7.28E+00	1.02E+00	1.27E+01
		364.48		81.20	-6.37E-02		1.02E+00
		636.97		7.26	-1.11E+00		1.38E+01
		722.89		1.80	4.10E+01		6.39E+01
+	TE-132	49.72		13.10	5.07E+01	2.61E+01	2.53E+02
		228.16		88.00	1.22E+01		2.61E+01
+	BA-133	81.00		34.06	-1.10E+00	2.56E-01	3.33E-01
		302.84		18.33	-7.56E-02		4.95E-01
		356.01		62.05	7.02E-01		2.56E-01
+	I-133	529.87		86.30	3.42E+06	1.39E+08	1.39E+08
+	XE-133	81.00		38.00	-3.13E+01	9.50E+00	9.50E+00
+	CS-134	563.23		8.38	-6.74E-01	1.42E-01	1.14E+00
		569.32		15.43	-2.70E-01		6.54E-01
		604.70		97.60	-2.37E-03		2.37E-01
		795.84		85.40	4.43E-02		1.42E-01
		801.93		8.73	-5.22E-01		1.32E+00
+	CS-135	268.24		16.00	1.98E-01	5.34E-01	5.34E-01
+	@ I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41		28.60	1.00E+26		1.00E+26
	@	1678.03		9.54	1.00E+26		1.00E+26
+	CS-136	153.22		7.46	1.46E+00	4.20E-01	4.54E+00
		163.89		4.61	1.97E+00		7.25E+00
		176.55		13.56	5.15E-01		2.48E+00
		273.65		12.66	1.83E+00		2.78E+00
		340.57		48.50	1.01E+00		8.63E-01
		818.50		99.70	-1.95E-02		4.20E-01
		1048.07		79.60	1.58E-01		5.64E-01
		1235.34		19.70	3.35E+00		3.12E+00
+	CS-137	661.65	*	85.12	2.57E-01	1.59E-01	1.59E-01
+	LA-138	788.74		34.00	-7.06E-02	1.73E-01	3.61E-01
		1435.80		66.00	2.08E-02		1.73E-01
+	CE-139	165.85		80.35	4.13E-02	1.20E-01	1.20E-01
+	BA-140	162.64		6.70	2.35E-01	1.53E+00	5.17E+00
		304.84		4.50	-3.29E+00		7.98E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BA-140	423.70		3.20	-1.02E+01	1.53E+00	1.04E+01
		437.55		2.00	1.11E+01		1.81E+01
		537.32		25.00	-5.52E-01		1.53E+00
+	LA-140	328.77		20.50	3.46E-01	4.97E-01	1.80E+00
		487.03		45.50	-2.19E-01		8.07E-01
		815.85		23.50	4.01E-01		1.91E+00
		1596.49		95.49	-1.77E-01		4.97E-01
+	CE-141	145.44		48.40	-2.85E-03	3.04E-01	3.04E-01
+	CE-143	57.36		11.80	-3.61E+05	1.93E+05	4.81E+05
		293.26		42.00	9.48E+05		1.93E+05
		664.55		5.20	1.56E+06		1.30E+06
+	CE-144	133.54		10.80	1.50E-02	8.11E-01	8.11E-01
+	PM-144	476.78		42.00	-2.26E-03	1.07E-01	2.47E-01
		618.01		98.60	4.41E-03		1.07E-01
		696.49		99.49	1.57E-02		1.17E-01
+	PM-145	36.85		21.70	7.58E+00	7.22E-01	1.32E+00
		37.36		39.70	4.26E+00		7.22E-01
		42.30		15.10	3.31E+00		1.37E+00
		72.40		2.31	5.61E+00		5.56E+00
+	PM-146	453.90		39.94	6.76E-02	2.26E-01	2.26E-01
		735.90		14.01	-4.14E-01		7.84E-01
		747.13		13.10	-1.02E-01		7.71E-01
+	ND-147	91.11	*	28.90	1.93E+00	2.63E+00	2.63E+00
		531.02		13.10	5.06E-01		3.78E+00
+	PM-149	285.90		3.10	-2.50E+02	9.90E+03	9.90E+03
+	EU-152	121.78		20.50	-1.12E-01	3.66E-01	3.66E-01
		244.69		5.40	8.20E-01		2.34E+00
		344.27		19.13	-5.84E+00		4.87E-01
		778.89		9.10	-4.63E-02		1.20E+00
		964.01		10.40	-1.59E-01		1.50E+00
		1085.78		7.22	-5.42E-01		1.45E+00
		1112.02		9.60	9.86E-02		1.24E+00
		1407.95		14.94	3.38E-01		9.26E-01
+	GD-153	97.43		31.30	-6.55E-02	2.82E-01	2.82E-01
		103.18		22.20	-2.85E-02		3.61E-01
+	EU-154	123.07		40.50	-2.93E-02	1.88E-01	1.88E-01
		723.30		19.70	3.94E-01		6.13E-01
		873.19		11.50	4.78E-01		1.02E+00
		996.32		10.30	1.98E-01		1.09E+00
		1004.76		17.90	4.45E-01		6.58E-01
		1274.45		35.50	1.15E-02		3.16E-01
+	EU-155	86.50	*	30.90	8.93E-01	3.63E-01	4.85E-01
		105.30		20.70	-1.80E-01		3.63E-01
+	EU-156	811.77		10.40	-4.05E-01	3.36E+00	3.36E+00
		1153.47		7.20	-2.02E+00		5.92E+00
		1230.71		8.90	6.78E-01		4.56E+00
+	HO-166M	184.41		72.60	3.04E-01	1.42E-01	1.42E-01
		280.45		29.60	-1.99E-02		2.82E-01
		410.94		11.10	1.78E-01		8.51E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	HO-166M	711.69		54.10	2.14E-03	1.42E-01	1.78E-01
+	TM-171	66.72		0.14	-5.07E+01	7.57E+01	7.57E+01
+	HF-172	67.35		5.31	-7.57E+00	7.04E-01	1.95E+00
		125.82		11.30	-1.91E-01		7.04E-01
+	LU-172	181.53		20.60	-2.23E-01	2.69E+00	6.65E+00
		900.72		29.81	1.13E+00		5.82E+00
		1093.66		62.50	4.26E-01		2.69E+00
+	LU-173	100.72		5.24	-7.75E-01	4.28E-01	1.48E+00
		272.11		21.20	1.09E-01		4.28E-01
+	HF-175	343.40		84.00	-6.98E-01	1.49E-01	1.49E-01
+	LU-176	88.34		13.30	1.71E+00	8.86E-02	7.89E-01
		201.83		86.00	2.06E-02		1.02E-01
		306.78		94.00	-7.75E-02		8.86E-02
+	HF-181	133.02		41.70	5.59E-03	1.80E-01	3.02E-01
		345.85		17.20	-9.91E+00		1.02E+00
		482.03		82.80	7.19E-02		1.80E-01
+	TA-182	67.75		41.20	-1.11E+00	2.85E-01	2.85E-01
		1121.30		34.90	1.69E+00		6.78E-01
		1189.05		16.23	1.09E-02		7.75E-01
		1221.41		26.98	1.84E-01		5.40E-01
		1231.02		11.44	1.70E-01		1.34E+00
+	IR-192	308.46		29.68	-2.94E-01	2.30E-01	3.56E-01
		468.07		48.10	-2.24E-02		2.30E-01
+	HG-203	279.19		77.30	-1.39E-02	1.60E-01	1.60E-01
+	TL-204	374.74		94.11	-2.85E-02	9.13E-02	9.13E-02
		899.15		99.16	1.92E-02		1.17E-01
		911.74		91.10	3.60E-01		1.90E-01
+	BI-207	569.67		97.72	-4.17E-02	1.01E-01	1.01E-01
		1063.62		74.90	2.44E-02		1.47E-01
+	TL-208	583.14	*	30.22	1.05E+00	3.71E-02	4.58E-01
		860.37		4.48	1.00E+00		2.77E+00
		2614.66	*	35.85	1.41E+00		3.71E-02
+	BI-210M	262.00		45.00	-3.48E-02	1.79E-01	1.79E-01
		300.00		23.00	-1.26E-01		5.05E-01
+	PB-210	46.50	*	4.25	3.35E+00	3.05E+00	3.05E+00
+	PB-211	404.84		2.90	5.57E-01	3.21E+00	3.21E+00
		831.96		2.90	-1.45E-01		4.02E+00
+	BI-212	727.17		11.80	8.01E-01	1.06E+00	1.06E+00
		1620.62		2.75	4.07E-02		3.95E+00
+	PB-212	238.63	*	44.60	2.56E+00	3.95E-01	3.95E-01
		300.09		3.41	-8.48E-01		3.40E+00
+	BI-214	609.31	*	46.30	3.46E+00	3.52E-01	3.52E-01
		1120.29	*	15.10	3.75E+00		9.57E-01
		1764.49	*	15.80	3.37E+00		5.94E-01
		2204.22	*	4.98	4.43E+00		2.31E+00
+	PB-214	295.21	*	19.19	4.37E+00	4.58E-01	8.38E-01
		351.92	*	37.19	3.88E+00		4.58E-01
+	RN-219	401.80		6.50	-9.18E-01	1.37E+00	1.37E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	RA-223	323.87		3.88	-7.93E-01	2.19E+00	2.19E+00
+	RA-224	240.98	*	3.95	2.89E+01	4.46E+00	4.46E+00
+	RA-225	40.00		31.00	8.94E+00	2.63E+00	2.63E+00
+	RA-226	186.21	*	3.28	5.55E+00	4.04E+00	4.04E+00
+	TH-227	50.10		8.40	-1.79E-01	1.21E+00	1.46E+00
		236.00		11.50	2.76E+00		1.21E+00
		256.20		6.30	-1.96E-02		1.30E+00
+	AC-228	338.32	*	11.40	1.56E+00	7.81E-01	1.05E+00
		911.07	*	27.70	1.21E+00		8.38E-01
		969.11	*	16.60	1.39E+00		7.81E-01
+	TH-230	48.43	*	16.90	8.42E-01	7.65E-01	7.65E-01
		62.85	*	4.60	1.52E+00		2.47E+00
		67.67		0.37	-1.05E+02		2.71E+01
+	PA-231	283.67		1.60	-2.37E+00	4.01E+00	5.13E+00
		302.67		2.30	-1.09E+00		4.01E+00
+	TH-231	25.64		14.70	0.00E+00	1.45E-01	1.45E-01
		84.21		6.40	-8.34E+00		1.56E+00
+	PA-233	311.98		38.60	-3.09E-02	4.26E-01	4.26E-01
+	PA-234	131.20	*	20.40	2.28E-01	4.32E-01	4.32E-01
		733.99		8.80	-9.77E-01		1.24E+00
		946.00		12.00	-3.06E-01		8.67E-01
+	PA-234M	1001.03		0.92	-1.08E+01	1.16E+01	1.16E+01
+	TH-234	63.29	*	3.80	1.84E+00	2.99E+00	2.99E+00
+	U-235	143.76		10.50	2.36E-01	8.03E-01	8.03E-01
		163.35		4.70	8.15E-02		1.78E+00
		205.31		4.70	-1.41E-01		1.88E+00
+	NP-237	86.50	*	12.60	2.17E+00	1.18E+00	1.18E+00
+	NP-239	106.10		22.70	-4.26E+02	7.32E+02	7.32E+02
		228.18		10.70	8.53E+02		1.82E+03
		277.60		14.10	-2.37E+02		1.34E+03
+	AM-241	59.54		35.90	-1.45E-01	2.96E-01	2.96E-01
+	AM-243	74.67	*	66.00	1.67E+00	2.82E-01	2.82E-01
+	CM-243	209.75		3.29	1.43E+00	6.05E-01	2.77E+00
		228.14		10.60	3.86E-01		8.24E-01
		277.60		14.00	-1.07E-01		6.05E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

Analysis Report for 2206038-11

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NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BE-7	477.59	*	10.42	2.14E+00	2.14E+00	7.74E-01	1.04E+00
	NA-22	1274.54		99.94	1.14E-01	1.14E-01	4.15E-03	5.27E-02
	NA-24	1368.53		99.99	1.05E-01	7.94E-02	-2.16E-03	4.82E-02
		2754.09		99.86	7.94E-02		1.75E-02	3.29E-02
	AL-26	1808.65		99.76	8.55E-02	8.55E-02	-3.21E-03	3.73E-02
+	K-40	1460.81	*	10.67	2.17E+00	2.17E+00	6.08E+00	1.04E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	1.06E-01	1.06E-01	-4.13E-01	5.23E-02
		78.34		96.00	1.43E-01		8.53E-01	7.08E-02
	SC-46	889.25		98.98	1.33E-01	1.33E-01	-3.30E-02	6.27E-02
		1120.51		99.90	2.54E-01		6.67E-01	1.22E-01
	V-48	983.52		99.98	3.27E-01	3.27E-01	-2.30E-02	1.53E-01
		1312.10		97.50	3.46E-01		-1.45E-01	1.60E-01
	CR-51	320.08		9.83	1.64E+00	1.64E+00	-2.83E-01	7.95E-01
	MN-54	834.83		99.97	1.32E-01	1.32E-01	-1.71E-02	6.30E-02
	CO-56	846.75		99.96	1.46E-01	1.46E-01	-1.87E-03	6.92E-02
		1037.75		14.03	9.94E-01		-2.70E-01	4.65E-01
		1238.25		67.00	2.99E-01		2.18E-02	1.42E-01
		1771.40		15.51	7.57E-01		-1.35E-01	3.34E-01
		2587.48		16.90	2.76E-01		-1.78E-01	8.71E-02
	CO-57	122.06		85.51	9.35E-02	9.35E-02	-3.35E-02	4.59E-02
		136.48		10.60	8.29E-01		-3.84E-03	4.07E-01
	CO-58	810.76		99.40	1.43E-01	1.43E-01	-1.08E-02	6.79E-02
	FE-59	1099.22		56.50	3.10E-01	3.10E-01	2.38E-02	1.46E-01
		1291.56		43.20	3.93E-01		-5.35E-02	1.82E-01
+	CO-60	1173.22	*	100.00	1.57E-01	7.30E-02	1.56E-01	7.46E-02
		1332.49	*	100.00	7.30E-02		5.80E-02	3.22E-02
	ZN-65	1115.52		50.75	3.96E-01	3.96E-01	1.41E-03	1.90E-01
+	GA-67	93.31	*	35.70	1.07E+02	1.07E+02	7.83E+01	5.29E+01
		208.95	*	2.24	1.37E+03		8.33E+02	6.76E+02
		300.22		16.00	1.90E+02		-4.74E+01	9.31E+01
	SE-75	121.11		16.70	5.21E-01	1.57E-01	-1.59E-01	2.55E-01
		136.00		59.50	1.60E-01		-7.43E-04	7.87E-02
		264.65		59.80	1.57E-01		-1.58E-01	7.61E-02
		279.53		25.20	3.88E-01		-3.36E-02	1.89E-01
		400.65		11.40	9.02E-01		-4.64E-01	4.35E-01
	RB-82	776.52		13.00	1.64E+00	1.64E+00	-6.55E-02	7.77E-01
	RB-83	520.41		46.00	2.34E-01	2.34E-01	-3.42E-02	1.12E-01
		529.64		30.30	3.95E-01		1.73E-01	1.89E-01
		552.65		16.40	7.05E-01		1.70E-02	3.37E-01
	KR-85	513.99		0.43	2.68E+01	2.68E+01	-4.35E+00	1.30E+01
	SR-85	513.99		99.27	1.54E-01	1.54E-01	-2.51E-02	7.46E-02

BP/Castex-Ltd Adm-Apx E-001792

Analysis Report for 2206038-11

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	Y-88	898.02		93.40	1.40E-01	1.13E-01	-3.38E-02	6.61E-02
		1836.01		99.38	1.13E-01		1.61E-04	5.02E-02
	MO-93	263.06		56.72	1.41E-01	1.08E-01	-1.08E-01	6.87E-02
		684.67		99.68	1.08E-01		-8.85E-04	5.16E-02
		1477.11		99.08	1.20E-01		3.43E-02	5.50E-02
	NB-93M	16.57		9.43	8.90E+00	8.90E+00	0.00E+00	0.00E+00
	NB-94	702.63		100.00	1.13E-01	1.13E-01	7.32E-02	5.38E-02
		871.10		100.00	1.14E-01		-8.68E-03	5.40E-02
	NB-95	765.79		99.81	2.24E-01	2.24E-01	2.34E-01	1.07E-01
	NB-95M	235.69		25.00	7.96E+01	7.96E+01	-3.01E+00	3.92E+01
	ZR-95	724.18		43.70	3.74E-01	2.48E-01	3.17E-01	1.79E-01
		756.72		55.30	2.48E-01		4.89E-02	1.18E-01
	MO-99	181.06		6.20	1.08E+03	6.34E+02	-3.62E+01	5.30E+02
		739.58		12.80	6.34E+02		2.06E+02	3.02E+02
		778.00		4.50	1.77E+03		-6.86E+01	8.39E+02
	TC-99M	140.51		89.00	9.41E-02	9.41E-02	3.29E-02	4.62E-02
	RU-103	497.08		89.00	1.68E-01	1.68E-01	6.49E-02	8.07E-02
	RU-106	621.84		9.80	1.03E+00	1.03E+00	-3.44E-01	4.91E-01
	AG-108M	433.93		89.90	9.72E-02	9.72E-02	5.85E-03	4.68E-02
		614.37		90.40	2.31E-01		-9.66E-03	1.13E-01
		722.95		90.50	1.33E-01		8.52E-02	6.35E-02
+	CD-109	88.03	*	3.72	4.15E+00	4.15E+00	7.63E+00	2.06E+00
	AG-110M	657.75		93.14	1.36E-01	1.36E-01	1.14E-02	6.54E-02
		677.61		10.53	1.09E+00		4.76E-01	5.19E-01
		706.67		16.46	6.87E-01		6.41E-02	3.27E-01
		763.93		21.98	6.38E-01		4.20E-02	3.06E-01
		884.67		21.98	5.25E-01		-1.85E-01	2.48E-01
		1384.27		23.94	5.46E-01		3.42E-02	2.53E-01
	CD-113M	263.70		0.02	3.49E+02	3.49E+02	-2.66E+02	1.69E+02
	SN-113	255.12		1.93	5.07E+00	1.63E-01	1.99E+00	2.47E+00
		391.69		64.90	1.63E-01		4.38E-02	7.85E-02
	TE-123M	159.00		84.10	1.15E-01	1.15E-01	-4.55E-02	5.65E-02
	SB-124	602.71		97.87	1.89E-01	1.89E-01	1.31E-02	9.13E-02
		645.85		7.26	1.96E+00		6.05E-01	9.36E-01
		722.78		11.10	1.46E+00		9.39E-01	7.00E-01
		1691.02		49.00	2.73E-01		2.34E-03	1.22E-01
	I-125	35.49		6.49	6.04E+00	6.04E+00	2.45E+01	2.97E+00
	SB-125	176.33		6.89	1.25E+00	2.98E-01	2.59E-01	6.12E-01
		427.89		29.33	2.98E-01		-7.94E-02	1.43E-01
		463.38		10.35	9.25E-01		6.96E-01	4.45E-01
		600.56		17.80	6.01E-01		1.23E-01	2.88E-01
		635.90		11.32	9.25E-01		-5.10E-02	4.42E-01
	SB-126	414.70		83.30	1.11E-01	1.08E-01	2.87E-02	5.36E-02
		666.33		99.60	1.20E-01		4.28E-02	5.74E-02
		695.00		99.60	1.08E-01		-4.41E-02	5.14E-02
		720.50		53.80	1.99E-01		-9.18E-02	9.50E-02
+	SN-126	87.57	*	37.00	4.01E-01	4.01E-01	7.38E-01	1.99E-01
	SB-127	473.00		25.00	3.97E+01	3.33E+01	5.07E+00	1.90E+01
		685.00		35.70	3.33E+01		-2.05E+00	1.59E+01
		783.80		14.70	9.03E+01		3.30E+01	4.30E+01
	I-129	29.78		57.00	7.03E-02	7.03E-02	-7.87E-01	2.63E-02
		33.60		13.20	1.85E+00		-2.44E+00	9.04E-01
		39.58		7.52	3.28E+00		1.44E+01	1.62E+00

BP/Castex-Ltd Adm-Apx E-001793

Analysis Report for 2206038-11

R-3 6-12

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	I-131	284.30		6.05	1.27E+01	1.02E+00	-7.28E+00	6.18E+00
		364.48		81.20	1.02E+00		-6.37E-02	4.91E-01
		636.97		7.26	1.38E+01		-1.11E+00	6.61E+00
		722.89		1.80	6.39E+01		4.10E+01	3.06E+01
	TE-132	49.72		13.10	2.53E+02	2.61E+01	5.07E+01	1.24E+02
		228.16		88.00	2.61E+01		1.22E+01	1.28E+01
	BA-133	81.00		34.06	3.33E-01	2.56E-01	-1.10E+00	1.65E-01
		302.84		18.33	4.95E-01		-7.56E-02	2.40E-01
		356.01		62.05	2.56E-01		7.02E-01	1.26E-01
	I-133	529.87		86.30	1.39E+08	1.39E+08	3.42E+06	6.67E+07
	XE-133	81.00		38.00	9.50E+00	9.50E+00	-3.13E+01	4.69E+00
	CS-134	563.23		8.38	1.14E+00	1.42E-01	-6.74E-01	5.43E-01
		569.32		15.43	6.54E-01		-2.70E-01	3.13E-01
		604.70		97.60	2.37E-01		-2.37E-03	1.16E-01
		795.84		85.40	1.42E-01		4.43E-02	6.74E-02
		801.93		8.73	1.32E+00		-5.22E-01	6.30E-01
	CS-135	268.24		16.00	5.34E-01	5.34E-01	1.98E-01	2.60E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	4.54E+00	4.20E-01	1.46E+00	2.23E+00
		163.89		4.61	7.25E+00		1.97E+00	3.56E+00
		176.55		13.56	2.48E+00		5.15E-01	1.21E+00
		273.65		12.66	2.78E+00		1.83E+00	1.35E+00
		340.57		48.50	8.63E-01		1.01E+00	4.20E-01
		818.50		99.70	4.20E-01		-1.95E-02	1.99E-01
		1048.07		79.60	5.64E-01		1.58E-01	2.64E-01
		1235.34		19.70	3.12E+00		3.35E+00	1.48E+00
+	CS-137	661.65	*	85.12	1.59E-01	1.59E-01	2.57E-01	7.66E-02
	LA-138	788.74		34.00	3.61E-01	1.73E-01	-7.06E-02	1.72E-01
		1435.80		66.00	1.73E-01		2.08E-02	7.95E-02
	CE-139	165.85		80.35	1.20E-01	1.20E-01	4.13E-02	5.86E-02
	BA-140	162.64		6.70	5.17E+00	1.53E+00	2.35E-01	2.53E+00
		304.84		4.50	7.98E+00		-3.29E+00	3.87E+00
		423.70		3.20	1.04E+01		-1.02E+01	4.97E+00
		437.55		2.00	1.81E+01		1.11E+01	8.69E+00
		537.32		25.00	1.53E+00		-5.52E-01	7.33E-01
	LA-140	328.77		20.50	1.80E+00	4.97E-01	3.46E-01	8.74E-01
		487.03		45.50	8.07E-01		-2.19E-01	3.87E-01
		815.85		23.50	1.91E+00		4.01E-01	9.04E-01
		1596.49		95.49	4.97E-01		-1.77E-01	2.27E-01
	CE-141	145.44		48.40	3.04E-01	3.04E-01	-2.85E-03	1.49E-01
	CE-143	57.36		11.80	4.81E+05	1.93E+05	-3.61E+05	2.36E+05
		293.26		42.00	1.93E+05		9.48E+05	9.49E+04
		664.55		5.20	1.30E+06		1.56E+06	6.27E+05
	CE-144	133.54		10.80	8.11E-01	8.11E-01	1.50E-02	3.98E-01
	PM-144	476.78		42.00	2.47E-01	1.07E-01	-2.26E-03	1.19E-01
		618.01		98.60	1.07E-01		4.41E-03	5.11E-02
		696.49		99.49	1.17E-01		1.57E-02	5.57E-02
	PM-145	36.85		21.70	1.32E+00	7.22E-01	7.58E+00	6.48E-01
		37.36		39.70	7.22E-01		4.26E+00	3.56E-01
		42.30		15.10	1.37E+00		3.31E+00	6.77E-01
		72.40		2.31	5.56E+00		5.61E+00	2.75E+00

BP/Castex-Ltd Adm-Apx E-001794

Analysis Report for 2206038-11

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PM-146	453.90		39.94	2.26E-01	2.26E-01	6.76E-02	1.09E-01
		735.90		14.01	7.84E-01		-4.14E-01	3.73E-01
		747.13		13.10	7.71E-01		-1.02E-01	3.65E-01
	ND-147	91.11	*	28.90	2.63E+00	2.63E+00	1.93E+00	1.30E+00
		531.02		13.10	3.78E+00		5.06E-01	1.81E+00
	PM-149	285.90		3.10	9.90E+03	9.90E+03	-2.50E+02	4.81E+03
	EU-152	121.78		20.50	3.66E-01	3.66E-01	-1.12E-01	1.80E-01
		244.69		5.40	2.34E+00		8.20E-01	1.15E+00
		344.27		19.13	4.87E-01		-5.84E+00	2.36E-01
		778.89		9.10	1.20E+00		-4.63E-02	5.68E-01
		964.01		10.40	1.50E+00		-1.59E-01	7.17E-01
		1085.78		7.22	1.45E+00		-5.42E-01	6.75E-01
		1112.02		9.60	1.24E+00		9.86E-02	5.82E-01
		1407.95		14.94	9.26E-01		3.38E-01	4.33E-01
	GD-153	97.43		31.30	2.82E-01	2.82E-01	-6.55E-02	1.39E-01
		103.18		22.20	3.61E-01		-2.85E-02	1.77E-01
	EU-154	123.07		40.50	1.88E-01	1.88E-01	-2.93E-02	9.22E-02
		723.30		19.70	6.13E-01		3.94E-01	2.94E-01
		873.19		11.50	1.02E+00		4.78E-01	4.86E-01
		996.32		10.30	1.09E+00		1.98E-01	5.14E-01
		1004.76		17.90	6.58E-01		4.45E-01	3.10E-01
		1274.45		35.50	3.16E-01		1.15E-02	1.47E-01
+	EU-155	86.50	*	30.90	4.85E-01	3.63E-01	8.93E-01	2.40E-01
		105.30		20.70	3.63E-01		-1.80E-01	1.78E-01
	EU-156	811.77		10.40	3.36E+00	3.36E+00	-4.05E-01	1.59E+00
		1153.47		7.20	5.92E+00		-2.02E+00	2.79E+00
		1230.71		8.90	4.56E+00		6.78E-01	2.13E+00
	HO-166M	184.41		72.60	1.42E-01	1.42E-01	3.04E-01	6.95E-02
		280.45		29.60	2.82E-01		-1.99E-02	1.37E-01
		410.94		11.10	8.51E-01		1.78E-01	4.11E-01
		711.69		54.10	1.78E-01		2.14E-03	8.41E-02
	TM-171	66.72		0.14	7.57E+01	7.57E+01	-5.07E+01	3.73E+01
	HF-172	67.35		5.31	1.95E+00	7.04E-01	-7.57E+00	9.59E-01
		125.82		11.30	7.04E-01		-1.91E-01	3.46E-01
	LU-172	181.53		20.60	6.65E+00	2.69E+00	-2.23E-01	3.26E+00
		900.72		29.81	5.82E+00		1.13E+00	2.75E+00
		1093.66		62.50	2.69E+00		4.26E-01	1.26E+00
	LU-173	100.72		5.24	1.48E+00	4.28E-01	-7.75E-01	7.29E-01
		272.11		21.20	4.28E-01		1.09E-01	2.09E-01
	HF-175	343.40		84.00	1.49E-01	1.49E-01	-6.98E-01	7.24E-02
	LU-176	88.34		13.30	7.89E-01	8.86E-02	1.71E+00	3.89E-01
		201.83		86.00	1.02E-01		2.06E-02	4.97E-02
		306.78		94.00	8.86E-02		-7.75E-02	4.30E-02
	HF-181	133.02		41.70	3.02E-01	1.80E-01	5.59E-03	1.48E-01
		345.85		17.20	1.02E+00		-9.91E+00	4.97E-01
		482.03		82.80	1.80E-01		7.19E-02	8.68E-02
	TA-182	67.75		41.20	2.85E-01	2.85E-01	-1.11E+00	1.40E-01
		1121.30		34.90	6.78E-01		1.69E+00	3.27E-01
		1189.05		16.23	7.75E-01		1.09E-02	3.59E-01
		1221.41		26.98	5.40E-01		1.84E-01	2.53E-01
		1231.02		11.44	1.34E+00		1.70E-01	6.29E-01
	IR-192	308.46		29.68	3.56E-01	2.30E-01	-2.94E-01	1.72E-01
		468.07		48.10	2.30E-01		-2.24E-02	1.10E-01

BP/Castex-Ltd Adm-Apx E-001795

Analysis Report for 2206038-11

R-3 6-12

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	HG-203	279.19		77.30	1.60E-01	1.60E-01	-1.39E-02	7.79E-02
	TL-204	374.74		94.11	9.13E-02	9.13E-02	-2.85E-02	4.40E-02
		899.15		99.16	1.17E-01		1.92E-02	5.51E-02
		911.74		91.10	1.90E-01		3.60E-01	9.13E-02
	BI-207	569.67		97.72	1.01E-01	1.01E-01	-4.17E-02	4.84E-02
		1063.62		74.90	1.47E-01		2.44E-02	6.88E-02
+	TL-208	583.14	*	30.22	4.58E-01	3.71E-02	1.05E+00	2.22E-01
		860.37		4.48	2.77E+00		1.00E+00	1.32E+00
		2614.66	*	35.85	3.71E-02		1.41E+00	0.00E+00
	BI-210M	262.00		45.00	1.79E-01	1.79E-01	-3.48E-02	8.71E-02
		300.00		23.00	5.05E-01		-1.26E-01	2.47E-01
	PB-210	46.50	*	4.25	3.05E+00	3.05E+00	3.35E+00	1.50E+00
	PB-211	404.84		2.90	3.21E+00	3.21E+00	5.57E-01	1.55E+00
		831.96		2.90	4.02E+00		-1.45E-01	1.91E+00
	BI-212	727.17		11.80	1.06E+00	1.06E+00	8.01E-01	5.09E-01
		1620.62		2.75	3.95E+00		4.07E-02	1.80E+00
+	PB-212	238.63	*	44.60	3.95E-01	3.95E-01	2.56E+00	1.95E-01
		300.09		3.41	3.40E+00		-8.48E-01	1.67E+00
+	BI-214	609.31	*	46.30	3.52E-01	3.52E-01	3.46E+00	1.71E-01
		1120.29	*	15.10	9.57E-01		3.75E+00	4.54E-01
		1764.49	*	15.80	5.94E-01		3.37E+00	2.63E-01
		2204.22	*	4.98	2.31E+00		4.43E+00	1.03E+00
+	PB-214	295.21	*	19.19	8.38E-01	4.58E-01	4.37E+00	4.12E-01
		351.92	*	37.19	4.58E-01		3.88E+00	2.25E-01
	RN-219	401.80		6.50	1.37E+00	1.37E+00	-9.18E-01	6.61E-01
	RA-223	323.87		3.88	2.19E+00	2.19E+00	-7.93E-01	1.06E+00
+	RA-224	240.98	*	3.95	4.46E+00	4.46E+00	2.89E+01	2.20E+00
	RA-225	40.00		31.00	2.63E+00	2.63E+00	8.94E+00	1.30E+00
+	RA-226	186.21	*	3.28	4.04E+00	4.04E+00	5.55E+00	1.99E+00
	TH-227	50.10		8.40	1.46E+00	1.21E+00	-1.79E-01	7.16E-01
		236.00		11.50	1.21E+00		2.76E+00	5.95E-01
		256.20		6.30	1.30E+00		-1.96E-02	6.31E-01
+	AC-228	338.32	*	11.40	1.05E+00	7.81E-01	1.56E+00	5.11E-01
		911.07	*	27.70	8.38E-01		1.21E+00	4.08E-01
		969.11	*	16.60	7.81E-01		1.39E+00	3.71E-01
+	TH-230	48.43	*	16.90	7.65E-01	7.65E-01	8.42E-01	3.75E-01
		62.85	*	4.60	2.47E+00		1.52E+00	1.22E+00
		67.67		0.37	2.71E+01		-1.05E+02	1.34E+01
	PA-231	283.67		1.60	5.13E+00	4.01E+00	-2.37E+00	2.49E+00
		302.67		2.30	4.01E+00		-1.09E+00	1.95E+00
	TH-231	25.64		14.70	1.45E-01	1.45E-01	0.00E+00	0.00E+00
		84.21		6.40	1.56E+00		-8.34E+00	7.67E-01
	PA-233	311.98		38.60	4.26E-01	4.26E-01	-3.09E-02	2.06E-01
+	PA-234	131.20	*	20.40	4.32E-01	4.32E-01	2.28E-01	2.12E-01
		733.99		8.80	1.24E+00		-9.77E-01	5.92E-01
		946.00		12.00	8.67E-01		-3.06E-01	4.07E-01
	PA-234M	1001.03		0.92	1.16E+01	1.16E+01	-1.08E+01	5.42E+00
	TH-234	63.29	*	3.80	2.99E+00	2.99E+00	1.84E+00	1.48E+00
	U-235	143.76		10.50	8.03E-01	8.03E-01	2.36E-01	3.94E-01
		163.35		4.70	1.78E+00		8.15E-02	8.70E-01
		205.31		4.70	1.88E+00		-1.41E-01	9.21E-01
+	NP-237	86.50	*	12.60	1.18E+00	1.18E+00	2.17E+00	5.84E-01
	NP-239	106.10		22.70	7.32E+02	7.32E+02	-4.26E+02	3.59E+02

BP/Castex-Ltd Adm-Apx E-001796

Analysis Report for 2206038-11

R-3 6-12

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	NP-239	228.18		10.70	1.82E+03	7.32E+02	8.53E+02	8.90E+02
		277.60		14.10	1.34E+03		-2.37E+02	6.51E+02
	AM-241	59.54		35.90	2.96E-01	2.96E-01	-1.45E-01	1.46E-01
+	AM-243	74.67	*	66.00	2.82E-01	2.82E-01	1.67E+00	1.40E-01
	CM-243	209.75		3.29	2.77E+00	6.05E-01	1.43E+00	1.36E+00
		228.14		10.60	8.24E-01		3.86E-01	4.02E-01
		277.60		14.00	6.05E-01		-1.07E-01	2.94E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-3 6-12

Elapsed Live time: 3600
Elapsed Real Time: 3602

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	3
33:	107	124	140	132	206	346	249	128
41:	81	86	117	117	149	134	117	83
49:	100	96	132	121	92	93	115	129
57:	140	123	112	160	185	183	161	148
65:	155	138	142	159	167	133	189	291
73:	386	471	534	517	425	230	178	159
81:	151	144	128	171	216	263	252	239
89:	198	191	218	213	164	122	107	108
97:	115	94	120	97	105	107	98	112
105:	102	95	99	107	95	125	113	115
113:	98	108	105	104	90	109	106	82
121:	96	100	89	95	101	108	103	140
129:	113	82	119	83	107	115	106	117
137:	95	114	107	113	105	101	117	100
145:	100	110	103	101	96	107	115	102
153:	117	90	89	108	96	80	101	102
161:	101	82	96	97	82	87	90	92
169:	77	85	86	88	81	91	96	92
177:	80	79	83	87	64	95	123	169
185:	211	156	104	93	79	81	91	77
193:	70	62	89	84	82	77	82	74
201:	74	78	76	70	75	84	84	84
209:	97	84	58	84	65	65	80	77
217:	64	63	83	70	52	60	58	59
225:	73	64	65	83	67	58	58	54
233:	46	73	114	205	322	329	238	222
241:	195	144	99	80	50	45	49	51
249:	40	68	40	51	53	43	43	55
257:	51	51	44	47	46	39	42	41
265:	45	40	54	48	59	64	48	40
273:	51	46	44	61	45	49	31	42
281:	47	35	38	60	36	34	34	41
289:	54	35	62	94	220	327	230	126
297:	60	54	52	56	56	31	30	51
305:	38	41	40	30	23	43	35	37
313:	39	52	37	32	35	33	44	35
321:	38	26	41	23	42	34	41	40
329:	44	49	37	40	49	33	49	65
337:	78	82	51	42	32	29	38	38
345:	34	39	50	66	210	404	459	265
353:	98	38	27	33	29	23	28	31
361:	35	41	29	33	32	25	22	36

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369:	25	39	28	20	26	33	28	21

Sample Title: R-3 6-12

Channel								
377:	35	30	33	38	26	36	23	34
385:	24	28	26	28	25	28	34	23
393:	35	42	29	25	30	29	26	34
401:	27	26	23	29	28	36	34	35
409:	23	21	43	28	30	24	36	32
417:	22	17	20	22	21	23	26	24
425:	18	14	22	33	23	21	29	32
433:	27	26	17	21	17	23	20	27
441:	16	13	14	22	18	27	19	19
449:	23	16	28	23	27	30	19	16
457:	25	19	29	25	26	40	26	22
465:	22	13	17	20	16	28	20	21
473:	20	29	13	22	19	28	30	20
481:	12	17	11	17	21	26	21	11
489:	14	18	13	16	23	26	15	15
497:	18	20	20	14	18	19	15	16
505:	12	20	26	42	54	59	35	26
513:	15	22	8	8	11	7	18	11
521:	20	14	17	20	17	24	16	13
529:	17	18	13	17	16	9	19	14
537:	14	15	14	22	14	16	19	20
545:	22	11	17	18	10	16	14	16
553:	11	16	15	19	10	13	6	20
561:	19	14	18	11	13	16	15	17
569:	18	19	14	18	13	23	16	16
577:	17	11	25	54	62	90	57	17
585:	12	21	14	18	16	9	20	10
593:	13	13	21	20	15	18	17	11
601:	9	15	20	20	48	114	272	313
609:	190	72	34	11	17	14	18	10
617:	14	16	10	14	19	12	9	15
625:	8	13	12	15	12	6	13	17
633:	17	13	15	15	17	15	11	16
641:	12	21	14	20	13	10	7	15
649:	10	20	8	16	10	17	7	16
657:	14	20	24	30	21	20	28	29
665:	17	11	5	8	12	13	9	15
673:	16	18	6	11	10	15	18	17
681:	14	9	12	13	11	17	12	11
689:	11	8	18	12	14	10	8	14
697:	15	18	17	19	17	16	12	7
705:	11	11	17	8	7	10	10	10
713:	6	10	10	9	4	13	11	14
721:	19	14	18	14	20	23	21	12
729:	12	19	13	11	15	10	12	17
737:	8	8	10	12	17	16	12	7
745:	9	7	9	9	11	4	9	11
753:	13	9	10	6	11	12	10	12
761:	12	11	8	16	22	31	32	18
769:	16	13	15	11	7	6	9	13
777:	7	8	13	11	16	19	12	22
785:	16	9	9	9	15	7	15	16
793:	23	15	17	12	10	9	6	9

BP/Castex-Ltd Adm-Apx E-001799

801:	9	15	9	18	18	10	13	8

Sample Title: R-3 6-12

Channel								
809:	4	12	13	10	18	5	5	8
817:	11	11	8	10	12	6	11	4
825:	14	9	16	10	8	11	9	16
833:	15	9	11	11	18	20	15	10
841:	13	16	2	8	10	10	7	17
849:	9	7	14	10	12	9	15	14
857:	10	16	19	9	12	9	5	16
865:	10	8	9	13	6	8	13	15
873:	11	7	10	17	7	8	6	3
881:	13	12	10	11	8	9	4	10
889:	9	12	6	6	6	11	8	9
897:	12	13	8	5	11	8	13	8
905:	11	9	16	32	56	36	32	18
913:	13	6	6	11	7	9	6	8
921:	13	11	6	4	4	6	8	8
929:	14	11	16	26	20	15	8	9
937:	9	10	7	6	7	4	7	7
945:	5	8	11	4	11	8	9	6
953:	10	6	8	6	11	6	5	7
961:	9	16	7	14	14	27	37	33
969:	16	14	4	6	5	8	7	6
977:	12	6	8	10	8	3	8	4
985:	6	5	4	11	7	3	6	17
993:	8	5	6	6	5	6	13	8
1001:	4	7	8	6	5	14	10	8
1009:	7	3	5	7	3	4	3	6
1017:	8	9	4	5	5	9	8	9
1025:	8	4	6	6	6	5	11	4
1033:	4	4	5	3	11	9	9	6
1041:	5	11	9	7	7	5	6	2
1049:	10	11	2	7	3	6	7	5
1057:	4	4	8	6	9	7	10	7
1065:	3	6	7	10	2	5	6	8
1073:	2	6	7	8	6	6	7	5
1081:	9	2	7	4	4	6	5	8
1089:	6	5	7	5	10	9	7	0
1097:	8	9	7	4	9	8	5	6
1105:	8	8	3	9	6	5	4	6
1113:	5	8	10	13	33	58	51	28
1121:	11	9	10	7	2	2	5	3
1129:	9	6	5	4	9	6	7	6
1137:	8	2	3	10	4	4	9	8
1145:	8	11	5	10	4	4	8	11
1153:	9	8	13	9	5	7	8	16
1161:	3	3	5	6	9	8	11	4
1169:	8	6	9	8	8	4	7	9
1177:	4	2	7	8	4	5	6	7
1185:	8	2	2	3	2	1	11	8
1193:	5	5	3	5	5	6	6	5
1201:	8	6	3	1	9	7	7	9
1209:	4	7	5	4	8	1	8	5
1217:	5	9	5	7	9	4	5	7
1225:	8	7	7	4	4	3	5	6

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1233:	3	15	17	30	17	4	8	1

Sample Title: R-3 6-12

Channel								
1241:	5	6	3	3	4	3	4	7
1249:	4	2	6	5	7	8	6	2
1257:	4	2	8	3	6	2	5	5
1265:	2	5	2	10	0	5	3	5
1273:	3	3	6	3	7	8	12	6
1281:	6	8	4	1	6	7	4	4
1289:	7	2	5	0	6	8	4	6
1297:	7	5	2	9	6	6	5	8
1305:	5	8	5	4	5	2	3	5
1313:	5	5	3	2	3	9	4	2
1321:	5	6	5	5	5	1	7	2
1329:	4	1	6	8	7	4	1	1
1337:	7	2	4	3	4	2	6	3
1345:	2	7	3	3	5	5	5	3
1353:	4	6	2	3	3	6	4	5
1361:	8	2	4	4	8	3	3	3
1369:	4	1	3	6	6	13	17	16
1377:	10	3	5	5	8	5	0	9
1385:	4	3	4	9	9	2	7	3
1393:	2	2	2	6	6	6	9	6
1401:	9	8	9	9	9	8	7	6
1409:	4	4	5	1	3	2	5	4
1417:	4	4	4	4	2	5	9	0
1425:	6	3	5	2	3	5	7	4
1433:	4	4	3	6	2	5	2	5
1441:	2	5	2	2	6	1	8	1
1449:	3	3	3	3	6	5	11	13
1457:	35	47	48	30	16	6	5	3
1465:	3	3	1	4	7	4	2	6
1473:	3	7	6	5	2	4	5	5
1481:	1	4	1	1	2	4	7	5
1489:	0	6	3	3	2	2	4	2
1497:	2	5	4	2	5	3	8	1
1505:	3	10	16	11	6	7	2	3
1513:	4	4	1	10	4	4	1	3
1521:	6	1	0	2	3	4	5	6
1529:	2	5	3	3	4	6	5	1
1537:	2	2	1	6	7	6	5	5
1545:	2	6	2	4	1	0	2	4
1553:	6	2	2	3	3	1	1	1
1561:	4	2	2	0	2	7	3	1
1569:	3	1	2	6	2	4	4	2
1577:	4	2	3	2	2	4	3	6
1585:	6	2	6	6	9	4	6	6
1593:	1	3	1	4	1	7	1	4
1601:	3	3	2	5	1	6	0	1
1609:	1	3	2	2	7	4	1	4
1617:	1	1	7	3	4	0	3	5
1625:	4	3	0	3	4	5	1	3
1633:	1	1	2	1	0	2	1	6
1641:	0	1	1	2	1	3	1	0
1649:	2	2	3	2	2	1	5	2
1657:	2	1	7	2	4	0	1	0

BP/Castex-Ltd Adm-Apx E-001801

1665:	5	3	1	2	1	2	1	0

Sample Title: R-3 6-12

Channel								
1673:	0	2	0	0	1	1	2	4
1681:	1	2	1	2	2	1	2	1
1689:	1	3	4	5	3	1	2	4
1697:	2	2	1	1	0	3	1	4
1705:	3	2	0	2	2	3	1	2
1713:	4	3	1	4	2	0	2	0
1721:	1	0	2	0	3	8	12	5
1729:	6	3	0	0	1	1	0	2
1737:	4	1	2	0	1	0	3	3
1745:	1	3	3	1	1	0	1	3
1753:	1	1	1	2	1	5	9	22
1761:	34	33	19	12	4	3	0	1
1769:	1	0	3	0	3	3	1	4
1777:	0	1	0	1	4	2	3	3
1785:	0	6	1	2	1	2	1	2
1793:	1	1	1	4	1	0	1	0
1801:	1	3	3	2	2	1	0	1
1809:	0	1	1	2	2	2	0	0
1817:	2	2	2	2	0	4	2	3
1825:	4	1	0	3	3	0	1	1
1833:	2	2	0	4	3	1	3	1
1841:	1	5	6	4	8	7	5	3
1849:	2	2	1	0	1	1	0	3
1857:	0	1	3	3	0	1	1	0
1865:	3	1	1	0	1	3	0	0
1873:	5	1	1	2	2	0	2	0
1881:	0	0	2	2	0	1	3	1
1889:	2	1	0	3	1	4	2	1
1897:	2	0	1	2	2	1	0	2
1905:	0	2	2	1	2	1	1	0
1913:	0	0	2	1	0	2	2	1
1921:	1	0	4	1	0	1	2	2
1929:	1	2	2	3	2	2	3	2
1937:	2	2	0	1	2	1	0	2
1945:	0	0	1	3	1	3	1	3
1953:	4	1	1	0	0	3	3	2
1961:	2	2	0	1	1	3	1	1
1969:	1	1	0	1	1	2	2	1
1977:	1	0	2	2	1	1	0	0
1985:	2	1	1	2	2	0	0	3
1993:	1	2	0	0	2	2	0	1
2001:	0	0	1	2	0	1	1	1
2009:	0	3	1	1	2	1	2	1
2017:	0	2	3	2	0	1	1	1
2025:	0	1	3	0	0	0	0	0
2033:	0	1	0	2	2	1	0	0
2041:	0	0	1	1	0	1	2	0
2049:	0	2	1	2	0	0	1	0
2057:	0	2	1	2	0	0	0	0
2065:	0	1	3	1	1	0	1	1
2073:	4	0	0	0	1	0	1	0
2081:	3	2	1	3	3	1	1	0
2089:	3	2	1	1	0	2	0	3

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2097:	2	2	3	4	3	8	3	3

Sample Title: R-3 6-12

Channel								
2105:	2	0	1	1	1	0	2	3
2113:	1	3	9	2	0	1	4	0
2121:	3	0	0	0	2	0	1	3
2129:	2	1	0	1	3	3	1	1
2137:	1	0	1	1	2	2	1	1
2145:	2	2	1	2	3	0	0	1
2153:	1	0	0	0	1	0	2	0
2161:	1	1	0	2	0	1	0	0
2169:	0	0	2	0	2	1	1	0
2177:	2	3	2	4	0	0	0	5
2185:	1	2	1	1	0	0	1	1
2193:	1	1	3	0	3	3	6	11
2201:	12	8	5	6	4	2	0	1
2209:	2	1	2	1	1	3	0	1
2217:	0	0	1	1	1	1	2	0
2225:	0	0	2	2	3	0	1	0
2233:	1	0	1	0	2	1	0	1
2241:	1	3	2	1	1	0	4	2
2249:	0	1	1	2	0	1	0	1
2257:	3	1	3	0	1	2	1	1
2265:	1	1	2	2	0	0	2	0
2273:	2	0	4	0	0	1	0	2
2281:	3	1	1	1	1	1	2	2
2289:	0	3	0	1	2	1	0	2
2297:	1	3	0	0	1	1	0	1
2305:	0	1	0	4	3	0	3	0
2313:	1	1	1	2	0	1	1	5
2321:	1	4	1	2	2	1	0	0
2329:	1	0	0	1	1	1	2	1
2337:	1	1	0	0	2	1	2	1
2345:	1	0	2	0	0	0	0	1
2353:	2	1	0	2	0	0	1	2
2361:	0	1	1	0	2	1	3	1
2369:	1	2	0	1	2	3	1	2
2377:	1	0	1	3	1	2	1	0
2385:	1	2	0	1	3	1	2	0
2393:	0	0	1	2	1	3	0	1
2401:	1	0	4	1	0	0	0	0
2409:	0	1	0	0	1	0	0	1
2417:	0	1	1	2	1	0	1	0
2425:	0	2	2	2	2	1	2	0
2433:	1	1	2	2	1	0	0	1
2441:	1	1	1	4	3	4	1	0
2449:	1	0	0	0	1	0	1	1
2457:	0	1	0	0	0	1	1	0
2465:	1	0	0	1	0	0	0	1
2473:	0	1	0	0	0	1	1	1
2481:	0	1	0	0	0	0	2	2
2489:	0	0	1	0	0	2	0	1
2497:	2	0	2	0	2	0	0	0
2505:	0	0	1	0	0	0	0	0
2513:	0	0	1	0	0	0	0	0
2521:	1	1	2	0	1	0	0	0

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2529:	0	1	0	0	0	0	0	1

Sample Title: R-3 6-12

Channel								
2537:	0	0	0	0	0	1	0	0
2545:	1	1	1	1	0	0	1	0
2553:	1	2	0	0	2	1	0	0
2561:	0	0	1	1	0	0	0	0
2569:	0	0	1	1	0	1	0	1
2577:	1	0	1	0	0	0	0	0
2585:	0	1	0	0	0	0	0	0
2593:	0	1	0	0	0	0	0	1
2601:	0	0	0	0	0	1	4	11
2609:	12	14	26	16	10	7	2	0
2617:	0	1	0	0	0	1	0	2
2625:	0	0	0	0	1	0	1	0
2633:	0	0	0	1	1	0	1	1
2641:	0	0	0	0	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	1	1	0	0	0	0
2665:	2	1	0	0	0	0	1	0
2673:	0	0	0	0	0	2	0	0
2681:	1	0	0	0	0	1	0	1
2689:	1	0	0	0	0	0	0	0
2697:	0	0	0	0	1	1	0	1
2705:	0	0	0	0	0	0	1	0
2713:	0	0	0	0	0	1	0	0
2721:	0	0	0	0	0	0	0	0
2729:	1	0	1	0	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	1	0	0	0	0	0	1	2
2753:	0	2	1	1	0	1	1	0
2761:	1	0	1	0	0	1	0	0
2769:	0	0	0	0	1	0	1	1
2777:	1	0	0	0	0	0	1	0
2785:	0	0	0	0	0	0	1	0
2793:	0	1	0	0	0	1	0	0
2801:	0	0	0	0	0	0	0	0
2809:	1	1	0	0	0	0	0	0
2817:	0	0	0	0	0	1	0	0
2825:	0	0	0	0	0	0	0	0
2833:	1	0	0	0	1	0	0	0
2841:	1	0	0	0	1	0	0	1
2849:	0	0	0	0	1	1	0	1
2857:	0	0	0	1	0	0	0	1
2865:	0	0	0	0	0	0	1	1
2873:	0	0	0	1	0	0	0	0
2881:	2	0	0	1	0	0	0	1
2889:	0	0	0	0	0	0	0	0
2897:	0	0	0	0	0	1	0	0
2905:	0	0	1	0	0	0	0	0
2913:	0	0	0	0	0	1	0	0
2921:	1	0	2	0	0	0	0	0
2929:	1	0	1	0	0	0	0	1
2937:	0	0	0	1	0	0	1	0
2945:	0	0	0	0	0	1	0	0
2953:	0	1	1	1	0	0	1	0

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2961:	0	0	0	0	0	0	0	0

Sample Title: R-3 6-12

Channel								
2969:	0	0	0	0	0	1	1	0
2977:	0	0	0	0	0	0	0	1
2985:	0	0	0	0	0	0	0	0
2993:	0	0	0	0	0	0	2	0
3001:	1	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	1	0	1	0	0	1	0	0
3025:	1	0	0	0	0	1	0	0
3033:	0	0	0	0	0	0	1	0
3041:	0	0	0	0	1	0	0	0
3049:	0	0	0	0	0	1	0	0
3057:	1	0	0	0	0	0	0	0
3065:	0	1	0	0	0	0	0	1
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	1	0	0	0	0	0	0	0
3097:	0	0	0	0	1	0	0	0
3105:	1	0	0	0	1	0	0	0
3113:	0	0	0	0	1	0	0	2
3121:	0	1	1	0	2	0	1	0
3129:	0	0	0	0	1	0	0	1
3137:	0	0	0	0	0	0	0	1
3145:	1	0	0	0	0	1	0	0
3153:	0	0	0	0	1	0	0	0
3161:	0	0	1	1	0	0	0	0
3169:	0	0	0	0	0	0	1	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	1	0	1	0
3193:	0	1	0	0	0	0	1	0
3201:	0	0	0	0	0	0	0	1
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	0	0	0	0	0
3225:	2	0	0	0	0	0	1	0
3233:	0	0	0	0	0	0	0	0
3241:	0	1	0	0	0	0	0	0
3249:	0	0	0	1	0	0	1	0
3257:	0	0	0	1	0	0	0	0
3265:	0	0	1	0	0	0	0	0
3273:	0	1	0	0	0	0	0	0
3281:	0	0	0	0	0	0	0	0
3289:	0	0	0	1	0	0	0	0
3297:	1	0	0	1	0	0	0	0
3305:	0	0	0	1	0	0	0	2
3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	1	1	1	0	0	0
3337:	0	0	0	1	0	0	0	1
3345:	0	0	0	0	0	0	1	0
3353:	0	0	0	0	0	0	0	1
3361:	0	1	0	0	1	0	0	0
3369:	0	1	1	0	0	1	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	1	0	0	0	1	0	0

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3393:	1	0	0	1	0	0	0	0

Sample Title: R-3 6-12

Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	1	0	0	0	0	0	0
3425:	0	0	0	1	0	0	1	0
3433:	0	0	1	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	1	0	0	1	0	0
3481:	0	0	0	0	0	0	1	0
3489:	0	0	0	0	0	0	0	1
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	1	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	2	0
3529:	0	1	0	0	1	1	0	0
3537:	0	0	2	0	0	0	0	0
3545:	0	0	0	0	0	0	1	0
3553:	0	0	0	0	0	0	0	0
3561:	1	0	0	0	0	0	0	1
3569:	0	1	0	0	0	0	1	1
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	1	0
3593:	0	0	1	0	0	0	1	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	1	0	0	0	0	0
3617:	0	0	0	0	0	0	0	1
3625:	0	0	0	0	0	0	0	1
3633:	0	0	0	1	0	0	1	0
3641:	1	0	0	0	0	0	0	1
3649:	0	0	1	0	0	0	0	0
3657:	0	0	0	0	0	0	0	1
3665:	0	0	0	0	0	0	0	0
3673:	1	1	0	0	0	0	0	0
3681:	0	0	0	0	1	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	1	0	0	1	0	0	0
3705:	0	0	0	0	0	0	1	0
3713:	0	0	2	1	0	0	0	0
3721:	0	0	0	0	1	0	0	0
3729:	0	1	1	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	1	0	0	1	0	0	0	0
3753:	1	0	0	0	0	0	0	0
3761:	0	0	0	0	0	1	0	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	1
3793:	0	1	0	0	0	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	1	0	0	0	0	0	0	0

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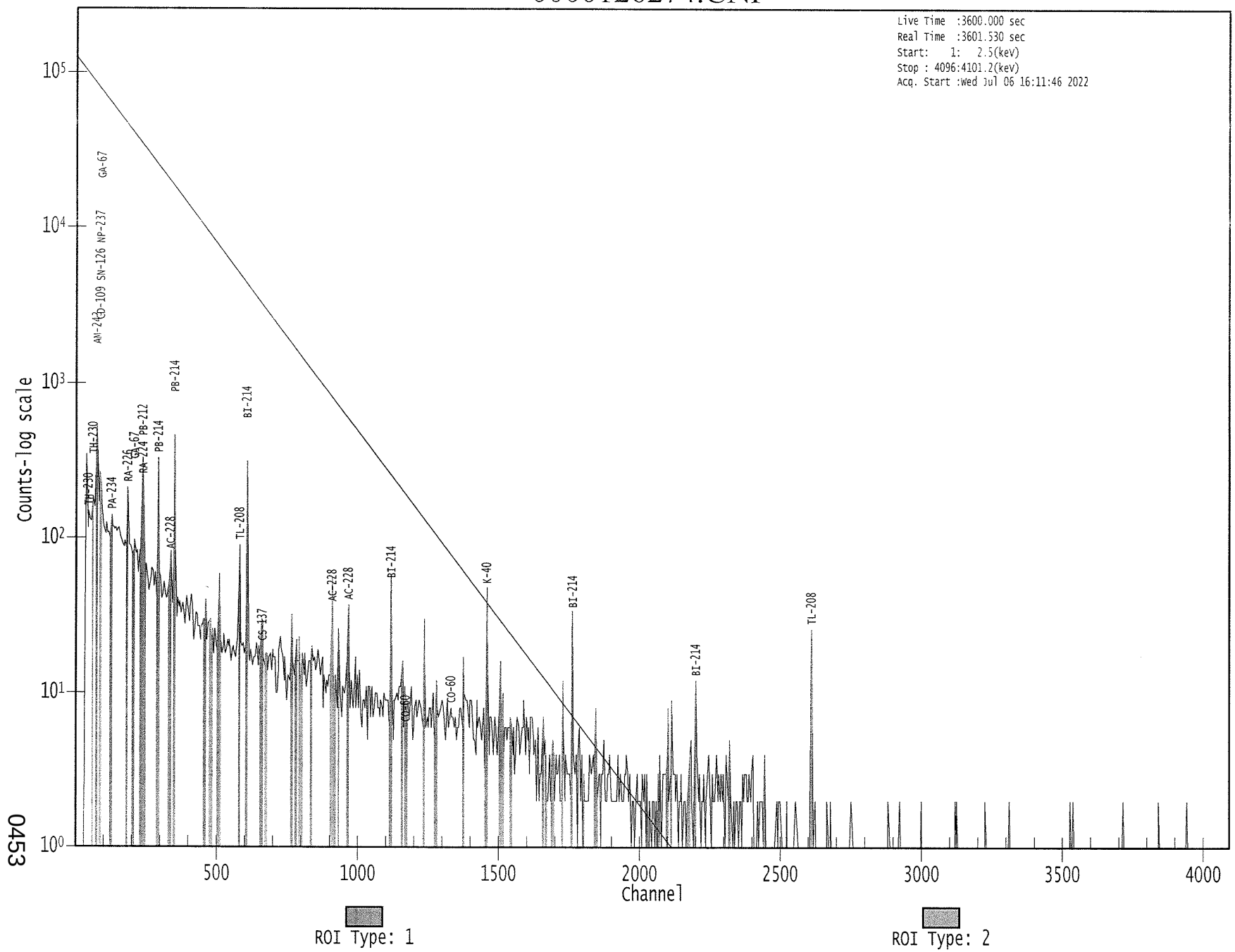
3825:	0	0	0	0	0	0	0	0

Sample Title: R-3 6-12

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	2	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	1	0	0	0	0
3873:	0	0	0	0	0	1	0	0
3881:	0	1	0	0	0	1	0	0
3889:	0	0	1	0	1	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	1	0	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	1	0	0	0	0	0
3937:	0	1	0	0	0	2	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	1
3961:	0	0	0	0	1	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	1	0	1	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	1
4017:	0	0	1	0	0	0	0	0
4025:	1	0	1	0	1	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	1	1	0	0	0	1
4049:	1	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	1	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001807

0000126274.CNF



0453

BP/Castex-Ltd Adm-Apx E-001808

KB 7/6/22

Apex-Gamma

Analysis Report for 2206038-12
R-3-12-18

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-12
Sample Description	: R-3-12-18
Sample Type	: SOIL
Sample Size	: 5.855E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:45:38AM
Acquisition Started	: 7/6/2022 4:17:18PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3601.1 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/20/2021
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126283

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
7/7/22

BP/Castex-Ltd Adm-Apx E-001809

Analysis Report for 2206038-12
R-3-12-18

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 5:24:48PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	74.01	75.53	0.0000	0.00
2	76.29	77.81	0.0000	0.00
3	186.19	187.48	0.0000	0.00
4	208.78	210.03	0.0000	0.00
5	238.51	239.71	0.0000	0.00
6	242.04	243.23	0.0000	0.00
7	295.20	296.28	0.0000	0.00
8	300.04	301.11	0.0000	0.00
9	338.14	339.14	0.0000	0.00
10	352.00	352.97	0.0000	0.00
11	462.04	462.80	0.0000	0.00
12	510.75	511.42	0.0000	0.00
13	583.29	583.83	0.0000	0.00
14	609.67	610.15	0.0000	0.00
15	728.24	728.50	0.0000	0.00
16	755.43	755.65	0.0000	0.00
17	762.23	762.43	0.0000	0.00
18	767.76	767.95	0.0000	0.00
19	786.03	786.19	0.0000	0.00
20	807.51	807.63	0.0000	0.00
21	861.17	861.19	0.0000	0.00
22	904.35	904.29	0.0000	0.00
23	911.58	911.51	0.0000	0.00
24	935.31	935.19	0.0000	0.00
25	939.12	939.00	0.0000	0.00
26	969.02	968.85	0.0000	0.00
27	974.18	974.00	0.0000	0.00
28	1097.31	1096.92	0.0000	0.00
29	1121.11	1120.67	0.0000	0.00
30	1141.73	1141.26	0.0000	0.00
31	1155.12	1154.62	0.0000	0.00
32	1310.26	1309.50	0.0000	0.00
33	1315.66	1314.89	0.0000	0.00
34	1377.91	1377.04	0.0000	0.00
35	1430.62	1429.66	0.0000	0.00
36	1462.03	1461.02	0.0000	0.00
37	1482.81	1481.76	0.0000	0.00
38	1488.93	1487.88	0.0000	0.00
39	1508.27	1507.18	0.0000	0.00
40	1593.38	1592.16	0.0000	0.00
41	1645.37	1644.07	0.0000	0.00
42	1765.39	1763.89	0.0000	0.00

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Analysis Report for 2206038-12

R-3-12-18

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1777.91	1776.39	0.0000	0.00
44	1877.25	1875.58	0.0000	0.00
45	1924.85	1923.11	0.0000	0.00
46	2025.67	2023.78	0.0000	0.00
47	2109.13	2107.12	0.0000	0.00
48	2120.01	2117.98	0.0000	0.00
49	2204.57	2202.42	0.0000	0.00
50	2230.69	2228.50	0.0000	0.00
51	2372.39	2370.00	0.0000	0.00
52	2381.40	2379.00	0.0000	0.00
53	2444.87	2442.38	0.0000	0.00
54	2615.34	2612.62	0.0000	0.00
55	3785.28	3781.20	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001811

Analysis Report for 2206038-12

R-3-12-18

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 5:24:48PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	74.01	73 -	83	75.53	3.31E+02	104.20	1.67E+03	2.66
m	2	76.29	73 -	83	77.81	5.64E+02	129.20	2.23E+03	2.68
	3	186.19	183 -	193	187.48	2.16E+02	100.61	1.23E+03	2.61
	4	208.78	207 -	213	210.03	7.45E+01	62.92	6.67E+02	1.99
M	5	238.51	234 -	246	239.71	6.74E+02	88.79	7.98E+02	2.69
m	6	242.04	234 -	246	243.23	1.28E+02	71.81	6.45E+02	2.07
M	7	295.20	292 -	304	296.28	3.08E+02	62.58	4.71E+02	2.66
m	8	300.04	292 -	304	301.11	8.87E+01	58.58	4.03E+02	2.70
	9	338.14	335 -	342	339.14	7.48E+01	59.09	5.32E+02	1.90
	10	352.00	348 -	358	352.97	3.97E+02	85.09	7.53E+02	2.11
	11	462.04	458 -	467	462.80	5.63E+01	49.35	3.17E+02	1.73
	12	510.75	506 -	516	511.42	1.15E+02	57.54	3.81E+02	2.97
	13	583.29	578 -	589	583.83	1.82E+02	63.18	4.09E+02	1.95
	14	609.67	604 -	615	610.15	3.46E+02	67.82	4.02E+02	2.12
	15	728.24	723 -	733	728.50	4.82E+01	39.96	1.88E+02	3.60
	16	755.43	753 -	759	755.65	2.47E+01	21.93	6.86E+01	3.50
	17	762.23	760 -	764	762.43	1.53E+01	17.30	5.34E+01	1.06
	18	767.76	765 -	771	767.95	4.40E+01	26.43	9.59E+01	3.85
	19	786.03	784 -	788	786.19	1.81E+01	21.08	7.99E+01	2.60
	20	807.51	803 -	812	807.63	3.43E+01	26.93	8.14E+01	2.49
	21	861.17	856 -	866	861.19	3.89E+01	29.87	9.62E+01	2.78
	22	904.35	900 -	907	904.29	3.80E+01	25.61	8.41E+01	2.51
	23	911.58	908 -	915	911.51	1.37E+02	34.64	1.10E+02	2.35
M	24	935.31	933 -	945	935.19	2.36E+01	13.86	2.71E+01	2.12
m	25	939.12	933 -	945	939.00	1.19E+01	16.28	3.85E+01	1.93
M	26	969.02	960 -	980	968.85	6.65E+01	24.68	6.25E+01	2.01
m	27	974.18	960 -	980	974.00	1.30E+01	19.31	5.73E+01	1.95
	28	1097.31	1095 -	1100	1096.92	1.10E+01	12.81	2.40E+01	1.82
	29	1121.11	1116 -	1127	1120.67	7.25E+01	38.63	1.51E+02	2.62
	30	1141.73	1137 -	1147	1141.26	2.73E+01	26.87	7.95E+01	2.28
	31	1155.12	1152 -	1159	1154.62	1.62E+01	21.07	6.16E+01	3.18
	32	1310.26	1306 -	1312	1309.50	1.39E+01	9.62	6.24E+00	1.90
	33	1315.66	1313 -	1318	1314.89	9.47E+00	10.20	1.51E+01	2.01
	34	1377.91	1372 -	1381	1377.04	3.15E+01	19.26	3.51E+01	1.90
	35	1430.62	1426 -	1434	1429.66	1.08E+01	13.76	2.25E+01	2.20
	36	1462.03	1456 -	1468	1461.02	1.69E+02	42.51	1.23E+02	3.36
	37	1482.81	1480 -	1484	1481.76	1.15E+01	8.28	5.00E+00	2.19
	38	1488.93	1485 -	1491	1487.88	1.16E+01	11.18	1.49E+01	2.62
	39	1508.27	1505 -	1509	1507.18	8.57E+00	9.55	1.29E+01	2.36
	40	1593.38	1590 -	1595	1592.16	1.39E+01	13.60	2.42E+01	1.59

BP/Castex-Ltd Adm-Apx E-001812

Analysis Report for 2206038-12

R-3-12-18

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1645.37	1638 -	1651	1644.07	1.51E+01	15.72	1.98E+01	4.89
42	1765.39	1759 -	1767	1763.89	3.28E+01	19.86	4.04E+01	1.69
43	1777.91	1773 -	1781	1776.39	1.25E+01	10.42	9.00E+00	2.89
44	1877.25	1872 -	1879	1875.58	8.00E+00	8.94	8.00E+00	1.01
45	1924.85	1920 -	1925	1923.11	5.57E+00	6.08	2.86E+00	2.68
46	2025.67	2022 -	2026	2023.78	5.43E+00	5.85	3.14E+00	2.52
47	2109.13	2105 -	2110	2107.12	9.07E+00	9.59	9.86E+00	1.49
48	2120.01	2113 -	2122	2117.98	1.05E+01	11.96	1.31E+01	5.22
49	2204.57	2196 -	2208	2202.42	2.79E+01	12.89	6.19E+00	2.83
50	2230.69	2225 -	2231	2228.50	8.00E+00	5.66	0.00E+00	1.34
51	2372.39	2367 -	2372	2370.00	5.00E+00	4.47	0.00E+00	2.99
52	2381.40	2375 -	2381	2379.00	1.00E+01	6.32	0.00E+00	1.63
53	2444.87	2439 -	2444	2442.38	5.36E+00	6.08	3.29E+00	1.97
54	2615.34	2606 -	2617	2612.62	6.60E+01	25.46	4.80E+01	2.80
55	3785.28	3777 -	3783	3781.20	5.00E+00	4.47	0.00E+00	2.76

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 5:24:48PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	1	74.01	73 -	83	3.31E+02	104.20	1.67E+03	6.72E+01
m	2	76.29	73 -	83	5.64E+02	129.20	2.23E+03	7.77E+01
	3	186.19	183 -	193	2.16E+02	100.61	1.23E+03	7.91E+01
	4	208.78	207 -	213	7.45E+01	62.92	6.67E+02	4.97E+01
M	5	238.51	234 -	246	6.74E+02	88.79	7.98E+02	4.64E+01
m	6	242.04	234 -	246	1.28E+02	71.81	6.45E+02	4.18E+01
M	7	295.20	292 -	304	3.08E+02	62.58	4.71E+02	3.57E+01
m	8	300.04	292 -	304	8.87E+01	58.58	4.03E+02	3.30E+01
	9	338.14	335 -	342	7.48E+01	59.09	5.32E+02	4.64E+01
	10	352.00	348 -	358	3.97E+02	85.09	7.53E+02	6.18E+01
	11	462.04	458 -	467	5.63E+01	49.35	3.17E+02	3.86E+01
	12	510.75	506 -	516	1.15E+02	57.54	3.81E+02	4.39E+01
	13	583.29	578 -	589	1.82E+02	63.18	4.09E+02	4.70E+01

BP/Castex-Ltd Adm-Apx E-001813

Analysis Report for 2206038-12

R-3-12-18

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	14	609.67	604 -	615	3.46E+02	67.82	4.02E+02	4.66E+01
	15	728.24	723 -	733	4.82E+01	39.96	1.88E+02	3.08E+01
	16	755.43	753 -	759	2.47E+01	21.93	6.86E+01	1.61E+01
	17	762.23	760 -	764	1.53E+01	17.30	5.34E+01	1.27E+01
	18	767.76	765 -	771	4.40E+01	26.43	9.59E+01	1.88E+01
	19	786.03	784 -	788	1.81E+01	21.08	7.99E+01	1.59E+01
	20	807.51	803 -	812	3.43E+01	26.93	8.14E+01	1.99E+01
	21	861.17	856 -	866	3.89E+01	29.87	9.62E+01	2.23E+01
	22	904.35	900 -	907	3.80E+01	25.61	8.41E+01	1.85E+01
	23	911.58	908 -	915	1.37E+02	34.64	1.10E+02	2.10E+01
M	24	935.31	933 -	945	2.36E+01	13.86	2.71E+01	8.56E+00
m	25	939.12	933 -	945	1.19E+01	16.28	3.85E+01	1.02E+01
M	26	969.02	960 -	980	6.65E+01	24.68	6.25E+01	1.30E+01
m	27	974.18	960 -	980	1.30E+01	19.31	5.73E+01	1.24E+01
	28	1097.31	1095 -	1100	1.10E+01	12.81	2.40E+01	9.00E+00
	29	1121.11	1116 -	1127	7.25E+01	38.63	1.51E+02	2.85E+01
	30	1141.73	1137 -	1147	2.73E+01	26.87	7.95E+01	2.03E+01
	31	1155.12	1152 -	1159	1.62E+01	21.07	6.16E+01	1.60E+01
	32	1310.26	1306 -	1312	1.39E+01	9.62	6.24E+00	5.00E+00
	33	1315.66	1313 -	1318	9.47E+00	10.20	1.51E+01	6.68E+00
	34	1377.91	1372 -	1381	3.15E+01	19.26	3.51E+01	1.29E+01
	35	1430.62	1426 -	1434	1.08E+01	13.76	2.25E+01	9.94E+00
	36	1462.03	1456 -	1468	1.69E+02	42.51	1.23E+02	2.77E+01
	37	1482.81	1480 -	1484	1.15E+01	8.28	5.00E+00	3.90E+00
	38	1488.93	1485 -	1491	1.16E+01	11.18	1.49E+01	7.30E+00
	39	1508.27	1505 -	1509	8.57E+00	9.55	1.29E+01	6.21E+00
	40	1593.38	1590 -	1595	1.39E+01	13.60	2.42E+01	9.35E+00
	41	1645.37	1638 -	1651	1.51E+01	15.72	1.98E+01	1.12E+01
	42	1765.39	1759 -	1767	3.28E+01	19.86	4.04E+01	1.33E+01
	43	1777.91	1773 -	1781	1.25E+01	10.42	9.00E+00	6.29E+00
	44	1877.25	1872 -	1879	8.00E+00	8.94	8.00E+00	5.70E+00
	45	1924.85	1920 -	1925	5.57E+00	6.08	2.86E+00	3.15E+00
	46	2025.67	2022 -	2026	5.43E+00	5.85	3.14E+00	2.91E+00
	47	2109.13	2105 -	2110	9.07E+00	9.59	9.86E+00	6.14E+00
	48	2120.01	2113 -	2122	1.05E+01	11.96	1.31E+01	8.27E+00
	49	2204.57	2196 -	2208	2.79E+01	12.89	6.19E+00	6.08E+00
	50	2230.69	2225 -	2231	8.00E+00	5.66	0.00E+00	0.00E+00
	51	2372.39	2367 -	2372	5.00E+00	4.47	0.00E+00	0.00E+00
	52	2381.40	2375 -	2381	1.00E+01	6.32	0.00E+00	0.00E+00
	53	2444.87	2439 -	2444	5.36E+00	6.08	3.29E+00	3.24E+00
	54	2615.34	2606 -	2617	6.60E+01	25.46	4.80E+01	1.61E+01
	55	3785.28	3777 -	3783	5.00E+00	4.47	0.00E+00	0.00E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 2206038-12

R-3-12-18

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 5:24:48PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	1	74.01	73 -	83	75.53	3.31E+02	104.20	1.67E+03	AM-243 PM-145
m	2	76.29	73 -	83	77.81	5.64E+02	129.20	2.23E+03	AM-243 TI-44
	3	186.19	183 -	193	187.48	2.16E+02	100.61	1.23E+03	RA-226 HO-166M
	4	208.78	207 -	213	210.03	7.45E+01	62.92	6.67E+02	GA-67 CM-243
M	5	238.51	234 -	246	239.71	6.74E+02	88.79	7.98E+02	PB-212 RA-224
m	6	242.04	234 -	246	243.23	1.28E+02	71.81	6.45E+02	RA-224
M	7	295.20	292 -	304	296.28	3.08E+02	62.58	4.71E+02	PB-214 CE-143
m	8	300.04	292 -	304	301.11	8.87E+01	58.58	4.03E+02	BI-210M PB-212 GA-67
	9	338.14	335 -	342	339.14	7.48E+01	59.09	5.32E+02	AC-228 CS-136
	10	352.00	348 -	358	352.97	3.97E+02	85.09	7.53E+02	PB-214
	11	462.04	458 -	467	462.80	5.63E+01	49.35	3.17E+02	SB-125
	12	510.75	506 -	516	511.42	1.15E+02	57.54	3.81E+02	.....
	13	583.29	578 -	589	583.83	1.82E+02	63.18	4.09E+02	TL-208
	14	609.67	604 -	615	610.15	3.46E+02	67.82	4.02E+02	BI-214
	15	728.24	723 -	733	728.50	4.82E+01	39.96	1.88E+02	BI-212
	16	755.43	753 -	759	755.65	2.47E+01	21.93	6.86E+01	ZR-95
	17	762.23	760 -	764	762.43	1.53E+01	17.30	5.34E+01	AG-110M
	18	767.76	765 -	771	767.95	4.40E+01	26.43	9.59E+01	NB-95
	19	786.03	784 -	788	786.19	1.81E+01	21.08	7.99E+01	SB-127
	20	807.51	803 -	812	807.63	3.43E+01	26.93	8.14E+01	.....
	21	861.17	856 -	866	861.19	3.89E+01	29.87	9.62E+01	TL-208
	22	904.35	900 -	907	904.29	3.80E+01	25.61	8.41E+01	.....
	23	911.58	908 -	915	911.51	1.37E+02	34.64	1.10E+02	TL-204 AC-228
M	24	935.31	933 -	945	935.19	2.36E+01	13.86	2.71E+01	.....
m	25	939.12	933 -	945	939.00	1.19E+01	16.28	3.85E+01	.....
M	26	969.02	960 -	980	968.85	6.65E+01	24.68	6.25E+01	AC-228
m	27	974.18	960 -	980	974.00	1.30E+01	19.31	5.73E+01	.....
	28	1097.31	1095 -	1100	1096.92	1.10E+01	12.81	2.40E+01	FE-59

BP/Castex-Ltd Adm-Apx E-001815

Analysis Report for 2206038-12

R-3-12-18

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
29	1121.11	1116 -	1127	1120.67	7.25E+01	38.63	1.51E+02	TA-182 SC-46 BI-214
30	1141.73	1137 -	1147	1141.26	2.73E+01	26.87	7.95E+01	.....
31	1155.12	1152 -	1159	1154.62	1.62E+01	21.07	6.16E+01	EU-156
32	1310.26	1306 -	1312	1309.50	1.39E+01	9.62	6.24E+00	V-48
33	1315.66	1313 -	1318	1314.89	9.47E+00	10.20	1.51E+01	.....
34	1377.91	1372 -	1381	1377.04	3.15E+01	19.26	3.51E+01	.....
35	1430.62	1426 -	1434	1429.66	1.08E+01	13.76	2.25E+01	.....
36	1462.03	1456 -	1468	1461.02	1.69E+02	42.51	1.23E+02	K-40
37	1482.81	1480 -	1484	1481.76	1.15E+01	8.28	5.00E+00	.....
38	1488.93	1485 -	1491	1487.88	1.16E+01	11.18	1.49E+01	.....
39	1508.27	1505 -	1509	1507.18	8.57E+00	9.55	1.29E+01	.....
40	1593.38	1590 -	1595	1592.16	1.39E+01	13.60	2.42E+01	.....
41	1645.37	1638 -	1651	1644.07	1.51E+01	15.72	1.98E+01	.....
42	1765.39	1759 -	1767	1763.89	3.28E+01	19.86	4.04E+01	BI-214
43	1777.91	1773 -	1781	1776.39	1.25E+01	10.42	9.00E+00	.....
44	1877.25	1872 -	1879	1875.58	8.00E+00	8.94	8.00E+00	.....
45	1924.85	1920 -	1925	1923.11	5.57E+00	6.08	2.86E+00	.....
46	2025.67	2022 -	2026	2023.78	5.43E+00	5.85	3.14E+00	.....
47	2109.13	2105 -	2110	2107.12	9.07E+00	9.59	9.86E+00	.....
48	2120.01	2113 -	2122	2117.98	1.05E+01	11.96	1.31E+01	.....
49	2204.57	2196 -	2208	2202.42	2.79E+01	12.89	6.19E+00	BI-214
50	2230.69	2225 -	2231	2228.50	8.00E+00	5.66	0.00E+00	.....
51	2372.39	2367 -	2372	2370.00	5.00E+00	4.47	0.00E+00	.....
52	2381.40	2375 -	2381	2379.00	1.00E+01	6.32	0.00E+00	.....
53	2444.87	2439 -	2444	2442.38	5.36E+00	6.08	3.29E+00	.....
54	2615.34	2606 -	2617	2612.62	6.60E+01	25.46	4.80E+01	TL-208
55	3785.28	3777 -	3783	3781.20	5.00E+00	4.47	0.00E+00	.....

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 5:24:48PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	74.01	3.31E+02	104.20	2.31E-02	1.82E-03

BP/Castex-Ltd Adm-Apx E-001816

Analysis Report for 2206038-12

R-3-12-18

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
m	2	76.29	5.64E+02	129.20	2.32E-02	1.85E-03
	3	186.19	2.16E+02	100.61	1.96E-02	1.56E-03
	4	208.78	7.45E+01	62.92	1.84E-02	1.48E-03
M	5	238.51	6.74E+02	88.79	1.69E-02	1.37E-03
m	6	242.04	1.28E+02	71.81	1.68E-02	1.36E-03
M	7	295.20	3.08E+02	62.58	1.46E-02	1.20E-03
m	8	300.04	8.87E+01	58.58	1.44E-02	1.19E-03
	9	338.14	7.48E+01	59.09	1.32E-02	1.12E-03
	10	352.00	3.97E+02	85.09	1.28E-02	1.09E-03
	11	462.04	5.63E+01	49.35	1.03E-02	9.29E-04
	12	510.75	1.15E+02	57.54	9.50E-03	8.69E-04
	13	583.29	1.82E+02	63.18	8.52E-03	7.80E-04
	14	609.67	3.46E+02	67.82	8.22E-03	7.48E-04
	15	728.24	4.82E+01	39.96	7.12E-03	6.22E-04
	16	755.43	2.47E+01	21.93	6.91E-03	5.96E-04
	17	762.23	1.53E+01	17.30	6.86E-03	5.90E-04
	18	767.76	4.40E+01	26.43	6.83E-03	5.85E-04
	19	786.03	1.81E+01	21.08	6.70E-03	5.68E-04
	20	807.51	3.43E+01	26.93	6.56E-03	5.48E-04
	21	861.17	3.89E+01	29.87	6.23E-03	4.97E-04
	22	904.35	3.80E+01	25.61	5.99E-03	4.61E-04
	23	911.58	1.37E+02	34.64	5.96E-03	4.59E-04
M	24	935.31	2.36E+01	13.86	5.84E-03	4.53E-04
m	25	939.12	1.19E+01	16.28	5.82E-03	4.52E-04
M	26	969.02	6.65E+01	24.68	5.68E-03	4.45E-04
m	27	974.18	1.30E+01	19.31	5.66E-03	4.43E-04
	28	1097.31	1.10E+01	12.81	5.16E-03	4.12E-04
	29	1121.11	7.25E+01	38.63	5.07E-03	4.05E-04
	30	1141.73	2.73E+01	26.87	5.00E-03	4.00E-04
	31	1155.12	1.62E+01	21.07	4.96E-03	3.97E-04
	32	1310.26	1.39E+01	9.62	4.51E-03	3.63E-04
	33	1315.66	9.47E+00	10.20	4.49E-03	3.62E-04
	34	1377.91	3.15E+01	19.26	4.34E-03	3.51E-04
	35	1430.62	1.08E+01	13.76	4.22E-03	3.41E-04
	36	1462.03	1.69E+02	42.51	4.15E-03	3.35E-04
	37	1482.81	1.15E+01	8.28	4.11E-03	3.32E-04
	38	1488.93	1.16E+01	11.18	4.09E-03	3.31E-04
	39	1508.27	8.57E+00	9.55	4.05E-03	3.27E-04
	40	1593.38	1.39E+01	13.60	3.89E-03	3.12E-04
	41	1645.37	1.51E+01	15.72	3.80E-03	3.03E-04
	42	1765.39	3.28E+01	19.86	3.60E-03	2.81E-04
	43	1777.91	1.25E+01	10.42	3.58E-03	2.79E-04
	44	1877.25	8.00E+00	8.94	3.43E-03	2.69E-04
	45	1924.85	5.57E+00	6.08	3.37E-03	2.69E-04
	46	2025.67	5.43E+00	5.85	3.24E-03	2.69E-04
	47	2109.13	9.07E+00	9.59	3.14E-03	2.69E-04
	48	2120.01	1.05E+01	11.96	3.13E-03	2.69E-04
	49	2204.57	2.79E+01	12.89	3.03E-03	2.69E-04
	50	2230.69	8.00E+00	5.66	3.00E-03	2.69E-04
	51	2372.39	5.00E+00	4.47	2.86E-03	2.69E-04
	52	2381.40	1.00E+01	6.32	2.85E-03	2.69E-04
	53	2444.87	5.36E+00	6.08	2.79E-03	2.69E-04
	54	2615.34	6.60E+01	25.46	2.63E-03	2.69E-04

BP/Castex-Ltd Adm-Apx E-001817

Analysis Report for 2206038-12

R-3-12-18

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
55	3785.28	5.00E+00	4.47	1.86E-03	2.69E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 5:24:48PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126201.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	74.01	3.31E+02	104.20			3.31E+02	1.04E+02
m	2	76.29	5.64E+02	129.20	1.53E+01	8.05E+00	5.48E+02	1.29E+02
	3	186.19	2.16E+02	100.61	3.65E+01	7.27E+00	1.79E+02	1.01E+02
	4	208.78	7.45E+01	62.92			7.45E+01	6.29E+01
M	5	238.51	6.74E+02	88.79	1.16E+01	6.70E+00	6.63E+02	8.90E+01
m	6	242.04	1.28E+02	71.81			1.28E+02	7.18E+01
M	7	295.20	3.08E+02	62.58	6.18E+00	5.51E+00	3.02E+02	6.28E+01
m	8	300.04	8.87E+01	58.58			8.87E+01	5.86E+01
	9	338.14	7.48E+01	59.09			7.48E+01	5.91E+01
	10	352.00	3.97E+02	85.09	9.32E+00	5.69E+00	3.88E+02	8.53E+01
	11	462.04	5.63E+01	49.35			5.63E+01	4.93E+01
	12	510.75	1.15E+02	57.54	6.77E+01	4.98E+00	4.76E+01	5.78E+01
	13	583.29	1.82E+02	63.18	6.36E+00	3.67E+00	1.75E+02	6.33E+01
	14	609.67	3.46E+02	67.82	5.18E+00	3.99E+00	3.41E+02	6.79E+01
	15	728.24	4.82E+01	39.96			4.82E+01	4.00E+01
	16	755.43	2.47E+01	21.93			2.47E+01	2.19E+01
	17	762.23	1.53E+01	17.30			1.53E+01	1.73E+01
	18	767.76	4.40E+01	26.43			4.40E+01	2.64E+01
	19	786.03	1.81E+01	21.08			1.81E+01	2.11E+01
	20	807.51	3.43E+01	26.93			3.43E+01	2.69E+01
	21	861.17	3.89E+01	29.87			3.89E+01	2.99E+01
	22	904.35	3.80E+01	25.61			3.80E+01	2.56E+01
	23	911.58	1.37E+02	34.64	3.54E+00	2.41E+00	1.33E+02	3.47E+01
M	24	935.31	2.36E+01	13.86			2.36E+01	1.39E+01
m	25	939.12	1.19E+01	16.28			1.19E+01	1.63E+01
M	26	969.02	6.65E+01	24.68	9.15E-01	2.46E+00	6.56E+01	2.48E+01
m	27	974.18	1.30E+01	19.31			1.30E+01	1.93E+01
	28	1097.31	1.10E+01	12.81			1.10E+01	1.28E+01
	29	1121.11	7.25E+01	38.63	5.91E-01	2.52E+00	7.19E+01	3.87E+01

BP/Castex-Ltd Adm-Apx E-001818

Analysis Report for 2206038-12

R-3-12-18

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
30	1141.73	2.73E+01	26.87			2.73E+01	2.69E+01
31	1155.12	1.62E+01	21.07			1.62E+01	2.11E+01
32	1310.26	1.39E+01	9.62			1.39E+01	9.62E+00
33	1315.66	9.47E+00	10.20			9.47E+00	1.02E+01
34	1377.91	3.15E+01	19.26			3.15E+01	1.93E+01
35	1430.62	1.08E+01	13.76			1.08E+01	1.38E+01
36	1462.03	1.69E+02	42.51	7.20E+00	2.34E+00	1.62E+02	4.26E+01
37	1482.81	1.15E+01	8.28			1.15E+01	8.28E+00
38	1488.93	1.16E+01	11.18			1.16E+01	1.12E+01
39	1508.27	8.57E+00	9.55			8.57E+00	9.55E+00
40	1593.38	1.39E+01	13.60			1.39E+01	1.36E+01
41	1645.37	1.51E+01	15.72			1.51E+01	1.57E+01
42	1765.39	3.28E+01	19.86			3.28E+01	1.99E+01
43	1777.91	1.25E+01	10.42			1.25E+01	1.04E+01
44	1877.25	8.00E+00	8.94			8.00E+00	8.94E+00
45	1924.85	5.57E+00	6.08			5.57E+00	6.08E+00
46	2025.67	5.43E+00	5.85			5.43E+00	5.85E+00
47	2109.13	9.07E+00	9.59			9.07E+00	9.59E+00
48	2120.01	1.05E+01	11.96			1.05E+01	1.20E+01
49	2204.57	2.79E+01	12.89			2.79E+01	1.29E+01
50	2230.69	8.00E+00	5.66			8.00E+00	5.66E+00
51	2372.39	5.00E+00	4.47			5.00E+00	4.47E+00
52	2381.40	1.00E+01	6.32			1.00E+01	6.32E+00
53	2444.87	5.36E+00	6.08			5.36E+00	6.08E+00
54	2615.34	6.60E+01	25.46	4.10E+00	1.50E+00	6.19E+01	2.55E+01
55	3785.28	5.00E+00	4.47			5.00E+00	4.47E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 5:24:48PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126201.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	1	74.01	3.31E+02	104.20			3.31E+02	1.04E+02
m	2	76.29	5.64E+02	129.20	1.53E+01	8.05E+00	5.48E+02	1.29E+02

Analysis Report for 2206038-12

R-3-12-18

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	3	186.19	2.16E+02	100.61	3.65E+01	7.27E+00	1.79E+02	1.01E+02
	4	208.78	7.45E+01	62.92			7.45E+01	6.29E+01
M	5	238.51	6.74E+02	88.79	1.16E+01	6.70E+00	6.63E+02	8.90E+01
m	6	242.04	1.28E+02	71.81			1.28E+02	7.18E+01
M	7	295.20	3.08E+02	62.58	6.18E+00	5.51E+00	3.02E+02	6.28E+01
m	8	300.04	8.87E+01	58.58			8.87E+01	5.86E+01
	9	338.14	7.48E+01	59.09			7.48E+01	5.91E+01
	10	352.00	3.97E+02	85.09	9.32E+00	5.69E+00	3.88E+02	8.53E+01
	11	462.04	5.63E+01	49.35			5.63E+01	4.93E+01
	12	510.75	1.15E+02	57.54	6.77E+01	4.98E+00	4.76E+01	5.78E+01
	13	583.29	1.82E+02	63.18	6.36E+00	3.67E+00	1.75E+02	6.33E+01
	14	609.67	3.46E+02	67.82	5.18E+00	3.99E+00	3.41E+02	6.79E+01
	15	728.24	4.82E+01	39.96			4.82E+01	4.00E+01
	16	755.43	2.47E+01	21.93			2.47E+01	2.19E+01
	17	762.23	1.53E+01	17.30			1.53E+01	1.73E+01
	18	767.76	4.40E+01	26.43			4.40E+01	2.64E+01
	19	786.03	1.81E+01	21.08			1.81E+01	2.11E+01
	20	807.51	3.43E+01	26.93			3.43E+01	2.69E+01
	21	861.17	3.89E+01	29.87			3.89E+01	2.99E+01
	22	904.35	3.80E+01	25.61			3.80E+01	2.56E+01
	23	911.58	1.37E+02	34.64	3.54E+00	2.41E+00	1.33E+02	3.47E+01
M	24	935.31	2.36E+01	13.86			2.36E+01	1.39E+01
m	25	939.12	1.19E+01	16.28			1.19E+01	1.63E+01
M	26	969.02	6.65E+01	24.68	9.15E-01	2.46E+00	6.56E+01	2.48E+01
m	27	974.18	1.30E+01	19.31			1.30E+01	1.93E+01
	28	1097.31	1.10E+01	12.81			1.10E+01	1.28E+01
	29	1121.11	7.25E+01	38.63	5.91E-01	2.52E+00	7.19E+01	3.87E+01
	30	1141.73	2.73E+01	26.87			2.73E+01	2.69E+01
	31	1155.12	1.62E+01	21.07			1.62E+01	2.11E+01
	32	1310.26	1.39E+01	9.62			1.39E+01	9.62E+00
	33	1315.66	9.47E+00	10.20			9.47E+00	1.02E+01
	34	1377.91	3.15E+01	19.26			3.15E+01	1.93E+01
	35	1430.62	1.08E+01	13.76			1.08E+01	1.38E+01
	36	1462.03	1.69E+02	42.51	7.20E+00	2.34E+00	1.62E+02	4.26E+01
	37	1482.81	1.15E+01	8.28			1.15E+01	8.28E+00
	38	1488.93	1.16E+01	11.18			1.16E+01	1.12E+01
	39	1508.27	8.57E+00	9.55			8.57E+00	9.55E+00
	40	1593.38	1.39E+01	13.60			1.39E+01	1.36E+01
	41	1645.37	1.51E+01	15.72			1.51E+01	1.57E+01
	42	1765.39	3.28E+01	19.86			3.28E+01	1.99E+01
	43	1777.91	1.25E+01	10.42			1.25E+01	1.04E+01
	44	1877.25	8.00E+00	8.94			8.00E+00	8.94E+00
	45	1924.85	5.57E+00	6.08			5.57E+00	6.08E+00
	46	2025.67	5.43E+00	5.85			5.43E+00	5.85E+00
	47	2109.13	9.07E+00	9.59			9.07E+00	9.59E+00
	48	2120.01	1.05E+01	11.96			1.05E+01	1.20E+01
	49	2204.57	2.79E+01	12.89			2.79E+01	1.29E+01
	50	2230.69	8.00E+00	5.66			8.00E+00	5.66E+00
	51	2372.39	5.00E+00	4.47			5.00E+00	4.47E+00
	52	2381.40	1.00E+01	6.32			1.00E+01	6.32E+00
	53	2444.87	5.36E+00	6.08			5.36E+00	6.08E+00
	54	2615.34	6.60E+01	25.46	4.10E+00	1.50E+00	6.19E+01	2.55E+01
	55	3785.28	5.00E+00	4.47			5.00E+00	4.47E+00

Analysis Report for 2206038-12
R-3-12-18

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.963	1460.81	*	10.67	4.68E+00	1.29E+00
NB-95	0.903	765.79	*	99.81	1.39E-01	8.44E-02
TL-208	0.993	583.14	*	30.22	8.73E-01	3.25E-01
		860.37	*	4.48	1.79E+00	1.38E+00
		2614.66	*	35.85	8.40E-01	3.57E-01
BI-212	0.743	727.17	*	11.80	7.36E-01	6.13E-01
		1620.62		2.75		
PB-212	1.000	238.63	*	44.60	1.12E+00	1.76E-01
		300.09	*	3.41	2.31E+00	1.54E+00
BI-214	0.991	609.31	*	46.30	1.15E+00	2.52E-01
		1120.29	*	15.10	1.20E+00	6.55E-01
		1764.49	*	15.80	7.40E-01	4.51E-01
		2204.22	*	4.98	2.37E+00	1.12E+00
PB-214	1.000	295.21	*	19.19	1.38E+00	3.09E-01
		351.92	*	37.19	1.05E+00	2.47E-01
RA-224	0.972	240.98	*	3.95	2.47E+00	1.40E+00
RA-226	1.000	186.21	*	3.28	3.56E+00	2.03E+00
AC-228	0.996	338.32	*	11.40	6.38E-01	5.07E-01
		911.07	*	27.70	1.04E+00	2.81E-01
		969.11	*	16.60	8.92E-01	3.44E-01
AM-243	0.989	74.67	*	66.00	2.79E-01	9.05E-02

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

Analysis Report for 2206038-12
R-3-12-18

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 5:24:48PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	2	76.29	1.52360E-01	11.80	Tol.	AM-243
	4	208.78	2.06836E-02	42.25	Tol.	CM-243
	11	462.04	1.56408E-02	43.82	Tol.	SB-125
	12	510.75	1.32338E-02	60.62		
	16	755.43	6.86676E-03	44.36	Tol.	ZR-95
	17	762.23	4.24603E-03	56.59	Tol.	AG-110M
	19	786.03	5.01437E-03	58.40	Tol.	SB-127
	20	807.51	9.52778E-03	39.25		
	22	904.35	1.05486E-02	33.72	Sum	
M	24	935.31	6.54457E-03	29.41	Sum	
m	25	939.12	3.30773E-03	68.35		
m	27	974.18	3.59789E-03	74.55		
	28	1097.31	3.05556E-03	58.21	Sum	
	30	1141.73	7.57255E-03	49.27		
	31	1155.12	4.49764E-03	65.07	Sum	
	32	1310.26	3.85621E-03	34.64	Sum	
	33	1315.66	2.63072E-03	53.84		
	34	1377.91	8.73866E-03	30.61	Sum	
	35	1430.62	2.98611E-03	63.99		
	37	1482.81	3.19444E-03	35.98		
	38	1488.93	3.20906E-03	48.39		
	39	1508.27	2.37963E-03	55.75		
	40	1593.38	3.85684E-03	48.98	D-Esc	
	41	1645.37	4.18889E-03	52.11		
	43	1777.91	3.47222E-03	41.67		
	44	1877.25	2.22222E-03	55.90		
	45	1924.85	1.54762E-03	54.59		
	46	2025.67	1.50794E-03	53.90		
	47	2109.13	2.51984E-03	52.87		
	48	2120.01	2.90850E-03	57.10		
	50	2230.69	2.22222E-03	35.36	Sum	
	51	2372.39	1.38889E-03	44.72	Sum	
	52	2381.40	2.77778E-03	31.62		
	53	2444.87	1.48810E-03	56.77	Sum	
	55	3785.28	1.38889E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 2206038-12
R-3-12-18

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.96	1460.81	*	10.67	4.68E+00	1.29E+00
NB-95	0.90	765.79	*	99.81	1.39E-01	8.44E-02
TL-208	0.99	583.14	*	30.22	8.73E-01	3.25E-01
		860.37	*	4.48	1.79E+00	1.38E+00
		2614.66	*	35.85	8.40E-01	3.57E-01
BI-212	0.74	727.17	*	11.80	7.36E-01	6.13E-01
		1620.62		2.75		
PB-212	1.00	238.63	*	44.60	1.12E+00	1.76E-01
		300.09	*	3.41	2.31E+00	1.54E+00
BI-214	0.99	609.31	*	46.30	1.15E+00	2.52E-01
		1120.29	*	15.10	1.20E+00	6.55E-01
		1764.49	*	15.80	7.40E-01	4.51E-01
		2204.22	*	4.98	2.37E+00	1.12E+00
PB-214	1.00	295.21	*	19.19	1.38E+00	3.09E-01
		351.92	*	37.19	1.05E+00	2.47E-01
RA-224	0.97	240.98	*	3.95	2.47E+00	1.40E+00
RA-226	1.00	186.21	*	3.28	3.56E+00	2.03E+00
AC-228	0.99	338.32	*	11.40	6.38E-01	5.07E-01
		911.07	*	27.70	1.04E+00	2.81E-01
		969.11	*	16.60	8.92E-01	3.44E-01
AM-243	0.98	74.67	*	66.00	2.79E-01	9.05E-02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Analysis Report for 2206038-12

R-3-12-18

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.963	4.68E+00	1.29E+00	
NB-95	0.903	1.39E-01	8.44E-02	
TL-208	0.993	8.85E-01	2.37E-01	
BI-212	0.743	7.36E-01	6.13E-01	
PB-212	1.000	1.14E+00	1.75E-01	
BI-214	0.991	1.11E+00	2.05E-01	
PB-214	1.000	1.18E+00	1.93E-01	
RA-224	0.972	2.47E+00	1.40E+00	
RA-226	1.000	3.56E+00	2.03E+00	
AC-228	0.996	9.25E-01	2.00E-01	
AM-243	0.989	2.79E-01	9.05E-02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-12
R-3-12-18

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 5:24:48PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	2	76.29	1.52360E-01	11.80	Tol.	AM-243
	4	208.78	2.06836E-02	42.25	Tol.	CM-243
	11	462.04	1.56408E-02	43.82	Tol.	SB-125
	12	510.75	1.32338E-02	60.62		
	16	755.43	6.86676E-03	44.36	Tol.	ZR-95
	17	762.23	4.24603E-03	56.59	Tol.	AG-110M
	19	786.03	5.01437E-03	58.40	Tol.	SB-127
	20	807.51	9.52778E-03	39.25		
	22	904.35	1.05486E-02	33.72	Sum	
M	24	935.31	6.54457E-03	29.41	Sum	
m	25	939.12	3.30773E-03	68.35		
m	27	974.18	3.59789E-03	74.55		
	28	1097.31	3.05556E-03	58.21	Sum	
	30	1141.73	7.57255E-03	49.27		
	31	1155.12	4.49764E-03	65.07	Sum	
	32	1310.26	3.85621E-03	34.64	Sum	
	33	1315.66	2.63072E-03	53.84		
	34	1377.91	8.73866E-03	30.61	Sum	
	35	1430.62	2.98611E-03	63.99		
	37	1482.81	3.19444E-03	35.98		
	38	1488.93	3.20906E-03	48.39		
	39	1508.27	2.37963E-03	55.75		
	40	1593.38	3.85684E-03	48.98	D-Esc	
	41	1645.37	4.18889E-03	52.11		
	43	1777.91	3.47222E-03	41.67		
	44	1877.25	2.22222E-03	55.90		
	45	1924.85	1.54762E-03	54.59		
	46	2025.67	1.50794E-03	53.90		
	47	2109.13	2.51984E-03	52.87		
	48	2120.01	2.90850E-03	57.10		
	50	2230.69	2.22222E-03	35.36	Sum	
	51	2372.39	1.38889E-03	44.72	Sum	
	52	2381.40	2.77778E-03	31.62		

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Analysis Report for 2206038-12
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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
53	2444.87	1.48810E-03	56.77	Sum	
55	3785.28	1.38889E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	-3.63E-01	6.78E-01	6.78E-01
+	NA-22	1274.54		99.94	4.11E-02	8.92E-02	8.92E-02
+	NA-24	1368.53		99.99	2.68E-03	1.38E-02	6.44E-02
		2754.09		99.86	0.00E+00		1.38E-02
+	AL-26	1808.65		99.76	-1.09E-02	5.77E-02	5.77E-02
+	K-40	1460.81	*	10.67	4.68E+00	1.71E+00	1.71E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	2.42E-02	7.54E-02	7.54E-02
		78.34		96.00	-3.64E-02		8.66E-02
+	SC-46	889.25		98.98	3.72E-02	9.17E-02	9.17E-02
		1120.51		99.90	2.12E-01		1.65E-01
+	V-48	983.52		99.98	8.86E-02	1.99E-01	2.42E-01
		1312.10		97.50	-1.06E-01		1.99E-01
+	CR-51	320.08		9.83	1.33E-01	1.03E+00	1.03E+00
+	MN-54	834.83		99.97	1.06E-03	9.10E-02	9.10E-02
+	CO-56	846.75		99.96	-1.19E-02	9.10E-02	9.10E-02
		1037.75		14.03	1.00E-01		6.56E-01
		1238.25		67.00	6.38E-02		1.86E-01
		1771.40		15.51	3.76E-01		7.31E-01
		2587.48		16.90	1.48E-01		4.44E-01
+	CO-57	122.06		85.51	-1.24E-02	6.40E-02	6.40E-02
		136.48		10.60	6.89E-02		5.21E-01
+	CO-58	810.76		99.40	-2.41E-02	8.01E-02	8.01E-02
+	FE-59	1099.22		56.50	-3.97E-03	1.75E-01	1.75E-01
		1291.56		43.20	-7.24E-02		2.03E-01
+	CO-60	1173.22		100.00	3.15E-02	6.69E-02	8.09E-02
		1332.49		100.00	-7.27E-03		6.69E-02

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Analysis Report for 2206038-12

R-3-12-18

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	ZN-65	1115.52		50.75	-5.09E-02	1.70E-01	1.70E-01
+	GA-67	93.31		35.70	9.57E+00	4.55E+01	4.55E+01
		208.95		2.24	7.75E+02		6.99E+02
		300.22		16.00	3.29E+01		1.01E+02
+	SE-75	121.11		16.70	-6.90E-02	1.00E-01	3.56E-01
		136.00		59.50	-7.84E-03		1.01E-01
		264.65		59.80	-8.78E-04		1.00E-01
		279.53		25.20	1.15E-01		2.56E-01
		400.65		11.40	-1.73E-01		5.76E-01
+	RB-82	776.52		13.00	-9.50E-01	1.01E+00	1.01E+00
+	RB-83	520.41		46.00	-8.44E-02	1.46E-01	1.46E-01
		529.64		30.30	-5.00E-02		2.30E-01
		552.65		16.40	2.96E-02		5.10E-01
+	KR-85	513.99		0.43	-2.45E+00	1.73E+01	1.73E+01
+	SR-85	513.99		99.27	-1.41E-02	9.94E-02	9.94E-02
+	Y-88	898.02		93.40	1.95E-02	7.30E-02	9.71E-02
		1836.01		99.38	-4.77E-02		7.30E-02
+	MO-93	263.06		56.72	-2.46E-02	6.53E-02	8.66E-02
		684.67		99.68	-2.02E-02		6.53E-02
		1477.11		99.08	-1.65E-02		7.09E-02
+	NB-93M	16.57		9.43	0.00E+00	1.43E-01	1.43E-01
+	NB-94	702.63		100.00	-4.72E-03	7.12E-02	7.75E-02
		871.10		100.00	4.03E-02		7.12E-02
+	NB-95	765.79	*	99.81	1.39E-01	1.27E-01	1.27E-01
+	NB-95M	235.69		25.00	-1.36E+02	5.11E+01	5.11E+01
+	ZR-95	724.18		43.70	-2.91E-02	1.67E-01	2.22E-01
		756.72		55.30	4.74E-03		1.67E-01
+	MO-99	181.06		6.20	4.19E+02	4.04E+02	6.49E+02
		739.58		12.80	-1.19E+01		4.04E+02
		778.00		4.50	-9.83E+02		1.09E+03
+	TC-99M	140.51		89.00	-1.81E-02	5.81E-02	5.81E-02
+	RU-103	497.08		89.00	-4.25E-02	9.05E-02	9.05E-02
+	RU-106	621.84		9.80	-4.13E-01	7.31E-01	7.31E-01
+	AG-108M	433.93		89.90	5.92E-03	5.77E-02	5.77E-02
		614.37		90.40	1.01E-02		1.09E-01
		722.95		90.50	-1.80E-03		7.84E-02
+	CD-109	88.03		3.72	2.07E+00	2.00E+00	2.00E+00
+	AG-110M	657.75		93.14	2.78E-03	8.73E-02	8.73E-02
		677.61		10.53	1.62E-01		6.93E-01
		706.67		16.46	2.76E-02		4.78E-01
		763.93		21.98	-6.93E-02		3.91E-01
		884.67		21.98	1.84E-01		3.56E-01
		1384.27		23.94	2.10E-02		2.84E-01
+	CD-113M	263.70		0.02	3.82E+01	2.19E+02	2.19E+02
+	SN-113	255.12		1.93	1.22E+00	9.64E-02	3.23E+00
		391.69		64.90	1.19E-02		9.64E-02
+	TE-123M	159.00		84.10	-3.17E-03	7.11E-02	7.11E-02

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Analysis Report for 2206038-12

R-3-12-18

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	SB-124	602.71	97.87	-1.27E-02	1.12E-01	1.12E-01
		645.85	7.26	-9.42E-02		1.21E+00
		722.78	11.10	-1.99E-02		8.64E-01
		1691.02	49.00	-4.16E-03		1.51E-01
+	I-125	35.49	6.49	1.81E-01	3.15E+00	3.15E+00
+	SB-125	176.33	6.89	-2.17E-01	1.79E-01	7.60E-01
		427.89	29.33	4.10E-02		1.79E-01
		463.38	10.35	3.97E-01		6.77E-01
		600.56	17.80	-4.44E-02		4.38E-01
		635.90	11.32	2.34E-02		6.16E-01
+	SB-126	414.70	83.30	4.28E-02	6.72E-02	6.87E-02
		666.33	99.60	-5.15E-03		6.72E-02
		695.00	99.60	-1.59E-02		7.15E-02
		720.50	53.80	4.77E-03		1.35E-01
+	SN-126	87.57	37.00	-9.22E-02	1.90E-01	1.90E-01
+	SB-127	473.00	25.00	-1.99E+00	2.04E+01	2.30E+01
		685.00	35.70	-6.30E+00		2.04E+01
		783.80	14.70	6.47E+00		6.75E+01
+	I-129	29.78	57.00	4.81E-01	3.30E-01	3.30E-01
		33.60	13.20	4.23E+00		1.51E+00
		39.58	7.52	-4.65E-01		1.28E+00
+	I-131	284.30	6.05	2.83E-02	6.80E-01	8.15E+00
		364.48	81.20	-4.33E-02		6.80E-01
		636.97	7.26	-1.89E+00		8.94E+00
		722.89	1.80	-8.67E-01		3.78E+01
+	TE-132	49.72	13.10	-8.13E+01	1.70E+01	1.31E+02
		228.16	88.00	4.24E+00		1.70E+01
+	BA-133	81.00	34.06	-9.22E-02	1.11E-01	1.99E-01
		302.84	18.33	3.43E-02		2.96E-01
		356.01	62.05	-3.24E-01		1.11E-01
+	I-133	529.87	86.30	3.20E+07	8.58E+07	8.58E+07
+	XE-133	81.00	38.00	-2.63E+00	5.69E+00	5.69E+00
+	CS-134	563.23	8.38	-1.90E-01	9.33E-02	8.15E-01
		569.32	15.43	-2.00E-02		4.54E-01
		604.70	97.60	-6.69E-03		9.33E-02
		795.84	85.40	3.30E-02		9.66E-02
		801.93	8.73	1.36E-01		7.90E-01
+	CS-135	268.24	16.00	1.76E-02	3.48E-01	3.48E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	1.63E-01	3.03E-01	2.82E+00
		163.89	4.61	-2.48E-01		4.54E+00
		176.55	13.56	-4.31E-01		1.51E+00
		273.65	12.66	-1.31E-01		1.74E+00
		340.57	48.50	1.04E-01		5.50E-01
		818.50	99.70	8.95E-02		3.03E-01
		1048.07	79.60	9.80E-02		3.43E-01
		1235.34	19.70	-6.29E-01		1.66E+00

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Analysis Report for 2206038-12

R-3-12-18

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CS-137	661.65	85.12	6.45E-02	9.33E-02	9.33E-02
+	LA-138	788.74	34.00	-1.03E-02	9.57E-02	2.33E-01
		1435.80	66.00	-4.73E-02		9.57E-02
+	CE-139	165.85	80.35	-4.68E-02	7.37E-02	7.37E-02
+	BA-140	162.64	6.70	1.50E+00	9.57E-01	3.25E+00
		304.84	4.50	-9.65E-01		4.73E+00
		423.70	3.20	2.35E+00		6.81E+00
		437.55	2.00	-4.61E-01		1.15E+01
		537.32	25.00	5.12E-01		9.57E-01
+	LA-140	328.77	20.50	4.35E-02	3.85E-01	1.15E+00
		487.03	45.50	-3.54E-02		4.79E-01
		815.85	23.50	2.98E-02		1.23E+00
		1596.49	95.49	5.87E-02		3.85E-01
+	CE-141	145.44	48.40	2.51E-02	1.94E-01	1.94E-01
+	CE-143	57.36	11.80	-2.98E+05	9.82E+04	3.07E+05
		293.26	42.00	-7.58E+04		9.82E+04
		664.55	5.20	9.85E+04		7.61E+05
+	CE-144	133.54	10.80	1.40E-01	5.15E-01	5.15E-01
+	PM-144	476.78	42.00	-6.73E-02	7.94E-02	1.26E-01
		618.01	98.60	-2.80E-03		8.36E-02
		696.49	99.49	-2.50E-02		7.94E-02
+	PM-145	36.85	21.70	-3.82E-01	2.95E-01	5.94E-01
		37.36	39.70	-8.89E-02		2.95E-01
		42.30	15.10	-3.95E-01		5.54E-01
		72.40	2.31	-7.00E+00		3.59E+00
+	PM-146	453.90	39.94	2.33E-02	1.36E-01	1.36E-01
		735.90	14.01	2.11E-01		5.22E-01
		747.13	13.10	1.11E-01		5.61E-01
+	ND-147	91.11	28.90	4.20E-01	1.22E+00	1.22E+00
		531.02	13.10	2.58E-02		2.29E+00
+	PM-149	285.90	3.10	2.37E+03	6.42E+03	6.42E+03
+	EU-152	121.78	20.50	-4.85E-02	2.50E-01	2.50E-01
		244.69	5.40	5.06E-01		1.24E+00
		344.27	19.13	2.54E-01		3.42E-01
		778.89	9.10	-3.46E-01		7.46E-01
		964.01	10.40	-8.53E-01		9.56E-01
		1085.78	7.22	-1.76E-01		8.90E-01
		1112.02	9.60	-3.70E-01		7.73E-01
		1407.95	14.94	1.11E-01		5.69E-01
+	GD-153	97.43	31.30	-8.27E-02	1.82E-01	1.82E-01
		103.18	22.20	-1.75E-01		2.39E-01
+	EU-154	123.07	40.50	1.10E-02	1.28E-01	1.28E-01
		723.30	19.70	-4.88E-02		3.73E-01
		873.19	11.50	-2.06E-01		5.78E-01
		996.32	10.30	1.35E-02		7.32E-01
		1004.76	17.90	-2.17E-03		4.00E-01
		1274.45	35.50	1.14E-01		2.48E-01
+	EU-155	86.50	30.90	2.77E-01	2.35E-01	2.35E-01
		105.30	20.70	6.97E-02		2.55E-01

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Analysis Report for 2206038-12

R-3-12-18

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	EU-156	811.77		10.40	-6.50E-01	1.96E+00	1.96E+00
		1153.47		7.20	4.31E-02		4.26E+00
		1230.71		8.90	1.23E+00		3.17E+00
+	HO-166M	184.41		72.60	1.57E-01	9.24E-02	9.24E-02
		280.45		29.60	-1.12E-01		1.77E-01
		410.94		11.10	-3.36E-01		4.78E-01
		711.69		54.10	-3.56E-02		1.28E-01
+	TM-171	66.72		0.14	-6.73E+00	5.23E+01	5.23E+01
+	HF-172	67.35		5.31	4.43E-01	4.70E-01	1.38E+00
		125.82		11.30	-1.65E-02		4.70E-01
+	LU-172	181.53		20.60	1.43E+00	1.66E+00	4.09E+00
		900.72		29.81	-7.45E-02		4.01E+00
		1093.66		62.50	5.97E-02		1.66E+00
+	LU-173	100.72		5.24	-1.45E-01	2.73E-01	1.00E+00
		272.11		21.20	-3.01E-02		2.73E-01
+	HF-175	343.40		84.00	1.24E-02	9.65E-02	9.65E-02
+	LU-176	88.34		13.30	5.56E-01	5.90E-02	5.38E-01
		201.83		86.00	2.56E-02		6.45E-02
		306.78		94.00	3.95E-02		5.90E-02
+	HF-181	133.02		41.70	6.22E-03	1.12E-01	1.92E-01
		345.85		17.20	1.92E-01		5.62E-01
		482.03		82.80	7.07E-02		1.12E-01
+	TA-182	67.75		41.20	6.51E-02	2.02E-01	2.02E-01
		1121.30		34.90	5.87E-01		4.46E-01
		1189.05		16.23	4.66E-02		5.05E-01
		1221.41		26.98	6.25E-02		3.59E-01
		1231.02		11.44	3.40E-01		8.73E-01
+	IR-192	308.46		29.68	1.26E-02	1.54E-01	2.35E-01
		468.07		48.10	4.49E-02		1.54E-01
+	HG-203	279.19		77.30	1.85E-02	1.08E-01	1.08E-01
+	TL-204	374.74		94.11	-1.83E-03	5.45E-02	5.45E-02
		899.15		99.16	5.14E-03		7.68E-02
		911.74		91.10	3.01E-01		1.58E-01
+	BI-207	569.67		97.72	-3.09E-03	7.01E-02	7.01E-02
		1063.62		74.90	-2.56E-04		1.02E-01
+	TL-208	583.14	*	30.22	8.73E-01	4.84E-01	4.84E-01
		860.37	*	4.48	1.79E+00		2.18E+00
		2614.66	*	35.85	8.40E-01		4.85E-01
+	BI-210M	262.00		45.00	-8.30E-02	1.07E-01	1.07E-01
		300.00		23.00	8.72E-02		2.66E-01
+	PB-210	46.50		4.25	7.63E-01	1.75E+00	1.75E+00
+	PB-211	404.84		2.90	3.46E-01	2.17E+00	2.17E+00
		831.96		2.90	2.07E+00		3.06E+00
+	BI-212	727.17	*	11.80	7.36E-01	9.82E-01	9.82E-01
		1620.62		2.75	6.07E-01		2.29E+00
+	PB-212	238.63	*	44.60	1.12E+00	2.86E-01	2.86E-01
		300.09	*	3.41	2.31E+00		3.27E+00
+	BI-214	609.31	*	46.30	1.15E+00	3.25E-01	3.25E-01

Analysis Report for 2206038-12

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BI-214	1120.29	*	15.10	1.20E+00	3.25E-01	1.00E+00
		1764.49	*	15.80	7.40E-01		6.63E-01
		2204.22	*	4.98	2.37E+00		1.26E+00
+	PB-214	295.21	*	19.19	1.38E+00	3.43E-01	5.84E-01
		351.92	*	37.19	1.05E+00		3.43E-01
+	RN-219	401.80		6.50	-8.27E-03	9.11E-01	9.11E-01
+	RA-223	323.87		3.88	-1.08E-01	1.39E+00	1.39E+00
+	RA-224	240.98	*	3.95	2.47E+00	3.19E+00	3.19E+00
+	RA-225	40.00		31.00	7.85E-01	1.04E+00	1.04E+00
+	RA-226	186.21	*	3.28	3.56E+00	3.24E+00	3.24E+00
+	TH-227	50.10		8.40	-1.78E-01	7.26E-01	7.66E-01
		236.00		11.50	-1.93E+00		7.26E-01
		256.20		6.30	-3.09E-01		8.21E-01
+	AC-228	338.32	*	11.40	6.38E-01	3.53E-01	8.16E-01
		911.07	*	27.70	1.04E+00		3.53E-01
		969.11	*	16.60	8.92E-01		1.14E+00
+	TH-230	48.43		16.90	-1.40E-01	4.09E-01	4.09E-01
		62.85		4.60	1.96E-02		1.57E+00
		67.67		0.37	6.18E+00		1.92E+01
+	PA-231	283.67		1.60	1.11E-02	2.35E+00	3.21E+00
		302.67		2.30	2.72E-01		2.35E+00
+	TH-231	25.64		14.70	-5.87E-01	7.57E-02	7.57E-02
		84.21		6.40	-1.28E+00		1.06E+00
+	PA-233	311.98		38.60	-4.30E-02	2.64E-01	2.64E-01
+	PA-234	131.20		20.40	-5.24E-02	2.54E-01	2.54E-01
		733.99		8.80	-1.64E-01		8.16E-01
		946.00		12.00	1.62E-01		6.13E-01
+	PA-234M	1001.03		0.92	5.35E-01	8.09E+00	8.09E+00
+	TH-234	63.29		3.80	9.00E-02	1.91E+00	1.91E+00
+	U-235	143.76		10.50	-1.39E-01	5.03E-01	5.03E-01
		163.35		4.70	-6.12E-02		1.12E+00
		205.31		4.70	-1.16E-02		1.14E+00
+	NP-237	86.50		12.60	6.71E-01	5.70E-01	5.70E-01
+	NP-239	106.10		22.70	1.76E+02	5.17E+02	5.17E+02
		228.18		10.70	2.96E+02		1.18E+03
		277.60		14.10	3.02E+02		9.11E+02
+	AM-241	59.54		35.90	1.05E-02	1.95E-01	1.95E-01
+	AM-243	74.67	*	66.00	2.79E-01	1.99E-01	1.99E-01
+	CM-243	209.75		3.29	6.67E-01	4.11E-01	1.79E+00
		228.14		10.60	1.34E-01		5.35E-01
		277.60		14.00	1.36E-01		4.11E-01

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

Analysis Report for 2206038-12

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NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	6.78E-01	6.78E-01	-3.63E-01	3.16E-01
	NA-22	1274.54		99.94	8.92E-02	8.92E-02	4.11E-02	4.08E-02
	NA-24	1368.53		99.99	6.44E-02	1.38E-02	2.68E-03	2.82E-02
		2754.09		99.86	1.38E-02		0.00E+00	0.00E+00
	AL-26	1808.65		99.76	5.77E-02	5.77E-02	-1.09E-02	2.39E-02
+	K-40	1460.81	*	10.67	1.71E+00	1.71E+00	4.68E+00	8.14E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	7.54E-02	7.54E-02	2.42E-02	3.69E-02
		78.34		96.00	8.66E-02		-3.64E-02	4.25E-02
	SC-46	889.25		98.98	9.17E-02	9.17E-02	3.72E-02	4.22E-02
		1120.51		99.90	1.65E-01		2.12E-01	7.83E-02
	V-48	983.52		99.98	2.42E-01	1.99E-01	8.86E-02	1.11E-01
		1312.10		97.50	1.99E-01		-1.06E-01	8.74E-02
	CR-51	320.08		9.83	1.03E+00	1.03E+00	1.33E-01	4.92E-01
	MN-54	834.83		99.97	9.10E-02	9.10E-02	1.06E-03	4.26E-02
	CO-56	846.75		99.96	9.10E-02	9.10E-02	-1.19E-02	4.19E-02
		1037.75		14.03	6.56E-01		1.00E-01	2.98E-01
		1238.25		67.00	1.86E-01		6.38E-02	8.58E-02
		1771.40		15.51	7.31E-01		3.76E-01	3.25E-01
		2587.48		16.90	4.44E-01		1.48E-01	1.72E-01
	CO-57	122.06		85.51	6.40E-02	6.40E-02	-1.24E-02	3.11E-02
		136.48		10.60	5.21E-01		6.89E-02	2.52E-01
	CO-58	810.76		99.40	8.01E-02	8.01E-02	-2.41E-02	3.66E-02
	FE-59	1099.22		56.50	1.75E-01	1.75E-01	-3.97E-03	7.85E-02
		1291.56		43.20	2.03E-01		-7.24E-02	8.82E-02
	CO-60	1173.22		100.00	8.09E-02	6.69E-02	3.15E-02	3.69E-02
		1332.49		100.00	6.69E-02		-7.27E-03	2.95E-02
	ZN-65	1115.52		50.75	1.70E-01	1.70E-01	-5.09E-02	7.76E-02
	GA-67	93.31		35.70	4.55E+01	4.55E+01	9.57E+00	2.22E+01
		208.95		2.24	6.99E+02		7.75E+02	3.39E+02
		300.22		16.00	1.01E+02		3.29E+01	4.83E+01
	SE-75	121.11		16.70	3.56E-01	1.00E-01	-6.90E-02	1.73E-01
		136.00		59.50	1.01E-01		-7.84E-03	4.89E-02
		264.65		59.80	1.00E-01		-8.78E-04	4.81E-02
		279.53		25.20	2.56E-01		1.15E-01	1.23E-01
		400.65		11.40	5.76E-01		-1.73E-01	2.73E-01

BP/Castex-Ltd Adm-Apx E-001832

Analysis Report for 2206038-12

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	RB-82	776.52		13.00	1.01E+00	1.01E+00	-9.50E-01	4.63E-01
	RB-83	520.41		46.00	1.46E-01	1.46E-01	-8.44E-02	6.79E-02
		529.64		30.30	2.30E-01		-5.00E-02	1.07E-01
		552.65		16.40	5.10E-01		2.96E-02	2.41E-01
	KR-85	513.99		0.43	1.73E+01	1.73E+01	-2.45E+00	8.20E+00
	SR-85	513.99		99.27	9.94E-02	9.94E-02	-1.41E-02	4.72E-02
	Y-88	898.02		93.40	9.71E-02	7.30E-02	1.95E-02	4.49E-02
		1836.01		99.38	7.30E-02		-4.77E-02	3.06E-02
	MO-93	263.06		56.72	8.66E-02	6.53E-02	-2.46E-02	4.13E-02
		684.67		99.68	6.53E-02		-2.02E-02	3.03E-02
		1477.11		99.08	7.09E-02		-1.65E-02	3.12E-02
	NB-93M	16.57		9.43	1.43E-01	1.43E-01	0.00E+00	0.00E+00
	NB-94	702.63		100.00	7.75E-02	7.12E-02	-4.72E-03	3.64E-02
		871.10		100.00	7.12E-02		4.03E-02	3.28E-02
+	NB-95	765.79	*	99.81	1.27E-01	1.27E-01	1.39E-01	5.94E-02
	NB-95M	235.69		25.00	5.11E+01	5.11E+01	-1.36E+02	2.49E+01
	ZR-95	724.18		43.70	2.22E-01	1.67E-01	-2.91E-02	1.04E-01
		756.72		55.30	1.67E-01		4.74E-03	7.76E-02
	MO-99	181.06		6.20	6.49E+02	4.04E+02	4.19E+02	3.14E+02
		739.58		12.80	4.04E+02		-1.19E+01	1.88E+02
		778.00		4.50	1.09E+03		-9.83E+02	5.02E+02
	TC-99M	140.51		89.00	5.81E-02	5.81E-02	-1.81E-02	2.82E-02
	RU-103	497.08		89.00	9.05E-02	9.05E-02	-4.25E-02	4.21E-02
	RU-106	621.84		9.80	7.31E-01	7.31E-01	-4.13E-01	3.42E-01
	AG-108M	433.93		89.90	5.77E-02	5.77E-02	5.92E-03	2.70E-02
		614.37		90.40	1.09E-01		1.01E-02	5.24E-02
		722.95		90.50	7.84E-02		-1.80E-03	3.65E-02
	CD-109	88.03		3.72	2.00E+00	2.00E+00	2.07E+00	9.81E-01
	AG-110M	657.75		93.14	8.73E-02	8.73E-02	2.78E-03	4.11E-02
		677.61		10.53	6.93E-01		1.62E-01	3.23E-01
		706.67		16.46	4.78E-01		2.76E-02	2.24E-01
		763.93		21.98	3.91E-01		-6.93E-02	1.83E-01
		884.67		21.98	3.56E-01		1.84E-01	1.64E-01
		1384.27		23.94	2.84E-01		2.10E-02	1.24E-01
	CD-113M	263.70		0.02	2.19E+02	2.19E+02	3.82E+01	1.05E+02
	SN-113	255.12		1.93	3.23E+00	9.64E-02	1.22E+00	1.55E+00
		391.69		64.90	9.64E-02		1.19E-02	4.55E-02
	TE-123M	159.00		84.10	7.11E-02	7.11E-02	-3.17E-03	3.44E-02
	SB-124	602.71		97.87	1.12E-01	1.12E-01	-1.27E-02	5.30E-02
		645.85		7.26	1.21E+00		-9.42E-02	5.62E-01
		722.78		11.10	8.64E-01		-1.99E-02	4.03E-01
		1691.02		49.00	1.51E-01		-4.16E-03	6.26E-02
	I-125	35.49		6.49	3.15E+00	3.15E+00	1.81E-01	1.55E+00
	SB-125	176.33		6.89	7.60E-01	1.79E-01	-2.17E-01	3.67E-01
		427.89		29.33	1.79E-01		4.10E-02	8.40E-02
		463.38		10.35	6.77E-01		3.97E-01	3.22E-01
		600.56		17.80	4.38E-01		-4.44E-02	2.07E-01
		635.90		11.32	6.16E-01		2.34E-02	2.89E-01
	SB-126	414.70		83.30	6.87E-02	6.72E-02	4.28E-02	3.25E-02
		666.33		99.60	6.72E-02		-5.15E-03	3.13E-02
		695.00		99.60	7.15E-02		-1.59E-02	3.34E-02
		720.50		53.80	1.35E-01		4.77E-03	6.32E-02
	SN-126	87.57		37.00	1.90E-01	1.90E-01	-9.22E-02	9.33E-02

Analysis Report for 2206038-12

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
SB-127	473.00	25.00	2.30E+01	2.04E+01	-1.99E+00	1.07E+01
	685.00	35.70	2.04E+01		-6.30E+00	9.45E+00
	783.80	14.70	6.75E+01		6.47E+00	3.18E+01
I-129	29.78	57.00	3.30E-01	3.30E-01	4.81E-01	1.62E-01
	33.60	13.20	1.51E+00		4.23E+00	7.43E-01
	39.58	7.52	1.28E+00		-4.65E-01	6.27E-01
I-131	284.30	6.05	8.15E+00	6.80E-01	2.83E-02	3.89E+00
	364.48	81.20	6.80E-01		-4.33E-02	3.23E-01
	636.97	7.26	8.94E+00		-1.89E+00	4.18E+00
	722.89	1.80	3.78E+01		-8.67E-01	1.76E+01
TE-132	49.72	13.10	1.31E+02	1.70E+01	-8.13E+01	6.38E+01
	228.16	88.00	1.70E+01		4.24E+00	8.20E+00
BA-133	81.00	34.06	1.99E-01	1.11E-01	-9.22E-02	9.75E-02
	302.84	18.33	2.96E-01		3.43E-02	1.42E-01
	356.01	62.05	1.11E-01		-3.24E-01	5.32E-02
I-133	529.87	86.30	8.58E+07	8.58E+07	3.20E+07	4.01E+07
XE-133	81.00	38.00	5.69E+00	5.69E+00	-2.63E+00	2.78E+00
CS-134	563.23	8.38	8.15E-01	9.33E-02	-1.90E-01	3.83E-01
	569.32	15.43	4.54E-01		-2.00E-02	2.14E-01
	604.70	97.60	9.33E-02		-6.69E-03	4.44E-02
	795.84	85.40	9.66E-02		3.30E-02	4.51E-02
	801.93	8.73	7.90E-01		1.36E-01	3.64E-01
CS-135	268.24	16.00	3.48E-01	3.48E-01	1.76E-02	1.67E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	2.82E+00	3.03E-01	1.63E-01	1.37E+00
	163.89	4.61	4.54E+00		-2.48E-01	2.20E+00
	176.55	13.56	1.51E+00		-4.31E-01	7.29E-01
	273.65	12.66	1.74E+00		-1.31E-01	8.35E-01
	340.57	48.50	5.50E-01		1.04E-01	2.64E-01
	818.50	99.70	3.03E-01		8.95E-02	1.41E-01
	1048.07	79.60	3.43E-01		9.80E-02	1.55E-01
	1235.34	19.70	1.66E+00		-6.29E-01	7.56E-01
CS-137	661.65	85.12	9.33E-02	9.33E-02	6.45E-02	4.40E-02
LA-138	788.74	34.00	2.33E-01	9.57E-02	-1.03E-02	1.09E-01
	1435.80	66.00	9.57E-02		-4.73E-02	4.16E-02
CE-139	165.85	80.35	7.37E-02	7.37E-02	-4.68E-02	3.57E-02
BA-140	162.64	6.70	3.25E+00	9.57E-01	1.50E+00	1.58E+00
	304.84	4.50	4.73E+00		-9.65E-01	2.25E+00
	423.70	3.20	6.81E+00		2.35E+00	3.20E+00
	437.55	2.00	1.15E+01		-4.61E-01	5.41E+00
	537.32	25.00	9.57E-01		5.12E-01	4.47E-01
LA-140	328.77	20.50	1.15E+00	3.85E-01	4.35E-02	5.51E-01
	487.03	45.50	4.79E-01		-3.54E-02	2.23E-01
	815.85	23.50	1.23E+00		2.98E-02	5.66E-01
	1596.49	95.49	3.85E-01		5.87E-02	1.73E-01
CE-141	145.44	48.40	1.94E-01	1.94E-01	2.51E-02	9.40E-02
CE-143	57.36	11.80	3.07E+05	9.82E+04	-2.98E+05	1.50E+05
	293.26	42.00	9.82E+04		-7.58E+04	4.76E+04
	664.55	5.20	7.61E+05		9.85E+04	3.57E+05
CE-144	133.54	10.80	5.15E-01	5.15E-01	1.40E-01	2.50E-01
PM-144	476.78	42.00	1.26E-01	7.94E-02	-6.73E-02	5.85E-02

Analysis Report for 2206038-12

R-3-12-18

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
PM-144	618.01	98.60	8.36E-02	7.94E-02	-2.80E-03	3.95E-02
	696.49	99.49	7.94E-02		-2.50E-02	3.72E-02
PM-145	36.85	21.70	5.94E-01	2.95E-01	-3.82E-01	2.91E-01
	37.36	39.70	2.95E-01		-8.89E-02	1.44E-01
	42.30	15.10	5.54E-01		-3.95E-01	2.70E-01
	72.40	2.31	3.59E+00		-7.00E+00	1.76E+00
PM-146	453.90	39.94	1.36E-01	1.36E-01	2.33E-02	6.37E-02
	735.90	14.01	5.22E-01		2.11E-01	2.43E-01
	747.13	13.10	5.61E-01		1.11E-01	2.61E-01
ND-147	91.11	28.90	1.22E+00	1.22E+00	4.20E-01	5.95E-01
	531.02	13.10	2.29E+00		2.58E-02	1.07E+00
PM-149	285.90	3.10	6.42E+03	6.42E+03	2.37E+03	3.07E+03
EU-152	121.78	20.50	2.50E-01	2.50E-01	-4.85E-02	1.22E-01
	244.69	5.40	1.24E+00		5.06E-01	6.02E-01
	344.27	19.13	3.42E-01		2.54E-01	1.64E-01
	778.89	9.10	7.46E-01		-3.46E-01	3.45E-01
	964.01	10.40	9.56E-01		-8.53E-01	4.49E-01
	1085.78	7.22	8.90E-01		-1.76E-01	3.99E-01
	1112.02	9.60	7.73E-01		-3.70E-01	3.51E-01
	1407.95	14.94	5.69E-01		1.11E-01	2.57E-01
GD-153	97.43	31.30	1.82E-01	1.82E-01	-8.27E-02	8.83E-02
	103.18	22.20	2.39E-01		-1.75E-01	1.16E-01
EU-154	123.07	40.50	1.28E-01	1.28E-01	1.10E-02	6.23E-02
	723.30	19.70	3.73E-01		-4.88E-02	1.74E-01
	873.19	11.50	5.78E-01		-2.06E-01	2.64E-01
	996.32	10.30	7.32E-01		1.35E-02	3.36E-01
	1004.76	17.90	4.00E-01		-2.17E-03	1.82E-01
	1274.45	35.50	2.48E-01		1.14E-01	1.13E-01
EU-155	86.50	30.90	2.35E-01	2.35E-01	2.77E-01	1.15E-01
	105.30	20.70	2.55E-01		6.97E-02	1.24E-01
EU-156	811.77	10.40	1.96E+00	1.96E+00	-6.50E-01	8.96E-01
	1153.47	7.20	4.26E+00		4.31E-02	1.97E+00
	1230.71	8.90	3.17E+00		1.23E+00	1.45E+00
HO-166M	184.41	72.60	9.24E-02	9.24E-02	1.57E-01	4.50E-02
	280.45	29.60	1.77E-01		-1.12E-01	8.49E-02
	410.94	11.10	4.78E-01		-3.36E-01	2.25E-01
	711.69	54.10	1.28E-01		-3.56E-02	5.94E-02
TM-171	66.72	0.14	5.23E+01	5.23E+01	-6.73E+00	2.56E+01
HF-172	67.35	5.31	1.38E+00	4.70E-01	4.43E-01	6.75E-01
	125.82	11.30	4.70E-01		-1.65E-02	2.28E-01
LU-172	181.53	20.60	4.09E+00	1.66E+00	1.43E+00	1.98E+00
	900.72	29.81	4.01E+00		-7.45E-02	1.86E+00
	1093.66	62.50	1.66E+00		5.97E-02	7.48E-01
LU-173	100.72	5.24	1.00E+00	2.73E-01	-1.45E-01	4.88E-01
	272.11	21.20	2.73E-01		-3.01E-02	1.31E-01
HF-175	343.40	84.00	9.65E-02	9.65E-02	1.24E-02	4.62E-02
LU-176	88.34	13.30	5.38E-01	5.90E-02	5.56E-01	2.64E-01
	201.83	86.00	6.45E-02		2.56E-02	3.12E-02
	306.78	94.00	5.90E-02		3.95E-02	2.82E-02
HF-181	133.02	41.70	1.92E-01	1.12E-01	6.22E-03	9.29E-02
	345.85	17.20	5.62E-01		1.92E-01	2.69E-01
	482.03	82.80	1.12E-01		7.07E-02	5.27E-02
TA-182	67.75	41.20	2.02E-01	2.02E-01	6.51E-02	9.90E-02

Analysis Report for 2206038-12

R-3-12-18

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TA-182	1121.30		34.90	4.46E-01	2.02E-01	5.87E-01	2.12E-01
		1189.05		16.23	5.05E-01		4.66E-02	2.26E-01
		1221.41		26.98	3.59E-01		6.25E-02	1.64E-01
		1231.02		11.44	8.73E-01		3.40E-01	3.99E-01
	IR-192	308.46		29.68	2.35E-01	1.54E-01	1.26E-02	1.12E-01
		468.07		48.10	1.54E-01		4.49E-02	7.25E-02
	HG-203	279.19		77.30	1.08E-01	1.08E-01	1.85E-02	5.17E-02
	TL-204	374.74		94.11	5.45E-02	5.45E-02	-1.83E-03	2.57E-02
		899.15		99.16	7.68E-02		5.14E-03	3.54E-02
		911.74		91.10	1.58E-01		3.01E-01	7.60E-02
	BI-207	569.67		97.72	7.01E-02	7.01E-02	-3.09E-03	3.30E-02
		1063.62		74.90	1.02E-01		-2.56E-04	4.65E-02
+	TL-208	583.14	*	30.22	4.84E-01	4.84E-01	8.73E-01	2.35E-01
		860.37	*	4.48	2.18E+00		1.79E+00	1.03E+00
		2614.66	*	35.85	4.85E-01		8.40E-01	2.24E-01
	BI-210M	262.00		45.00	1.07E-01	1.07E-01	-8.30E-02	5.09E-02
		300.00		23.00	2.66E-01		8.72E-02	1.28E-01
	PB-210	46.50		4.25	1.75E+00	1.75E+00	7.63E-01	8.54E-01
	PB-211	404.84		2.90	2.17E+00	2.17E+00	3.46E-01	1.03E+00
		831.96		2.90	3.06E+00		2.07E+00	1.44E+00
+	BI-212	727.17	*	11.80	9.82E-01	9.82E-01	7.36E-01	4.70E-01
		1620.62		2.75	2.29E+00		6.07E-01	9.79E-01
+	PB-212	238.63	*	44.60	2.86E-01	2.86E-01	1.12E+00	1.41E-01
		300.09	*	3.41	3.27E+00		2.31E+00	1.60E+00
+	BI-214	609.31	*	46.30	3.25E-01	3.25E-01	1.15E+00	1.58E-01
		1120.29	*	15.10	1.00E+00		1.20E+00	4.79E-01
		1764.49	*	15.80	6.63E-01		7.40E-01	3.01E-01
		2204.22	*	4.98	1.26E+00		2.37E+00	5.17E-01
+	PB-214	295.21	*	19.19	5.84E-01	3.43E-01	1.38E+00	2.86E-01
		351.92	*	37.19	3.43E-01		1.05E+00	1.68E-01
	RN-219	401.80		6.50	9.11E-01	9.11E-01	-8.27E-03	4.32E-01
	RA-223	323.87		3.88	1.39E+00	1.39E+00	-1.08E-01	6.60E-01
+	RA-224	240.98	*	3.95	3.19E+00	3.19E+00	2.47E+00	1.57E+00
	RA-225	40.00		31.00	1.04E+00	1.04E+00	7.85E-01	5.07E-01
+	RA-226	186.21	*	3.28	3.24E+00	3.24E+00	3.56E+00	1.59E+00
	TH-227	50.10		8.40	7.66E-01	7.26E-01	-1.78E-01	3.72E-01
		236.00		11.50	7.26E-01		-1.93E+00	3.54E-01
		256.20		6.30	8.21E-01		-3.09E-01	3.93E-01
+	AC-228	338.32	*	11.40	8.16E-01	3.53E-01	6.38E-01	3.96E-01
		911.07	*	27.70	3.53E-01		1.04E+00	1.66E-01
		969.11	*	16.60	1.14E+00		8.92E-01	5.54E-01
	TH-230	48.43		16.90	4.09E-01	4.09E-01	-1.40E-01	1.99E-01
		62.85		4.60	1.57E+00		1.96E-02	7.69E-01
		67.67		0.37	1.92E+01		6.18E+00	9.41E+00
	PA-231	283.67		1.60	3.21E+00	2.35E+00	1.11E-02	1.53E+00
		302.67		2.30	2.35E+00		2.72E-01	1.12E+00
	TH-231	25.64		14.70	7.57E-02	7.57E-02	-5.87E-01	2.39E-02
		84.21		6.40	1.06E+00		-1.28E+00	5.19E-01
	PA-233	311.98		38.60	2.64E-01	2.64E-01	-4.30E-02	1.25E-01
	PA-234	131.20		20.40	2.54E-01	2.54E-01	-5.24E-02	1.23E-01
		733.99		8.80	8.16E-01		-1.64E-01	3.80E-01
		946.00		12.00	6.13E-01		1.62E-01	2.82E-01
	PA-234M	1001.03		0.92	8.09E+00	8.09E+00	5.35E-01	3.70E+00

Analysis Report for 2206038-12

R-3-12-18

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TH-234	63.29		3.80	1.91E+00	1.91E+00	9.00E-02	9.34E-01
	U-235	143.76		10.50	5.03E-01	5.03E-01	-1.39E-01	2.44E-01
		163.35		4.70	1.12E+00		-6.12E-02	5.41E-01
		205.31		4.70	1.14E+00		-1.16E-02	5.51E-01
	NP-237	86.50		12.60	5.70E-01	5.70E-01	6.71E-01	2.79E-01
	NP-239	106.10		22.70	5.17E+02	5.17E+02	1.76E+02	2.51E+02
		228.18		10.70	1.18E+03		2.96E+02	5.71E+02
		277.60		14.10	9.11E+02		3.02E+02	4.37E+02
	AM-241	59.54		35.90	1.95E-01	1.95E-01	1.05E-02	9.51E-02
+	AM-243	74.67	*	66.00	1.99E-01	1.99E-01	2.79E-01	9.85E-02
	CM-243	209.75		3.29	1.79E+00	4.11E-01	6.67E-01	8.64E-01
		228.14		10.60	5.35E-01		1.34E-01	2.58E-01
		277.60		14.00	4.11E-01		1.36E-01	1.97E-01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

Analysis Report for 2206038-12

R-3-12-18

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-3-12-18

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	1	58	225	399
33:	415	449	376	245	240	152	123	132
41:	111	118	101	109	81	89	117	111
49:	85	67	87	82	79	79	82	104
57:	74	101	95	118	115	135	123	127
65:	151	127	144	132	124	153	131	130
73:	147	202	210	285	363	252	302	188
81:	139	141	147	134	118	157	142	144
89:	185	154	130	168	120	147	123	113
97:	80	80	87	86	87	79	61	74
105:	76	74	78	91	89	78	75	71
113:	83	76	72	69	69	73	71	75
121:	74	71	80	69	78	80	74	59
129:	84	80	74	70	75	79	68	75
137:	72	68	72	68	69	72	73	68
145:	78	68	72	80	69	73	64	70
153:	63	82	67	66	65	66	66	65
161:	54	61	62	87	54	58	58	67
169:	70	61	51	49	49	67	63	63
177:	49	50	54	67	60	74	46	64
185:	83	107	124	89	68	71	68	65
193:	44	61	64	58	63	52	52	58
201:	61	65	53	55	51	46	47	56
209:	61	71	83	47	43	54	50	55
217:	51	55	48	49	35	41	56	51
225:	54	43	54	42	47	66	46	50
233:	45	43	58	71	76	115	222	312
241:	162	95	118	97	55	44	68	63
249:	49	50	47	41	45	39	33	50
257:	36	35	26	42	32	28	23	30
265:	36	37	36	32	42	42	45	40
273:	40	43	25	39	42	38	48	41
281:	30	33	32	27	36	33	25	29
289:	44	30	40	26	34	47	89	127
297:	126	53	25	47	56	36	39	24
305:	23	32	24	34	36	33	24	25
313:	33	28	25	26	27	20	23	24
321:	37	26	24	29	24	25	35	30
329:	38	34	26	24	27	31	35	21
337:	36	42	80	68	34	25	42	32
345:	32	40	40	29	31	38	57	130
353:	209	121	57	34	36	32	36	34
361:	28	23	24	20	31	21	35	29

BP/Castex-Ltd Adm-Apx E-001839

369:	27	26	20	19	19	18	29	18

Sample Title: R-3-12-18

Channel								
377:	17	13	20	19	27	21	20	24
385:	21	10	21	22	13	18	19	17
393:	17	18	28	30	12	18	19	19
401:	16	24	24	24	30	28	27	23
409:	20	30	20	13	12	15	25	27
417:	11	26	15	17	14	17	25	12
425:	12	13	22	18	7	18	14	12
433:	17	14	9	15	23	20	12	19
441:	26	19	21	20	16	18	20	18
449:	15	18	11	14	21	16	13	13
457:	15	12	18	22	19	22	26	39
465:	26	14	17	19	22	19	10	13
473:	14	13	12	14	14	13	10	11
481:	24	14	19	18	15	9	17	13
489:	19	8	9	15	7	10	18	9
497:	6	21	11	12	16	17	11	17
505:	18	13	20	18	19	29	63	43
513:	50	20	18	13	25	15	15	11
521:	16	9	12	18	13	25	10	11
529:	13	10	17	15	16	10	13	16
537:	13	20	12	7	7	9	13	11
545:	11	13	16	19	10	10	13	11
553:	13	14	17	13	10	12	11	12
561:	16	12	15	12	8	15	7	13
569:	17	9	17	12	13	16	12	12
577:	18	15	20	16	26	25	55	95
585:	55	22	20	17	20	15	12	18
593:	14	14	11	9	11	15	10	14
601:	14	18	13	18	19	18	24	28
609:	76	150	94	47	34	18	21	15
617:	20	13	11	12	10	12	9	9
625:	12	14	11	11	8	10	9	12
633:	12	14	10	7	14	4	12	10
641:	10	12	6	8	9	10	7	10
649:	13	8	8	5	10	9	9	14
657:	11	8	16	13	14	19	9	10
665:	12	6	10	10	6	10	3	10
673:	10	9	8	13	6	5	14	8
681:	10	3	10	8	11	8	11	6
689:	13	8	7	10	9	13	9	10
697:	7	10	13	14	13	18	9	7
705:	10	9	15	9	8	12	8	5
713:	11	8	9	6	12	9	11	13
721:	7	8	8	11	8	8	17	24
729:	16	21	12	10	7	11	7	9
737:	7	11	12	6	5	12	6	8
745:	10	6	13	6	11	9	9	5
753:	6	12	8	13	9	5	6	3
761:	9	9	19	2	10	10	15	18
769:	17	15	7	8	14	7	10	6
777:	6	6	5	5	10	12	12	9
785:	16	11	18	4	9	8	10	9
793:	11	6	19	13	6	7	8	8

BP/Castex-Ltd Adm-Apx E-001840

801:	6	6	5	5	9	11	14	8

Sample Title: R-3-12-18

Channel								
809:	6	7	6	4	2	5	8	12
817:	11	8	3	10	7	8	6	8
825:	6	8	4	7	12	7	14	11
833:	8	17	11	8	9	10	9	12
841:	9	7	5	5	6	10	3	8
849:	7	8	10	7	7	8	5	6
857:	6	5	12	13	14	5	8	7
865:	8	3	4	8	7	8	5	6
873:	7	5	4	4	8	6	6	3
881:	2	9	7	5	2	7	6	11
889:	6	5	8	4	6	5	9	11
897:	5	7	6	4	9	7	10	12
905:	18	15	5	6	15	20	50	55
913:	24	16	6	10	11	9	10	7
921:	8	8	6	8	6	6	9	10
929:	3	3	9	6	1	11	15	8
937:	8	4	9	3	5	5	10	6
945:	1	5	5	5	11	4	6	4
953:	6	4	8	9	4	7	8	4
961:	9	3	10	17	17	14	9	20
969:	34	23	5	10	7	11	5	8
977:	5	5	9	3	6	8	2	8
985:	9	9	5	3	5	8	6	5
993:	3	9	4	7	5	5	8	7
1001:	5	4	4	7	3	7	9	2
1009:	3	6	5	9	7	7	5	5
1017:	1	3	5	5	4	3	7	9
1025:	3	8	8	11	3	10	4	6
1033:	3	3	8	4	6	4	6	3
1041:	3	5	3	2	2	5	2	7
1049:	4	5	6	5	3	5	5	2
1057:	7	9	5	8	6	4	7	4
1065:	5	4	4	5	3	4	2	5
1073:	3	4	10	3	3	7	6	6
1081:	2	5	2	6	3	3	3	3
1089:	5	4	6	7	2	2	2	6
1097:	8	3	3	1	3	2	3	3
1105:	5	1	2	8	6	4	6	3
1113:	2	7	5	7	9	6	14	27
1121:	30	18	11	9	6	5	6	7
1129:	3	9	5	4	7	9	4	5
1137:	4	6	11	10	6	6	5	6
1145:	4	5	4	2	5	5	6	3
1153:	9	8	12	8	4	2	1	6
1161:	6	1	5	6	6	8	4	4
1169:	4	7	3	6	2	6	6	6
1177:	2	4	4	7	4	8	5	5
1185:	2	3	2	3	3	9	4	1
1193:	2	3	7	3	4	2	5	6
1201:	4	3	2	7	7	8	4	6
1209:	5	7	7	5	4	3	4	2
1217:	3	7	5	7	4	6	3	4
1225:	5	6	9	4	7	3	4	4

BP/Castex-Ltd Adm-Apx E-001841

1233:	7	4	1	4	7	8	13	6

Sample Title: R-3-12-18

Channel								
1241:	10	4	6	4	6	6	6	2
1249:	7	3	7	1	4	10	5	2
1257:	5	2	6	2	1	1	5	5
1265:	4	4	6	4	4	1	4	8
1273:	4	5	9	2	6	3	5	4
1281:	3	4	5	2	2	2	2	3
1289:	0	3	3	4	1	1	4	4
1297:	2	4	3	5	1	4	3	1
1305:	1	1	3	1	3	6	3	0
1313:	0	4	7	4	2	0	4	4
1321:	2	5	1	2	3	7	4	5
1329:	2	3	1	7	1	3	2	2
1337:	2	1	1	3	6	1	3	4
1345:	2	3	4	7	1	6	2	6
1353:	3	4	3	1	1	3	2	1
1361:	3	2	1	3	3	4	0	2
1369:	4	2	2	1	4	5	3	4
1377:	6	14	9	2	1	3	1	2
1385:	2	5	5	1	0	4	4	6
1393:	5	3	4	5	6	2	3	3
1401:	3	5	2	1	4	3	8	4
1409:	3	7	3	4	5	2	4	2
1417:	4	2	2	5	4	3	2	1
1425:	1	0	0	3	6	5	1	2
1433:	2	3	1	4	3	0	5	6
1441:	4	1	1	0	3	0	3	3
1449:	5	2	2	4	5	9	7	8
1457:	8	9	33	51	44	31	13	9
1465:	11	5	5	3	3	7	2	6
1473:	5	2	4	1	4	1	1	0
1481:	6	5	3	0	1	2	4	3
1489:	7	1	1	2	2	3	1	4
1497:	1	2	2	2	3	2	3	1
1505:	1	3	5	5	1	2	3	2
1513:	2	1	3	1	2	5	3	4
1521:	4	1	0	1	0	3	2	1
1529:	2	0	0	4	0	3	1	1
1537:	0	2	4	3	2	2	1	3
1545:	3	1	2	4	1	2	1	5
1553:	2	1	3	0	2	1	1	5
1561:	1	1	2	0	2	3	0	1
1569:	3	0	0	2	0	2	2	4
1577:	2	1	1	1	4	3	2	5
1585:	1	1	7	7	3	3	6	9
1593:	3	4	1	2	2	6	2	1
1601:	4	1	1	2	2	4	3	4
1609:	1	2	3	3	1	0	2	2
1617:	0	2	0	3	4	1	2	0
1625:	3	5	4	1	3	5	2	3
1633:	5	1	1	2	1	1	1	3
1641:	0	4	4	3	2	1	2	1
1649:	1	2	0	1	1	3	1	2
1657:	3	0	3	3	2	1	2	2

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1665:	3	2	0	3	3	1	0	1

Sample Title: R-3-12-18

Channel								
1673:	1	1	3	1	2	2	2	1
1681:	2	1	1	0	2	0	0	0
1689:	2	2	0	1	3	1	2	0
1697:	2	1	0	2	3	2	2	3
1705:	2	0	2	0	1	2	1	0
1713:	1	1	3	1	2	2	0	2
1721:	5	2	1	3	0	2	4	5
1729:	4	5	1	0	3	3	1	1
1737:	2	4	4	1	5	1	0	1
1745:	1	0	1	3	0	3	0	0
1753:	4	2	2	1	0	3	1	4
1761:	2	5	7	18	10	6	0	5
1769:	6	4	0	1	0	0	5	3
1777:	6	1	1	1	0	1	1	1
1785:	1	0	0	2	1	0	0	0
1793:	1	0	0	0	2	1	0	2
1801:	1	2	2	0	1	0	2	0
1809:	1	0	2	1	1	1	0	1
1817:	0	2	2	0	0	2	1	1
1825:	0	1	2	4	0	1	1	0
1833:	0	1	1	1	1	3	3	2
1841:	2	0	2	1	4	5	4	2
1849:	3	1	0	2	1	1	0	1
1857:	0	2	3	0	1	2	2	0
1865:	2	1	1	0	0	1	1	0
1873:	2	2	0	5	1	2	0	1
1881:	1	0	0	1	1	4	1	3
1889:	2	2	1	1	0	1	2	2
1897:	1	1	0	1	1	0	2	1
1905:	2	0	0	0	0	1	1	2
1913:	0	0	1	0	0	1	0	0
1921:	0	2	2	3	0	1	0	3
1929:	3	0	1	3	1	3	3	2
1937:	2	3	1	2	1	2	3	2
1945:	3	1	1	3	1	2	2	3
1953:	2	1	5	0	0	3	2	3
1961:	1	1	0	2	2	0	2	0
1969:	1	1	0	1	2	3	2	0
1977:	2	0	1	3	0	1	0	2
1985:	2	1	0	1	1	0	3	0
1993:	0	0	0	0	1	0	2	1
2001:	0	1	0	2	1	1	2	3
2009:	0	2	1	2	2	0	3	1
2017:	4	1	2	2	0	0	3	2
2025:	2	0	1	1	1	2	0	1
2033:	1	1	3	0	0	0	1	1
2041:	2	1	1	2	1	0	1	1
2049:	0	2	2	4	2	2	0	3
2057:	2	1	0	0	1	0	2	2
2065:	0	2	0	1	2	1	1	0
2073:	2	1	0	1	1	1	3	2
2081:	0	2	0	0	0	1	1	2
2089:	1	0	1	0	1	3	0	1

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2097:	1	1	0	2	4	1	4	0

Sample Title: R-3-12-18

Channel								
2105:	3	2	3	5	1	0	1	2
2113:	1	0	3	1	4	3	2	2
2121:	1	0	0	2	2	1	3	1
2129:	2	2	0	0	1	2	2	0
2137:	0	1	0	2	1	0	0	0
2145:	0	2	1	4	0	2	0	1
2153:	0	1	1	1	2	3	2	1
2161:	0	3	0	0	3	0	2	1
2169:	1	2	1	1	1	1	1	0
2177:	0	2	1	0	0	2	1	0
2185:	0	2	2	2	0	1	1	3
2193:	1	1	1	0	3	1	2	2
2201:	1	5	5	8	2	1	1	0
2209:	0	1	2	2	0	1	2	1
2217:	4	1	0	1	2	0	2	0
2225:	0	0	1	4	1	2	0	0
2233:	0	3	1	0	0	1	1	2
2241:	1	2	1	0	0	1	3	2
2249:	0	0	1	1	0	0	0	2
2257:	0	2	0	0	2	1	2	1
2265:	2	1	0	0	0	2	0	0
2273:	0	2	0	1	1	0	1	1
2281:	0	0	1	1	0	1	1	1
2289:	2	1	0	0	2	2	3	2
2297:	2	1	0	2	1	0	1	3
2305:	1	1	3	2	2	1	3	1
2313:	2	1	2	0	1	1	0	1
2321:	3	1	0	1	0	1	1	2
2329:	1	2	3	2	0	1	2	2
2337:	3	1	3	0	3	1	1	2
2345:	1	1	0	1	1	0	0	2
2353:	1	2	0	0	1	1	2	1
2361:	0	2	2	2	0	0	0	0
2369:	2	1	2	0	0	0	0	1
2377:	1	0	3	5	0	0	2	0
2385:	0	2	1	0	1	3	0	0
2393:	0	3	1	1	0	1	4	0
2401:	0	3	1	0	1	1	1	1
2409:	0	0	1	1	0	1	1	0
2417:	1	1	3	0	0	3	0	1
2425:	0	2	1	0	1	0	1	1
2433:	0	1	2	1	0	1	0	0
2441:	1	3	3	0	0	0	0	0
2449:	0	1	2	1	2	0	2	0
2457:	0	1	0	0	1	0	0	0
2465:	1	0	1	0	0	0	0	0
2473:	1	0	1	0	2	0	3	0
2481:	1	0	1	0	0	0	0	0
2489:	0	2	1	0	3	0	0	1
2497:	1	0	1	0	0	0	0	1
2505:	0	1	0	2	0	1	0	0
2513:	0	1	0	0	0	1	0	0
2521:	0	0	0	0	0	0	0	1

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2529:	1	0	0	3	0	1	0	0

Sample Title: R-3-12-18

Channel								
2537:	0	0	0	1	0	0	2	0
2545:	0	0	0	0	1	0	2	0
2553:	1	1	0	0	0	0	0	1
2561:	1	0	1	0	1	0	0	1
2569:	0	1	0	1	0	0	1	0
2577:	1	0	0	0	1	0	1	0
2585:	0	0	0	1	1	0	0	0
2593:	0	0	0	0	0	1	0	0
2601:	0	0	2	3	2	2	2	3
2609:	6	4	9	15	23	14	10	2
2617:	0	4	5	2	2	2	0	2
2625:	0	1	0	0	0	0	0	0
2633:	0	0	0	1	1	0	1	0
2641:	0	0	0	0	1	1	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	0	0	1	0	0
2665:	0	0	0	0	1	1	0	0
2673:	0	1	0	0	0	0	0	0
2681:	1	0	0	0	0	0	0	0
2689:	0	0	0	0	1	2	0	0
2697:	0	0	0	0	2	0	0	0
2705:	0	0	0	0	0	0	0	0
2713:	0	0	0	0	1	0	0	1
2721:	1	0	1	1	0	0	0	0
2729:	0	0	0	0	1	1	1	0
2737:	0	0	0	1	0	0	0	1
2745:	0	0	0	0	0	0	0	0
2753:	0	0	0	0	0	0	0	1
2761:	1	0	0	1	0	0	0	0
2769:	0	0	1	1	0	0	0	0
2777:	0	2	0	1	0	0	0	0
2785:	0	1	1	0	0	0	0	0
2793:	0	0	1	1	0	0	0	0
2801:	0	0	0	0	0	2	1	1
2809:	0	1	0	0	1	0	0	1
2817:	0	0	0	1	0	0	0	0
2825:	0	0	0	0	0	0	0	0
2833:	0	1	0	0	0	0	0	1
2841:	0	0	0	1	0	0	0	0
2849:	2	0	0	0	0	1	0	1
2857:	0	0	1	0	0	0	0	0
2865:	0	1	1	0	0	0	0	0
2873:	0	0	0	0	1	0	0	0
2881:	0	0	0	0	0	0	0	0
2889:	0	1	0	0	0	0	0	0
2897:	1	1	0	1	0	1	0	0
2905:	1	1	1	0	0	0	0	0
2913:	0	0	0	0	0	0	1	0
2921:	1	0	0	0	0	0	0	0
2929:	0	0	1	0	0	1	0	0
2937:	0	0	0	0	0	1	1	0
2945:	0	0	1	1	0	1	0	1
2953:	0	2	1	0	0	0	1	0

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2961:	0	0	1	0	1	0	0	0

Sample Title: R-3-12-18

Channel								
2969:	0	0	0	0	0	0	0	0
2977:	0	0	0	0	0	0	0	0
2985:	0	0	0	0	0	0	0	1
2993:	0	2	1	0	0	0	0	0
3001:	0	0	2	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	1	0	0	0	0	0	1
3025:	0	0	0	0	0	1	0	0
3033:	0	0	1	0	1	0	0	0
3041:	0	0	0	1	0	0	0	0
3049:	0	0	0	0	0	0	2	1
3057:	0	0	1	0	0	1	0	0
3065:	1	0	0	0	0	0	0	0
3073:	1	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	0	0	0	0	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	1	0	0	1	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	0	0	0	0	1	1	0	0
3129:	0	0	1	1	1	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	1	0	0	0	0	1	0	1
3153:	1	0	0	0	1	0	0	0
3161:	0	0	0	0	0	0	1	0
3169:	0	0	0	0	0	1	0	0
3177:	0	0	0	2	0	0	0	1
3185:	0	1	0	1	0	0	1	0
3193:	0	0	1	1	0	0	0	1
3201:	0	0	0	0	0	0	0	0
3209:	0	0	0	0	0	0	0	0
3217:	1	0	0	0	0	0	0	1
3225:	1	0	0	0	0	0	0	0
3233:	0	1	0	0	1	0	0	0
3241:	0	0	0	0	0	0	0	0
3249:	0	0	0	0	0	0	0	0
3257:	0	0	1	0	0	0	0	0
3265:	0	0	0	0	0	0	0	0
3273:	0	0	0	0	0	0	0	1
3281:	0	1	0	0	0	0	0	0
3289:	0	0	0	0	0	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0
3313:	0	1	0	0	0	2	0	0
3321:	0	0	0	1	1	2	0	0
3329:	1	0	0	0	0	0	0	0
3337:	1	0	0	0	0	0	0	0
3345:	0	0	1	0	0	0	0	0
3353:	0	0	0	0	0	1	0	0
3361:	0	0	0	1	0	0	0	0
3369:	1	0	1	0	1	0	1	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0

3393:	0	1	0	0	0	0	0	2

Sample Title: R-3-12-18

Channel								
3401:	1	1	0	0	1	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	2	1	0	1	0
3425:	0	0	0	0	0	0	1	0
3433:	0	1	0	0	0	0	0	1
3441:	0	0	0	0	0	0	0	0
3449:	1	1	0	0	1	1	0	0
3457:	0	0	0	1	1	0	0	0
3465:	2	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	1	0	0	1	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	1	0
3513:	0	0	0	1	0	0	0	0
3521:	1	0	0	0	1	0	0	1
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	0	0	0	0	0
3545:	1	0	0	0	0	0	1	1
3553:	1	0	0	0	0	0	0	0
3561:	0	0	0	0	0	0	1	0
3569:	1	0	1	0	1	1	2	1
3577:	0	0	1	0	0	0	0	0
3585:	0	0	0	1	0	0	0	0
3593:	0	1	0	0	1	1	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	1	0	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	1	0	0	0	1	0	0	0
3649:	0	0	1	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	1	0	0
3673:	0	0	0	0	0	0	0	0
3681:	1	0	0	0	0	0	0	0
3689:	0	0	0	0	0	1	1	1
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	1	0	1
3713:	0	1	0	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	1	0	0	0	0	0
3737:	0	0	1	0	0	0	0	0
3745:	0	0	0	0	1	0	0	0
3753:	0	0	0	1	1	0	0	1
3761:	0	0	0	0	0	0	0	1
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	2	0	3	0	0
3785:	0	0	0	0	1	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	1	0	0	0
3809:	1	1	0	0	0	0	0	0
3817:	0	0	1	0	0	0	1	0

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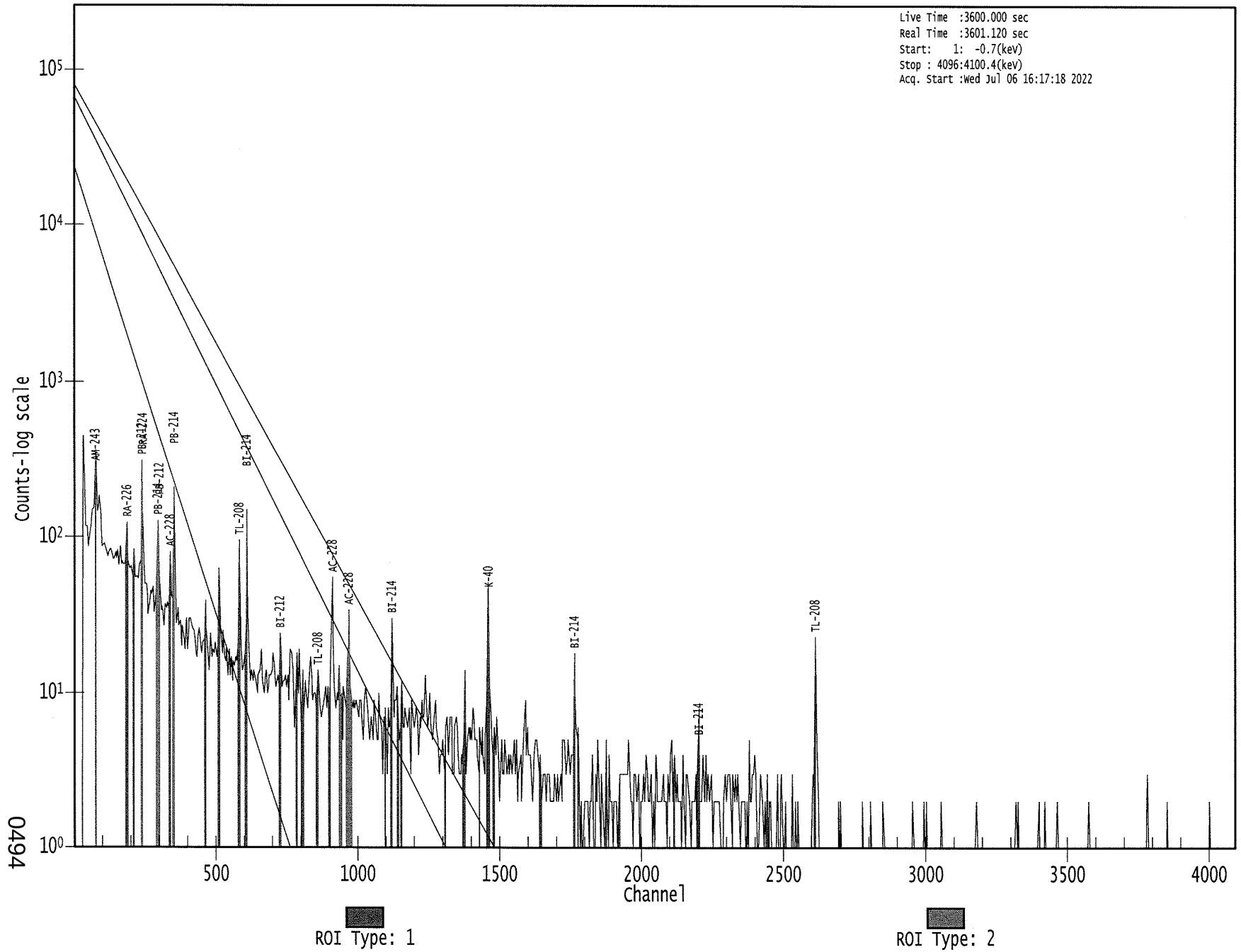
3825:	0	0	0	0	0	0	0	0

Sample Title: R-3-12-18

Channel								
3833:	0	0	1	0	0	1	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	2	0	0	0	0
3857:	0	1	0	1	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	1	0	0
3881:	1	0	0	0	0	0	0	0
3889:	1	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	1
3913:	0	0	1	0	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	1	0	0	0	0	0	0	0
3937:	1	0	0	0	0	0	0	0
3945:	0	1	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	1	0	0	0
3977:	0	1	0	0	0	0	0	0
3985:	1	0	0	0	0	0	0	1
3993:	1	0	0	0	0	0	0	0
4001:	1	2	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	1	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	1	1	0	0
4049:	0	0	0	1	0	0	0	0
4057:	1	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	1
4089:	0	0	1	1	0	1	0	0

BP/Castex-Ltd Adm-Apx E-001848

0000126283.CNF



0494

BP/Castex-Ltd Adm-Apx E-001849

KB 7/6/22

Apex-Gamma

Analysis Report for 2206038-13
R-4 0-4

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-13
Sample Description	: R-4 0-4
Sample Type	: SOIL
Sample Size	: 7.369E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:46:03AM
Acquisition Started	: 7/6/2022 4:17:27PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3650.3 seconds
Dead Time	: 1.38 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 8 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 11/22/2021
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126285

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

Analysis Report for 2206038-13

R-4 0-4

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 5:26:07PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	31.81	31.77	0.0000	0.00
2	36.28	36.24	0.0000	0.00
3	75.98	75.92	0.0000	0.00
4	87.34	87.26	0.0000	0.00
5	90.47	90.40	0.0000	0.00
6	93.24	93.17	0.0000	0.00
7	99.19	99.11	0.0000	0.00
8	105.87	105.78	0.0000	0.00
9	114.77	114.68	0.0000	0.00
10	128.89	128.79	0.0000	0.00
11	154.08	153.97	0.0000	0.00
12	166.28	166.16	0.0000	0.00
13	186.29	186.15	0.0000	0.00
14	209.27	209.11	0.0000	0.00
15	239.15	238.98	0.0000	0.00
16	252.56	252.38	0.0000	0.00
17	258.84	258.66	0.0000	0.00
18	270.28	270.09	0.0000	0.00
19	277.32	277.12	0.0000	0.00
20	295.21	295.00	0.0000	0.00
21	300.08	299.87	0.0000	0.00
22	327.95	327.73	0.0000	0.00
23	338.39	338.16	0.0000	0.00
24	351.91	351.67	0.0000	0.00
25	387.83	387.57	0.0000	0.00
26	409.41	409.14	0.0000	0.00
27	453.74	453.44	0.0000	0.00
28	462.99	462.69	0.0000	0.00
29	510.58	510.25	0.0000	0.00
30	562.48	562.12	0.0000	0.00
31	583.20	582.83	0.0000	0.00
32	594.66	594.28	0.0000	0.00
33	609.33	608.95	0.0000	0.00
34	665.48	665.07	0.0000	0.00
35	702.79	702.36	0.0000	0.00
36	727.31	726.86	0.0000	0.00
37	755.44	754.98	0.0000	0.00
38	769.69	769.22	0.0000	0.00
39	784.70	784.22	0.0000	0.00
40	794.93	794.45	0.0000	0.00
41	806.77	806.28	0.0000	0.00
42	836.91	836.41	0.0000	0.00

Analysis Report for 2206038-13

R-4 0-4

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	860.63	860.11	0.0000	0.00
44	904.13	903.59	0.0000	0.00
45	911.25	910.71	0.0000	0.00
46	933.57	933.02	0.0000	0.00
47	965.03	964.46	0.0000	0.00
48	969.16	968.60	0.0000	0.00
49	1052.55	1051.95	0.0000	0.00
50	1075.16	1074.55	0.0000	0.00
51	1087.23	1086.62	0.0000	0.00
52	1094.78	1094.15	0.0000	0.00
53	1120.33	1119.70	0.0000	0.00
54	1154.68	1154.03	0.0000	0.00
55	1182.55	1181.89	0.0000	0.00
56	1206.00	1205.33	0.0000	0.00
57	1238.20	1237.52	0.0000	0.00
58	1281.19	1280.50	0.0000	0.00
59	1377.66	1376.93	0.0000	0.00
60	1385.03	1384.29	0.0000	0.00
61	1401.03	1400.29	0.0000	0.00
62	1408.04	1407.29	0.0000	0.00
63	1459.56	1458.80	0.0000	0.00
64	1497.47	1496.69	0.0000	0.00
65	1509.30	1508.52	0.0000	0.00
66	1538.58	1537.79	0.0000	0.00
67	1582.01	1581.21	0.0000	0.00
68	1588.10	1587.30	0.0000	0.00
69	1593.10	1592.30	0.0000	0.00
70	1621.02	1620.20	0.0000	0.00
71	1630.19	1629.38	0.0000	0.00
72	1660.85	1660.03	0.0000	0.00
73	1711.25	1710.41	0.0000	0.00
74	1729.81	1728.96	0.0000	0.00
75	1764.63	1763.77	0.0000	0.00
76	1796.81	1795.95	0.0000	0.00
77	1847.73	1846.85	0.0000	0.00
78	1897.24	1896.34	0.0000	0.00
79	2103.43	2102.49	0.0000	0.00
80	2119.08	2118.13	0.0000	0.00
81	2153.08	2152.14	0.0000	0.00
82	2204.40	2203.44	0.0000	0.00
83	2396.25	2395.26	0.0000	0.00
84	2446.78	2445.78	0.0000	0.00
85	2614.66	2613.65	0.0000	0.00
86	2674.87	2673.86	0.0000	0.00
87	2703.52	2702.50	0.0000	0.00
88	2892.50	2891.48	0.0000	0.00
89	2984.49	2983.47	0.0000	0.00
90	3108.77	3107.75	0.0000	0.00
91	3197.17	3196.15	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 2206038-13

R-4 0-4

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 5:26:07PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	31.81	28 -	39	31.77	3.72E+03	406.97	2.75E+04	2.28
m	2	36.28	28 -	39	36.24	1.37E+03	397.30	2.69E+04	2.42
	3	75.98	69 -	81	75.92	3.60E+04	940.78	8.70E+04	4.21
M	4	87.34	82 -	96	87.26	1.29E+04	688.94	5.96E+04	4.03
m	5	90.47	82 -	96	90.40	2.43E+03	406.95	2.89E+04	1.71
m	6	93.24	82 -	96	93.17	3.39E+03	500.11	3.96E+04	2.18
	7	99.19	97 -	101	99.11	6.39E+02	357.67	2.79E+04	2.16
	8	105.87	103 -	109	105.78	9.72E+02	473.43	4.01E+04	2.30
	9	114.77	112 -	117	114.68	6.32E+02	405.70	3.23E+04	2.22
	10	128.89	125 -	133	128.79	2.68E+03	575.38	4.93E+04	2.47
	11	154.08	152 -	157	153.97	6.51E+02	385.12	2.90E+04	2.89
	12	166.28	164 -	169	166.16	3.68E+02	360.66	2.57E+04	2.83
	13	186.29	182 -	190	186.15	2.64E+03	500.66	3.68E+04	2.56
	14	209.27	205 -	213	209.11	2.74E+03	465.88	3.16E+04	2.59
	15	239.15	234 -	246	238.98	4.17E+04	665.22	3.17E+04	2.61
	16	252.56	250 -	256	252.38	3.35E+02	281.76	1.42E+04	3.01
	17	258.84	256 -	262	258.66	3.11E+02	278.71	1.39E+04	1.74
M	18	270.28	265 -	281	270.09	2.13E+03	316.82	1.55E+04	2.70
m	19	277.32	265 -	281	277.12	1.45E+03	281.23	1.31E+04	2.47
M	20	295.21	290 -	304	295.00	8.50E+03	317.99	1.22E+04	2.33
m	21	300.08	290 -	304	299.87	1.78E+03	272.86	1.16E+04	2.21
	22	327.95	324 -	332	327.73	1.49E+03	304.00	1.33E+04	2.57
	23	338.39	333 -	343	338.16	6.05E+03	375.80	1.55E+04	2.53
	24	351.91	347 -	357	351.67	1.36E+04	401.89	1.42E+04	2.50
	25	387.83	384 -	391	387.57	3.48E+02	237.62	9.18E+03	5.16
	26	409.41	406 -	413	409.14	7.63E+02	233.63	8.52E+03	2.42
M	27	453.74	448 -	467	453.44	3.02E+02	218.16	7.25E+03	3.16
m	28	462.99	448 -	467	462.69	1.65E+03	210.11	6.15E+03	2.65
	29	510.58	502 -	515	510.25	3.05E+03	317.31	9.84E+03	2.74
	30	562.48	558 -	566	562.12	3.44E+02	192.60	5.51E+03	2.89
	31	583.20	576 -	589	582.83	8.70E+03	330.10	8.23E+03	2.62
	32	594.66	592 -	598	594.28	1.24E+02	144.94	3.73E+03	3.66
	33	609.33	604 -	613	608.95	9.14E+03	269.81	5.17E+03	2.62
	34	665.48	662 -	669	665.07	2.63E+02	155.99	3.86E+03	2.63
	35	702.79	699 -	706	702.36	2.85E+02	154.23	3.79E+03	4.10
	36	727.31	722 -	732	726.86	1.60E+03	208.29	4.93E+03	2.74
	37	755.44	750 -	759	754.98	2.99E+02	171.80	4.03E+03	2.82
	38	769.69	764 -	775	769.22	8.73E+02	205.93	4.81E+03	2.57
	39	784.70	779 -	789	784.22	5.06E+02	169.82	3.58E+03	3.11
	40	794.93	790 -	799	794.45	8.20E+02	157.25	3.05E+03	2.81

BP/Castex-Ltd Adm-Apx E-001853

Analysis Report for 2206038-13

R-4 0-4

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	806.77	801 -	810	806.28	1.99E+02	145.03	2.89E+03	1.76
	42	836.91	827 -	844	836.41	5.93E+02	237.82	4.90E+03	4.91
	43	860.63	855 -	863	860.11	8.72E+02	134.88	2.26E+03	2.75
M	44	904.13	899 -	916	903.59	8.63E+01	107.48	2.06E+03	3.41
m	45	911.25	899 -	916	910.71	5.07E+03	176.39	1.75E+03	2.61
	46	933.57	926 -	937	933.02	5.19E+02	140.33	2.20E+03	2.79
M	47	965.03	959 -	972	964.46	1.04E+03	166.37	2.05E+03	3.18
m	48	969.16	959 -	972	968.60	2.79E+03	145.37	1.36E+03	2.41
	49	1052.55	1048 -	1056	1051.95	7.49E+01	90.64	1.21E+03	1.68
	50	1075.16	1067 -	1082	1074.55	2.08E+02	149.52	2.15E+03	11.84
	51	1087.23	1084 -	1090	1086.62	5.82E+01	70.12	8.48E+02	1.44
	52	1094.78	1090 -	1098	1094.15	1.40E+02	87.64	1.10E+03	5.85
	53	1120.33	1115 -	1126	1119.70	1.71E+03	139.37	1.58E+03	2.63
	54	1154.68	1149 -	1159	1154.03	2.31E+02	107.42	1.42E+03	3.93
	55	1182.55	1179 -	1185	1181.89	6.88E+01	68.39	8.04E+02	1.77
	56	1206.00	1201 -	1209	1205.33	9.35E+01	79.44	9.13E+02	4.67
	57	1238.20	1232 -	1243	1237.52	6.37E+02	120.07	1.49E+03	2.87
	58	1281.19	1276 -	1284	1280.50	1.36E+02	86.18	1.06E+03	2.29
M	59	1377.66	1372 -	1389	1376.93	4.57E+02	92.96	9.64E+02	3.22
m	60	1385.03	1372 -	1389	1384.29	1.21E+02	86.34	9.81E+02	3.22
M	61	1401.03	1397 -	1412	1400.29	1.34E+02	58.04	5.78E+02	2.80
m	62	1408.04	1397 -	1412	1407.29	2.33E+02	87.02	9.03E+02	3.23
	63	1459.56	1454 -	1465	1458.80	1.73E+02	96.91	1.09E+03	2.31
	64	1497.47	1491 -	1503	1496.69	1.42E+02	107.73	1.29E+03	2.30
	65	1509.30	1504 -	1514	1508.52	2.58E+02	93.94	1.04E+03	3.14
	66	1538.58	1535 -	1541	1537.79	4.89E+01	58.95	5.92E+02	1.53
M	67	1582.01	1573 -	1597	1581.21	1.33E+02	75.69	6.89E+02	3.27
m	68	1588.10	1573 -	1597	1587.30	4.47E+02	88.57	7.15E+02	3.27
m	69	1593.10	1573 -	1597	1592.30	6.58E+02	94.89	7.50E+02	3.27
M	70	1621.02	1614 -	1633	1620.20	2.32E+02	78.20	6.51E+02	3.60
m	71	1630.19	1614 -	1633	1629.38	2.38E+02	67.49	5.75E+02	3.51
	72	1660.85	1656 -	1664	1660.03	1.17E+02	60.99	5.02E+02	2.59
	73	1711.25	1707 -	1715	1710.41	5.38E+01	50.64	3.64E+02	5.22
	74	1729.81	1723 -	1735	1728.96	3.19E+02	81.83	6.40E+02	2.49
	75	1764.63	1757 -	1770	1763.77	1.28E+03	104.48	6.39E+02	3.47
	76	1796.81	1789 -	1802	1795.95	7.24E+01	75.13	5.95E+02	7.72
	77	1847.73	1842 -	1850	1846.85	1.79E+02	61.73	4.75E+02	2.27
	78	1897.24	1893 -	1900	1896.34	4.81E+01	49.03	3.70E+02	2.16
	79	2103.43	2098 -	2108	2102.49	2.83E+02	73.80	5.84E+02	3.07
	80	2119.08	2114 -	2122	2118.13	7.80E+01	56.04	4.32E+02	1.97
	81	2153.08	2149 -	2155	2152.14	3.57E+01	41.87	2.91E+02	3.60
	82	2204.40	2197 -	2209	2203.44	3.67E+02	81.48	6.01E+02	2.48
	83	2396.25	2393 -	2399	2395.26	5.13E+01	38.05	2.29E+02	1.20
	84	2446.78	2437 -	2451	2445.78	1.10E+02	77.90	5.92E+02	3.31
	85	2614.66	2605 -	2622	2613.65	2.47E+03	106.60	1.30E+02	3.37
	86	2674.87	2670 -	2677	2673.86	1.09E+01	13.42	2.02E+01	1.15
	87	2703.52	2697 -	2707	2702.50	2.21E+01	20.35	4.18E+01	8.60
	88	2892.50	2887 -	2895	2891.48	1.69E+01	9.81	4.21E+00	1.70
	89	2984.49	2979 -	2988	2983.47	1.50E+01	7.75	0.00E+00	2.99
	90	3108.77	3104 -	3110	3107.75	4.42E+00	6.02	3.17E+00	2.56
	91	3197.17	3190 -	3201	3196.15	2.51E+01	12.17	5.71E+00	4.90

BP/Castex-Ltd Adm-Apx E-001854

Analysis Report for 2206038-13

R-4 0-4

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 5:26:07PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	1	31.81	28 -	39	3.72E+03	406.97	2.75E+04	2.73E+02
m	2	36.28	28 -	39	1.37E+03	397.30	2.69E+04	2.69E+02
	3	75.98	69 -	81	3.60E+04	940.78	8.70E+04	7.08E+02
M	4	87.34	82 -	96	1.29E+04	688.94	5.96E+04	4.01E+02
m	5	90.47	82 -	96	2.43E+03	406.95	2.89E+04	2.80E+02
m	6	93.24	82 -	96	3.39E+03	500.11	3.96E+04	3.27E+02
	7	99.19	97 -	101	6.39E+02	357.67	2.79E+04	2.91E+02
	8	105.87	103 -	109	9.72E+02	473.43	4.01E+04	3.86E+02
	9	114.77	112 -	117	6.32E+02	405.70	3.23E+04	3.31E+02
	10	128.89	125 -	133	2.68E+03	575.38	4.93E+04	4.65E+02
	11	154.08	152 -	157	6.51E+02	385.12	2.90E+04	3.14E+02
	12	166.28	164 -	169	3.68E+02	360.66	2.57E+04	2.95E+02
	13	186.29	182 -	190	2.64E+03	500.66	3.68E+04	4.03E+02
	14	209.27	205 -	213	2.74E+03	465.88	3.16E+04	3.73E+02
	15	239.15	234 -	246	4.17E+04	665.22	3.17E+04	4.32E+02
	16	252.56	250 -	256	3.35E+02	281.76	1.42E+04	2.30E+02
	17	258.84	256 -	262	3.11E+02	278.71	1.39E+04	2.27E+02
M	18	270.28	265 -	281	2.13E+03	316.82	1.55E+04	2.05E+02
m	19	277.32	265 -	281	1.45E+03	281.23	1.31E+04	1.88E+02
M	20	295.21	290 -	304	8.50E+03	317.99	1.22E+04	1.82E+02
m	21	300.08	290 -	304	1.78E+03	272.86	1.16E+04	1.77E+02
	22	327.95	324 -	332	1.49E+03	304.00	1.33E+04	2.42E+02
	23	338.39	333 -	343	6.05E+03	375.80	1.55E+04	2.81E+02
	24	351.91	347 -	357	1.36E+04	401.89	1.42E+04	2.69E+02
	25	387.83	384 -	391	3.48E+02	237.62	9.18E+03	1.93E+02
	26	409.41	406 -	413	7.63E+02	233.63	8.52E+03	1.87E+02
M	27	453.74	448 -	467	3.02E+02	218.16	7.25E+03	1.40E+02
m	28	462.99	448 -	467	1.65E+03	210.11	6.15E+03	1.29E+02
	29	510.58	502 -	515	3.05E+03	317.31	9.84E+03	2.44E+02
	30	562.48	558 -	566	3.44E+02	192.60	5.51E+03	1.55E+02
	31	583.20	576 -	589	8.70E+03	330.10	8.23E+03	2.24E+02

0500

Analysis Report for 2206038-13

R-4 0-4

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	32	594.66	592 -	598	1.24E+02	144.94	3.73E+03	1.18E+02
	33	609.33	604 -	613	9.14E+03	269.81	5.17E+03	1.56E+02
	34	665.48	662 -	669	2.63E+02	155.99	3.86E+03	1.25E+02
	35	702.79	699 -	706	2.85E+02	154.23	3.79E+03	1.24E+02
	36	727.31	722 -	732	1.60E+03	208.29	4.93E+03	1.58E+02
	37	755.44	750 -	759	2.99E+02	171.80	4.03E+03	1.38E+02
	38	769.69	764 -	775	8.73E+02	205.93	4.81E+03	1.62E+02
	39	784.70	779 -	789	5.06E+02	169.82	3.58E+03	1.35E+02
	40	794.93	790 -	799	8.20E+02	157.25	3.05E+03	1.20E+02
	41	806.77	801 -	810	1.99E+02	145.03	2.89E+03	1.17E+02
	42	836.91	827 -	844	5.93E+02	237.82	4.90E+03	1.91E+02
	43	860.63	855 -	863	8.72E+02	134.88	2.26E+03	9.97E+01
M	44	904.13	899 -	916	8.63E+01	107.48	2.06E+03	7.47E+01
m	45	911.25	899 -	916	5.07E+03	176.39	1.75E+03	6.87E+01
	46	933.57	926 -	937	5.19E+02	140.33	2.20E+03	1.09E+02
M	47	965.03	959 -	972	1.04E+03	166.37	2.05E+03	7.45E+01
m	48	969.16	959 -	972	2.79E+03	145.37	1.36E+03	6.06E+01
	49	1052.55	1048 -	1056	7.49E+01	90.64	1.21E+03	7.31E+01
	50	1075.16	1067 -	1082	2.08E+02	149.52	2.15E+03	1.21E+02
	51	1087.23	1084 -	1090	5.82E+01	70.12	8.48E+02	5.63E+01
	52	1094.78	1090 -	1098	1.40E+02	87.64	1.10E+03	6.94E+01
	53	1120.33	1115 -	1126	1.71E+03	139.37	1.58E+03	9.23E+01
	54	1154.68	1149 -	1159	2.31E+02	107.42	1.42E+03	8.47E+01
	55	1182.55	1179 -	1185	6.88E+01	68.39	8.04E+02	5.45E+01
	56	1206.00	1201 -	1209	9.35E+01	79.44	9.13E+02	6.33E+01
	57	1238.20	1232 -	1243	6.37E+02	120.07	1.49E+03	8.95E+01
	58	1281.19	1276 -	1284	1.36E+02	86.18	1.06E+03	6.82E+01
M	59	1377.66	1372 -	1389	4.57E+02	92.96	9.64E+02	5.10E+01
m	60	1385.03	1372 -	1389	1.21E+02	86.34	9.81E+02	5.15E+01
M	61	1401.03	1397 -	1412	1.34E+02	58.04	5.78E+02	3.95E+01
m	62	1408.04	1397 -	1412	2.33E+02	87.02	9.03E+02	4.94E+01
	63	1459.56	1454 -	1465	1.73E+02	96.91	1.09E+03	7.67E+01
	64	1497.47	1491 -	1503	1.42E+02	107.73	1.29E+03	8.64E+01
	65	1509.30	1504 -	1514	2.58E+02	93.94	1.04E+03	7.26E+01
	66	1538.58	1535 -	1541	4.89E+01	58.95	5.92E+02	4.71E+01
M	67	1582.01	1573 -	1597	1.33E+02	75.69	6.89E+02	4.31E+01
m	68	1588.10	1573 -	1597	4.47E+02	88.57	7.15E+02	4.40E+01
m	69	1593.10	1573 -	1597	6.58E+02	94.89	7.50E+02	4.50E+01
M	70	1621.02	1614 -	1633	2.32E+02	78.20	6.51E+02	4.19E+01
m	71	1630.19	1614 -	1633	2.38E+02	67.49	5.75E+02	3.94E+01
	72	1660.85	1656 -	1664	1.17E+02	60.99	5.02E+02	4.69E+01
	73	1711.25	1707 -	1715	5.38E+01	50.64	3.64E+02	3.98E+01
	74	1729.81	1723 -	1735	3.19E+02	81.83	6.40E+02	6.05E+01
	75	1764.63	1757 -	1770	1.28E+03	104.48	6.39E+02	6.25E+01
	76	1796.81	1789 -	1802	7.24E+01	75.13	5.95E+02	6.02E+01
	77	1847.73	1842 -	1850	1.79E+02	61.73	4.75E+02	4.57E+01
	78	1897.24	1893 -	1900	4.81E+01	49.03	3.70E+02	3.87E+01
	79	2103.43	2098 -	2108	2.83E+02	73.80	5.84E+02	5.40E+01
	80	2119.08	2114 -	2122	7.80E+01	56.04	4.32E+02	4.37E+01
	81	2153.08	2149 -	2155	3.57E+01	41.87	2.91E+02	3.30E+01
	82	2204.40	2197 -	2209	3.67E+02	81.48	6.01E+02	5.91E+01

Analysis Report for 2206038-13

R-4 0-4

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
83	2396.25	2393 -	2399	5.13E+01	38.05	2.29E+02	2.90E+01
84	2446.78	2437 -	2451	1.10E+02	77.90	5.92E+02	6.17E+01
85	2614.66	2605 -	2622	2.47E+03	106.60	1.30E+02	3.16E+01
86	2674.87	2670 -	2677	1.09E+01	13.42	2.02E+01	9.60E+00
87	2703.52	2697 -	2707	2.21E+01	20.35	4.18E+01	1.48E+01
88	2892.50	2887 -	2895	1.69E+01	9.81	4.21E+00	4.40E+00
89	2984.49	2979 -	2988	1.50E+01	7.75	0.00E+00	0.00E+00
90	3108.77	3104 -	3110	4.42E+00	6.02	3.17E+00	3.54E+00
91	3197.17	3190 -	3201	2.51E+01	12.17	5.71E+00	5.66E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 5:26:07PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	1	31.81	28 -	39	31.77	3.72E+03	406.97	2.75E+04	I-129 I-129
m	2	36.28	28 -	39	36.24	1.37E+03	397.30	2.69E+04	PM-145 I-125 PM-145
	3	75.98	69 -	81	75.92	3.60E+04	940.78	8.70E+04	AM-243 TI-44
M	4	87.34	82 -	96	87.26	1.29E+04	688.94	5.96E+04	SN-126 CD-109 NP-237 EU-155 LU-176
m	5	90.47	82 -	96	90.40	2.43E+03	406.95	2.89E+04	ND-147 LU-176 CD-109
m	6	93.24	82 -	96	93.17	3.39E+03	500.11	3.96E+04	GA-67 ND-147

BP/Castex-Ltd Adm-Apx E-001857

Analysis Report for 2206038-13

R-4 0-4

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	7	99.19	97 -	101	99.11	6.39E+02	357.67	2.79E+04	LU-173 GD-153
	8	105.87	103 -	109	105.78	9.72E+02	473.43	4.01E+04	NP-239 EU-155
	9	114.77	112 -	117	114.68	6.32E+02	405.70	3.23E+04	.....
	10	128.89	125 -	133	128.79	2.68E+03	575.38	4.93E+04	PA-234
	11	154.08	152 -	157	153.97	6.51E+02	385.12	2.90E+04	CS-136
	12	166.28	164 -	169	166.16	3.68E+02	360.66	2.57E+04	CE-139 CS-136
	13	186.29	182 -	190	186.15	2.64E+03	500.66	3.68E+04	RA-226 HO-166M
	14	209.27	205 -	213	209.11	2.74E+03	465.88	3.16E+04	GA-67 CM-243
	15	239.15	234 -	246	238.98	4.17E+04	665.22	3.17E+04	PB-212 RA-224
	16	252.56	250 -	256	252.38	3.35E+02	281.76	1.42E+04	.....
	17	258.84	256 -	262	258.66	3.11E+02	278.71	1.39E+04	.....
M	18	270.28	265 -	281	270.09	2.13E+03	316.82	1.55E+04	LU-173 CS-135
m	19	277.32	265 -	281	277.12	1.45E+03	281.23	1.31E+04	CM-243 NP-239 HG-203 SE-75
M	20	295.21	290 -	304	295.00	8.50E+03	317.99	1.22E+04	PB-214 CE-143
m	21	300.08	290 -	304	299.87	1.78E+03	272.86	1.16E+04	PB-212 BI-210M GA-67
	22	327.95	324 -	332	327.73	1.49E+03	304.00	1.33E+04	LA-140
	23	338.39	333 -	343	338.16	6.05E+03	375.80	1.55E+04	AC-228 CS-136
	24	351.91	347 -	357	351.67	1.36E+04	401.89	1.42E+04	PB-214
	25	387.83	384 -	391	387.57	3.48E+02	237.62	9.18E+03	.....
	26	409.41	406 -	413	409.14	7.63E+02	233.63	8.52E+03	HO-166M
M	27	453.74	448 -	467	453.44	3.02E+02	218.16	7.25E+03	PM-146
m	28	462.99	448 -	467	462.69	1.65E+03	210.11	6.15E+03	SB-125
	29	510.58	502 -	515	510.25	3.05E+03	317.31	9.84E+03	.....
	30	562.48	558 -	566	562.12	3.44E+02	192.60	5.51E+03	CS-134
	31	583.20	576 -	589	582.83	8.70E+03	330.10	8.23E+03	TL-208
	32	594.66	592 -	598	594.28	1.24E+02	144.94	3.73E+03	.....
	33	609.33	604 -	613	608.95	9.14E+03	269.81	5.17E+03	BI-214
	34	665.48	662 -	669	665.07	2.63E+02	155.99	3.86E+03	SB-126 CE-143
	35	702.79	699 -	706	702.36	2.85E+02	154.23	3.79E+03	NB-94
	36	727.31	722 -	732	726.86	1.60E+03	208.29	4.93E+03	BI-212
	37	755.44	750 -	759	754.98	2.99E+02	171.80	4.03E+03	ZR-95
	38	769.69	764 -	775	769.22	8.73E+02	205.93	4.81E+03	.....
	39	784.70	779 -	789	784.22	5.06E+02	169.82	3.58E+03	SB-127
	40	794.93	790 -	799	794.45	8.20E+02	157.25	3.05E+03	CS-134
	41	806.77	801 -	810	806.28	1.99E+02	145.03	2.89E+03	.....
	42	836.91	827 -	844	836.41	5.93E+02	237.82	4.90E+03	MN-54
	43	860.63	855 -	863	860.11	8.72E+02	134.88	2.26E+03	TL-208
M	44	904.13	899 -	916	903.59	8.63E+01	107.48	2.06E+03	.....
m	45	911.25	899 -	916	910.71	5.07E+03	176.39	1.75E+03	AC-228

BP/Castex-Ltd Adm-Apx E-001858

Analysis Report for 2206038-13

R-4 0-4

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									TL-204
	46	933.57	926 -	937	933.02	5.19E+02	140.33	2.20E+03	.....
M	47	965.03	959 -	972	964.46	1.04E+03	166.37	2.05E+03	EU-152
m	48	969.16	959 -	972	968.60	2.79E+03	145.37	1.36E+03	AC-228
	49	1052.55	1048 -	1056	1051.95	7.49E+01	90.64	1.21E+03	.....
	50	1075.16	1067 -	1082	1074.55	2.08E+02	149.52	2.15E+03	.....
	51	1087.23	1084 -	1090	1086.62	5.82E+01	70.12	8.48E+02	EU-152
	52	1094.78	1090 -	1098	1094.15	1.40E+02	87.64	1.10E+03	LU-172
	53	1120.33	1115 -	1126	1119.70	1.71E+03	139.37	1.58E+03	BI-214
									SC-46
									TA-182
	54	1154.68	1149 -	1159	1154.03	2.31E+02	107.42	1.42E+03	EU-156
	55	1182.55	1179 -	1185	1181.89	6.88E+01	68.39	8.04E+02	.....
	56	1206.00	1201 -	1209	1205.33	9.35E+01	79.44	9.13E+02	.....
	57	1238.20	1232 -	1243	1237.52	6.37E+02	120.07	1.49E+03	CO-56
	58	1281.19	1276 -	1284	1280.50	1.36E+02	86.18	1.06E+03	.....
M	59	1377.66	1372 -	1389	1376.93	4.57E+02	92.96	9.64E+02	.....
m	60	1385.03	1372 -	1389	1384.29	1.21E+02	86.34	9.81E+02	AG-110M
M	61	1401.03	1397 -	1412	1400.29	1.34E+02	58.04	5.78E+02	.....
m	62	1408.04	1397 -	1412	1407.29	2.33E+02	87.02	9.03E+02	EU-152
	63	1459.56	1454 -	1465	1458.80	1.73E+02	96.91	1.09E+03	K-40
	64	1497.47	1491 -	1503	1496.69	1.42E+02	107.73	1.29E+03	.....
	65	1509.30	1504 -	1514	1508.52	2.58E+02	93.94	1.04E+03	.....
	66	1538.58	1535 -	1541	1537.79	4.89E+01	58.95	5.92E+02	.....
M	67	1582.01	1573 -	1597	1581.21	1.33E+02	75.69	6.89E+02	.....
m	68	1588.10	1573 -	1597	1587.30	4.47E+02	88.57	7.15E+02	.....
m	69	1593.10	1573 -	1597	1592.30	6.58E+02	94.89	7.50E+02	.....
M	70	1621.02	1614 -	1633	1620.20	2.32E+02	78.20	6.51E+02	BI-212
m	71	1630.19	1614 -	1633	1629.38	2.38E+02	67.49	5.75E+02	.....
	72	1660.85	1656 -	1664	1660.03	1.17E+02	60.99	5.02E+02	.....
	73	1711.25	1707 -	1715	1710.41	5.38E+01	50.64	3.64E+02	.....
	74	1729.81	1723 -	1735	1728.96	3.19E+02	81.83	6.40E+02	.....
	75	1764.63	1757 -	1770	1763.77	1.28E+03	104.48	6.39E+02	BI-214
	76	1796.81	1789 -	1802	1795.95	7.24E+01	75.13	5.95E+02	.....
	77	1847.73	1842 -	1850	1846.85	1.79E+02	61.73	4.75E+02	.....
	78	1897.24	1893 -	1900	1896.34	4.81E+01	49.03	3.70E+02	.....
	79	2103.43	2098 -	2108	2102.49	2.83E+02	73.80	5.84E+02	.....
	80	2119.08	2114 -	2122	2118.13	7.80E+01	56.04	4.32E+02	.....
	81	2153.08	2149 -	2155	2152.14	3.57E+01	41.87	2.91E+02	.....
	82	2204.40	2197 -	2209	2203.44	3.67E+02	81.48	6.01E+02	BI-214
	83	2396.25	2393 -	2399	2395.26	5.13E+01	38.05	2.29E+02	.....
	84	2446.78	2437 -	2451	2445.78	1.10E+02	77.90	5.92E+02	.....
	85	2614.66	2605 -	2622	2613.65	2.47E+03	106.60	1.30E+02	TL-208
	86	2674.87	2670 -	2677	2673.86	1.09E+01	13.42	2.02E+01	.....
	87	2703.52	2697 -	2707	2702.50	2.21E+01	20.35	4.18E+01	.....
	88	2892.50	2887 -	2895	2891.48	1.69E+01	9.81	4.21E+00	.....
	89	2984.49	2979 -	2988	2983.47	1.50E+01	7.75	0.00E+00	.....
	90	3108.77	3104 -	3110	3107.75	4.42E+00	6.02	3.17E+00	.....
	91	3197.17	3190 -	3201	3196.15	2.51E+01	12.17	5.71E+00	.....

BP/Castex-Ltd Adm-Apx E-001859

Analysis Report for 2206038-13
R-4 0-4

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 5:26:07PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	31.81	3.72E+03	406.97	9.81E-03	1.74E-03
m	2	36.28	1.37E+03	397.30	1.29E-02	1.74E-03
	3	75.98	3.60E+04	940.78	2.51E-02	1.97E-03
M	4	87.34	1.29E+04	688.94	2.51E-02	2.13E-03
m	5	90.47	2.43E+03	406.95	2.50E-02	2.11E-03
m	6	93.24	3.39E+03	500.11	2.48E-02	2.08E-03
	7	99.19	6.39E+02	357.67	2.45E-02	2.00E-03
	8	105.87	9.72E+02	473.43	2.39E-02	1.92E-03
	9	114.77	6.32E+02	405.70	2.32E-02	1.81E-03
	10	128.89	2.68E+03	575.38	2.18E-02	1.70E-03
	11	154.08	6.51E+02	385.12	1.94E-02	1.66E-03
	12	166.28	3.68E+02	360.66	1.83E-02	1.64E-03
	13	186.29	2.64E+03	500.66	1.67E-02	1.55E-03
	14	209.27	2.74E+03	465.88	1.51E-02	1.46E-03
	15	239.15	4.17E+04	665.22	1.34E-02	1.33E-03
	16	252.56	3.35E+02	281.76	1.27E-02	1.28E-03
	17	258.84	3.11E+02	278.71	1.24E-02	1.25E-03
M	18	270.28	2.13E+03	316.82	1.19E-02	1.20E-03
m	19	277.32	1.45E+03	281.23	1.16E-02	1.17E-03
M	20	295.21	8.50E+03	317.99	1.09E-02	1.10E-03
m	21	300.08	1.78E+03	272.86	1.07E-02	1.08E-03
	22	327.95	1.49E+03	304.00	9.78E-03	9.72E-04
	23	338.39	6.05E+03	375.80	9.47E-03	9.31E-04
	24	351.91	1.36E+04	401.89	9.09E-03	8.78E-04
	25	387.83	3.48E+02	237.62	8.22E-03	7.36E-04
	26	409.41	7.63E+02	233.63	7.77E-03	7.01E-04
M	27	453.74	3.02E+02	218.16	6.97E-03	6.50E-04
m	28	462.99	1.65E+03	210.11	6.83E-03	6.39E-04
	29	510.58	3.05E+03	317.31	6.16E-03	5.85E-04
	30	562.48	3.44E+02	192.60	5.56E-03	5.26E-04
	31	583.20	8.70E+03	330.10	5.36E-03	5.02E-04
	32	594.66	1.24E+02	144.94	5.25E-03	4.89E-04
	33	609.33	9.14E+03	269.81	5.12E-03	4.72E-04
	34	665.48	2.63E+02	155.99	4.67E-03	4.10E-04

BP/Castex-Ltd Adm-Apx E-001860

Analysis Report for 2206038-13

R-4 0-4

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	35	702.79	2.85E+02	154.23	4.42E-03	3.92E-04
	36	727.31	1.60E+03	208.29	4.27E-03	3.80E-04
	37	755.44	2.99E+02	171.80	4.10E-03	3.66E-04
	38	769.69	8.73E+02	205.93	4.03E-03	3.59E-04
	39	784.70	5.06E+02	169.82	3.95E-03	3.52E-04
	40	794.93	8.20E+02	157.25	3.90E-03	3.46E-04
	41	806.77	1.99E+02	145.03	3.84E-03	3.41E-04
	42	836.91	5.93E+02	237.82	3.70E-03	3.26E-04
	43	860.63	8.72E+02	134.88	3.60E-03	3.14E-04
M	44	904.13	8.63E+01	107.48	3.43E-03	2.96E-04
m	45	911.25	5.07E+03	176.39	3.40E-03	2.96E-04
	46	933.57	5.19E+02	140.33	3.32E-03	2.95E-04
M	47	965.03	1.04E+03	166.37	3.21E-03	2.95E-04
m	48	969.16	2.79E+03	145.37	3.20E-03	2.95E-04
	49	1052.55	7.49E+01	90.64	2.95E-03	2.94E-04
	50	1075.16	2.08E+02	149.52	2.89E-03	2.94E-04
	51	1087.23	5.82E+01	70.12	2.86E-03	2.93E-04
	52	1094.78	1.40E+02	87.64	2.84E-03	2.93E-04
	53	1120.33	1.71E+03	139.37	2.78E-03	2.93E-04
	54	1154.68	2.31E+02	107.42	2.70E-03	2.93E-04
	55	1182.55	6.88E+01	68.39	2.64E-03	2.88E-04
	56	1206.00	9.35E+01	79.44	2.60E-03	2.75E-04
	57	1238.20	6.37E+02	120.07	2.53E-03	2.59E-04
	58	1281.19	1.36E+02	86.18	2.46E-03	2.36E-04
M	59	1377.66	4.57E+02	92.96	2.30E-03	2.04E-04
m	60	1385.03	1.21E+02	86.34	2.29E-03	2.03E-04
M	61	1401.03	1.34E+02	58.04	2.26E-03	2.00E-04
m	62	1408.04	2.33E+02	87.02	2.25E-03	1.99E-04
	63	1459.56	1.73E+02	96.91	2.18E-03	1.93E-04
	64	1497.47	1.42E+02	107.73	2.13E-03	1.88E-04
	65	1509.30	2.58E+02	93.94	2.12E-03	1.86E-04
	66	1538.58	4.89E+01	58.95	2.08E-03	1.82E-04
M	67	1582.01	1.33E+02	75.69	2.03E-03	1.76E-04
m	68	1588.10	4.47E+02	88.57	2.03E-03	1.76E-04
m	69	1593.10	6.58E+02	94.89	2.02E-03	1.75E-04
M	70	1621.02	2.32E+02	78.20	1.99E-03	1.71E-04
m	71	1630.19	2.38E+02	67.49	1.98E-03	1.70E-04
	72	1660.85	1.17E+02	60.99	1.95E-03	1.66E-04
	73	1711.25	5.38E+01	50.64	1.90E-03	1.59E-04
	74	1729.81	3.19E+02	81.83	1.88E-03	1.57E-04
	75	1764.63	1.28E+03	104.48	1.85E-03	1.52E-04
	76	1796.81	7.24E+01	75.13	1.82E-03	1.48E-04
	77	1847.73	1.79E+02	61.73	1.78E-03	1.43E-04
	78	1897.24	4.81E+01	49.03	1.74E-03	1.43E-04
	79	2103.43	2.83E+02	73.80	1.61E-03	1.43E-04
	80	2119.08	7.80E+01	56.04	1.60E-03	1.43E-04
	81	2153.08	3.57E+01	41.87	1.58E-03	1.43E-04
	82	2204.40	3.67E+02	81.48	1.55E-03	1.43E-04
	83	2396.25	5.13E+01	38.05	1.45E-03	1.43E-04
	84	2446.78	1.10E+02	77.90	1.43E-03	1.43E-04
	85	2614.66	2.47E+03	106.60	1.36E-03	1.43E-04
	86	2674.87	1.09E+01	13.42	1.34E-03	1.43E-04
	87	2703.52	2.21E+01	20.35	1.33E-03	1.43E-04

BP/Castex-Ltd Adm-Apx E-001861

Analysis Report for 2206038-13

R-4 0-4

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
88	2892.50	1.69E+01	9.81	1.27E-03	1.43E-04
89	2984.49	1.50E+01	7.75	1.25E-03	1.43E-04
90	3108.77	4.42E+00	6.02	1.21E-03	1.43E-04
91	3197.17	2.51E+01	12.17	1.19E-03	1.43E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 5:26:07PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126203.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	31.81	3.72E+03	406.97			3.72E+03	4.07E+02
m	2	36.28	1.37E+03	397.30			1.37E+03	3.97E+02
	3	75.98	3.60E+04	940.78	2.03E+01	5.84E+00	3.60E+04	9.41E+02
M	4	87.34	1.29E+04	688.94			1.29E+04	6.89E+02
m	5	90.47	2.43E+03	406.95	6.50E+01	7.53E+00	2.37E+03	4.07E+02
m	6	93.24	3.39E+03	500.11	6.50E+01	7.53E+00	3.33E+03	5.00E+02
	7	99.19	6.39E+02	357.67			6.39E+02	3.58E+02
	8	105.87	9.72E+02	473.43			9.72E+02	4.73E+02
	9	114.77	6.32E+02	405.70			6.32E+02	4.06E+02
	10	128.89	2.68E+03	575.38			2.68E+03	5.75E+02
	11	154.08	6.51E+02	385.12			6.51E+02	3.85E+02
	12	166.28	3.68E+02	360.66			3.68E+02	3.61E+02
	13	186.29	2.64E+03	500.66	1.96E+01	3.17E+00	2.62E+03	5.01E+02
	14	209.27	2.74E+03	465.88			2.74E+03	4.66E+02
	15	239.15	4.17E+04	665.22	8.87E+00	6.28E+00	4.17E+04	6.65E+02
	16	252.56	3.35E+02	281.76	1.57E+00	5.48E+00	3.34E+02	2.82E+02
	17	258.84	3.11E+02	278.71			3.11E+02	2.79E+02
M	18	270.28	2.13E+03	316.82			2.13E+03	3.17E+02
m	19	277.32	1.45E+03	281.23			1.45E+03	2.81E+02
M	20	295.21	8.50E+03	317.99			8.50E+03	3.18E+02
m	21	300.08	1.78E+03	272.86			1.78E+03	2.73E+02
	22	327.95	1.49E+03	304.00			1.49E+03	3.04E+02
	23	338.39	6.05E+03	375.80			6.05E+03	3.76E+02
	24	351.91	1.36E+04	401.89			1.36E+04	4.02E+02
	25	387.83	3.48E+02	237.62			3.48E+02	2.38E+02
	26	409.41	7.63E+02	233.63			7.63E+02	2.34E+02

Analysis Report for 2206038-13

R-4 0-4

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	27	453.74	3.02E+02	218.16			3.02E+02	2.18E+02
m	28	462.99	1.65E+03	210.11			1.65E+03	2.10E+02
	29	510.58	3.05E+03	317.31	4.35E+01	4.93E+00	3.01E+03	3.17E+02
	30	562.48	3.44E+02	192.60			3.44E+02	1.93E+02
	31	583.20	8.70E+03	330.10	3.49E+00	3.56E+00	8.69E+03	3.30E+02
	32	594.66	1.24E+02	144.94			1.24E+02	1.45E+02
	33	609.33	9.14E+03	269.81	4.60E+00	3.40E+00	9.13E+03	2.70E+02
	34	665.48	2.63E+02	155.99			2.63E+02	1.56E+02
	35	702.79	2.85E+02	154.23			2.85E+02	1.54E+02
	36	727.31	1.60E+03	208.29			1.60E+03	2.08E+02
	37	755.44	2.99E+02	171.80			2.99E+02	1.72E+02
	38	769.69	8.73E+02	205.93			8.73E+02	2.06E+02
	39	784.70	5.06E+02	169.82			5.06E+02	1.70E+02
	40	794.93	8.20E+02	157.25			8.20E+02	1.57E+02
	41	806.77	1.99E+02	145.03			1.99E+02	1.45E+02
	42	836.91	5.93E+02	237.82			5.93E+02	2.38E+02
	43	860.63	8.72E+02	134.88			8.72E+02	1.35E+02
M	44	904.13	8.63E+01	107.48			8.63E+01	1.07E+02
m	45	911.25	5.07E+03	176.39			5.07E+03	1.76E+02
	46	933.57	5.19E+02	140.33			5.19E+02	1.40E+02
M	47	965.03	1.04E+03	166.37			1.04E+03	1.66E+02
m	48	969.16	2.79E+03	145.37			2.79E+03	1.45E+02
	49	1052.55	7.49E+01	90.64			7.49E+01	9.06E+01
	50	1075.16	2.08E+02	149.52			2.08E+02	1.50E+02
	51	1087.23	5.82E+01	70.12			5.82E+01	7.01E+01
	52	1094.78	1.40E+02	87.64			1.40E+02	8.76E+01
	53	1120.33	1.71E+03	139.37			1.71E+03	1.39E+02
	54	1154.68	2.31E+02	107.42			2.31E+02	1.07E+02
	55	1182.55	6.88E+01	68.39			6.88E+01	6.84E+01
	56	1206.00	9.35E+01	79.44			9.35E+01	7.94E+01
	57	1238.20	6.37E+02	120.07			6.37E+02	1.20E+02
	58	1281.19	1.36E+02	86.18			1.36E+02	8.62E+01
M	59	1377.66	4.57E+02	92.96			4.57E+02	9.30E+01
m	60	1385.03	1.21E+02	86.34			1.21E+02	8.63E+01
M	61	1401.03	1.34E+02	58.04			1.34E+02	5.80E+01
m	62	1408.04	2.33E+02	87.02			2.33E+02	8.70E+01
	63	1459.56	1.73E+02	96.91	2.23E+00	1.49E+00	1.70E+02	9.69E+01
	64	1497.47	1.42E+02	107.73			1.42E+02	1.08E+02
	65	1509.30	2.58E+02	93.94			2.58E+02	9.39E+01
	66	1538.58	4.89E+01	58.95			4.89E+01	5.89E+01
M	67	1582.01	1.33E+02	75.69			1.33E+02	7.57E+01
m	68	1588.10	4.47E+02	88.57			4.47E+02	8.86E+01
m	69	1593.10	6.58E+02	94.89			6.58E+02	9.49E+01
M	70	1621.02	2.32E+02	78.20			2.32E+02	7.82E+01
m	71	1630.19	2.38E+02	67.49			2.38E+02	6.75E+01
	72	1660.85	1.17E+02	60.99			1.17E+02	6.10E+01
	73	1711.25	5.38E+01	50.64			5.38E+01	5.06E+01
	74	1729.81	3.19E+02	81.83			3.19E+02	8.18E+01
	75	1764.63	1.28E+03	104.48			1.28E+03	1.04E+02
	76	1796.81	7.24E+01	75.13			7.24E+01	7.51E+01
	77	1847.73	1.79E+02	61.73			1.79E+02	6.17E+01
	78	1897.24	4.81E+01	49.03			4.81E+01	4.90E+01
	79	2103.43	2.83E+02	73.80			2.83E+02	7.38E+01
	80	2119.08	7.80E+01	56.04			7.80E+01	5.60E+01

BP/Castex-Ltd Adm-Apx E-001863

Analysis Report for 2206038-13

R-4 0-4

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
81	2153.08	3.57E+01	41.87			3.57E+01	4.19E+01
82	2204.40	3.67E+02	81.48			3.67E+02	8.15E+01
83	2396.25	5.13E+01	38.05			5.13E+01	3.81E+01
84	2446.78	1.10E+02	77.90			1.10E+02	7.79E+01
85	2614.66	2.47E+03	106.60	2.23E+00	1.06E+00	2.47E+03	1.07E+02
86	2674.87	1.09E+01	13.42			1.09E+01	1.34E+01
87	2703.52	2.21E+01	20.35			2.21E+01	2.03E+01
88	2892.50	1.69E+01	9.81			1.69E+01	9.81E+00
89	2984.49	1.50E+01	7.75			1.50E+01	7.75E+00
90	3108.77	4.42E+00	6.02			4.42E+00	6.02E+00
91	3197.17	2.51E+01	12.17	2.09E-01	5.84E-01	2.49E+01	1.22E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 5:26:07PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126203.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	1	31.81	3.72E+03	406.97			3.72E+03	4.07E+02
m	2	36.28	1.37E+03	397.30			1.37E+03	3.97E+02
	3	75.98	3.60E+04	940.78	2.03E+01	5.84E+00	3.60E+04	9.41E+02
M	4	87.34	1.29E+04	688.94			1.29E+04	6.89E+02
m	5	90.47	2.43E+03	406.95	6.50E+01	7.53E+00	2.37E+03	4.07E+02
m	6	93.24	3.39E+03	500.11	6.50E+01	7.53E+00	3.33E+03	5.00E+02
	7	99.19	6.39E+02	357.67			6.39E+02	3.58E+02
	8	105.87	9.72E+02	473.43			9.72E+02	4.73E+02
	9	114.77	6.32E+02	405.70			6.32E+02	4.06E+02
	10	128.89	2.68E+03	575.38			2.68E+03	5.75E+02
	11	154.08	6.51E+02	385.12			6.51E+02	3.85E+02
	12	166.28	3.68E+02	360.66			3.68E+02	3.61E+02
	13	186.29	2.64E+03	500.66	1.96E+01	3.17E+00	2.62E+03	5.01E+02
	14	209.27	2.74E+03	465.88			2.74E+03	4.66E+02
	15	239.15	4.17E+04	665.22	8.87E+00	6.28E+00	4.17E+04	6.65E+02
	16	252.56	3.35E+02	281.76	1.57E+00	5.48E+00	3.34E+02	2.82E+02
	17	258.84	3.11E+02	278.71			3.11E+02	2.79E+02

Analysis Report for 2206038-13

R-4 0-4

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	18	270.28	2.13E+03	316.82			2.13E+03	3.17E+02
m	19	277.32	1.45E+03	281.23			1.45E+03	2.81E+02
M	20	295.21	8.50E+03	317.99			8.50E+03	3.18E+02
m	21	300.08	1.78E+03	272.86			1.78E+03	2.73E+02
	22	327.95	1.49E+03	304.00			1.49E+03	3.04E+02
	23	338.39	6.05E+03	375.80			6.05E+03	3.76E+02
	24	351.91	1.36E+04	401.89			1.36E+04	4.02E+02
	25	387.83	3.48E+02	237.62			3.48E+02	2.38E+02
	26	409.41	7.63E+02	233.63			7.63E+02	2.34E+02
M	27	453.74	3.02E+02	218.16			3.02E+02	2.18E+02
m	28	462.99	1.65E+03	210.11			1.65E+03	2.10E+02
	29	510.58	3.05E+03	317.31	4.35E+01	4.93E+00	3.01E+03	3.17E+02
	30	562.48	3.44E+02	192.60			3.44E+02	1.93E+02
	31	583.20	8.70E+03	330.10	3.49E+00	3.56E+00	8.69E+03	3.30E+02
	32	594.66	1.24E+02	144.94			1.24E+02	1.45E+02
	33	609.33	9.14E+03	269.81	4.60E+00	3.40E+00	9.13E+03	2.70E+02
	34	665.48	2.63E+02	155.99			2.63E+02	1.56E+02
	35	702.79	2.85E+02	154.23			2.85E+02	1.54E+02
	36	727.31	1.60E+03	208.29			1.60E+03	2.08E+02
	37	755.44	2.99E+02	171.80			2.99E+02	1.72E+02
	38	769.69	8.73E+02	205.93			8.73E+02	2.06E+02
	39	784.70	5.06E+02	169.82			5.06E+02	1.70E+02
	40	794.93	8.20E+02	157.25			8.20E+02	1.57E+02
	41	806.77	1.99E+02	145.03			1.99E+02	1.45E+02
	42	836.91	5.93E+02	237.82			5.93E+02	2.38E+02
	43	860.63	8.72E+02	134.88			8.72E+02	1.35E+02
M	44	904.13	8.63E+01	107.48			8.63E+01	1.07E+02
m	45	911.25	5.07E+03	176.39			5.07E+03	1.76E+02
	46	933.57	5.19E+02	140.33			5.19E+02	1.40E+02
M	47	965.03	1.04E+03	166.37			1.04E+03	1.66E+02
m	48	969.16	2.79E+03	145.37			2.79E+03	1.45E+02
	49	1052.55	7.49E+01	90.64			7.49E+01	9.06E+01
	50	1075.16	2.08E+02	149.52			2.08E+02	1.50E+02
	51	1087.23	5.82E+01	70.12			5.82E+01	7.01E+01
	52	1094.78	1.40E+02	87.64			1.40E+02	8.76E+01
	53	1120.33	1.71E+03	139.37			1.71E+03	1.39E+02
	54	1154.68	2.31E+02	107.42			2.31E+02	1.07E+02
	55	1182.55	6.88E+01	68.39			6.88E+01	6.84E+01
	56	1206.00	9.35E+01	79.44			9.35E+01	7.94E+01
	57	1238.20	6.37E+02	120.07			6.37E+02	1.20E+02
	58	1281.19	1.36E+02	86.18			1.36E+02	8.62E+01
M	59	1377.66	4.57E+02	92.96			4.57E+02	9.30E+01
m	60	1385.03	1.21E+02	86.34			1.21E+02	8.63E+01
M	61	1401.03	1.34E+02	58.04			1.34E+02	5.80E+01
m	62	1408.04	2.33E+02	87.02			2.33E+02	8.70E+01
	63	1459.56	1.73E+02	96.91	2.23E+00	1.49E+00	1.70E+02	9.69E+01
	64	1497.47	1.42E+02	107.73			1.42E+02	1.08E+02
	65	1509.30	2.58E+02	93.94			2.58E+02	9.39E+01
	66	1538.58	4.89E+01	58.95			4.89E+01	5.89E+01
M	67	1582.01	1.33E+02	75.69			1.33E+02	7.57E+01
m	68	1588.10	4.47E+02	88.57			4.47E+02	8.86E+01
m	69	1593.10	6.58E+02	94.89			6.58E+02	9.49E+01
M	70	1621.02	2.32E+02	78.20			2.32E+02	7.82E+01
m	71	1630.19	2.38E+02	67.49			2.38E+02	6.75E+01

Analysis Report for 2206038-13

R-4 0-4

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
72	1660.85	1.17E+02	60.99			1.17E+02	6.10E+01
73	1711.25	5.38E+01	50.64			5.38E+01	5.06E+01
74	1729.81	3.19E+02	81.83			3.19E+02	8.18E+01
75	1764.63	1.28E+03	104.48			1.28E+03	1.04E+02
76	1796.81	7.24E+01	75.13			7.24E+01	7.51E+01
77	1847.73	1.79E+02	61.73			1.79E+02	6.17E+01
78	1897.24	4.81E+01	49.03			4.81E+01	4.90E+01
79	2103.43	2.83E+02	73.80			2.83E+02	7.38E+01
80	2119.08	7.80E+01	56.04			7.80E+01	5.60E+01
81	2153.08	3.57E+01	41.87			3.57E+01	4.19E+01
82	2204.40	3.67E+02	81.48			3.67E+02	8.15E+01
83	2396.25	5.13E+01	38.05			5.13E+01	3.81E+01
84	2446.78	1.10E+02	77.90			1.10E+02	7.79E+01
85	2614.66	2.47E+03	106.60	2.23E+00	1.06E+00	2.47E+03	1.07E+02
86	2674.87	1.09E+01	13.42			1.09E+01	1.34E+01
87	2703.52	2.21E+01	20.35			2.21E+01	2.03E+01
88	2892.50	1.69E+01	9.81			1.69E+01	9.81E+00
89	2984.49	1.50E+01	7.75			1.50E+01	7.75E+00
90	3108.77	4.42E+00	6.02			4.42E+00	6.02E+00
91	3197.17	2.51E+01	12.17	2.09E-01	5.84E-01	2.49E+01	1.22E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.961	1460.81	*	10.67	7.45E+00	4.29E+00
MN-54	0.895	834.83	*	99.97	1.73E+00	7.11E-01
GA-67	0.724	93.31	*	35.70	1.00E+03	1.73E+02
		208.95	*	2.24	2.16E+04	4.22E+03
		300.22	*	16.00	2.78E+03	5.10E+02
I-125	0.983	35.49	*	6.49	2.25E+01	7.18E+00
SN-126	0.999	87.57	*	37.00	1.41E+01	1.42E+00
CS-135	0.898	268.24	*	16.00	1.14E+01	2.05E+00
CE-139	0.995	165.85	*	80.35	2.91E-01	2.86E-01
PM-146	0.448	453.90	*	39.94	1.11E+00	8.12E-01
		735.90		14.01		

Analysis Report for 2206038-13
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Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
PM-146	0.448	747.13		13.10		
ND-147	0.684	91.11	*	28.90	1.75E+01	3.35E+00
		531.02		13.10		
EU-155	0.986	86.50	*	30.90	1.71E+01	1.71E+00
		105.30	*	20.70	2.02E+00	9.96E-01
HO-166M	0.329	184.41	*	72.60	2.20E+00	4.67E-01
		280.45		29.60		
		410.94	*	11.10	9.02E+00	2.88E+00
		711.69		54.10		
LU-173	0.923	100.72	*	5.24	5.26E+00	2.98E+00
		272.11	*	21.20	8.94E+00	1.61E+00
TL-208	1.000	583.14	*	30.22	5.47E+01	5.53E+00
		860.37	*	4.48	5.51E+01	9.79E+00
		2614.66	*	35.85	5.14E+01	5.82E+00
BI-212	0.999	727.17	*	11.80	3.23E+01	5.11E+00
		1620.62	*	2.75	4.32E+01	1.50E+01
PB-212	0.994	238.63	*	44.60	7.12E+01	7.18E+00
		300.09	*	3.41	4.97E+01	9.12E+00
BI-214	1.000	609.31	*	46.30	3.93E+01	3.80E+00
		1120.29	*	15.10	4.14E+01	5.51E+00
		1764.49	*	15.80	4.47E+01	5.17E+00
		2204.22	*	4.98	4.84E+01	1.17E+01
PB-214	1.000	295.21	*	19.19	4.15E+01	4.47E+00
		351.92	*	37.19	4.11E+01	4.14E+00
RA-224	0.918	240.98	*	3.95	8.04E+02	8.11E+01
AC-228	1.000	338.32	*	11.40	5.71E+01	6.64E+00
		911.07	*	27.70	5.48E+01	5.13E+00
		969.11	*	16.60	5.35E+01	5.66E+00
PA-234	0.462	131.20	*	20.40	6.15E+00	1.40E+00
		733.99		8.80		
		946.00		12.00		
AM-243	0.957	74.67	*	66.00	2.21E+01	1.82E+00
CM-243	0.364	209.75	*	3.29	5.62E+01	1.10E+01
		228.14		10.60		
		277.60	*	14.00	9.13E+00	2.00E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 5:26:07PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Analysis Report for 2206038-13

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	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	31.81	1.03372E+00	5.47	Tol.	I-129
						I-129
	9	114.77	1.75445E-01	32.12		
	11	154.08	1.80749E-01	29.59	Sum	
	16	252.56	9.27186E-02	42.21	Sum	
	17	258.84	8.62545E-02	44.88	Sum	
	22	327.95	4.14528E-01	10.19	Sum	
	25	387.83	9.65958E-02	34.17	Sum	
m	28	462.99	4.59297E-01	6.35	Sum	
	29	510.58	8.36142E-01	5.27	Sum	
	30	562.48	9.56313E-02	27.97	Sum	
	32	594.66	3.43691E-02	58.57	Sum	
	34	665.48	7.31163E-02	29.63	Sum	
	35	702.79	7.92368E-02	27.03	Sum	
	37	755.44	8.31333E-02	28.70	Sum	
	38	769.69	2.42496E-01	11.79	Sum	
	39	784.70	1.40567E-01	16.78	Tol.	SB-127
	40	794.93	2.27843E-01	9.59	Sum	
	41	806.77	5.53701E-02	36.38	Sum	
M	44	904.13	2.39653E-02	62.29	Sum	
	46	933.57	1.44251E-01	13.51	Sum	
M	47	965.03	2.88994E-01	8.00	Sum	
	49	1052.55	2.07971E-02	60.53		
	50	1075.16	5.77551E-02	35.96	Sum	
	51	1087.23	1.61538E-02	60.29		
	52	1094.78	3.87687E-02	31.40	Tol.	LU-172
	54	1154.68	6.41273E-02	23.26	Sum	
	55	1182.55	1.91227E-02	49.67	D-Esc	
	56	1206.00	2.59652E-02	42.49	Sum	
	57	1238.20	1.76951E-01	9.42	Sum	
	58	1281.19	3.79115E-02	31.57		
M	59	1377.66	1.26873E-01	10.18	Sum	
m	60	1385.03	3.36960E-02	35.59	Tol.	AG-110M
M	61	1401.03	3.70914E-02	21.73		
m	62	1408.04	6.46598E-02	18.69		
	64	1497.47	3.95203E-02	37.86	Sum	
	65	1509.30	7.15507E-02	18.24		
	66	1538.58	1.35962E-02	60.22		
M	67	1582.01	3.69456E-02	28.45		
m	68	1588.10	1.24126E-01	9.91	Sum	
m	69	1593.10	1.82641E-01	7.22	D-Esc	
m	71	1630.19	6.61993E-02	14.16		
	72	1660.85	3.24430E-02	26.11		
	73	1711.25	1.49435E-02	47.06	Sum	
	74	1729.81	8.85818E-02	12.83	Sum	
	76	1796.81	2.01021E-02	51.91	Sum	
	77	1847.73	4.96528E-02	17.27	Sum	
	78	1897.24	1.33512E-02	51.01	Sum	
	79	2103.43	7.85749E-02	13.04	S-Esc	
	80	2119.08	2.16752E-02	35.91		
	81	2153.08	9.92557E-03	58.59		

Analysis Report for 2206038-13
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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
83	2396.25	1.42637E-02	37.05		
84	2446.78	3.05272E-02	35.44		
86	2674.87	3.02910E-03	61.52	Sum	
87	2703.52	6.13695E-03	46.05	Sum	
88	2892.50	4.69298E-03	29.03	Sum	
89	2984.49	4.16667E-03	25.82		
90	3108.77	1.22685E-03	68.16		
91	3197.17	6.92595E-03	24.42	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.96	1460.81	*	10.67	7.45E+00	4.29E+00
MN-54	0.89	834.83	*	99.97	1.73E+00	7.11E-01
GA-67	0.72	93.31	*	35.70	1.00E+03	1.73E+02
		208.95	*	2.24	2.16E+04	4.22E+03
		300.22	*	16.00	2.78E+03	5.10E+02
I-125	0.98	35.49	*	6.49	2.25E+01	7.18E+00
SN-126	0.99	87.57	*	37.00	1.41E+01	1.42E+00
CS-135	0.89	268.24	*	16.00	1.14E+01	2.05E+00
CE-139	0.99	165.85	*	80.35	2.91E-01	2.86E-01
PM-146	0.44	453.90	*	39.94	1.11E+00	8.12E-01
		735.90		14.01		
		747.13		13.10		
ND-147	0.68	91.11	*	28.90	1.75E+01	3.35E+00
		531.02		13.10		
EU-155	0.98	86.50	*	30.90	1.71E+01	1.71E+00
		105.30	*	20.70	2.02E+00	9.96E-01
HO-166M	0.32	184.41	*	72.60	2.20E+00	4.67E-01
		280.45		29.60		
		410.94	*	11.10	9.02E+00	2.88E+00
		711.69		54.10		

BP/Castex-Ltd Adm-Apx E-001869

Analysis Report for 2206038-13
R-4 0-4

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
LU-173	0.92	100.72	*	5.24	5.26E+00	2.98E+00
		272.11	*	21.20	8.94E+00	1.61E+00
TL-208	1.00	583.14	*	30.22	5.47E+01	5.53E+00
		860.37	*	4.48	5.51E+01	9.79E+00
		2614.66	*	35.85	5.14E+01	5.82E+00
BI-212	0.99	727.17	*	11.80	3.23E+01	5.11E+00
		1620.62	*	2.75	4.32E+01	1.50E+01
PB-212	0.99	238.63	*	44.60	7.12E+01	7.18E+00
		300.09	*	3.41	4.97E+01	9.12E+00
BI-214	1.00	609.31	*	46.30	3.93E+01	3.80E+00
		1120.29	*	15.10	4.14E+01	5.51E+00
		1764.49	*	15.80	4.47E+01	5.17E+00
		2204.22	*	4.98	4.84E+01	1.17E+01
PB-214	1.00	295.21	*	19.19	4.15E+01	4.47E+00
		351.92	*	37.19	4.11E+01	4.14E+00
RA-224	0.91	240.98	*	3.95	8.04E+02	8.11E+01
AC-228	1.00	338.32	*	11.40	5.71E+01	6.64E+00
		911.07	*	27.70	5.48E+01	5.13E+00
		969.11	*	16.60	5.35E+01	5.66E+00
PA-234	0.46	131.20	*	20.40	6.15E+00	1.40E+00
		733.99		8.80		
		946.00		12.00		
AM-243	0.95	74.67	*	66.00	2.21E+01	1.82E+00
CM-243	0.36	209.75	*	3.29	5.62E+01	1.10E+01
		228.14		10.60		
		277.60	*	14.00	9.13E+00	2.00E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.961	7.45E+00	4.29E+00	

Analysis Report for 2206038-13

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	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	MN-54	0.895	1.73E+00	7.11E-01	
	GA-67	0.724	1.03E+03	1.72E+02	
X	CD-109	0.988			
	I-125	0.983	2.25E+01	7.18E+00	
	SN-126	0.999	1.24E+01	1.64E+00	
	CS-135	0.898	4.69E+00	4.32E+00	
	CE-139	0.995	2.91E-01	2.86E-01	
	PM-146	0.448	1.11E+00	8.12E-01	
	ND-147	0.684	1.75E+01	3.35E+00	
	EU-155	0.986	2.02E+00	9.96E-01	
	HO-166M	0.329	2.37E+00	4.61E-01	
	LU-173	0.923	5.26E+00	2.98E+00	
X	HG-203	0.913			
	TL-208	1.000	5.34E+01	3.71E+00	
	BI-212	0.999	3.34E+01	4.83E+00	
	PB-212	0.994	3.13E+01	9.63E+00	
	BI-214	1.000	4.16E+01	2.61E+00	
	PB-214	1.000	4.13E+01	3.04E+00	
	RA-224	0.918	4.51E+02	1.36E+02	
X	RA-226	1.000			
	AC-228	1.000	5.49E+01	3.30E+00	
	PA-234	0.462	6.15E+00	1.40E+00	
X	NP-237	0.982			
X	NP-239	0.365			
	AM-243	0.957	2.21E+01	1.82E+00	
	CM-243	0.364	1.05E+01	1.96E+00	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-13
R-4 0-4

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 5:26:07PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	31.81	1.03372E+00	5.47	Tol.	I-129
						I-129
	9	114.77	1.75445E-01	32.12		
	11	154.08	1.80749E-01	29.59	Sum	
	16	252.56	9.27186E-02	42.21	Sum	
	17	258.84	8.62545E-02	44.88	Sum	
	22	327.95	4.14528E-01	10.19	Sum	
	25	387.83	9.65958E-02	34.17	Sum	
m	28	462.99	4.59297E-01	6.35	Sum	
	29	510.58	8.36142E-01	5.27	Sum	
	30	562.48	9.56313E-02	27.97	Sum	
	32	594.66	3.43691E-02	58.57	Sum	
	34	665.48	7.31163E-02	29.63	Sum	
	35	702.79	7.92368E-02	27.03	Sum	
	37	755.44	8.31333E-02	28.70	Sum	
	38	769.69	2.42496E-01	11.79	Sum	
	39	784.70	1.40567E-01	16.78	Tol.	SB-127
	40	794.93	2.27843E-01	9.59	Sum	
	41	806.77	5.53701E-02	36.38	Sum	
M	44	904.13	2.39653E-02	62.29	Sum	
	46	933.57	1.44251E-01	13.51	Sum	
M	47	965.03	2.88994E-01	8.00	Sum	
	49	1052.55	2.07971E-02	60.53		
	50	1075.16	5.77551E-02	35.96	Sum	
	51	1087.23	1.61538E-02	60.29		
	52	1094.78	3.87687E-02	31.40	Tol.	LU-172
	54	1154.68	6.41273E-02	23.26	Sum	
	55	1182.55	1.91227E-02	49.67	D-Esc	
	56	1206.00	2.59652E-02	42.49	Sum	
	57	1238.20	1.76951E-01	9.42	Sum	
	58	1281.19	3.79115E-02	31.57		
M	59	1377.66	1.26873E-01	10.18	Sum	
m	60	1385.03	3.36960E-02	35.59	Tol.	AG-110M
M	61	1401.03	3.70914E-02	21.73		

Analysis Report for 2206038-13
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	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	62	1408.04	6.46598E-02	18.69		
	64	1497.47	3.95203E-02	37.86	Sum	
	65	1509.30	7.15507E-02	18.24		
	66	1538.58	1.35962E-02	60.22		
M	67	1582.01	3.69456E-02	28.45		
m	68	1588.10	1.24126E-01	9.91	Sum	
m	69	1593.10	1.82641E-01	7.22	D-Esc	
m	71	1630.19	6.61993E-02	14.16		
	72	1660.85	3.24430E-02	26.11		
	73	1711.25	1.49435E-02	47.06	Sum	
	74	1729.81	8.85818E-02	12.83	Sum	
	76	1796.81	2.01021E-02	51.91	Sum	
	77	1847.73	4.96528E-02	17.27	Sum	
	78	1897.24	1.33512E-02	51.01	Sum	
	79	2103.43	7.85749E-02	13.04	S-Esc	
	80	2119.08	2.16752E-02	35.91		
	81	2153.08	9.92557E-03	58.59		
	83	2396.25	1.42637E-02	37.05		
	84	2446.78	3.05272E-02	35.44		
	86	2674.87	3.02910E-03	61.52	Sum	
	87	2703.52	6.13695E-03	46.05	Sum	
	88	2892.50	4.69298E-03	29.03	Sum	
	89	2984.49	4.16667E-03	25.82		
	90	3108.77	1.22685E-03	68.16		
	91	3197.17	6.92595E-03	24.42	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	2.78E+00	5.77E+00	5.77E+00
+	NA-22	1274.54	99.94	-5.96E-02	4.54E-01	4.54E-01

BP/Castex-Ltd Adm-Apx E-001873

Analysis Report for 2206038-13

R-4 0-4

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NA-24	1368.53		99.99	-1.60E-01	1.90E-01	4.47E-01
		2754.09		99.86	4.70E-03		1.90E-01
+	AL-26	1808.65		99.76	-1.33E-01	4.45E-01	4.45E-01
+	K-40	1460.81	*	10.67	7.45E+00	6.84E+00	6.84E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	1.11E-01	3.69E-01	3.69E-01
		78.34		96.00	1.10E+01		4.90E-01
+	SC-46	889.25		98.98	2.47E-01	5.77E-01	5.77E-01
		1120.51		99.90	7.66E+00		1.03E+00
+	V-48	983.52		99.98	3.17E-01	1.36E+00	1.36E+00
		1312.10		97.50	-5.44E-01		1.46E+00
+	CR-51	320.08		9.83	-1.07E+00	7.68E+00	7.68E+00
+	MN-54	834.83	*	99.97	1.73E+00	1.13E+00	1.13E+00
+	CO-56	846.75		99.96	-5.96E-02	5.79E-01	5.79E-01
		1037.75		14.03	7.29E-01		3.99E+00
		1238.25		67.00	4.88E+00		1.27E+00
		1771.40		15.51	-6.80E-01		4.23E+00
		2587.48		16.90	-3.55E-01		2.35E+00
+	CO-57	122.06		85.51	-5.27E-01	4.14E-01	4.14E-01
		136.48		10.60	3.11E-01		3.53E+00
+	CO-58	810.76		99.40	-1.81E-01	6.20E-01	6.20E-01
+	FE-59	1099.22		56.50	-1.45E-01	1.18E+00	1.18E+00
		1291.56		43.20	-4.39E-01		1.59E+00
+	CO-60	1173.22		100.00	3.12E-01	4.48E-01	4.48E-01
		1332.49		100.00	-1.12E-01		4.67E-01
+	ZN-65	1115.52		50.75	-1.01E-01	1.33E+00	1.33E+00
+	GA-67	93.31	*	35.70	1.00E+03	4.28E+02	4.28E+02
		208.95	*	2.24	2.16E+04		5.91E+03
		300.22	*	16.00	2.78E+03		1.20E+03
+	SE-75	121.11		16.70	-2.92E+00	6.84E-01	2.29E+00
		136.00		59.50	6.02E-02		6.84E-01
		264.65		59.80	1.55E-01		7.26E-01
		279.53		25.20	-2.18E-01		1.89E+00
		400.65		11.40	-3.57E-01		4.45E+00
+	RB-82	776.52		13.00	-1.63E+00	7.95E+00	7.95E+00
+	RB-83	520.41		46.00	-7.31E-01	1.17E+00	1.17E+00
		529.64		30.30	-4.01E-01		1.80E+00
		552.65		16.40	-8.10E-01		3.35E+00
+	KR-85	513.99		0.43	-2.59E+01	1.33E+02	1.33E+02
+	SR-85	513.99		99.27	-1.49E-01	7.65E-01	7.65E-01
+	Y-88	898.02		93.40	1.83E-01	5.86E-01	5.97E-01
		1836.01		99.38	9.45E-02		5.86E-01
+	MO-93	263.06		56.72	1.40E-01	4.85E-01	6.59E-01
		684.67		99.68	1.96E-01		5.05E-01
		1477.11		99.08	-2.85E-02		4.85E-01
+	NB-93M	16.57		9.43	4.96E+01	1.18E+02	1.18E+02
+	NB-94	702.63		100.00	2.98E-01	4.57E-01	5.33E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	NB-94	871.10		100.00	-1.15E-02	4.57E-01	4.57E-01
+	NB-95	765.79		99.81	1.60E-01	1.00E+00	1.00E+00
+	NB-95M	235.69		25.00	-1.45E+02	4.68E+02	4.68E+02
+	ZR-95	724.18		43.70	3.01E-02	1.28E+00	2.03E+00
		756.72		55.30	3.58E-01		1.28E+00
+	MO-99	181.06		6.20	-1.52E+02	2.86E+03	4.63E+03
		739.58		12.80	-2.01E+02		2.86E+03
		778.00		4.50	-1.71E+03		8.03E+03
+	TC-99M	140.51		89.00	-8.78E-02	3.96E-01	3.96E-01
+	RU-103	497.08		89.00	-3.35E-01	7.63E-01	7.63E-01
+	RU-106	621.84		9.80	-9.82E-01	4.90E+00	4.90E+00
+	AG-108M	433.93		89.90	-2.52E-01	4.63E-01	4.63E-01
		614.37		90.40	-8.26E-01		7.38E-01
		722.95		90.50	1.13E-01		7.01E-01
+	CD-109	88.03	*	3.72	1.46E+02	1.65E+01	1.65E+01
+	AG-110M	657.75		93.14	-2.83E-01	5.58E-01	5.58E-01
		677.61		10.53	7.32E-01		5.04E+00
		706.67		16.46	9.64E-01		3.51E+00
		763.93		21.98	-2.38E-01		2.67E+00
		884.67		21.98	-1.32E+00		2.15E+00
		1384.27		23.94	-5.48E+00		2.26E+00
+	CD-113M	263.70		0.02	3.45E+02	1.62E+03	1.62E+03
+	SN-113	255.12		1.93	3.74E+01	7.80E-01	2.27E+01
		391.69		64.90	-2.49E-02		7.80E-01
+	TE-123M	159.00		84.10	-1.13E-01	5.03E-01	5.03E-01
+	SB-124	602.71		97.87	-1.04E-01	6.44E-01	6.44E-01
		645.85		7.26	2.64E+00		8.92E+00
		722.78		11.10	1.76E+00		7.00E+00
		1691.02		49.00	-3.32E-01		1.15E+00
+	I-125	35.49	*	6.49	2.25E+01	1.56E+01	1.56E+01
+	SB-125	176.33		6.89	-6.69E-01	1.47E+00	5.53E+00
		427.89		29.33	5.98E-01		1.47E+00
		463.38		10.35	2.25E+01		4.92E+00
		600.56		17.80	-4.30E-01		2.63E+00
		635.90		11.32	-3.62E+00		4.13E+00
+	SB-126	414.70		83.30	-5.84E-02	5.04E-01	5.21E-01
		666.33		99.60	5.21E-01		5.10E-01
		695.00		99.60	-1.06E-01		5.04E-01
		720.50		53.80	9.80E-02		9.39E-01
+	SN-126	87.57	*	37.00	1.41E+01	1.60E+00	1.60E+00
+	SB-127	473.00		25.00	2.50E+01	1.56E+02	1.92E+02
		685.00		35.70	-8.39E+00		1.56E+02
		783.80		14.70	8.84E+02		4.11E+02
+	I-129	29.78		57.00	-9.58E-02	1.47E+00	1.47E+00
		33.60		13.20	3.51E+01		4.87E+00
		39.58		7.52	-4.12E+00		5.65E+00
+	I-131	284.30		6.05	-4.05E+01	4.71E+00	6.00E+01
		364.48		81.20	-1.29E+00		4.71E+00

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		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		I-131	636.97		7.26	-2.01E+01	4.71E+00	6.13E+01
			722.89		1.80	7.70E+01		3.06E+02
+		TE-132	49.72		13.10	-2.52E+02	1.18E+02	6.56E+02
			228.16		88.00	-1.58E+01		1.18E+02
+		BA-133	81.00		34.06	-2.48E+01	9.94E-01	1.18E+00
			302.84		18.33	-1.35E-01		2.32E+00
			356.01		62.05	-9.44E-03		9.94E-01
+		I-133	529.87		86.30	-2.48E+08	6.48E+08	6.48E+08
+		XE-133	81.00		38.00	-7.06E+02	3.35E+01	3.35E+01
+		CS-134	563.23		8.38	7.12E+00	6.90E-01	5.90E+00
			569.32		15.43	3.94E-01		3.09E+00
			604.70		97.60	-5.62E-02		7.19E-01
			795.84		85.40	2.59E+00		6.90E-01
			801.93		8.73	-3.58E+01		5.35E+00
+		CS-135	268.24	*	16.00	1.14E+01	4.89E+00	4.89E+00
+	@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41		28.60	1.00E+26		1.00E+26
	@		1678.03		9.54	1.00E+26		1.00E+26
+		CS-136	153.22		7.46	-5.46E+00	1.82E+00	1.96E+01
			163.89		4.61	-4.19E+00		3.14E+01
			176.55		13.56	-1.33E+00		1.10E+01
			273.65		12.66	5.39E+01		1.37E+01
			340.57		48.50	5.37E+01		4.59E+00
			818.50		99.70	5.81E-01		1.82E+00
			1048.07		79.60	1.51E-01		2.13E+00
			1235.34		19.70	4.25E+01		1.30E+01
+		CS-137	661.65		85.12	-2.86E-01	5.88E-01	5.88E-01
+		LA-138	788.74		34.00	-7.57E+00	7.05E-01	1.53E+00
			1435.80		66.00	2.04E-01		7.05E-01
+		CE-139	165.85	*	80.35	2.91E-01	4.67E-01	4.67E-01
+		BA-140	162.64		6.70	-3.00E+00	7.33E+00	2.25E+01
			304.84		4.50	-1.52E+00		3.60E+01
			423.70		3.20	7.82E+00		5.52E+01
			437.55		2.00	1.12E+01		8.68E+01
			537.32		25.00	1.55E+00		7.33E+00
+		LA-140	328.77		20.50	2.46E+01	2.93E+00	8.96E+00
			487.03		45.50	-6.58E-01		3.84E+00
			815.85		23.50	-4.06E+00		7.98E+00
			1596.49		95.49	-4.56E-02		2.93E+00
+		CE-141	145.44		48.40	8.94E-02	1.29E+00	1.29E+00
+		CE-143	57.36		11.80	-9.90E+05	7.25E+05	1.49E+06
			293.26		42.00	8.04E+06		7.25E+05
			664.55		5.20	-3.38E+05		5.38E+06
+		CE-144	133.54		10.80	-3.22E-03	3.55E+00	3.55E+00
+		PM-144	476.78		42.00	2.49E-01	4.87E-01	1.07E+00
			618.01		98.60	-1.73E+00		4.87E-01
			696.49		99.49	-1.53E-02		5.38E-01
+		PM-145	36.85		21.70	-4.39E-01	1.22E+00	2.29E+00
			37.36		39.70	-2.34E-01		1.22E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-145	42.30		15.10	-2.02E+00	1.22E+00	2.49E+00
		72.40		2.31	-5.28E+01		1.90E+01
+	PM-146	453.90	*	39.94	1.11E+00	2.53E+00	2.53E+00
		735.90		14.01	-1.67E+00		3.56E+00
		747.13		13.10	-9.46E-01		3.86E+00
+	ND-147	91.11	*	28.90	1.75E+01	1.03E+01	1.03E+01
		531.02		13.10	-2.20E+00		1.76E+01
+	PM-149	285.90		3.10	-3.02E+04	4.53E+04	4.53E+04
+	EU-152	121.78		20.50	-2.06E+00	1.62E+00	1.62E+00
		244.69		5.40	-3.15E+00		8.61E+00
		344.27		19.13	-1.25E+00		2.18E+00
		778.89		9.10	-1.15E+00		5.41E+00
		964.01		10.40	-4.28E+01		7.07E+00
		1085.78		7.22	-3.54E+00		5.92E+00
		1112.02		9.60	-2.03E-01		4.71E+00
		1407.95		14.94	2.88E+00		3.75E+00
+	GD-153	97.43		31.30	-3.61E+00	1.12E+00	1.12E+00
		103.18		22.20	2.25E+00		1.57E+00
+	EU-154	123.07		40.50	-5.96E-01	8.32E-01	8.32E-01
		723.30		19.70	5.21E-01		3.24E+00
		873.19		11.50	4.48E-01		4.00E+00
		996.32		10.30	-1.91E-03		4.14E+00
		1004.76		17.90	2.73E-01		2.42E+00
		1274.45		35.50	-1.65E-01		1.26E+00
+	EU-155	86.50	*	30.90	1.71E+01	1.61E+00	1.93E+00
		105.30	*	20.70	2.02E+00		1.61E+00
+	EU-156	811.77		10.40	-6.91E+00	1.47E+01	1.47E+01
		1153.47		7.20	4.03E+01		2.33E+01
		1230.71		8.90	1.19E+00		1.70E+01
+	HO-166M	184.41	*	72.60	2.20E+00	6.78E-01	6.78E-01
		280.45		29.60	-6.99E-01		1.37E+00
		410.94	*	11.10	9.02E+00		4.44E+00
		711.69		54.10	5.72E-02		9.46E-01
+	TM-171	66.72		0.14	2.37E+01	2.52E+02	2.52E+02
+	HF-172	67.35		5.31	6.23E-01	3.22E+00	6.64E+00
		125.82		11.30	-1.26E+00		3.22E+00
+	LU-172	181.53		20.60	-9.33E-01	1.07E+01	2.85E+01
		900.72		29.81	-4.24E-01		2.43E+01
		1093.66		62.50	4.23E+00		1.07E+01
+	LU-173	100.72	*	5.24	5.26E+00	3.83E+00	4.82E+00
		272.11	*	21.20	8.94E+00		3.83E+00
+	HF-175	343.40		84.00	-3.66E-01	7.12E-01	7.12E-01
+	LU-176	88.34		13.30	2.82E+01	4.06E-01	2.94E+00
		201.83		86.00	1.15E-01		4.58E-01
		306.78		94.00	-8.78E-02		4.06E-01
+	HF-181	133.02		41.70	-1.20E-03	7.87E-01	1.32E+00
		345.85		17.20	-2.13E+00		4.01E+00
		482.03		82.80	6.49E-02		7.87E-01
+	TA-182	67.75		41.20	2.97E-01	9.90E-01	9.90E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TA-182	1121.30		34.90	2.05E+01	9.90E-01	2.78E+00
		1189.05		16.23	7.23E-01		3.20E+00
		1221.41		26.98	-3.28E-01		1.96E+00
		1231.02		11.44	3.28E-01		4.70E+00
+	IR-192	308.46		29.68	-8.40E-01	1.18E+00	1.64E+00
		468.07		48.10	1.04E-01		1.18E+00
+	HG-203	279.19	*	77.30	2.44E+00	1.52E+00	1.52E+00
+	TL-204	374.74		94.11	-1.72E-01	4.42E-01	4.42E-01
		899.15		99.16	-5.20E-02		4.86E-01
		911.74		91.10	1.69E+01		1.22E+00
+	BI-207	569.67		97.72	6.08E-02	4.78E-01	4.78E-01
		1063.62		74.90	2.17E-01		5.72E-01
+	TL-208	583.14	*	30.22	5.47E+01	1.38E+00	2.84E+00
		860.37	*	4.48	5.51E+01		1.28E+01
		2614.66	*	35.85	5.14E+01		1.38E+00
+	BI-210M	262.00		45.00	1.75E-01	8.27E-01	8.27E-01
		300.00		23.00	-7.01E+00		2.10E+00
+	PB-210	46.50		4.25	-8.56E+00	7.93E+00	7.93E+00
+	PB-211	404.84		2.90	-5.11E+00	1.58E+01	1.58E+01
		831.96		2.90	-4.85E+00		1.74E+01
+	BI-212	727.17	*	11.80	3.23E+01	6.46E+00	6.46E+00
		1620.62	*	2.75	4.32E+01		3.61E+01
+	PB-212	238.63	*	44.60	7.12E+01	1.48E+00	1.48E+00
		300.09	*	3.41	4.97E+01		2.15E+01
+	BI-214	609.31	*	46.30	3.93E+01	1.36E+00	1.36E+00
		1120.29	*	15.10	4.14E+01		4.54E+00
		1764.49	*	15.80	4.47E+01		4.45E+00
		2204.22	*	4.98	4.84E+01		1.60E+01
+	PB-214	295.21	*	19.19	4.15E+01	1.63E+00	3.77E+00
		351.92	*	37.19	4.11E+01		1.63E+00
+	RN-219	401.80		6.50	-1.90E+00	6.73E+00	6.73E+00
+	RA-223	323.87		3.88	5.12E-02	1.10E+01	1.10E+01
+	RA-224	240.98	*	3.95	8.04E+02	1.67E+01	1.67E+01
+	RA-225	40.00		31.00	-3.35E+00	4.59E+00	4.59E+00
+	RA-226	186.21	*	3.28	4.86E+01	1.50E+01	1.50E+01
+	TH-227	50.10		8.40	-1.48E+00	3.85E+00	3.85E+00
		236.00		11.50	-2.06E+00		6.64E+00
		256.20		6.30	8.40E+00		5.94E+00
+	AC-228	338.32	*	11.40	5.71E+01	3.59E+00	5.34E+00
		911.07	*	27.70	5.48E+01		3.59E+00
		969.11	*	16.60	5.35E+01		4.75E+00
+	TH-230	48.43		16.90	-3.32E+00	1.93E+00	1.93E+00
		62.85		4.60	2.81E+00		7.35E+00
		67.67		0.37	2.82E+01		9.41E+01
+	PA-231	283.67		1.60	-2.17E+01	1.86E+01	2.38E+01
		302.67		2.30	1.03E+00		1.86E+01
+	TH-231	25.64		14.70	2.64E+00	5.74E+00	8.19E+00
		84.21		6.40	-7.46E+01		5.74E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-233	311.98		38.60	-4.53E-01	1.94E+00	1.94E+00
+	PA-234	131.20	*	20.40	6.15E+00	2.14E+00	2.14E+00
		733.99		8.80	-5.09E-01		5.62E+00
		946.00		12.00	1.19E+00		3.74E+00
+	PA-234M	1001.03		0.92	-2.06E+01	4.59E+01	4.59E+01
+	TH-234	63.29		3.80	3.39E+00	8.87E+00	8.87E+00
+	U-235	143.76		10.50	4.72E-01	3.39E+00	3.39E+00
		163.35		4.70	-1.04E+00		7.77E+00
		205.31		4.70	-3.06E+00		8.84E+00
+	NP-237	86.50	*	12.60	4.14E+01	4.69E+00	4.69E+00
+	NP-239	106.10	*	22.70	4.08E+03	3.25E+03	3.25E+03
		228.18		10.70	-1.10E+03		8.23E+03
		277.60	*	14.10	2.02E+04		1.26E+04
+	AM-241	59.54		35.90	-8.27E-01	9.07E-01	9.07E-01
+	AM-243	74.67	*	66.00	2.21E+01	8.71E-01	8.71E-01
+	CM-243	209.75	*	3.29	5.62E+01	3.72E+00	1.54E+01
		228.14		10.60	-4.99E-01		3.72E+00
		277.60	*	14.00	9.13E+00		5.70E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	5.77E+00	5.77E+00	2.78E+00	2.86E+00
NA-22	1274.54	99.94	4.54E-01	4.54E-01	-5.96E-02	2.21E-01
NA-24	1368.53	99.99	4.47E-01	1.90E-01	-1.60E-01	2.18E-01
	2754.09	99.86	1.90E-01		4.70E-03	8.46E-02

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Analysis Report for 2206038-13

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	AL-26	1808.65		99.76	4.45E-01	4.45E-01	-1.33E-01	2.15E-01
+	K-40	1460.81	*	10.67	6.84E+00	6.84E+00	7.45E+00	3.36E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	3.69E-01	3.69E-01	1.11E-01	1.84E-01
		78.34		96.00	4.90E-01		1.10E+01	2.44E-01
	SC-46	889.25		98.98	5.77E-01	5.77E-01	2.47E-01	2.83E-01
		1120.51		99.90	1.03E+00		7.66E+00	5.08E-01
	V-48	983.52		99.98	1.36E+00	1.36E+00	3.17E-01	6.67E-01
		1312.10		97.50	1.46E+00		-5.44E-01	7.13E-01
	CR-51	320.08		9.83	7.68E+00	7.68E+00	-1.07E+00	3.81E+00
+	MN-54	834.83	*	99.97	1.13E+00	1.13E+00	1.73E+00	5.59E-01
	CO-56	846.75		99.96	5.79E-01	5.79E-01	-5.96E-02	2.85E-01
		1037.75		14.03	3.99E+00		7.29E-01	1.95E+00
		1238.25		67.00	1.27E+00		4.88E+00	6.27E-01
		1771.40		15.51	4.23E+00		-6.80E-01	2.05E+00
		2587.48		16.90	2.35E+00		-3.55E-01	1.10E+00
	CO-57	122.06		85.51	4.14E-01	4.14E-01	-5.27E-01	2.06E-01
		136.48		10.60	3.53E+00		3.11E-01	1.76E+00
	CO-58	810.76		99.40	6.20E-01	6.20E-01	-1.81E-01	3.05E-01
	FE-59	1099.22		56.50	1.18E+00	1.18E+00	-1.45E-01	5.76E-01
		1291.56		43.20	1.59E+00		-4.39E-01	7.76E-01
	CO-60	1173.22		100.00	4.48E-01	4.48E-01	3.12E-01	2.19E-01
		1332.49		100.00	4.67E-01		-1.12E-01	2.27E-01
	ZN-65	1115.52		50.75	1.33E+00	1.33E+00	-1.01E-01	6.57E-01
+	GA-67	93.31	*	35.70	4.28E+02	4.28E+02	1.00E+03	2.13E+02
		208.95	*	2.24	5.91E+03		2.16E+04	2.94E+03
		300.22	*	16.00	1.20E+03		2.78E+03	5.99E+02
	SE-75	121.11		16.70	2.29E+00	6.84E-01	-2.92E+00	1.14E+00
		136.00		59.50	6.84E-01		6.02E-02	3.41E-01
		264.65		59.80	7.26E-01		1.55E-01	3.61E-01
		279.53		25.20	1.89E+00		-2.18E-01	9.38E-01
		400.65		11.40	4.45E+00		-3.57E-01	2.21E+00
	RB-82	776.52		13.00	7.95E+00	7.95E+00	-1.63E+00	3.92E+00
	RB-83	520.41		46.00	1.17E+00	1.17E+00	-7.31E-01	5.80E-01
		529.64		30.30	1.80E+00		-4.01E-01	8.89E-01
		552.65		16.40	3.35E+00		-8.10E-01	1.66E+00
	KR-85	513.99		0.43	1.33E+02	1.33E+02	-2.59E+01	6.59E+01
	SR-85	513.99		99.27	7.65E-01	7.65E-01	-1.49E-01	3.80E-01
	Y-88	898.02		93.40	5.97E-01	5.86E-01	1.83E-01	2.93E-01
		1836.01		99.38	5.86E-01		9.45E-02	2.84E-01
	MO-93	263.06		56.72	6.59E-01	4.85E-01	1.40E-01	3.28E-01
		684.67		99.68	5.05E-01		1.96E-01	2.50E-01
		1477.11		99.08	4.85E-01		-2.85E-02	2.36E-01
	NB-93M	16.57		9.43	1.18E+02	1.18E+02	4.96E+01	5.88E+01
	NB-94	702.63		100.00	5.33E-01	4.57E-01	2.98E-01	2.63E-01
		871.10		100.00	4.57E-01		-1.15E-02	2.25E-01
	NB-95	765.79		99.81	1.00E+00	1.00E+00	1.60E-01	4.96E-01
	NB-95M	235.69		25.00	4.68E+02	4.68E+02	-1.45E+02	2.33E+02
	ZR-95	724.18		43.70	2.03E+00	1.28E+00	3.01E-02	1.00E+00
		756.72		55.30	1.28E+00		3.58E-01	6.33E-01
	MO-99	181.06		6.20	4.63E+03	2.86E+03	-1.52E+02	2.31E+03
		739.58		12.80	2.86E+03		-2.01E+02	1.41E+03
		778.00		4.50	8.03E+03		-1.71E+03	3.96E+03

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Analysis Report for 2206038-13

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TC-99M	140.51		89.00	3.96E-01	3.96E-01	-8.78E-02	1.97E-01
	RU-103	497.08		89.00	7.63E-01	7.63E-01	-3.35E-01	3.78E-01
	RU-106	621.84		9.80	4.90E+00	4.90E+00	-9.82E-01	2.42E+00
	AG-108M	433.93		89.90	4.63E-01	4.63E-01	-2.52E-01	2.29E-01
		614.37		90.40	7.38E-01		-8.26E-01	3.66E-01
		722.95		90.50	7.01E-01		1.13E-01	3.47E-01
	CD-109	88.03	*	3.72	1.65E+01	1.65E+01	1.46E+02	8.24E+00
	AG-110M	657.75		93.14	5.58E-01	5.58E-01	-2.83E-01	2.76E-01
		677.61		10.53	5.04E+00		7.32E-01	2.49E+00
		706.67		16.46	3.51E+00		9.64E-01	1.74E+00
		763.93		21.98	2.67E+00		-2.38E-01	1.32E+00
		884.67		21.98	2.15E+00		-1.32E+00	1.06E+00
		1384.27		23.94	2.26E+00		-5.48E+00	1.10E+00
	CD-113M	263.70		0.02	1.62E+03	1.62E+03	3.45E+02	8.06E+02
	SN-113	255.12		1.93	2.27E+01	7.80E-01	3.74E+01	1.13E+01
		391.69		64.90	7.80E-01		-2.49E-02	3.87E-01
	TE-123M	159.00		84.10	5.03E-01	5.03E-01	-1.13E-01	2.51E-01
	SB-124	602.71		97.87	6.44E-01	6.44E-01	-1.04E-01	3.18E-01
		645.85		7.26	8.92E+00		2.64E+00	4.41E+00
		722.78		11.10	7.00E+00		1.76E+00	3.46E+00
		1691.02		49.00	1.15E+00		-3.32E-01	5.55E-01
+	I-125	35.49	*	6.49	1.56E+01	1.56E+01	2.25E+01	7.80E+00
	SB-125	176.33		6.89	5.53E+00	1.47E+00	-6.69E-01	2.75E+00
		427.89		29.33	1.47E+00		5.98E-01	7.29E-01
		463.38		10.35	4.92E+00		2.25E+01	2.44E+00
		600.56		17.80	2.63E+00		-4.30E-01	1.30E+00
		635.90		11.32	4.13E+00		-3.62E+00	2.04E+00
	SB-126	414.70		83.30	5.21E-01	5.04E-01	-5.84E-02	2.59E-01
		666.33		99.60	5.10E-01		5.21E-01	2.52E-01
		695.00		99.60	5.04E-01		-1.06E-01	2.49E-01
		720.50		53.80	9.39E-01		9.80E-02	4.63E-01
+	SN-126	87.57	*	37.00	1.60E+00	1.60E+00	1.41E+01	7.97E-01
	SB-127	473.00		25.00	1.92E+02	1.56E+02	2.50E+01	9.49E+01
		685.00		35.70	1.56E+02		-8.39E+00	7.72E+01
		783.80		14.70	4.11E+02		8.84E+02	2.03E+02
	I-129	29.78		57.00	1.47E+00	1.47E+00	-9.58E-02	7.32E-01
		33.60		13.20	4.87E+00		3.51E+01	2.43E+00
		39.58		7.52	5.65E+00		-4.12E+00	2.81E+00
	I-131	284.30		6.05	6.00E+01	4.71E+00	-4.05E+01	2.98E+01
		364.48		81.20	4.71E+00		-1.29E+00	2.34E+00
		636.97		7.26	6.13E+01		-2.01E+01	3.03E+01
		722.89		1.80	3.06E+02		7.70E+01	1.51E+02
	TE-132	49.72		13.10	6.56E+02	1.18E+02	-2.52E+02	3.27E+02
		228.16		88.00	1.18E+02		-1.58E+01	5.87E+01
	BA-133	81.00		34.06	1.18E+00	9.94E-01	-2.48E+01	5.86E-01
		302.84		18.33	2.32E+00		-1.35E-01	1.15E+00
		356.01		62.05	9.94E-01		-9.44E-03	4.95E-01
	I-133	529.87		86.30	6.48E+08	6.48E+08	-2.48E+08	3.21E+08
	XE-133	81.00		38.00	3.35E+01	3.35E+01	-7.06E+02	1.67E+01
	CS-134	563.23		8.38	5.90E+00	6.90E-01	7.12E+00	2.92E+00
		569.32		15.43	3.09E+00		3.94E-01	1.53E+00
		604.70		97.60	7.19E-01		-5.62E-02	3.57E-01
		795.84		85.40	6.90E-01		2.59E+00	3.41E-01

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Analysis Report for 2206038-13

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	801.93		8.73	5.35E+00	6.90E-01	-3.58E+01	2.63E+00
+	CS-135	268.24	*	16.00	4.89E+00	4.89E+00	1.14E+01	2.44E+00
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	1.96E+01	1.82E+00	-5.46E+00	9.77E+00
		163.89		4.61	3.14E+01		-4.19E+00	1.56E+01
		176.55		13.56	1.10E+01		-1.33E+00	5.47E+00
		273.65		12.66	1.37E+01		5.39E+01	6.81E+00
		340.57		48.50	4.59E+00		5.37E+01	2.28E+00
		818.50		99.70	1.82E+00		5.81E-01	8.97E-01
		1048.07		79.60	2.13E+00		1.51E-01	1.04E+00
		1235.34		19.70	1.30E+01		4.25E+01	6.39E+00
	CS-137	661.65		85.12	5.88E-01	5.88E-01	-2.86E-01	2.91E-01
	LA-138	788.74		34.00	1.53E+00	7.05E-01	-7.57E+00	7.57E-01
		1435.80		66.00	7.05E-01		2.04E-01	3.43E-01
+	CE-139	165.85	*	80.35	4.67E-01	4.67E-01	2.91E-01	2.33E-01
	BA-140	162.64		6.70	2.25E+01	7.33E+00	-3.00E+00	1.12E+01
		304.84		4.50	3.60E+01		-1.52E+00	1.79E+01
		423.70		3.20	5.52E+01		7.82E+00	2.74E+01
		437.55		2.00	8.68E+01		1.12E+01	4.30E+01
		537.32		25.00	7.33E+00		1.55E+00	3.62E+00
	LA-140	328.77		20.50	8.96E+00	2.93E+00	2.46E+01	4.45E+00
		487.03		45.50	3.84E+00		-6.58E-01	1.90E+00
		815.85		23.50	7.98E+00		-4.06E+00	3.92E+00
		1596.49		95.49	2.93E+00		-4.56E-02	1.43E+00
	CE-141	145.44		48.40	1.29E+00	1.29E+00	8.94E-02	6.44E-01
	CE-143	57.36		11.80	1.49E+06	7.25E+05	-9.90E+05	7.45E+05
		293.26		42.00	7.25E+05		8.04E+06	3.61E+05
		664.55		5.20	5.38E+06		-3.38E+05	2.66E+06
	CE-144	133.54		10.80	3.55E+00	3.55E+00	-3.22E-03	1.77E+00
	PM-144	476.78		42.00	1.07E+00	4.87E-01	2.49E-01	5.30E-01
		618.01		98.60	4.87E-01		-1.73E+00	2.40E-01
		696.49		99.49	5.38E-01		-1.53E-02	2.66E-01
	PM-145	36.85		21.70	2.29E+00	1.22E+00	-4.39E-01	1.14E+00
		37.36		39.70	1.22E+00		-2.34E-01	6.09E-01
		42.30		15.10	2.49E+00		-2.02E+00	1.24E+00
		72.40		2.31	1.90E+01		-5.28E+01	9.47E+00
+	PM-146	453.90	*	39.94	2.53E+00	2.53E+00	1.11E+00	1.26E+00
		735.90		14.01	3.56E+00		-1.67E+00	1.76E+00
		747.13		13.10	3.86E+00		-9.46E-01	1.90E+00
+	ND-147	91.11	*	28.90	1.03E+01	1.03E+01	1.75E+01	5.15E+00
		531.02		13.10	1.76E+01		-2.20E+00	8.72E+00
	PM-149	285.90		3.10	4.53E+04	4.53E+04	-3.02E+04	2.25E+04
	EU-152	121.78		20.50	1.62E+00	1.62E+00	-2.06E+00	8.07E-01
		244.69		5.40	8.61E+00		-3.15E+00	4.29E+00
		344.27		19.13	2.18E+00		-1.25E+00	1.08E+00
		778.89		9.10	5.41E+00		-1.15E+00	2.67E+00
		964.01		10.40	7.07E+00		-4.28E+01	3.49E+00
		1085.78		7.22	5.92E+00		-3.54E+00	2.89E+00
		1112.02		9.60	4.71E+00		-2.03E-01	2.31E+00
		1407.95		14.94	3.75E+00		2.88E+00	1.83E+00
	GD-153	97.43		31.30	1.12E+00	1.12E+00	-3.61E+00	5.60E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	GD-153	103.18		22.20	1.57E+00	1.12E+00	2.25E+00	7.80E-01
	EU-154	123.07		40.50	8.32E-01	8.32E-01	-5.96E-01	4.15E-01
		723.30		19.70	3.24E+00		5.21E-01	1.60E+00
		873.19		11.50	4.00E+00		4.48E-01	1.97E+00
		996.32		10.30	4.14E+00		-1.91E-03	2.03E+00
		1004.76		17.90	2.42E+00		2.73E-01	1.18E+00
		1274.45		35.50	1.26E+00		-1.65E-01	6.14E-01
+	EU-155	86.50	*	30.90	1.93E+00	1.61E+00	1.71E+01	9.64E-01
		105.30	*	20.70	1.61E+00		2.02E+00	8.01E-01
	EU-156	811.77		10.40	1.47E+01	1.47E+01	-6.91E+00	7.22E+00
		1153.47		7.20	2.33E+01		4.03E+01	1.14E+01
		1230.71		8.90	1.70E+01		1.19E+00	8.32E+00
+	HO-166M	184.41	*	72.60	6.78E-01	6.78E-01	2.20E+00	3.38E-01
		280.45		29.60	1.37E+00		-6.99E-01	6.80E-01
		410.94	*	11.10	4.44E+00		9.02E+00	2.21E+00
		711.69		54.10	9.46E-01		5.72E-02	4.67E-01
	TM-171	66.72		0.14	2.52E+02	2.52E+02	2.37E+01	1.26E+02
	HF-172	67.35		5.31	6.64E+00	3.22E+00	6.23E-01	3.31E+00
		125.82		11.30	3.22E+00		-1.26E+00	1.61E+00
	LU-172	181.53		20.60	2.85E+01	1.07E+01	-9.33E-01	1.42E+01
		900.72		29.81	2.43E+01		-4.24E-01	1.20E+01
		1093.66		62.50	1.07E+01		4.23E+00	5.25E+00
+	LU-173	100.72	*	5.24	4.82E+00	3.83E+00	5.26E+00	2.40E+00
		272.11	*	21.20	3.83E+00		8.94E+00	1.91E+00
	HF-175	343.40		84.00	7.12E-01	7.12E-01	-3.66E-01	3.54E-01
	LU-176	88.34		13.30	2.94E+00	4.06E-01	2.82E+01	1.46E+00
		201.83		86.00	4.58E-01		1.15E-01	2.28E-01
		306.78		94.00	4.06E-01		-8.78E-02	2.01E-01
	HF-181	133.02		41.70	1.32E+00	7.87E-01	-1.20E-03	6.58E-01
		345.85		17.20	4.01E+00		-2.13E+00	1.99E+00
		482.03		82.80	7.87E-01		6.49E-02	3.90E-01
	TA-182	67.75		41.20	9.90E-01	9.90E-01	2.97E-01	4.93E-01
		1121.30		34.90	2.78E+00		2.05E+01	1.37E+00
		1189.05		16.23	3.20E+00		7.23E-01	1.56E+00
		1221.41		26.98	1.96E+00		-3.28E-01	9.56E-01
		1231.02		11.44	4.70E+00		3.28E-01	2.29E+00
	IR-192	308.46		29.68	1.64E+00	1.18E+00	-8.40E-01	8.13E-01
		468.07		48.10	1.18E+00		1.04E-01	5.84E-01
	HG-203	279.19	*	77.30	1.52E+00	1.52E+00	2.44E+00	7.59E-01
	TL-204	374.74		94.11	4.42E-01	4.42E-01	-1.72E-01	2.19E-01
		899.15		99.16	4.86E-01		-5.20E-02	2.39E-01
		911.74		91.10	1.22E+00		1.69E+01	6.04E-01
	BI-207	569.67		97.72	4.78E-01	4.78E-01	6.08E-02	2.36E-01
		1063.62		74.90	5.72E-01		2.17E-01	2.80E-01
+	TL-208	583.14	*	30.22	2.84E+00	1.38E+00	5.47E+01	1.41E+00
		860.37	*	4.48	1.28E+01		5.51E+01	6.30E+00
		2614.66	*	35.85	1.38E+00		5.14E+01	6.60E-01
	BI-210M	262.00		45.00	8.27E-01	8.27E-01	1.75E-01	4.11E-01
		300.00		23.00	2.10E+00		-7.01E+00	1.04E+00
	PB-210	46.50		4.25	7.93E+00	7.93E+00	-8.56E+00	3.95E+00
	PB-211	404.84		2.90	1.58E+01	1.58E+01	-5.11E+00	7.82E+00
		831.96		2.90	1.74E+01		-4.85E+00	8.58E+00
+	BI-212	727.17	*	11.80	6.46E+00	6.46E+00	3.23E+01	3.20E+00

Analysis Report for 2206038-13

R-4 0-4

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BI-212	1620.62	*	2.75	3.61E+01	6.46E+00	4.32E+01	1.78E+01
+	PB-212	238.63	*	44.60	1.48E+00	1.48E+00	7.12E+01	7.37E-01
		300.09	*	3.41	2.15E+01		4.97E+01	1.07E+01
+	BI-214	609.31	*	46.30	1.36E+00	1.36E+00	3.93E+01	6.73E-01
		1120.29	*	15.10	4.54E+00		4.14E+01	2.24E+00
		1764.49	*	15.80	4.45E+00		4.47E+01	2.18E+00
		2204.22	*	4.98	1.60E+01		4.84E+01	7.82E+00
+	PB-214	295.21	*	19.19	3.77E+00	1.63E+00	4.15E+01	1.88E+00
		351.92	*	37.19	1.63E+00		4.11E+01	8.10E-01
	RN-219	401.80		6.50	6.73E+00	6.73E+00	-1.90E+00	3.34E+00
	RA-223	323.87		3.88	1.10E+01	1.10E+01	5.12E-02	5.47E+00
+	RA-224	240.98	*	3.95	1.67E+01	1.67E+01	8.04E+02	8.33E+00
	RA-225	40.00		31.00	4.59E+00	4.59E+00	-3.35E+00	2.29E+00
	RA-226	186.21	*	3.28	1.50E+01	1.50E+01	4.86E+01	7.48E+00
	TH-227	50.10		8.40	3.85E+00	3.85E+00	-1.48E+00	1.92E+00
		236.00		11.50	6.64E+00		-2.06E+00	3.31E+00
		256.20		6.30	5.94E+00		8.40E+00	2.95E+00
+	AC-228	338.32	*	11.40	5.34E+00	3.59E+00	5.71E+01	2.66E+00
		911.07	*	27.70	3.59E+00		5.48E+01	1.78E+00
		969.11	*	16.60	4.75E+00		5.35E+01	2.35E+00
	TH-230	48.43		16.90	1.93E+00	1.93E+00	-3.32E+00	9.62E-01
		62.85		4.60	7.35E+00		2.81E+00	3.66E+00
		67.67		0.37	9.41E+01		2.82E+01	4.69E+01
	PA-231	283.67		1.60	2.38E+01	1.86E+01	-2.17E+01	1.18E+01
		302.67		2.30	1.86E+01		1.03E+00	9.26E+00
	TH-231	25.64		14.70	8.19E+00	5.74E+00	2.64E+00	4.08E+00
		84.21		6.40	5.74E+00		-7.46E+01	2.86E+00
	PA-233	311.98		38.60	1.94E+00	1.94E+00	-4.53E-01	9.61E-01
+	PA-234	131.20	*	20.40	2.14E+00	2.14E+00	6.15E+00	1.07E+00
		733.99		8.80	5.62E+00		-5.09E-01	2.77E+00
		946.00		12.00	3.74E+00		1.19E+00	1.84E+00
	PA-234M	1001.03		0.92	4.59E+01	4.59E+01	-2.06E+01	2.24E+01
	TH-234	63.29		3.80	8.87E+00	8.87E+00	3.39E+00	4.42E+00
	U-235	143.76		10.50	3.39E+00	3.39E+00	4.72E-01	1.69E+00
		163.35		4.70	7.77E+00		-1.04E+00	3.87E+00
		205.31		4.70	8.84E+00		-3.06E+00	4.40E+00
	NP-237	86.50	*	12.60	4.69E+00	4.69E+00	4.14E+01	2.34E+00
	NP-239	106.10	*	22.70	3.25E+03	3.25E+03	4.08E+03	1.62E+03
		228.18		10.70	8.23E+03		-1.10E+03	4.09E+03
		277.60	*	14.10	1.26E+04		2.02E+04	6.31E+03
	AM-241	59.54		35.90	9.07E-01	9.07E-01	-8.27E-01	4.52E-01
+	AM-243	74.67	*	66.00	8.71E-01	8.71E-01	2.21E+01	4.35E-01
+	CM-243	209.75	*	3.29	1.54E+01	3.72E+00	5.62E+01	7.65E+00
		228.14		10.60	3.72E+00		-4.99E-01	1.85E+00
		277.60	*	14.00	5.70E+00		9.13E+00	2.84E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

Analysis Report for 2206038-13
R-4 0-4

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-4 0-4

Elapsed Live time: 3600
Elapsed Real Time: 3650

Channel								
1:	0	0	0	0	0	0	0	12
9:	1257	2436	2442	2287	2346	2335	2299	2360
17:	2232	2194	2201	2122	2107	2105	2089	2145
25:	2121	1995	2022	1991	2002	2261	3120	3420
33:	2660	2071	2162	2470	2281	2019	1918	1867
41:	1858	1850	1970	1854	1951	1996	2017	1953
49:	1989	2109	2123	2251	2346	2351	2335	2405
57:	2647	2648	2869	2959	3121	3124	3139	3366
65:	3352	3376	3478	3630	3585	3551	3852	4117
73:	5330	8052	9719	10961	11706	7942	4249	3295
81:	3147	3059	3455	3809	4083	5148	6351	5505
89:	4852	4964	3946	3764	4230	3819	3063	2733
97:	2819	2903	3022	3063	2767	2822	2813	3023
105:	3080	3259	2976	2877	2992	2806	2759	2787
113:	2743	2907	2965	2788	2606	2671	2726	2750
121:	2626	2697	2678	2763	2750	2836	3025	3351
129:	3744	3297	2871	2732	2705	2736	2695	2646
137:	2657	2636	2565	2698	2528	2618	2553	2586
145:	2633	2570	2478	2570	2600	2473	2523	2537
153:	2667	2674	2575	2411	2294	2389	2337	2296
161:	2286	2202	2236	2167	2279	2274	2268	2129
169:	2077	2109	2129	2173	2114	2031	2096	2120
177:	2123	2081	2123	2103	2132	2175	2066	2178
185:	2697	3059	2699	2172	2090	1900	2016	2054
193:	2025	1906	1926	1818	1929	1930	1958	1969
201:	1779	1777	1848	1893	1830	1764	1905	2418
209:	2851	2588	1845	1645	1673	1664	1659	1689
217:	1586	1544	1573	1551	1517	1532	1584	1553
225:	1520	1494	1501	1461	1419	1500	1467	1428
233:	1485	1380	1481	2138	6265	13461	13153	6555
241:	4115	3460	2082	1231	1144	1110	1048	1031
249:	995	1009	1102	1087	1157	1067	1014	1002
257:	1046	1084	1166	1042	966	943	1015	1028
265:	966	939	1008	1098	1444	1724	1488	1102
273:	1031	943	1051	1253	1479	1298	1034	945
281:	920	901	830	814	903	889	928	925
289:	895	952	831	869	1346	2992	4260	2940
297:	1298	978	1326	1580	1194	824	817	813
305:	800	768	743	781	746	753	777	691
313:	769	790	707	745	756	742	763	797
321:	795	756	722	703	747	874	1199	1285
329:	1022	798	778	754	773	734	727	1020
337:	2047	3005	2277	1083	792	691	665	650
345:	634	687	653	675	881	2061	4888	5664
353:	2983	1046	637	639	619	637	625	557
361:	595	603	593	585	593	624	581	640

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369:	588	613	572	558	598	579	642	580

Sample Title: R-4 0-4

Channel								
377:	582	632	620	586	641	545	562	589
385:	598	659	637	617	606	652	578	566
393:	609	580	571	593	566	544	625	613
401:	538	584	602	596	619	543	603	721
409:	845	713	586	513	498	496	506	503
417:	492	543	505	548	458	507	500	511
425:	479	501	464	469	502	457	482	451
433:	458	454	432	443	443	423	460	438
441:	478	448	413	421	430	421	425	401
449:	432	425	432	463	447	480	454	393
457:	394	340	386	420	563	912	915	679
465:	457	401	356	394	431	404	402	385
473:	394	400	387	360	386	385	403	398
481:	375	352	343	365	368	375	372	362
489:	365	344	360	360	337	383	340	373
497:	327	384	377	342	344	398	360	385
505:	378	323	348	492	882	1345	1259	686
513:	428	355	333	329	330	338	339	358
521:	341	312	344	334	355	344	320	323
529:	296	338	327	332	343	345	343	341
537:	329	302	297	275	331	279	318	319
545:	346	314	355	282	326	329	316	284
553:	286	313	320	322	310	282	298	326
561:	395	427	399	330	331	309	319	305
569:	330	323	317	304	313	295	325	287
577:	315	329	306	453	1045	2695	3405	2005
585:	740	319	321	303	288	278	251	277
593:	291	302	305	293	264	258	279	272
601:	279	290	269	276	250	358	965	2517
609:	3647	2328	854	302	227	264	251	278
617:	267	243	256	266	235	243	275	242
625:	250	235	246	278	255	269	241	230
633:	238	245	247	270	241	231	248	261
641:	260	268	257	272	272	253	237	235
649:	260	258	267	231	261	280	254	245
657:	228	243	244	253	264	242	278	306
665:	342	299	262	245	221	245	252	221
673:	241	247	259	253	236	257	235	253
681:	242	259	245	236	266	247	255	246
689:	217	270	228	241	259	255	244	244
697:	263	231	220	277	274	316	308	282
705:	275	227	264	263	241	248	218	243
713:	213	242	232	236	192	238	258	213
721:	242	207	234	231	377	650	813	594
729:	304	206	233	214	234	189	190	206
737:	207	211	199	212	199	248	205	210
745:	213	202	209	191	219	203	221	206
753:	247	267	289	240	227	208	208	180
761:	203	238	250	209	223	253	363	449
769:	349	261	251	305	240	185	188	167
777:	190	161	163	176	193	225	211	253
785:	292	264	191	169	157	169	153	172
793:	281	430	420	288	144	145	142	146

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801:	138	134	139	166	182	229	180	160

Sample Title: R-4 0-4

Channel								
809:	164	154	140	133	143	128	133	148
817:	148	144	156	129	157	146	122	132
825:	154	155	148	144	144	159	187	135
833:	157	214	238	240	174	192	182	167
841:	167	142	132	121	124	128	128	121
849:	131	124	118	140	122	133	138	127
857:	129	177	322	439	347	207	116	116
865:	134	128	127	133	114	131	118	141
873:	122	128	121	122	137	122	124	113
881:	135	93	101	105	107	117	119	125
889:	118	106	134	135	140	145	120	119
897:	106	145	119	124	112	150	158	151
905:	143	123	139	220	683	1577	1895	1034
913:	305	117	101	93	95	93	92	92
921:	105	95	94	87	91	97	101	96
929:	115	125	99	157	231	243	167	107
937:	82	97	92	87	109	100	97	110
945:	87	85	131	101	107	87	100	121
953:	90	103	82	97	117	110	106	95
961:	122	154	280	406	378	311	560	1031
969:	1095	524	165	87	95	104	84	83
977:	87	82	103	81	82	100	101	79
985:	88	76	101	89	84	93	96	77
993:	101	82	69	77	84	77	90	89
1001:	73	74	82	84	83	93	95	80
1009:	72	82	88	89	97	81	82	91
1017:	83	89	83	112	85	84	77	72
1025:	70	80	85	88	75	78	81	77
1033:	92	79	73	82	77	80	74	84
1041:	75	65	86	76	78	68	70	70
1049:	76	74	83	100	78	61	77	63
1057:	68	60	91	80	69	68	77	69
1065:	81	70	62	87	74	100	82	79
1073:	67	67	74	91	87	95	102	79
1081:	67	72	65	62	75	71	93	70
1089:	59	52	65	85	82	90	84	85
1097:	84	63	69	60	73	76	77	79
1105:	79	57	74	88	68	76	103	66
1113:	80	59	66	68	111	244	534	670
1121:	388	138	80	64	67	68	69	81
1129:	76	56	58	70	67	70	51	67
1137:	88	63	67	75	87	72	67	71
1145:	68	63	56	58	62	62	69	93
1153:	102	120	127	100	71	67	68	69
1161:	72	68	62	61	59	57	66	61
1169:	59	68	85	67	52	71	67	66
1177:	59	51	56	54	80	91	61	69
1185:	60	61	66	61	69	56	73	62
1193:	57	55	62	53	56	47	66	55
1201:	47	60	59	75	54	80	62	67
1209:	46	55	54	68	49	58	58	58
1217:	54	75	70	67	49	59	62	64
1225:	68	63	69	81	60	59	58	58

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1233:	54	77	81	142	247	261	173	85

Sample Title: R-4 0-4

Channel								
1241:	70	66	67	64	76	90	78	76
1249:	71	62	74	66	65	70	73	53
1257:	60	54	65	68	65	56	55	62
1265:	65	54	51	67	60	60	53	59
1273:	49	57	58	54	60	59	75	111
1281:	104	75	62	67	56	78	73	62
1289:	57	65	57	45	55	53	59	62
1297:	58	54	53	59	53	58	62	71
1305:	69	51	50	68	60	58	53	51
1313:	62	58	51	61	61	56	51	63
1321:	61	45	53	57	52	64	55	56
1329:	61	51	54	56	48	62	59	60
1337:	68	55	60	63	60	45	68	57
1345:	53	63	60	66	52	58	65	53
1353:	57	54	46	64	58	72	55	66
1361:	65	47	50	42	46	51	58	44
1369:	63	51	48	47	55	65	93	149
1377:	194	145	91	63	46	45	79	83
1385:	64	64	54	62	43	56	53	53
1393:	59	59	65	50	49	51	72	89
1401:	101	64	53	53	72	94	118	107
1409:	61	58	57	32	54	57	55	56
1417:	40	46	51	55	59	50	55	58
1425:	65	47	50	51	56	54	47	51
1433:	46	59	56	53	37	38	60	31
1441:	43	48	57	50	47	45	52	52
1449:	39	54	52	47	46	38	52	61
1457:	58	93	79	65	51	68	57	48
1465:	49	48	49	53	50	56	55	49
1473:	53	40	40	62	56	51	52	46
1481:	54	53	37	61	41	44	42	51
1489:	56	58	47	56	53	76	93	73
1497:	60	54	50	65	62	58	42	53
1505:	63	51	87	115	101	81	72	58
1513:	48	48	46	44	65	49	43	45
1521:	48	51	47	50	50	50	51	53
1529:	64	60	46	41	31	48	43	51
1537:	55	66	44	44	42	38	66	46
1545:	45	47	53	40	42	42	38	41
1553:	35	47	47	43	39	41	47	33
1561:	40	30	37	44	37	42	33	26
1569:	36	30	32	41	26	33	36	43
1577:	29	42	47	54	72	72	56	52
1585:	59	103	156	170	103	101	183	238
1593:	214	87	56	37	40	38	43	40
1601:	41	42	35	36	37	55	38	40
1609:	33	34	39	33	23	33	27	41
1617:	44	48	80	98	90	50	43	48
1625:	37	44	45	61	89	102	62	49
1633:	32	34	37	33	56	42	42	41
1641:	36	31	37	41	31	31	35	25
1649:	28	23	17	44	18	32	28	24
1657:	33	32	53	65	70	28	35	28

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1665:	31	40	39	36	33	32	23	21

Sample Title: R-4 0-4

Channel								
1673:	34	26	28	28	32	35	37	26
1681:	31	29	44	35	39	27	26	28
1689:	25	31	32	34	42	20	26	23
1697:	28	26	38	33	31	23	19	27
1705:	24	22	13	28	27	35	31	29
1713:	30	22	21	24	24	29	25	30
1721:	30	24	21	25	41	29	50	88
1729:	128	84	41	34	32	39	27	26
1737:	22	26	24	31	22	33	23	24
1745:	32	29	24	26	24	24	23	22
1753:	24	23	23	31	22	26	33	28
1761:	79	205	340	371	274	97	47	33
1769:	29	18	21	19	27	25	26	25
1777:	29	26	23	26	27	13	28	26
1785:	26	22	28	16	26	25	11	26
1793:	25	35	33	29	18	30	30	30
1801:	29	23	20	29	32	17	25	23
1809:	28	21	24	32	18	25	27	26
1817:	23	24	21	19	27	26	22	37
1825:	20	23	24	26	32	25	26	27
1833:	24	22	37	27	36	33	36	31
1841:	28	30	29	39	42	59	90	61
1849:	45	21	27	29	25	31	16	21
1857:	28	32	30	29	34	25	27	32
1865:	22	22	31	24	39	29	38	40
1873:	32	25	35	33	27	30	28	22
1881:	27	21	30	30	30	31	26	30
1889:	33	35	31	23	21	26	39	36
1897:	28	25	32	26	22	30	25	27
1905:	29	28	36	27	27	37	38	22
1913:	27	22	27	29	25	21	30	22
1921:	33	40	36	23	36	32	34	27
1929:	27	31	32	28	28	28	25	26
1937:	33	29	30	33	30	25	31	26
1945:	38	33	21	26	33	25	27	26
1953:	18	19	23	29	19	25	21	23
1961:	27	30	31	23	19	35	25	27
1969:	30	32	26	29	23	30	25	29
1977:	29	29	36	30	27	24	24	35
1985:	28	29	35	31	16	27	38	26
1993:	27	21	23	13	22	29	22	18
2001:	21	27	26	15	27	23	21	19
2009:	21	27	23	25	20	19	28	27
2017:	30	24	25	20	23	25	23	26
2025:	19	30	28	22	28	26	24	30
2033:	18	31	20	24	19	25	22	22
2041:	22	22	27	27	27	24	22	35
2049:	25	38	18	27	17	31	26	25
2057:	27	30	27	24	21	30	31	29
2065:	25	28	21	32	20	28	30	24
2073:	22	31	24	23	29	24	23	25
2081:	32	20	27	19	23	30	23	28
2089:	19	29	25	20	23	21	31	27

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2097:	27	15	30	51	68	90	111	69

Sample Title: R-4 0-4

Channel								
2105:	54	39	25	23	39	27	32	23
2113:	26	27	18	34	44	56	32	30
2121:	32	21	23	23	29	23	20	27
2129:	19	31	27	28	20	20	19	25
2137:	27	27	37	30	19	30	20	31
2145:	30	26	23	26	19	23	39	30
2153:	26	30	14	25	17	32	32	25
2161:	25	27	22	31	24	24	24	25
2169:	32	24	22	24	24	30	22	28
2177:	19	35	28	25	31	18	34	24
2185:	34	28	21	27	28	26	33	25
2193:	33	29	24	31	26	27	27	36
2201:	59	74	137	114	58	31	36	26
2209:	16	21	24	33	24	31	38	27
2217:	28	21	29	29	28	21	24	27
2225:	29	27	29	35	27	25	30	25
2233:	30	34	20	30	25	27	31	24
2241:	43	32	24	37	31	35	27	22
2249:	27	30	25	31	30	20	26	32
2257:	27	27	29	34	23	19	28	23
2265:	33	31	29	24	35	30	21	24
2273:	31	25	23	40	27	17	36	19
2281:	31	35	46	38	43	34	24	39
2289:	26	29	36	35	27	35	32	36
2297:	41	37	30	38	30	25	31	42
2305:	34	31	34	33	24	30	34	31
2313:	45	25	40	33	26	24	29	32
2321:	33	46	24	28	27	43	45	37
2329:	39	37	23	47	32	26	44	38
2337:	34	40	44	40	39	37	37	28
2345:	37	37	29	38	35	32	31	42
2353:	49	49	43	32	44	42	32	40
2361:	46	40	34	36	29	33	34	29
2369:	28	32	39	33	33	42	31	35
2377:	36	34	34	26	32	30	28	25
2385:	27	33	27	30	28	22	31	16
2393:	12	42	25	25	21	26	15	21
2401:	21	20	26	22	24	17	19	22
2409:	22	34	18	24	28	18	17	22
2417:	17	23	19	20	16	18	27	24
2425:	20	25	22	30	23	25	21	19
2433:	17	23	24	21	21	28	18	22
2441:	17	19	19	31	43	45	50	29
2449:	20	27	17	20	21	24	15	16
2457:	33	18	16	16	12	14	16	14
2465:	20	14	20	21	18	18	20	12
2473:	12	15	13	18	19	14	12	17
2481:	16	14	13	12	12	13	13	7
2489:	17	13	15	10	13	6	11	12
2497:	6	14	9	8	7	9	14	13
2505:	10	11	11	9	12	11	11	11
2513:	3	8	7	7	8	8	13	0
2521:	8	6	7	8	8	9	11	3

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2529:	10	10	11	8	9	7	8	6

Sample Title: R-4 0-4

Channel								
2537:	5	8	1	6	4	9	6	10
2545:	4	6	11	5	4	5	9	7
2553:	6	13	6	6	6	12	3	4
2561:	11	7	6	1	5	4	8	6
2569:	5	4	10	9	7	3	7	7
2577:	7	7	3	10	6	3	7	4
2585:	8	7	10	5	6	6	7	7
2593:	8	6	6	7	4	8	9	4
2601:	5	9	7	7	6	10	10	8
2609:	17	45	140	334	602	664	431	197
2617:	53	8	6	2	4	0	2	3
2625:	2	3	3	2	4	4	2	0
2633:	4	4	2	2	3	1	3	3
2641:	6	2	5	3	4	1	4	0
2649:	4	2	2	5	1	4	6	1
2657:	2	3	3	2	2	1	3	4
2665:	4	4	3	3	2	3	2	2
2673:	3	8	1	2	0	1	5	4
2681:	2	2	2	4	7	6	5	0
2689:	6	6	4	3	2	3	3	4
2697:	2	6	3	1	7	5	7	2
2705:	2	7	1	1	3	0	4	3
2713:	4	3	3	1	2	5	2	3
2721:	3	7	1	2	1	2	3	1
2729:	4	4	2	3	1	3	2	0
2737:	3	1	3	3	4	2	1	3
2745:	0	2	2	3	4	2	1	3
2753:	0	1	2	3	3	0	3	3
2761:	1	1	3	2	2	4	1	2
2769:	2	1	2	3	2	1	6	3
2777:	1	1	2	3	2	3	1	2
2785:	5	3	3	4	4	5	2	1
2793:	3	2	1	1	2	4	2	2
2801:	1	1	1	3	2	0	2	1
2809:	1	2	2	0	3	2	0	1
2817:	0	4	1	0	4	1	2	2
2825:	4	2	2	2	2	2	1	3
2833:	2	0	5	1	1	1	3	3
2841:	0	1	1	1	0	3	4	1
2849:	1	0	1	2	0	2	3	1
2857:	1	1	2	2	2	1	2	2
2865:	1	1	2	1	1	1	1	5
2873:	4	2	2	1	0	2	0	2
2881:	2	2	1	0	4	0	1	2
2889:	1	2	2	6	3	2	0	0
2897:	1	2	0	2	0	1	1	4
2905:	1	4	1	1	0	3	2	0
2913:	1	3	4	2	3	0	0	0
2921:	3	2	1	0	0	2	2	2
2929:	0	1	2	0	1	1	0	1
2937:	1	0	1	3	0	3	1	5
2945:	1	1	1	0	2	2	0	0
2953:	2	2	1	1	1	0	1	1

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2961:	2	1	1	2	1	1	1	2

Sample Title: R-4 0-4

Channel								
2969:	0	3	0	1	1	0	1	1
2977:	2	0	0	2	2	0	3	2
2985:	4	1	1	0	0	0	2	0
2993:	0	2	1	0	1	2	2	3
3001:	1	2	0	0	2	0	0	2
3009:	0	0	0	1	1	0	0	0
3017:	0	0	1	1	0	0	2	0
3025:	2	0	0	0	2	3	2	0
3033:	2	1	0	1	0	0	1	0
3041:	1	3	0	0	3	1	1	0
3049:	1	1	1	1	0	1	0	1
3057:	0	0	1	0	0	3	0	2
3065:	1	1	0	1	0	0	1	0
3073:	1	1	0	0	2	1	0	0
3081:	0	0	0	1	1	0	2	0
3089:	0	0	0	1	0	0	0	0
3097:	0	0	0	1	0	0	0	0
3105:	0	0	3	1	2	0	1	0
3113:	0	0	0	0	0	1	1	0
3121:	0	0	0	2	1	3	0	0
3129:	0	1	0	0	1	0	0	0
3137:	0	1	1	0	1	0	0	0
3145:	0	0	0	0	0	0	0	0
3153:	1	0	0	0	0	0	1	2
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	0	1	1	0
3177:	2	0	0	2	1	2	0	1
3185:	0	0	1	1	0	0	1	1
3193:	0	4	3	4	6	6	2	1
3201:	0	1	1	1	0	0	0	2
3209:	1	0	0	0	0	2	0	0
3217:	0	1	1	0	0	0	1	1
3225:	1	0	0	0	0	0	0	0
3233:	0	0	0	0	0	0	0	0
3241:	0	0	1	1	0	0	0	1
3249:	1	0	0	0	1	0	1	1
3257:	1	0	0	0	0	0	0	0
3265:	0	1	0	0	0	0	0	0
3273:	1	1	0	0	0	0	0	1
3281:	0	0	0	0	0	0	0	0
3289:	0	0	1	0	0	0	1	0
3297:	1	1	0	0	0	0	0	0
3305:	0	0	0	1	0	1	0	1
3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	1	0	0	0	0	0	0
3337:	0	0	0	0	1	1	0	0
3345:	0	0	1	0	0	0	0	0
3353:	1	2	0	0	0	0	0	0
3361:	0	0	0	0	0	1	0	0
3369:	1	0	1	0	0	0	0	0
3377:	0	0	0	0	0	1	0	0
3385:	0	0	0	0	0	0	0	0

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3393:	0	0	0	0	0	0	0	0

Sample Title: R-4 0-4

Channel								
3401:	1	0	0	0	0	0	0	0
3409:	1	0	0	0	0	0	0	1
3417:	0	0	0	0	1	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	2	0	0	0	0	0
3441:	1	2	0	0	0	0	0	0
3449:	0	0	0	0	1	0	0	0
3457:	0	0	0	0	0	1	0	1
3465:	1	0	0	0	1	0	0	0
3473:	0	1	0	1	1	0	0	0
3481:	0	2	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	1
3497:	1	0	1	0	0	0	0	0
3505:	0	0	1	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	1	0	0	1	0	0
3529:	0	0	0	0	0	0	1	0
3537:	0	0	0	0	0	1	1	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	2	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	1	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	1	1	1	0	0	0
3633:	0	0	0	0	0	1	0	0
3641:	0	0	0	0	0	0	1	1
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	1	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	1	0
3697:	0	0	0	0	0	0	0	2
3705:	0	0	0	0	1	0	0	0
3713:	0	1	0	0	0	0	0	0
3721:	0	0	0	0	0	0	1	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	1	0	0	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	1	0	0	0	0	0	0	0
3809:	0	0	1	0	0	0	1	0
3817:	0	0	0	0	0	0	0	0

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3825:	0	0	0	0	0	0	0	0

Sample Title: R-4 0-4

Channel								
3833:	1	0	0	0	0	0	0	0
3841:	0	0	0	1	0	1	0	1
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	1
3873:	1	0	0	0	0	0	0	0
3881:	0	0	0	0	1	1	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	1	0	1	0	0	1
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	1
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	1	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	1	1	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	1	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	1	0	0	0	0	0	0	0
4009:	0	1	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	1	0
4041:	0	0	0	0	0	0	1	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	1	0	0	0	1	0
4089:	0	0	0	1	1	2	0	0

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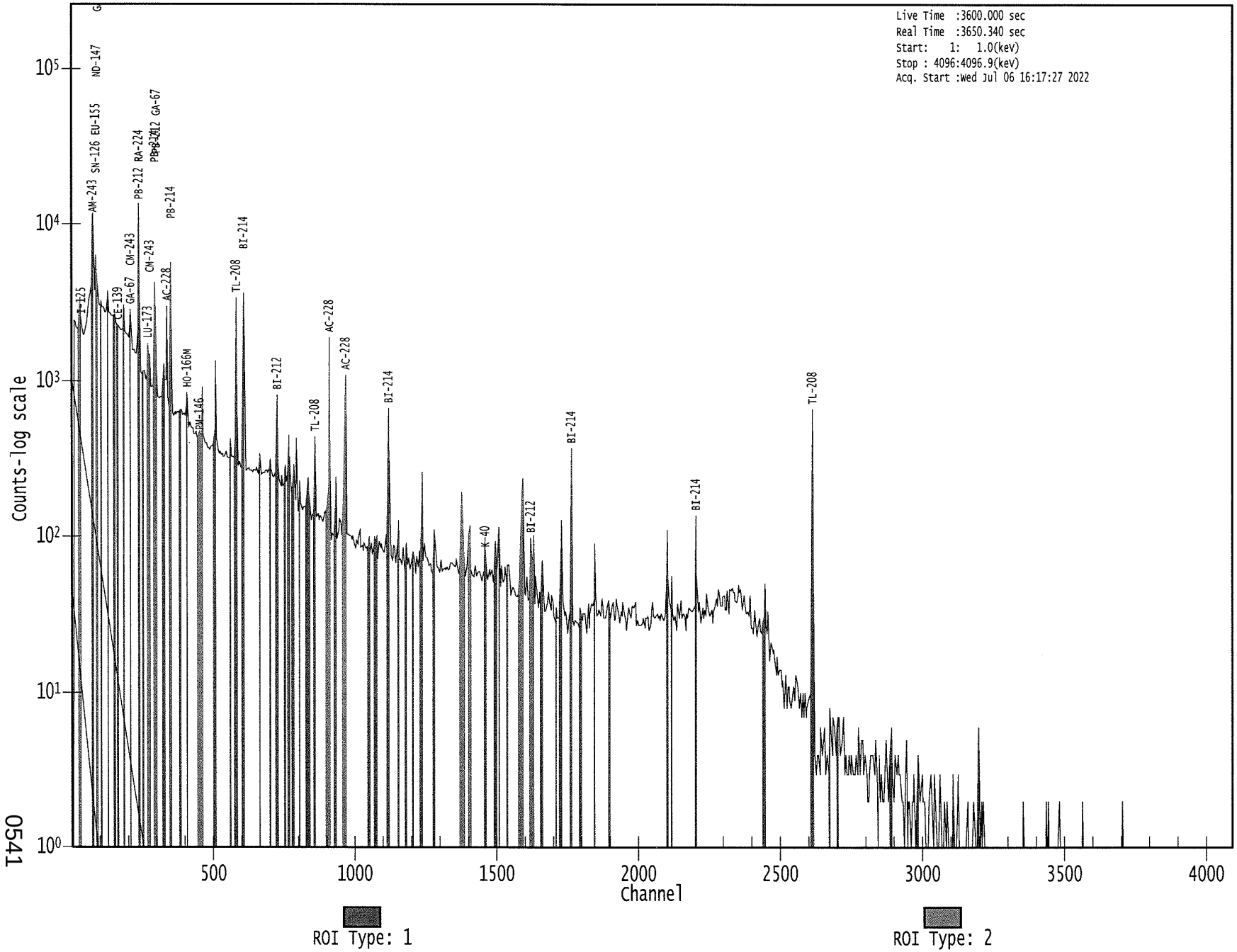
0000126285.CNF



0541

BP/Castex-Ltd Adm-Apx E-001896

KB 7/6/22

Apex-Gamma

Analysis Report for 2206038-14
R-5 0-6

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2206038-14
Sample Description	: R-5 0-6
Sample Type	: SOIL
Sample Size	: 6.477E+02 grams
Facility	: Countroom
Sample Taken On	: 6/10/2022 11:46:23AM
Acquisition Started	: 7/6/2022 5:13:11PM
Procedure	: GAS-2102 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-2102
Live Time	: 3600.0 seconds
Real Time	: 3609.5 seconds
Dead Time	: 0.26 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 31 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 7/1/2022
Efficiency Calibration Used Done On	: 11/20/2021
Efficiency Calibration Description	:
Sample Number	: 126279

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 7/7/22

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Analysis Report for 2206038-14

R-5 0-6

PEAK LOCATE REPORT

Peak Locate Performed on : 7/6/2022 6:13:23PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	76.19	74.75	0.0000	0.00
2	88.15	86.72	0.0000	0.00
3	93.56	92.13	0.0000	0.00
4	99.56	98.14	0.0000	0.00
5	106.00	104.58	0.0000	0.00
6	129.28	127.87	0.0000	0.00
7	154.43	153.03	0.0000	0.00
8	186.33	184.95	0.0000	0.00
9	209.45	208.09	0.0000	0.00
10	239.29	237.94	0.0000	0.00
11	270.33	268.99	0.0000	0.00
12	277.73	276.39	0.0000	0.00
13	296.02	294.70	0.0000	0.00
14	327.98	326.67	0.0000	0.00
15	338.39	337.08	0.0000	0.00
16	351.88	350.58	0.0000	0.00
17	376.74	375.45	0.0000	0.00
18	408.16	406.88	0.0000	0.00
19	462.87	461.61	0.0000	0.00
20	510.37	509.12	0.0000	0.00
21	562.85	561.62	0.0000	0.00
22	571.87	570.64	0.0000	0.00
23	582.71	581.48	0.0000	0.00
24	608.78	607.56	0.0000	0.00
25	663.59	662.37	0.0000	0.00
26	726.78	725.58	0.0000	0.00
27	754.63	753.42	0.0000	0.00
28	768.40	767.19	0.0000	0.00
29	783.80	782.60	0.0000	0.00
30	794.60	793.40	0.0000	0.00
31	805.40	804.20	0.0000	0.00
32	809.62	808.42	0.0000	0.00
33	836.91	835.72	0.0000	0.00
34	859.45	858.25	0.0000	0.00
35	910.41	909.21	0.0000	0.00
36	933.03	931.83	0.0000	0.00
37	967.02	965.82	0.0000	0.00
38	1078.68	1077.47	0.0000	0.00
39	1099.58	1098.36	0.0000	0.00
40	1108.86	1107.64	0.0000	0.00
41	1119.19	1117.97	0.0000	0.00
42	1154.15	1152.92	0.0000	0.00

Analysis Report for 2206038-14

R-5 0-6

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1236.79	1235.54	0.0000	0.00
44	1280.17	1278.91	0.0000	0.00
45	1375.85	1374.55	0.0000	0.00
46	1399.01	1397.70	0.0000	0.00
47	1406.65	1405.34	0.0000	0.00
48	1432.91	1431.59	0.0000	0.00
49	1458.32	1456.99	0.0000	0.00
50	1493.68	1492.33	0.0000	0.00
51	1509.03	1507.67	0.0000	0.00
52	1586.89	1585.50	0.0000	0.00
53	1591.28	1589.88	0.0000	0.00
54	1619.29	1617.88	0.0000	0.00
55	1629.15	1627.73	0.0000	0.00
56	1660.69	1659.25	0.0000	0.00
57	1727.88	1726.40	0.0000	0.00
58	1762.58	1761.08	0.0000	0.00
59	2061.58	2059.84	0.0000	0.00
60	2101.76	2099.98	0.0000	0.00
61	2202.50	2200.63	0.0000	0.00
62	2228.40	2226.50	0.0000	0.00
63	2445.54	2443.40	0.0000	0.00
64	2612.45	2610.09	0.0000	0.00
65	2674.97	2672.53	0.0000	0.00
66	2850.20	2847.51	0.0000	0.00
67	3122.43	3119.30	0.0000	0.00
68	3195.89	3192.64	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

BP/Castex-Ltd Adm-Apx E-001899

Analysis Report for 2206038-14

R-5 0-6

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 6:13:23PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	76.19	68 -	81	74.75	1.48E+04	592.59	3.23E+04	4.41
M	2	88.15	81 -	95	86.72	6.34E+03	456.56	2.26E+04	5.31
m	3	93.56	81 -	95	92.13	1.37E+03	285.88	1.22E+04	2.19
	4	99.56	96 -	101	98.14	2.66E+02	224.95	9.89E+03	1.30
	5	106.00	101 -	108	104.58	3.88E+02	285.50	1.33E+04	2.68
	6	129.28	123 -	132	127.87	1.08E+03	337.26	1.56E+04	3.53
	7	154.43	150 -	157	153.03	2.73E+02	267.31	1.17E+04	2.36
	8	186.33	181 -	189	184.95	9.73E+02	279.13	1.14E+04	2.63
	9	209.45	204 -	212	208.09	1.33E+03	261.60	9.66E+03	2.87
	10	239.29	232 -	246	237.94	1.52E+04	432.33	1.30E+04	3.01
M	11	270.33	262 -	280	268.99	9.55E+02	213.67	5.98E+03	3.48
m	12	277.73	262 -	280	276.39	6.20E+02	210.18	5.78E+03	3.34
	13	296.02	288 -	302	294.70	3.77E+03	312.82	8.68E+03	2.62
	14	327.98	322 -	331	326.67	6.91E+02	198.87	5.27E+03	3.01
	15	338.39	332 -	343	337.08	2.83E+03	243.04	5.91E+03	2.86
	16	351.88	345 -	356	350.58	5.31E+03	253.32	5.38E+03	2.90
	17	376.74	373 -	379	375.45	1.02E+02	122.76	2.66E+03	1.87
	18	408.16	402 -	412	406.88	3.60E+02	179.09	4.09E+03	3.28
	19	462.87	456 -	467	461.61	8.78E+02	172.21	3.26E+03	3.10
	20	510.37	502 -	515	509.12	1.43E+03	190.10	3.38E+03	3.44
	21	562.85	556 -	566	561.62	3.12E+02	132.56	2.17E+03	5.43
M	22	571.87	567 -	589	570.64	1.41E+02	91.05	1.35E+03	3.69
m	23	582.71	567 -	589	581.48	3.59E+03	170.21	2.07E+03	3.19
	24	608.78	601 -	613	607.56	3.66E+03	195.51	2.78E+03	3.04
	25	663.59	659 -	667	662.37	8.75E+01	106.93	1.70E+03	4.45
	26	726.78	720 -	731	725.58	7.31E+02	139.34	2.05E+03	2.83
	27	754.63	748 -	758	753.42	2.57E+02	108.36	1.42E+03	3.61
	28	768.40	759 -	776	767.19	7.51E+02	162.02	2.11E+03	6.69
	29	783.80	777 -	788	782.60	2.87E+02	111.09	1.40E+03	4.33
	30	794.60	789 -	800	793.40	4.76E+02	113.00	1.35E+03	3.35
M	31	805.40	800 -	811	804.20	9.55E+01	79.53	9.11E+02	3.55
m	32	809.62	800 -	811	808.42	7.92E+01	56.68	5.29E+02	2.51
	33	836.91	829 -	842	835.72	2.90E+02	120.20	1.45E+03	5.80
	34	859.45	850 -	865	858.25	4.66E+02	124.35	1.36E+03	3.25
	35	910.41	904 -	917	909.21	2.75E+03	156.76	1.48E+03	3.05
	36	933.03	926 -	936	931.83	1.28E+02	84.89	8.81E+02	3.07
	37	967.02	959 -	974	965.82	2.21E+03	137.17	9.97E+02	3.27
	38	1078.68	1073 -	1082	1077.47	7.38E+01	57.18	4.24E+02	6.24
	39	1099.58	1095 -	1102	1098.36	5.50E+01	51.03	3.92E+02	2.98
M	40	1108.86	1103 -	1127	1107.64	6.36E+01	58.85	4.43E+02	3.94

BP/Castex-Ltd Adm-Apx E-001900

Analysis Report for 2206038-14

R-5 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
m	41	1119.19	1103 -	1127	1117.97	7.87E+02	79.64	4.57E+02	3.39
	42	1154.15	1149 -	1159	1152.92	6.31E+01	65.26	5.36E+02	2.49
	43	1236.79	1228 -	1241	1235.54	2.66E+02	87.25	7.27E+02	2.75
	44	1280.17	1273 -	1286	1278.91	9.38E+01	76.09	6.00E+02	4.04
	45	1375.85	1369 -	1380	1374.55	1.90E+02	66.81	4.65E+02	3.59
M	46	1399.01	1392 -	1411	1397.70	8.00E+01	58.96	3.75E+02	4.05
m	47	1406.65	1392 -	1411	1405.34	1.18E+02	60.50	3.80E+02	4.06
	48	1432.91	1427 -	1435	1431.59	3.69E+01	42.92	2.60E+02	6.18
	49	1458.32	1450 -	1464	1456.99	1.49E+02	71.33	4.74E+02	8.29
	50	1493.68	1486 -	1497	1492.33	5.19E+01	64.37	4.92E+02	1.77
	51	1509.03	1499 -	1513	1507.67	6.47E+01	79.83	6.39E+02	7.47
M	52	1586.89	1575 -	1595	1585.50	2.50E+02	66.00	3.71E+02	4.12
m	53	1591.28	1575 -	1595	1589.88	1.48E+02	66.72	3.98E+02	3.87
	54	1619.29	1611 -	1623	1617.88	9.47E+01	56.96	3.35E+02	2.37
	55	1629.15	1624 -	1632	1627.73	9.74E+01	46.25	2.67E+02	2.55
	56	1660.69	1648 -	1667	1659.25	6.67E+01	70.31	3.89E+02	12.99
	57	1727.88	1719 -	1735	1726.40	1.62E+02	60.57	2.82E+02	3.60
	58	1762.58	1753 -	1769	1761.08	6.42E+02	73.67	2.74E+02	3.33
	59	2061.58	2055 -	2068	2059.84	3.28E+01	41.39	1.78E+02	7.76
	60	2101.76	2092 -	2107	2099.98	1.80E+02	58.65	2.72E+02	3.84
	61	2202.50	2195 -	2205	2200.63	1.43E+02	46.28	2.09E+02	5.12
	62	2228.40	2224 -	2229	2226.50	1.96E+01	20.88	7.08E+01	2.91
	63	2445.54	2438 -	2448	2443.40	6.09E+01	35.67	1.36E+02	5.90
	64	2612.45	2601 -	2617	2610.09	1.12E+03	72.76	7.80E+01	4.34
	65	2674.97	2664 -	2680	2672.53	1.74E+01	18.35	2.52E+01	9.39
	66	2850.20	2844 -	2851	2847.51	6.82E+00	8.72	8.36E+00	1.50
	67	3122.43	3114 -	3122	3119.30	8.20E+00	7.76	3.60E+00	1.70
	68	3195.89	3187 -	3198	3192.64	3.03E+01	12.96	5.39E+00	3.37

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 7/6/2022 6:13:23PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level

BP/Castex-Ltd Adm-Apx E-001901

Analysis Report for 2206038-14

R-5 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	76.19	68 -	81	1.48E+04	592.59	3.23E+04	4.44E+02
M	2	88.15	81 -	95	6.34E+03	456.56	2.26E+04	2.47E+02
m	3	93.56	81 -	95	1.37E+03	285.88	1.22E+04	1.81E+02
	4	99.56	96 -	101	2.66E+02	224.95	9.89E+03	1.83E+02
	5	106.00	101 -	108	3.88E+02	285.50	1.33E+04	2.32E+02
	6	129.28	123 -	132	1.08E+03	337.26	1.56E+04	2.72E+02
	7	154.43	150 -	157	2.73E+02	267.31	1.17E+04	2.18E+02
	8	186.33	181 -	189	9.73E+02	279.13	1.14E+04	2.24E+02
	9	209.45	204 -	212	1.33E+03	261.60	9.66E+03	2.07E+02
	10	239.29	232 -	246	1.52E+04	432.33	1.30E+04	2.92E+02
M	11	270.33	262 -	280	9.55E+02	213.67	5.98E+03	1.27E+02
m	12	277.73	262 -	280	6.20E+02	210.18	5.78E+03	1.25E+02
	13	296.02	288 -	302	3.77E+03	312.82	8.68E+03	2.36E+02
	14	327.98	322 -	331	6.91E+02	198.87	5.27E+03	1.58E+02
	15	338.39	332 -	343	2.83E+03	243.04	5.91E+03	1.80E+02
	16	351.88	345 -	356	5.31E+03	253.32	5.38E+03	1.70E+02
	17	376.74	373 -	379	1.02E+02	122.76	2.66E+03	9.95E+01
	18	408.16	402 -	412	3.60E+02	179.09	4.09E+03	1.44E+02
	19	462.87	456 -	467	8.78E+02	172.21	3.26E+03	1.33E+02
	20	510.37	502 -	515	1.43E+03	190.10	3.38E+03	1.43E+02
	21	562.85	556 -	566	3.12E+02	132.56	2.17E+03	1.05E+02
M	22	571.87	567 -	589	1.41E+02	91.05	1.35E+03	6.04E+01
m	23	582.71	567 -	589	3.59E+03	170.21	2.07E+03	7.49E+01
	24	608.78	601 -	613	3.66E+03	195.51	2.78E+03	1.26E+02
	25	663.59	659 -	667	8.75E+01	106.93	1.70E+03	8.65E+01
	26	726.78	720 -	731	7.31E+02	139.34	2.05E+03	1.06E+02
	27	754.63	748 -	758	2.57E+02	108.36	1.42E+03	8.51E+01
	28	768.40	759 -	776	7.51E+02	162.02	2.11E+03	1.25E+02
	29	783.80	777 -	788	2.87E+02	111.09	1.40E+03	8.70E+01
	30	794.60	789 -	800	4.76E+02	113.00	1.35E+03	8.57E+01
M	31	805.40	800 -	811	9.55E+01	79.53	9.11E+02	4.96E+01
m	32	809.62	800 -	811	7.92E+01	56.68	5.29E+02	3.78E+01
	33	836.91	829 -	842	2.90E+02	120.20	1.45E+03	9.48E+01
	34	859.45	850 -	865	4.66E+02	124.35	1.36E+03	9.59E+01
	35	910.41	904 -	917	2.75E+03	156.76	1.48E+03	9.58E+01
	36	933.03	926 -	936	1.28E+02	84.89	8.81E+02	6.73E+01
	37	967.02	959 -	974	2.21E+03	137.17	9.97E+02	8.22E+01
	38	1078.68	1073 -	1082	7.38E+01	57.18	4.24E+02	4.48E+01
	39	1099.58	1095 -	1102	5.50E+01	51.03	3.92E+02	4.01E+01
M	40	1108.86	1103 -	1127	6.36E+01	58.85	4.43E+02	3.46E+01
m	41	1119.19	1103 -	1127	7.87E+02	79.64	4.57E+02	3.51E+01
	42	1154.15	1149 -	1159	6.31E+01	65.26	5.36E+02	5.20E+01
	43	1236.79	1228 -	1241	2.66E+02	87.25	7.27E+02	6.65E+01
	44	1280.17	1273 -	1286	9.38E+01	76.09	6.00E+02	6.05E+01
	45	1375.85	1369 -	1380	1.90E+02	66.81	4.65E+02	5.00E+01
M	46	1399.01	1392 -	1411	8.00E+01	58.96	3.75E+02	3.19E+01
m	47	1406.65	1392 -	1411	1.18E+02	60.50	3.80E+02	3.21E+01
	48	1432.91	1427 -	1435	3.69E+01	42.92	2.60E+02	3.38E+01
	49	1458.32	1450 -	1464	1.49E+02	71.33	4.74E+02	5.51E+01
	50	1493.68	1486 -	1497	5.19E+01	64.37	4.92E+02	5.16E+01
	51	1509.03	1499 -	1513	6.47E+01	79.83	6.39E+02	6.43E+01

Analysis Report for 2206038-14

R-5 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	52	1586.89	1575 -	1595	2.50E+02	66.00	3.71E+02	3.17E+01
m	53	1591.28	1575 -	1595	1.48E+02	66.72	3.98E+02	3.28E+01
	54	1619.29	1611 -	1623	9.47E+01	56.96	3.35E+02	4.40E+01
	55	1629.15	1624 -	1632	9.74E+01	46.25	2.67E+02	3.44E+01
	56	1660.69	1648 -	1667	6.67E+01	70.31	3.89E+02	5.62E+01
	57	1727.88	1719 -	1735	1.62E+02	60.57	2.82E+02	4.52E+01
	58	1762.58	1753 -	1769	6.42E+02	73.67	2.74E+02	4.40E+01
	59	2061.58	2055 -	2068	3.28E+01	41.39	1.78E+02	3.27E+01
	60	2101.76	2092 -	2107	1.80E+02	58.65	2.72E+02	4.29E+01
	61	2202.50	2195 -	2205	1.43E+02	46.28	2.09E+02	3.25E+01
	62	2228.40	2224 -	2229	1.96E+01	20.88	7.08E+01	1.55E+01
	63	2445.54	2438 -	2448	6.09E+01	35.67	1.36E+02	2.64E+01
	64	2612.45	2601 -	2617	1.12E+03	72.76	7.80E+01	2.33E+01
	65	2674.97	2664 -	2680	1.74E+01	18.35	2.52E+01	1.34E+01
	66	2850.20	2844 -	2851	6.82E+00	8.72	8.36E+00	5.74E+00
	67	3122.43	3114 -	3122	8.20E+00	7.76	3.60E+00	4.31E+00
	68	3195.89	3187 -	3198	3.03E+01	12.96	5.39E+00	5.62E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 7/6/2022 6:13:23PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 2.500 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	76.19	68 -	81	74.75	1.48E+04	592.59	3.23E+04	AM-243 TI-44
M	2	88.15	81 -	95	86.72	6.34E+03	456.56	2.26E+04	CD-109 LU-176 SN-126 NP-237 EU-155
m	3	93.56	81 -	95	92.13	1.37E+03	285.88	1.22E+04	GA-67

BP/Castex-Ltd Adm-Apx E-001903

Analysis Report for 2206038-14

R-5 0-6

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									ND-147
	4	99.56	96 -	101	98.14	2.66E+02	224.95	9.89E+03	LU-173
									GD-153
	5	106.00	101 -	108	104.58	3.88E+02	285.50	1.33E+04	NP-239
									EU-155
	6	129.28	123 -	132	127.87	1.08E+03	337.26	1.56E+04	PA-234
	7	154.43	150 -	157	153.03	2.73E+02	267.31	1.17E+04	CS-136
	8	186.33	181 -	189	184.95	9.73E+02	279.13	1.14E+04	RA-226
									HO-166M
	9	209.45	204 -	212	208.09	1.33E+03	261.60	9.66E+03	CM-243
									GA-67
	10	239.29	232 -	246	237.94	1.52E+04	432.33	1.30E+04	PB-212
									RA-224
M	11	270.33	262 -	280	268.99	9.55E+02	213.67	5.98E+03	LU-173
									CS-135
m	12	277.73	262 -	280	276.39	6.20E+02	210.18	5.78E+03	CM-243
									NP-239
									HG-203
									SE-75
	13	296.02	288 -	302	294.70	3.77E+03	312.82	8.68E+03	PB-214
	14	327.98	322 -	331	326.67	6.91E+02	198.87	5.27E+03	LA-140
	15	338.39	332 -	343	337.08	2.83E+03	243.04	5.91E+03	AC-228
									CS-136
	16	351.88	345 -	356	350.58	5.31E+03	253.32	5.38E+03	PB-214
	17	376.74	373 -	379	375.45	1.02E+02	122.76	2.66E+03	TL-204
	18	408.16	402 -	412	406.88	3.60E+02	179.09	4.09E+03	.....
	19	462.87	456 -	467	461.61	8.78E+02	172.21	3.26E+03	SB-125
	20	510.37	502 -	515	509.12	1.43E+03	190.10	3.38E+03	.....
	21	562.85	556 -	566	561.62	3.12E+02	132.56	2.17E+03	CS-134
M	22	571.87	567 -	589	570.64	1.41E+02	91.05	1.35E+03	BI-207
m	23	582.71	567 -	589	581.48	3.59E+03	170.21	2.07E+03	TL-208
	24	608.78	601 -	613	607.56	3.66E+03	195.51	2.78E+03	BI-214
	25	663.59	659 -	667	662.37	8.75E+01	106.93	1.70E+03	CE-143
									CS-137
	26	726.78	720 -	731	725.58	7.31E+02	139.34	2.05E+03	BI-212
	27	754.63	748 -	758	753.42	2.57E+02	108.36	1.42E+03	ZR-95
	28	768.40	759 -	776	767.19	7.51E+02	162.02	2.11E+03	.....
	29	783.80	777 -	788	782.60	2.87E+02	111.09	1.40E+03	SB-127
	30	794.60	789 -	800	793.40	4.76E+02	113.00	1.35E+03	CS-134
M	31	805.40	800 -	811	804.20	9.55E+01	79.53	9.11E+02	.....
m	32	809.62	800 -	811	808.42	7.92E+01	56.68	5.29E+02	CO-58
									EU-156
	33	836.91	829 -	842	835.72	2.90E+02	120.20	1.45E+03	MN-54
	34	859.45	850 -	865	858.25	4.66E+02	124.35	1.36E+03	TL-208
	35	910.41	904 -	917	909.21	2.75E+03	156.76	1.48E+03	AC-228
									TL-204
	36	933.03	926 -	936	931.83	1.28E+02	84.89	8.81E+02	.....
	37	967.02	959 -	974	965.82	2.21E+03	137.17	9.97E+02	AC-228
	38	1078.68	1073 -	1082	1077.47	7.38E+01	57.18	4.24E+02	.....
	39	1099.58	1095 -	1102	1098.36	5.50E+01	51.03	3.92E+02	FE-59
M	40	1108.86	1103 -	1127	1107.64	6.36E+01	58.85	4.43E+02	.....
m	41	1119.19	1103 -	1127	1117.97	7.87E+02	79.64	4.57E+02	BI-214
									SC-46
									TA-182

Analysis Report for 2206038-14

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	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	42	1154.15	1149 -	1159	1152.92	6.31E+01	65.26	5.36E+02	EU-156
	43	1236.79	1228 -	1241	1235.54	2.66E+02	87.25	7.27E+02	CS-136 CO-56
	44	1280.17	1273 -	1286	1278.91	9.38E+01	76.09	6.00E+02	.....
	45	1375.85	1369 -	1380	1374.55	1.90E+02	66.81	4.65E+02	.....
M	46	1399.01	1392 -	1411	1397.70	8.00E+01	58.96	3.75E+02	.....
m	47	1406.65	1392 -	1411	1405.34	1.18E+02	60.50	3.80E+02	EU-152
	48	1432.91	1427 -	1435	1431.59	3.69E+01	42.92	2.60E+02	.....
	49	1458.32	1450 -	1464	1456.99	1.49E+02	71.33	4.74E+02	K-40
	50	1493.68	1486 -	1497	1492.33	5.19E+01	64.37	4.92E+02	.....
	51	1509.03	1499 -	1513	1507.67	6.47E+01	79.83	6.39E+02	.....
M	52	1586.89	1575 -	1595	1585.50	2.50E+02	66.00	3.71E+02	.....
m	53	1591.28	1575 -	1595	1589.88	1.48E+02	66.72	3.98E+02	.....
	54	1619.29	1611 -	1623	1617.88	9.47E+01	56.96	3.35E+02	BI-212
	55	1629.15	1624 -	1632	1627.73	9.74E+01	46.25	2.67E+02	.....
	56	1660.69	1648 -	1667	1659.25	6.67E+01	70.31	3.89E+02	.....
	57	1727.88	1719 -	1735	1726.40	1.62E+02	60.57	2.82E+02	.....
	58	1762.58	1753 -	1769	1761.08	6.42E+02	73.67	2.74E+02	BI-214
	59	2061.58	2055 -	2068	2059.84	3.28E+01	41.39	1.78E+02	.....
	60	2101.76	2092 -	2107	2099.98	1.80E+02	58.65	2.72E+02	.....
	61	2202.50	2195 -	2205	2200.63	1.43E+02	46.28	2.09E+02	BI-214
	62	2228.40	2224 -	2229	2226.50	1.96E+01	20.88	7.08E+01	.....
	63	2445.54	2438 -	2448	2443.40	6.09E+01	35.67	1.36E+02	.....
	64	2612.45	2601 -	2617	2610.09	1.12E+03	72.76	7.80E+01	TL-208
	65	2674.97	2664 -	2680	2672.53	1.74E+01	18.35	2.52E+01	.....
	66	2850.20	2844 -	2851	2847.51	6.82E+00	8.72	8.36E+00	.....
	67	3122.43	3114 -	3122	3119.30	8.20E+00	7.76	3.60E+00	.....
	68	3195.89	3187 -	3198	3192.64	3.03E+01	12.96	5.39E+00	.....

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 7/6/2022 6:13:23PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	76.19	1.48E+04	592.59	2.79E-02	2.21E-03
M	2	88.15	6.34E+03	456.56	2.90E-02	2.53E-03

Analysis Report for 2206038-14

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	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
m	3	93.56	1.37E+03	285.88	2.92E-02	2.45E-03
	4	99.56	2.66E+02	224.95	2.91E-02	2.36E-03
	5	106.00	3.88E+02	285.50	2.89E-02	2.27E-03
	6	129.28	1.08E+03	337.26	2.73E-02	2.01E-03
	7	154.43	2.73E+02	267.31	2.52E-02	1.93E-03
	8	186.33	9.73E+02	279.13	2.26E-02	1.82E-03
	9	209.45	1.33E+03	261.60	2.09E-02	1.73E-03
	10	239.29	1.52E+04	432.33	1.91E-02	1.62E-03
M	11	270.33	9.55E+02	213.67	1.74E-02	1.50E-03
m	12	277.73	6.20E+02	210.18	1.71E-02	1.47E-03
	13	296.02	3.77E+03	312.82	1.63E-02	1.41E-03
	14	327.98	6.91E+02	198.87	1.51E-02	1.32E-03
	15	338.39	2.83E+03	243.04	1.47E-02	1.28E-03
	16	351.88	5.31E+03	253.32	1.42E-02	1.24E-03
	17	376.74	1.02E+02	122.76	1.35E-02	1.17E-03
	18	408.16	3.60E+02	179.09	1.27E-02	1.10E-03
	19	462.87	8.78E+02	172.21	1.14E-02	1.03E-03
	20	510.37	1.43E+03	190.10	1.06E-02	9.78E-04
	21	562.85	3.12E+02	132.56	9.74E-03	9.15E-04
M	22	571.87	1.41E+02	91.05	9.62E-03	9.04E-04
m	23	582.71	3.59E+03	170.21	9.47E-03	8.91E-04
	24	608.78	3.66E+03	195.51	9.13E-03	8.60E-04
	25	663.59	8.75E+01	106.93	8.49E-03	7.95E-04
	26	726.78	7.31E+02	139.34	7.86E-03	7.52E-04
	27	754.63	2.57E+02	108.36	7.62E-03	7.33E-04
	28	768.40	7.51E+02	162.02	7.50E-03	7.23E-04
	29	783.80	2.87E+02	111.09	7.37E-03	7.12E-04
	30	794.60	4.76E+02	113.00	7.29E-03	7.05E-04
M	31	805.40	9.55E+01	79.53	7.21E-03	6.98E-04
m	32	809.62	7.92E+01	56.68	7.17E-03	6.95E-04
	33	836.91	2.90E+02	120.20	6.97E-03	6.76E-04
	34	859.45	4.66E+02	124.35	6.82E-03	6.60E-04
	35	910.41	2.75E+03	156.76	6.49E-03	6.24E-04
	36	933.03	1.28E+02	84.89	6.36E-03	6.08E-04
	37	967.02	2.21E+03	137.17	6.17E-03	5.82E-04
	38	1078.68	7.38E+01	57.18	5.62E-03	4.98E-04
	39	1099.58	5.50E+01	51.03	5.53E-03	4.83E-04
M	40	1108.86	6.36E+01	58.85	5.49E-03	4.76E-04
m	41	1119.19	7.87E+02	79.64	5.45E-03	4.68E-04
	42	1154.15	6.31E+01	65.26	5.31E-03	4.42E-04
	43	1236.79	2.66E+02	87.25	5.01E-03	4.20E-04
	44	1280.17	9.38E+01	76.09	4.87E-03	4.14E-04
	45	1375.85	1.90E+02	66.81	4.59E-03	3.97E-04
M	46	1399.01	8.00E+01	58.96	4.53E-03	3.91E-04
m	47	1406.65	1.18E+02	60.50	4.51E-03	3.89E-04
	48	1432.91	3.69E+01	42.92	4.44E-03	3.83E-04
	49	1458.32	1.49E+02	71.33	4.38E-03	3.77E-04
	50	1493.68	5.19E+01	64.37	4.30E-03	3.68E-04
	51	1509.03	6.47E+01	79.83	4.27E-03	3.64E-04
M	52	1586.89	2.50E+02	66.00	4.10E-03	3.45E-04
m	53	1591.28	1.48E+02	66.72	4.09E-03	3.44E-04
	54	1619.29	9.47E+01	56.96	4.04E-03	3.37E-04
	55	1629.15	9.74E+01	46.25	4.02E-03	3.35E-04

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Analysis Report for 2206038-14

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	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	56	1660.69	6.67E+01	70.31	3.97E-03	3.27E-04
	57	1727.88	1.62E+02	60.57	3.85E-03	3.10E-04
	58	1762.58	6.42E+02	73.67	3.80E-03	3.02E-04
	59	2061.58	3.28E+01	41.39	3.42E-03	2.84E-04
	60	2101.76	1.80E+02	58.65	3.38E-03	2.84E-04
	61	2202.50	1.43E+02	46.28	3.29E-03	2.84E-04
	62	2228.40	1.96E+01	20.88	3.27E-03	2.84E-04
	63	2445.54	6.09E+01	35.67	3.12E-03	2.84E-04
	64	2612.45	1.12E+03	72.76	3.04E-03	2.84E-04
	65	2674.97	1.74E+01	18.35	3.01E-03	2.84E-04
	66	2850.20	6.82E+00	8.72	2.96E-03	2.84E-04
	67	3122.43	8.20E+00	7.76	2.91E-03	2.84E-04
	68	3195.89	3.03E+01	12.96	2.91E-03	2.84E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 7/6/2022 6:13:23PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126204.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	76.19	1.48E+04	592.59			1.48E+04	5.93E+02
M	2	88.15	6.34E+03	456.56			6.34E+03	4.57E+02
m	3	93.56	1.37E+03	285.88	1.06E+02	9.79E+00	1.27E+03	2.86E+02
	4	99.56	2.66E+02	224.95			2.66E+02	2.25E+02
	5	106.00	3.88E+02	285.50			3.88E+02	2.85E+02
	6	129.28	1.08E+03	337.26			1.08E+03	3.37E+02
	7	154.43	2.73E+02	267.31			2.73E+02	2.67E+02
	8	186.33	9.73E+02	279.13	4.53E+01	1.25E+01	9.28E+02	2.79E+02
	9	209.45	1.33E+03	261.60			1.33E+03	2.62E+02
	10	239.29	1.52E+04	432.33	1.45E+01	5.40E+00	1.52E+04	4.32E+02
M	11	270.33	9.55E+02	213.67			9.55E+02	2.14E+02
m	12	277.73	6.20E+02	210.18	1.02E+00	3.47E+00	6.19E+02	2.10E+02
	13	296.02	3.77E+03	312.82			3.77E+03	3.13E+02
	14	327.98	6.91E+02	198.87			6.91E+02	1.99E+02
	15	338.39	2.83E+03	243.04	4.53E+00	4.32E+00	2.83E+03	2.43E+02
	16	351.88	5.31E+03	253.32	4.32E+00	3.84E+00	5.30E+03	2.53E+02
	17	376.74	1.02E+02	122.76			1.02E+02	1.23E+02

BP/Castex-Ltd Adm-Apx E-001907

Analysis Report for 2206038-14

R-5 0-6

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	18	408.16	3.60E+02	179.09			3.60E+02	1.79E+02
	19	462.87	8.78E+02	172.21			8.78E+02	1.72E+02
	20	510.37	1.43E+03	190.10	5.27E+01	5.41E+00	1.38E+03	1.90E+02
	21	562.85	3.12E+02	132.56	1.91E+00	3.64E+00	3.10E+02	1.33E+02
M	22	571.87	1.41E+02	91.05			1.41E+02	9.11E+01
m	23	582.71	3.59E+03	170.21			3.59E+03	1.70E+02
	24	608.78	3.66E+03	195.51	5.34E+00	3.89E+00	3.65E+03	1.96E+02
	25	663.59	8.75E+01	106.93			8.75E+01	1.07E+02
	26	726.78	7.31E+02	139.34			7.31E+02	1.39E+02
	27	754.63	2.57E+02	108.36			2.57E+02	1.08E+02
	28	768.40	7.51E+02	162.02			7.51E+02	1.62E+02
	29	783.80	2.87E+02	111.09			2.87E+02	1.11E+02
	30	794.60	4.76E+02	113.00			4.76E+02	1.13E+02
M	31	805.40	9.55E+01	79.53			9.55E+01	7.95E+01
m	32	809.62	7.92E+01	56.68			7.92E+01	5.67E+01
	33	836.91	2.90E+02	120.20			2.90E+02	1.20E+02
	34	859.45	4.66E+02	124.35			4.66E+02	1.24E+02
	35	910.41	2.75E+03	156.76	1.52E+00	2.64E+00	2.74E+03	1.57E+02
	36	933.03	1.28E+02	84.89			1.28E+02	8.49E+01
	37	967.02	2.21E+03	137.17			2.21E+03	1.37E+02
	38	1078.68	7.38E+01	57.18			7.38E+01	5.72E+01
	39	1099.58	5.50E+01	51.03			5.50E+01	5.10E+01
M	40	1108.86	6.36E+01	58.85			6.36E+01	5.88E+01
m	41	1119.19	7.87E+02	79.64			7.87E+02	7.96E+01
	42	1154.15	6.31E+01	65.26			6.31E+01	6.53E+01
	43	1236.79	2.66E+02	87.25			2.66E+02	8.72E+01
	44	1280.17	9.38E+01	76.09			9.38E+01	7.61E+01
	45	1375.85	1.90E+02	66.81			1.90E+02	6.68E+01
M	46	1399.01	8.00E+01	58.96			8.00E+01	5.90E+01
m	47	1406.65	1.18E+02	60.50			1.18E+02	6.05E+01
	48	1432.91	3.69E+01	42.92			3.69E+01	4.29E+01
	49	1458.32	1.49E+02	71.33			1.49E+02	7.13E+01
	50	1493.68	5.19E+01	64.37			5.19E+01	6.44E+01
	51	1509.03	6.47E+01	79.83			6.47E+01	7.98E+01
M	52	1586.89	2.50E+02	66.00			2.50E+02	6.60E+01
m	53	1591.28	1.48E+02	66.72			1.48E+02	6.67E+01
	54	1619.29	9.47E+01	56.96			9.47E+01	5.70E+01
	55	1629.15	9.74E+01	46.25			9.74E+01	4.62E+01
	56	1660.69	6.67E+01	70.31			6.67E+01	7.03E+01
	57	1727.88	1.62E+02	60.57			1.62E+02	6.06E+01
	58	1762.58	6.42E+02	73.67			6.42E+02	7.37E+01
	59	2061.58	3.28E+01	41.39			3.28E+01	4.14E+01
	60	2101.76	1.80E+02	58.65			1.80E+02	5.87E+01
	61	2202.50	1.43E+02	46.28			1.43E+02	4.63E+01
	62	2228.40	1.96E+01	20.88			1.96E+01	2.09E+01
	63	2445.54	6.09E+01	35.67			6.09E+01	3.57E+01
	64	2612.45	1.12E+03	72.76			1.12E+03	7.28E+01
	65	2674.97	1.74E+01	18.35			1.74E+01	1.84E+01
	66	2850.20	6.82E+00	8.72			6.82E+00	8.72E+00
	67	3122.43	8.20E+00	7.76			8.20E+00	7.76E+00
	68	3195.89	3.03E+01	12.96			3.03E+01	1.30E+01

BP/Castex-Ltd Adm-Apx E-001908

Analysis Report for 2206038-14

R-5 0-6

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 7/6/2022 6:13:23PM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000126204.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	76.19	1.48E+04	592.59			1.48E+04	5.93E+02
M	2	88.15	6.34E+03	456.56			6.34E+03	4.57E+02
m	3	93.56	1.37E+03	285.88	1.06E+02	9.79E+00	1.27E+03	2.86E+02
	4	99.56	2.66E+02	224.95			2.66E+02	2.25E+02
	5	106.00	3.88E+02	285.50			3.88E+02	2.85E+02
	6	129.28	1.08E+03	337.26			1.08E+03	3.37E+02
	7	154.43	2.73E+02	267.31			2.73E+02	2.67E+02
	8	186.33	9.73E+02	279.13	4.53E+01	1.25E+01	9.28E+02	2.79E+02
	9	209.45	1.33E+03	261.60			1.33E+03	2.62E+02
	10	239.29	1.52E+04	432.33	1.45E+01	5.40E+00	1.52E+04	4.32E+02
M	11	270.33	9.55E+02	213.67			9.55E+02	2.14E+02
m	12	277.73	6.20E+02	210.18	1.02E+00	3.47E+00	6.19E+02	2.10E+02
	13	296.02	3.77E+03	312.82			3.77E+03	3.13E+02
	14	327.98	6.91E+02	198.87			6.91E+02	1.99E+02
	15	338.39	2.83E+03	243.04	4.53E+00	4.32E+00	2.83E+03	2.43E+02
	16	351.88	5.31E+03	253.32	4.32E+00	3.84E+00	5.30E+03	2.53E+02
	17	376.74	1.02E+02	122.76			1.02E+02	1.23E+02
	18	408.16	3.60E+02	179.09			3.60E+02	1.79E+02
	19	462.87	8.78E+02	172.21			8.78E+02	1.72E+02
	20	510.37	1.43E+03	190.10	5.27E+01	5.41E+00	1.38E+03	1.90E+02
	21	562.85	3.12E+02	132.56	1.91E+00	3.64E+00	3.10E+02	1.33E+02
M	22	571.87	1.41E+02	91.05			1.41E+02	9.11E+01
m	23	582.71	3.59E+03	170.21			3.59E+03	1.70E+02
	24	608.78	3.66E+03	195.51	5.34E+00	3.89E+00	3.65E+03	1.96E+02
	25	663.59	8.75E+01	106.93			8.75E+01	1.07E+02
	26	726.78	7.31E+02	139.34			7.31E+02	1.39E+02
	27	754.63	2.57E+02	108.36			2.57E+02	1.08E+02
	28	768.40	7.51E+02	162.02			7.51E+02	1.62E+02
	29	783.80	2.87E+02	111.09			2.87E+02	1.11E+02
	30	794.60	4.76E+02	113.00			4.76E+02	1.13E+02
M	31	805.40	9.55E+01	79.53			9.55E+01	7.95E+01
m	32	809.62	7.92E+01	56.68			7.92E+01	5.67E+01

Analysis Report for 2206038-14

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	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	33	836.91	2.90E+02	120.20			2.90E+02	1.20E+02
	34	859.45	4.66E+02	124.35			4.66E+02	1.24E+02
	35	910.41	2.75E+03	156.76	1.52E+00	2.64E+00	2.74E+03	1.57E+02
	36	933.03	1.28E+02	84.89			1.28E+02	8.49E+01
	37	967.02	2.21E+03	137.17			2.21E+03	1.37E+02
	38	1078.68	7.38E+01	57.18			7.38E+01	5.72E+01
	39	1099.58	5.50E+01	51.03			5.50E+01	5.10E+01
M	40	1108.86	6.36E+01	58.85			6.36E+01	5.88E+01
m	41	1119.19	7.87E+02	79.64			7.87E+02	7.96E+01
	42	1154.15	6.31E+01	65.26			6.31E+01	6.53E+01
	43	1236.79	2.66E+02	87.25			2.66E+02	8.72E+01
	44	1280.17	9.38E+01	76.09			9.38E+01	7.61E+01
	45	1375.85	1.90E+02	66.81			1.90E+02	6.68E+01
M	46	1399.01	8.00E+01	58.96			8.00E+01	5.90E+01
m	47	1406.65	1.18E+02	60.50			1.18E+02	6.05E+01
	48	1432.91	3.69E+01	42.92			3.69E+01	4.29E+01
	49	1458.32	1.49E+02	71.33			1.49E+02	7.13E+01
	50	1493.68	5.19E+01	64.37			5.19E+01	6.44E+01
	51	1509.03	6.47E+01	79.83			6.47E+01	7.98E+01
M	52	1586.89	2.50E+02	66.00			2.50E+02	6.60E+01
m	53	1591.28	1.48E+02	66.72			1.48E+02	6.67E+01
	54	1619.29	9.47E+01	56.96			9.47E+01	5.70E+01
	55	1629.15	9.74E+01	46.25			9.74E+01	4.62E+01
	56	1660.69	6.67E+01	70.31			6.67E+01	7.03E+01
	57	1727.88	1.62E+02	60.57			1.62E+02	6.06E+01
	58	1762.58	6.42E+02	73.67			6.42E+02	7.37E+01
	59	2061.58	3.28E+01	41.39			3.28E+01	4.14E+01
	60	2101.76	1.80E+02	58.65			1.80E+02	5.87E+01
	61	2202.50	1.43E+02	46.28			1.43E+02	4.63E+01
	62	2228.40	1.96E+01	20.88			1.96E+01	2.09E+01
	63	2445.54	6.09E+01	35.67			6.09E+01	3.57E+01
	64	2612.45	1.12E+03	72.76			1.12E+03	7.28E+01
	65	2674.97	1.74E+01	18.35			1.74E+01	1.84E+01
	66	2850.20	6.82E+00	8.72			6.82E+00	8.72E+00
	67	3122.43	8.20E+00	7.76			8.20E+00	7.76E+00
	68	3195.89	3.03E+01	12.96			3.03E+01	1.30E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Analysis Report for 2206038-14

R-5 0-6

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.853	1460.81	*	10.67	3.69E+00	1.80E+00
MN-54	0.894	834.83	*	99.97	5.11E-01	2.18E-01
FE-59	0.331	1099.22	*	56.50	3.07E-01	2.86E-01
		1291.56		43.20		
GA-67	0.445	93.31	*	35.70	3.74E+02	9.00E+01
		208.95	*	2.24	8.68E+03	1.86E+03
		300.22		16.00		
SN-126	0.991	87.57	*	37.00	6.84E+00	7.74E-01
CS-137	0.908	661.65	*	85.12	1.41E-01	1.72E-01
EU-155	0.954	86.50	*	30.90	8.28E+00	9.36E-01
		105.30	*	20.70	7.61E-01	5.62E-01
EU-156	0.449	811.77	*	10.40	4.08E+00	2.94E+00
		1153.47	*	7.20	6.34E+00	6.58E+00
		1230.71		8.90		
LU-173	0.930	100.72	*	5.24	2.10E+00	1.78E+00
		272.11	*	21.20	3.11E+00	7.44E-01
BI-207	0.339	569.67	*	97.72	1.74E-01	1.14E-01
		1063.62		74.90		
TL-208	0.935	583.14	*	30.22	1.46E+01	1.53E+00
		860.37	*	4.48	1.77E+01	5.02E+00
		2614.66	*	35.85	1.19E+01	1.36E+00
BI-212	0.988	727.17	*	11.80	9.13E+00	1.95E+00
		1620.62	*	2.75	9.87E+00	6.00E+00
PB-212	0.885	238.63	*	44.60	2.07E+01	1.85E+00
		300.09		3.41		
BI-214	0.968	609.31	*	46.30	1.00E+01	1.09E+00
		1120.29	*	15.10	1.11E+01	1.47E+00
		1764.49	*	15.80	1.24E+01	1.73E+00
		2204.22	*	4.98	1.01E+01	3.39E+00
PB-214	0.994	295.21	*	19.19	1.40E+01	1.68E+00
		351.92	*	37.19	1.16E+01	1.15E+00
RA-224	0.930	240.98	*	3.95	2.33E+02	2.09E+01
RA-226	1.000	186.21	*	3.28	1.45E+01	4.53E+00
AC-228	0.962	338.32	*	11.40	1.96E+01	2.40E+00
		911.07	*	27.70	1.77E+01	1.98E+00
		969.11	*	16.60	2.50E+01	2.82E+00
PA-234	0.411	131.20	*	20.40	2.24E+00	7.20E-01
		733.99		8.80		
		946.00		12.00		
AM-243	0.943	74.67	*	66.00	9.33E+00	8.27E-01
CM-243	0.372	209.75	*	3.29	2.24E+01	4.79E+00
		228.14		10.60		
		277.60	*	14.00	3.00E+00	1.05E+00

Analysis Report for 2206038-14

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* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 6:13:23PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	7	154.43	7.57593E-02	49.00	Sum	
	14	327.98	1.91887E-01	14.39	Sum	
	17	376.74	2.82285E-02	60.40	Sum	
	18	408.16	1.00024E-01	24.87	Sum	
	19	462.87	2.43839E-01	9.81	Sum	
	20	510.37	3.82703E-01	6.90	Sum	
	21	562.85	8.61375E-02	21.38	Sum	
	27	754.63	7.13452E-02	21.09	Tol.	ZR-95
	28	768.40	2.08481E-01	10.79	Sum	
	29	783.80	7.97616E-02	19.34	Sum	
	30	794.60	1.32111E-01	11.88	Sum	
M	31	805.40	2.65416E-02	41.62	Sum	
	36	933.03	3.56561E-02	33.07	Sum	
	38	1078.68	2.04929E-02	38.75	Sum	
M	40	1108.86	1.76581E-02	46.29	S-Esc	
	43	1236.79	7.37833E-02	16.42	Sum	
	44	1280.17	2.60589E-02	40.56		
	45	1375.85	5.29091E-02	17.54	Sum	
M	46	1399.01	2.22141E-02	36.86	Sum	
m	47	1406.65	3.28932E-02	25.54	Sum	
	48	1432.91	1.02528E-02	58.15	Sum	
	50	1493.68	1.44118E-02	62.04	Sum	
	51	1509.03	1.79745E-02	61.69		
M	52	1586.89	6.94600E-02	13.20	Sum	
m	53	1591.28	4.10664E-02	22.57	D-Esc	
	55	1629.15	2.70527E-02	23.74	Sum	
	56	1660.69	1.85249E-02	52.72		
	57	1727.88	4.49615E-02	18.71	Sum	
	59	2061.58	9.09950E-03	63.17		
	60	2101.76	4.99560E-02	16.31	S-Esc	
	62	2228.40	5.43939E-03	53.32	Sum	
	63	2445.54	1.69283E-02	29.26		
	65	2674.97	4.82870E-03	52.78	Sum	

Analysis Report for 2206038-14

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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
66	2850.20	1.89394E-03	63.93	Sum	
67	3122.43	2.27778E-03	47.33		
68	3195.89	8.41751E-03	21.39	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.85	1460.81	*	10.67	3.69E+00	1.80E+00
MN-54	0.89	834.83	*	99.97	5.11E-01	2.18E-01
FE-59	0.33	1099.22	*	56.50	3.07E-01	2.86E-01
		1291.56		43.20		
GA-67	0.44	93.31	*	35.70	3.74E+02	9.00E+01
		208.95	*	2.24	8.68E+03	1.86E+03
		300.22		16.00		
SN-126	0.99	87.57	*	37.00	6.84E+00	7.74E-01
CS-137	0.90	661.65	*	85.12	1.41E-01	1.72E-01
EU-155	0.95	86.50	*	30.90	8.28E+00	9.36E-01
		105.30	*	20.70	7.61E-01	5.62E-01
EU-156	0.44	811.77	*	10.40	4.08E+00	2.94E+00
		1153.47	*	7.20	6.34E+00	6.58E+00
		1230.71		8.90		
LU-173	0.93	100.72	*	5.24	2.10E+00	1.78E+00
		272.11	*	21.20	3.11E+00	7.44E-01
BI-207	0.33	569.67	*	97.72	1.74E-01	1.14E-01
		1063.62		74.90		
TL-208	0.93	583.14	*	30.22	1.46E+01	1.53E+00
		860.37	*	4.48	1.77E+01	5.02E+00
		2614.66	*	35.85	1.19E+01	1.36E+00
BI-212	0.98	727.17	*	11.80	9.13E+00	1.95E+00
		1620.62	*	2.75	9.87E+00	6.00E+00
PB-212	0.88	238.63	*	44.60	2.07E+01	1.85E+00
		300.09		3.41		

Analysis Report for 2206038-14

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Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-214	0.96	609.31	*	46.30	1.00E+01	1.09E+00
		1120.29	*	15.10	1.11E+01	1.47E+00
		1764.49	*	15.80	1.24E+01	1.73E+00
		2204.22	*	4.98	1.01E+01	3.39E+00
PB-214	0.99	295.21	*	19.19	1.40E+01	1.68E+00
		351.92	*	37.19	1.16E+01	1.15E+00
RA-224	0.93	240.98	*	3.95	2.33E+02	2.09E+01
RA-226	1.00	186.21	*	3.28	1.45E+01	4.53E+00
AC-228	0.96	338.32	*	11.40	1.96E+01	2.40E+00
		911.07	*	27.70	1.77E+01	1.98E+00
		969.11	*	16.60	2.50E+01	2.82E+00
PA-234	0.41	131.20	*	20.40	2.24E+00	7.20E-01
		733.99		8.80		
		946.00		12.00		
AM-243	0.94	74.67	*	66.00	9.33E+00	8.27E-01
CM-243	0.37	209.75	*	3.29	2.24E+01	4.79E+00
		228.14		10.60		
		277.60	*	14.00	3.00E+00	1.05E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.853	3.69E+00	1.80E+00	
	MN-54	0.894	5.11E-01	2.18E-01	
X	CO-58	0.967			
	FE-59	0.331	3.07E-01	2.86E-01	
	GA-67	0.445	3.89E+02	8.99E+01	
X	CD-109	1.000			
	SN-126	0.991	6.21E+00	9.03E-01	
X	CS-135	0.894			
	CS-137	0.908	1.41E-01	1.72E-01	

Analysis Report for 2206038-14

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	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
X	ND-147	0.545			
	EU-155	0.954	7.61E-01	5.62E-01	
	EU-156	0.449	4.46E+00	2.69E+00	
	LU-173	0.930	2.96E+00	6.87E-01	
X	HG-203	0.945			
X	TL-204	0.464			
	BI-207	0.339	1.74E-01	1.14E-01	
	TL-208	0.935	1.33E+01	9.96E-01	
	BI-212	0.988	9.20E+00	1.85E+00	
?	PB-212	0.885	2.07E+01	1.85E+00	
	BI-214	0.968	1.08E+01	7.60E-01	
	PB-214	0.994	1.24E+01	9.51E-01	
?	RA-224	0.930	2.33E+02	2.09E+01	
	RA-226	1.000	1.45E+01	4.53E+00	
	AC-228	0.962	1.99E+01	1.34E+00	
	PA-234	0.411	2.24E+00	7.20E-01	
X	NP-237	0.933			
X	NP-239	0.358			
	AM-243	0.943	9.33E+00	8.27E-01	
	CM-243	0.372	3.85E+00	1.03E+00	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2206038-14

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 7/6/2022 6:13:23PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	7	154.43	7.57593E-02	49.00	Sum	
	14	327.98	1.91887E-01	14.39	Sum	
	17	376.74	2.82285E-02	60.40	Sum	
	18	408.16	1.00024E-01	24.87	Sum	
	19	462.87	2.43839E-01	9.81	Sum	
	20	510.37	3.82703E-01	6.90	Sum	
	21	562.85	8.61375E-02	21.38	Sum	
	27	754.63	7.13452E-02	21.09	Tol.	ZR-95
	28	768.40	2.08481E-01	10.79	Sum	
	29	783.80	7.97616E-02	19.34	Sum	
	30	794.60	1.32111E-01	11.88	Sum	
M	31	805.40	2.65416E-02	41.62	Sum	
	36	933.03	3.56561E-02	33.07	Sum	
	38	1078.68	2.04929E-02	38.75	Sum	
M	40	1108.86	1.76581E-02	46.29	S-Esc	
	43	1236.79	7.37833E-02	16.42	Sum	
	44	1280.17	2.60589E-02	40.56		
	45	1375.85	5.29091E-02	17.54	Sum	
M	46	1399.01	2.22141E-02	36.86	Sum	
m	47	1406.65	3.28932E-02	25.54	Sum	
	48	1432.91	1.02528E-02	58.15	Sum	
	50	1493.68	1.44118E-02	62.04	Sum	
	51	1509.03	1.79745E-02	61.69		
M	52	1586.89	6.94600E-02	13.20	Sum	
m	53	1591.28	4.10664E-02	22.57	D-Esc	
	55	1629.15	2.70527E-02	23.74	Sum	
	56	1660.69	1.85249E-02	52.72		
	57	1727.88	4.49615E-02	18.71	Sum	
	59	2061.58	9.09950E-03	63.17		
	60	2101.76	4.99560E-02	16.31	S-Esc	
	62	2228.40	5.43939E-03	53.32	Sum	
	63	2445.54	1.69283E-02	29.26		
	65	2674.97	4.82870E-03	52.78	Sum	
	66	2850.20	1.89394E-03	63.93	Sum	

BP/Castex-Ltd Adm-Apx E-001916

Analysis Report for 2206038-14
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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
67	3122.43	2.27778E-03	47.33		
68	3195.89	8.41751E-03	21.39	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	4.88E-01	2.60E+00	2.60E+00
+	NA-22	1274.54		99.94	1.12E-02	1.99E-01	1.99E-01
+	NA-24	1368.53		99.99	2.32E-02	9.34E-02	1.91E-01
		2754.09		99.86	-6.01E-03		9.34E-02
+	AL-26	1808.65		99.76	6.71E-02	1.54E-01	1.54E-01
+	K-40	1460.81	*	10.67	3.69E+00	2.80E+00	2.80E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-8.23E-02	2.28E-01	2.28E-01
		78.34		96.00	5.07E+00		3.06E-01
+	SC-46	889.25		98.98	1.37E-01	2.42E-01	2.42E-01
		1120.51		99.90	2.01E+00		4.06E-01
+	V-48	983.52		99.98	4.09E-02	5.63E-01	5.63E-01
		1312.10		97.50	-2.42E-01		5.70E-01
+	CR-51	320.08		9.83	-1.14E+00	3.33E+00	3.33E+00
+	MN-54	834.83	*	99.97	5.11E-01	3.39E-01	3.39E-01
+	CO-56	846.75		99.96	1.18E-02	2.38E-01	2.38E-01
		1037.75		14.03	-6.71E-01		1.54E+00
		1238.25		67.00	1.16E+00		5.09E-01
		1771.40		15.51	3.38E-02		1.35E+00
		2587.48		16.90	-8.18E-02		6.99E-01
+	CO-57	122.06		85.51	-8.03E-02	2.03E-01	2.03E-01
		136.48		10.60	-1.10E-01		1.72E+00
+	CO-58	810.76	*	99.40	1.66E-01	3.18E-01	3.18E-01
+	FE-59	1099.22	*	56.50	3.07E-01	4.63E-01	4.63E-01
		1291.56		43.20	3.65E-01		6.56E-01
+	CO-60	1173.22		100.00	-3.86E-02	1.78E-01	1.83E-01
		1332.49		100.00	-5.72E-02		1.78E-01

Analysis Report for 2206038-14

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	ZN-65	1115.52		50.75	2.06E+00	6.58E-01	6.58E-01
+	GA-67	93.31	*	35.70	3.74E+02	2.36E+02	2.36E+02
		208.95	*	2.24	8.68E+03		2.72E+03
		300.22		16.00	-7.23E+02		3.56E+02
+	SE-75	121.11		16.70	-2.67E-01	3.25E-01	1.13E+00
		136.00		59.50	-2.12E-02		3.33E-01
		264.65		59.80	2.08E-02		3.25E-01
		279.53		25.20	-6.13E-02		8.35E-01
		400.65		11.40	-2.25E-01		1.81E+00
+	RB-82	776.52		13.00	-1.07E+01	3.40E+00	3.40E+00
+	RB-83	520.41		46.00	-1.54E-01	5.14E-01	5.14E-01
		529.64		30.30	-1.99E-01		7.90E-01
		552.65		16.40	2.05E-01		1.49E+00
+	KR-85	513.99		0.43	-4.88E+00	6.03E+01	6.03E+01
+	SR-85	513.99		99.27	-2.81E-02	3.48E-01	3.48E-01
+	Y-88	898.02		93.40	-1.14E-01	2.04E-01	2.51E-01
		1836.01		99.38	3.02E-02		2.04E-01
+	MO-93	263.06		56.72	3.56E-02	1.89E-01	2.92E-01
		684.67		99.68	5.16E-02		2.15E-01
		1477.11		99.08	1.99E-03		1.89E-01
+	NB-93M	16.57		9.43	0.00E+00	6.92E+00	6.92E+00
+	NB-94	702.63		100.00	1.74E-01	1.84E-01	2.29E-01
		871.10		100.00	7.06E-02		1.84E-01
+	NB-95	765.79		99.81	1.02E+00	4.38E-01	4.38E-01
+	NB-95M	235.69		25.00	-2.31E+00	2.12E+02	2.12E+02
+	ZR-95	724.18		43.70	-3.86E-02	5.47E-01	8.64E-01
		756.72		55.30	2.79E-01		5.47E-01
+	MO-99	181.06		6.20	-3.29E+02	1.23E+03	2.21E+03
		739.58		12.80	1.27E+02		1.23E+03
		778.00		4.50	-9.84E+03		3.53E+03
+	TC-99M	140.51		89.00	-4.79E-02	1.91E-01	1.91E-01
+	RU-103	497.08		89.00	-8.48E-02	3.38E-01	3.38E-01
+	RU-106	621.84		9.80	8.01E-01	2.19E+00	2.19E+00
+	AG-108M	433.93		89.90	3.16E-02	1.91E-01	1.91E-01
		614.37		90.40	-8.70E-02		3.71E-01
		722.95		90.50	8.31E-03		3.10E-01
+	CD-109	88.03	*	3.72	7.08E+01	9.31E+00	9.31E+00
+	AG-110M	657.75		93.14	-8.14E-02	2.43E-01	2.43E-01
		677.61		10.53	-4.66E-01		2.21E+00
		706.67		16.46	1.09E+00		1.50E+00
		763.93		21.98	2.60E-01		1.21E+00
		884.67		21.98	-8.87E-02		9.09E-01
		1384.27		23.94	2.33E-03		8.64E-01
+	CD-113M	263.70		0.02	8.78E+01	7.21E+02	7.21E+02
+	SN-113	255.12		1.93	3.87E+00	3.24E-01	1.02E+01
		391.69		64.90	1.02E-01		3.24E-01
+	TE-123M	159.00		84.10	5.09E-02	2.41E-01	2.41E-01

BP/Castex-Ltd Adm-Apx E-001918

Analysis Report for 2206038-14

R-5 0-6

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		SB-124	602.71		97.87	2.12E-02	3.62E-01	3.62E-01
			645.85		7.26	3.42E-01		3.81E+00
			722.78		11.10	9.16E-02		3.42E+00
			1691.02		49.00	7.56E-03		4.46E-01
+		I-125	35.49		6.49	6.42E+01	9.33E+00	9.33E+00
+		SB-125	176.33		6.89	-2.52E+00	6.15E-01	2.57E+00
			427.89		29.33	1.93E-01		6.15E-01
			463.38		10.35	8.60E+00		2.16E+00
			600.56		17.80	1.81E-01		1.21E+00
			635.90		11.32	6.27E-01		1.81E+00
+		SB-126	414.70		83.30	-3.79E-02	2.17E-01	2.18E-01
			666.33		99.60	3.59E-03		2.23E-01
			695.00		99.60	-1.19E-01		2.17E-01
			720.50		53.80	-1.70E-02		4.36E-01
+		SN-126	87.57	*	37.00	6.84E+00	9.00E-01	9.00E-01
+		SB-127	473.00		25.00	-3.30E+01	6.74E+01	7.70E+01
			685.00		35.70	6.28E+00		6.74E+01
			783.80		14.70	1.81E+02		1.74E+02
+		I-129	29.78		57.00	-3.77E+00	9.19E-02	9.19E-02
			33.60		13.20	7.23E+00		3.20E+00
			39.58		7.52	3.46E+01		5.17E+00
+		I-131	284.30		6.05	-1.49E+01	2.00E+00	2.68E+01
			364.48		81.20	-8.46E-01		2.00E+00
			636.97		7.26	5.41E+00		2.67E+01
			722.89		1.80	4.01E+00		1.50E+02
+		TE-132	49.72		13.10	-4.18E+02	5.62E+01	4.63E+02
			228.16		88.00	-3.52E+01		5.62E+01
+		BA-133	81.00		34.06	-8.43E+00	4.36E-01	7.07E-01
			302.84		18.33	-4.55E-01		1.01E+00
			356.01		62.05	2.63E-02		4.36E-01
+		I-133	529.87		86.30	1.27E+08	2.98E+08	2.98E+08
+		XE-133	81.00		38.00	-2.42E+02	2.03E+01	2.03E+01
+		CS-134	563.23		8.38	1.69E+00	2.99E-01	2.58E+00
			569.32		15.43	-1.39E+00		1.37E+00
			604.70		97.60	-9.29E-03		3.93E-01
			795.84		85.40	8.43E-01		2.99E-01
			801.93		8.73	-7.63E+00		2.40E+00
+		CS-135	268.24	*	16.00	3.97E+00	2.37E+00	2.37E+00
+	@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41		28.60	1.00E+26		1.00E+26
	@		1678.03		9.54	1.00E+26		1.00E+26
+		CS-136	153.22		7.46	-1.29E+00	7.54E-01	9.57E+00
			163.89		4.61	-1.08E+01		1.47E+01
			176.55		13.56	-5.01E+00		5.11E+00
			273.65		12.66	1.03E+01		6.13E+00
			340.57		48.50	1.84E+01		2.15E+00
			818.50		99.70	-1.69E-01		7.54E-01
			1048.07		79.60	1.87E-01		8.52E-01
			1235.34		19.70	1.24E+01		5.25E+00

BP/Castex-Ltd Adm-Apx E-001919

Analysis Report for 2206038-14

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CS-137	661.65	*	85.12	1.41E-01	2.83E-01	2.83E-01
+	LA-138	788.74		34.00	-7.11E-02	2.83E-01	7.26E-01
		1435.80		66.00	9.39E-02		2.83E-01
+	CE-139	165.85		80.35	-8.45E-02	2.43E-01	2.43E-01
+	BA-140	162.64		6.70	4.01E-01	3.25E+00	1.06E+01
		304.84		4.50	-7.52E+00		1.60E+01
		423.70		3.20	7.94E+00		2.33E+01
		437.55		2.00	-1.32E+01		3.51E+01
		537.32		25.00	-4.26E-01		3.25E+00
+	LA-140	328.77		20.50	9.98E+00	9.70E-01	4.07E+00
		487.03		45.50	5.64E-01		1.78E+00
		815.85		23.50	-7.86E-01		3.28E+00
		1596.49		95.49	1.65E-01		9.70E-01
+	CE-141	145.44		48.40	-3.55E-01	6.21E-01	6.21E-01
+	CE-143	57.36		11.80	-8.81E+05	3.34E+05	1.02E+06
		293.26		42.00	2.21E+06		3.34E+05
		664.55		5.20	3.44E+04		2.34E+06
+	CE-144	133.54		10.80	9.07E-02	1.75E+00	1.75E+00
+	PM-144	476.78		42.00	9.05E-02	2.21E-01	4.81E-01
		618.01		98.60	-4.46E-02		2.21E-01
		696.49		99.49	-9.29E-02		2.32E-01
+	PM-145	36.85		21.70	1.66E+01	1.10E+00	1.99E+00
		37.36		39.70	9.54E+00		1.10E+00
		42.30		15.10	1.89E+00		2.14E+00
		72.40		2.31	5.07E+01		1.22E+01
+	PM-146	453.90		39.94	1.00E-01	4.39E-01	4.39E-01
		735.90		14.01	-3.63E-02		1.54E+00
		747.13		13.10	-2.87E-01		1.59E+00
+	ND-147	91.11	*	28.90	9.14E+00	5.77E+00	5.77E+00
		531.02		13.10	1.54E+00		7.84E+00
+	PM-149	285.90		3.10	-1.14E+04	2.04E+04	2.04E+04
+	EU-152	121.78		20.50	-1.88E-01	7.94E-01	7.94E-01
		244.69		5.40	-3.05E+01		4.84E+00
		344.27		19.13	-2.84E+01		9.65E-01
		778.89		9.10	-3.79E+00		2.38E+00
		964.01		10.40	2.96E+01		4.13E+00
		1085.78		7.22	-1.46E+00		2.32E+00
		1112.02		9.60	-1.76E+01		2.20E+00
		1407.95		14.94	1.82E+00		1.45E+00
+	GD-153	97.43		31.30	-1.30E+00	6.07E-01	6.07E-01
		103.18		22.20	8.12E-01		8.15E-01
+	EU-154	123.07		40.50	-1.47E-01	4.09E-01	4.09E-01
		723.30		19.70	3.84E-02		1.43E+00
		873.19		11.50	1.49E-01		1.61E+00
		996.32		10.30	6.02E-01		1.79E+00
		1004.76		17.90	4.72E-01		1.01E+00
		1274.45		35.50	3.12E-02		5.51E-01
+	EU-155	86.50	*	30.90	8.28E+00	9.16E-01	1.09E+00
		105.30	*	20.70	7.61E-01		9.16E-01

Analysis Report for 2206038-14

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	EU-156	811.77	*	10.40	4.08E+00	7.08E+00	7.79E+00
		1153.47	*	7.20	6.34E+00		1.07E+01
		1230.71		8.90	-7.87E-01		7.08E+00
+	HO-166M	184.41		72.60	3.53E-03	2.70E-01	2.70E-01
		280.45		29.60	-1.52E-01		6.08E-01
		410.94		11.10	1.72E-01		1.74E+00
		711.69		54.10	-3.14E-01		4.02E-01
+	TM-171	66.72		0.14	-1.40E+01	1.58E+02	1.58E+02
+	HF-172	67.35		5.31	-1.51E+00	1.57E+00	4.18E+00
		125.82		11.30	-3.37E-01		1.57E+00
+	LU-172	181.53		20.60	-2.01E+00	4.49E+00	1.35E+01
		900.72		29.81	-5.85E+00		1.02E+01
		1093.66		62.50	8.35E-01		4.49E+00
+	LU-173	100.72	*	5.24	2.10E+00	1.85E+00	2.91E+00
		272.11	*	21.20	3.11E+00		1.85E+00
+	HF-175	343.40		84.00	-3.38E+00	3.18E-01	3.18E-01
+	LU-176	88.34		13.30	1.30E+01	1.81E-01	1.71E+00
		201.83		86.00	-4.28E-02		2.15E-01
		306.78		94.00	-8.20E-02		1.81E-01
+	HF-181	133.02		41.70	3.38E-02	3.59E-01	6.51E-01
		345.85		17.20	-4.28E+01		1.84E+00
		482.03		82.80	2.87E-02		3.59E-01
+	TA-182	67.75		41.20	-2.21E-01	6.13E-01	6.13E-01
		1121.30		34.90	5.40E+00		1.10E+00
		1189.05		16.23	-4.07E-01		1.22E+00
		1221.41		26.98	-2.22E-01		7.35E-01
		1231.02		11.44	-1.20E-01		2.20E+00
+	IR-192	308.46		29.68	-7.34E-01	4.85E-01	7.20E-01
		468.07		48.10	-6.34E-02		4.85E-01
+	HG-203	279.19	*	77.30	8.02E-01	7.37E-01	7.37E-01
+	TL-204	374.74	*	94.11	9.39E-02	1.87E-01	1.87E-01
		899.15		99.16	-1.26E-01		2.06E-01
		911.74	*	91.10	5.45E+00		3.86E-01
+	BI-207	569.67	*	97.72	1.74E-01	2.45E-01	4.88E-01
		1063.62		74.90	-3.86E-02		2.45E-01
+	TL-208	583.14	*	30.22	1.46E+01	5.26E-01	1.62E+00
		860.37	*	4.48	1.77E+01		7.38E+00
		2614.66	*	35.85	1.19E+01		5.26E-01
+	BI-210M	262.00		45.00	2.49E-02	3.64E-01	3.64E-01
		300.00		23.00	-1.90E+00		9.35E-01
+	PB-210	46.50		4.25	-2.09E+01	5.88E+00	5.88E+00
+	PB-211	404.84		2.90	-9.97E-01	6.54E+00	6.54E+00
		831.96		2.90	1.10E+00		7.80E+00
+	BI-212	727.17	*	11.80	9.13E+00	2.67E+00	2.67E+00
		1620.62	*	2.75	9.87E+00		9.47E+00
+	PB-212	238.63	*	44.60	2.07E+01	8.01E-01	8.01E-01
		300.09		3.41	-1.28E+01		6.31E+00
+	BI-214	609.31	*	46.30	1.00E+01	7.01E-01	7.01E-01

BP/Castex-Ltd Adm-Apx E-001921

Analysis Report for 2206038-14

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BI-214	1120.29	*	15.10	1.11E+01	7.01E-01	2.89E+00
		1764.49	*	15.80	1.24E+01		1.75E+00
		2204.22	*	4.98	1.01E+01		4.80E+00
+	PB-214	295.21	*	19.19	1.40E+01	7.52E-01	1.77E+00
		351.92	*	37.19	1.16E+01		7.52E-01
+	RN-219	401.80		6.50	-4.66E-01	2.74E+00	2.74E+00
+	RA-223	323.87		3.88	-4.12E-01	4.92E+00	4.92E+00
+	RA-224	240.98	*	3.95	2.33E+02	9.04E+00	9.04E+00
+	RA-225	40.00		31.00	1.55E+01	4.13E+00	4.13E+00
+	RA-226	186.21	*	3.28	1.45E+01	7.06E+00	7.06E+00
+	TH-227	50.10		8.40	-1.80E+00	2.67E+00	2.73E+00
		236.00		11.50	5.27E+01		3.18E+00
		256.20		6.30	1.70E+00		2.67E+00
+	AC-228	338.32	*	11.40	1.96E+01	1.25E+00	2.51E+00
		911.07	*	27.70	1.77E+01		1.25E+00
		969.11	*	16.60	2.50E+01		1.89E+00
+	TH-230	48.43		16.90	-1.78E+00	1.40E+00	1.40E+00
		62.85		4.60	5.70E+00		4.70E+00
		67.67		0.37	-2.10E+01		5.83E+01
+	PA-231	283.67		1.60	-5.53E+00	8.31E+00	1.06E+01
		302.67		2.30	-1.32E+00		8.31E+00
+	TH-231	25.64		14.70	0.00E+00	1.13E-01	1.13E-01
		84.21		6.40	-5.10E+01		3.34E+00
+	PA-233	311.98		38.60	5.67E-02	8.49E-01	8.49E-01
+	PA-234	131.20	*	20.40	2.24E+00	1.14E+00	1.14E+00
		733.99		8.80	-1.50E+00		2.48E+00
		946.00		12.00	-1.19E-01		1.47E+00
+	PA-234M	1001.03		0.92	5.04E-01	1.96E+01	1.96E+01
+	TH-234	63.29		3.80	3.21E+00	5.72E+00	5.72E+00
+	U-235	143.76		10.50	-8.54E-01	1.63E+00	1.63E+00
		163.35		4.70	-8.83E-01		3.65E+00
		205.31		4.70	-1.68E+00		4.19E+00
+	NP-237	86.50	*	12.60	2.01E+01	2.64E+00	2.64E+00
+	NP-239	106.10	*	22.70	1.55E+03	1.87E+03	1.87E+03
		228.18		10.70	-2.46E+03		3.93E+03
		277.60	*	14.10	6.73E+03		6.19E+03
+	AM-241	59.54		35.90	-1.48E-01	5.99E-01	5.99E-01
+	AM-243	74.67	*	66.00	9.33E+00	5.60E-01	5.60E-01
+	CM-243	209.75	*	3.29	2.24E+01	1.76E+00	7.02E+00
		228.14		10.60	-1.10E+00		1.76E+00
		277.60	*	14.00	3.00E+00		2.76E+00

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

Analysis Report for 2206038-14

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NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	2.60E+00	2.60E+00	4.88E-01	1.28E+00
	NA-22	1274.54		99.94	1.99E-01	1.99E-01	1.12E-02	9.60E-02
	NA-24	1368.53		99.99	1.91E-01	9.34E-02	2.32E-02	9.19E-02
		2754.09		99.86	9.34E-02		-6.01E-03	4.14E-02
	AL-26	1808.65		99.76	1.54E-01	1.54E-01	6.71E-02	7.28E-02
+	K-40	1460.81	*	10.67	2.80E+00	2.80E+00	3.69E+00	1.37E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	2.28E-01	2.28E-01	-8.23E-02	1.13E-01
		78.34		96.00	3.06E-01		5.07E+00	1.53E-01
	SC-46	889.25		98.98	2.42E-01	2.42E-01	1.37E-01	1.18E-01
		1120.51		99.90	4.06E-01		2.01E+00	2.00E-01
	V-48	983.52		99.98	5.63E-01	5.63E-01	4.09E-02	2.73E-01
		1312.10		97.50	5.70E-01		-2.42E-01	2.75E-01
	CR-51	320.08		9.83	3.33E+00	3.33E+00	-1.14E+00	1.64E+00
+	MN-54	834.83	*	99.97	3.39E-01	3.39E-01	5.11E-01	1.67E-01
	CO-56	846.75		99.96	2.38E-01	2.38E-01	1.18E-02	1.16E-01
		1037.75		14.03	1.54E+00		-6.71E-01	7.47E-01
		1238.25		67.00	5.09E-01		1.16E+00	2.48E-01
		1771.40		15.51	1.35E+00		3.38E-02	6.38E-01
		2587.48		16.90	6.99E-01		-8.18E-02	3.10E-01
	CO-57	122.06		85.51	2.03E-01	2.03E-01	-8.03E-02	1.01E-01
		136.48		10.60	1.72E+00		-1.10E-01	8.55E-01
	CO-58	810.76	*	99.40	3.18E-01	3.18E-01	1.66E-01	1.56E-01
+	FE-59	1099.22	*	56.50	4.63E-01	4.63E-01	3.07E-01	2.24E-01
		1291.56		43.20	6.56E-01		3.65E-01	3.17E-01
	CO-60	1173.22		100.00	1.83E-01	1.78E-01	-3.86E-02	8.87E-02
		1332.49		100.00	1.78E-01		-5.72E-02	8.59E-02
	ZN-65	1115.52		50.75	6.58E-01	6.58E-01	2.06E+00	3.23E-01
+	GA-67	93.31	*	35.70	2.36E+02	2.36E+02	3.74E+02	1.17E+02
		208.95	*	2.24	2.72E+03		8.68E+03	1.35E+03
		300.22		16.00	3.56E+02		-7.23E+02	1.76E+02
	SE-75	121.11		16.70	1.13E+00	3.25E-01	-2.67E-01	5.60E-01
		136.00		59.50	3.33E-01		-2.12E-02	1.65E-01
		264.65		59.80	3.25E-01		2.08E-02	1.61E-01
		279.53		25.20	8.35E-01		-6.13E-02	4.13E-01
		400.65		11.40	1.81E+00		-2.25E-01	8.93E-01

Analysis Report for 2206038-14

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	RB-82	776.52		13.00	3.40E+00	3.40E+00	-1.07E+01	1.67E+00
	RB-83	520.41		46.00	5.14E-01	5.14E-01	-1.54E-01	2.53E-01
		529.64		30.30	7.90E-01		-1.99E-01	3.89E-01
		552.65		16.40	1.49E+00		2.05E-01	7.35E-01
	KR-85	513.99		0.43	6.03E+01	6.03E+01	-4.88E+00	2.98E+01
	SR-85	513.99		99.27	3.48E-01	3.48E-01	-2.81E-02	1.72E-01
	Y-88	898.02		93.40	2.51E-01	2.04E-01	-1.14E-01	1.23E-01
		1836.01		99.38	2.04E-01		3.02E-02	9.71E-02
	MO-93	263.06		56.72	2.92E-01	1.89E-01	3.56E-02	1.44E-01
		684.67		99.68	2.15E-01		5.16E-02	1.06E-01
		1477.11		99.08	1.89E-01		1.99E-03	9.07E-02
	NB-93M	16.57		9.43	6.92E+00	6.92E+00	0.00E+00	0.00E+00
	NB-94	702.63		100.00	2.29E-01	1.84E-01	1.74E-01	1.13E-01
		871.10		100.00	1.84E-01		7.06E-02	8.96E-02
	NB-95	765.79		99.81	4.38E-01	4.38E-01	1.02E+00	2.16E-01
	NB-95M	235.69		25.00	2.12E+02	2.12E+02	-2.31E+00	1.06E+02
	ZR-95	724.18		43.70	8.64E-01	5.47E-01	-3.86E-02	4.26E-01
		756.72		55.30	5.47E-01		2.79E-01	2.68E-01
	MO-99	181.06		6.20	2.21E+03	1.23E+03	-3.29E+02	1.10E+03
		739.58		12.80	1.23E+03		1.27E+02	6.04E+02
		778.00		4.50	3.53E+03		-9.84E+03	1.73E+03
	TC-99M	140.51		89.00	1.91E-01	1.91E-01	-4.79E-02	9.48E-02
	RU-103	497.08		89.00	3.38E-01	3.38E-01	-8.48E-02	1.66E-01
	RU-106	621.84		9.80	2.19E+00	2.19E+00	8.01E-01	1.08E+00
	AG-108M	433.93		89.90	1.91E-01	1.91E-01	3.16E-02	9.39E-02
		614.37		90.40	3.71E-01		-8.70E-02	1.84E-01
		722.95		90.50	3.10E-01		8.31E-03	1.53E-01
	CD-109	88.03	*	3.72	9.31E+00	9.31E+00	7.08E+01	4.64E+00
	AG-110M	657.75		93.14	2.43E-01	2.43E-01	-8.14E-02	1.19E-01
		677.61		10.53	2.21E+00		-4.66E-01	1.09E+00
		706.67		16.46	1.50E+00		1.09E+00	7.37E-01
		763.93		21.98	1.21E+00		2.60E-01	5.95E-01
		884.67		21.98	9.09E-01		-8.87E-02	4.43E-01
		1384.27		23.94	8.64E-01		2.33E-03	4.17E-01
	CD-113M	263.70		0.02	7.21E+02	7.21E+02	8.78E+01	3.57E+02
	SN-113	255.12		1.93	1.02E+01	3.24E-01	3.87E+00	5.03E+00
		391.69		64.90	3.24E-01		1.02E-01	1.60E-01
	TE-123M	159.00		84.10	2.41E-01	2.41E-01	5.09E-02	1.19E-01
	SB-124	602.71		97.87	3.62E-01	3.62E-01	2.12E-02	1.78E-01
		645.85		7.26	3.81E+00		3.42E-01	1.87E+00
		722.78		11.10	3.42E+00		9.16E-02	1.69E+00
		1691.02		49.00	4.46E-01		7.56E-03	2.12E-01
	I-125	35.49		6.49	9.33E+00	9.33E+00	6.42E+01	4.62E+00
	SB-125	176.33		6.89	2.57E+00	6.15E-01	-2.52E+00	1.27E+00
		427.89		29.33	6.15E-01		1.93E-01	3.03E-01
		463.38		10.35	2.16E+00		8.60E+00	1.07E+00
		600.56		17.80	1.21E+00		1.81E-01	5.95E-01
		635.90		11.32	1.81E+00		6.27E-01	8.89E-01
	SB-126	414.70		83.30	2.18E-01	2.17E-01	-3.79E-02	1.07E-01
		666.33		99.60	2.23E-01		3.59E-03	1.09E-01
		695.00		99.60	2.17E-01		-1.19E-01	1.07E-01
		720.50		53.80	4.36E-01		-1.70E-02	2.14E-01
+	SN-126	87.57	*	37.00	9.00E-01	9.00E-01	6.84E+00	4.48E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	SB-127	473.00		25.00	7.70E+01	6.74E+01	-3.30E+01	3.79E+01
		685.00		35.70	6.74E+01		6.28E+00	3.31E+01
		783.80		14.70	1.74E+02		1.81E+02	8.55E+01
	I-129	29.78		57.00	9.19E-02	9.19E-02	-3.77E+00	3.91E-02
		33.60		13.20	3.20E+00		7.23E+00	1.58E+00
		39.58		7.52	5.17E+00		3.46E+01	2.57E+00
	I-131	284.30		6.05	2.68E+01	2.00E+00	-1.49E+01	1.32E+01
		364.48		81.20	2.00E+00		-8.46E-01	9.87E-01
		636.97		7.26	2.67E+01		5.41E+00	1.31E+01
		722.89		1.80	1.50E+02		4.01E+00	7.38E+01
	TE-132	49.72		13.10	4.63E+02	5.62E+01	-4.18E+02	2.30E+02
		228.16		88.00	5.62E+01		-3.52E+01	2.79E+01
	BA-133	81.00		34.06	7.07E-01	4.36E-01	-8.43E+00	3.52E-01
		302.84		18.33	1.01E+00		-4.55E-01	5.02E-01
		356.01		62.05	4.36E-01		2.63E-02	2.16E-01
	I-133	529.87		86.30	2.98E+08	2.98E+08	1.27E+08	1.47E+08
	XE-133	81.00		38.00	2.03E+01	2.03E+01	-2.42E+02	1.01E+01
	CS-134	563.23		8.38	2.58E+00	2.99E-01	1.69E+00	1.27E+00
		569.32		15.43	1.37E+00		-1.39E+00	6.72E-01
		604.70		97.60	3.93E-01		-9.29E-03	1.95E-01
		795.84		85.40	2.99E-01		8.43E-01	1.47E-01
		801.93		8.73	2.40E+00		-7.63E+00	1.17E+00
	CS-135	268.24	*	16.00	2.37E+00	2.37E+00	3.97E+00	1.18E+00
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	9.57E+00	7.54E-01	-1.29E+00	4.75E+00
		163.89		4.61	1.47E+01		-1.08E+01	7.30E+00
		176.55		13.56	5.11E+00		-5.01E+00	2.53E+00
		273.65		12.66	6.13E+00		1.03E+01	3.04E+00
		340.57		48.50	2.15E+00		1.84E+01	1.07E+00
		818.50		99.70	7.54E-01		-1.69E-01	3.68E-01
		1048.07		79.60	8.52E-01		1.87E-01	4.12E-01
		1235.34		19.70	5.25E+00		1.24E+01	2.56E+00
+	CS-137	661.65	*	85.12	2.83E-01	2.83E-01	1.41E-01	1.39E-01
	LA-138	788.74		34.00	7.26E-01	2.83E-01	-7.11E-02	3.56E-01
		1435.80		66.00	2.83E-01		9.39E-02	1.36E-01
	CE-139	165.85		80.35	2.43E-01	2.43E-01	-8.45E-02	1.21E-01
	BA-140	162.64		6.70	1.06E+01	3.25E+00	4.01E-01	5.27E+00
		304.84		4.50	1.60E+01		-7.52E+00	7.91E+00
		423.70		3.20	2.33E+01		7.94E+00	1.15E+01
		437.55		2.00	3.51E+01		-1.32E+01	1.73E+01
		537.32		25.00	3.25E+00		-4.26E-01	1.60E+00
	LA-140	328.77		20.50	4.07E+00	9.70E-01	9.98E+00	2.01E+00
		487.03		45.50	1.78E+00		5.64E-01	8.78E-01
		815.85		23.50	3.28E+00		-7.86E-01	1.60E+00
		1596.49		95.49	9.70E-01		1.65E-01	4.69E-01
	CE-141	145.44		48.40	6.21E-01	6.21E-01	-3.55E-01	3.08E-01
	CE-143	57.36		11.80	1.02E+06	3.34E+05	-8.81E+05	5.05E+05
		293.26		42.00	3.34E+05		2.21E+06	1.66E+05
		664.55		5.20	2.34E+06		3.44E+04	1.15E+06
	CE-144	133.54		10.80	1.75E+00	1.75E+00	9.07E-02	8.67E-01
	PM-144	476.78		42.00	4.81E-01	2.21E-01	9.05E-02	2.37E-01

Analysis Report for 2206038-14

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PM-144	618.01		98.60	2.21E-01	2.21E-01	-4.46E-02	1.09E-01
		696.49		99.49	2.32E-01		-9.29E-02	1.14E-01
	PM-145	36.85		21.70	1.99E+00	1.10E+00	1.66E+01	9.87E-01
		37.36		39.70	1.10E+00		9.54E+00	5.47E-01
		42.30		15.10	2.14E+00		1.89E+00	1.06E+00
		72.40		2.31	1.22E+01		5.07E+01	6.09E+00
	PM-146	453.90		39.94	4.39E-01	4.39E-01	1.00E-01	2.16E-01
		735.90		14.01	1.54E+00		-3.63E-02	7.55E-01
		747.13		13.10	1.59E+00		-2.87E-01	7.80E-01
	ND-147	91.11	*	28.90	5.77E+00	5.77E+00	9.14E+00	2.88E+00
		531.02		13.10	7.84E+00		1.54E+00	3.86E+00
	PM-149	285.90		3.10	2.04E+04	2.04E+04	-1.14E+04	1.01E+04
	EU-152	121.78		20.50	7.94E-01	7.94E-01	-1.88E-01	3.94E-01
		244.69		5.40	4.84E+00		-3.05E+01	2.41E+00
		344.27		19.13	9.65E-01		-2.84E+01	4.77E-01
		778.89		9.10	2.38E+00		-3.79E+00	1.17E+00
		964.01		10.40	4.13E+00		2.96E+01	2.04E+00
		1085.78		7.22	2.32E+00		-1.46E+00	1.12E+00
		1112.02		9.60	2.20E+00		-1.76E+01	1.07E+00
		1407.95		14.94	1.45E+00		1.82E+00	7.01E-01
	GD-153	97.43		31.30	6.07E-01	6.07E-01	-1.30E+00	3.02E-01
		103.18		22.20	8.15E-01		8.12E-01	4.05E-01
	EU-154	123.07		40.50	4.09E-01	4.09E-01	-1.47E-01	2.03E-01
		723.30		19.70	1.43E+00		3.84E-02	7.06E-01
		873.19		11.50	1.61E+00		1.49E-01	7.82E-01
		996.32		10.30	1.79E+00		6.02E-01	8.68E-01
		1004.76		17.90	1.01E+00		4.72E-01	4.92E-01
		1274.45		35.50	5.51E-01		3.12E-02	2.67E-01
+	EU-155	86.50	*	30.90	1.09E+00	9.16E-01	8.28E+00	5.42E-01
		105.30	*	20.70	9.16E-01		7.61E-01	4.55E-01
+	EU-156	811.77	*	10.40	7.79E+00	7.08E+00	4.08E+00	3.82E+00
		1153.47	*	7.20	1.07E+01		6.34E+00	5.23E+00
		1230.71		8.90	7.08E+00		-7.87E-01	3.42E+00
	HO-166M	184.41		72.60	2.70E-01	2.70E-01	3.53E-03	1.34E-01
		280.45		29.60	6.08E-01		-1.52E-01	3.01E-01
		410.94		11.10	1.74E+00		1.72E-01	8.59E-01
		711.69		54.10	4.02E-01		-3.14E-01	1.98E-01
	TM-171	66.72		0.14	1.58E+02	1.58E+02	-1.40E+01	7.87E+01
	HF-172	67.35		5.31	4.18E+00	1.57E+00	-1.51E+00	2.08E+00
		125.82		11.30	1.57E+00		-3.37E-01	7.78E-01
	LU-172	181.53		20.60	1.35E+01	4.49E+00	-2.01E+00	6.71E+00
		900.72		29.81	1.02E+01		-5.85E+00	5.00E+00
		1093.66		62.50	4.49E+00		8.35E-01	2.18E+00
+	LU-173	100.72	*	5.24	2.91E+00	1.85E+00	2.10E+00	1.44E+00
		272.11	*	21.20	1.85E+00		3.11E+00	9.22E-01
	HF-175	343.40		84.00	3.18E-01	3.18E-01	-3.38E+00	1.57E-01
	LU-176	88.34		13.30	1.71E+00	1.81E-01	1.30E+01	8.50E-01
		201.83		86.00	2.15E-01		-4.28E-02	1.07E-01
		306.78		94.00	1.81E-01		-8.20E-02	8.92E-02
	HF-181	133.02		41.70	6.51E-01	3.59E-01	3.38E-02	3.23E-01
		345.85		17.20	1.84E+00		-4.28E+01	9.10E-01
		482.03		82.80	3.59E-01		2.87E-02	1.77E-01
	TA-182	67.75		41.20	6.13E-01	6.13E-01	-2.21E-01	3.05E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TA-182	1121.30		34.90	1.10E+00	6.13E-01	5.40E+00	5.41E-01
		1189.05		16.23	1.22E+00		-4.07E-01	5.87E-01
		1221.41		26.98	7.35E-01		-2.22E-01	3.54E-01
		1231.02		11.44	2.20E+00		-1.20E-01	1.07E+00
	IR-192	308.46		29.68	7.20E-01	4.85E-01	-7.34E-01	3.56E-01
		468.07		48.10	4.85E-01		-6.34E-02	2.39E-01
	HG-203	279.19	*	77.30	7.37E-01	7.37E-01	8.02E-01	3.67E-01
	TL-204	374.74	*	94.11	1.87E-01	1.87E-01	9.39E-02	9.21E-02
		899.15		99.16	2.06E-01		-1.26E-01	1.00E-01
		911.74	*	91.10	3.86E-01		5.45E+00	1.91E-01
+	BI-207	569.67	*	97.72	4.88E-01	2.45E-01	1.74E-01	2.42E-01
		1063.62		74.90	2.45E-01		-3.86E-02	1.19E-01
+	TL-208	583.14	*	30.22	1.62E+00	5.26E-01	1.46E+01	8.04E-01
		860.37	*	4.48	7.38E+00		1.77E+01	3.64E+00
		2614.66	*	35.85	5.26E-01		1.19E+01	2.48E-01
	BI-210M	262.00		45.00	3.64E-01	3.64E-01	2.49E-02	1.80E-01
		300.00		23.00	9.35E-01		-1.90E+00	4.63E-01
	PB-210	46.50		4.25	5.88E+00	5.88E+00	-2.09E+01	2.92E+00
	PB-211	404.84		2.90	6.54E+00	6.54E+00	-9.97E-01	3.23E+00
		831.96		2.90	7.80E+00		1.10E+00	3.82E+00
+	BI-212	727.17	*	11.80	2.67E+00	2.67E+00	9.13E+00	1.32E+00
		1620.62	*	2.75	9.47E+00		9.87E+00	4.59E+00
+	PB-212	238.63	*	44.60	8.01E-01	8.01E-01	2.07E+01	3.99E-01
		300.09		3.41	6.31E+00		-1.28E+01	3.12E+00
+	BI-214	609.31	*	46.30	7.01E-01	7.01E-01	1.00E+01	3.47E-01
		1120.29	*	15.10	2.89E+00		1.11E+01	1.43E+00
		1764.49	*	15.80	1.75E+00		1.24E+01	8.50E-01
		2204.22	*	4.98	4.80E+00		1.01E+01	2.30E+00
+	PB-214	295.21	*	19.19	1.77E+00	7.52E-01	1.40E+01	8.78E-01
		351.92	*	37.19	7.52E-01		1.16E+01	3.73E-01
	RN-219	401.80		6.50	2.74E+00	2.74E+00	-4.66E-01	1.35E+00
	RA-223	323.87		3.88	4.92E+00	4.92E+00	-4.12E-01	2.43E+00
+	RA-224	240.98	*	3.95	9.04E+00	9.04E+00	2.33E+02	4.50E+00
	RA-225	40.00		31.00	4.13E+00	4.13E+00	1.55E+01	2.05E+00
+	RA-226	186.21	*	3.28	7.06E+00	7.06E+00	1.45E+01	3.51E+00
	TH-227	50.10		8.40	2.73E+00	2.67E+00	-1.80E+00	1.35E+00
		236.00		11.50	3.18E+00		5.27E+01	1.58E+00
		256.20		6.30	2.67E+00		1.70E+00	1.32E+00
+	AC-228	338.32	*	11.40	2.51E+00	1.25E+00	1.96E+01	1.24E+00
		911.07	*	27.70	1.25E+00		1.77E+01	6.18E-01
		969.11	*	16.60	1.89E+00		2.50E+01	9.31E-01
	TH-230	48.43		16.90	1.40E+00	1.40E+00	-1.78E+00	6.93E-01
		62.85		4.60	4.70E+00		5.70E+00	2.34E+00
		67.67		0.37	5.83E+01		-2.10E+01	2.90E+01
	PA-231	283.67		1.60	1.06E+01	8.31E+00	-5.53E+00	5.26E+00
		302.67		2.30	8.31E+00		-1.32E+00	4.11E+00
	TH-231	25.64		14.70	1.13E-01	1.13E-01	0.00E+00	0.00E+00
		84.21		6.40	3.34E+00		-5.10E+01	1.66E+00
	PA-233	311.98		38.60	8.49E-01	8.49E-01	5.67E-02	4.20E-01
+	PA-234	131.20	*	20.40	1.14E+00	1.14E+00	2.24E+00	5.66E-01
		733.99		8.80	2.48E+00		-1.50E+00	1.22E+00
		946.00		12.00	1.47E+00		-1.19E-01	7.12E-01
	PA-234M	1001.03		0.92	1.96E+01	1.96E+01	5.04E-01	9.49E+00

Analysis Report for 2206038-14

R-5 0-6

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TH-234	63.29		3.80	5.72E+00	5.72E+00	3.21E+00	2.84E+00
	U-235	143.76		10.50	1.63E+00	1.63E+00	-8.54E-01	8.08E-01
		163.35		4.70	3.65E+00		-8.83E-01	1.81E+00
		205.31		4.70	4.19E+00		-1.68E+00	2.08E+00
	NP-237	86.50	*	12.60	2.64E+00	2.64E+00	2.01E+01	1.32E+00
	NP-239	106.10	*	22.70	1.87E+03	1.87E+03	1.55E+03	9.30E+02
		228.18		10.70	3.93E+03		-2.46E+03	1.95E+03
		277.60	*	14.10	6.19E+03		6.73E+03	3.08E+03
	AM-241	59.54		35.90	5.99E-01	5.99E-01	-1.48E-01	2.98E-01
+	AM-243	74.67	*	66.00	5.60E-01	5.60E-01	9.33E+00	2.79E-01
+	CM-243	209.75	*	3.29	7.02E+00	1.76E+00	2.24E+01	3.49E+00
		228.14		10.60	1.76E+00		-1.10E+00	8.70E-01
		277.60	*	14.00	2.76E+00		3.00E+00	1.37E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

Analysis Report for 2206038-14

R-5 0-6

BP/Castex-Ltd Adm-Apx E-001929

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: R-5 0-6

Elapsed Live time: 3600
Elapsed Real Time: 3609

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	2	9
33:	560	689	666	636	728	956	772	608
41:	585	596	595	567	612	654	595	587
49:	681	671	754	726	774	788	741	868
57:	948	953	1046	1026	1128	1082	1123	1190
65:	1175	1161	1236	1199	1331	1318	1496	2194
73:	3176	3915	4275	4347	2914	1693	1104	1015
81:	1034	1166	1264	1392	1863	2141	1909	1808
89:	1652	1442	1358	1485	1286	959	818	866
97:	819	999	893	829	804	819	915	972
105:	926	890	879	856	840	798	715	783
113:	788	801	764	821	788	744	797	688
121:	773	803	766	770	829	939	1019	1089
129:	1010	861	826	783	775	818	779	786
137:	753	767	762	786	697	765	715	783
145:	739	723	793	740	776	785	790	812
153:	824	754	730	740	664	716	658	627
161:	735	669	623	621	660	628	610	636
169:	665	661	605	587	575	643	637	627
177:	622	616	662	654	632	695	673	874
185:	975	842	704	630	635	611	597	631
193:	605	598	599	594	593	655	614	569
201:	570	574	585	559	575	679	824	972
209:	847	631	564	507	512	526	580	486
217:	496	523	520	524	490	481	519	475
225:	496	472	503	499	503	531	536	499
233:	515	631	1116	2558	4422	4146	2476	1638
241:	1150	766	523	442	372	400	348	364
249:	355	341	377	347	375	317	357	360
257:	314	343	337	312	317	301	302	314
265:	334	338	398	531	577	491	343	364
273:	324	340	387	467	434	371	337	277
281:	289	284	293	257	307	341	305	309
289:	309	301	374	588	1049	1390	908	533
297:	440	451	471	411	293	282	267	282
305:	257	242	266	272	269	219	264	248
313:	259	249	248	252	240	251	238	276
321:	251	251	265	292	361	427	471	376
329:	302	291	289	259	270	309	504	902
337:	1177	886	444	314	253	242	225	225
345:	203	216	262	411	943	1746	1880	1127
353:	474	259	241	235	231	244	200	208
361:	189	221	201	225	205	195	195	180

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369:	216	191	187	200	183	200	252	230

Sample Title: R-5 0-6

Channel								
377:	202	190	177	202	196	222	193	214
385:	184	222	206	220	192	210	204	215
393:	188	192	213	190	195	192	203	195
401:	165	193	192	202	214	242	258	295
409:	252	188	193	178	206	173	182	194
417:	155	185	191	195	162	185	186	191
425:	192	149	175	161	182	157	165	153
433:	150	165	158	129	166	130	165	155
441:	148	166	145	154	164	178	140	146
449:	158	139	168	159	160	155	146	134
457:	144	158	167	266	398	356	283	179
465:	151	150	123	142	144	107	149	148
473:	125	151	134	123	135	144	158	136
481:	137	136	143	146	136	138	147	126
489:	144	133	151	121	103	150	108	136
497:	117	124	138	120	123	129	126	127
505:	155	167	251	403	479	442	258	198
513:	140	121	122	109	130	115	120	137
521:	111	139	102	116	122	121	129	121
529:	114	119	119	123	129	134	104	118
537:	121	114	114	113	119	119	118	133
545:	120	134	132	122	119	110	129	115
553:	103	113	107	98	116	117	127	134
561:	159	154	140	140	127	86	105	109
569:	128	141	118	113	106	124	130	119
577:	160	179	266	612	1143	1152	612	283
585:	146	134	128	108	100	118	95	112
593:	105	117	103	118	117	107	113	109
601:	103	102	130	151	265	627	1073	1204
609:	722	303	150	115	101	114	105	91
617:	99	104	103	128	100	100	98	91
625:	104	101	76	90	98	101	93	89
633:	96	86	105	97	104	79	102	89
641:	101	88	85	91	91	111	82	108
649:	103	98	93	87	99	81	90	98
657:	95	101	89	107	111	118	114	114
665:	96	98	93	96	114	109	108	116
673:	108	99	100	91	86	90	113	88
681:	86	89	107	98	97	89	93	86
689:	84	96	89	100	88	98	85	93
697:	82	107	112	112	113	112	120	110
705:	82	102	86	94	106	98	80	86
713:	94	91	87	86	105	86	99	82
721:	91	122	111	187	291	284	183	144
729:	87	97	79	84	79	80	59	81
737:	82	85	85	104	93	71	70	80
745:	70	70	79	58	90	66	84	106
753:	115	125	97	82	82	64	59	86
761:	90	94	83	98	122	158	161	142
769:	131	111	117	86	73	74	68	51
777:	61	64	79	76	106	88	105	118
785:	79	70	74	68	53	71	114	149
793:	186	144	105	83	55	74	62	53

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801:	53	65	68	82	67	58	65	73

Sample Title: R-5 0-6

Channel								
809:	64	58	42	40	47	66	49	49
817:	66	49	63	47	60	53	58	50
825:	63	51	67	73	55	61	56	72
833:	111	106	100	79	81	81	55	63
841:	58	37	47	39	53	51	56	59
849:	36	47	42	44	47	52	52	63
857:	123	151	167	105	65	60	45	45
865:	38	49	47	42	60	42	36	50
873:	56	39	43	45	38	43	55	36
881:	37	44	52	44	44	52	50	42
889:	49	49	52	51	48	58	34	46
897:	42	59	48	41	56	70	70	51
905:	57	89	251	652	919	715	358	123
913:	65	59	53	46	47	49	36	35
921:	37	37	45	36	48	50	25	40
929:	56	61	67	82	76	43	43	26
937:	39	32	32	33	38	38	34	36
945:	47	34	26	38	34	38	42	37
953:	37	31	48	40	56	34	30	70
961:	109	165	197	195	264	432	522	336
969:	177	72	39	34	36	26	35	37
977:	35	37	43	41	33	38	34	30
985:	33	36	29	33	37	39	33	43
993:	33	35	27	31	35	33	41	43
1001:	30	32	36	31	37	31	30	33
1009:	31	34	24	26	33	24	37	35
1017:	34	43	25	30	26	28	38	32
1025:	30	23	32	29	41	35	28	41
1033:	28	32	24	37	24	23	19	28
1041:	28	20	32	26	27	31	30	26
1049:	23	29	30	35	23	23	37	33
1057:	25	26	27	25	32	44	53	38
1065:	24	30	28	35	35	36	31	24
1073:	19	31	29	27	37	36	34	30
1081:	26	17	25	16	30	28	24	27
1089:	30	25	42	41	32	26	30	31
1097:	36	34	41	28	28	23	21	31
1105:	20	33	39	41	32	31	19	30
1113:	28	26	51	104	186	273	170	97
1121:	45	37	28	32	30	33	17	30
1129:	24	26	22	37	33	23	23	32
1137:	31	33	25	25	29	24	26	13
1145:	16	22	24	26	21	25	33	42
1153:	48	34	35	26	23	24	20	30
1161:	21	26	21	20	19	27	33	28
1169:	24	30	27	28	20	28	21	25
1177:	27	29	33	36	25	31	14	33
1185:	25	21	22	22	22	20	19	28
1193:	17	23	19	16	22	25	27	22
1201:	21	23	24	25	32	35	17	25
1209:	24	19	22	20	27	19	21	21
1217:	27	26	17	18	17	26	24	19
1225:	18	26	25	22	26	29	16	26

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1233:	40	47	103	117	80	44	26	29

Sample Title: R-5 0-6

Channel								
1241:	24	33	39	26	29	29	27	34
1249:	39	28	26	18	24	20	18	29
1257:	19	17	26	20	17	22	18	27
1265:	26	20	14	24	28	22	23	22
1273:	22	25	27	30	36	32	43	40
1281:	25	27	25	24	24	14	28	24
1289:	30	25	26	30	18	23	24	18
1297:	25	18	18	18	24	29	21	30
1305:	17	14	13	27	22	21	30	23
1313:	21	24	18	17	20	26	28	15
1321:	9	18	16	29	21	18	30	17
1329:	16	19	22	18	20	21	19	21
1337:	26	19	22	19	22	20	13	33
1345:	29	17	18	17	22	17	34	19
1353:	20	29	20	22	11	17	23	30
1361:	16	27	22	23	19	24	20	20
1369:	9	24	25	34	32	59	60	64
1377:	42	33	21	20	28	24	29	21
1385:	14	24	17	16	25	20	14	17
1393:	21	21	20	23	31	44	24	29
1401:	23	24	25	40	45	41	28	30
1409:	21	18	13	19	15	15	10	15
1417:	18	7	17	24	16	12	12	16
1425:	16	18	12	22	23	15	14	20
1433:	23	28	10	18	23	28	16	14
1441:	12	11	19	21	20	18	26	29
1449:	17	12	19	15	29	27	32	40
1457:	28	41	31	26	31	21	19	15
1465:	19	18	12	18	21	15	24	15
1473:	13	30	15	18	18	28	18	15
1481:	13	20	14	24	15	19	13	22
1489:	20	18	27	32	45	31	26	25
1497:	20	28	23	24	21	14	19	23
1505:	38	39	35	33	28	30	16	27
1513:	14	21	20	14	17	21	10	25
1521:	23	17	19	13	19	13	11	23
1529:	19	16	15	16	21	11	16	27
1537:	16	21	12	17	20	22	9	11
1545:	16	12	13	14	16	6	16	18
1553:	15	22	23	20	21	16	17	10
1561:	19	16	11	12	21	11	12	13
1569:	10	12	14	15	15	15	13	19
1577:	15	28	18	19	20	17	37	57
1585:	71	71	51	55	56	50	55	27
1593:	14	22	17	18	27	11	13	13
1601:	11	10	14	8	13	21	10	16
1609:	17	12	8	9	15	12	12	20
1617:	39	44	26	18	25	17	17	15
1625:	21	23	50	41	32	21	12	16
1633:	12	23	14	15	18	13	15	8
1641:	11	12	10	9	3	12	11	13
1649:	7	3	9	14	20	16	12	15
1657:	17	11	17	15	10	20	15	14

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1665:	15	12	6	9	13	7	15	14

Sample Title: R-5 0-6

Channel								
1673:	9	9	8	9	19	8	11	13
1681:	8	13	9	10	8	9	9	16
1689:	11	10	11	16	11	13	10	11
1697:	13	11	8	9	6	9	10	7
1705:	13	9	15	7	18	7	11	14
1713:	11	12	18	12	13	8	12	11
1721:	15	14	9	27	34	40	45	22
1729:	17	8	9	11	10	13	6	8
1737:	15	7	16	6	7	13	7	6
1745:	12	9	8	4	8	10	12	4
1753:	7	8	11	15	12	28	60	110
1761:	167	170	92	43	9	11	14	11
1769:	11	10	9	8	6	14	12	8
1777:	9	6	7	8	6	7	12	15
1785:	10	8	6	16	8	10	5	6
1793:	9	11	13	15	5	10	4	13
1801:	10	7	12	10	14	13	9	10
1809:	6	7	6	7	7	6	5	12
1817:	6	8	10	6	11	9	6	8
1825:	15	7	9	10	12	9	12	5
1833:	12	9	9	15	14	15	12	5
1841:	16	16	19	26	21	22	11	10
1849:	12	11	11	8	10	9	7	10
1857:	10	8	12	10	13	7	12	9
1865:	12	9	10	15	10	13	13	7
1873:	12	8	8	3	12	7	7	11
1881:	14	8	10	10	19	12	17	4
1889:	10	9	16	8	7	14	10	12
1897:	10	10	10	10	6	16	8	10
1905:	11	10	10	11	9	8	10	9
1913:	11	11	10	10	9	13	9	6
1921:	8	13	8	7	13	7	15	9
1929:	15	12	11	9	12	5	7	17
1937:	6	12	9	11	6	11	7	8
1945:	7	7	7	10	11	13	12	6
1953:	10	5	6	9	8	11	10	6
1961:	8	6	14	8	9	11	6	10
1969:	10	8	10	11	5	8	8	14
1977:	8	6	12	10	9	11	6	8
1985:	8	10	8	13	11	7	9	7
1993:	10	12	10	11	10	7	10	11
2001:	7	4	7	6	8	8	11	7
2009:	7	9	8	13	12	6	11	9
2017:	8	13	8	13	2	4	11	7
2025:	13	7	10	4	7	5	7	6
2033:	8	6	4	4	6	8	5	7
2041:	13	5	12	11	12	11	11	10
2049:	6	10	11	8	12	6	4	17
2057:	8	7	14	2	8	8	16	5
2065:	12	7	7	7	8	8	6	9
2073:	10	7	6	10	11	7	14	5
2081:	7	11	6	7	10	12	17	8
2089:	5	11	7	8	6	9	8	13

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2097:	16	34	38	53	44	24	21	13

Sample Title: R-5 0-6

Channel								
2105:	8	13	8	11	10	7	5	9
2113:	12	18	15	15	6	9	10	10
2121:	12	11	14	9	3	13	11	8
2129:	11	9	9	7	4	9	8	7
2137:	7	11	7	9	10	10	7	7
2145:	6	12	15	8	12	7	6	6
2153:	8	10	7	12	11	8	9	9
2161:	6	11	10	11	8	15	11	11
2169:	9	13	8	10	8	11	9	9
2177:	5	11	10	11	13	6	13	14
2185:	7	6	12	11	17	12	11	13
2193:	10	8	10	9	16	20	35	33
2201:	36	35	24	21	9	11	15	10
2209:	7	15	6	8	3	10	11	10
2217:	13	12	9	9	8	12	5	8
2225:	8	12	12	10	5	6	6	9
2233:	10	8	8	8	6	8	9	12
2241:	9	18	12	6	12	10	12	8
2249:	10	8	6	13	9	8	13	17
2257:	13	9	13	9	8	11	11	15
2265:	8	13	10	11	10	12	8	14
2273:	8	9	11	15	13	7	11	11
2281:	14	9	17	13	14	13	13	12
2289:	11	8	15	13	3	6	11	8
2297:	11	12	11	11	12	7	7	16
2305:	12	15	13	8	10	10	13	13
2313:	4	9	11	11	14	13	12	18
2321:	14	13	13	9	10	10	12	18
2329:	13	16	12	5	8	12	8	14
2337:	7	8	16	15	12	14	8	13
2345:	9	15	18	11	8	14	11	8
2353:	18	11	15	8	17	11	19	13
2361:	16	15	6	15	16	14	14	12
2369:	7	10	13	13	9	14	3	18
2377:	11	12	9	16	13	16	5	12
2385:	5	6	13	5	10	11	9	7
2393:	9	7	8	4	6	9	11	6
2401:	9	6	11	9	12	6	9	5
2409:	12	8	12	8	4	6	8	5
2417:	9	11	6	7	6	7	10	7
2425:	10	9	7	11	6	13	8	12
2433:	8	14	13	14	8	6	9	13
2441:	15	7	17	18	19	13	8	4
2449:	7	6	7	4	10	5	6	10
2457:	8	10	6	6	2	6	6	5
2465:	4	3	6	8	9	7	5	6
2473:	6	8	4	4	6	7	3	4
2481:	6	7	5	4	9	6	2	6
2489:	4	4	5	2	4	6	3	5
2497:	2	8	2	4	3	5	4	3
2505:	1	4	6	6	2	4	3	3
2513:	4	3	4	4	2	5	3	3
2521:	1	3	2	5	0	6	2	3

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2529:	2	4	4	4	0	1	3	2

Sample Title: R-5 0-6

Channel								
2537:	4	2	3	0	2	4	1	5
2545:	4	5	2	4	2	2	5	1
2553:	4	2	2	3	1	3	2	1
2561:	3	4	2	1	1	3	1	7
2569:	3	2	2	1	2	1	1	4
2577:	1	1	2	1	4	3	2	3
2585:	3	1	3	0	1	0	2	3
2593:	1	3	1	3	3	4	5	2
2601:	4	4	3	7	14	27	52	119
2609:	200	226	242	164	70	18	6	4
2617:	1	2	6	1	3	4	2	6
2625:	0	3	0	0	0	1	1	1
2633:	0	3	2	1	0	2	4	0
2641:	0	0	3	2	0	1	1	4
2649:	2	1	3	2	2	2	0	3
2657:	0	1	0	1	1	0	0	1
2665:	0	0	2	1	5	2	1	1
2673:	3	3	1	2	4	3	1	0
2681:	2	3	1	2	1	3	0	0
2689:	2	2	2	1	3	0	1	2
2697:	1	2	1	2	3	1	2	2
2705:	0	2	0	0	1	1	1	4
2713:	1	0	2	0	0	1	1	2
2721:	3	3	3	2	2	2	1	0
2729:	0	0	2	0	1	0	2	1
2737:	2	0	1	0	0	0	3	1
2745:	2	3	0	0	1	2	0	2
2753:	2	3	3	0	3	2	0	4
2761:	2	2	0	3	0	0	0	1
2769:	2	2	2	2	3	2	1	0
2777:	1	1	0	0	4	2	0	1
2785:	2	2	0	2	1	2	1	0
2793:	3	0	0	2	2	2	0	2
2801:	0	0	0	2	2	1	2	0
2809:	1	3	0	1	0	1	3	3
2817:	1	3	2	2	1	0	0	2
2825:	1	1	4	0	1	1	0	1
2833:	0	1	0	2	1	0	0	1
2841:	2	0	0	0	1	1	2	4
2849:	1	2	0	2	1	2	1	0
2857:	0	1	1	2	1	2	2	0
2865:	2	1	1	0	0	0	2	1
2873:	0	0	1	3	1	2	2	1
2881:	2	1	0	0	2	0	0	0
2889:	3	2	1	2	3	0	1	1
2897:	0	1	0	0	1	1	1	2
2905:	0	0	2	1	1	0	2	0
2913:	1	1	2	0	0	0	0	0
2921:	1	1	1	1	0	0	2	1
2929:	0	0	0	0	3	2	1	0
2937:	1	1	1	1	0	1	1	0
2945:	1	1	1	0	2	1	1	0
2953:	0	0	2	0	0	1	2	0

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2961:	1	0	0	2	1	0	0	0

Sample Title: R-5 0-6

Channel								
2969:	1	2	0	1	0	1	0	0
2977:	0	3	0	0	0	0	3	1
2985:	0	1	1	0	1	0	0	0
2993:	0	1	1	0	1	0	3	1
3001:	0	0	1	1	1	1	2	0
3009:	0	1	1	0	0	1	2	1
3017:	1	3	0	2	3	1	1	1
3025:	0	3	0	0	0	0	0	0
3033:	0	0	0	0	1	0	0	0
3041:	1	0	0	0	0	0	0	0
3049:	0	0	2	0	2	0	0	2
3057:	1	1	1	1	0	1	0	0
3065:	0	1	1	2	1	0	1	0
3073:	1	1	0	3	1	0	0	2
3081:	0	0	0	0	0	1	0	1
3089:	0	0	1	1	0	1	0	1
3097:	0	0	0	1	1	0	1	0
3105:	0	1	0	1	2	1	1	1
3113:	0	0	0	0	0	1	5	3
3121:	1	0	1	0	0	1	0	1
3129:	0	0	0	0	2	1	0	0
3137:	0	1	0	1	1	0	0	1
3145:	0	1	0	0	1	0	0	1
3153:	0	1	0	0	0	1	0	0
3161:	1	0	1	0	0	1	0	0
3169:	0	0	1	0	0	1	1	1
3177:	0	0	0	0	0	0	0	2
3185:	2	0	1	1	2	1	5	7
3193:	7	4	1	3	1	0	0	0
3201:	0	0	1	1	0	0	0	0
3209:	0	1	0	0	0	0	0	1
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	1	0	0	0
3241:	1	0	0	0	0	0	0	0
3249:	1	0	1	0	0	1	0	0
3257:	3	0	0	0	0	1	0	0
3265:	1	1	0	1	0	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	0	1	0	0
3289:	0	0	1	0	1	1	0	0
3297:	0	0	0	0	0	0	2	0
3305:	0	0	1	0	0	0	1	1
3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	0	1	0	1	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	1	0	0	0	0
3345:	1	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	1
3361:	0	0	1	0	0	0	0	1
3369:	0	0	0	0	1	0	0	0
3377:	0	2	0	0	0	0	0	0
3385:	1	0	2	0	0	0	1	0

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3393:	0	0	0	0	1	0	0	0

Sample Title: R-5 0-6

Channel								
3401:	0	0	0	0	0	0	0	0
3409:	1	0	0	2	0	0	0	1
3417:	1	1	0	1	1	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	2	0
3449:	0	0	0	0	0	0	1	0
3457:	0	0	0	0	0	0	0	0
3465:	1	0	1	0	1	1	0	0
3473:	0	0	1	0	0	0	0	0
3481:	1	0	0	1	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	1	0	0
3521:	0	0	0	0	2	0	0	0
3529:	0	0	0	0	0	0	0	0
3537:	1	0	0	1	1	0	0	0
3545:	1	0	0	0	0	0	0	0
3553:	0	0	0	0	1	0	0	0
3561:	0	0	0	0	1	0	0	0
3569:	0	0	1	1	0	0	1	0
3577:	0	0	1	0	1	1	0	1
3585:	0	0	0	1	0	1	0	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	1	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	0	0	0	0	0	0
3633:	1	1	0	0	0	0	0	1
3641:	0	0	1	1	0	0	0	1
3649:	0	1	0	0	0	0	0	1
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	1	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	1
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	1	1	0	1
3753:	0	0	1	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	0	1	0	0
3777:	1	0	0	0	1	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	0	0	1	2	0	0	0	0
3801:	0	0	0	0	0	0	0	1
3809:	0	0	0	0	0	0	0	1
3817:	0	0	0	0	0	0	1	0

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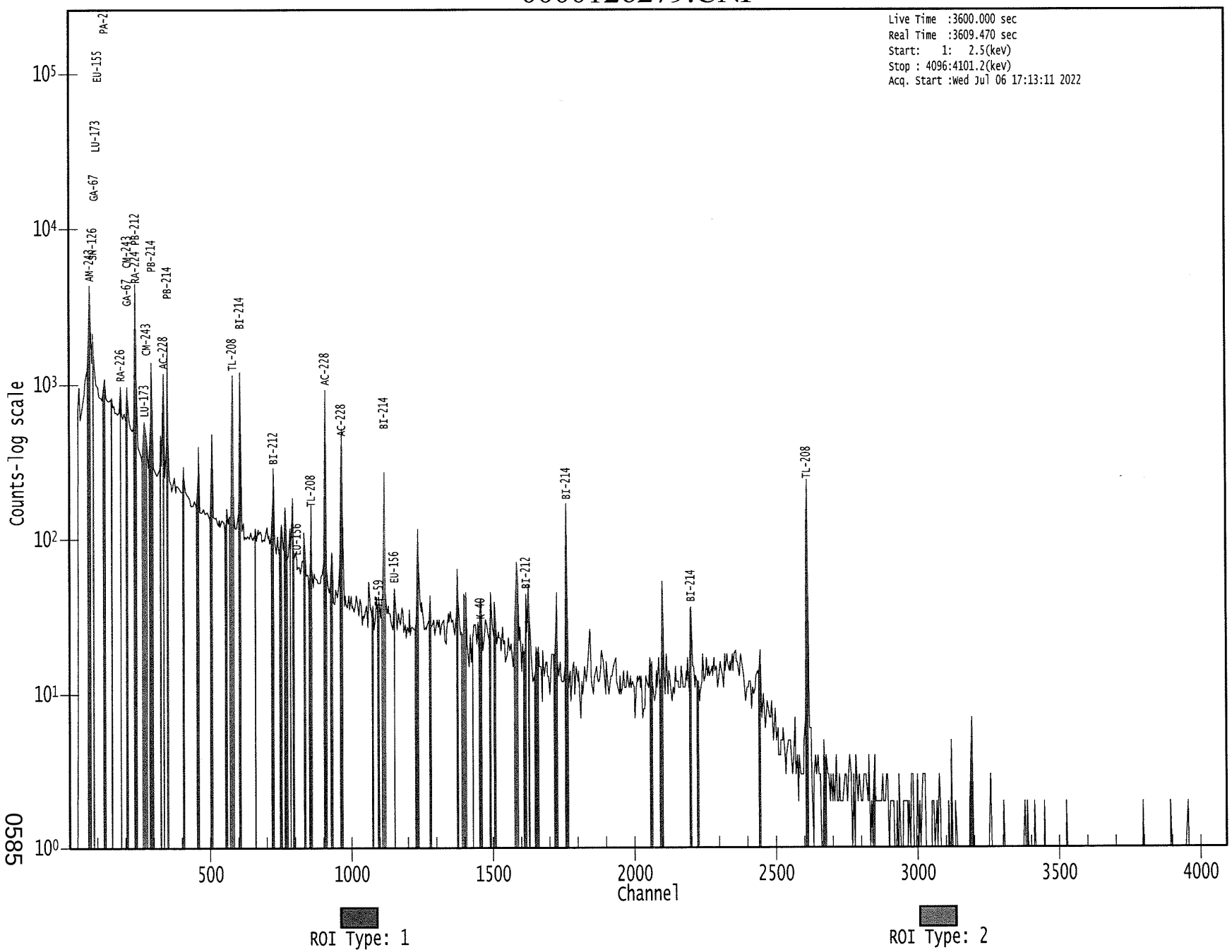
3825:	0	0	0	0	0	0	0	0

Sample Title: R-5 0-6

Channel								
3833:	1	0	1	1	0	0	0	0
3841:	0	0	0	1	0	0	0	1
3849:	1	0	0	0	0	0	0	0
3857:	1	0	1	0	0	0	0	1
3865:	0	0	1	0	0	1	0	0
3873:	0	0	0	0	0	1	0	0
3881:	0	0	0	1	0	0	0	0
3889:	0	0	0	0	2	0	0	0
3897:	0	1	0	0	1	0	0	1
3905:	1	0	0	0	0	0	1	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	1	0	1	0
3929:	0	0	0	0	0	0	1	0
3937:	0	0	0	0	0	0	1	0
3945:	0	0	0	1	1	0	0	0
3953:	0	0	0	2	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	1	1	0	0	0	0	0	0
3985:	0	0	1	0	0	0	0	0
3993:	0	0	0	0	0	0	1	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	1
4057:	1	0	0	0	0	0	0	0
4065:	0	0	0	0	1	0	0	0
4073:	0	1	0	0	0	0	0	0
4081:	0	0	0	0	0	0	1	0
4089:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-001939

0000126279.CNF



0585

BP/Castex-Ltd Adm-Apx E-001940

KB 7/6/22

****
***** GENIE QUALITY ASSURANCE *****
****

Last Results Report
7/6/22 2:34:06 PM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000001B.QCK

Detector: GE1
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 7/6/22 2:18:51 PM
Measurement Date: 7/6/22 2:18:53 PM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE1	2.7378E+000	-6.4407E-002
[SD: 5.8372E+001+/-863.79]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

BP/Castex-Ltd Adm-Apx E-001941

LP 7/6/22

********** GENIE QUALITY ASSURANCE **********

Last Results Report
7/6/22 5:54:15 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002B.QCK

Detector: GE2
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 7/6/22 5:38:50 AM
Measurement Date: 7/6/22 5:38:53 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE2 [SD: 9.5527E+000+/-195.84]	2.4044E+000	-3.6500E-002 < : : : >

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

BP/Castex-Ltd Adm-Apx E-001942

KP 7/6/22

****
***** GENIE QUALITY ASSURANCE *****
****

Last Results Report
7/6/22 5:54:36 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000003B.QCK

Detector: GE3
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 7/6/22 5:38:58 AM
Measurement Date: 7/6/22 5:39:00 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 910.6 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE3	2.0860E+003	-4.6926E-002
[SD: 3.9888E+003+/-40547.]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

BP/Castex-Ltd Adm-Apx E-001943

KP 7/6/22

****
***** GENIE QUALITY ASSURANCE *****
****

Last Results Report
7/6/22 5:54:24 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000004B.QCK

Detector: GE4
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 7/6/22 5:39:06 AM
Measurement Date: 7/6/22 5:39:07 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.3 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE4	1.7056E+000	2.1512E-002
[SD:-7.8733E+034+/-******]		< : : : >

Trend Test: The last 9 samples exhibit a bias trend.

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

BP/Castex-Ltd Adm-Apx E-001944

****
***** G E N I E Q U A L I T Y A S S U R A N C E *****
****

Last Results Report
7/6/22 2:17:56 PM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000001GAF-21C.QCK

Detector: GE1
Geometry: <None>
Certificate: GAF-21
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 7/1/21 12:00:00 PM
Measurement Date: 7/6/22 2:02:34 PM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 908.0 seconds

AC 7/6/22

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.8260E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6025E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Peak centroid 1332.49 ke	1.3309E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< Be: : : >
Peak centroid 1836.01 ke	1.8342E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	3.0491E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	3.1899E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	3.6326E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Peak FWHM Y-88	4.0728E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Decay corrected activity	1.6408E+004	
Boundary Limits: [1.272E-002, 2.120E-002]		< : : : >
Decay corrected activity	5.7417E+003	

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Boundary Limits: [4.565E-003, 7.609E-003]		< : : : >
Decay corrected activity	9.7258E+003	
Boundary Limits: [7.437E-003, 1.240E-002]		< : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	1.7998E+004	
Boundary Limits: [1.610E-002, 2.683E-002]		< : : : >

Flags Key:

LU	= Lower/Upper Bounds Test	(Ab = Above, Be = Below)
SD	= Sample Driven N-Sigma Test	(In = Investigate, Ac = Action)
UD	= User Driven N-Sigma Test	(In = Investigate, Ac = Action)
BS	= Measurement Bias Test	(In = Investigate, Ac = Action)

BP/Castex-Ltd Adm-Apx E-001946

KP 7/6/22

****
***** GENIE QUALITY ASSURANCE *****
****

Last Results Report
7/6/22 6:11:48 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002GAS-2101C.QC

Detector: GE2
Geometry: <None>
Certificate: GAS-2101
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 7/1/21 12:00:00 PM
Measurement Date: 7/6/22 5:56:13 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 922.0 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	6.1068E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		<Ab : : : >
Peak centroid 661.65 kev	6.6225E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Peak centroid 1332.49 ke	1.3319E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8346E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.6347E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Peak FWHM Cs-137	1.8756E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Peak FWHM Co-60	2.3841E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Y-88	2.7800E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Decay corrected activity	1.5322E+005	
Boundary Limits: [1.192E-001, 1.788E-001]		< : : : >
Decay corrected activity	6.1417E+004	
Boundary Limits: [4.740E-002, 7.110E-002]		< : : : >
Decay corrected activity	9.9686E+004	

BP/Castex-Ltd Adm-Apx E-001947

Boundary Limits: [7.700E-002, 1.155E-001] < : : : >
Trend Test: The last 9 samples exhibit a bias trend.

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	2.1267E+005	
Boundary Limits: [1.670E-001, 2.504E-001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

BP/Castex-Ltd Adm-Apx E-001948

KP 7/6/22

****
***** G E N I E Q U A L I T Y A S S U R A N C E *****
****

Last Results Report
7/6/22 7:53:34 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000003GAS-2102C.QC

Detector: GE3
Geometry: <None>
Certificate: GAS-2102
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 7/1/21 12:00:00 PM
Measurement Date: 7/6/22 7:37:44 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 936.7 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.9928E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 kev	6.6149E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Peak centroid 1332.49 ke	1.3316E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8345E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	3.4604E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Peak FWHM Cs-137	3.6888E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Peak FWHM Co-60	3.7750E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Peak FWHM Y-88	3.8011E+000	
Boundary Limits: [5.000E-001, 4.500E+000]		< : : : >
Decay corrected activity	1.2406E+005	
Boundary Limits: [1.188E-001, 1.782E-001]		< : : : >
Decay corrected activity	5.6999E+004	
Boundary Limits: [4.725E-002, 7.087E-002]		< : : : >
Decay corrected activity	9.6349E+004	
Boundary Limits: [7.700E-002, 1.155E-001]		< : : : >

BP/Castex-Ltd Adm-Apx E-001949

Trend Test: The last 9 samples exhibit a bias trend.

Decay corrected activity 2.1404E+005
Boundary Limits: [1.664E-001, 2.496E-001] < : : : >

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

BP/Castex-Ltd Adm-Apx E-001950

KP 7/6/22

****
***** GENIE QUALITY ASSURANCE *****
****

Last Results Report
7/6/22 6:12:55 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000004GAW-21C.QCK

Detector: GE4
Geometry: <None>
Certificate: GAW-21
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 7/1/21 12:00:00 PM
Measurement Date: 7/6/22 5:56:29 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 973.4 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.9055E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 kev	6.6082E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Peak centroid 1332.49 ke	1.3311E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8344E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	2.5242E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	2.7073E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	3.0257E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		<Ab : : : >
Peak FWHM Y-88	3.4306E+000	
Boundary Limits: [5.000E-001, 3.500E+000]		< : : : >
Decay corrected activity	1.4268E+005	
Boundary Limits: [1.195E-001, 1.792E-001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	5.9544E+004	
Boundary Limits: [4.752E-002, 7.129E-002]		< : : : >

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Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	9.5046E+004	
Boundary Limits: [7.738E-002, 1.161E-001]		< : : : >
Decay corrected activity	2.0162E+005	
Boundary Limits: [1.674E-001, 2.511E-001]		< : : : >

Flags Key:

LU	= Lower/Upper Bounds Test	(Ab = Above, Be = Below)
SD	= Sample Driven N-Sigma Test	(In = Investigate, Ac = Action)
UD	= User Driven N-Sigma Test	(In = Investigate, Ac = Action)
BS	= Measurement Bias Test	(In = Investigate, Ac = Action)

BP/Castex-Ltd Adm-Apx E-001952

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7/18/2024

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 24-165-0028
Project Description: Castex
Project Number: 0727954
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 6/13/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2025
Arkansas	State Program	88-0650	02/07/2025
California	State Program	2904	06/30/2024
Florida	State Program - NELAP	E871157	06/30/2025
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2024
Kentucky	State Program	90047	12/31/2024
Kentucky	State Program	80215	06/30/2024
Kentucky	State Program	KY90047	12/31/2024
Louisiana	State Program - NELAP	LA037	12/31/2024
Louisiana	State Program - NELAP	04015	06/30/2025
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2024
North Carolina	State Program	415	12/31/2024
Pennsylvania	State Program - NELAP	68-03195	05/31/2025
South Carolina	State Program	84002	06/30/2024
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2024
Virginia	State Program	00106	06/30/2025
Virginia	State Program - NELAP	460181	09/14/2024

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Sample Summary Table

Report Number: **24-165-0028**

Client Project Description: **Castex**
Project Number: 0727954
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
82526	CD-16 (10-12')	Solids	06/11/2024 09:45	06/13/2024		
82527	CD-16 (10-12')	TCLP	06/11/2024 09:45	06/13/2024	1312	WP MTN
82527	CD-16 (10-12')	TCLP	06/11/2024 09:45	06/13/2024	9056	WP MTN
82528	CD-16 (14-16')	Solids	06/11/2024 09:54	06/13/2024		
82529	CD-16 (14-16')	TCLP	06/11/2024 09:54	06/13/2024	9056	WP MTN
82529	CD-16 (14-16')	TCLP	06/11/2024 09:54	06/13/2024	1312	WP MTN
82530	CD-16 (54-56')	Solids	06/11/2024 09:57	06/13/2024		
82531	CD-16 (54-56')	TCLP	06/11/2024 09:57	06/13/2024	9056	WP MTN
82531	CD-16 (54-56')	TCLP	06/11/2024 09:57	06/13/2024	1312	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Client: ERM
Project: Castex
Lab Report Number: 24-165-0028
Date: 7/18/2024

CASE NARRATIVE

Report Comments
Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.
Results
• 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
• True Total Barium results are reported dry weight

Metals Analysis Method 6010D
Sample 82526 (CD-16 (10-12'))
Analyte: Arsenic
QC Batch No: A93621/A93573
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.
MS/MSD

Sample 82526 (CD-16 (10-12'))
Analyte: Arsenic
QC Batch No: A93621/A93573
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 82526 (CD-16 (10-12'))
Analyte: Arsenic
QC Batch No: A93787/A93573
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 82526 (CD-16 (10-12'))
Analyte: Arsenic
QC Batch No: A93787/A93573
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.
MS/MSD

Sample 82526 (CD-16 (10-12'))
Analyte: Lead
QC Batch No: A93621/A93573
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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Sample 82526 (CD-16 (10-12'))
Analyte: Lead
QC Batch No: A93621/A93573
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.
MS/MSD

Sample 82526 (CD-16 (10-12'))
Analyte: Lead
QC Batch No: A93787/A93573
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 82526 (CD-16 (10-12'))
Analyte: Lead
QC Batch No: A93787/A93573
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.
MS/MSD

Sample 82526 (CD-16 (10-12'))
Analyte: Zinc
QC Batch No: A93621/A93573
The matrix spike, matrix spike duplicate and the dilution test were all outside of the quality control acceptance ranges. Matrix interference is suspected.

Sample 82526 (CD-16 (10-12'))
Analyte: Zinc
QC Batch No: A93787/A93573
The matrix spike, matrix spike duplicate and the dilution test were all outside of the quality control acceptance ranges. Matrix interference is suspected.

Anions by Ion Chromatography (SPLP) Method 9056
Sample 82527 (CD-16 (10-12'))
QC Batch No: L758985/L758503
The sample was diluted due to the nature of the sample matrix. Reporting limits have been adjusted accordingly.

Sample 82531 (CD-16 (54-56'))
QC Batch No: L758985/L758503
The sample was diluted due to the nature of the sample matrix. Reporting limits have been adjusted accordingly.

Sample 82529 (CD-16 (14-16'))
QC Batch No: L759108/L759107
The sample was diluted due to the nature of the sample matrix. Reporting limits have been adjusted accordingly.

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10485
ERM
Mr. Dave Upthegrove
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Houston , TX 77024

Project Castex

Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/13/2024

Report Number : **24-165-0028**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82526**
Sample ID : **CD-16 (10-12')**

Matrix: **Solids**
Sampled: **6/11/2024 9:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	26.8	%	0.050	1	06/17/24 10:10	TJL	SW-DRYWT
% Saturation (Sat Paste)	147	%		1	06/19/24 15:35	JMB	29B
Electrical Conductivity (Sat Paste)	0.313	mmhos/cm		1	06/19/24 15:35	JMB	29B
pH (Sat Paste)	8.29	s.u.		1	06/19/24 15:35	JMB	29B
Cation Exchange Capacity	49.1	meq/100g	0.100	10	06/20/24 14:47		29B
Exchangeable Sodium Percentage	1.51	%	0.100	1	06/19/24 15:35		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	2.67	Calc	0.025	5	06/20/24 13:40		29B
Calcium (Sat Paste)	0.925	meq/L	0.025	5	06/20/24 13:40	APB	29B
Magnesium (Sat Paste)	0.395	meq/L	0.041	5	06/20/24 13:40	APB	29B
Sodium (Sat Paste)	2.17	meq/L	0.110	5	06/20/24 13:40	APB	29B
True Total Barium	349	mg/Kg	50.0	1	06/20/24 12:24	APB	29B
Arsenic	10.9	mg/Kg	1.00	2	06/19/24 13:57	APB	6010D
Barium	228	mg/Kg	1.00	2	06/19/24 13:57	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	06/19/24 13:57	APB	6010D
Chromium	32.4	mg/Kg	0.500	2	06/19/24 13:57	APB	6010D
Lead	16.1	mg/Kg	0.600	2	06/19/24 13:57	APB	6010D
Mercury	<0.0185	mg/Kg	0.0185	1	06/19/24 11:44	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	06/19/24 13:57	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	06/19/24 13:57	APB	6010D
Zinc	109	mg/Kg	2.50	2	06/19/24 13:57	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-001958

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/13/2024

Report Number : **24-165-0028**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82527**
Sample ID : **CD-16 (10-12')**

Matrix: **TCLP**
Sampled: **6/11/2024 9:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	06/17/24 12:00	TJT	1312
SPLP Chloride	<1.60	mg/L	1.60	10	06/26/24 15:28	SWB	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-001959

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/13/2024

Report Number : **24-165-0028**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82528**
Sample ID : **CD-16 (14-16')**

Matrix: **Solids**
Sampled: **6/11/2024 9:54**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.4	%	0.050	1	06/17/24 10:10	TJL	SW-DRYWT
% Saturation (Sat Paste)	159	%		1	06/19/24 15:35	JMB	29B
Electrical Conductivity (Sat Paste)	0.270	mmhos/cm		1	06/19/24 15:35	JMB	29B
pH (Sat Paste)	8.34	s.u.		1	06/19/24 15:35	JMB	29B
Cation Exchange Capacity	58.7	meq/100g	0.100	10	06/20/24 14:51		29B
Exchangeable Sodium Percentage	1.16	%	0.100	1	06/19/24 15:35		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	1.92	Calc	0.025	5	06/20/24 13:44		29B
Calcium (Sat Paste)	0.832	meq/L	0.025	5	06/20/24 13:44	APB	29B
Magnesium (Sat Paste)	0.457	meq/L	0.041	5	06/20/24 13:44	APB	29B
Sodium (Sat Paste)	1.54	meq/L	0.110	5	06/20/24 13:44	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-001960

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/13/2024

Report Number : **24-165-0028**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82529**
Sample ID : **CD-16 (14-16')**

Matrix: **TCLP**
Sampled: **6/11/2024 9:54**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	06/17/24 12:00	TJT	1312
SPLP Chloride	<1.60	mg/L	1.60	10	06/26/24 15:53	NFP	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-001961

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/13/2024

Report Number : **24-165-0028**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82530**
Sample ID : **CD-16 (54-56')**

Matrix: **Solids**
Sampled: **6/11/2024 9:57**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.6	%	0.050	1	06/17/24 10:10	TJL	SW-DRYWT
% Saturation (Sat Paste)	77.7	%		1	06/19/24 15:35	JMB	29B
Electrical Conductivity (Sat Paste)	0.526	mmhos/cm		1	06/19/24 15:35	JMB	29B
pH (Sat Paste)	8.34	s.u.		1	06/19/24 15:35	JMB	29B
Cation Exchange Capacity	37.8	meq/100g	0.100	10	06/20/24 14:55		29B
Exchangeable Sodium Percentage	1.30	%	0.100	1	06/19/24 15:35		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	2.20	Calc	0.025	5	06/20/24 13:48		29B
Calcium (Sat Paste)	1.73	meq/L	0.025	5	06/20/24 13:48	APB	29B
Magnesium (Sat Paste)	0.754	meq/L	0.041	5	06/20/24 13:48	APB	29B
Sodium (Sat Paste)	2.45	meq/L	0.110	5	06/20/24 13:48	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-001962

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10485
ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston , TX 77024

Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/13/2024

Report Number : **24-165-0028**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82531**
Sample ID : **CD-16 (54-56')**

Matrix: **TCLP**
Sampled: **6/11/2024 9:57**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	06/17/24 12:00	TJT	1312
SPLP Chloride	<1.60	mg/L	1.60	10	06/26/24 16:20	SWB	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-001963

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-165-0028

QC Prep: A93586
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): A93679
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-A93586 Matrix: SOL
Associated Lab Samples: 82526

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 50.0	50.0	06/20/24 12:16

Laboratory Control Sample LCS-A93586

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	10400	104	80-120

Matrix Spike & Matrix Spike Duplicate A 82526-A93491-MS-A93586 A 82526-A93491-MSD-A93586

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	349	9710	9350	10400	9820	104	101	75-125	5.7	20.0

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-165-0028**

QC Prep: A93555
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A93614
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A93555 Matrix: SOL
Associated Lab Samples: 82526, 82528, 82530

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	06/20/24 14:44

Duplicate A 82653-A93541-DUP-A93555

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	8330	8350	0.2	30.0	06/20/24 15:19

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-165-0028**

QC Prep: A93556
QC Prep Batch Method: 29B
QC Analytical Batch(es): A93615
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 82653-A93541-DUP-A93556

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	7.80	7.93	1.6	30.0	06/20/24 16:27

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-165-0028

QC Prep: A93554
QC Prep Batch Method: 29B
QC Analytical Batch(es): A93616,A93617
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 82649-A93541-DUP-A93554

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	77.4	77.3	0.1	30.0	06/19/24 15:35
Electrical Conductivity (Sat Paste)	mmhos/cm	6.62	6.39	3.5	30.0	06/19/24 15:35
pH (Sat Paste)	s.u.	7.90	7.91	0.1	30.0	06/19/24 15:35

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-165-0028**

QC Prep: A93554
QC Prep Batch Method: 29B
QC Analytical Batch(es): A93616,A93617
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 82649-A93541-DUP-A93554

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	4.42	4.28	3.2	30.0	06/20/24 13:56
Magnesium (Sat Paste)	meq/L	14.7	13.7	7.0	30.0	06/20/24 13:56
Sodium (Sat Paste)	meq/L	45.3	43.7	3.5	30.0	06/20/24 13:56

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-165-0028

QC Prep: A93573
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A93621,A93787
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-A93573 Matrix: SOL
Associated Lab Samples: 82526

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 0.500	0.500	06/19/24 13:45
Barium	mg/Kg	< 0.500	0.500	06/19/24 13:45
Cadmium	mg/Kg	< 0.100	0.100	06/19/24 13:45
Chromium	mg/Kg	< 0.250	0.250	06/19/24 13:45
Lead	mg/Kg	< 0.300	0.300	06/19/24 13:45
Selenium	mg/Kg	< 0.500	0.500	06/19/24 13:45
Silver	mg/Kg	< 0.250	0.250	06/19/24 13:45
Zinc	mg/Kg	< 1.25	1.25	06/19/24 13:45

Laboratory Control Sample & LCSD LCS-A93573 LCSD-A93573

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	5.00	5.30	5.40	106	108	80-120	1.8	20.0
Barium	mg/Kg	50.0	53.6	53.8	107	108	80-120	0.3	20.0
Cadmium	mg/Kg	5.00	5.53	5.56	111	111	80-120	0.5	20.0
Chromium	mg/Kg	50.0	54.9	54.5	110	109	80-120	0.7	20.0
Lead	mg/Kg	5.00	5.52	5.44	110	109	80-120	1.4	20.0
Selenium	mg/Kg	5.00	5.17	5.06	103	101	80-120	2.1	20.0
Silver	mg/Kg	5.00	5.32	5.34	106	107	80-120	0.3	20.0
Zinc	mg/Kg	50.0	52.9	52.5	106	105	80-120	0.7	20.0

Matrix Spike & Matrix Spike Duplicate A 82526-MS-A93573 A 82526-MSD-A93573

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	10.9	4.84	4.76	13.2	24.3	48.0*	282*	75-125	59.2*	20.0
Barium	mg/Kg	228	48.4	47.6	279	273	105	95.0	75-125	2.1	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-165-0028

QC Prep: A93573
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A93621,A93787
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 82526-MS-A93573 A 82526-MSD-A93573

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Cadmium	mg/Kg	< 0.200	4.84	4.76	4.55	4.39	94.0	92.0	75-125	3.5	20.0
Chromium	mg/Kg	32.4	48.4	47.6	85.0	83.1	109	107	75-125	2.2	20.0
Lead	mg/Kg	16.1	4.84	4.76	17.8	22.3	35.0*	130*	75-125	22.4*	20.0
Selenium	mg/Kg	< 1.00	4.84	4.76	3.79	3.88	78.0	82.0	75-125	2.3	20.0
Silver	mg/Kg	< 0.500	4.84	4.76	4.45	4.26	92.0	90.0	75-125	4.3	20.0
Zinc	mg/Kg	109	48.4	47.6	133	120	50.0*	23.0*	75-125	10.2	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-165-0028

QC Prep: A93578
QC Prep Batch Method: 7471A
QC Analytical Batch(es): A93613,A93692
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-A93578 Matrix: SOL
Associated Lab Samples: 82526

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.0185	0.0185	06/19/24 11:35

Laboratory Control Sample & LCSD LCS-A93578 LCSD-A93578

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Mercury	mg/Kg	0.348	0.355	0.352	102	99.0	80-120	0.8	20.0

Matrix Spike & Matrix Spike Duplicate A 82651-MS-A93578 A 82651-MSD-A93578

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	0.0193	0.341	0.382	0.334	0.378	92.0	94.0	80-120	12.3	20.0

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-165-0028

QC Prep: L758503
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L758985
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L758503 Matrix: TCL
Associated Lab Samples: 82527, 82531

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	06/26/24 15:02

Laboratory Control Sample LCS-L758503

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	54.5	109	90-110

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-165-0028**

QC Prep: L759107
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L759108
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L759107 Matrix: TCL
Associated Lab Samples: 82529

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	06/26/24 15:02

Laboratory Control Sample LCS-L759107

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	54.5	109	90-110

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-165-0028**

QC Analytical Batch: A93539
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 82650-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	53.8	52.6	2.2	20.0	06/17/24 10:10

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **24-165-0028**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 06/13/2024 14:59:21

BP/Castex-Ltd Adm-Apx E-001975

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM (10485) 840 W. Sam Houston Pkwy North, Suite 600 Houston, TX 77024	Dave Upthegrove Anna Fix	ERM (10485)

24-165-0028
10485
06-13-2024
14:58:30
ERM (Sugar Land)
Castex

Project Description	Project/Site Location (City/State)	
Castex	Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed

Meth
☐ Fe
☐ Courier ☐ Client Drop Off
Other

DW – Drinking Water S – Soil /Solid O – Oil
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
PN 0727954	832-786-5006	David.Upthegrove@erm.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	29B salts*	29B pH	29B Metals**	29B Oil and Grease	SPLP Chloride	VPH	EPH	% moisture		Comments/Notes
			6	S		✓	✓	✓	✓	✓	✓	✓			*29B salts: EC, SAR, ESP, CEC, pH
6/11/24	0945	CD-16(10-12') 82524-82527	2	S		X		X		X			X		**metals – As,Ba,TTBa,Cd,Cr,Pb,Hg,Se,Ag,Zn
6/11/24	0954	CD-16(14-16') 82528-82529	2	S		X				X			X		
6/11/24	0957	CD-16(54-56')	2	S		X				X			X		82530-82531

For Laboratory Use Only		
Ice	Custody Seals	Lab Comments
Y / N	Y / N	
Blank/Cooler Temp		
1.8°C		

Sampled by (Name – Print): Hannah Spiegel

Client Remarks/Comments: RECAP limits

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Hannah Spiegel	6/13/24 0640	[illegible]	6/13/24 0640
[illegible]	6/13/24 1100	[illegible]	6/13/24 1100
[illegible] 6/13/24 @	1414	[illegible]	6/13/24 1414

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7/18/2024

ERM (Sugar Land)
Mr. David Upthegrove
840 W. Sam Houston Pkwy North, Suite 600
Suite 600
Houston, TX, 77024

Ref: Report Number: 24-166-0036
Project Description: Castex
Project Number: 0727954
Jennings, LA

Dear Mr. David Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 6/14/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Project Manager

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2025
Arkansas	State Program	88-0650	02/07/2025
California	State Program	2904	06/30/2024
Florida	State Program - NELAP	E871157	06/30/2025
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2024
Kentucky	State Program	90047	12/31/2024
Kentucky	State Program	80215	06/30/2024
Kentucky	State Program	KY90047	12/31/2024
Louisiana	State Program - NELAP	LA037	12/31/2024
Louisiana	State Program - NELAP	04015	06/30/2025
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2024
North Carolina	State Program	415	12/31/2024
Pennsylvania	State Program - NELAP	68-03195	05/31/2025
South Carolina	State Program	84002	06/30/2024
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2024
Virginia	State Program	00106	06/30/2025
Virginia	State Program - NELAP	460181	09/14/2024

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2025
Kentucky	State Program	KY98013	12/31/2024
Louisiana	State Program - NELAP	04023	06/30/2025

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Sample Summary Table

Report Number: **24-166-0036**

Client Project Description: **Castex**
Project Number: 0727954
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
82736	CD-16A1	Aqueous	06/13/2024 11:50	06/14/2024		
82736	CD-16A1	Aqueous	06/13/2024 11:50	06/14/2024	6020B	WP MTN
82736	CD-16A1	Aqueous	06/13/2024 11:50	06/14/2024	7470A	WP MTN
82736	CD-16A1	Aqueous	06/13/2024 11:50	06/14/2024	MAVPH LA	WP RMS
82736	CD-16A1	Aqueous	06/13/2024 11:50	06/14/2024	MAEPH LA	WP RMS
82736	CD-16A1	Aqueous	06/13/2024 11:50	06/14/2024	8260B	WP RMS
82737	CD-16A1	Aqueous	06/13/2024 11:50	06/14/2024	6020B	WP MTN
82737	CD-16A1	Aqueous	06/13/2024 11:50	06/14/2024	7470A	WP MTN
82738	CD-16A2	Aqueous	06/13/2024 13:53	06/14/2024		
82738	CD-16A2	Aqueous	06/13/2024 13:53	06/14/2024	6020B	WP MTN
82738	CD-16A2	Aqueous	06/13/2024 13:53	06/14/2024	7470A	WP MTN
82738	CD-16A2	Aqueous	06/13/2024 13:53	06/14/2024	8260B	WP RMS
82738	CD-16A2	Aqueous	06/13/2024 13:53	06/14/2024	MAVPH LA	WP RMS
82738	CD-16A2	Aqueous	06/13/2024 13:53	06/14/2024	MAEPH LA	WP RMS
82739	CD-16A2	Aqueous	06/13/2024 13:53	06/14/2024	6020B	WP MTN
82739	CD-16A2	Aqueous	06/13/2024 13:53	06/14/2024	7470A	WP MTN
82740	CD-16B	Aqueous	06/13/2024 16:00	06/14/2024		
82740	CD-16B	Aqueous	06/13/2024 16:00	06/14/2024	7470A	WP MTN
82740	CD-16B	Aqueous	06/13/2024 16:00	06/14/2024	6020B	WP MTN
82740	CD-16B	Aqueous	06/13/2024 16:00	06/14/2024	8260B	WP RMS
82740	CD-16B	Aqueous	06/13/2024 16:00	06/14/2024	MAVPH LA	WP RMS
82740	CD-16B	Aqueous	06/13/2024 16:00	06/14/2024	MAEPH LA	WP RMS
82741	CD-16B	Aqueous	06/13/2024 16:00	06/14/2024	7470A	WP MTN
82741	CD-16B	Aqueous	06/13/2024 16:00	06/14/2024	6020B	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN
WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Client: ERM (Sugar Land) **CASE NARRATIVE**
Project: Castex
Lab Report Number: 24-166-0036
Date: 7/18/2024

MADEP EPH Method MAEPH LA
Analyte: Chlorooctadecane
QC Batch No: G195613
Surrogate(s) was flagged for recovery outside QC limits in this project sample. This sample was re-analyzed for verification, and/or dilution of target analytes. Batch QC samples (method blank and laboratory control samples) all showed surrogates within QC limits.

Sample 53134
QC Batch No: G195613/G195371
This target analyte was outside the acceptable limits in the matrix spike. The LCS was within acceptable limits.

Sample 82736 (CD-16A1)
Analyte: Chlorooctadecane
QC Batch No: G195613/G195371
Surrogate(s) was flagged for recovery outside QC limits in this project sample. This sample was re-analyzed for verification, and/or dilution of target analytes. Batch QC samples (method blank and laboratory control samples) all showed surrogates within QC limits.

Sample 82738 (CD-16A2)
Analyte: Chlorooctadecane
QC Batch No: G195613/G195371
Surrogate(s) was flagged for recovery outside QC limits in this project sample. This sample was re-analyzed for verification, and/or dilution of target analytes. Batch QC samples (method blank and laboratory control samples) all showed surrogates within QC limits.

Sample 82740 (CD-16B)
Analyte: Chlorooctadecane
QC Batch No: G195613/G195371
Surrogate(s) were flagged for recoveries in the associated project sample. During the extraction step, the extraction technician noted that a significant emulsion formed. Batch QC samples (Method Blank and Laboratory Control Samples) all showed surrogate recoveries within QC limits, indicating that the biased recoveries were due to the sample matrix.

MADEP VPH Rev 1.1 Method MAVPH LA
Sample 52681
QC Batch No: G195532/G195505
This target analyte was outside the acceptable limits in the matrix spike. The LCS was within acceptable limits.

Metals Analyses Method 6020B
Sample 82737 (CD-16A1)
Analyte: Manganese
QC Batch No: L757576/L756816/L756810
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 82736 (CD-16A1)
QC Batch No: L758590/L757704
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 82738 (CD-16A2)
QC Batch No: L758590/L757704
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 82740 (CD-16B)
QC Batch No: L758590/L757704
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Volatile Organic Compounds - GC/MS Method 8260B
Sample 52681
QC Batch No: G195531/G195503
This target analyte was outside the acceptable limits in the matrix spike. The LCS was within acceptable limits.

Anions by Ion Chromatography Method 9056
Sample 82608
Analyte: Chloride
QC Batch No: A93779/A93756
The MS recovery is outside QC limits due to the level of analyte present in the parent sample relative to the spike level.

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82736**
Sample ID : **CD-16A1**

Matrix: **Aqueous**
Sampled: **6/13/2024 11:50**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	490	mg/L	10	1	06/18/24 09:33	JMB	A93577
Carbonate	<10	mg/L	10	1	06/18/24 09:33	JMB	A93577
Alkalinity (as CaCO3)	490	mg/L	10	1	06/18/24 09:33	JMB	A93577

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	642	mg/L	10	1	06/19/24 14:20	MJM	A93574

Analytical Method: 6020B **Prep Batch(es):** **L757704** 06/21/24 16:07
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	<0.0050	mg/L	0.0050	5	06/26/24 20:29	CPW	L758590
Barium	0.313	mg/L	0.005	5	06/26/24 20:29	CPW	L758590
Cadmium	<0.0050	mg/L	0.0050	5	06/26/24 20:29	CPW	L758590
Calcium	72.8	mg/L	1.00	5	06/26/24 20:29	CPW	L758590
Chromium	<0.005	mg/L	0.005	5	06/26/24 20:29	CPW	L758590
Iron	<0.500	mg/L	0.500	5	06/26/24 20:29	CPW	L758590
Lead	<0.0050	mg/L	0.0050	5	06/26/24 20:29	CPW	L758590
Magnesium	27.4	mg/L	0.500	5	06/26/24 20:29	CPW	L758590

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001983

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Report Date : 07/18/2024
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Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82736**
Sample ID : **CD-16A1**

Matrix: **Aqueous**
Sampled: **6/13/2024 11:50**

Analytical Method: 6020B **Prep Batch(es):** **L757704** 06/21/24 16:07
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.077	mg/L	0.005	5	06/26/24 20:29	CPW	L758590
Potassium	1.94	mg/L	0.500	5	06/26/24 20:29	CPW	L758590
Selenium	<0.005	mg/L	0.005	5	06/26/24 20:29	CPW	L758590
Silver	<0.0050	mg/L	0.0050	5	06/26/24 20:29	CPW	L758590
Sodium	136	mg/L	2.00	20	06/29/24 02:02	CPW	L759134
Strontium	0.415	mg/L	0.005	5	06/26/24 20:29	CPW	L758590
Zinc	<0.050	mg/L	0.050	5	06/26/24 20:29	CPW	L758590

Analytical Method: 7470A **Prep Batch(es):** **L756962** 06/19/24 09:00
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	06/19/24 13:42	JTR	L757159

Analytical Method: 8260B **Prep Batch(es):** **G195503** 06/26/24 20:50
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	06/27/24 01:09	MAO	G195531
Toluene	<0.005	mg/L	0.005	1	06/27/24 01:09	MAO	G195531
Ethylbenzene	<0.001	mg/L	0.001	1	06/27/24 01:09	MAO	G195531

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001984

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82736**
Sample ID : **CD-16A1**

Matrix: **Aqueous**
Sampled: **6/13/2024 11:50**

Analytical Method: 8260B **Prep Batch(es):** **G195503** 06/26/24 20:50
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	06/27/24 01:09		G195531
Surrogate: Toluene-d8	118		Limits: 70-130%	1	06/27/24 01:09	MAO	G195531

Analytical Method: 9056 **Prep Batch(es):** **A93756** 06/21/24 11:40
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	78.1	mg/L	0.800	5	06/21/24 16:54	MJM	A93779
Bromide (Br)	<0.500	mg/L	0.500	5	06/21/24 16:54	MJM	A93779
Sulfate	20.3	mg/L	2.50	5	06/21/24 16:54	MJM	A93779

Analytical Method: MAEPH LA **Prep Batch(es):** **G195371** 06/24/24 10:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.128	mg/L	0.128	1	06/27/24 21:06	SJS	G195613
Aromatic >C10-C12	<0.128	mg/L	0.128	1	06/27/24 21:06	SJS	G195613
Aliphatic >C12-C16	<0.128	mg/L	0.128	1	06/27/24 21:06	SJS	G195613
Aromatic >C12-C16	<0.128	mg/L	0.128	1	06/27/24 21:06	SJS	G195613
Aromatic >C16-C21	<0.128	mg/L	0.128	1	06/27/24 21:06	SJS	G195613
Aliphatic >C16-C35	<0.213	mg/L	0.213	1	06/27/24 21:06	SJS	G195613

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82736**
Sample ID : **CD-16A1**

Matrix: **Aqueous**
Sampled: **6/13/2024 11:50**

Analytical Method: MAEPH LA **Prep Batch(es):** **G195371** 06/24/24 10:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.149	mg/L	0.149	1	06/27/24 21:06	SJS	G195613
Surrogate: Chlorooctadecane	**24.4** *		Limits: 40-140%	1	06/27/24 21:06	SJS	MAEPH LA
Surrogate: OTP Surrogate	52.1		Limits: 40-140%	1	06/27/24 21:06	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G195505** 06/26/24 20:50
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	0.009	mg/L	0.005	1	06/27/24 01:09	MAO	G195532
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	06/27/24 01:09	MAO	G195532
Aromatic >C8-C10	<0.005	mg/L	0.005	1	06/27/24 01:09		G195532
Surrogate: Toluene-d8	118		Limits: 70-130%	1	06/27/24 01:09	MAO	G195532

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001986

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Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82737**
Sample ID : **CD-16A1**

Matrix: **Aqueous**
Sampled: **6/13/2024 11:50**

Analytical Method: 6020B **Prep Batch(es):** **L756816** 06/18/24 11:08
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	<0.0010	mg/L	0.0010	1	06/19/24 23:48	CPW	L757323
Dissolved Barium	0.313	mg/L	0.005	5	06/22/24 02:32	CPW	L757864
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	06/19/24 23:48	CPW	L757323
Dissolved Chromium	<0.001	mg/L	0.001	1	06/19/24 23:48	CPW	L757323
Dissolved Iron	<0.100	mg/L	0.100	1	06/19/24 23:48	CPW	L757323
Dissolved Lead	<0.0010	mg/L	0.0010	1	06/19/24 23:48	CPW	L757323
Dissolved Magnesium	25.4	mg/L	0.100	1	06/19/24 23:48	CPW	L757323
Dissolved Manganese	0.066	mg/L	0.005	5	06/21/24 02:01	CPW	L757576
Dissolved Selenium	<0.001	mg/L	0.001	1	06/19/24 23:48	CPW	L757323
Dissolved Silver	<0.0010	mg/L	0.0010	1	06/19/24 23:48	CPW	L757323
Dissolved Strontium	0.340	mg/L	0.005	5	06/21/24 02:01	CPW	L757576
Dissolved Zinc	<0.010	mg/L	0.010	1	06/19/24 23:48	CPW	L757323

Analytical Method: 7470A **Prep Batch(es):** **L758305** 06/26/24 08:30
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	06/26/24 13:37	FDS	L758478

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
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Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82738**
Sample ID : **CD-16A2**

Matrix: **Aqueous**
Sampled: **6/13/2024 13:53**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	360	mg/L	10	1	06/18/24 09:33	JMB	A93577
Carbonate	<10	mg/L	10	1	06/18/24 09:33	JMB	A93577
Alkalinity (as CaCO3)	360	mg/L	10	1	06/18/24 09:33	JMB	A93577

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	705	mg/L	10	1	06/19/24 14:20	MJM	A93574

Analytical Method: 6020B **Prep Batch(es):** **L757704** 06/21/24 16:07
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0172	mg/L	0.0050	5	06/26/24 20:35	CPW	L758590
Barium	0.449	mg/L	0.005	5	06/26/24 20:35	CPW	L758590
Cadmium	<0.0050	mg/L	0.0050	5	06/26/24 20:35	CPW	L758590
Calcium	88.2	mg/L	1.00	5	06/26/24 20:35	CPW	L758590
Chromium	<0.005	mg/L	0.005	5	06/26/24 20:35	CPW	L758590
Iron	2.56	mg/L	0.500	5	06/26/24 20:35	CPW	L758590
Lead	<0.0050	mg/L	0.0050	5	06/26/24 20:35	CPW	L758590
Magnesium	31.8	mg/L	0.500	5	06/26/24 20:35	CPW	L758590

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001988

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REPORT OF ANALYSIS

Lab No : **82738**
Sample ID : **CD-16A2**

Matrix: **Aqueous**
Sampled: **6/13/2024 13:53**

Analytical Method: 6020B **Prep Batch(es):** **L757704** 06/21/24 16:07
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.329	mg/L	0.005	5	06/26/24 20:35	CPW	L758590
Potassium	6.20	mg/L	0.500	5	06/26/24 20:35	CPW	L758590
Selenium	<0.005	mg/L	0.005	5	06/26/24 20:35	CPW	L758590
Silver	<0.0050	mg/L	0.0050	5	06/26/24 20:35	CPW	L758590
Sodium	104	mg/L	2.00	20	06/27/24 18:45	CPW	L758822
Strontium	0.594	mg/L	0.005	5	06/26/24 20:35	CPW	L758590
Zinc	<0.050	mg/L	0.050	5	06/26/24 20:35	CPW	L758590

Analytical Method: 7470A **Prep Batch(es):** **L756962** 06/19/24 09:00
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	06/19/24 13:44	JTR	L757159

Analytical Method: 8260B **Prep Batch(es):** **G195503** 06/26/24 20:50
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	06/27/24 01:32	MAO	G195531
Toluene	<0.005	mg/L	0.005	1	06/27/24 01:32	MAO	G195531
Ethylbenzene	<0.001	mg/L	0.001	1	06/27/24 01:32	MAO	G195531

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001989

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REPORT OF ANALYSIS

Lab No : **82738**
Sample ID : **CD-16A2**

Matrix: **Aqueous**
Sampled: **6/13/2024 13:53**

Analytical Method: 8260B **Prep Batch(es):** **G195503** 06/26/24 20:50
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	06/27/24 01:32		G195531
Surrogate: Toluene-d8	104		Limits: 70-130%	1	06/27/24 01:32	MAO	G195531

Analytical Method: 9056 **Prep Batch(es):** **A93756** 06/21/24 11:40
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	203	mg/L	0.800	5	06/21/24 17:07	MJM	A93779
Bromide (Br)	<0.500	mg/L	0.500	5	06/21/24 17:07	MJM	A93779
Sulfate	<2.50	mg/L	2.50	5	06/21/24 17:07	MJM	A93779

Analytical Method: MAEPH LA **Prep Batch(es):** **G195371** 06/24/24 10:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.125	mg/L	0.125	1	06/27/24 21:35	SJS	G195613
Aromatic >C10-C12	<0.125	mg/L	0.125	1	06/27/24 21:35	SJS	G195613
Aliphatic >C12-C16	<0.125	mg/L	0.125	1	06/27/24 21:35	SJS	G195613
Aromatic >C12-C16	<0.125	mg/L	0.125	1	06/27/24 21:35	SJS	G195613
Aromatic >C16-C21	<0.125	mg/L	0.125	1	06/27/24 21:35	SJS	G195613
Aliphatic >C16-C35	<0.208	mg/L	0.208	1	06/27/24 21:35	SJS	G195613

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001990

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82738**
Sample ID : **CD-16A2**

Matrix: **Aqueous**
Sampled: **6/13/2024 13:53**

Analytical Method: MAEPH LA **Prep Batch(es):** **G195371** 06/24/24 10:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.146	mg/L	0.146	1	06/27/24 21:35	SJS	G195613
Surrogate: Chlorooctadecane	**20.8** *		Limits: 40-140%	1	06/27/24 21:35	SJS	MAEPH LA
Surrogate: OTP Surrogate	40.4		Limits: 40-140%	1	06/27/24 21:35	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G195505** 06/26/24 20:50
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	06/27/24 01:32	MAO	G195532
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	06/27/24 01:32	MAO	G195532
Aromatic >C8-C10	<0.005	mg/L	0.005	1	06/27/24 01:32		G195532
Surrogate: Toluene-d8	104		Limits: 70-130%	1	06/27/24 01:32	MAO	G195532

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001991

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82739**
Sample ID : **CD-16A2**

Matrix: **Aqueous**
Sampled: **6/13/2024 13:53**

Analytical Method: 6020B **Prep Batch(es):** **L756816** 06/18/24 11:08
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0182	mg/L	0.0010	1	06/20/24 00:05	CPW	L757323
Dissolved Barium	0.459	mg/L	0.005	5	06/22/24 02:44	CPW	L757864
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	06/20/24 00:05	CPW	L757323
Dissolved Chromium	<0.001	mg/L	0.001	1	06/20/24 00:05	CPW	L757323
Dissolved Iron	3.30	mg/L	0.100	1	06/20/24 00:05	CPW	L757323
Dissolved Lead	<0.0010	mg/L	0.0010	1	06/20/24 00:05	CPW	L757323
Dissolved Magnesium	31.5	mg/L	0.100	1	06/20/24 00:05	CPW	L757323
Dissolved Manganese	0.344	mg/L	0.001	1	06/21/24 02:06	CPW	L757576
Dissolved Selenium	<0.001	mg/L	0.001	1	06/20/24 00:05	CPW	L757323
Dissolved Silver	<0.0010	mg/L	0.0010	1	06/20/24 00:05	CPW	L757323
Dissolved Strontium	0.533	mg/L	0.005	5	06/21/24 02:13	CPW	L757576
Dissolved Zinc	<0.010	mg/L	0.010	1	06/20/24 00:05	CPW	L757323

Analytical Method: 7470A **Prep Batch(es):** **L758305** 06/26/24 08:30
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	06/26/24 13:42	FDS	L758478

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001992

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82740**
Sample ID : **CD-16B**

Matrix: **Aqueous**
Sampled: **6/13/2024 16:00**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	230	mg/L	10	1	06/18/24 09:33	JMB	A93577
Carbonate	<10	mg/L	10	1	06/18/24 09:33	JMB	A93577
Alkalinity (as CaCO3)	230	mg/L	10	1	06/18/24 09:33	JMB	A93577

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	355	mg/L	10	1	06/19/24 14:20	MJM	A93574

Analytical Method: 6020B **Prep Batch(es):** **L757704** 06/21/24 16:07
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0452	mg/L	0.0050	5	06/26/24 20:40	CPW	L758590
Barium	0.645	mg/L	0.005	5	06/26/24 20:40	CPW	L758590
Cadmium	<0.0050	mg/L	0.0050	5	06/26/24 20:40	CPW	L758590
Calcium	155	mg/L	1.00	5	06/26/24 20:40	CPW	L758590
Chromium	0.188	mg/L	0.005	5	06/26/24 20:40	CPW	L758590
Iron	98.7	mg/L	0.500	5	06/26/24 20:40	CPW	L758590
Lead	0.0410	mg/L	0.0050	5	06/26/24 20:40	CPW	L758590
Magnesium	61.6	mg/L	0.500	5	06/26/24 20:40	CPW	L758590

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001993

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82740**
Sample ID : **CD-16B**

Matrix: **Aqueous**
Sampled: **6/13/2024 16:00**

Analytical Method: 6020B **Prep Batch(es):** **L757704** 06/21/24 16:07
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	1.97	mg/L	0.005	5	06/26/24 20:40	CPW	L758590
Potassium	12.1	mg/L	0.500	5	06/26/24 20:40	CPW	L758590
Selenium	<0.005	mg/L	0.005	5	06/26/24 20:40	CPW	L758590
Silver	<0.0050	mg/L	0.0050	5	06/26/24 20:40	CPW	L758590
Sodium	66.3	mg/L	0.500	5	06/26/24 20:40	CPW	L758590
Strontium	0.523	mg/L	0.005	5	06/26/24 20:40	CPW	L758590
Zinc	0.323	mg/L	0.050	5	06/26/24 20:40	CPW	L758590

Analytical Method: 7470A **Prep Batch(es):** **L756962** 06/19/24 09:00
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	06/19/24 13:45	JTR	L757159

Analytical Method: 8260B **Prep Batch(es):** **G195503** 06/26/24 20:50
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	06/27/24 01:55	MAO	G195531
Toluene	<0.005	mg/L	0.005	1	06/27/24 01:55	MAO	G195531
Ethylbenzene	<0.001	mg/L	0.001	1	06/27/24 01:55	MAO	G195531

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001994

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82740**
Sample ID : **CD-16B**

Matrix: **Aqueous**
Sampled: **6/13/2024 16:00**

Analytical Method: 8260B **Prep Batch(es):** **G195503** 06/26/24 20:50
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	06/27/24 01:55		G195531
Surrogate: Toluene-d8	119		Limits: 70-130%	1	06/27/24 01:55	MAO	G195531

Analytical Method: 9056 **Prep Batch(es):** **A93756** 06/21/24 11:40
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	70.9	mg/L	0.400	2	06/21/24 17:19	MJM	A93779
Bromide (Br)	<0.200	mg/L	0.200	2	06/21/24 17:19	MJM	A93779
Sulfate	2.15	mg/L	1.00	2	06/21/24 17:19	MJM	A93779

Analytical Method: MAEPH LA **Prep Batch(es):** **G195371** 06/24/24 10:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.125	mg/L	0.125	1	06/27/24 22:04	SJS	G195613
Aromatic >C10-C12	<0.125	mg/L	0.125	1	06/27/24 22:04	SJS	G195613
Aliphatic >C12-C16	<0.125	mg/L	0.125	1	06/27/24 22:04	SJS	G195613
Aromatic >C12-C16	<0.125	mg/L	0.125	1	06/27/24 22:04	SJS	G195613
Aromatic >C16-C21	<0.125	mg/L	0.125	1	06/27/24 22:04	SJS	G195613
Aliphatic >C16-C35	<0.208	mg/L	0.208	1	06/27/24 22:04	SJS	G195613

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001995

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82740**
Sample ID : **CD-16B**

Matrix: **Aqueous**
Sampled: **6/13/2024 16:00**

Analytical Method: MAEPH LA **Prep Batch(es):** **G195371** 06/24/24 10:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.146	mg/L	0.146	1	06/27/24 22:04	SJS	G195613
Surrogate: Chlorooctadecane	**21.7** *		Limits: 40-140%	1	06/27/24 22:04	SJS	MAEPH LA
Surrogate: OTP Surrogate	56.7		Limits: 40-140%	1	06/27/24 22:04	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G195505** 06/26/24 20:50
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	0.006	mg/L	0.005	1	06/27/24 01:55	MAO	G195532
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	06/27/24 01:55	MAO	G195532
Aromatic >C8-C10	<0.005	mg/L	0.005	1	06/27/24 01:55		G195532
Surrogate: Toluene-d8	119		Limits: 70-130%	1	06/27/24 01:55	MAO	G195532

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-001996

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/14/2024

Report Number : **24-166-0036**

REPORT OF ANALYSIS

Lab No : **82741**
Sample ID : **CD-16B**

Matrix: **Aqueous**
Sampled: **6/13/2024 16:00**

Analytical Method: 6020B **Prep Batch(es):** **L756816** 06/18/24 11:08
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0149	mg/L	0.0010	1	06/20/24 00:12	CPW	L757323
Dissolved Barium	0.224	mg/L	0.005	5	06/22/24 02:55	CPW	L757864
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	06/20/24 00:12	CPW	L757323
Dissolved Chromium	0.006	mg/L	0.001	1	06/22/24 02:49	CPW	L757864
Dissolved Iron	3.42	mg/L	0.100	1	06/20/24 00:12	CPW	L757323
Dissolved Lead	0.0011	mg/L	0.0010	1	06/20/24 00:12	CPW	L757323
Dissolved Magnesium	14.2	mg/L	0.100	1	06/20/24 00:12	CPW	L757323
Dissolved Manganese	0.195	mg/L	0.001	1	06/21/24 02:18	CPW	L757576
Dissolved Selenium	<0.001	mg/L	0.001	1	06/20/24 00:12	CPW	L757323
Dissolved Silver	<0.0010	mg/L	0.0010	1	06/20/24 00:12	CPW	L757323
Dissolved Strontium	0.196	mg/L	0.001	1	06/20/24 00:12	CPW	L757323
Dissolved Zinc	<0.010	mg/L	0.010	1	06/20/24 00:12	CPW	L757323

Analytical Method: 7470A **Prep Batch(es):** **L758305** 06/26/24 08:30
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	06/26/24 13:43	FDS	L758478

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-166-0036**

QC Analytical Batch: A93577
Analysis Method: 2320B-2011
Analysis Description: Alkalinity

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 82736, 82738, 82740

Parameter	Units	Blank Result	MQL	Analyzed
Alkalinity (as CaCO3)	mg/L	< 10	10	06/18/24 09:33

Duplicate A 82736-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Alkalinity (as CaCO3)	mg/L	490	490	0.0	25	06/18/24 09:33

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-166-0036**

QC Analytical Batch: A93574
Analysis Method: 2540C-2011
Analysis Description: Total Dissolved Solids (TDS)

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 82736, 82738, 82740

Parameter	Units	Blank Result	MQL	Analyzed
Total Dissolved Solids	mg/L	< 10	10	06/19/24 14:20

Duplicate A 82608-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Dissolved Solids	mg/L	14700	14700	0.0	10	06/19/24 14:20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-166-0036

QC Prep: L756816
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L757323,L757576,L757864
Analysis Method: 6020B
Analysis Description: Metals Analyses

Lab Reagent Blank LRB-L756816 Matrix: AQU
Associated Lab Samples: 82737, 82739, 82741

Parameter	Units	Blank Result	MQL	Analyzed
Dissolved Arsenic	mg/L	<0.0010	0.0010	06/19/24 23:32
Dissolved Barium	mg/L	<0.001	0.001	06/19/24 23:32
Dissolved Cadmium	mg/L	<0.0010	0.0010	06/19/24 23:32
Dissolved Chromium	mg/L	<0.001	0.001	06/19/24 23:32
Dissolved Iron	mg/L	<0.100	0.100	06/19/24 23:32
Dissolved Lead	mg/L	<0.0010	0.0010	06/19/24 23:32
Dissolved Magnesium	mg/L	<0.100	0.100	06/19/24 23:32
Dissolved Manganese	mg/L	<0.001	0.001	06/19/24 23:32
Dissolved Selenium	mg/L	<0.001	0.001	06/19/24 23:32
Dissolved Silver	mg/L	<0.0010	0.0010	06/19/24 23:32
Dissolved Strontium	mg/L	<0.001	0.001	06/19/24 23:32
Dissolved Zinc	mg/L	<0.010	0.010	06/19/24 23:32

Laboratory Control Sample & LCSD LCS-L756816 LCSD-L756816

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Arsenic	mg/L	0.0500	0.0494	0.0501	99.0	100	80-120	1.4	20
Dissolved Barium	mg/L	0.100	0.098	0.100	99.0	100	80-120	1.4	20
Dissolved Cadmium	mg/L	0.0100	0.0101	0.0105	101	105	80-120	3.8	20
Dissolved Chromium	mg/L	0.100	0.099	0.101	100	101	80-120	1.1	20
Dissolved Iron	mg/L	10.0	9.81	10.1	98.0	101	80-120	2.9	20
Dissolved Lead	mg/L	0.0500	0.0499	0.0506	100	101	80-120	1.3	20
Dissolved Magnesium	mg/L	10.0	10.5	10.6	105	106	80-120	0.9	20
Dissolved Manganese	mg/L	0.100	0.093	0.094	94.0	94.0	80-120	0.2	20
Dissolved Selenium	mg/L	0.100	0.097	0.100	98.0	100	80-120	2.4	20
Dissolved Silver	mg/L	0.0100	0.0102	0.0103	102	103	80-120	0.9	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-166-0036**

QC Prep: L756816
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L757323,L757576,L757864
Analysis Method: 6020B
Analysis Description: Metals Analyses

Laboratory Control Sample & LCSD LCS-L756816 LCSD-L756816

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Strontium	mg/L	0.100	0.101	0.103	101	103	80-120	1.9	20
Dissolved Zinc	mg/L	0.500	0.491	0.508	98.0	102	80-120	3.4	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-166-0036

QC Prep: L757704
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L758338,L758590
Analysis Method: 6020B
Analysis Description: Metals Analyses

Lab Reagent Blank LRB-L757704 Matrix: AQU
Associated Lab Samples: 82736, 82738, 82740

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/L	<0.0010	0.0010	06/25/24 19:41
Barium	mg/L	<0.001	0.001	06/25/24 19:41
Calcium	mg/L	<0.200	0.200	06/25/24 19:41
Cadmium	mg/L	<0.0010	0.0010	06/25/24 19:41
Chromium	mg/L	<0.001	0.001	06/25/24 19:41
Iron	mg/L	<0.100	0.100	06/25/24 19:41
Lead	mg/L	<0.0010	0.0010	06/25/24 19:41
Magnesium	mg/L	<0.100	0.100	06/26/24 20:19
Manganese	mg/L	<0.001	0.001	06/25/24 19:41
Potassium	mg/L	<0.100	0.100	06/25/24 19:41
Selenium	mg/L	<0.001	0.001	06/25/24 19:41
Silver	mg/L	<0.0010	0.0010	06/25/24 19:41
Sodium	mg/L	<0.100	0.100	06/26/24 20:19
Strontium	mg/L	<0.001	0.001	06/25/24 19:41
Zinc	mg/L	<0.010	0.010	06/25/24 19:41

Laboratory Control Sample LCS-L757704

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/L	0.0500	0.0464	93.0	80-120
Barium	mg/L	0.100	0.092	93.0	80-120
Calcium	mg/L	10.0	10.1	101	80-120
Cadmium	mg/L	0.0100	0.0094	94.0	80-120
Chromium	mg/L	0.100	0.096	97.0	80-120
Iron	mg/L	10.0	9.31	93.0	80-120
Lead	mg/L	0.0500	0.0452	90.0	80-120
Magnesium	mg/L	10.0	10.1	101	80-120

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-166-0036

QC Prep: L757704
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L758338,L758590
Analysis Method: 6020B
Analysis Description: Metals Analyses

Laboratory Control Sample LCS-L757704

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Manganese	mg/L	0.100	0.098	99.0	80-120
Potassium	mg/L	10.0	9.68	97.0	80-120
Selenium	mg/L	0.100	0.095	95.0	80-120
Silver	mg/L	0.0100	0.0088	89.0	80-120
Sodium	mg/L	10.0	10.3	103	80-120
Strontium	mg/L	0.100	0.098	98.0	80-120
Zinc	mg/L	0.500	0.471	94.0	80-120

Matrix Spike & Matrix Spike Duplicate N 93186-MS-L757704 N 93186-MSD-L757704

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/L	<0.0010	0.0500	0.0500	0.0480	0.0475	95.0	94.0	75-125	1.0	20
Barium	mg/L	0.026	0.100	0.100	0.117	0.115	90.0	88.0	75-125	1.7	20
Calcium	mg/L	9.42	10.0	10.0	18.9	18.7	95.0	93.0	75-125	1.0	20
Cadmium	mg/L	<0.0010	0.0100	0.0100	0.0092	0.0090	93.0	91.0	75-125	2.1	20
Chromium	mg/L	0.001	0.100	0.100	0.098	0.096	96.0	94.0	75-125	2.0	20
Iron	mg/L	1.04	10.0	10.0	10.0	9.98	90.0	89.0	75-125	0.2	20
Lead	mg/L	<0.0010	0.0500	0.0500	0.0460	0.0456	91.0	91.0	75-125	0.8	20
Magnesium	mg/L	1.17	10.0	10.0	11.6	11.8	104	106	75-125	1.7	20
Manganese	mg/L	0.046	0.100	0.100	0.148	0.146	101	99.0	75-125	1.3	20
Potassium	mg/L	0.806	10.0	10.0	10.1	9.91	93.0	91.0	75-125	1.8	20
Selenium	mg/L	<0.001	0.100	0.100	0.094	0.094	94.0	95.0	75-125	0.1	20
Silver	mg/L	<0.0010	0.0100	0.0100	0.0084	0.0081	84.0	81.0	75-125	3.3	20
Sodium	mg/L	55.1	10.0	10.0	64.8	65.7	97.0	106	75-125	1.3	20
Strontium	mg/L	0.148	0.100	0.100	0.256	0.256	108	108	75-125	0.0	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-166-0036**

QC Prep: L757704
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L758338,L758590
Analysis Method: 6020B
Analysis Description: Metals Analyses

Matrix Spike & Matrix Spike Duplicate N 93186-MS-L757704 N 93186-MSD-L757704

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Zinc	mg/L	0.026	0.500	0.500	0.476	0.475	90.0	90.0	75-125	0.2	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-166-0036

QC Prep: L756962
QC Prep Batch Method: 7470A
QC Analytical Batch(es): L757159
Analysis Method: 7470A
Analysis Description: Total Aqueous Mercury Analysis - CVAA

Lab Reagent Blank LRB-L756962 Matrix: AQU
Associated Lab Samples: 82736, 82738, 82740

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/L	<0.00020	0.00020	06/19/24 13:40

Laboratory Control Sample LCS-L756962

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/L	0.00400	0.00394	99.0	80-120

Matrix Spike & Matrix Spike Duplicate L 99895-MS-L756962 L 99895-MSD-L756962

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/L	<0.00020	0.00400	0.00400	0.00389	0.00399	97.0	100	80-120	2.5	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-166-0036**

QC Prep: L758305
QC Prep Batch Method: 7470A
QC Analytical Batch(es): L758478
Analysis Method: 7470A
Analysis Description: Total Aqueous Mercury Analysis - CVAA

Lab Reagent Blank LRB-L758305 Matrix: AQU
Associated Lab Samples: 82737, 82739, 82741

Parameter	Units	Blank Result	MQL	Analyzed
Dissolved Mercury	mg/L	<0.00020	0.00020	06/26/24 13:33

Laboratory Control Sample & LCSD LCS-L758305 LCSD-L758305

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Mercury	mg/L	0.00400	0.00392	0.00380	98.0	95.0	80-120	3.1	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-166-0036

QC Prep: G195503
QC Prep Batch Method: 5030B
QC Analytical Batch(es): G195531
Analysis Method: 8260B
Analysis Description: Volatile Organic Compounds - GC/MS

Lab Reagent Blank LRB-G195503 Matrix: AQU
Associated Lab Samples: 82736, 82738, 82740

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Benzene	mg/L	<0.001	0.001	06/26/24 23:14		
Ethylbenzene	mg/L	<0.001	0.001	06/26/24 23:14		
Toluene	mg/L	<0.005	0.005	06/26/24 23:14		
o-Xylene	mg/L	<0.001	0.001	06/26/24 23:14		
m,p-Xylene	mg/L	<0.002	0.002	06/26/24 23:14		
Toluene-d8 (S)				06/26/24 23:14	93.2	70-130

Laboratory Control Sample LCS-G195503

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Benzene	mg/L	0.100	0.099	99.5	70-130
Ethylbenzene	mg/L	0.100	0.094	94.3	80-120
Toluene	mg/L	0.100	0.108	108	80-120
o-Xylene	mg/L	0.100	0.103	103	70-130
m,p-Xylene	mg/L	0.200	0.204	102	75-125
Toluene-d8 (S)				119	70-130

Matrix Spike & Matrix Spike Duplicate G 52681-MS-G195503 G 52681-MSD-G195503

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Benzene	mg/L	13.7	0.100	0.100	14.7	14.0	1000*	300*	58-143	4.8	30
Ethylbenzene	mg/L	2.45	0.100	0.100	2.80	2.60	350*	150*	65-141	7.4	30
Toluene	mg/L	17.4	0.100	0.100	16.8	18.6	0.0*	1200*	64-145	10.1	30
o-Xylene	mg/L	3.52	0.100	0.100	3.72	3.77	200*	250*	65-142	1.3	30
m,p-Xylene	mg/L	9.16	0.200	0.200	9.56	9.79	200*	315*	61-149	2.3	30

* QC Fail

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-166-0036**

QC Prep: G195503
QC Prep Batch Method: 5030B
QC Analytical Batch(es): G195531
Analysis Method: 8260B
Analysis Description: Volatile Organic Compounds - GC/MS

Matrix Spike & Matrix Spike Duplicate G 52681-MS-G195503 G 52681-MSD-G195503

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Toluene-d8 (S)							104	112	70-130		

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-166-0036**

QC Prep: A93756
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A93779
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A93756 Matrix: AQU
Associated Lab Samples: 82736, 82738, 82740

Parameter	Units	Blank Result	MQL	Analyzed
Bromide (Br)	mg/L	< 0.100	0.100	06/21/24 13:31
Chloride	mg/L	< 0.400	0.400	06/21/24 13:31
Sulfate	mg/L	< 0.500	0.500	06/21/24 13:31

Laboratory Control Sample LCS-A93756

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Bromide (Br)	mg/L	13.9	14.0	101	80-120
Chloride	mg/L	55.6	57.4	103	80-120
Sulfate	mg/L	69.4	69.9	101	80-120

Matrix Spike & Matrix Spike Duplicate A 82608-MS-A93756 A 82608-MSD-A93756

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Bromide (Br)	mg/L	20.9	13.9	13.9	32.3	32.7	82.0	85.0	80-120	1.2	15.0
Chloride	mg/L	7750	55.6	55.6	7770	7810	36.0*	108	80-120	0.5	15.0
Sulfate	mg/L	< 55.6	69.4	69.4	65.8	65.0	95.0	94.0	80-120	1.2	15.0

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-166-0036

QC Prep: G195371
QC Prep Batch Method: MAEPH LA
QC Analytical Batch(es): G195613
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Lab Reagent Blank LRB-G195371 Matrix: AQU
Associated Lab Samples: 82736, 82738, 82740

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C10-C12	mg/L	<0.030	0.030	06/27/24 17:07		
Aliphatic >C12-C16	mg/L	<0.030	0.030	06/27/24 17:07		
Aliphatic >C16-C35	mg/L	<0.050	0.050	06/27/24 17:07		
Aromatic >C10-C12	mg/L	<0.030	0.030	06/27/24 17:07		
Aromatic >C12-C16	mg/L	<0.030	0.030	06/27/24 17:07		
Aromatic >C16-C21	mg/L	<0.030	0.030	06/27/24 17:07		
Aromatic >C21-C35	mg/L	<0.035	0.035	06/27/24 17:07		
Chlorooctadecane (S)				06/27/24 17:07	30.0	40-140
OTP Surrogate (S)				06/27/24 17:07	73.2	40-140

Laboratory Control Sample LCS-G195371

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Aliphatic >C12-C16	mg/L	0.100	0.060	60.9	40-140
Aliphatic >C16-C35	mg/L	0.300	0.266	88.6	40-140
Aromatic >C10-C12	mg/L	0.100	0.095	95.3	40-140
Aromatic >C12-C16	mg/L	0.200	0.176	88.0	40-140
Aromatic >C16-C21	mg/L	0.100	0.094	94.0	40-140
Chlorooctadecane (S)				41.8	40-140
OTP Surrogate (S)				93.4	40-140

Matrix Spike & Matrix Spike Duplicate G 53134-MS-G195371 G 53134-MSD-G195371

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Aliphatic >C12-C16	mg/L	20.3	0.377	0.400	6.04	10.5	0.0*	0.0*	40-140	53.9*	25
Aliphatic >C16-C35	mg/L	27.1	1.13	1.20	9.83	14.2	0.0*	0.0*	40-140	36.3*	25

* QC Fail

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-166-0036**

QC Prep: G195371
QC Prep Batch Method: MAEPH LA
QC Analytical Batch(es): G195613
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Matrix Spike & Matrix Spike Duplicate G 53134-MS-G195371 G 53134-MSD-G195371

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Aromatic >C10-C12	mg/L	12.7	0.377	0.400	20.6	4.78	2100*	0.0*	40-140	125*	25
Aromatic >C12-C16	mg/L	16.0	0.755	0.800	29.0	5.45	1720*	0.0*	40-140	137*	25
Aromatic >C16-C21	mg/L	0.656	0.377	0.400	3.20	0.780	675*	31.0*	40-140	122*	25
Chlorooctadecane (S)							59.2	96.0	40-140		
OTP Surrogate (S)							94.7	86.5	40-140		

* QC Fail

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-166-0036

QC Prep: G195505
QC Prep Batch Method: MAVPH LA (GC/MS) (Aqueous)
QC Analytical Batch(es): G195532
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G195505 Matrix: AQU
Associated Lab Samples: 82736, 82738, 82740

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/L	<0.005	0.005	06/26/24 23:14		
Aliphatic >C8-C10	mg/L	<0.013	0.013	06/26/24 23:14		
Aromatic >C8-C10 A	mg/L	<0.005	0.005	06/26/24 23:14		
Toluene-d8 (S)				06/26/24 23:14	93.2	70-130

Laboratory Control Sample LCS-G195505

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Aliphatic >C6-C8	mg/L	0.500	0.498	99.6	70-130
Aliphatic >C8-C10	mg/L	1.30	1.15	88.4	70-130
Aromatic >C8-C10 A	mg/L	0.500	0.467	93.4	70-130
Toluene-d8 (S)				119	70-130

Matrix Spike & Matrix Spike Duplicate G 52681-MS-G195505 G 52681-MSD-G195505

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/L	17.1	0.500	0.500	17.3	17.9	40.0*	160*	70-130	3.4	25
Aliphatic >C8-C10	mg/L	23.5	1.30	1.30	32.5	24.9	692*	108	70-130	26.4*	25
Aromatic >C8-C10 A	mg/L	3.87	0.500	0.500	4.59	4.25	144*	76.0	70-130	7.6	25
Toluene-d8 (S)							104	112	70-130		

* QC Fail

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM (Sugar Land)**
Report Number: **24-166-0036**

Shipping Method

○ Fed Ex	○ US Postal	● Lab	○ Other :	
○ UPS	○ Client	○ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	● Yes	○ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	○ Yes	○ No	● Not Present
Custody seals intact on sample bottles?	○ Yes	○ No	● Not Present
Chain of Custody (COC) present?	● Yes	○ No	
COC agrees with sample label(s)?	● Yes	○ No	
COC properly completed	● Yes	○ No	
Samples in proper containers?	● Yes	○ No	
Sample containers intact?	● Yes	○ No	
Sufficient sample volume for indicated test(s)?	● Yes	○ No	
All samples received within holding time?	● Yes	○ No	
Cooler temperature in compliance?	● Yes	○ No	○ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	● Yes	○ No	
Water - Sample containers properly preserved	● Yes	○ No	○ N/A
Water - VOA vials free of headspace	● Yes	○ No	○ N/A
Trip Blanks received with VOAs	● Yes	○ No	○ N/A
Soil VOA method 5035 – compliance criteria met	○ Yes	○ No	● N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	○ Yes	● No

Comments: Trip Blank rec'd and on hold, as per client. CCT

Signature: Christina R. Varuso Date & Time: 06/14/2024 17:07:15

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM (10485) 840 W. Sam Houston Pkwy North, Suite 600 Houston, TX 77024	Dave Upthegrove Anna Fix	ERM (10485)

24-166-0036
10485
06-14-2024
17:06:49
ERM (Sugar Land)
Castex

Project Description	Project/Site Location (City/State)		Method
Castex	Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other

WW – Wastewater GW – Groundwater
DW – Drinking Water S – Soil /Solid O – Oil
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
PN 0727954	832-786-5006	David.Upthegrove@erm.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification		Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Chloride, Sulfate, Bromide	Alkalinity	TDS	Metals+Cations*	Dissolved Metals**	VPH	BTEX	EPH	Rad 226/228 (Sub)	Comments/Notes
							Required Analysis / Preservative									
6/13/24	1150	CD-16A1	82736-82737	10	GW		✓	✓	✓	✓	✓	✓	✓	✓	✓	*Metals: As,Ba,Cd,Cr,Fe,Pb,Mn,Hg,Se,Ag,Zn+ Ca,Mg,K,Na,Sr
6/13/24	1353	CD-16A2	82738-82739	10	GW		✓	✓	✓	✓	✓	✓	✓	✓	✓	**Dissolved Metals: As, Ba, Cd, Cr, Fe, Pb, Mn, Hg, Se, Ag, Zn,Sr
6/13/24	1600	CD-16B	82740-82741	10	GW		✓	✓	✓	✓	✓	✓	✓	✓	✓	**Dissolved metals: Field filtered

For Laboratory Use Only

Ice	Custody Seals	Lab Comments
Y/N	Y/N	

Blank/Cooler Temp: 2.2°C

Sampled by (Name – Print): Hannah Spiegel

Client Remarks/Comments: RECAP limits

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Hannah Spiegel	6/14/24 0645	T. Howard	6/14/24 0645
T. Howard	6/14/24 0852	Kathryn Hendrix	06/14/24 0852
Kathryn Hendrix 06/14/24	1135	Received by: (SIGNATURE)	Date Time 1135

Relby: 6/14/24 @ 1400

Received by: 6/14/24 1400

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7/18/2024

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 24-170-0023
Project Description: Castex
Project Number: 0727954
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 6/18/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-002015

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2025
Arkansas	State Program	88-0650	02/07/2025
California	State Program	2904	06/30/2024
Florida	State Program - NELAP	E871157	06/30/2025
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2024
Kentucky	State Program	90047	12/31/2024
Kentucky	State Program	80215	06/30/2024
Kentucky	State Program	KY90047	12/31/2024
Louisiana	State Program - NELAP	LA037	12/31/2024
Louisiana	State Program - NELAP	04015	06/30/2025
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2024
North Carolina	State Program	415	12/31/2024
Pennsylvania	State Program - NELAP	68-03195	05/31/2025
South Carolina	State Program	84002	06/30/2024
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2024
Virginia	State Program	00106	06/30/2025
Virginia	State Program - NELAP	460181	09/14/2024

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Sample Summary Table

Report Number: **24-170-0023**

Client Project Description: **Castex**
Project Number: 0727954
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
82883	CD-17 (8-10')	Solids	06/14/2024 10:49	06/18/2024		
82884	CD-17 (8-10')	TCLP	06/14/2024 10:49	06/18/2024	1312	WP MTN
82884	CD-17 (8-10')	TCLP	06/14/2024 10:49	06/18/2024	9056	WP MTN
82885	CD-17 (14-16')	Solids	06/14/2024 10:51	06/18/2024		
82886	CD-17 (14-16')	TCLP	06/14/2024 10:51	06/18/2024	9056	WP MTN
82886	CD-17 (14-16')	TCLP	06/14/2024 10:51	06/18/2024	1312	WP MTN
82887	CD-17 (60-62')	Solids	06/14/2024 13:30	06/18/2024		
82888	CD-17 (60-62')	TCLP	06/14/2024 13:30	06/18/2024	9056	WP MTN
82888	CD-17 (60-62')	TCLP	06/14/2024 13:30	06/18/2024	1312	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

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Client: ERM
Project: Castex
Lab Report Number: 24-170-0023
Date: 7/18/2024

CASE NARRATIVE

Report Comments
Methods
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.
Results
• 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
• True Total Barium results are reported dry weight

Metals Analysis Method 6010D
Sample 82883 (CD-17 (8-10'))
Analyte: Arsenic
QC Batch No: A93758/A93650
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 82883 (CD-17 (8-10'))
Analyte: Barium
QC Batch No: A93758/A93650
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 82883 (CD-17 (8-10'))
Analyte: Lead
QC Batch No: A93758/A93650
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 82883 (CD-17 (8-10'))
Analyte: Lead
QC Batch No: A93758/A93650
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.
MS/MSD

Sample 82883 (CD-17 (8-10'))
Analyte: Zinc
QC Batch No: A93758/A93650
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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Project Castex

Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/18/2024

Report Number : **24-170-0023**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82883**
Sample ID : **CD-17 (8-10')**

Matrix: **Solids**
Sampled: **6/14/2024 10:49**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.8	%	0.050	1	06/20/24 08:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	142	%		1	07/05/24 09:40	TJL	29B
Electrical Conductivity (Sat Paste)	1.44	mmhos/cm		1	07/05/24 09:40	TJL	29B
pH (Sat Paste)	7.27	s.u.		1	07/05/24 09:40	TJL	29B
Cation Exchange Capacity	41.8	meq/100g	0.100	10	07/03/24 15:03		29B
Exchangeable Sodium Percentage	11.8	%	0.100	1	07/03/24 15:03		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	16.7	Calc	0.025	5	07/05/24 11:45		29B
Calcium (Sat Paste)	0.643	meq/L	0.025	5	07/05/24 11:45	APB	29B
Magnesium (Sat Paste)	0.456	meq/L	0.041	5	07/05/24 11:45	APB	29B
Sodium (Sat Paste)	12.4	meq/L	0.110	5	07/05/24 11:45	APB	29B
True Total Barium	448	mg/Kg	50.0	1	07/02/24 17:14	APB	29B
Arsenic	3.40	mg/Kg	1.00	2	06/22/24 14:29	APB	6010D
Barium	209	mg/Kg	1.00	2	06/22/24 14:29	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	06/22/24 14:29	APB	6010D
Chromium	23.5	mg/Kg	0.500	2	06/22/24 14:29	APB	6010D
Lead	13.7	mg/Kg	0.600	2	06/22/24 14:29	APB	6010D
Mercury	<0.0166	mg/Kg	0.0166	1	06/26/24 15:42	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	06/22/24 14:29	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	06/22/24 14:29	APB	6010D
Zinc	112	mg/Kg	2.50	2	06/22/24 14:29	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/18/2024

Report Number : **24-170-0023**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82884**
Sample ID : **CD-17 (8-10')**

Matrix: **TCLP**
Sampled: **6/14/2024 10:49**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	06/27/24 14:50	TJT	1312
SPLP Chloride	14.4	mg/L	1.60	10	07/01/24 16:22	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/18/2024

Report Number : **24-170-0023**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82885**
Sample ID : **CD-17 (14-16')**

Matrix: **Solids**
Sampled: **6/14/2024 10:51**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.2	%	0.050	1	06/20/24 08:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	116	%		1	07/05/24 09:40	TJL	29B
Electrical Conductivity (Sat Paste)	1.20	mmhos/cm		1	07/05/24 09:40	TJL	29B
pH (Sat Paste)	7.73	s.u.		1	07/05/24 09:40	TJL	29B
Cation Exchange Capacity	42.7	meq/100g	0.100	10	07/03/24 15:11		29B
Exchangeable Sodium Percentage	2.77	%	0.100	1	07/03/24 15:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	5.07	Calc	0.025	5	07/05/24 11:49		29B
Calcium (Sat Paste)	2.33	meq/L	0.025	5	07/05/24 11:49	APB	29B
Magnesium (Sat Paste)	1.53	meq/L	0.041	5	07/05/24 11:49	APB	29B
Sodium (Sat Paste)	7.04	meq/L	0.110	5	07/05/24 11:49	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/18/2024

Report Number : **24-170-0023**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82886**
Sample ID : **CD-17 (14-16')**

Matrix: **TCLP**
Sampled: **6/14/2024 10:51**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	06/27/24 14:50	TJT	1312
SPLP Chloride	10.3	mg/L	1.60	10	07/01/24 16:48	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/18/2024

Report Number : **24-170-0023**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82887**
Sample ID : **CD-17 (60-62')**

Matrix: **Solids**
Sampled: **6/14/2024 13:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	29.5	%	0.050	1	06/20/24 08:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	74.9	%		1	07/05/24 09:40	TJL	29B
Electrical Conductivity (Sat Paste)	1.12	mmhos/cm		1	07/05/24 09:40	TJL	29B
pH (Sat Paste)	7.90	s.u.		1	07/05/24 09:40	TJL	29B
Cation Exchange Capacity	33.8	meq/100g	0.100	10	07/03/24 15:20		29B
Exchangeable Sodium Percentage	1.26	%	0.100	1	07/03/24 15:20		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	2.51	Calc	0.025	5	07/05/24 11:53		29B
Calcium (Sat Paste)	3.91	meq/L	0.025	5	07/05/24 11:53	APB	29B
Magnesium (Sat Paste)	1.67	meq/L	0.041	5	07/05/24 11:53	APB	29B
Sodium (Sat Paste)	4.20	meq/L	0.110	5	07/05/24 11:53	APB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/18/2024

Report Number : **24-170-0023**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **82888**
Sample ID : **CD-17 (60-62')**

Matrix: **TCLP**
Sampled: **6/14/2024 13:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	06/27/24 14:50	TJT	1312
SPLP Chloride	5.58	mg/L	1.60	10	07/01/24 17:14	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-170-0023

QC Prep: A93916
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): A94026
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-A93916 Matrix: SOL
Associated Lab Samples: 82883

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 50.0	50.0	07/02/24 16:50

Laboratory Control Sample LCS-A93916

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	9880	99.0	80-120

Matrix Spike & Matrix Spike Duplicate A 82883-A93710-MS-A93916 A 82883-A93710-MSD-A93916

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	448	9710	9520	10100	9930	99.0	100	75-125	1.6	20.0

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-170-0023**

QC Prep: A93978
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A94054
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A93978 Matrix: SOL
Associated Lab Samples: 82883, 82885, 82887

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	07/03/24 14:59

Duplicate A 82883-A93710-DUP-A93978

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	9610	9910	3.0	30.0	07/03/24 15:07

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-170-0023**

QC Prep: A93979
QC Prep Batch Method: 29B
QC Analytical Batch(es): A94056
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 82883-A93710-DUP-A93979

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	6.68	6.70	0.2	30.0	07/03/24 16:56

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-170-0023

QC Prep: A93983
QC Prep Batch Method: 29B
QC Analytical Batch(es): A94073,A94075
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 83025-A93710-DUP-A93983

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	77.4	77.3	0.1	30.0	07/05/24 09:40
Electrical Conductivity (Sat Paste)	mmhos/cm	19.7	19.2	2.5	30.0	07/05/24 09:40
pH (Sat Paste)	s.u.	7.88	7.86	0.2	30.0	07/05/24 09:40

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-170-0023**

QC Prep: A93983
QC Prep Batch Method: 29B
QC Analytical Batch(es): A94073,A94075
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 83025-A93710-DUP-A93983

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	10.2	9.69	5.1	30.0	07/05/24 12:01
Magnesium (Sat Paste)	meq/L	31.4	30.4	3.2	30.0	07/05/24 12:01
Sodium (Sat Paste)	meq/L	155	151	2.6	30.0	07/05/24 12:01

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Quality Control Data

Client ID: ERM
Project Description: Castex
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QC Prep: A93650
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A93758
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-A93650 Matrix: SOL
Associated Lab Samples: 82883

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 0.500	0.500	06/22/24 14:17
Barium	mg/Kg	< 0.500	0.500	06/22/24 14:17
Cadmium	mg/Kg	< 0.100	0.100	06/22/24 14:17
Chromium	mg/Kg	< 0.250	0.250	06/22/24 14:17
Lead	mg/Kg	< 0.300	0.300	06/22/24 14:17
Selenium	mg/Kg	< 0.500	0.500	06/22/24 14:17
Silver	mg/Kg	< 0.250	0.250	06/22/24 14:17
Zinc	mg/Kg	< 1.25	1.25	06/22/24 14:17

Laboratory Control Sample & LCSD LCS-A93650 LCSD-A93650

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	5.00	5.50	5.48	110	110	80-120	0.3	20.0
Barium	mg/Kg	50.0	54.2	54.7	108	109	80-120	0.9	20.0
Cadmium	mg/Kg	5.00	5.58	5.61	112	112	80-120	0.5	20.0
Chromium	mg/Kg	50.0	55.0	55.4	110	111	80-120	0.7	20.0
Lead	mg/Kg	5.00	5.58	5.63	112	113	80-120	0.8	20.0
Selenium	mg/Kg	5.00	5.29	5.57	106	111	80-120	5.1	20.0
Silver	mg/Kg	5.00	5.44	5.49	109	110	80-120	0.9	20.0
Zinc	mg/Kg	50.0	51.2	51.3	102	103	80-120	0.1	20.0

Matrix Spike & Matrix Spike Duplicate A 82883-MS-A93650 A 82883-MSD-A93650

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	3.40	4.94	4.94	6.90	8.06	71.0*	94.0	75-125	15.5	20.0
Barium	mg/Kg	209	49.4	49.4	290	265	164*	113	75-125	9.0	20.0

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Project Description: Castex
Report No: 24-170-0023

QC Prep: A93650
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A93758
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 82883-MS-A93650 A 82883-MSD-A93650

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Cadmium	mg/Kg	< 0.200	4.94	4.94	4.67	4.68	95.0	95.0	75-125	0.2	20.0
Chromium	mg/Kg	23.5	49.4	49.4	77.8	77.9	110	110	75-125	0.1	20.0
Lead	mg/Kg	13.7	4.94	4.94	19.9	15.8	126*	43.0*	75-125	22.9*	20.0
Selenium	mg/Kg	< 1.00	4.94	4.94	4.26	3.75	86.0	76.0	75-125	12.7	20.0
Silver	mg/Kg	< 0.500	4.94	4.94	4.59	4.53	93.0	92.0	75-125	1.3	20.0
Zinc	mg/Kg	112	49.4	49.4	116	106	8.0*	0.0*	75-125	9.0	20.0

* QC Fail

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Quality Control Data

Client ID: ERM
Project Description: Castex
Report No: 24-170-0023

QC Prep: A93609
QC Prep Batch Method: 7471A
QC Analytical Batch(es): A93936
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-A93609 Matrix: SOL
Associated Lab Samples: 82883

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.0172	0.0172	06/26/24 15:32

Laboratory Control Sample & LCSD LCS-A93609 LCSD-A93609

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Mercury	mg/Kg	0.342	0.350	0.370	102	101	80-120	5.5	20.0

Matrix Spike & Matrix Spike Duplicate A 82883-MS-A93609 A 82883-MSD-A93609

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	< 0.0171	0.356	0.351	0.359	0.359	99.0	100	80-120	0.0	20.0

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-170-0023**

QC Prep: L759328
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L759493
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L759328 Matrix: TCL
Associated Lab Samples: 82884, 82886, 82888

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	07/01/24 15:56

Laboratory Control Sample LCS-L759328

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	54.0	108	90-110

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Quality Control Data

Client ID: **ERM**
Project Description: **Castex**
Report No: **24-170-0023**

QC Analytical Batch: A93626
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 82883-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	22.8	25.2	10.0	20.0	06/20/24 08:45

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **24-170-0023**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◯ Yes	◯ No	◉ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 06/18/2024 11:48:43

24-170-0023
10485
06-18-2024
11:43:19
ERM (Sugar Land)
Castex

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM (10485) 840 W. Sam Houston Pkwy North, Suite 600 Houston, TX 77024	Dave Upthegrove Anna Fix	ERM (10485)

Project Description	Project/Site Location (City/State)	Method of Shipment
Castex	Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed ☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other

WW – Wastewater GW – Groundwater
DW – Drinking Water S – Soil /Solid O – Oil
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
PN 0727954	832-786-5006	David.Upthegrove@erm.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

A Cool < 10C Na2S2O3 (Micro Only)
B Cool <= 6C
C H2SO4 pH<2
D None Required
E NaOH pH>10
F HNO3 pH<2
G HCL pH<2
H H3PO4 pH<2
I Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	29B salts*	29B pH	29B Metals**	29B Oil and Grease	SPLP Chloride	VPH	EPH	% Moisture		Comments/Notes
						Required Analysis / Preservative									
			6	S		✓	✓	✓	✓	✓	✓	✓			*29B salts: EC, SAR, ESP, CEC, pH (82884)
6/14	1049	CD-17 (8-10')	2	S		X		X		X			X		**metals – As,Ba,TTBa,Cd,Cr,Pb,Hg,Se,Ag,Zn (82884)
6/14	1051	CD-17 (14-16')	2	S		X				X			X		82884
6/17	1330	CD-17 (60-62')	2	S		X				X			X		82885
															TRIP BLANK on Hold 83027

For Laboratory Use Only

Ice	Custody Seals	Lab Comments
Y / N	Y / N	

Blank/Cooler Temp: 1.9°C

Sampled by (Name – Print): Hannah Spiegel

Client Remarks/Comments: RECAP limits

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Hannah Spiegel	6/18/24 0645	T. Hovarter	6/18/24 0645
T. Hovarter	6/18/24 0910	Kathy Hendrix	06/18/24 0910
Kathy Hendrix 06/18/24	0930		6/18/24 0930
Relinquished by: 6/18/24 1420		Received by: 6/18/24 1420	

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7/18/2024

ERM (Sugar Land)
Mr. David Upthegrove
840 W. Sam Houston Pkwy North, Suite 600
Suite 600
Houston, TX, 77024

Ref: Report Number: 24-172-0065
Project Description: Castex
Project Number: 0727954
Jennings, LA

Dear Mr. David Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 6/20/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-002037

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Project Manager

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2025
Arkansas	State Program	88-0650	02/07/2025
California	State Program	2904	06/30/2024
Florida	State Program - NELAP	E871157	06/30/2025
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2024
Kentucky	State Program	90047	12/31/2024
Kentucky	State Program	80215	06/30/2024
Kentucky	State Program	KY90047	12/31/2024
Louisiana	State Program - NELAP	LA037	12/31/2024
Louisiana	State Program - NELAP	04015	06/30/2025
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2024
North Carolina	State Program	415	12/31/2024
Pennsylvania	State Program - NELAP	68-03195	05/31/2025
South Carolina	State Program	84002	06/30/2024
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2024
Virginia	State Program	00106	06/30/2025
Virginia	State Program - NELAP	460181	09/14/2024

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2025
Kentucky	State Program	KY98013	12/31/2024
Louisiana	State Program - NELAP	04023	06/30/2025

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Sample Summary Table

Report Number: **24-172-0065**

Client Project Description: **Castex**
Project Number: 0727954
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
83252	CD-17A2	Aqueous	06/18/2024 15:40	06/20/2024		
83252	CD-17A2	Aqueous	06/18/2024 15:40	06/20/2024	6020B	WP MTN
83252	CD-17A2	Aqueous	06/18/2024 15:40	06/20/2024	7470A	WP MTN
83252	CD-17A2	Aqueous	06/18/2024 15:40	06/20/2024	MAVPH LA	WP RMS
83252	CD-17A2	Aqueous	06/18/2024 15:40	06/20/2024	MAEPH LA	WP RMS
83252	CD-17A2	Aqueous	06/18/2024 15:40	06/20/2024	8260B	WP RMS
83253	CD-17A2	Aqueous	06/18/2024 15:40	06/20/2024	6020B	WP MTN
83253	CD-17A2	Aqueous	06/18/2024 15:40	06/20/2024	7470A	WP MTN
83254	CD-17A1	Aqueous	06/18/2024 07:50	06/20/2024		
83254	CD-17A1	Aqueous	06/18/2024 07:50	06/20/2024	6020B	WP MTN
83254	CD-17A1	Aqueous	06/18/2024 07:50	06/20/2024	7470A	WP MTN
83254	CD-17A1	Aqueous	06/18/2024 07:50	06/20/2024	8260B	WP RMS
83254	CD-17A1	Aqueous	06/18/2024 07:50	06/20/2024	MAVPH LA	WP RMS
83254	CD-17A1	Aqueous	06/18/2024 07:50	06/20/2024	MAEPH LA	WP RMS
83255	CD-17A1	Aqueous	06/18/2024 07:50	06/20/2024	6020B	WP MTN
83255	CD-17A1	Aqueous	06/18/2024 07:50	06/20/2024	7470A	WP MTN
83256	CD-17B	Aqueous	06/18/2024 09:35	06/20/2024		
83256	CD-17B	Aqueous	06/18/2024 09:35	06/20/2024	7470A	WP MTN
83256	CD-17B	Aqueous	06/18/2024 09:35	06/20/2024	6020B	WP MTN
83256	CD-17B	Aqueous	06/18/2024 09:35	06/20/2024	8260B	WP RMS
83256	CD-17B	Aqueous	06/18/2024 09:35	06/20/2024	MAVPH LA	WP RMS
83256	CD-17B	Aqueous	06/18/2024 09:35	06/20/2024	MAEPH LA	WP RMS
83257	CD-17B	Aqueous	06/18/2024 09:35	06/20/2024	7470A	WP MTN
83257	CD-17B	Aqueous	06/18/2024 09:35	06/20/2024	6020B	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN
WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Client: ERM (Sugar Land) **CASE NARRATIVE**
Project: Castex
Lab Report Number: 24-172-0065
Date: 7/18/2024

MADEP EPH Method MAEPH LA
Analyte: Chlorooctadecane
QC Batch No: G195732
Surrogate(s) was flagged for recovery outside QC limits in this project sample. This sample was re-analyzed for verification, and/or dilution of target analytes. Batch QC samples (method blank and laboratory control samples) all showed surrogates within QC limits.

Sample 83254 (CD-17A1)
Analyte: Chlorooctadecane
QC Batch No: G195732/G195414
Surrogate(s) was flagged for recovery outside QC limits in this project sample. This sample was re-analyzed for verification, and/or dilution of target analytes. Batch QC samples (method blank and laboratory control samples) all showed surrogates within QC limits.

Sample 83256 (CD-17B)
Analyte: Chlorooctadecane
QC Batch No: G195732/G195414
Surrogate(s) were flagged for recoveries in the associated project sample. During the extraction step, the extraction technician noted that a significant emulsion formed. Batch QC samples (Method Blank and Laboratory Control Samples) all showed surrogate recoveries within QC limits, indicating that the biased recoveries were due to the sample matrix.

Sample 83252 (CD-17A2)
Analyte: o-Terphenyl
QC Batch No: G195732/G195414
Surrogate(s) was flagged for recovery outside QC limits in this project sample. This sample was re-analyzed for verification, and/or dilution of target analytes. Batch QC samples (method blank and laboratory control samples) all showed surrogates within QC limits.

Metals Analyses Method 6020B
Sample 83254 (CD-17A1)
Analyte: Silver
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83252 (CD-17A2)
Analyte: Arsenic
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 83252 (CD-17A2)
Analyte: Barium
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83254 (CD-17A1)
Analyte: Cadmium
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83252 (CD-17A2)
Analyte: Chromium
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83254 (CD-17A1)
Analyte: Chromium
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83256 (CD-17B)
Analyte: Chromium
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83254 (CD-17A1)
Analyte: Iron
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83254 (CD-17A1)
Analyte: Potassium
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83252 (CD-17A2)
Analyte: Magnesium
QC Batch No: L759305/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83252 (CD-17A2)
Analyte: Manganese
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 83254 (CD-17A1)
Analyte: Manganese
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83256 (CD-17B)
Analyte: Manganese
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83252 (CD-17A2)
Analyte: Manganese
QC Batch No: L759554/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83254 (CD-17A1)
Analyte: Manganese
QC Batch No: L759554/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83252 (CD-17A2)
Analyte: Selenium
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83252 (CD-17A2)
Analyte: Zinc
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83254 (CD-17A1)
Analyte: Zinc
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83256 (CD-17B)
Analyte: Zinc
QC Batch No: L759133/L758243
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 83253 (CD-17A2)
Analyte: Silver
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Silver
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Arsenic
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Arsenic
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83257 (CD-17B)
Analyte: Arsenic
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Barium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Barium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Cadmium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Cadmium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 83253 (CD-17A2)
Analyte: Chromium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Chromium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83257 (CD-17B)
Analyte: Chromium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Iron
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Iron
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Magnesium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83257 (CD-17B)
Analyte: Magnesium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Magnesium
QC Batch No: L759305/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 83253 (CD-17A2)
Analyte: Manganese
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Manganese
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83257 (CD-17B)
Analyte: Manganese
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Manganese
QC Batch No: L759554/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Manganese
QC Batch No: L759554/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Lead
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Lead
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Selenium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Selenium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 83257 (CD-17B)
Analyte: Selenium
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83253 (CD-17A2)
Analyte: Zinc
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83255 (CD-17A1)
Analyte: Zinc
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 83257 (CD-17B)
Analyte: Zinc
QC Batch No: L759133/L758260/L758259
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Anions by Ion Chromatography Method 9056
Sample 82608
Analyte: Chloride
QC Batch No: A93779/A93756
The MS recovery is outside QC limits due to the level of analyte present in the parent sample relative to the spike level.

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83252**
Sample ID : **CD-17A2**

Matrix: **Aqueous**
Sampled: **6/18/2024 15:40**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	530	mg/L	10	1	06/28/24 09:00	BMB	A93812
Carbonate	<10	mg/L	10	1	06/28/24 09:00	BMB	A93812
Alkalinity (as CaCO3)	530	mg/L	10	1	06/28/24 09:00	BMB	A93812

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	858	mg/L	10	1	06/25/24 16:14	MJM	A93807

Analytical Method: 6020B **Prep Batch(es):** **L758243** 06/25/24 16:01
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0057	mg/L	0.0050	5	06/29/24 04:01	CPW	L759133
Barium	0.563	mg/L	0.005	5	06/29/24 04:01	CPW	L759133
Cadmium	<0.0010	mg/L	0.0010	1	06/27/24 15:20	CPW	L758827
Calcium	105	mg/L	1.00	5	06/29/24 04:01	CPW	L759133
Chromium	<0.010	mg/L	0.010	10	06/29/24 04:06	CPW	L759133
Iron	5.31	mg/L	0.100	1	06/27/24 15:20	CPW	L758827
Lead	<0.0010	mg/L	0.0010	1	06/29/24 03:55	CPW	L759133
Magnesium	37.5	mg/L	0.500	5	06/29/24 04:01	CPW	L759305

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002048

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Project Castex
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Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83252**
Sample ID : **CD-17A2**

Matrix: **Aqueous**
Sampled: **6/18/2024 15:40**

Analytical Method: 6020B **Prep Batch(es):** **L758243** 06/25/24 16:01
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.293	mg/L	0.025	25	07/01/24 22:46	CPW	L759554
Potassium	7.41	mg/L	0.100	1	06/27/24 15:20	CPW	L758827
Selenium	<0.005	mg/L	0.005	5	06/29/24 04:01	CPW	L759133
Silver	<0.0010	mg/L	0.0010	1	06/27/24 15:20	CPW	L758827
Sodium	121	mg/L	1.00	10	06/29/24 04:06	CPW	L759305
Strontium	0.710	mg/L	0.005	5	06/29/24 04:01	CPW	L759133
Zinc	<0.100	mg/L	0.100	10	06/29/24 04:06	CPW	L759133

Analytical Method: 7470A **Prep Batch(es):** **L758545** 06/27/24 08:33
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	06/27/24 14:35	FDS	L758741

Analytical Method: 8260B **Prep Batch(es):** **G195562** 06/27/24 08:30
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	06/27/24 15:27	MAO	G195592
Toluene	<0.005	mg/L	0.005	1	06/27/24 15:27	MAO	G195592
Ethylbenzene	<0.001	mg/L	0.001	1	06/27/24 15:27	MAO	G195592

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002049

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Report Date : 07/18/2024
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Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83252**
Sample ID : **CD-17A2**

Matrix: **Aqueous**
Sampled: **6/18/2024 15:40**

Analytical Method: 8260B **Prep Batch(es):** **G195562** 06/27/24 08:30
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	06/27/24 15:27		G195592
Surrogate: Toluene-d8	112		Limits: 70-130%	1	06/27/24 15:27	MAO	G195592

Analytical Method: 9056 **Prep Batch(es):** **A93756** 06/21/24 11:40
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	167	mg/L	0.800	5	06/21/24 17:45	MJM	A93779
Bromide (Br)	2.30	mg/L	0.500	5	06/21/24 17:45	MJM	A93779
Sulfate	<2.50	mg/L	2.50	5	06/21/24 17:45	MJM	A93779

Analytical Method: MAEPH LA **Prep Batch(es):** **G195414** 06/25/24 12:30
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.122	mg/L	0.122	1	06/29/24 00:08	SJS	G195732
Aromatic >C10-C12	<0.122	mg/L	0.122	1	07/02/24 04:14	SJS	G195732
Aliphatic >C12-C16	<0.122	mg/L	0.122	1	06/29/24 00:08	SJS	G195732
Aromatic >C12-C16	<0.122	mg/L	0.122	1	07/02/24 04:14	SJS	G195732
Aromatic >C16-C21	<0.122	mg/L	0.122	1	07/02/24 04:14	SJS	G195732
Aliphatic >C16-C35	<0.204	mg/L	0.204	1	06/29/24 00:08	SJS	G195732

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002050

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83252**
Sample ID : **CD-17A2**

Matrix: **Aqueous**
Sampled: **6/18/2024 15:40**

Analytical Method: MAEPH LA **Prep Batch(es):** **G195414** 06/25/24 12:30
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.143	mg/L	0.143	1	07/02/24 04:14	SJS	G195732
Surrogate: Chlorooctadecane	41.2		Limits: 40-140%	1	06/29/24 00:08	SJS	MAEPH LA
Surrogate: OTP Surrogate	**31.1 ***		Limits: 40-140%	1	07/02/24 04:14	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G195561** 06/27/24 08:30
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	06/27/24 15:27	MAO	G195591
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	06/27/24 15:27	MAO	G195591
Aromatic >C8-C10	<0.005	mg/L	0.005	1	06/27/24 15:27		G195591
Surrogate: Toluene-d8	112		Limits: 70-130%	1	06/27/24 15:27	MAO	G195591

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83253**
Sample ID : **CD-17A2**

Matrix: **Aqueous**
Sampled: **6/18/2024 15:40**

Analytical Method: 6020B **Prep Batch(es):** **L758260** 06/25/24 16:21
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0065	mg/L	0.0050	5	06/29/24 02:40	CPW	L759133
Dissolved Barium	0.622	mg/L	0.005	5	06/29/24 02:40	CPW	L759133
Dissolved Cadmium	<0.0050	mg/L	0.0050	5	06/29/24 02:40	CPW	L759133
Dissolved Chromium	<0.010	mg/L	0.010	10	06/29/24 02:45	CPW	L759133
Dissolved Iron	5.34	mg/L	0.500	5	06/29/24 02:40	CPW	L759133
Dissolved Lead	<0.0050	mg/L	0.0050	5	06/29/24 02:40	CPW	L759133
Dissolved Magnesium	41.8	mg/L	0.500	5	06/29/24 02:40	CPW	L759305
Dissolved Manganese	0.409	mg/L	0.025	25	07/01/24 23:06	CPW	L759554
Dissolved Selenium	<0.005	mg/L	0.005	5	06/29/24 02:40	CPW	L759133
Dissolved Silver	<0.0050	mg/L	0.0050	5	06/29/24 02:40	CPW	L759133
Dissolved Strontium	0.793	mg/L	0.005	5	06/29/24 02:40	CPW	L759133
Dissolved Zinc	<0.100	mg/L	0.100	10	06/29/24 02:45	CPW	L759133

Analytical Method: 7470A **Prep Batch(es):** **L758547** 06/27/24 08:33
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	06/27/24 15:04	FDS	L758741

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002052

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83254**
Sample ID : **CD-17A1**

Matrix: **Aqueous**
Sampled: **6/18/2024 7:50**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	310	mg/L	10	1	06/28/24 09:00	BMB	A93812
Carbonate	<10	mg/L	10	1	06/28/24 09:00	BMB	A93812
Alkalinity (as CaCO3)	310	mg/L	10	1	06/28/24 09:00	BMB	A93812

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	1050	mg/L	10	1	06/25/24 16:14	MJM	A93807

Analytical Method: 6020B **Prep Batch(es):** **L758243** 06/25/24 16:01
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0099	mg/L	0.0010	1	06/29/24 04:12	CPW	L759133
Barium	0.490	mg/L	0.001	1	06/27/24 15:27	CPW	L758827
Cadmium	<0.0050	mg/L	0.0050	5	06/29/24 04:18	CPW	L759133
Calcium	132	mg/L	1.00	5	06/29/24 04:18	CPW	L759133
Chromium	<0.010	mg/L	0.010	10	06/29/24 04:23	CPW	L759133
Iron	2.41	mg/L	0.500	5	06/29/24 04:18	CPW	L759133
Lead	0.0013	mg/L	0.0010	1	06/29/24 04:12	CPW	L759133
Magnesium	52.3	mg/L	0.500	5	06/29/24 04:18	CPW	L759305

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002053

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Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83254**
Sample ID : **CD-17A1**

Matrix: **Aqueous**
Sampled: **6/18/2024 7:50**

Analytical Method: 6020B **Prep Batch(es):** **L758243** 06/25/24 16:01
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.964	mg/L	0.025	25	07/01/24 22:51	CPW	L759554
Potassium	6.60	mg/L	0.500	5	06/29/24 04:18	CPW	L759133
Selenium	<0.001	mg/L	0.001	1	06/29/24 04:12	CPW	L759133
Silver	<0.0050	mg/L	0.0050	5	06/29/24 04:18	CPW	L759133
Sodium	137	mg/L	1.00	10	06/29/24 04:23	CPW	L759305
Strontium	0.855	mg/L	0.005	5	06/29/24 04:18	CPW	L759133
Zinc	<0.100	mg/L	0.100	10	06/29/24 04:23	CPW	L759133

Analytical Method: 7470A **Prep Batch(es):** **L758545** 06/27/24 08:33
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	06/27/24 14:36	FDS	L758741

Analytical Method: 8260B **Prep Batch(es):** **G195562** 06/27/24 08:30
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	06/27/24 16:00	MAO	G195592
Toluene	0.006	mg/L	0.005	1	06/27/24 16:00	MAO	G195592
Ethylbenzene	<0.001	mg/L	0.001	1	06/27/24 16:00	MAO	G195592

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83254**
Sample ID : **CD-17A1**

Matrix: **Aqueous**
Sampled: **6/18/2024 7:50**

Analytical Method: 8260B **Prep Batch(es):** **G195562** 06/27/24 08:30
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	06/27/24 16:00		G195592
Surrogate: Toluene-d8	111		Limits: 70-130%	1	06/27/24 16:00	MAO	G195592

Analytical Method: 9056 **Prep Batch(es):** **A93756** 06/21/24 11:40
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	354	mg/L	0.800	5	06/21/24 17:58	MJM	A93779
Bromide (Br)	<0.500	mg/L	0.500	5	06/21/24 17:58	MJM	A93779
Sulfate	5.63	mg/L	2.50	5	06/21/24 17:58	MJM	A93779

Analytical Method: MAEPH LA **Prep Batch(es):** **G195414** 06/25/24 12:30
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.120	mg/L	0.120	1	06/29/24 00:37	SJS	G195732
Aromatic >C10-C12	<0.120	mg/L	0.120	1	07/02/24 04:43	SJS	G195732
Aliphatic >C12-C16	<0.120	mg/L	0.120	1	06/29/24 00:37	SJS	G195732
Aromatic >C12-C16	<0.120	mg/L	0.120	1	07/02/24 04:43	SJS	G195732
Aromatic >C16-C21	<0.120	mg/L	0.120	1	07/02/24 04:43	SJS	G195732
Aliphatic >C16-C35	<0.200	mg/L	0.200	1	06/29/24 00:37	SJS	G195732

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002055

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Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83254**
Sample ID : **CD-17A1**

Matrix: **Aqueous**
Sampled: **6/18/2024 7:50**

Analytical Method: MAEPH LA **Prep Batch(es):** **G195414** 06/25/24 12:30
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.140	mg/L	0.140	1	07/02/24 04:43	SJS	G195732
Surrogate: Chlorooctadecane	**34.1** *		Limits: 40-140%	1	06/29/24 00:37	SJS	MAEPH LA
Surrogate: OTP Surrogate	40.3		Limits: 40-140%	1	07/02/24 04:43	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G195561** 06/27/24 08:30
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	06/27/24 16:00	MAO	G195591
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	06/27/24 16:00	MAO	G195591
Aromatic >C8-C10	<0.005	mg/L	0.005	1	06/27/24 16:00		G195591
Surrogate: Toluene-d8	111		Limits: 70-130%	1	06/27/24 16:00	MAO	G195591

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002056

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ERM (Sugar Land)
Mr. David Upthegrove
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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83255**
Sample ID : **CD-17A1**

Matrix: **Aqueous**
Sampled: **6/18/2024 7:50**

Analytical Method: 6020B **Prep Batch(es):** **L758260** 06/25/24 16:21
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0143	mg/L	0.0050	5	06/29/24 02:57	CPW	L759133
Dissolved Barium	0.539	mg/L	0.005	5	06/29/24 02:57	CPW	L759133
Dissolved Cadmium	<0.0050	mg/L	0.0050	5	06/29/24 02:57	CPW	L759133
Dissolved Chromium	<0.010	mg/L	0.010	10	06/29/24 03:01	CPW	L759133
Dissolved Iron	<0.500	mg/L	0.500	5	06/29/24 02:57	CPW	L759133
Dissolved Lead	<0.0050	mg/L	0.0050	5	06/29/24 02:57	CPW	L759133
Dissolved Magnesium	57.0	mg/L	1.00	10	06/29/24 03:01	CPW	L759133
Dissolved Manganese	1.22	mg/L	0.025	25	07/01/24 23:12	CPW	L759554
Dissolved Selenium	<0.005	mg/L	0.005	5	06/29/24 02:57	CPW	L759133
Dissolved Silver	<0.0050	mg/L	0.0050	5	06/29/24 02:57	CPW	L759133
Dissolved Strontium	0.966	mg/L	0.005	5	06/29/24 02:57	CPW	L759133
Dissolved Zinc	<0.100	mg/L	0.100	10	06/29/24 03:01	CPW	L759133

Analytical Method: 7470A **Prep Batch(es):** **L758547** 06/27/24 08:33
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	06/27/24 15:05	FDS	L758741

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83256**
Sample ID : **CD-17B**

Matrix: **Aqueous**
Sampled: **6/18/2024 9:35**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	245	mg/L	10	1	06/28/24 09:00	BMB	A93812
Carbonate	<10	mg/L	10	1	06/28/24 09:00	BMB	A93812
Alkalinity (as CaCO3)	245	mg/L	10	1	06/28/24 09:00	BMB	A93812

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	756	mg/L	10	1	06/25/24 16:14	MJM	A93807

Analytical Method: 6020B **Prep Batch(es):** **L758243** 06/25/24 16:01
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0076	mg/L	0.0010	1	06/29/24 04:28	CPW	L759133
Barium	0.461	mg/L	0.001	1	06/27/24 15:33	CPW	L758827
Cadmium	<0.0010	mg/L	0.0010	1	06/27/24 15:33	CPW	L758827
Calcium	98.9	mg/L	1.00	5	06/29/24 04:34	CPW	L759133
Chromium	0.040	mg/L	0.005	5	06/29/24 04:34	CPW	L759133
Iron	18.2	mg/L	0.100	1	06/27/24 15:33	CPW	L758827
Lead	0.0059	mg/L	0.0010	1	06/27/24 15:33	CPW	L758827
Magnesium	29.3	mg/L	0.100	1	06/27/24 15:33	CPW	L758827

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002058

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83256**
Sample ID : **CD-17B**

Matrix: **Aqueous**
Sampled: **6/18/2024 9:35**

Analytical Method: 6020B **Prep Batch(es):** **L758243** 06/25/24 16:01
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.764	mg/L	0.005	5	07/01/24 22:56	CPW	L759554
Potassium	5.91	mg/L	0.100	1	06/27/24 15:33	CPW	L758827
Selenium	<0.001	mg/L	0.001	1	06/29/24 04:28	CPW	L759133
Silver	<0.0010	mg/L	0.0010	1	06/27/24 15:33	CPW	L758827
Sodium	89.2	mg/L	0.500	5	06/29/24 04:34	CPW	L759305
Strontium	0.506	mg/L	0.005	5	06/29/24 04:34	CPW	L759133
Zinc	0.064	mg/L	0.050	5	06/29/24 04:34	CPW	L759133

Analytical Method: 7470A **Prep Batch(es):** **L758545** 06/27/24 08:33
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	06/27/24 14:38	FDS	L758741

Analytical Method: 8260B **Prep Batch(es):** **G195562** 06/27/24 08:30
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	06/27/24 16:34	MAO	G195592
Toluene	0.009	mg/L	0.005	1	06/27/24 16:34	MAO	G195592
Ethylbenzene	<0.001	mg/L	0.001	1	06/27/24 16:34	MAO	G195592

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002059

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83256**
Sample ID : **CD-17B**

Matrix: **Aqueous**
Sampled: **6/18/2024 9:35**

Analytical Method: 8260B **Prep Batch(es):** **G195562** 06/27/24 08:30
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	06/27/24 16:34		G195592
Surrogate: Toluene-d8	112		Limits: 70-130%	1	06/27/24 16:34	MAO	G195592

Analytical Method: 9056 **Prep Batch(es):** **A93756** 06/21/24 11:40
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	248	mg/L	0.800	5	06/21/24 18:49	MJM	A93779
Bromide (Br)	<0.500	mg/L	0.500	5	06/21/24 18:49	MJM	A93779
Sulfate	<2.50	mg/L	2.50	5	06/21/24 18:49	MJM	A93779

Analytical Method: MAEPH LA **Prep Batch(es):** **G195414** 06/25/24 12:30
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.120	mg/L	0.120	1	06/29/24 01:07	SJS	G195732
Aromatic >C10-C12	<0.120	mg/L	0.120	1	07/02/24 05:13	SJS	G195732
Aliphatic >C12-C16	<0.120	mg/L	0.120	1	06/29/24 01:07	SJS	G195732
Aromatic >C12-C16	<0.120	mg/L	0.120	1	07/02/24 05:13	SJS	G195732
Aromatic >C16-C21	<0.120	mg/L	0.120	1	07/02/24 05:13	SJS	G195732
Aliphatic >C16-C35	<0.200	mg/L	0.200	1	06/29/24 01:07	SJS	G195732

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83256**
Sample ID : **CD-17B**

Matrix: **Aqueous**
Sampled: **6/18/2024 9:35**

Analytical Method: MAEPH LA **Prep Batch(es):** **G195414** 06/25/24 12:30
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.140	mg/L	0.140	1	07/02/24 05:13	SJS	G195732
Surrogate: Chlorooctadecane	**30.7** *		Limits: 40-140%	1	06/29/24 01:07	SJS	MAEPH LA
Surrogate: OTP Surrogate	65.0		Limits: 40-140%	1	07/02/24 05:13	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G195561** 06/27/24 08:30
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	06/27/24 16:34	MAO	G195591
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	06/27/24 16:34	MAO	G195591
Aromatic >C8-C10	<0.005	mg/L	0.005	1	06/27/24 16:34		G195591
Surrogate: Toluene-d8	112		Limits: 70-130%	1	06/27/24 16:34	MAO	G195591

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002061

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Project Castex
Information : Project Number: 0727954
Jennings, LA

Report Date : 07/18/2024
Received : 06/20/2024

Report Number : **24-172-0065**

REPORT OF ANALYSIS

Lab No : **83257**
Sample ID : **CD-17B**

Matrix: **Aqueous**
Sampled: **6/18/2024 9:35**

Analytical Method: 6020B **Prep Batch(es):** **L758260** 06/25/24 16:21
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0106	mg/L	0.0050	5	06/29/24 03:12	CPW	L759133
Dissolved Barium	0.460	mg/L	0.001	1	06/27/24 18:12	CPW	L758827
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	06/27/24 18:12	CPW	L758827
Dissolved Chromium	<0.005	mg/L	0.005	5	06/29/24 03:12	CPW	L759133
Dissolved Iron	1.52	mg/L	0.100	1	06/27/24 18:12	CPW	L758827
Dissolved Lead	<0.0010	mg/L	0.0010	1	06/27/24 18:12	CPW	L758827
Dissolved Magnesium	27.6	mg/L	1.00	10	06/29/24 03:17	CPW	L759133
Dissolved Manganese	0.354	mg/L	0.005	5	07/01/24 23:28	CPW	L759554
Dissolved Selenium	<0.005	mg/L	0.005	5	06/29/24 03:12	CPW	L759133
Dissolved Silver	<0.0010	mg/L	0.0010	1	06/27/24 18:12	CPW	L758827
Dissolved Strontium	0.554	mg/L	0.005	5	06/29/24 03:12	CPW	L759133
Dissolved Zinc	<0.050	mg/L	0.050	5	06/29/24 03:12	CPW	L759133

Analytical Method: 7470A **Prep Batch(es):** **L758547** 06/27/24 08:33
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	06/27/24 15:07	FDS	L758741

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002062

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-172-0065**

QC Analytical Batch: A93812
Analysis Method: 2320B-2011
Analysis Description: Alkalinity

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 83252, 83254, 83256

Parameter	Units	Blank Result	MQL	Analyzed
Alkalinity (as CaCO3)	mg/L	< 10	10	06/28/24 09:00

Duplicate A 83341-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Alkalinity (as CaCO3)	mg/L	850	865	1.7	25	06/28/24 09:00

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-172-0065**

QC Analytical Batch: A93807
Analysis Method: 2540C-2011
Analysis Description: Total Dissolved Solids (TDS)

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 83252, 83254, 83256

Parameter	Units	Blank Result	MQL	Analyzed
Total Dissolved Solids	mg/L	< 10	10	06/25/24 16:14

Duplicate A 82881-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Dissolved Solids	mg/L	< 10	<10	0.0	10	06/25/24 16:14

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-172-0065

QC Prep: L758243
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L758827
Analysis Method: 6020B
Analysis Description: Metals Analyses

Lab Reagent Blank LRB-L758243 Matrix: AQU
Associated Lab Samples: 83252, 83254, 83256

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/L	<0.0010	0.0010	06/27/24 14:45
Barium	mg/L	<0.001	0.001	06/27/24 14:45
Calcium	mg/L	<0.200	0.200	06/27/24 14:45
Cadmium	mg/L	<0.0010	0.0010	06/27/24 14:45
Chromium	mg/L	<0.001	0.001	06/27/24 14:45
Iron	mg/L	<0.100	0.100	06/27/24 14:45
Lead	mg/L	<0.0010	0.0010	06/27/24 14:45
Magnesium	mg/L	<0.100	0.100	06/27/24 14:45
Manganese	mg/L	<0.001	0.001	06/27/24 14:45
Potassium	mg/L	<0.100	0.100	06/27/24 14:45
Selenium	mg/L	<0.001	0.001	06/27/24 14:45
Silver	mg/L	<0.0010	0.0010	06/27/24 14:45
Sodium	mg/L	<0.100	0.100	06/27/24 14:45
Strontium	mg/L	<0.001	0.001	06/27/24 14:45
Zinc	mg/L	<0.010	0.010	06/27/24 14:45

Laboratory Control Sample LCS-L758243

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/L	0.0500	0.0468	94.0	80-120
Barium	mg/L	0.100	0.089	89.0	80-120
Calcium	mg/L	10.0	9.97	100	80-120
Cadmium	mg/L	0.0100	0.0093	94.0	80-120
Chromium	mg/L	0.100	0.099	99.0	80-120
Iron	mg/L	10.0	9.68	97.0	80-120
Lead	mg/L	0.0500	0.0477	95.0	80-120
Magnesium	mg/L	10.0	9.30	93.0	80-120

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-172-0065

QC Prep: L758243
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L758827
Analysis Method: 6020B
Analysis Description: Metals Analyses

Laboratory Control Sample LCS-L758243

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Manganese	mg/L	0.100	0.096	97.0	80-120
Potassium	mg/L	10.0	9.95	100	80-120
Selenium	mg/L	0.100	0.093	94.0	80-120
Silver	mg/L	0.0100	0.0088	88.0	80-120
Sodium	mg/L	10.0	9.35	94.0	80-120
Strontium	mg/L	0.100	0.097	97.0	80-120
Zinc	mg/L	0.500	0.508	102	80-120

Matrix Spike & Matrix Spike Duplicate Q 97258-MS-L758243 Q 97258-MSD-L758243

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/L	<0.0010	0.0500	0.0500	0.0466	0.0457	93.0	91.0	75-125	1.9	20
Barium	mg/L	0.038	0.100	0.100	0.119	0.120	80.0	81.0	75-125	0.8	20
Calcium	mg/L	5.39	10.0	10.0	14.9	14.9	95.0	95.0	75-125	0.0	20
Cadmium	mg/L	<0.0010	0.0100	0.0100	0.0093	0.0092	94.0	92.0	75-125	1.5	20
Chromium	mg/L	0.021	0.100	0.100	0.113	0.116	92.0	95.0	75-125	2.6	20
Iron	mg/L	1.23	10.0	10.0	10.5	10.4	93.0	92.0	75-125	0.9	20
Lead	mg/L	0.0013	0.0500	0.0500	0.0485	0.0485	94.0	94.0	75-125	0.0	20
Magnesium	mg/L	2.50	10.0	10.0	11.4	11.3	89.0	88.0	75-125	0.8	20
Manganese	mg/L	0.213	0.100	0.100	0.300	0.306	87.0	93.0	75-125	1.9	20
Potassium	mg/L	0.341	10.0	10.0	10.1	10.1	98.0	98.0	75-125	0.0	20
Selenium	mg/L	<0.001	0.100	0.100	0.092	0.090	92.0	90.0	75-125	2.0	20
Silver	mg/L	<0.0010	0.0100	0.0100	0.0088	0.0086	88.0	87.0	75-125	1.7	20
Sodium	mg/L	7.05	10.0	10.0	15.9	15.9	89.0	89.0	75-125	0.0	20
Strontium	mg/L	0.031	0.100	0.100	0.125	0.125	94.0	94.0	75-125	0.0	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-172-0065**

QC Prep: L758243
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L758827
Analysis Method: 6020B
Analysis Description: Metals Analyses

Matrix Spike & Matrix Spike Duplicate Q 97258-MS-L758243 Q 97258-MSD-L758243

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Zinc	mg/L	0.021	0.500	0.500	0.509	0.502	98.0	96.0	75-125	1.3	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-172-0065

QC Prep: L758260
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L758827,L759133
Analysis Method: 6020B
Analysis Description: Metals Analyses

Lab Reagent Blank LRB-L758260 Matrix: AQU
Associated Lab Samples: 83253, 83255, 83257

Parameter	Units	Blank Result	MQL	Analyzed
Dissolved Arsenic	mg/L	<0.0010	0.0010	06/27/24 17:43
Dissolved Barium	mg/L	<0.001	0.001	06/27/24 17:43
Dissolved Cadmium	mg/L	<0.0010	0.0010	06/27/24 17:43
Dissolved Chromium	mg/L	<0.001	0.001	06/27/24 17:43
Dissolved Iron	mg/L	<0.100	0.100	06/27/24 17:43
Dissolved Lead	mg/L	<0.0010	0.0010	06/27/24 17:43
Dissolved Magnesium	mg/L	<0.100	0.100	06/27/24 17:43
Dissolved Manganese	mg/L	<0.001	0.001	06/27/24 17:43
Dissolved Selenium	mg/L	<0.001	0.001	06/27/24 17:43
Dissolved Silver	mg/L	<0.0010	0.0010	06/27/24 17:43
Dissolved Strontium	mg/L	<0.001	0.001	06/29/24 02:07
Dissolved Zinc	mg/L	<0.010	0.010	06/29/24 02:07

Laboratory Control Sample & LCSD LCS-L758260 LCSD-L758260

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Arsenic	mg/L	0.0500	0.0478	0.0469	96.0	94.0	80-120	1.9	20
Dissolved Barium	mg/L	0.100	0.091	0.089	91.0	89.0	80-120	1.9	20
Dissolved Cadmium	mg/L	0.0100	0.0097	0.0095	97.0	95.0	80-120	2.0	20
Dissolved Chromium	mg/L	0.100	0.102	0.101	102	101	80-120	0.9	20
Dissolved Iron	mg/L	10.0	9.89	9.85	99.0	99.0	80-120	0.4	20
Dissolved Lead	mg/L	0.0500	0.0489	0.0492	98.0	98.0	80-120	0.6	20
Dissolved Magnesium	mg/L	10.0	9.46	9.37	95.0	94.0	80-120	0.9	20
Dissolved Manganese	mg/L	0.100	0.099	0.098	99.0	99.0	80-120	0.3	20
Dissolved Selenium	mg/L	0.100	0.095	0.094	96.0	94.0	80-120	1.4	20
Dissolved Silver	mg/L	0.0100	0.0091	0.0088	91.0	89.0	80-120	2.7	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-172-0065**

QC Prep: L758260
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L758827,L759133
Analysis Method: 6020B
Analysis Description: Metals Analyses

Laboratory Control Sample & LCSD LCS-L758260 LCSD-L758260

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Strontium	mg/L	0.100	0.099	0.098	99.0	99.0	80-120	0.5	20
Dissolved Zinc	mg/L	0.500	0.487	0.478	97.0	96.0	80-120	1.8	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-172-0065

QC Prep: L758545
QC Prep Batch Method: 7470A
QC Analytical Batch(es): L758741
Analysis Method: 7470A
Analysis Description: Total Aqueous Mercury Analysis - CVAA

Lab Reagent Blank LRB-L758545 Matrix: AQU
Associated Lab Samples: 83252, 83254, 83256

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/L	<0.00020	0.00020	06/27/24 14:25

Laboratory Control Sample LCS-L758545

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/L	0.00400	0.00439	110	80-120

Matrix Spike & Matrix Spike Duplicate Q 97291-MS-L758545 Q 97291-MSD-L758545

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/L	0.00061	0.00400	0.00400	0.00529	0.00507	117	112	80-120	4.2	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-172-0065**

QC Prep: L758547
QC Prep Batch Method: 7470A
QC Analytical Batch(es): L758741
Analysis Method: 7470A
Analysis Description: Total Aqueous Mercury Analysis - CVAA

Lab Reagent Blank LRB-L758547 Matrix: AQU
Associated Lab Samples: 83253, 83255, 83257

Parameter	Units	Blank Result	MQL	Analyzed
Dissolved Mercury	mg/L	<0.00020	0.00020	06/27/24 14:57

Laboratory Control Sample & LCSD LCS-L758547 LCSD-L758547

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Mercury	mg/L	0.00400	0.00437	0.00435	109	109	80-120	0.4	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-172-0065

QC Prep: G195562
QC Prep Batch Method: 5030B
QC Analytical Batch(es): G195592
Analysis Method: 8260B
Analysis Description: Volatile Organic Compounds - GC/MS

Lab Reagent Blank LRB-G195562 Matrix: AQU
Associated Lab Samples: 83252, 83254, 83256

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Benzene	mg/L	<0.001	0.001	06/27/24 10:58		
Ethylbenzene	mg/L	<0.001	0.001	06/27/24 10:58		
Toluene	mg/L	<0.005	0.005	06/27/24 10:58		
o-Xylene	mg/L	<0.001	0.001	06/27/24 10:58		
m,p-Xylene	mg/L	<0.002	0.002	06/27/24 10:58		
Toluene-d8 (S)				06/27/24 10:58	110	70-130

Laboratory Control Sample & LCSD LCS-G195562 LCSD-G195562

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Benzene	mg/L	0.100	0.102	0.104	102	104	70-130	1.9	20
Ethylbenzene	mg/L	0.100	0.088	0.089	88.4	89.1	80-120	0.7	20
Toluene	mg/L	0.100	0.097	0.098	97.1	98.5	80-120	1.4	20
o-Xylene	mg/L	0.100	0.088	0.089	88.8	89.3	70-130	0.5	20
m,p-Xylene	mg/L	0.200	0.179	0.181	89.5	90.5	75-125	1.1	20
Toluene-d8 (S)					122	117	70-130		

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-172-0065**

QC Prep: A93756
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A93779
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A93756 Matrix: AQU
Associated Lab Samples: 83252, 83254, 83256

Parameter	Units	Blank Result	MQL	Analyzed
Bromide (Br)	mg/L	< 0.100	0.100	06/21/24 13:31
Chloride	mg/L	< 0.400	0.400	06/21/24 13:31
Sulfate	mg/L	< 0.500	0.500	06/21/24 13:31

Laboratory Control Sample LCS-A93756

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Bromide (Br)	mg/L	13.9	14.0	101	80-120
Chloride	mg/L	55.6	57.4	103	80-120
Sulfate	mg/L	69.4	69.9	101	80-120

Matrix Spike & Matrix Spike Duplicate A 82608-MS-A93756 A 82608-MSD-A93756

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Bromide (Br)	mg/L	20.9	13.9	13.9	32.3	32.7	82.0	85.0	80-120	1.2	15.0
Chloride	mg/L	7750	55.6	55.6	7770	7810	36.0*	108	80-120	0.5	15.0
Sulfate	mg/L	< 55.6	69.4	69.4	65.8	65.0	95.0	94.0	80-120	1.2	15.0

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-172-0065

QC Prep: G195414
QC Prep Batch Method: MAEPH LA
QC Analytical Batch(es): G195732
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Lab Reagent Blank LRB-G195414 Matrix: AQU
Associated Lab Samples: 83252, 83254, 83256

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C10-C12	mg/L	<0.030	0.030	07/01/24 16:34		
Aliphatic >C12-C16	mg/L	<0.030	0.030	07/01/24 16:34		
Aliphatic >C16-C35	mg/L	<0.050	0.050	07/01/24 16:34		
Aromatic >C10-C12	mg/L	<0.030	0.030	07/02/24 02:45		
Aromatic >C12-C16	mg/L	<0.030	0.030	07/02/24 02:45		
Aromatic >C16-C21	mg/L	<0.030	0.030	07/02/24 02:45		
Aromatic >C21-C35	mg/L	<0.035	0.035	07/02/24 02:45		
Chlorooctadecane (S)				07/01/24 16:34	9.7	40-140
OTP Surrogate (S)				07/02/24 02:45	58.6	40-140

Laboratory Control Sample LCS-G195414

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Aliphatic >C12-C16	mg/L	0.100	0.057	57.7	40-140
Aliphatic >C16-C35	mg/L	0.300	0.224	74.6	40-140
Aromatic >C10-C12	mg/L	0.100	0.065	65.1	40-140
Aromatic >C12-C16	mg/L	0.200	0.143	71.5	40-140
Aromatic >C16-C21	mg/L	0.100	0.105	105	40-140
Chlorooctadecane (S)				25.0*	40-140
OTP Surrogate (S)				54.2	40-140

Matrix Spike & Matrix Spike Duplicate G 53400-MS-G195414 G 53400-MSD-G195414

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Aliphatic >C12-C16	mg/L	<0.120	0.400	0.400	0.283	0.269	70.7	67.2	40-140	5.0	25
Aliphatic >C16-C35	mg/L	<0.200	1.20	1.20	0.818	0.966	68.1	80.5	40-140	16.5	25

* QC Fail

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-172-0065**

QC Prep: G195414
QC Prep Batch Method: MAEPH LA
QC Analytical Batch(es): G195732
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Matrix Spike & Matrix Spike Duplicate G 53400-MS-G195414 G 53400-MSD-G195414

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Aromatic >C10-C12	mg/L	<0.120	0.400	0.400	0.223	0.298	55.7	74.5	40-140	28.7*	25
Aromatic >C12-C16	mg/L	<0.120	0.800	0.800	0.386	0.750	48.2	93.7	40-140	64.0*	25
Aromatic >C16-C21	mg/L	<0.120	0.400	0.400	0.245	0.528	61.2	132	40-140	73.2*	25
Chlorooctadecane (S)							74.0	94.5	40-140		
OTP Surrogate (S)							51.5	101	40-140		

* QC Fail

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-172-0065**

QC Prep: G195561
QC Prep Batch Method: MAVPH LA (GC/MS) (Aqueous)
QC Analytical Batch(es): G195591
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G195561 Matrix: AQU
Associated Lab Samples: 83252, 83254, 83256

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/L	<0.005	0.005	06/27/24 10:58		
Aliphatic >C8-C10	mg/L	<0.013	0.013	06/27/24 10:58		
Aromatic >C8-C10 A	mg/L	<0.005	0.005	06/27/24 10:58		
Toluene-d8 (S)				06/27/24 10:58	110	70-130

Laboratory Control Sample & LCSD LCS-G195561 LCSD-G195561

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/L	0.500	0.513	0.523	103	105	70-130	1.9	25
Aliphatic >C8-C10	mg/L	1.30	1.17	1.18	90.0	90.7	70-130	0.8	25
Aromatic >C8-C10 A	mg/L	0.500	0.440	0.447	88.0	89.4	70-130	1.5	25
Toluene-d8 (S)					122	117	70-130		

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM (Sugar Land)**
Report Number: **24-172-0065**

Shipping Method

○ Fed Ex	○ US Postal	◉ Lab	○ Other :	
○ UPS	○ Client	○ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	○ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	○ Yes	○ No	◉ Not Present
Custody seals intact on sample bottles?	○ Yes	○ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	○ No	
COC agrees with sample label(s)?	◉ Yes	○ No	
COC properly completed	◉ Yes	○ No	
Samples in proper containers?	◉ Yes	○ No	
Sample containers intact?	◉ Yes	○ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	○ No	
All samples received within holding time?	◉ Yes	○ No	
Cooler temperature in compliance?	◉ Yes	○ No	○ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	○ No	
Water - Sample containers properly preserved	◉ Yes	○ No	○ N/A
Water - VOA vials free of headspace	◉ Yes	○ No	○ N/A
Trip Blanks received with VOAs	◉ Yes	○ No	○ N/A
Soil VOA method 5035 – compliance criteria met	○ Yes	○ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	○ Yes	◉ No

Comments: Trip Blank rec'd and on hold, as per client. CCT

Signature: Christina R. Varuso Date & Time: 06/20/2024 18:04:00

24-172-0065
10485
06-20-2024
18:01:24
ERM (Sugar Land)
Castex

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM (10485) 840 W. Sam Houston Pkwy North, Suite 600 Houston, TX 77024	Dave Upthegrove Anna Fix	ERM (10485)

Project Description	Project/Site Location (City/State)	RUSH – Additional charges apply Special Detection Limit(s) Date Results Needed	Method of Shipment	Matrix Key
Castex	Jennings, LA		☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
PN 0727954	832-786-5006	David.Upthegrove@erm.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

Key	
A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Chloride, Sulfate, Bromide	Alkalinity	TDS	Metals+Cations*	Dissolved Metals**	VPH	BTEX	EPH	Rad 226/228 (Sub)	Comments/Notes
						Required Analysis / Preservative									
6/18	1540	CD-17A2 83252-83253	10	GW		✓	✓	✓	✓	✓	✓	✓	✓	✓	*Metals: As,Ba,Cd,Cr,Fe,Pb,Mn,Hg,Se,Ag,Zn+ Ca,Mg,K,Na,Sr
6/19	0750	CD-17A1 83254-83255	9	GW		✓	✓	✓	✓	✓	✓	✓	✓		**Dissolved Metals: As, Ba, Cd, Cr, Fe, Pb, Mn, Hg, Se, Ag, Zn,Sr
6/19	0935	CD-17B 83256-83257	10	GW		✓	✓	✓	✓	✓	✓	✓	✓	✓	**Dissolved metals: Field filtered
															*CD-17A1 prioritize chlorides w/ 1,000 mL bottle
															Trip Blank Submitted - 83258

For Laboratory Use Only			Sampled by (Name – Print)	Client Remarks/Comments
Ice (Y / N)	Custody Seals (Y / N)	Lab Comments	Hannah Spiegel	RECAP limits
Blank/Cooler Temp 2.5°c				

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Hannah Spiegel	6/19/24 1430		6/19/24 1430
T. Haware	6/20/24 0917	Kathy Hendrix 06/20/24	0917
Kathy Hendrix 06/20/24	1145		1145
Relinquished by: (SIGNATURE) 6/20/24 @ 1420		Received by: (SIGNATURE) 6/20/24 @ 1420	

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9/16/2024

ERM (Sugar Land)
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston, TX, 77024

Ref: Report Number: 24-215-0007
Project Description: Castex
Project Number: 0727954
Jeff Davis Parish, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 8/5/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-002079

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2025
Arkansas	State Program	88-0650	02/07/2025
California	State Program	2904	06/30/2025
Florida	State Program - NELAP	E871157	06/30/2025
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2025
Kentucky	State Program	90047	12/31/2024
Kentucky	State Program	80215	06/30/2025
Kentucky	State Program	KY90047	12/31/2024
Louisiana	State Program - NELAP	LA037	12/31/2024
Louisiana	State Program - NELAP	04015	06/30/2025
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2025
North Carolina	State Program	415	12/31/2024
Pennsylvania	State Program - NELAP	68-03195	05/31/2025
South Carolina	State Program	84002	06/30/2024
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2024
Virginia	State Program	00106	06/30/2025
Virginia	State Program - NELAP	460181	09/14/2025

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2025
Kentucky	State Program	KY98013	12/31/2024
Louisiana	State Program - NELAP	04023	06/30/2025

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Sample Summary Table

Report Number: **24-215-0007**

Client Project Description: **Castex**
Project Number: 0727954
Jeff Davis Parish, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
86621	CD-18 0-4'	Solids	07/23/2024 08:15	08/05/2024		
86622	CD-18 6-8'	Solids	07/23/2024 08:25	08/05/2024		
86623	CD-18 10-12'	Solids	07/23/2024 08:35	08/05/2024		
86624	CD-18 14-16'	Solids	07/23/2024 08:45	08/05/2024		
86625	CD-18 14-16'	SPLP	07/23/2024 08:45	08/05/2024	9056	WP MTN
86625	CD-18 14-16'	SPLP	07/23/2024 08:45	08/05/2024	1312	WP MTN
86626	CD-18 26-28'	Solids	07/23/2024 09:10	08/05/2024		
86627	CD-18 56-58'	Solids	07/23/2024 10:25	08/05/2024		
86628	CD-18 56-58'	SPLP	07/23/2024 10:25	08/05/2024	1312	WP MTN
86628	CD-18 56-58'	SPLP	07/23/2024 10:25	08/05/2024	9056	WP MTN
86629	CD-19 6-8'	Solids	07/29/2024 11:35	08/05/2024		
86630	CD-19 8-10'	Solids	07/29/2024 11:40	08/05/2024		
86631	CD-19 8-10'	SPLP	07/29/2024 11:40	08/05/2024	9056	WP MTN
86631	CD-19 8-10'	SPLP	07/29/2024 11:40	08/05/2024	1312	WP MTN
86632	CD-19 22-24'	Solids	07/29/2024 12:15	08/05/2024		
86633	CD-19 30-32'	Solids	07/29/2024 12:35	08/05/2024		
86634	CD-19 30-32'	SPLP	07/29/2024 12:35	08/05/2024	9056	WP MTN
86634	CD-19 30-32'	SPLP	07/29/2024 12:35	08/05/2024	1312	WP MTN
86635	CD-19 46-48'	Solids	07/29/2024 13:15	08/05/2024		
86636	CD-19 46-48'	SPLP	07/29/2024 13:15	08/05/2024	9056	WP MTN
86636	CD-19 46-48'	SPLP	07/29/2024 13:15	08/05/2024	1312	WP MTN
86637	CD-19 66-68'	Solids	07/29/2024 14:05	08/05/2024		
86638	CD-19 78-80'	Solids	07/30/2024 08:00	08/05/2024		
86639	CD-19 78-80'	SPLP	07/30/2024 08:00	08/05/2024	9056	WP MTN
86639	CD-19 78-80'	SPLP	07/30/2024 08:00	08/05/2024	1312	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Sample Summary Table

Report Number: **24-215-0007**

Client Project Description: **Castex**
Project Number: 0727954
Jeff Davis Parish, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
86640	HA-10 0-2'	Solids	08/02/2024 08:10	08/05/2024		
86640	HA-10 0-2'	Solids	08/02/2024 08:10	08/05/2024	8270D SIM	WP RMS
86640	HA-10 0-2'	Solids	08/02/2024 08:10	08/05/2024	MAVPH LA	WP RMS
86640	HA-10 0-2'	Solids	08/02/2024 08:10	08/05/2024	MAEPH LA	WP RMS
86641	HA-10 2-4'	Solids	08/02/2024 08:15	08/05/2024		
86641	HA-10 2-4'	Solids	08/02/2024 08:15	08/05/2024	MAEPH LA	WP RMS
86641	HA-10 2-4'	Solids	08/02/2024 08:15	08/05/2024	8270D SIM	WP RMS
86641	HA-10 2-4'	Solids	08/02/2024 08:15	08/05/2024	MAVPH LA	WP RMS
86642	HA-10 4-6'	Solids	08/02/2024 08:20	08/05/2024		
86642	HA-10 4-6'	Solids	08/02/2024 08:20	08/05/2024	8270D SIM	WP RMS
86642	HA-10 4-6'	Solids	08/02/2024 08:20	08/05/2024	MAVPH LA	WP RMS
86642	HA-10 4-6'	Solids	08/02/2024 08:20	08/05/2024	MAEPH LA	WP RMS

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Client: ERM (Sugar Land) **CASE NARRATIVE**
Project: Castex
Lab Report Number: 24-215-0007
Date: 9/16/2024

Report Comments
Methods reported as 29B are from the Laboratory Procedures for Analysis of Exploration & Production Waste – LDNR Office of Conservation Injection and Mining Division – Revised 11/2011.
Results
• 6010D/7471A metals are performed on the As-Received sample and are reported As-Received (not corrected for dry weight).
• True Total Barium results are reported dry weight
• VPH/EPH results reported as received
• Soluble anions (Chloride) results are reported on As-Received basis.

MADEP EPH Method MAEPH LA
QC Batch No: G197084
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

MADEP VPH Rev 1.1 Method MAVPH LA
Sample 57008
QC Batch No: G197026/G197015
This target analyte was outside the acceptable limits in the matrix spike. The LCS was within acceptable limits.

Metals Analysis Method 6010D
Sample 86621 (CD-18 0-4')
Analyte: Barium
QC Batch No: A95200/A95103
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 86621 (CD-18 0-4')
Analyte: Strontium
QC Batch No: A95200/A95103
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86621**
Sample ID : **CD-18 0-4'**

Matrix: **Solids**
Sampled: **7/23/2024 8:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.1	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	77.4	%		1	08/09/24 09:11	JMB	29B
Chloride	5.64	mg/Kg	4.00	1	08/13/24 15:57	MJM	9056
Electrical Conductivity (Sat Paste)	0.464	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	7.95	s.u.		1	08/09/24 09:11	JMB	29B
Cation Exchange Capacity	28.6	meq/100g	0.100	10	08/09/24 14:20		29B
Exchangeable Sodium Percentage	1.50	%	0.100	1	08/09/24 09:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	1.96	Calc	0.025	5	08/09/24 13:18		29B
Calcium (Sat Paste)	1.91	meq/L	0.025	5	08/09/24 13:18	APB	29B
Magnesium (Sat Paste)	0.657	meq/L	0.041	5	08/09/24 13:18	APB	29B
Sodium (Sat Paste)	2.22	meq/L	0.110	5	08/09/24 13:18	APB	29B
True Total Barium	665	mg/Kg	50.0	1	08/12/24 13:27	APB	29B
Arsenic	3.76	mg/Kg	1.00	2	08/14/24 14:05	APB	6010D
Barium	312	mg/Kg	1.00	2	08/14/24 14:05	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	08/14/24 14:05	APB	6010D
Chromium	16.1	mg/Kg	0.500	2	08/14/24 14:05	APB	6010D
Lead	10.1	mg/Kg	0.600	2	08/14/24 14:05	APB	6010D
Mercury	0.0242	mg/Kg	0.0185	1	08/08/24 11:10	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	08/14/24 14:05	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	08/14/24 14:05	APB	6010D
Strontium	45.3	mg/Kg	0.500	2	08/14/24 14:05	APB	6010D
Zinc	126	mg/Kg	2.50	2	08/14/24 14:05	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86622**
Sample ID : **CD-18 6-8'**

Matrix: **Solids**
Sampled: **7/23/2024 8:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	21.2	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	139	%		1	08/09/24 09:11	JMB	29B
Chloride	81.1	mg/Kg	4.00	1	08/13/24 16:10	MJM	9056
Electrical Conductivity (Sat Paste)	0.734	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.50	s.u.		1	08/09/24 09:11	JMB	29B
Cation Exchange Capacity	43.9	meq/100g	0.100	10	08/09/24 14:24		29B
Exchangeable Sodium Percentage	8.52	%	0.100	1	08/09/24 09:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	11.6	Calc	0.025	5	08/09/24 13:22		29B
Calcium (Sat Paste)	0.458	meq/L	0.025	5	08/09/24 13:22	APB	29B
Magnesium (Sat Paste)	0.205	meq/L	0.041	5	08/09/24 13:22	APB	29B
Sodium (Sat Paste)	6.70	meq/L	0.110	5	08/09/24 13:22	APB	29B
True Total Barium	922	mg/Kg	50.0	1	08/12/24 13:39	APB	29B
Arsenic	11.0	mg/Kg	1.00	2	08/14/24 14:25	APB	6010D
Barium	303	mg/Kg	1.00	2	08/14/24 14:25	APB	6010D
Cadmium	0.350	mg/Kg	0.200	2	08/14/24 14:25	APB	6010D
Chromium	26.3	mg/Kg	0.500	2	08/14/24 14:25	APB	6010D
Lead	16.9	mg/Kg	0.600	2	08/14/24 14:25	APB	6010D
Mercury	<0.0173	mg/Kg	0.0173	1	08/08/24 11:26	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	08/14/24 14:25	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	08/14/24 14:25	APB	6010D
Strontium	46.8	mg/Kg	0.500	2	08/14/24 14:25	APB	6010D
Zinc	68.9	mg/Kg	2.50	2	08/14/24 14:25	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86623**
Sample ID : **CD-18 10-12'**

Matrix: **Solids**
Sampled: **7/23/2024 8:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	26.0	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	167	%		1	08/09/24 09:11	JMB	29B
Chloride	322	mg/Kg	4.00	1	08/13/24 16:23	MJM	9056
Electrical Conductivity (Sat Paste)	1.13	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.39	s.u.		1	08/09/24 09:11	JMB	29B
Cation Exchange Capacity	50.9	meq/100g	0.100	10	08/09/24 15:01		29B
Exchangeable Sodium Percentage	7.43	%	0.100	1	08/09/24 09:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	11.7	Calc	0.025	5	08/09/24 13:26		29B
Calcium (Sat Paste)	0.717	meq/L	0.025	5	08/09/24 13:26	APB	29B
Magnesium (Sat Paste)	0.571	meq/L	0.041	5	08/09/24 13:26	APB	29B
Sodium (Sat Paste)	9.38	meq/L	0.110	5	08/09/24 13:26	APB	29B
True Total Barium	483	mg/Kg	50.0	1	08/12/24 13:43	APB	29B
Arsenic	15.6	mg/Kg	1.00	2	08/14/24 14:29	APB	6010D
Barium	316	mg/Kg	1.00	2	08/14/24 14:29	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	08/14/24 14:29	APB	6010D
Chromium	29.4	mg/Kg	0.500	2	08/14/24 14:29	APB	6010D
Lead	16.4	mg/Kg	0.600	2	08/14/24 14:29	APB	6010D
Mercury	<0.0175	mg/Kg	0.0175	1	08/08/24 11:29	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	08/14/24 14:29	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	08/14/24 14:29	APB	6010D
Strontium	46.4	mg/Kg	0.500	2	08/14/24 14:29	APB	6010D
Zinc	72.4	mg/Kg	2.50	2	08/14/24 14:29	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86624**
Sample ID : **CD-18 14-16'**

Matrix: **Solids**
Sampled: **7/23/2024 8:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	25.1	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	137	%		1	08/09/24 09:11	JMB	29B
Chloride	65.7	mg/Kg	4.00	1	08/13/24 16:36	MJM	9056
Electrical Conductivity (Sat Paste)	0.629	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.14	s.u.		1	08/09/24 09:11	JMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86625**
Sample ID : **CD-18 14-16'**

Matrix: **SPLP**
Sampled: **7/23/2024 8:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	08/13/24 14:30	TJT	1312
SPLP Chloride	6.45	mg/L	1.60	10	08/14/24 13:41	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86626**
Sample ID : **CD-18 26-28'**

Matrix: **Solids**
Sampled: **7/23/2024 9:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	25.1	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	105	%		1	08/09/24 09:11	JMB	29B
Chloride	18.5	mg/Kg	4.00	1	08/13/24 16:49	MJM	9056
Electrical Conductivity (Sat Paste)	0.472	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.36	s.u.		1	08/09/24 09:11	JMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86627**
Sample ID : **CD-18 56-58'**

Matrix: **Solids**
Sampled: **7/23/2024 10:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	23.6	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	51.3	%		1	08/09/24 09:11	JMB	29B
Chloride	39.9	mg/Kg	8.00	2	08/13/24 18:06	MJM	9056
Electrical Conductivity (Sat Paste)	0.958	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.17	s.u.		1	08/09/24 09:11	JMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86628**
Sample ID : **CD-18 56-58'**

Matrix: **SPLP**
Sampled: **7/23/2024 10:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	08/13/24 14:30	TJT	1312
SPLP Chloride	7.88	mg/L	1.60	10	08/14/24 14:07	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

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Jeff Davis Parish, LA

Report Date : 09/16/2024
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Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86629**
Sample ID : **CD-19 6-8'**

Matrix: **Solids**
Sampled: **7/29/2024 11:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	24.2	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	139	%		1	08/09/24 09:11	JMB	29B
Chloride	93.0	mg/Kg	4.00	1	08/13/24 18:19	MJM	9056
Electrical Conductivity (Sat Paste)	0.714	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	7.98	s.u.		1	08/09/24 09:11	JMB	29B
Cation Exchange Capacity	47.8	meq/100g	0.100	10	08/09/24 15:06		29B
Exchangeable Sodium Percentage	12.1	%	0.100	1	08/09/24 09:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	13.2	Calc	0.025	5	08/09/24 13:30		29B
Calcium (Sat Paste)	0.308	meq/L	0.025	5	08/09/24 13:30	APB	29B
Magnesium (Sat Paste)	0.138	meq/L	0.041	5	08/09/24 13:30	APB	29B
Sodium (Sat Paste)	6.21	meq/L	0.110	5	08/09/24 13:30	APB	29B
True Total Barium	387	mg/Kg	50.0	1	08/12/24 13:47	APB	29B
Arsenic	2.63	mg/Kg	1.00	2	08/14/24 14:33	APB	6010D
Barium	239	mg/Kg	1.00	2	08/14/24 14:33	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	08/14/24 14:33	APB	6010D
Chromium	25.3	mg/Kg	0.500	2	08/14/24 14:33	APB	6010D
Lead	9.16	mg/Kg	0.600	2	08/14/24 14:33	APB	6010D
Mercury	<0.0184	mg/Kg	0.0184	1	08/08/24 11:38	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	08/14/24 14:33	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	08/14/24 14:33	APB	6010D
Strontium	36.0	mg/Kg	0.500	2	08/14/24 14:33	APB	6010D
Zinc	53.3	mg/Kg	2.50	2	08/14/24 14:33	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002092

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Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86630**
Sample ID : **CD-19 8-10'**

Matrix: **Solids**
Sampled: **7/29/2024 11:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	17.4	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	91.5	%		1	08/09/24 09:11	JMB	29B
Chloride	18.3	mg/Kg	4.00	1	08/13/24 18:32	MJM	9056
Electrical Conductivity (Sat Paste)	0.552	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.39	s.u.		1	08/09/24 09:11	JMB	29B
Cation Exchange Capacity	33.3	meq/100g	0.100	10	08/09/24 15:10		29B
Exchangeable Sodium Percentage	12.0	%	0.100	1	08/09/24 09:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	13.4	Calc	0.025	5	08/09/24 13:47		29B
Calcium (Sat Paste)	0.190	meq/L	0.025	5	08/09/24 13:47	APB	29B
Magnesium (Sat Paste)	0.114	meq/L	0.041	5	08/09/24 13:47	APB	29B
Sodium (Sat Paste)	5.23	meq/L	0.110	5	08/09/24 13:47	APB	29B
True Total Barium	285	mg/Kg	50.0	1	08/12/24 13:51	APB	29B
Arsenic	2.22	mg/Kg	1.00	2	08/14/24 14:37	APB	6010D
Barium	207	mg/Kg	1.00	2	08/14/24 14:37	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	08/14/24 14:37	APB	6010D
Chromium	25.9	mg/Kg	0.500	2	08/14/24 14:37	APB	6010D
Lead	7.47	mg/Kg	0.600	2	08/14/24 14:37	APB	6010D
Mercury	<0.0181	mg/Kg	0.0181	1	08/08/24 11:41	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	08/14/24 14:37	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	08/14/24 14:37	APB	6010D
Strontium	33.6	mg/Kg	0.500	2	08/14/24 14:37	APB	6010D
Zinc	56.3	mg/Kg	2.50	2	08/14/24 14:37	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86631**
Sample ID : **CD-19 8-10'**

Matrix: **SPLP**
Sampled: **7/29/2024 11:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	08/12/24 14:30	TJT	1312
SPLP Chloride	<1.60	mg/L	1.60	10	08/14/24 14:33	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002094

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Project Castex

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86632**
Sample ID : **CD-19 22-24'**

Matrix: **Solids**
Sampled: **7/29/2024 12:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.6	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	97.4	%		1	08/09/24 09:11	JMB	29B
Chloride	220	mg/Kg	4.00	1	08/13/24 18:45	MJM	9056
Electrical Conductivity (Sat Paste)	1.21	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	7.84	s.u.		1	08/09/24 09:11	JMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002095

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86633**
Sample ID : **CD-19 30-32'**

Matrix: **Solids**
Sampled: **7/29/2024 12:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	29.1	%	0.050	1	08/06/24 09:45	TJL	SW-DRYWT
% Saturation (Sat Paste)	80.7	%		1	08/09/24 09:11	JMB	29B
Chloride	135	mg/Kg	8.00	2	08/13/24 18:58	MJM	9056
Electrical Conductivity (Sat Paste)	1.07	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	7.90	s.u.		1	08/09/24 09:11	JMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86634**
Sample ID : **CD-19 30-32'**

Matrix: **SPLP**
Sampled: **7/29/2024 12:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	08/12/24 14:30	TJT	1312
SPLP Chloride	5.17	mg/L	1.60	10	08/14/24 14:59	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002097

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86635**
Sample ID : **CD-19 46-48'**

Matrix: **Solids**
Sampled: **7/29/2024 13:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	34.8	%	0.050	1	08/06/24 09:25	TJL	SW-DRYWT
% Saturation (Sat Paste)	109	%		1	08/09/24 09:11	JMB	29B
Chloride	61.8	mg/Kg	8.00	2	08/13/24 19:10	MJM	9056
Electrical Conductivity (Sat Paste)	0.647	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.24	s.u.		1	08/09/24 09:11	JMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002098

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Project Castex

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86636**
Sample ID : **CD-19 46-48'**

Matrix: **SPLP**
Sampled: **7/29/2024 13:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	08/12/24 14:30	TJT	1312
SPLP Chloride	2.71	mg/L	1.60	10	08/14/24 15:25	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86637**
Sample ID : **CD-19 66-68'**

Matrix: **Solids**
Sampled: **7/29/2024 14:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	26.0	%	0.050	1	08/06/24 09:25	TJL	SW-DRYWT
% Saturation (Sat Paste)	73.8	%		1	08/09/24 09:11	JMB	29B
Chloride	19.3	mg/Kg	8.00	2	08/13/24 19:23	MJM	9056
Electrical Conductivity (Sat Paste)	0.730	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.32	s.u.		1	08/09/24 09:11	JMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002100

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86638**
Sample ID : **CD-19 78-80'**

Matrix: **Solids**
Sampled: **7/30/2024 8:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	27.0	%	0.050	1	08/06/24 09:25	TJL	SW-DRYWT
% Saturation (Sat Paste)	78.8	%		1	08/09/24 09:11	JMB	29B
Chloride	12.7	mg/Kg	8.00	2	08/13/24 19:36	MJM	9056
Electrical Conductivity (Sat Paste)	0.629	mmhos/cm		1	08/09/24 09:11	JMB	29B
pH (Sat Paste)	8.32	s.u.		1	08/09/24 09:11	JMB	29B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

Information : Project Number: 0727954
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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86639**
Sample ID : **CD-19 78-80'**

Matrix: **SPLP**
Sampled: **7/30/2024 8:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
SPLP Extraction	Leachate			1	08/13/24 14:30	TJT	1312
SPLP Chloride	<0.400	mg/L	0.400	1	08/14/24 16:16	HMQ	9056

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86640**
Sample ID : **HA-10 0-2'**

Matrix: **Solids**
Sampled: **8/2/2024 8:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	22.4	%	0.050	1	08/06/24 09:25	TJL	SW-DRYWT
% Saturation (Sat Paste)	100	%		1	08/09/24 09:11	JMB	29B
Chloride	74.0	mg/Kg	4.00	1	08/13/24 20:28	MJM	9056
Electrical Conductivity (Sat Paste)	0.483	mmhos/cm		1	08/09/24 09:11	JMB	29B
Cation Exchange Capacity	30.8	meq/100g	0.100	10	08/09/24 15:14		29B
Exchangeable Sodium Percentage	6.40	%	0.100	1	08/09/24 09:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	9.78	Calc	0.025	5	08/09/24 13:51		29B
Calcium (Sat Paste)	0.172	meq/L	0.025	5	08/09/24 13:51	APB	29B
Magnesium (Sat Paste)	0.130	meq/L	0.041	5	08/09/24 13:51	APB	29B
Sodium (Sat Paste)	3.80	meq/L	0.110	5	08/09/24 13:51	APB	29B
True Total Barium	2910	mg/Kg	50.0	1	08/12/24 13:55	APB	29B
Arsenic	4.08	mg/Kg	1.00	2	08/14/24 14:41	APB	6010D
Barium	764	mg/Kg	1.00	2	08/14/24 14:41	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	08/14/24 14:41	APB	6010D
Chromium	19.8	mg/Kg	0.500	2	08/14/24 14:41	APB	6010D
Lead	10.8	mg/Kg	0.600	2	08/14/24 14:41	APB	6010D
Mercury	<0.0171	mg/Kg	0.0171	1	08/08/24 11:44	BMB	7471A
Selenium	1.16	mg/Kg	1.00	2	08/14/24 14:41	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	08/14/24 14:41	APB	6010D
Strontium	30.8	mg/Kg	0.500	2	08/14/24 14:41	APB	6010D
Zinc	34.8	mg/Kg	2.50	2	08/14/24 14:41	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86640**
Sample ID : **HA-10 0-2'**

Matrix: **Solids**
Sampled: **8/2/2024 8:10**

Analytical Method: MAEPH LA **Prep Batch(es):** **G196929** 08/07/24 15:00
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	08/10/24 10:32	SJS	G197084
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	08/10/24 10:32	SJS	G197084
Aliphatic >C12-C16	<2.00	mg/Kg	2.00	1	08/10/24 10:32	SJS	G197084
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	08/10/24 10:32	SJS	G197084
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	08/10/24 10:32	SJS	G197084
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	08/10/24 10:32	SJS	G197084
Aromatic >C21-C35	4.05	mg/Kg	2.00	1	08/10/24 10:32	SJS	G197084
Surrogate: Chlorooctadecane	98.2		Limits: 40-140%	1	08/10/24 10:32	SJS	MAEPH LA
Surrogate: OTP Surrogate	91.0		Limits: 40-140%	1	08/10/24 10:32	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197015** 08/08/24 11:40
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.327	mg/Kg	0.327	100	08/08/24 22:44	SNC	G197026
Aliphatic >C8-C10	4.35	mg/Kg	0.851	100	08/08/24 22:44	SNC	G197026
Aromatic >C8-C10	<0.327	mg/Kg	0.327	100	08/08/24 22:44		G197026
Surrogate: Toluene-d8	67.9		Limits: 50-150%	100	08/08/24 22:44	SNC	G197026

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002104

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Project Castex

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REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86641**
Sample ID : **HA-10 2-4'**

Matrix: **Solids**
Sampled: **8/2/2024 8:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	18.3	%	0.050	1	08/06/24 09:25	TJL	SW-DRYWT
% Saturation (Sat Paste)	145	%		1	08/09/24 09:11	JMB	29B
Chloride	268	mg/Kg	8.00	2	08/13/24 20:40	MJM	9056
Electrical Conductivity (Sat Paste)	1.42	mmhos/cm		1	08/09/24 09:11	JMB	29B
Cation Exchange Capacity	33.1	meq/100g	0.100	10	08/09/24 15:18		29B
Exchangeable Sodium Percentage	13.6	%	0.100	1	08/09/24 09:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	17.4	Calc	0.025	5	08/09/24 14:00		29B
Calcium (Sat Paste)	0.519	meq/L	0.025	5	08/09/24 14:00	APB	29B
Magnesium (Sat Paste)	0.366	meq/L	0.041	5	08/09/24 14:00	APB	29B
Sodium (Sat Paste)	11.6	meq/L	0.110	5	08/09/24 14:00	APB	29B
True Total Barium	386	mg/Kg	50.0	1	08/12/24 13:59	APB	29B
Arsenic	3.85	mg/Kg	1.00	2	08/14/24 14:58	APB	6010D
Barium	137	mg/Kg	1.00	2	08/14/24 14:58	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	08/14/24 14:58	APB	6010D
Chromium	17.8	mg/Kg	0.500	2	08/14/24 14:58	APB	6010D
Lead	10.7	mg/Kg	0.600	2	08/14/24 14:58	APB	6010D
Mercury	<0.0171	mg/Kg	0.0171	1	08/08/24 11:47	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	08/14/24 14:58	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	08/14/24 14:58	APB	6010D
Strontium	20.4	mg/Kg	0.500	2	08/14/24 14:58	APB	6010D
Zinc	36.4	mg/Kg	2.50	2	08/14/24 14:58	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86641**
Sample ID : **HA-10 2-4'**

Matrix: **Solids**
Sampled: **8/2/2024 8:15**

Analytical Method: MAEPH LA **Prep Batch(es):** **G196929** 08/07/24 15:00
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<2.00	mg/Kg	2.00	1	08/10/24 11:03	SJS	G197084
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	08/10/24 11:03	SJS	G197084
Aliphatic >C12-C16	3.16	mg/Kg	2.00	1	08/10/24 11:03	SJS	G197084
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	08/10/24 11:03	SJS	G197084
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	08/10/24 11:03	SJS	G197084
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	08/10/24 11:03	SJS	G197084
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	08/10/24 11:03	SJS	G197084
Surrogate: Chlorooctadecane	117		Limits: 40-140%	1	08/10/24 11:03	SJS	MAEPH LA
Surrogate: OTP Surrogate	69.9		Limits: 40-140%	1	08/10/24 11:03	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197015** 08/08/24 11:40
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.303	mg/Kg	0.303	100	08/08/24 23:06	SNC	G197026
Aliphatic >C8-C10	<0.789	mg/Kg	0.789	100	08/08/24 23:06	SNC	G197026
Aromatic >C8-C10	<0.303	mg/Kg	0.303	100	08/08/24 23:06		G197026
Surrogate: Toluene-d8	61.7		Limits: 50-150%	100	08/08/24 23:06	SNC	G197026

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002106

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10485
ERM (Sugar Land)
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston , TX 77024

Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86642**
Sample ID : **HA-10 4-6'**

Matrix: **Solids**
Sampled: **8/2/2024 8:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	16.5	%	0.050	1	08/06/24 09:25	TJL	SW-DRYWT
% Saturation (Sat Paste)	144	%		1	08/09/24 09:11	JMB	29B
Chloride	385	mg/Kg	8.00	2	08/13/24 20:53	MJM	9056
Electrical Conductivity (Sat Paste)	1.68	mmhos/cm		1	08/09/24 09:11	JMB	29B
Cation Exchange Capacity	33.2	meq/100g	0.100	10	08/09/24 15:22		29B
Exchangeable Sodium Percentage	16.1	%	0.100	1	08/09/24 09:11		CALCULATION
Sodium Adsorption Ratio (Sat Paste)	21.4	Calc	0.025	5	08/09/24 14:04		29B
Calcium (Sat Paste)	0.480	meq/L	0.025	5	08/09/24 14:04	APB	29B
Magnesium (Sat Paste)	0.362	meq/L	0.041	5	08/09/24 14:04	APB	29B
Sodium (Sat Paste)	13.9	meq/L	0.110	5	08/09/24 14:04	APB	29B
True Total Barium	392	mg/Kg	50.0	1	08/12/24 14:12	APB	29B
Arsenic	4.21	mg/Kg	1.00	2	08/14/24 15:02	APB	6010D
Barium	256	mg/Kg	1.00	2	08/14/24 15:02	APB	6010D
Cadmium	<0.200	mg/Kg	0.200	2	08/14/24 15:02	APB	6010D
Chromium	18.8	mg/Kg	0.500	2	08/14/24 15:02	APB	6010D
Lead	12.3	mg/Kg	0.600	2	08/14/24 15:02	APB	6010D
Mercury	<0.0176	mg/Kg	0.0176	1	08/08/24 11:50	BMB	7471A
Selenium	<1.00	mg/Kg	1.00	2	08/14/24 15:02	APB	6010D
Silver	<0.500	mg/Kg	0.500	2	08/14/24 15:02	APB	6010D
Strontium	22.9	mg/Kg	0.500	2	08/14/24 15:02	APB	6010D
Zinc	32.8	mg/Kg	2.50	2	08/14/24 15:02	APB	6010D

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

BP/Castex-Ltd Adm-Apx E-002107

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ERM (Sugar Land)
Mr. Dave Upthegrove
840 W. Sam Houston Parkway, Suite 600
Houston , TX 77024

Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0007**

REPORT OF ANALYSIS

Cristina Thibeaux
Project Manager

Lab No : **86642**
Sample ID : **HA-10 4-6'**

Matrix: **Solids**
Sampled: **8/2/2024 8:20**

Analytical Method: MAEPH LA **Prep Batch(es):** **G196929** 08/07/24 15:00
Prep Method: MAEPH LA (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	3.84	mg/Kg	2.00	1	08/10/24 11:33	SJS	G197084
Aromatic >C10-C12	<2.00	mg/Kg	2.00	1	08/10/24 11:33	SJS	G197084
Aliphatic >C12-C16	9.00	mg/Kg	2.00	1	08/10/24 11:33	SJS	G197084
Aromatic >C12-C16	<2.00	mg/Kg	2.00	1	08/10/24 11:33	SJS	G197084
Aromatic >C16-C21	<2.00	mg/Kg	2.00	1	08/10/24 11:33	SJS	G197084
Aliphatic >C16-C35	<4.00	mg/Kg	4.00	1	08/10/24 11:33	SJS	G197084
Aromatic >C21-C35	<2.00	mg/Kg	2.00	1	08/10/24 11:33	SJS	G197084
Surrogate: Chlorooctadecane	125		Limits: 40-140%	1	08/10/24 11:33	SJS	MAEPH LA
Surrogate: OTP Surrogate	63.9		Limits: 40-140%	1	08/10/24 11:33	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197015** 08/08/24 11:40
Prep Method: MAVPH LA (GC/MS) (Soil)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.299	mg/Kg	0.299	100	08/08/24 23:29	SNC	G197026
Aliphatic >C8-C10	<0.777	mg/Kg	0.777	100	08/08/24 23:29	SNC	G197026
Aromatic >C8-C10	<0.299	mg/Kg	0.299	100	08/08/24 23:29		G197026
Surrogate: Toluene-d8	64.9		Limits: 50-150%	100	08/08/24 23:29	SNC	G197026

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0007

QC Prep: A95134
QC Prep Batch Method: LA 29B BA (PREP)
QC Analytical Batch(es): A95155
Analysis Method: 29B
Analysis Description: True Total Barium

Lab Reagent Blank LRB-A95134 Matrix: SOL
Associated Lab Samples: 86621, 86622, 86623, 86629, 86630, 86640, 86641, 86642

Parameter	Units	Blank Result	MQL	Analyzed
True Total Barium	mg/Kg	< 50.0	50.0	08/12/24 13:06

Laboratory Control Sample LCS-A95134

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
True Total Barium	mg/Kg	10000	10100	101	80-120

Matrix Spike & Matrix Spike Duplicate A 86621-A95000-MS-A95134 A 86621-A95000-MSD-A95134

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
True Total Barium	mg/Kg	665	10000	9620	10800	10200	101	99.0	75-125	5.7	20.0

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Prep: A95049
QC Prep Batch Method: LA 29B CEC (PREP)
QC Analytical Batch(es): A95090
Analysis Method: 29B
Analysis Description: Cation Exchange Capacity

Lab Reagent Blank LRB-A95049 Matrix: SOL
Associated Lab Samples: 86621, 86622, 86623, 86629, 86630, 86640, 86641, 86642

Parameter	Units	Blank Result	MQL	Analyzed
Total Sodium CEC	mg/Kg	< 100	100	08/09/24 14:08

Duplicate A 86675-A94992-DUP-A95049

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium CEC	mg/Kg	3250	3320	2.1	30.0	08/09/24 14:16

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Prep: A95050
QC Prep Batch Method: 29B
QC Analytical Batch(es): A95091
Analysis Method: 29B
Analysis Description: Exchangeable Sodium Percentage

Duplicate A 86675-A94992-DUP-A95050

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Sodium ESP	meq/100g	0.299	0.314	4.8	30.0	08/09/24 15:34

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Prep: A95044
QC Prep Batch Method: 29B
QC Analytical Batch(es): A95092,A95093
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 86640-A95000-DUP-A95044

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Saturation (Sat Paste)	%	100	99.3	0.7	30.0	08/09/24 09:11
Electrical Conductivity (Sat Paste)	mmhos/cm	0.483	0.490	1.4	30.0	08/09/24 09:11
pH (Sat Paste)	s.u.	5.92	5.83	1.5	30.0	08/09/24 09:11

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Prep: A95044
QC Prep Batch Method: 29B
QC Analytical Batch(es): A95092,A95093
Analysis Method: 29B
Analysis Description: Saturated Paste Extraction

Duplicate A 86640-A95000-DUP-A95044

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Calcium (Sat Paste)	meq/L	0.172	0.219	24.0	30.0	08/09/24 13:55
Magnesium (Sat Paste)	meq/L	0.130	0.111	15.7	30.0	08/09/24 13:55
Sodium (Sat Paste)	meq/L	3.80	3.78	0.5	30.0	08/09/24 13:55

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0007

QC Prep: A95103
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A95200
Analysis Method: 6010D
Analysis Description: Metals Analysis

Lab Reagent Blank LRB-A95103 Matrix: SOL
Associated Lab Samples: 86621, 86622, 86623, 86629, 86630, 86640, 86641, 86642

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/Kg	< 0.500	0.500	08/14/24 13:28
Barium	mg/Kg	< 0.500	0.500	08/14/24 13:28
Cadmium	mg/Kg	< 0.100	0.100	08/14/24 13:28
Chromium	mg/Kg	< 0.250	0.250	08/14/24 13:28
Lead	mg/Kg	< 0.300	0.300	08/14/24 13:28
Selenium	mg/Kg	< 0.500	0.500	08/14/24 13:28
Silver	mg/Kg	< 0.250	0.250	08/14/24 13:28
Strontium	mg/Kg	< 0.250	0.250	08/14/24 13:28
Zinc	mg/Kg	< 1.25	1.25	08/14/24 13:28

Laboratory Control Sample & LCSD LCS-A95103 LCSD-A95103

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	5.00	5.55	5.51	111	110	80-120	0.7	20.0
Barium	mg/Kg	50.0	52.5	51.7	105	103	80-120	1.5	20.0
Cadmium	mg/Kg	5.00	5.62	5.56	112	111	80-120	1.0	20.0
Chromium	mg/Kg	50.0	54.2	53.4	108	107	80-120	1.4	20.0
Lead	mg/Kg	5.00	5.33	5.28	107	106	80-120	0.9	20.0
Selenium	mg/Kg	5.00	5.28	5.35	106	107	80-120	1.3	20.0
Silver	mg/Kg	5.00	5.34	5.20	107	104	80-120	2.6	20.0
Strontium	mg/Kg	5.00	5.42	5.34	108	107	80-120	1.4	20.0
Zinc	mg/Kg	50.0	53.2	52.0	106	104	80-120	2.2	20.0

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Prep: A95103
QC Prep Batch Method: 3050B
QC Analytical Batch(es): A95200
Analysis Method: 6010D
Analysis Description: Metals Analysis

Matrix Spike & Matrix Spike Duplicate A 86621-MS-A95103 A 86621-MSD-A95103

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/Kg	3.76	4.80	4.84	8.20	8.50	93.0	98.0	75-125	3.5	20.0
Barium	mg/Kg	312	48.0	48.4	459	409	306*	201*	75-125	11.5	20.0
Cadmium	mg/Kg	< 0.200	4.80	4.84	4.78	4.77	100	99.0	75-125	0.2	20.0
Chromium	mg/Kg	16.1	48.0	48.4	67.0	69.0	106	109	75-125	2.9	20.0
Lead	mg/Kg	10.1	4.80	4.84	15.8	15.0	119	101	75-125	5.1	20.0
Selenium	mg/Kg	< 1.00	4.80	4.84	4.98	5.00	104	103	75-125	0.4	20.0
Silver	mg/Kg	< 0.500	4.80	4.84	4.56	4.58	95.0	95.0	75-125	0.4	20.0
Strontium	mg/Kg	45.3	4.80	4.84	52.0	54.8	140*	196*	75-125	5.2	20.0
Zinc	mg/Kg	126	48.0	48.4	149	133	48.0*	14.0*	75-125	11.3	20.0

* QC Fail

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0007

QC Prep: A95036
QC Prep Batch Method: 7471A
QC Analytical Batch(es): A95067
Analysis Method: 7471A
Analysis Description: Solids Total Mercury Analysis - CVAA

Lab Reagent Blank LRB-A95036 Matrix: SOL
Associated Lab Samples: 86621, 86622, 86623, 86629, 86630, 86640, 86641, 86642

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/Kg	< 0.0184	0.0184	08/08/24 11:01

Laboratory Control Sample & LCSD LCS-A95036 LCSD-A95036

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Mercury	mg/Kg	0.382	0.373	0.371	98.0	97.0	80-120	0.5	20.0

Matrix Spike & Matrix Spike Duplicate A 86621-MS-A95036 A 86621-MSD-A95036

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/Kg	0.0242	0.384	0.385	0.389	0.467	95.0	115	80-120	18.2	20.0

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0007

QC Prep: G197065
QC Prep Batch Method: 3546
QC Analytical Batch(es): G197272
Analysis Method: 8270D SIM
Analysis Description: Semivolatile Organic Compounds - GC/MS (SIM)

Lab Reagent Blank LRB-G197065 Matrix: SOL
Associated Lab Samples: 86640, 86641, 86642

Parameter	Units	Blank Result	MQL	Analyzed
2-Methylnaphthalene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Acenaphthene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Acenaphthylene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Anthracene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Benzo(a)anthracene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Benzo(a)pyrene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Benzo(b)fluoranthene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Benzo(k)fluoranthene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Chrysene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Dibenz(a,h)anthracene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Fluoranthene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Fluorene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Indeno(1,2,3-cd)pyrene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Naphthalene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Phenanthrene	µg/Kg	< 0.660	0.660	08/15/24 23:30
Pyrene	µg/Kg	< 0.660	0.660	08/15/24 23:30

Laboratory Control Sample & LCSD LCS-G197065 LCSD-G197065

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
2-Methylnaphthalene	µg/Kg	167	105	101	62.8	60.4	40-130	3.8	20.0
Acenaphthene	µg/Kg	167	106	102	63.4	61.0	40-130	3.8	20.0
Acenaphthylene	µg/Kg	167	102	97.7	61.0	58.5	40-130	4.3	20.0
Anthracene	µg/Kg	167	98.5	100	58.9	59.8	40-130	1.5	20.0
Benzo(a)anthracene	µg/Kg	167	124	121	74.2	72.4	40-130	2.4	20.0
Benzo(a)pyrene	µg/Kg	167	116	112	69.4	67.0	40-130	3.5	20.0

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Prep: G197065
QC Prep Batch Method: 3546
QC Analytical Batch(es): G197272
Analysis Method: 8270D SIM
Analysis Description: Semivolatile Organic Compounds - GC/MS (SIM)

Laboratory Control Sample & LCSD LCS-G197065 LCSD-G197065

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Benzo(b)fluoranthene	µg/Kg	167	113	106	67.6	63.4	40-130	6.3	20.0
Benzo(k)fluoranthene	µg/Kg	167	102	108	61.0	64.6	40-130	5.7	20.0
Chrysene	µg/Kg	167	122	116	73.0	69.4	40-130	5.0	20.0
Dibenz(a,h)anthracene	µg/Kg	167	112	111	67.0	66.4	40-130	0.8	20.0
Fluoranthene	µg/Kg	167	113	110	67.6	65.8	40-130	2.6	20.0
Fluorene	µg/Kg	167	110	107	65.8	64.0	40-130	2.7	20.0
Indeno(1,2,3-cd)pyrene	µg/Kg	167	116	117	69.4	70.0	40-130	0.8	20.0
Naphthalene	µg/Kg	167	104	100	62.2	59.8	40-130	3.9	20.0
Phenanthrene	µg/Kg	167	104	103	62.2	61.6	40-130	0.9	20.0
Pyrene	µg/Kg	167	108	106	64.6	63.4	40-130	1.8	20.0

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0007

QC Prep: A95061
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A95117
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A95061 Matrix: SOL

Associated Lab Samples: 86621, 86622, 86623, 86624, 86626, 86627, 86629, 86630, 86632, 86633, 86635, 86637, 86638, 86640, 86641, 86642

Parameter	Units	Blank Result	MQL	Analyzed
Chloride	mg/Kg	< 4.00	4.00	08/13/24 13:32

Laboratory Control Sample LCS-A95061

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Chloride	mg/Kg	500	520	104	80-120

Matrix Spike & Matrix Spike Duplicate A 86626-MS-A95061 A 86626-MSD-A95061

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Chloride	mg/Kg	18.5	493	496	554	558	109	109	80-120	0.7	15.0

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Prep: L767402
QC Prep Batch Method: SW-9056A (PREP)
QC Analytical Batch(es): L767669
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography (SPLP)

Lab Reagent Blank LRB-L767402 Matrix: TCL
Associated Lab Samples: 86625, 86628, 86631, 86634, 86636, 86639

Parameter	Units	Blank Result	MQL	Analyzed
SPLP Chloride	mg/L	<0.400	0.400	08/14/24 08:23

Laboratory Control Sample LCS-L767402

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
SPLP Chloride	mg/L	50.0	54.2	108	90-110

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0007

QC Prep: G196929
QC Prep Batch Method: MAEPH LA (Soil)
QC Analytical Batch(es): G197084
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Lab Reagent Blank LRB-G196929 Matrix: SOL
Associated Lab Samples: 86640, 86641, 86642

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C10-C12	mg/Kg	<2.00	2.00	08/10/24 09:00		
Aliphatic >C12-C16	mg/Kg	<2.00	2.00	08/10/24 09:00		
Aliphatic >C16-C35	mg/Kg	<4.00	4.00	08/10/24 09:00		
Aromatic >C10-C12	mg/Kg	<2.00	2.00	08/10/24 09:00		
Aromatic >C12-C16	mg/Kg	<2.00	2.00	08/10/24 09:00		
Aromatic >C16-C21	mg/Kg	<2.00	2.00	08/10/24 09:00		
Aromatic >C21-C35	mg/Kg	<2.00	2.00	08/10/24 09:00		
Chlorooctadecane (S)				08/10/24 09:00	98.2	40-140
OTP Surrogate (S)				08/10/24 09:00	88.6	40-140

Laboratory Control Sample & LCSD LCS-G196929 LCSD-G196929

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C12-C16	mg/Kg	3.33	3.65	3.41	110	102	40-140	6.7	25
Aliphatic >C16-C35	mg/Kg	10.0	11.0	9.83	110	98.3	40-140	11.2	25
Aromatic >C10-C12	mg/Kg	3.33	3.03	4.08	90.9	123	40-140	29.5*	25
Aromatic >C12-C16	mg/Kg	6.67	4.71	7.40	70.6	111	40-140	44.4*	25
Aromatic >C16-C21	mg/Kg	3.33	3.84	4.38	115	132	40-140	13.1	25
Chlorooctadecane (S)					138	123	40-140		
OTP Surrogate (S)					77.8	119	40-140		

* QC Fail

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0007

QC Prep: G197015
QC Prep Batch Method: MAVPH LA (GC/MS) (Soil)
QC Analytical Batch(es): G197026
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G197015 Matrix: SOL
Associated Lab Samples: 86640, 86641, 86642

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/Kg	<0.500	0.500	08/08/24 14:05		
Aliphatic >C8-C10	mg/Kg	<1.30	1.30	08/08/24 14:05		
Aromatic >C8-C10 A	mg/Kg	<0.500	0.500	08/08/24 14:05		
Toluene-d8 (S)				08/08/24 14:05	76.2	50-150

Laboratory Control Sample & LCSD LCS-G197015 LCSD-G197015

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/Kg	50.0	45.3	45.3	90.6	90.6	50-150	0.0	30
Aliphatic >C8-C10	mg/Kg	130	133	132	102	102	50-150	0.7	30
Aromatic >C8-C10 A	mg/Kg	50.0	50.2	48.7	100	97.4	50-150	3.0	30
Toluene-d8 (S)					81.4	82.4	50-150		

Matrix Spike & Matrix Spike Duplicate G 57008-MS-G197015 G 57008-MSD-G197015

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/Kg	256	50.7	50.7	338	328	162*	142	50-150	3.0	30
Aliphatic >C8-C10	mg/Kg	269	132	132	394	391	94.6	92.4	50-150	0.7	30
Aromatic >C8-C10 A	mg/Kg	47.1	50.7	50.7	79.4	79.4	63.7	63.7	50-150	0.0	30
Toluene-d8 (S)							64.1	60.9	50-150		

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Analytical Batch: A94998
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 86621-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	22.1	20.8	6.0	20.0	08/06/24 09:45

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0007**

QC Analytical Batch: A94999
Analysis Method: SW-DRYWT
Analysis Description: Dry Weight Determination

Duplicate A 86635-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
% Moisture	%	34.8	34.8	0.0	20.0	08/06/24 09:25

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM (Sugar Land)**
Report Number: **24-215-0007**

Shipping Method

○ Fed Ex	○ US Postal	◉ Lab	○ Other :	
○ UPS	○ Client	○ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	○ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	○ Yes	○ No	◉ Not Present
Custody seals intact on sample bottles?	○ Yes	○ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	○ No	
COC agrees with sample label(s)?	◉ Yes	○ No	
COC properly completed	◉ Yes	○ No	
Samples in proper containers?	◉ Yes	○ No	
Sample containers intact?	◉ Yes	○ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	○ No	
All samples received within holding time?	◉ Yes	○ No	
Cooler temperature in compliance?	◉ Yes	○ No	○ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	○ No	
Water - Sample containers properly preserved	○ Yes	○ No	◉ N/A
Water - VOA vials free of headspace	○ Yes	○ No	◉ N/A
Trip Blanks received with VOAs	○ Yes	◉ No	○ N/A
Soil VOA method 5035 – compliance criteria met	◉ Yes	○ No	○ N/A

☐ High concentration container (48 hr)
☐ Low concentration EnCore samplers (48 hr)
☑ High concentration pre-weighed (methanol -14 d)
☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	○ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 08/05/2024 14:10:00

Client Name/Address ERM 840 W. Sam Houston Pkwy N. Suite 600 Houston, TX 77024	**Client Project Manager/Contact** Dave Upthegrove Shawn Wiggins	**Billing Information**	24-215-0007 10485 08-02-2024 12:03:41 ERM (Sugar Land) Castex
Project Description CasteX	**Project/Site Location (City/State)** Jeff Davis Parish, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) ☐ Date Results Needed	Meth ☐ F ☒ Courier ☐ Client Drop Off ☐ Other — DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc
Project Number 0727954	**Project Manager Phone #** 504.481.6470 972.303.2385	**Project Manager Email** david.upthegrove@ERM.com Shawn.Wiggins@ERM.com	**Purchase Order Number**	**Site/Facility ID #**

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Unless noted, all containers per Table II of 40 CFR Part 136.

A Cool < 10C Na2S2O3 (Micro Only)
B Cool <= 6C
C H2SO4 pH<2
D None Required
E NaOH pH>10
F HNO3 pH<2
G HCL pH<2
H H3PO4 pH<2
I Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative: 7.11C	% Moisture	Soluble Cl	CEC, ESP, SAR	29B Metals	SPLP Cl	pH			Comments/Notes
7/23/24	0815	CD-18 0-4'	1	S	G	X	X	X	X	X		X			86621
"	0825	CD-18 6-8'	"	"	"	X	X	X	X	X		X			86622
"	0835	CD-18 10-12'	"	"	"	X	X	X	X	X		X			86623
"	0845	CD-18 14-16'	"	"	"	X	X	X			X	X			86624 - 86625
"	0910	CD-18 26-28'	"	"	"	X	X	X				X			86626
↓	1005	CD-18 56-58'	↓	↓	↓	X	X	X			X	X			86627 - 86628

For Laboratory Use Only

Ice	Custody Seals	Lab Comments
Y/N	Y/N	

Blank/Cooler Temp: 2.2°C

Sampled by (Name – Print): R. Charles Graham

Client Remarks/Comments: 29B Metals: As, Ba, TI, Be, Cd, Cr, Pb, Sr, Zn, Hg, Se, Ag

	Date	Time		Date	Time
Relinquished by: (SIGNATURE) R. Charles Graham	8/4	0926	Received by: (SIGNATURE) RB Cocd	8/5	9:26
Relinquished by: (SIGNATURE) RB Cocd	8/5/24	7:20	Received by: (SIGNATURE) P. Howard	8/5	7:20
Relinquished by: (SIGNATURE) P. Howard	8/5	8:51	Received by: (SIGNATURE) Kayla Hendrix	08/05/24	0851

Relinq by Kayla Hendrix 08/05/24 0100 Recd by: 8/5/24 @1100 Relinq by: 8/5/24 @ 1410
Recd by: 8/5/24 1410

BP/Castex-Ltd Adm-Apx E-002126

Client Name/Address	Client Project Manager/Contact	Billing Information	For Laboratory Use Only
ERM 840 W. Sam Houston Pkwy N. Suite 600 Houston, TX 77024	Dave Upthegrove Shawn Wiggins		

Project Description	Project/Site Location (City/State)		Method of Shipment	Matrix Key
Castex	Jeff Davis Parish, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
07 27954	504, 481. 6470 901, 303. 2385	david.upthegrove@erm.com shawn.wiggins@erm.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	EC	% Moisture	Soluble Cl	CEC, ESP, SAR	29B Metals	SPLP Cl	pH			Comments/Notes
			Required Analysis / Preservative												
7/31/24	1135	CD-19 6-8'	1	S	G	X	X	X	X	X		X			~~86628~~ CW 86629
"	1140	CD-19 8-10'	2	"	"	X	X	X	X	X	X	X			~~86629~~ CW - 86630 - 86631
"	1215	CD-19 22-24'	1	"	"	X	X	X				X			~~86631~~ 86632
"	1235	CD-19 30-32'	2	"	"	X	X	X			X	X			~~86632~~ - 86633 - 86634
"	1315	CD-19 46-48'	2	"	"	X	X	X			X	X			~~86634~~ - 86635 - 86636
↓	1405	CD-19 66-68'	1	"	"	X	X	X				X			86637
7/31/24	0800	CD-19 78-80'	2	↓	↓	X	X	X			X	X			86638 - 86639

For Laboratory Use Only			Sampled by (Name – Print)	Client Remarks/Comments
Ice	Custody Seals	Lab Comments	R. Charles Trahan	29B Metals: As, Ba, TTBa, Cd, Cr, Pb, Sr, Zn, Hg, Se, Ag
Y/N	Y/N			
Blank/Cooler Temp				
2.2 °C				

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
R. Charles Trahan	8/4 Y 0900	DB Coco	8/2 9:20
DB Coco	8/5/24 730	T. Howard	8/5 730
T. Howard	8/5 8:51	Kathy Hendrix	080524 0851

Reling. by: Kathy Hendrix 080524 1100 Rec'd by: 8/5/24@1100 Reling by: 8/5/24@1410
Rec'd By: 8/5/24/1410

Client Name/Address	Client Project Manager/Contact	Billing Information	For Laboratory Use Only
ERM 840 W. Sam Houston Pkwy N. Suite 600 Houston, TX 77024	David Upthegrove Shawn Wiggins		

Project Description	Project/Site Location (City/State)		Method of Shipment	Matrix Key
Castex	Jeff Davis Parish, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed Ex ☐ UPS ☐ USPS ☒ Courier ☐ Client Drop Off Other	WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0727954	504.981.6470 936.353.2385	david.upthegrove@erm.com shawn.wiggins@erm.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative									Comments/Notes
						EC	% Moisture	Soluble Cl	29B Metals	CEC, SAR, ESP	VOH, EPH	BTEX, Naphthalene			
8/5/24	0810	HA-10 0-2'	4	S	G	X	X	X	X	X	X	X			86640
	0815	HA-10 2-4'	↓	↓	↓	X	X	X	X	X	X	X			86641
	0820	HA-10 4-6'	↓	↓	↓	X	X	X	X	X	X	X			86642

For Laboratory Use Only			Sampled by (Name – Print)	Client Remarks/Comments
Ice	Custody Seals	Lab Comments	R. Charles Trahan	29B Metals: As, Ba, TTRa, Cd, Cr, Pb, Se, Zn, Hg, Se, Ag
Y/N	Y/N			
Blank/Cooler Temp				
2.2°C				

Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
R. Charles Trahan	8/5/24	0916	Coco	8/5	9:26
D3 Coco	8/5/24	7:20	P. Howard	8/5	7:20
P. Howard	8/5	8:51	Kathy Hendrix	08/05/24	0851

Relinq'd by: Kathy Hendrix 08/05/24 1100
Rec'd By: [signature] 8/5/24 1410

Rec'd by [signature] 8/5/24 1100 Reling by: [signature]
8/5/24 @ 1410

BP/Castex-Ltd Adm-Apx E-002128

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9/16/2024

ERM (Sugar Land)
Mr. David Upthegrove
840 W. Sam Houston Pkwy North, Suite 600
Houston, TX, 77024

Ref: Report Number: 24-215-0008
Project Description: Castex
Project Number: 0727954
Jeff Davis Parish, LA

Dear Mr. David Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 8/5/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2025
Arkansas	State Program	88-0650	02/07/2025
California	State Program	2904	06/30/2025
Florida	State Program - NELAP	E871157	06/30/2025
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2025
Kentucky	State Program	90047	12/31/2024
Kentucky	State Program	80215	06/30/2025
Kentucky	State Program	KY90047	12/31/2024
Louisiana	State Program - NELAP	LA037	12/31/2024
Louisiana	State Program - NELAP	04015	06/30/2025
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2025
North Carolina	State Program	415	12/31/2024
Pennsylvania	State Program - NELAP	68-03195	05/31/2025
South Carolina	State Program	84002	06/30/2024
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2024
Virginia	State Program	00106	06/30/2025
Virginia	State Program - NELAP	460181	09/14/2025

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2025
Kentucky	State Program	KY98013	12/31/2024
Louisiana	State Program - NELAP	04023	06/30/2025

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Sample Summary Table

Report Number: **24-215-0008**

Client Project Description: **Castex**
Project Number: 0727954
Jeff Davis Parish, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
86643	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024		
86643	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	7470A	WP MTN
86643	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	6020B	WP MTN
86643	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	8260B	WP RMS
86643	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	MAEPH LA	WP RMS
86643	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	MAVPH LA	WP RMS
86644	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	6020B	WP MTN
86644	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	7470A	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Client: ERM (Sugar Land) **CASE NARRATIVE**
Project: Castex
Lab Report Number: 24-215-0008
Date: 9/16/2024

MADEP EPH Method MAEPH LA
QC Batch No: G197083
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

Analyte: Chlorooctadecane
QC Batch No: G197083
Surrogate(s) was flagged for recovery outside QC limits in this project sample. This sample was re-analyzed for verification, and/or dilution of target analytes. Batch QC samples (method blank and laboratory control samples) all showed surrogates within QC limits.

Sample 86643 (CD-19D)
Analyte: Chlorooctadecane
QC Batch No: G197083/G197034
Surrogate(s) were flagged for recoveries in the associated project sample. During the extraction step, the extraction technician noted that a significant emulsion formed. Batch QC samples (Method Blank and Laboratory Control Samples) all showed surrogate recoveries within QC limits, indicating that the biased recoveries were due to the sample matrix.

Metals Analyses Method 6020B
Sample 86731
Analyte: Calcium
QC Batch No: L766914/L766247
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

Sample 86731
Analyte: Strontium
QC Batch No: L766914/L766247
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A dilution test was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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ERM (Sugar Land)
Mr. David Upthegrove
840 W. Sam Houston Pkwy North, Suite 600
Houston , TX 77024

Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0008**

REPORT OF ANALYSIS

Lab No : **86643**
Sample ID : **CD-19D**

Matrix: **Aqueous**
Sampled: **7/30/2024 12:30**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	240	mg/L	10	1	08/13/24 09:30	JMB	A95176
Carbonate	<10	mg/L	10	1	08/13/24 09:30	JMB	A95176
Alkalinity (as CaCO3)	240	mg/L	10	1	08/13/24 09:30	JMB	A95176

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	348	mg/L	10	1	08/06/24 15:18	MJM	A95017

Analytical Method: 6020B **Prep Batch(es):** **L766247** 08/08/24 15:52
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0234	mg/L	0.0010	1	08/09/24 16:38	TJS	L766658
Barium	0.754	mg/L	0.001	1	08/09/24 16:38	CPW	L766658
Cadmium	0.0014	mg/L	0.0010	1	08/09/24 16:38	CPW	L766658
Calcium	121	mg/L	1.00	5	08/12/24 15:50	TJS	L766914
Chromium	0.211	mg/L	0.001	1	08/09/24 16:38	CPW	L766658
Iron	91.4	mg/L	0.500	5	08/12/24 15:50	TJS	L766914
Lead	0.0382	mg/L	0.0010	1	08/09/24 16:38	CPW	L766658
Magnesium	48.1	mg/L	0.500	5	08/12/24 15:50	TJS	L766914

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002133

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0008**

REPORT OF ANALYSIS

Lab No : **86643**
Sample ID : **CD-19D**

Matrix: **Aqueous**
Sampled: **7/30/2024 12:30**

Analytical Method: 6020B **Prep Batch(es):** **L766247** 08/08/24 15:52
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	1.48	mg/L	0.005	5	08/12/24 15:50	TJS	L766914
Potassium	11.2	mg/L	0.100	1	08/09/24 16:38	CPW	L766658
Selenium	0.003	mg/L	0.001	1	08/09/24 16:38	TJS	L766658
Silver	<0.0010	mg/L	0.0010	1	08/09/24 16:38	CPW	L766658
Sodium	64.5	mg/L	0.500	5	08/12/24 15:50	TJS	L766914
Strontium	0.423	mg/L	0.005	5	08/12/24 15:50	TJS	L766914
Zinc	0.283	mg/L	0.010	1	08/09/24 16:38	TJS	L766658

Analytical Method: 7470A **Prep Batch(es):** **L766353** 08/09/24 09:24
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	08/09/24 13:15	FDS	L766508

Analytical Method: 8260B **Prep Batch(es):** **G197014** 08/08/24 11:40
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/08/24 16:44	SNC	G197025
Toluene	<0.005	mg/L	0.005	1	08/08/24 16:44	SNC	G197025
Ethylbenzene	<0.001	mg/L	0.001	1	08/08/24 16:44	SNC	G197025

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002134

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0008**

REPORT OF ANALYSIS

Lab No : **86643**
Sample ID : **CD-19D**

Matrix: **Aqueous**
Sampled: **7/30/2024 12:30**

Analytical Method: 8260B **Prep Batch(es):** **G197014** 08/08/24 11:40
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	08/08/24 16:44		G197025
Surrogate: Toluene-d8	77.4		Limits: 70-130%	1	08/08/24 16:44	SNC	G197025

Analytical Method: 9056 **Prep Batch(es):** **A95174** 08/09/24 11:40
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	65.7	mg/L	0.400	2	08/09/24 16:44	MJM	A95180
Bromide (Br)	<0.200	mg/L	0.200	2	08/09/24 16:44	MJM	A95180
Sulfate	<1.00	mg/L	1.00	2	08/09/24 16:44	MJM	A95180

Analytical Method: MAEPH LA **Prep Batch(es):** **G197034** 08/08/24 13:30
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.122	mg/L	0.122	1	08/10/24 01:11	SJS	G197083
Aromatic >C10-C12	<0.122	mg/L	0.122	1	08/10/24 01:11	SJS	G197083
Aliphatic >C12-C16	<0.122	mg/L	0.122	1	08/10/24 01:11	SJS	G197083
Aromatic >C12-C16	<0.122	mg/L	0.122	1	08/10/24 01:11	SJS	G197083
Aromatic >C16-C21	<0.122	mg/L	0.122	1	08/10/24 01:11	SJS	G197083
Aliphatic >C16-C35	<0.204	mg/L	0.204	1	08/10/24 01:11	SJS	G197083

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002135

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0008**

REPORT OF ANALYSIS

Lab No : **86643**
Sample ID : **CD-19D**

Matrix: **Aqueous**
Sampled: **7/30/2024 12:30**

Analytical Method: MAEPH LA **Prep Batch(es):** **G197034** 08/08/24 13:30
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.143	mg/L	0.143	1	08/10/24 01:11	SJS	G197083
Surrogate: Chlorooctadecane	**15.3** *		Limits: 40-140%	1	08/10/24 01:11	SJS	MAEPH LA
Surrogate: OTP Surrogate	**23.7** *		Limits: 40-140%	1	08/10/24 01:11	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197013** 08/08/24 11:40
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/08/24 16:44	SNC	G197024
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/08/24 16:44	SNC	G197024
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/08/24 16:44		G197024
Surrogate: Toluene-d8	77.4		Limits: 70-130%	1	08/08/24 16:44	SNC	G197024

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/05/2024

Report Number : **24-215-0008**

REPORT OF ANALYSIS

Lab No : **86644**
Sample ID : **CD-19D**

Matrix: **Aqueous**
Sampled: **7/30/2024 12:30**

Analytical Method: 6020B **Prep Batch(es):** **L766263** 08/08/24 15:52
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0049	mg/L	0.0010	1	08/09/24 17:26	CPW	L766658
Dissolved Barium	0.238	mg/L	0.001	1	08/09/24 17:26	CPW	L766658
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	08/09/24 17:26	CPW	L766658
Dissolved Chromium	<0.001	mg/L	0.001	1	08/09/24 17:26	CPW	L766658
Dissolved Iron	0.860	mg/L	0.100	1	08/09/24 17:26	CPW	L766658
Dissolved Lead	<0.0010	mg/L	0.0010	1	08/09/24 17:26	CPW	L766658
Dissolved Manganese	0.158	mg/L	0.001	1	08/09/24 17:26	CPW	L766658
Dissolved Selenium	<0.001	mg/L	0.001	1	08/09/24 17:26	CPW	L766658
Dissolved Silver	<0.0010	mg/L	0.0010	1	08/09/24 17:26	CPW	L766658
Dissolved Strontium	0.259	mg/L	0.005	5	08/12/24 17:18	TJS	L766914
Dissolved Zinc	<0.010	mg/L	0.010	1	08/09/24 17:26	CPW	L766658

Analytical Method: 7470A **Prep Batch(es):** **L766362** 08/09/24 09:24
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	08/09/24 14:04	FDS	L766508

Qualifiers/ Definitions * Outside QC Limit DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002137

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0008**

QC Analytical Batch: A95176
Analysis Method: 2320B-2011
Analysis Description: Alkalinity

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 86643

Parameter	Units	Blank Result	MQL	Analyzed
Alkalinity (as CaCO3)	mg/L	< 10	10	08/13/24 09:30

Duplicate A 87049-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Alkalinity (as CaCO3)	mg/L	270	260	3.7	25	08/13/24 09:30

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0008**

QC Analytical Batch: A95017
Analysis Method: 2540C-2011
Analysis Description: Total Dissolved Solids (TDS)

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 86643

Parameter	Units	Blank Result	MQL	Analyzed
Total Dissolved Solids	mg/L	< 10	10	08/06/24 15:18

Duplicate A 86643-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Dissolved Solids	mg/L	348	346	0.5	10	08/06/24 15:18

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0008

QC Prep: L766247
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L766658,L766914
Analysis Method: 6020B
Analysis Description: Metals Analyses

Lab Reagent Blank LRB-L766247 Matrix: AQU
Associated Lab Samples: 86643

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/L	<0.0010	0.0010	08/09/24 15:46
Barium	mg/L	<0.001	0.001	08/09/24 15:46
Calcium	mg/L	<0.200	0.200	08/09/24 15:46
Cadmium	mg/L	<0.0010	0.0010	08/09/24 15:46
Chromium	mg/L	<0.001	0.001	08/09/24 15:46
Iron	mg/L	<0.100	0.100	08/09/24 15:46
Lead	mg/L	<0.0010	0.0010	08/09/24 15:46
Magnesium	mg/L	<0.100	0.100	08/09/24 15:46
Manganese	mg/L	<0.001	0.001	08/09/24 15:46
Potassium	mg/L	<0.100	0.100	08/09/24 15:46
Selenium	mg/L	<0.001	0.001	08/09/24 15:46
Silver	mg/L	<0.0010	0.0010	08/09/24 15:46
Sodium	mg/L	<0.100	0.100	08/09/24 15:46
Strontium	mg/L	<0.001	0.001	08/09/24 15:46
Zinc	mg/L	<0.010	0.010	08/09/24 15:46

Laboratory Control Sample LCS-L766247

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/L	0.0500	0.0513	103	80-120
Barium	mg/L	0.100	0.096	97.0	80-120
Calcium	mg/L	10.0	10.2	102	80-120
Cadmium	mg/L	0.0100	0.0102	102	80-120
Chromium	mg/L	0.100	0.102	102	80-120
Iron	mg/L	10.0	10.0	100	80-120
Lead	mg/L	0.0500	0.0506	101	80-120
Magnesium	mg/L	10.0	9.62	96.0	80-120

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0008

QC Prep: L766247
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L766658,L766914
Analysis Method: 6020B
Analysis Description: Metals Analyses

Laboratory Control Sample LCS-L766247

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Manganese	mg/L	0.100	0.103	103	80-120
Potassium	mg/L	10.0	9.96	100	80-120
Selenium	mg/L	0.100	0.099	100	80-120
Silver	mg/L	0.0100	0.0098	98.0	80-120
Sodium	mg/L	10.0	10.1	101	80-120
Strontium	mg/L	0.100	0.096	96.0	80-120
Zinc	mg/L	0.500	0.519	104	80-120

Matrix Spike & Matrix Spike Duplicate A 86731-MS-L766247 A 86731-MSD-L766247

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/L	0.112	0.0500	0.0500	0.164	0.161	104	98.0	75-125	1.8	20
Barium	mg/L	0.603	0.100	0.100	0.703	0.680	100	77.0	75-125	3.3	20
Calcium	mg/L	147	10.0	10.0	163	161	160*	140*	75-125	1.2	20
Cadmium	mg/L	<0.0010	0.0100	0.0100	0.0095	0.0092	95.0	93.0	75-125	2.5	20
Chromium	mg/L	<0.001	0.100	0.100	0.102	0.097	102	97.0	75-125	4.3	20
Iron	mg/L	13.8	10.0	10.0	23.6	22.9	98.0	91.0	75-125	3.0	20
Lead	mg/L	<0.0010	0.0500	0.0500	0.0479	0.0465	96.0	93.0	75-125	2.9	20
Magnesium	mg/L	55.8	10.0	10.0	66.6	64.9	108	91.0	75-125	2.5	20
Manganese	mg/L	0.205	0.100	0.100	0.305	0.292	100	87.0	75-125	4.3	20
Potassium	mg/L	9.56	10.0	10.0	19.5	18.8	99.0	92.0	75-125	3.6	20
Selenium	mg/L	<0.005	0.100	0.100	0.102	0.103	102	103	75-125	0.9	20
Silver	mg/L	<0.0010	0.0100	0.0100	0.0086	0.0083	87.0	84.0	75-125	3.8	20
Sodium	mg/L	73.0	10.0	10.0	84.7	81.9	117	89.0	75-125	3.3	20
Strontium	mg/L	0.993	0.100	0.100	1.14	1.10	147*	107	75-125	3.5	20

* QC Fail

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0008

QC Prep: L766247
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L766658,L766914
Analysis Method: 6020B
Analysis Description: Metals Analyses

Matrix Spike & Matrix Spike Duplicate A 86731-MS-L766247 A 86731-MSD-L766247

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Zinc	mg/L	<0.050	0.500	0.500	0.511	0.502	102	100	75-125	1.7	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0008

QC Prep: L766263
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L766658
Analysis Method: 6020B
Analysis Description: Metals Analyses

Lab Reagent Blank LRB-L766263 Matrix: AQU
Associated Lab Samples: 86644

Parameter	Units	Blank Result	MQL	Analyzed
Dissolved Arsenic	mg/L	<0.0010	0.0010	08/09/24 17:06
Dissolved Barium	mg/L	<0.001	0.001	08/09/24 17:06
Dissolved Cadmium	mg/L	<0.0010	0.0010	08/09/24 17:06
Dissolved Chromium	mg/L	<0.001	0.001	08/09/24 17:06
Dissolved Iron	mg/L	<0.100	0.100	08/09/24 17:06
Dissolved Lead	mg/L	<0.0010	0.0010	08/09/24 17:06
Dissolved Manganese	mg/L	<0.001	0.001	08/09/24 17:06
Dissolved Selenium	mg/L	<0.001	0.001	08/09/24 17:06
Dissolved Silver	mg/L	<0.0010	0.0010	08/09/24 17:06
Dissolved Strontium	mg/L	<0.001	0.001	08/09/24 17:06
Dissolved Zinc	mg/L	<0.010	0.010	08/09/24 17:06

Laboratory Control Sample & LCSD LCS-L766263 LCSD-L766263

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Arsenic	mg/L	0.0500	0.0503	0.0494	101	99.0	80-120	1.8	20
Dissolved Barium	mg/L	0.100	0.095	0.093	96.0	93.0	80-120	2.9	20
Dissolved Cadmium	mg/L	0.0100	0.0101	0.0098	101	99.0	80-120	2.1	20
Dissolved Chromium	mg/L	0.100	0.099	0.097	100	97.0	80-120	2.5	20
Dissolved Iron	mg/L	10.0	9.88	9.48	99.0	95.0	80-120	4.1	20
Dissolved Lead	mg/L	0.0500	0.0492	0.0487	98.0	97.0	80-120	1.0	20
Dissolved Manganese	mg/L	0.100	0.103	0.099	103	99.0	80-120	3.8	20
Dissolved Selenium	mg/L	0.100	0.096	0.096	96.0	97.0	80-120	0.3	20
Dissolved Silver	mg/L	0.0100	0.0096	0.0094	96.0	95.0	80-120	1.5	20
Dissolved Strontium	mg/L	0.100	0.095	0.094	95.0	94.0	80-120	1.1	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0008**

QC Prep: L766263
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L766658
Analysis Method: 6020B
Analysis Description: Metals Analyses

Laboratory Control Sample & LCSD LCS-L766263 LCSD-L766263

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Zinc	mg/L	0.500	0.505	0.500	101	100	80-120	0.9	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0008

QC Prep: L766353
QC Prep Batch Method: 7470A
QC Analytical Batch(es): L766508
Analysis Method: 7470A
Analysis Description: Total Aqueous Mercury Analysis - CVAA

Lab Reagent Blank LRB-L766353 Matrix: AQU
Associated Lab Samples: 86643

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/L	<0.00020	0.00020	08/09/24 13:12

Laboratory Control Sample LCS-L766353

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/L	0.00400	0.00366	92.0	80-120

Matrix Spike & Matrix Spike Duplicate L 96477-MS-L766353 L 96477-MSD-L766353

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/L	<0.00020	0.00400	0.00400	0.00388	0.00377	97.0	94.0	80-120	2.8	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0008**

QC Prep: L766362
QC Prep Batch Method: 7470A
QC Analytical Batch(es): L766508
Analysis Method: 7470A
Analysis Description: Total Aqueous Mercury Analysis - CVAA

Lab Reagent Blank LRB-L766362 Matrix: AQU
Associated Lab Samples: 86644

Parameter	Units	Blank Result	MQL	Analyzed
Dissolved Mercury	mg/L	<0.00020	0.00020	08/09/24 13:57

Laboratory Control Sample & LCSD LCS-L766362 LCSD-L766362

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Mercury	mg/L	0.00400	0.00377	0.00385	94.0	96.0	80-120	2.0	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0008

QC Prep: G197014
QC Prep Batch Method: 5030B
QC Analytical Batch(es): G197025
Analysis Method: 8260B
Analysis Description: Volatile Organic Compounds - GC/MS

Lab Reagent Blank LRB-G197014 Matrix: AQU
Associated Lab Samples: 86643

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Benzene	mg/L	<0.001	0.001	08/08/24 14:05		
Ethylbenzene	mg/L	<0.001	0.001	08/08/24 14:05		
Toluene	mg/L	<0.005	0.005	08/08/24 14:05		
o-Xylene	mg/L	<0.001	0.001	08/08/24 14:05		
m,p-Xylene	mg/L	<0.002	0.002	08/08/24 14:05		
Toluene-d8 (S)				08/08/24 14:05	76.2	70-130

Laboratory Control Sample & LCSD LCS-G197014 LCSD-G197014

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Benzene	mg/L	0.100	0.105	0.105	105	105	70-130	0.0	20
Ethylbenzene	mg/L	0.100	0.099	0.097	99.1	97.2	80-120	1.9	20
Toluene	mg/L	0.100	0.106	0.105	106	105	80-120	0.9	20
o-Xylene	mg/L	0.100	0.101	0.096	101	96.7	70-130	4.3	20
m,p-Xylene	mg/L	0.200	0.210	0.202	105	101	75-125	3.8	20
Toluene-d8 (S)					81.4	82.4	70-130		

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0008**

QC Prep: A95174
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A95180
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A95174 Matrix: AQU
Associated Lab Samples: 86643

Parameter	Units	Blank Result	MQL	Analyzed
Bromide (Br)	mg/L	< 0.100	0.100	08/09/24 15:40
Chloride	mg/L	< 0.400	0.400	08/09/24 15:40
Sulfate	mg/L	< 0.500	0.500	08/09/24 15:40

Laboratory Control Sample LCS-A95174

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Bromide (Br)	mg/L	13.9	14.0	101	80-120
Chloride	mg/L	55.6	59.3	107	80-120
Sulfate	mg/L	69.4	72.5	104	80-120

Matrix Spike & Matrix Spike Duplicate A 86643-MS-A95174 A 86643-MSD-A95174

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Bromide (Br)	mg/L	< 0.222	13.9	13.9	14.2	14.3	102	103	80-120	0.7	15.0
Chloride	mg/L	65.7	55.6	55.6	125	125	107	107	80-120	0.0	15.0
Sulfate	mg/L	< 1.11	69.4	69.4	70.8	70.8	101	101	80-120	0.0	15.0

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-215-0008

QC Prep: G197034
QC Prep Batch Method: MAEPH LA
QC Analytical Batch(es): G197083
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Lab Reagent Blank LRB-G197034 Matrix: AQU
Associated Lab Samples: 86643

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C10-C12	mg/L	<0.030	0.030	08/09/24 18:13		
Aliphatic >C12-C16	mg/L	<0.030	0.030	08/09/24 18:13		
Aliphatic >C16-C35	mg/L	<0.050	0.050	08/09/24 18:13		
Aromatic >C10-C12	mg/L	<0.030	0.030	08/09/24 18:13		
Aromatic >C12-C16	mg/L	<0.030	0.030	08/09/24 18:13		
Aromatic >C16-C21	mg/L	<0.030	0.030	08/09/24 18:13		
Aromatic >C21-C35	mg/L	<0.035	0.035	08/09/24 18:13		
Chlorooctadecane (S)				08/09/24 18:13	35.6	40-140
OTP Surrogate (S)				08/09/24 18:13	40.6	40-140

Laboratory Control Sample & LCSD LCS-G197034 LCSD-G197034

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C12-C16	mg/L	0.100	0.076	0.056	76.0	56.1	40-140	30.1*	25
Aliphatic >C16-C35	mg/L	0.300	0.213	0.171	71.0	57.0	40-140	21.8	25
Aromatic >C10-C12	mg/L	0.100	0.081	0.058	81.0	58.3	40-140	32.5*	25
Aromatic >C12-C16	mg/L	0.200	0.127	0.112	63.5	56.0	40-140	12.5	25
Aromatic >C16-C21	mg/L	0.100	0.096	0.095	96.5	95.8	40-140	0.7	25
Chlorooctadecane (S)					62.8	55.4	40-140		
OTP Surrogate (S)					42.8	49.0	40-140		

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-215-0008**

QC Prep: G197013
QC Prep Batch Method: MAVPH LA (GC/MS) (Aqueous)
QC Analytical Batch(es): G197024
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G197013 Matrix: AQU
Associated Lab Samples: 86643

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/L	<0.005	0.005	08/08/24 14:05		
Aliphatic >C8-C10	mg/L	<0.013	0.013	08/08/24 14:05		
Aromatic >C8-C10 A	mg/L	<0.005	0.005	08/08/24 14:05		
Toluene-d8 (S)				08/08/24 14:05	76.2	70-130

Laboratory Control Sample & LCSD LCS-G197013 LCSD-G197013

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/L	0.500	0.453	0.453	90.6	90.6	70-130	0.0	25
Aliphatic >C8-C10	mg/L	1.30	1.33	1.32	102	102	70-130	0.7	25
Aromatic >C8-C10 A	mg/L	0.500	0.502	0.487	100	97.4	70-130	3.0	25
Toluene-d8 (S)					81.4	82.4	70-130		

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM (Sugar Land)**
Report Number: **24-215-0008**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◉ Yes	◯ No	◯ N/A
Water - VOA vials free of headspace	◉ Yes	◯ No	◯ N/A
Trip Blanks received with VOAs	◯ Yes	◉ No	◯ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 08/05/2024 16:49:51

BP/Castex-Ltd Adm-Apx E-002151

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM 840 W. Sam Houston Pkwy N., Suite 600 Houston, TX 77024	Dave Upthegrove Shawn Wiggins	

24-215-0008
10485
08-02-2024
12:05:40
ERM (Sugar Land)
Castex

Project Description	Project/Site Location (City/State)	
Castex	Jeff Davis Parish, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed

Metl
☐ Fed Ex ☐ UPS ☐ USPS
☒ Courier ☐ Client Drop Off
Other

WW – Wastewater GW – Groundwater
DW – Drinking Water S – Soil /Solid O – Oil
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0727954	504.481.6470 971.303.2385	david.upthegrove@erm.com shawn.wiggins@erm.com		

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Unless noted, all containers per Table II of 40 CFR Part 136.

A Cool < 10C Na2S2O3 (Micro Only)
B Cool <= 6C
C H2SO4 pH<2
D None Required
E NaOH pH>10
F HNO3 pH<2
G HCl pH<2
H H3PO4 pH<2
I Cool <= 6C NA2S2O3

* CCT 8/6/24

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	BTEX	EPH	VPH	TDS	Cl, SO4, CO3, HCO3, Alk	Total Metals	Diss Metals	Ra 226/228		Comments/Notes
						Required Analysis / Preservative									
7/30/24	1230	CA-19D	11	GW	G	X	X	X	X	X	X	X	X		86643-86644
															RECAP LIMITS

For Laboratory Use Only

Ice	Custody Seals	Lab Comments
Y/N	Y/N	Total and dissolved Strontium added to metals, as per D. Upthegrove. CCT 8/6/24

Blank/Cooler Temp: 2.2°C

Sampled by (Name – Print): R. Charles Trahan

Client Remarks/Comments: Ra 226/228 subs to baseline
Total Metals: As, Ba, Ca, Cd, Cr, Fe, Pb, Mg, Mn, Hg, K, Na, Se, Ag, Zn
Diss Metals: As, Ba, Ca, Cr, Fe, Pb, Mn, Hg, Se, Ag, Zn

Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
R. Charles Trahan	8/2/24	0924	DB Cocu	8/2	9:26
DB Cocu	8/5/24	7:20	T. Howard	8/5	7:20
T. Howard	8/5	8:51	Kathy Hendrix	08/05/24	0851

Rec'd by: Kathy Hendrix 08/05/24 1100 Rec'd by: [illegible] 8/5/24@ 1100 Reling by: [illegible] 8/5/24@ 1410
Rec'd By: [illegible] 8/5/24 1410

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9/16/2024

ERM (Sugar Land)
Mr. David Upthegrove
840 W. Sam Houston Pkwy North, Suite 600
Houston, TX, 77024

Ref: Report Number: 24-221-0053
Project Description: Castex
Project Number: 0727954
Jeff Davis Parish, LA

Dear Mr. David Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 8/8/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-002153

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2025
Arkansas	State Program	88-0650	02/07/2025
California	State Program	2904	06/30/2025
Florida	State Program - NELAP	E871157	06/30/2025
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2025
Kentucky	State Program	90047	12/31/2024
Kentucky	State Program	80215	06/30/2025
Kentucky	State Program	KY90047	12/31/2024
Louisiana	State Program - NELAP	LA037	12/31/2024
Louisiana	State Program - NELAP	04015	06/30/2025
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2025
North Carolina	State Program	415	12/31/2024
Pennsylvania	State Program - NELAP	68-03195	05/31/2025
South Carolina	State Program	84002	06/30/2024
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2024
Virginia	State Program	00106	06/30/2025
Virginia	State Program - NELAP	460181	09/14/2025

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2025
Kentucky	State Program	KY98013	12/31/2024
Louisiana	State Program - NELAP	04023	06/30/2025

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Sample Summary Table

Report Number: **24-221-0053**

Client Project Description: **Castex**
Project Number: 0727954
Jeff Davis Parish, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
87049	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024		
87049	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	6020B	WP MTN
87049	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	7470A	WP MTN
87049	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	MAEPH LA	WP RMS
87049	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	MAVPH LA	WP RMS
87049	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	8260B	WP RMS
87050	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	6020B	WP MTN
87050	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	7470A	WP MTN
87051	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024		
87051	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	6020B	WP MTN
87051	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	7470A	WP MTN
87051	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	8260B	WP RMS
87051	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	MAVPH LA	WP RMS
87051	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	MAEPH LA	WP RMS
87052	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	6020B	WP MTN
87052	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	7470A	WP MTN
87053	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024		
87053	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	7470A	WP MTN
87053	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	6020B	WP MTN
87053	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	8260B	WP RMS
87053	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	MAVPH LA	WP RMS
87053	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	MAEPH LA	WP RMS
87054	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	7470A	WP MTN
87054	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	6020B	WP MTN
87055	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024		

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Sample Summary Table

Report Number: **24-221-0053**

Client Project Description: **Castex**
Project Number: 0727954
Jeff Davis Parish, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
87055	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	7470A	WP MTN
87055	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	6020B	WP MTN
87055	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	8260B	WP RMS
87055	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	MAVPH LA	WP RMS
87055	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	MAEPH LA	WP RMS
87056	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	6020B	WP MTN
87056	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	7470A	WP MTN
87057	CD-19A	Aqueous	08/07/2024 08:50	08/08/2024		
87057	CD-19A	Aqueous	08/07/2024 08:50	08/08/2024	7470A	WP MTN
87057	CD-19A	Aqueous	08/07/2024 08:50	08/08/2024	6020B	WP MTN
87057	CD-19A	Aqueous	08/07/2024 08:50	08/08/2024	8260B	WP RMS
87057	CD-19A	Aqueous	08/07/2024 08:50	08/08/2024	MAVPH LA	WP RMS
87057	CD-19A	Aqueous	08/07/2024 08:50	08/08/2024	MAEPH LA	WP RMS
87058	CD-19A	Aqueous	08/07/2024 08:50	08/08/2024	7470A	WP MTN
87058	CD-19A	Aqueous	08/07/2024 08:50	08/08/2024	6020B	WP MTN
87059	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024		
87059	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	7470A	WP MTN
87059	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	6020B	WP MTN
87059	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	8260B	WP RMS
87059	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	MAVPH LA	WP RMS
87059	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	MAEPH LA	WP RMS
87060	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	7470A	WP MTN
87060	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	6020B	WP MTN
87061	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024		
87061	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	7470A	WP MTN

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Sample Summary Table

Report Number: **24-221-0053**

Client Project Description: **Castex**
Project Number: 0727954
Jeff Davis Parish, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
87061	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	6020B	WP MTN
87061	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	8260B	WP RMS
87061	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	MAVPH LA	WP RMS
87061	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	MAEPH LA	WP RMS
87062	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	7470A	WP MTN
87062	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	6020B	WP MTN
87063	Trip Blank 1	Aqueous		08/08/2024	8260B	WP RMS
87063	Trip Blank 1	Aqueous		08/08/2024	MAVPH LA	WP RMS
87064	Trip Blank 2	Aqueous		08/08/2024	8260B	WP RMS
87064	Trip Blank 2	Aqueous		08/08/2024	MAVPH LA	WP RMS
87065	Trip Blank 3	Aqueous		08/08/2024	8260B	WP RMS
87065	Trip Blank 3	Aqueous		08/08/2024	MAVPH LA	WP RMS

WP MTN - Memphis, TN: Waypoint Analytical - TN, Memphis, TN

WP RMS - Ridgeland, MS: Waypoint Analytical - Mississippi, Inc., Ridgeland, MS

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Client: ERM (Sugar Land) **CASE NARRATIVE**
Project: Castex
Lab Report Number: 24-221-0053
Date: 9/16/2024

MADEP EPH Method MAEPH LA
Sample 87051
Analyte: Chlorooctadecane
QC Batch No: G197200/G197132
Surrogate(s) were flagged for recoveries in the associated project sample. During the extraction step, the extraction technician noted that a significant emulsion formed. Batch QC samples (Method Blank and Laboratory Control Samples) all showed surrogate recoveries within QC limits, indicating that the biased recoveries were due to the sample matrix.

Sample 87053
Analyte: Chlorooctadecane
QC Batch No: G197200/G197132
Surrogate(s) were flagged for recoveries in the associated project sample. During the extraction step, the extraction technician noted that a significant emulsion formed. Batch QC samples (Method Blank and Laboratory Control Samples) all showed surrogate recoveries within QC limits, indicating that the biased recoveries were due to the sample matrix.

Sample 87055
Analyte: Chlorooctadecane
QC Batch No: G197200/G197132
Surrogate(s) were flagged for recoveries in the associated project sample. During the extraction step, the extraction technician noted that a significant emulsion formed. Batch QC samples (Method Blank and Laboratory Control Samples) all showed surrogate recoveries within QC limits, indicating that the biased recoveries were due to the sample matrix.

Metals Analyses Method 6020B
Sample 87057
Analyte: Silver
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87059
Analyte: Silver
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87057
Analyte: Barium
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 87059
Analyte: Barium
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87057
Analyte: Cadmium
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87059
Analyte: Cadmium
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87057
Analyte: Chromium
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87059
Analyte: Chromium
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87057
Analyte: Iron
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87057
Analyte: Potassium
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87057
Analyte: Manganese
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87059
Analyte: Manganese
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 87057
Analyte: Zinc
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87059
Analyte: Zinc
QC Batch No: L767655/L767041
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87058
Analyte: Silver
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Silver
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87058
Analyte: Arsenic
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Arsenic
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87058
Analyte: Barium
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Barium
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 87058
Analyte: Cadmium
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Cadmium
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87058
Analyte: Chromium
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Chromium
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87058
Analyte: Iron
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87058
Analyte: Manganese
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Manganese
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87058
Analyte: Lead
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Lead
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

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Sample 87058
Analyte: Selenium
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Selenium
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87050
Analyte: Zinc
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87058
Analyte: Zinc
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Sample 87060
Analyte: Zinc
QC Batch No: L767655/L767044/A95139
One or more Internal Standards are outside method acceptance criteria. Re-analysis and/or sample dilutions are required.

Total Aqueous Mercury Analysis - CVAA Method 7470A
Sample 89572
Analyte: Mercury
QC Batch No: L767271/L767100
The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87049**
Sample ID : **CD-18B**

Matrix: **Aqueous**
Sampled: **8/6/2024 10:50**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	270	mg/L	10	1	08/13/24 09:30	JMB	A95176
Carbonate	<10	mg/L	10	1	08/13/24 09:30	JMB	A95176
Alkalinity (as CaCO3)	270	mg/L	10	1	08/13/24 09:30	JMB	A95176

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	756	mg/L	10	1	08/13/24 14:20	MJM	A95175

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0130	mg/L	0.0010	1	08/14/24 18:28	CPW	L767335
Barium	0.576	mg/L	0.001	1	08/14/24 18:28	CPW	L767335
Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 18:28	CPW	L767335
Calcium	101	mg/L	1.00	5	08/15/24 15:11	CPW	L767655
Chromium	<0.001	mg/L	0.001	1	08/14/24 18:28	CPW	L767335
Iron	2.59	mg/L	0.100	1	08/14/24 18:28	CPW	L767335
Lead	<0.0010	mg/L	0.0010	1	08/14/24 18:28	CPW	L767335
Magnesium	31.7	mg/L	0.100	1	08/14/24 18:28	CPW	L767335

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002163

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87049**
Sample ID : **CD-18B**

Matrix: **Aqueous**
Sampled: **8/6/2024 10:50**

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.718	mg/L	0.001	1	08/15/24 15:07	CPW	L767655
Potassium	6.52	mg/L	0.100	1	08/14/24 18:28	CPW	L767335
Selenium	0.001	mg/L	0.001	1	08/14/24 18:28	CPW	L767335
Silver	<0.0010	mg/L	0.0010	1	08/14/24 18:28	CPW	L767335
Sodium	83.9	mg/L	0.500	5	08/15/24 15:11	CPW	L767655
Strontium	0.705	mg/L	0.005	5	08/15/24 15:11	CPW	L767655
Zinc	<0.010	mg/L	0.010	1	08/14/24 18:28	CPW	L767335

Analytical Method: 7470A **Prep Batch(es):** **L767100** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	08/14/24 13:51	FDS	L767271

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 15:16	MAO	G197273
Toluene	0.007	mg/L	0.005	1	08/15/24 15:16	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 15:16	MAO	G197273

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002164

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87049**
Sample ID : **CD-18B**

Matrix: **Aqueous**
Sampled: **8/6/2024 10:50**

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 15:16		G197273
Surrogate: Toluene-d8	90.6		Limits: 70-130%	1	08/15/24 15:16	MAO	G197273

Analytical Method: 9056 **Prep Batch(es):** **A95202** 08/16/24 16:10
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	277	mg/L	0.800	5	08/16/24 21:59	MJM	A95304
Bromide (Br)	0.604	mg/L	0.500	5	08/16/24 21:59	MJM	A95304
Sulfate	9.15	mg/L	2.50	5	08/16/24 21:59	MJM	A95304

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 19:50	SJS	G197200
Aromatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 19:50	SJS	G197200
Aliphatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 19:50	SJS	G197200
Aromatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 19:50	SJS	G197200
Aromatic >C16-C21	<0.120	mg/L	0.120	1	08/14/24 19:50	SJS	G197200
Aliphatic >C16-C35	<0.200	mg/L	0.200	1	08/14/24 19:50	SJS	G197200

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex

Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87049**
Sample ID : **CD-18B**

Matrix: **Aqueous**
Sampled: **8/6/2024 10:50**

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.140	mg/L	0.140	1	08/14/24 19:50	SJS	G197200
Surrogate: Chlorooctadecane	40.1		Limits: 40-140%	1	08/14/24 19:50	SJS	MAEPH LA
Surrogate: OTP Surrogate	50.0		Limits: 40-140%	1	08/14/24 19:50	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 15:16	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 15:16	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 15:16		G197247
Surrogate: Toluene-d8	90.6		Limits: 70-130%	1	08/15/24 15:16	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002166

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87050**
Sample ID : **CD-18B**

Matrix: **Aqueous**
Sampled: **8/6/2024 10:50**

Analytical Method: 6020B **Prep Batch(es):** **L767044** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0135	mg/L	0.0010	1	08/14/24 19:53	CPW	L767335
Dissolved Barium	0.617	mg/L	0.001	1	08/14/24 19:53	CPW	L767335
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 19:53	CPW	L767335
Dissolved Chromium	<0.001	mg/L	0.001	1	08/14/24 19:53	CPW	L767335
Dissolved Iron	2.54	mg/L	0.100	1	08/14/24 19:53	CPW	L767335
Dissolved Lead	<0.0010	mg/L	0.0010	1	08/14/24 19:53	CPW	L767335
Dissolved Manganese	0.594	mg/L	0.001	1	08/14/24 19:53	CPW	L767335
Dissolved Selenium	0.001	mg/L	0.001	1	08/15/24 18:07	CPW	L767655
Dissolved Silver	<0.0010	mg/L	0.0010	1	08/14/24 19:53	CPW	L767335
Dissolved Strontium	0.747	mg/L	0.005	5	08/15/24 18:11	CPW	L767655
Dissolved Zinc	<0.050	mg/L	0.050	5	08/15/24 18:11	CPW	L767655

Analytical Method: 7470A **Prep Batch(es):** **L767146** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	08/14/24 14:21	FDS	L767271

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002167

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87051**
Sample ID : **CD-18C**

Matrix: **Aqueous**
Sampled: **8/6/2024 12:50**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	240	mg/L	10	1	08/13/24 09:30	JMB	A95176
Carbonate	<10	mg/L	10	1	08/13/24 09:30	JMB	A95176
Alkalinity (as CaCO3)	240	mg/L	10	1	08/13/24 09:30	JMB	A95176

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	536	mg/L	10	1	08/13/24 14:20	MJM	A95175

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0177	mg/L	0.0010	1	08/14/24 18:32	CPW	L767335
Barium	0.406	mg/L	0.001	1	08/14/24 18:32	CPW	L767335
Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 18:32	CPW	L767335
Calcium	77.3	mg/L	1.00	5	08/15/24 15:23	CPW	L767655
Chromium	0.006	mg/L	0.001	1	08/14/24 18:32	CPW	L767335
Iron	5.00	mg/L	0.100	1	08/14/24 18:32	CPW	L767335
Lead	0.0020	mg/L	0.0010	1	08/14/24 18:32	CPW	L767335
Magnesium	22.1	mg/L	0.100	1	08/14/24 18:32	CPW	L767335

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002168

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87051**
Sample ID : **CD-18C**

Matrix: **Aqueous**
Sampled: **8/6/2024 12:50**

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.326	mg/L	0.001	1	08/15/24 15:19	CPW	L767655
Potassium	5.00	mg/L	0.100	1	08/14/24 18:32	CPW	L767335
Selenium	<0.001	mg/L	0.001	1	08/14/24 18:32	CPW	L767335
Silver	<0.0010	mg/L	0.0010	1	08/14/24 18:32	CPW	L767335
Sodium	75.2	mg/L	0.500	5	08/15/24 15:23	CPW	L767655
Strontium	0.443	mg/L	0.005	5	08/15/24 15:23	CPW	L767655
Zinc	0.013	mg/L	0.010	1	08/14/24 18:32	CPW	L767335

Analytical Method: 7470A **Prep Batch(es):** **L767100** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	08/14/24 13:52	FDS	L767271

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 15:51	MAO	G197273
Toluene	0.005	mg/L	0.005	1	08/15/24 15:51	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 15:51	MAO	G197273

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002169

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87051**
Sample ID : **CD-18C**

Matrix: **Aqueous**
Sampled: **8/6/2024 12:50**

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 15:51		G197273
Surrogate: Toluene-d8	90.2		Limits: 70-130%	1	08/15/24 15:51	MAO	G197273

Analytical Method: 9056 **Prep Batch(es):** **A95202** 08/16/24 16:10
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	163	mg/L	0.800	5	08/16/24 22:45	MJM	A95304
Bromide (Br)	<0.500	mg/L	0.500	5	08/16/24 22:45	MJM	A95304
Sulfate	8.63	mg/L	2.50	5	08/16/24 22:45	MJM	A95304

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.122	mg/L	0.122	1	08/14/24 20:23	SJS	G197200
Aromatic >C10-C12	<0.122	mg/L	0.122	1	08/14/24 20:23	SJS	G197200
Aliphatic >C12-C16	<0.122	mg/L	0.122	1	08/14/24 20:23	SJS	G197200
Aromatic >C12-C16	<0.122	mg/L	0.122	1	08/14/24 20:23	SJS	G197200
Aromatic >C16-C21	<0.122	mg/L	0.122	1	08/14/24 20:23	SJS	G197200
Aliphatic >C16-C35	<0.204	mg/L	0.204	1	08/14/24 20:23	SJS	G197200

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87051**
Sample ID : **CD-18C**

Matrix: **Aqueous**
Sampled: **8/6/2024 12:50**

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.143	mg/L	0.143	1	08/14/24 20:23	SJS	G197200
Surrogate: Chlorooctadecane	**24.4** *		Limits: 40-140%	1	08/14/24 20:23	SJS	MAEPH LA
Surrogate: OTP Surrogate	52.5		Limits: 40-140%	1	08/14/24 20:23	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 15:51	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 15:51	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 15:51		G197247
Surrogate: Toluene-d8	90.2		Limits: 70-130%	1	08/15/24 15:51	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87052**
Sample ID : **CD-18C**

Matrix: **Aqueous**
Sampled: **8/6/2024 12:50**

Analytical Method: 6020B **Prep Batch(es):** **L767044** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0172	mg/L	0.0010	1	08/14/24 19:57	CPW	L767335
Dissolved Barium	0.392	mg/L	0.001	1	08/14/24 19:57	CPW	L767335
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 19:57	CPW	L767335
Dissolved Chromium	<0.001	mg/L	0.001	1	08/14/24 19:57	CPW	L767335
Dissolved Iron	1.50	mg/L	0.100	1	08/14/24 19:57	CPW	L767335
Dissolved Lead	<0.0010	mg/L	0.0010	1	08/14/24 19:57	CPW	L767335
Dissolved Manganese	0.243	mg/L	0.001	1	08/14/24 19:57	CPW	L767335
Dissolved Selenium	<0.001	mg/L	0.001	1	08/15/24 18:19	CPW	L767655
Dissolved Silver	<0.0010	mg/L	0.0010	1	08/14/24 19:57	CPW	L767335
Dissolved Strontium	0.465	mg/L	0.005	5	08/15/24 18:23	CPW	L767655
Dissolved Zinc	<0.010	mg/L	0.010	1	08/15/24 18:19	CPW	L767655

Analytical Method: 7470A **Prep Batch(es):** **L767146** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	08/14/24 14:23	FDS	L767271

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Report Date : 09/16/2024
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Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87053**
Sample ID : **CD-18A**

Matrix: **Aqueous**
Sampled: **8/6/2024 13:30**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	290	mg/L	10	1	08/13/24 09:30	JMB	A95176
Carbonate	<10	mg/L	10	1	08/13/24 09:30	JMB	A95176
Alkalinity (as CaCO3)	290	mg/L	10	1	08/13/24 09:30	JMB	A95176

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	456	mg/L	10	1	08/13/24 14:20	MJM	A95175

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0420	mg/L	0.0010	1	08/14/24 18:37	CPW	L767335
Barium	0.297	mg/L	0.001	1	08/14/24 18:37	CPW	L767335
Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 18:37	CPW	L767335
Calcium	75.7	mg/L	1.00	5	08/15/24 15:47	CPW	L767655
Chromium	0.001	mg/L	0.001	1	08/14/24 18:37	CPW	L767335
Iron	0.682	mg/L	0.100	1	08/14/24 18:37	CPW	L767335
Lead	<0.0010	mg/L	0.0010	1	08/14/24 18:37	CPW	L767335
Magnesium	28.1	mg/L	0.100	1	08/14/24 18:37	CPW	L767335

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87053**
Sample ID : **CD-18A**

Matrix: **Aqueous**
Sampled: **8/6/2024 13:30**

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.901	mg/L	0.001	1	08/15/24 15:43	CPW	L767655
Potassium	2.94	mg/L	0.100	1	08/14/24 18:37	CPW	L767335
Selenium	<0.001	mg/L	0.001	1	08/14/24 18:37	CPW	L767335
Silver	<0.0010	mg/L	0.0010	1	08/14/24 18:37	CPW	L767335
Sodium	51.1	mg/L	0.500	5	08/15/24 15:47	CPW	L767655
Strontium	0.533	mg/L	0.005	5	08/15/24 15:47	CPW	L767655
Zinc	<0.010	mg/L	0.010	1	08/14/24 18:37	CPW	L767335

Analytical Method: 7470A **Prep Batch(es):** **L767100** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	08/14/24 13:54	FDS	L767271

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 16:25	MAO	G197273
Toluene	<0.005	mg/L	0.005	1	08/15/24 16:25	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 16:25	MAO	G197273

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87053**
Sample ID : **CD-18A**

Matrix: **Aqueous**
Sampled: **8/6/2024 13:30**

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 16:25		G197273
Surrogate: Toluene-d8	92.0		Limits: 70-130%	1	08/15/24 16:25	MAO	G197273

Analytical Method: 9056 **Prep Batch(es):** **A95202** 08/16/24 16:10
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	104	mg/L	0.400	2	08/16/24 23:01	MJM	A95304
Bromide (Br)	0.286	mg/L	0.200	2	08/16/24 23:01	MJM	A95304
Sulfate	4.03	mg/L	1.00	2	08/16/24 23:01	MJM	A95304

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 20:56	SJS	G197200
Aromatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 20:56	SJS	G197200
Aliphatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 20:56	SJS	G197200
Aromatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 20:56	SJS	G197200
Aromatic >C16-C21	<0.120	mg/L	0.120	1	08/14/24 20:56	SJS	G197200
Aliphatic >C16-C35	<0.200	mg/L	0.200	1	08/14/24 20:56	SJS	G197200

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002175

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87053**
Sample ID : **CD-18A**

Matrix: **Aqueous**
Sampled: **8/6/2024 13:30**

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.140	mg/L	0.140	1	08/14/24 20:56	SJS	G197200
Surrogate: Chlorooctadecane	**24.0** *		Limits: 40-140%	1	08/14/24 20:56	SJS	MAEPH LA
Surrogate: OTP Surrogate	44.1		Limits: 40-140%	1	08/14/24 20:56	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 16:25	MAO	G197247
Aliphatic >C8-C10	0.017	mg/L	0.013	1	08/15/24 16:25	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 16:25		G197247
Surrogate: Toluene-d8	92.0		Limits: 70-130%	1	08/15/24 16:25	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002176

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87054**
Sample ID : **CD-18A**

Matrix: **Aqueous**
Sampled: **8/6/2024 13:30**

Analytical Method: 6020B **Prep Batch(es):** **L767044** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0437	mg/L	0.0010	1	08/14/24 20:01	CPW	L767335
Dissolved Barium	0.297	mg/L	0.001	1	08/14/24 20:01	CPW	L767335
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 20:01	CPW	L767335
Dissolved Chromium	<0.001	mg/L	0.001	1	08/14/24 20:01	CPW	L767335
Dissolved Iron	<0.100	mg/L	0.100	1	08/14/24 20:01	CPW	L767335
Dissolved Lead	<0.0010	mg/L	0.0010	1	08/14/24 20:01	CPW	L767335
Dissolved Manganese	0.743	mg/L	0.001	1	08/14/24 20:01	CPW	L767335
Dissolved Selenium	<0.001	mg/L	0.001	1	08/14/24 20:01	CPW	L767335
Dissolved Silver	<0.0010	mg/L	0.0010	1	08/14/24 20:01	CPW	L767335
Dissolved Strontium	0.533	mg/L	0.010	10	08/15/24 18:31	CPW	L767655
Dissolved Zinc	<0.010	mg/L	0.010	1	08/14/24 20:01	CPW	L767335

Analytical Method: 7470A **Prep Batch(es):** **L767146** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	08/14/24 14:24	FDS	L767271

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87055**
Sample ID : **CD-18D**

Matrix: **Aqueous**
Sampled: **8/6/2024 14:30**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	230	mg/L	10	1	08/13/24 09:30	JMB	A95176
Carbonate	<10	mg/L	10	1	08/13/24 09:30	JMB	A95176
Alkalinity (as CaCO3)	230	mg/L	10	1	08/13/24 09:30	JMB	A95176

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	496	mg/L	10	1	08/13/24 14:20	MJM	A95175

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0954	mg/L	0.0010	1	08/14/24 18:41	CPW	L767335
Barium	0.546	mg/L	0.001	1	08/14/24 18:41	CPW	L767335
Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 18:41	CPW	L767335
Calcium	102	mg/L	1.00	5	08/15/24 15:55	CPW	L767655
Chromium	0.065	mg/L	0.001	1	08/14/24 18:41	CPW	L767335
Iron	37.3	mg/L	0.100	1	08/14/24 18:41	CPW	L767335
Lead	0.0218	mg/L	0.0010	1	08/14/24 18:41	CPW	L767335
Magnesium	27.2	mg/L	0.100	1	08/14/24 18:41	CPW	L767335

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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ERM (Sugar Land)
Mr. David Upthegrove
840 W. Sam Houston Pkwy North, Suite 600
Houston , TX 77024

Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87055**
Sample ID : **CD-18D**

Matrix: **Aqueous**
Sampled: **8/6/2024 14:30**

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.773	mg/L	0.001	1	08/15/24 15:51	CPW	L767655
Potassium	6.85	mg/L	0.100	1	08/14/24 18:41	CPW	L767335
Selenium	0.002	mg/L	0.001	1	08/14/24 18:41	CPW	L767335
Silver	<0.0010	mg/L	0.0010	1	08/14/24 18:41	CPW	L767335
Sodium	69.5	mg/L	0.500	5	08/15/24 15:55	CPW	L767655
Strontium	0.437	mg/L	0.005	5	08/15/24 15:55	CPW	L767655
Zinc	0.096	mg/L	0.010	1	08/14/24 18:41	CPW	L767335

Analytical Method: 7470A **Prep Batch(es):** **L767100** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	08/14/24 13:55	FDS	L767271

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 17:00	MAO	G197273
Toluene	<0.005	mg/L	0.005	1	08/15/24 17:00	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 17:00	MAO	G197273

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002179

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REPORT OF ANALYSIS

Lab No : **87055**
Sample ID : **CD-18D**

Matrix: **Aqueous**
Sampled: **8/6/2024 14:30**

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 17:00		G197273
Surrogate: Toluene-d8	88.2		Limits: 70-130%	1	08/15/24 17:00	MAO	G197273

Analytical Method: 9056 **Prep Batch(es):** **A95202** 08/16/24 16:10
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	145	mg/L	0.400	2	08/16/24 23:16	MJM	A95304
Bromide (Br)	0.334	mg/L	0.200	2	08/16/24 23:16	MJM	A95304
Sulfate	9.25	mg/L	1.00	2	08/16/24 23:16	MJM	A95304

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 21:29	SJS	G197200
Aromatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 21:29	SJS	G197200
Aliphatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 21:29	SJS	G197200
Aromatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 21:29	SJS	G197200
Aromatic >C16-C21	<0.120	mg/L	0.120	1	08/14/24 21:29	SJS	G197200
Aliphatic >C16-C35	<0.200	mg/L	0.200	1	08/14/24 21:29	SJS	G197200

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87055**
Sample ID : **CD-18D**

Matrix: **Aqueous**
Sampled: **8/6/2024 14:30**

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.140	mg/L	0.140	1	08/14/24 21:29	SJS	G197200
Surrogate: Chlorooctadecane	**36.4** *		Limits: 40-140%	1	08/14/24 21:29	SJS	MAEPH LA
Surrogate: OTP Surrogate	56.5		Limits: 40-140%	1	08/14/24 21:29	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 17:00	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 17:00	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 17:00		G197247
Surrogate: Toluene-d8	88.2		Limits: 70-130%	1	08/15/24 17:00	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002181

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Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87056**
Sample ID : **CD-18D**

Matrix: **Aqueous**
Sampled: **8/6/2024 14:30**

Analytical Method: 6020B **Prep Batch(es):** **L767044** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0191	mg/L	0.0010	1	08/14/24 20:05	CPW	L767335
Dissolved Barium	0.348	mg/L	0.001	1	08/14/24 20:05	CPW	L767335
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 20:05	CPW	L767335
Dissolved Chromium	<0.001	mg/L	0.001	1	08/14/24 20:05	CPW	L767335
Dissolved Iron	1.71	mg/L	0.100	1	08/14/24 20:05	CPW	L767335
Dissolved Lead	<0.0010	mg/L	0.0010	1	08/14/24 20:05	CPW	L767335
Dissolved Manganese	0.246	mg/L	0.001	1	08/14/24 20:05	CPW	L767335
Dissolved Selenium	<0.001	mg/L	0.001	1	08/14/24 20:05	CPW	L767335
Dissolved Silver	<0.0010	mg/L	0.0010	1	08/14/24 20:05	CPW	L767335
Dissolved Strontium	0.370	mg/L	0.005	5	08/15/24 18:35	CPW	L767655
Dissolved Zinc	<0.010	mg/L	0.010	1	08/14/24 20:05	CPW	L767335

Analytical Method: 7470A **Prep Batch(es):** **L767146** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	08/14/24 14:26	FDS	L767271

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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REPORT OF ANALYSIS

Lab No : **87057**
Sample ID : **CD-19A**

Matrix: **Aqueous**
Sampled: **8/7/2024 8:50**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	380	mg/L	10	1	08/13/24 09:30	JMB	A95176
Carbonate	<10	mg/L	10	1	08/13/24 09:30	JMB	A95176
Alkalinity (as CaCO3)	380	mg/L	10	1	08/13/24 09:30	JMB	A95176

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	2480	mg/L	20	1	08/13/24 14:20	MJM	A95175

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0017	mg/L	0.0010	1	08/15/24 16:03	CPW	L767655
Barium	2.33	mg/L	0.005	5	08/15/24 16:07	CPW	L767655
Cadmium	<0.0050	mg/L	0.0050	5	08/15/24 16:07	CPW	L767655
Calcium	365	mg/L	5.00	25	08/15/24 16:11	CPW	L767655
Chromium	<0.005	mg/L	0.005	5	08/15/24 16:07	CPW	L767655
Iron	1.82	mg/L	0.500	5	08/15/24 16:07	CPW	L767655
Lead	<0.0050	mg/L	0.0050	5	08/15/24 16:07	CPW	L767655
Magnesium	111	mg/L	0.500	5	08/15/24 16:07	CPW	L767655

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002183

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REPORT OF ANALYSIS

Lab No : **87057**
Sample ID : **CD-19A**

Matrix: **Aqueous**
Sampled: **8/7/2024 8:50**

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.128	mg/L	0.005	5	08/15/24 16:07	CPW	L767655
Potassium	4.43	mg/L	0.500	5	08/15/24 16:07	CPW	L767655
Selenium	0.033	mg/L	0.001	1	08/15/24 16:03	CPW	L767655
Silver	<0.0050	mg/L	0.0050	5	08/15/24 16:07	CPW	L767655
Sodium	235	mg/L	2.50	25	08/15/24 16:11	CPW	L767655
Strontium	2.04	mg/L	0.025	25	08/15/24 16:11	CPW	L767655
Zinc	<0.050	mg/L	0.050	5	08/15/24 16:07	CPW	L767655

Analytical Method: 7470A **Prep Batch(es):** **L767100** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	08/14/24 13:57	FDS	L767271

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 17:34	MAO	G197273
Toluene	0.005	mg/L	0.005	1	08/15/24 17:34	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 17:34	MAO	G197273

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002184

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REPORT OF ANALYSIS

Lab No : **87057**
Sample ID : **CD-19A**

Matrix: **Aqueous**
Sampled: **8/7/2024 8:50**

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 17:34		G197273
Surrogate: Toluene-d8	91.6		Limits: 70-130%	1	08/15/24 17:34	MAO	G197273

Analytical Method: 9056 **Prep Batch(es):** **A95202** 08/16/24 16:10
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	1150	mg/L	3.20	20	08/17/24 00:17	MJM	A95304
Bromide (Br)	3.89	mg/L	2.00	20	08/17/24 00:17	MJM	A95304
Sulfate	<10.0	mg/L	10.0	20	08/17/24 00:17	MJM	A95304

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 22:01	SJS	G197200
Aromatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 22:01	SJS	G197200
Aliphatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 22:01	SJS	G197200
Aromatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 22:01	SJS	G197200
Aromatic >C16-C21	<0.120	mg/L	0.120	1	08/14/24 22:01	SJS	G197200
Aliphatic >C16-C35	<0.200	mg/L	0.200	1	08/14/24 22:01	SJS	G197200

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002185

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REPORT OF ANALYSIS

Lab No : **87057**
Sample ID : **CD-19A**

Matrix: **Aqueous**
Sampled: **8/7/2024 8:50**

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.140	mg/L	0.140	1	08/14/24 22:01	SJS	G197200
Surrogate: Chlorooctadecane	70.5		Limits: 40-140%	1	08/14/24 22:01	SJS	MAEPH LA
Surrogate: OTP Surrogate	48.0		Limits: 40-140%	1	08/14/24 22:01	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 17:34	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 17:34	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 17:34		G197247
Surrogate: Toluene-d8	91.6		Limits: 70-130%	1	08/15/24 17:34	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002186

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Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87058**
Sample ID : **CD-19A**

Matrix: **Aqueous**
Sampled: **8/7/2024 8:50**

Analytical Method: 6020B **Prep Batch(es):** **L767044** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	<0.0050	mg/L	0.0050	5	08/15/24 18:43	CPW	L767655
Dissolved Barium	2.22	mg/L	0.005	5	08/15/24 18:43	CPW	L767655
Dissolved Cadmium	<0.0050	mg/L	0.0050	5	08/15/24 18:43	CPW	L767655
Dissolved Chromium	<0.005	mg/L	0.005	5	08/15/24 18:43	CPW	L767655
Dissolved Iron	0.663	mg/L	0.500	5	08/15/24 18:43	CPW	L767655
Dissolved Lead	<0.0050	mg/L	0.0050	5	08/15/24 18:43	CPW	L767655
Dissolved Manganese	0.115	mg/L	0.005	5	08/15/24 18:43	CPW	L767655
Dissolved Selenium	0.041	mg/L	0.005	5	08/15/24 18:43	CPW	L767655
Dissolved Silver	<0.0050	mg/L	0.0050	5	08/15/24 18:43	CPW	L767655
Dissolved Strontium	2.00	mg/L	0.025	25	08/15/24 18:55	CPW	L767655
Dissolved Zinc	<0.050	mg/L	0.050	5	08/15/24 18:43	CPW	L767655

Analytical Method: 7470A **Prep Batch(es):** **L767146** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	08/14/24 14:27	FDS	L767271

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002187

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Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87059**
Sample ID : **CD-19B**

Matrix: **Aqueous**
Sampled: **8/7/2024 13:30**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	290	mg/L	10	1	08/13/24 09:30	JMB	A95176
Carbonate	<10	mg/L	10	1	08/13/24 09:30	JMB	A95176
Alkalinity (as CaCO3)	290	mg/L	10	1	08/13/24 09:30	JMB	A95176

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	1680	mg/L	10	1	08/13/24 14:20	MJM	A95175

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0066	mg/L	0.0010	1	08/15/24 16:31	CPW	L767655
Barium	2.47	mg/L	0.005	5	08/15/24 16:35	CPW	L767655
Cadmium	<0.0050	mg/L	0.0050	5	08/15/24 16:35	CPW	L767655
Calcium	422	mg/L	5.00	25	08/15/24 16:19	CPW	L767655
Chromium	<0.005	mg/L	0.005	5	08/15/24 16:35	CPW	L767655
Iron	4.68	mg/L	0.100	1	08/14/24 18:49	CPW	L767335
Lead	<0.0010	mg/L	0.0010	1	08/15/24 16:31	CPW	L767655
Magnesium	115	mg/L	0.500	5	08/15/24 16:35	CPW	L767655

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002188

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REPORT OF ANALYSIS

Lab No : **87059**
Sample ID : **CD-19B**

Matrix: **Aqueous**
Sampled: **8/7/2024 13:30**

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	2.13	mg/L	0.005	5	08/15/24 16:35	CPW	L767655
Potassium	7.97	mg/L	0.100	1	08/15/24 16:31	CPW	L767655
Selenium	0.007	mg/L	0.001	1	08/15/24 16:31	CPW	L767655
Silver	<0.0050	mg/L	0.0050	5	08/15/24 16:35	CPW	L767655
Sodium	179	mg/L	2.50	25	08/15/24 16:19	CPW	L767655
Strontium	2.49	mg/L	0.025	25	08/15/24 16:19	CPW	L767655
Zinc	<0.050	mg/L	0.050	5	08/15/24 16:35	CPW	L767655

Analytical Method: 7470A **Prep Batch(es):** **L767100** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	08/14/24 13:58	FDS	L767271

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 18:08	MAO	G197273
Toluene	<0.005	mg/L	0.005	1	08/15/24 18:08	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 18:08	MAO	G197273

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87059**
Sample ID : **CD-19B**

Matrix: **Aqueous**
Sampled: **8/7/2024 13:30**

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 18:08		G197273
Surrogate: Toluene-d8	92.2		Limits: 70-130%	1	08/15/24 18:08	MAO	G197273

Analytical Method: 9056 **Prep Batch(es):** **A95202** 08/16/24 16:10
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	713	mg/L	1.60	10	08/17/24 00:33	MJM	A95304
Bromide (Br)	2.30	mg/L	1.00	10	08/17/24 00:33	MJM	A95304
Sulfate	8.71	mg/L	5.00	10	08/17/24 00:33	MJM	A95304

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.125	mg/L	0.125	1	08/14/24 22:34	SJS	G197200
Aromatic >C10-C12	<0.125	mg/L	0.125	1	08/14/24 22:34	SJS	G197200
Aliphatic >C12-C16	<0.125	mg/L	0.125	1	08/14/24 22:34	SJS	G197200
Aromatic >C12-C16	<0.125	mg/L	0.125	1	08/14/24 22:34	SJS	G197200
Aromatic >C16-C21	<0.125	mg/L	0.125	1	08/14/24 22:34	SJS	G197200
Aliphatic >C16-C35	<0.208	mg/L	0.208	1	08/14/24 22:34	SJS	G197200

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87059**
Sample ID : **CD-19B**

Matrix: **Aqueous**
Sampled: **8/7/2024 13:30**

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.146	mg/L	0.146	1	08/14/24 22:34	SJS	G197200
Surrogate: Chlorooctadecane	85.6		Limits: 40-140%	1	08/14/24 22:34	SJS	MAEPH LA
Surrogate: OTP Surrogate	57.2		Limits: 40-140%	1	08/14/24 22:34	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 18:08	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 18:08	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 18:08		G197247
Surrogate: Toluene-d8	92.2		Limits: 70-130%	1	08/15/24 18:08	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87060**
Sample ID : **CD-19B**

Matrix: **Aqueous**
Sampled: **8/7/2024 13:30**

Analytical Method: 6020B **Prep Batch(es):** **L767044** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0082	mg/L	0.0050	5	08/15/24 19:03	CPW	L767655
Dissolved Barium	1.47	mg/L	0.005	5	08/15/24 19:03	CPW	L767655
Dissolved Cadmium	<0.0050	mg/L	0.0050	5	08/15/24 19:03	CPW	L767655
Dissolved Chromium	<0.005	mg/L	0.005	5	08/15/24 19:03	CPW	L767655
Dissolved Iron	4.36	mg/L	0.100	1	08/15/24 18:59	CPW	L767655
Dissolved Lead	<0.0050	mg/L	0.0050	5	08/15/24 19:03	CPW	L767655
Dissolved Manganese	1.23	mg/L	0.005	5	08/15/24 19:03	CPW	L767655
Dissolved Selenium	0.011	mg/L	0.005	5	08/15/24 19:03	CPW	L767655
Dissolved Silver	<0.0050	mg/L	0.0050	5	08/15/24 19:03	CPW	L767655
Dissolved Strontium	1.44	mg/L	0.025	25	08/15/24 19:07	CPW	L767655
Dissolved Zinc	<0.050	mg/L	0.050	5	08/15/24 19:03	CPW	L767655

Analytical Method: 7470A **Prep Batch(es):** **L767146** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	08/14/24 14:28	FDS	L767271

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Jeff Davis Parish, LA

Report Date : 09/16/2024
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Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87061**
Sample ID : **CD-19C**

Matrix: **Aqueous**
Sampled: **8/7/2024 15:00**

Analytical Method: 2320B-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bicarbonate	240	mg/L	10	1	08/13/24 09:30	JMB	A95176
Carbonate	<10	mg/L	10	1	08/13/24 09:30	JMB	A95176
Alkalinity (as CaCO3)	240	mg/L	10	1	08/13/24 09:30	JMB	A95176

Analytical Method: 2540C-2011

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Total Dissolved Solids	525	mg/L	10	1	08/13/24 14:20	MJM	A95175

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Arsenic	0.0221	mg/L	0.0010	1	08/14/24 19:01	CPW	L767335
Barium	0.376	mg/L	0.001	1	08/14/24 19:01	CPW	L767335
Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 19:01	CPW	L767335
Calcium	72.9	mg/L	1.00	5	08/15/24 16:43	CPW	L767655
Chromium	0.003	mg/L	0.001	1	08/14/24 19:01	CPW	L767335
Iron	2.63	mg/L	0.100	1	08/14/24 19:01	CPW	L767335
Lead	<0.0010	mg/L	0.0010	1	08/14/24 19:01	CPW	L767335
Magnesium	18.7	mg/L	0.100	1	08/14/24 19:01	CPW	L767335

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87061**
Sample ID : **CD-19C**

Matrix: **Aqueous**
Sampled: **8/7/2024 15:00**

Analytical Method: 6020B **Prep Batch(es):** **L767041** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Manganese	0.280	mg/L	0.001	1	08/15/24 16:39	CPW	L767655
Potassium	4.30	mg/L	0.100	1	08/14/24 19:01	CPW	L767335
Selenium	<0.001	mg/L	0.001	1	08/14/24 19:01	CPW	L767335
Silver	<0.0010	mg/L	0.0010	1	08/14/24 19:01	CPW	L767335
Sodium	69.7	mg/L	0.500	5	08/15/24 16:43	CPW	L767655
Strontium	0.442	mg/L	0.005	5	08/15/24 16:43	CPW	L767655
Zinc	<0.010	mg/L	0.010	1	08/14/24 19:01	CPW	L767335

Analytical Method: 7470A **Prep Batch(es):** **L767100** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Mercury	<0.00020	mg/L	0.00020	1	08/14/24 14:02	FDS	L767271

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 18:42	MAO	G197273
Toluene	<0.005	mg/L	0.005	1	08/15/24 18:42	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 18:42	MAO	G197273

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87061**
Sample ID : **CD-19C**

Matrix: **Aqueous**
Sampled: **8/7/2024 15:00**

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 18:42		G197273
Surrogate: Toluene-d8	91.8		Limits: 70-130%	1	08/15/24 18:42	MAO	G197273

Analytical Method: 9056 **Prep Batch(es):** **A95202** 08/16/24 16:10
Prep Method: SW-9056 (PREP)

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Chloride	156	mg/L	0.400	2	08/17/24 00:48	MJM	A95304
Bromide (Br)	0.457	mg/L	0.200	2	08/17/24 00:48	MJM	A95304
Sulfate	15.8	mg/L	1.00	2	08/17/24 00:48	MJM	A95304

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 23:08	SJS	G197200
Aromatic >C10-C12	<0.120	mg/L	0.120	1	08/14/24 23:08	SJS	G197200
Aliphatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 23:08	SJS	G197200
Aromatic >C12-C16	<0.120	mg/L	0.120	1	08/14/24 23:08	SJS	G197200
Aromatic >C16-C21	<0.120	mg/L	0.120	1	08/14/24 23:08	SJS	G197200
Aliphatic >C16-C35	<0.200	mg/L	0.200	1	08/14/24 23:08	SJS	G197200

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Report Date : 09/16/2024
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Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87061**
Sample ID : **CD-19C**

Matrix: **Aqueous**
Sampled: **8/7/2024 15:00**

Analytical Method: MAEPH LA **Prep Batch(es):** **G197132** 08/13/24 13:00
Prep Method: MAEPH LA

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aromatic >C21-C35	<0.140	mg/L	0.140	1	08/14/24 23:08	SJS	G197200
Surrogate: Chlorooctadecane	47.9		Limits: 40-140%	1	08/14/24 23:08	SJS	MAEPH LA
Surrogate: OTP Surrogate	87.5		Limits: 40-140%	1	08/14/24 23:08	SJS	MAEPH LA

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 18:42	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 18:42	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 18:42		G197247
Surrogate: Toluene-d8	91.8		Limits: 70-130%	1	08/15/24 18:42	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002196

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Jeff Davis Parish, LA

Report Date : 09/16/2024
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Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87062**
Sample ID : **CD-19C**

Matrix: **Aqueous**
Sampled: **8/7/2024 15:00**

Analytical Method: 6020B **Prep Batch(es):** **L767044** 08/13/24 15:49
Prep Method: 3005A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Arsenic	0.0220	mg/L	0.0010	1	08/14/24 20:17	CPW	L767335
Dissolved Barium	0.359	mg/L	0.001	1	08/14/24 20:17	CPW	L767335
Dissolved Cadmium	<0.0010	mg/L	0.0010	1	08/14/24 20:17	CPW	L767335
Dissolved Chromium	<0.001	mg/L	0.001	1	08/14/24 20:17	CPW	L767335
Dissolved Iron	1.37	mg/L	0.100	1	08/14/24 20:17	CPW	L767335
Dissolved Lead	<0.0010	mg/L	0.0010	1	08/14/24 20:17	CPW	L767335
Dissolved Manganese	0.224	mg/L	0.001	1	08/14/24 20:17	CPW	L767335
Dissolved Selenium	0.001	mg/L	0.001	1	08/14/24 20:17	CPW	L767335
Dissolved Silver	<0.0010	mg/L	0.0010	1	08/14/24 20:17	CPW	L767335
Dissolved Strontium	0.420	mg/L	0.005	5	08/15/24 19:11	CPW	L767655
Dissolved Zinc	<0.010	mg/L	0.010	1	08/14/24 20:17	CPW	L767335

Analytical Method: 7470A **Prep Batch(es):** **L767146** 08/14/24 08:29
Prep Method: 7470A

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dissolved Mercury	<0.00020	mg/L	0.00020	1	08/14/24 14:30	FDS	L767271

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002197

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87063**
Sample ID : **Trip Blank 1**

Matrix: **Aqueous**
Sampled:

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 12:59	MAO	G197273
Toluene	<0.005	mg/L	0.005	1	08/15/24 12:59	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 12:59	MAO	G197273
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 12:59		G197273
Surrogate: Toluene-d8	88.6		Limits: 70-130%	1	08/15/24 12:59	MAO	G197273

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 12:59	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 12:59	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 12:59		G197247
Surrogate: Toluene-d8	88.6		Limits: 70-130%	1	08/15/24 12:59	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

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Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87064**
Sample ID : **Trip Blank 2**

Matrix: **Aqueous**
Sampled:

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 13:33	MAO	G197273
Toluene	<0.005	mg/L	0.005	1	08/15/24 13:33	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 13:33	MAO	G197273
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 13:33		G197273
Surrogate: Toluene-d8	89.8		Limits: 70-130%	1	08/15/24 13:33	MAO	G197273

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 13:33	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 13:33	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 13:33		G197247
Surrogate: Toluene-d8	89.8		Limits: 70-130%	1	08/15/24 13:33	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002199

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10485
ERM (Sugar Land)
Mr. David Upthegrove
840 W. Sam Houston Pkwy North, Suite 600
Houston , TX 77024

Project Castex
Information : Project Number: 0727954
Jeff Davis Parish, LA

Report Date : 09/16/2024
Received : 08/08/2024

Report Number : **24-221-0053**

REPORT OF ANALYSIS

Lab No : **87065**
Sample ID : **Trip Blank 3**

Matrix: **Aqueous**
Sampled:

Analytical Method: 8260B **Prep Batch(es):** **G197245** 08/15/24 10:10
Prep Method: 5030B

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Benzene	<0.001	mg/L	0.001	1	08/15/24 14:07	MAO	G197273
Toluene	<0.005	mg/L	0.005	1	08/15/24 14:07	MAO	G197273
Ethylbenzene	<0.001	mg/L	0.001	1	08/15/24 14:07	MAO	G197273
Xylene (Total)	<0.001	mg/L	0.001	1	08/15/24 14:07		G197273
Surrogate: Toluene-d8	88.6		Limits: 70-130%	1	08/15/24 14:07	MAO	G197273

Analytical Method: MAVPH LA **Prep Batch(es):** **G197244** 08/15/24 10:10
Prep Method: MAVPH LA (GC/MS) (Aquec

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic >C6-C8	<0.005	mg/L	0.005	1	08/15/24 14:07	MAO	G197247
Aliphatic >C8-C10	<0.013	mg/L	0.013	1	08/15/24 14:07	MAO	G197247
Aromatic >C8-C10	<0.005	mg/L	0.005	1	08/15/24 14:07		G197247
Surrogate: Toluene-d8	88.6		Limits: 70-130%	1	08/15/24 14:07	MAO	G197247

Qualifiers/ Definitions
* Outside QC Limit
MQL Method Quantitation Limit
DF Dilution Factor

BP/Castex-Ltd Adm-Apx E-002200

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-221-0053**

QC Analytical Batch: A95176
Analysis Method: 2320B-2011
Analysis Description: Alkalinity

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 87049, 87051, 87053, 87055, 87057, 87059, 87061

Parameter	Units	Blank Result	MQL	Analyzed
Alkalinity (as CaCO3)	mg/L	< 10	10	08/13/24 09:30

Duplicate A 87049-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Alkalinity (as CaCO3)	mg/L	270	260	3.7	25	08/13/24 09:30

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-221-0053**

QC Analytical Batch: A95175
Analysis Method: 2540C-2011
Analysis Description: Total Dissolved Solids (TDS)

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 87049, 87051, 87053, 87055, 87057, 87059, 87061

Parameter	Units	Blank Result	MQL	Analyzed
Total Dissolved Solids	mg/L	< 10	10	08/13/24 14:20

Duplicate A 87049-DUP

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
Total Dissolved Solids	mg/L	756	781	3.2	10	08/13/24 14:20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-221-0053

QC Prep: L767041
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L767335,L767655
Analysis Method: 6020B
Analysis Description: Metals Analyses

Lab Reagent Blank LRB-L767041 Matrix: AQU
Associated Lab Samples: 87049, 87051, 87053, 87055, 87057, 87059, 87061

Parameter	Units	Blank Result	MQL	Analyzed
Arsenic	mg/L	<0.0010	0.0010	08/14/24 18:20
Barium	mg/L	<0.001	0.001	08/14/24 18:20
Calcium	mg/L	<0.200	0.200	08/14/24 18:20
Cadmium	mg/L	<0.0010	0.0010	08/14/24 18:20
Chromium	mg/L	<0.001	0.001	08/14/24 18:20
Iron	mg/L	<0.100	0.100	08/14/24 18:20
Lead	mg/L	<0.0010	0.0010	08/14/24 18:20
Magnesium	mg/L	<0.100	0.100	08/14/24 18:20
Manganese	mg/L	<0.001	0.001	08/14/24 18:20
Potassium	mg/L	<0.100	0.100	08/14/24 18:20
Selenium	mg/L	<0.001	0.001	08/14/24 18:20
Silver	mg/L	<0.0010	0.0010	08/14/24 18:20
Sodium	mg/L	<0.100	0.100	08/14/24 18:20
Strontium	mg/L	<0.001	0.001	08/14/24 18:20
Zinc	mg/L	<0.010	0.010	08/14/24 18:20

Laboratory Control Sample LCS-L767041

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Arsenic	mg/L	0.0500	0.0531	106	80-120
Barium	mg/L	0.100	0.096	97.0	80-120
Calcium	mg/L	10.0	10.7	107	80-120
Cadmium	mg/L	0.0100	0.0101	101	80-120
Chromium	mg/L	0.100	0.114	114	80-120
Iron	mg/L	10.0	10.3	103	80-120
Lead	mg/L	0.0500	0.0502	100	80-120
Magnesium	mg/L	10.0	9.68	97.0	80-120

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-221-0053

QC Prep: L767041
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L767335,L767655
Analysis Method: 6020B
Analysis Description: Metals Analyses

Laboratory Control Sample LCS-L767041

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Manganese	mg/L	0.100	0.118	118	80-120
Potassium	mg/L	10.0	10.8	108	80-120
Selenium	mg/L	0.100	0.106	106	80-120
Silver	mg/L	0.0100	0.0097	98.0	80-120
Sodium	mg/L	10.0	10.0	100	80-120
Strontium	mg/L	0.100	0.102	102	80-120
Zinc	mg/L	0.500	0.536	107	80-120

Matrix Spike & Matrix Spike Duplicate Q 89572-MS-L767041 Q 89572-MSD-L767041

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Arsenic	mg/L	<0.0010	0.0500	0.0500	0.0538	0.0527	106	104	75-125	2.0	20
Barium	mg/L	0.044	0.100	0.100	0.142	0.139	97.0	94.0	75-125	2.1	20
Calcium	mg/L	21.9	10.0	10.0	31.8	31.1	99.0	92.0	75-125	2.2	20
Cadmium	mg/L	<0.0010	0.0100	0.0100	0.0096	0.0094	97.0	94.0	75-125	2.3	20
Chromium	mg/L	0.001	0.100	0.100	0.109	0.105	108	104	75-125	3.7	20
Iron	mg/L	0.767	10.0	10.0	10.6	10.5	98.0	97.0	75-125	0.9	20
Lead	mg/L	<0.0010	0.0500	0.0500	0.0475	0.0464	94.0	92.0	75-125	2.3	20
Magnesium	mg/L	9.98	10.0	10.0	19.9	19.2	99.0	92.0	75-125	3.5	20
Manganese	mg/L	0.117	0.100	0.100	0.201	0.195	84.0	78.0	75-125	3.0	20
Potassium	mg/L	6.46	10.0	10.0	16.7	16.2	102	97.0	75-125	3.0	20
Selenium	mg/L	0.003	0.100	0.100	0.120	0.118	116	114	75-125	1.6	20
Silver	mg/L	<0.0010	0.0100	0.0100	0.0087	0.0084	87.0	84.0	75-125	3.3	20
Sodium	mg/L	158	10.0	10.0	159	160	10.0*	20.0*	75-125	0.6	20
Strontium	mg/L	0.089	0.100	0.100	0.176	0.174	87.0	85.0	75-125	1.1	20

* QC Fail

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-221-0053

QC Prep: L767041
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L767335,L767655
Analysis Method: 6020B
Analysis Description: Metals Analyses

Matrix Spike & Matrix Spike Duplicate Q 89572-MS-L767041 Q 89572-MSD-L767041

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Zinc	mg/L	<0.050	0.500	0.500	0.516	0.505	102	99.0	75-125	2.1	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-221-0053

QC Prep: L767044
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L767335
Analysis Method: 6020B
Analysis Description: Metals Analyses

Lab Reagent Blank LRB-L767044 Matrix: AQU
Associated Lab Samples: 87050, 87052, 87054, 87056, 87058, 87060, 87062

Parameter	Units	Blank Result	MQL	Analyzed
Dissolved Arsenic	mg/L	<0.0010	0.0010	08/14/24 19:33
Dissolved Barium	mg/L	<0.001	0.001	08/14/24 19:33
Dissolved Cadmium	mg/L	<0.0010	0.0010	08/14/24 19:33
Dissolved Chromium	mg/L	<0.001	0.001	08/14/24 19:33
Dissolved Iron	mg/L	<0.100	0.100	08/14/24 19:33
Dissolved Lead	mg/L	<0.0010	0.0010	08/14/24 19:33
Dissolved Manganese	mg/L	<0.001	0.001	08/14/24 19:33
Dissolved Selenium	mg/L	<0.001	0.001	08/14/24 19:33
Dissolved Silver	mg/L	<0.0010	0.0010	08/14/24 19:33
Dissolved Strontium	mg/L	<0.001	0.001	08/14/24 19:33
Dissolved Zinc	mg/L	<0.010	0.010	08/14/24 19:33

Laboratory Control Sample & LCSD LCS-L767044 LCSD-L767044

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Arsenic	mg/L	0.0500	0.0540	0.0552	108	110	80-120	2.1	20
Dissolved Barium	mg/L	0.100	0.100	0.102	100	102	80-120	1.9	20
Dissolved Cadmium	mg/L	0.0100	0.0103	0.0105	103	105	80-120	1.9	20
Dissolved Chromium	mg/L	0.100	0.110	0.114	110	114	80-120	3.5	20
Dissolved Iron	mg/L	10.0	10.3	10.6	103	106	80-120	2.8	20
Dissolved Lead	mg/L	0.0500	0.0531	0.0552	106	110	80-120	3.8	20
Dissolved Manganese	mg/L	0.100	0.109	0.112	109	112	80-120	2.7	20
Dissolved Selenium	mg/L	0.100	0.109	0.112	109	112	80-120	2.7	20
Dissolved Silver	mg/L	0.0100	0.0098	0.0099	99.0	100	80-120	1.0	20
Dissolved Strontium	mg/L	0.100	0.107	0.111	107	111	80-120	3.6	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-221-0053**

QC Prep: L767044
QC Prep Batch Method: 3005A
QC Analytical Batch(es): L767335
Analysis Method: 6020B
Analysis Description: Metals Analyses

Laboratory Control Sample & LCSD LCS-L767044 LCSD-L767044

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Zinc	mg/L	0.500	0.530	0.544	106	109	80-120	2.6	20

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-221-0053

QC Prep: L767100
QC Prep Batch Method: 7470A
QC Analytical Batch(es): L767271
Analysis Method: 7470A
Analysis Description: Total Aqueous Mercury Analysis - CVAA

Lab Reagent Blank LRB-L767100 Matrix: AQU
Associated Lab Samples: 87049, 87051, 87053, 87055, 87057, 87059, 87061

Parameter	Units	Blank Result	MQL	Analyzed
Mercury	mg/L	<0.00020	0.00020	08/14/24 13:47

Laboratory Control Sample LCS-L767100

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Mercury	mg/L	0.00400	0.00363	91.0	80-120

Matrix Spike & Matrix Spike Duplicate Q 89572-MS-L767100 Q 89572-MSD-L767100

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Mercury	mg/L	0.00113	0.00400	0.00400	0.00446	0.00426	83.0	78.0*	80-120	4.5	20

* QC Fail

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-221-0053**

QC Prep: L767146
QC Prep Batch Method: 7470A
QC Analytical Batch(es): L767271
Analysis Method: 7470A
Analysis Description: Total Aqueous Mercury Analysis - CVAA

Lab Reagent Blank LRB-L767146 Matrix: AQU
Associated Lab Samples: 87050, 87052, 87054, 87056, 87058, 87060, 87062

Parameter	Units	Blank Result	MQL	Analyzed
Dissolved Mercury	mg/L	<0.00020	0.00020	08/14/24 14:14

Laboratory Control Sample & LCSD LCS-L767146 LCSD-L767146

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Dissolved Mercury	mg/L	0.00400	0.00387	0.00386	97.0	97.0	80-120	0.2	20

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-221-0053**

QC Prep: G197245
QC Prep Batch Method: 5030B
QC Analytical Batch(es): G197273
Analysis Method: 8260B
Analysis Description: Volatile Organic Compounds - GC/MS

Lab Reagent Blank LRB-G197245 Matrix: AQU
Associated Lab Samples: 87049, 87051, 87053, 87055, 87057, 87059, 87061, 87063, 87064, 87065

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Benzene	mg/L	<0.001	0.001	08/15/24 11:50		
Ethylbenzene	mg/L	<0.001	0.001	08/15/24 11:50		
Toluene	mg/L	<0.005	0.005	08/15/24 11:50		
o-Xylene	mg/L	<0.001	0.001	08/15/24 11:50		
m,p-Xylene	mg/L	<0.002	0.002	08/15/24 11:50		
Toluene-d8 (S)				08/15/24 11:50	89.8	70-130

Laboratory Control Sample & LCSD LCS-G197245 LCSD-G197245

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Benzene	mg/L	0.100	0.099	0.100	99.7	100	80-120	0.3	20
Ethylbenzene	mg/L	0.100	0.101	0.103	101	103	80-120	1.9	20
Toluene	mg/L	0.100	0.101	0.103	101	103	80-120	1.9	20
o-Xylene	mg/L	0.100	0.102	0.102	102	102	80-120	0.0	20
m,p-Xylene	mg/L	0.200	0.207	0.208	104	104	80-120	0.4	20
Toluene-d8 (S)					94.6	94.2	70-130		

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-221-0053**

QC Prep: A95202
QC Prep Batch Method: SW-9056 (PREP)
QC Analytical Batch(es): A95304
Analysis Method: 9056
Analysis Description: Anions by Ion Chromatography

Lab Reagent Blank LRB-A95202 Matrix: AQU
Associated Lab Samples: 87049, 87051, 87053, 87055, 87057, 87059, 87061

Parameter	Units	Blank Result	MQL	Analyzed
Bromide (Br)	mg/L	< 0.100	0.100	08/16/24 20:27
Chloride	mg/L	< 0.400	0.400	08/16/24 20:27
Sulfate	mg/L	< 0.500	0.500	08/16/24 20:27

Laboratory Control Sample LCS-A95202

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Bromide (Br)	mg/L	13.9	14.1	102	80-120
Chloride	mg/L	55.6	58.8	106	80-120
Sulfate	mg/L	69.4	72.3	104	80-120

Matrix Spike & Matrix Spike Duplicate A 87049-MS-A95202 A 87049-MSD-A95202

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Bromide (Br)	mg/L	0.604	13.9	13.9	14.6	14.5	101	100	80-120	0.6	15.0
Chloride	mg/L	277	55.6	55.6	336	336	106	106	80-120	0.0	15.0
Sulfate	mg/L	9.15	69.4	69.4	80.3	81.2	102	104	80-120	1.1	15.0

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-221-0053

QC Prep: G197132
QC Prep Batch Method: MAEPH LA
QC Analytical Batch(es): G197200
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Lab Reagent Blank LRB-G197132 Matrix: AQU
Associated Lab Samples: 87049, 87051, 87053, 87055, 87057, 87059, 87061

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C10-C12	mg/L	<0.030	0.030	08/14/24 18:45		
Aliphatic >C12-C16	mg/L	<0.030	0.030	08/14/24 18:45		
Aliphatic >C16-C35	mg/L	<0.050	0.050	08/14/24 18:45		
Aromatic >C10-C12	mg/L	<0.030	0.030	08/14/24 18:45		
Aromatic >C12-C16	mg/L	<0.030	0.030	08/14/24 18:45		
Aromatic >C16-C21	mg/L	<0.030	0.030	08/14/24 18:45		
Aromatic >C21-C35	mg/L	<0.035	0.035	08/14/24 18:45		
Chlorooctadecane (S)				08/14/24 18:45	40.2	40-140
OTP Surrogate (S)				08/14/24 18:45	54.0	40-140

Laboratory Control Sample LCS-G197132

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
Aliphatic >C12-C16	mg/L	0.100	0.061	61.7	40-140
Aliphatic >C16-C35	mg/L	0.300	0.200	66.6	40-140
Aromatic >C10-C12	mg/L	0.100	0.077	77.1	40-140
Aromatic >C12-C16	mg/L	0.200	0.147	73.5	40-140
Aromatic >C16-C21	mg/L	0.100	0.093	93.7	40-140
Chlorooctadecane (S)				46.0	40-140
OTP Surrogate (S)				86.4	40-140

Matrix Spike & Matrix Spike Duplicate G 57494-MS-G197132 G 57494-MSD-G197132

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Aliphatic >C12-C16	mg/L	<0.120	0.400	0.364	0.295	0.292	73.7	80.2	40-140	1.0	25
Aliphatic >C16-C35	mg/L	<0.200	1.20	1.09	0.864	0.839	72.0	76.9	40-140	2.9	25

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Quality Control Data

Client ID: ERM (Sugar Land)
Project Description: Castex
Report No: 24-221-0053

QC Prep: G197132
QC Prep Batch Method: MAEPH LA
QC Analytical Batch(es): G197200
Analysis Method: MAEPH LA
Analysis Description: MADEP EPH Rev 1.1

Matrix Spike & Matrix Spike Duplicate G 57494-MS-G197132 G 57494-MSD-G197132

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	MSD %Rec	%Rec Limits	RPD	Max RPD
Aromatic >C10-C12	mg/L	<0.120	0.400	0.364	0.310	0.340	77.5	93.4	40-140	9.2	25
Aromatic >C12-C16	mg/L	<0.120	0.800	0.727	0.548	0.628	68.5	86.3	40-140	13.6	25
Aromatic >C16-C21	mg/L	<0.120	0.400	0.364	0.390	0.461	97.5	127	40-140	16.6	25
Chlorooctadecane (S)							42.0	41.5	40-140		
OTP Surrogate (S)							83.5	104	40-140		

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Quality Control Data

Client ID: **ERM (Sugar Land)**
Project Description: **Castex**
Report No: **24-221-0053**

QC Prep: G197244
QC Prep Batch Method: MAVPH LA (GC/MS) (Aqueous)
QC Analytical Batch(es): G197247
Analysis Method: MAVPH LA
Analysis Description: MADEP VPH Rev 1.1

Lab Reagent Blank LRB-G197244 Matrix: AQU
Associated Lab Samples: 87049, 87051, 87053, 87055, 87057, 87059, 87061, 87063, 87064, 87065

Parameter	Units	Blank Result	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic >C6-C8	mg/L	<0.005	0.005	08/15/24 11:50		
Aliphatic >C8-C10	mg/L	<0.013	0.013	08/15/24 11:50		
Aromatic >C8-C10 A	mg/L	<0.005	0.005	08/15/24 11:50		
Toluene-d8 (S)				08/15/24 11:50	89.8	70-130

Laboratory Control Sample & LCSD LCS-G197244 LCSD-G197244

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic >C6-C8	mg/L	0.500	0.502	0.458	100	91.6	70-130	9.1	25
Aliphatic >C8-C10	mg/L	1.30	1.33	1.31	102	101	70-130	1.5	25
Aromatic >C8-C10 A	mg/L	0.500	0.509	0.503	102	101	70-130	1.1	25
Toluene-d8 (S)					94.6	94.2	70-130		

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Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM (Sugar Land)**
Report Number: **24-221-0053**

Shipping Method

○ Fed Ex	○ US Postal	◉ Lab	○ Other :	
○ UPS	○ Client	○ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	○ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	○ Yes	○ No	◉ Not Present
Custody seals intact on sample bottles?	○ Yes	○ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	○ No	
COC agrees with sample label(s)?	◉ Yes	○ No	
COC properly completed	◉ Yes	○ No	
Samples in proper containers?	◉ Yes	○ No	
Sample containers intact?	◉ Yes	○ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	○ No	
All samples received within holding time?	◉ Yes	○ No	
Cooler temperature in compliance?	◉ Yes	○ No	○ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	○ No	
Water - Sample containers properly preserved	◉ Yes	○ No	○ N/A
Water - VOA vials free of headspace	◉ Yes	○ No	○ N/A
Trip Blanks received with VOAs	◉ Yes	○ No	○ N/A
Soil VOA method 5035 – compliance criteria met	○ Yes	○ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	○ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 08/08/2024 17:14:59

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM (10485) 840 W. Sam Houston Pkwy North, Suite 600 Houston, TX 77024	Dave Upthegrove Anna Fix	ERM (10485)

ERM (Sugar Land)
Castex
24-221-0053
10485
08-08-2024
17:09:39

Project Description	Project/Site Location (City/State)		Method
Castex	Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed	☐ Fed ☐ Courier ☐ Client Drop Off Other

DW – Drinking Water S – Soil /Solid O – Oil
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
PN 0727954	832-786-5006	David.Upthegrove@erm.com		

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(504)-371-8557

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Chloride, Sulfate, Bromide	Alkalinity	TDS	Metals+Cations*	Dissolved Metals**	VPH	BTEX	EPH	Rad 226/228 (Sub)	Comments/Notes
			Required Analysis / Preservative												
8/6/24	1050	CD-18B 87049-87050	10	GW	G	✓	✓	✓	✓	✓	✓	✓	✓	✓	*Metals: As,Ba,Cd,Cr,Fe,Pb,Mn,Hg,Se,Ag,Sr,Zn+ Ca,Mg,K,Na
↓	1250	CD-18C 87051-87052	↓	↓	↓	X	X	X	X	X	X	X	X	X	**Dissolved Metals: As, Ba, Cd, Cr, Fe, Pb, Mn, Hg, Se, Ag, Sr, Zn
↓	1330	CD-18A 87053-87054	↓	↓	↓	X	X	X	X	X	X	X	X	X	**Dissolved metals: Field filtered
↓	1430	CD-18D	↓	↓	↓	X	X	X	X	X	X	X	X	X	87055 - 87056
8/7/24	0850	CD-19A	↓	↓	↓	X	X	X	X	X	X	X	X	X	87057-87058
↓	1330	CD-19B	↓	↓	↓	X	X	X	X	X	X	X	X	X	87059-87060
↓	1500	CD-19C	↓	↓	↓	X	X	X	X	X	X	X	X	X	87061-87062
—	—	Trip Blank	3	—	—										87063 - 87065 (A)

For Laboratory Use Only

Ice	Custody Seals	Lab Comments	Blank/Cooler Temp
Y/N	Y/N	(A) BTEX/VPH or TBs - see attached - CRV	2.1 C

Sampled by (Name – Print): R. Charles Trahan

Client Remarks/Comments: RECAP limits

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
	8/8/24 0855	Kathy Hendrix 08/08/24	0855
Kathy Hendrix 08/08/24	1130		1130
	8/8/24		8/8/24 1349

BP/Castex-Ltd Adm-Apx E-002216

Christina Varuso - [EXTERNAL] RE: ERM 24-221-0053 Castex GWs

From: Charles Trahan <Charles.Trahan@erm.com>
To: Cristina Thibeaux <cthibeaux@waypointanalytical.com>, Anna Fix <Anna.Fix...
Date: 8/9/2024 2:21 PM
Subject: [EXTERNAL] RE: ERM 24-221-0053 Castex GWs
Cc: Christina Varuso <cvaruso@waypointanalytical.com>

This Message Is From an External Sender
This message came from outside your organization.

Please run VPH/BTEX on the TB.

ERM
Sustainability is our business

Charles Trahan, P.G.
Managing Technical Consultant, Geologist

Houston, TX
713.540.2227 Mobile
832.564.3949 Office
erm.com

From: Cristina Thibeaux <cthibeaux@waypointanalytical.com>
Sent: Friday, August 9, 2024 2:09 PM
To: Anna Fix <anna.fix@erm.com>; Charles Trahan <Charles.Trahan@erm.com>; David Upthegrove <david.upthegrove@erm.com>
Cc: Christina Varuso <cvaruso@waypointanalytical.com>
Subject: Re: ERM 24-221-0053 Castex GWs

EXTERNAL MESSAGE

Sorry. COC is attached now. Also, regarding the TB sets, please confirm you want both the VPH and BTEX analyzed.

Much appreciated,
Cristina

>>> Cristina Thibeaux 8/9/2024 2:05 PM >>>
Hello all. We received these samples today (COC is attached), but for the Radiums, we are missing a cubitainer for CD-19A. Was a sample collected for that parameter on that collection point?

Sincerely,

Cristina Thibeaux
Project Manager

Waypoint ANALYTICAL
5041 Taravella Rd.
Marrero, LA 70072
Direct: 504-350-0899
Mobile: 337-654-6144
cthibeaux@waypointanalytical.com
http://www.WaypointAnalytical.com

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9/23/2024

ERM
Mr. Dave Upthegrove
840 W. Sam Houston Parkway
Suite 600
Houston, TX, 77024

Ref: Report Number: 24-221-0054
Project Description: Castex
Project Number: 0727954
Jennings, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 8/8/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

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Project Manager

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Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

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Sample Summary Table

Report Number: **24-221-0054**

Client Project Description: **Castex**
Project Number: 0727954
Jennings, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
87150	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	2540C-2011	
87150	CD-18B	Aqueous	08/06/2024 10:50	08/08/2024	901.1 Mod	
87151	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	2540C-2011	
87151	CD-18C	Aqueous	08/06/2024 12:50	08/08/2024	901.1 Mod	
87152	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	2540C-2011	
87152	CD-18A	Aqueous	08/06/2024 13:30	08/08/2024	901.1 Mod	
87153	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	901.1 Mod	
87153	CD-18D	Aqueous	08/06/2024 14:30	08/08/2024	2540C-2011	
87154	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	2540C-2011	
87154	CD-19B	Aqueous	08/07/2024 13:30	08/08/2024	901.1 Mod	
87155	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	2540C-2011	
87155	CD-19C	Aqueous	08/07/2024 15:00	08/08/2024	901.1 Mod	

: Eberline Analytical Coporation, Oak Ridge, TN

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Client: ERM
Project: Castex
Lab Report Number: 24-221-0054
Date: 9/23/2024

CASE NARRATIVE

Report Comments
The Radium and TDS analyses were subcontracted to Eberline- Oak Ridge, TN. Their report is included in its entirety.

WAYPOINT ANALYTICAL LOUISIANA

Project: 24-221-0054

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #24-08053-OR

September 23, 2024

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

BP/Castex-Ltd Adm-Apx E-002224

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Eberline Analytical – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Analytical Work Order # 24-08053

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		8/14/24	DVW	Sample Log-In
		9/10/24	SLB	Data Compilation
		9/11/24	JPD	First Technical Data Review
		9/11/24		Second Technical Data Review
		9/18/24	SLB	Data Entry/Electronic Deliverable
		9/18/24	SLB	Case Narrative
		09/19/24	EyT	Electronic Deliverable Proof
		9/11/24	JPD	Samples Analyzed within Holding Time Yes? ✓ No? * ✓ * TDS ONLY
		9/19/24	JPD	QA/QC Review
				Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by: _____ 09/23/24

Laboratory Manager Date

Copy No. _____

Radiochemistry Services

0003

BP/Castex-Ltd Adm-Apx E-002226

SECTION I

CHAIN OF CUSTODY
& pH CHECK

BP/Castex-Ltd Adm-Apx E-002227

Waypoint ANALYTICAL

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08/12/2024 10:04:38

Export Batch Report

Export Batch Id : **10924EXP**

REC'D AUG 14 2024

24-08053

Created: 8/12/2024 10:04:20
Computer: WPALMS-094
User: Christina R. Varuso
Project Manager: Cristina Thibeaux

To: Eberline Analytical Coporation
601 Scarboror Road
Oak Ridge, TN 37830
865-481-0683

From: Waypoint Analytical Louisiana, Inc.
5041 Taravella Rd.
Marrero, LA 70072
504-371-8557

Report No	Due Date	Sample Date	Customer Sample No	Rush	Matrix	Lab No	Method No	Fee Code Description
24-221-0054	08/23/2024	08/06/2024 10:50	CD-18B (4)		AQU	87150	EPA-901.1	Radium 226/228 29B
24-221-0054	08/23/2024	08/06/2024 10:50	CD-18B		AQU	87150	Export TDS	Total Dissolved Solids (TDS)
24-221-0054	08/23/2024	08/06/2024 12:50	CD-18C (5)		AQU	87151	EPA-901.1	Radium 226/228 29B
24-221-0054	08/23/2024	08/06/2024 12:50	CD-18C		AQU	87151	Export TDS	Total Dissolved Solids (TDS)
24-221-0054	08/23/2024	08/06/2024 13:30	CD-18A (6)		AQU	87152	EPA-901.1	Radium 226/228 29B
24-221-0054	08/23/2024	08/06/2024 13:30	CD-18A		AQU	87152	Export TDS	Total Dissolved Solids (TDS)
24-221-0054	08/23/2024	08/06/2024 14:30	CD-18D (7)		AQU	87153	EPA-901.1	Radium 226/228 29B
24-221-0054	08/23/2024	08/06/2024 14:30	CD-18D		AQU	87153	Export TDS	Total Dissolved Solids (TDS)
24-221-0054	08/23/2024	08/07/2024 13:30	CD-19B (8)		AQU	87154	EPA-901.1	Radium 226/228 29B
24-221-0054	08/23/2024	08/07/2024 13:30	CD-19B		AQU	87154	Export TDS	Total Dissolved Solids (TDS)
24-221-0054	08/23/2024	08/07/2024 15:00	CD-19C (9)		AQU	87155	EPA-901.1	Radium 226/228 29B
24-221-0054	08/23/2024	08/07/2024 15:00	CD-19C		AQU	87155	Export TDS	Total Dissolved Solids (TDS)

Sampled By	Method of Shipment	Blank / Cooler Temp.	
Remarks			
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time
Christina Varuso	8/12/24 1645	[signature]	8/14/24 1238
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	24-08053
Lab Deadline	9/5/2024
Analysis	Ra226 - Level 4
Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	80	W1.5
	05	80	W1.5
	06	40	W1.5
	07	80	W1.5
	08	80	W1.5
	09	80	W1.5

	Initials	Date	Time
Received by	[illegible]	9/3/24	0800
Relinquished by	[illegible]	9/3/24	1200
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			

0006
Printed: 8/14/2024 1:26 PM

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	24-08053
Lab Deadline	9/5/2024
Analysis	Ra228 - Level 4
Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	80	W1.5
	05	80	W1.5
	06	40	W1.5
	07	80	W1.5
	08	80	W1.5
	09	80	W1.5

	Initials	Date	Time
Received by	[illegible]	9/3/24	0800
Relinquished by	[illegible]	9/3/24	1200
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			

0007
Printed: 8/14/2024 1:26 PM

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	24-08053
Lab Deadline	8/21/2024
Analysis	TDS - Level 4
Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	80	W1.5
	05	80	W1.5
	06	40	W1.5
	07	80	W1.5
	08	80	W1.5
	09	80	W1.5

	Initials	Date	Time
Received by	KJ	8-15-24	0630
Relinquished by	KJ	8-16-24	0745
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			

EBERLINE SERVICES

Sample Receiving Report
(Volumes, pH, & CPM)

Internal Work Order: **24-08053**

Received By: DWAGGONER

FR	ClientID	# Btls	Comments	Matrix	Storage	Rec Vol Ttl	CPM Max
01	LCS	0		WA	W1.5		
02	BLANK	0		WA	W1.5		
03	DUP	0		WA	W1.5		
04	CD-18B	1		WA	W1.5	3.76	80
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	80
05	CD-18C	1		WA	W1.5	3.76	80
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	80
06	CD-18A	1		WA	W1.5	3.10	40
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.1000	40
07	CD-18D	1		WA	W1.5	3.76	80
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	80
08	CD-19B	1		WA	W1.5	3.76	80
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	80
09	CD-19C	1		WA	W1.5	3.76	80
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	80

Received by: DWG Date: 8/14/24

MP-001, Rev 5
Effective: 11/22/02

0009

SECTION II

SAMPLE ACKNOWLEDGEMENT

BP/Castex-Ltd Adm-Apx E-002233

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
Waypoint Analytical Louisiana	24-221-0054	Environmental	08/14/2024	28	24-08053
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
24-221-0054	24-221-0054	W	09/05/2024	09/12/2024	09/12/2024

Internal ID	Client ID	Sample Date	Matrix	Storage	Ra226	Ra228	TDS																					Ttl
01	LCS	08/14/24	WA	W1.5	X	X	X																					3
02	BLANK	08/14/24	WA	W1.5	X	X	X																					3
03	DUP	08/14/24	WA	W1.5	X	X	X																					3
04	CD-18B	08/06/24 10:50	WA	W1.5	X	X	X																					3
05	CD-18C	08/06/24 12:50	WA	W1.5	X	X	X																					3
06	CD-18A	08/06/24 13:30	WA	W1.5	X	X	X																					3
07	CD-18D	08/06/24 14:30	WA	W1.5	X	X	X																					3
08	CD-19B	08/06/24 13:30	WA	W1.5	X	X	X																					3
09	CD-19C	08/06/24 15:00	WA	W1.5	X	X	X																					3
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
		Totals Per Analysis (non QA samples)			6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice	Accounts Payable	**Report Data**	Cristina Thibeaux
	Waypoint Analytical Louisiana		Waypoint Analytical Louisiana
	5041 Taravella Rd.		5041 Taravella Road
	Marrero, LA 70072		Marrero, LA 70072
Voice	504-371-8557	*Voice*	
Fax	504-371-8560	*Fax*	504-371-8557
Contact	Cristina Thibeaux		
Voice			
Fax	504-371-8557		

Eberline Analytical – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 24-08053

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

(AQUEOUS) NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	(Y)	N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: D-O Wyg DATE: 8/14/24

SECTION III

CASE NARRATIVE

BP/Castex-Ltd Adm-Apx E-002236

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-52689

September 23, 2024

Christina Thibeaux
Waypoint Analytical Louisiana
5041 Taravella Road
Marrero, LA 70072

CASE NARRATIVE
Work Order # 24-08053-OR

SAMPLE RECEIPT

This work order contains six water samples received 08/14/2024. Samples were analyzed for Radium-226/228 and Total Dissolved Solids.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
CD-18B	24-08053-04	CD-18D	24-08053-07
CD-18C	24-08053-05	CD-19B	24-08053-08
CD-18A	24-08053-06	CD-19C	24-08053-09

ANALYTICAL METHODS

Radium-226 was analyzed using EPA Method 903.0 Modified. Radium-228 was analyzed using EPA Method 904.0. Total Dissolved Solids were analyzed using Standard Methods 2540C.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

SPECIAL CIRCUMSTANCES

Sample aliquots were reduced for Radium-226/228 analysis due to high solids content for fractions -05, and -09 (Client IDs: CD-18C and CD-19C).

ANALYTICAL RESULTS CONTINUED

RADIUM-226

A representative aliquot of each sample was digested with mixed acids, Radium/Barium Sulfate was precipitated, and precipitates were dissolved in alkaline EDTA. Radium was selectively precipitated, mounted on micro-porous filter media, and counted by alpha spectroscopy using an energy specific region of interest for Radium-226. Chemical recovery was calculated using a Barium-133 tracer determined by HPGe gamma spectroscopy. Final results were corrected for inherent self-absorption from elemental Barium.

Samples demonstrated acceptable results for all Radium-226 analyses. Chemical recovery was acceptable for all analyses. The Radium-226 method blank demonstrated an acceptable result. Results for the Radium-226 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Radium-226 laboratory control sample demonstrated an acceptable percent recovery.

RADIUM-228

Barium/Radium Sulfate precipitates were redissolved following alpha spectroscopy analysis of Radium-226 and time was allowed for sufficient ingrowth of the Actinium-228 daughter. Actinium-228 was selectively precipitated, filtered, and beta emissions for Actinium-228 were counted on a gas proportional counter. Chemical recovery was determined using a Barium-133 tracer by HPGe gamma spectroscopy and an elemental Yttrium carrier by gravimetric measurements. The product of these two recoveries was used to calculate chemical yield.

Samples demonstrated acceptable results for all Radium-228 analyses. Chemical recovery was acceptable for all analyses. The Radium-228 method blank demonstrated an acceptable result. Results for the Radium-228 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Radium-228 laboratory control sample demonstrated an acceptable percent recovery.

TOTAL DISSOLVED SOLIDS (TDS)

A volumetric aliquot of each sample was filtered through 0.45µm filter media into a tared 250ml beaker. Samples were dried on a hot plate and allowed to cool. The TDS content was determined by re-weighing tared beakers.

Samples demonstrated Total Dissolved Solids content from 1,180.0 mg/L to 4,542.0 mg/L.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

Ethan Getgood
Laboratory Manager

Date: 9/23/2024

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

SECTION IV

ANALYTICAL RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-002240

Eberline Analytical
Final Report of Analysis

Report To:
Cristina Thibeaux
Waypoint Analytical Louisiana
5041 Taravella Road
Marrero, LA 70072

Work Order Details:
SDG: 24-08053
Purchase Order: 24-221-0054
Analysis Category: ENVIRONMENTAL
Sample Matrix: WA

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
24-08053-01	LCS	KNOWN	08/14/24 00:00	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	9.98E+00	4.59E-01			pCi/l
24-08053-01	LCS	SPIKE	08/14/24 00:00	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	1.09E+01	1.10E+00	2.56E+00	1.35E-01	pCi/l
24-08053-02	MBL	BLANK	08/14/24 00:00	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	-5.50E-03	6.09E-02	6.09E-02	1.29E-01	pCi/l
24-08053-03	DUP	CD-18B	08/06/24 10:50	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	4.70E-01	2.52E-01	2.71E-01	1.89E-01	pCi/l
24-08053-04	DO	CD-18B	08/06/24 10:50	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	9.86E-01	5.33E-01	5.72E-01	3.51E-01	pCi/l
24-08053-05	TRG	CD-18C	08/06/24 12:50	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	9.68E-01	4.75E-01	5.17E-01	3.41E-01	pCi/l
24-08053-06	TRG	CD-18A	08/06/24 13:30	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	2.80E-01	2.57E-01	2.64E-01	3.28E-01	pCi/l
24-08053-07	TRG	CD-18D	08/06/24 14:30	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	9.60E-02	1.25E-01	1.26E-01	1.76E-01	pCi/l
24-08053-08	TRG	CD-19B	08/06/24 13:30	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	1.16E+00	4.87E-01	5.45E-01	2.75E-01	pCi/l
24-08053-09	TRG	CD-19C	08/06/24 15:00	8/14/2024	9/9/2024	24-08053	Radium-226	EPA 903.0 Modified	1.63E+00	6.67E-01	7.50E-01	4.06E-01	pCi/l
24-08053-01	LCS	KNOWN	08/14/24 00:00	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	9.19E+00	4.69E-01			pCi/l
24-08053-01	LCS	SPIKE	08/14/24 00:00	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	7.97E+00	1.07E+00	2.10E+00	1.04E+00	pCi/l
24-08053-02	MBL	BLANK	08/14/24 00:00	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	9.61E-01	6.87E-01	7.21E-01	1.36E+00	pCi/l
24-08053-03	DUP	CD-18B	08/06/24 10:50	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	6.05E-01	7.08E-01	7.21E-01	1.45E+00	pCi/l
24-08053-04	DO	CD-18B	08/06/24 10:50	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	1.10E+00	9.40E-01	9.73E-01	1.89E+00	pCi/l
24-08053-05	TRG	CD-18C	08/06/24 12:50	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	3.52E+00	1.49E+00	1.69E+00	2.76E+00	pCi/l
24-08053-06	TRG	CD-18A	08/06/24 13:30	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	1.72E+00	1.05E+00	1.12E+00	2.05E+00	pCi/l
24-08053-07	TRG	CD-18D	08/06/24 14:30	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	3.13E+00	1.10E+00	1.31E+00	2.00E+00	pCi/l
24-08053-08	TRG	CD-19B	08/06/24 13:30	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	3.54E+00	1.50E+00	1.70E+00	2.72E+00	pCi/l
24-08053-09	TRG	CD-19C	08/06/24 15:00	8/14/2024	9/10/2024	24-08053	Radium-228	EPA 904.0	5.70E+00	2.94E+00	3.21E+00	5.62E+00	pCi/l
24-08053-04	TRG	CD-18B	08/06/24 10:50	8/14/2024	8/16/2024	24-08053	TDS	SM2540C	2.25E+03				mg/l
24-08053-05	TRG	CD-18C	08/06/24 12:50	8/14/2024	8/16/2024	24-08053	TDS	SM2540C	1.47E+03				mg/l
24-08053-06	TRG	CD-18A	08/06/24 13:30	8/14/2024	8/16/2024	24-08053	TDS	SM2540C	1.29E+03				mg/l
24-08053-07	TRG	CD-18D	08/06/24 14:30	8/14/2024	8/16/2024	24-08053	TDS	SM2540C	1.18E+03				mg/l
24-08053-08	TRG	CD-19B	08/06/24 13:30	8/14/2024	8/16/2024	24-08053	TDS	SM2540C	4.54E+03				mg/l
24-08053-09	TRG	CD-19C	08/06/24 15:00	8/14/2024	8/16/2024	24-08053	TDS	SM2540C	1.70E+03				mg/l

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

SECTION V

ANALYTICAL STANDARD

BP/Castex-Ltd Adm-Apx E-002242

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP-009

Rev.8; 1/10/03
Title. Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
RECERTIFICATION
MP 009

		CURRENT DATE	1/5/2024 0:00
SOLUTION REFERENCE #	Analytics 7235-207	**SOLUTION #**	Ra-12

Principal Radionuclide	**Half Life, Years**	**Half Life, Days**
^{228}Ra	5.750E+00	2.100E+03

Radionuclide	^{228}Ra	
Certified Activity	1.087E-01	µCi
Certified Concentration		µCi per gram

Reference Date 2/10/2006 0:00

Ampoule /Solution Gross	9.0741	**Weight, Grams**
Empty Ampoule	3.9858	**Weight, Grams**
Solution Net	5.0883	**Weight, Grams**
Total Activity in Ampoule	0.1087	µCi

Chemical Composition of Standard Solution

$^{228}Ra(NO_3)_2$ in 0.5 M HCl

Dilution Instructions: **Dilution Solvent Used** 0.5 M HCl

Dilute to a volume of 991.00 **Kg**

Certified Total Activity of 0.1087 µCi **Which Equals** 2.413E+05 **dpm at the date listed above**

And after dilution the activity of this solution is **2.435E+02** **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 5, 2025

Recertified By _____ Date: ~~1/5/23~~ 1/5/24 1/5/24 JPD

QC Approval _____ Date: 1/5/23 → 24 1/5/24 JPD 1/5/24

0020

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Ra-5
QA/QC REVIEWED
Date 2/8/94 Initials MT

Radionuclide:	Ra-226	Customer:	TMA EBERLINE
Half Life:	1600 ± 7 years	P.O.No.:	VH1888
Catalog No.:	7226	Reference Date:	February 1 1994 12:00 PST.
Source No.:	453-26	Contained Radioactivity: (Ra-226)	1.001 μCi.
		Contained Radioactivity: (Ra-226)	37.0 kBq.

Description of Solution

a. Mass of solution: 5.1864 g (in a 5 ml Flame Sealed Ampoule)

b. Chemical form: Ra(NO3)2 in 1 N HNO3

c. Carrier content: None added

d. Density: 1.0318 g/ml @ 20°C.

Radioimpurities: None detected(other than daughters)

Radioactive Daughters

Rn-222, Po-218, At-218, Pb-214, Bi-214, Po-214, Tl-210, Pb-210, Bi-210, Po-210 and Tl-206.

Radionuclide Concentration

(Ra-226) 0.1929 μCi/g.

Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry:
Energy peak(s) integrated under: 186 keV.
Branching ratio(s) used: 0.0351 gamma rays per decay.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:	±3.4%
b. Random uncertainty in assay:	±3.1%
c. Random uncertainty in weighing(s):	±0.2%
d. Total uncertainty at the 99% confidence level:	±4.6%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

Ana U. Kuen
QUALITY CONTROL

Feb. 3, 1994
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 North Keystone Street
Burbank, California 91504
(818) 843 - 7000

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

7/22/2024 EC 7/22/24

CURRENT DATE: ~~7/22/2025 00:00~~

SOLUTION REFERENCE #	IPL 453-26	SOLUTION #	Ra-5

Principal Radionuclide	Half Life, Years	Half Life, Days
^{226}Radium	1.600E+03	5.844E+05

Radionuclide	^{226}Radium	Reference Date	2/1/1994 00:00
Certified Activity	1.001E+00 µCi		
Certified Concentration	µCi per gram		

Ampoule /Solution Gross		Weight, Grams
Empty Ampoule		Weight, Grams
Solution Net		Weight, Grams
Total Activity in Ampoule	1.0010	µCi

Chemical Composition of Standard Solution

$^{226}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions: **Dilution Solvent Used** 1M HNO_3

Dilute to a volume of 1000.00 **milliliters**

Certified Total Activity of 1.0010 µCi **Which Equals** 2.222E+06 **dpm at the date listed above**

And after dilution the activity of this solution is 2.222E+03 **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: July 22, 2025

Verified & Approved By _____ Date: 7/22/2024

QC Approval _____ Date: 7/22/24

0022

BP/Castex-Ltd Adm-Apx E-002245

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP 009

Rev.8; 11/01/03
Title: **Radioactive Reference Standards Solutions & Records**

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

	MP 009	Date	7/22/2024 00:00
Solution Reference #	IPL-453-26	Solution #	Ra-5b

Principal Radionuclide	Half Life, Years	Half Life, Days
^{226}Radium	1.600E+03	5.844E+05

Radionuclide of Interest	^{226}Radium	Reference Date	2/1/1994 00:00
Parent Solution Conc.	2.22E+03 dpm/ml		

Chemical Composition of Standard Solution
$^{226}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions: **Dilution Solvent Used** 1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution:	20.0000 ml	Final Activity Concentration:	4.4440E+01 dpm/ml
Total Activity:	4.4440E+04 dpm		
Final Volume:	1000.00 ml		

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: 22-Jul-25

Verified & Approved By _____ Date: 7/22/2024 00:00

QC Approval _____ Date: 7/22/24

0023

BP/Castex-Ltd Adm-Apx E-002246

****
***** L I B R A R Y L I S T I N G R E P O R T *****
****

Nuclide Library Title: Radium

Nuclide Library Description: Ra-226, Po-218, Rn-222

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert.(Abs.+-)
PO-218	5.049E+010	6003.000*	0.000	99.9800	0.0000
RN-222	5.049E+010	5490.000*	0.000	99.9200	0.0000
RA-226	5.049E+010	4785.000*	0.000	100.0000	0.0000

* = key line

TOTALS: 3 Nuclides 3 Energy Lines

0024

BP/Castex-Ltd Adm-Apx E-002247

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-002248

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
24-08053	Ra226	1	pCi	l	Waypoint Analytical Louisiana

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-226		109.64%	23.41%	100.00%	4.60%	9.98E+00	4.59E-01	1.09E+01	2.56E+00	Ra-5b	4.39E+01	4.60E+00	5.05E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*
				#VALUE!									

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-226	1.60	70.86	9.86E-01	5.72E-01	4.70E-01	2.71E-01

QC Summary

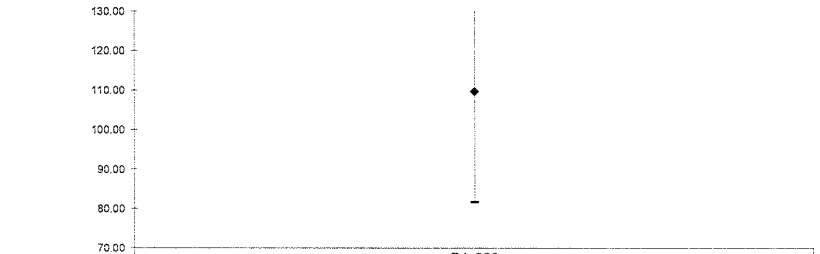
LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.10	OK				NA	OK

BP/Castex-Ltd Adm-Apx E-002249

Version

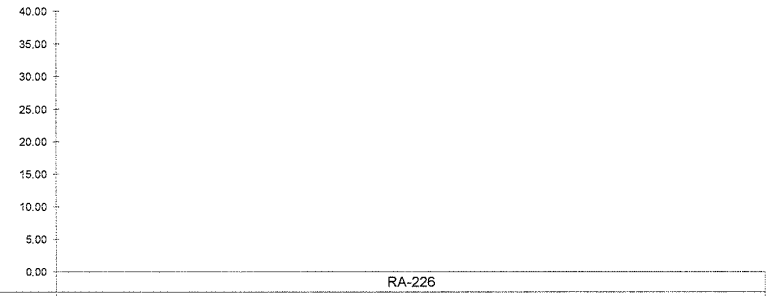
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
24-08053	Ra226	1	pCi	l	Waypoint Analytical Louisiana

LCS % Recovery



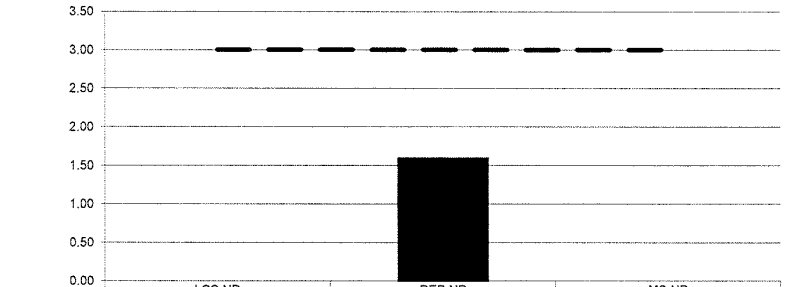
	RA-226
Lower Error	81.63
Upper Error	137.65
%R	109.64
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	RA-226
Lower Error	91.35
Upper Error	50.36
RPD	70.86
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
RA-226	0.00	1.60	0.00
UCL	3	3	3

No Matrix Spike

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
24-08053	Ra228	1	pCi	l	Waypoint Analytical Louisiana

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-228		86.65%	26.32%	100.00%	5.10%	9.19E+00	4.69E-01	7.97E+00	2.10E+00	Ra-12	5.19E+01	5.10E+00	3.94E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-228	0.80	57.79	1.10E+00	9.73E-01	6.05E-01	7.21E-01

QC Summary

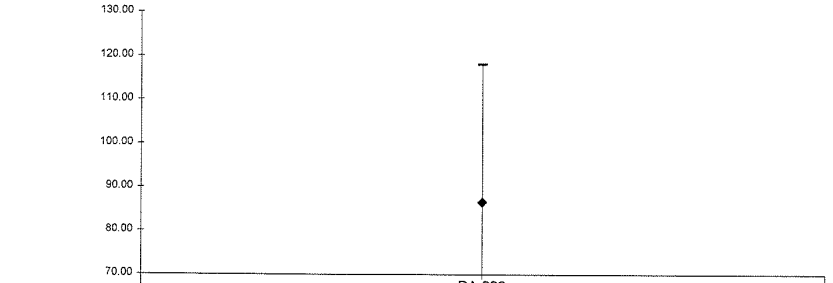
LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.87	OK				NA	OK

BP/Castex-Ltd Adm-Apx E-002251

Version

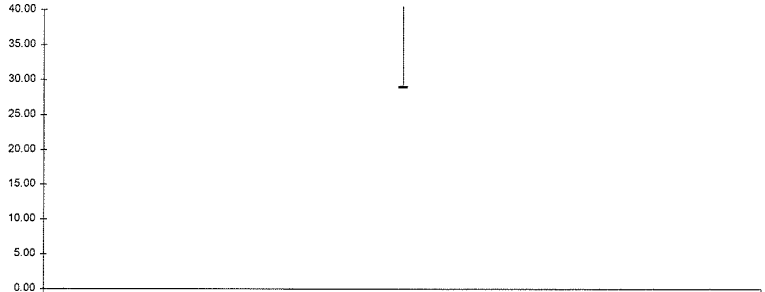
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
24-08053	Ra228	1	pCi	I	Waypoint Analytical Louisiana

LCS % Recovery



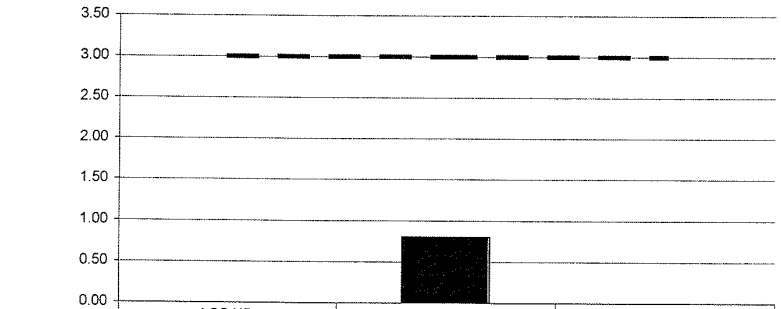
	RA-228
Lower Error	55.24
Upper Error	118.07
%R	86.65
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	RA-228
Lower Error	86.56
Upper Error	29.02
RPD	57.79
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
RA-228	0.00	0.80	0.00
UCL	3	3	3

No Matrix Spike

SECTION VII

LABORATORY TECHNICIAN'S NOTES

BP/Castex-Ltd Adm-Apx E-002253

RA-226 NOTES

BP/Castex-Ltd Adm-Apx E-002254

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08053
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	09/03/24 14:08	PREP	JHARVEY	ALIQUOTED AND ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- FRACTIONS 5 AND 9 WERE HEAVY WITH SOLIDS SO THEIR ALIQUOTS WERE REDUCED- SAMPLE ALIQUOTS WERE LEACHED AND PRECIPITATED- PRECIPITATES WERE DISSOLVED IN ALKALINE EDTA- ALL SAMPLES WERE TRANSFERRED TO SEPARATIONS

JHarvey
9/3/24

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08053
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	09/03/24 14:08	PREP	JHARVEY	ALIQUOTED AND ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- FRACTIONS 5 AND 9 WERE HEAVY WITH SOLIDS SO THEIR ALIQUOTS WERE REDUCED- SAMPLE ALIQUOTS WERE LEACHED AND PRECIPITATED- PRECIPITATES WERE DISSOLVED IN ALKALINE EDTA- ALL SAMPLES WERE TRANSFERRED TO SEPARATIONS
2	09/06/24 14:43	CHEM	CNGUYEN	Selectively precipitated Ra226. Recorded t0. Filtered, dried, reweighed and submitted to count room.

09/06/24

0033

BP/Castex-Ltd Adm-Apx E-002256

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
24-08053	
Analysis Code	Run
Ra226	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
026676P	Ammonium Hydroxide	Reagent Grade	JHARVEY	9/3/2024
026976S	Ammonium Sulfate	200 mg/ml	JHARVEY	9/3/2024
026674D04	Barium Carrier	1 mg/ml	JHARVEY	9/3/2024
026926S	EDTA	0.25M	JHARVEY	9/3/2024
027002D01	Lead Carrier	166 mg/ml	JHARVEY	9/3/2024
026917P	Nitric Acid	Reagent Grade	JHARVEY	9/3/2024
026958P	Acedit Acid	Reagent Grade	CNGUYEN	9/6/2024
027012S	Ammonium Sulfate	200 mg/ml	CNGUYEN	9/6/2024
026733S	EDTA	0.25M	CNGUYEN	9/6/2024

Alpha Bank #3

Date	Sample #	Client	Load Time	Count Time	Analysis	Tech
9/5/24	2408056A(1-13)	ENTACT	1306	3hrs	Uh	NL
9/6/24	Daily Pulser	Lab	0613	10min	NA	NL
9/6/24	Cal Check (34-48)	Lab	0644	2hr 30min	NA	NL
9/6/24 NL 9/9/24	Cal Check (49-56)	Lab	0920	2hr 30min	NA	NL
9/6/24	2409002A(1-5)	Unitech	0920	3hrs	Uh	NL
9/6/24	2408059A(1-4)	PLL	0921	3hrs	Th	NL
9/6/24	System Blkgd	Lab	1320	16.4 hrs	NA	NL
9/9/24	Daily Pulser	Lab	0615	10min	NA	NL
9/9/24	2409001A(1-7)	Teledyne NL 9/9/24	~~0638~~ 0659	3hrs	Ra^b	NL
9/9/24	2408045A(1-4)	Waypoint NL 9/9/24	~~0639~~ 0700	3hrs	Ra^b	NL
9/9/24	2408053A(1-9)	Waypoint	0701	3hrs	Ra^b	NL

BP/Castex-Ltd Adm-Apx E-002258

RA-228 NOTES

BP/Castex-Ltd Adm-Apx E-002259

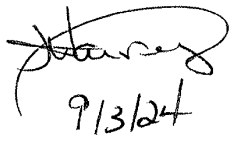
EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08053
Analysis Code	Ra228
Run Number	1

#	Date	Dept	User	Notes
1	09/03/24 14:08	PREP	JHARVEY	ALIQUOTED AND ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- FRACTIONS 5 AND 9 WERE HEAVY WITH SOLIDS SO THEIR ALIQUOTS WERE REDUCED- SAMPLE ALIQUOTS WERE LEACHED AND PRECIPITATED- PRECIPITATES WERE DISSOLVED IN ALKALINE EDTA- ALL SAMPLES WERE TRANSFERRED TO SEPARATIONS



EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08053
Analysis Code	Ra228
Run Number	1

#	Date	Dept	User	Notes
1	09/03/24 14:08	PREP	JHARVEY	ALIQUOTED AND ADDED SPIKE AND TRACER- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- FRACTIONS 5 AND 9 WERE HEAVY WITH SOLIDS SO THEIR ALIQUOTS WERE REDUCED- SAMPLE ALIQUOTS WERE LEACHED AND PRECIPITATED- PRECIPITATES WERE DISSOLVED IN ALKALINE EDTA- ALL SAMPLES WERE TRANSFERRED TO SEPARATIONS
2	09/10/24 11:56	CHEM	CNGUYEN	Added 2ml Yttrium carrier and 18M Sodium Hydroxide were added. Let sit in hot bath for 15 minutes, clocked t1. Centrifuged, poured off supernatant and dissolved precipitate in 6N Nitric Acid. Added 10M Sodium Hydroxide. Let sit in hot bath for 15 minutes. Centrifuged, poured off supernatant and dissolved in 1N Nitric Acid. Added Ammonium Oxalate. Filtered on pretared filters, dried, reweighed, submitted to count room.

09/10/24

0038

BP/Castex-Ltd Adm-Apx E-002261

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
24-08053	
Analysis Code	Run
Ra228	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
026676P	Ammonium Hydroxide	Reagent Grade	JHARVEY	9/3/2024
026976S	Ammonium Sulfate	200 mg/ml	JHARVEY	9/3/2024
026674D04	Barium Carrier	1 mg/ml	JHARVEY	9/3/2024
026926S	EDTA	0.25M	JHARVEY	9/3/2024
027002D01	Lead Carrier	166 mg/ml	JHARVEY	9/3/2024
026917P	Nitric Acid	Reagent Grade	JHARVEY	9/3/2024
026637D01	Ammonium Oxalate	5%	CNGUYEN	9/10/2024
026733S	EDTA	0.25M	CNGUYEN	9/10/2024
026559S	Nitric Acid	1N	CNGUYEN	9/10/2024
026621S	Nitric Acid	6N	CNGUYEN	9/10/2024
026742S	Sodium Hydroxide	18M	CNGUYEN	9/10/2024
026687S	Yttrium Carrier	9 mg/ml	CNGUYEN	9/10/2024
027003S	Sodium Hydroxide	10M	CNGUYEN	9/10/2024

Aqua LB4110

Date	Sample #	Client	Load Time	Count Time	Analysis	Tech
9/3/24	Weekly Bkgd	Lab	1101	12 hrs	αβ	KB
9/9/24	Daily Bkgd / Qc	Lab NC 9/9/24	0609/0717	1hr 30min	αβ	NC
9/9/24	240807054(1-3,9,13)	Fruit Growers	~~1350~~ 1354	2hrs	Sy^{90}	NC
9/9/24	240807554(6)	UCOR	1409	2hrs	Sy^{90}	NC
9/9/24	Daily Bkgd / Qc	Lab	0609/0714	1hr 30min	αβ	NC
9/10/24	240805BRA(2-4)	Waypoint	1226 NC 9/10/24	2hrs	Ra^{3}	KB
9/10/24	240805BRA(1)	Waypoint	~~1429~~ 1431	1hr	Ra^{8}	NC

0040

TDS NOTES

BP/Castex-Ltd Adm-Apx E-002264

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08053
Analysis Code	TDS
Run Number	1

#	Date	Dept	User	Notes
1	08/15/24 08:17	PREP	KSALLINGS	filtered into tared beaker,dried,reweighed

0042

BP/Castex-Ltd Adm-Apx E-002265

SECTION VIII

ANALYTICAL DATA (RADIUM-226)

BP/Castex-Ltd Adm-Apx E-002266

24-08053
Ra226
Run 1

Work Order	24-08053
Analysis Code	Ra226
Run	1
Date Received	8/14/2024
Lab Deadline	9/5/2024
Client	Waypoint Analytical Louisiana
Project	24-221-0054
Report Level	4
Activity Units	pCi
Aliquot Units	l
Matrix	WA
Method	EPA 903.0 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-7
Tracer Act (dpm/g)	7403.04
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		08/14/24 00:00	1.0000E+00
02	MBL	BLANK		08/14/24 00:00	1.0000E+00
03	DUP	CD-18B	80	08/06/24 10:50	1.0000E+00
04	DO	CD-18B	80	08/06/24 10:50	1.0000E+00
05	TRG	CD-18C	80	08/06/24 12:50	5.0000E-01
06	TRG	CD-18A	40	08/06/24 13:30	1.0000E+00
07	TRG	CD-18D	80	08/06/24 14:30	1.0000E+00
08	TRG	CD-19B	80	08/06/24 13:30	1.0000E+00
09	TRG	CD-19C	80	08/06/24 15:00	5.0000E-01

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-002267

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.1452	1074.9	491.0	101.40		0.0198	0.0259	0.0061		101.40	1.71	1.00
02	MBL	0.1447	1071.2	425.0	88.08		0.0197	0.0260	0.0063		88.08	1.76	1.00
03	DUP	0.1464	1083.8	470.0	96.27		0.0200	0.0264	0.0064		96.27	1.79	1.00
04	DO	0.1440	1066.0	402.0	83.72		0.0200	0.0299	0.0099		83.72	2.80	1.00
05	TRG	0.1501	1111.2	482.0	96.30		0.0199	0.0265	0.0066		96.30	1.84	1.00
06	TRG	0.1438	1064.6	390.0	81.33		0.0201	0.0266	0.0065		81.33	1.81	1.00
07	TRG	0.1433	1060.9	371.0	77.64		0.0198	0.0252	0.0054		77.64	1.56	1.00
08	TRG	0.1443	1068.3	327.0	67.96		0.0200	0.0272	0.0072		67.96	1.99	1.00
09	TRG	0.1513	1120.1	439.0	87.01		0.0197	0.0267	0.0070		87.01	1.94	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-002268

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		
02	MBL			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		
03	DUP			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		
04	DO			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		
05	TRG			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		
06	TRG			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		
07	TRG			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		
08	TRG			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		
09	TRG			09/03/24 08:42	JHARVEY	09/06/24 12:22	CNGUYEN		

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-002269

Preliminary Data Report & Analytical Calculations

Work Order: 24-08053-Ra226-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	24-08053	Waypoint Analytical Louisiana

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-226	LCS	LCS	pCi/l	1.09E+01	1.10E+00	1.35E-01	9.98E+00	109.64	OK		OK	
02	RA-226	MBL	BLANK	pCi/l	-5.50E-03	6.09E-02	1.29E-01					OK	OK
03	RA-226	DUP	CD-18B	pCi/l	4.70E-01	2.52E-01	1.89E-01				NA	OK	
04	RA-226	DO	CD-18B	pCi/l	9.86E-01	5.33E-01	3.51E-01					OK	
05	RA-226	TRG	CD-18C	pCi/l	9.68E-01	4.75E-01	3.41E-01					OK	
06	RA-226	TRG	CD-18A	pCi/l	2.80E-01	2.57E-01	3.28E-01					OK	
07	RA-226	TRG	CD-18D	pCi/l	9.60E-02	1.25E-01	1.76E-01					OK	
08	RA-226	TRG	CD-19B	pCi/l	1.16E+00	4.87E-01	2.75E-01					OK	
09	RA-226	TRG	CD-19C	pCi/l	1.63E+00	6.67E-01	4.06E-01					OK	

BP/Castex-Ltd Adm-Apx E-002270

Preliminary Data Report & Analytical Calculations

Work Order: 24-08053-Ra226-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	24-08053	Waypoint Analytical Louisiana

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-226	LCS	08/14/24 00:00	1.00E+00	100.00	0.00	101.40		9/6/2024 12:22	
02	RA-226	MBL	08/14/24 00:00	1.00E+00	88.08	0.00	88.08		9/6/2024 12:22	
03	RA-226	DUP	08/06/24 10:50	1.00E+00	96.27	0.00	96.27		9/6/2024 12:22	
04	RA-226	DO	08/06/24 10:50	1.00E+00	83.72	0.00	83.72		9/6/2024 12:22	
05	RA-226	TRG	08/06/24 12:50	5.00E-01	96.30	0.00	96.30		9/6/2024 12:22	
06	RA-226	TRG	08/06/24 13:30	1.00E+00	81.33	0.00	81.33		9/6/2024 12:22	
07	RA-226	TRG	08/06/24 14:30	1.00E+00	77.64	0.00	77.64		9/6/2024 12:22	
08	RA-226	TRG	08/06/24 13:30	1.00E+00	67.96	0.00	67.96		9/6/2024 12:22	
09	RA-226	TRG	08/06/24 15:00	5.00E-01	87.01	0.00	87.01		9/6/2024 12:22	

Client	Eberline Services Work Order	Analysis Code	Run
Waypoint Analytical Louisiana	24-08053	Ra226	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	RA-226	LCS	09/09/24 07:01		A_Spec	Alpha_048	180	4.31 E+02	3.00 E-03	16.9
02	RA-226	MBL	09/09/24 07:01		A_Spec	Alpha_049	180	-1.80 E-01	1.00 E-03	16.4
03	RA-226	DUP	09/09/24 07:01		A_Spec	Alpha_050	180	1.43 E+01	4.00 E-03	14.1
04	RA-226	DO	09/09/24 07:01		A_Spec	Alpha_051	180	1.36 E+01	2.00 E-03	11.6
05	RA-226	TRG	09/09/24 07:01		A_Spec	Alpha_052	180	1.70 E+01	0.00 E+00	16.8
06	RA-226	TRG	09/09/24 07:01		A_Spec	Alpha_053	180	5.74 E+00	7.00 E-03	11.4
07	RA-226	TRG	09/09/24 07:01		A_Spec	Alpha_054	180	2.64 E+00	2.00 E-03	13.8
08	RA-226	TRG	09/09/24 07:01		A_Spec	Alpha_055	180	2.25 E+01	3.00 E-03	14.2
09	RA-226	TRG	09/09/24 07:01		A_Spec	Alpha_056	180	2.40 E+01	0.00 E+00	16.5

Count Room Report
Client: Waypoint Analytical Louis

24-08053-Ra226-1 (pCi/l) in WA
Tracer ID: Ba-7

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	08/14/24 00:00	1.0000	0.1452	1074.9214	491.0000	101.40	1.71	1.00
02	MBL	BLANK	08/14/24 00:00	1.0000	0.1447	1071.2199	425.0000	88.08	1.76	1.00
03	DUP	CD-18B	08/06/24 10:50	1.0000	0.1464	1083.8051	470.0000	96.27	1.79	1.00
04	DO	CD-18B	08/06/24 10:50	1.0000	0.1440	1066.0378	402.0000	83.72	2.80	1.00
05	TRG	CD-18C	08/06/24 12:50	0.5000	0.1501	1111.1963	482.0000	96.30	1.84	1.00
06	TRG	CD-18A	08/06/24 13:30	1.0000	0.1438	1064.5572	390.0000	81.33	1.81	1.00
07	TRG	CD-18D	08/06/24 14:30	1.0000	0.1433	1060.8556	371.0000	77.64	1.56	1.00
08	TRG	CD-19B	08/06/24 13:30	1.0000	0.1443	1068.2587	327.0000	67.96	1.99	1.00
09	TRG	CD-19C	08/06/24 15:00	0.5000	0.1513	1120.0800	439.0000	87.01	1.94	1.00

BP/Castex-Ltd Adm-Apx E-002273

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 9/3/2024 08:42

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
24-08053	1	Ra226	9/3/2024 08:33	JHARVEY		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	*Sol #*	*Activity dpm/g*	*Solution Date*	*Approx Addition*	*Volume Used (g)*	*Volume Used (g)*	*Volume Used (g)*	*Volume Used (g)*	*Known pCi*	*Error Estimate*	*Added pCi*	*Error Estimate*	*Known pCi*	*Error Estimate*	*Added pCi*	*Error Estimate*
Ra-226	Ra-5b	43.860	9/3/2024	0.500	0.5053				9.98	0.459	0.00	0.000	0.00	0.000	0.00	0.000

Tracers

fraction	*Isotope*	*Sol #*	*Activity dpm/g*	*Solution Date*	*Volume Used (g)*	*Approx Addition*
01	Ba-133	Ba-7	7403.040	9/3/2024	0.1452	0.1400
02	Ba-133	Ba-7	7403.040	9/3/2024	0.1447	0.1400
03	Ba-133	Ba-7	7403.040	9/3/2024	0.1464	0.1400
04	Ba-133	Ba-7	7403.040	9/3/2024	0.1440	0.1400
05	Ba-133	Ba-7	7403.040	9/3/2024	0.1501	0.1400
06	Ba-133	Ba-7	7403.040	9/3/2024	0.1438	0.1400
07	Ba-133	Ba-7	7403.040	9/3/2024	0.1433	0.1400
08	Ba-133	Ba-7	7403.040	9/3/2024	0.1443	0.1400
09	Ba-133	Ba-7	7403.040	9/3/2024	0.1513	0.1400

Balance Printer Tapes

Tracer

LCS

Matrix Spike

BP/Castex-Ltd Adm-Apx E-002274

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 9/3/2024 08:44

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
24-08053	1	Ra226	liters	9/5/2024	JHARVEY

Lab Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-18B	DUP					1.0000E+00	1.0000E+00				
04	CD-18B	DO					1.0000E+00	1.0000E+00				
05	CD-18C	TRG					5.0000E-01	5.0000E-01				
06	CD-18A	TRG					1.0000E+00	1.0000E+00				
07	CD-18D	TRG					1.0000E+00	1.0000E+00				
08	CD-19B	TRG					1.0000E+00	1.0000E+00				
09	CD-19C	TRG					5.0000E-01	5.0000E-01				

Comments	

Technician: JHarvey Date: 9/3/24

BP/Castex-Ltd Adm-Apx E-002275

Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Printed: 9/6/2024 2:36 PM

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
24-08053	**1**	**Ra226**			**CNGUYEN**

TRetec	Waypoint Analytical Louisiana	Sample	Carrier Data	Filter Data			Gravimetric
			Carrier Added	Filter Tare	Filter Final	Filter Net	%
Fraction	Client ID	Type	(ml)	(g)	(g)	(g)	Recovery
01	LCS	LCS		0.0198	0.0259	**0.0061**	
02	BLANK	MBL		0.0197	0.0260	**0.0063**	
03	DUP	DUP		0.0200	0.0264	**0.0064**	
04	CD-18B	DO		0.0200	0.0299	**0.0099**	
05	CD-18C	TRG		0.0199	0.0265	**0.0066**	
06	CD-18A	TRG		0.0201	0.0266	**0.0065**	
07	CD-18D	TRG		0.0198	0.0252	**0.0054**	
08	CD-19B	TRG		0.0200	0.0272	**0.0072**	
09	CD-19C	TRG		0.0197	0.0267	**0.0070**	

Technician: _____ Date: 09/06/24

BP/Castex-Ltd Adm-Apx E-002276

Apex-Alpha™

KB 9/9/24

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_048
Chamber Serial Number: 10006125B
Detector Serial Number: 83111
Env. Background: System Bkgd 373298
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.710E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 9/9/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:19 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1687 +/- 0.0030 on 3/22/2024 8:42:54 PM
Effective Efficiency: 0.1687 +/- 0.0030

Control Certificate Name: Ra226_Ra-5b
Chem. Recov. of Control: RA-226 0.641225 +/- 0.038116
Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.472	301.74	11.31	1.26	0.00E+000	3.3
RA-226	4.597	431.46	9.44	0.54	0.00E+000	4.1

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.942	5685.50*	8.05E+000 +/- 9.52E-001	1.79E-001 +/- 6.21E-003
RA-226	0.955	4785.00*	1.09E+001 +/- 1.10E+000	1.35E-001 +/- 4.69E-003

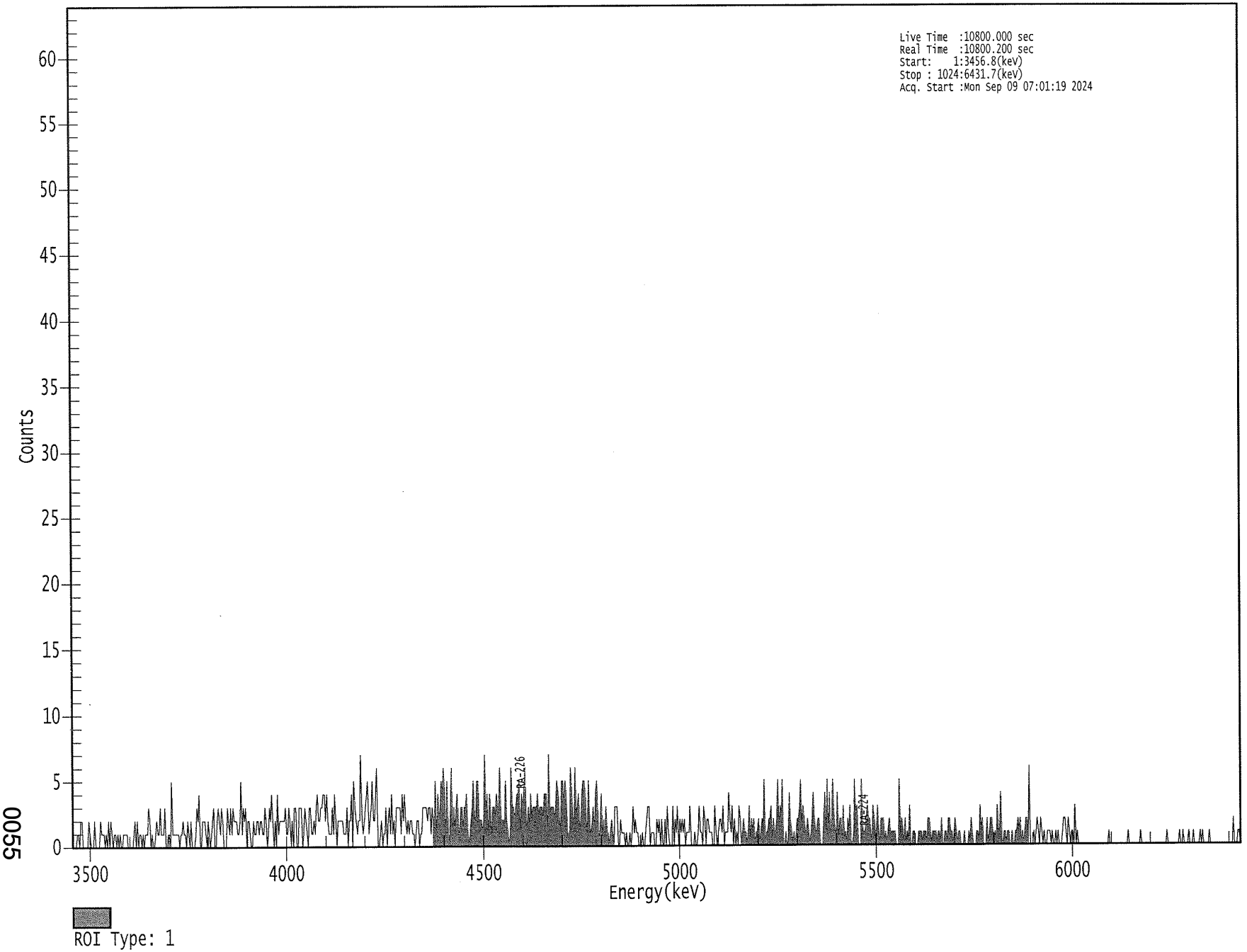
0054

BP/Castex-Ltd Adm-Apx E-002277

BP/Castex-Ltd Adm-Apx E-002278

0055

0000362871.CNF



****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 01

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	1	1	0	2
9:	2	0	0	0	0	0	2	1
17:	0	0	0	2	0	0	0	0
25:	2	1	1	1	0	1	0	2
33:	0	2	1	0	1	1	0	1
41:	0	1	0	0	1	1	1	1
49:	0	0	0	0	0	1	2	0
57:	2	0	1	1	0	1	0	1
65:	1	1	3	2	0	1	0	0
73:	1	2	1	1	3	1	1	1
81:	3	0	0	1	1	0	5	1
89:	1	1	1	1	1	0	1	1
97:	2	1	1	0	2	1	0	2
105:	0	0	0	1	3	2	4	0
113:	0	2	2	2	1	0	2	1
121:	0	1	2	3	0	0	2	3
129:	2	1	3	2	0	0	0	3
137:	2	1	3	1	3	2	2	2
145:	1	1	2	5	1	3	2	3
153:	0	2	2	1	0	0	2	1
161:	1	2	2	1	2	2	1	1
169:	3	2	0	1	3	2	4	2
177:	0	2	0	4	1	2	2	2
185:	2	2	3	1	1	3	2	0
193:	2	0	3	3	0	0	3	3
201:	3	0	1	3	2	1	0	3
209:	3	1	1	2	1	3	4	2
217:	2	3	3	4	4	2	4	2
225:	1	1	1	3	1	4	2	0
233:	2	2	2	2	2	1	1	1
241:	3	0	2	2	4	0	5	3
249:	2	1	2	2	7	2	1	2
257:	3	4	5	1	2	3	5	2
265:	2	4	6	0	0	1	2	0
273:	1	1	3	0	2	3	1	4
281:	1	2	0	3	3	3	3	1
289:	4	2	4	2	1	2	1	2
297:	2	1	1	0	1	2	2	0
305:	1	1	3	3	3	3	2	3
313:	3	1	3	2	2	5	0	4
321:	2	3	5	4	6	4	0	5
329:	1	0	3	6	0	3	1	3
337:	4	1	1	3	3	1	3	3
345:	4	1	0	1	2	3	5	2
353:	2	5	5	2	2	2	1	2
361:	7	2	4	0	4	3	0	3

0056

BP/Castex-Ltd Adm-Apx E-002279

369:	3	2	4	3	3	6	2	2

Sample Title: 01

Channel								
377:	2	1	5	2	1	0	1	6
385:	3	3	2	3	4	4	5	0
393:	4	3	4	6	1	2	3	1
401:	4	2	3	3	3	3	4	2
409:	3	3	3	2	4	4	4	0
417:	7	2	3	3	3	2	3	5
425:	4	2	1	5	5	3	5	4
433:	1	1	1	6	4	2	2	6
441:	2	3	4	1	2	4	5	5
449:	4	1	2	5	1	1	2	3
457:	1	4	5	2	0	2	4	0
465:	2	0	3	1	1	0	1	2
473:	1	0	3	3	3	0	0	2
481:	1	1	1	0	1	0	0	1
489:	0	1	3	1	2	1	1	0
497:	0	0	1	0	0	1	2	3
505:	3	0	1	1	1	0	0	2
513:	1	2	0	2	0	0	2	0
521:	3	1	0	0	0	3	0	2
529:	1	3	0	2	1	2	1	2
537:	0	1	1	1	3	0	0	0
545:	1	0	0	1	3	1	1	0
553:	3	2	0	2	2	1	1	1
561:	0	0	3	1	0	1	2	2
569:	1	3	0	1	1	1	4	2
577:	1	3	0	2	0	1	0	3
585:	2	0	1	2	1	1	0	1
593:	3	0	2	1	2	0	1	1
601:	2	0	1	2	1	5	0	1
609:	1	2	2	3	0	2	1	1
617:	2	5	1	3	2	5	0	0
625:	1	0	0	4	2	1	0	1
633:	0	1	2	2	3	5	1	3
641:	2	1	1	2	1	0	1	2
649:	4	2	1	1	2	2	0	0
657:	0	2	4	0	5	0	4	0
665:	2	5	2	1	1	4	0	2
673:	2	0	3	0	1	0	2	1
681:	3	0	0	1	5	2	3	0
689:	0	0	5	1	1	1	2	3
697:	2	2	1	0	3	2	1	1
705:	3	1	0	2	2	2	0	1
713:	0	1	2	1	1	1	1	1
721:	0	0	0	5	0	2	1	0
729:	2	0	1	0	3	0	0	1
737:	1	0	0	0	1	1	1	0
745:	1	1	1	0	2	2	1	0
753:	1	1	1	1	0	1	1	0
761:	2	0	0	1	1	0	2	2
769:	1	1	0	1	2	1	0	1
777:	1	0	0	0	1	0	0	0
785:	1	0	2	1	0	0	0	1
793:	1	0	3	1	2	0	0	0

BP/Castex-Ltd Adm-Apx E-002280

801:	2	0	1	2	2	1	0	1

Sample Title: 01

Channel								
809:	0	3	1	1	4	0	0	1
817:	1	0	1	1	0	0	1	0
825:	0	1	1	2	1	2	0	1
833:	0	1	2	2	0	6	0	0
841:	0	1	0	1	2	1	0	2
849:	1	0	1	0	0	1	1	1
857:	0	1	0	0	1	0	1	0
865:	0	0	1	2	2	1	0	2
873:	1	0	1	1	0	3	0	1
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	1	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	1	0	0	0
929:	0	0	0	0	0	0	0	1
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	1	0
961:	0	0	0	0	0	0	0	0
969:	0	1	0	0	1	0	0	0
977:	0	1	0	0	0	1	0	0
985:	0	0	0	1	0	1	0	0
993:	0	0	0	1	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	2	0	0	0	1	1	0	0

BP/Castex-Ltd Adm-Apx E-002281

Apex-Alpha™

NC 9/9/24

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_049
Chamber Serial Number: 10006121A
Detector Serial Number: 49
Env. Background: System Bkgd 373299
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.760E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 9/9/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:06 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.8808 +/- 0.0000
Counting Efficiency: 0.1636 +/- 0.0029 on 3/22/2024 11:09:49 AM
Effective Efficiency: 0.1441 +/- 0.0026

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.529	0.00	1960.0	0.00	0.00E+000	0.0
RA-226	4.601	-0.18	1106.3	0.18	0.00E+000	0.0

NUCLIDE ANALYSIS RESULTS

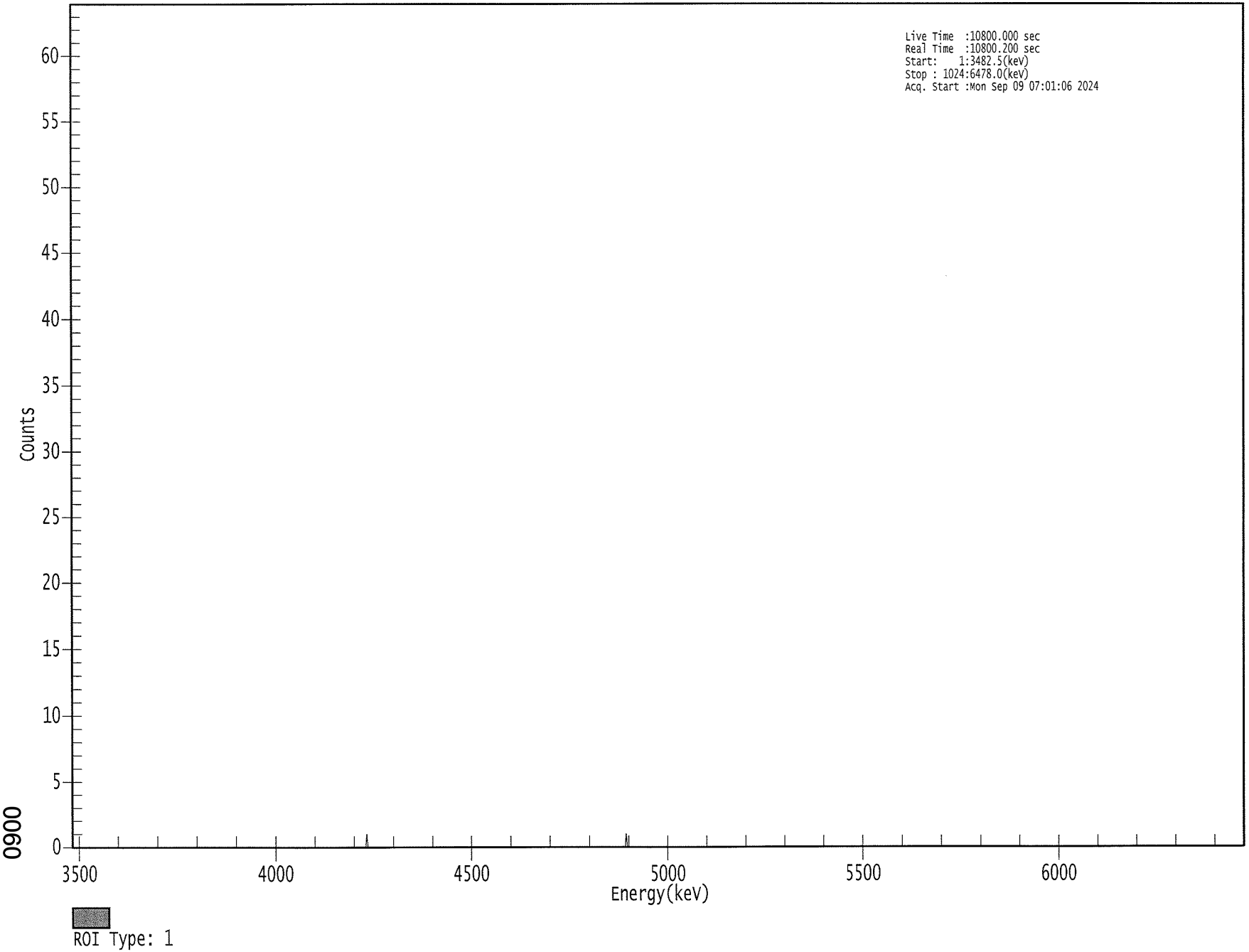
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.969	5685.50*	0.00E+000 +/- 8.91E-002	1.93E-001 +/- 6.75E-003
RA-226	0.957	4785.00*	-5.50E-003 +/- 6.09E-002	1.29E-001 +/- 4.52E-003

0059

BP/Castex-Ltd Adm-Apx E-002282

BP/Castex-Ltd Adm-Apx E-002283

0060



****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 02

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	1	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

0061

BP/Castex-Ltd Adm-Apx E-002284

369:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	1	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

MC 9/9/24

Sample Description: CD-18B DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_050
Chamber Serial Number: 10006121B
Detector Serial Number: 50
Env. Background: System Bkgd 373300
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.790E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/6/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:07 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.9627 +/- 0.0000
Counting Efficiency: 0.1413 +/- 0.0026 on 3/22/2024 11:09:47 AM
Effective Efficiency: 0.1360 +/- 0.0025

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

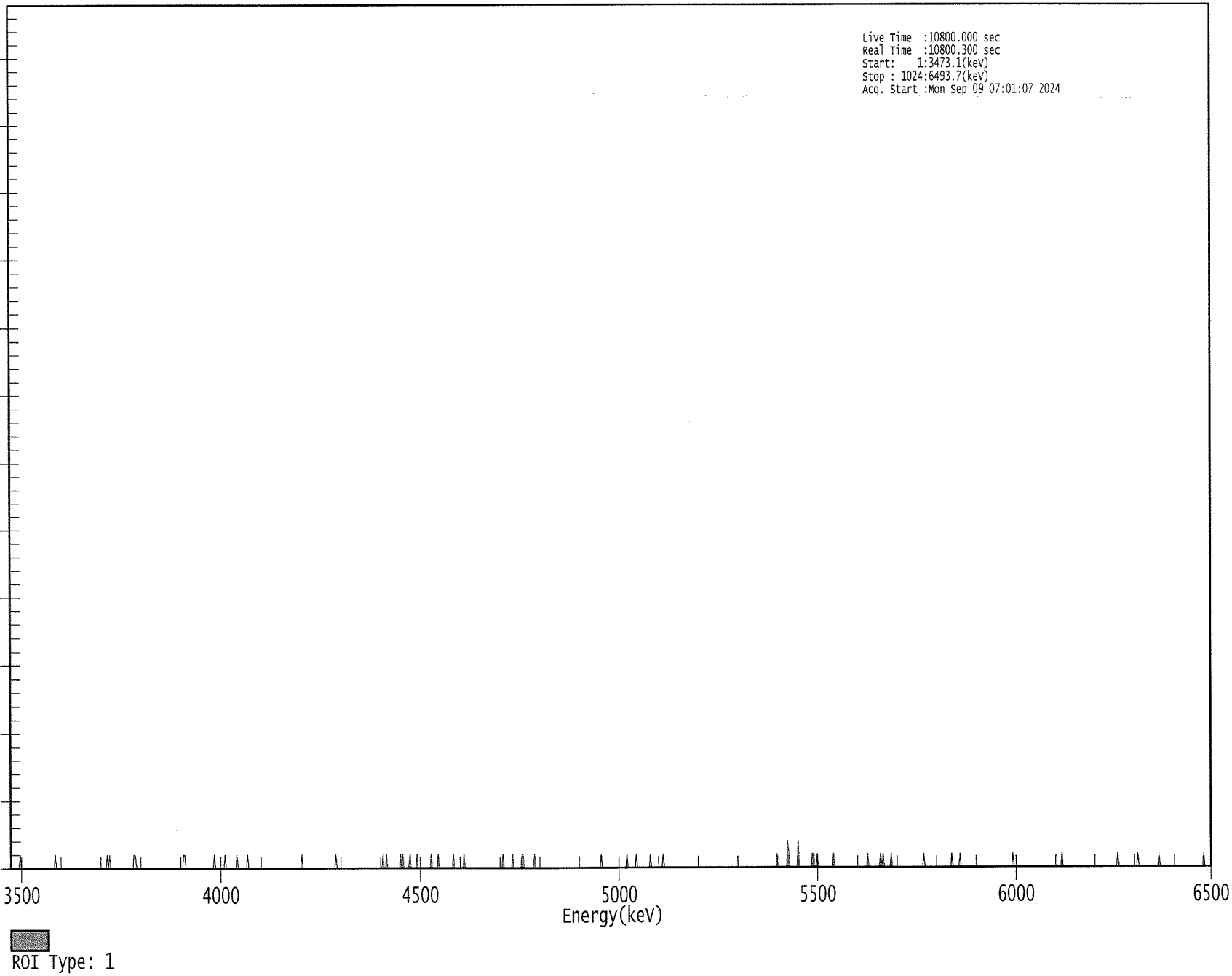
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.516	13.46	54.67	0.54	0.00E+000	4.4
RA-226	4.580	14.28	53.39	0.72	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.963	5685.50*	4.71E-001 +/- 2.58E-001	1.87E-001 +/- 6.67E-003
RA-226	0.946	4785.00*	4.70E-001 +/- 2.52E-001	1.89E-001 +/- 6.71E-003

0064

BP/Castex-Ltd Adm-Apx E-002287



BP/Castex-Ltd Adm-Apx E-002288

0065

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 03

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	1	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	1	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	1	0	1	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	1	1	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	1	1	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	1	0	0
177:	0	0	0	0	0	0	1	0
185:	0	0	0	0	0	0	0	0
193:	1	0	0	0	0	0	0	0
201:	0	1	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	1
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	1	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	1	0	0	1
321:	0	0	0	0	0	0	0	0
329:	0	0	0	1	0	1	0	0
337:	0	0	0	1	0	0	0	0
345:	0	1	0	0	0	0	0	0
353:	0	0	0	0	0	1	0	0
361:	0	0	0	1	0	0	0	0

369:	0	0	0	0	0	0	0	0

Sample Title: 03

Channel								
377:	1	0	0	0	0	0	0	0
385:	0	1	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	1	0	0	0	0	0
425:	0	0	1	0	0	0	0	0
433:	0	0	1	1	0	0	0	0
441:	0	0	0	0	0	1	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	1	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	1	0	0	0
529:	0	0	0	0	1	0	0	0
537:	0	0	0	0	0	0	0	0
545:	1	0	0	0	0	0	0	0
553:	0	0	0	1	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	1	0	0	0
657:	0	0	0	0	0	2	1	0
665:	0	0	0	0	0	0	2	0
673:	0	0	0	0	0	0	0	0
681:	0	0	1	1	0	0	1	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	1	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	1	0	0	0	0	0	0
737:	0	0	0	0	1	0	1	0
745:	0	0	0	0	0	1	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	1	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	1	0	0	0	0	0	0

Sample Title: 03

Channel								
809:	1	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	1	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	1
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	1
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	1	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	1	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	1	0	0	0	0	0	0	0

Apex-Alpha™

MC 9/9/24

Sample Description: CD-18B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_051
Chamber Serial Number: 10006123A
Detector Serial Number: 51
Env. Background: System Bkgd 373301
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.800E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/6/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:09 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.8372 +/- 0.0000
Counting Efficiency: 0.1157 +/- 0.0022 on 3/22/2024 11:09:46 AM
Effective Efficiency: 0.0969 +/- 0.0018

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.521	6.64	78.46	0.36	0.00E+000	5.9
RA-226	4.646	13.64	53.89	0.36	0.00E+000	3.0

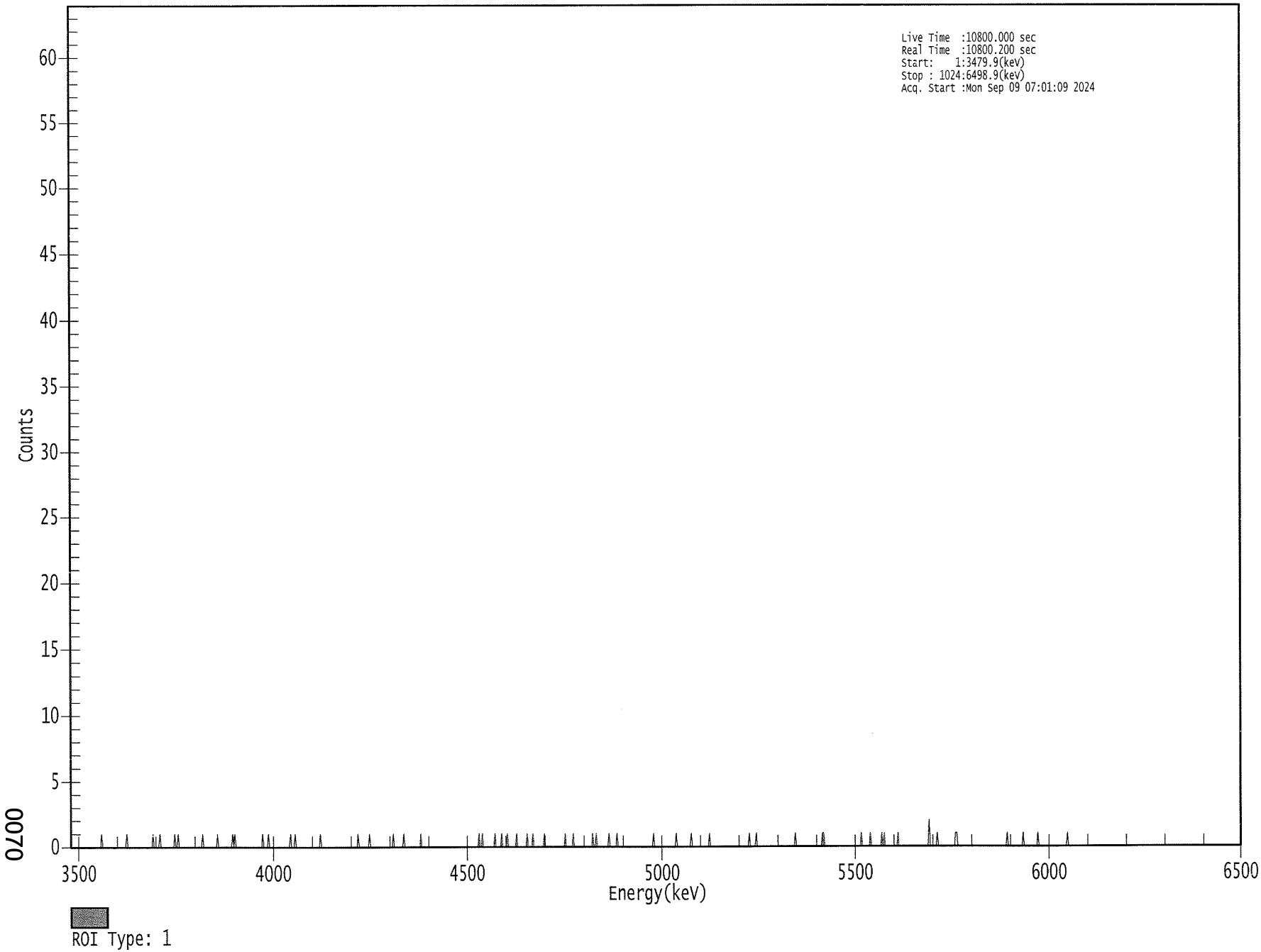
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.965	5685.50*	5.11E-001 +/- 4.01E-001	3.73E-001 +/- 1.38E-002
RA-226	0.975	4785.00*	9.86E-001 +/- 5.33E-001	3.51E-001 +/- 1.30E-002

0069

BP/Castex-Ltd Adm-Apx E-002292

0000362861.CNF



BP/Castex-Ltd Adm-Apx E-002293

0070

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 04

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	1	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	1	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	1	0	0	0	0	0	1	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	1	0	0	1	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	1	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	1	0	0	0	0	0	0	0
137:	0	0	0	0	0	1	0	1
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	1
169:	0	0	0	0	1	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	1
193:	0	0	0	1	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	1	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	1	0	0	0	0	0
257:	0	0	0	0	1	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	1	0	0	0	0	0	0
289:	0	0	1	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	1	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	1	0	0	1
361:	0	0	0	0	0	0	0	0

0071

BP/Castex-Ltd Adm-Apx E-002294

369:	0	0	1	0	0	0	0	0

Sample Title: 04

Channel								
377:	1	0	0	0	0	1	0	0
385:	0	0	0	0	0	1	0	0
393:	0	0	0	0	0	0	1	0
401:	0	0	0	1	0	0	0	0
409:	0	0	0	0	0	1	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	1
433:	0	0	0	0	0	0	1	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	1
457:	0	0	1	0	0	0	0	0
465:	0	0	0	0	0	1	0	0
473:	0	0	0	0	1	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	1	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	1	0	0	0	0	0	0	0
537:	0	0	0	0	0	1	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	1	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	1	0	0	0	0	0	1	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	1	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	1	1	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	1	0	0	0	0	0
697:	0	0	1	0	0	0	0	0
705:	0	0	0	0	1	0	1	0
713:	0	0	0	0	0	0	0	0
721:	0	0	1	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	2	0	0
753:	0	0	0	0	1	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	1	1	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 04

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	1	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	1
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	1	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	1	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-002296

Apex-Alpha™

MC 9/9/24

Sample Description: CD-18C
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_052
Chamber Serial Number: 10006123B
Detector Serial Number: 52
Env. Background: System Bkgd 373302
Reagent Blank: <not performed>

Sample Size: 5.000E-001 +/- 0.000E+000 liter
Generic Mult. Factor: 1.840E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/6/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:11 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.9630 +/- 0.0000
Counting Efficiency: 0.1679 +/- 0.0030 on 3/22/2024 11:09:43 AM
Effective Efficiency: 0.1617 +/- 0.0029

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

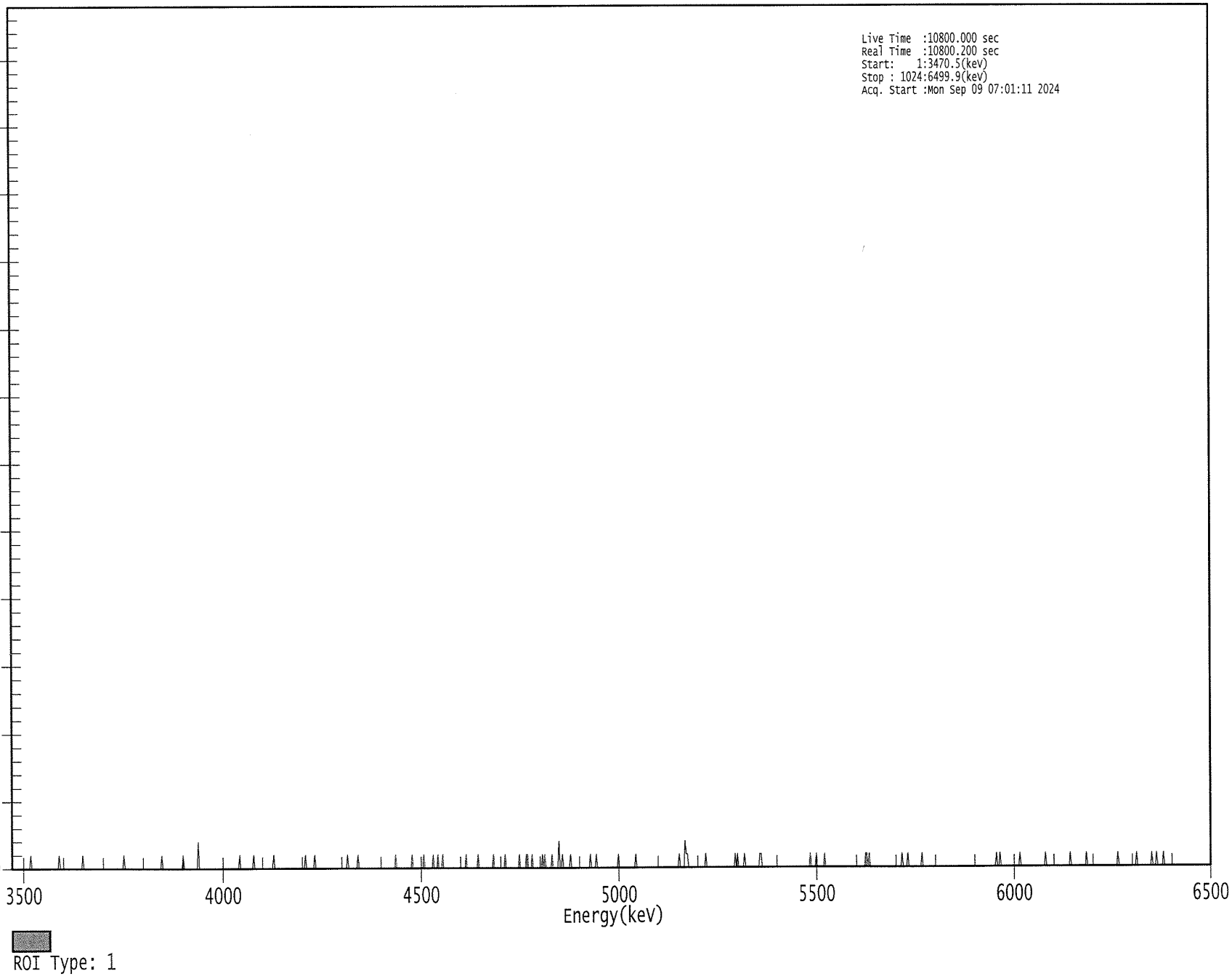
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.564	4.92	99.15	1.08	0.00E+000	3.0
RA-226	4.659	17.00	48.92	0.00	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.981	5685.50*	2.98E-001 +/- 2.96E-001	3.89E-001 +/- 1.36E-002
RA-226	0.979	4785.00*	9.68E-001 +/- 4.75E-001	3.41E-001 +/- 1.18E-002

0074

BP/Castex-Ltd Adm-Apx E-002297



BP/Castex-Ltd Adm-Apx E-002298

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 05

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	1	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	1	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	1	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	1
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	1
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	1	0	0	0	0	0	0
153:	0	0	0	0	0	0	2	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	1	0	0	0	0	0	0
201:	0	0	0	0	0	1	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	1	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	1	0	0	0	0	0	0
257:	0	1	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	1	0	0
289:	0	0	0	0	0	0	1	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	1	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	1	0	0	0
345:	0	0	0	0	0	0	1	0
353:	0	0	0	0	0	0	1	0
361:	0	0	1	0	0	0	1	0

0076

BP/Castex-Ltd Adm-Apx E-002299

369:	0	0	0	0	0	0	0	0

Sample Title: 05

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	1	0	0	0	0	0
393:	0	0	0	0	1	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	1	0	0	0	0	0	0
417:	0	0	0	1	0	0	0	0
425:	0	0	0	0	0	0	0	1
433:	0	0	0	0	0	1	1	0
441:	0	0	1	0	0	0	0	0
449:	0	0	0	1	0	1	0	0
457:	0	0	0	1	0	0	0	0
465:	0	2	0	0	1	0	0	0
473:	0	0	0	1	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	1	0	0	0
497:	0	1	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	1	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	1	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	1	0	0	0	0	2	1	1
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	1
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	1	0	1	0	0	0	0	0
625:	1	0	0	0	0	0	0	0
633:	0	0	0	0	0	1	1	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	1	0	0	0	0	1	0	0
689:	0	0	0	0	1	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	1
729:	1	0	1	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	1	0
761:	0	0	0	1	0	0	0	0
769:	0	0	0	0	0	0	0	1
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 05

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	1
841:	0	0	1	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	1	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	1	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	1	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	1	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	1
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	1
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	1	0	0	0
977:	1	0	0	0	0	0	1	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

NC
9/9/24

Sample Description: CD-18A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_053
Chamber Serial Number: 10006122A
Detector Serial Number: 53
Env. Background: System Bkgd 373303
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.810E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/6/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:12 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.8133 +/- 0.0000
Counting Efficiency: 0.1142 +/- 0.0021 on 3/22/2024 11:09:42 AM
Effective Efficiency: 0.0929 +/- 0.0017

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.523	6.46	80.83	0.54	0.00E+000	3.0
RA-226	4.651	5.74	91.79	1.26	0.00E+000	3.0

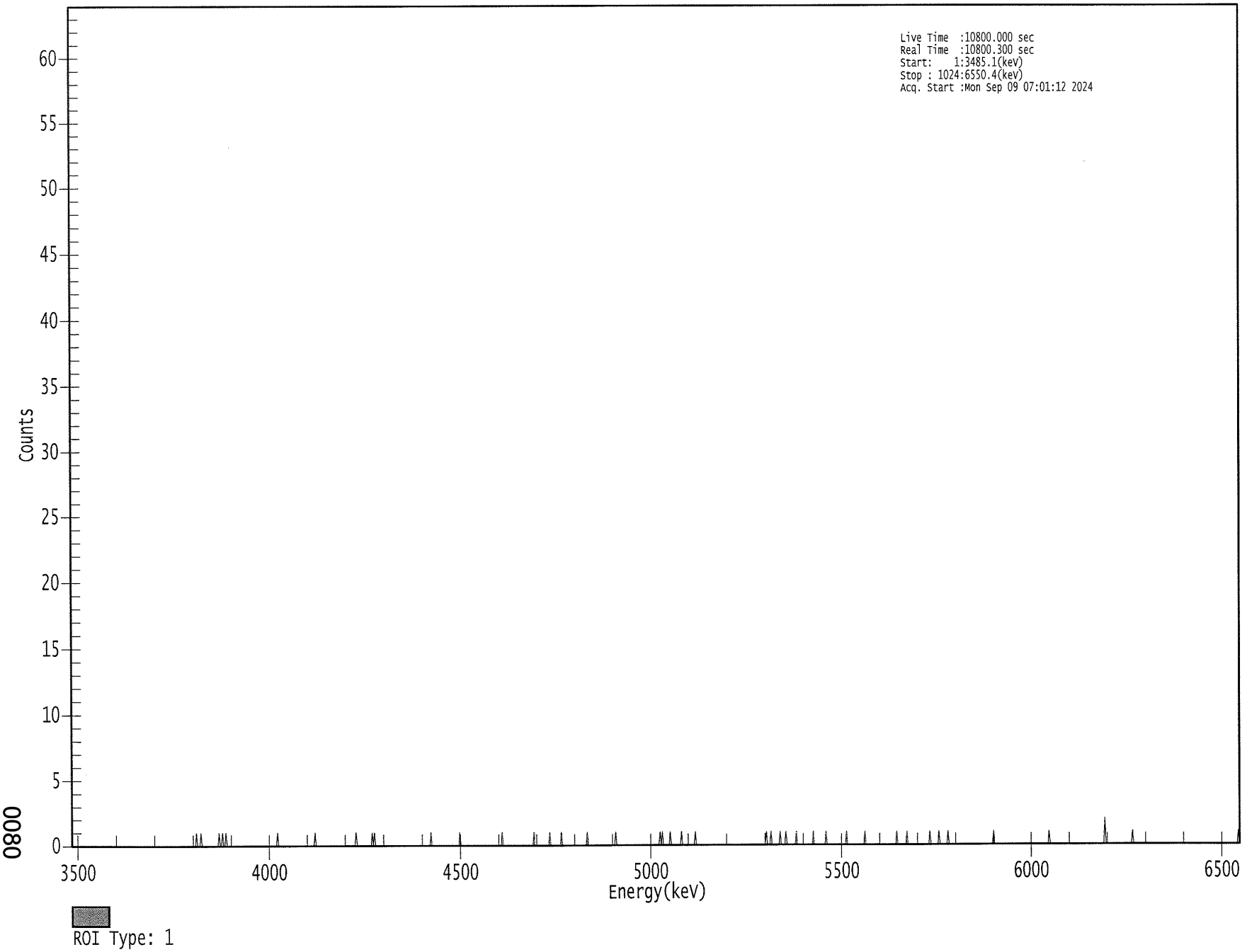
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.966	5685.50*	3.35E-001 +/- 2.71E-001	2.76E-001 +/- 1.02E-002
RA-226	0.977	4785.00*	2.80E-001 +/- 2.57E-001	3.28E-001 +/- 1.21E-002

0079

BP/Castex-Ltd Adm-Apx E-002302

0000362862.CNF



BP/Castex-Ltd Adm-Apx E-002303

0080

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 06

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	1	0	0	0
113:	1	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	1	0	0	1	0	0	1	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	1	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	1	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	1	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	1	0
265:	1	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	1	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	1	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

0081

BP/Castex-Ltd Adm-Apx E-002304

369:	0	0	0	0	0	0	0	1

Sample Title: 06

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	1	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	1	0	0	0	0	0	0
425:	0	0	0	1	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	1	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	1	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	1	0	1	0	0	0
521:	0	0	0	1	0	0	0	0
529:	0	0	0	0	0	1	0	0
537:	0	0	0	0	0	0	0	0
545:	0	1	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	1
609:	0	0	0	1	0	0	0	0
617:	0	0	0	1	0	0	0	0
625:	1	0	0	0	0	0	0	0
633:	0	1	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	1	0	0	0	0	0	0	0
657:	0	0	0	1	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	1	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	1	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	1	0	0	0	0	0	0
729:	0	0	1	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	1	0
753:	0	0	0	0	0	0	1	0
761:	0	0	0	0	0	0	1	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	1	0

Sample Title: 06

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	1
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	2	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	1	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	1	0	0

BP/Castex-Ltd Adm-Apx E-002306

Apex-Alpha™

NL 9/9/24

Sample Description: CD-18D
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 07
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_054
Chamber Serial Number: 10006122B
Detector Serial Number: 54
Env. Background: System Bkgd 373304
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.560E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/6/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:14 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.7764 +/- 0.0000
Counting Efficiency: 0.1382 +/- 0.0025 on 3/22/2024 11:09:40 AM
Effective Efficiency: 0.1073 +/- 0.0019

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.593	4.46	99.22	0.54	0.00E+000	3.0
RA-226	4.786	2.64	129.97	0.36	0.00E+000	3.0

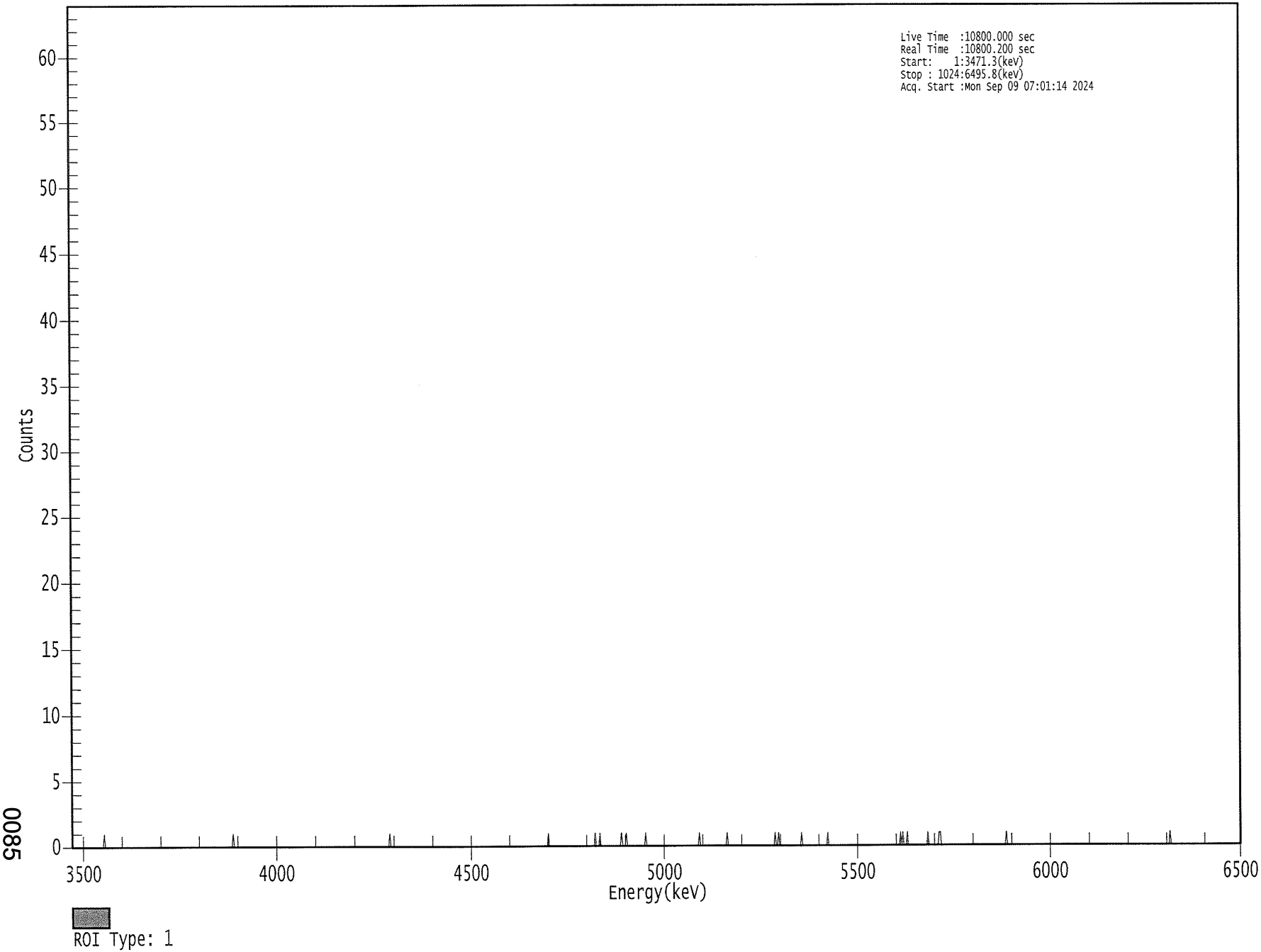
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.989	5685.50*	1.72E-001 +/- 1.71E-001	2.06E-001 +/- 7.38E-003
RA-226	1.000	4785.00*	9.60E-002 +/- 1.25E-001	1.76E-001 +/- 6.28E-003

0084

BP/Castex-Ltd Adm-Apx E-002307

0000362858.CNF



BP/Castex-Ltd Adm-Apx E-002308

0085

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 07

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	1	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	1	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	1	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

0086

BP/Castex-Ltd Adm-Apx E-002309

369:	0	0	0	0	0	0	0	0

Sample Title: 07

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	1	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	1	0	0	0	1	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	1	0	0	0	1	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	1	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	1	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	1	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	1	0
617:	0	1	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	1	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	1	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	1	0	1	0
729:	0	0	1	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	1	0	0	0
753:	0	0	0	0	0	0	1	1
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 07

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	1	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	1	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

MC 9/9/24

Sample Description: CD-19B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 08
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_055
Chamber Serial Number: 10006124A
Detector Serial Number: 55
Env. Background: System Bkgd 373305
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 1.990E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/6/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:16 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.6796 +/- 0.0000
Counting Efficiency: 0.1422 +/- 0.0026 on 3/22/2024 11:09:52 AM
Effective Efficiency: 0.0966 +/- 0.0017

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.507	9.46	65.84	0.54	0.00E+000	3.0
RA-226	4.616	22.46	41.94	0.54	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

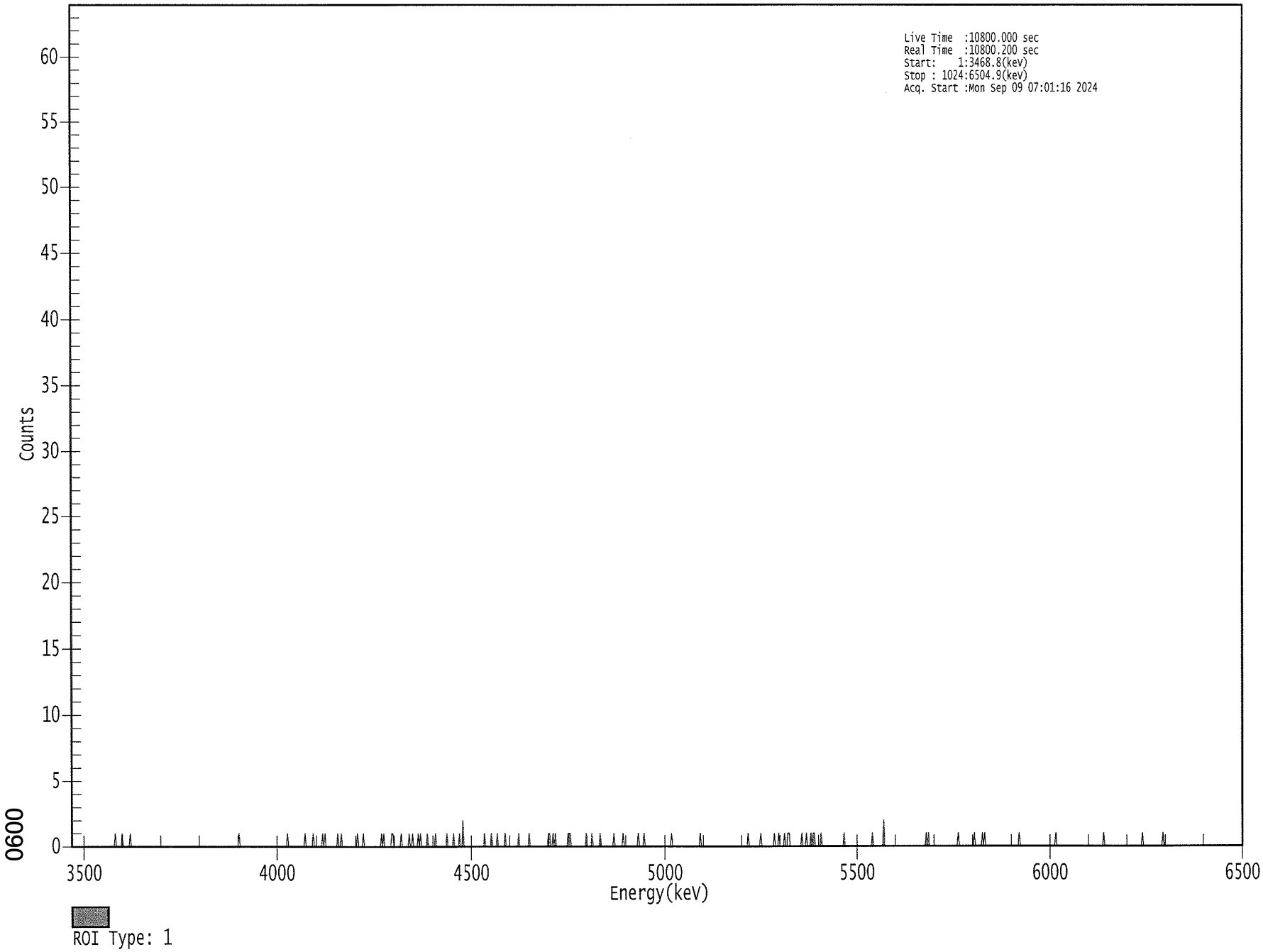
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.959	5685.50*	5.18E-001 +/- 3.42E-001	2.92E-001 +/- 1.04E-002
RA-226	0.963	4785.00*	1.16E+000 +/- 4.87E-001	2.75E-001 +/- 9.76E-003

0089

BP/Castex-Ltd Adm-Apx E-002312

BP/Castex-Ltd Adm-Apx E-002313

0000362859.CNF



0090

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 08

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	1	0
41:	0	0	0	0	1	0	0	0
49:	0	0	0	1	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	1	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	1	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	1	0	0	0	0
209:	0	0	1	0	0	0	0	0
217:	0	0	1	0	1	0	0	0
225:	0	0	0	0	0	0	0	1
233:	0	0	1	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	1	0	0	0	0	1	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	1	0	1
273:	0	0	0	0	0	0	1	1
281:	0	0	0	0	0	0	1	0
289:	0	0	0	0	0	1	0	0
297:	1	0	0	0	0	1	0	1
305:	0	0	0	0	0	1	0	0
313:	0	0	0	0	1	0	0	0
321:	0	0	0	0	0	0	1	0
329:	0	0	0	0	1	0	0	0
337:	0	1	0	0	2	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	1
361:	0	0	0	0	0	1	0	0

0091

BP/Castex-Ltd Adm-Apx E-002314

369:	0	0	1	0	0	0	0	0

Sample Title: 08

Channel								
377:	0	1	0	0	0	0	0	0
385:	0	0	0	0	0	1	0	0
393:	0	0	0	0	0	0	1	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	1
417:	1	0	0	1	0	1	0	0
425:	0	0	0	0	0	0	0	0
433:	1	1	1	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	1	0	0	0	0	1	0	0
457:	0	0	0	0	1	0	0	0
465:	0	0	0	0	0	0	0	0
473:	1	0	0	0	0	0	0	0
481:	1	0	0	0	0	0	0	0
489:	0	0	0	0	0	1	0	0
497:	0	0	1	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	1	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	1	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	1	0	0
593:	0	0	0	0	0	0	0	0
601:	1	0	0	0	0	0	0	0
609:	0	0	0	0	1	0	0	0
617:	1	0	0	0	0	1	0	0
625:	1	1	0	0	0	0	0	0
633:	0	0	0	0	1	0	0	0
641:	1	0	0	0	1	0	1	1
649:	0	0	0	0	0	1	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	1	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	1	0	0	0	0	0
705:	0	0	0	0	2	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	1	0	1	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	1	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	1	0	0	0	0
793:	0	0	1	0	1	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 08

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	1	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	1	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	1	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	1	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	1	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

MC 9/9/24

Sample Description: CD-19C
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003628
Batch Identification: 2408053A-RA
Sample Identification: 09
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_056
Chamber Serial Number: 10006124B
Detector Serial Number: 56
Env. Background: System Bkgd 373306
Reagent Blank: <not performed>

Sample Size: 5.000E-001 +/- 0.000E+000 liter
Generic Mult. Factor: 1.940E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/6/2024 4:42:02 PM
Acquisition Date/Time: 9/9/2024 7:01:17 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.8701 +/- 0.0000
Counting Efficiency: 0.1646 +/- 0.0029 on 3/22/2024 11:09:50 AM
Effective Efficiency: 0.1432 +/- 0.0025

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.468	6.46	80.83	0.54	0.00E+000	3.0
RA-226	4.618	24.00	40.83	0.00	0.00E+000	3.0

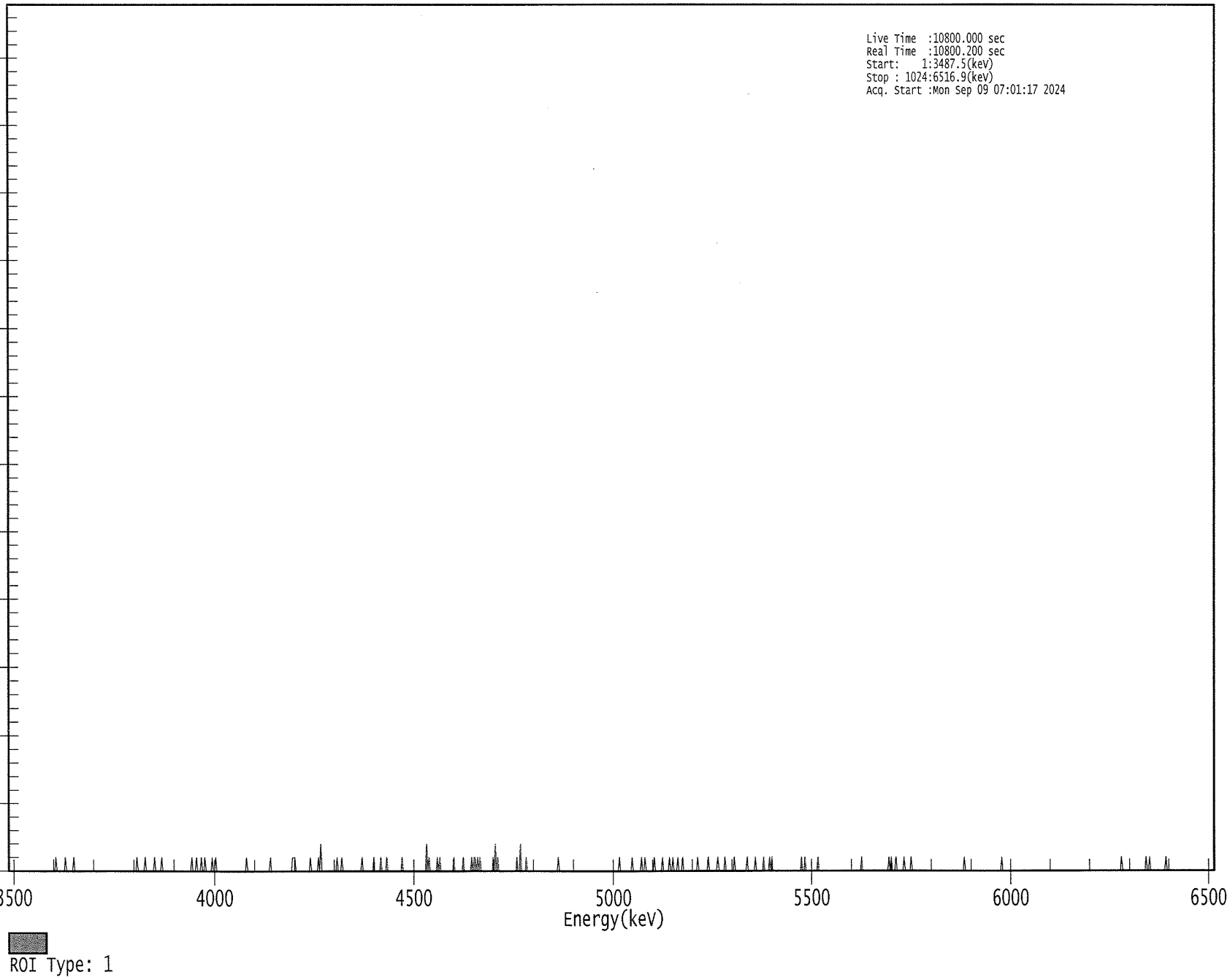
NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.940	5685.50*	4.66E-001 +/- 3.77E-001	3.84E-001 +/- 1.34E-002
RA-226	0.964	4785.00*	1.63E+000 +/- 6.67E-001	4.06E-001 +/- 1.41E-002

0094

BP/Castex-Ltd Adm-Apx E-002317

0000362860.CNF



0095

BP/Castex-Ltd Adm-Apx E-002318

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 09

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	1	0	0	0	0	0	0	0
49:	1	0	0	0	0	0	0	1
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	1	0	0	0
113:	0	0	0	1	0	0	0	0
121:	0	0	0	1	0	0	0	0
129:	0	1	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	1	0	0	0	1	0
161:	0	0	1	0	0	1	0	0
169:	0	0	0	1	0	0	1	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	1	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	1	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	1
241:	1	1	0	0	0	0	0	0
249:	0	0	0	0	0	0	1	0
257:	0	0	0	0	0	1	0	2
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	1	0	0
281:	0	1	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	1	0	0	0	0	0
305:	0	0	0	0	1	0	0	0
313:	0	0	1	0	0	0	0	1
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	1	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	2	0	1	0	0	0	0
361:	0	0	1	0	1	0	0	0

0096

BP/Castex-Ltd Adm-Apx E-002319

369:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
377:	1	0	0	0	0	0	0	0
385:	1	0	0	0	0	0	0	1
393:	0	1	1	0	1	0	1	0
401:	0	0	0	0	0	0	0	0
409:	0	1	0	2	0	1	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	1	0	0
433:	2	0	0	0	0	1	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	1	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	1	0	0	0
521:	0	0	0	0	0	0	0	1
529:	0	0	0	0	0	0	0	1
537:	0	0	1	0	0	0	0	0
545:	0	0	1	0	0	0	0	0
553:	0	1	0	0	0	0	0	1
561:	0	0	1	0	0	0	1	0
569:	0	0	1	0	0	0	0	0
577:	0	0	0	0	0	0	0	1
585:	0	0	0	0	0	0	0	0
593:	1	0	0	0	0	0	0	0
601:	1	0	0	0	0	0	1	0
609:	0	0	0	0	0	0	1	0
617:	0	0	0	0	0	0	0	0
625:	0	1	0	0	0	0	0	0
633:	1	0	0	0	0	0	0	1
641:	0	0	0	0	1	0	1	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	1
673:	0	0	1	0	0	0	0	0
681:	0	0	0	0	0	1	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	1	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	1	0	1	0	0	0	1
753:	0	0	0	0	0	0	1	0
761:	0	0	0	0	1	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
809:	0	1	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	1	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	1
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	1	0	0	1
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	1	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

9/9/2024 6:54:31 AM

Apex-Alpha™

QA SUMMARY REPORT

Review Of QA Results - Pulser Check

Date : 9/9/2024
Time : 6:54:31 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_011	21f	ALL	Passed	9/6/2024 6:13:04 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:15:58 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:15:59 AM
Alpha_039	Alpha Analyst100DC	OK Peak FWHM NL 9/9/24	Action	9/9/2024 6:43:22 AM
Alpha_040	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:43:23 AM
Alpha_041	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:01 AM
Alpha_042	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:02 AM
Alpha_043	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:04 AM
Alpha_044	Alpha Analyst100DC	OK Peak FWHM NL 9/9/24	Action	9/9/2024 6:16:05 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:07 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:08 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:10 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:11 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:13 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:14 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:16 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:18 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:20 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:21 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:23 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	9/9/2024 6:16:25 AM

APPROVED BY: NL

APPROVAL DATE: 9/9/24

0099

BP/Castex-Ltd Adm-Apx E-002322

ANALYTICS #411 Rec'd 2/15/06 R Trenton

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

Ra 228

72325-207

Ra-228 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Ra-228
ACTIVITY (dps):	4.022 E3
HALF-LIFE:	5.75 years
CALIBRATION DATE:	February 10, 2006 12:00 EST
RELATIIVE EXPANDED UNCERTAINTY (k=2):	4.0%

Impurities: γ-impurities <0.1%

5.10721 grams 0.1M HCl solution with 50 µg/g Ba carrier.

P O NUMBER 00003181, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: M. M 2-13-06

0100

BP/Castex-Ltd Adm-Apx E-002323

SECTION IX

ANALYTICAL DATA (RADIUM-228)

BP/Castex-Ltd Adm-Apx E-002324

24-08053
Ra228
Run 1

Work Order	24-08053
Analysis Code	Ra228
Run	1
Date Received	8/14/2024
Lab Deadline	9/5/2024
Client	Waypoint Analytical Louisiana
Project	24-221-0054
Report Level	4
Activity Units	pCi
Aliquot Units	l
Matrix	WA
Method	EPA 904.0
Instrument Type	Alpha/Beta GPC
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-7
Tracer Act (dpm/g)	7393.66
Carrier	Yttrium
Carrier Conc (mg/ml)	36.34

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		08/14/24 00:00	1.0000E+00
02	MBL	BLANK		08/14/24 00:00	1.0000E+00
03	DUP	CD-18B	80	08/06/24 10:50	1.0000E+00
04	DO	CD-18B	80	08/06/24 10:50	1.0000E+00
05	TRG	CD-18C	80	08/06/24 12:50	5.0000E-01
06	TRG	CD-18A	40	08/06/24 13:30	1.0000E+00
07	TRG	CD-18D	80	08/06/24 14:30	1.0000E+00
08	TRG	CD-19B	80	08/06/24 13:30	1.0000E+00
09	TRG	CD-19C	80	08/06/24 15:00	5.0000E-01

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-002325

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.1452	1073.6	491.0	101.53	2.000	0.0706	0.1495	0.0789	108.56	110.00	1.00	1.00
02	MBL	0.1447	1069.9	425.0	88.19	2.000	0.0714	0.1155	0.0441	60.68	53.51	1.00	1.00
03	DUP	0.1464	1082.4	470.0	96.39	2.000	0.0708	0.1147	0.0439	60.40	58.22	1.00	1.00
04	DO	0.1440	1064.7	402.0	83.82	2.000	0.0706	0.1129	0.0423	58.16	48.75	1.00	1.00
05	TRG	0.1501	1109.8	482.0	96.42	2.000	0.0709	0.1130	0.0421	57.93	55.85	1.00	1.00
06	TRG	0.1438	1063.2	390.0	81.43	2.000	0.0704	0.1082	0.0378	52.01	42.35	1.00	1.00
07	TRG	0.1433	1059.5	371.0	77.74	2.000	0.0710	0.1085	0.0375	51.60	40.11	1.00	1.00
08	TRG	0.1443	1066.9	327.0	68.04	2.000	0.0707	0.1041	0.0334	45.95	31.27	1.00	1.00
09	TRG	0.1513	1118.7	439.0	87.12	2.000	0.0716	0.1096	0.0380	52.28	45.55	1.00	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-002326

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN
02	MBL			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN
03	DUP			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN
04	DO			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN
05	TRG			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN
06	TRG			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN
07	TRG			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN
08	TRG			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN
09	TRG			09/10/24 10:06	CNGUYEN	09/06/24 12:22	CNGUYEN	09/10/24 10:17	CNGUYEN

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Preliminary Data Report & Analytical Calculations

Work Order: 24-08053-Ra228-1

Client	Eberline Services Work Order	Analysis Code	Run
Waypoint Analytical Louisiana	24-08053	Ra228	1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-228	LCS	LCS	pCi/l	7.97E+00	1.07E+00	1.04E+00	9.19E+00	86.65	OK		OK	
02	RA-228	MBL	BLANK	pCi/l	9.61E-01	6.87E-01	1.36E+00					OK	OK
03	RA-228	DUP	CD-18B	pCi/l	6.05E-01	7.08E-01	1.45E+00				NA	OK	
04	RA-228	DO	CD-18B	pCi/l	1.10E+00	9.40E-01	1.89E+00					OK	
05	RA-228	TRG	CD-18C	pCi/l	3.52E+00	1.49E+00	2.76E+00					INV	
06	RA-228	TRG	CD-18A	pCi/l	1.72E+00	1.05E+00	2.05E+00					INV	
07	RA-228	TRG	CD-18D	pCi/l	3.13E+00	1.10E+00	2.00E+00					OK	
08	RA-228	TRG	CD-19B	pCi/l	3.54E+00	1.50E+00	2.72E+00					INV	
09	RA-228	TRG	CD-19C	pCi/l	5.70E+00	2.94E+00	5.62E+00					INV	

0105

Preliminary Data Report & Analytical Calculations

Work Order: 24-08053-Ra228-1

Client: Waypoint Analytical Louisiana
Eberline Services Work Order: 24-08053
Analysis Code: Ra228
Run: 1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-228	LCS	08/14/24 00:00	1.00E+00	101.53	108.56	110.00	1.00	9/6/2024 12:22	9/10/2024 10:17
02	RA-228	MBL	08/14/24 00:00	1.00E+00	88.19	60.68	53.51	1.00	9/6/2024 12:22	9/10/2024 10:17
03	RA-228	DUP	08/06/24 10:50	1.00E+00	96.39	60.40	58.22	1.00	9/6/2024 12:22	9/10/2024 10:17
04	RA-228	DO	08/06/24 10:50	1.00E+00	83.82	58.16	48.75	1.00	9/6/2024 12:22	9/10/2024 10:17
05	RA-228	TRG	08/06/24 12:50	5.00E-01	96.42	57.93	55.85	1.00	9/6/2024 12:22	9/10/2024 10:17
06	RA-228	TRG	08/06/24 13:30	1.00E+00	81.43	52.01	42.35	1.00	9/6/2024 12:22	9/10/2024 10:17
07	RA-228	TRG	08/06/24 14:30	1.00E+00	77.74	51.60	40.11	1.00	9/6/2024 12:22	9/10/2024 10:17
08	RA-228	TRG	08/06/24 13:30	1.00E+00	68.04	45.95	31.27	1.00	9/6/2024 12:22	9/10/2024 10:17
09	RA-228	TRG	08/06/24 15:00	5.00E-01	87.12	52.28	45.55	1.00	9/6/2024 12:22	9/10/2024 10:17

Preliminary Data Report & Analytical Calculations

Work Order: 24-08053-Ra228-1

Client	Eberline Services Work Order	Analysis Code	Run
Waypoint Analytical Louisiana	24-08053	Ra228	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	RA-228	LCS	09/10/24 14:31		LB4110A	A1	60	357	0.983333333	0.4803
02	RA-228	MBL	09/10/24 12:26		LB4110A	A1	120	164	0.983333333	0.4803
03	RA-228	DUP	09/10/24 12:26		LB4110A	A2	120	187	1.3	0.4724
04	RA-228	DO	09/10/24 12:26		LB4110A	A3	120	235	1.566666667	0.4719
05	RA-228	TRG	09/10/24 12:26		LB4110A	B2	120	214	1.066666667	0.4691
06	RA-228	TRG	09/10/24 12:26		LB4110A	B3	120	211	1.25	0.449
07	RA-228	TRG	09/10/24 12:26		LB4110A	B4	120	242	1.116666667	0.4619
08	RA-228	TRG	09/10/24 12:26		LB4110A	D1	120	153	0.683333333	0.34468
09	RA-228	TRG	09/10/24 12:26		LB4110A	D2	120	194	1.05	0.28092

BP/Castex-Ltd Adm-Apx E-002330

0107

Count Room Report
Client: Waypoint Analytical Louis

24-08053-Ra228-1 (pCi/l) in WA
Tracer ID: Ba-7

Printed: 9/10/2024 12:19 PM

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	08/14/24 00:00	1.0000	0.1452	1073.5594	491.0000	101.53	1.00	1.00
02	MBL	BLANK	08/14/24 00:00	1.0000	0.1447	1069.8626	425.0000	88.19	1.00	1.00
03	DUP	CD-18B	08/06/24 10:50	1.0000	0.1464	1082.4318	470.0000	96.39	1.00	1.00
04	DO	CD-18B	08/06/24 10:50	1.0000	0.1440	1064.6870	402.0000	83.82	1.00	1.00
05	TRG	CD-18C	08/06/24 12:50	0.5000	0.1501	1109.7884	482.0000	96.42	1.00	1.00
06	TRG	CD-18A	08/06/24 13:30	1.0000	0.1438	1063.2083	390.0000	81.43	1.00	1.00
07	TRG	CD-18D	08/06/24 14:30	1.0000	0.1433	1059.5115	371.0000	77.74	1.00	1.00
08	TRG	CD-19B	08/06/24 13:30	1.0000	0.1443	1066.9051	327.0000	68.04	1.00	1.00
09	TRG	CD-19C	08/06/24 15:00	0.5000	0.1513	1118.6608	439.0000	87.12	1.00	1.00

BP/Castex-Ltd Adm-Apx E-002331

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 9/10/2024 10:06 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
24-08053	1	Ra228	9/10/2024 10:06	CNGUYEN		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	*Sol #*	*Activity dpm/g*	*Solution Date*	*Approx Addition*	*Volume Used (g)*	*Volume Used (g)*	*Volume Used (g)*	*Volume Used (g)*	*Known pCi*	*Error Estimate*	*Added pCi*	*Error Estimate*	*Known pCi*	*Error Estimate*	*Added pCi*	*Error Estimate*
Ra-228	Ra-12	51.850	9/10/2024	**0.390**	**0.3936**				9.19	0.469	0.00	0.000	0.00	0.000	0.00	0.000
Tc-99 MS	Tc-2a	22043.01	3/21/2023	0.1												

Tracers

fraction	*Isotope*	*Sol #*	*Activity dpm/g*	*Solution Date*	*Volume Used (g)*	*Approx Addition*
01	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1452**	**0.1400**
02	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1447**	**0.1400**
03	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1464**	**0.1400**
04	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1440**	**0.1400**
05	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1501**	**0.1400**
06	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1438**	**0.1400**
07	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1433**	**0.1400**
08	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1443**	**0.1400**
09	**Ba-133**	Ba-7	7393.660	9/10/2024	**0.1513**	**0.1400**

Balance Printer Tapes

Tracer

LCS

Matrix Spike

BP/Castex-Ltd Adm-Apx E-002332

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 9/3/2024 08:45

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
24-08053	1	Ra228	liters	9/5/2024	JHARVEY

Lab Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-18B	DUP					1.0000E+00	1.0000E+00				
04	CD-18B	DO					1.0000E+00	1.0000E+00				
05	CD-18C	TRG					5.0000E-01	5.0000E-01				
06	CD-18A	TRG					1.0000E+00	1.0000E+00				
07	CD-18D	TRG					1.0000E+00	1.0000E+00				
08	CD-19B	TRG					1.0000E+00	1.0000E+00				
09	CD-19C	TRG					5.0000E-01	5.0000E-01				

Comments	

Technician: Harvey Date: 9 3 24

BP/Castex-Ltd Adm-Apx E-002333

Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Printed: 9/10/2024 12:19 PM

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
24-08053	**1**	**Ra228**	**Yttrium**	**36.3400**	**CNGUYEN**

TRetec Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Carrier Data	Filter Data			Gravimetric
			Carrier Added (ml)	Filter Tare (g)	Filter Final (g)	Filter Net (g)	% Recovery
01	LCS	LCS	2.0000	0.0706	0.1495	**0.0789**	**108.56**
02	BLANK	MBL	2.0000	0.0714	0.1155	**0.0441**	**60.68**
03	DUP	DUP	2.0000	0.0708	0.1147	**0.0439**	**60.40**
04	CD-18B	DO	2.0000	0.0706	0.1129	**0.0423**	**58.16**
05	CD-18C	TRG	2.0000	0.0709	0.1130	**0.0421**	**57.93**
06	CD-18A	TRG	2.0000	0.0704	0.1082	**0.0378**	**52.01**
07	CD-18D	TRG	2.0000	0.0710	0.1085	**0.0375**	**51.60**
08	CD-19B	TRG	2.0000	0.0707	0.1041	**0.0334**	**45.95**
09	CD-19C	TRG	2.0000	0.0716	0.1096	**0.0380**	**52.28**

Technician: Cng Date: 09,10,24

BP/Castex-Ltd Adm-Apx E-002334

KB 9/10/24

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
A1	2408053-01	5	357	60	1410	9/10/2024 2:31:34 PM
A1	2408053-02	20	164	120	1410	9/10/2024 12:26:37 PM
A2	2408053-03	23	187	120	1410	9/10/2024 12:26:37 PM
A3	2408053-04	25	235	120	1410	9/10/2024 12:26:40 PM
B2	2408053-05	16	214	120	1410	9/10/2024 12:26:40 PM
B3	2408053-06	21	211	120	1410	9/10/2024 12:26:40 PM
B4	2408053-07	14	242	120	1410	9/10/2024 12:26:40 PM
D1	2408053-08	8	153	120	1410	9/10/2024 12:26:40 PM
D2	2408053-09	13	194	120	1410	9/10/2024 12:26:40 PM

GPC Detector Report
(ALL Backgrounds)

NC 9/10/24

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/2/2019	9/10/2024	1.00E-01	P	-9.11E-05	1.54E-01	3.07E-01
LB4110A - A2	Alpha	11/2/2019	9/10/2024	1.50E-01	P	3.78E-03	1.42E-01	2.80E-01
LB4110A - A3	Alpha	11/2/2019	9/10/2024	1.00E-01	P	2.31E-02	1.66E-01	3.09E-01
LB4110A - A4	Alpha	11/2/2019	9/10/2024	2.17E-01	P	2.31E-02	1.77E-01	3.31E-01
LB4110A - B1	Alpha	11/2/2019	9/10/2024	2.33E-01	P	-9.82E-03	1.44E-01	2.98E-01
LB4110A - B2	Alpha	11/2/2019	9/10/2024	1.33E-01	P	-5.65E-02	1.50E-01	3.56E-01
LB4110A - B3	Alpha	11/2/2019	9/10/2024	1.50E-01	P	9.29E-03	1.57E-01	3.04E-01
LB4110A - B4	Alpha	11/2/2019	9/10/2024	1.17E-01	P	-1.04E-02	1.13E-01	2.37E-01
LB4110A - C1	Alpha	11/2/2019	9/10/2024	6.67E-02	P	-3.41E-02	1.06E-01	2.45E-01
LB4110A - C2	Alpha	11/2/2019	9/10/2024	1.17E-01	P	-2.52E-02	1.00E-01	2.26E-01
LB4110A - C3	Alpha	11/2/2019	9/10/2024	8.33E-02	P	-2.04E-02	9.15E-02	2.03E-01
LB4110A - C4	Alpha	11/2/2019	9/10/2024	1.67E-01	P	3.78E-02	2.23E-01	4.08E-01
LB4110A - D1	Alpha	11/2/2019	9/10/2024	3.33E-02	P	-4.81E-02	7.10E-02	1.90E-01
LB4110A - D2	Alpha	11/2/2019	9/10/2024	6.67E-02	P	-3.51E-02	1.04E-01	2.44E-01
LB4110A - D3	Alpha	11/2/2019	9/10/2024	6.67E-02	P	-5.24E-02	1.25E-01	3.03E-01
LB4110A - D4	Alpha	11/2/2019	9/10/2024	8.33E-02	P	1.25E-02	1.58E-01	3.03E-01
LB4110A - E1	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E2	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E3	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E4	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - F1	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-3.26E-02	1.31E-01	2.95E-01
LB4110A - F2	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-3.95E-02	1.19E-01	2.77E-01
LB4110A - F3	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-2.28E-02	1.05E-01	2.34E-01
LB4110A - F4	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-4.44E-02	7.07E-02	1.86E-01
LB4110A - G1	Alpha	11/2/2019	9/10/2024	8.33E-02	P	-2.72E-02	9.16E-02	2.10E-01
LB4110A - G2	Alpha	11/2/2019	9/10/2024	6.67E-02	P	-9.91E-02	9.56E-02	2.90E-01
LB4110A - G3	Alpha	11/2/2019	9/10/2024	3.33E-02	P	-4.75E-02	1.37E-01	3.22E-01
LB4110A - G4	Alpha	11/2/2019	9/10/2024	1.17E-01	P	-1.95E-02	1.12E-01	2.43E-01

GPC Detector Report
(ALL Backgrounds)

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/2/2019	9/10/2024	9.83E-01	P	-7.35E-01	1.28E+00	3.29E+00
LB4110A - A2	Beta	11/2/2019	9/10/2024	1.30E+00	P	-6.68E-01	1.44E+00	3.55E+00
LB4110A - A3	Beta	11/2/2019	9/10/2024	1.57E+00	P	-5.04E-01	1.39E+00	3.29E+00
LB4110A - A4	Beta	11/2/2019	9/10/2024	1.13E+00	P	-1.05E+01	1.59E+00	1.37E+01
LB4110A - B1	Beta	11/2/2019	9/10/2024	1.40E+00	P	5.66E-01	1.39E+00	2.21E+00
LB4110A - B2	Beta	11/2/2019	9/10/2024	1.07E+00	P	7.63E-02	1.30E+00	2.52E+00
LB4110A - B3	Beta	11/2/2019	9/10/2024	1.25E+00	P	6.74E-01	1.27E+00	1.88E+00
LB4110A - B4	Beta	11/2/2019	9/10/2024	1.12E+00	P	1.94E-01	1.47E+00	2.75E+00
LB4110A - C1	Beta	11/2/2019	9/10/2024	9.33E-01	P	6.68E-01	1.09E+00	1.50E+00
LB4110A - C2	Beta	11/2/2019	9/10/2024	8.17E-01	P	5.40E-01	9.39E-01	1.34E+00
LB4110A - C3	Beta	11/2/2019	9/10/2024	9.83E-01	P	5.52E-01	1.17E+00	1.78E+00
LB4110A - C4	Beta	11/2/2019	9/10/2024	1.15E+00	P	7.70E-01	1.21E+00	1.65E+00
LB4110A - D1	Beta	11/2/2019	9/10/2024	6.83E-01	P	4.83E-01	9.67E-01	1.45E+00
LB4110A - D2	Beta	11/2/2019	9/10/2024	1.05E+00	P	-9.37E-01	1.90E+00	4.74E+00
LB4110A - D3	Beta	11/2/2019	9/10/2024	9.33E-01	P	5.61E-01	1.03E+00	1.50E+00
LB4110A - D4	Beta	11/2/2019	9/10/2024	1.05E+00	P	8.45E-01	1.36E+00	1.88E+00
LB4110A - E1	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E2	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E3	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E4	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - F1	Beta	11/2/2019	1/10/2022	1.67E-02	P	2.10E-01	1.28E+00	2.35E+00
LB4110A - F2	Beta	11/2/2019	1/10/2022	0.00E+00	P	-5.04E-01	1.19E+00	2.88E+00
LB4110A - F3	Beta	11/2/2019	1/10/2022	0.00E+00	P	-2.58E-01	1.18E+00	2.62E+00
LB4110A - F4	Beta	11/2/2019	1/10/2022	0.00E+00	P	-1.30E+00	1.60E+00	4.50E+00
LB4110A - G1	Beta	11/2/2019	9/10/2024	1.42E+00	P	7.49E-01	1.24E+00	1.73E+00
LB4110A - G2	Beta	11/2/2019	9/10/2024	1.57E+00	P	8.52E-01	1.58E+00	2.31E+00
LB4110A - G3	Beta	11/2/2019	9/10/2024	1.20E+00	P	5.42E-01	1.25E+00	1.95E+00
LB4110A - G4	Beta	11/2/2019	9/10/2024	1.07E+00	P	-2.99E-01	1.30E+00	2.90E+00

NC
9/10/24

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Efficiencies)

Printed: 9/10/2024 7:50 AM

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/2/2019	9/10/2024	0.2123	P	0.1904	0.2230	0.2555
LB4110A - A2	Alpha	11/2/2019	9/10/2024	0.1937	P	0.1748	0.1967	0.2187
LB4110A - A3	Alpha	11/2/2019	9/10/2024	0.1898	P	0.1723	0.1924	0.2125
LB4110A - A4	Alpha	11/2/2019	9/10/2024	0.2153	P	0.1968	0.2208	0.2447
LB4110A - B1	Alpha	11/2/2019	9/10/2024	0.2080	P	0.1924	0.2117	0.2310
LB4110A - B2	Alpha	11/2/2019	9/10/2024	0.1834	P	0.1674	0.1913	0.2152
LB4110A - B3	Alpha	11/2/2019	9/10/2024	0.2207	P	0.1944	0.2247	0.2549
LB4110A - B4	Alpha	11/2/2019	9/10/2024	0.2177	P	0.1955	0.2214	0.2473
LB4110A - C1	Alpha	11/2/2019	9/10/2024	0.1516	P	0.1342	0.1838	0.2334
LB4110A - C2	Alpha	11/2/2019	9/10/2024	0.1571	P	0.1442	0.1891	0.2340
LB4110A - C3	Alpha	11/2/2019	9/10/2024	0.1611	P	0.1408	0.2080	0.2751
LB4110A - C4	Alpha	11/2/2019	9/10/2024	0.1706	P	0.1443	0.1978	0.2514
LB4110A - D1	Alpha	11/2/2019	9/10/2024	0.1833	P	0.1652	0.1916	0.2179
LB4110A - D2	Alpha	11/2/2019	9/10/2024	0.1951	P	0.1861	0.2235	0.2608
LB4110A - D3	Alpha	11/2/2019	9/10/2024	0.1566	F	0.1860	0.2310	0.2759
LB4110A - D4	Alpha	11/2/2019	9/10/2024	0.2258	F	0.1455	0.1785	0.2115
LB4110A - E1	Alpha	11/2/2017	5/19/2020	0.2075	P	0.1686	0.2257	0.2828
LB4110A - E2	Alpha	11/2/2017	5/19/2020	0.1778	P	0.1514	0.2049	0.2583
LB4110A - E3	Alpha	11/2/2017	5/19/2020	0.2234	P	0.1549	0.2076	0.2604
LB4110A - E4	Alpha	11/2/2017	5/19/2020	0.2155	P	0.1746	0.2353	0.2961
LB4110A - F1	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1419	0.2082	0.2746
LB4110A - F2	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1190	0.1738	0.2286
LB4110A - F3	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1494	0.2173	0.2853
LB4110A - F4	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1457	0.2123	0.2788
LB4110A - G1	Alpha	11/2/2019	9/10/2024	0.1791	P	0.1707	0.1846	0.1984
LB4110A - G2	Alpha	11/2/2019	9/10/2024	0.1743	P	0.1667	0.1807	0.1946
LB4110A - G3	Alpha	11/2/2019	9/10/2024	0.1938	P	0.1867	0.2081	0.2295
LB4110A - G4	Alpha	11/2/2019	9/10/2024	0.1715	P	0.1630	0.1807	0.1984

NC 9/10/24

Harrilo JM
Only 2 days of info

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Efficiencies)

Printed: 9/10/2024 7:50 AM

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/2/2019	9/10/2024	0.4815	P	0.4101	0.5266	0.6431
LB4110A - A2	Beta	11/2/2019	9/10/2024	0.4474	P	0.4071	0.4443	0.4816
LB4110A - A3	Beta	11/2/2019	9/10/2024	0.4604	P	0.4154	0.4677	0.5199
LB4110A - A4	Beta	11/2/2019	9/10/2024	0.5176	P	0.4548	0.5344	0.6140
LB4110A - B1	Beta	11/2/2019	9/10/2024	0.4938	P	0.4499	0.4949	0.5398
LB4110A - B2	Beta	11/2/2019	9/10/2024	0.4265	P	0.3627	0.4571	0.5516
LB4110A - B3	Beta	11/2/2019	9/10/2024	0.5453	P	0.4735	0.5568	0.6401
LB4110A - B4	Beta	11/2/2019	9/10/2024	0.5130	P	0.4545	0.5360	0.6176
LB4110A - C1	Beta	11/2/2019	9/10/2024	0.3727	P	0.3397	0.4430	0.5463
LB4110A - C2	Beta	11/2/2019	9/10/2024	0.3881	P	0.3558	0.4496	0.5433
LB4110A - C3	Beta	11/2/2019	9/10/2024	0.5054	P	0.4375	0.5394	0.6412
LB4110A - C4	Beta	11/2/2019	9/10/2024	0.4354	P	0.3877	0.4853	0.5829
LB4110A - D1	Beta	11/2/2019	9/10/2024	0.4572	P	0.4047	0.5383	0.6718
LB4110A - D2	Beta	11/2/2019	9/10/2024	0.4715	P	0.4182	0.5517	0.6853
LB4110A - D3	Beta	11/2/2019	9/10/2024	0.3423	F	0.3948	0.5581	0.7213
LB4110A - D4	Beta	11/2/2019	9/10/2024	0.5427	W	0.3693	0.4617	0.5540
LB4110A - E1	Beta	11/2/2017	5/19/2020	0.5360	P	0.4167	0.5408	0.6649
LB4110A - E2	Beta	11/2/2017	5/19/2020	0.4520	P	0.3728	0.4910	0.6092
LB4110A - E3	Beta	11/2/2017	5/19/2020	0.5775	P	0.3848	0.5001	0.6154
LB4110A - E4	Beta	11/2/2017	5/19/2020	0.5466	P	0.4532	0.5887	0.7241
LB4110A - F1	Beta	11/2/2019	1/10/2022	0.0044	F	0.3744	0.5247	0.6751
LB4110A - F2	Beta	11/2/2019	1/10/2022	0.0009	F	0.3099	0.4365	0.5632
LB4110A - F3	Beta	11/2/2019	1/10/2022	0.0002	F	0.4027	0.5661	0.7294
LB4110A - F4	Beta	11/2/2019	1/10/2022	0.0003	F	0.3883	0.5461	0.7040
LB4110A - G1	Beta	11/2/2019	9/10/2024	0.4244	P	0.4081	0.4393	0.4705
LB4110A - G2	Beta	11/2/2019	9/10/2024	0.4123	P	0.3819	0.4258	0.4697
LB4110A - G3	Beta	11/2/2019	9/10/2024	0.4867	P	0.4651	0.5062	0.5473
LB4110A - G4	Beta	11/2/2019	9/10/2024	0.4417	P	0.4033	0.4383	0.4734

out of service
NC 9/10/24

0116

BP/Castex-Ltd Adm-Apx E-002339

KB 9/6/2024

Apex-Gamma

Analysis Report for 2408053-01
SPIKE

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-01
Sample Description	: SPIKE
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:14:32PM
Acquisition Started	: 9/6/2024 4:34:54PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 30 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 6/24/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 152329

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 4:50:05PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0117

Analysis Report for 2408053-01

SPIKE

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.55	37 -	41	37.35	4.35E+02	75.55	4.78E+02	1.99
	2	53.40	52 -	59	55.15	7.25E+01	35.44	1.63E+02	1.59
M	3	62.18	60 -	77	63.92	2.26E+02	35.83	9.44E+01	1.47
m	4	66.48	60 -	77	68.20	8.69E+01	29.33	9.72E+01	1.47
	5	81.40	79 -	90	83.08	9.34E+02	76.58	2.53E+02	1.14
	6	102.40	101 -	106	104.02	2.04E+01	26.00	1.17E+02	1.21
	7	112.15	110 -	116	113.75	1.48E+02	41.80	2.10E+02	1.20
	8	199.79	199 -	204	201.16	2.86E+01	24.60	9.68E+01	3.99
	9	276.83	275 -	281	278.02	6.35E+01	23.32	5.30E+01	1.19
M	10	303.42	300 -	318	304.54	2.22E+02	31.61	3.50E+01	1.74
m	11	307.70	300 -	318	308.81	2.50E+01	18.06	4.20E+01	1.96
M	12	334.01	331 -	342	335.05	8.47E+01	21.47	2.85E+01	1.70
m	13	338.17	331 -	342	339.21	2.92E+01	20.17	2.69E+01	1.84
	14	356.50	352 -	362	357.49	6.38E+02	54.08	4.95E+01	1.87
M	15	384.32	374 -	397	385.25	1.15E+02	25.34	6.00E+00	1.92
m	16	387.41	374 -	397	388.33	1.53E+02	29.22	6.00E+00	1.88
m	17	392.00	374 -	397	392.92	4.69E+01	15.94	6.00E+00	1.90
M	18	414.98	411 -	426	415.84	2.93E+01	13.52	8.58E+00	1.79
m	19	418.15	411 -	426	419.00	2.12E+01	14.52	6.73E+00	1.79
	20	437.52	434 -	442	438.33	7.95E+01	22.21	2.70E+01	1.99
	21	467.97	466 -	473	468.71	1.62E+01	12.81	1.75E+01	1.48
	22	512.61	508 -	520	513.25	2.63E+01	12.74	7.37E+00	2.82
	23	568.78	567 -	571	569.31	4.67E+00	5.50	2.67E+00	1.89
	24	898.29	895 -	900	898.20	5.00E+00	4.47	0.00E+00	2.32

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 4:50:05PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152138.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.55	4.35E+02	75.55			4.35E+02	7.56E+01
	2	53.40	7.25E+01	35.44			7.25E+01	3.54E+01
M	3	62.18	2.26E+02	35.83	7.01E+00	2.67E+00	2.19E+02	3.59E+01
m	4	66.48	8.69E+01	29.33			8.69E+01	2.93E+01
	5	81.40	9.34E+02	76.58			9.34E+02	7.66E+01

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BP/Castex-Ltd Adm-Apx E-002341

Analysis Report for 2408053-01

SPIKE

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	6	102.40	2.04E+01	26.00			2.04E+01	2.60E+01
	7	112.15	1.48E+02	41.80			1.48E+02	4.18E+01
	8	199.79	2.86E+01	24.60	2.09E+00	1.65E+00	2.65E+01	2.47E+01
	9	276.83	6.35E+01	23.32			6.35E+01	2.33E+01
M	10	303.42	2.22E+02	31.61			2.22E+02	3.16E+01
m	11	307.70	2.50E+01	18.06			2.50E+01	1.81E+01
M	12	334.01	8.47E+01	21.47			8.47E+01	2.15E+01
m	13	338.17	2.92E+01	20.17			2.92E+01	2.02E+01
	14	356.50	6.38E+02	54.08			6.38E+02	5.41E+01
M	15	384.32	1.15E+02	25.34			1.15E+02	2.53E+01
m	16	387.41	1.53E+02	29.22			1.53E+02	2.92E+01
m	17	392.00	4.69E+01	15.94			4.69E+01	1.59E+01
M	18	414.98	2.93E+01	13.52			2.93E+01	1.35E+01
m	19	418.15	2.12E+01	14.52			2.12E+01	1.45E+01
	20	437.52	7.95E+01	22.21			7.95E+01	2.22E+01
	21	467.97	1.62E+01	12.81			1.62E+01	1.28E+01
	22	512.61	2.63E+01	12.74	1.68E+01	1.26E+00	9.49E+00	1.28E+01
	23	568.78	4.67E+00	5.50			4.67E+00	5.50E+00
	24	898.29	5.00E+00	4.47			5.00E+00	4.47E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.42E+01	1.17E+01
BA-133	0.99	81.00	*	34.06	4.84E+02	4.44E+01
		302.84	*	18.33	5.72E+02	8.72E+01
		356.01	*	62.05	4.77E+02	4.49E+01
HG-203	0.86	279.19	*	77.30	3.89E+01	1.45E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	5.97E+01	1.04E+01
TH-234	0.96	63.29	*	3.80	6.42E+02	1.07E+02

0119

BP/Castex-Ltd Adm-Apx E-002342

Analysis Report for 2408053-01

SPIKE

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.950	3.42E+01	1.17E+01	
BA-133	0.994	4.91E+02	2.97E+01	
HG-203	0.868	3.89E+01	1.45E+01	
PA-234M	0.981	5.97E+01	1.04E+01	
TH-234	0.969	6.42E+02	1.07E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0120

BP/Castex-Ltd Adm-Apx E-002343

Analysis Report for 2408053-01

SPIKE

UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 4:50:05PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.40	8.05339E-02	24.45		
m	4	66.48	9.65246E-02	16.88		
	6	102.40	2.27145E-02	63.59	Tol.	U-237
	7	112.15	1.64438E-01	14.12	Tol.	U-237
	8	199.79	2.94618E-02	46.49		
m	11	307.70	2.77359E-02	36.17		
M	12	334.01	9.41427E-02	12.67		
m	13	338.17	3.24550E-02	34.53	Sum	
M	15	384.32	1.27912E-01	11.00	Sum	
m	16	387.41	1.69545E-01	9.58		
M	18	414.98	3.25998E-02	23.04		
m	19	418.15	2.35058E-02	34.31	Sum	
	20	437.52	8.83333E-02	13.97	Sum	
	21	467.97	1.80444E-02	39.43		
	22	512.61	1.05413E-02	67.46		
	23	568.78	5.18519E-03	58.93		
	24	898.29	5.55556E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

0121

BP/Castex-Ltd Adm-Apx E-002344

Analysis Report for 2408053-01

SPIKE

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.25E+01	1.25E+01	4.92E-01	5.80E+00
		136.48		10.60	1.29E+02		-6.37E+01	6.03E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	1.93E+02	1.93E+02	2.98E+01	8.94E+01
+	SN-113	255.12		1.93	4.73E+02	2.27E+01	-2.91E+02	2.04E+02
		391.69	*	61.90	2.27E+01		3.42E+01	1.04E+01
	SN-119M	23.87		16.10	1.81E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-125	27.30		100.00	4.23E-01	4.23E-01	-5.76E-01	1.90E-01
		30.90		19.70	2.68E+01		2.30E+02	1.32E+01
		35.49		6.49	5.97E+01		1.60E+02	2.92E+01
	I-129	29.78		57.00	7.97E+00	7.97E+00	6.64E+01	3.94E+00
		33.60		13.20	2.35E+01		-3.21E+02	1.15E+01
		39.58		7.52	2.37E+01		-1.11E-01	1.11E+01
+	BA-133	81.00	*	34.06	4.07E+01	2.57E+01	4.84E+02	1.96E+01
		302.84	*	18.33	1.62E+02		5.72E+02	7.76E+01
		356.01	*	62.05	2.57E+01		4.77E+02	1.18E+01
	CE-139	165.85		80.35	1.95E+01	1.95E+01	6.79E+00	9.09E+00
	CE-144	133.54		10.80	1.14E+02	1.14E+02	-5.80E+01	5.31E+01
+	HG-203	279.19	*	77.30	1.88E+01	1.88E+01	3.89E+01	8.57E+00
	PB-210	46.50		4.25	4.39E+01	4.39E+01	6.22E-01	2.00E+01
	TH-231	25.64		14.70	2.46E-01	2.46E-01	0.00E+00	0.00E+00
		84.21		6.40	1.80E+02		-1.34E+03	8.59E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.46E+01		5.97E+01	7.11E+00
+	TH-234	63.29	*	3.80	3.17E+02	3.17E+02	6.42E+02	1.55E+02
	NP-237	29.37		14.00	1.10E+01	1.10E+01	-3.63E+02	5.32E+00
		86.50		12.60	5.66E+01		-9.20E+00	2.62E+01
	U-237	97.08		16.30	5.49E+01	3.85E+01	7.58E+00	2.56E+01
		101.07		26.30	3.85E+01		2.33E+01	1.80E+01
		114.00		12.30	1.65E+02		8.28E+01	7.94E+01
		208.01		22.00	6.74E+01		1.43E+01	3.10E+01
	AM-241	59.54		35.90	8.98E+00	8.98E+00	-2.28E+01	4.10E+00
	AM-243	74.67		66.00	7.22E+00	7.22E+00	-1.36E+00	3.30E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0122

BP/Castex-Ltd Adm-Apx E-002345

KB 9/10/24

Apex-Gamma

Analysis Report for 2408053-02
BLANK

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-02
Sample Description	: BLANK
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:14:44PM
Acquisition Started	: 9/6/2024 4:34:59PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 902.1 seconds
Dead Time	: 0.23 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 7/27/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 152330

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 4:50:16PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0123

BP/Castex-Ltd Adm-Apx E-002346

Analysis Report for 2408053-02

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	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	19.72	15 -	24	19.73	1.05E+02	52.60	3.37E+02	2.59
M	2	31.02	25 -	41	31.03	2.07E+03	99.14	1.93E+02	2.24
m	3	35.22	25 -	41	35.24	5.41E+02	96.95	1.66E+02	2.55
M	4	52.99	46 -	72	53.01	5.05E+01	35.61	1.42E+02	2.79
m	5	61.93	46 -	72	61.95	1.73E+02	42.19	1.73E+02	2.80
	6	81.18	77 -	86	81.22	8.99E+02	67.86	1.43E+02	2.14
	7	100.75	97 -	104	100.79	2.96E+01	28.14	1.13E+02	2.59
	8	112.81	107 -	120	112.86	1.78E+02	53.46	2.40E+02	2.72
	9	125.96	122 -	131	126.02	3.24E+01	30.03	1.11E+02	2.16
	10	161.29	154 -	167	161.35	5.70E+01	41.71	1.68E+02	5.77
	11	276.81	272 -	280	276.92	4.95E+01	24.65	6.30E+01	2.43
	12	303.37	298 -	310	303.50	1.16E+02	35.21	9.23E+01	2.46
	13	334.84	329 -	340	334.98	5.00E+01	19.80	2.40E+01	5.51
	14	356.27	350 -	362	356.42	3.92E+02	42.30	2.61E+01	2.31
	15	385.98	375 -	397	386.14	1.87E+02	32.50	2.30E+01	4.99
	16	436.66	431 -	440	436.84	3.29E+01	15.33	1.43E+01	1.97
	17	506.06	502 -	508	506.27	5.64E+00	6.34	2.71E+00	2.48
	18	557.00	553 -	560	557.22	9.00E+00	6.00	0.00E+00	2.83
	19	666.62	663 -	670	666.89	9.00E+00	6.00	0.00E+00	3.22
	20	785.12	782 -	788	785.43	7.00E+00	5.29	0.00E+00	3.00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 4:50:16PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152139.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	19.72	1.05E+02	52.60	1.64E+01	1.34E+00	8.83E+01	5.26E+01
M	2	31.02	2.07E+03	99.14			2.07E+03	9.91E+01
m	3	35.22	5.41E+02	96.95			5.41E+02	9.70E+01
M	4	52.99	5.05E+01	35.61			5.05E+01	3.56E+01
m	5	61.93	1.73E+02	42.19	9.01E+00	2.26E+00	1.64E+02	4.23E+01
	6	81.18	8.99E+02	67.86			8.99E+02	6.79E+01
	7	100.75	2.96E+01	28.14			2.96E+01	2.81E+01
	8	112.81	1.78E+02	53.46			1.78E+02	5.35E+01
	9	125.96	3.24E+01	30.03			3.24E+01	3.00E+01

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BP/Castex-Ltd Adm-Apx E-002347

Analysis Report for 2408053-02

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Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
10	161.29	5.70E+01	41.71			5.70E+01	4.17E+01
11	276.81	4.95E+01	24.65			4.95E+01	2.46E+01
12	303.37	1.16E+02	35.21			1.16E+02	3.52E+01
13	334.84	5.00E+01	19.80			5.00E+01	1.98E+01
14	356.27	3.92E+02	42.30			3.92E+02	4.23E+01
15	385.98	1.87E+02	32.50			1.87E+02	3.25E+01
16	436.66	3.29E+01	15.33			3.29E+01	1.53E+01
17	506.06	5.64E+00	6.34			5.64E+00	6.34E+00
18	557.00	9.00E+00	6.00			9.00E+00	6.00E+00
19	666.62	9.00E+00	6.00			9.00E+00	6.00E+00
20	785.12	7.00E+00	5.29			7.00E+00	5.29E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.85	29.78	*	57.00	4.32E+01	2.07E+00
		33.60	*	13.20	7.47E+01	1.34E+01
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	4.35E+02	3.69E+01
		302.84	*	18.33	4.15E+02	1.28E+02
		356.01	*	62.05	4.11E+02	4.76E+01
HG-203	0.86	279.19	*	77.30	4.15E+01	2.08E+01
TH-234	0.95	63.29	*	3.80	3.89E+02	1.01E+02
AM-241	0.86	59.54	*	35.90	4.11E+01	1.07E+01

Analysis Report for 2408053-02

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* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.857	4.39E+01	2.05E+00	
	BA-133	0.998	4.25E+02	2.84E+01	
	HG-203	0.865	4.15E+01	2.08E+01	
?	TH-234	0.954	3.89E+02	1.01E+02	
X	NP-237	0.690			
?	AM-241	0.864	4.11E+01	1.07E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0126

BP/Castex-Ltd Adm-Apx E-002349

Analysis Report for 2408053-02

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 4:50:16PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	19.72	9.81182E-02	29.79	Tol.	PA-234M
M	4	52.99	5.61596E-02	35.23		
	7	100.75	3.28682E-02	47.57	Tol.	U-237
	8	112.81	1.97912E-01	15.01	Sum	
	9	125.96	3.60101E-02	46.33	Sum	
	10	161.29	6.33333E-02	36.59	Sum	
	13	334.84	5.55556E-02	19.80	Sum	
	15	385.98	2.07222E-01	8.71	Sum	
	16	436.66	3.65139E-02	23.32	Sum	
	17	506.06	6.26984E-03	56.22		
	18	557.00	1.00000E-02	33.33		
	19	666.62	1.00000E-02	33.33		
	20	785.12	7.77778E-03	37.80		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
	3.31	12.30	2.92E-06		0.00E+00	0.00E+00

0127

Analysis Report for 2408053-02

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	FE-55	5.89		24.50	6.26E-04	6.26E-04	3.08E-05	2.85E-04
	CO-57	122.06		85.51	1.76E+01	1.76E+01	-1.57E+01	8.29E+00
		136.48		10.60	1.56E+02		2.10E+01	7.29E+01
	NI-59	6.92		29.80	1.64E-03	1.64E-03	8.24E-04	7.59E-04
	MO-93	16.59		52.90	1.45E-01	1.45E-01	-2.28E-02	6.96E-02
		18.60		10.00	1.30E+00		1.82E+00	6.28E-01
	NB-93M	16.57		9.43	8.06E-01	8.06E-01	-1.27E-01	3.88E-01
	CD-109	88.03		3.72	2.45E+02	2.45E+02	-2.60E+01	1.15E+02
	SN-113	255.12		1.93	9.66E+02	4.40E+01	3.73E+02	4.39E+02
		391.69		61.90	4.40E+01		3.47E+01	2.06E+01
	SN-119M	23.87		16.10	2.17E+00	2.10E+00	-4.09E+01	1.05E+00
		25.10		22.70	2.10E+00		-6.66E+01	1.02E+00
	I-125	27.30		100.00	1.44E+00	1.44E+00	5.70E+00	7.11E-01
		30.90		19.70	1.41E+01		1.16E+02	6.97E+00
		35.49		6.49	4.78E+01		8.03E+01	2.35E+01
+	I-129	29.78	*	57.00	2.30E+00	2.30E+00	4.32E+01	1.12E+00
		33.60	*	13.20	1.51E+01		7.47E+01	7.38E+00
		39.58		7.52	2.89E+01		1.68E+00	1.40E+01
+	BA-133	81.00	*	34.06	2.66E+01	2.66E+01	4.35E+02	1.27E+01
		302.84	*	18.33	1.74E+02		4.15E+02	8.20E+01
		356.01	*	62.05	2.85E+01		4.11E+02	1.28E+01
	CE-139	165.85		80.35	2.78E+01	2.78E+01	-1.99E+00	1.31E+01
	CE-144	133.54		10.80	1.43E+02	1.43E+02	-2.67E+01	6.67E+01
+	HG-203	279.19	*	77.30	3.02E+01	3.02E+01	4.15E+01	1.39E+01
	PB-210	46.50		4.25	4.80E+01	4.80E+01	-2.18E+00	2.27E+01
	TH-231	25.64		14.70	5.29E+00	5.29E+00	-4.78E+01	2.59E+00
		84.21		6.40	4.00E+02		-1.29E+01	1.96E+02
	PA-234M	9.89		89.00	5.25E-03	5.25E-03	4.95E-03	2.49E-03
		21.72		64.90	3.77E-01		1.37E-01	1.82E-01
		37.93		23.75	1.14E+01		-3.45E+01	5.56E+00
+	TH-234	63.29	*	3.80	3.57E+02	3.57E+02	3.89E+02	1.75E+02
	NP-237	29.37	*	14.00	9.38E+00	9.38E+00	1.76E+02	4.58E+00
		86.50		12.60	8.56E+01		-2.68E+01	4.08E+01
	U-237	97.08		16.30	6.79E+01	4.49E+01	7.66E+00	3.20E+01
		101.07		26.30	4.49E+01		1.47E+01	2.12E+01
		114.00		12.30	1.87E+02		4.23E+02	9.01E+01
		208.01		22.00	1.11E+02		-2.03E+01	5.20E+01
+	AM-241	59.54	*	35.90	3.78E+01	3.78E+01	4.11E+01	1.86E+01
	AM-243	74.67		66.00	1.17E+01	1.17E+01	-4.41E+00	5.54E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0128

BP/Castex-Ltd Adm-Apx E-002351

KB 9/16/24

Apex-Gamma

Analysis Report for 2408053-03
CD-18B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-03
Sample Description	: CD-18B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:15:08PM
Acquisition Started	: 9/6/2024 4:38:24PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE5
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 1175.4 seconds
Dead Time	: 23.43 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 2 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 6/24/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 152331

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 4:58:02PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0129

BP/Castex-Ltd Adm-Apx E-002352

Analysis Report for 2408053-03

CD-18B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	19.77	179 -	214	184.84	3.10E+01	13.87	1.26E+01	1.30
m	2	20.77	179 -	214	195.00	1.47E+02	32.69	5.37E+01	0.89
m	3	21.43	179 -	214	201.62	3.86E+01	28.74	5.46E+01	0.72
	4	30.82	275 -	317	296.74	2.57E+03	119.96	3.23E+02	0.89
M	5	34.70	322 -	360	336.00	3.90E+02	55.01	8.22E+01	0.93
m	6	35.89	322 -	360	348.00	1.89E+02	52.94	4.32E+01	0.93
	7	53.23	514 -	533	523.55	3.37E+01	27.98	8.66E+01	0.33
M	8	61.67	594 -	626	609.00	2.26E+02	44.86	7.73E+01	1.08
m	9	62.16	594 -	626	614.00	1.05E+02	41.26	5.76E+01	1.09
M	10	66.01	638 -	665	653.01	1.28E+02	35.15	9.16E+01	1.09
m	11	66.80	638 -	665	661.00	3.53E+01	15.62	3.23E+01	1.00
M	12	79.84	781 -	821	793.00	4.54E+01	51.18	7.09E+01	1.02
m	13	81.13	781 -	821	806.00	1.27E+03	71.70	9.35E+01	1.02
M	14	110.65	1099 -	1131	1104.89	3.19E+01	12.91	1.44E+01	1.05
m	15	111.75	1099 -	1131	1116.08	1.05E+02	37.71	3.48E+01	0.96
m	16	112.31	1099 -	1131	1121.69	2.34E+02	34.35	2.40E+01	1.06
M	17	115.70	1143 -	1173	1156.08	2.89E+01	23.03	5.51E+01	1.18
m	18	116.49	1143 -	1173	1164.00	2.65E+01	20.01	3.55E+01	1.07
m	19	117.18	1143 -	1173	1171.06	2.73E+01	8.85	9.98E+00	0.78
	20	186.64	1860 -	1887	1874.40	2.80E+01	16.78	2.19E+01	2.26
	21	276.96	2773 -	2800	2789.07	5.24E+01	17.05	9.29E+00	1.01
	22	303.53	3039 -	3071	3058.22	1.20E+02	23.14	5.48E+00	0.97
	23	307.95	3085 -	3115	3103.00	3.24E+01	13.51	7.11E+00	1.26
	24	334.50	3352 -	3384	3371.99	4.88E+01	20.65	2.85E+01	0.77
	25	339.04	3405 -	3427	3417.95	1.94E+01	10.45	5.13E+00	1.12
	26	356.96	3580 -	3614	3599.51	4.77E+02	46.43	2.63E+01	0.86
	27	384.84	3862 -	3895	3881.96	9.74E+01	25.08	2.72E+01	0.97
	28	387.82	3896 -	3925	3912.10	1.54E+02	31.62	4.87E+01	0.98
	29	391.93	3939 -	3964	3953.73	2.95E+01	15.00	1.30E+01	1.44

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 4:58:02PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152140.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.

0130

BP/Castex-Ltd Adm-Apx E-002353

Analysis Report for 2408053-03

CD-18B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	19.77	3.10E+01	13.87	7.18E+00	4.05E+00	2.38E+01	1.45E+01
m	2	20.77	1.47E+02	32.69	7.18E+00	4.05E+00	1.40E+02	3.29E+01
m	3	21.43	3.86E+01	28.74	7.18E+00	4.05E+00	3.14E+01	2.90E+01
	4	30.82	2.57E+03	119.96	5.63E+00	9.12E-01	2.56E+03	1.20E+02
M	5	34.70	3.90E+02	55.01			3.90E+02	5.50E+01
m	6	35.89	1.89E+02	52.94			1.89E+02	5.29E+01
	7	53.23	3.37E+01	27.98			3.37E+01	2.80E+01
M	8	61.67	2.26E+02	44.86	4.33E+00	7.60E-01	2.22E+02	4.49E+01
m	9	62.16	1.05E+02	41.26			1.05E+02	4.13E+01
M	10	66.01	1.28E+02	35.15			1.28E+02	3.52E+01
m	11	66.80	3.53E+01	15.62			3.53E+01	1.56E+01
M	12	79.84	4.54E+01	51.18			4.54E+01	5.12E+01
m	13	81.13	1.27E+03	71.70			1.27E+03	7.17E+01
M	14	110.65	3.19E+01	12.91	1.04E+00	5.79E-01	3.09E+01	1.29E+01
m	15	111.75	1.05E+02	37.71	1.04E+00	5.79E-01	1.04E+02	3.77E+01
m	16	112.31	2.34E+02	34.35	1.04E+00	5.79E-01	2.33E+02	3.44E+01
M	17	115.70	2.89E+01	23.03			2.89E+01	2.30E+01
m	18	116.49	2.65E+01	20.01			2.65E+01	2.00E+01
m	19	117.18	2.73E+01	8.85			2.73E+01	8.85E+00
	20	186.64	2.80E+01	16.78			2.80E+01	1.68E+01
	21	276.96	5.24E+01	17.05	0.00E+00	0.00E+00	5.24E+01	1.71E+01
	22	303.53	1.20E+02	23.14			1.20E+02	2.31E+01
	23	307.95	3.24E+01	13.51			3.24E+01	1.35E+01
	24	334.50	4.88E+01	20.65			4.88E+01	2.06E+01
	25	339.04	1.94E+01	10.45			1.94E+01	1.04E+01
	26	356.96	4.77E+02	46.43			4.77E+02	4.64E+01
	27	384.84	9.74E+01	25.08			9.74E+01	2.51E+01
	28	387.82	1.54E+02	31.62			1.54E+02	3.16E+01
	29	391.93	2.95E+01	15.00	1.31E-01	3.00E-01	2.94E+01	1.50E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/units)	Activity Uncertainty

0131

BP/Castex-Ltd Adm-Apx E-002354

Analysis Report for 2408053-03
CD-18B

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	2.42E+01	1.24E+01
I-129	0.87	29.78	*	57.00	3.59E+01	1.68E+00
		33.60	*	13.20	3.67E+01	5.18E+00
		39.58		7.52		
BA-133	0.98	81.00	*	34.06	5.42E+02	3.70E+01
		302.84	*	18.33	3.65E+02	7.26E+01
		356.01	*	62.05	4.09E+02	4.34E+01
HG-203	0.88	279.19	*	77.30	3.78E+01	1.25E+01
TH-234	0.96	63.29	*	3.80	2.13E+02	8.34E+01
AM-241	0.89	59.54	*	35.90	4.65E+01	9.43E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	SN-113	0.952	2.42E+01	1.24E+01	
	I-129	0.875	3.60E+01	1.60E+00	
	BA-133	0.985	4.70E+02	2.62E+01	
	HG-203	0.880	3.78E+01	1.25E+01	
	TH-234	0.968	2.13E+02	8.34E+01	
X	NP-237	0.728			
	AM-241	0.891	4.65E+01	9.43E+00	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0132

BP/Castex-Ltd Adm-Apx E-002355

Analysis Report for 2408053-03
CD-18B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 4:58:02PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	19.77	2.64911E-02	30.31	Tol.	PA-234M
m	2	20.77	1.55679E-01	11.75	Tol.	PA-234M
m	3	21.43	3.48661E-02	46.25	Tol.	PA-234M
m	6	35.89	2.09941E-01	14.01	Tol.	I-125 I-129 PA-234M
	7	53.23	3.74603E-02	41.50		
M	10	66.01	1.42544E-01	13.70	Sum	
m	11	66.80	3.92100E-02	22.13	Sum	
M	12	79.84	5.04445E-02	56.36	Tol.	BA-133
M	14	110.65	3.43136E-02	20.92	Sum	
m	15	111.75	1.15552E-01	18.13	Sum	
m	16	112.31	2.58484E-01	7.38	Sum	
M	17	115.70	3.21625E-02	39.78	Sum	
m	18	116.49	2.93921E-02	37.82	Sum	
m	19	117.18	3.02887E-02	16.24	Sum	
	20	186.64	3.11396E-02	29.93		
	23	307.95	3.60494E-02	20.82	Sum	
	24	334.50	5.41799E-02	21.17	Sum	
	25	339.04	2.15960E-02	26.88	Sum	
	27	384.84	1.08222E-01	12.87	Sum	
	28	387.82	1.70732E-01	10.29	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

0133

BP/Castex-Ltd Adm-Apx E-002356

Analysis Report for 2408053-03
CD-18B

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	4.63E-07	4.63E-07	-1.10E-06	2.14E-07
		3.31		12.30	6.70E-06		-1.84E-05	3.12E-06
	FE-55	5.89		24.50	2.18E-04	2.18E-04	9.80E-05	1.02E-04
	CO-57	122.06		85.51	1.04E+01	1.04E+01	-1.81E+00	4.73E+00
		136.48		10.60	9.09E+01		-1.14E+02	4.09E+01
	NI-59	6.92		29.80	4.68E-04	4.68E-04	-9.91E-05	2.17E-04
	MO-93	16.59		52.90	2.98E-02	2.98E-02	-1.14E-02	1.35E-02
		18.60		10.00	3.08E-01		-6.76E-02	1.41E-01
	NB-93M	16.57		9.43	1.66E-01	1.66E-01	-4.04E-02	7.53E-02
	CD-109	88.03		3.72	1.40E+02	1.40E+02	-1.00E+01	6.35E+01
+	SN-113	255.12		1.93	7.31E+02	1.63E+01	9.22E+01	3.27E+02
		391.69	*	61.90	1.63E+01		2.42E+01	7.03E+00
	SN-119M	23.87		16.10	6.93E-01	5.99E-01	2.39E-01	3.23E-01
		25.10		22.70	5.99E-01		2.59E-01	2.78E-01
	I-125	27.30		100.00	2.25E-01	2.25E-01	-3.90E-02	1.06E-01
		30.90		19.70	9.95E+00		1.05E+02	4.92E+00
		35.49		6.49	2.53E+01		1.28E+02	1.24E+01
+	I-129	29.78	*	57.00	1.52E+00	1.52E+00	3.59E+01	7.41E-01
		33.60	*	13.20	5.42E+00		3.67E+01	2.59E+00
		39.58		7.52	6.81E+00		-3.33E+00	3.05E+00
+	BA-133	81.00	*	34.06	2.53E+01	2.46E+01	5.42E+02	1.21E+01
		302.84	*	18.33	4.50E+01		3.65E+02	1.84E+01
		356.01	*	62.05	2.46E+01		4.09E+02	1.11E+01
	CE-139	165.85		80.35	1.66E+01	1.66E+01	5.92E-01	7.57E+00
	CE-144	133.54		10.80	1.16E+02	1.16E+02	6.22E+01	5.37E+01
+	HG-203	279.19	*	77.30	1.27E+01	1.27E+01	3.78E+01	5.35E+00
	PB-210	46.50		4.25	2.61E+01	2.61E+01	7.70E+00	1.20E+01
	TH-231	25.64		14.70	9.62E-01	9.62E-01	-5.85E-01	4.46E-01
		84.21		6.40	8.72E+01		-2.69E+02	4.03E+01
	PA-234M	9.89		89.00	1.28E-03	1.28E-03	3.50E-04	5.90E-04
		21.72		64.90	1.77E-01		-7.51E-04	8.47E-02
		37.93		23.75	2.14E+00		-1.40E+00	9.73E-01
+	TH-234	63.29	*	3.80	9.91E+01	9.91E+01	2.13E+02	4.68E+01
	NP-237	29.37	*	14.00	6.19E+00	6.19E+00	1.46E+02	3.02E+00
		86.50		12.60	4.03E+01		-3.59E+01	1.84E+01
	U-237	97.08		16.30	4.33E+01	3.40E+01	7.66E+00	1.99E+01
		101.07		26.30	3.40E+01		1.80E+01	1.58E+01
		114.00		12.30	1.03E+02		-1.01E+02	4.86E+01
		208.01		22.00	7.17E+01		1.62E+01	3.27E+01
+	AM-241	59.54	*	35.90	1.06E+01	1.06E+01	4.65E+01	5.02E+00
	AM-243	74.67		66.00	6.25E+00	6.25E+00	2.25E+00	2.88E+00

0134

BP/Castex-Ltd Adm-Apx E-002357

Analysis Report for 2408053-03

CD-18B

+	=	Nuclide identified during the nuclide identification
*	=	Energy line found in the spectrum
>	=	MDA value not calculated
@	=	Half-life too short to be able to perform the decay correction

Apex-Gamma

Analysis Report for 2408053-04
CD-18B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-04
Sample Description	: CD-18B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:15:21PM
Acquisition Started	: 9/6/2024 4:51:52PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE1
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.2 seconds
Dead Time	: 0.02 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 32 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 8/12/2024
Efficiency Calibration Used Done On	: 12/14/2021
Efficiency Calibration Description	:
Sample Number	: 152332

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 5:06:55PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0136

BP/Castex-Ltd Adm-Apx E-002359

Analysis Report for 2408053-04

CD-18B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	61.26	47 -	71	61.07	2.65E+02	59.04	2.58E+02	3.83
m	2	65.34	47 -	71	65.15	1.29E+02	62.55	2.85E+02	3.85
	3	79.73	73 -	87	79.54	7.81E+02	84.72	4.25E+02	3.97
	4	91.21	87 -	96	91.02	6.00E+01	43.01	2.30E+02	4.80
	5	111.25	105 -	120	111.06	2.57E+02	71.33	3.98E+02	3.52
	6	187.13	179 -	196	186.94	5.45E+01	61.55	3.27E+02	9.48
	7	234.47	221 -	247	234.27	7.88E+01	67.03	2.66E+02	21.92
	8	281.43	270 -	295	281.24	1.19E+02	40.37	6.95E+01	20.92
	9	301.88	296 -	311	301.69	1.76E+02	42.10	1.19E+02	3.74
	10	334.36	327 -	346	334.17	7.93E+01	43.17	1.23E+02	5.07
M	11	354.87	347 -	369	354.67	5.15E+02	47.56	2.83E+01	3.02
m	12	363.71	347 -	369	363.51	2.43E+01	20.69	1.37E+01	3.86
	13	385.64	377 -	396	385.44	2.85E+02	51.73	1.18E+02	5.92
M	14	412.46	408 -	425	412.27	3.04E+01	19.33	3.77E+01	2.93
m	15	417.03	408 -	425	416.84	2.61E+01	20.73	2.85E+01	2.93
	16	435.91	431 -	441	435.72	1.04E+02	24.19	2.41E+01	3.48
	17	468.48	463 -	474	468.29	2.49E+01	13.86	1.03E+01	5.95
	18	510.30	505 -	515	510.11	2.75E+01	13.87	1.10E+01	3.36
	19	728.56	724 -	731	728.38	8.00E+00	5.66	0.00E+00	3.48
	20	883.18	878 -	886	883.00	6.00E+00	4.90	0.00E+00	2.41

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 5:06:55PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152137.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	61.26	2.65E+02	59.04	1.81E+01	1.48E+00	2.47E+02	5.91E+01
m	2	65.34	1.29E+02	62.55			1.29E+02	6.25E+01
	3	79.73	7.81E+02	84.72			7.81E+02	8.47E+01
	4	91.21	6.00E+01	43.01	1.78E+01	5.13E+00	4.22E+01	4.33E+01
	5	111.25	2.57E+02	71.33			2.57E+02	7.13E+01
	6	187.13	5.45E+01	61.55			5.45E+01	6.15E+01
	7	234.47	7.88E+01	67.03	2.48E+00	1.74E+00	7.63E+01	6.71E+01
	8	281.43	1.19E+02	40.37			1.19E+02	4.04E+01
	9	301.88	1.76E+02	42.10			1.76E+02	4.21E+01

0137

BP/Castex-Ltd Adm-Apx E-002360

Analysis Report for 2408053-04

CD-18B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	10	334.36	7.93E+01	43.17			7.93E+01	4.32E+01
M	11	354.87	5.15E+02	47.56			5.15E+02	4.76E+01
m	12	363.71	2.43E+01	20.69			2.43E+01	2.07E+01
	13	385.64	2.85E+02	51.73			2.85E+02	5.17E+01
M	14	412.46	3.04E+01	19.33			3.04E+01	1.93E+01
m	15	417.03	2.61E+01	20.73			2.61E+01	2.07E+01
	16	435.91	1.04E+02	24.19			1.04E+02	2.42E+01
	17	468.48	2.49E+01	13.86			2.49E+01	1.39E+01
	18	510.30	2.75E+01	13.87	5.44E+00	1.21E+00	2.21E+01	1.39E+01
	19	728.56	8.00E+00	5.66			8.00E+00	5.66E+00
	20	883.18	6.00E+00	4.90			6.00E+00	4.90E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
BA-133	0.96	81.00	*	34.06	3.86E+02	4.45E+01
		302.84	*	18.33	4.88E+02	1.20E+02
		356.01	*	62.05	4.05E+02	4.09E+01
HG-203	0.87	279.19	*	77.30	7.92E+01	2.72E+01
TH-234	0.90	63.29	*	3.80	6.44E+02	1.55E+02
AM-241	0.92	59.54	*	35.90	6.82E+01	1.64E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

Analysis Report for 2408053-04
CD-18B

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	BA-133	0.966	4.02E+02	2.92E+01	
	HG-203	0.879	7.92E+01	2.72E+01	
?	TH-234	0.900	6.44E+02	1.55E+02	
?	AM-241	0.927	6.82E+01	1.64E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0139

BP/Castex-Ltd Adm-Apx E-002362

Analysis Report for 2408053-04
CD-18B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 5:06:55PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	2	65.34	1.43839E-01	24.16	Tol.	TH-234
	4	91.21	4.69186E-02	51.29		
	5	111.25	2.85671E-01	13.87		
	6	187.13	6.05097E-02	56.51		
	7	234.47	8.48022E-02	43.93		
	10	334.36	8.80851E-02	27.23		
m	12	363.71	2.70529E-02	42.49	Sum	
	13	385.64	3.16512E-01	9.08		
M	14	412.46	3.37342E-02	31.84		
m	15	417.03	2.90123E-02	39.70	Sum	
	16	435.91	1.15517E-01	11.63	Sum	
	17	468.48	2.76296E-02	27.86		
	18	510.30	2.45159E-02	31.56		
	19	728.56	8.88889E-03	35.36		
	20	883.18	6.66667E-03	40.82		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)

0140

BP/Castex-Ltd Adm-Apx E-002363

Analysis Report for 2408053-04

CD-18B

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.44E-07	5.44E-07	0.00E+00	0.00E+00
		3.31		12.30	6.51E-06		0.00E+00	0.00E+00
	FE-55	5.89		24.50	1.09E-04	1.09E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.85E+01	1.85E+01	4.39E+00	8.72E+00
		136.48		10.60	1.64E+02		-7.75E+01	7.72E+01
	NI-59	6.92		29.80	2.19E-04	2.19E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	8.08E-03	8.08E-03	0.00E+00	0.00E+00
		18.60		10.00	6.79E-02		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	4.51E-02	4.51E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	3.26E+02	3.26E+02	-1.02E+03	1.56E+02
	SN-113	255.12		1.93	9.70E+02	3.74E+01	3.29E+02	4.49E+02
		391.69		61.90	3.74E+01		-3.03E+00	1.77E+01
	SN-119M	23.87		16.10	1.08E-01	9.18E-02	0.00E+00	0.00E+00
		25.10		22.70	9.18E-02		0.00E+00	0.00E+00
	I-125	27.30		100.00	2.79E-02	2.79E-02	0.00E+00	0.00E+00
		30.90		19.70	8.51E+00		2.11E+01	4.15E+00
		35.49		6.49	5.15E+01		2.90E+02	2.52E+01
	I-129	29.78		57.00	2.13E+00	2.13E+00	2.21E+00	1.03E+00
		33.60		13.20	2.00E+01		8.69E+01	9.78E+00
		39.58		7.52	5.06E+01		7.02E+01	2.47E+01
+	BA-133	81.00	*	34.06	5.31E+01	3.98E+01	3.86E+02	2.59E+01
		302.84	*	18.33	1.57E+02		4.88E+02	7.48E+01
		356.01	*	62.05	3.98E+01		4.05E+02	1.88E+01
	CE-139	165.85		80.35	2.76E+01	2.76E+01	3.62E-01	1.31E+01
	CE-144	133.54		10.80	1.52E+02	1.52E+02	5.56E+00	7.17E+01
+	HG-203	279.19	*	77.30	3.89E+01	3.89E+01	7.92E+01	1.85E+01
	PB-210	46.50		4.25	6.89E+01	6.89E+01	-6.69E+00	3.28E+01
	TH-231	25.64		14.70	1.53E-01	1.53E-01	0.00E+00	0.00E+00
		84.21		6.40	3.16E+02		2.18E+02	1.54E+02
	PA-234M	9.89		89.00	4.64E-04	4.64E-04	0.00E+00	0.00E+00
		21.72		64.90	1.90E-02		0.00E+00	0.00E+00
		37.93		23.75	1.57E+01		5.14E+01	7.71E+00
+	TH-234	63.29	*	3.80	3.89E+02	3.89E+02	6.44E+02	1.91E+02
	NP-237	29.37		14.00	6.17E+00	6.17E+00	1.65E+00	2.96E+00
		86.50		12.60	1.14E+02		-5.95E+02	5.47E+01
	U-237	97.08		16.30	7.73E+01	5.00E+01	-8.08E+00	3.67E+01
		101.07		26.30	5.00E+01		3.87E+00	2.37E+01
		114.00		12.30	1.96E+02		2.30E+02	9.49E+01
		208.01		22.00	9.95E+01		-8.39E+00	4.67E+01
+	AM-241	59.54	*	35.90	4.12E+01	4.12E+01	6.82E+01	2.02E+01
	AM-243	74.67		66.00	1.98E+01	1.98E+01	-8.09E+01	9.61E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0141

BP/Castex-Ltd Adm-Apx E-002364

Apex-Gamma

Analysis Report for 2408053-05
CD-18C

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-05
Sample Description	: CD-18C
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:15:36PM
Acquisition Started	: 9/6/2024 4:51:58PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 30 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 6/24/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 152333

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 5:07:09PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0142

Analysis Report for 2408053-05

CD-18C

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.50	37 -	42	37.31	4.04E+02	82.07	4.58E+02	1.82
	2	53.40	52 -	58	55.15	8.81E+01	33.80	1.44E+02	1.56
	3	62.03	61 -	67	63.77	5.69E+01	54.13	5.12E+02	1.17
	4	66.55	67 -	70	68.27	8.88E+01	29.26	1.19E+02	1.29
	5	81.31	79 -	86	82.99	9.36E+02	71.33	2.24E+02	1.17
	6	112.04	110 -	116	113.64	1.53E+02	41.60	2.03E+02	1.27
	7	133.86	132 -	139	135.40	2.77E+01	29.93	1.29E+02	2.18
	8	161.70	159 -	168	163.17	6.78E+01	37.75	1.64E+02	5.36
	9	205.70	204 -	211	207.06	3.37E+01	27.50	1.03E+02	2.84
M	10	223.69	221 -	235	225.00	1.15E+01	14.56	3.93E+01	1.34
m	11	229.83	221 -	235	231.13	1.14E+01	13.71	3.17E+01	1.48
	12	246.24	244 -	251	247.50	2.21E+01	18.55	3.98E+01	1.75
	13	260.39	258 -	264	261.62	1.80E+01	19.70	5.40E+01	3.50
	14	276.81	274 -	281	277.99	5.49E+01	24.58	6.41E+01	1.32
M	15	303.40	299 -	317	304.52	1.85E+02	29.85	3.39E+01	1.84
m	16	307.84	299 -	317	308.95	3.21E+01	17.64	2.29E+01	1.96
m	17	312.03	299 -	317	313.13	2.04E+01	14.93	1.96E+01	1.97
	18	334.09	331 -	339	335.14	3.46E+01	29.02	1.09E+02	1.53
	19	356.43	352 -	361	357.43	6.46E+02	54.51	5.61E+01	1.96
	20	376.91	374 -	380	377.86	1.51E+01	13.17	1.98E+01	1.16
M	21	384.23	381 -	395	385.16	1.09E+02	31.64	1.04E+01	2.32
m	22	387.30	381 -	395	388.22	1.81E+02	33.88	1.25E+01	1.95
m	23	391.40	381 -	395	392.31	4.68E+01	22.91	1.99E+01	2.34
	24	414.68	413 -	420	415.54	1.95E+01	21.73	6.89E+01	1.36
	25	438.01	434 -	445	438.81	7.66E+01	21.17	1.68E+01	2.35
M	26	468.43	466 -	475	469.17	1.51E+01	9.70	7.85E+00	1.87
m	27	472.18	466 -	475	472.91	1.06E+01	8.60	1.93E+00	1.87
	28	496.30	493 -	500	496.98	9.46E+00	9.17	7.08E+00	2.85
	29	511.70	508 -	516	512.35	2.69E+01	11.67	4.24E+00	3.88
	30	551.65	549 -	554	552.21	5.43E+00	6.08	3.14E+00	2.54
	31	632.89	631 -	635	633.29	7.00E+00	5.29	0.00E+00	2.10
	32	1382.17	1378 -	1384	1381.40	5.00E+00	4.47	0.00E+00	1.00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 5:07:09PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152138.CNF

0143

BP/Castex-Ltd Adm-Apx E-002366

Analysis Report for 2408053-05

CD-18C

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.50	4.04E+02	82.07			4.04E+02	8.21E+01
	2	53.40	8.81E+01	33.80			8.81E+01	3.38E+01
	3	62.03	5.69E+01	54.13	7.01E+00	2.67E+00	4.99E+01	5.42E+01
	4	66.55	8.88E+01	29.26			8.88E+01	2.93E+01
	5	81.31	9.36E+02	71.33			9.36E+02	7.13E+01
	6	112.04	1.53E+02	41.60			1.53E+02	4.16E+01
	7	133.86	2.77E+01	29.93			2.77E+01	2.99E+01
	8	161.70	6.78E+01	37.75	0.00E+00	0.00E+00	6.78E+01	3.77E+01
	9	205.70	3.37E+01	27.50			3.37E+01	2.75E+01
M	10	223.69	1.15E+01	14.56			1.15E+01	1.46E+01
m	11	229.83	1.14E+01	13.71			1.14E+01	1.37E+01
	12	246.24	2.21E+01	18.55			2.21E+01	1.85E+01
	13	260.39	1.80E+01	19.70			1.80E+01	1.97E+01
	14	276.81	5.49E+01	24.58			5.49E+01	2.46E+01
M	15	303.40	1.85E+02	29.85			1.85E+02	2.98E+01
m	16	307.84	3.21E+01	17.64			3.21E+01	1.76E+01
m	17	312.03	2.04E+01	14.93			2.04E+01	1.49E+01
	18	334.09	3.46E+01	29.02			3.46E+01	2.90E+01
	19	356.43	6.46E+02	54.51			6.46E+02	5.45E+01
	20	376.91	1.51E+01	13.17			1.51E+01	1.32E+01
M	21	384.23	1.09E+02	31.64			1.09E+02	3.16E+01
m	22	387.30	1.81E+02	33.88			1.81E+02	3.39E+01
m	23	391.40	4.68E+01	22.91			4.68E+01	2.29E+01
	24	414.68	1.95E+01	21.73			1.95E+01	2.17E+01
	25	438.01	7.66E+01	21.17			7.66E+01	2.12E+01
M	26	468.43	1.51E+01	9.70			1.51E+01	9.70E+00
m	27	472.18	1.06E+01	8.60			1.06E+01	8.60E+00
	28	496.30	9.46E+00	9.17			9.46E+00	9.17E+00
	29	511.70	2.69E+01	11.67	1.68E+01	1.26E+00	1.00E+01	1.17E+01
	30	551.65	5.43E+00	6.08			5.43E+00	6.08E+00
	31	632.89	7.00E+00	5.29			7.00E+00	5.29E+00
	32	1382.17	5.00E+00	4.47			5.00E+00	4.47E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

0144

BP/Castex-Ltd Adm-Apx E-002367

Analysis Report for 2408053-05
CD-18C

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.41E+01	1.68E+01
BA-133	0.99	81.00	*	34.06	4.84E+02	4.19E+01
		302.84	*	18.33	4.78E+02	8.12E+01
		356.01	*	62.05	4.82E+02	4.53E+01
CE-144	0.99	133.54	*	10.80	8.38E+01	9.08E+01
HG-203	0.86	279.19	*	77.30	3.36E+01	1.52E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	5.52E+01	1.12E+01
TH-234	0.96	63.29	*	3.80	1.46E+02	1.58E+02
AM-241	0.85	59.54	*	35.90	1.54E+01	1.68E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	SN-113	0.950	3.41E+01	1.68E+01	
	BA-133	0.995	4.82E+02	2.88E+01	
	CE-144	0.997	8.38E+01	9.08E+01	
	HG-203	0.865	3.36E+01	1.52E+01	
	PA-234M	0.980	5.52E+01	1.12E+01	
?	TH-234	0.960	1.46E+02	1.58E+02	
?	AM-241	0.853	1.54E+01	1.68E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0145

BP/Castex-Ltd Adm-Apx E-002368

Analysis Report for 2408053-05
CD-18C

UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 5:07:09PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.40	9.78403E-02	19.19		
	4	66.55	9.86111E-02	16.48		
	6	112.04	1.70401E-01	13.56	Tol.	U-237
	8	161.70	7.53778E-02	27.82	Sum	
	9	205.70	3.74641E-02	40.77	Tol.	U-237
M	10	223.69	1.28084E-02	63.15		
m	11	229.83	1.27189E-02	59.89		
	12	246.24	2.45370E-02	41.99		
	13	260.39	2.00000E-02	54.73		
m	16	307.84	3.56517E-02	27.48		
m	17	312.03	2.26647E-02	36.60	Sum	
	18	334.09	3.84832E-02	41.89		
	20	376.91	1.67778E-02	43.62		
M	21	384.23	1.21048E-01	14.52	Sum	
m	22	387.30	2.01516E-01	9.34		
	24	414.68	2.17078E-02	55.60		
	25	438.01	8.50915E-02	13.82	Sum	
M	26	468.43	1.67224E-02	32.21		
m	27	472.18	1.17914E-02	40.53	Sum	
	28	496.30	1.05128E-02	48.43		
	29	511.70	1.11665E-02	58.41		
	30	551.65	6.03175E-03	56.03	Sum	
	31	632.89	7.77778E-03	37.80	Sum	
	32	1382.17	5.55556E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

0146

BP/Castex-Ltd Adm-Apx E-002369

Analysis Report for 2408053-05
CD-18C

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.28E+01	1.28E+01	1.15E+00	5.91E+00
		136.48		10.60	1.09E+02		-1.14E+02	5.01E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.05E+02	2.05E+02	2.89E+00	9.52E+01
+	SN-113	255.12		1.93	6.41E+02	2.15E+01	-1.87E+02	2.88E+02
		391.69	*	61.90	2.15E+01		3.41E+01	9.76E+00
	SN-119M	23.87		16.10	1.81E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-125	27.30		100.00	3.85E-01	3.85E-01	-4.96E-01	1.71E-01
		30.90		19.70	2.62E+01		2.22E+02	1.29E+01
		35.49		6.49	5.81E+01		1.58E+02	2.84E+01
	I-129	29.78		57.00	7.71E+00	7.71E+00	6.06E+01	3.81E+00
		33.60		13.20	2.37E+01		-2.91E+02	1.15E+01
		39.58		7.52	1.97E+01		-7.42E+00	9.11E+00
+	BA-133	81.00	*	34.06	3.26E+01	2.62E+01	4.84E+02	1.56E+01
		302.84	*	18.33	1.45E+02		4.78E+02	6.92E+01
		356.01	*	62.05	2.62E+01		4.82E+02	1.21E+01
	CE-139	165.85		80.35	1.88E+01	1.88E+01	8.00E-01	8.74E+00
+	CE-144	133.54	*	10.80	1.48E+02	1.48E+02	8.38E+01	6.98E+01
+	HG-203	279.19	*	77.30	2.14E+01	2.14E+01	3.36E+01	9.87E+00
	PB-210	46.50		4.25	3.90E+01	3.90E+01	-1.84E+01	1.75E+01
	TH-231	25.64		14.70	2.46E-01	2.46E-01	0.00E+00	0.00E+00
		84.21		6.40	1.93E+02		-3.12E+00	9.25E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.65E+01		5.52E+01	8.05E+00
+	TH-234	63.29	*	3.80	2.59E+02	2.59E+02	1.46E+02	1.26E+02
	NP-237	29.37		14.00	1.09E+01	1.09E+01	-3.19E+02	5.24E+00
		86.50		12.60	6.47E+01		1.02E+01	3.03E+01
	U-237	97.08		16.30	5.41E+01	3.67E+01	1.11E+01	2.52E+01
		101.07		26.30	3.67E+01		1.94E+00	1.71E+01
		114.00		12.30	1.57E+02		7.01E+01	7.55E+01
		208.01		22.00	7.36E+01		2.38E+01	3.41E+01
+	AM-241	59.54	*	35.90	2.74E+01	2.74E+01	1.54E+01	1.33E+01
	AM-243	74.67		66.00	6.46E+00	6.46E+00	-5.94E-01	2.92E+00

0147

BP/Castex-Ltd Adm-Apx E-002370

Analysis Report for 2408053-05

CD-18C

+	=	Nuclide identified during the nuclide identification
*	=	Energy line found in the spectrum
>	=	MDA value not calculated
@	=	Half-life too short to be able to perform the decay correction

KCB 9/16/24

Apex-Gamma

Analysis Report for 2408053-06
CD-18A

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-06
Sample Description	: CD-18A
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:16:13PM
Acquisition Started	: 9/6/2024 4:52:05PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 902.2 seconds
Dead Time	: 0.25 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 7/27/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 152334

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 5:07:21PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0149

BP/Castex-Ltd Adm-Apx E-002372

Analysis Report for 2408053-06

CD-18A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.96	18 -	24	20.97	7.89E+01	42.94	2.80E+02	2.41
M	2	30.99	27 -	46	31.00	2.08E+03	99.94	2.42E+02	2.30
m	3	35.31	27 -	46	35.32	4.92E+02	74.60	1.70E+02	2.32
M	4	52.51	48 -	73	52.53	5.13E+01	40.25	2.15E+02	3.06
m	5	61.83	48 -	73	61.86	2.39E+02	48.41	2.12E+02	3.02
m	6	66.47	48 -	73	66.50	1.10E+02	40.30	1.62E+02	2.45
	7	81.15	76 -	86	81.19	8.19E+02	72.21	2.57E+02	2.33
	8	112.64	107 -	118	112.69	1.77E+02	57.45	3.23E+02	2.02
	9	141.26	138 -	144	141.32	3.11E+01	26.52	1.06E+02	3.68
	10	161.99	157 -	167	162.05	4.42E+01	42.00	2.04E+02	2.96
	11	276.62	269 -	281	276.73	4.49E+01	29.95	8.42E+01	1.59
	12	303.04	299 -	306	303.17	1.02E+02	27.93	7.31E+01	2.11
	13	334.67	328 -	341	334.81	8.77E+01	25.79	3.47E+01	2.59
	14	356.22	349 -	362	356.37	3.67E+02	42.97	4.13E+01	2.54
	15	386.82	378 -	395	386.98	2.09E+02	40.30	6.92E+01	4.88
M	16	415.11	407 -	427	415.29	5.01E+01	13.72	5.74E+00	3.13
m	17	419.54	407 -	427	419.71	1.79E+01	14.97	2.63E+00	3.14
	18	437.52	432 -	441	437.70	7.02E+01	17.80	5.63E+00	2.65
	19	470.60	466 -	475	470.79	1.97E+01	10.63	4.64E+00	6.08
	20	477.31	475 -	480	477.51	4.75E+00	5.74	2.50E+00	1.09
	21	531.44	529 -	534	531.66	6.75E+00	6.40	2.50E+00	2.68

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 5:07:21PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152139.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	20.96	7.89E+01	42.94	1.64E+01	1.34E+00	6.26E+01	4.30E+01
M	2	30.99	2.08E+03	99.94			2.08E+03	9.99E+01
m	3	35.31	4.92E+02	74.60			4.92E+02	7.46E+01
M	4	52.51	5.13E+01	40.25			5.13E+01	4.02E+01
m	5	61.83	2.39E+02	48.41	9.01E+00	2.26E+00	2.30E+02	4.85E+01
m	6	66.47	1.10E+02	40.30			1.10E+02	4.03E+01
	7	81.15	8.19E+02	72.21			8.19E+02	7.22E+01
	8	112.64	1.77E+02	57.45			1.77E+02	5.74E+01

0150

BP/Castex-Ltd Adm-Apx E-002373

Analysis Report for 2408053-06

CD-18A

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	9	141.26	3.11E+01	26.52			3.11E+01	2.65E+01
	10	161.99	4.42E+01	42.00			4.42E+01	4.20E+01
	11	276.62	4.49E+01	29.95			4.49E+01	3.00E+01
	12	303.04	1.02E+02	27.93			1.02E+02	2.79E+01
	13	334.67	8.77E+01	25.79			8.77E+01	2.58E+01
	14	356.22	3.67E+02	42.97			3.67E+02	4.30E+01
	15	386.82	2.09E+02	40.30			2.09E+02	4.03E+01
M	16	415.11	5.01E+01	13.72			5.01E+01	1.37E+01
m	17	419.54	1.79E+01	14.97			1.79E+01	1.50E+01
	18	437.52	7.02E+01	17.80			7.02E+01	1.78E+01
	19	470.60	1.97E+01	10.63			1.97E+01	1.06E+01
	20	477.31	4.75E+00	5.74			4.75E+00	5.74E+00
	21	531.44	6.75E+00	6.40			6.75E+00	6.40E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.85	29.78	*	57.00	4.33E+01	2.08E+00
		33.60	*	13.20	6.84E+01	1.04E+01
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	3.96E+02	3.81E+01
		302.84	*	18.33	3.67E+02	1.02E+02
		356.01	*	62.05	3.86E+02	4.79E+01
TH-234	0.94	63.29	*	3.80	5.45E+02	1.15E+02
AM-241	0.87	59.54	*	35.90	5.77E+01	1.22E+01

Analysis Report for 2408053-06
CD-18A

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.857	4.43E+01	2.04E+00	
	BA-133	0.999	3.90E+02	2.86E+01	
?	TH-234	0.947	5.45E+02	1.15E+02	
X	NP-237	0.691			
?	AM-241	0.874	5.77E+01	1.22E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0152

BP/Castex-Ltd Adm-Apx E-002375

Analysis Report for 2408053-06
CD-18A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 5:07:21PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.96	6.95007E-02	34.34	Tol.	PA-234M
M	4	52.51	5.70481E-02	39.19		
m	6	66.47	1.22173E-01	18.32	Sum	
	8	112.64	1.97103E-01	16.19	Sum	
	9	141.26	3.45635E-02	42.63	Sum	
	10	161.99	4.90830E-02	47.54	Sum	
	11	276.62	4.98787E-02	33.36		
	13	334.67	9.73915E-02	14.71	Sum	
	15	386.82	2.32668E-01	9.62	Sum	
M	16	415.11	5.56232E-02	13.70		
m	17	419.54	1.99165E-02	41.77	Sum	
	18	437.52	7.79833E-02	12.68	Sum	
	19	470.60	2.18687E-02	27.00		
	20	477.31	5.27778E-03	60.47		
	21	531.44	7.50000E-03	47.43		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

0153

BP/Castex-Ltd Adm-Apx E-002376

Analysis Report for 2408053-06

CD-18A

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
		3.31		12.30	2.92E-06		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.57E-04	5.57E-04	-2.34E-04	2.50E-04
	CO-57	122.06		85.51	1.89E+01	1.89E+01	-1.97E+01	8.91E+00
		136.48		10.60	1.71E+02		-4.08E+01	8.04E+01
	NI-59	6.92		29.80	1.58E-03	1.58E-03	4.53E-04	7.32E-04
	MO-93	16.59		52.90	1.47E-01	1.47E-01	-8.40E-03	7.11E-02
		18.60		10.00	1.34E+00		6.00E-02	6.45E-01
	NB-93M	16.57		9.43	8.23E-01	8.23E-01	-4.69E-02	3.97E-01
	CD-109	88.03		3.72	2.56E+02	2.56E+02	-4.77E+01	1.21E+02
	SN-113	255.12		1.93	1.12E+03	4.77E+01	7.83E+01	5.18E+02
		391.69		61.90	4.77E+01		2.76E+01	2.25E+01
	SN-119M	23.87		16.10	2.35E+00	2.24E+00	-2.53E-02	1.14E+00
		25.10		22.70	2.24E+00		-2.17E-02	1.09E+00
	I-125	27.30		100.00	1.46E+00	1.46E+00	-6.73E-03	7.18E-01
		30.90		19.70	1.41E+01		1.12E+02	6.95E+00
		35.49		6.49	4.73E+01		6.69E+01	2.33E+01
+	I-129	29.78	*	57.00	2.96E+00	2.96E+00	4.33E+01	1.45E+00
		33.60	*	13.20	1.96E+01		6.84E+01	9.59E+00
		39.58		7.52	2.96E+01		9.99E+00	1.43E+01
+	BA-133	81.00	*	34.06	3.63E+01	3.63E+01	3.96E+02	1.75E+01
		302.84	*	18.33	1.56E+02		3.67E+02	7.30E+01
		356.01	*	62.05	3.63E+01		3.86E+02	1.68E+01
	CE-139	165.85		80.35	2.94E+01	2.94E+01	-5.96E-01	1.39E+01
	CE-144	133.54		10.80	1.62E+02	1.62E+02	-4.08E+01	7.63E+01
	HG-203	279.19		77.30	3.40E+01	3.40E+01	-3.78E+00	1.59E+01
	PB-210	46.50		4.25	5.24E+01	5.24E+01	-4.39E+01	2.48E+01
	TH-231	25.64		14.70	5.64E+00	5.64E+00	-3.63E-02	2.76E+00
		84.21		6.40	3.93E+02		-8.31E+00	1.93E+02
	PA-234M	9.89		89.00	5.40E-03	5.40E-03	5.33E-03	2.57E-03
		21.72		64.90	3.89E-01		-4.35E-03	1.88E-01
		37.93		23.75	1.13E+01		-3.77E+01	5.50E+00
+	TH-234	63.29	*	3.80	3.64E+02	3.64E+02	5.45E+02	1.79E+02
	NP-237	29.37	*	14.00	1.20E+01	1.20E+01	1.76E+02	5.90E+00
		86.50		12.60	9.10E+01		2.58E+00	4.35E+01
	U-237	97.08		16.30	6.80E+01	4.47E+01	-1.47E+01	3.21E+01
		101.07		26.30	4.47E+01		-1.47E+01	2.11E+01
		114.00		12.30	2.04E+02		4.72E+02	9.86E+01
		208.01		22.00	1.13E+02		-2.44E+01	5.31E+01
+	AM-241	59.54	*	35.90	3.85E+01	3.85E+01	5.77E+01	1.89E+01
	AM-243	74.67		66.00	1.20E+01	1.20E+01	1.85E+00	5.71E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0154

BP/Castex-Ltd Adm-Apx E-002377

KB 9/6/24

Apex-Gamma

Analysis Report for 2408053-07
CD-18D

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-07
Sample Description	: CD-18D
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:16:27PM
Acquisition Started	: 9/6/2024 5:08:26PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE1
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.2 seconds
Dead Time	: 0.02 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 33 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 8/12/2024
Efficiency Calibration Used Done On	: 12/14/2021
Efficiency Calibration Description	:
Sample Number	: 152336

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 5:23:29PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0155

Analysis Report for 2408053-07

CD-18D

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	61.02	57 -	69	60.83	2.01E+02	52.23	2.58E+02	3.18
m	2	63.95	57 -	69	63.76	1.09E+02	52.08	2.72E+02	2.63
	3	80.05	74 -	87	79.86	7.68E+02	81.07	3.78E+02	3.79
	4	94.12	87 -	102	93.93	8.13E+01	59.93	3.21E+02	10.74
M	5	110.12	105 -	116	109.93	1.30E+02	39.51	1.84E+02	2.43
m	6	113.11	105 -	116	112.92	5.06E+01	47.13	2.31E+02	3.01
	7	160.38	154 -	169	160.19	7.82E+01	50.48	2.22E+02	9.80
	8	183.98	181 -	187	183.79	2.25E+01	28.09	1.23E+02	3.63
	9	275.36	270 -	280	275.17	6.51E+01	31.02	9.38E+01	1.72
	10	301.79	295 -	308	301.59	1.56E+02	38.81	9.89E+01	2.35
	11	332.83	328 -	337	332.64	5.12E+01	31.80	1.16E+02	1.43
	12	354.74	348 -	362	354.54	4.45E+02	50.70	8.50E+01	2.97
	13	385.69	378 -	396	385.49	2.65E+02	45.17	8.35E+01	5.54
	14	416.11	410 -	423	415.91	5.65E+01	22.91	2.69E+01	5.98
	15	436.09	431 -	441	435.90	7.92E+01	23.70	3.15E+01	2.39

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 5:23:29PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152137.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	61.02	2.01E+02	52.23	1.81E+01	1.48E+00	1.83E+02	5.23E+01
m	2	63.95	1.09E+02	52.08	1.81E+01	1.48E+00	9.13E+01	5.21E+01
	3	80.05	7.68E+02	81.07			7.68E+02	8.11E+01
	4	94.12	8.13E+01	59.93	1.78E+01	5.13E+00	6.35E+01	6.02E+01
M	5	110.12	1.30E+02	39.51			1.30E+02	3.95E+01
m	6	113.11	5.06E+01	47.13			5.06E+01	4.71E+01
	7	160.38	7.82E+01	50.48			7.82E+01	5.05E+01
	8	183.98	2.25E+01	28.09			2.25E+01	2.81E+01
	9	275.36	6.51E+01	31.02			6.51E+01	3.10E+01
	10	301.79	1.56E+02	38.81			1.56E+02	3.88E+01
	11	332.83	5.12E+01	31.80			5.12E+01	3.18E+01
	12	354.74	4.45E+02	50.70			4.45E+02	5.07E+01
	13	385.69	2.65E+02	45.17			2.65E+02	4.52E+01
	14	416.11	5.65E+01	22.91			5.65E+01	2.29E+01

0156

BP/Castex-Ltd Adm-Apx E-002379

Analysis Report for 2408053-07

CD-18D

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
15	436.09	7.92E+01	23.70			7.92E+01	2.37E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
BA-133	0.96	81.00	*	34.06	3.82E+02	4.31E+01
		302.84	*	18.33	4.32E+02	1.10E+02
		356.01	*	62.05	3.50E+02	4.24E+01
TH-234	0.98	63.29	*	3.80	2.61E+02	1.49E+02
AM-241	0.94	59.54	*	35.90	5.00E+01	1.44E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Analysis Report for 2408053-07

CD-18D

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
BA-133	0.967	3.71E+02	2.91E+01	
TH-234	0.989	2.61E+02	1.49E+02	
AM-241	0.946	5.00E+01	1.44E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0158

BP/Castex-Ltd Adm-Apx E-002381

Analysis Report for 2408053-07
CD-18D

UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 5:23:29PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	4	94.12	7.05343E-02	47.38		
M	5	110.12	1.43904E-01	15.25		
m	6	113.11	5.61690E-02	46.61	Tol.	U-237
	7	160.38	8.69312E-02	32.26	Sum	
	8	183.98	2.50198E-02	62.38		
	9	275.36	7.23264E-02	23.83		
	11	332.83	5.68654E-02	31.06		
	13	385.69	2.94696E-01	8.52		
	14	416.11	6.28175E-02	20.26	Sum	
	15	436.09	8.80468E-02	14.95	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	5.44E-07	5.44E-07	0.00E+00	0.00E+00
	3.31	12.30	6.51E-06		0.00E+00	0.00E+00
FE-55	5.89	24.50	1.09E-04	1.09E-04	0.00E+00	0.00E+00
CO-57	122.06	85.51	1.70E+01	1.70E+01	1.45E+00	8.00E+00
	136.48	10.60	1.55E+02		-7.70E+01	7.30E+01
NI-59	6.92	29.80	2.19E-04	2.19E-04	0.00E+00	0.00E+00

0159

BP/Castex-Ltd Adm-Apx E-002382

Analysis Report for 2408053-07

CD-18D

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	MO-93	16.59		52.90	8.08E-03	8.08E-03	0.00E+00	0.00E+00
		18.60		10.00	6.79E-02		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	4.51E-02	4.51E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	3.19E+02	3.19E+02	-1.19E+03	1.52E+02
	SN-113	255.12		1.93	9.45E+02	3.72E+01	-9.20E+01	4.36E+02
		391.69		61.90	3.72E+01		-4.97E-02	1.76E+01
	SN-119M	23.87		16.10	1.08E-01	9.18E-02	0.00E+00	0.00E+00
		25.10		22.70	9.18E-02		0.00E+00	0.00E+00
	I-125	27.30		100.00	2.79E-02	2.79E-02	0.00E+00	0.00E+00
		30.90		19.70	8.13E+00		2.02E+01	3.96E+00
		35.49		6.49	4.89E+01		2.48E+02	2.39E+01
	I-129	29.78		57.00	1.94E+00	1.94E+00	9.34E-01	9.39E-01
		33.60		13.20	1.90E+01		8.07E+01	9.31E+00
		39.58		7.52	5.05E+01		1.05E+02	2.46E+01
+	BA-133	81.00	*	34.06	4.98E+01	3.84E+01	3.82E+02	2.42E+01
		302.84	*	18.33	1.43E+02		4.32E+02	6.80E+01
		356.01	*	62.05	3.84E+01		3.50E+02	1.82E+01
	CE-139	165.85		80.35	2.43E+01	2.43E+01	-1.52E+01	1.14E+01
	CE-144	133.54		10.80	1.51E+02	1.51E+02	3.04E+01	7.13E+01
	HG-203	279.19		77.30	3.01E+01	3.01E+01	-6.04E-02	1.42E+01
	PB-210	46.50		4.25	6.89E+01	6.89E+01	-8.64E+01	3.28E+01
	TH-231	25.64		14.70	1.53E-01	1.53E-01	0.00E+00	0.00E+00
		84.21		6.40	3.25E+02		5.54E+02	1.58E+02
	PA-234M	9.89		89.00	4.64E-04	4.64E-04	0.00E+00	0.00E+00
		21.72		64.90	1.90E-02		0.00E+00	0.00E+00
		37.93		23.75	1.53E+01		5.23E+01	7.50E+00
+	TH-234	63.29	*	3.80	2.83E+02	2.83E+02	2.61E+02	1.38E+02
	NP-237	29.37		14.00	5.70E+00	5.70E+00	-4.70E-02	2.72E+00
		86.50		12.60	1.14E+02		-5.46E+02	5.47E+01
	U-237	97.08		16.30	7.98E+01	4.91E+01	-7.08E+00	3.79E+01
		101.07		26.30	4.91E+01		2.52E+00	2.32E+01
		114.00		12.30	1.85E+02		2.57E+01	8.93E+01
		208.01		22.00	9.37E+01		-1.65E-01	4.38E+01
+	AM-241	59.54	*	35.90	2.69E+01	2.69E+01	5.00E+01	1.31E+01
	AM-243	74.67		66.00	1.92E+01	1.92E+01	2.26E+00	9.28E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0160

BP/Castex-Ltd Adm-Apx E-002383

KB 9/6/24

Apex-Gamma

Analysis Report for 2408053-08
CD-19B

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-08
Sample Description	: CD-19B
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:17:02PM
Acquisition Started	: 9/6/2024 5:08:32PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.2 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 30 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 6/24/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 152337

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 5:23:42PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0161

BP/Castex-Ltd Adm-Apx E-002384

Analysis Report for 2408053-08

CD-19B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.58	37 -	40	37.38	3.30E+02	58.51	3.28E+02	2.07
	2	53.43	51 -	59	55.19	6.75E+01	36.01	1.59E+02	2.26
M	3	62.07	60 -	70	63.80	1.51E+02	33.05	1.08E+02	1.47
m	4	66.25	60 -	70	67.97	8.91E+01	27.86	1.37E+02	1.47
	5	81.32	79 -	85	83.00	5.53E+02	58.34	3.08E+02	1.09
	6	93.10	91 -	98	94.75	3.60E+01	29.33	1.18E+02	2.14
M	7	112.48	111 -	120	114.08	1.36E+02	29.26	6.30E+01	1.21
m	8	116.30	111 -	120	117.89	2.78E+01	20.40	5.76E+01	1.22
	9	134.87	135 -	138	136.41	1.30E+01	14.56	4.00E+01	1.56
	10	162.01	159 -	170	163.48	3.81E+01	41.76	2.02E+02	1.77
	11	230.71	230 -	234	232.01	1.16E+01	14.62	3.69E+01	2.07
	12	276.66	274 -	281	277.85	5.59E+01	23.66	5.63E+01	1.20
M	13	303.47	301 -	320	304.59	1.61E+02	26.33	1.80E+01	1.68
m	14	307.88	301 -	320	308.99	3.50E+01	15.43	1.13E+01	1.96
M	15	334.45	330 -	344	335.50	5.97E+01	21.47	2.76E+01	2.02
m	16	338.46	330 -	344	339.50	9.24E+00	17.80	2.50E+01	2.02
	17	356.46	352 -	362	357.46	4.78E+02	46.04	2.74E+01	1.91
M	18	384.41	381 -	395	385.34	1.42E+02	30.55	2.43E+01	2.35
m	19	387.57	381 -	395	388.49	1.46E+02	29.43	1.59E+01	1.95
m	20	391.65	381 -	395	392.56	4.83E+01	23.10	1.51E+01	2.43
M	21	414.98	413 -	422	415.84	2.13E+01	14.37	2.31E+01	1.79
m	22	417.98	413 -	422	418.84	1.04E+01	14.65	2.76E+01	1.79
	23	422.76	422 -	427	423.60	7.97E+00	10.25	1.41E+01	1.77
	24	437.37	433 -	442	438.18	8.60E+01	20.35	1.00E+01	2.03
	25	468.33	465 -	471	469.07	1.56E+01	10.99	1.08E+01	1.71
	26	545.93	544 -	549	546.50	6.00E+00	4.90	0.00E+00	1.16
	27	593.09	591 -	596	593.57	7.00E+00	5.29	0.00E+00	2.22
	28	706.37	704 -	708	706.63	8.00E+00	5.66	0.00E+00	1.10

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 5:23:42PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152138.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	35.58	3.30E+02	58.51			3.30E+02	5.85E+01

0162

BP/Castex-Ltd Adm-Apx E-002385

Analysis Report for 2408053-08

CD-19B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	2	53.43	6.75E+01	36.01			6.75E+01	3.60E+01
M	3	62.07	1.51E+02	33.05	7.01E+00	2.67E+00	1.44E+02	3.32E+01
m	4	66.25	8.91E+01	27.86			8.91E+01	2.79E+01
	5	81.32	5.53E+02	58.34			5.53E+02	5.83E+01
	6	93.10	3.60E+01	29.33	1.22E+01	1.78E+00	2.38E+01	2.94E+01
M	7	112.48	1.36E+02	29.26			1.36E+02	2.93E+01
m	8	116.30	2.78E+01	20.40			2.78E+01	2.04E+01
	9	134.87	1.30E+01	14.56			1.30E+01	1.46E+01
	10	162.01	3.81E+01	41.76	0.00E+00	0.00E+00	3.81E+01	4.18E+01
	11	230.71	1.16E+01	14.62			1.16E+01	1.46E+01
	12	276.66	5.59E+01	23.66			5.59E+01	2.37E+01
M	13	303.47	1.61E+02	26.33			1.61E+02	2.63E+01
m	14	307.88	3.50E+01	15.43			3.50E+01	1.54E+01
M	15	334.45	5.97E+01	21.47			5.97E+01	2.15E+01
m	16	338.46	9.24E+00	17.80			9.24E+00	1.78E+01
	17	356.46	4.78E+02	46.04			4.78E+02	4.60E+01
M	18	384.41	1.42E+02	30.55			1.42E+02	3.06E+01
m	19	387.57	1.46E+02	29.43			1.46E+02	2.94E+01
m	20	391.65	4.83E+01	23.10			4.83E+01	2.31E+01
M	21	414.98	2.13E+01	14.37			2.13E+01	1.44E+01
m	22	417.98	1.04E+01	14.65			1.04E+01	1.46E+01
	23	422.76	7.97E+00	10.25			7.97E+00	1.02E+01
	24	437.37	8.60E+01	20.35			8.60E+01	2.03E+01
	25	468.33	1.56E+01	10.99			1.56E+01	1.10E+01
	26	545.93	6.00E+00	4.90			6.00E+00	4.90E+00
	27	593.09	7.00E+00	5.29			7.00E+00	5.29E+00
	28	706.37	8.00E+00	5.66			8.00E+00	5.66E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.52E+01	1.69E+01

0163

BP/Castex-Ltd Adm-Apx E-002386

Analysis Report for 2408053-08
CD-19B

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
BA-133	0.99	81.00	*	34.06	2.86E+02	3.24E+01
		302.84	*	18.33	4.16E+02	7.16E+01
		356.01	*	62.05	3.57E+02	3.74E+01
CE-144	0.95	133.54	*	10.80	3.97E+01	4.45E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	4.54E+01	8.06E+00
TH-234	0.96	63.29	*	3.80	4.22E+02	9.76E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
SN-113	0.952	3.52E+01	1.69E+01	
BA-133	0.995	3.27E+02	2.32E+01	
CE-144	0.956	3.97E+01	4.45E+01	
PA-234M	0.981	4.54E+01	8.06E+00	
TH-234	0.963	4.22E+02	9.76E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0164

BP/Castex-Ltd Adm-Apx E-002387

Analysis Report for 2408053-08
CD-19B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 5:23:42PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.43	7.49735E-02	26.68		
m	4	66.25	9.89756E-02	15.64		
	6	93.10	2.64435E-02	61.72		
M	7	112.48	1.51342E-01	10.74	Tol.	U-237
m	8	116.30	3.08568E-02	36.72	Sum	
	10	162.01	4.23062E-02	54.84	Sum	
	11	230.71	1.28519E-02	63.20		
	12	276.66	6.20635E-02	21.18		
m	14	307.88	3.89186E-02	22.02		
M	15	334.45	6.63312E-02	17.98		
m	16	338.46	1.02704E-02	96.31	Sum	
M	18	384.41	1.57405E-01	10.78	Sum	
m	19	387.57	1.62104E-01	10.09		
M	21	414.98	2.36188E-02	33.80		
m	22	417.98	1.15558E-02	70.41	Sum	
	23	422.76	8.85185E-03	64.31		
	24	437.37	9.55556E-02	11.83	Sum	
	25	468.33	1.73280E-02	35.23		
	26	545.93	6.66667E-03	40.82		
	27	593.09	7.77778E-03	37.80		
	28	706.37	8.88889E-03	35.36		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

0165

BP/Castex-Ltd Adm-Apx E-002388

Analysis Report for 2408053-08
CD-19B

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.16E+01	1.16E+01	-1.77E+00	5.32E+00
		136.48		10.60	1.03E+02		-2.86E-01	4.74E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	1.83E+02	1.83E+02	6.39E+00	8.41E+01
+	SN-113	255.12		1.93	6.07E+02	2.50E+01	-8.44E+01	2.71E+02
		391.69	*	61.90	2.50E+01		3.52E+01	1.15E+01
	SN-119M	23.87		16.10	1.81E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-125	27.30		100.00	3.12E-01	3.12E-01	-4.16E-01	1.34E-01
		30.90		19.70	2.33E+01		1.63E+02	1.15E+01
		35.49		6.49	5.24E+01		8.09E+01	2.55E+01
	I-129	29.78		57.00	6.80E+00	6.80E+00	4.57E+01	3.35E+00
		33.60		13.20	2.35E+01		-2.08E+02	1.15E+01
		39.58		7.52	1.92E+01		-6.84E+00	8.82E+00
+	BA-133	81.00	*	34.06	3.37E+01	1.97E+01	2.86E+02	1.62E+01
		302.84	*	18.33	1.14E+02		4.16E+02	5.36E+01
		356.01	*	62.05	1.97E+01		3.57E+02	8.82E+00
	CE-139	165.85		80.35	1.79E+01	1.79E+01	9.53E+00	8.29E+00
+	CE-144	133.54	*	10.80	7.17E+01	7.17E+01	3.97E+01	3.17E+01
	HG-203	279.19		77.30	2.57E+01	2.57E+01	2.32E+01	1.20E+01
	PB-210	46.50		4.25	4.33E+01	4.33E+01	1.72E+01	1.97E+01
	TH-231	25.64		14.70	2.46E-01	2.46E-01	0.00E+00	0.00E+00
		84.21		6.40	1.65E+02		5.23E+01	7.87E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.66E+01		4.54E+01	8.10E+00
+	TH-234	63.29	*	3.80	2.33E+02	2.33E+02	4.22E+02	1.13E+02
	NP-237	29.37		14.00	8.85E+00	8.85E+00	-2.61E+02	4.23E+00
		86.50		12.60	6.17E+01		4.22E+01	2.88E+01
	U-237	97.08		16.30	4.65E+01	3.57E+01	6.46E-01	2.13E+01
		101.07		26.30	3.57E+01		1.98E+01	1.66E+01
		114.00		12.30	1.51E+02		2.21E+02	7.25E+01
		208.01		22.00	6.83E+01		-5.10E+00	3.14E+01
	AM-241	59.54		35.90	8.98E+00	8.98E+00	-2.46E+01	4.10E+00
	AM-243	74.67		66.00	7.65E+00	7.65E+00	1.90E+00	3.51E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0166

BP/Castex-Ltd Adm-Apx E-002389

Apex-Gamma

Analysis Report for 2408053-09
CD-19C

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408053-09
Sample Description	: CD-19C
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 9/6/2024 4:17:16PM
Acquisition Started	: 9/6/2024 5:08:38PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE4
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 902.3 seconds
Dead Time	: 0.26 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 7/27/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 152338

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 9/6/2024 5:23:54PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

Analysis Report for 2408053-09

CD-19C

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.65	17 -	24	20.66	8.54E+01	49.32	3.49E+02	1.67
M	2	31.04	25 -	40	31.05	2.30E+03	101.61	2.47E+02	2.37
m	3	35.34	25 -	40	35.35	5.50E+02	77.51	1.46E+02	2.47
	4	53.11	50 -	57	53.13	4.80E+01	39.19	2.24E+02	3.03
M	5	61.90	58 -	70	61.93	2.01E+02	47.83	2.30E+02	2.59
m	6	66.13	58 -	70	66.15	1.16E+02	56.16	2.94E+02	3.40
	7	81.22	76 -	87	81.26	9.38E+02	74.97	2.32E+02	2.28
	8	111.66	107 -	116	111.71	1.55E+02	54.47	3.36E+02	1.65
	9	130.81	128 -	135	130.87	3.43E+01	26.76	9.73E+01	1.62
	10	277.52	272 -	283	277.64	5.91E+01	31.56	9.18E+01	2.84
M	11	303.15	298 -	316	303.28	1.40E+02	27.60	3.42E+01	3.06
m	12	313.59	298 -	316	313.72	1.42E+01	13.03	1.50E+01	3.06
M	13	334.54	329 -	364	334.68	6.69E+01	25.14	3.71E+01	4.10
m	14	356.45	329 -	364	356.60	3.87E+02	41.01	2.52E+01	2.25
M	15	386.39	381 -	397	386.55	1.38E+02	32.51	4.41E+01	3.43
m	16	392.24	381 -	397	392.40	1.99E+01	27.87	4.88E+01	3.43
	17	415.93	411 -	422	416.10	2.56E+01	20.98	4.29E+01	2.21
	18	437.39	433 -	442	437.57	5.93E+01	18.52	1.54E+01	1.97
	19	467.90	464 -	472	468.09	1.63E+01	10.98	7.50E+00	2.37
	20	596.96	593 -	599	597.20	5.00E+00	6.34	4.00E+00	1.69
	21	663.81	661 -	667	664.08	6.56E+00	6.65	2.88E+00	3.31

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 9/6/2024 5:23:54PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000152139.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	20.65	8.54E+01	49.32	1.64E+01	1.34E+00	6.90E+01	4.93E+01
M	2	31.04	2.30E+03	101.61			2.30E+03	1.02E+02
m	3	35.34	5.50E+02	77.51			5.50E+02	7.75E+01
	4	53.11	4.80E+01	39.19			4.80E+01	3.92E+01
M	5	61.90	2.01E+02	47.83	9.01E+00	2.26E+00	1.92E+02	4.79E+01
m	6	66.13	1.16E+02	56.16			1.16E+02	5.62E+01
	7	81.22	9.38E+02	74.97			9.38E+02	7.50E+01
	8	111.66	1.55E+02	54.47			1.55E+02	5.45E+01

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BP/Castex-Ltd Adm-Apx E-002391

Analysis Report for 2408053-09

CD-19C

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	9	130.81	3.43E+01	26.76			3.43E+01	2.68E+01
	10	277.52	5.91E+01	31.56			5.91E+01	3.16E+01
M	11	303.15	1.40E+02	27.60			1.40E+02	2.76E+01
m	12	313.59	1.42E+01	13.03			1.42E+01	1.30E+01
M	13	334.54	6.69E+01	25.14			6.69E+01	2.51E+01
m	14	356.45	3.87E+02	41.01			3.87E+02	4.10E+01
M	15	386.39	1.38E+02	32.51			1.38E+02	3.25E+01
m	16	392.24	1.99E+01	27.87			1.99E+01	2.79E+01
	17	415.93	2.56E+01	20.98			2.56E+01	2.10E+01
	18	437.39	5.93E+01	18.52			5.93E+01	1.85E+01
	19	467.90	1.63E+01	10.98	6.75E-01	8.46E-01	1.56E+01	1.10E+01
	20	596.96	5.00E+00	6.34			5.00E+00	6.34E+00
	21	663.81	6.56E+00	6.65			6.56E+00	6.65E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.94	255.12		1.93		
		391.69	*	61.90	2.05E+01	2.87E+01
I-129	0.85	29.78	*	57.00	4.82E+01	2.13E+00
		33.60	*	13.20	7.66E+01	1.08E+01
		39.58		7.52		
BA-133	0.99	81.00	*	34.06	4.54E+02	4.04E+01
		302.84	*	18.33	5.03E+02	1.02E+02
		356.01	*	62.05	4.06E+02	4.63E+01
HG-203	0.93	279.19	*	77.30	4.96E+01	2.67E+01
TH-234	0.95	63.29	*	3.80	4.57E+02	1.14E+02
AM-241	0.86	59.54	*	35.90	4.84E+01	1.21E+01

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BP/Castex-Ltd Adm-Apx E-002392

Analysis Report for 2408053-09

CD-19C

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	SN-113	0.944	2.05E+01	2.87E+01	
	I-129	0.854	4.92E+01	2.09E+00	
	BA-133	0.997	4.39E+02	2.92E+01	
	HG-203	0.931	4.96E+01	2.67E+01	
?	TH-234	0.952	4.57E+02	1.14E+02	
X	NP-237	0.689			
?	AM-241	0.867	4.84E+01	1.21E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0170

BP/Castex-Ltd Adm-Apx E-002393

Analysis Report for 2408053-09
CD-19C

UNIDENTIFIED PEAKS

Peak Locate Performed on : 9/6/2024 5:23:54PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.65	7.66493E-02	35.76	Tol.	PA-234M
	4	53.11	5.33333E-02	40.82		
m	6	66.13	1.28975E-01	24.19	Sum	
	8	111.66	1.72035E-01	17.59	Sum	
	9	130.81	3.81392E-02	38.98		
m	12	313.59	1.57866E-02	45.85	Sum	
M	13	334.54	7.42953E-02	18.80	Sum	
M	15	386.39	1.53024E-01	11.80	Sum	
	17	415.93	2.83924E-02	41.04	Sum	
	18	437.39	6.58955E-02	15.61	Sum	
	19	467.90	1.73052E-02	35.35		
	20	596.96	5.55556E-03	63.44		
	21	663.81	7.29167E-03	50.68		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
CA-41	3.00	77.00	2.38E-07	2.38E-07	0.00E+00	0.00E+00
	3.31	12.30	2.92E-06		0.00E+00	0.00E+00

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BP/Castex-Ltd Adm-Apx E-002394

Analysis Report for 2408053-09

CD-19C

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	FE-55	5.89		24.50	5.93E-04	5.93E-04	2.01E-05	2.68E-04
	CO-57	122.06		85.51	1.91E+01	1.91E+01	-6.37E+00	9.00E+00
		136.48		10.60	1.54E+02		-8.50E+00	7.19E+01
	NI-59	6.92		29.80	1.57E-03	1.57E-03	4.52E-04	7.25E-04
	MO-93	16.59		52.90	1.52E-01	1.52E-01	-1.80E-02	7.32E-02
		18.60		10.00	1.35E+00		-8.45E-02	6.52E-01
	NB-93M	16.57		9.43	8.47E-01	8.47E-01	-1.00E-01	4.09E-01
	CD-109	88.03		3.72	2.90E+02	2.90E+02	4.60E+00	1.38E+02
+	SN-113	255.12		1.93	1.11E+03	4.91E+01	1.08E+02	5.12E+02
		391.69	*	61.90	4.91E+01		2.05E+01	2.31E+01
	SN-119M	23.87		16.10	2.36E+00	2.29E+00	-5.00E+01	1.14E+00
		25.10		22.70	2.29E+00		-7.41E+01	1.11E+00
	I-125	27.30		100.00	1.50E+00	1.50E+00	5.35E+00	7.39E-01
		30.90		19.70	1.46E+01		1.23E+02	7.23E+00
		35.49		6.49	4.96E+01		9.32E+01	2.44E+01
+	I-129	29.78	*	57.00	2.37E+00	2.37E+00	4.82E+01	1.16E+00
		33.60	*	13.20	1.55E+01		7.66E+01	7.54E+00
		39.58		7.52	3.02E+01		-6.50E+00	1.46E+01
+	BA-133	81.00	*	34.06	3.57E+01	3.57E+01	4.54E+02	1.72E+01
		302.84	*	18.33	1.65E+02		5.03E+02	7.79E+01
		356.01	*	62.05	8.60E+01		4.06E+02	4.16E+01
	CE-139	165.85		80.35	2.85E+01	2.85E+01	-1.42E+00	1.35E+01
	CE-144	133.54		10.80	1.68E+02	1.68E+02	1.13E+01	7.92E+01
+	HG-203	279.19	*	77.30	4.03E+01	4.03E+01	4.96E+01	1.90E+01
	PB-210	46.50		4.25	5.55E+01	5.55E+01	-1.86E+00	2.64E+01
	TH-231	25.64		14.70	5.74E+00	5.74E+00	-4.85E+01	2.81E+00
		84.21		6.40	4.11E+02		2.34E+03	2.02E+02
	PA-234M	9.89		89.00	5.36E-03	5.36E-03	6.57E-03	2.54E-03
		21.72		64.90	4.02E-01		3.08E-01	1.94E-01
		37.93		23.75	1.16E+01		-6.19E-01	5.67E+00
+	TH-234	63.29	*	3.80	2.19E+02	2.19E+02	4.57E+02	1.06E+02
	NP-237	29.37	*	14.00	9.65E+00	9.65E+00	1.96E+02	4.71E+00
		86.50		12.60	9.91E+01		-1.08E+01	4.75E+01
	U-237	97.08		16.30	7.27E+01	4.72E+01	-2.33E+01	3.44E+01
		101.07		26.30	4.72E+01		4.21E+00	2.23E+01
		114.00		12.30	2.14E+02		5.35E+01	1.04E+02
		208.01		22.00	1.18E+02		3.71E+01	5.56E+01
+	AM-241	59.54	*	35.90	2.31E+01	2.31E+01	4.84E+01	1.12E+01
	AM-243	74.67		66.00	1.30E+01	1.30E+01	1.31E-01	6.21E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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BP/Castex-Ltd Adm-Apx E-002395

SECTION XI

ANALYTICAL DATA (TOTAL DISSOLVED SOLIDS)

BP/Castex-Ltd Adm-Apx E-002396

Eberline Services - Oak Ridge
Version 1.0 9/1999

TDS / TSS Worksheet

Printed: 8/16/2024 7:10 AM

Work Order	Run	Analysis Code	Technician
24-08053	**1**	**TDS**	**KSALLINGS**

TRetec	Waypoint Analytical Louisiana		Filter Data			TDS/TSS	Maximum Aliq
Fraction	Client ID	Aliquot ml	Filter Tare (g)	Filter Final (g)	Filter Net (g)	(mg/L)	(mL)
04	**CD-18B**	100.0000	98.3232	98.5483	**0.2251**	**2251.4200**	**44.42**
05	**CD-18C**	100.0000	100.1170	100.2638	**0.1468**	**1468.0000**	**68.12**
06	**CD-18A**	100.0000	98.4827	98.6119	**0.1292**	**1292.0000**	**77.40**
07	**CD-18D**	100.0000	107.9765	108.0945	**0.1180**	**1180.0000**	**84.75**
08	**CD-19B**	100.0000	119.1107	119.5649	**0.4542**	**4542.0000**	**22.02**
09	**CD-19C**	100.0000	100.3768	100.5465	**0.1697**	**1697.0000**	**58.93**

Technician: Kenny Sallings Date: 8/16/24

BP/Castex-Ltd Adm-Apx E-002397

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 8/15/2024 8:15 AM

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
24-08053	1	TDS	liters	9/5/2024	KSALLINGS

Lab Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Muffle Data	Dilution Data			Aliquot Data		MS Aliquot Data		H-3 Solids Only	
			Ratio Post/Pre	No of Dils	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-18B	DUP					1.0000E-01	1.0000E-01				
04	CD-18B	DO					1.0000E-01	1.0000E-01				
05	CD-18C	TRG					1.0000E-01	1.0000E-01				
06	CD-18A	TRG					1.0000E-01	1.0000E-01				
07	CD-18D	TRG					1.0000E-01	1.0000E-01				
08	CD-19B	TRG					1.0000E-01	1.0000E-01				
09	CD-19C	TRG					1.0000E-01	1.0000E-01				

Comments	

Technician: Kenny Sallings Date: 8/15/24

BP/Castex-Ltd Adm-Apx E-002398

Waypoint ANALYTICAL

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **24-221-0054**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◉ Yes	◯ No	◯ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 08/08/2024 13:49:00

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM (10485) 840 W. Sam Houston Pkwy North, Suite 600 Houston, TX 77024	Dave Upthegrove Anna Fix	ERM (10485)

ERM (Sugar Land)
Castex
24-221-0054
10485
08-09-2024
12:12:55

Project Description	Project/Site Location (City/State)	
Castex	Jennings, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed

Metho
☐ Fe
☐ Courier ☐ Client Drop Off
Other

DW – Drinking Water
P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
PN 0727954	832-786-5006	David.Upthegrove@erm.com		

Waypoint ANALYTICAL
5041 Taravella Road
Marrero, LA 70072
(504)-371-8557

Unless noted, all containers per Table II of 40 CFR Part 136.

A	Cool < 10C Na2S2O3 (Micro Only)
B	Cool <= 6C
C	H2SO4 pH<2
D	None Required
E	NaOH pH>10
F	HNO3 pH<2
G	HCL pH<2
H	H3PO4 pH<2
I	Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Chloride, Sulfate, Bromide	Alkalinity	TDS	Metals+Cations*	Dissolved Metals**	VPH	BTEX	EPH	Rad 226/228 (Sub)	Comments/Notes
			Required Analysis / Preservative												
8/6/24	1050	CD-18B 87150 87049-87050	10	GW	G	✓	✓	✓	✓	✓	✓	✓	✓	✓	*Metals: As,Ba,Cd,Cr,Fe,Pb,Mn,Hg,Se,Ag,Sr,Zn+ Ca,Mg,K,Na
"	1250	CD-18C 87151 87051-87052	"	"	"	X	X	X	X	X	X	X	X	X	**Dissolved Metals: As, Ba, Cd, Cr, Fe, Pb, Mn, Hg, Se, Ag, Sr, Zn
"	1330	CD-18A 87152 87053-87054	"	"	"	X	X	X	X	X	X	X	X	X	**Dissolved metals: Field filtered
↓	1430	CD-18D 87153	"	"	"	X	X	X	X	X	X	X	X	X	87055-87056
8/7/24	0850	CD-19A (A) ~~87~~	"	"	"	X	X	X	X	X	X	X	X	X (B)	87057-87058 (4)
"	1330	CD-19B 87154	"	"	"	X	X	X	X	X	X	X	X	X	87059-87060
↓	1500	CD-19C 87155	↓	↓	↓	X	X	X	X	X	X	X	X	X	87061-87062
—	—	Trip Blank	3	—	—										

For Laboratory Use Only

Ice	Custody Seals	Lab Comments
Y/N	Y/N	(A) Radium sample not submitted - see attached - CRV

Blank/Cooler Temp: 2.1 C

Sampled by (Name – Print): R. Charles Graham

Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
[signature]	8/8/24 0855	Kathy Hendrix 08/08/24	0855
Kathy Hendrix 08/08/24	1130	[signature] 8/8/24 e	1130
[signature] 8/8/24 e	1349	[signature]	8/8/24 1349

Client Remarks/Comments: RECAP limits

Christina Varuso - [EXTERNAL] RE: ERM 24-221-0053 Castex GWs

From: Charles Trahan <Charles.Trahan@erm.com>
To: Cristina Thibeaux <cthibeaux@waypointanalytical.com>, Anna Fix <Anna.Fix...
Date: 8/9/2024 2:09 PM
Subject: [EXTERNAL] RE: ERM 24-221-0053 Castex GWs
Cc: Christina Varuso <cvaruso@waypointanalytical.com>

This Message Is From an External Sender
This message came from outside your organization.

Cristina,

No Radium sample was collected at CD-19A due to limited volume/well going dry. I should have added that to comment section. Sorry for the confusion.

Charles

ERM
Sustainability is our business

Charles Trahan, P.G.
Managing Technical Consultant, Geologist

Houston, TX
713.540.2227 Mobile
832.564.3949 Office
erm.com

From: Cristina Thibeaux <cthibeaux@waypointanalytical.com>
Sent: Friday, August 9, 2024 2:06 PM
To: Anna Fix <anna.fix@erm.com>; Charles Trahan <Charles.Trahan@erm.com>; David Upthegrove <david.upthegrove@erm.com>
Cc: Christina Varuso <cvaruso@waypointanalytical.com>
Subject: ERM 24-221-0053 Castex GWs

EXTERNAL MESSAGE

Hello all. We received these samples today (COC is attached), but for the Radiums, we are missing a cubitainer for CD-19A. Was a sample collected for that parameter on that collection point?

Sincerely,

Cristina Thibeaux
Project Manager

Waypoint ANALYTICAL

5041 Taravella Rd.
Marrero, LA 70072
Direct: 504-350-0899
Mobile: 337-654-6144
cthibeaux@waypointanalytical.com
http://www.WaypointAnalytical.com

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5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 º Fax 504-371-8560
www.waypointanalytical.com

9/24/2024

ERM
Mr. Dave Upthegrove
840 West Sam Houston Pkwy N, Suite 600
Houston, TX, 77024

Ref: Report Number: 24-215-0009
Project Description: Castex
Project Number: 0727954
Jeff Davis Parish, LA

Dear Mr. Dave Upthegrove:

Waypoint Analytical Louisiana, Inc. received sample(s) on 8/5/2024 for the analyses presented in the following report. The above referenced project has been analyzed per your instructions. Unless otherwise noted, the analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance. Analyses reported which indicate "Field" for these parameters were analyzed by the client in the field. Results for solid samples are reported on an as received or “wet weight” basis unless otherwise specified.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

All quality control measures undertaken in accordance with Waypoint Analytical Louisiana, Inc. CompQAP990807A and revisions under the terms of the Louisiana Environmental Laboratory Accreditation Program (Certificate #02041) are within acceptance ranges established in that document with the exception of the items indicated and/or discussed in a Case Narrative.

The results are shown on the attached analysis sheet(s). Be aware that the time analyzed for certain samples (e.g. - BOD, CBOD, etc.) refer to the time the sample batch was begun and not necessarily to the time an individual sample was begun. Thank you for allowing Waypoint Analytical Louisiana, Inc. to serve you. Should I be of further assistance, if you have any questions or need additional information please contact me or client services.

Sincerely,

Cristina Thibeaux
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis. This report may be reproduced in full only with the written permission of the laboratory and/or the entity to which it is addressed. Results contained herein relate only to the sample(s) submitted to the laboratory.

BP/Castex-Ltd Adm-Apx E-002403

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Certification Summary

Laboratory ID: WP MLA: Waypoint Analytical Louisiana, Inc., Marrero, LA

State	Program	Lab ID	Expiration Date
Georgia	State Program	02041	06/30/2025
Louisiana	State Program - NELAP	02041	06/30/2025

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Sample Summary Table

Report Number: **24-215-0009**

Client Project Description: **Castex**
Project Number: 0727954
Jeff Davis Parish, LA

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
86725	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	2540C-2011	
86725	CD-19D	Aqueous	07/30/2024 12:30	08/05/2024	901.1 Mod	

: Eberline Analytical Coporation, Oak Ridge, TN

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Client: ERM
Project: Castex
Lab Report Number: 24-215-0009
Date: 9/24/2024

CASE NARRATIVE

Report Comments
The Radium and TDS analyses were subcontracted to Eberline- Oak Ridge, TN. Their report is included in its entirety.

WAYPOINT ANALYTICAL LOUISIANA

Project: 24-215-0009
Water

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #24-08035-OR

September 24, 2024

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

BP/Castex-Ltd Adm-Apx E-002407

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X	Analytical Data (Total Dissolved Solids)	116
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Eberline Analytical – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Analytical Work Order # 24-08035

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		8/19/24	AKP	Sample Log-In
		9/17/24		Data Compilation
		9/18/24	JPD	First Technical Data Review
		9/18/24		Second Technical Data Review
		9/23/24	SLB	Data Entry/Electronic Deliverable
		9/23/24	SLB	Case Narrative
		9/24/24		Electronic Deliverable Proof
		9/18/24	JPD	Samples Analyzed within Holding Time Yes? ✓ No? ✓
		9/24/24	JPD	QA/QC Review TDS only
				Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by: _____ 09/24/24

Laboratory Manager Date

Copy No. _____

Radiochemistry Services

0003

SECTION I

CHAIN OF CUSTODY
& pH CHECK

BP/Castex-Ltd Adm-Apx E-002410

Waypoint ANALYTICAL

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

08/06/2024 09:54:57

Export Batch Report

Export Batch Id : 10897EXP

REC'D AUG 09 2024

24-08035

Created: 8/6/2024 09:54:11
Computer: WPALMS-086
User: Christina R. Varuso
Project Manager: Cristina Thibeaux

To: Eberline Analytical Coporation
601 Scarboror Road
Oak Ridge, TN 37830
865-481-0683

From: Waypoint Analytical Louisiana, Inc.
5041 Taravella Rd.
Marrero, LA 70072
504-371-8557

Report No	Due Date	Sample Date	Customer Sample No	Rush	Matrix	Lab No	Method No	Fee Code Description
24-215-0009	09/11/2024	07/30/2024 12:30	CD-19D		AQU	86725	EPA-901.1	Radium 226/228 29B
24-215-0009	09/11/2024	07/30/2024 12:30	CD-19D		AQU	86725	Export TDS	Total Dissolved Solids (TDS)

Sampled By	Method of Shipment	Blank / Cooler Temp.	
Remarks 0009			
Relinquished By (sign)	Date / Time 8/6/24 1600	Received By (sign)	Date / Time 8/9/24 1158
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	24-08035
Lab Deadline	8/30/2024
Analysis	Ra226 - Level 4
Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	80	R1.3

	Initials	Date	Time
Received by	[signature]	8/20/24	1300
Relinquished by	[signature]	8/20/24	1400
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			

EBERLINE SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	24-08035
Lab Deadline	8/30/2024
Analysis	Ra228 - Level 4
Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	80	R1.3

	Initials	Date	Time
Received by	Harvey	8/22/24	1300
Relinquished by	Harvey	8/22/24	1400
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	24-08035
		Lab Deadline	8/12/2024
		Analysis	TDS - Level 4
		Sample Matrix	Water

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	80	R1.3

	Initials	Date	Time
Received by	KS	8-12-24	0630
Relinquished by	KS	8.13.24	0745
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			

EBERLINE SERVICES

Sample Receiving Report
(Volumes, pH, & CPM)

Internal Work Order
24-08035
Received By
APREAST

FR	ClientID	# Btls	Comments	Matrix	Storage	Rec Vol Ttl	CPM Max
01	LCS	0		WA	R1.3		
02	BLANK	0		WA	R1.3		
03	DUP	0		WA	R1.3		
04	CD-19D	1		WA	R1.3	3.76	80
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	3.7600	80

Received by: APREAST Date: 8/9/24

MP-001, Rev 5
Effective: 11/22/02
0009

SECTION II

SAMPLE ACKNOWLEDGEMENT

BP/Castex-Ltd Adm-Apx E-002416

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
Waypoint Analytical Louisiana	24-215-0009	Environmental	08/09/2024	28	24-08035
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
24-215-0009	10897EXP	W	08/30/2024	09/05/2024	09/09/2024

Internal ID	Client ID	Sample Date	Matrix	Storage	Ra226	Ra228	TDS																							Tot
01	LCS	08/09/24	WA	R1.3	X	X	X																							3
02	BLANK	08/09/24	WA	R1.3	X	X	X																							3
03	DUP	08/09/24	WA	R1.3	X	X	X																							3
04	CD-19D	07/30/24 12:30	WA	R1.3	X	X	X																							3
																														0

Eberline Analytical – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 24-08035

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

(AQUEOUS) NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	(Y)	N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: Ash Preast DATE: 8/9/24

SECTION III

CASE NARRATIVE

BP/Castex-Ltd Adm-Apx E-002419

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-52697

September 24, 2024

Cristina Thibeaux
Waypoint Analytical
5041 Taravella Road
Marrero, LA 70072

CASE NARRATIVE
Work Order # 24-08035-OR

SAMPLE RECEIPT

This work order contains one water sample received 08/09/2024. Sample was analyzed for Radium-226/228 and Total Dissolved Solids.

CLIENT ID	LAB ID
CD-19D	24-08035-04

ANALYTICAL METHODS

Radium-226 was analyzed using EPA Method 903.0 Modified. Radium-228 was analyzed using EPA Method 904.0. Total Dissolved Solids was analyzed using Standard Method 2540C.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

SPECIAL CIRCUMSTANCES

Sample aliquot was reduced for Radium-226/228 analysis due to high solids content for fractions -04 (Client ID: CD-19D).

RADIUM-226

A representative aliquot of sample was digested with mixed acids, Radium/Barium Sulfate was precipitated, and precipitates were dissolved in alkaline EDTA. Radium was selectively precipitated, mounted on micro-porous filter media, and counted by alpha spectroscopy using an energy specific region of interest for Radium-226. Chemical recovery was calculated using a Barium-133 tracer determined by HPGe gamma spectroscopy. Final results were corrected for inherent self-absorption from elemental Barium.

ANALYTICAL RESULTS CONTINUED

RADIUM-226 CONTINUED

Sample demonstrated acceptable results for all Radium-226 analyses. Chemical recovery was acceptable for all analyses. The Radium-226 method blank demonstrated an acceptable result. Results for the Radium-226 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Radium-226 laboratory control sample demonstrated an acceptable percent recovery.

RADIUM-228

Barium/Radium Sulfate precipitates were redissolved following alpha spectroscopy analysis of Radium-226 and time was allowed for sufficient ingrowth of the Actinium-228 daughter. Actinium-228 was selectively precipitated, filtered, and beta emissions for Actinium-228 were counted on a gas proportional counter. Chemical recovery was determined using a Barium-133 tracer by HPGe gamma spectroscopy and an elemental Yttrium carrier by gravimetric measurements. The product of these two recoveries was used to calculate chemical yield.

Sample demonstrated acceptable results for all Radium-228 analyses. Chemical recovery was acceptable for all analyses. The Radium-228 method blank demonstrated an acceptable result. Results for the Radium-228 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Radium-228 laboratory control sample demonstrated an acceptable percent recovery.

TOTAL DISSOLVED SOLIDS (TDS)

A volumetric aliquot of sample was filtered through 0.45µm filter media into a tared 250ml beaker. Sample was dried on a hot plate and allowed to cool. The TDS content was determined by re-weighing tared beakers.

Sample demonstrated Total Dissolved Solids content of 408.0 mg/L.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

Ethan Getgood
Laboratory Manager

Date: 9/24/2024

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

SECTION IV

ANALYTICAL RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-002422

Eberline Analytical
Final Report of Analysis

Report To:
Cristina Thibeaux
Waypoint Analytical Louisiana
5041 Taravella Road
Marrero, LA 70072

Work Order Details:
SDG: 24-08035
Purchase Order: 24-215-0009
Analysis Category: ENVIRONMENTAL
Sample Matrix: WA

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
24-08035-01	LCS	KNOWN	08/09/24 00:00	8/9/2024	8/28/2024	24-08035	Radium-226	EPA 903.0 Modified	1.00E+01	4.61E-01			pCi/l
24-08035-01	LCS	SPIKE	08/09/24 00:00	8/9/2024	8/28/2024	24-08035	Radium-226	EPA 903.0 Modified	1.07E+01	1.51E+00	2.73E+00	2.52E-01	pCi/l
24-08035-02	MBL	BLANK	08/09/24 00:00	8/9/2024	8/28/2024	24-08035	Radium-226	EPA 903.0 Modified	1.11E+00	7.79E-01	8.13E-01	7.01E-01	pCi/l
24-08035-03	DUP	CD-19D	07/30/24 12:30	8/9/2024	8/28/2024	24-08035	Radium-226	EPA 903.0 Modified	1.30E+00	5.62E-01	6.25E-01	3.81E-01	pCi/l
24-08035-04	DO	CD-19D	07/30/24 12:30	8/9/2024	8/28/2024	24-08035	Radium-226	EPA 903.0 Modified	1.67E+00	7.72E-01	8.49E-01	5.96E-01	pCi/l
24-08035-01	LCS	KNOWN	08/09/24 00:00	8/9/2024	8/29/2024	24-08035	Radium-228	EPA 904.0	9.06E+00	4.62E-01			pCi/l
24-08035-01	LCS	SPIKE	08/09/24 00:00	8/9/2024	8/29/2024	24-08035	Radium-228	EPA 904.0	8.38E+00	7.04E-01	2.02E+00	7.92E-01	pCi/l
24-08035-02	MBL	BLANK	08/09/24 00:00	8/9/2024	8/29/2024	24-08035	Radium-228	EPA 904.0	1.29E+00	7.79E-01	8.32E-01	1.51E+00	pCi/l
24-08035-03	DUP	CD-19D	07/30/24 12:30	8/9/2024	8/29/2024	24-08035	Radium-228	EPA 904.0	7.05E+00	1.17E+00	1.98E+00	1.85E+00	pCi/l
24-08035-04	DO	CD-19D	07/30/24 12:30	8/9/2024	8/29/2024	24-08035	Radium-228	EPA 904.0	8.68E+00	1.24E+00	2.33E+00	1.82E+00	pCi/l
24-08035-04	TRG	CD-19D	07/30/24 12:30	8/9/2024	8/13/2024	24-08035	TDS	SM2540C	4.08E+02				mg/l

BP/Castex-Ltd Adm-Apx E-002423

0017

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

SECTION V

ANALYTICAL STANDARD

BP/Castex-Ltd Adm-Apx E-002424

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Ra-5
QA/QC REVIEWED
Date 2/8/94 Initials WT

Radionuclide:	Ra-226	Customer:	TMA EBERLINE
Half Life:	1600 ± 7 years	P.O.No.:	VH1888
Catalog No.:	7226	Reference Date:	February 1 1994 12:00 PST.
Source No.:	453-26	Contained Radioactivity: (Ra-226)	1.001 μCi.
		Contained Radioactivity: (Ra-226)	37.0 kBq.

Description of Solution

a. Mass of solution:	5.1864 g (in a 5 ml Flame Sealed Ampoule)	
b. Chemical form:	Ra(NO3)2 in 1 N HNO3	
c. Carrier content:	None added	
d. Density:	1.0318	g/ml @ 20°C.

Radioimpurities: None detected(other than daughters)

Radioactive Daughters
Rn-222, Po-218, At-218, Pb-214, Bi-214, Po-214, Tl-210, Pb-210, Bi-210, Po-210 and Tl-206.

Radionuclide Concentration

(Ra-226) 0.1929 μCi/g.

Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry:
Energy peak(s) integrated under: 186 keV.
Branching ratio(s) used: 0.0351 gamma rays per decay.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:	±3.4%
b. Random uncertainty in assay:	±3.1%
c. Random uncertainty in weighing(s):	±0.2%
d. Total uncertainty at the 99% confidence level:	±4.6%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

Anna U. Kuen
QUALITY CONTROL

Feb. 3, 1994
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 North Keystone Street
Burbank, California 91504
(818) 843 - 7000

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP 009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

7/22/2024

		CURRENT DATE	~~7/22/2025 00:00~~ 7/22/24
SOLUTION REFERENCE #	IPL 453-26	**SOLUTION #**	Ra-5

Principal Radionuclide	**Half Life, Years**	**Half Life, Days**
^{226}Radium	1.600E+03	5.844E+05

Radionuclide	^{226}Radium	**Reference Date**	2/1/1994 00:00
Certified Activity	1.001E+00 µCi		
Certified Concentration	µCi per gram		

Ampoule /Solution Gross		**Weight, Grams**
Empty Ampoule		**Weight, Grams**
Solution Net		**Weight, Grams**
Total Activity in Ampoule	1.0010	µCi

Chemical Composition of Standard Solution
$^{226}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions: **Dilution Solvent Used** 1M HNO_3

Dilute to a volume of 1000.00 **milliliters**

Certified Total Activity of 1.0010 µCi **Which Equals** 2.222E+06 **dpm at the date listed above**

And after dilution the activity of this solution is 2.222E+03 **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: July 22, 2025

Verified & Approved By _____ Date: 7/22/2024

QC Approval _____ Date: 7/22/24

0020

BP/Castex-Ltd Adm-Apx E-002426

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03
Title: **Radioactive Reference Standards Solutions & Records**

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

	MP 009	Date	7/22/2024 00:00
Solution Reference #	IPL-453-26	Solution #	Ra-5b

Principal Radionuclide	Half Life, Years	Half Life, Days
^{226}Radium	1.600E+03	5.844E+05

Radionuclide of Interest	^{226}Radium	Reference Date	2/1/1994 00:00
Parent Solution Conc.	2.22E+03 dpm/ml		

Chemical Composition of Standard Solution
$^{226}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions: **Dilution Solvent Used** 1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution:	20.0000 ml	Final Activity Concentration:	4.4440E+01 dpm/ml
Total Activity:	4.4440E+04 dpm		
Final Volume:	1000.00 ml		

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: 22-Jul-25

Verified & Approved By _____ Date: 7/22/2024 00:00

QC Approval _____ Date: 7/22/24

0021

BP/Castex-Ltd Adm-Apx E-002427

ANALYTICS #411 Rec'd 2/15/06 R Stenton

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

72325-207 Ra^{228}

Ra-228 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Ra-228
ACTIVITY (dps):	4.022 E3
HALF-LIFE:	5.75 years
CALIBRATION DATE:	February 10, 2006 12:00 EST
RELATIIVE EXPANDED UNCERTAINTY (k=2):	4.0%

Impurities: γ-impurities <0.1%

5.10721 grams 0.1M HCl solution with 50 µg/g Ba carrier.

P O NUMBER 00003181, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 2-13-06

0022

BP/Castex-Ltd Adm-Apx E-002428

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP-009

Rev.8; 1/10/03
Title. Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
RECERTIFICATION
MP 009

		CURRENT DATE	1/5/2024 0:00
SOLUTION REFERENCE #	Analytics 7235-207	**SOLUTION #**	Ra-12

Principal Radionuclide	**Half Life, Years**	**Half Life, Days**
^{228}Ra	5.750E+00	2.100E+03

Radionuclide	^{228}Ra	**Reference Date**	2/10/2006 0:00
Certified Activity	1.087E-01	µCi	
Certified Concentration		µCi per gram	

Ampoule /Solution Gross	9.0741	**Weight, Grams**
Empty Ampoule	3.9858	**Weight, Grams**
Solution Net	5.0883	**Weight, Grams**
Total Activity in Ampoule	0.1087	µCi

Chemical Composition of Standard Solution

$^{228}Ra(NO_3)_2$ in 0.5 M HCl

Dilution Instructions: **Dilution Solvent Used** 0.5 M HCl

Dilute to a volume of 991.00 **Kg**

Certified Total Activity of 0.1087 µCi **Which Equals** 2.413E+05 **dpm at the date listed above**

And after dilution the activity of this solution is **2.435E+02** **dpm/ml**

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 5, 2025

Recertified By _____ Date: ~~1/5/23~~ 1/5/24 1/5/24 JPD

QC Approval _____ Date: 1/5/23 24 JPD 1/5/24

0023

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

BP/Castex-Ltd Adm-Apx E-002430

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
24-08035	Ra226	1	pCi	l	Waypoint Analytical Louisiana

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-226		107.00%	25.41%	100.00%	4.60%	1.00E+01	4.61E-01	1.07E+01	2.73E+00	Ra-5b	4.39E+01	4.60E+00	5.07E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*
				#VALUE!									

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-226	0.68	24.70	1.67E+00	8.49E-01	1.30E+00	6.25E-01

QC Summary

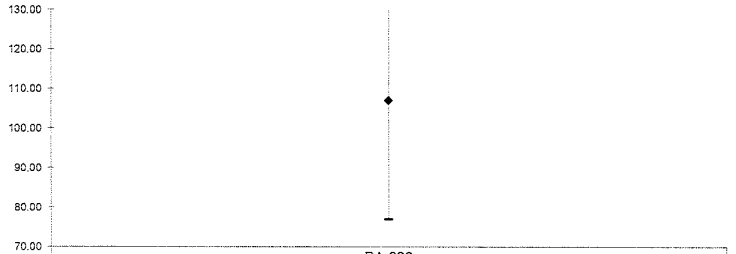
LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.07	OK				NA	OK

BP/Castex-Ltd Adm-Apx E-002431

Version

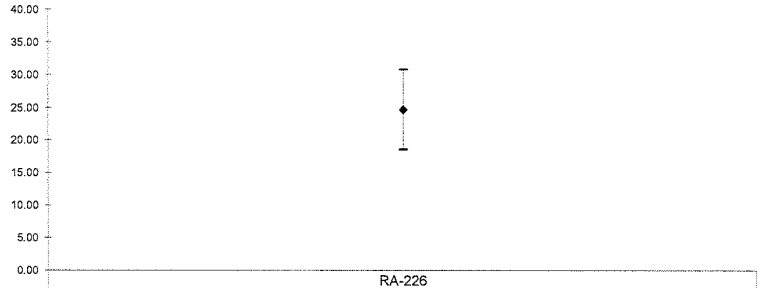
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
24-08035	Ra226	1	pCi	l	Waypoint Analytical Louisiana

LCS % Recovery



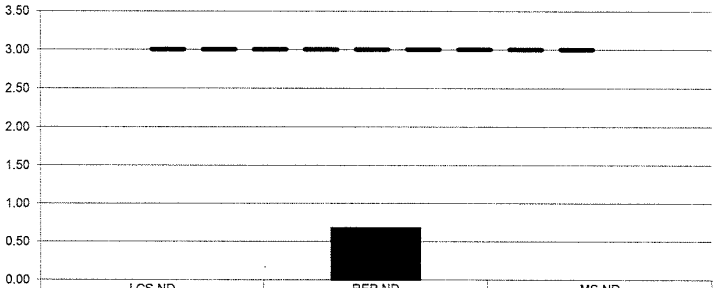
	RA-226
Lower Error	76.99
Upper Error	137.01
%R	107.00
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	RA-226
Lower Error	30.84
Upper Error	18.57
RPD	24.70
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
RA-226	0.00	0.68	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
24-08035	Ra228	1	pCi	l	Waypoint Analytical Louisiana

Laboratory Control Sample

Analyte	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-228	92.49%	24.15%	100.00%	5.10%	9.06E+00	4.62E-01	8.38E+00	2.02E+00	Ra-12	5.21E+01	5.10E+00	3.86E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*
				#VALUE!									

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
RA-228	1.05	20.73	8.68E+00	2.33E+00	7.05E+00	1.98E+00

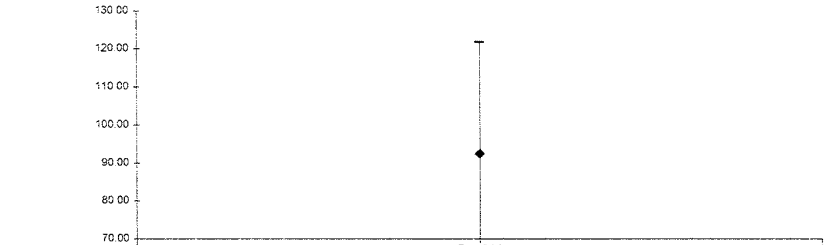
QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.92	OK				NA	OK

BP/Castex-Ltd Adm-Apx E-002433

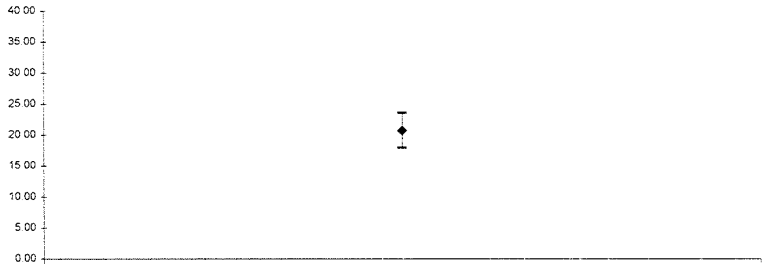
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
24-08035	Ra228	1	pCi	l	Waypoint Analytical Louisiana

LCS % Recovery



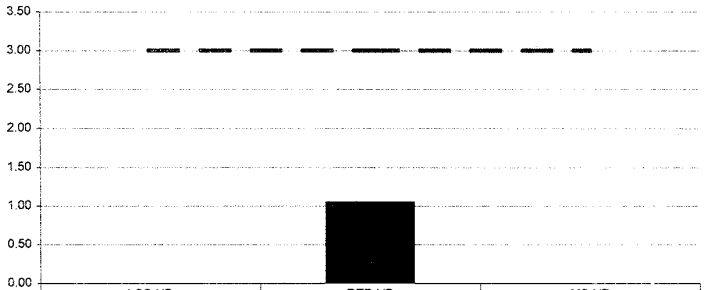
	RA-228
Lower Error	63.24
Upper Error	121.74
%R	92.49
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	RA-228
Lower Error	23.57
Upper Error	17.89
RPD	20.73
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
RA-228	0.00	1.05	0.00
UCL	3	3	3

No Matrix Spike

SECTION VII

LABORATORY TECHNICIAN'S NOTES

BP/Castex-Ltd Adm-Apx E-002435

RA-226 NOTES

BP/Castex-Ltd Adm-Apx E-002436

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08035
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	08/22/24 14:18	PREP	JHARVEY	ALIQUOT WAS REDUCED DUE TO HEAVY AMOUNT OF SOLID IN SAMPLE- SAMPLE ALIQUOTS WERE LEACHED AND PRECIPITATED- PRECIPITATES WERE DISSOLVED IN AKALINE EDTA AND THEN TRANSFERRED TO SEPARATIONS
2	08/27/24 15:53	PREP	ZCORD	Selectively precipitated Ra226. Recorded t0. Filtered, dried, reweighed and submitted to count room.

8/27/24

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08035
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	08/22/24 14:18	PREP	JHARVEY	ALIQUOT WAS REDUCED DUE TO HEAVY AMOUNT OF SOLID IN SAMPLE- SAMPLE ALIQUOTS WERE LEACHED AND PRECIPITATED- PRECIPITATES WERE DISSOLVED IN AKALINE EDTA AND THEN TRANSFERRED TO SEPARATIONS

8/22/24

0032

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
24-08035	
Analysis Code	Run
Ra226	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
026674D04	Barium Carrier	1 mg/ml	JHARVEY	8/22/2024
026926S	EDTA	0.25M	JHARVEY	8/22/2024
025409P	Acetic Acid	Reagent Grade	ZCORD	8/27/2024
025918D02	Ammonium Sulfate	200 mg/ml	ZCORD	8/27/2024
025887S	EDTA	0.25M	ZCORD	8/27/2024

Alpha Book #3

Date	Sample #	Client	Load Time	Count Time	Analysis	Tech
8/25/24	240805SA (3 to)	TN Dept of Health	1002	3hrs	UU	KB
8/25/24	240805ZA (1-4)	Fruit Growers	1003	3hrs	UU	KB
8/26/24	Daily Pulser	Lab	0611	10min	NA	NC
8/26/24	2408023A(1-4,7)	UCOR	0741	3hrs	Pu	NC
8/26/24	2408023A(1-4)	UCOR	~~0742~~ NC 8/26/24 0743	3hrs	UU	NC
8/26/24	2408023A(1-4)	UCOR	0745	3hrs	Th	NC
8/26/24	2408023A(1-4)	UCOR	0746	3hrs	Th^{229}	NC
8/26/24	2408023A(1-4)	UCOR	0747	3hrs	Pu^{242}	NC
8/26/24	2408023A(1-3)	UCOR	1044	3hrs	Pu^{242}	NC
8/26/24	2408023A(4)	UCOR	1142	3hrs	Th	NC
8/27/24	2408023A(1-4)	Lab	0614	10min	NA	NC
8/27/24	Daily Pulser	UCOR	0741	3hrs	Pu	NC
8/27/24	2408042A(1-3,5,8)	UCOR	0742	3hrs	Pu^{242}	NC
8/27/24	2408042A(1-3,5)	UCOR	0743	3hrs	UU	NC
8/27/24	2408042A(1-3,5)	UCOR	0744	3hrs	UU	NC
8/27/24	2408044A(1-5,8)	UCOR	1050	3hrs	UU	NC
8/27/24	2408044A(10)	UCOR	1051	3hrs	Th	NC
8/27/24	2408042A(1-3,5)	UCOR	1052	3hrs	Th^{229}	NC
8/27/24	2408042A(1-3,5)	UCOR	1053	3hrs	UU	NC
8/27/24	2408051A(1-4,6,8,10)	UCOR	1054	3hrs	Ra^{6}	NC
8/27/24	2408005A(1-3)	Waypoint	1354	3hrs	~~Ra~~ NC 8/27/24 UU	NC
8/27/24	2408051A(12,14,16,18)	UCOR	1432	3hrs	Th	KB
8/27/24	2408042A (1)	UCOR	0614	~~15~~ NC 8/28/24 10min	NA	NC
8/28/24	Daily Pulser	Lab	0636	3hrs	Ra^{6}	NC
8/28/24	2407159A(1-6)	Fruit Growers	0637	3hrs	Ra^{6}	NC
8/28/24	2407150A(1-7)	Fruit Growers	0638	3hrs	Ra^{6}	NC
8/28/24	2408035A(1-4)	Waypoint	0639	3hrs	Ra^{6}	NC
8/28/24	2408042A(1-3)	UCOR				

BP/Castex-Ltd Adm-Apx E-002440

RA-228 NOTES

BP/Castex-Ltd Adm-Apx E-002441

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08035
Analysis Code	Ra228
Run Number	1

#	Date	Dept	User	Notes
1	08/22/24 14:18	PREP	JHARVEY	ALIQUOT WAS REDUCED DUE TO HEAVY AMOUNT OF SOLID IN SAMPLE- SAMPLE ALIQUOTS WERE LEACHED AND PRECIPITATED- PRECIPITATES WERE DISSOLVED IN AKALINE EDTA AND THEN TRANSFERRED TO SEPARATIONS

8/22/24

0036

BP/Castex-Ltd Adm-Apx E-002442

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08035
Analysis Code	Ra228
Run Number	1

#	Date	Dept	User	Notes
1	08/22/24 14:18	PREP	JHARVEY	ALIQUOT WAS REDUCED DUE TO HEAVY AMOUNT OF SOLID IN SAMPLE- SAMPLE ALIQUOTS WERE LEACHED AND PRECIPITATED- PRECIPITATES WERE DISSOLVED IN AKALINE EDTA AND THEN TRANSFERRED TO SEPARATIONS
2	08/29/24 11:14	PREP	ZCORD	Added 2ml Yttrium carrier and 18M Sodium Hydroxide were added. Let sit in hot bath for 15 minutes, clocked t1. Centrifuged, poured off supernatant and dissolved precipitate in 6N Nitric Acid. Added 10M Sodium Hydroxide. Let sit in hot bath for 15 minutes. Centrifuged, poured off supernatant and dissolved in 1N Nitric Acid. Added Ammonium Oxalate. Filtered on pretared filters, dried, reweighed, submitted to count room.

8/29/24

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
24-08035	
Analysis Code	Run
Ra228	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
026674D04	Barium Carrier	1 mg/ml	JHARVEY	8/22/2024
026926S	EDTA	0.25M	JHARVEY	8/22/2024
025867D02	Ammonium Oxalate	5%	ZCORD	8/29/2024
024949S	Nitric Acid	1N	ZCORD	8/29/2024
024947S	Nitric Acid	6N	ZCORD	8/29/2024
025880S	Sodium Hydroxide	10M	ZCORD	8/29/2024
025857D02	Sodium Hydroxide	18M	ZCORD	8/29/2024
025492S	Yttrium Carrier	9 mg/ml	ZCORD	8/29/2024

Aqua LB4110

Date	Sample #	Client	Load Time	Count Time	Analysis	Tech
8/28/24	240802 42NP(1-3,5)	UCOR	0809	10min	NP	NC
8/28/24	240801 65Y(2-4)	TN Dept. Health	1013	2hrs	Sy^{90}	NC
8/28/24	240802 35Y(2-4,6)	UCOR	1015	2hrs	Sy^{90}	NC
8/28/24	240809 2AB(3A-3C)	Feezor	1110	2hrs	dB	NC
8/28/24	240800 5RA(1)	Waypoint	1226	1hr	Ra8	KB
8/28/24	240801 6SR(2-4)	TN Dept of Health	1232	2hrs	Tot Sr	KB
8/28/24	240809 2AB(3D-3A)	Feezor	1315	2hrs	dB	NC
8/28/24	240809 2AB(4B,4C)	Feezor	1317	2hrs	dB	NC
8/28/24	240801 6SY(1)	TN Dept. Health	1329	1hr	Sy^{90}	NC
8/28/24	240809 2AB(4D-5C)	Feezor	1441	2hrs	$\alpha\beta$	KB
8/28/24	240809 2AB(6B-7A)	Feezor	1549	2hrs	$\alpha\beta$	KB
8/29/24	Daily Blkgd /Lcs	Lab	0610/0717	1hr 30min	dB	NC
8/29/24	240803 0AB(1-4)	Enviodyne	0819	2hrs	dB	NC
8/29/24	240804 2AB(1-4)	UCOR	0821	2hrs	dB	NC
8/29/24	240809 2AB(7B-8A)	Feezor	0829	2hrs	dB	NC
8/29/24	240809 2AB(8D-9C)	Feezor	1034	2hrs	dB	NC
8/29/24	240803 5RA(1-4)	Waypoint	1128	2hrs	Ra8	KB
8/29/24	240804 2RA(1-3,5)	UCOR	1129	2hrs	Ra8	KB

TDS NOTES

BP/Castex-Ltd Adm-Apx E-002446

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	24-08035
Analysis Code	TDS
Run Number	1

#	Date	Dept	User	Notes
1	08/12/24 08:08	PREP	KSALLINGS KS	filtered into tared beaker,dried,reweighed

BP/Castex-Ltd Adm-Apx E-002447

SECTION VIII

ANALYTICAL DATA (RADIUM-226)

BP/Castex-Ltd Adm-Apx E-002448

24-08035
Ra226
Run 1

Work Order	24-08035
Analysis Code	Ra226
Run	1
Date Received	8/9/2024
Lab Deadline	8/30/2024
Client	Waypoint Analytical Louisiana
Project	24-215-0009
Report Level	4
Activity Units	pCi
Aliquot Units	l
Matrix	WA
Method	EPA 903.0 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-7
Tracer Act (dpm/g)	7419.14
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		08/09/24 00:00	1.0000E+00
02	MBL	BLANK		08/09/24 00:00	1.0000E+00
03	DUP	CD-19D	80	07/30/24 12:30	5.0000E-01
04	DO	CD-19D	80	07/30/24 12:30	5.0000E-01

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-002449

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.1477	1095.8	502.0	101.70		0.0197	0.0300	0.0103		101.70	2.93	1.00
02	MBL	0.1473	1092.8	259.0	52.61		0.0196	0.0307	0.0111		52.61	3.20	1.00
03	DUP	0.1474	1093.6	524.0	106.37		0.0198	0.0270	0.0072		106.37	1.99	1.00
04	DO	0.1474	1093.6	484.0	98.25		0.0200	0.0269	0.0069		98.25	1.91	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			08/22/24 13:17	JHARVEY	08/27/24 14:05	ZCORD		
02	MBL			08/22/24 13:17	JHARVEY	08/27/24 14:05	ZCORD		
03	DUP			08/22/24 13:17	JHARVEY	08/27/24 14:05	ZCORD		
04	DO			08/22/24 13:17	JHARVEY	08/27/24 14:05	ZCORD		

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Preliminary Data Report & Analytical Calculations

Work Order: 24-08035-Ra226-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	24-08035	Waypoint Analytical Louisiana

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-226	LCS	LCS	pCi/l	1.07E+01	1.51E+00	2.52E-01	1.00E+01	107.00	OK		OK	
02	RA-226	MBL	BLANK	pCi/l	1.11E+00	7.79E-01	7.01E-01					OK	OK
03	RA-226	DUP	CD-19D	pCi/l	1.30E+00	5.62E-01	3.81E-01				NA	OK	
04	RA-226	DO	CD-19D	pCi/l	1.67E+00	7.72E-01	5.96E-01					OK	

BP/Castex-Ltd Adm-Apx E-002452

Preliminary Data Report & Analytical Calculations

Work Order: 24-08035-Ra226-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	24-08035	Waypoint Analytical Louisiana

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-226	LCS	08/09/24 00:00	1.00E+00	100.00	0.00	101.70		8/27/2024 14:05	
02	RA-226	MBL	08/09/24 00:00	1.00E+00	52.61	0.00	52.61		8/27/2024 14:05	
03	RA-226	DUP	07/30/24 12:30	5.00E-01	100.00	0.00	106.37		8/27/2024 14:05	
04	RA-226	DO	07/30/24 12:30	5.00E-01	98.25	0.00	98.25		8/27/2024 14:05	

BP/Castex-Ltd Adm-Apx E-002453

Preliminary Data Report & Analytical Calculations

Work Order: 24-08035-Ra226-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	24-08035	Waypoint Analytical Louisiana

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	RA-226	LCS	08/28/24 06:38		A_Spec	Alpha_050	180	2.07 E+02	2.00 E-03	14.1
02	RA-226	MBL	08/28/24 06:38		A_Spec	Alpha_051	180	8.46 E+00	3.00 E-03	11.6
03	RA-226	DUP	08/28/24 06:38		A_Spec	Alpha_052	180	2.19 E+01	6.00 E-03	16.8
04	RA-226	DO	08/28/24 06:38		A_Spec	Alpha_053	180	1.96 E+01	8.00 E-03	11.4

BP/Castex-Ltd Adm-Apx E-002454

Count Room Report
Client: Waypoint Analytical Louis

24-08035-Ra226-1 (pCi/l) in WA
Tracer ID: Ba-7

Printed: 8/27/2024 5:35 PM
Page 1 of 1

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	08/09/24 00:00	1.0000	0.1477	1095.8070	502.0000	101.70	2.93	1.00
02	MBL	BLANK	08/09/24 00:00	1.0000	0.1473	1092.8393	259.0000	52.61	3.20	1.00
03	DUP	CD-19D	07/30/24 12:30	0.5000	0.1474	1093.5812	524.0000	106.37	1.99	1.00
04	DO	CD-19D	07/30/24 12:30	0.5000	0.1474	1093.5812	484.0000	98.25	1.91	1.00

BP/Castex-Ltd Adm-Apx E-002455

Spike and Tracer Worksheet

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
24-08035	1	Ra226	8/22/2024 13:12	JHARVEY		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	*Sol #*	*Activity dpm/g*	*Solution Date*	*Approx Addition*	*Volume Used (g)*	*Volume Used (g)*	*Volume Used (g)*	*Volume Used (g)*	*Known pCi*	*Error Estimate*	*Added pCi*	*Error Estimate*	*Known pCi*	*Error Estimate*	*Added pCi*	*Error Estimate*
Ra-226	Ra-5b	43.860	8/22/2024	0.500	0.5073				10.02	0.461	0.00	0.000	0.00	0.000	0.00	0.000

Tracers						
fraction	*Isotope*	*Sol #*	*Activity dpm/g*	*Solution Date*	*Volume Used (g)*	*Approx Addition*
01	Ba-133	Ba-7	7419.140	8/22/2024	0.1477	0.1400
02	Ba-133	Ba-7	7419.140	8/22/2024	0.1473	0.1400
03	Ba-133	Ba-7	7419.140	8/22/2024	0.1474	0.1400
04	Ba-133	Ba-7	7419.140	8/22/2024	0.1474	0.1400

Balance Printer Tapes

Tracer

LCS

Matrix Spike

BP/Castex-Ltd Adm-Apx E-002456

0050

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 8/22/2024 13:11

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
24-08035	1	Ra226	liters	8/30/2024	JHARVEY

Lab Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Muffle Data	Dilution Data			Aliquot Data		MS Aliquot Data		H-3 Solids Only	
			Ratio Post/Pre	No of Dils	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-19D	DUP					5.0000E-01	5.0000E-01				
04	CD-19D	DO					5.0000E-01	5.0000E-01				

Comments	

Technician: JHarvey Date: 8 22 24

BP/Castex-Ltd Adm-Apx E-002457

Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Printed: 8/27/2024 16:02

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
24-08035	**1**	**Ra226**			**ZCORD**

TRetec Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Carrier Data	Filter Data			Gravimetric
			Carrier Added (ml)	Filter Tare (g)	Filter Final (g)	Filter Net (g)	% Recovery
01	LCS	LCS		0.0197	0.0300	**0.0103**	
02	BLANK	MBL		0.0196	0.0307	**0.0111**	
03	DUP	DUP		0.0198	0.0270	**0.0072**	
04	CD-19D	DO		0.0200	0.0269	**0.0069**	

Technician: _____ Date: 8 /27 /24

BP/Castex-Ltd Adm-Apx E-002458

Apex-Alpha™

NC 8/28/24

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003623
Batch Identification: 2408035A-RA
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_050
Chamber Serial Number: 10006121B
Detector Serial Number: 50
Env. Background: System Bkgd 372819
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 2.930E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/28/2024 5:15:32 PM
Acquisition Date/Time: 8/28/2024 6:38:34 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1413 +/- 0.0026 on 3/22/2024 11:09:47 AM
Effective Efficiency: 0.1413 +/- 0.0026

Control Certificate Name: Ra226_Ra-5b
Chem. Recov. of Control: RA-226 0.365210 +/- 0.028472
Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

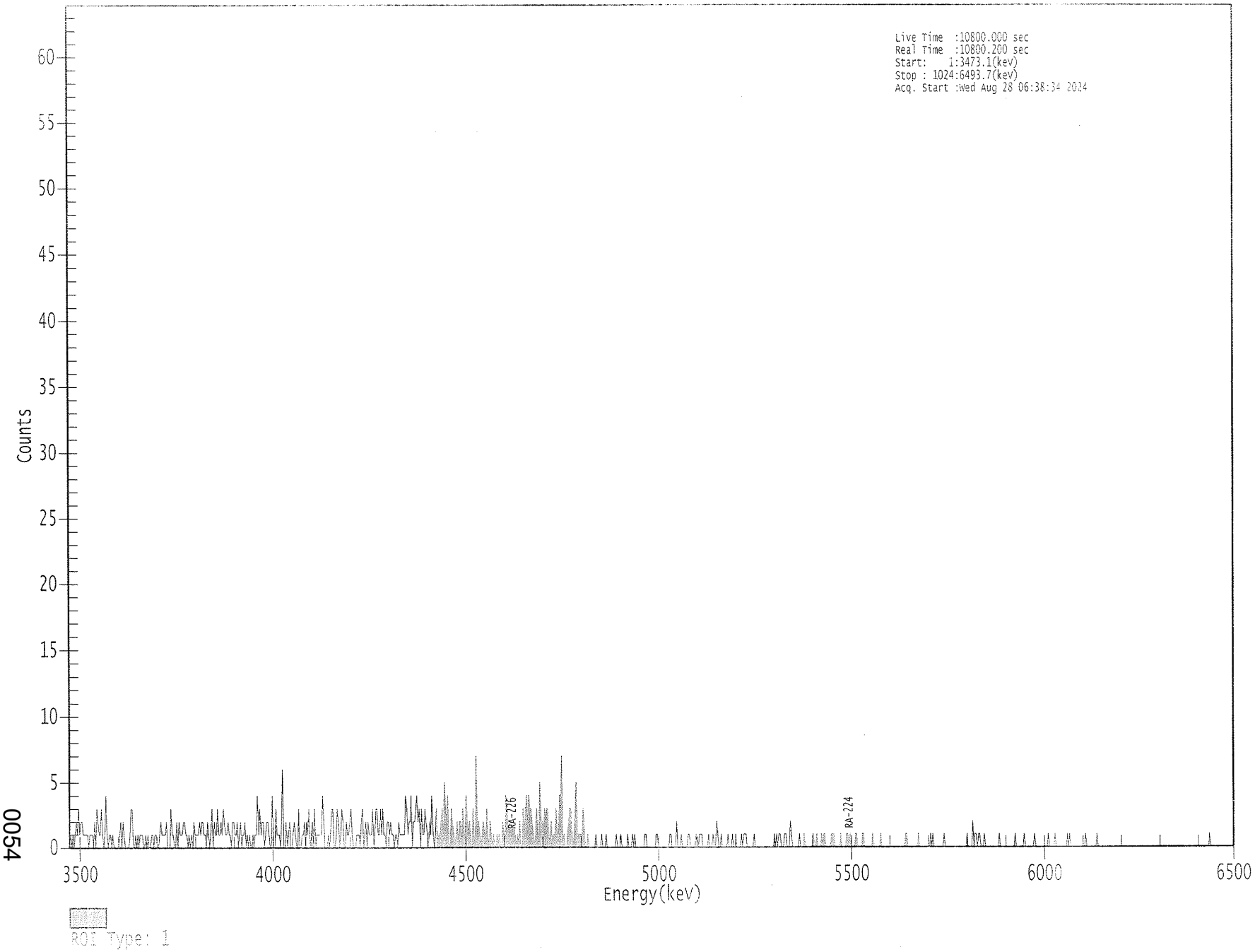
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.497	21.64	42.55	0.36	0.00E+000	3.0
RA-226	4.622	206.64	13.65	0.36	0.00E+000	3.2

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.955	5685.50*	1.18E+000 +/- 5.04E-001	2.65E-001 +/- 9.40E-003
RA-226	0.966	4785.00*	1.07E+001 +/- 1.51E+000	2.52E-001 +/- 8.94E-003

0053

BP/Castex-Ltd Adm-Apx E-002459



BP/Castex-Ltd Adm-Apx E-002460

0054

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 01

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel							
1:	1	1	0	1	0	1	2	1
9:	3	1	2	2	1	1	1	1
17:	1	0	1	1	1	0	2	0
25:	3	2	1	1	3	1	0	1
33:	4	1	0	1	1	0	1	0
41:	0	0	0	0	1	2	0	2
49:	1	0	0	0	0	1	3	3
57:	0	0	1	0	1	0	1	1
65:	1	0	0	1	0	1	0	0
73:	1	1	0	1	1	0	0	1
81:	2	1	1	1	1	2	0	0
89:	0	3	1	1	0	0	2	0
97:	2	1	1	1	2	2	1	1
105:	0	1	0	1	0	2	1	1
113:	1	1	2	1	2	2	1	1
121:	0	2	1	0	1	3	0	2
129:	1	1	3	1	1	2	1	3
137:	2	1	1	2	1	1	0	2
145:	2	1	1	2	0	1	2	0
153:	1	1	2	0	1	0	1	0
161:	0	1	0	1	1	4	1	3
169:	1	2	2	0	1	2	2	1
177:	0	0	4	0	0	3	1	1
185:	1	0	2	6	0	0	2	0
193:	1	2	0	0	1	2	1	0
201:	0	3	0	0	1	1	2	0
209:	2	1	3	0	1	2	0	3
217:	0	1	1	1	1	1	4	2
225:	0	0	0	1	0	1	3	3
233:	0	0	1	3	2	0	1	3
241:	2	0	0	2	1	1	2	3
249:	1	0	0	0	1	1	1	0
257:	2	3	0	1	2	0	2	1
265:	1	1	3	0	1	3	3	1
273:	1	3	1	3	1	1	0	2
281:	2	1	2	1	1	0	1	1
289:	0	2	1	1	1	1	1	4
297:	3	1	2	2	4	0	2	2
305:	3	4	2	3	0	3	1	1
313:	3	2	1	0	2	1	4	1
321:	0	1	3	0	1	1	2	3
329:	0	5	3	2	4	0	0	3
337:	2	1	0	1	2	0	2	2
345:	0	3	1	1	4	2	1	2
353:	0	0	3	0	1	7	0	2
361:	1	0	1	2	1	0	3	1

BP/Castex-Ltd Adm-Apx E-002461

369:	0	2	1	0	1	0	0	1

Sample Title: 01

Channel								
377:	0	1	0	0	2	1	1	4
385:	3	1	2	2	2	1	2	1
393:	0	1	0	2	0	0	3	1
401:	3	4	1	4	3	3	2	1
409:	0	1	3	1	0	5	2	2
417:	1	3	2	3	3	0	1	2
425:	0	1	1	3	1	1	4	2
433:	7	0	1	0	0	1	2	3
441:	3	1	0	1	3	5	0	1
449:	1	1	1	3	1	0	0	1
457:	0	0	0	0	0	0	1	0
465:	0	0	0	1	0	0	0	1
473:	0	0	0	0	0	0	0	0
481:	1	0	0	0	1	0	0	0
489:	0	0	1	0	0	0	1	0
497:	1	0	0	0	0	0	0	0
505:	0	1	1	0	0	0	0	0
513:	0	0	0	1	1	0	0	0
521:	0	0	0	0	0	0	0	1
529:	1	0	0	0	0	2	0	0
537:	0	1	0	0	0	0	0	1
545:	1	0	0	0	0	0	1	0
553:	0	1	1	1	0	0	0	0
561:	0	1	0	0	0	1	0	0
569:	2	1	0	0	1	0	0	0
577:	0	0	1	0	0	0	1	0
585:	0	1	0	0	0	0	1	0
593:	1	1	1	0	0	0	0	0
601:	0	1	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	1	0	1	0	1
625:	1	0	0	0	1	1	0	0
633:	0	2	1	0	0	0	0	0
641:	0	1	0	0	0	1	0	0
649:	0	0	0	0	0	1	0	0
657:	1	0	0	0	1	0	1	1
665:	0	0	0	0	0	1	1	1
673:	0	0	0	0	0	1	0	0
681:	0	0	1	1	0	1	0	0
689:	0	0	1	1	0	0	0	0
697:	1	1	0	0	0	0	0	0
705:	0	1	0	0	0	0	0	0
713:	1	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	1	1
737:	0	0	0	0	0	0	0	0
745:	0	1	0	0	0	0	0	0
753:	0	0	0	0	1	0	1	0
761:	0	0	0	0	0	0	0	0
769:	1	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	1	0	0	0
793:	0	2	0	1	1	0	1	1

0056

BP/Castex-Ltd Adm-Apx E-002462

801:	0	0	0	1	0	0	0	0

Sample Title: 01

Channel								
809:	0	0	0	0	0	0	0	0
817:	1	0	0	0	0	0	0	0
[illegible]:	0	0	0	0	0	0	1	0
833:	0	0	0	0	0	0	1	0
841:	0	0	0	0	0	0	0	1
849:	0	0	0	0	0	0	0	0
857:	0	0	0	1	0	0	0	0
865:	0	1	0	0	0	0	0	0
873:	0	0	0	0	1	0	1	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	1	0	0	0
897:	0	0	0	0	0	0	1	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
[illegible]:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
[illegible]:	0	0	0	0	0	0	0	0
[illegible]:	0	0	0	0	0	0	0	0
[illegible]:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	1	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

NC 8/28/24

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003623
Batch Identification: 2408035A-RA
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_051
Chamber Serial Number: 10006123A
Detector Serial Number: 51
Env. Background: System Bkgd 372820
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 liter
Generic Mult. Factor: 3.200E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 8/28/2024 5:15:32 PM
Acquisition Date/Time: 8/28/2024 6:38:38 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.5261 +/- 0.0000
Counting Efficiency: 0.1157 +/- 0.0022 on 3/22/2024 11:09:46 AM
Effective Efficiency: 0.0609 +/- 0.0011

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

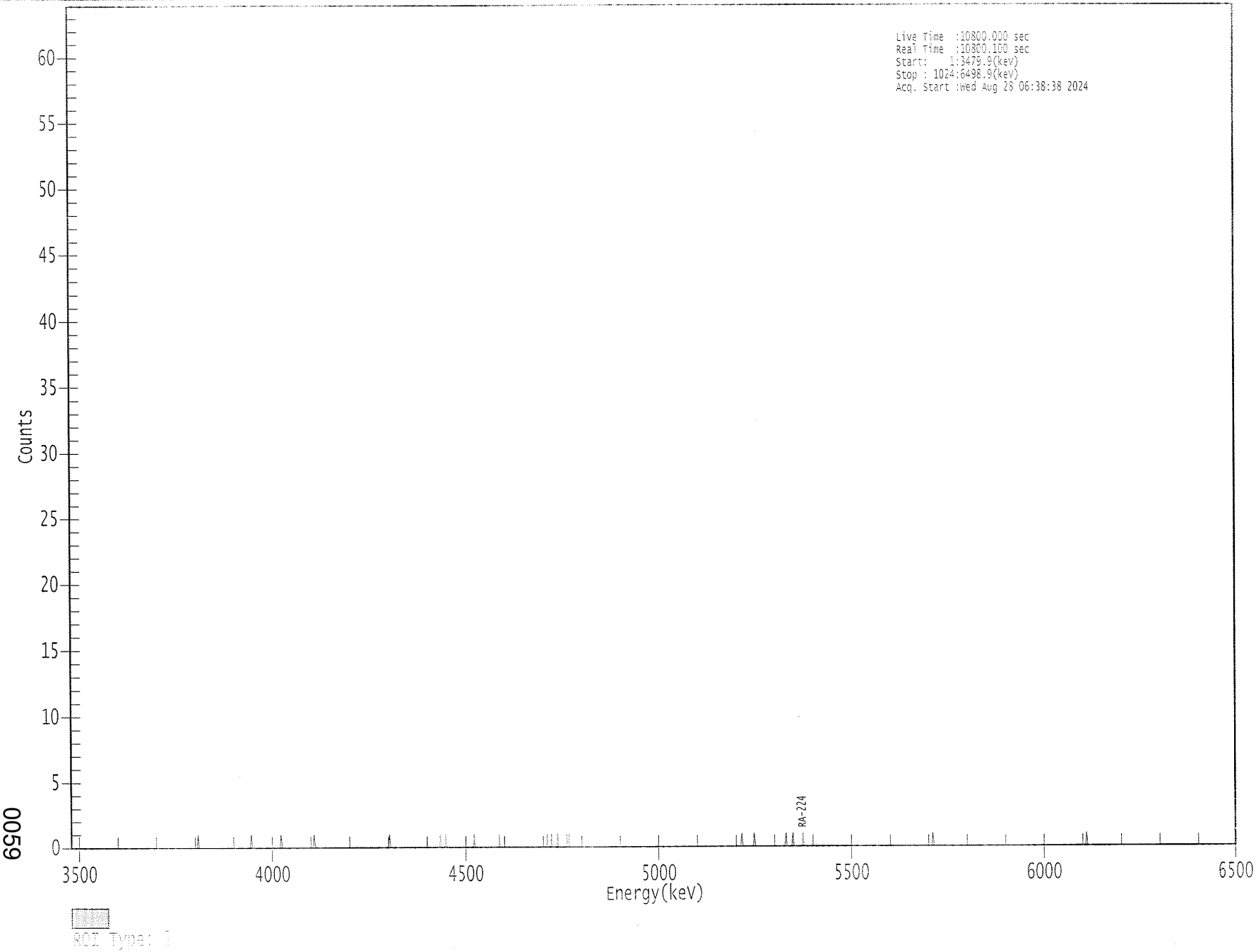
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.375	0.46	446.31	0.54	0.00E+000	3.0
RA-226	4.632	8.46	69.88	0.54	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.881	5685.50*	6.36E-002 +/- 2.84E-001	7.37E-001 +/- 2.72E-002
RA-226	0.970	4785.00*	1.11E+000 +/- 7.79E-001	7.01E-001 +/- 2.59E-002

0058

BP/Castex-Ltd Adm-Apx E-002464



0059

BP/Castex-Ltd Adm-Apx E-002465

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 02

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	1
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	1	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	1	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	1	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	1
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	1	0	0	0	0
329:	1	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	1	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

0060

BP/Castex-Ltd Adm-Apx E-002466

369:	0	0	0	0	0	0	0	1

Sample Title: 02

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	1	0	0	0	1	0	0
425:	0	0	1	0	0	0	0	0
433:	0	0	1	0	1	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	1	0	0	0
593:	0	0	0	0	0	0	0	1
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	1	0	0	0	0
633:	0	1	0	0	0	0	0	0
641:	0	0	1	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	1	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	1	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

BP/Castex-Ltd Adm-Apx E-002468

Apex-Alpha™

NC 8/28/24

Sample Description: CD-19D DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003623
Batch Identification: 2408035A-RA
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_052
Chamber Serial Number: 10006123B
Detector Serial Number: 52
Env. Background: System Bkgd 372821
Reagent Blank: <not performed>

Sample Size: 5.000E-001 +/- 0.000E+000 liter
Generic Mult. Factor: 1.990E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 7/30/2024 5:15:32 PM
Acquisition Date/Time: 8/28/2024 6:38:39 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1679 +/- 0.0030 on 3/22/2024 11:09:43 AM
Effective Efficiency: 0.1679 +/- 0.0030

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

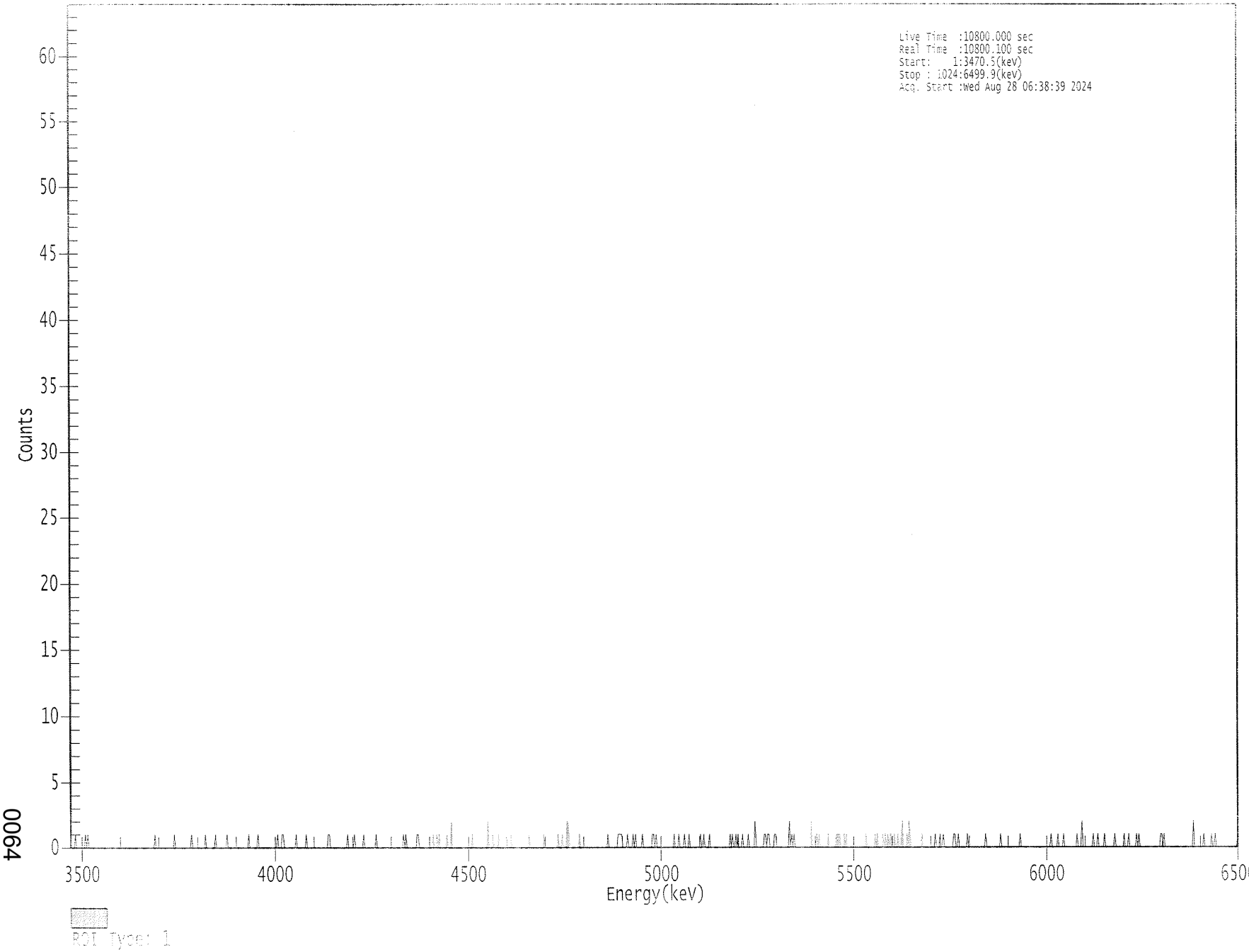
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.543	27.92	37.93	1.08	0.00E+000	3.0
RA-226	4.606	21.92	43.06	1.08	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.974	5685.50*	1.76E+000 +/- 6.69E-001	4.04E-001 +/- 1.41E-002
RA-226	0.959	4785.00*	1.30E+000 +/- 5.62E-001	3.81E-001 +/- 1.32E-002

0063

BP/Castex-Ltd Adm-Apx E-002469



0064

BP/Castex-Ltd Adm-Apx E-002470

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 03

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	1	0	0	0
9:	0	0	0	0	0	1	0	1
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	1	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	1	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	1	0	0	0	0	0
113:	0	0	0	0	0	0	1	0
121:	0	0	0	0	0	0	0	1
129:	0	0	0	0	0	0	0	0
137:	0	1	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	1	0	0	0
161:	0	0	0	0	1	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	1	0	0
185:	0	1	1	0	0	0	0	0
193:	0	0	0	0	0	1	0	0
201:	0	0	0	0	0	0	1	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	1	1	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	1	0	0	0	0	0
249:	1	0	0	0	0	0	0	0
257:	1	0	0	0	0	0	0	0
265:	0	0	0	1	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	1	0	1	0	0
297:	0	0	0	0	0	0	0	1
305:	1	0	0	0	0	0	0	0
313:	0	0	0	0	0	1	0	0
321:	1	0	1	0	0	0	0	0
329:	0	1	0	0	0	2	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	1
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	1	2	0	0

0065

BP/Castex-Ltd Adm-Apx E-002471

369:	0	1	0	0	0	0	1	0

Sample Title: 03

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	1	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	1	0	0	0	0	0	0
409:	0	0	0	0	0	0	1	0
417:	0	0	0	0	0	0	0	0
425:	0	0	1	0	0	0	1	0
433:	0	0	2	2	1	0	0	0
441:	0	0	0	0	0	1	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	1	0
473:	0	0	0	0	0	0	0	1
481:	1	1	1	0	0	0	0	1
489:	0	0	0	0	1	0	1	0
497:	0	0	0	0	1	0	0	0
505:	0	0	0	0	0	1	1	0
513:	1	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	1	0	0	0	1	0	0	0
537:	0	1	0	0	0	1	0	0
545:	0	0	0	0	0	0	0	1
553:	0	0	1	0	0	0	0	1
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	1	0	1	0	0	1	0
585:	1	0	0	0	1	0	0	0
593:	0	1	0	0	0	0	0	2
601:	0	0	0	0	0	0	0	1
609:	1	0	1	1	0	0	0	0
617:	1	1	0	0	0	0	0	0
625:	0	0	0	0	0	2	0	1
633:	0	1	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	2	0	0	0	0	1	0	1
657:	0	0	0	0	0	0	0	1
665:	0	0	0	0	0	0	1	1
673:	1	1	0	0	0	1	0	1
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	1	0	0	0	0	0	0	0
705:	1	0	1	0	0	0	0	1
713:	0	1	0	1	0	1	1	0
721:	0	1	0	0	1	0	0	1
729:	2	0	0	0	1	0	2	1
737:	0	0	0	0	0	0	0	0
745:	0	1	0	0	0	0	0	0
753:	0	0	0	0	0	1	0	0
761:	0	1	0	0	1	0	0	0
769:	0	0	0	0	0	1	1	0
777:	0	1	0	0	0	0	0	0
785:	0	1	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	1	0	0	0	0	0	0

Sample Title: 03

Channel								
809:	0	0	0	0	0	0	1	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	1
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	1	0	0	0	0	0
865:	1	0	0	0	0	1	0	0
873:	0	0	0	0	0	0	0	0
881:	0	1	0	0	0	2	0	0
889:	0	0	0	0	0	0	0	1
897:	0	0	0	1	0	0	0	0
905:	0	1	0	0	0	0	0	0
913:	0	0	1	0	0	0	0	0
921:	0	0	1	0	0	0	1	0
929:	0	0	0	0	0	1	0	1
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	1	1	0	1	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	2
985:	0	0	0	0	0	0	0	0
993:	1	0	0	0	0	0	0	1
1001:	0	0	1	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	1	0

BP/Castex-Ltd Adm-Apx E-002473

Apex-Alpha™

NC 8/28/24

Sample Description: CD-19D
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00003623
Batch Identification: 2408035A-RA
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: Ra

Detector Name: Alpha_053
Chamber Serial Number: 10006122A
Detector Serial Number: 53
Env. Background: System Bkgd 372822
Reagent Blank: <not performed>

Sample Size: 5.000E-001 +/- 0.000E+000 liter
Generic Mult. Factor: 1.910E+000 Generic Div. Factor: 1.000E+000
Sample Date/Time: 7/30/2024 5:15:32 PM
Acquisition Date/Time: 8/28/2024 6:38:36 AM
Acquisition Live Time: 180.0 minutes
Acquisition Real Time: 180.0 minutes

Chem. Recovery Factor: 0.9825 +/- 0.0000
Counting Efficiency: 0.1142 +/- 0.0021 on 3/22/2024 11:09:42 AM
Effective Efficiency: 0.1122 +/- 0.0021

Peak Match Tolerance: 0.350 MeV

PEAK AREA REPORT

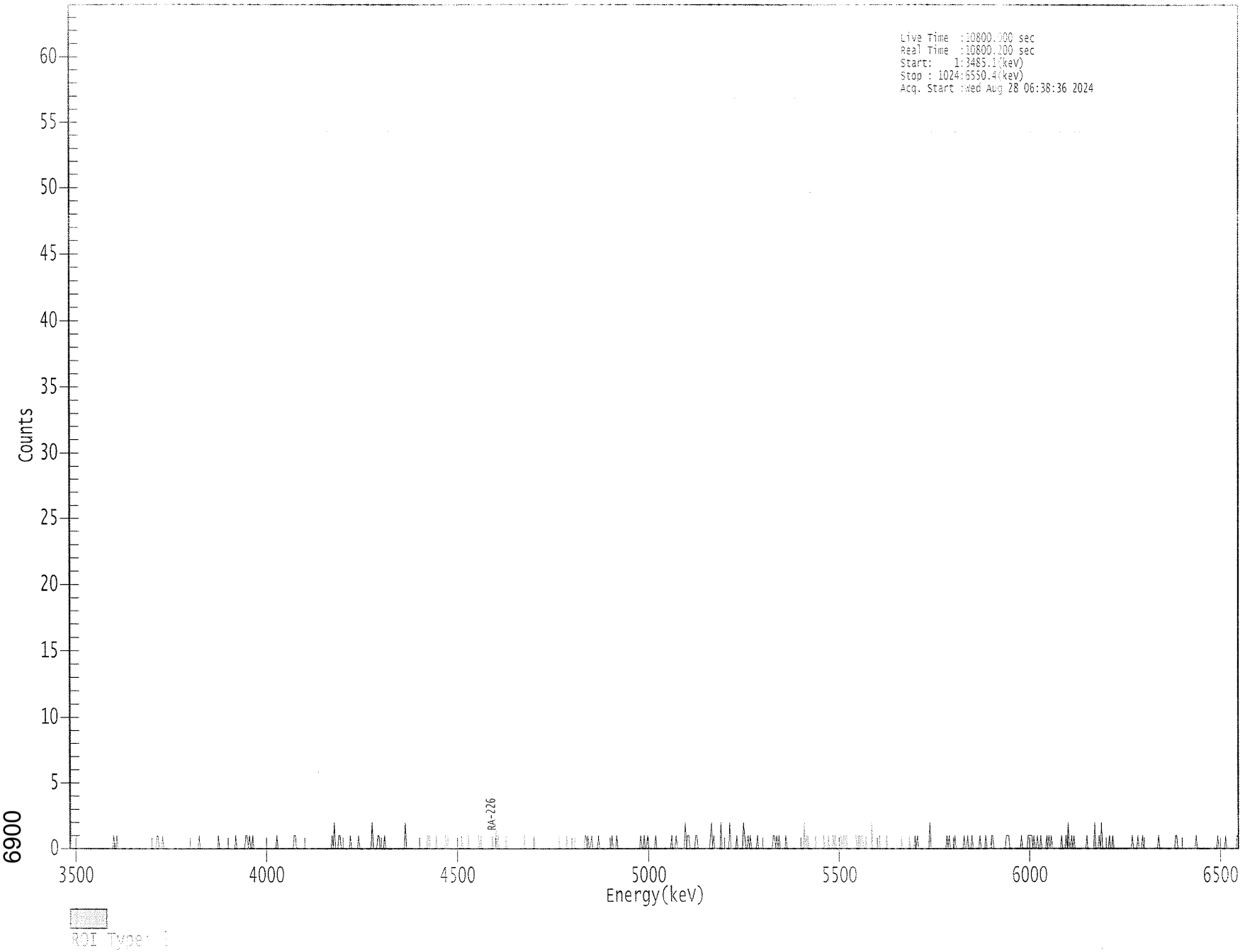
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
RA-224	5.526	26.64	38.28	0.36	0.00E+000	3.0
RA-226	4.590	19.56	46.20	1.44	0.00E+000	3.0

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/liter)	MDA (pCi/liter)
RA-224	0.967	5685.50*	2.41E+000 +/- 9.26E-001	4.39E-001 +/- 1.62E-002
RA-226	0.952	4785.00*	1.67E+000 +/- 7.72E-001	5.96E-001 +/- 2.20E-002

0068

BP/Castex-Ltd Adm-Apx E-002474



0069

BP/Castex-Ltd Adm-Apx E-002475

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 04

Elapsed Live time: 10800
Elapsed Real Time: 10800

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	1	0
41:	0	1	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	1	1	0	0
81:	0	1	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	1	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	1	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	1	0	0	0	0	0	0
153:	0	0	1	1	0	1	0	0
161:	1	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	1	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	1	1	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	1	0	2
233:	0	0	0	1	1	0	0	0
241:	0	0	0	0	0	1	0	0
249:	0	0	0	0	1	0	0	0
257:	0	0	0	0	0	0	0	0
265:	2	0	0	0	0	1	1	0
273:	0	0	0	1	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	2	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	1	1	1	0	0	0	0	0
321:	1	0	0	0	0	0	0	0
329:	1	0	1	0	0	0	0	0
337:	0	0	0	0	0	0	1	0
345:	0	0	0	0	1	0	0	0
353:	0	0	0	0	0	1	0	1
361:	0	0	0	0	0	0	0	0

0070

BP/Castex-Ltd Adm-Apx E-002476

369:	0	1	0	0	2	0	1	0

Sample Title: 04

Channel								
377:	0	0	0	0	0	1	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	1	0	0
401:	0	0	0	0	0	0	1	0
[illegible]:	0	0	0	0	0	0	0	0
[illegible]:	0	0	0	0	0	0	0	0
425:	0	0	0	1	0	0	0	0
433:	0	0	1	0	0	0	0	0
441:	0	1	0	0	0	0	0	0
449:	0	0	1	1	0	1	0	0
[illegible]:	1	0	0	0	0	0	1	0
465:	0	0	0	0	0	0	0	0
[illegible]:	0	0	1	0	0	0	1	0
[illegible]:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
[illegible]:	0	0	0	1	0	0	1	0
505:	0	1	0	0	0	0	0	0
513:	1	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	1	0
529:	0	0	1	0	0	0	0	0
537:	0	0	2	0	1	1	0	0
545:	0	0	0	1	1	0	0	0
[illegible]:	0	0	0	0	0	0	0	0
[illegible]:	1	2	0	1	0	0	0	0
569:	0	2	0	0	0	0	0	0
[illegible]:	0	2	0	0	0	0	0	1
585:	0	0	0	0	0	2	1	0
[illegible]:	0	1	0	1	0	0	0	0
[illegible]:	0	1	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	1
[illegible]:	1	0	1	0	1	0	0	0
625:	0	0	1	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	2	0	1	1	0	0
649:	0	0	0	0	1	0	0	0
657:	0	0	0	1	0	0	0	1
665:	0	0	0	1	0	1	0	0
673:	0	0	1	0	1	1	1	1
[illegible]:	0	0	0	0	0	0	0	1
[illegible]:	0	1	1	1	1	1	0	0
[illegible]:	1	0	0	0	0	2	0	0
705:	0	0	0	0	1	0	0	0
[illegible]:	0	0	1	0	0	0	0	0
[illegible]:	0	0	0	0	0	0	0	1
729:	0	0	0	0	0	0	1	0
[illegible]:	0	0	0	1	0	1	0	0
[illegible]:	0	0	0	0	0	0	0	0
[illegible]:	2	0	0	0	0	0	0	0
[illegible]:	0	0	0	0	0	0	0	1
769:	0	1	0	0	0	0	1	0
777:	0	0	0	0	0	0	1	0
785:	0	1	0	0	0	1	0	0
793:	0	0	0	0	1	0	0	0

801:	0	1	0	0	0	0	1	1

Sample Title: 04

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	1	1	1	0	0
825:	0	0	0	0	0	0	0	0
833:	1	0	0	0	0	0	1	1
841:	1	1	0	1	0	0	1	0
849:	0	1	0	0	0	0	1	0
857:	1	0	1	0	0	0	0	0
865:	0	0	0	1	0	0	0	1
873:	0	2	0	0	1	0	1	0
881:	0	0	0	0	0	0	0	0
889:	0	1	0	0	0	0	0	0
897:	2	0	0	0	1	0	2	0
905:	0	0	0	0	0	1	0	0
913:	1	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	1	0	0	0	0	1	0
937:	0	0	1	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	1	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	1
969:	1	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	1	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	1	0	0	0
1009:	0	0	0	1	0	0	0	0
1017:	0	0	0	0	0	1	1	0

BP/Castex-Ltd Adm-Apx E-002478

8/28/2024 6:27:44 AM

Apex-Alpha™

QA SUMMARY REPORT
Review Of QA Results - Pulser Check

Date : 8/28/2024
Time : 6:27:44 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_011	21f	ALL	Passed	8/28/2024 6:14:33 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:34 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:35 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	8/27/2024 6:14:22 AM
Alpha_040	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:38 AM
Alpha_041	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:39 AM
Alpha_042	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:41 AM
Alpha_043	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:42 AM
Alpha_044	Alpha Analyst100DC	ok Peak FWHM NL 8/28/24	Action	8/28/2024 6:14:44 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:45 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:47 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:49 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:50 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:52 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:54 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:56 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:57 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:14:59 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:15:01 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:15:03 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	8/28/2024 6:15:05 AM

APPROVED BY: NL

APPROVAL DATE: 8/28/24

0073

BP/Castex-Ltd Adm-Apx E-002479

****
***** L I B R A R Y L I S T I N G R E P O R T *****
****

Nuclide Library Title: Radium

Nuclide Library Description: Ra-226, Po-218, Rn-222

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert.(Abs.+-)
PO-218	5.049E+010	6003.000*	0.000	99.9800	0.0000
RN-222	5.049E+010	5490.000*	0.000	99.9200	0.0000
RA-226	5.049E+010	4785.000*	0.000	100.0000	0.0000

* = key line

TOTALS: 3 Nuclides 3 Energy Lines

0074

BP/Castex-Ltd Adm-Apx E-002480

SECTION IX

ANALYTICAL DATA (RADIUM-228)

BP/Castex-Ltd Adm-Apx E-002481

Work Order	24-08035
Analysis Code	Ra228
Run	1
Date Received	8/9/2024
Lab Deadline	8/30/2024
Client	Waypoint Analytical Louisiana
Project	24-215-0009
Report Level	4
Activity Units	pCi
Aliquot Units	l
Matrix	WA
Method	EPA 904.0
Instrument Type	Alpha/Beta GPC
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-7
Tracer Act (dpm/g)	7409.74
Carrier	Yttrium
Carrier Conc (mg/ml)	36.34

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		08/09/24 00:00	1.0000E+00
02	MBL	BLANK		08/09/24 00:00	1.0000E+00
03	DUP	CD-19D	80	07/30/24 12:30	5.0000E-01
04	DO	CD-19D	80	07/30/24 12:30	5.0000E-01

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-002482

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.1477	1094.4	502.0	101.83	2.000	0.0742	0.1454	0.0712	97.96	99.76	1.00	1.00
02	MBL	0.1473	1091.5	259.0	52.68	2.000	0.0721	0.1387	0.0666	91.63	48.27	1.00	1.00
03	DUP	0.1474	1092.2	524.0	106.51	2.000	0.0720	0.1383	0.0663	91.22	97.16	1.00	1.00
04	DO	0.1474	1092.2	484.0	98.38	2.000	0.0713	0.1410	0.0697	95.90	94.34	1.00	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

24-08035
Ra228
Run 1

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			08/29/24 07:16	ZCORD	08/27/24 14:05	ZCORD	08/29/24 09:24	ZCORD
02	MBL			08/29/24 07:16	ZCORD	08/27/24 14:05	ZCORD	08/29/24 09:24	ZCORD
03	DUP			08/29/24 07:16	ZCORD	08/27/24 14:05	ZCORD	08/29/24 09:24	ZCORD
04	DO			08/29/24 07:16	ZCORD	08/27/24 14:05	ZCORD	08/29/24 09:24	ZCORD

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

BP/Castex-Ltd Adm-Apx E-002484

Client: Waypoint Analytical Louisiana
Eberline Services Work Order: 24-08035
Analysis Code: Ra228
Run: 1

Lab Fraction	Nuclide	Sample Desc	Client identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-228	LCS	LCS	pCi/l	8.38E+00	7.04E-01	7.92E-01	9.06E+00	92.49	OK		OK	
02	RA-228	MBL	BLANK	pCi/l	1.29E+00	7.79E-01	1.51E+00					OK	OK
03	RA-228	DUP	CD-19D	pCi/l	7.05E+00	1.17E+00	1.85E+00				NA	OK	
04	RA-228	DO	CD-19D	pCi/l	8.68E+00	1.24E+00	1.82E+00					OK	

BP/Castex-Ltd Adm-Apx E-002485

Preliminary Data Report & Analytical Calculations

Work Order: 24-08035-Ra228-1

Client: Waypoint Analytical Louisiana

Eberline Services Work Order: 24-08035

Analysis Code: Ra228

Run: 1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-228	LCS	08/09/24 00:00	1.00E+00	101.83	97.96	99.76	1.00	8/27/2024 14:05	8/29/2024 9:24
02	RA-228	MBL	08/09/24 00:00	1.00E+00	52.68	91.63	48.27	1.00	8/27/2024 14:05	8/29/2024 9:24
03	RA-228	DUP	07/30/24 12:30	5.00E-01	106.51	91.22	97.16	1.00	8/27/2024 14:05	8/29/2024 9:24
04	RA-228	DO	07/30/24 12:30	5.00E-01	98.38	95.90	94.34	1.00	8/27/2024 14:05	8/29/2024 9:24

0080

BP/Castex-Ltd Adm-Apx E-002486

Preliminary Data Report & Analytical Calculations

Work Order: 24-08035-Ra228-1

Client: Waypoint Analytical Louisiana

Eberline Services Work Order: 24-08035

Analysis Code: Ra228

Run: 1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	RA-228	LCS	08/29/24 11:28		LB4110A	A1	120	892	1.183333333	0.4803
02	RA-228	MBL	08/29/24 11:28		LB4110A	A2	120	171	0.966666667	0.4724
03	RA-228	DUP	08/29/24 11:28		LB4110A	A3	120	480	1.483333333	0.4719
04	RA-228	DO	08/29/24 11:28		LB4110A	A4	120	498	1.25	0.4548

BP/Castex-Ltd Adm-Apx E-002487

0081

Count Room Report
Client: Waypoint Analytical Louis

24-08035-Ra228-1 (pCi/l) in WA
Tracer ID: Ba-7

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	08/09/24 00:00	1.0000	0.1477	1094.4186	502.0000	101.83	1.00	1.00
02	MBL	BLANK	08/09/24 00:00	1.0000	0.1473	1091.4547	259.0000	52.68	1.00	1.00
03	DUP	CD-19D	07/30/24 12:30	0.5000	0.1474	1092.1957	524.0000	106.51	1.00	1.00
04	DO	CD-19D	07/30/24 12:30	0.5000	0.1474	1092.1957	484.0000	98.38	1.00	1.00

BP/Castex-Ltd Adm-Apx E-002488

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 8/29/2024 7:16 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
24-08035	1	Ra228	8/29/2024 7:15	ZCORD	ZC	

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
Ra-228	Ra-12	52.050	8/29/2024	**0.380**	**0.3864**				9.06	0.462	0.00	0.000	0.00	0.000	0.00	0.000
Tc-99 MS	Tc-2a	22043.01	3/21/2023	0.1												

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	**Ba-133**	Ba-7	7409.740	8/29/2024	**0.1477**	**0.1400**
02	**Ba-133**	Ba-7	7409.740	8/29/2024	**0.1473**	**0.1400**
03	**Ba-133**	Ba-7	7409.740	8/29/2024	**0.1474**	**0.1400**
04	**Ba-133**	Ba-7	7409.740	8/29/2024	**0.1474**	**0.1400**

Balance Printer Tapes

Tracer

LCS

Matrix Spike

BP/Castex-Ltd Adm-Apx E-002489

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 8/22/2024 13:12

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
24-08035	1	Ra228	liters	8/30/2024	JHARVEY

Lab Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-19D	DUP					5.0000E-01	5.0000E-01				
04	CD-19D	DO					5.0000E-01	5.0000E-01				

Comments	

Technician: JHarvey Date: 8/29/24

BP/Castex-Ltd Adm-Apx E-002490

Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Printed: 8/29/2024 11:12 AM

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
24-08035	1	Ra228	Yttrium	36.3400	ZCORD

TRetec Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Carrier Data	Filter Data			Gravimetric
			Carrier Added (ml)	Filter Tare (g)	Filter Final (g)	Filter Net (g)	% Recovery
01	LCS	LCS	2.0000	0.0742	0.1454	0.0712	97.96
02	BLANK	MBL	2.0000	0.0721	0.1387	0.0666	91.63
03	DUP	DUP	2.0000	0.0720	0.1383	0.0663	91.22
04	CD-19D	DO	2.0000	0.0713	0.1410	0.0697	95.90

Technician: _____ Date: 8/29/24

BP/Castex-Ltd Adm-Apx E-002491

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
A1	2408035-01	20	892	120	1410	8/29/2024 11:28:08 AM
A2	2408035-02	24	171	120	1410	8/29/2024 11:28:08 AM
A3	2408035-03	25	480	120	1410	8/29/2024 11:28:08 AM
A4	2408035-04	29	498	120	1410	8/29/2024 11:28:08 AM

08/29/24

BP/Castex-Ltd Adm-Apx E-002492

GPC Detector Report
(ALL Backgrounds)

NC 8/29/24

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/2/2019	8/29/2024	1.00E-01	P	3.26E-04	1.54E-01	3.08E-01
LB4110A - A2	Alpha	11/2/2019	8/29/2024	1.17E-01	P	3.68E-03	1.42E-01	2.80E-01
LB4110A - A3	Alpha	11/2/2019	8/29/2024	1.67E-01	P	2.37E-02	1.67E-01	3.10E-01
LB4110A - A4	Alpha	11/2/2019	8/29/2024	1.17E-01	P	2.27E-02	1.77E-01	3.32E-01
LB4110A - B1	Alpha	11/2/2019	8/29/2024	1.67E-01	P	-9.68E-03	1.43E-01	2.96E-01
LB4110A - B2	Alpha	11/2/2019	8/29/2024	1.00E-01	P	-5.66E-02	1.50E-01	3.57E-01
LB4110A - B3	Alpha	11/2/2019	8/29/2024	1.33E-01	P	9.09E-03	1.57E-01	3.04E-01
LB4110A - B4	Alpha	11/2/2019	8/29/2024	1.67E-02	P	-1.02E-02	1.14E-01	2.37E-01
LB4110A - C1	Alpha	11/2/2019	8/29/2024	6.67E-02	P	-3.39E-02	1.06E-01	2.46E-01
LB4110A - C2	Alpha	11/2/2019	8/29/2024	3.33E-02	P	-2.51E-02	1.00E-01	2.26E-01
LB4110A - C3	Alpha	11/2/2019	8/29/2024	5.00E-02	P	-2.04E-02	9.17E-02	2.04E-01
LB4110A - C4	Alpha	11/2/2019	8/29/2024	2.00E-01	P	3.81E-02	2.23E-01	4.09E-01
LB4110A - D1	Alpha	11/2/2019	8/29/2024	3.33E-02	P	-4.84E-02	7.10E-02	1.90E-01
LB4110A - D2	Alpha	11/2/2019	8/29/2024	1.67E-01	P	-3.50E-02	1.05E-01	2.44E-01
LB4110A - D3	Alpha	11/2/2019	8/29/2024	1.67E-02	P	-5.19E-02	1.26E-01	3.04E-01
LB4110A - D4	Alpha	11/2/2019	8/29/2024	2.17E-01	P	1.29E-02	1.58E-01	3.04E-01
LB4110A - E1	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E2	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E3	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - E4	Alpha	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.93E+02	2.53E+04
LB4110A - F1	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-3.26E-02	1.31E-01	2.95E-01
LB4110A - F2	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-3.95E-02	1.19E-01	2.77E-01
LB4110A - F3	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-2.28E-02	1.05E-01	2.34E-01
LB4110A - F4	Alpha	11/2/2019	1/10/2022	0.00E+00	P	-4.44E-02	7.07E-02	1.86E-01
LB4110A - G1	Alpha	11/2/2019	8/29/2024	5.00E-02	P	-2.69E-02	9.18E-02	2.10E-01
LB4110A - G2	Alpha	11/2/2019	8/29/2024	6.67E-02	P	-9.96E-02	9.56E-02	2.91E-01
LB4110A - G3	Alpha	11/2/2019	8/29/2024	3.33E-02	P	-4.76E-02	1.38E-01	3.23E-01
LB4110A - G4	Alpha	11/2/2019	8/29/2024	6.67E-02	P	-1.98E-02	1.11E-01	2.43E-01

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Backgrounds)

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Page 1 of 1

NC 8/29/24

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/2/2019	8/29/2024	1.18E+00	P	-7.41E-01	1.28E+00	3.30E+00
LB4110A - A2	Beta	11/2/2019	8/29/2024	9.67E-01	P	-6.73E-01	1.44E+00	3.56E+00
LB4110A - A3	Beta	11/2/2019	8/29/2024	1.48E+00	P	-5.10E-01	1.39E+00	3.29E+00
LB4110A - A4	Beta	11/2/2019	8/29/2024	1.25E+00	P	-1.06E+01	1.59E+00	1.38E+01
LB4110A - B1	Beta	11/2/2019	8/29/2024	1.60E+00	P	7.24E-01	1.38E+00	2.05E+00
LB4110A - B2	Beta	11/2/2019	8/29/2024	1.23E+00	P	2.36E-01	1.29E+00	2.35E+00
LB4110A - B3	Beta	11/2/2019	8/29/2024	1.10E+00	P	7.52E-01	1.27E+00	1.79E+00
LB4110A - B4	Beta	11/2/2019	8/29/2024	1.75E+00	P	2.77E-01	1.47E+00	2.66E+00
LB4110A - C1	Beta	11/2/2019	8/29/2024	1.05E+00	P	6.69E-01	1.09E+00	1.51E+00
LB4110A - C2	Beta	11/2/2019	8/29/2024	1.18E+00	P	5.42E-01	9.39E-01	1.33E+00
LB4110A - C3	Beta	11/2/2019	8/29/2024	9.67E-01	P	5.53E-01	1.17E+00	1.78E+00
LB4110A - C4	Beta	11/2/2019	8/29/2024	1.07E+00	P	7.74E-01	1.21E+00	1.65E+00
LB4110A - D1	Beta	11/2/2019	8/29/2024	6.50E-01	P	4.86E-01	9.69E-01	1.45E+00
LB4110A - D2	Beta	11/2/2019	8/29/2024	8.83E-01	P	-9.41E-01	1.90E+00	4.75E+00
LB4110A - D3	Beta	11/2/2019	8/29/2024	9.00E-01	P	5.63E-01	1.03E+00	1.50E+00
LB4110A - D4	Beta	11/2/2019	8/29/2024	8.83E-01	P	8.48E-01	1.37E+00	1.88E+00
LB4110A - E1	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E2	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E3	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - E4	Beta	11/2/2017	5/19/2020	1.00E+05	F	-2.35E+04	8.94E+02	2.53E+04
LB4110A - F1	Beta	11/2/2019	1/10/2022	1.67E-02	P	2.10E-01	1.28E+00	2.35E+00
LB4110A - F2	Beta	11/2/2019	1/10/2022	0.00E+00	P	-5.04E-01	1.19E+00	2.88E+00
LB4110A - F3	Beta	11/2/2019	1/10/2022	0.00E+00	P	-2.58E-01	1.18E+00	2.62E+00
LB4110A - F4	Beta	11/2/2019	1/10/2022	0.00E+00	P	-1.30E+00	1.60E+00	4.50E+00
LB4110A - G1	Beta	11/2/2019	8/29/2024	1.38E+00	P	7.47E-01	1.24E+00	1.73E+00
LB4110A - G2	Beta	11/2/2019	8/29/2024	1.65E+00	P	8.50E-01	1.58E+00	2.31E+00
LB4110A - G3	Beta	11/2/2019	8/29/2024	1.20E+00	P	5.39E-01	1.25E+00	1.95E+00
LB4110A - G4	Beta	11/2/2019	8/29/2024	1.18E+00	P	-3.03E-01	1.30E+00	2.91E+00

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Efficiencies)

Printed: 8/29/2024 7:55 AM

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/2/2019	8/29/2024	0.2140	P	0.1904	0.2230	0.2556
LB4110A - A2	Alpha	11/2/2019	8/29/2024	0.1873	P	0.1748	0.1968	0.2188
LB4110A - A3	Alpha	11/2/2019	8/29/2024	0.1851	P	0.1722	0.1924	0.2126
LB4110A - A4	Alpha	11/2/2019	8/29/2024	0.2126	P	0.1969	0.2208	0.2448
LB4110A - B1	Alpha	11/2/2019	8/29/2024	0.2026	P	0.1925	0.2118	0.2310
LB4110A - B2	Alpha	11/2/2019	8/29/2024	0.1856	P	0.1674	0.1913	0.2152
LB4110A - B3	Alpha	11/2/2019	8/29/2024	0.2162	P	0.1944	0.2247	0.2550
LB4110A - B4	Alpha	11/2/2019	8/29/2024	0.2120	P	0.1955	0.2214	0.2474
LB4110A - C1	Alpha	11/2/2019	8/29/2024	0.1416	W	0.1349	0.1840	0.2332
LB4110A - C2	Alpha	11/2/2019	8/29/2024	0.1591	P	0.1447	0.1893	0.2338
LB4110A - C3	Alpha	11/2/2019	8/29/2024	0.1616	P	0.1415	0.2082	0.2749
LB4110A - C4	Alpha	11/2/2019	8/29/2024	0.1662	P	0.1447	0.1980	0.2513
LB4110A - D1	Alpha	11/2/2019	8/29/2024	0.1807	P	0.1652	0.1916	0.2180
LB4110A - D2	Alpha	11/2/2019	8/29/2024	0.1979	P	0.1865	0.2236	0.2607
LB4110A - D3	Alpha	11/2/2019	8/29/2024	0.1583	F	0.1891	0.2315	0.2739
LB4110A - D4	Alpha	11/2/2019	8/29/2024	0.2267	F	0.1471	0.1781	0.2092
LB4110A - E1	Alpha	11/2/2017	5/19/2020	0.2075	P	0.1686	0.2257	0.2828
LB4110A - E2	Alpha	11/2/2017	5/19/2020	0.1778	P	0.1514	0.2049	0.2583
LB4110A - E3	Alpha	11/2/2017	5/19/2020	0.2234	P	0.1549	0.2076	0.2604
LB4110A - E4	Alpha	11/2/2017	5/19/2020	0.2155	P	0.1746	0.2353	0.2961
LB4110A - F1	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1419	0.2082	0.2746
LB4110A - F2	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1190	0.1738	0.2286
LB4110A - F3	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1494	0.2173	0.2853
LB4110A - F4	Alpha	11/2/2019	1/10/2022	0.0000	F	0.1457	0.2123	0.2788
LB4110A - G1	Alpha	11/2/2019	8/29/2024	0.1752	P	0.1709	0.1846	0.1984
LB4110A - G2	Alpha	11/2/2019	8/29/2024	0.1753	P	0.1668	0.1807	0.1946
LB4110A - G3	Alpha	11/2/2019	8/29/2024	0.2005	P	0.1868	0.2082	0.2296
LB4110A - G4	Alpha	11/2/2019	8/29/2024	0.1746	P	0.1630	0.1807	0.1984

NC 8/29/24

out of service 11/2/18 NC

Eberline Analytical
Oak Ridge Laboratory

GPC Detector Report
(ALL Efficiencies)

Printed: 8/29/2024 7:56 AM

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/2/2019	8/29/2024	0.4873	P	0.4106	0.5270	0.6434
LB4110A - A2	Beta	11/2/2019	8/29/2024	0.4432	P	0.4070	0.4443	0.4817
LB4110A - A3	Beta	11/2/2019	8/29/2024	0.4519	P	0.4154	0.4677	0.5201
LB4110A - A4	Beta	11/2/2019	8/29/2024	0.5112	P	0.4548	0.5345	0.6143
LB4110A - B1	Beta	11/2/2019	8/29/2024	0.4850	P	0.4500	0.4949	0.5399
LB4110A - B2	Beta	11/2/2019	8/29/2024	0.4361	P	0.3628	0.4573	0.5519
LB4110A - B3	Beta	11/2/2019	8/29/2024	0.5349	P	0.4734	0.5569	0.6404
LB4110A - B4	Beta	11/2/2019	8/29/2024	0.5140	P	0.4545	0.5362	0.6179
LB4110A - C1	Beta	11/2/2019	8/29/2024	0.3629	W	0.3405	0.4434	0.5463
LB4110A - C2	Beta	11/2/2019	8/29/2024	0.3932	P	0.3564	0.4499	0.5434
LB4110A - C3	Beta	11/2/2019	8/29/2024	0.4867	P	0.4375	0.5395	0.6415
LB4110A - C4	Beta	11/2/2019	8/29/2024	0.4478	P	0.3879	0.4855	0.5831
LB4110A - D1	Beta	11/2/2019	8/29/2024	0.4637	P	0.4053	0.5386	0.6719
LB4110A - D2	Beta	11/2/2019	8/29/2024	0.4620	P	0.4194	0.5523	0.6851
LB4110A - D3	Beta	11/2/2019	8/29/2024	0.3499	F	0.4017	0.5595	0.7173
LB4110A - D4	Beta	11/2/2019	8/29/2024	0.5278	P	0.3713	0.4610	0.5506
LB4110A - E1	Beta	11/2/2017	5/19/2020	0.5360	P	0.4167	0.5408	0.6649
LB4110A - E2	Beta	11/2/2017	5/19/2020	0.4520	P	0.3728	0.4910	0.6092
LB4110A - E3	Beta	11/2/2017	5/19/2020	0.5775	P	0.3848	0.5001	0.6154
LB4110A - E4	Beta	11/2/2017	5/19/2020	0.5466	P	0.4532	0.5887	0.7241
LB4110A - F1	Beta	11/2/2019	1/10/2022	0.0044	F	0.3744	0.5247	0.6751
LB4110A - F2	Beta	11/2/2019	1/10/2022	0.0009	F	0.3099	0.4365	0.5632
LB4110A - F3	Beta	11/2/2019	1/10/2022	0.0002	F	0.4027	0.5661	0.7294
LB4110A - F4	Beta	11/2/2019	1/10/2022	0.0003	F	0.3883	0.5461	0.7040
LB4110A - G1	Beta	11/2/2019	8/29/2024	0.4222	P	0.4082	0.4394	0.4706
LB4110A - G2	Beta	11/2/2019	8/29/2024	0.4001	P	0.3819	0.4259	0.4699
LB4110A - G3	Beta	11/2/2019	8/29/2024	0.4942	P	0.4650	0.5062	0.5474
LB4110A - G4	Beta	11/2/2019	8/29/2024	0.4407	P	0.4032	0.4383	0.4735

NC 8/28/24

11/2/19 NC drops to the

Apex-Gamma

Analysis Report for 2408035-01
SPIKE

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408035-01
Sample Description	: SPIKE
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 8/27/2024 4:15:30PM
Acquisition Started	: 8/27/2024 4:58:29PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 6/24/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 151991

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/27/2024 5:13:40PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0091

Analysis Report for 2408035-01

SPIKE

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.41	37 -	40	37.21	4.87E+02	69.71	3.05E+02	1.69
	2	52.99	52 -	58	54.75	7.19E+01	36.46	1.90E+02	1.24
M	3	62.10	60 -	71	63.83	2.18E+02	38.00	1.00E+02	1.47
m	4	66.04	60 -	71	67.76	1.14E+02	31.75	1.06E+02	1.47
	5	71.36	72 -	76	73.06	2.13E+01	26.80	1.41E+02	3.08
	6	81.20	80 -	86	82.88	9.79E+02	71.69	2.27E+02	1.12
M	7	112.23	109 -	126	113.83	1.92E+02	36.11	8.02E+01	1.33
m	8	116.18	109 -	126	117.77	5.49E+01	25.46	7.05E+01	1.34
M	9	161.41	157 -	177	162.88	1.82E+01	19.49	6.14E+01	1.34
m	10	168.67	157 -	177	170.12	1.31E+01	17.55	6.27E+01	1.35
	11	258.90	257 -	264	260.13	1.92E+01	17.89	4.16E+01	5.14
	12	276.16	266 -	283	277.35	8.80E+01	41.79	1.30E+02	1.63
M	13	303.19	299 -	314	304.31	1.93E+02	29.98	2.85E+01	1.78
m	14	307.20	299 -	314	308.31	2.03E+01	16.70	3.68E+01	1.78
M	15	334.12	329 -	346	335.16	7.34E+01	21.42	2.34E+01	2.02
m	16	338.46	329 -	346	339.50	2.42E+01	17.86	1.63E+01	2.02
	17	356.40	355 -	362	357.40	6.69E+02	54.81	5.29E+01	1.98
M	18	384.06	382 -	391	384.99	1.33E+02	28.99	4.72E+01	1.74
m	19	387.21	382 -	391	388.14	1.93E+02	36.34	1.10E+02	1.75
M	20	415.16	412 -	426	416.02	2.97E+01	14.32	1.35E+01	2.17
m	21	418.69	412 -	426	419.54	1.51E+01	16.03	1.55E+01	2.17
	22	437.49	434 -	441	438.30	7.99E+01	20.40	1.63E+01	1.78
	23	446.39	444 -	449	447.18	1.25E+01	8.06	3.07E+00	2.05
	24	459.96	457 -	464	460.72	8.36E+00	10.20	1.13E+01	3.19
	25	468.09	465 -	471	468.83	1.28E+01	10.43	1.04E+01	1.99
	26	472.67	472 -	476	473.40	8.23E+00	9.55	1.35E+01	1.06
	27	592.47	590 -	595	592.95	4.50E+00	5.74	3.00E+00	2.88
	28	628.37	625 -	632	628.78	9.00E+00	6.00	0.00E+00	1.34
	29	663.46	661 -	666	663.80	5.00E+00	4.47	0.00E+00	2.41
	30	730.64	728 -	733	730.84	4.57E+00	6.78	4.86E+00	1.77
	31	1130.25	1126 -	1132	1129.80	5.00E+00	4.47	0.00E+00	2.76

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/27/2024 5:13:40PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000151875.CNF

0092

BP/Castex-Ltd Adm-Apx E-002498

Analysis Report for 2408035-01

SPIKE

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.41	4.87E+02	69.71			4.87E+02	6.97E+01
	2	52.99	7.19E+01	36.46	6.29E-01	1.32E+00	7.13E+01	3.65E+01
M	3	62.10	2.18E+02	38.00	2.12E+00	8.25E-01	2.16E+02	3.80E+01
m	4	66.04	1.14E+02	31.75	9.42E+00	2.43E+00	1.05E+02	3.18E+01
	5	71.36	2.13E+01	26.80			2.13E+01	2.68E+01
	6	81.20	9.79E+02	71.69			9.79E+02	7.17E+01
M	7	112.23	1.92E+02	36.11			1.92E+02	3.61E+01
m	8	116.18	5.49E+01	25.46			5.49E+01	2.55E+01
M	9	161.41	1.82E+01	19.49			1.82E+01	1.95E+01
m	10	168.67	1.31E+01	17.55			1.31E+01	1.75E+01
	11	258.90	1.92E+01	17.89			1.92E+01	1.79E+01
	12	276.16	8.80E+01	41.79			8.80E+01	4.18E+01
M	13	303.19	1.93E+02	29.98			1.93E+02	3.00E+01
m	14	307.20	2.03E+01	16.70			2.03E+01	1.67E+01
M	15	334.12	7.34E+01	21.42			7.34E+01	2.14E+01
m	16	338.46	2.42E+01	17.86	7.56E-01	1.23E+00	2.34E+01	1.79E+01
	17	356.40	6.69E+02	54.81			6.69E+02	5.48E+01
M	18	384.06	1.33E+02	28.99			1.33E+02	2.90E+01
m	19	387.21	1.93E+02	36.34			1.93E+02	3.63E+01
M	20	415.16	2.97E+01	14.32			2.97E+01	1.43E+01
m	21	418.69	1.51E+01	16.03			1.51E+01	1.60E+01
	22	437.49	7.99E+01	20.40			7.99E+01	2.04E+01
	23	446.39	1.25E+01	8.06			1.25E+01	8.06E+00
	24	459.96	8.36E+00	10.20			8.36E+00	1.02E+01
	25	468.09	1.28E+01	10.43			1.28E+01	1.04E+01
	26	472.67	8.23E+00	9.55			8.23E+00	9.55E+00
	27	592.47	4.50E+00	5.74			4.50E+00	5.74E+00
	28	628.37	9.00E+00	6.00			9.00E+00	6.00E+00
	29	663.46	5.00E+00	4.47	1.66E+00	7.66E-01	3.34E+00	4.54E+00
	30	730.64	4.57E+00	6.78			4.57E+00	6.78E+00
	31	1130.25	5.00E+00	4.47			5.00E+00	4.47E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Analysis Report for 2408035-01

SPIKE

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
BA-133	0.99	81.00	*	34.06	5.05E+02	4.24E+01
		302.84	*	18.33	4.98E+02	8.19E+01
		356.01	*	62.05	4.99E+02	4.58E+01
TH-234	0.96	63.29	*	3.80	6.32E+02	1.12E+02

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
BA-133	0.997	5.02E+02	2.91E+01	
TH-234	0.964	6.32E+02	1.12E+02	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0094

Analysis Report for 2408035-01

SPIKE

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/27/2024 5:13:40PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	35.41	5.40718E-01	7.16	Tol.	I-125 I-129
	2	52.99	7.91678E-02	25.60		
m	4	66.04	1.16557E-01	15.18		
	5	71.36	2.36715E-02	62.89		
M	7	112.23	2.12904E-01	9.42	Tol.	U-237
m	8	116.18	6.09815E-02	23.19	Tol.	U-237
M	9	161.41	2.01947E-02	53.63	Sum	
m	10	168.67	1.45027E-02	67.23		
	11	258.90	2.13611E-02	46.52		
	12	276.16	9.77487E-02	23.75		
m	14	307.20	2.25920E-02	41.07		
M	15	334.12	8.15295E-02	14.60		
m	16	338.46	2.60060E-02	38.25		
M	18	384.06	1.47226E-01	10.94	Sum	
m	19	387.21	2.14863E-01	9.40		
M	20	415.16	3.30476E-02	24.07		
m	21	418.69	1.67901E-02	53.04	Sum	
	22	437.49	8.87247E-02	12.77	Sum	
	23	446.39	1.38492E-02	32.34		
	24	459.96	9.28571E-03	61.01		
	25	468.09	1.42284E-02	40.72		
	26	472.67	9.14815E-03	58.01		
	27	592.47	5.00000E-03	63.83		
	28	628.37	1.00000E-02	33.33		
	29	663.46	3.71451E-03	67.86		
	30	730.64	5.07937E-03	74.18		
	31	1130.25	5.55556E-03	44.72		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

0095

Analysis Report for 2408035-01

SPIKE

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.22E+01	1.22E+01	-2.40E+00	5.62E+00
		136.48		10.60	1.24E+02		3.65E+01	5.76E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.26E+02	2.26E+02	5.91E+00	1.06E+02
	SN-113	255.12		1.93	6.07E+02	2.67E+01	8.09E+01	2.71E+02
		391.69		61.90	2.67E+01		2.40E+01	1.23E+01
	SN-119M	23.87		16.10	1.81E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-125	27.30		100.00	7.88E-01	7.88E-01	2.79E-01	3.72E-01
		30.90		19.70	2.92E+01		3.22E+02	1.44E+01
		35.49		6.49	6.19E+01		3.03E+02	3.03E+01
	I-129	29.78		57.00	8.86E+00	8.86E+00	8.45E+01	4.38E+00
		33.60		13.20	1.85E+01		-4.26E+02	8.97E+00
		39.58		7.52	1.97E+01		8.30E+00	9.11E+00
+	BA-133	81.00	*	34.06	3.11E+01	2.43E+01	5.05E+02	1.48E+01
		302.84	*	18.33	1.29E+02		4.98E+02	6.10E+01
		356.01	*	62.05	2.43E+01		4.99E+02	1.12E+01
	CE-139	165.85		80.35	1.82E+01	1.82E+01	-7.57E+00	8.44E+00
	CE-144	133.54		10.80	1.20E+02	1.20E+02	6.95E+01	5.58E+01
	HG-203	279.19		77.30	2.65E+01	2.65E+01	2.92E+01	1.24E+01
	PB-210	46.50		4.25	5.02E+01	5.02E+01	-6.17E-01	2.31E+01
	TH-231	25.64		14.70	2.46E-01	2.46E-01	0.00E+00	0.00E+00
		84.21		6.40	1.51E+02		-3.19E+01	7.14E+01
	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93		23.75	6.05E+00		-1.85E+01	2.81E+00
+	TH-234	63.29	*	3.80	2.26E+02	2.26E+02	6.32E+02	1.09E+02
	NP-237	29.37		14.00	1.64E+01	1.64E+01	-3.45E+02	8.02E+00
		86.50		12.60	6.95E+01		-1.41E+01	3.27E+01
	U-237	97.08		16.30	5.50E+01	3.54E+01	1.89E+01	2.56E+01
		101.07		26.30	3.54E+01		-2.74E+00	1.65E+01
		114.00		12.30	1.75E+02		9.20E+01	8.42E+01
		208.01		22.00	8.60E+01		3.42E+01	4.03E+01
	AM-241	59.54		35.90	9.80E+00	9.80E+00	-4.09E+01	4.51E+00
	AM-243	74.67		66.00	7.82E+00	7.82E+00	1.21E+00	3.59E+00

0096

BP/Castex-Ltd Adm-Apx E-002502

Analysis Report for 2408035-01

SPIKE

+	=	Nuclide identified during the nuclide identification
*	=	Energy line found in the spectrum
>	=	MDA value not calculated
@	=	Half-life too short to be able to perform the decay correction

KB 8/27/24

Apex-Gamma

Analysis Report for 2408035-02
BLANK

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408035-02
Sample Description	: BLANK
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 8/27/2024 4:15:41PM
Acquisition Started	: 8/27/2024 4:58:23PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE1
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.2 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 33 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 8/12/2024
Efficiency Calibration Used Done On	: 12/14/2021
Efficiency Calibration Description	:
Sample Number	: 151990

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/27/2024 5:13:26PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0098

Analysis Report for 2408035-02

BLANK

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	57.01	55 -	69	56.83	6.83E+01	31.50	1.59E+02	1.84
m	2	60.94	55 -	69	60.75	3.17E+02	73.92	4.74E+02	4.65
M	3	76.38	71 -	83	76.19	5.13E+02	76.75	3.40E+02	2.89
m	4	79.22	71 -	83	79.02	4.71E+02	77.84	3.35E+02	3.16
M	5	107.88	101 -	120	107.69	2.74E+02	61.19	2.97E+02	3.94
m	6	112.11	101 -	120	111.91	8.87E+01	57.29	2.62E+02	3.60
m	7	117.94	101 -	120	117.75	2.85E+01	32.75	1.63E+02	2.38
	8	129.70	127 -	133	129.51	2.76E+01	31.23	1.57E+02	3.44
	9	249.19	247 -	251	249.00	1.36E+01	14.68	3.69E+01	2.83
	10	272.90	268 -	278	272.71	8.16E+01	30.12	7.87E+01	3.43
	11	300.38	294 -	308	300.19	1.79E+02	47.81	1.67E+02	3.07
M	12	330.32	323 -	340	330.12	8.20E+01	26.13	4.81E+01	3.15
m	13	335.20	323 -	340	335.00	4.18E+01	23.66	4.63E+01	2.62
	14	352.34	347 -	360	352.14	6.06E+02	58.40	1.25E+02	3.21
	15	382.89	374 -	393	382.69	3.94E+02	57.06	1.40E+02	5.63
M	16	411.75	406 -	421	411.56	3.40E+01	25.08	7.26E+01	3.22
m	17	417.64	406 -	421	417.44	3.00E+01	21.35	3.94E+01	3.23
	18	433.40	429 -	439	433.21	1.10E+02	26.33	3.69E+01	3.12
	19	463.88	457 -	470	463.69	1.60E+01	21.02	4.19E+01	2.63
	20	539.56	536 -	543	539.36	8.77E+00	7.75	4.45E+00	4.20
	21	567.96	563 -	571	567.76	7.83E+00	9.41	8.33E+00	1.48

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/27/2024 5:13:26PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000151874.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	57.01	6.83E+01	31.50			6.83E+01	3.15E+01
m	2	60.94	3.17E+02	73.92	2.16E+01	2.77E+00	2.95E+02	7.40E+01
M	3	76.38	5.13E+02	76.75			5.13E+02	7.68E+01
m	4	79.22	4.71E+02	77.84			4.71E+02	7.78E+01
M	5	107.88	2.74E+02	61.19	4.28E+00	2.52E+00	2.69E+02	6.12E+01
m	6	112.11	8.87E+01	57.29			8.87E+01	5.73E+01
m	7	117.94	2.85E+01	32.75			2.85E+01	3.27E+01
	8	129.70	2.76E+01	31.23			2.76E+01	3.12E+01

0099

BP/Castex-Ltd Adm-Apx E-002505

Analysis Report for 2408035-02

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	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	9	249.19	1.36E+01	14.68			1.36E+01	1.47E+01
	10	272.90	8.16E+01	30.12			8.16E+01	3.01E+01
	11	300.38	1.79E+02	47.81			1.79E+02	4.78E+01
M	12	330.32	8.20E+01	26.13			8.20E+01	2.61E+01
m	13	335.20	4.18E+01	23.66			4.18E+01	2.37E+01
	14	352.34	6.06E+02	58.40			6.06E+02	5.84E+01
	15	382.89	3.94E+02	57.06			3.94E+02	5.71E+01
M	16	411.75	3.40E+01	25.08			3.40E+01	2.51E+01
m	17	417.64	3.00E+01	21.35			3.00E+01	2.14E+01
	18	433.40	1.10E+02	26.33			1.10E+02	2.63E+01
	19	463.88	1.60E+01	21.02			1.60E+01	2.10E+01
	20	539.56	8.77E+00	7.75			8.77E+00	7.75E+00
	21	567.96	7.83E+00	9.41			7.83E+00	9.41E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
TH-234	0.86	63.29	*	3.80	7.60E+02	1.92E+02
AM-241	0.95	59.54	*	35.90	8.05E+01	2.03E+01
AM-243	0.92	74.67	*	66.00	1.21E+02	1.86E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

0100

BP/Castex-Ltd Adm-Apx E-002506

Analysis Report for 2408035-02

BLANK

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
?	TH-234	0.868	7.60E+02	1.92E+02	
?	AM-241	0.951	8.05E+01	2.03E+01	
	AM-243	0.928	1.21E+02	1.86E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0101

Analysis Report for 2408035-02

BLANK

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/27/2024 5:13:26PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	57.01	7.58530E-02	23.07		
m	4	79.22	5.23546E-01	8.26	Tol.	BA-133
M	5	107.88	2.99435E-01	11.36		
m	6	112.11	9.85459E-02	32.30	Tol.	U-237
m	7	117.94	3.16151E-02	57.54		
	8	129.70	3.06866E-02	56.54		
	9	249.19	1.50694E-02	54.12		
	10	272.90	9.07025E-02	18.45		
	11	300.38	1.98393E-01	13.39	Tol.	BA-133
M	12	330.32	9.11422E-02	15.93		
m	13	335.20	4.64539E-02	28.30		
	14	352.34	6.73805E-01	4.82		
	15	382.89	4.37778E-01	7.24		
M	16	411.75	3.77868E-02	36.87		
m	17	417.64	3.33432E-02	35.58		
	18	433.40	1.21719E-01	12.02		
	19	463.88	1.78078E-02	65.59		
	20	539.56	9.74747E-03	44.15		
	21	567.96	8.70370E-03	60.05		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

0102

Analysis Report for 2408035-02

BLANK

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.44E-07	5.44E-07	0.00E+00	0.00E+00
		3.31		12.30	6.51E-06		0.00E+00	0.00E+00
	FE-55	5.89		24.50	1.09E-04	1.09E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	2.06E+01	2.06E+01	1.94E+00	9.78E+00
		136.48		10.60	1.88E+02		8.53E+01	8.96E+01
	NI-59	6.92		29.80	2.19E-04	2.19E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	8.08E-03	8.08E-03	0.00E+00	0.00E+00
		18.60		10.00	6.79E-02		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	4.51E-02	4.51E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	3.62E+02	3.62E+02	-4.50E+01	1.74E+02
	SN-113	255.12		1.93	1.01E+03	3.20E+01	-1.03E+02	4.70E+02
		391.69		61.90	3.20E+01		6.69E-01	1.50E+01
	SN-119M	23.87		16.10	1.08E-01	9.18E-02	0.00E+00	0.00E+00
		25.10		22.70	9.18E-02		0.00E+00	0.00E+00
	I-125	27.30		100.00	2.79E-02	2.79E-02	0.00E+00	0.00E+00
		30.90		19.70	8.87E+00		2.81E+01	4.33E+00
		35.49		6.49	5.26E+01		2.96E+02	2.58E+01
	I-129	29.78		57.00	2.16E+00	2.16E+00	2.25E+00	1.05E+00
		33.60		13.20	2.02E+01		8.39E+01	9.90E+00
		39.58		7.52	5.34E+01		3.99E+01	2.61E+01
	BA-133	81.00		34.06	6.93E+01	6.93E+01	-2.31E+00	3.40E+01
		302.84		18.33	1.82E+02		2.62E+02	8.74E+01
		356.01		62.05	8.10E+01		2.59E+02	3.94E+01
	CE-139	165.85		80.35	3.05E+01	3.05E+01	1.17E+01	1.45E+01
	CE-144	133.54		10.80	1.83E+02	1.83E+02	-1.06E+01	8.70E+01
	HG-203	279.19		77.30	2.57E+01	2.57E+01	2.97E+00	1.20E+01
	PB-210	46.50		4.25	8.95E+01	8.95E+01	3.11E+00	4.31E+01
	TH-231	25.64		14.70	1.53E-01	1.53E-01	0.00E+00	0.00E+00
		84.21		6.40	2.59E+02		-2.43E+00	1.25E+02
	PA-234M	9.89		89.00	4.64E-04	4.64E-04	0.00E+00	0.00E+00
		21.72		64.90	1.90E-02		0.00E+00	0.00E+00
		37.93		23.75	1.68E+01		6.12E+01	8.25E+00
+	TH-234	63.29	*	3.80	3.21E+02	3.21E+02	7.60E+02	1.57E+02
	NP-237	29.37		14.00	5.46E+00	5.46E+00	-6.20E+00	2.61E+00
		86.50		12.60	1.04E+02		-3.55E+01	4.98E+01
	U-237	97.08		16.30	8.71E+01	5.87E+01	-1.68E+01	4.16E+01
		101.07		26.30	5.87E+01		7.84E+00	2.81E+01
		114.00		12.30	1.81E+02		-9.41E+01	8.75E+01
		208.01		22.00	1.07E+02		4.44E-01	5.03E+01
+	AM-241	59.54	*	35.90	3.40E+01	3.40E+01	8.05E+01	1.66E+01
+	AM-243	74.67	*	66.00	2.47E+01	2.47E+01	1.21E+02	1.20E+01

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0103

BP/Castex-Ltd Adm-Apx E-002509

ICB 8/27/24

Apex-Gamma

Analysis Report for 2408035-03
CD-19D

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408035-03
Sample Description	: CD-19D
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 8/27/2024 4:15:55PM
Acquisition Started	: 8/27/2024 5:10:00PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE5
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 1171.0 seconds
Dead Time	: 23.14 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 2 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 6/24/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 151993

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/27/2024 5:29:47PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0104

Analysis Report for 2408035-03

CD-19D

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	20.92	182 -	211	196.49	1.56E+02	43.55	1.30E+02	0.84
	2	30.79	275 -	315	296.43	3.28E+03	131.48	3.41E+02	0.84
	3	35.12	321 -	360	340.22	7.81E+02	73.46	1.85E+02	0.83
M	4	51.10	493 -	537	502.06	7.13E+01	20.76	3.21E+01	1.29
m	5	51.87	493 -	537	509.86	1.27E+01	26.83	4.67E+01	0.78
m	6	52.37	493 -	537	514.90	1.84E+01	19.16	2.81E+01	0.42
m	7	53.01	493 -	537	521.35	1.28E+01	23.12	4.19E+01	0.57
m	8	53.48	493 -	537	526.09	3.20E+01	28.06	6.56E+01	1.29
	9	61.89	593 -	636	611.29	4.05E+02	63.51	1.78E+02	1.14
	10	66.08	638 -	670	653.71	1.64E+02	40.94	1.17E+02	1.39
	11	73.87	716 -	743	732.59	2.32E+01	19.79	3.96E+01	0.57
M	12	79.82	783 -	820	792.76	8.58E+01	32.69	5.17E+01	1.22
m	13	81.10	783 -	820	805.75	1.39E+03	76.72	5.48E+01	0.91
	14	111.88	1097 -	1131	1117.36	3.36E+02	45.78	8.19E+01	1.13
M	15	116.09	1147 -	1177	1160.00	1.37E+02	28.87	8.65E+01	1.07
m	16	116.94	1147 -	1177	1168.59	2.61E+01	23.16	4.43E+01	1.17
	17	160.93	1599 -	1626	1614.00	3.45E+01	26.30	7.30E+01	1.55
M	18	276.43	2771 -	2801	2783.74	1.53E+01	19.90	2.08E+01	1.37
m	19	277.15	2771 -	2801	2791.00	1.06E+02	19.43	1.76E+01	1.25
M	20	303.31	3038 -	3072	3056.00	7.45E+01	30.30	2.52E+01	1.27
m	21	303.90	3038 -	3072	3062.00	1.29E+02	26.81	2.00E+01	1.27
	22	307.91	3086 -	3116	3102.55	4.20E+01	12.96	0.00E+00	1.27
	23	334.43	3352 -	3384	3371.24	7.96E+01	20.67	1.08E+01	1.14
	24	356.88	3579 -	3616	3598.65	5.93E+02	50.88	2.19E+01	0.92
	25	384.81	3864 -	3895	3881.65	1.56E+02	27.02	1.13E+01	1.19
	26	387.87	3897 -	3925	3912.60	1.66E+02	34.03	6.24E+01	0.92

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/27/2024 5:29:47PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000151879.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	20.92	1.56E+02	43.55	8.63E+00	2.15E+00	1.48E+02	4.36E+01
2	30.79	3.28E+03	131.48	5.19E+00	5.49E-01	3.28E+03	1.31E+02
3	35.12	7.81E+02	73.46	1.05E+00	3.56E-01	7.80E+02	7.35E+01

0105

BP/Castex-Ltd Adm-Apx E-002511

Analysis Report for 2408035-03

CD-19D

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	4	51.10	7.13E+01	20.76			7.13E+01	2.08E+01
m	5	51.87	1.27E+01	26.83			1.27E+01	2.68E+01
m	6	52.37	1.84E+01	19.16			1.84E+01	1.92E+01
m	7	53.01	1.28E+01	23.12			1.28E+01	2.31E+01
m	8	53.48	3.20E+01	28.06			3.20E+01	2.81E+01
	9	61.89	4.05E+02	63.51	4.15E+00	7.17E-01	4.01E+02	6.35E+01
	10	66.08	1.64E+02	40.94	4.33E-01	4.89E-01	1.64E+02	4.09E+01
	11	73.87	2.32E+01	19.79			2.32E+01	1.98E+01
M	12	79.82	8.58E+01	32.69			8.58E+01	3.27E+01
m	13	81.10	1.39E+03	76.72			1.39E+03	7.67E+01
	14	111.88	3.36E+02	45.78	4.52E-01	5.23E-01	3.36E+02	4.58E+01
M	15	116.09	1.37E+02	28.87			1.37E+02	2.89E+01
m	16	116.94	2.61E+01	23.16			2.61E+01	2.32E+01
	17	160.93	3.45E+01	26.30	5.22E-01	5.42E-01	3.40E+01	2.63E+01
M	18	276.43	1.53E+01	19.90			1.53E+01	1.99E+01
m	19	277.15	1.06E+02	19.43			1.06E+02	1.94E+01
M	20	303.31	7.45E+01	30.30	9.86E-02	3.05E-01	7.44E+01	3.03E+01
m	21	303.90	1.29E+02	26.81	9.71E-02	3.00E-01	1.29E+02	2.68E+01
	22	307.91	4.20E+01	12.96			4.20E+01	1.30E+01
	23	334.43	7.96E+01	20.67	2.97E-03	3.54E-01	7.96E+01	2.07E+01
	24	356.88	5.93E+02	50.88			5.93E+02	5.09E+01
	25	384.81	1.56E+02	27.02			1.56E+02	2.70E+01
	26	387.87	1.66E+02	34.03			1.66E+02	3.40E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
I-129	0.87	29.78	*	57.00	4.58E+01	1.84E+00
		33.60	*	13.20	7.67E+01	7.22E+00
		39.58		7.52		
BA-133	0.98	81.00	*	34.06	5.89E+02	3.97E+01
		302.84	*	18.33	2.26E+02	9.26E+01
		356.01	*	62.05	5.09E+02	4.86E+01

0106

BP/Castex-Ltd Adm-Apx E-002512

Analysis Report for 2408035-03
CD-19D

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
HG-203	0.89	279.19	*	77.30	7.67E+01	1.48E+01
TH-234	0.95	63.29	*	3.80	8.00E+02	1.28E+02
AM-241	0.86	59.54	*	35.90	8.46E+01	1.35E+01
AM-243	0.98	74.67	*	66.00	4.12E+00	3.52E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	I-129	0.872	4.77E+01	1.78E+00	
	BA-133	0.989	5.24E+02	2.92E+01	
	HG-203	0.899	7.67E+01	1.48E+01	
?	TH-234	0.951	8.00E+02	1.28E+02	
X	NP-237	0.729			
?	AM-241	0.868	8.46E+01	1.35E+01	
	AM-243	0.984	4.12E+00	3.52E+00	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

0107

BP/Castex-Ltd Adm-Apx E-002513

Analysis Report for 2408035-03
CD-19D

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/27/2024 5:29:47PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	20.92	1.63917E-01	14.78	Tol.	MO-93 PA-234M
M	4	51.10	7.91741E-02	14.57		
m	5	51.87	1.41499E-02	105.35		
m	6	52.37	2.04354E-02	52.09		
m	7	53.01	1.42370E-02	90.22		
m	8	53.48	3.55686E-02	43.83		
	10	66.08	1.82275E-01	12.48	Sum	
M	12	79.82	9.53023E-02	19.05	Tol.	BA-133
	14	111.88	3.72882E-01	6.82	Sum	
M	15	116.09	1.51825E-01	10.56	Sum	
m	16	116.94	2.90544E-02	44.29	Sum	
	17	160.93	3.77426E-02	38.72	Sum	
M	18	276.43	1.70386E-02	64.90		
m	21	303.90	1.43442E-01	10.38	Tol.	BA-133
	22	307.91	4.66667E-02	15.43	Sum	
	23	334.43	8.84542E-02	12.98	Sum	
	25	384.81	1.73698E-01	8.64	Sum	
	26	387.87	1.84235E-01	10.26	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

0108

BP/Castex-Ltd Adm-Apx E-002514

Analysis Report for 2408035-03

CD-19D

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.24E-07	5.24E-07	-1.95E-06	2.45E-07
		3.31		12.30	7.56E-06		-2.94E-05	3.55E-06
	FE-55	5.89		24.50	2.28E-04	2.28E-04	-1.68E-04	1.07E-04
	CO-57	122.06		85.51	1.16E+01	1.16E+01	-3.96E+00	5.34E+00
		136.48		10.60	1.17E+02		2.70E+01	5.41E+01
	NI-59	6.92		29.80	5.70E-04	5.70E-04	1.83E-04	2.68E-04
	MO-93	16.59		52.90	3.13E-02	3.13E-02	-2.33E-02	1.43E-02
		18.60		10.00	3.64E-01		-1.19E-01	1.70E-01
	NB-93M	16.57		9.43	1.79E-01	1.79E-01	-9.37E-02	8.19E-02
	CD-109	88.03		3.72	1.55E+02	1.55E+02	3.08E+01	7.13E+01
	SN-113	255.12		1.93	7.44E+02	3.14E+01	1.46E+01	3.33E+02
		391.69		61.90	3.14E+01		-2.85E+01	1.46E+01
	SN-119M	23.87		16.10	6.77E-01	6.30E-01	-1.13E-01	3.15E-01
		25.10		22.70	6.30E-01		3.56E-02	2.94E-01
	I-125	27.30		100.00	2.46E-01	2.46E-01	-1.15E-01	1.16E-01
		30.90		19.70	1.12E+01		1.33E+02	5.54E+00
		35.49		6.49	2.86E+01		1.61E+02	1.40E+01
+	I-129	29.78	*	57.00	1.52E+00	1.52E+00	4.58E+01	7.41E-01
		33.60	*	13.20	7.98E+00		7.67E+01	3.85E+00
		39.58		7.52	8.33E+00		-3.25E+00	3.81E+00
+	BA-133	81.00	*	34.06	1.95E+01	1.95E+01	5.89E+02	9.16E+00
		302.84	*	18.33	8.66E+01		2.26E+02	3.92E+01
		356.01	*	62.05	2.31E+01		5.09E+02	1.04E+01
	CE-139	165.85		80.35	1.78E+01	1.78E+01	-3.11E+00	8.18E+00
	CE-144	133.54		10.80	1.13E+02	1.13E+02	2.51E+01	5.22E+01
+	HG-203	279.19	*	77.30	1.83E+01	1.83E+01	7.67E+01	8.17E+00
	PB-210	46.50		4.25	2.69E+01	2.69E+01	1.60E+01	1.24E+01
	TH-231	25.64		14.70	1.09E+00	1.09E+00	-2.76E-01	5.11E-01
		84.21		6.40	1.04E+02		-4.74E+02	4.87E+01
	PA-234M	9.89		89.00	1.19E-03	1.19E-03	-9.48E-04	5.42E-04
		21.72		64.90	1.95E-01		-1.47E-02	9.34E-02
		37.93		23.75	2.43E+00		-1.22E+00	1.12E+00
+	TH-234	63.29	*	3.80	1.67E+02	1.67E+02	8.00E+02	8.09E+01
	NP-237	29.37	*	14.00	6.19E+00	6.19E+00	1.86E+02	3.02E+00
		86.50		12.60	4.18E+01		-3.89E+01	1.91E+01
	U-237	97.08		16.30	4.96E+01	3.30E+01	1.59E+01	2.30E+01
		101.07		26.30	3.30E+01		7.64E+00	1.54E+01
		114.00		12.30	1.17E+02		-1.62E+02	5.57E+01
		208.01		22.00	7.37E+01		-2.14E+00	3.37E+01
+	AM-241	59.54	*	35.90	1.77E+01	1.77E+01	8.46E+01	8.56E+00
+	AM-243	74.67	*	66.00	5.54E+00	5.54E+00	4.12E+00	2.53E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0109

BP/Castex-Ltd Adm-Apx E-002515

Apex-Gamma

Analysis Report for 2408035-04
CD-19D

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 2408035-04
Sample Description	: CD-19D
Sample Type	: RA RECOVERY
Sample Size	: 1.000E+00 units
Facility	: Countroom
Sample Taken On	: 8/27/2024 4:16:08PM
Acquisition Started	: 8/27/2024 5:14:30PM
Procedure	: BAFIL
Operator	: Administrator
Detector Name	: GE2
Geometry	: BAFIL
Live Time	: 900.0 seconds
Real Time	: 900.3 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 2.500 keV
Energy Calibration Used Done On	: 6/24/2023
Efficiency Calibration Used Done On	: 12/13/2021
Efficiency Calibration Description	:
Sample Number	: 151994

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/27/2024 5:29:33PM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)

0110

Analysis Report for 2408035-04

CD-19D

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	35.48	37 -	40	37.29	4.63E+02	67.38	3.07E+02	1.79
	2	52.97	51 -	58	54.72	6.84E+01	35.83	1.69E+02	1.24
M	3	61.92	60 -	70	63.66	2.41E+02	39.92	9.84E+01	1.61
m	4	66.08	60 -	70	67.80	1.31E+02	32.65	1.03E+02	1.61
	5	81.17	79 -	86	82.85	1.00E+03	73.84	2.41E+02	1.11
	6	111.93	110 -	115	113.53	1.57E+02	37.92	1.63E+02	1.54
	7	266.31	264 -	272	267.52	1.80E+01	17.49	3.60E+01	4.76
	8	275.91	273 -	281	277.09	7.04E+01	25.20	5.53E+01	1.48
	9	303.60	300 -	310	304.72	1.92E+02	40.34	1.12E+02	1.95
M	10	333.98	329 -	343	335.03	7.74E+01	20.90	3.25E+01	1.72
m	11	338.22	329 -	343	339.26	2.28E+01	16.46	1.71E+01	1.84
	12	356.32	352 -	362	357.32	6.02E+02	53.49	6.03E+01	1.97
	13	376.36	374 -	380	377.31	2.05E+01	12.53	1.30E+01	3.89
M	14	384.19	381 -	396	385.12	1.31E+02	26.13	6.99E+00	1.92
m	15	387.38	381 -	396	388.31	2.27E+02	33.27	8.02E+00	1.78
m	16	391.42	381 -	396	392.33	5.46E+01	24.80	1.14E+01	1.93
M	17	415.17	410 -	428	416.04	4.10E+01	15.84	1.24E+01	2.17
m	18	418.91	410 -	428	419.76	2.28E+01	15.52	6.14E+00	2.17
m	19	422.70	410 -	428	423.54	1.14E+01	13.44	2.89E+00	2.18
	20	437.42	434 -	442	438.23	1.10E+02	24.19	2.12E+01	2.12
	21	453.08	451 -	456	453.86	9.42E+00	8.89	7.15E+00	2.54
	22	468.56	466 -	473	469.30	1.34E+01	13.11	1.92E+01	1.90
	23	614.57	612 -	617	615.00	6.00E+00	4.90	0.00E+00	2.88
	24	621.00	619 -	623	621.42	5.71E+00	5.85	2.57E+00	0.94
	25	923.80	920 -	926	923.67	6.00E+00	4.90	0.00E+00	1.92

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/27/2024 5:29:33PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000151875.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	35.48	4.63E+02	67.38			4.63E+02	6.74E+01
	2	52.97	6.84E+01	35.83	6.29E-01	1.32E+00	6.77E+01	3.59E+01
M	3	61.92	2.41E+02	39.92	2.12E+00	8.25E-01	2.39E+02	3.99E+01
m	4	66.08	1.31E+02	32.65	9.42E+00	2.43E+00	1.22E+02	3.27E+01

0111

BP/Castex-Ltd Adm-Apx E-002517

Analysis Report for 2408035-04

CD-19D

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	5	81.17	1.00E+03	73.84			1.00E+03	7.38E+01
	6	111.93	1.57E+02	37.92			1.57E+02	3.79E+01
	7	266.31	1.80E+01	17.49			1.80E+01	1.75E+01
	8	275.91	7.04E+01	25.20			7.04E+01	2.52E+01
	9	303.60	1.92E+02	40.34			1.92E+02	4.03E+01
M	10	333.98	7.74E+01	20.90			7.74E+01	2.09E+01
m	11	338.22	2.28E+01	16.46	7.56E-01	1.23E+00	2.20E+01	1.65E+01
	12	356.32	6.02E+02	53.49			6.02E+02	5.35E+01
	13	376.36	2.05E+01	12.53			2.05E+01	1.25E+01
M	14	384.19	1.31E+02	26.13			1.31E+02	2.61E+01
m	15	387.38	2.27E+02	33.27			2.27E+02	3.33E+01
m	16	391.42	5.46E+01	24.80			5.46E+01	2.48E+01
M	17	415.17	4.10E+01	15.84			4.10E+01	1.58E+01
m	18	418.91	2.28E+01	15.52			2.28E+01	1.55E+01
m	19	422.70	1.14E+01	13.44			1.14E+01	1.34E+01
	20	437.42	1.10E+02	24.19			1.10E+02	2.42E+01
	21	453.08	9.42E+00	8.89			9.42E+00	8.89E+00
	22	468.56	1.34E+01	13.11			1.34E+01	1.31E+01
	23	614.57	6.00E+00	4.90			6.00E+00	4.90E+00
	24	621.00	5.71E+00	5.85			5.71E+00	5.85E+00
	25	923.80	6.00E+00	4.90			6.00E+00	4.90E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
SN-113	0.95	255.12		1.93		
		391.69	*	61.90	3.98E+01	1.81E+01
BA-133	0.99	81.00	*	34.06	5.17E+02	4.36E+01
		302.84	*	18.33	4.97E+02	1.08E+02
		356.01	*	62.05	4.49E+02	4.40E+01
PA-234M	0.98	9.89		89.00		
		21.72		64.90		
		37.93	*	23.75	6.33E+01	9.22E+00

0112

BP/Castex-Ltd Adm-Apx E-002518

Analysis Report for 2408035-04
CD-19D

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/units)	Activity Uncertainty
TH-234	0.95	63.29	*	3.80	6.96E+02	1.18E+02
AM-241	0.86	59.54	*	35.90	7.37E+01	1.25E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 2.500 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/units)	Wt mean Activity Uncertainty	Comments
	SN-113	0.951	3.98E+01	1.81E+01	
	BA-133	0.996	4.84E+02	2.98E+01	
	PA-234M	0.980	6.33E+01	9.22E+00	
?	TH-234	0.953	6.96E+02	1.18E+02	
?	AM-241	0.865	7.37E+01	1.25E+01	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 2408035-04
CD-19D

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/27/2024 5:29:33PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	52.97	7.52559E-02	26.47		
m	4	66.08	1.35111E-01	13.46		
	6	111.93	1.73940E-01	12.11	Tol.	U-237
	7	266.31	2.00000E-02	48.59		
	8	275.91	7.81859E-02	17.91		
M	10	333.98	8.60471E-02	13.49		
m	11	338.22	2.44955E-02	37.44	Sum	
	13	376.36	2.27778E-02	30.56		
M	14	384.19	1.45547E-01	9.98	Sum	
m	15	387.38	2.51987E-01	7.33		
M	17	415.17	4.55044E-02	19.34		
m	18	418.91	2.53649E-02	33.98	Sum	
m	19	422.70	1.27115E-02	58.76		
	20	437.42	1.22654E-01	10.96	Sum	
	21	453.08	1.04701E-02	47.16	Sum	
	22	468.56	1.48792E-02	48.97		
	23	614.57	6.66667E-03	40.82		
	24	621.00	6.34921E-03	51.21		
	25	923.80	6.66667E-03	40.82		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\WSRC.NLB

0114

BP/Castex-Ltd Adm-Apx E-002520

Analysis Report for 2408035-04

CD-19D

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/units)	Nuclide MDA (pCi/units)	Activity (pCi/units)	Dec. Level (pCi/units)
	CA-41	3.00		77.00	5.55E-06	5.55E-06	0.00E+00	0.00E+00
		3.31		12.30	5.93E-05		0.00E+00	0.00E+00
	FE-55	5.89		24.50	5.43E-04	5.43E-04	0.00E+00	0.00E+00
	CO-57	122.06		85.51	1.21E+01	1.21E+01	-6.46E-01	5.56E+00
		136.48		10.60	1.16E+02		-5.93E+00	5.37E+01
	NI-59	6.92		29.80	9.37E-04	9.37E-04	0.00E+00	0.00E+00
	MO-93	16.59		52.90	1.70E-02	1.70E-02	0.00E+00	0.00E+00
		18.60		10.00	1.33E-01		0.00E+00	0.00E+00
	NB-93M	16.57		9.43	9.52E-02	9.52E-02	0.00E+00	0.00E+00
	CD-109	88.03		3.72	2.03E+02	2.03E+02	2.06E+01	9.44E+01
+	SN-113	255.12		1.93	6.52E+02	1.95E+01	-1.94E+02	2.93E+02
		391.69	*	61.90	1.95E+01		3.98E+01	8.79E+00
	SN-119M	23.87		16.10	1.81E-01	1.50E-01	0.00E+00	0.00E+00
		25.10		22.70	1.50E-01		0.00E+00	0.00E+00
	I-125	27.30		100.00	6.30E-01	6.30E-01	-3.77E-01	2.93E-01
		30.90		19.70	2.81E+01		2.94E+02	1.39E+01
		35.49		6.49	6.02E+01		2.71E+02	2.94E+01
	I-129	29.78		57.00	8.52E+00	8.52E+00	7.89E+01	4.21E+00
		33.60		13.20	1.85E+01		-3.78E+02	8.96E+00
		39.58		7.52	1.80E+01		1.37E+00	8.21E+00
+	BA-133	81.00	*	34.06	3.36E+01	2.82E+01	5.17E+02	1.61E+01
		302.84	*	18.33	1.32E+02		4.97E+02	6.23E+01
		356.01	*	62.05	2.82E+01		4.49E+02	1.31E+01
	CE-139	165.85		80.35	2.00E+01	2.00E+01	-2.02E+00	9.37E+00
	CE-144	133.54		10.80	1.11E+02	1.11E+02	1.26E+01	5.17E+01
	HG-203	279.19		77.30	2.32E+01	2.32E+01	2.10E+01	1.08E+01
	PB-210	46.50		4.25	3.96E+01	3.96E+01	-1.06E+01	1.79E+01
	TH-231	25.64		14.70	2.46E-01	2.46E-01	0.00E+00	0.00E+00
		84.21		6.40	1.43E+02		-7.57E-01	6.78E+01
+	PA-234M	9.89		89.00	1.45E-03	1.45E-03	0.00E+00	0.00E+00
		21.72		64.90	3.37E-02		0.00E+00	0.00E+00
		37.93	*	23.75	1.20E+01		6.33E+01	5.82E+00
+	TH-234	63.29	*	3.80	1.88E+02	1.88E+02	6.96E+02	9.01E+01
	NP-237	29.37		14.00	1.53E+01	1.53E+01	-3.12E+02	7.46E+00
		86.50		12.60	6.17E+01		-3.46E+01	2.88E+01
	U-237	97.08		16.30	5.83E+01	3.28E+01	1.79E+01	2.72E+01
		101.07		26.30	3.28E+01		-1.39E+01	1.52E+01
		114.00		12.30	1.52E+02		7.91E+01	7.29E+01
		208.01		22.00	7.37E+01		2.62E+01	3.41E+01
+	AM-241	59.54	*	35.90	1.99E+01	1.99E+01	7.37E+01	9.54E+00
	AM-243	74.67		66.00	7.13E+00	7.13E+00	-1.68E+00	3.25E+00

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

0115

SECTION X

ANALYTICAL DATA (TOTAL DISSOLVED SOLIDS)

Eberline Services - Oak Ridge
Version 1.0 9/1999

TDS / TSS Worksheet

Printed: 8/13/2024 7:21 AM

Work Order	Run	Analysis Code	Technician
24-08035	**1**	**TDS**	**KSALLINGS**

TRetec	Waypoint Analytical Louisiana		Filter Data			TDS/TSS	Maximum Aliq
Fraction	Client ID	Aliquot ml	Filter Tare (g)	Filter Final (g)	Filter Net (g)	(mg/L)	(mL)
04	**CD-19D**	100.0000	104.3405	104.3813	**0.0408**	**408.0000**	**245.10**

BP/Castex-Ltd Adm-Apx E-002523

Technician: Kerry Sallings Date: 8/13/24

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Printed: 8/12/2024 8:07 AM

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
24-08035	1	TDS	liters	8/30/2024	KSALLINGS

Lab Fraction	Waypoint Analytical Louisiana Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	CD-19D	DUP					1.0000E-01	1.0000E-01				
04	CD-19D	DO					1.0000E-01	1.0000E-01				

Comments	

Technician: Kerry Sallings Date: 8/12/24

BP/Castex-Ltd Adm-Apx E-002524

Waypoint ANALYTICAL

5041 Taravella Road, Marrero, LA 70072
Main 504-371-8557 ° Fax 504-371-8560
www.waypointanalytical.com

Shipment Receipt Form

Customer Number: **10485**
Customer Name: **ERM**
Report Number: **24-215-0009**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	IR 1

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	◯ Not Present
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◉ Yes	◯ No	◯ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Christina R. Varuso Date & Time: 08/05/2024 16:50:39

BP/Castex-Ltd Adm-Apx E-002526

ERM (Sugar Land)
Castex
24-215-0009
10485
08-02-2024
12:06:14

Client Name/Address	Client Project Manager/Contact	Billing Information
ERM 840 W. Sam Houston Pkwy N. Suite 600 Houston, TX 77024	Dave Upthegrove Shawn Wiggins	

Project Description	Project/Site Location (City/State)	
Castex	Jeff Davis Parish, LA	☐ RUSH – Additional charges apply ☐ Special Detection Limit(s) Date Results Needed

Method: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Courier ☐ Client Drop Off ☐ Other

WW – Wastewater GW – Groundwater DW – Drinking Water S – Soil /Solid O – Oil P - Product M - Misc

Project Number	Project Manager Phone #	Project Manager Email	Purchase Order Number	Site/Facility ID #
0727954	504.481.6470 971.303.2385	david.upthegrove@erm.com shawn.wiggins@erm.com		

Waypoint ANALYTICAL
5041 Taravella Road
Marrero, LA 70072
(504) 371-8560

Unless noted, all containers per Table II of 40 CFR Part 136.

A Cool < 10C Na2S2O3 (Micro Only)
B Cool <= 6C
C H2SO4 pH<2
D None Required
E NaOH pH>10
F HNO3 pH<2
G HCL pH<2
H H3PO4 pH<2
I Cool <= 6C NA2S2O3

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(G)rab or (C)omposite	Required Analysis / Preservative: BTEX	EPH	VPH	TDS	Cl, SO4, CO3, HCO3, Alk	Total Metals	Diss Metals	Ra226/228		Comments/Notes
7/31/24	1330	CA-19D	11	GW	G	X	X	X	X	X	X	X	X		86725
															RECAP Limits

For Laboratory Use Only

Ice	Custody Seals	Lab Comments
Y / N	Y / N	

Blank/Cooler Temp: 2.2°C

Sampled by (Name – Print): R. Charles Trahan

Client Remarks/Comments: Ra226/228 Subs to Enervue
Total Metals: As, Ba, Ca, Cd, Cr, Fe, Pb, Mg, Mn, Hg, K, Na, Se, Ag, Zn
Diss Metals: As, Ba, Cd, Cr, Fe, Pb, Mn, Hg, Se, Ag, Zn

Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
R. Charles Trahan	8/2/24	0926	DB Cocu	8/2	9:26
DB Cocu	8/5/24	7:20	T. Howard	8/5	7:20
T. Howard	8/5	8:51	Kathy Hendrix	08/05/24	0851

Rec'd by: Kathy Hendrix 08/05/24 1100 Rec'd by: [illegible] 8/5/24 1100 Reling by: [illegible] 8/5/24 1410
Rec'd By: [illegible] 8/5/24 1610