SAF-RC-148
300 Area D4 Waste Sites – Soil Full Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

No distribution required KW 7/7/16
INITIAL/DATE

COMMENTS:

SDG XP0229 **SAF-RC-148**

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

Sample Location: 300-288:2 WSA1

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

June 28, 2016

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354

Re: RC-148 Soil
Work Order: 399781
SDG: XP0229

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 21, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 1510
Chain of Custody: RC-148-226 and RC-148-227
Enclosures

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Case Narrative

Receipt Narrative
for
Eberline
SDG: XP0229
Work Order: 399781

June 28, 2016

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on June 21, 2016 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification: The laboratory received the following samples:

Laboratory ID	Client ID
399781001	J1V928
399781002	J1V929

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Diesel Range Organics, GC Semivolatile PCB, GC/MS Semivolatile, General Chemistry and Metals.

Heather Shaffer

Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-226 | Page 1 of 1

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 DAY		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 WSA1		SAF No.: RC-148
Ice Chest No.: AFS-04-008	Field Logbook No.: EL-1663-08	COA: 0328822000 (W TRR 6-20-16)	Method of Shipment: Commerical Carrier
Shipped To: GEL Laboratories Charleston	Offsite Property No.: A131476		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: Eberline Services Oak Ridge

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C							
Type of Container	G/P	aG	G	G/P	aG							
No. of Container(s)	1	1	1	1	1							
Volume	250mL	250mL	125mL	250mL	250mL							
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA -- 8270 (Add-On Tributyl phosphate)							

Sample No.	Matrix	Sample Date	Sample Time											
J1V928	SOIL	6-16-16	0740	✓	✓	✓	✓	✓						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. ETHERINGTON	6-16-16 1410	T.R. Edmundson / S.R. Edmundson	6-16-16 1410
T.R. Edmundson / S.R. Edmundson	6-16-16 1500	1060 #1	6-16-16 1500
1060 #1	6-20-16 1030	T.R. Edmundson / S.R. Edmundson	6-20-16 1030
T.R. Edmundson / S.R. Edmundson (WCH)	6-20-16 1500	Fed Ex	6-20-16 —
Fx		M. Kirsten Nuffer	6-21-16 0905

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Tin, Uranium, Vanadium, Zinc, Zirconium}; Mercury - 7471 - (CV)

399781

REVIEWED BY Kwpertel DATE 6-20-16

XP0229

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-227 | Page 1 of 1

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 DAY		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 WSA2		SAF No.: RC-148
Ice Chest No.: AFS-04-008	Field Logbook No.: EL-1663-08	COA: W TRE 6-20-16 032882000	Method of Shipment: Commerical Carrier
Shipped To: GEL Laboratories Charleston	Offsite Property No.: A1314/16		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: Eberline Services Oak Ridge

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C							
Type of Container	G/P	aG	G	G/P	aG							
No. of Container(s)	1	1	1	1	1							
Volume	250mL	250mL	125mL	250mL	250mL							
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA -- 8270 (Add-On Tributyl phosphate)							

Sample No.	Matrix	Sample Date	Sample Time											
J1V929	SOIL	6-16-16	1030	✓	✓	✓	✓	✓						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T.E. Etherington	6-16-16 1410	T.R. Edmundson / T.R. Edmundson	6-16-16 1410
T.R. Edmundson / T.R. Edmundson	6-16-16 1500	1060 #1	6-16-16 1500
1060 #1	6-20-16 1030	T.R. Edmundson / T.R. Edmundson	6-20-16 1030
WCH T.R. Edmundson / T.R. Edmundson	6-20-16 1500	Fed Ex	6-20-16 —
FP		M. Kristow	6-21-16 0905

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Tin, Uranium, Vanadium, Zinc, Zirconium}; Mercury - 7471 - (CV)

399781

REVIEWED BY Kwpostelo DATE 6-20-16

XP0229

WCH-EE-011

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: WCHN	**SDG/AR/COC/Work Order:** XP0229
Received By: MK	**Date Received:** 6-21-16

Suspected Hazard Information	**Yes**	**No**	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): cpm 0
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	**Yes**	**NA**	**No**	**Comments/Qualifiers (Required for Non-Conforming Items)**
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures ~~are recorded~~ in Celsius 2 C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 134626 62 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓		✓	
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		✓		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓	-		Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in-relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 8599 0424 0117

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 6/21/16 Page 1 of 1

GL-CHL-SR-001 Rev 3

Laboratory Certifications

List of current GEL Certifications as of 28 June 2016

State	Certification
Alaska	UST−0110
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−16−11
Utah NELAP	SC000122016−20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Semi-Volatile Analysis

Case Narrative

GC/MS Semivolatile
Technical Case Narrative
Eberline (WCHN)
SDG #: XP0229
Work Order #: 399781

Method/Analysis Information

Procedure:	**Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry**
Analytical Method:	SW846 3541/8270D
Prep Method:	SW846 3541
Analytical Batch Number:	1576296
Prep Batch Number:	1576295

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3541/8270D:

Sample ID	Client ID
399781001	J1V928
399781002	J1V929
1203571908	Method Blank (MB)
1203571909	Laboratory Control Sample (LCS)
1203571910	399781001(J1V928) Matrix Spike (MS)
1203571911	399781001(J1V928) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-009 REV# 36.

Raw data reports are processed and reviewed by the analyst using the data analysis software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package. The various calibration mixes may not be calibrated using all of the calibration levels. In addition, not all of the mixes are calibrated using the same levels.

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG) in this batch. A second source initial calibration verification (ICV) was included in the standard section directly behind the initial calibration.

CCV Requirements
All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for samples 399781001 (J1V928) and 399781002 (J1V929) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG in this batch met the acceptance criteria.

Surrogate Recoveries
All the surrogate recoveries were within the established acceptance criteria for this SDG in this batch.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

QC Sample Designation
Sample 399781001 (J1V928) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement
The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. As similar recoveries were displayed in the MS and MSD, the failures were attributed to sample matrix interference and the data were reported.

Sample	Analyte	Value
1203571911 (J1V928MSD)	2,4-Dinitrophenol	10* (12%-112%)

MS/MSD Relative Percent Difference (RPD) Statement
The relative percent differences (RPD) for the MS and MSD, (See Below), were not within the acceptance limits. The failures were attributed to matrix interference. The data were reported.

Sample	Analyte	Value
1203571910MS and 1203571911MSD (J1V928)	2,4-Dinitrophenol	39* (0%-30%)
	3,3’-Dichlorobenzidine	34* (0%-30%)

Internal Standard (ISTD) Acceptance
The internal standard responses used to quantitate the requested target analytes were within the required

acceptance criteria for the SDG associated samples in this batch.

Technical Information:

Holding Time Specifications
All samples in this SDG in this batch met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP. All reported compound mass spectra met the detection specifications in the method.

Sample Dilutions
The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:

Data Exception (DER) Documentation
A data exception report (DER) 1532421 was generated for sample 1203571911 (J1V928MSD) in this SDG/batch.

Manual Integrations
Manual integrations were not required on samples in this batch in this SDG for detected target analytes or surrogates.

TIC Comment
Tentatively identified compounds (TIC) were not required for the samples in this SDG for this batch.

Additional Comments
Additional comments were not required for the SDG associated samples in this batch.

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

System Configuration

The Semi-Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description

MSD8.I	Agilent 6890/5973 GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
23-JUN-16	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
SEMIVOA GC/MS	SW846 3541/8270D	Solid	WCHN
Batch ID:	**Sample Numbers:**		
1576296	See Below		

Potentially affected work order(s)(SDG): 399781(XP0229)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Failed RPD for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. The 1203571911MSD failed spike recovery.	1. The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. As similar recoveries were displayed in the MS and MSD, the failures were attributed to sample matrix interference and the data were reported. 1203571911 (J1V928MSD) 2,4-Dinitrophenol [10* (12%-112%)].
2. The RPD values between the 1203571910MS and 1203571911MSD were not within the acceptance limits.	2. The relative percent differences (RPD) for the MS and MSD, (See Below), were not within the acceptance limits. The failures were attributed to matrix interference. The data were reported. 1203571910MS and 1203571911MSD (J1V928) 2,4-Dinitrophenol [39* (0%-30%)] and 3,3'-Dichlorobenzidine [34* (0%-30%)].

Originator's Name:

Jennifer Dunagan Jones 23-JUN-16

Data Validator/Group Leader:

Herbert Maier 23-JUN-16

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

WCHN001 Eberline

Client SDG: XP0229 GEL Work Order: 399781 Project: RC-148 Soil

The Qualifiers in this report are defined as follows:

J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated

T Spike and/or spike duplicate sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 30 JUN 2016 **Title: Data Validator**

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: **RC-148 Soil**

Report Date: June 23, 2016

Client SDG: XP0229

Client Sample ID: J1V928
Sample ID: 399781001
Matrix: SOIL
Collect Date: 16-JUN-16 07:40
Receive Date: 21-JUN-16
Collector: Client
Moisture: 2.54%

Project: WCHN00314
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatile-GC/MS										
8270D/3541 BNA Soil Automated Soxhlet + TBP "Dry Weight Corrected"										
1,2,4-Trichlorobenzene	U	103	103	342	ug/kg	1	JLD1 06/22/16	2200	1576296	1
1,2-Dichlorobenzene	U	103	103	342	ug/kg	1				
1,3-Dichlorobenzene	U	103	103	342	ug/kg	1				
1,4-Dichlorobenzene	U	103	103	342	ug/kg	1				
2,4,5-Trichlorophenol	U	103	103	342	ug/kg	1				
2,4,6-Trichlorophenol	U	103	103	342	ug/kg	1				
2,4-Dichlorophenol	U	103	103	342	ug/kg	1				
2,4-Dimethylphenol	U	103	103	342	ug/kg	1				
2,4-Dinitrophenol	TU	103	103	684	ug/kg	1				
2,4-Dinitrotoluene	U	103	103	342	ug/kg	1				
2,6-Dinitrotoluene	U	103	103	342	ug/kg	1				
2-Chloronaphthalene	U	10.3	10.3	34.2	ug/kg	1				
2-Chlorophenol	U	103	103	342	ug/kg	1				
2-Methyl-4,6-dinitrophenol	U	103	103	342	ug/kg	1				
2-Methylnaphthalene	U	10.3	10.3	34.2	ug/kg	1				
2-Nitrophenol	U	103	103	342	ug/kg	1				
3,3'-Dichlorobenzidine	U	103	103	342	ug/kg	1				
4-Bromophenylphenylether	U	103	103	342	ug/kg	1				
4-Chloro-3-methylphenol	U	137	137	342	ug/kg	1				
4-Chloroaniline	U	103	103	342	ug/kg	1				
4-Chlorophenylphenylether	U	103	103	342	ug/kg	1				
4-Nitrophenol	U	103	103	342	ug/kg	1				
Acenaphthene	U	10.3	10.3	34.2	ug/kg	1				
Acenaphthylene	U	10.3	10.3	34.2	ug/kg	1				
Anthracene	U	10.3	10.3	34.2	ug/kg	1				
Benzo(a)anthracene	U	10.3	10.3	34.2	ug/kg	1				
Benzo(a)pyrene	U	10.3	10.3	34.2	ug/kg	1				
Benzo(b)fluoranthene	U	10.3	10.3	34.2	ug/kg	1				
Benzo(ghi)perylene	U	10.3	10.3	34.2	ug/kg	1				
Benzo(k)fluoranthene	U	10.3	10.3	34.2	ug/kg	1				
Butylbenzylphthalate	U	103	103	342	ug/kg	1				
Carbazole	U	10.3	10.3	34.2	ug/kg	1				
Chrysene	U	10.3	10.3	34.2	ug/kg	1				

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: **RC-148 Soil**

Report Date: June 23, 2016

Client SDG: XP0229

Client Sample ID: J1V928
Sample ID: 399781001

Project: WCHN00314
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatile-GC/MS										
8270D/3541 BNA Soil Automated Soxhlet + TBP "Dry Weight Corrected"										
Di-n-butylphthalate	U	103	103	342	ug/kg	1				
Di-n-octylphthalate	U	103	103	342	ug/kg	1				
Dibenzo(a,h)anthracene	U	10.3	10.3	34.2	ug/kg	1				
Dibenzofuran	U	103	103	342	ug/kg	1				
Diethylphthalate	U	103	103	342	ug/kg	1				
Dimethylphthalate	U	103	103	342	ug/kg	1				
Diphenylamine	U	103	103	342	ug/kg	1				
Fluoranthene	U	10.3	10.3	34.2	ug/kg	1				
Fluorene	U	10.3	10.3	34.2	ug/kg	1				
Hexachlorobenzene	U	103	103	342	ug/kg	1				
Hexachlorobutadiene	U	103	103	342	ug/kg	1				
Hexachlorocyclopentadiene	U	103	103	342	ug/kg	1				
Hexachloroethane	U	103	103	342	ug/kg	1				
Indeno(1,2,3-cd)pyrene	U	10.3	10.3	34.2	ug/kg	1				
Isophorone	U	103	103	342	ug/kg	1				
N-Nitrosodipropylamine	U	103	103	342	ug/kg	1				
Naphthalene	U	10.3	10.3	34.2	ug/kg	1				
Nitrobenzene	U	103	103	342	ug/kg	1				
Pentachlorophenol	U	103	103	342	ug/kg	1				
Phenanthrene	U	10.3	10.3	34.2	ug/kg	1				
Phenol	U	103	103	342	ug/kg	1				
Pyrene	U	10.3	10.3	34.2	ug/kg	1				
Tributylphosphate	U	103	103	342	ug/kg	1				
bis(2-Chloro-1-methylethyl)ether	U	103	103	342	ug/kg	1				
bis(2-Chloroethoxy)methane	U	103	103	342	ug/kg	1				
bis(2-Chloroethyl) ether	U	103	103	342	ug/kg	1				
bis(2-Ethylhexyl)phthalate	U	103	103	342	ug/kg	1				
3- and/or 4-Methylphenol	U	103	103	342	ug/kg	1				
m-Nitroaniline	U	103	103	342	ug/kg	1				
o-Cresol	U	103	103	342	ug/kg	1				
o-Nitroaniline	U	113	113	342	ug/kg	1				
p-Nitroaniline	U	103	103	342	ug/kg	1				

Surrogate/Tracer recovery	*Result*	*Nominal*	*Recovery%*	*Acceptable Limits*	*Date Time:*	*06/22/16 22 00*
Nitrobenzene-d5	1070 ug/kg	1710	63	(13%-112%)		
2-Fluorobiphenyl	1280 ug/kg	1710	75	(15%-110%)		
p-Terphenyl-d14	1380 ug/kg	1710	81	(24%-141%)		
2-Fluorophenol	2030 ug/kg	3420	59	(10%-115%)		

GEL LABORATORIES LLC
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Certificate of Analysis

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: **RC-148 Soil**

Report Date: June 23, 2016

Client SDG: XP0229

Client Sample ID: J1V928
Sample ID: 399781001

Project: WCHN00314
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatile-GC/MS										
8270D/3541 BNA Soil Automated Soxhlet + TBP "Dry Weight Corrected"										
Phenol-d5		2170 ug/kg	3420	64	(15%-117%)					
2,4,6-Tribromophenol		2310 ug/kg	3420	68	(12%-129%)					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 8270D BNA for Soil	MXD2	06/22/16	1057	1576295

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3541/8270D	

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Certificate of Analysis

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: **RC-148 Soil**

Report Date: June 23, 2016

Client SDG: XP0229

Client Sample ID:	J1V929	Project:	WCHN00314
Sample ID:	399781002	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	16-JUN-16 10:30		
Receive Date:	21-JUN-16		
Collector:	Client		
Moisture:	1.36%		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatile-GC/MS										
8270D/3541 BNA Soil Automated Soxhlet + TBP "Dry Weight Corrected"										
1,2,4-Trichlorobenzene	U	101	101	338	ug/kg	1	JLD1 06/22/16	2333	1576296	1
1,2-Dichlorobenzene	U	101	101	338	ug/kg	1				
1,3-Dichlorobenzene	U	101	101	338	ug/kg	1				
1,4-Dichlorobenzene	U	101	101	338	ug/kg	1				
2,4,5-Trichlorophenol	U	101	101	338	ug/kg	1				
2,4,6-Trichlorophenol	U	101	101	338	ug/kg	1				
2,4-Dichlorophenol	U	101	101	338	ug/kg	1				
2,4-Dimethylphenol	U	101	101	338	ug/kg	1				
2,4-Dinitrophenol	TU	101	101	675	ug/kg	1				
2,4-Dinitrotoluene	U	101	101	338	ug/kg	1				
2,6-Dinitrotoluene	U	101	101	338	ug/kg	1				
2-Chloronaphthalene	U	10.1	10.1	33.8	ug/kg	1				
2-Chlorophenol	U	101	101	338	ug/kg	1				
2-Methyl-4,6-dinitrophenol	U	101	101	338	ug/kg	1				
2-Methylnaphthalene	U	10.1	10.1	33.8	ug/kg	1				
2-Nitrophenol	U	101	101	338	ug/kg	1				
3,3'-Dichlorobenzidine	U	101	101	338	ug/kg	1				
4-Bromophenylphenylether	U	101	101	338	ug/kg	1				
4-Chloro-3-methylphenol	U	135	135	338	ug/kg	1				
4-Chloroaniline	U	101	101	338	ug/kg	1				
4-Chlorophenylphenylether	U	101	101	338	ug/kg	1				
4-Nitrophenol	U	101	101	338	ug/kg	1				
Acenaphthene	U	10.1	10.1	33.8	ug/kg	1				
Acenaphthylene	U	10.1	10.1	33.8	ug/kg	1				
Anthracene	U	10.1	10.1	33.8	ug/kg	1				
Benzo(a)anthracene	U	10.1	10.1	33.8	ug/kg	1				
Benzo(a)pyrene	U	10.1	10.1	33.8	ug/kg	1				
Benzo(b)fluoranthene	U	10.1	10.1	33.8	ug/kg	1				
Benzo(ghi)perylene	U	10.1	10.1	33.8	ug/kg	1				
Benzo(k)fluoranthene	U	10.1	10.1	33.8	ug/kg	1				
Butylbenzylphthalate	U	101	101	338	ug/kg	1				
Carbazole	U	10.1	10.1	33.8	ug/kg	1				
Chrysene	U	10.1	10.1	33.8	ug/kg	1				

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Certificate of Analysis

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
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Richland, Washington 99354
Contact: Joan Kessner
Project: **RC-148 Soil**

Report Date: June 23, 2016

Client SDG: XP0229

Client Sample ID: J1V929
Sample ID: 399781002

Project: WCHN00314
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatile-GC/MS										
8270D/3541 BNA Soil Automated Soxhlet + TBP "Dry Weight Corrected"										
Di-n-butylphthalate	U	101	101	338	ug/kg	1				
Di-n-octylphthalate	U	101	101	338	ug/kg	1				
Dibenzo(a,h)anthracene	U	10.1	10.1	33.8	ug/kg	1				
Dibenzofuran	U	101	101	338	ug/kg	1				
Diethylphthalate	U	101	101	338	ug/kg	1				
Dimethylphthalate	U	101	101	338	ug/kg	1				
Diphenylamine	U	101	101	338	ug/kg	1				
Fluoranthene	U	10.1	10.1	33.8	ug/kg	1				
Fluorene	U	10.1	10.1	33.8	ug/kg	1				
Hexachlorobenzene	U	101	101	338	ug/kg	1				
Hexachlorobutadiene	U	101	101	338	ug/kg	1				
Hexachlorocyclopentadiene	U	101	101	338	ug/kg	1				
Hexachloroethane	U	101	101	338	ug/kg	1				
Indeno(1,2,3-cd)pyrene	U	10.1	10.1	33.8	ug/kg	1				
Isophorone	U	101	101	338	ug/kg	1				
N-Nitrosodipropylamine	U	101	101	338	ug/kg	1				
Naphthalene	U	10.1	10.1	33.8	ug/kg	1				
Nitrobenzene	U	101	101	338	ug/kg	1				
Pentachlorophenol	U	101	101	338	ug/kg	1				
Phenanthrene	U	10.1	10.1	33.8	ug/kg	1				
Phenol	U	101	101	338	ug/kg	1				
Pyrene	U	10.1	10.1	33.8	ug/kg	1				
Tributylphosphate	U	101	101	338	ug/kg	1				
bis(2-Chloro-1-methylethyl)ether	U	101	101	338	ug/kg	1				
bis(2-Chloroethoxy)methane	U	101	101	338	ug/kg	1				
bis(2-Chloroethyl) ether	U	101	101	338	ug/kg	1				
bis(2-Ethylhexyl)phthalate	U	101	101	338	ug/kg	1				
3- and/or 4-Methylphenol	U	101	101	338	ug/kg	1				
m-Nitroaniline	U	101	101	338	ug/kg	1				
o-Cresol	U	101	101	338	ug/kg	1				
o-Nitroaniline	U	111	111	338	ug/kg	1				
p-Nitroaniline	U	101	101	338	ug/kg	1				

Surrogate/Tracer recovery	*Result*	*Nominal*	*Recovery%*	*Acceptable Limits*	*Date Time:*	*06/22/16 23 33*
Nitrobenzene-d5	1060 ug/kg	1690	63	(13%-112%)		
2-Fluorobiphenyl	1250 ug/kg	1690	74	(15%-110%)		
p-Terphenyl-d14	1470 ug/kg	1690	87	(24%-141%)		
2-Fluorophenol	2040 ug/kg	3380	60	(10%-115%)		

Certificate of Analysis

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: **RC-148 Soil**

Report Date: June 23, 2016

Client SDG: XP0229

Client Sample ID: J1V929
Sample ID: 399781002

Project: WCHN00314
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatile-GC/MS										
8270D/3541 BNA Soil Automated Soxhlet + TBP "Dry Weight Corrected"										
2,4,6-Tribromophenol		2060 ug/kg	3380	61	(12%-129%)					
Phenol-d5		2160 ug/kg	3380	64	(15%-117%)					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 8270D BNA for Soil	MXD2	06/22/16	1057	1576295

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3541/8270D	

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: June 23, 2016

WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington

Contact: **Joan Kessner**

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS										
Batch 1576296										
QC1203571909 LCS										
1,2,4-Trichlorobenzene	1670			1430	ug/kg		86	(42%-102%)	JLD1	06/22/16 21:29
1,2-Dichlorobenzene	1670			1380	ug/kg		83	(39%-100%)		
1,3-Dichlorobenzene	1670			1320	ug/kg		79	(39%-95%)		
1,4-Dichlorobenzene	1670			1350	ug/kg		81	(39%-98%)		
2,4,5-Trichlorophenol	1670			1330	ug/kg		80	(45%-111%)		
2,4,6-Trichlorophenol	1670			1320	ug/kg		79	(46%-108%)		
2,4-Dichlorophenol	1670			1380	ug/kg		83	(44%-108%)		
2,4-Dimethylphenol	1670			1400	ug/kg		84	(41%-106%)		
2,4-Dinitrophenol	1670		J	427	ug/kg		26	(26%-90%)		
2,4-Dinitrotoluene	1670			1480	ug/kg		89	(46%-115%)		
2,6-Dinitrotoluene	1670			1490	ug/kg		89	(46%-112%)		
2-Chloronaphthalene	1670			1330	ug/kg		80	(44%-102%)		
2-Chlorophenol	1670			1410	ug/kg		84	(41%-110%)		
2-Methyl-4,6-dinitrophenol	1670			902	ug/kg		54	(31%-100%)		
2-Methylnaphthalene	1670			1350	ug/kg		81	(42%-103%)		
2-Nitrophenol	1670			1310	ug/kg		79	(42%-112%)		
3,3'-Dichlorobenzidine	1670			1460	ug/kg		87	(39%-104%)		
3- and/or 4-Methylphenol	1670			1450	ug/kg		87	(41%-127%)		
4-Bromophenylphenylether	1670			1440	ug/kg		86	(46%-112%)		
4-Chloro-3-methylphenol	1670			1340	ug/kg		80	(42%-116%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS										
Batch 1576296										
4-Chloroaniline	1670			1000	ug/kg		60	(37%-113%)	JLD1	06/22/16 21:29
4-Chlorophenylphenylether	1670			1430	ug/kg		86	(48%-113%)		
4-Nitrophenol	1670			1560	ug/kg		94	(27%-125%)		
Acenaphthene	1670			1330	ug/kg		80	(45%-103%)		
Acenaphthylene	1670			1400	ug/kg		84	(46%-107%)		
Anthracene	1670			1360	ug/kg		82	(47%-104%)		
Benzo(a)anthracene	1670			1490	ug/kg		89	(47%-107%)		
Benzo(a)pyrene	1670			1630	ug/kg		98	(46%-110%)		
Benzo(b)fluoranthene	1670			1690	ug/kg		101	(47%-112%)		
Benzo(ghi)perylene	1670			1330	ug/kg		80	(33%-125%)		
Benzo(k)fluoranthene	1670			1650	ug/kg		99	(46%-115%)		
Butylbenzylphthalate	1670			1420	ug/kg		85	(42%-120%)		
Carbazole	1670			1510	ug/kg		91	(46%-112%)		
Chrysene	1670			1480	ug/kg		89	(45%-109%)		
Di-n-butylphthalate	1670			1420	ug/kg		85	(47%-115%)		
Di-n-octylphthalate	1670			1500	ug/kg		90	(41%-128%)		
Dibenzo(a,h)anthracene	1670			1520	ug/kg		91	(34%-137%)		
Dibenzofuran	1670			1450	ug/kg		87	(48%-112%)		
Diethylphthalate	1670			1360	ug/kg		81	(45%-113%)		
Dimethylphthalate	1670			1470	ug/kg		88	(47%-110%)		
Diphenylamine	1670			1330	ug/kg		80	(43%-102%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS										
Batch 1576296										
Fluoranthene	1670			1490	ug/kg		90	(44%-112%)		
Fluorene	1670			1380	ug/kg		83	(45%-107%)	JLD1	06/22/16 21:29
Hexachlorobenzene	1670			1450	ug/kg		87	(44%-108%)		
Hexachlorobutadiene	1670			1430	ug/kg		86	(40%-110%)		
Hexachlorocyclopentadiene	1670			710	ug/kg		43	(27%-84%)		
Hexachloroethane	1670			1240	ug/kg		74	(38%-103%)		
Indeno(1,2,3-cd)pyrene	1670			1460	ug/kg		87	(38%-131%)		
Isophorone	1670			1300	ug/kg		78	(42%-107%)		
N-Nitrosodipropylamine	1670			1280	ug/kg		77	(36%-109%)		
Naphthalene	1670			1380	ug/kg		83	(43%-103%)		
Nitrobenzene	1670			1290	ug/kg		78	(41%-109%)		
Pentachlorophenol	1670			1190	ug/kg		71	(30%-106%)		
Phenanthrene	1670			1350	ug/kg		81	(47%-103%)		
Phenol	1670			1230	ug/kg		74	(38%-111%)		
Pyrene	1670			1240	ug/kg		75	(38%-111%)		
Tributylphosphate	1670			1270	ug/kg		76	(43%-123%)		
bis(2-Chloro-1-methylethyl)ether	1670			1080	ug/kg		65	(35%-114%)		
bis(2-Chloroethoxy)methane	1670			1390	ug/kg		83	(45%-110%)		
bis(2-Chloroethyl) ether	1670			1360	ug/kg		81	(41%-110%)		
bis(2-Ethylhexyl)phthalate	1670			1460	ug/kg		88	(42%-120%)		
m-Nitroaniline	1670			1340	ug/kg		80	(35%-131%)		
o-Cresol	1670			1290	ug/kg		77	(40%-111%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS										
Batch 1576296										
o-Nitroaniline	1670			1200	ug/kg		72	(39%-119%)		
p-Nitroaniline	1670			1570	ug/kg		95	(34%-138%)	JLD1	06/22/16 21:29
**2,4,6-Tribromophenol	3330			2750	ug/kg		83	(12%-129%)		
**2-Fluorobiphenyl	1670			1210	ug/kg		72	(15%-110%)		
**2-Fluorophenol	3330			2380	ug/kg		71	(10%-115%)		
**Nitrobenzene-d5	1670			1060	ug/kg		63	(13%-112%)		
**Phenol-d5	3330			2300	ug/kg		69	(15%-117%)		
**p-Terphenyl-d14	1670			1260	ug/kg		75	(24%-141%)		
QC1203571908 MB										
1,2,4-Trichlorobenzene			U	100	ug/kg					06/22/16 20:58
1,2-Dichlorobenzene			U	100	ug/kg					
1,3-Dichlorobenzene			U	100	ug/kg					
1,4-Dichlorobenzene			U	100	ug/kg					
2,4,5-Trichlorophenol			U	100	ug/kg					
2,4,6-Trichlorophenol			U	100	ug/kg					
2,4-Dichlorophenol			U	100	ug/kg					
2,4-Dimethylphenol			U	100	ug/kg					
2,4-Dinitrophenol			U	100	ug/kg					
2,4-Dinitrotoluene			U	100	ug/kg					
2,6-Dinitrotoluene			U	100	ug/kg					
2-Chloronaphthalene			U	10.0	ug/kg					
2-Chlorophenol			U	100	ug/kg					
2-Methyl-4,6-dinitrophenol			U	100	ug/kg					

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch 1576296											
2-Methylnaphthalene			U	10.0	ug/kg				JLD1	06/22/16	20:58
2-Nitrophenol			U	100	ug/kg						
3,3'-Dichlorobenzidine			U	100	ug/kg						
3- and/or 4-Methylphenol			U	100	ug/kg						
4-Bromophenylphenylether			U	100	ug/kg						
4-Chloro-3-methylphenol			U	133	ug/kg						
4-Chloroaniline			U	100	ug/kg						
4-Chlorophenylphenylether			U	100	ug/kg						
4-Nitrophenol			U	100	ug/kg						
Acenaphthene			U	10.0	ug/kg						
Acenaphthylene			U	10.0	ug/kg						
Anthracene			U	10.0	ug/kg						
Benzo(a)anthracene			U	10.0	ug/kg						
Benzo(a)pyrene			U	10.0	ug/kg						
Benzo(b)fluoranthene			U	10.0	ug/kg						
Benzo(ghi)perylene			U	10.0	ug/kg						
Benzo(k)fluoranthene			U	10.0	ug/kg						
Butylbenzylphthalate			U	100	ug/kg						
Carbazole			U	10.0	ug/kg						
Chrysene			U	10.0	ug/kg						
Di-n-butylphthalate			U	100	ug/kg						

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch 1576296											
Di-n-octylphthalate			U	100	ug/kg						
Dibenzo(a,h)anthracene			U	10.0	ug/kg				JLD1	06/22/16	20:58
Dibenzofuran			U	100	ug/kg						
Diethylphthalate			U	100	ug/kg						
Dimethylphthalate			U	100	ug/kg						
Diphenylamine			U	100	ug/kg						
Fluoranthene			U	10.0	ug/kg						
Fluorene			U	10.0	ug/kg						
Hexachlorobenzene			U	100	ug/kg						
Hexachlorobutadiene			U	100	ug/kg						
Hexachlorocyclopentadiene			U	100	ug/kg						
Hexachloroethane			U	100	ug/kg						
Indeno(1,2,3-cd)pyrene			U	10.0	ug/kg						
Isophorone			U	100	ug/kg						
N-Nitrosodipropylamine			U	100	ug/kg						
Naphthalene			U	10.0	ug/kg						
Nitrobenzene			U	100	ug/kg						
Pentachlorophenol			U	100	ug/kg						
Phenanthrene			U	10.0	ug/kg						
Phenol			U	100	ug/kg						
Pyrene			U	10.0	ug/kg						
Tributylphosphate			U	100	ug/kg						

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS												
Batch 1576296												
bis(2-Chloro-1-methylethyl)ether				U	100	ug/kg						
bis(2-Chloroethoxy)methane				U	100	ug/kg				JLD1	06/22/16	20:58
bis(2-Chloroethyl) ether				U	100	ug/kg						
bis(2-Ethylhexyl)phthalate				U	100	ug/kg						
m-Nitroaniline				U	100	ug/kg						
o-Cresol				U	100	ug/kg						
o-Nitroaniline				U	110	ug/kg						
p-Nitroaniline				U	100	ug/kg						
**2,4,6-Tribromophenol	3330				2390	ug/kg		72	(12%-129%)			
**2-Fluorobiphenyl	1670				1230	ug/kg		74	(15%-110%)			
**2-Fluorophenol	3330				2030	ug/kg		61	(10%-115%)			
**Nitrobenzene-d5	1670				999	ug/kg		60	(13%-112%)			
**Phenol-d5	3330				1930	ug/kg		58	(15%-117%)			
**p-Terphenyl-d14	1670				1180	ug/kg		71	(24%-141%)			
QC1203571910 399781001 MS												
1,2,4-Trichlorobenzene	1710	U	103		1440	ug/kg		84	(26%-104%)		06/22/16	22:31
1,2-Dichlorobenzene	1710	U	103		1360	ug/kg		79	(26%-98%)			
1,3-Dichlorobenzene	1710	U	103		1290	ug/kg		76	(27%-92%)			
1,4-Dichlorobenzene	1710	U	103		1310	ug/kg		77	(27%-95%)			
2,4,5-Trichlorophenol	1710	U	103		1460	ug/kg		85	(26%-120%)			
2,4,6-Trichlorophenol	1710	U	103		1400	ug/kg		82	(25%-117%)			
2,4-Dichlorophenol	1710	U	103		1440	ug/kg		84	(21%-119%)			
2,4-Dimethylphenol	1710	U	103		1130	ug/kg		66	(27%-111%)			

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Semi-Volatile-GC/MS
Batch 1576296

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
2,4-Dinitrophenol	1710	TU	103	J	254	ug/kg		15	(12%-112%)	JLD1	06/22/16 22:31
2,4-Dinitrotoluene	1710	U	103		1540	ug/kg		90	(32%-118%)		
2,6-Dinitrotoluene	1710	U	103		1550	ug/kg		91	(32%-114%)		
2-Chloronaphthalene	1710	U	10.3		1380	ug/kg		81	(25%-111%)		
2-Chlorophenol	1710	U	103		1400	ug/kg		82	(20%-114%)		
2-Methyl-4,6-dinitrophenol	1710	U	103		1090	ug/kg		64	(17%-115%)		
2-Methylnaphthalene	1710	U	10.3		1340	ug/kg		78	(25%-112%)		
2-Nitrophenol	1710	U	103		1330	ug/kg		78	(23%-115%)		
3,3'-Dichlorobenzidine	1710	U	103		749	ug/kg		44	(21%-107%)		
3- and/or 4-Methylphenol	1710	U	103		1490	ug/kg		87	(29%-130%)		
4-Bromophenylphenylether	1710	U	103		1580	ug/kg		93	(29%-121%)		
4-Chloro-3-methylphenol	1710	U	137		1420	ug/kg		83	(29%-119%)		
4-Chloroaniline	1710	U	103		958	ug/kg		56	(22%-120%)		
4-Chlorophenylphenylether	1710	U	103		1510	ug/kg		88	(29%-119%)		
4-Nitrophenol	1710	U	103		1520	ug/kg		89	(20%-120%)		
Acenaphthene	1710	U	10.3		1400	ug/kg		82	(27%-111%)		
Acenaphthylene	1710	U	10.3		1460	ug/kg		86	(26%-117%)		
Anthracene	1710	U	10.3		1450	ug/kg		85	(29%-118%)		
Benzo(a)anthracene	1710	U	10.3		1590	ug/kg		93	(25%-126%)		
Benzo(a)pyrene	1710	U	10.3		1730	ug/kg		101	(28%-122%)		
Benzo(b)fluoranthene	1710	U	10.3		1880	ug/kg		110	(28%-127%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS											
Batch 1576296											
Benzo(ghi)perylene	1710	U	10.3		1300	ug/kg		76	(22%-113%)		
Benzo(k)fluoranthene	1710	U	10.3		1900	ug/kg		111	(28%-131%)	JLD1	06/22/16 22:31
Butylbenzylphthalate	1710	U	103		1690	ug/kg		99	(26%-133%)		
Carbazole	1710	U	10.3		1540	ug/kg		90	(27%-123%)		
Chrysene	1710	U	10.3		1540	ug/kg		90	(26%-122%)		
Di-n-butylphthalate	1710	U	103		1580	ug/kg		92	(26%-126%)		
Di-n-octylphthalate	1710	U	103		1580	ug/kg		93	(29%-130%)		
Dibenzo(a,h)anthracene	1710	U	10.3		1530	ug/kg		90	(19%-133%)		
Dibenzofuran	1710	U	103		1500	ug/kg		88	(30%-119%)		
Diethylphthalate	1710	U	103		1480	ug/kg		86	(26%-124%)		
Dimethylphthalate	1710	U	103		1570	ug/kg		92	(27%-120%)		
Diphenylamine	1710	U	103		1450	ug/kg		85	(32%-109%)		
Fluoranthene	1710	U	10.3		1500	ug/kg		88	(24%-123%)		
Fluorene	1710	U	10.3		1430	ug/kg		84	(27%-117%)		
Hexachlorobenzene	1710	U	103		1600	ug/kg		94	(30%-113%)		
Hexachlorobutadiene	1710	U	103		1430	ug/kg		84	(25%-109%)		
Hexachlorocyclopentadiene	1710	U	103		605	ug/kg		35	(10%-100%)		
Hexachloroethane	1710	U	103		1240	ug/kg		72	(23%-98%)		
Indeno(1,2,3-cd)pyrene	1710	U	10.3		1380	ug/kg		81	(21%-126%)		
Isophorone	1710	U	103		1360	ug/kg		80	(29%-107%)		
N-Nitrosodipropylamine	1710	U	103		1330	ug/kg		78	(25%-113%)		
Naphthalene	1710	U	10.3		1390	ug/kg		81	(23%-111%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS											
Batch 1576296											
Nitrobenzene	1710	U	103		1290	ug/kg		76	(26%-109%)		
Pentachlorophenol	1710	U	103		1040	ug/kg		61	(17%-119%)	JLD1	06/22/16 22:31
Phenanthrene	1710	U	10.3		1470	ug/kg		86	(26%-121%)		
Phenol	1710	U	103		1290	ug/kg		75	(28%-111%)		
Pyrene	1710	U	10.3		1550	ug/kg		91	(23%-127%)		
Tributylphosphate	1710	U	103		1350	ug/kg		79	(25%-131%)		
bis(2-Chloro-1-methylethyl)ether	1710	U	103		1120	ug/kg		66	(21%-116%)		
bis(2-Chloroethoxy)methane	1710	U	103		1440	ug/kg		84	(30%-111%)		
bis(2-Chloroethyl) ether	1710	U	103		1370	ug/kg		80	(27%-110%)		
bis(2-Ethylhexyl)phthalate	1710	U	103		1710	ug/kg		99	(27%-131%)		
m-Nitroaniline	1710	U	103		1100	ug/kg		65	(24%-137%)		
o-Cresol	1710	U	103		1320	ug/kg		78	(28%-114%)		
o-Nitroaniline	1710	U	113		1240	ug/kg		73	(27%-120%)		
p-Nitroaniline	1710	U	103		999	ug/kg		58	(19%-140%)		
**2,4,6-Tribromophenol	3420		2310		2840	ug/kg		83	(12%-129%)		
**2-Fluorobiphenyl	1710		1280		1280	ug/kg		75	(15%-110%)		
**2-Fluorophenol	3420		2030		2430	ug/kg		71	(10%-115%)		
**Nitrobenzene-d5	1710		1070		1070	ug/kg		63	(13%-112%)		
**Phenol-d5	3420		2170		2370	ug/kg		69	(15%-117%)		
**p-Terphenyl-d14	1710		1380		1560	ug/kg		91	(24%-141%)		
QC1203571911 399781001 MSD											
1,2,4-Trichlorobenzene	1710	U	103		1440	ug/kg	0	84	(0%-30%)		06/22/16 23:02
1,2-Dichlorobenzene	1710	U	103		1380	ug/kg	2	81	(0%-30%)		

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Semi-Volatile-GC/MS
Batch 1576296

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
1,3-Dichlorobenzene	1710	U	103		1320	ug/kg	2	77	(0%-30%)	JLD1	06/22/16 23:02
1,4-Dichlorobenzene	1710	U	103		1350	ug/kg	3	79	(0%-30%)		
2,4,5-Trichlorophenol	1710	U	103		1410	ug/kg	3	82	(0%-30%)		
2,4,6-Trichlorophenol	1710	U	103		1360	ug/kg	4	79	(0%-30%)		
2,4-Dichlorophenol	1710	U	103		1440	ug/kg	0	84	(0%-30%)		
2,4-Dimethylphenol	1710	U	103		1210	ug/kg	6	70	(0%-30%)		
2,4-Dinitrophenol	1710	TU	103	JT	170	ug/kg	39*	10*	(0%-30%)		
2,4-Dinitrotoluene	1710	U	103		1550	ug/kg	1	91	(0%-30%)		
2,6-Dinitrotoluene	1710	U	103		1530	ug/kg	1	89	(0%-30%)		
2-Chloronaphthalene	1710	U	10.3		1330	ug/kg	4	78	(0%-30%)		
2-Chlorophenol	1710	U	103		1430	ug/kg	2	84	(0%-30%)		
2-Methyl-4,6-dinitrophenol	1710	U	103		873	ug/kg	23	51	(0%-30%)		
2-Methylnaphthalene	1710	U	10.3		1390	ug/kg	4	81	(0%-30%)		
2-Nitrophenol	1710	U	103		1310	ug/kg	2	77	(0%-30%)		
3,3'-Dichlorobenzidine	1710	U	103		533	ug/kg	34*	31	(0%-30%)		
3- and/or 4-Methylphenol	1710	U	103		1570	ug/kg	5	92	(0%-30%)		
4-Bromophenylphenylether	1710	U	103		1470	ug/kg	8	86	(0%-30%)		
4-Chloro-3-methylphenol	1710	U	137		1450	ug/kg	2	85	(0%-30%)		
4-Chloroaniline	1710	U	103		948	ug/kg	1	55	(0%-30%)		
4-Chlorophenylphenylether	1710	U	103		1480	ug/kg	2	87	(0%-30%)		
4-Nitrophenol	1710	U	103		1600	ug/kg	5	93	(0%-30%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS											
Batch 1576296											
Acenaphthene	1710	U	10.3		1350	ug/kg	4	79	(0%-30%)		
Acenaphthylene	1710	U	10.3		1430	ug/kg	2	84	(0%-30%)	JLD1	06/22/16 23:02
Anthracene	1710	U	10.3		1380	ug/kg	5	81	(0%-30%)		
Benzo(a)anthracene	1710	U	10.3		1460	ug/kg	9	85	(0%-30%)		
Benzo(a)pyrene	1710	U	10.3		1580	ug/kg	9	92	(0%-30%)		
Benzo(b)fluoranthene	1710	U	10.3		1730	ug/kg	8	101	(0%-30%)		
Benzo(ghi)perylene	1710	U	10.3		1210	ug/kg	7	71	(0%-30%)		
Benzo(k)fluoranthene	1710	U	10.3		1750	ug/kg	8	103	(0%-30%)		
Butylbenzylphthalate	1710	U	103		1490	ug/kg	12	87	(0%-30%)		
Carbazole	1710	U	10.3		1460	ug/kg	6	85	(0%-30%)		
Chrysene	1710	U	10.3		1410	ug/kg	9	83	(0%-30%)		
Di-n-butylphthalate	1710	U	103		1460	ug/kg	8	85	(0%-30%)		
Di-n-octylphthalate	1710	U	103		1490	ug/kg	6	87	(0%-30%)		
Dibenzo(a,h)anthracene	1710	U	10.3		1410	ug/kg	8	83	(0%-30%)		
Dibenzofuran	1710	U	103		1490	ug/kg	1	87	(0%-30%)		
Diethylphthalate	1710	U	103		1450	ug/kg	2	84	(0%-30%)		
Dimethylphthalate	1710	U	103		1520	ug/kg	3	89	(0%-30%)		
Diphenylamine	1710	U	103		1370	ug/kg	6	80	(0%-30%)		
Fluoranthene	1710	U	10.3		1430	ug/kg	5	83	(0%-30%)		
Fluorene	1710	U	10.3		1420	ug/kg	0	83	(0%-30%)		
Hexachlorobenzene	1710	U	103		1460	ug/kg	9	85	(0%-30%)		
Hexachlorobutadiene	1710	U	103		1440	ug/kg	0	84	(0%-30%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS											
Batch 1576296											
Hexachlorocyclopentadiene	1710	U	103		472	ug/kg	25	28	(0%-30%)		
Hexachloroethane	1710	U	103		1280	ug/kg	3	75	(0%-30%)	JLD1	06/22/16 23:02
Indeno(1,2,3-cd)pyrene	1710	U	10.3		1270	ug/kg	8	74	(0%-30%)		
Isophorone	1710	U	103		1380	ug/kg	1	81	(0%-30%)		
N-Nitrosodipropylamine	1710	U	103		1380	ug/kg	3	81	(0%-30%)		
Naphthalene	1710	U	10.3		1400	ug/kg	1	82	(0%-30%)		
Nitrobenzene	1710	U	103		1280	ug/kg	1	75	(0%-30%)		
Pentachlorophenol	1710	U	103		1110	ug/kg	7	65	(0%-30%)		
Phenanthrene	1710	U	10.3		1370	ug/kg	7	80	(0%-30%)		
Phenol	1710	U	103		1300	ug/kg	1	76	(0%-30%)		
Pyrene	1710	U	10.3		1360	ug/kg	13	79	(0%-30%)		
Tributylphosphate	1710	U	103		1380	ug/kg	2	81	(0%-30%)		
bis(2-Chloro-1-methylethyl)ether	1710	U	103		1180	ug/kg	5	69	(0%-30%)		
bis(2-Chloroethoxy)methane	1710	U	103		1430	ug/kg	1	83	(0%-30%)		
bis(2-Chloroethyl) ether	1710	U	103		1410	ug/kg	3	83	(0%-30%)		
bis(2-Ethylhexyl)phthalate	1710	U	103		1540	ug/kg	10	89	(0%-30%)		
m-Nitroaniline	1710	U	103		1130	ug/kg	2	66	(0%-30%)		
o-Cresol	1710	U	103		1370	ug/kg	3	80	(0%-30%)		
o-Nitroaniline	1710	U	113		1220	ug/kg	2	71	(0%-30%)		
p-Nitroaniline	1710	U	103		1070	ug/kg	7	63	(0%-30%)		
**2,4,6-Tribromophenol	3420		2310		2730	ug/kg		80	(12%-129%)		
**2-Fluorobiphenyl	1710		1280		1120	ug/kg		66	(15%-110%)		

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatile-GC/MS										
Batch 1576296										
**2-Fluorophenol	3420	2030		2310	ug/kg		68	(10%-115%)		
**Nitrobenzene-d5	1710	1070		997	ug/kg		58	(13%-112%)	JLD1	06/22/16 23:02
**Phenol-d5	3420	2170		2290	ug/kg		67	(15%-117%)		
**p-Terphenyl-d14	1710	1380		1300	ug/kg		76	(24%-141%)		

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated
- P Aroclor target analyte with greater than 40% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (0rganics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

Prep Logbook

Automated Soxhlet Extraction

Batch ID: **1576295** **Verified by:** _____

Analyst: **Mia DeLee**

Method: **SW846 3541**

Lab SOP: **GL-OA-E-066 REV# 6**

Instrument: **Semi-Volatiles Manual**

Sample ID	Prep Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203571908 MB	22-JUN-2016 10:57:00	30.015	1	0.03332
1203571909 LCS	22-JUN-2016 10:57:00	30.028	1	0.0333
399781001	22-JUN-2016 10:57:00	30.006	1	0.03333
1203571910 MS (399781001)	22-JUN-2016 10:57:00	30.039	1	0.03329
1203571911 MSD (399781001)	22-JUN-2016 10:57:00	30.002	1	0.03333
399781002	22-JUN-2016 10:57:00	30.016	1	0.03332

Type	Sample Id	Description	Serial Number	Spike Amt	Units
LCS	1203571909	BENZIDINE/Atrazine LCS	WE160524-48	1	mL
LCS	1203571909	BNA LCS w/o Benzidine/Atrazine 50ppm	WE160613-40	1	mL
MS	1203571910	BENZIDINE/Atrazine LCS	WE160524-48	1	mL
MS	1203571910	BNA LCS w/o Benzidine/Atrazine 50ppm	WE160613-40	1	mL
MSD	1203571911	BENZIDINE/Atrazine LCS	WE160524-48	1	mL
MSD	1203571911	BNA LCS w/o Benzidine/Atrazine 50ppm	WE160613-40	1	mL
SURR	All	BNA for all Surrogate	UE160601-05	1	mL
REGNT	All	Methylene Chloride	2417473	60	mL
REGNT	All	Acetone	2419973-B4	60	mL
SOURC	All	SODIUM SULFATE	2387099	30	g

Comments:

Final Solvent: CH2Cl2
Verified by: SJW

FID Diesel Range Organics Analysis

Case Narrative

Diesel Range Organics
Technical Case Narrative
Eberline (WCHN)
SDG #: XP0229
Work Order #: 399781

Method/Analysis Information

Procedure:	**Analysis of Diesel Range Organics by Flame Ionization Detector**
Analytical Method:	NWTPH-Dx in Soil
Prep Method:	SW846 3541
Analytical Batch Number:	1576306
Prep Batch Number:	1576305

Sample Analysis

The following samples were analyzed using the analytical protocol as established in NWTPH-Dx in Soil:

Sample ID	Client ID
399781001	J1V928
399781002	J1V929
1203571934	Method Blank (MB)
1203571935	Laboratory Control Sample (LCS)
1203571936	399781002(J1V929) Matrix Spike (MS)
1203571937	399781002(J1V929) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-003 REV# 26.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. Analyte peaks eluted within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria; however, the MB contained low level (below the PQL) of hydrocarbons within Motor Oil range.

Surrogate Recoveries
All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS/LCSD) Recovery
The LCS/LCSD spike recoveries met the acceptance limits.

QC Sample Designation
Sample 399781002 (J1V929) was selected for the MS and MSD analyses.

Matrix Spike (MS/MSD) Recovery Statement
The MS/MSD recovery was within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement
The RPD between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP. Analyte peaks eluted within the established retention time windows for this method.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required for the samples reported in this batch.

Miscellaneous Information

Electronic Package Comment

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

Data Exception (DER) Documentation
Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations
Samples 1203571935 (LCS), 1203571936 (J1V929MS) and 1203571937 (J1V929MSD) required manual integration to correctly position the baseline as set in the calibration standard injections.

Additional Comments
The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The additional comments were not required.

System Configuration

The Diesel Range Organics analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
FID7.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	DB-5MS	30m x 0.25mm, 0.25um(J&W)

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Qualifier Definition Report
for

WCHN001 Eberline

Client SDG: XP0229 GEL Work Order: 399781 Project: RC−148 Soil

The Qualifiers in this report are defined as follows:

B The analyte was detected in both the associated QC blank and in the sample.

J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

RA Indicates that sample is re−analyzed without re−extraction.

RE Indicates that sample is re−extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP−like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Jimin Cao **Name: Jimin Cao**

Date: 24 JUN 2016 **Title: Data Validator**

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: June 24, 2016

Company :	WC−Hanford, Inc.
Address :	2620 Fermi Avenue MSIN H4−21 Richland, Washington 99354
Contact:	Joan Kessner
Project:	RC−148 Soil

Client SDG: XP0229

Client Sample ID:	J1V928	Project:	WCHN00314
Sample ID:	399781001	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	16−JUN−16 07:40		
Receive Date:	21−JUN−16		
Collector:	Client		
Moisture:	2.54%		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH−Dx in Soil (DRO + Motor Oil) "Dry Weight Corrected"											
Diesel Range Organics (C10−C20)	U	2200	2200	6760	ug/kg	1	JMB3	06/23/16	1414	1576306	1
Motor Oil (C20−C36)	BJ	6460	2200	6760	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	SJW1	06/23/16	0525	1576305

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	NWTPH−Dx in Soil	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
o−Terphenyl	SW 3541/NWTPH−Dx in Soil (DRO + Motor Oil) "Dry Weight Corrected"	360 ug/kg	676	53	(50%−150%)

Notes:

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis

Report Date: June 24, 2016

Company :	WC−Hanford, Inc.
Address :	2620 Fermi Avenue MSIN H4−21 Richland, Washington 99354
Contact:	Joan Kessner
Project:	RC−148 Soil

Client SDG: XP0229

Client Sample ID:	J1V929	Project:	WCHN00314
Sample ID:	399781002	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	16−JUN−16 10:30		
Receive Date:	21−JUN−16		
Collector:	Client		
Moisture:	1.36%		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH−Dx in Soil (DRO + Motor Oil) "Dry Weight Corrected"											
Diesel Range Organics (C10−C20)	U	2170	2170	6680	ug/kg	1	JMB3	06/23/16	1453	1576306	1
Motor Oil (C20−C36)	BJ	4530	2170	6680	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	SJW1	06/23/16	0525	1576305

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	NWTPH−Dx in Soil	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
o−Terphenyl	SW 3541/NWTPH−Dx in Soil (DRO + Motor Oil) "Dry Weight Corrected"	390 ug/kg	668	58	(50%−150%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 − (843) 556−8171 − www.gel.com

QC Summary

Report Date: June 24, 2016

WC−Hanford, Inc.
2620 Fermi Avenue
MSIN H4−21
Richland, Washington

Contact: **Joan Kessner**

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC−148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Tin
Diesel Range Organics											
Batch 1576306											
QC1203571935 LCS											
Diesel Range Organics (C10−C20)	66700				47300	ug/kg		71	(70%−130%)	JMB3	06/23/16 13
Motor Oil (C20−C36)	66700			B	61400	ug/kg		92	(70%−130%)		
**o−Terphenyl	667				476	ug/kg		71	(50%−150%)		
QC1203571934 MB											
Diesel Range Organics (C10−C20)				U	2160	ug/kg					06/23/16 12
Motor Oil (C20−C36)				J	2190	ug/kg					
**o−Terphenyl	666				430	ug/kg		65	(50%−150%)		
QC1203571936 399781002 MS											
Diesel Range Organics (C10−C20)	67400	U	2170		47100	ug/kg		70	(70%−130%)		06/23/16 15
Motor Oil (C20−C36)	67400	BJ	4530	B	62000	ug/kg		85	(70%−130%)		
**o−Terphenyl	674		390		450	ug/kg		67	(50%−150%)		
QC1203571937 399781002 MSD											
Diesel Range Organics (C10−C20)	67000	U	2170		46800	ug/kg	1	70	(0%−20%)		06/23/16 16
Motor Oil (C20−C36)	67000	BJ	4530	B	62900	ug/kg	1	87	(0%−20%)		
**o−Terphenyl	670		390		483	ug/kg		72	(50%−150%)		

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol−condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC−148 Soil **Page 2 o**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Tin

P	Aroclor target analyte with greater than 40% difference between column analyses.
T	Spike and/or spike duplicate sample recovery is outside control limits.
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
o	Analyte failed to recover within LCS limits (0rganics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/− the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

Prep Logbook

Extraction of Semivolatile and Nonvolatile Organic Compounds from Soil, Sludge, and Other Miscellaneous Solid Samples

Batch ID: **1576305** **Verified by:** _____

Analyst: **Sirena White**

Method: **SW846 3541**

Lab SOP: **GL−OA−E−010 REV# 25**

Instrument: **Semi−Volatiles Manual**

Sample ID	Prep Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203571934 MB	23−JUN−2016 05:25:00	30.03	1	0.0333
1203571935 LCS	23−JUN−2016 05:25:00	30	1	0.03333
399781001	23−JUN−2016 05:25:00	30.36	1	0.03294
399781002	23−JUN−2016 05:25:00	30.35	1	0.03295
1203571936 MS (399781002)	23−JUN−2016 05:25:00	30.08	1	0.03324
1203571937 MSD (399781002)	23−JUN−2016 05:25:00	30.26	1	0.03305

Type	Sample Id	Description	Serial Number	Spike Amt	Units
LCS	1203571935	AZDRO SPIKE LCS STD,4000ug/ml	WFI160621−62	1	mL
MS	1203571936	AZDRO SPIKE LCS STD,4000ug/ml	WFI160621−62	1	mL
MSD	1203571937	AZDRO SPIKE LCS STD,4000ug/ml	WFI160621−62	1	mL
SURR	All	20 ppm surrogate	WE160516−04	1	mL
REGNT	All	Methylene Chloride	2417473	120	mL
SOURC	All	SODIUM SULFATE	2387099	30	g

Comments:

Final Solvent: CH2Cl2
Verified by: DPF

PCB Analysis

Case Narrative

GC Semivolatile PCB
Technical Case Narrative
Eberline (WCHN)
SDG #: XP0229
Work Order #: 399781

Method/Analysis Information

Procedure:	**Analysis of Polychlorinated Biphenyls by ECD**
Analytical Method:	SW846 3541/8082A
Prep Method:	SW846 3541
Analytical Batch Number:	1576300
Prep Batch Number:	1576299

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3541/8082A:

Sample ID	Client ID
399781001	J1V928
399781002	J1V929
1203571920	Method Blank (MB)
1203571921	Laboratory Control Sample (LCS)
1203571922	399781001(J1V928) Matrix Spike (MS)
1203571923	399781001(J1V928) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-040 REV# 21.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

The calibration verification standards(ICV or CCV) did not meet acceptance criteria with a positive bias. As there were no target analytes detected in the associated environmental samples, the sample results were not adversely affected.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
All surrogate recoveries were within the established acceptance criteria for the samples in this SDG in this batch.

Laboratory Control Sample (LCS/LCSD) Recovery
The LCS/LCSD spike recoveries met the acceptance limits.

QC Sample Designation
Sample 399781001 (J1V928) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS/MSD) Recovery Statement
The MS/MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement
The RPD between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All samples and QC in this batch were cleaned using alumina in order to remove oil and other high molecular weight interferences. All samples and QC in this batch were cleaned with activated copper in order to remove sulfur. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported analyte concentrations were confirmed on dissimilar columns.

Sample Dilutions
The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required for the samples reported in this batch.

Miscellaneous Information

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Manual integrations
Samples 1203571920 (MB), 1203571921 (LCS), 1203571922 (J1V928MS), 1203571923 (J1V928MSD), 399781001 (J1V928) and 399781002 (J1V929) required manual integration to correctly position the baseline as set in the calibration standard injections.

Additional Comments
The lower results from either column have been chosen and reported in the data package for the client samples, MB and LCS. The data reported for the MS/MSD are from the same analytical column as the parent sample.

System Configuration

The Semi-Volatiles-PCB analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD8A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide I)
ECD8A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

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Qualifier Definition Report
for

WCHN001 Eberline

Client SDG: XP0229 GEL Work Order: 399781 Project: RC-148 Soil

The Qualifiers in this report are defined as follows:

J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Jimin Cao **Name: Jimin Cao**

Date: 28 JUN 2016 **Title: Data Validator**

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 23, 2016

Company :	WC-Hanford, Inc.
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354
Contact:	Joan Kessner
Project:	RC-148 Soil

Client SDG: XP0229

Client Sample ID:	J1V928	Project:	WCHN00314
Sample ID:	399781001	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	16-JUN-16 07:40		
Receive Date:	21-JUN-16		
Collector:	Client		
Moisture:	2.54%		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"											
Aroclor-1016	U	1.12	1.12	3.37	ug/kg	1	JXM	06/23/16	0918	1576300	1
Aroclor-1221	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1232	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1242	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1248	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1254	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1260	J	2.19	1.12	3.37	ug/kg	1					
Aroclor-1262	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1268	U	1.12	1.12	3.37	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	06/22/16	1045	1576299

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	
2	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.58 ug/kg	6.75	68	(32%-139%)
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.39 ug/kg	6.75	65	(30%-120%)

Notes:

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 23, 2016

Company :	WC-Hanford, Inc.
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354
Contact:	Joan Kessner
Project:	RC-148 Soil

Client SDG: XP0229

Client Sample ID:	J1V929	Project:	WCHN00314
Sample ID:	399781002	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	16-JUN-16 10:30		
Receive Date:	21-JUN-16		
Collector:	Client		
Moisture:	1.36%		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"											
Aroclor-1016	U	1.12	1.12	3.36	ug/kg	1	JXM	06/23/16	0955	1576300	1
Aroclor-1221	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1232	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1242	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1248	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1254	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1260	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1262	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1268	U	1.12	1.12	3.36	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	06/22/16	1045	1576299

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	
2	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.02 ug/kg	6.72	60	(32%-139%)
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	3.87 ug/kg	6.72	58	(30%-120%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 23, 2016

WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington

Contact: **Joan Kessner**

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatiles-PCB										
Batch 1576300										
QC1203571921 LCS										
Aroclor-1016	33.3			23.5	ug/kg		70	(48%-93%)	JXM	06/23/16 09:06
Aroclor-1260	33.3			20.4	ug/kg		61	(58%-117%)		
**4cmx	6.66			4.60	ug/kg		69	(30%-120%)		
**Decachlorobiphenyl	6.66			5.66	ug/kg		85	(32%-139%)		
QC1203571920 MB										
Aroclor-1016			U	1.11	ug/kg					06/23/16 08:54
Aroclor-1221			U	1.11	ug/kg					
Aroclor-1232			U	1.11	ug/kg					
Aroclor-1242			U	1.11	ug/kg					
Aroclor-1248			U	1.11	ug/kg					
Aroclor-1254			U	1.11	ug/kg					
Aroclor-1260			U	1.11	ug/kg					
Aroclor-1262			U	1.11	ug/kg					
Aroclor-1268			U	1.11	ug/kg					
**4cmx	6.66			3.63	ug/kg		55	(30%-120%)		
**Decachlorobiphenyl	6.66			4.20	ug/kg		63	(32%-139%)		
QC1203571922 399781001 MS										
Aroclor-1016	34.1	U	1.12	22.4	ug/kg		66	(23%-121%)		06/23/16 09:31
Aroclor-1260	34.1	J	2.19	21.9	ug/kg		58	(35%-135%)		
**4cmx	6.82		4.39	4.04	ug/kg		59	(30%-120%)		
**Decachlorobiphenyl	6.82		4.58	4.78	ug/kg		70	(32%-139%)		

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatiles-PCB											
Batch 1576300											
QC1203571923 399781001 MSD											
Aroclor-1016	34.1	U	1.12		24.5	ug/kg	9	72	(0%-29%)	JXM	06/23/16 09:43
Aroclor-1260	34.1	J	2.19		23.4	ug/kg	6	62	(0%-33%)		
**4cmx	6.83		4.39		4.42	ug/kg		65	(30%-120%)		
**Decachlorobiphenyl	6.83		4.58		5.05	ug/kg		74	(32%-139%)		

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated
- P Aroclor target analyte with greater than 40% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (0rganics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

Prep Logbook

Automated Soxhlet Extraction

Batch ID: **1576299** **Verified by:** _____

Analyst: **Sirena White**

Method: **SW846 3541**

Lab SOP: **GL-OA-E-066 REV# 6**

Instrument: **Semi-Volatiles Manual**

Sample ID	Prep Date	Aliquot (g)	Clean Up 1	Clean Up Amount 1 (mL)	Post Clean Up Amount 1 (mL)	Final Volume (mL)	Prepped Factor (mL/g)
1203571920 MB	22-JUN-2016 10:45:00	30.02	H2SO4/KMnO4	2	9	1	0.03331
1203571921 LCS	22-JUN-2016 10:45:00	30.02	H2SO4/KMnO4	2	9	1	0.03331
399781001	22-JUN-2016 10:45:00	30.41	H2SO4/KMnO4	2	9	1	0.03288
1203571922 MS (399781001)	22-JUN-2016 10:45:00	30.08	H2SO4/KMnO4	2	9	1	0.03324
1203571923 MSD (399781001)	22-JUN-2016 10:45:00	30.06	H2SO4/KMnO4	2	9	1	0.03327
399781002	22-JUN-2016 10:45:00	30.17	H2SO4/KMnO4	2	9	1	0.03315

Type	Sample Id	Description	Serial Number	Spike Amt	Units
LCS	1203571921	PCB Laboratory Control	WE160608-06	1	mL
MS	1203571922	PCB Laboratory Control	WE160608-06	1	mL
MSD	1203571923	PCB Laboratory Control	WE160608-06	1	mL
SURR	All	PEST LOW LEVEL SURROGATE 200 UG/L	WE160516-02	1	mL
REGNT	All	5% Potassium Permanganate	2383310	5	mL
REGNT	All	Hexane	2415029	120	mL
REGNT	All	1:1 sulfuric acid	2422012	5	mL
SOURC	All	SODIUM SULFATE	2387099	30	g

Comments:

Final Solvent: Hexane
Verified by: MD
Clean-up Initials: SJW
Clean-up SOP: GL-OA-E-037 REV.7
Clean-up date: 06/22/2016

Prior to Clean-up: 2mL

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
Eberline (WCHN)
SDG #: XP0229
Work Order #: 399781

Sample ID	Client ID
399781001	J1V928
399781002	J1V929
1203571690	Method Blank (MB)**ICP**
1203571691	Laboratory Control Sample (LCS)
1203571694	399781001(J1V928L) Serial Dilution (SD)
1203571692	399781001(J1V928D) Sample Duplicate (DUP)
1203571693	399781001(J1V928S) Matrix Spike (MS)
1203572443	399781001(J1V928PS) Post Spike (PS)
1203572286	Method Blank (MB)**ICP-MS**
1203572287	Laboratory Control Sample (LCS)
1203572290	399781001(J1V928L) Serial Dilution (SD)
1203572288	399781001(J1V928D) Sample Duplicate (DUP)
1203572289	399781001(J1V928S) Matrix Spike (MS)
1203572060	Method Blank (MB)**CVAA**
1203572061	Laboratory Control Sample (LCS)
1203572070	399781001(J1V928L) Serial Dilution (SD)
1203572068	399781001(J1V928D) Sample Duplicate (DUP)
1203572069	399781001(J1V928S) Matrix Spike (MS)

Sample Analysis

The samples in this SDG were analyzed on a "dry weight" basis.

Method/Analysis Information

Analytical Batch:	1576203, 1576435 and 1576352
Prep Batch :	1576202, 1576434 and 1576347
Standard Operating Procedures:	GL-MA-E-013 REV# 26, GL-MA-E-009 REV# 26, GL-MA-E-014 REV# 28 and GL-MA-E-010 REV# 31
Analytical Method:	SW846 3050B/6010C, SW846 3050B/6020A and SW846 7471B
Prep Method :	SW846 3050B and SW846 7471B Prep

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma

atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 300X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

Calibration Information

Instrument Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

CRDL/PQL Requirements
The CRDL/PQL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blanks (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement
The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement
The following samples were selected as the quality control (QC) samples for this SDG: 399781001 (J1V928)-ICP, ICP-MS and CVAA.

Matrix Spike (MS/MSD) Recovery Statement
The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike recovery was within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203571693 (J1V928MS)	Silicon	-3.45* (75%-125%)

Duplicate Relative Percent Difference (RPD) Statement
The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. Not all the applicable analyte RPD values were within the acceptance criteria.

Sample	Analyte	Value
1203572288 (J1V928DUP)	Uranium	47.5* (0%-20%)

Post Spike (PS) Recovery Statement
The PS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the absence of matrix interferences in the post-digested sample.

Serial Dilution % Difference Statement
All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP. Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Samples were diluted in order to bring raw values of titanium within the linear range of the instrument, and for the analytes interfered with, in order to ensure that the inter-element correction factors were valid for arsenic, beryllium, antimony and tin. Sample #399781001 required further dilutions in order to minimize suppression due to matrix interferences for antimony. 399781001 (J1V928) and 399781002 (J1V929)-ICP. Samples 399781001 (J1V928) and 399781002 (J1V929) were diluted to ensure that the analyte concentrations were within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times. ICP-MS.

Analyte	399781	
	001	002
Several	5X 2X 10X 1X	5X 2X 10X 1X

Preparation Information
The samples in this SDG were not diluted and prepared according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation
A Data exception report (DER) was generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) 1532677 was generated for sample 1203571693 (J1V928MS) in this SDG/batch. A data exception report (DER) 1533911 was generated for sample 1203572288 (J1V928DUP) in this SDG/batch.

Additional Comments
Additional comments were not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
23-JUN-16	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ICP	SW846 3050B/6010C	Solid	WCHN
Batch ID:	**Sample Numbers:**		
1576203	See Below		

Potentially affected work order(s)(SDG): 399781(XP0229)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203571693MS	1. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike recovery was within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity. 1203571693 (J1V928MS) Silicon [-3.45* (75%-125%)].

Originator's Name:

Jerry Wigfall 23-JUN-16

Data Validator/Group Leader:

Helen Camello 27-JUN-16

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
28-JUN-16	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ICP/MS	SW846 3050B/6020A	Solid	WCHN
Batch ID:	**Sample Numbers:**		
1576435	See Below		

Potentially affected work order(s)(SDG): 399781(XP0229)

Application Issues:

Failed RPD for DUP

Failed Recovery for PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. Failed RPD for DUP: QC 1203572288DUP 2. Failed Recovery for PS/PSD: QC 1203574508PS	1. Not all the applicable analyte RPD values were within the acceptance criteria. 1203572288 (J1V928DUP) Uranium [47.5* (0%-20%)].

Originator's Name:

Elizabeth Janssen 28-JUN-16

Data Validator/Group Leader:

Paul Boyd 28-JUN-16

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

WCHN001 Eberline

Client SDG: XP0229 GEL Work Order: 399781 Project: RC-148 Soil

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Nik-Cole A. Elmore **Name: Nik-Cole Elmore**

Date: 30 JUN 2016 **Title: Data Validator**

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 30, 2016

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-148 Soil

Client SDG: XP0229

Client Sample ID: J1V928
Sample ID: 399781001
Matrix: SOIL
Collect Date: 16-JUN-16 07:40
Receive Date: 21-JUN-16
Collector: Client
Moisture: 2.54%

Project: WCHN00314
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA											
SW846 7471B Mercury in Solid "Dry Weight Corrected"											
Mercury	B	0.00638	0.00348	0.0104	mg/kg	1	MTM1	06/23/16	1136	1576352	1
Metals Analysis-ICP											
ICP METALS 6010TR Client List +Sn "Dry Weight Corrected"											
Aluminum		6340	6.96	20.5	mg/kg	1	JWJ	06/22/16	1342	1576203	2
Barium		71.0	0.102	0.512	mg/kg	1					
Boron	B	4.87	1.02	5.12	mg/kg	1					
Cadmium	B	0.340	0.102	0.512	mg/kg	1					
Calcium		3710	8.19	25.6	mg/kg	1					
Chromium		9.37	0.154	0.512	mg/kg	1					
Cobalt		9.89	0.154	0.512	mg/kg	1					
Copper		13.9	0.307	1.02	mg/kg	1					
Iron		22200	8.19	25.6	mg/kg	1					
Lead		5.73	0.338	1.02	mg/kg	1					
Magnesium		4280	8.70	30.7	mg/kg	1					
Manganese		346	0.205	1.02	mg/kg	1					
Molybdenum	B	0.618	0.205	1.02	mg/kg	1					
Nickel		8.61	0.154	0.512	mg/kg	1					
Potassium		1240	6.55	25.6	mg/kg	1					
Silicon	N	359	1.54	10.2	mg/kg	1					
Silver	U	0.102	0.102	0.512	mg/kg	1					
Sodium		132	7.17	25.6	mg/kg	1					
Strontium		17.5	0.102	0.512	mg/kg	1					
Vanadium		58.1	0.102	0.512	mg/kg	1					
Zinc		44.7	0.410	1.02	mg/kg	1					
Arsenic	BD	3.30	2.56	15.4	mg/kg	5	JWJ	06/22/16	1402	1576203	3
Beryllium	BD	0.694	0.512	2.56	mg/kg	5					
Tin	DU	1.54	1.54	5.12	mg/kg	5					
Antimony	DU	3.38	3.38	10.2	mg/kg	10	JWJ	06/22/16	1515	1576203	4
Metals Analysis-ICP-MS											
SW846 3050B/6020A Li, Se, U, Zr "Dry Weight Corrected"											
Lithium	D	9.32	0.393	1.97	mg/kg	2	BAJ	06/24/16	1845	1576435	5
Selenium	D	1.07	0.324	1.00	mg/kg	2	BAJ	06/27/16	1635	1576435	6
Uranium	*D	0.950	0.013	0.0393	mg/kg	2	PRB	06/28/16	1043	1576435	7
Zirconium	D	29.5	0.491	9.83	mg/kg	10	PRB	06/28/16	1052	1576435	8

The following Prep Methods were performed:

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 30, 2016

Company :	WC-Hanford, Inc.		
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354		
Contact:	Joan Kessner	Client SDG:	XP0229
Project:	RC-148 Soil		

Client Sample ID:	J1V928	Project:	WCHN00314
Sample ID:	399781001	Client ID:	WCHN001

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/23/16	1137	1576434
SW846 3050B	SW846 3050B Prep for 6010C	SXW1	06/22/16	0826	1576202
SW846 7471B Prep	SW846 7471B Mercury Prep Soil	MTM1	06/22/16	1455	1576347

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 7471B	
2	SW846 3050B/6010C	
3	SW846 3050B/6010C	
4	SW846 3050B/6010C	
5	SW846 3050B/6020A	
6	SW846 3050B/6020A	
7	SW846 3050B/6020A	
8	SW846 3050B/6020A	

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: June 30, 2016

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-148 Soil

Client SDG: XP0229

Client Sample ID: J1V929
Sample ID: 399781002
Matrix: SOIL
Collect Date: 16-JUN-16 10:30
Receive Date: 21-JUN-16
Collector: Client
Moisture: 1.36%

Project: WCHN00314
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA											
SW846 7471B Mercury in Solid "Dry Weight Corrected"											
Mercury	U	0.00396	0.00396	0.0118	mg/kg	1	MTM1	06/23/16	1145	1576352	1
Metals Analysis-ICP											
ICP METALS 6010TR Client List +Sn "Dry Weight Corrected"											
Aluminum		4800	6.60	19.4	mg/kg	1	JWJ	06/22/16	1353	1576203	2
Barium		59.0	0.0971	0.486	mg/kg	1					
Boron		5.04	0.971	4.86	mg/kg	1					
Cadmium	B	0.341	0.0971	0.486	mg/kg	1					
Calcium		4500	7.77	24.3	mg/kg	1					
Chromium		7.14	0.146	0.486	mg/kg	1					
Cobalt		10.6	0.146	0.486	mg/kg	1					
Copper		14.2	0.291	0.971	mg/kg	1					
Iron		22400	7.77	24.3	mg/kg	1					
Lead		3.38	0.320	0.971	mg/kg	1					
Magnesium		4010	8.25	29.1	mg/kg	1					
Manganese		318	0.194	0.971	mg/kg	1					
Molybdenum	B	0.570	0.194	0.971	mg/kg	1					
Nickel		7.09	0.146	0.486	mg/kg	1					
Potassium		892	6.21	24.3	mg/kg	1					
Silicon	N	326	1.46	9.71	mg/kg	1					
Silver	U	0.0971	0.0971	0.486	mg/kg	1					
Sodium		167	6.80	24.3	mg/kg	1					
Strontium		17.6	0.0971	0.486	mg/kg	1					
Vanadium		65.3	0.0971	0.486	mg/kg	1					
Zinc		39.2	0.388	0.971	mg/kg	1					
Antimony	DU	1.60	1.60	4.86	mg/kg	5	JWJ	06/22/16	1417	1576203	3
Arsenic	BD	3.21	2.43	14.6	mg/kg	5					
Beryllium	BD	0.778	0.486	2.43	mg/kg	5					
Tin	BD	1.55	1.46	4.86	mg/kg	5					
Metals Analysis-ICP-MS											
SW846 3050B/6020A Li, Se, U, Zr "Dry Weight Corrected"											
Lithium	D	6.50	0.380	1.90	mg/kg	2	BAJ	06/24/16	1858	1576435	4
Selenium	D	1.08	0.314	1.00	mg/kg	2	BAJ	06/27/16	1643	1576435	5
Uranium	*D	0.471	0.0126	0.038	mg/kg	2	PRB	06/28/16	1106	1576435	6
Zirconium	D	24.1	0.476	9.51	mg/kg	10	PRB	06/28/16	1059	1576435	7

The following Prep Methods were performed:

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 30, 2016

Company :	WC-Hanford, Inc.		
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354		
Contact:	Joan Kessner	Client SDG:	XP0229
Project:	RC-148 Soil		

Client Sample ID:	J1V929	Project:	WCHN00314
Sample ID:	399781002	Client ID:	WCHN001

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/23/16	1137	1576434
SW846 3050B	SW846 3050B Prep for 6010C	SXW1	06/22/16	0826	1576202
SW846 7471B Prep	SW846 7471B Mercury Prep Soil	MTM1	06/22/16	1455	1576347

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 7471B	
2	SW846 3050B/6010C	
3	SW846 3050B/6010C	
4	SW846 3050B/6020A	
5	SW846 3050B/6020A	
6	SW846 3050B/6020A	
7	SW846 3050B/6020A	

Notes:

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 30, 2016

WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington

Contact: **Joan Kessner**

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%		REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS												
Batch 1576435												
QC1203572288 399781001 DUP												
Lithium		D	9.32	D	8.40	mg/kg	10.4	^		(+/-2.03)	BAJ	06/24/16 18:48
Selenium		D	1.07	BD	0.921	mg/kg	15	^		(+/-1.00)		06/27/16 16:37
Uranium		*D	0.950	*D	0.585	mg/kg	47.5*			(0%-20%)	PRB	06/28/16 10:45
Zirconium		D	29.5	D	26.1	mg/kg	12.5	^		(+/-10.2)		06/28/16 10:54
QC1203572287 LCS												
Lithium	4.91			D	5.33	mg/kg			108	(80%-120%)	BAJ	06/24/16 18:43
Selenium	4.91			D	4.24	mg/kg			86.4	(80%-120%)		06/27/16 16:34
Uranium	4.91			D	4.58	mg/kg			93.3	(34%-166%)	PRB	06/28/16 10:38
Zirconium	4.91			D	4.78	mg/kg			97.3	(80%-120%)		
QC1203572286 MB												
Lithium				DU	0.375	mg/kg					BAJ	06/24/16 18:40
Selenium				DU	0.310	mg/kg						06/27/16 16:32
Uranium				DU	0.0124	mg/kg					PRB	06/28/16 10:36
Zirconium				DU	0.0938	mg/kg						
QC1203572289 399781001 MS												
Lithium	5.09	D	9.32	D	13.2	mg/kg			76.7	(75%-125%)	BAJ	06/24/16 18:50
Selenium	5.09	D	1.07	D	5.19	mg/kg			81	(75%-125%)		06/27/16 16:38
Uranium	5.09	*D	0.950	D	5.05	mg/kg			80.5	(75%-125%)	PRB	06/28/16 10:47
Zirconium	5.09	D	29.5	D	29.0	mg/kg			N/A	(75%-125%)		06/28/16 10:55
QC1203572290 399781001 SDILT												
Lithium		D	47.4	BD	9.27	ug/L	2.29			(0%-10%)	BAJ	06/24/16 18:56
Selenium		D	5.44	DU	1.62	ug/L	N/A			(0%-10%)		06/27/16 16:42

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1576435										
Uranium	*D	4.83	D	1.10	ug/L	13.4		(0%-10%)	PRB	06/28/16 10:48
Zirconium	D	30.1	BD	5.95	ug/L	1.02		(0%-10%)		06/28/16 10:57
Metals Analysis-ICP										
Batch 1576203										
QC1203571692 399781001 DUP										
Aluminum		6340		6490	mg/kg	2.27		(0%-20%)	JWJ	06/22/16 13:44
Antimony	DU	3.38	DU	3.14	mg/kg	N/A				06/22/16 15:18
Arsenic	BD	3.30	DU	2.38	mg/kg	64.4 ^		(+/-14.3)		06/22/16 14:05
Barium		71.0		71.2	mg/kg	0.177		(0%-20%)		06/22/16 13:44
Beryllium	BD	0.694	BD	0.617	mg/kg	11.8 ^		(+/-2.38)		06/22/16 14:05
Boron	B	4.87		5.34	mg/kg	9.18 ^		(+/-4.76)		06/22/16 13:44
Cadmium	B	0.340	B	0.290	mg/kg	15.9 ^		(+/-0.476)		
Calcium		3710		3680	mg/kg	0.574		(0%-20%)		
Chromium		9.37		9.75	mg/kg	4.01		(0%-20%)		
Cobalt		9.89		9.72	mg/kg	1.74		(0%-20%)		
Copper		13.9		14.0	mg/kg	1.16		(0%-20%)		
Iron		22200		22700	mg/kg	1.97		(0%-20%)		
Lead		5.73		5.51	mg/kg	3.87		(0%-20%)		
Magnesium		4280		4240	mg/kg	0.865		(0%-20%)		
Manganese		346		338	mg/kg	2.45		(0%-20%)		
Molybdenum	B	0.618	B	0.552	mg/kg	11.3 ^		(+/-0.952)		
Nickel		8.61		9.26	mg/kg	7.27		(0%-20%)		
Potassium		1240		1270	mg/kg	2.96		(0%-20%)		
Silicon	N	359		345	mg/kg	4.16		(0%-20%)		

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP										
Batch 1576203										
Silver	U	0.102	U	0.0952	mg/kg	N/A			JWJ	06/22/16 13:44
Sodium		132		140	mg/kg	6.03		(0%-20%)		
Strontium		17.5		17.5	mg/kg	0.383		(0%-20%)		
Tin	DU	1.54	DU	1.43	mg/kg	N/A				06/22/16 14:05
Vanadium		58.1		58.5	mg/kg	0.584		(0%-20%)		06/22/16 13:44
Zinc		44.7		43.6	mg/kg	2.64		(0%-20%)		
QC1203571691 LCS										
Aluminum	484			466	mg/kg		96.4	(80%-120%)		06/22/16 13:39
Antimony	48.4			45.0	mg/kg		93.1	(80%-120%)		
Arsenic	48.4			43.6	mg/kg		90.1	(80%-120%)		
Barium	48.4			45.5	mg/kg		94	(80%-120%)		
Beryllium	48.4			45.2	mg/kg		93.4	(80%-120%)		
Boron	48.4			45.0	mg/kg		93	(80%-120%)		
Cadmium	48.4			45.5	mg/kg		94.1	(80%-120%)		
Calcium	484			471	mg/kg		97.5	(80%-120%)		
Chromium	48.4			44.9	mg/kg		92.8	(80%-120%)		
Cobalt	48.4			44.3	mg/kg		91.6	(80%-120%)		
Copper	48.4			45.3	mg/kg		93.7	(80%-120%)		
Iron	484			462	mg/kg		95.5	(80%-120%)		
Lead	48.4			44.5	mg/kg		92	(80%-120%)		
Magnesium	484			467	mg/kg		96.6	(80%-120%)		
Manganese	48.4			45.1	mg/kg		93.3	(80%-120%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP										
Batch 1576203										
Molybdenum	48.4			44.1	mg/kg		91.1	(80%-120%)	JWJ	06/22/16 13:39
Nickel	48.4			44.3	mg/kg		91.7	(80%-120%)		
Potassium	484			461	mg/kg		95.4	(80%-120%)		
Silicon	484			390	mg/kg		80.7	(80%-120%)		06/22/16 16:48
Silver	48.4			44.7	mg/kg		92.5	(80%-120%)		06/22/16 13:39
Sodium	484			468	mg/kg		96.7	(80%-120%)		
Strontium	48.4			45.9	mg/kg		94.9	(80%-120%)		
Tin	48.4			44.6	mg/kg		92.1	(80%-120%)		
Vanadium	48.4			45.3	mg/kg		93.7	(80%-120%)		
Zinc	48.4			45.1	mg/kg		93.3	(80%-120%)		
QC1203571690 MB										
Aluminum			U	6.63	mg/kg					06/22/16 13:36
Antimony			U	0.322	mg/kg					
Arsenic			U	0.487	mg/kg					
Barium			U	0.0975	mg/kg					
Beryllium			U	0.0975	mg/kg					
Boron			U	0.975	mg/kg					
Cadmium			U	0.0975	mg/kg					
Calcium			U	7.80	mg/kg					
Chromium			U	0.146	mg/kg					
Cobalt			U	0.146	mg/kg					
Copper			U	0.292	mg/kg					

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1576203											
Iron				U	7.80	mg/kg				JWJ	06/22/16 13:36
Lead				U	0.322	mg/kg					
Magnesium				U	8.28	mg/kg					
Manganese				U	0.195	mg/kg					
Molybdenum				U	0.195	mg/kg					
Nickel				U	0.146	mg/kg					
Potassium				U	6.24	mg/kg					
Silicon				U	1.46	mg/kg					06/22/16 16:46
Silver				U	0.0975	mg/kg					06/22/16 13:36
Sodium				U	6.82	mg/kg					
Strontium				U	0.0975	mg/kg					
Tin				U	0.292	mg/kg					
Vanadium				U	0.0975	mg/kg					
Zinc				U	0.390	mg/kg					
QC1203571693 399781001 MS											
Aluminum	512		6340		7860	mg/kg		N/A	(75%-125%)		06/22/16 13:46
Antimony	51.2	DU	3.38	D	43.3	mg/kg		82	(75%-125%)		06/22/16 15:21
Arsenic	51.2	BD	3.30	D	52.3	mg/kg		95.8	(75%-125%)		06/22/16 14:09
Barium	51.2		71.0		114	mg/kg		84	(75%-125%)		06/22/16 13:46
Beryllium	51.2	BD	0.694	D	49.9	mg/kg		96	(75%-125%)		06/22/16 14:09
Boron	51.2	B	4.87		50.7	mg/kg		89.4	(75%-125%)		06/22/16 13:46
Cadmium	51.2	B	0.340		45.6	mg/kg		88.4	(75%-125%)		

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1576203											
Calcium	512		3710		4310	mg/kg		N/A	(75%-125%)	JWJ	06/22/16 13:46
Chromium	51.2		9.37		54.1	mg/kg		87.4	(75%-125%)		
Cobalt	51.2		9.89		54.7	mg/kg		87.5	(75%-125%)		
Copper	51.2		13.9		62.1	mg/kg		94.1	(75%-125%)		
Iron	512		22200		23300	mg/kg		N/A	(75%-125%)		
Lead	51.2		5.73		50.7	mg/kg		87.9	(75%-125%)		
Magnesium	512		4280		4770	mg/kg		N/A	(75%-125%)		
Manganese	51.2		346		368	mg/kg		N/A	(75%-125%)		
Molybdenum	51.2	B	0.618		46.1	mg/kg		88.8	(75%-125%)		
Nickel	51.2		8.61		53.4	mg/kg		87.5	(75%-125%)		
Potassium	512		1240		1800	mg/kg		110	(75%-125%)		
Silicon	512	N	359	N	341	mg/kg		0*	(75%-125%)		
Silver	51.2	U	0.102		46.3	mg/kg		90.4	(75%-125%)		
Sodium	512		132		642	mg/kg		99.7	(75%-125%)		
Strontium	51.2		17.5		66.0	mg/kg		94.8	(75%-125%)		
Tin	51.2	DU	1.54	D	49.3	mg/kg		94.4	(75%-125%)		06/22/16 14:09
Vanadium	51.2		58.1		104	mg/kg		88.7	(75%-125%)		06/22/16 13:46
Zinc	51.2		44.7		84.9	mg/kg		78.5	(75%-125%)		
QC1203572443 399781001 PS											
Silicon	5000	N	3510		8080	ug/L		91.4	(80%-120%)		06/22/16 13:48
QC1203571694 399781001 SDILT											
Aluminum			61900	D	12800	ug/L	3.42		(0%-10%)		06/22/16 13:50
Antimony		DU	1.28	DU	16.9	ug/L	N/A		(0%-10%)		06/22/16 15:24

QC Summary

Workorder: 399781 **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Metals Analysis-ICP
Batch 1576203

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Arsenic	BD	6.45	DU	12.8	ug/L	N/A		(0%-10%)	JWJ	06/22/16 14:14
Barium		694	D	138	ug/L	.265		(0%-10%)		06/22/16 13:50
Beryllium	BD	1.36	DU	2.56	ug/L	N/A		(0%-10%)		06/22/16 14:14
Boron	B	47.6	DU	5.12	ug/L	N/A		(0%-10%)		06/22/16 13:50
Cadmium	B	3.32	DU	0.512	ug/L	N/A		(0%-10%)		
Calcium		36200	D	7460	ug/L	3.13		(0%-10%)		
Chromium		91.5	D	19.6	ug/L	7.25		(0%-10%)		
Cobalt		96.5	D	19.8	ug/L	2.45		(0%-10%)		
Copper		136	D	27.7	ug/L	2.12		(0%-10%)		
Iron		217000	D	44900	ug/L	3.47		(0%-10%)		
Lead		56.0	D	13.6	ug/L	21.3		(0%-10%)		
Magnesium		41800	D	8630	ug/L	3.17		(0%-10%)		
Manganese		3380	D	680	ug/L	.573		(0%-10%)		
Molybdenum	B	6.04	DU	1.02	ug/L	N/A		(0%-10%)		
Nickel		84.0	D	17.3	ug/L	2.77		(0%-10%)		
Potassium		12100	D	2400	ug/L	.468		(0%-10%)		
Silicon	N	3510	D	705	ug/L	.532		(0%-10%)		
Silver	U	-0.791	DU	0.512	ug/L	N/A		(0%-10%)		
Sodium		1290	BD	247	ug/L	4.03		(0%-10%)		
Strontium		171	D	35.6	ug/L	4.38		(0%-10%)		
Tin	DU	1.81	DU	7.68	ug/L	N/A		(0%-10%)		06/22/16 14:14

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1576203											
Vanadium			568	D	114	ug/L	.504		(0%-10%)		06/22/16 13:50
Zinc			437	D	90.8	ug/L	3.89		(0%-10%)	JWJ	
Metals Analysis-Mercury											
Batch 1576352											
QC1203572068 399781001 DUP											
Mercury		B	0.00638	B	0.0064	mg/kg	0.169 ^		(+/-0.0104)	MTM1	06/23/16 11:38
QC1203572061 LCS											
Mercury	10.4			D	10.2	mg/kg		97.7	(80%-120%)		06/23/16 13:03
QC1203572060 MB											
Mercury				U	0.00401	mg/kg					06/23/16 10:53
QC1203572069 399781001 MS											
Mercury	0.106	B	0.00638		0.118	mg/kg		105	(80%-120%)		06/23/16 11:40
QC1203572070 399781001 SDILT											
Mercury		B	0.123	DU	0.0174	ug/L	N/A		(0%-10%)		06/23/16 11:41

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

QC Summary

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

Prep Logbook

Acid Digestion of Sediments, Sludges, and Soils

Batch ID: **1576202**
Analyst: Shanta Mack
Method: SW846 3050B
Lab SOP: GL-MA-E-009 REV# 26
Instrument: BAL-893

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1203571691	Metals Spike Mix I	UI160422-01	.25	mL
LCS	1203571691	Metals Spike Mix II	UI160422-02	.25	mL
MS	1203571693	Metals Spike Mix I	UI160422-01	.25	mL
MS	1203571693	Metals Spike Mix II	UI160422-02	.25	mL

Sample ID	Prep Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)
1203571690 MB	21-JUN-2016 14:55:36	Soil	0.513	50	97.46589
1203571691 LCS	21-JUN-2016 14:55:36	Soil	0.517	50	96.7118
399781001	21-JUN-2016 14:55:36	Soil	0.501	50	99.8004
1203571692 DUP (399781001)	21-JUN-2016 14:55:36	Soil	0.539	50	92.76438
1203571693 MS (399781001)	21-JUN-2016 14:55:36	Soil	0.501	50	99.8004
1203571694 SDILT (399781001)	21-JUN-2016 14:55:36	Soil	0.501	50	99.8004
399781002	21-JUN-2016 14:55:36	Soil	0.522	50	95.78544

Reagent/Solvent Lot ID	Description	Amount
160425	Concentrated Nitric Acid	1.25 mL
160601	HYDROCHLORIC ACID	10 mL

Comments:
Block Temperature (90-100C): 91 C
Temperature within limits (Y/N)?: Y
Thermometer ID: 118840
Hot Block ID: 9
Prep Date: 22-JUN-2016 08:26 METALMAN Shanta Mack

Prep Logbook

Acid Digestion of Sediments, Sludges, and Soils

Batch ID: **1576434**
Analyst: Shanta Mack
Method: SW846 3050B
Lab SOP: GL-MA-E-009 REV# 26
Instrument: BAL-893

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1203572287	ICP-MS spiking soluiton A	UI160422-A	.25	mL
LCS	1203572287	ICP-MS spiking solution B	UI160422-B	.25	mL
MS	1203572289	ICP-MS spiking soluiton A	UI160422-A	.25	mL
MS	1203572289	ICP-MS spiking solution B	UI160422-B	.25	mL

Sample ID	Prep Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)
1203572286 MB	22-JUN-2016 12:15:24	Soil	0.533	50	93.80863
1203572287 LCS	22-JUN-2016 12:15:24	Soil	0.509	50	98.23183
399781001	22-JUN-2016 12:15:24	Soil	0.522	50	95.78544
1203572288 DUP (399781001)	22-JUN-2016 12:15:24	Soil	0.505	50	99.0099
1203572289 MS (399781001)	22-JUN-2016 12:15:24	Soil	0.504	50	99.20635
1203572290 SDILT (399781001)	22-JUN-2016 12:15:24	Soil	0.522	50	95.78544
399781002	22-JUN-2016 12:15:24	Soil	0.533	50	93.80863

Reagent/Solvent Lot ID	Description	Amount
160425	Concentrated Nitric Acid	5 mL
160615	Hydrogen Peroxide 30%, from Bioassay (LIMS ID 2360034)	1.5 mL

Comments:
Block Temperature (90-100C): 96 C
Temperature within limits (Y/N)?: Y
Thermometer ID: 2126351
Hot Block ID: 12
Prep Date2: 23-JUN-2016 11:37 METALMAN Shanta Mack

Prep Logbook

Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer

Batch ID: **1576347**
Analyst: Monifa Basdeo
Method: SW846 7471B Prep SW846 7471A Prep
Lab SOP: GL-MA-E-010 REV# 31
Instrument: BAL-892

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1203572061	Metals Soil LCS SRM	UI160301	.2	g
MS	1203572063	MHGSOILMSSPIKE	WHG160622-14	.3	mL
MS	1203572065	MHGSOILMSSPIKE	WHG160622-14	.3	mL
MS	1203572069	MHGSOILMSSPIKE	WHG160622-14	.3	mL
MSD	1203572066	MHGSOILMSSPIKE	WHG160622-14	.3	mL

Sample ID	Prep Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)
1203572060 MB	22-JUN-2016 14:55:12	Oil	0.501	30	59.88024
1203572061 LCS	22-JUN-2016 14:55:12	Oil	0.2	30	150
399486001	22-JUN-2016 14:55:12	Oil	0.512	30	58.59375
1203572062 DUP (399486001)	22-JUN-2016 14:55:12	Oil	0.506	30	59.28854
1203572063 MS (399486001)	22-JUN-2016 14:55:12	Oil	0.535	30	56.07477
1203572064 SDILT (399486001)	22-JUN-2016 14:55:12	Oil	0.512	30	58.59375
399595001	22-JUN-2016 14:55:12	Soil	0.503	30	59.64215
399595002	22-JUN-2016 14:55:12	Soil	0.513	30	58.47953
399595003	22-JUN-2016 14:55:12	Soil	0.507	30	59.1716
399595004	22-JUN-2016 14:55:12	Soil	0.504	30	59.52381
399595005	22-JUN-2016 14:55:12	Soil	0.517	30	58.02708
399610002	22-JUN-2016 14:55:12	Misc Solid	0.551	30	54.44646
1203572065 MS (399610002)	22-JUN-2016 14:55:12	Misc Solid	0.528	30	56.81818
1203572066 MSD (399610002)	22-JUN-2016 14:55:12	Misc Solid	0.505	30	59.40594
1203572067 SDILT (399610002)	22-JUN-2016 14:55:12	Misc Solid	0.551	30	54.44646
399612001	22-JUN-2016 14:55:12	Misc Solid	0.193	30	155.44041
399725001	22-JUN-2016 14:55:12	Misc Solid	0.503	30	59.64215
399725002	22-JUN-2016 14:55:12	Misc Solid	0.571	30	52.5394
399725003	22-JUN-2016 14:55:12	Misc Solid	0.533	30	56.28518
399725004	22-JUN-2016 14:55:12	Misc Solid	0.502	30	59.76096
399781001	22-JUN-2016 14:55:12	Soil	0.593	30	50.59022
1203572068 DUP (399781001)	22-JUN-2016 14:55:12	Soil	0.592	30	50.67568
1203572069 MS (399781001)	22-JUN-2016 14:55:12	Soil	0.579	30	51.81347
1203572070 SDILT (399781001)	22-JUN-2016 14:55:12	Soil	0.593	30	50.59022
399781002	22-JUN-2016 14:55:12	Soil	0.514	30	58.36576
399799001	22-JUN-2016 14:55:12	Soil	0.547	30	54.84461
399799002	22-JUN-2016 14:55:12	Soil	0.514	30	58.36576
399799003	22-JUN-2016 14:55:12	Soil	0.501	30	59.88024
399799004	22-JUN-2016 14:55:12	Soil	0.564	30	53.19149

Reagent/Solvent Lot ID	Description	Amount
2374218-C	Hg reducing agent	3 mL
2394470-C	5% KMnO4 solution	7.5 mL
2422015-C	50% Aqua Regia	3 mL
WHG160622-07	Mercury Working Standard 1st Source CAL S	30 uL

Comments:
Digestion Start Date: 22-JUN-2016 15:30
Digestion End Date: 22-JUN-2016 16:00
Block Temperature (92-98C): 94 C
Temperature within limits (Y/N)?: Y

Prep Logbook

Sample ID	Prep Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)

Reagent/Solvent Lot ID	Description	Amount
	0.2/CRA	
WHG160622-08	Mercury Working Standard 1st Source CAL S 0.5	75 uL
WHG160622-09	Mercury Working 1st Source CAL S 2.0	300 uL
WHG160622-10	Mercury Working 1st Source CAL S 5.0/CCV	750 uL
WHG160622-11	Mercury Working 1st Source CAL S 10.0	1.5 mL
WHG160622-12	Mercury Working 2nd Source S 5.0/ICV	750 uL

Comments:

Thermometer ID: 2126223
Hot Block ID: 6

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
Eberline (WCHN)
SDG #: XP0229
Work Order #: 399781

Method/Analysis Information

Product: **pH**

Analytical Batch: 1576381 **Method:** SW9045D pH

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9045D:

Sample ID	Client ID
399781001	J1V928
399781002	J1V929
1203572155	Laboratory Control Sample (LCS)
1203572159	399781001(J1V928) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-008 REV# 21.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a Thermo Orion Star A111. Immediates

Initial Standardization
The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Sample 399781001 (J1V928) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203572159 (J1V928DUP)	pH	Received 21-JUN-16, out of holding 16-JUN-16
399781001 (J1V928)	pH	Received 21-JUN-16, out of holding 16-JUN-16
399781002 (J1V929)	pH	Received 21-JUN-16, out of holding 16-JUN-16

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1532436 was generated for samples 399781001 (J1V928), 399781002 (J1V929) and 1203572159 (J1V928DUP) in this SDG/batch.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
23-JUN-16	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ELECTRODE	SW846 9045C/9045D, SW846 9045D	Solid	CPRC, LANL, WCHN
Batch ID:	**Sample Numbers:**		
1576381	See Below		

Potentially affected work order(s)(SDG): **399481(GEL399481),399585(GEL399585),399595(2016-1401),399710(GEL399710),399712(2016-1419),399781(XP0229)**

Application Issues:

Sample received out of holding

Specification and Requirements Exception Description:	DER Disposition:
1. Sample received out of holding: 399481 001,002 399585 001 399595 001,002,003,004,005 399710 001,002 399712 001,002,003,004 399781 001,002 QC 1203572156DUP,1203572158DUP, 1203572159DUP	1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203572156 (CALA-16-121915DUP) [Received 17-JUN-16, out of holding 15-JUN-16]. 1203572158 (B35YC0DUP) [Received 16-JUN-16, out of holding 14-JUN-16]. 1203572159 (J1V928DUP) [Received 21-JUN-16, out of holding 16-JUN-16]. 399481001 (B35YC0) [Received 16-JUN-16, out of holding 14-JUN-16]. 399481002 (B35YC2) [Received 16-JUN-16, out of holding 14-JUN-16]. 399585001 (B35YC5) [Received 17-JUN-16, out of holding 15-JUN-16]. 399595001 (CALA-16-121915) [Received 17-JUN-16, out of holding 15-JUN-16]. 399595002 (CALA-16-121916) [Received 17-JUN-16, out of holding 15-JUN-16]. 399595003 (CALA-16-121917) [Received 17-JUN-16, out of holding 15-JUN-16]. 399595004 (CALA-16-121918) [Received 17-JUN-16, out of holding 15-JUN-16]. 399595005 (CALA-16-121930) [Received 17-JUN-16, out of holding 15-JUN-16]. 399710001 (B35YC8) [Received 21-JUN-16, out of holding 20-JUN-16]. 399710002 (B35YD1) [Received 21-JUN-16, out of holding 20-JUN-16]. 399712001 (CALA-16-121919) [Received 21-JUN-16, out of holding 17-JUN-16]. 399712002 (CALA-16-121920) [Received 21-JUN-16, out of holding 17-JUN-16]. 399712003 (CALA-16-121921) [Received 21-JUN-16, out of holding 17-JUN-16]. 399712004 (CALA-16-121922) [Received 21-JUN-16, out of holding 17-JUN-16]. 399781001 (J1V928) [Received 21-JUN-16, out of holding 16-JUN-16]. 399781002 (J1V929) [Received 21-JUN-16, out of holding 16-JUN-16].

Originator's Name:

Kristen Mizzell 23-JUN-16

Data Validator/Group Leader:

Elzbieta Szulc 23-JUN-16

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

WCHN001 Eberline

Client SDG: XP0229 GEL Work Order: 399781 Project: RC-148 Soil

The Qualifiers in this report are defined as follows:

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: **Name: Aubrey Kingsbury**

Date: 24 JUN 2016 **Title: Analyst I**

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 24, 2016

Company :	WC-Hanford, Inc.		
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354		
Contact:	Joan Kessner	Client SDG:	XP0229
Project:	RC-148 Soil		

Client Sample ID:	J1V928	Project:	WCHN00314
Sample ID:	399781001	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	16-JUN-16 07:40		
Receive Date:	21-JUN-16		
Collector:	Client		
Moisture:	2.54%		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
SW9045D pH "As Received"											
pH at Temp 24.7C	X	8.79	0.010	0.100	pH	1	KLP1	06/22/16	1715	1576381	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9045D	

Notes:

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 24, 2016

Company :	WC-Hanford, Inc.		
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354		
Contact:	Joan Kessner	Client SDG:	XP0229
Project:	RC-148 Soil		

Client Sample ID:	J1V929	Project:	WCHN00314
Sample ID:	399781002	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	16-JUN-16 10:30		
Receive Date:	21-JUN-16		
Collector:	Client		
Moisture:	1.36%		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
SW9045D pH "As Received"											
pH at Temp 24.4C	X	8.62	0.010	0.100	pH	1	KLP1	06/22/16	1716	1576381	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9045D	

Notes:

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 24, 2016

WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington

Contact: **Joan Kessner**

Workorder: **399781** **Client SDG:** XP0229 **Project Description:** RC-148 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Titration and Ion Analysis										
Batch 1576381										
QC1203572159 399781001 DUP										
pH	X	8.79	X	8.81	pH	0.227		(0%-10%)	KLP1	06/22/16 17:15
QC1203572155 LCS										
pH	7.00			7.00	pH		100	(99%-101%)		06/22/16 16:49

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

Moisture LogBook

Batch: 1576163
Analyst: CXC1
Date/Time: 21-JUN-2016
Procedure Code DRY WEIGHT
Procedure Description Dry Weight-Percent Moisture
Lab Sop: GL-OA-E-020

Sample St	Sample Id	Rpd(%)
DUP	1203571585	**4.923**

Sample Id	Sample Type	Original Hsn	Instrument	Run Time	Container Wt	Initial Wt	Final Wt (g)	Net Initial Wt (g)	Net Final Wt (g)	Moisture (%)
399710001	SAMPLE		SP-39020004	15:40	7.107	21.401	20.906	14.294	13.799	3.462
399710002	SAMPLE		SP-39020004	15:40	7.13	25.224	24.962	18.094	17.832	1.447
399727001	SAMPLE		SP-39020004	15:40	7.06	18.857	16.431	11.797	9.371	20.564
399727002	SAMPLE		SP-39020004	15:40	7.203	21.121	18.445	13.918	11.242	19.226
399730001	SAMPLE		SP-39020004	15:40	7.193	19.547	18.145	12.354	10.952	11.348
399730002	SAMPLE		SP-39020004	15:40	7.039	45.284	41.621	38.245	34.582	9.577
399730003	SAMPLE		SP-39020004	15:40	7.146	25.179	24.648	18.033	17.502	2.944
399730004	SAMPLE		SP-39020004	15:40	7.134	27.271	26.584	20.137	19.45	3.411
399730005	SAMPLE		SP-39020004	15:40	7.182	17.426	16.175	10.244	8.993	12.212
399730006	SAMPLE		SP-39020004	15:40	7.146	23.902	21.676	16.756	14.53	13.284
399730007	SAMPLE		SP-39020004	15:40	7.209	26.418	25.318	19.209	18.109	5.726
399730008	SAMPLE		SP-39020004	15:40	6.978	22.956	20.576	15.978	13.598	14.895
399730009	SAMPLE		SP-39020004	15:40	6.958	18.175	17.218	11.217	10.26	8.531
399781001	SAMPLE		SP-39020004	15:40	7.079	29.784	29.207	22.705	22.128	2.541
399781002	SAMPLE		SP-39020004	15:40	7.103	31.398	31.068	24.295	23.965	1.358
1203571585	DUP	399727001	SP-39020004	15:40	7.083	22.147	19.198	15.064	12.115	19.576

Comments:

A) Result = (Net Initial - Net Final) /Net Initial * 100

Note: Aliquot is used for the determination of the effective MDL and PQL in LIMS

WASHINGTON CLOSURE HANFORD

SAF: RC-148, SDG: XP0229

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #16-06093-OR

July 7, 2016

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

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Eberline Services – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Services Work Order # 16-06093

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		6-21-16	JED	Sample Log-In
		6/27/16	KBS	Data Compilation
		7-6-16	MLT	First Technical Data Review
		7/6/16	[illegible]	Second Technical Data Review
		7/6/16	[illegible]	Data Entry/Electronic Deliverable
		7/6/16	[illegible]	Case Narrative
		7/7/16	KBS	Electronic Deliverable Proof
		7/7/16	MGK	Samples Analyzed within Holding Time Yes? [X] No? [ ]
		7/7/16	MGK	QA/QC Review
		06/27/16	EJ	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] 7/7/16

Laboratory Manager Date

Copy No. _____

SECTION I

CHAIN OF CUSTODY

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-226

Collector ETHERINGTON, TW	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH
Price Code 8B	**Data Turnaround** 7 DAY		
Project Designation 300 Area D4 Waste Sites	**Sampling Location** 300-288:2 WSA1		**SAF No.** RC-148
Ice Chest No. ERC-01-013	**Field Logbook No.** EL-1663-08	**COA** W TRE 6-20-16 0328822000	**Method of Shipment** Commercial Carrier
Shipped To Eberline Services Oak Ridge	**Offsite Property No.** A131458		**Bill of Lading/Air Bill No.** SEE OSPC

Other Labs Shipped To
GEL Laboratories Charleston

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool as required for preservation

Preservation	None	None									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	1000mL	60mL									
Sample Analysis	See item (2) in Special Instructions	Isotopic Uranium									

Sample No.	Matrix	Sample Date	Sample Time										
J1V928 4	SOIL	6-16-16	0740	✓	✓								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington	6-16-16 1410	T.R. Edmundson J.R. Edmundson	6-16-16 1410
T.R. Edmundson J.R. Edmundson	6-16-16 1500	1060 #1	6-16-16 1550
1060 #1	6-20-16 1030	T.R. Edmundson J.R. Edmundson	6-20-16 1030
T.R. Edmundson J.R. Edmundson WCH	6-20-16 1500	Fed Ex	6-20-16 —
			0915 6-21-16

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS
(2) Gamma Spec (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, Zinc-65}

16-06093

REC'D JUN 21 2016

REVIEWED BY Kw Pertelo DATE 6-20-16

XP0229

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-227

Collector ETHERINGTON, TW	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH
Price Code 8B	**Data Turnaround** 7 DAY		
Project Designation 300 Area D4 Waste Sites	**Sampling Location** 300-288:2 WSA2		**SAF No.** RC-148
Ice Chest No. ERC-01-013	**Field Logbook No.** EL-1663-08	**COA** W TRE 6-20-16 0328822000	**Method of Shipment** Commercial Carrier
Shipped To Eberline Services Oak Ridge	**Offsite Property No.** A131458		**Bill of Lading/Air Bill No.** SEE OSPC

Other Labs Shipped To
GEL Laboratories Charleston

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool as required for preservation

Preservation	None	None										
Type of Container	G/P	G/P										
No. of Container(s)	1	1										
Volume	1000mL	60mL										
Sample Analysis	See item (2) in Special Instructions	Isotopic Uranium										

Sample No.	Matrix	Sample Date	Sample Time										
J1V929 5	SOIL	6-16-16	1030	✓	✓								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
ETHERINGTON	6-16-16 1410	T.R. Edmundson	6-16-16 1410
T.R. Edmundson	6-16-16 1500	1060 #1	6-16-16 1500
1060 #1	6-20-16 1030	T.R. Edmundson	6-20-16 1030
T.R. Edmundson	6-20-16 1500	Fed Ex	6-20-16 —
			6-21-16 0935

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

SPECIAL INSTRUCTIONS
(2) Gamma Spec (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, Zinc-65}

16-06093

REC'D JUN 21 2016

REVIEWED BY KWestel DATE 6-20-16

XP0229

WCH-EE-011

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	16-06093
		Lab Deadline	6/27/2016
		Analysis	UUISO - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	45	G1.4
	05	41	G1.4

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1200	[illegible]	6-21-16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0730	[illegible]	6-22-16
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 730	[illegible]	6-22-16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1215	[illegible]	6-22-16
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	JPD 6/22/16	1215
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	0830
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		6/22 [illegible]
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	JLB 6/27/16	1215
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		

Printed: 6/21/2016 10:37 AM

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	16-06093
		Lab Deadline	6/27/2016
		Analysis	Gamma - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
Report Am241, Sb125, Ce144, Cs134/137, Co60, Eu152/154/155, K40, Pa234m, Pb212/214, Ra226/228, Ru106, Th234, Tl208, U235/238, Zn65 and positives.	04	45	G1.4
	05	41	G1.4

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1200	Kenyseij	6-21-16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0730	Kenyseij	6-22-16
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	AC	6/22/16 0730
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	6/22/16 1033
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

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
Washington Closure Hanford	S00W235A01	Environmental	06/21/2016	7	16-06093
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
S00W235A01	SAF: RC-148; SDG: XP0229	H	06/27/2016	06/28/2016	06/28/2016

| Internal ID | Client ID | Sample Date | Matrix | Storage | Gamma | UUISO | | |

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 16-06093

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: James E Bailey DATE: 6-21-16

SECTION III

CASE NARRATIVE

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-40954

July 7, 2016

Joan Kessner
Washington Closure Hanford
2620 Fermi Avenue
Richland, WA 99354

CASE NARRATIVE
SAF: RC-148, SDG: XP0229
Work Order # 16-06093-OR

SAMPLE RECEIPT

This work order contains two soil samples received 06/21/2016. Both samples were analyzed for Isotopic Uranium and by Gamma Spectroscopy.

CLIENT ID	LAB ID
J1V928	16-06093-04
J1V929	16-06093-05

ANALYTICAL METHODS

Isotopic Uranium was analyzed using Method EML U-02 Modified. Gamma Spectroscopy was performed using Method LANL ER-130 Modified.

Laboratory qualifier is as follows:

U - Result is less than or equal to MDA.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 2-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.

ISOTOPIC URANIUM

Samples were prepared by removing a representative aliquot followed by mixed acid digestions as appropriate. Uranium was selectively extracted by ion exchange. Uranium was eluted, micro-precipitated and mounted on micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Uranium-234, Uranium-235 and Uranium-238. Chemical recovery was determined by the use of a Uranium-232 tracer. Activity of the Uranium-232 tracer was determined by alpha spectroscopy using an energy specific region of interest.

ANALYTICAL RESULTS CONTINUED

ISOTOPIC URANIUM CONTINUED

Samples demonstrated acceptable results for all Uranium analyses. Chemical recovery was slightly high for the laboratory control sample. Chemical recovery was acceptable for all other samples. The Uranium-233/234, Uranium-235 and Uranium-238 method blank demonstrated acceptable results. Results for the Uranium-233/234 and Uranium-238 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Uranium-235 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Uranium-234 and Uranium-238 laboratory control sample demonstrated an acceptable percent recovery.

GAMMA SPECTROSCOPY

Samples for Gamma Spectroscopy analysis were prepared by transferring a known mass/aliquot of each prepared and homogenized sample to a standard geometry container. Samples were counted on High Purity Germanium (HPGe) gamma ray detectors.

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 Potassium-40, 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 is in compliance 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: 7/7/2016

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://www.eberlineservices.com/client.htm to provide us with feedback on our services.

SECTION IV

ANALYTICAL RESULTS SUMMARY

Joan Kessner
Washington Closure Hanford
2620 Fermi Avenue
Richland, WA 99354

SAF: RC-148
SDG: XP0229
Work Order: 16-06093
Date Received: 06/21/2016
Matrix: Soil

Sample Number	Lab Sample ID	QC Type	Date Analyzed	Method Name	CAS Number	Isotope	Result	2-Sigma Counting Error	Total Propagated Uncertainty	MDA	Lab Qualifier	Analysis Units
NA	16-06093-01	LCS	6/22/2016	GAMMA_GS	10198-40-0	Cobalt-60	140.623	9.75	12.13	1.57		pCi/g
		LCS	6/22/2016	GAMMA_GS	10045-97-3	Cesium-137	89.251	8.57	9.71	1.92		pCi/g
		LCS	6/27/2016	UISO_IE_PRECIP_AEA	U-233/234	Uranium-233/234	6.348	0.92	1.03	0.08		pCi/g
		LCS	6/27/2016	UISO_IE_PRECIP_AEA	15117-96-1	Uranium-235	0.353	0.17	0.17	0.10		pCi/g
		LCS	6/27/2016	UISO_IE_PRECIP_AEA	U-238	Uranium-238	6.441	0.93	1.04	0.08		pCi/g
NA	16-06093-02	BLK	6/22/2016	GAMMA_GS	14596-10-2	Americium-241	0.038	0.04	0.04	0.07	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	14762-78-8	Cerium-144	-0.072	0.18	0.18	0.27	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	10198-40-0	Cobalt-60	0.024	0.05	0.05	0.08	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	13967-70-9	Cesium-134	-0.025	0.04	0.04	0.06	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	10045-97-3	Cesium-137	-0.013	0.04	0.04	0.06	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	14683-23-9	Europium-152	-0.103	0.15	0.15	0.13	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	15585-10-1	Europium-154	-0.043	0.11	0.11	0.07	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	14391-16-3	Europium-155	0.043	0.08	0.08	0.09	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	13966-00-2	Potassium-40	0.213	0.21	0.21	0.64	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	15100-28-4	Protactinium-234m	-1.941	2.48	2.49	8.22	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	15092-94-1	Lead-212	0.016	0.06	0.06	0.09	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	15067-28-4	Lead-214	0.033	0.08	0.08	0.13	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	13982-63-3	Radium-226	0.012	0.08	0.08	0.13	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	15262-20-1	Radium-228	-0.015	0.14	0.14	0.23	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	13967-48-1	Ruthenium-106	0.219	0.36	0.36	0.67	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	14234-35-6	Antimony-125	0.032	0.10	0.10	0.17	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	15065-10-8	Thorium-234	0.554	0.42	0.42	0.70	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	14913-50-9	Thallium-208	0.037	0.12	0.12	0.20	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	15117-96-1	Uranium-235	0.001	0.20	0.20	0.32	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	U-238	Uranium-238	0.554	0.42	0.42	0.70	U	pCi/g
		BLK	6/22/2016	GAMMA_GS	13982-39-3	Zinc-65	-0.066	0.11	0.11	0.15	U	pCi/g
		BLK	6/27/2016	UISO_IE_PRECIP_AEA	U-233/234	Uranium-233/234	0.123	0.15	0.15	0.21	U	pCi/g
		BLK	6/27/2016	UISO_IE_PRECIP_AEA	15117-96-1	Uranium-235	0.006	0.08	0.08	0.24	U	pCi/g
		BLK	6/27/2016	UISO_IE_PRECIP_AEA	U-238	Uranium-238	0.064	0.11	0.11	0.20	U	pCi/g

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SDG: XP0229
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Matrix: Soil

Sample Number	Lab Sample ID	QC Type	Date Analyzed	Method Name	CAS Number	Isotope	Result	2-Sigma Counting Error	Total Propagated Uncertainty	MDA	Lab Qualifier	Analysis Units
J1V928	16-06093-03	DUP	6/22/2016	GAMMA_GS	14596-10-2	Americium-241	0.051	0.06	0.06	0.10	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	14762-78-8	Cerium-144	-0.162	0.27	0.27	0.34	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	10198-40-0	Cobalt-60	0.007	0.05	0.05	0.07	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	13967-70-9	Cesium-134	-0.002	0.02	0.02	0.06	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	10045-97-3	Cesium-137	0.011	0.04	0.04	0.06	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	14683-23-9	Europium-152	-0.021	0.17	0.17	0.17	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	15585-10-1	Europium-154	0.031	0.13	0.13	0.09	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	14391-16-3	Europium-155	0.113	0.13	0.13	0.15	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	13966-00-2	Potassium-40	14.239	1.71	1.86	0.53		pCi/g
		DUP	6/22/2016	GAMMA_GS	15100-28-4	Protactinium-234m	0.553	3.79	3.79	6.06	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	15092-94-1	Lead-212	0.270	0.10	0.10	0.18		pCi/g
		DUP	6/22/2016	GAMMA_GS	15067-28-4	Lead-214	0.694	0.12	0.13	0.12		pCi/g
		DUP	6/22/2016	GAMMA_GS	13982-63-3	Radium-226	0.573	0.11	0.12	0.17		pCi/g
		DUP	6/22/2016	GAMMA_GS	15262-20-1	Radium-228	0.920	0.16	0.17	0.27		pCi/g
		DUP	6/22/2016	GAMMA_GS	13967-48-1	Ruthenium-106	0.103	0.35	0.35	0.54	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	14234-35-6	Antimony-125	0.046	0.08	0.08	0.14	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	15065-10-8	Thorium-234	0.453	0.62	0.62	0.98	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	14913-50-9	Thallium-208	0.633	0.12	0.13	0.19		pCi/g
		DUP	6/22/2016	GAMMA_GS	15117-96-1	Uranium-235	-0.126	0.30	0.30	0.37	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	U-238	Uranium-238	0.453	0.62	0.62	0.98	U	pCi/g
		DUP	6/22/2016	GAMMA_GS	13982-39-3	Zinc-65	0.009	0.07	0.07	0.14	U	pCi/g
		DUP	6/27/2016	UISO_IE_PRECIP_AEA	U-233/234	Uranium-233/234	0.710	0.25	0.26	0.14		pCi/g
		DUP	6/27/2016	UISO_IE_PRECIP_AEA	15117-96-1	Uranium-235	0.078	0.09	0.09	0.13	U	pCi/g
		DUP	6/27/2016	UISO_IE_PRECIP_AEA	U-238	Uranium-238	0.455	0.19	0.20	0.12		pCi/g

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SDG: XP0229
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Matrix: Soil

Sample Number	Lab Sample ID	QC Type	Date Analyzed	Method Name	CAS Number	Isotope	Result	2-Sigma Counting Error	Total Propagated Uncertainty	MDA	Lab Qualifier	Analysis Units
J1V928	16-06093-04		6/22/2016	GAMMA_GS	14596-10-2	Americium-241	-0.047	0.07	0.07	0.09	U	pCi/g
			6/22/2016	GAMMA_GS	14762-78-8	Cerium-144	-0.013	0.21	0.21	0.33	U	pCi/g
			6/22/2016	GAMMA_GS	10198-40-0	Cobalt-60	0.030	0.04	0.04	0.06	U	pCi/g
			6/22/2016	GAMMA_GS	13967-70-9	Cesium-134	-0.001	0.02	0.02	0.06	U	pCi/g
			6/22/2016	GAMMA_GS	10045-97-3	Cesium-137	-0.010	0.03	0.03	0.05	U	pCi/g
			6/22/2016	GAMMA_GS	14683-23-9	Europium-152	-0.067	0.10	0.10	0.17	U	pCi/g
			6/22/2016	GAMMA_GS	15585-10-1	Europium-154	-0.060	0.11	0.11	0.09	U	pCi/g
			6/22/2016	GAMMA_GS	14391-16-3	Europium-155	0.079	0.13	0.13	0.15	U	pCi/g
			6/22/2016	GAMMA_GS	13966-00-2	Potassium-40	14.869	1.80	1.96	0.82		pCi/g
			6/22/2016	GAMMA_GS	15100-28-4	Protactinium-234m	2.104	4.30	4.31	7.07	U	pCi/g
			6/22/2016	GAMMA_GS	15092-94-1	Lead-212	0.838	0.13	0.14	0.18		pCi/g
			6/22/2016	GAMMA_GS	15067-28-4	Lead-214	0.631	0.12	0.12	0.15		pCi/g
			6/22/2016	GAMMA_GS	13982-63-3	Radium-226	0.566	0.10	0.11	0.14		pCi/g
			6/22/2016	GAMMA_GS	15262-20-1	Radium-228	0.844	0.17	0.17	0.23		pCi/g
			6/22/2016	GAMMA_GS	13967-48-1	Ruthenium-106	0.099	0.35	0.35	0.54	U	pCi/g
			6/22/2016	GAMMA_GS	14234-35-6	Antimony-125	-0.049	0.08	0.08	0.13	U	pCi/g
			6/22/2016	GAMMA_GS	15065-10-8	Thorium-234	1.007	1.12	1.12	1.87	U	pCi/g
			6/22/2016	GAMMA_GS	14913-50-9	Thallium-208	0.657	0.12	0.12	0.09		pCi/g
			6/22/2016	GAMMA_GS	15117-96-1	Uranium-235	0.128	0.27	0.27	0.36	U	pCi/g
			6/22/2016	GAMMA_GS	U-238	Uranium-238	1.007	1.12	1.12	1.87	U	pCi/g
			6/22/2016	GAMMA_GS	13982-39-3	Zinc-65	-0.018	0.05	0.05	0.13	U	pCi/g
			6/27/2016	UISO_IE_PRECIP_AEA	U-233/234	Uranium-233/234	0.719	0.27	0.27	0.13		pCi/g
			6/27/2016	UISO_IE_PRECIP_AEA	15117-96-1	Uranium-235	0.106	0.12	0.12	0.17	U	pCi/g
			6/27/2016	UISO_IE_PRECIP_AEA	U-238	Uranium-238	0.485	0.22	0.22	0.15		pCi/g

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Matrix: Soil

Sample Number	Lab Sample ID	QC Type	Date Analyzed	Method Name	CAS Number	Isotope	Result	2-Sigma Counting Error	Total Propagated Uncertainty	MDA	Lab Qualifier	Analysis Units
J1V929	16-06093-05		6/22/2016	GAMMA_GS	14596-10-2	Americium-241	-0.114	0.10	0.10	0.11	U	pCi/g
			6/22/2016	GAMMA_GS	14762-78-8	Cerium-144	0.001	0.20	0.20	0.32	U	pCi/g
			6/22/2016	GAMMA_GS	10198-40-0	Cobalt-60	0.008	0.05	0.05	0.07	U	pCi/g
			6/22/2016	GAMMA_GS	13967-70-9	Cesium-134	-0.312	0.10	0.10	0.06	U	pCi/g
			6/22/2016	GAMMA_GS	10045-97-3	Cesium-137	-0.007	0.05	0.05	0.07	U	pCi/g
			6/22/2016	GAMMA_GS	14683-23-9	Europium-152	0.040	0.09	0.09	0.15	U	pCi/g
			6/22/2016	GAMMA_GS	15585-10-1	Europium-154	0.085	0.15	0.15	0.08		pCi/g
			6/22/2016	GAMMA_GS	14391-16-3	Europium-155	0.030	0.09	0.09	0.13	U	pCi/g
			6/22/2016	GAMMA_GS	13966-00-2	Potassium-40	11.269	1.47	1.58	0.79		pCi/g
			6/22/2016	GAMMA_GS	15100-28-4	Protactinium-234m	-3.004	4.70	4.70	5.97	U	pCi/g
			6/22/2016	GAMMA_GS	15092-94-1	Lead-212	0.593	0.09	0.09	0.15		pCi/g
			6/22/2016	GAMMA_GS	15067-28-4	Lead-214	0.488	0.11	0.11	0.17		pCi/g
			6/22/2016	GAMMA_GS	13982-63-3	Radium-226	0.597	0.11	0.12	0.17		pCi/g
			6/22/2016	GAMMA_GS	15262-20-1	Radium-228	0.609	0.15	0.16	0.30		pCi/g
			6/22/2016	GAMMA_GS	13967-48-1	Ruthenium-106	0.434	0.34	0.34	0.59	U	pCi/g
			6/22/2016	GAMMA_GS	14234-35-6	Antimony-125	0.097	0.10	0.10	0.17	U	pCi/g
			6/22/2016	GAMMA_GS	15065-10-8	Thorium-234	0.405	0.85	0.85	1.12	U	pCi/g
			6/22/2016	GAMMA_GS	14913-50-9	Thallium-208	0.447	0.11	0.11	0.16		pCi/g
			6/22/2016	GAMMA_GS	15117-96-1	Uranium-235	0.144	0.20	0.20	0.34	U	pCi/g
			6/22/2016	GAMMA_GS	U-238	Uranium-238	0.405	0.85	0.85	1.12	U	pCi/g
			6/22/2016	GAMMA_GS	13982-39-3	Zinc-65	0.007	0.06	0.06	0.14	U	pCi/g
			6/27/2016	UISO_IE_PRECIP_AEA	U-233/234	Uranium-233/234	0.673	0.21	0.21	0.06		pCi/g
			6/27/2016	UISO_IE_PRECIP_AEA	15117-96-1	Uranium-235	0.099	0.09	0.09	0.10		pCi/g
			6/27/2016	UISO_IE_PRECIP_AEA	U-238	Uranium-238	0.450	0.17	0.17	0.06		pCi/g

SECTION V

ANALYTICAL STANDARD

QA/QC REVIEWED
Date 1/16/95 Initials VA

U-8

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	U-238NAT	Customer:	TMA EBERLINE
Half Life:	(4.468 ± 0.005) x 10^9 years	P.O.No.:	OR2778
Catalog No.:	7338	Reference Date:	January 1 1995 12:00 PST.
Source No.:	479-50	Contained Radioactivity:	(Total U) 8.016 μCi
		Contained Radioactivity:	(Total U) 297 kBq

Description of Solution

a. Mass of solution: 65.2896 g in a 50 ml flame sealed ampoule

b. Chemical form: Uranyl Nitrate in H2O

c. Carrier content: None

d. Density: Approximately 1.3202 g/ml @ 20°C.

Radioimpurities

Refer to attached technical data sheet

Radioactive Daughters

Refer to attached technical data sheet

Radionuclide Concentration

(Total U) 0.1228 μCi/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ±3.0%

b. Random uncertainty in assay: ±0.0%

c. Random uncertainty in weighing(s): ±2.0%

d. Total uncertainty at the 99% confidence level: ±3.6%

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).

ERIC ALLAS
QUALITY CONTROL

29 DECEMBER 1994
Date Signed

ISOTOPE PRODUCTS LABORATORIES
3017 N. SAN FERNANDO BLVD.
BURBANK, CALIFORNIA 91504
818·843·7000 FAX 818·843·6168

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: 10/1/2015 0:00

SOLUTION REFERENCE #: IPL 479-50

SOLUTION #: U-8

Principal Radionuclide	Half Life, Years	Half Life, Days
$^{234, 235, 238}U$	4.468E+09	1.632E+12

Radionuclide: $^{234, 235, 238}U$

Reference Date: 1/1/1995 0:00

Certified Activity: 8.016E+00 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross	97.6400	Weight, Grams
Empty Ampoule	32.5020	Weight, Grams
Solution Net	65.1380	Weight, Grams
Total Activity in Ampoule	8.0160	µCi

Chemical Composition of Standard Solution

Uranyl nitrate in dilute HNO_3

Dilution Instructions:

Dilution Solvent Used: 1M HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 8.0160 µCi Which Equals 1.780E+07 dpm at the date listed above

And after dilution the activity of this solution is 1.77955E+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: July 27, 2016

Verified & Approved By _____ Date: 10/1/2015 0:00

QC Approval _____ Date: 10/1/15

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 479-50

Date 10/1/2015 0:00

Solution # U-8a

Principal Radionuclide	Half Life, Years	Half Life, Days
$^{234, 235, 238}U$	4.468E+09	1.632E+12

Radionuclide of Interest $^{234, 235, 238}U$

Reference Date 1/1/1995 0:00

Parent Solution Conc. 1.7796E+04 dpm/ml

Chemical Composition of Standard Solution

Uranly Nitrate in 1M HNO_3

Dilution Instructions:

Dilution Solvent Used 1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 4.0000 ml
Total Activity: 7.1182E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 7.1182E+01 dpm/ml

NOTES:

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.

Isotopic Distribution as:
U-238 Atom % = 48.239 U-238 = 71.182 dpm/ml X 0.48249 = 34.345 dpm/ml
U-235 Atom % = 2.25 U-235 = 71.182 dpm/ml X 0.0225 = 1.602 dpm/ml
U-234 Atom % = 49.501 U-238 = 71.182 dpm/ml X 0.49501 = 35.236 dpm/ml
All values +/- 3.6%

Isotopic ratios from manufacturer's data sheet

Expiration Date: July 27, 2016

Verified & Approved By _____ Date: 10/1/2015 0:00

QC Approval _____ Date: 10/1/15

RECORD COPY

Tracer Solution for Environmental Analysis & Disequilibrium Studies

Product Description & Measurement Certificate

Description	Principal radionuclide:	**uranium 232** (U-232)	Product code: **UDP10050**
	Daughter Nuclide:	Th-228	Batch Number: 92/232/67
Measurement	Reference date:		01 March 2000
	Radioactive concentration U-232		6.739E+03 becquerels per gram of solution
	which is equivalent to		1.821E-01 microcuries per gram of solution
	Mass of solution		5.356 grams
	Volume of solution		5.035 millilitres
	Total activity of U-232		3.61E+04 becquerels
	which is equivalent to		9.76E-01 microcuries

Method of measurement (see reverse of this certificate)

Accuracy Random uncertainty is: ± 0.7% Systematic uncertainty: ± 0.5%
Overall uncertainty in the radioactive concentration quoted above: ± 1.7%
Overall uncertainty is defined on the reverse of this certificate.

Radionuclidic Purity Any radioactive impurities measured are listed below, expressed as percentages of the activity of the principle radionuclide at the reference date .

Th-228 and daughter activity removed 2 Feb 2000
U-232 daughters activity will increase with time. By alpha 88% U-232, 12% daughters on 1/3/00

Isotopic Purity The isotopic composition, expressed as atom per cent at the reference date .

Not measured

Chemical Composition Calculated weight of U-232, 4.42E-08 grams, as 2M HNO3 solution in a flame sealed glass vial.
This Tracer solution has been produced 'carrier free'.

Physical Data Recommended half life of uranium 232: 6.980E+01 years
Principle energies of alpha emissions (MeV): 5.263 31.7%, 5.320 68.0%
Branching ratio for alpha emission: 100%
Calculated specific activity of uranium 232: 8.167E+05 Bq per microgram U-232.

Remarks For safety information and notes to ensure correct usage by all persons handling this radioactive Tracer solution please read the instructions accompanying the package.

AEA Technology operates a quality management system which has been independently audited and approved to ISO 9001.

Approved Signatory

Roger Wiltshire

Project Ref. AE2315

Roger Wiltshire

Prepared and characterised in the UK, for world wide distribution by **Isotrak, AEA Technology, QSA.**

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: 10/27/2015 0:00

SOLUTION REFERENCE #: AEA/Amersham 92/232/67 SOLUTION #: U-10

Principal Radionuclide	Half Life, Years	Half Life, Days
^{232}U	7.200E+01	2.630E+04

Radionuclide: ^{232}U

Reference Date: 3/1/2000 0:00

Certified Activity: 9.760E-01 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross: Weight, Grams

Empty Ampoule: Weight, Grams

Solution Net: Weight, Grams

Total Activity in Ampoule: 0.9760 µCi

Chemical Composition of Standard Solution

$^{232}U(NO_3)_6$ in 2M HNO_3

Dilution Instructions:

Dilution Solvent Used: 2M HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 0.9760 µCi Which Equals 2.167E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.167E+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: October 26, 2016

Verified & Approved By _____ Date: 10/27/2015 0:00

QC Approval _____ Date: 10/28/15

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 # AEA/Amersham 92/232/67

Date 10/27/2015 0:00
Solution # U-10a

Principal Radionuclide	Half Life, Years	Half Life, Days
^{232}U	7.200E+01	2.630E+04

Radionuclide of Interest ^{232}U
Parent Solution Conc. 2.167E+03 dpm/ml

Reference Date 3/1/2000 0:00

Chemical Composition of Standard Solution
$^{232}U(NO_3)_6$ in 2M HNO_3

Dilution Instructions:

Dilution Solvent Used 2M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml
Total Activity: 2.1670E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 2.1670E+01 dpm/ml

NOTES:

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 26, 2016

Verified & Approved By _____ Date: 10/27/2015 0:00

QC Approval _____ Date: 10/28/15

00026

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

GAS-1402

98503

Sand in 16 Ounce PP Taral Jar Filled to Capacity

Customer: Eberline Analytical Corporation
P.O. No.: OR-1405030, Item 6 Product Code: 8401-EG-SAN
Reference Date: 01-Oct-2014 12:00 PM EST **Grams of Master Source:** 0.017608

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using a germanium gamma spectrometer system. 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 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." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty*, % Type u_A	u_B	U	Calibration Method*
Am-241	59.5	1.580E+05	———	2.030E+03	0.1	1.8	3.6	4π LS
Cd-109	88.0	4.614E+02	1.663E+05	2.929E+03	0.5	2.0	4.1	HPGe
Co-57	122.1	2.717E+02	8.913E+04	1.569E+03	0.4	1.7	3.5	HPGe
Ce-139	165.9	1.376E+02	1.241E+05	2.185E+03	0.4	1.7	3.5	HPGe
Hg-203	279.2	4.659E+01	2.675E+05	4.710E+03	0.3	1.7	3.5	HPGe
Sn-113	391.7	1.151E+02	1.796E+05	3.163E+03	0.4	1.9	3.9	HPGe
Cs-137	661.7	1.099E+04	1.111E+05	1.956E+03	0.7	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.223E+05	7.435E+03	0.7	1.7	3.7	HPGe
Co-60	1173.2	1.925E+03	2.091E+05	3.683E+03	0.7	1.8	3.9	HPGe
Co-60	1332.5	1.925E+03	2.094E+05	3.687E+03	0.7	1.8	3.9	HPGe
Y-88	1836.1	1.066E+02	4.471E+05	7.872E+03	0.7	1.7	3.7	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ANA Form005 Rev. —

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1954

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

00027

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06093	UUISO	1	pCi	g	Washington Closure Hanford

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)
U-234		77.88%	16.22%	100.00%	3.60%	8.15E+00	2.93E-01	6.35E+00	1.03E+00	U-8a	3.20E+01	3.60E+00	5.66E-01
U-238		81.57%	16.17%	100.00%	3.60%	7.90E+00	2.84E-01	6.44E+00	1.04E+00	U-8a	3.10E+01	3.60E+00	5.66E-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
U-234	0.05	1.20	7.19E-01	2.71E-01	7.10E-01	2.55E-01
U-238	0.20	6.49	4.85E-01	2.21E-01	4.55E-01	1.97E-01
U-235	0.37	30.88	1.06E-01	1.20E-01	7.80E-02	9.40E-02

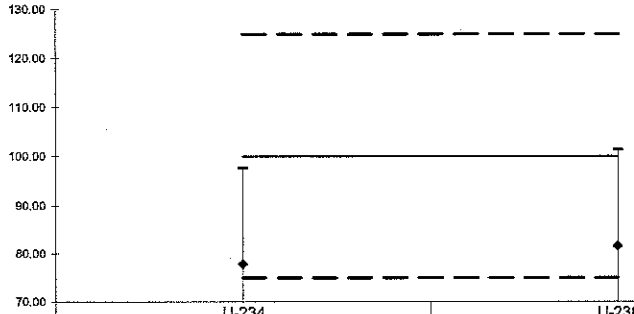
QC Summary

LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
0.78	OK				OK	OK
0.82	OK				OK	OK
	OK				NA	OK

Version

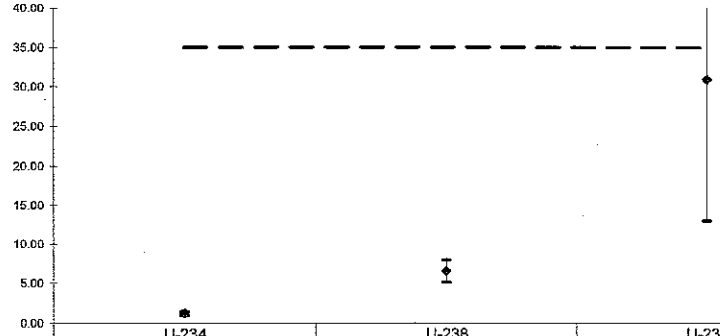
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06093	UUISO	1	pCi	g	Washington Closure Hanford

LCS % Recovery



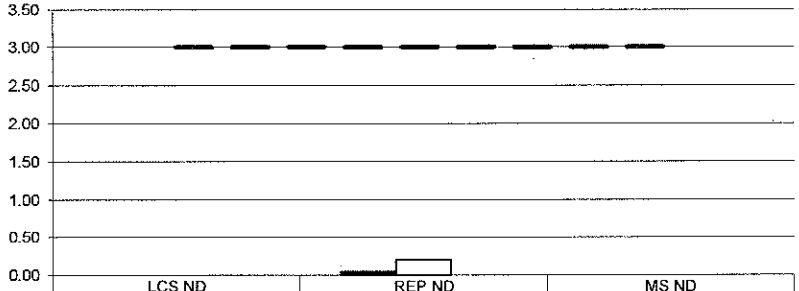
	U-234	U-238
Lower Error	58.06	61.80
Upper Error	97.69	101.34
%R	77.88	81.57
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	U-234	U-238	U-235
Lower Error	1.42	7.93	48.83
Upper Error	0.98	5.04	12.93
RPD	1.20	6.49	30.88
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
U-234	0.00	0.05	0.00
U-238	0.00	0.20	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06093	Gamma	1	pCi	g	Washington Closure Hanford

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		102.61%	8.62%	100.00%	4.00%	1.37E+02	5.48E+00	1.41E+02	1.21E+01	GAS-1302	1.37E+02	5.48E+00	7.36E+02
CS-137		102.67%	10.88%	100.00%	4.00%	8.69E+01	3.48E+00	8.93E+01	9.71E+00	GAS-1302	8.69E+01	3.48E+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
K-40	0.46	4.33	1.49E+01	1.96E+00	1.42E+01	1.86E+00
RA-226	0.09	1.24	5.66E-01	1.07E-01	5.73E-01	1.18E-01
RA-228	0.62	8.61	8.44E-01	1.71E-01	9.20E-01	1.71E-01

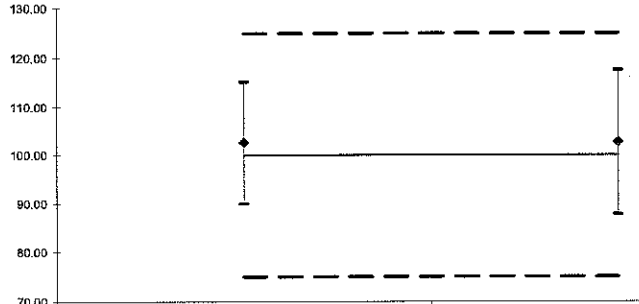
QC Summary

LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
1.03	OK		<CS-137	K-40>	NA	
1.03	OK		<CO-60	RA-226>	NA	OK
				RA-228>	NA	OK

Version

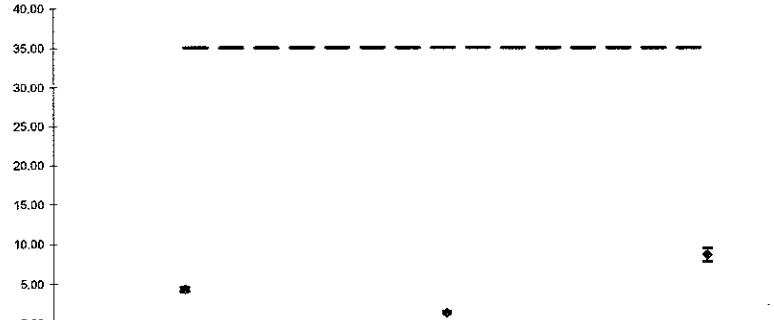
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06093	Gamma	1	pCi	g	Washington Closure Hanford

LCS % Recovery



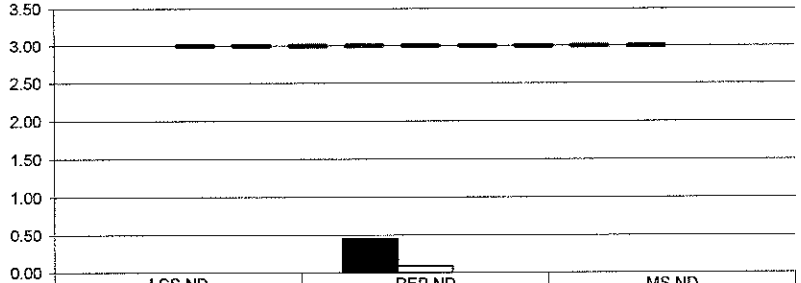
	CO-60	CS-137
Lower Error	89.99	87.78
Upper Error	115.24	117.56
%R	102.61	102.67
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	K-40	RA-226	RA-228
Lower Error	4.61	1.36	9.44
Upper Error	4.04	1.12	7.78
RPD	4.33	1.24	8.61
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
CO-60	0.00	0.46	0.00
CS-137	0.00	0.09	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike

SECTION VII

LABORATORY TECHNICIAN'S NOTES

ISO-U 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	16-06093
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	06/22/16 08:12	PREP	JPACHELLA	Samples were aliquoted, spiked and traced. Samples were digested on low heat with HF. Samples were further digested with a mixed acid digestion on medium heat. Samples were submitted to separations.

6-22-16 JPachella

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	16-06093
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	06/22/16 08:12	PREP	JPACHELLA	Samples were aliquoted, spiked and traced. Samples were digested on low heat with HF. Samples were further digested with a mixed acid digestion on medium heat. Samples were submitted to separations.
2	06/24/16 17:52	CHEM	JDEMELAS	Added concentrated HCl to sample beakers and heated to dryness; Added 20 ml 8N HCL to samples and transferred to new, labeled C-Tubes, rinsing with 8N HCl to bring volume to ~35 ml; Preconditioned resin columns with 35 ml 8N HCl; Centrifuged samples and loaded onto columns; Rinsed C-Tubes with 20 ml 8N HCl, centrifuged as needed and loaded onto columns; Rinsed columns with 35 ml 8N HCl – 0.1N NH4I, 35 ml of 6.5N HCl – 0.04N HF, and 10 ml of 6.5N HCl; Eluted Uranium with 50 ml of 0.5N HCl into clean, labeled 100-ml beakers; Dried-down samples on hotplate; Dissolved samples in ~10 ml of concentrated HCl; Transferred to new, labeled C-Tubes with DI H2O. Set samples aside for later precipitation and filtering.

6/24/16

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	16-06093
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	06/22/16 08:12	PREP	JPACHELLA	Samples were aliquoted, spiked and traced. Samples were digested on low heat with HF. Samples were further digested with a mixed acid digestion on medium heat. Samples were submitted to separations.
2	06/24/16 17:52	CHEM	JDEMELAS	Added concentrated HCl to sample beakers and heated to dryness; Added 20 ml 8N HCL to samples and transferred to new, labeled C-Tubes, rinsing with 8N HCl to bring volume to ~35 ml; Preconditioned resin columns with 35 ml 8N HCl; Centrifuged samples and loaded onto columns; Rinsed C-Tubes with 20 ml 8N HCl, centrifuged as needed and loaded onto columns; Rinsed columns with 35 ml 8N HCl – 0.1N NH4I, 35 ml of 6.5N HCl – 0.04N HF, and 10 ml of 6.5N HCl; Eluted Uranium with 50 ml of 0.5N HCl into clean, labeled 100-ml beakers; Dried-down samples on hotplate; Dissolved samples in ~10 ml of concentrated HCl; Transferred to new, labeled C-Tubes with DI H2O. Set samples aside for later precipitation and filtering.
3	06/27/16 05:17	CHEM	TSMITH	Followed steps 12.1.7 to 12.4.5 in AP-005 . (Preciptiated and filtered samples for Uranium)

6-27-16
TM

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
16-06093	
Analysis Code	Run
UUISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
017047P	Hydrofluoric Acid	Reagent Grade	JPACHELLA	6/22/2016
017533P	Nitric Acid	Reagent Grade	JPACHELLA	6/22/2016
017589P	Perchloric Acid	Reagent Grade	JPACHELLA	6/22/2016
017243P	Sulfuric Acid	Reagent Grade	JPACHELLA	6/22/2016
017344P	Anion Exchange Resin	Reagent Grade	JDEMELAS	6/24/2016
017726S	HCl - HF	6.5N - 0.04N	JDEMELAS	6/24/2016
017518D05	Hydrochloric Acid	0.5N	JDEMELAS	6/24/2016
017728S	Hydrochloric Acid	6.5N	JDEMELAS	6/24/2016
017518P	Hydrochloric Acid	Reagent Grade	JDEMELAS	6/24/2016
017747S	HCl - NH4I	8N - 0.1M	JDEMELAS	6/24/2016
017746S	Hydrochloric Acid	8N	JDEMELAS	6/24/2016
017713S	Carbon substrate	Solution	TSMITH	6/27/2016
017559P	Hydrofluoric Acid	Reagent Grade	TSMITH	6/27/2016
017340S	Neodymium Carrier	1 mg/ml	TSMITH	6/27/2016
017649P	Reagent Alcohol	Reagent Grade	TSMITH	6/27/2016
016606P	Titanous Chloride	Reagent Grade	TSMITH	6/27/2016

Alpha #1

Date	Sample #	Client	Time	CT Time	Analysis	Tech
6/24/16	System Pkgd	Lab	1509	16.40 hr	2	KB
6/27	Primy Pulse	LAB	0453	1	NA	—
6/27	1606093A(1-5)	Washington	0856	245	44750	—
6/27	1606057A(1-2)	Auxier	0856	245	44750	—

GAMMA NOTES

GE 2

DATE	Sample #	Client	Load Time	CT. Time	Analysis	Tech
6/16/16	1606072-03	Indust. + Env.	1811	4 hrs	γ	ICB
6/17	GAS 1401	Lab	0524	15	γ	[illegible]
6/17	Daily Bkgd	Lab	0550	15	γ	[illegible]
6/17	1606069-01	ucon	0617	3	γ	
6/17	1606069-03	ucon	0646	2	γ	[illegible]
6/17	1606065-05	Auxier	0857	2	γ	[illegible]
6/17	1606065-08	Auxier	1009	2	γ	[illegible]
6/17	1606069-04	ucon	1110	2	γ	[illegible]
6/17	1606069-02	ucon	1311	2	γ	[illegible]
6/17/16	1606066-07	Auxier	1512	1 hr	γ	KB
6/17/16	1606066-11	Auxier	1613	1 hr	γ	KB
6/17/16	1606072-04	Indust + Env.	1715	4 hrs	γ	ICB
6/18/16	System Bkgd	Lab	0841	24 hrs	γ	ICB
6/20/16	Daily Bkgd	Lab	0623	15 min	γ	AG
6/20/16	GAS 1401	Lab	0641	15 min	γ	AG
6/20/16	1606067-06	Auxier	0914	1 hr	γ	ICB
6/20/16	1606067-08	Auxier	1014	1 hr	γ	KB
6/20/16	1606067-11	Auxier	1117	1 hr	γ	KB
6/20/16	1606070-05	Hudson Ranch	1307	2 hrs	γ	ICB
6/20/16	1606070-08	Hudson Ranch	1510	2 hrs	γ	KB
6/20/16	1606084-03	Chevron	1716	4 hrs	γ	ICB
6/21/16	Daily Bkgd	Lab	0559	15 min	γ	AG
6/21/16	GAS 1401	Lab	0617	15 min	γ	AG
6/21/16	1606070-12	Hudson Ranch	0642	2 hr	γ	AG
6/21/16	1606070-15	Hudson Ranch	0845	2 hrs	γ	ICB
6/21/16	1606070-18	Hudson Ranch	1046	2 hrs	γ	ICB
6/21/16	1606071-03	Hudson Ranch	1307	2 hrs	γ	ICB
6/21/16	1606071-04	Hudson Ranch	1504	2 hrs	γ	ICB
6/21/16	1606084-04	Chevron	1713	4 hrs	γ	ICB
6/22/16	Daily Bkgd	Lab	0538	15 min	γ	AG
6/22/16	GAS 1401	Lab	0555	15 min	γ	AG
6/22/16	1606071-10	~~Hudson Ranch~~ ~~Daily Bkgd~~	0626	2 hr	γ	AG
6/22/16	1606093-03	Wash. Closure	0828	1 hr	γ	KB
6/22/16	1606093-04	Wash-Closure	0930	1 hr	γ	KB

GE 3

DATE	SAMPLE #	Client	Load Time	CT Time	Analysis	Tech
6/20/16	Daily Bkgd	Lab	0623	15 min	γ	AG
6/20/16	GAS 1402	Lab	0643	15 min	γ	AG
6/20/16	16060067-07	Auxier	0914	1 hr	γ	KB
6/20/16	16060067-09	Auxier	1016	1 hr	γ	KB
6/20/16	16060067-12	Auxier	1118	1 hr	γ	KB
6/20/16	16060070-04	Hudson Ranch	1307	2 hr	γ	KB
6/20/16	16060070-09	Hudson Ranch	1510	2 hr	γ	KB
6/20/16	16060084-05	Chevron	1714	4 hrs	γ	KB
6/21/16	Daily Bkgd	Lab	0559	15 min	γ	AG
6/21/16	GAS-1402	Lab	0617	15 min	γ	AG
6/21/16	16060070-13	Hudson Ranch	0643	2 hr	γ	AG
6/21/16	16060070-16	Hudson Ranch	0845	2 hr	γ	KB
6/21/16	16060070-19	Hudson Ranch	1044	2 hr	γ	KB
6/21/16	16060071-05	Hudson Ranch	1304	2 hr	γ	KB
6/21/16	16060071-07	Hudson Ranch	1505	2 hr	γ	KB
6/21/16	16060084-06	Chevron	1713	4 hr	γ	KB
6/22/16	Daily Bkgd	Lab	0538	15 min	γ	AG
6/22/16	GAS 1402	Lab	0556	15 min	γ	AG
6/22/16	16060071-11	~~Hudson Ranch~~ ~~Facility Services~~	0626	2 hr	γ	AG
6/22/16	16060093-05	Wash Closure	0828	1 hr	γ	KB

GE 4

DATE	Sample #	Client	Load Time	CT Time	Analysis	Tech
6/20/16	1606023-03	UCOR	1150	15mins	Ba	KB
6/20/16	1606070-07	Hudson Ranch	1308	2hrs	γ	KB
6/20/16	1606070-02	Hudson Ranch	1510	2 hrs	γ	KB
6/20/16	1606084-01	Chevron	1713	30mins	γ	KB
6/20/16	1606084-02	Chevron	1745	6 hrs	γ	KB
6/21/16	Daily Bkgd	Lab	0559	15min	γ	AC
6/21/16	GAW-14	Lab	0617	15min	γ	AC
6/21/16	1606070-14	Hudson Ranch	0643	2 hr	γ	AG
6/21/16	1606070-17	Hudson Ranch	0845	2 hrs	γ	KB
6/21/16	1606070-20	Hudson Ranch	1046	2 hrs	γ	KB
6/21/16	1606071-06	Hudson Ranch	1304	2 hrs	γ	KB
6/21/16	1606071-02	Hudson Ranch	1505	2 hrs	γ	KB
6/21/16	1606071-01	Hudson Ranch	1706	30mins	γ	KB
6/21/16	1606087-02	Utility Services	1739	6 hrs	γ	KB
6/22/16	Daily Bkgd	Lab	0538	15min	γ	AG
6/22/16	GAW14	Lab	0556	15min	γ	AG
6/22/16	1606071-12	~~Utility Services~~ Hudson Ranch	0626	2 hr	γ	AC
6/22/16	1606093-02	Wash. Closure	0828	1 hr	γ	KB
6/22/16	1606093-01	Wash. Closure	0930	30 min	γ	KB

SECTION VIII

ANALYTICAL DATA (ISOTOPIC URANIUM)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

16-06093
UUISO
Run 1

Work Order	16-06093
Analysis Code	UUISO
Run	1
Date Received	6/21/2016
Lab Deadline	6/27/2016
Client	Washington Closure Hanford
Project	S00W235A01
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EML U-02 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	U-232
Radiometric Sol#	U-10a
Tracer Act (dpm/g)	18.52
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		06/21/16 00:00	1.0000E+00
02	MBL	BLANK		06/21/16 00:00	1.0000E+00
03	DUP	J1V928 SAF: RC-148	45	06/16/16 07:40	1.0130E+00
04	DO	J1V928 SAF: RC-148	45	06/16/16 07:40	1.0259E+00
05	TRG	J1V929 SAF: RC-148	41	06/16/16 10:30	1.0142E+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.

16-06093
UUISO
Run 1

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	0.6752	12.5		0.00								
02	MBL	0.6665	12.3		0.00								
03	DUP	0.6667	12.3		0.00								
04	DO	0.6746	12.5		0.00								
05	TRG	0.6724	12.5		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.

16-06093
UUISO
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			06/22/16 08:07	JPACHELLA				
02	MBL			06/22/16 08:07	JPACHELLA				
03	DUP			06/22/16 08:07	JPACHELLA				
04	DO	06/22/16 07:09	KSALLINGS	06/22/16 08:07	JPACHELLA				
05	TRG	06/22/16 07:09	KSALLINGS	06/22/16 08:07	JPACHELLA				

* 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: 16-06093-UUISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Washington Closure Hanford	16-06093	UUISO	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	U-234	LCS	LCS	pCi/g	6.35E+00	9.24E-01	8.36E-02	8.15E+00	77.88	OK		OK	
02	U-234	MBL	BLANK	pCi/g	1.23E-01	1.46E-01	2.13E-01					OK	OK
03	U-234	DUP	J1V928 SAF: RC-148	pCi/g	7.10E-01	2.50E-01	1.40E-01				OK	OK	
04	U-234	DO	J1V928 SAF: RC-148	pCi/g	7.19E-01	2.66E-01	1.30E-01					OK	
05	U-234	TRG	J1V929 SAF: RC-148	pCi/g	6.73E-01	2.09E-01	6.12E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-UUISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Washington Closure Hanford	16-06093	UUISO	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	U-234	LCS	06/21/16 00:00	1.00E+00	111.12	0.00	0.00			
02	U-234	MBL	06/21/16 00:00	1.00E+00	43.72	0.00	0.00			
03	U-234	DUP	06/16/16 07:40	1.01E+00	72.63	0.00	0.00			
04	U-234	DO	06/16/16 07:40	1.03E+00	60.04	0.00	0.00			
05	U-234	TRG	06/16/16 10:30	1.01E+00	92.92	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-UUISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Washington Closure Hanford	16-06093	UUISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-234	LCS	06/27/16 08:56		A_Spec	Alpha_003	170	4.28 E+02	4.00 E-03	16.1
02	U-234	MBL	06/27/16 08:56		A_Spec	Alpha_004	170.02	3.81 E+00	7.00 E-03	18.8
03	U-234	DUP	06/27/16 08:56		A_Spec	Alpha_010	170.02	3.73 E+01	1.00 E-02	19
04	U-234	DO	06/27/16 08:56		A_Spec	Alpha_011	170	3.32 E+01	5.00 E-03	19.9
05	U-234	TRG	06/27/16 08:56		A_Spec	Alpha_012	170.02	4.58 E+01	1.00 E-03	19.2

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-UUISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Washington Closure Hanford	16-06093	UUISO	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	U-238	LCS	LCS	pCi/g	6.44E+00	9.34E-01	7.74E-02	7.90E+00	81.57	OK		OK	
02	U-238	MBL	BLANK	pCi/g	6.37E-02	1.13E-01	2.03E-01					OK	OK
03	U-238	DUP	J1V928 SAF: RC-148	pCi/g	4.55E-01	1.95E-01	1.19E-01				OK	OK	
04	U-238	DO	J1V928 SAF: RC-148	pCi/g	4.85E-01	2.18E-01	1.53E-01					OK	
05	U-238	TRG	J1V929 SAF: RC-148	pCi/g	4.50E-01	1.67E-01	6.10E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-UUISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Washington Closure Hanford	16-06093	UUISO	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	U-238	LCS	06/21/16 00:00	1.00E+00	111.12	0.00	0.00			
02	U-238	MBL	06/21/16 00:00	1.00E+00	43.72	0.00	0.00			
03	U-238	DUP	06/16/16 07:40	1.01E+00	72.63	0.00	0.00			
04	U-238	DO	06/16/16 07:40	1.03E+00	60.04	0.00	0.00			
05	U-238	TRG	06/16/16 10:30	1.01E+00	92.92	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-UUISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Washington Closure Hanford	16-06093	UUISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-238	LCS	06/27/16 08:56		A_Spec	Alpha_003	170	4.36 E+02	3.00 E-03	16.1
02	U-238	MBL	06/27/16 08:56		A_Spec	Alpha_004	170.02	1.98 E+00	6.00 E-03	18.8
03	U-238	DUP	06/27/16 08:56		A_Spec	Alpha_010	170.02	2.40 E+01	6.00 E-03	19
04	U-238	DO	06/27/16 08:56		A_Spec	Alpha_011	170	2.25 E+01	9.00 E-03	19.9
05	U-238	TRG	06/27/16 08:56		A_Spec	Alpha_012	170.02	3.08 E+01	1.00 E-03	19.2

Preliminary Data Report & Analytical Calculations
Work Order: 16-06093-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 16-06093
Client: Washington Closure Hanford

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	U-235	LCS	LCS	pCi/g	3.53E-01	1.65E-01	1.03E-01					OK	
02	U-235	MBL	BLANK	pCi/g	5.98E-03	8.36E-02	2.39E-01					OK	OK
03	U-235	DUP	J1V928 SAF: RC-148	pCi/g	7.80E-02	9.39E-02	1.32E-01				NA	OK	
04	U-235	DO	J1V928 SAF: RC-148	pCi/g	1.06E-01	1.20E-01	1.68E-01					OK	
05	U-235	TRG	J1V929 SAF: RC-148	pCi/g	9.94E-02	8.82E-02	9.50E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-UUISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Washington Closure Hanford	16-06093	UUISO	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	U-235	LCS	06/21/16 00:00	1.00E+00	111.12	0.00	0.00			
02	U-235	MBL	06/21/16 00:00	1.00E+00	43.72	0.00	0.00			
03	U-235	DUP	06/16/16 07:40	1.01E+00	72.63	0.00	0.00			
04	U-235	DO	06/16/16 07:40	1.03E+00	60.04	0.00	0.00			
05	U-235	TRG	06/16/16 10:30	1.01E+00	92.92	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-UUISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Washington Closure Hanford	16-06093	UUISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-235	LCS	06/27/16 08:56		A_Spec	Alpha_003	170	1.93 E+01	4.00 E-03	16.1
02	U-235	MBL	06/27/16 08:56		A_Spec	Alpha_004	170.02	1.50 E-01	5.00 E-03	18.8
03	U-235	DUP	06/27/16 08:56		A_Spec	Alpha_010	170.02	3.32 E+00	4.00 E-03	19
04	U-235	DO	06/27/16 08:56		A_Spec	Alpha_011	170	3.98 E+00	6.00 E-03	19.9
05	U-235	TRG	06/27/16 08:56		A_Spec	Alpha_012	170.02	5.49 E+00	3.00 E-03	19.2

Count Room Report
Client: Washington Closure Hanfor

16-06093-UUISO-1 (pCi/g) in SO
Tracer ID: U-10a

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	06/21/16 00:00	1.0000	0.6752	12.5047		0.00		
02	MBL	BLANK	06/21/16 00:00	1.0000	0.6665	12.3436		0.00		
03	DUP	J1V928 SAF: RC-148	06/16/16 07:40	1.0130	0.6667	12.3473		0.00		
04	DO	J1V928 SAF: RC-148	06/16/16 07:40	1.0259	0.6746	12.4936		0.00		
05	TRG	J1V929 SAF: RC-148	06/16/16 10:30	1.0142	0.6724	12.4528		0.00		

00057

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 6/22/2016 8:07 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
16-06093	1	UUISO	6/22/2016 8:04	JPACHELLA		

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
U-234	U-8a	32.000	6/22/2016	0.550	0.5655				8.15	0.293	0.00	0.000	0.00	0.000	0.00	0.000
U-238	U-8a	31.000	6/22/2016	0.550	0.5655				7.90	0.284	0.00	0.000	0.00	0.000	0.00	0.000
Tc-99 MS	Tc-2a	22043.636	7/5/2014	0.1												

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	U-232	U-10a	18.520	6/22/2016	0.6752	0.6500
02	U-232	U-10a	18.520	6/22/2016	0.6665	0.6500
03	U-232	U-10a	18.520	6/22/2016	0.6667	0.6500
04	U-232	U-10a	18.520	6/22/2016	0.6746	0.6500
05	U-232	U-10a	18.520	6/22/2016	0.6724	0.6500

Balance Printer Tapes

Tracer

0.6752 g
0.6665 g
0.6667 g
0.6746 g
0.6724 g

LCS

0.5655 g

Matrix Spike

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
16-06093	1	UUISO	grams	6/27/2016	JPACHELLA

Lab Fraction	Washington Closure Hanford 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	J1V928 SAF: RC-148	DUP					1.0130E+00	1.0130E+00				
04	J1V928 SAF: RC-148	DO					1.0259E+00	1.0259E+00				
05	J1V929 SAF: RC-148	TRG					1.0142E+00	1.0142E+00				

Comments	

Technician: JPachella Date: 6/22/16

000053

Eberline Services - Oak Ridge
Prep Logbook
Version 2.0 8/1999

Rough Sample Preparation Log Book

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
16-06093	6/27/2016	6/21/2016	6/22/2016	6/23/2016	KSALLINGS

Eberline	Washington Closure Hanford	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special
Fraction	Client ID	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	Info
04	J1V928 SAF: RC-148	9.5600	112.4500	109.4100	102.8900	99.8500	2.95%	97.05%	0.0000	0.0000	
05	J1V929 SAF: RC-148	9.6600	134.7600	132.4600	125.1000	122.8000	1.84%	98.16%	0.0000	0.0000	

Comments	
Special Codes	H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)

Technician: Kenny Sallings

Date: Analysis: Rough Prep Logbook

Analysis: UUISO Page No. 9713

KD
6/27/16

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001554
Batch Identification: 1606093A-UU
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_003
Chamber Serial Number:
Detector Serial Number: 3
Env. Background: System Bkgd 157572
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 6/27/2016 6:12:46 AM
Acquisition Date/Time: 6/27/2016 8:56:52 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.675 mL
Effective Efficiency: 0.1791 +/- 0.0101
Counting Efficiency: 0.1612 +/- 0.0029 on 12/11/2015 2:46:09 PM
Chem. Recovery Factor: 1.1112 +/- 0.0657

Control Certificate Name: NatU_U-8A
Chem. Recov. of Control: U-238 0.717591 +/- 0.057297
Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.280	378.15	10.09	0.85	0.00E+000	7.0
U-234		4.736	428.32	9.48	0.68	0.00E+000	23.9
U-235		4.393	19.32	45.50	0.68	0.00E+000	3.0
U-238		4.153	436.49	9.39	0.51	0.00E+000	16.0

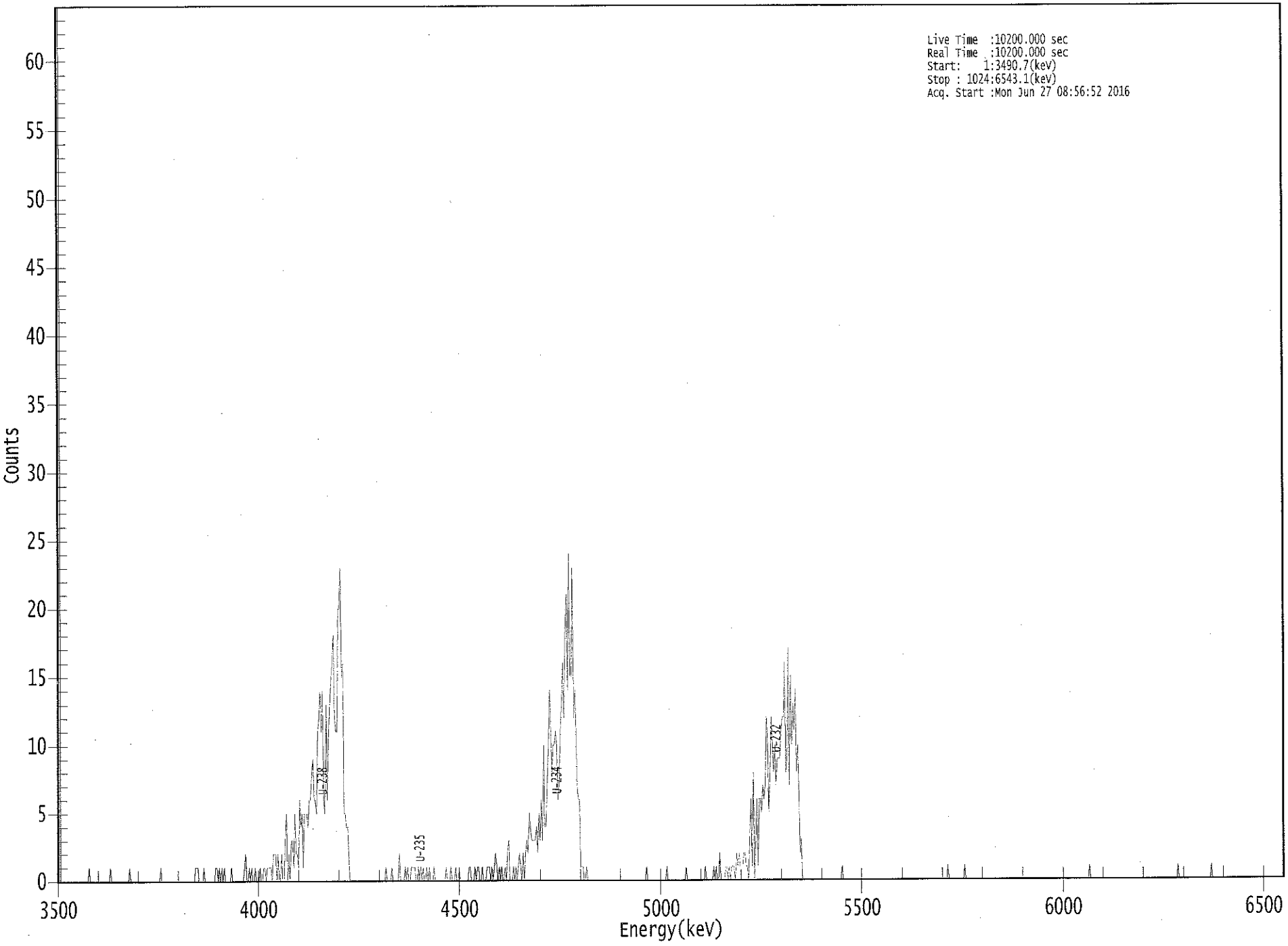
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	5.60E+000 +/- 6.20E-001	8.87E-002 +/- 9.81E-003
U-234	0.995	4761.50*	6.35E+000 +/- 9.24E-001	8.36E-002 +/- 9.24E-003
U-235	1.000	4385.50*	3.53E-001 +/- 1.65E-001	1.03E-001 +/- 1.14E-002
U-238	0.993	4184.40*	6.44E+000 +/- 9.34E-001	7.74E-002 +/- 8.56E-003

AG
6/27/16

0000155445.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: 10200
Elapsed Real Time: 10200

Channel								
1:	10200	10200	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	1	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	1	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	1	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	1	1	1	0	0
121:	0	0	1	0	0	0	0	0
129:	0	0	0	0	1	1	0	1
137:	0	1	0	1	0	0	0	0
145:	0	1	0	0	0	0	0	0
153:	0	0	0	0	1	2	0	0
161:	1	0	1	0	0	1	0	0
169:	0	1	0	0	1	1	0	1
177:	1	1	1	0	2	2	2	0
185:	2	0	0	2	0	0	3	5
193:	0	2	0	3	3	1	5	2
201:	2	1	6	4	5	1	5	5
209:	5	4	6	6	8	9	6	6
217:	5	11	12	14	11	14	6	5
225:	13	6	11	13	15	16	18	12
233:	11	11	20	20	23	15	16	5
241:	5	4	4	2	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	1	0	0	0	0	1
281:	0	0	0	0	0	2	0	0
289:	0	0	1	0	1	0	0	1
297:	1	1	1	0	0	1	0	1
305:	0	1	0	0	1	0	1	0
313:	0	0	1	0	0	0	0	0
321:	0	0	0	0	1	0	0	0
329:	1	0	0	0	1	0	0	1
337:	0	0	0	0	0	0	0	1
345:	1	0	0	0	1	0	1	1
353:	0	0	1	0	0	0	1	1
361:	1	0	1	0	1	2	1	0

369:	1	0	1	0	0	1	0	2

Sample Title: 01

Channel								
377:	3	0	0	0	1	0	1	0
385:	1	2	1	0	2	0	2	3
393:	2	5	4	3	3	3	3	4
401:	2	5	3	6	3	10	4	4
409:	7	10	14	11	8	10	10	11
417:	10	6	7	11	13	16	12	18
425:	21	14	24	15	15	23	12	14
433:	11	7	6	6	1	1	1	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	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	1	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	0	0	0	0
537:	0	0	0	0	1	0	0	0
545:	0	0	0	1	0	1	0	0
553:	2	0	0	0	0	1	1	0
561:	1	0	1	1	1	0	2	1
569:	2	1	1	1	2	2	1	1
577:	0	3	6	1	8	0	3	6
585:	1	6	6	5	7	6	7	12
593:	10	5	8	12	10	8	10	7
601:	9	9	9	11	12	12	16	8
609:	9	17	7	15	10	13	11	14
617:	8	10	7	2	3	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	1	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:	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: 01

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	1	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	1	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	1	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™

KB 6/27/16

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001554
Batch Identification: 1606093A-UU
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_004
Chamber Serial Number:
Detector Serial Number: 4
Env. Background: System Bkgd 157573
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 6/27/2016 6:12:46 AM
Acquisition Date/Time: 6/27/2016 8:56:53 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.666 mL
Effective Efficiency: 0.0821 +/- 0.0066
Counting Efficiency: 0.1879 +/- 0.0033 on 12/11/2015 2:46:10 PM
Chem. Recovery Factor: 0.4372 +/- 0.0358

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.272	171.15	15.03	0.85	0.00E+000	7.3
U-234		4.744	3.81	117.34	1.19	0.00E+000	2.9
U-235		4.380	0.15	1398.5	0.85	0.00E+000	2.9
U-238		4.159	1.98	176.35	1.02	0.00E+000	2.9

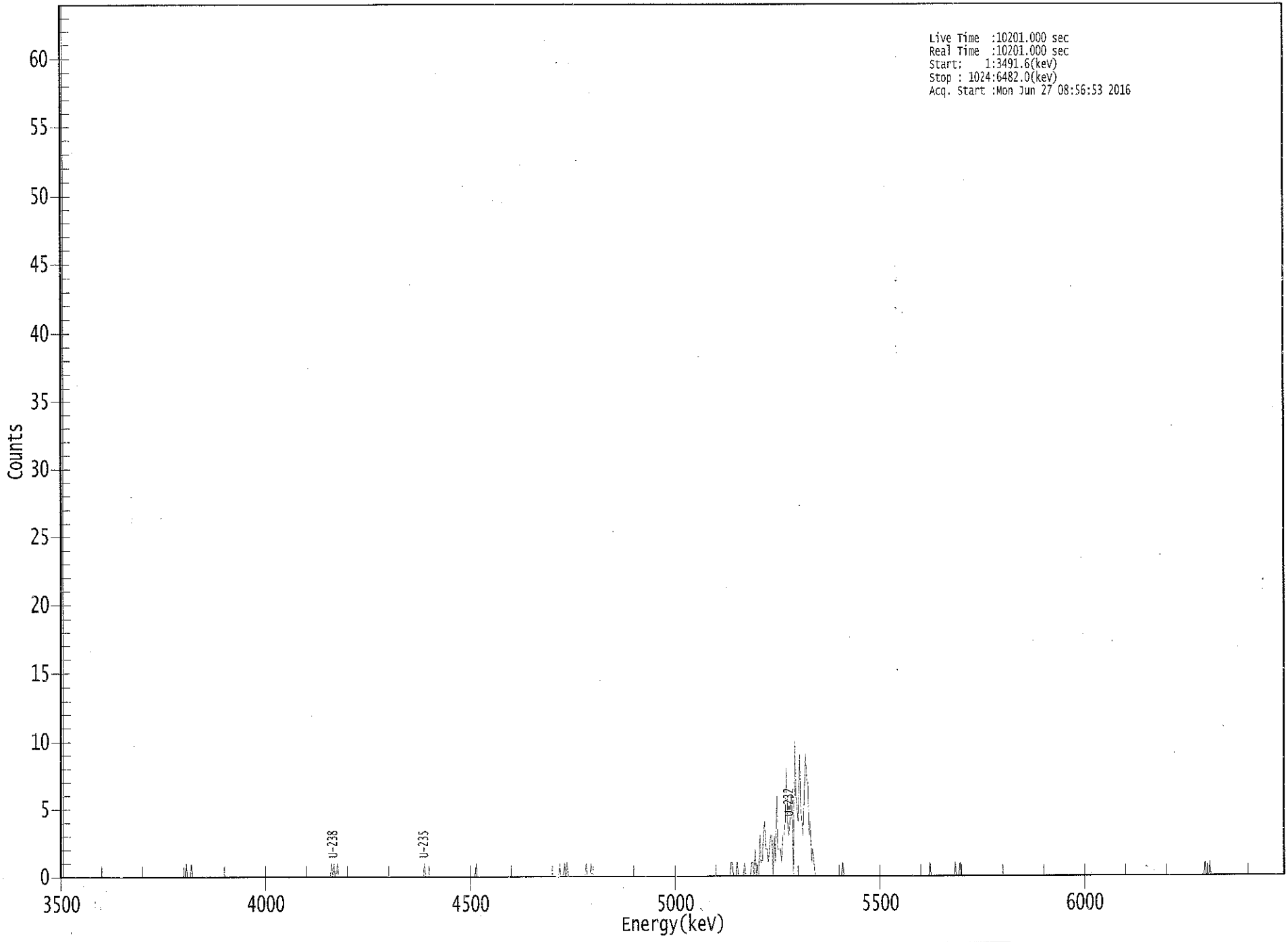
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.993	5302.50*	5.53E+000 +/- 8.68E-001	1.94E-001 +/- 3.04E-002
U-234	0.998	4761.50*	1.23E-001 +/- 1.46E-001	2.13E-001 +/- 3.34E-002
U-235	1.000	4385.50*	5.98E-003 +/- 8.36E-002	2.39E-001 +/- 3.75E-002
U-238	0.995	4184.40*	6.37E-002 +/- 1.13E-001	2.03E-001 +/- 3.18E-002

AG 6/27/16

0000155446.CNF



****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 02

Elapsed Live time: 10201
Elapsed Real Time: 10201

Channel								
1:	10201	10201	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	1	0	0	0	1	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	1	0	1	0	0	1
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:	1	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	1	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

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	1	0	0	0	1	0	1
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	0	0	1
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	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	1	0	0	0	1	0	0
569:	0	0	0	1	0	0	0	0
577:	0	1	1	0	2	0	0	0
585:	3	1	1	3	4	2	2	1
593:	2	3	3	0	3	1	6	2
601:	2	2	1	3	3	4	8	4
609:	3	4	6	4	0	10	6	5
617:	4	9	5	4	3	6	9	7
625:	7	3	4	1	2	1	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	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	1	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	1	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

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	1	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

KP 6/23/14

Apex-Alpha™

Sample Description: J1V928 SAF: RC-148-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001554
Batch Identification: 1606093A-UU
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_010
Chamber Serial Number:
Detector Serial Number: 10
Env. Background: System Bkgd 157574
Reagent Blank: <not performed>

Sample Size: 1.013E+000 +/- 0.000E+000 gram
Sample Date/Time: 6/16/2016 6:12:46 AM
Acquisition Date/Time: 6/27/2016 8:56:54 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.667 mL
Effective Efficiency: 0.1377 +/- 0.0087
Counting Efficiency: 0.1895 +/- 0.0033 on 12/11/2015 2:46:10 PM
Chem. Recovery Factor: 0.7263 +/- 0.0478

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.259	286.98	11.59	1.02	0.00E+000	3.9
U-234		4.719	37.30	32.94	1.70	0.00E+000	3.6
U-235		4.382	3.32	119.77	0.68	0.00E+000	2.9
U-238		4.110	23.98	41.01	1.02	0.00E+000	2.9

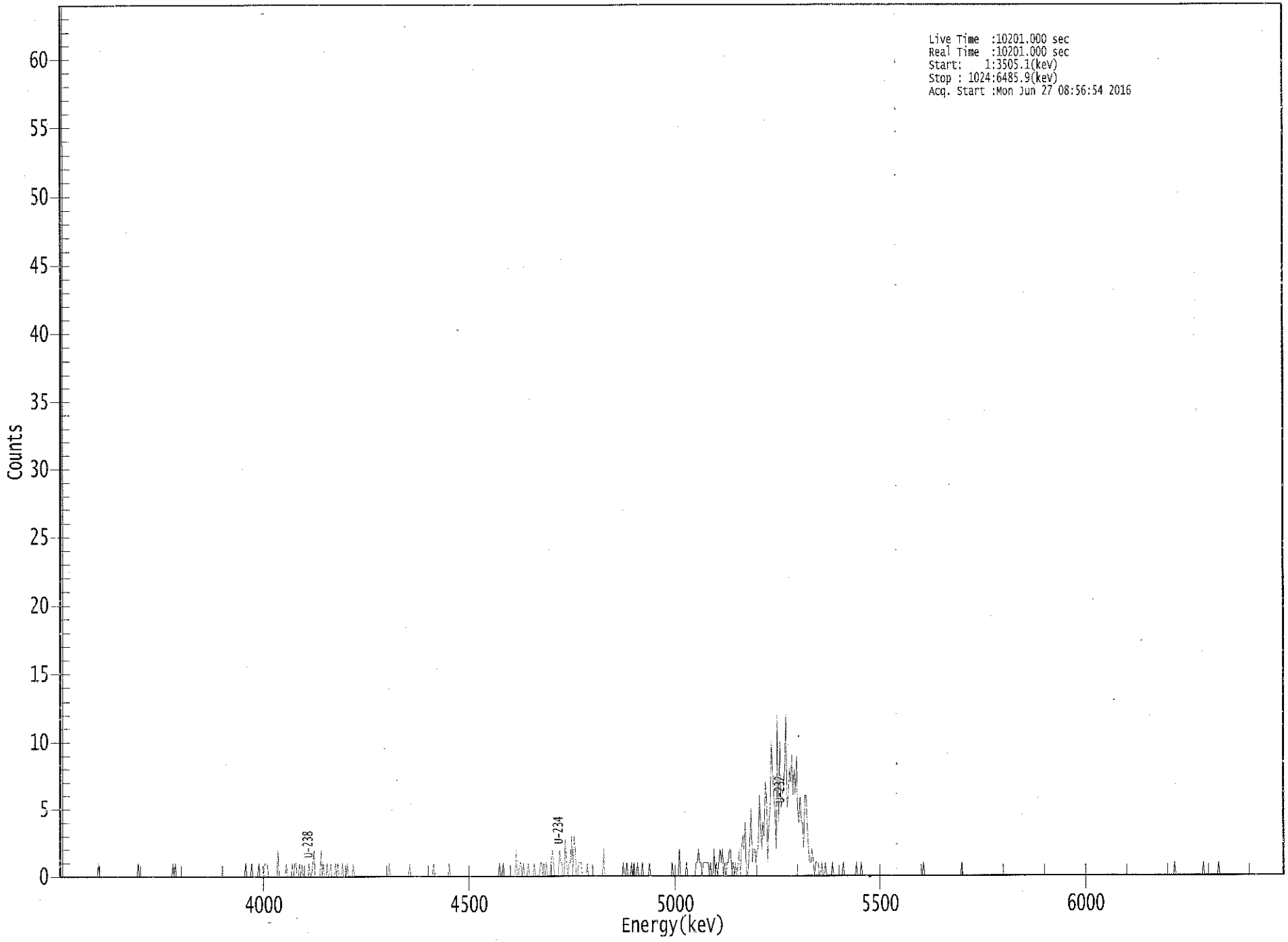
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.987	5302.50*	5.46E+000 +/- 6.80E-001	1.20E-001 +/- 1.49E-002
U-234	0.987	4761.50*	7.10E-001 +/- 2.50E-001	1.40E-001 +/- 1.74E-002
U-235	1.000	4385.50*	7.80E-002 +/- 9.39E-002	1.32E-001 +/- 1.65E-002
U-238	0.961	4184.40*	4.55E-001 +/- 1.95E-001	1.19E-001 +/- 1.49E-002

AG
6/27/16

0000155447.CNF



****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 03

Elapsed Live time: 10201
Elapsed Real Time: 10201

Channel								
1:	10201	10201	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	1	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	1	0
97:	1	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	1	0	0	0	0
161:	1	0	0	0	0	0	1	0
169:	0	0	0	1	1	1	0	0
177:	0	0	0	0	0	0	2	0
185:	0	0	0	0	0	1	0	0
193:	0	0	1	0	1	1	0	0
201:	1	0	1	0	0	0	0	0
209:	1	0	0	1	2	0	0	0
217:	0	0	2	0	1	0	0	1
225:	0	0	1	0	0	0	1	0
233:	1	0	0	0	1	0	0	0
241:	1	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	1	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	1	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	1	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	1

369:	0	0	1	0	0	0	0	0

Sample Title: 03

Channel								
377:	0	0	0	0	0	2	0	0
385:	1	1	0	1	0	0	0	1
393:	0	0	0	0	1	0	0	0
401:	0	1	1	0	1	0	1	0
409:	0	0	1	2	1	0	0	0
417:	0	2	1	1	0	0	3	1
425:	0	1	1	3	0	3	2	0
433:	0	1	1	1	0	0	0	0
441:	1	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	2	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	1	0
473:	0	1	0	0	0	1	0	1
481:	0	0	1	0	0	0	1	0
489:	0	0	0	0	1	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	2	0	0
521:	0	0	0	1	0	0	0	0
529:	0	0	0	1	1	2	1	1
537:	0	1	1	1	1	1	0	1
545:	0	0	2	0	1	0	1	2
553:	1	2	0	1	0	1	1	2
561:	2	0	1	0	1	0	1	2
569:	0	2	3	2	4	0	0	1
577:	3	5	1	2	2	1	2	2
585:	6	4	2	4	3	7	6	1
593:	4	5	10	8	6	5	2	12
601:	4	10	5	6	7	8	12	5
609:	6	8	7	9	6	8	6	9
617:	5	4	6	4	4	2	6	6
625:	4	2	1	1	2	1	0	1
633:	1	1	0	0	1	0	0	1
641:	0	0	0	0	0	1	0	0
649:	0	0	0	0	0	0	1	0
657:	0	0	0	0	0	0	0	0
665:	0	1	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	1	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	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

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	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	1	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	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

VLB 6/27/16

Sample Description: J1V928 SAF: RC-148
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001554
Batch Identification: 1606093A-UU
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_011
Chamber Serial Number:
Detector Serial Number: 11
Env. Background: System Bkgd 157575
Reagent Blank: <not performed>

Sample Size: 1.026E+000 +/- 0.000E+000 gram
Sample Date/Time: 6/16/2016 6:12:46 AM
Acquisition Date/Time: 6/27/2016 8:56:55 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.675 mL
Effective Efficiency: 0.1194 +/- 0.0080
Counting Efficiency: 0.1989 +/- 0.0034 on 12/11/2015 2:46:14 PM
Chem. Recovery Factor: 0.6004 +/- 0.0418

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.263	251.79	12.42	2.21	0.00E+000	4.5
U-234		4.709	33.15	34.55	0.85	0.00E+000	3.9
U-235		4.451	3.98	112.01	1.02	0.00E+000	2.6
U-238		4.144	22.47	42.96	1.53	0.00E+000	2.6

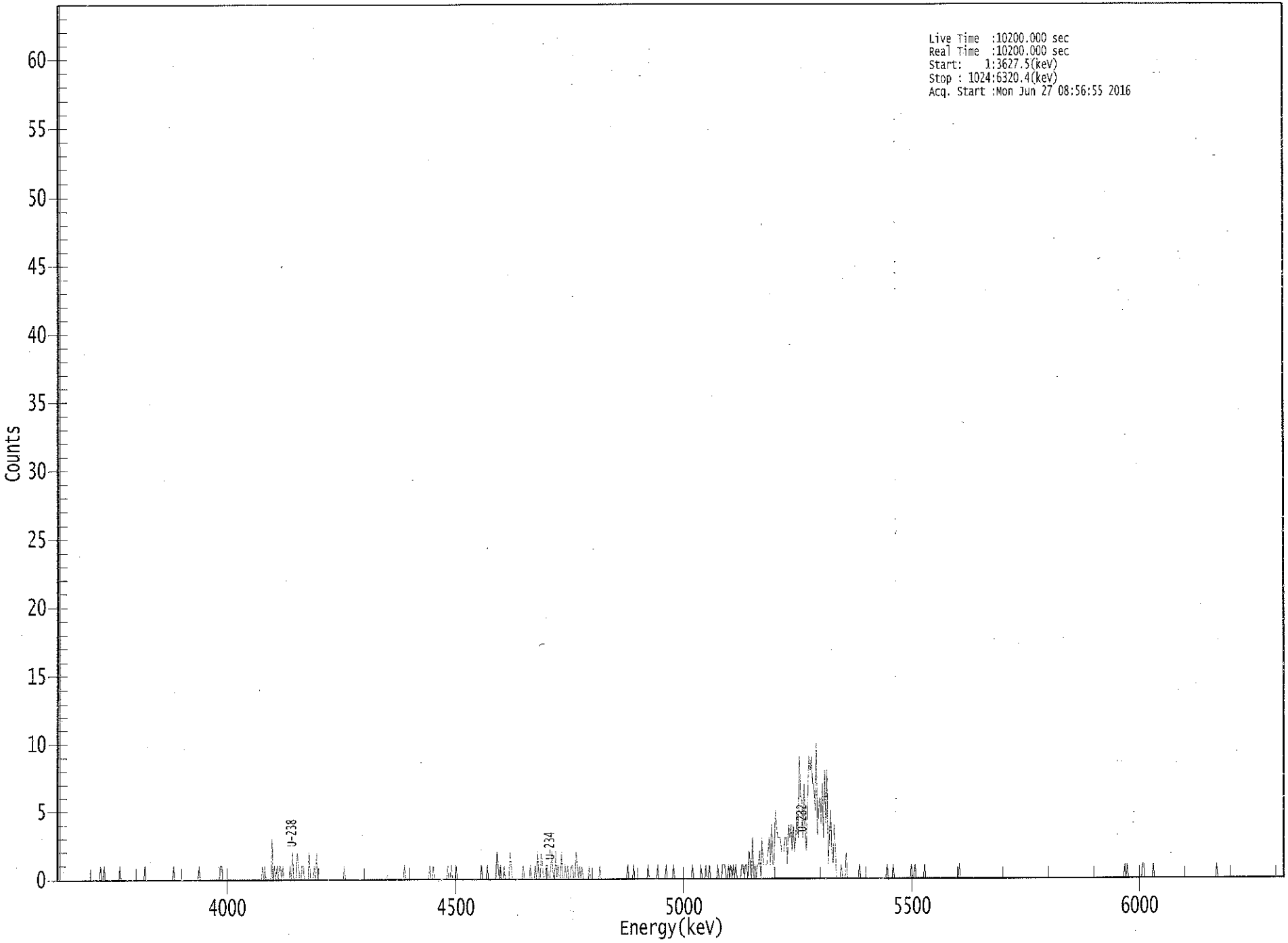
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.989	5302.50*	5.46E+000 +/- 7.21E-001	1.73E-001 +/- 2.29E-002
U-234	0.981	4761.50*	7.19E-001 +/- 2.66E-001	1.30E-001 +/- 1.71E-002
U-235	0.970	4385.50*	1.06E-001 +/- 1.20E-001	1.68E-001 +/- 2.23E-002
U-238	0.988	4184.40*	4.85E-001 +/- 2.18E-001	1.53E-001 +/- 2.03E-002

AG
6/27/16

0000155448.CNF



000177

****
***** 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:	10200	10200	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	1	0	0	1
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	0	0	0	0
73:	0	1	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	1	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:	1	1	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	1	0	1	0	0
177:	0	0	0	3	0	1	0	1
185:	0	1	1	0	1	0	0	0
193:	0	0	1	0	2	0	0	0
201:	2	1	0	0	1	1	0	0
209:	0	0	2	0	0	0	1	0
217:	2	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	1
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	1	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	1	0
313:	0	1	0	0	0	0	0	0
321:	0	0	0	0	0	1	0	0
329:	1	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	1	0	0	0	0	1	0
361:	0	0	0	0	0	0	2	1

369:	0	1	0	0	1	0	0	0

Sample Title: 04

Channel								
377:	0	2	1	0	0	0	0	0
385:	0	0	0	0	1	0	0	0
393:	0	0	1	0	0	0	1	0
401:	2	0	0	2	1	0	0	1
409:	1	0	0	1	2	0	0	2
417:	0	1	0	0	2	0	0	1
425:	0	1	0	0	1	1	0	0
433:	2	1	0	1	0	1	0	0
441:	0	0	0	1	0	0	0	0
449:	0	0	0	0	1	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:	1	0	0	0	0	0	0	0
489:	0	0	0	0	1	0	0	0
497:	0	0	0	0	1	0	0	0
505:	0	0	0	1	0	0	0	0
513:	0	1	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	1	0	0	0	0	0	0
537:	1	0	0	0	1	0	0	1
545:	0	0	0	0	0	0	1	0
553:	0	0	1	1	1	0	0	1
561:	0	1	0	1	0	1	0	0
569:	0	0	1	1	0	1	1	0
577:	2	1	0	3	0	1	0	1
585:	1	2	0	3	1	1	1	1
593:	2	3	1	4	1	1	5	4
601:	3	3	3	2	2	2	3	3
609:	1	4	3	4	2	4	2	3
617:	5	3	9	6	6	3	7	3
625:	2	6	9	8	9	7	7	5
633:	10	3	5	6	4	7	3	8
641:	4	8	1	3	5	2	1	4
649:	2	0	0	0	0	1	0	0
657:	0	2	0	0	0	0	0	0
665:	0	0	0	0	1	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	1	0	0	0	0
697:	1	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	1
713:	0	0	1	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	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

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:	0	1	0	1	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	1	1	0	0	0	0	0	0
913:	0	1	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	1	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

NB 6/27/16

Apex-Alpha™

Sample Description: J1V929 SAF: RC-148
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001554
Batch Identification: 1606093A-UU
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_012
Chamber Serial Number:
Detector Serial Number: 12
Env. Background: System Bkgd 157576
Reagent Blank: <not performed>

Sample Size: 1.014E+000 +/- 0.000E+000 gram
Sample Date/Time: 6/16/2016 6:12:46 AM
Acquisition Date/Time: 6/27/2016 8:56:56 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.672 mL
Effective Efficiency: 0.1784 +/- 0.0101
Counting Efficiency: 0.1919 +/- 0.0033 on 12/11/2015 2:46:15 PM
Chem. Recovery Factor: 0.9292 +/- 0.0550

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.264	374.98	10.14	1.02	0.00E+000	5.6
U-234		4.713	45.83	29.01	0.17	0.00E+000	3.7
U-235		4.417	5.49	88.08	0.51	0.00E+000	3.0
U-238		4.137	30.83	35.41	0.17	0.00E+000	3.0

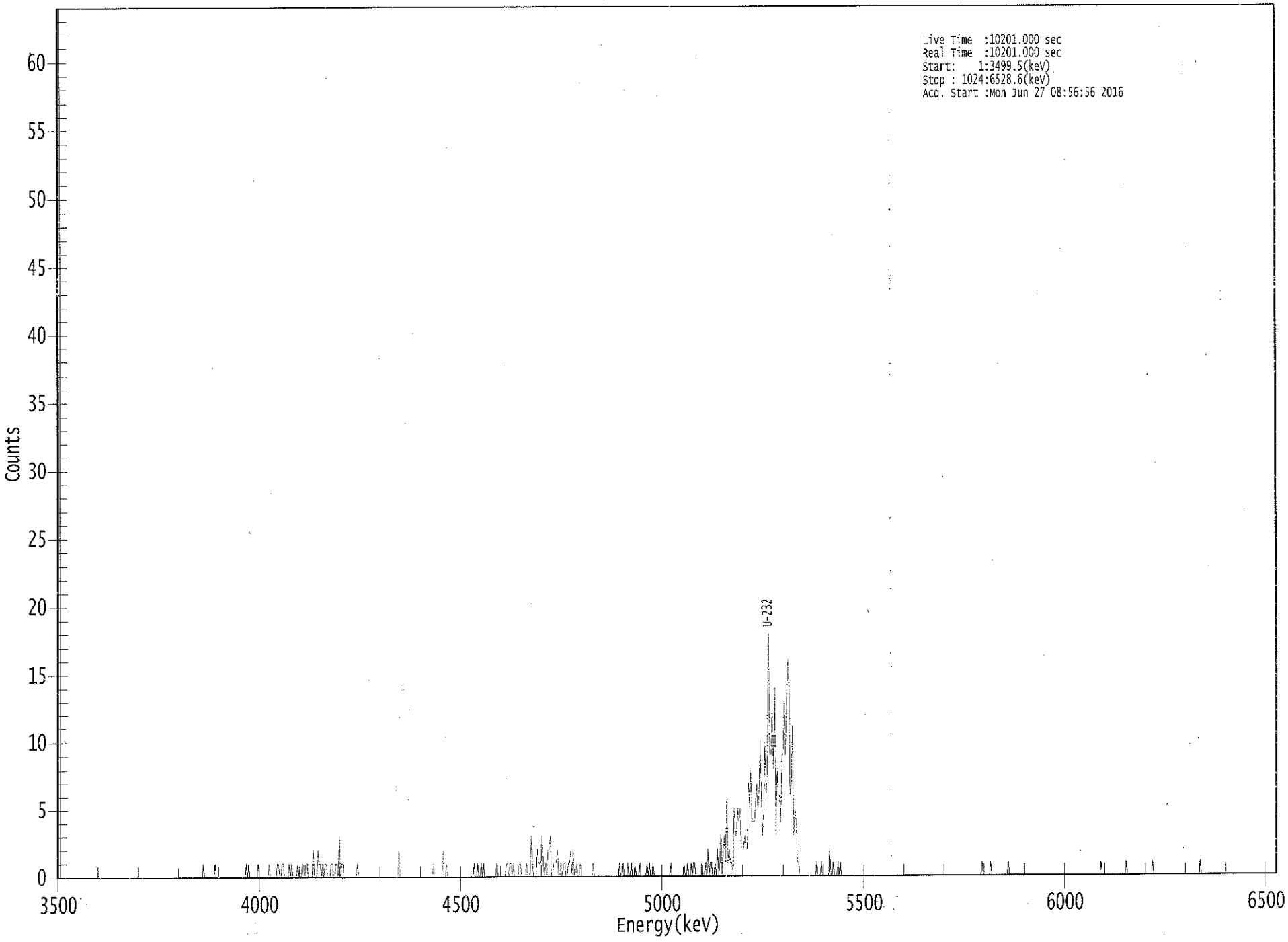
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.989	5302.50*	5.50E+000 +/- 6.11E-001	9.25E-002 +/- 1.03E-002
U-234	0.983	4761.50*	6.73E-001 +/- 2.09E-001	6.12E-002 +/- 6.80E-003
U-235	0.993	4385.50*	9.94E-002 +/- 8.82E-002	9.50E-002 +/- 1.05E-002
U-238	0.984	4184.40*	4.50E-001 +/- 1.67E-001	6.10E-002 +/- 6.77E-003

AG 6/27/16

0000155449.CNF



000082

****
***** S P E C T R A L D A T A R E P O R T *****
****

Sample Title: 05

Elapsed Live time: 10201
Elapsed Real Time: 10201

Channel								
1:	10201	10201	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	1	0	0	0	0	0
129:	0	0	0	0	1	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:	1	0	0	0	0	0	0	0
169:	1	0	0	0	0	0	0	0
177:	0	1	0	0	0	0	0	0
185:	1	1	0	0	1	1	0	0
193:	0	0	1	0	1	0	0	0
201:	0	1	0	0	0	1	1	0
209:	1	1	0	0	0	0	2	0
217:	0	0	2	1	1	0	1	0
225:	1	1	0	0	0	1	1	0
233:	0	1	1	0	3	0	1	1
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	0	0	0	2	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	2	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	1	0	0
353:	1	0	0	1	0	1	0	0
361:	0	0	0	0	0	0	0	0

369:	1	0	0	0	0	0	0	0

Sample Title: 05

Channel								
377:	1	1	0	1	1	0	1	0
385:	0	0	0	1	1	0	0	0
393:	0	1	0	0	0	3	1	0
401:	0	0	2	1	1	1	3	1
409:	0	1	0	2	2	3	0	0
417:	1	1	1	2	0	0	1	0
425:	1	1	0	0	1	1	2	0
433:	2	0	0	1	0	0	1	0
441:	0	0	0	0	0	0	0	0
449:	0	1	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	1
473:	0	0	1	0	0	0	1	0
481:	0	1	0	0	1	0	0	0
489:	1	0	0	0	0	0	1	0
497:	1	0	0	1	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	1	0	0	0	0	0
521:	0	0	0	0	0	1	0	0
529:	1	0	0	1	0	1	1	0
537:	0	0	0	0	1	0	0	1
545:	0	2	0	1	1	0	0	1
553:	0	2	0	1	3	0	2	3
561:	1	6	1	2	1	1	0	5
569:	3	3	5	4	5	2	2	2
577:	3	2	2	7	5	8	4	4
585:	4	5	7	5	6	10	6	3
593:	5	10	6	8	18	9	9	12
601:	8	14	3	8	6	6	4	9
609:	9	13	9	13	16	14	6	7
617:	11	3	5	4	1	1	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	1	0	0	0
641:	1	0	0	0	0	0	0	2
649:	0	0	1	0	0	0	1	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	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	1
777:	0	0	0	0	0	0	1	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	1	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	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	1	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	1	0	0	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	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	1	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

6/27/2016 5:23:48 AM

Apex-Alpha™

QA SUMMARY REPORT

Review Of QA Results - Pulser Check

Date : 6/27/2016
Time : 5:23:48 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Passed	6/27/2016 4:58:52 AM
Alpha_004	21f	ALL	Passed	6/27/2016 4:58:53 AM
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	Passed	6/27/2016 4:58:54 AM
Alpha_011	21f	ALL	Passed	6/27/2016 4:58:55 AM
Alpha_012	21f	ALL	Passed	6/27/2016 4:58:56 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Passed	6/27/2016 4:58:57 AM
Alpha_015	21f	Peak Energy	Action	6/27/2016 4:58:58 AM
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:58:59 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:00 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:02 AM
Alpha_036	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:03 AM
Alpha_037	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:05 AM
Alpha_038	Alpha Analyst100DC	Peak Energy	Action	6/27/2016 4:59:06 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:08 AM
Alpha_040	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:10 AM
Alpha_041	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:11 AM
Alpha_042	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:13 AM
Alpha_043	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:15 AM
Alpha_044	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:16 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:18 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:20 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:22 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:23 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:25 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:27 AM
Alpha_051	Alpha Analyst100DC	ALL	Not Done	
Alpha_052	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:29 AM
Alpha_053	Alpha Analyst100DC	Peak FWHM	Action	6/27/2016 4:59:31 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:33 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:36 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:38 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:40 AM
Alpha_058	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:43 AM

Review of QA Results - Pulser Check

6/27/2016 5:23:48 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:46 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	6/27/2016 4:59:49 AM

APPROVED BY: _____

APPROVAL DATE: 6/27/16

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*************************************************************************
*****          L I B R A R Y   L I S T I N G   R E P O R T          *****
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Nuclide Library Title: Uranium

Nuclide Library Description: U-232,-234,-235,-238

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert.(Abs.+-)
U-232	2.174E+009	5302.500*	0.000	99.8000	0.0000
U-234	7.731E+012	4761.500*	0.000	99.8000	0.0000
U-235	2.221E+016	4385.500*	0.000	80.9000	0.0000
U-238	1.410E+017	4184.400*	0.000	100.2300	0.0000

* = key line

TOTALS: 4 Nuclides 4 Energy Lines

SECTION IX

ANALYTICAL DATA (GAMMA SPECTROSCOPY)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

16-06093
Gamma
Run 1

Work Order	16-06093
Analysis Code	Gamma
Run	1
Date Received	6/21/2016
Lab Deadline	6/27/2016
Client	Washington Closure Hanford
Project	S00W235A01
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	LANL ER-130 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		06/21/16 00:00	1.0000E+00
02	MBL	BLANK		06/21/16 00:00	1.0000E+00
03	DUP	J1V928 SAF: RC-148	45	06/16/16 07:40	7.2167E+02
04	DO	J1V928 SAF: RC-148	45	06/16/16 07:40	7.2167E+02
05	TRG	J1V929 SAF: RC-148	41	06/16/16 10:30	8.3376E+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.

16-06093
Gamma
Run 1

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								

* 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.

16-06093

16-06093
Gamma
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								
02	MBL								
03	DUP								
04	DO	06/22/16 07:09	KSALLINGS						
05	TRG	06/22/16 07:09	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.

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-Gamma-1

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	1.41E+02	9.75E+00	1.57E+00	1.37E+02	102.61	OK		06/21/16 00:00	1.00E+00	06/22/16 09:30	YES
01	CS-137	LCS	LCS	pCi/g	8.93E+01	8.57E+00	1.92E+00	8.69E+01	102.67	OK		06/21/16 00:00	1.00E+00	06/22/16 09:30	YES
02	RA-228	MBL	BLANK	pCi/g	-1.50E-02	1.38E-01	2.31E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	AM-241	MBL	BLANK	pCi/g	3.79E-02	4.32E-02	7.18E-02					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	RA-226	MBL	BLANK	pCi/g	1.20E-02	7.72E-02	1.34E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	CE-144	MBL	BLANK	pCi/g	-7.23E-02	1.79E-01	2.73E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	CO-60	MBL	BLANK	pCi/g	2.36E-02	4.67E-02	8.32E-02					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	CS-134	MBL	BLANK	pCi/g	-2.51E-02	4.27E-02	6.29E-02					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	CS-137	MBL	BLANK	pCi/g	-1.26E-02	4.02E-02	6.34E-02					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	EU-152	MBL	BLANK	pCi/g	-1.03E-01	1.53E-01	1.35E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	EU-154	MBL	BLANK	pCi/g	-4.26E-02	1.09E-01	6.99E-02					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	EU-155	MBL	BLANK	pCi/g	4.28E-02	8.23E-02	8.89E-02					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	K-40	MBL	BLANK	pCi/g	2.13E-01	2.10E-01	6.41E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	PA-234M	MBL	BLANK	pCi/g	-1.94E+00	2.48E+00	8.22E+00					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	PB-212	MBL	BLANK	pCi/g	1.64E-02	5.71E-02	9.37E-02					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	PB-214	MBL	BLANK	pCi/g	3.26E-02	7.85E-02	1.35E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	RU-106	MBL	BLANK	pCi/g	2.19E-01	3.58E-01	6.69E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	SB-125	MBL	BLANK	pCi/g	3.20E-02	1.01E-01	1.73E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	TH-234	MBL	BLANK	pCi/g	5.54E-01	4.16E-01	7.04E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	TL-208	MBL	BLANK	pCi/g	3.66E-02	1.19E-01	2.03E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	U-235	MBL	BLANK	pCi/g	1.29E-03	2.05E-01	3.24E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	U-238	MBL	BLANK	pCi/g	5.54E-01	4.16E-01	7.04E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
02	ZN-65	MBL	BLANK	pCi/g	-6.61E-02	1.05E-01	1.53E-01					06/21/16 00:00	1.00E+00	06/22/16 08:28	NO
03	RA-228	DUP	J1V928 SAF: RC-148	pCi/g	9.20E-01	1.64E-01	2.65E-01				NA	06/16/16 07:40	7.22E+02	06/22/16 08:28	YES
03	AM-241	DUP	J1V928 SAF: RC-148	pCi/g	5.08E-02	6.23E-02	9.88E-02					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	RA-226	DUP	J1V928 SAF: RC-148	pCi/g	5.73E-01	1.14E-01	1.68E-01				NA	06/16/16 07:40	7.22E+02	06/22/16 08:28	YES
03	CE-144	DUP	J1V928 SAF: RC-148	pCi/g	-1.62E-01	2.72E-01	3.37E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	CO-60	DUP	J1V928 SAF: RC-148	pCi/g	6.98E-03	4.63E-02	6.80E-02					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	CS-134	DUP	J1V928 SAF: RC-148	pCi/g	-1.86E-03	1.58E-02	5.88E-02					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	CS-137	DUP	J1V928 SAF: RC-148	pCi/g	1.09E-02	4.23E-02	6.46E-02					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	EU-152	DUP	J1V928 SAF: RC-148	pCi/g	-2.14E-02	1.72E-01	1.74E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	EU-154	DUP	J1V928 SAF: RC-148	pCi/g	3.08E-02	1.30E-01	9.01E-02					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	EU-155	DUP	J1V928 SAF: RC-148	pCi/g	1.13E-01	1.31E-01	1.47E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	K-40	DUP	J1V928 SAF: RC-148	pCi/g	1.42E+01	1.71E+00	5.33E-01				NA	06/16/16 07:40	7.22E+02	06/22/16 08:28	YES
03	PA-234M	DUP	J1V928 SAF: RC-148	pCi/g	5.53E-01	3.79E+00	6.06E+00					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	PB-212	DUP	J1V928 SAF: RC-148	pCi/g	2.70E-01	1.01E-01	1.82E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	YES
03	PB-214	DUP	J1V928 SAF: RC-148	pCi/g	6.94E-01	1.21E-01	1.22E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	YES
03	RU-106	DUP	J1V928 SAF: RC-148	pCi/g	1.03E-01	3.46E-01	5.39E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO

Work Order: 16-06093-Gamma-1

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
03	SB-125	DUP	J1V928 SAF: RC-148	pCi/g	4.60E-02	8.11E-02	1.42E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	TH-234	DUP	J1V928 SAF: RC-148	pCi/g	4.53E-01	6.18E-01	9.80E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	TL-208	DUP	J1V928 SAF: RC-148	pCi/g	6.33E-01	1.24E-01	1.93E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	YES
03	U-235	DUP	J1V928 SAF: RC-148	pCi/g	-1.26E-01	2.95E-01	3.67E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	U-238	DUP	J1V928 SAF: RC-148	pCi/g	4.53E-01	6.18E-01	9.80E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
03	ZN-65	DUP	J1V928 SAF: RC-148	pCi/g	9.32E-03	7.19E-02	1.41E-01					06/16/16 07:40	7.22E+02	06/22/16 08:28	NO
04	RA-228	DO	J1V928 SAF: RC-148	pCi/g	8.44E-01	1.65E-01	2.25E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	YES
04	AM-241	DO	J1V928 SAF: RC-148	pCi/g	-4.74E-02	6.51E-02	9.29E-02					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	RA-226	DO	J1V928 SAF: RC-148	pCi/g	5.66E-01	1.03E-01	1.38E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	YES
04	CE-144	DO	J1V928 SAF: RC-148	pCi/g	-1.28E-02	2.09E-01	3.31E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	CO-60	DO	J1V928 SAF: RC-148	pCi/g	3.02E-02	4.32E-02	5.55E-02					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	CS-134	DO	J1V928 SAF: RC-148	pCi/g	-8.66E-04	1.77E-02	5.73E-02					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	CS-137	DO	J1V928 SAF: RC-148	pCi/g	-1.00E-02	2.70E-02	5.28E-02					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	EU-152	DO	J1V928 SAF: RC-148	pCi/g	-6.74E-02	1.03E-01	1.71E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	EU-154	DO	J1V928 SAF: RC-148	pCi/g	-5.97E-02	1.09E-01	8.66E-02					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	EU-155	DO	J1V928 SAF: RC-148	pCi/g	7.87E-02	1.26E-01	1.46E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	K-40	DO	J1V928 SAF: RC-148	pCi/g	1.49E+01	1.80E+00	8.25E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	YES
04	PA-234M	DO	J1V928 SAF: RC-148	pCi/g	2.10E+00	4.30E+00	7.07E+00					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	PB-212	DO	J1V928 SAF: RC-148	pCi/g	8.38E-01	1.34E-01	1.80E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	YES
04	PB-214	DO	J1V928 SAF: RC-148	pCi/g	6.31E-01	1.17E-01	1.54E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	YES
04	RU-106	DO	J1V928 SAF: RC-148	pCi/g	9.86E-02	3.48E-01	5.43E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	SB-125	DO	J1V928 SAF: RC-148	pCi/g	-4.86E-02	8.19E-02	1.28E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	TH-234	DO	J1V928 SAF: RC-148	pCi/g	1.01E+00	1.12E+00	1.87E+00					06/16/16 07:40	7.22E+02	06/22/16 09:30	YES
04	TL-208	DO	J1V928 SAF: RC-148	pCi/g	6.57E-01	1.19E-01	9.09E-02					06/16/16 07:40	7.22E+02	06/22/16 09:30	YES
04	U-235	DO	J1V928 SAF: RC-148	pCi/g	1.28E-01	2.66E-01	3.58E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
04	U-238	DO	J1V928 SAF: RC-148	pCi/g	1.01E+00	1.12E+00	1.87E+00					06/16/16 07:40	7.22E+02	06/22/16 09:30	YES
04	ZN-65	DO	J1V928 SAF: RC-148	pCi/g	-1.79E-02	5.49E-02	1.28E-01					06/16/16 07:40	7.22E+02	06/22/16 09:30	NO
05	RA-228	TRG	J1V929 SAF: RC-148	pCi/g	6.09E-01	1.52E-01	3.04E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	YES
05	AM-241	TRG	J1V929 SAF: RC-148	pCi/g	-1.14E-01	9.79E-02	1.13E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	RA-226	TRG	J1V929 SAF: RC-148	pCi/g	5.97E-01	1.14E-01	1.72E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	YES
05	CE-144	TRG	J1V929 SAF: RC-148	pCi/g	1.11E-03	1.98E-01	3.20E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	CO-60	TRG	J1V929 SAF: RC-148	pCi/g	7.65E-03	5.00E-02	6.85E-02					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	CS-134	TRG	J1V929 SAF: RC-148	pCi/g	-3.12E-01	1.00E-01	5.77E-02					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	CS-137	TRG	J1V929 SAF: RC-148	pCi/g	-7.47E-03	4.64E-02	6.94E-02					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	EU-152	TRG	J1V929 SAF: RC-148	pCi/g	3.95E-02	9.30E-02	1.52E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	EU-154	TRG	J1V929 SAF: RC-148	pCi/g	8.47E-02	1.53E-01	7.89E-02					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	EU-155	TRG	J1V929 SAF: RC-148	pCi/g	2.96E-02	9.39E-02	1.33E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	K-40	TRG	J1V929 SAF: RC-148	pCi/g	1.13E+01	1.47E+00	7.92E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	YES

Preliminary Data Report & Analytical Calculations

Work Order: 16-06093-Gamma-1

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
05	PA-234M	TRG	J1V929 SAF: RC-148	pCi/g	-3.00E+00	4.70E+00	5.97E+00					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	PB-212	TRG	J1V929 SAF: RC-148	pCi/g	5.93E-01	8.66E-02	1.54E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	YES
05	PB-214	TRG	J1V929 SAF: RC-148	pCi/g	4.88E-01	1.07E-01	1.66E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	YES
05	RU-106	TRG	J1V929 SAF: RC-148	pCi/g	4.34E-01	3.38E-01	5.92E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	SB-125	TRG	J1V929 SAF: RC-148	pCi/g	9.72E-02	1.01E-01	1.66E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	TH-234	TRG	J1V929 SAF: RC-148	pCi/g	4.05E-01	8.52E-01	1.12E+00					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	TL-208	TRG	J1V929 SAF: RC-148	pCi/g	4.47E-01	1.08E-01	1.64E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	YES
05	U-235	TRG	J1V929 SAF: RC-148	pCi/g	1.44E-01	2.03E-01	3.36E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	U-238	TRG	J1V929 SAF: RC-148	pCi/g	4.05E-01	8.52E-01	1.12E+00					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO
05	ZN-65	TRG	J1V929 SAF: RC-148	pCi/g	7.23E-03	6.22E-02	1.45E-01					06/16/16 10:30	8.34E+02	06/22/16 08:28	NO

55000

Count Room Report
Client: Washington Closure Hanfor

16-06093-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	06/21/16 00:00	1.0000				0.00		
02	MBL	BLANK	06/21/16 00:00	1.0000				0.00		
03	DUP	J1V928 SAF: RC-148	06/16/16 07:40	721.6700				0.00		
04	DO	J1V928 SAF: RC-148	06/16/16 07:40	721.6700				0.00		
05	TRG	J1V929 SAF: RC-148	06/16/16 10:30	833.7600				0.00		

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
16-06093	1	Gamma	grams	6/27/2016	KSALLINGS

Lab Fraction	Washington Closure Hanford 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	J1V928 SAF: RC-148	DUP					7.2167E+02	7.2167E+02				
04	J1V928 SAF: RC-148	DO					7.2167E+02	7.2167E+02				
05	J1V929 SAF: RC-148	TRG					8.3376E+02	8.3376E+02				

Comments	

Technician: Kenny Seay Date: 6/22/16

Eberline Services - Oak Ridge
Prep Logbook
Version 2.0 8/1999

Rough Sample Preparation Log Book

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
16-06093	6/27/2016	6/21/2016	6/22/2016	6/23/2016	KSALLINGS

Eberline	Washington Closure Hanford	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special
Fraction	Client ID	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	Info
04	J1V928 SAF: RC-148	29.1500	1497.7400	1455.5600	1468.5900	1426.4100	2.87%	97.13%	0.0000	0.0000	
05	J1V929 SAF: RC-148	29.1600	1845.9500	1817.1500	1816.7900	1787.9900	1.59%	98.41%	0.0000	0.0000	

Comments	
Special Codes	H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)

Technician: Kerry Sallings Date: Analysis: Rough Prep Logbook

Analysis: Gamma Page No. 9712

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

GAS-1302

94268

Sand in 16 Ounce PP Taral Jar Filled to Top

Customer: Eberline Analytical Corporation
P.O. No.: 1304009, Item 7 Product Code: 8401-EG-SAN
Reference Date: 01-Jul-2013 12:00 PM EST **Grams of Master Source:** 0.017994

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using a germanium gamma spectrometer system. 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 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." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty*, % Type u_A	u_B	U	Calibration Method*
Am-241	59.5	1.580E+05	———	2.094E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.641E+05	2.952E+03	0.5	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	8.865E+04	1.595E+03	0.4	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.243E+05	2.236E+03	0.4	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.627E+05	4.727E+03	0.3	1.9	3.8	HPGe
Sn-113	391.7	1.151E+02	1.736E+05	3.124E+03	0.4	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.120E+05	2.015E+03	0.7	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.197E+05	7.553E+03	0.5	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.074E+05	3.732E+03	0.6	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.074E+05	3.732E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.444E+05	7.996E+03	0.7	1.9	4.0	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

: 00093

Apex-Gamma

Analysis Report for 1606093-01

GAS 1302

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1606093-01
Sample Description	: GAS 1302
Sample Type	: SOIL
Sample Size	: 7.360E+02 grams
Facility	: Countroom
Sample Taken On	: 7/1/2013 8:16:28AM
Acquisition Started	: 6/22/2016 9:30:15AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-1402
Live Time	: 1800.0 seconds
Real Time	: 1818.4 seconds
Dead Time	: 1.01 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 15 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 10/25/2014
Efficiency Calibration Used Done On	: 11/8/2014
Efficiency Calibration Description	:
Sample Number	: 39246

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
6/22/16

Analysis Report for 1606093-01

GAS 1302

PEAK LOCATE REPORT

Peak Locate Performed on : 6/22/2016 10:00:37AM
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	22.58	21.83	0.0000	0.00
2	32.03	31.28	0.0000	0.00
3	53.81	53.07	0.0000	0.00
4	59.57	58.83	0.0000	0.00
5	67.40	66.66	0.0000	0.00
6	87.96	87.24	0.0000	0.00
7	122.07	121.35	0.0000	0.00
8	136.99	136.28	0.0000	0.00
9	165.87	165.18	0.0000	0.00
10	188.73	188.04	0.0000	0.00
11	474.10	473.54	0.0000	0.00
12	503.19	502.64	0.0000	0.00
13	597.27	596.77	0.0000	0.00
14	661.91	661.44	0.0000	0.00
15	687.51	687.06	0.0000	0.00
16	1173.53	1173.33	0.0000	0.00
17	1332.79	1332.68	0.0000	0.00
18	1470.33	1470.30	0.0000	0.00
19	1573.77	1573.81	0.0000	0.00
20	1791.08	1791.26	0.0000	0.00
21	1801.06	1801.25	0.0000	0.00
22	1808.92	1809.11	0.0000	0.00
23	1837.02	1837.23	0.0000	0.00
24	2004.39	2004.71	0.0000	0.00
25	2031.87	2032.22	0.0000	0.00
26	2056.89	2057.25	0.0000	0.00
27	2127.53	2127.94	0.0000	0.00
28	2136.35	2136.77	0.0000	0.00
29	2152.08	2152.51	0.0000	0.00
30	2174.20	2174.65	0.0000	0.00
31	2232.30	2232.78	0.0000	0.00
32	2505.89	2506.57	0.0000	0.00
33	2615.84	2616.62	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1606093-01

GAS 1302

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/22/2016 10:00:37AM

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	22.58	20 -	25	21.83	4.05E+04	681.84	5.77E+04	2.23
	2	32.03	29 -	35	31.28	8.84E+02	251.09	1.09E+04	2.19
M	3	53.81	43 -	63	53.07	1.78E+04	959.49	5.17E+04	6.63
m	4	59.57	43 -	63	58.83	5.59E+04	591.52	1.64E+04	2.26
	5	67.40	64 -	70	66.66	3.86E+02	295.57	1.57E+04	2.30
	6	87.96	80 -	93	87.24	1.86E+04	558.05	2.59E+04	2.45
	7	122.07	116 -	126	121.35	3.03E+03	346.58	1.44E+04	2.45
	8	136.99	133 -	140	136.28	3.53E+02	245.39	9.76E+03	1.83
	9	165.87	163 -	169	165.18	2.53E+02	206.62	7.59E+03	2.91
	10	188.73	185 -	191	188.04	3.41E+02	206.49	7.48E+03	3.95
	11	474.10	470 -	477	473.54	1.40E+02	166.61	4.53E+03	4.39
	12	503.19	500 -	506	502.64	1.25E+02	127.87	2.88E+03	3.23
	13	597.27	594 -	599	596.77	8.17E+01	97.49	1.83E+03	2.97
	14	661.91	656 -	667	661.44	1.24E+04	275.02	3.22E+03	2.55
	15	687.51	683 -	691	687.06	1.54E+02	120.03	2.11E+03	6.14
	16	1173.53	1167 -	1179	1173.33	9.47E+03	228.02	1.66E+03	2.70
	17	1332.79	1326 -	1340	1332.68	8.70E+03	194.83	3.18E+02	2.77
	18	1470.33	1467 -	1475	1470.30	1.28E+01	15.15	2.84E+01	1.20
	19	1573.77	1570 -	1576	1573.81	1.23E+01	16.09	3.75E+01	3.06
	20	1791.08	1786 -	1797	1791.26	2.00E+01	13.27	1.20E+01	7.00
	21	1801.06	1798 -	1804	1801.25	1.35E+01	8.50	3.07E+00	3.32
	22	1808.92	1805 -	1817	1809.11	1.41E+01	13.13	1.57E+01	7.43
	23	1837.02	1832 -	1844	1837.23	2.79E+01	19.78	3.42E+01	2.47
	24	2004.39	2001 -	2008	2004.71	1.40E+01	7.48	0.00E+00	2.07
	25	2031.87	2027 -	2035	2032.22	8.55E+00	8.02	4.91E+00	1.39
	26	2056.89	2051 -	2062	2057.25	1.20E+01	6.93	0.00E+00	1.33
M	27	2127.53	2123 -	2139	2127.94	1.23E+01	8.00	0.00E+00	4.92
m	28	2136.35	2123 -	2139	2136.77	1.36E+01	6.93	0.00E+00	4.03
	29	2152.08	2148 -	2155	2152.51	4.86E+00	6.63	4.29E+00	2.72
	30	2174.20	2169 -	2179	2174.65	8.36E+00	8.62	5.27E+00	2.49
	31	2232.30	2229 -	2235	2232.78	8.20E+00	7.23	3.60E+00	1.74
	32	2505.89	2502 -	2510	2506.57	4.70E+01	13.71	0.00E+00	3.15
	33	2615.84	2610 -	2621	2616.62	1.30E+01	7.21	0.00E+00	1.25

Analysis Report for 1606093-01

GAS 1302

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 : 6/22/2016 10:00:37AM

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	22.58	20 -	25	4.05E+04	681.84	5.77E+04	4.52E+02
	2	32.03	29 -	35	8.84E+02	251.09	1.09E+04	2.01E+02
M	3	53.81	43 -	63	1.78E+04	959.49	5.17E+04	3.74E+02
m	4	59.57	43 -	63	5.59E+04	591.52	1.64E+04	2.11E+02
	5	67.40	64 -	70	3.86E+02	295.57	1.57E+04	2.41E+02
	6	87.96	80 -	93	1.86E+04	558.05	2.59E+04	4.00E+02
	7	122.07	116 -	126	3.03E+03	346.58	1.44E+04	2.70E+02
	8	136.99	133 -	140	3.53E+02	245.39	9.76E+03	1.99E+02
	9	165.87	163 -	169	2.53E+02	206.62	7.59E+03	1.68E+02
	10	188.73	185 -	191	3.41E+02	206.49	7.48E+03	1.67E+02
	11	474.10	470 -	477	1.40E+02	166.61	4.53E+03	1.36E+02
	12	503.19	500 -	506	1.25E+02	127.87	2.88E+03	1.03E+02
	13	597.27	594 -	599	8.17E+01	97.49	1.83E+03	7.88E+01
	14	661.91	656 -	667	1.24E+04	275.02	3.22E+03	1.32E+02
	15	687.51	683 -	691	1.54E+02	120.03	2.11E+03	9.65E+01
	16	1173.53	1167 -	1179	9.47E+03	228.02	1.66E+03	9.77E+01
	17	1332.79	1326 -	1340	8.70E+03	194.83	3.18E+02	4.63E+01
	18	1470.33	1467 -	1475	1.28E+01	15.15	2.84E+01	1.10E+01
	19	1573.77	1570 -	1576	1.23E+01	16.09	3.75E+01	1.19E+01
	20	1791.08	1786 -	1797	2.00E+01	13.27	1.20E+01	8.05E+00
	21	1801.06	1798 -	1804	1.35E+01	8.50	3.07E+00	3.52E+00
	22	1808.92	1805 -	1817	1.41E+01	13.13	1.57E+01	8.85E+00
	23	1837.02	1832 -	1844	2.79E+01	19.78	3.42E+01	1.37E+01
	24	2004.39	2001 -	2008	1.40E+01	7.48	0.00E+00	0.00E+00
	25	2031.87	2027 -	2035	8.55E+00	8.02	4.91E+00	4.51E+00
	26	2056.89	2051 -	2062	1.20E+01	6.93	0.00E+00	0.00E+00
M	27	2127.53	2123 -	2139	1.23E+01	8.00	0.00E+00	0.00E+00
m	28	2136.35	2123 -	2139	1.36E+01	6.93	0.00E+00	0.00E+00
	29	2152.08	2148 -	2155	4.86E+00	6.63	4.29E+00	4.07E+00
	30	2174.20	2169 -	2179	8.36E+00	8.62	5.27E+00	5.25E+00
	31	2232.30	2229 -	2235	8.20E+00	7.23	3.60E+00	3.63E+00

Analysis Report for 1606093-01

GAS 1302

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
32	2505.89	2502 -	2510	4.70E+01	13.71	0.00E+00	0.00E+00
33	2615.84	2610 -	2621	1.30E+01	7.21	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 : 6/22/2016 10:00:37AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 1.000 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	22.58	20 -	25	21.83	4.05E+04	681.84	5.77E+04	.....
	2	32.03	29 -	35	31.28	8.84E+02	251.09	1.09E+04	.....
M	3	53.81	43 -	63	53.07	1.78E+04	959.49	5.17E+04	.....
m	4	59.57	43 -	63	58.83	5.59E+04	591.52	1.64E+04	AM-241
	5	67.40	64 -	70	66.66	3.86E+02	295.57	1.57E+04	TH-230
									TA-182
									TI-44
									TM-171
	6	87.96	80 -	93	87.24	1.86E+04	558.05	2.59E+04	CD-109
									LU-176
									SN-126
	7	122.07	116 -	126	121.35	3.03E+03	346.58	1.44E+04	CO-57
									EU-152
									SE-75
	8	136.99	133 -	140	136.28	3.53E+02	245.39	9.76E+03	CO-57
									SE-75
	9	165.87	163 -	169	165.18	2.53E+02	206.62	7.59E+03	CE-139
	10	188.73	185 -	191	188.04	3.41E+02	206.49	7.48E+03	.....
	11	474.10	470 -	477	473.54	1.40E+02	166.61	4.53E+03	.....
	12	503.19	500 -	506	502.64	1.25E+02	127.87	2.88E+03	.....
	13	597.27	594 -	599	596.77	8.17E+01	97.49	1.83E+03	.....
	14	661.91	656 -	667	661.44	1.24E+04	275.02	3.22E+03	CS-137
	15	687.51	683 -	691	687.06	1.54E+02	120.03	2.11E+03	.....
	16	1173.53	1167 -	1179	1173.33	9.47E+03	228.02	1.66E+03	CO-60

Analysis Report for 1606093-01

GAS 1302

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	17	1332.79	1326 -	1340	1332.68	8.70E+03	194.83	3.18E+02	CO-60
	18	1470.33	1467 -	1475	1470.30	1.28E+01	15.15	2.84E+01	.....
	19	1573.77	1570 -	1576	1573.81	1.23E+01	16.09	3.75E+01	.....
	20	1791.08	1786 -	1797	1791.26	2.00E+01	13.27	1.20E+01	.....
	21	1801.06	1798 -	1804	1801.25	1.35E+01	8.50	3.07E+00	.....
	22	1808.92	1805 -	1817	1809.11	1.41E+01	13.13	1.57E+01	AL-26
	23	1837.02	1832 -	1844	1837.23	2.79E+01	19.78	3.42E+01	.....
	24	2004.39	2001 -	2008	2004.71	1.40E+01	7.48	0.00E+00	.....
	25	2031.87	2027 -	2035	2032.22	8.55E+00	8.02	4.91E+00	.....
	26	2056.89	2051 -	2062	2057.25	1.20E+01	6.93	0.00E+00	.....
M	27	2127.53	2123 -	2139	2127.94	1.23E+01	8.00	0.00E+00	.....
m	28	2136.35	2123 -	2139	2136.77	1.36E+01	6.93	0.00E+00	.....
	29	2152.08	2148 -	2155	2152.51	4.86E+00	6.63	4.29E+00	.....
	30	2174.20	2169 -	2179	2174.65	8.36E+00	8.62	5.27E+00	.....
	31	2232.30	2229 -	2235	2232.78	8.20E+00	7.23	3.60E+00	.....
	32	2505.89	2502 -	2510	2506.57	4.70E+01	13.71	0.00E+00	.....
	33	2615.84	2610 -	2621	2616.62	1.30E+01	7.21	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 : 6/22/2016 10:00:37AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	22.58	4.05E+04	681.84	3.04E-02	1.78E-03
	2	32.03	8.84E+02	251.09	2.91E-02	1.78E-03
M	3	53.81	1.78E+04	959.49	2.49E-02	1.78E-03
m	4	59.57	5.59E+04	591.52	2.39E-02	1.78E-03
	5	67.40	3.86E+02	295.57	2.26E-02	1.74E-03
	6	87.96	1.86E+04	558.05	1.96E-02	1.63E-03
	7	122.07	3.03E+03	346.58	1.59E-02	1.53E-03
	8	136.99	3.53E+02	245.39	1.47E-02	1.42E-03
	9	165.87	2.53E+02	206.62	1.27E-02	1.21E-03
	10	188.73	3.41E+02	206.49	1.15E-02	1.14E-03
	11	474.10	1.40E+02	166.61	4.96E-03	6.15E-04
	12	503.19	1.25E+02	127.87	4.68E-03	5.73E-04
	13	597.27	8.17E+01	97.49	3.95E-03	4.35E-04

Analysis Report for 1606093-01

GAS 1302

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	14	661.91	1.24E+04	275.02	3.57E-03	3.40E-04
	15	687.51	1.54E+02	120.03	3.44E-03	3.26E-04
	16	1173.53	9.47E+03	228.02	2.05E-03	1.73E-04
	17	1332.79	8.70E+03	194.83	1.83E-03	2.16E-04
	18	1470.33	1.28E+01	15.15	1.67E-03	1.87E-04
	19	1573.77	1.23E+01	16.09	1.58E-03	1.66E-04
	20	1791.08	2.00E+01	13.27	1.42E-03	1.20E-04
	21	1801.06	1.35E+01	8.50	1.41E-03	1.18E-04
	22	1808.92	1.41E+01	13.13	1.41E-03	1.17E-04
	23	1837.02	2.79E+01	19.78	1.39E-03	1.11E-04
	24	2004.39	1.40E+01	7.48	1.30E-03	1.11E-04
	25	2031.87	8.55E+00	8.02	1.28E-03	1.11E-04
	26	2056.89	1.20E+01	6.93	1.27E-03	1.11E-04
M	27	2127.53	1.23E+01	8.00	1.24E-03	1.11E-04
m	28	2136.35	1.36E+01	6.93	1.23E-03	1.11E-04
	29	2152.08	4.86E+00	6.63	1.23E-03	1.11E-04
	30	2174.20	8.36E+00	8.62	1.22E-03	1.11E-04
	31	2232.30	8.20E+00	7.23	1.20E-03	1.11E-04
	32	2505.89	4.70E+01	13.71	1.10E-03	1.11E-04
	33	2615.84	1.30E+01	7.21	1.07E-03	1.11E-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 : 6/22/2016 10:00:37AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039130.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	22.58	4.05E+04	681.84			4.05E+04	6.82E+02
	2	32.03	8.84E+02	251.09			8.84E+02	2.51E+02
M	3	53.81	1.78E+04	959.49	1.47E+00	1.13E+00	1.78E+04	9.59E+02
m	4	59.57	5.59E+04	591.52			5.59E+04	5.92E+02
	5	67.40	3.86E+02	295.57			3.86E+02	2.96E+02
	6	87.96	1.86E+04	558.05			1.86E+04	5.58E+02
	7	122.07	3.03E+03	346.58			3.03E+03	3.47E+02
	8	136.99	3.53E+02	245.39			3.53E+02	2.45E+02
	9	165.87	2.53E+02	206.62			2.53E+02	2.07E+02
	10	188.73	3.41E+02	206.49			3.41E+02	2.06E+02

Analysis Report for 1606093-01

GAS 1302

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	11	474.10	1.40E+02	166.61			1.40E+02	1.67E+02
	12	503.19	1.25E+02	127.87			1.25E+02	1.28E+02
	13	597.27	8.17E+01	97.49	1.36E+00	1.97E+00	8.04E+01	9.75E+01
	14	661.91	1.24E+04	275.02			1.24E+04	2.75E+02
	15	687.51	1.54E+02	120.03			1.54E+02	1.20E+02
	16	1173.53	9.47E+03	228.02			9.47E+03	2.28E+02
	17	1332.79	8.70E+03	194.83			8.70E+03	1.95E+02
	18	1470.33	1.28E+01	15.15			1.28E+01	1.51E+01
	19	1573.77	1.23E+01	16.09			1.23E+01	1.61E+01
	20	1791.08	2.00E+01	13.27			2.00E+01	1.33E+01
	21	1801.06	1.35E+01	8.50			1.35E+01	8.50E+00
	22	1808.92	1.41E+01	13.13			1.41E+01	1.31E+01
	23	1837.02	2.79E+01	19.78			2.79E+01	1.98E+01
	24	2004.39	1.40E+01	7.48			1.40E+01	7.48E+00
	25	2031.87	8.55E+00	8.02			8.55E+00	8.02E+00
	26	2056.89	1.20E+01	6.93			1.20E+01	6.93E+00
M	27	2127.53	1.23E+01	8.00			1.23E+01	8.00E+00
m	28	2136.35	1.36E+01	6.93			1.36E+01	6.93E+00
	29	2152.08	4.86E+00	6.63			4.86E+00	6.63E+00
	30	2174.20	8.36E+00	8.62			8.36E+00	8.62E+00
	31	2232.30	8.20E+00	7.23			8.20E+00	7.23E+00
	32	2505.89	4.70E+01	13.71			4.70E+01	1.37E+01
	33	2615.84	1.30E+01	7.21	4.14E-01	4.93E-01	1.26E+01	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

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 6/22/2016 10:00:37AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039130.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	22.58	4.05E+04	681.84			4.05E+04	6.82E+02
	2	32.03	8.84E+02	251.09			8.84E+02	2.51E+02
M	3	53.81	1.78E+04	959.49	1.47E+00	1.13E+00	1.78E+04	9.59E+02
m	4	59.57	5.59E+04	591.52			5.59E+04	5.92E+02
	5	67.40	3.86E+02	295.57			3.86E+02	2.96E+02

Analysis Report for 1606093-01

GAS 1302

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	6	87.96	1.86E+04	558.05			1.86E+04	5.58E+02
	7	122.07	3.03E+03	346.58			3.03E+03	3.47E+02
	8	136.99	3.53E+02	245.39			3.53E+02	2.45E+02
	9	165.87	2.53E+02	206.62			2.53E+02	2.07E+02
	10	188.73	3.41E+02	206.49			3.41E+02	2.06E+02
	11	474.10	1.40E+02	166.61			1.40E+02	1.67E+02
	12	503.19	1.25E+02	127.87			1.25E+02	1.28E+02
	13	597.27	8.17E+01	97.49	1.36E+00	1.97E+00	8.04E+01	9.75E+01
	14	661.91	1.24E+04	275.02			1.24E+04	2.75E+02
	15	687.51	1.54E+02	120.03			1.54E+02	1.20E+02
	16	1173.53	9.47E+03	228.02			9.47E+03	2.28E+02
	17	1332.79	8.70E+03	194.83			8.70E+03	1.95E+02
	18	1470.33	1.28E+01	15.15			1.28E+01	1.51E+01
	19	1573.77	1.23E+01	16.09			1.23E+01	1.61E+01
	20	1791.08	2.00E+01	13.27			2.00E+01	1.33E+01
	21	1801.06	1.35E+01	8.50			1.35E+01	8.50E+00
	22	1808.92	1.41E+01	13.13			1.41E+01	1.31E+01
	23	1837.02	2.79E+01	19.78			2.79E+01	1.98E+01
	24	2004.39	1.40E+01	7.48			1.40E+01	7.48E+00
	25	2031.87	8.55E+00	8.02			8.55E+00	8.02E+00
	26	2056.89	1.20E+01	6.93			1.20E+01	6.93E+00
M	27	2127.53	1.23E+01	8.00			1.23E+01	8.00E+00
m	28	2136.35	1.36E+01	6.93			1.36E+01	6.93E+00
	29	2152.08	4.86E+00	6.63			4.86E+00	6.63E+00
	30	2174.20	8.36E+00	8.62			8.36E+00	8.62E+00
	31	2232.30	8.20E+00	7.23			8.20E+00	7.23E+00
	32	2505.89	4.70E+01	13.71			4.70E+01	1.37E+01
	33	2615.84	1.30E+01	7.21	4.14E-01	4.93E-01	1.26E+01	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\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
AL-26	0.989	1808.65	*	99.76	2.06E-01	1.92E-01
CO-57	0.918	122.06	*	85.51	7.32E+01	1.10E+01
		136.48	*	10.60	7.45E+01	5.24E+01

Analysis Report for 1606093-01

GAS 1302

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
CO-60	0.984	1173.22	*	100.00	1.39E+02	1.22E+01
		1332.49	*	100.00	1.44E+02	1.73E+01
CD-109	0.972	88.03	*	3.72	2.64E+03	2.82E+02
SN-126	0.975	87.57	*	37.00	5.24E+01	4.63E+00
CS-137	0.990	661.65	*	85.12	8.93E+01	8.74E+00
CE-139	0.732	165.85	*	80.35	1.20E+02	9.89E+01
TM-171	0.918	66.72	*	0.14	7.28E+02	5.61E+02
AM-241	1.000	59.54	*	35.90	1.34E+02	1.00E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 10:00:37AM
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	22.58	2.24899E+01	0.84		
	2	32.03	4.91313E-01	14.20		
M	3	53.81	9.90806E+00	2.69		
	10	188.73	1.89216E-01	30.31	Sum	
	11	474.10	7.76537E-02	59.60		
	12	503.19	6.92869E-02	51.26		
	13	597.27	4.46479E-02	60.67		
	15	687.51	8.53556E-02	39.06		
	18	1470.33	7.09877E-03	59.28	Sum	
	19	1573.77	6.81004E-03	65.61		
	20	1791.08	1.11111E-02	33.17		
	21	1801.06	7.48148E-03	31.56		
	23	1837.02	1.55000E-02	35.45		
	24	2004.39	7.77778E-03	26.73		
	25	2031.87	4.74747E-03	46.90		
	26	2056.89	6.66667E-03	28.87		
M	27	2127.53	6.84346E-03	32.47		
m	28	2136.35	7.57076E-03	25.42		
	29	2152.08	2.69841E-03	68.28		
	30	2174.20	4.64647E-03	51.51		
	31	2232.30	4.55556E-03	44.08		

Analysis Report for 1606093-01

GAS 1302

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
32	2505.89	2.61111E-02	14.59	Sum	
33	2615.84	6.99214E-03	28.71		

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
AL-26	0.98	1808.65	*	99.76	2.06E-01	1.92E-01
CO-57	0.91	122.06	*	85.51	7.32E+01	1.10E+01
		136.48	*	10.60	7.45E+01	5.24E+01
CO-60	0.98	1173.22	*	100.00	1.39E+02	1.22E+01
		1332.49	*	100.00	1.44E+02	1.73E+01
CD-109	0.97	88.03	*	3.72	2.64E+03	2.82E+02
SN-126	0.97	87.57	*	37.00	5.24E+01	4.63E+00
CS-137	0.99	661.65	*	85.12	8.93E+01	8.74E+00
CE-139	0.73	165.85	*	80.35	1.20E+02	9.89E+01
TM-171	0.91	66.72	*	0.14	7.28E+02	5.61E+02
AM-241	1.00	59.54	*	35.90	1.34E+02	1.00E+01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

Analysis Report for 1606093-01

GAS 1302

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	AL-26	0.989	2.06E-01	1.92E-01	
	CO-57	0.918	7.33E+01	1.07E+01	
	CO-60	0.984	1.41E+02	9.95E+00	
?	CD-109	0.972	2.64E+03	2.82E+02	
?	SN-126	0.975	5.24E+01	4.63E+00	
	CS-137	0.990	8.93E+01	8.74E+00	
	CE-139	0.732	1.20E+02	9.89E+01	
	TM-171	0.918	7.28E+02	5.61E+02	
	AM-241	1.000	1.34E+02	1.00E+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 1606093-01

GAS 1302

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 10:00:37AM
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	22.58	2.24899E+01	0.84		
	2	32.03	4.91313E-01	14.20		
M	3	53.81	9.90806E+00	2.69		
	10	188.73	1.89216E-01	30.31	Sum	
	11	474.10	7.76537E-02	59.60		
	12	503.19	6.92869E-02	51.26		
	13	597.27	4.46479E-02	60.67		
	15	687.51	8.53556E-02	39.06		
	18	1470.33	7.09877E-03	59.28	Sum	
	19	1573.77	6.81004E-03	65.61		
	20	1791.08	1.11111E-02	33.17		
	21	1801.06	7.48148E-03	31.56		
	23	1837.02	1.55000E-02	35.45		
	24	2004.39	7.77778E-03	26.73		
	25	2031.87	4.74747E-03	46.90		
	26	2056.89	6.66667E-03	28.87		
M	27	2127.53	6.84346E-03	32.47		
m	28	2136.35	7.57076E-03	25.42		
	29	2152.08	2.69841E-03	68.28		
	30	2174.20	4.64647E-03	51.51		
	31	2232.30	4.55556E-03	44.08		
	32	2505.89	2.61111E-02	14.59	Sum	
	33	2615.84	6.99214E-03	28.71		

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 1606093-01

GAS 1302

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	2.75E+06	1.27E+07	1.27E+07
+		NA-22	1274.54		99.94	-2.39E-01	1.49E+00	1.49E+00
+	@	NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26
	@		2754.09		99.86	0.00E+00		1.00E+26
+		AL-26	1808.65	*	99.76	2.06E-01	2.97E-01	2.97E-01
+		K-40	1460.81		10.67	8.73E-01	3.30E+00	3.30E+00
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	-1.77E+01	4.73E-01	4.73E-01
			78.34		96.00	4.91E-02		5.20E-01
+		SC-46	889.25		99.98	2.38E+03	1.11E+04	1.11E+04
			1120.51		99.99	8.69E+03		1.14E+04
+	@	V-48	983.52		99.98	1.00E+26	1.00E+26	1.00E+26
	@		1312.10		97.50	1.00E+26		1.00E+26
+		CR-51	320.08		9.83	7.09E+10	4.74E+12	4.74E+12
+		MN-54	834.83		99.97	4.02E+00	1.37E+01	1.37E+01
+		CO-56	846.75		99.96	6.05E+03	4.34E+03	1.83E+04
			1037.75		14.03	4.13E+03		1.48E+05
			1238.25		67.00	-5.96E+02		1.51E+04
			1771.40		15.51	1.81E+04		3.76E+04
			2598.48		16.90	0.00E+00		4.34E+03
+		CO-57	122.06	*	85.51	7.32E+01	1.31E+01	1.31E+01
			136.48	*	10.60	7.45E+01		8.49E+01
+		CO-58	810.76		99.40	-1.18E+03	5.06E+04	5.06E+04
+		FE-59	1099.22		56.50	1.67E+07	3.38E+07	5.87E+07
			1291.56		43.20	-7.03E+06		3.38E+07
+		CO-60	1173.22	*	100.00	1.39E+02	1.57E+00	2.91E+00
			1332.49	*	100.00	1.44E+02		1.57E+00
+		ZN-65	1115.52		50.75	2.99E+01	6.44E+01	6.44E+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	1.21E+04	4.52E+02	1.82E+03
			136.00		59.20	-6.55E+01		4.52E+02
			264.65		59.80	-3.33E+02		6.11E+02
			279.53		25.20	4.33E+02		1.48E+03
			400.65		11.40	-5.77E+02		4.01E+03
+		RB-82	776.52		13.00	-2.44E+13	5.39E+13	5.39E+13
+		RB-83	520.41		46.00	5.80E+03	1.27E+04	1.27E+04
			529.64		30.30	-2.73E+03		1.85E+04
			552.65		16.40	2.40E+04		3.52E+04
+		KR-85	513.99		0.43	7.69E+01	2.61E+02	2.61E+02
+		SR-85	513.99		99.27	3.09E+04	1.05E+05	1.05E+05

Analysis Report for 1606093-01

GAS 1302

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	Y-88	898.02		93.40	-2.59E+02	5.38E+02	1.80E+03
		1836.01		99.38	1.33E+02		5.38E+02
+	NB-93M	16.57		9.43	-2.41E+02	5.05E+00	5.05E+00
+	NB-94	702.63		100.00	-1.53E-01	9.75E-01	9.75E-01
		871.10		100.00	-2.36E-02		1.34E+00
+	NB-95	765.79		99.81	-6.90E+08	2.33E+09	2.33E+09
+	@ NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26
+	ZR-95	724.18		43.70	-1.42E+05	2.50E+05	3.03E+05
		756.72		55.30	5.27E+04		2.50E+05
+	@ 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
+	RU-103	497.08		89.00	2.39E+06	2.13E+08	2.13E+08
+	RU-106	621.84		9.80	2.66E+01	7.51E+01	7.51E+01
+	AG-108M	433.93		89.90	4.82E-02	1.04E+00	1.04E+00
		614.37		90.40	2.47E-01		1.08E+00
		722.95		90.50	-7.01E-01		1.14E+00
+	CD-109	88.03	*	3.72	2.64E+03	1.14E+02	1.14E+02
+	AG-110M	657.75		93.14	-1.94E+00	2.56E+01	5.16E+01
		677.61		10.53	4.85E+01		1.89E+02
		706.67		16.46	2.14E+01		1.22E+02
		763.93		21.98	-4.18E+01		9.94E+01
		884.67		71.63	-3.78E+00		3.94E+01
		1384.27		23.94	1.58E+00		2.56E+01
+	CD-113M	263.70		0.02	-1.76E+03	3.41E+03	3.41E+03
+	SN-113	255.12		1.93	2.32E+03	9.03E+02	2.47E+04
		391.69		64.90	1.02E+01		9.03E+02
+	TE123M	159.00		84.10	-2.66E+02	3.31E+02	3.31E+02
+	SB-124	602.71		97.87	-5.87E+03	1.58E+05	2.63E+05
		645.85		7.26	-7.71E+05		3.67E+06
		722.78		11.10	-9.78E+05		2.51E+06
		1691.02		49.00	4.84E+04		1.58E+05
+	I-125	35.49		6.49	-2.06E+06	1.31E+06	1.31E+06
+	SB-125	176.33		6.89	-4.46E+00	6.48E+00	1.68E+01
		427.89		29.33	-1.95E+00		6.48E+00
		463.38		10.35	2.19E+00		2.02E+01
		600.56		17.80	-6.30E-01		1.12E+01
		635.90		11.32	-7.21E+00		1.77E+01
+	@ SB-126	414.70		83.30	1.00E+26	1.00E+26	1.00E+26
	@	666.33		99.60	1.00E+26		1.00E+26
	@	695.00		99.60	1.00E+26		1.00E+26
	@	720.50		53.80	1.00E+26		1.00E+26
+	SN-126	87.57	*	37.00	5.24E+01	2.26E+00	2.26E+00
+	@ SB-127	473.00		25.00	1.00E+26	1.00E+26	1.00E+26
	@	685.20		35.70	1.00E+26		1.00E+26
	@	783.80		14.70	1.00E+26		1.00E+26
+	I-129	29.78		57.00	-3.26E+00	6.79E-01	6.79E-01
		33.60		13.20	-3.51E-01		2.27E+00

Analysis Report for 1606093-01

GAS 1302

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		I-129	39.58		7.52	-1.41E+01	6.79E-01	4.50E+00
+	@	I-131	284.30		6.05	1.00E+26	1.00E+26	1.00E+26
	@		364.48		81.20	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		33.00	-5.33E-01	1.58E+00	1.83E+00
			302.84		17.80	-3.09E+00		4.74E+00
			356.01		60.00	7.90E-02		1.58E+00
+	@	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	6.30E+00	2.64E+00	2.95E+01
			569.32		15.43	-3.95E+00		1.59E+01
			604.70		97.60	-8.00E-01		2.64E+00
			795.84		85.40	3.56E-02		3.69E+00
			801.93		8.73	1.26E+01		3.66E+01
+		CS-135	268.24		16.00	1.42E+00	4.29E+00	4.29E+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	1.00E+26	1.00E+26	1.00E+26
	@		163.89		4.61	1.00E+26		1.00E+26
	@		176.55		13.56	1.00E+26		1.00E+26
	@		273.65		12.66	1.00E+26		1.00E+26
	@		340.57		48.50	1.00E+26		1.00E+26
	@		818.50		99.70	1.00E+26		1.00E+26
	@		1048.07		79.60	1.00E+26		1.00E+26
	@		1235.34		19.70	1.00E+26		1.00E+26
+		CS-137	661.65	*	85.12	8.93E+01	1.92E+00	1.92E+00
+		LA-138	788.74		34.00	-3.03E-01	4.94E-01	3.38E+00
			1435.80		66.00	-1.94E-01		4.94E-01
+		CE-139	165.85	*	80.35	1.20E+02	1.61E+02	1.61E+02
+	@	BA-140	162.64		6.70	1.00E+26	1.00E+26	1.00E+26
	@		304.84		4.50	1.00E+26		1.00E+26
	@		423.70		3.20	1.00E+26		1.00E+26
	@		437.55		2.00	1.00E+26		1.00E+26
	@		537.32		25.00	1.00E+26		1.00E+26
+	@	LA-140	328.77		20.50	1.00E+26	1.00E+26	1.00E+26
	@		487.03		45.50	1.00E+26		1.00E+26
	@		815.85		23.50	1.00E+26		1.00E+26
	@		1596.49		95.49	1.00E+26		1.00E+26
+		CE-141	145.44		48.40	-5.62E+09	1.19E+10	1.19E+10
+	@	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	-4.31E+00	6.46E+01	6.46E+01
+		PM-144	476.78		42.00	5.38E+00	7.62E+00	1.91E+01

Analysis Report for 1606093-01

GAS 1302

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		PM-144	618.01		98.60	-3.73E+00	7.62E+00	7.62E+00
			696.49		99.49	1.08E-01		7.70E+00
+		PM-145	36.85		21.70	-3.71E+00	8.81E-01	1.60E+00
			37.36		39.70	-2.59E+00		8.81E-01
			42.30		15.10	-5.38E+00		2.91E+00
			72.40		2.31	-1.12E+00		2.22E+01
+		PM-146	453.90		39.94	-1.30E+00	3.54E+00	3.54E+00
			735.90		14.01	-3.88E+00		1.07E+01
			747.13		13.10	-4.03E+00		1.14E+01
+	@	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	2.19E+01	2.73E+00	3.20E+00
			244.69		5.40	-5.30E+00		1.46E+01
			344.27		19.13	-2.47E+00		4.56E+00
			778.89		9.20	-6.13E+00		1.39E+01
			964.01		10.40	-1.93E+00		1.76E+01
			1085.78		7.22	-7.68E-01		2.40E+01
			1112.02		9.60	1.29E+00		1.82E+01
			1407.95		14.94	-3.50E-01		2.73E+00
+		GD-153	97.43		31.30	-2.05E+01	2.87E+01	2.87E+01
			103.18		22.20	-9.05E+00		4.22E+01
+		EU-154	123.07		40.50	1.19E+01	1.76E+00	1.76E+00
			723.30		19.70	-4.01E+00		6.52E+00
			873.19		11.50	-4.48E+00		1.48E+01
			996.32		10.30	7.06E+00		1.75E+01
			1004.76		17.90	-3.31E+00		1.02E+01
			1274.45		35.50	-3.85E-01		2.41E+00
+		EU-155	86.50		30.90	9.23E+01	3.09E+00	3.88E+00
			105.30		20.70	-6.20E-01		3.09E+00
+	@	EU-156	811.77		10.40	1.00E+26	1.00E+26	1.00E+26
	@		1153.47		7.20	1.00E+26		1.00E+26
	@		1230.71		8.90	1.00E+26		1.00E+26
+		HO-166M	184.41		72.60	-7.97E-02	8.13E-01	8.13E-01
			280.45		29.60	3.44E-01		2.34E+00
			410.94		11.10	5.84E+00		7.93E+00
			711.69		54.10	-1.35E+00		1.82E+00
+		TM-171	66.72	*	0.14	7.28E+02	9.15E+02	9.15E+02
+		HF-172	81.75		4.52	-5.19E+00	1.47E+01	3.37E+01
			125.81		11.30	-3.15E+00		1.47E+01
+	@	LU-172	181.53		20.60	1.00E+26	1.00E+26	1.00E+26
	@		810.06		16.63	1.00E+26		1.00E+26
	@		912.12		15.25	1.00E+26		1.00E+26
	@		1093.66		62.50	1.00E+26		1.00E+26
+		LU-173	100.72		5.24	1.15E+00	1.47E+01	3.51E+01
			272.11		21.20	4.36E+00		1.47E+01
+		HF-175	343.40		84.00	9.52E+03	4.24E+04	4.24E+04
+		LU-176	88.34		13.30	1.39E+02	7.18E-01	5.88E+00
			201.83		86.00	-7.94E-02		7.18E-01

Analysis Report for 1606093-01

GAS 1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LU-176	306.78	94.00	-1.63E-01	7.18E-01	7.56E-01
+	TA-182	67.75	41.20	-2.85E+04	7.59E+02	7.59E+02
		1121.30	34.90	1.99E+03		2.90E+03
		1189.05	16.23	-1.09E+03		4.24E+03
		1221.41	26.98	1.19E+03		2.20E+03
		1231.02	11.44	-2.14E+03		4.45E+03
+	IR-192	308.46	29.68	1.32E+04	5.43E+04	6.40E+04
		468.07	48.10	-5.70E+03		5.43E+04
+	HG-203	279.19	77.30	2.75E+06	9.41E+06	9.41E+06
+	BI-207	569.67	97.72	-2.44E-01	9.83E-01	9.83E-01
		1063.62	74.90	9.27E-01		2.14E+00
+	TL-208	583.14	30.22	5.86E-01	1.03E+00	3.06E+00
		860.37	4.48	6.91E+00		3.00E+01
		2614.66	35.85	6.90E-01		1.03E+00
+	BI-210M	262.00	45.00	-4.42E-02	1.50E+00	1.50E+00
		300.00	23.00	-9.81E-01		3.03E+00
+	PB-210	46.50	4.25	1.57E+01	1.34E+01	1.34E+01
+	PB-211	404.84	2.90	-1.07E+01	2.96E+01	2.96E+01
		831.96	2.90	-4.93E-01		4.19E+01
+	BI-212	727.17	11.80	3.77E+00	8.77E+00	8.77E+00
		1620.62	2.75	-2.83E+00		1.05E+01
+	PB-212	238.63	44.60	5.81E-01	1.53E+00	1.53E+00
		300.09	3.41	-6.62E+00		2.04E+01
+	BI-214	609.31	46.30	8.64E-01	2.09E+00	2.09E+00
		1120.29	15.10	7.19E+00		9.42E+00
		1764.49	15.80	-1.37E+00		2.34E+00
		2204.22	4.98	-2.36E+00		6.17E+00
+	PB-214	295.21	19.19	1.03E+00	2.07E+00	3.66E+00
		351.92	37.19	4.57E-01		2.07E+00
+	RN-219	401.80	6.50	-2.52E+00	1.31E+01	1.31E+01
+	RA-223	323.87	3.88	-2.35E+00	1.84E+01	1.84E+01
+	RA-224	240.98	3.95	3.48E+00	1.73E+01	1.73E+01
+	@ RA-225	40.00	31.00	1.00E+26	1.00E+26	1.00E+26
+	RA-226	186.21	3.28	-2.57E+00	1.82E+01	1.82E+01
+	TH-227	50.10	8.40	2.15E+01	5.93E+00	7.21E+00
		236.00	11.50	2.50E+00		5.93E+00
		256.20	6.30	8.26E-01		1.08E+01
+	AC-228	338.32	11.40	2.99E+00	5.53E+00	6.59E+00
		911.07	27.70	3.93E+00		5.53E+00
		969.11	16.60	-7.85E-01		9.08E+00
+	TH-230	48.44	16.90	1.12E+01	3.41E+00	3.41E+00
		62.85	4.60	8.77E+02		2.22E+01
		67.67	0.37	-4.38E+03		1.17E+02
+	PA-231	283.67	1.60	-1.53E+01	3.01E+01	4.33E+01
		302.67	2.30	-1.96E+01		3.01E+01
+	TH-231	25.64	14.70	-1.24E+01	5.43E+00	5.43E+00
		84.21	6.40	2.66E+01		1.06E+01
+	PA-233	311.98	38.60	1.78E+12	2.50E+12	2.50E+12

Analysis Report for 1606093-01

GAS 1302

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-234	131.20		20.40	-9.40E-01	2.34E+00	2.34E+00
		733.99		8.80	-7.00E-01		1.17E+01
		946.00		12.00	-2.17E+00		1.35E+01
+	PA-234M	1001.03		0.92	-2.35E+01	1.56E+02	1.56E+02
+	TH-234	63.29		3.80	5.73E+02	2.31E+01	2.31E+01
+	U-235	143.76		10.50	-3.17E-01	4.68E+00	4.68E+00
		163.35		4.70	-5.45E+00		1.13E+01
		205.31		4.70	-1.00E+01		1.32E+01
+	NP-237	86.50		12.60	1.49E+02	6.27E+00	6.27E+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	1.34E+02	2.99E+00	2.99E+00
+	AM-243	74.67		66.00	2.42E-03	7.06E-01	7.06E-01
+	CM-243	209.75		3.29	-4.39E-01	5.27E+00	2.10E+01
		228.14		10.60	-6.06E+00		6.76E+00
		277.60		14.00	-1.47E+00		5.27E+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	1.27E+07	1.27E+07	2.75E+06	6.26E+06
	NA-22	1274.54		99.94	1.49E+00	1.49E+00	-2.39E-01	7.15E-01
@	NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		2754.09		99.86	1.00E+26		0.00E+00	1.00E+20
+	AL-26	1808.65	*	99.76	2.97E-01	2.97E-01	2.06E-01	1.29E-01

Analysis Report for 1606093-01

GAS 1302

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	K-40	1460.81		10.67	3.30E+00	3.30E+00	8.73E-01	1.49E+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	4.73E-01	4.73E-01	-1.77E+01	2.35E-01
		78.34		96.00	5.20E-01		4.91E-02	2.58E-01
	SC-46	889.25		99.98	1.11E+04	1.11E+04	2.38E+03	5.49E+03
		1120.51		99.99	1.14E+04		8.69E+03	5.59E+03
@	V-48	983.52		99.98	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1312.10		97.50	1.00E+26		1.00E+26	1.00E+20
	CR-51	320.08		9.83	4.74E+12	4.74E+12	7.09E+10	2.34E+12
	MN-54	834.83		99.97	1.37E+01	1.37E+01	4.02E+00	6.72E+00
	CO-56	846.75		99.96	1.83E+04	4.34E+03	6.05E+03	8.99E+03
		1037.75		14.03	1.48E+05		4.13E+03	7.29E+04
		1238.25		67.00	1.51E+04		-5.96E+02	7.27E+03
		1771.40		15.51	3.76E+04		1.81E+04	1.70E+04
		2598.48		16.90	4.34E+03		0.00E+00	0.00E+00
+	CO-57	122.06	*	85.51	1.31E+01	1.31E+01	7.32E+01	6.53E+00
		136.48	*	10.60	8.49E+01		7.45E+01	4.22E+01
	CO-58	810.76		99.40	5.06E+04	5.06E+04	-1.18E+03	2.49E+04
	FE-59	1099.22		56.50	5.87E+07	3.38E+07	1.67E+07	2.89E+07
		1291.56		43.20	3.38E+07		-7.03E+06	1.62E+07
+	CO-60	1173.22	*	100.00	2.91E+00	1.57E+00	1.39E+02	1.44E+00
		1332.49	*	100.00	1.57E+00		1.44E+02	7.64E-01
	ZN-65	1115.52		50.75	6.44E+01	6.44E+01	2.99E+01	3.16E+01
@	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	1.82E+03	4.52E+02	1.21E+04	9.04E+02
		136.00		59.20	4.52E+02		-6.55E+01	2.25E+02
		264.65		59.80	6.11E+02		-3.33E+02	3.03E+02
		279.53		25.20	1.48E+03		4.33E+02	7.34E+02
		400.65		11.40	4.01E+03		-5.77E+02	1.98E+03
	RB-82	776.52		13.00	5.39E+13	5.39E+13	-2.44E+13	2.65E+13
	RB-83	520.41		46.00	1.27E+04	1.27E+04	5.80E+03	6.28E+03
		529.64		30.30	1.85E+04		-2.73E+03	9.11E+03
		552.65		16.40	3.52E+04		2.40E+04	1.74E+04
	KR-85	513.99		0.43	2.61E+02	2.61E+02	7.69E+01	1.29E+02
	SR-85	513.99		99.27	1.05E+05	1.05E+05	3.09E+04	5.17E+04
	Y-88	898.02		93.40	1.80E+03	5.38E+02	-2.59E+02	8.86E+02
		1836.01		99.38	5.38E+02		1.33E+02	2.46E+02
	NB-93M	16.57		9.43	5.05E+00	5.05E+00	-2.41E+02	2.52E+00
	NB-94	702.63		100.00	9.75E-01	9.75E-01	-1.53E-01	4.79E-01
		871.10		100.00	1.34E+00		-2.36E-02	6.61E-01
	NB-95	765.79		99.81	2.33E+09	2.33E+09	-6.90E+08	1.14E+09
@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	ZR-95	724.18		43.70	3.03E+05	2.50E+05	-1.42E+05	1.49E+05
		756.72		55.30	2.50E+05		5.27E+04	1.23E+05
@	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
	RU-103	497.08		89.00	2.13E+08	2.13E+08	2.39E+06	1.05E+08
	RU-106	621.84		9.80	7.51E+01	7.51E+01	2.66E+01	3.70E+01
	AG-108M	433.93		89.90	1.04E+00	1.04E+00	4.82E-02	5.13E-01
		614.37		90.40	1.08E+00		2.47E-01	5.31E-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)
	AG-108M	722.95		90.50	1.14E+00	1.04E+00	-7.01E-01	5.61E-01
+	CD-109	88.03	*	3.72	1.14E+02	1.14E+02	2.64E+03	5.68E+01
	AG-110M	657.75		93.14	5.16E+01	2.56E+01	-1.94E+00	2.56E+01
		677.61		10.53	1.89E+02		4.85E+01	9.31E+01
		706.67		16.46	1.22E+02		2.14E+01	5.99E+01
		763.93		21.98	9.94E+01		-4.18E+01	4.89E+01
		884.67		71.63	3.94E+01		-3.78E+00	1.94E+01
		1384.27		23.94	2.56E+01		1.58E+00	1.15E+01
	CD-113M	263.70		0.02	3.41E+03	3.41E+03	-1.76E+03	1.69E+03
	SN-113	255.12		1.93	2.47E+04	9.03E+02	2.32E+03	1.22E+04
		391.69		64.90	9.03E+02		1.02E+01	4.46E+02
	TE123M	159.00		84.10	3.31E+02	3.31E+02	-2.66E+02	1.64E+02
	SB-124	602.71		97.87	2.63E+05	1.58E+05	-5.87E+03	1.29E+05
		645.85		7.26	3.67E+06		-7.71E+05	1.80E+06
		722.78		11.10	2.51E+06		-9.78E+05	1.23E+06
		1691.02		49.00	1.58E+05		4.84E+04	6.89E+04
	I-125	35.49		6.49	1.31E+06	1.31E+06	-2.06E+06	6.51E+05
	SB-125	176.33		6.89	1.68E+01	6.48E+00	-4.46E+00	8.34E+00
		427.89		29.33	6.48E+00		-1.95E+00	3.20E+00
		463.38		10.35	2.02E+01		2.19E+00	1.00E+01
		600.56		17.80	1.12E+01		-6.30E-01	5.51E+00
		635.90		11.32	1.77E+01		-7.21E+00	8.69E+00
@	SB-126	414.70		83.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		666.33		99.60	1.00E+26		1.00E+26	1.00E+20
@		695.00		99.60	1.00E+26		1.00E+26	1.00E+20
@		720.50		53.80	1.00E+26		1.00E+26	1.00E+20
+	SN-126	87.57	*	37.00	2.26E+00	2.26E+00	5.24E+01	1.12E+00
@	SB-127	473.00		25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		685.20		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	6.79E-01	6.79E-01	-3.26E+00	3.38E-01
		33.60		13.20	2.27E+00		-3.51E-01	1.13E+00
		39.58		7.52	4.50E+00		-1.41E+01	2.24E+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		33.00	1.83E+00	1.58E+00	-5.33E-01	9.08E-01
		302.84		17.80	4.74E+00		-3.09E+00	2.34E+00
		356.01		60.00	1.58E+00		7.90E-02	7.83E-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	2.95E+01	2.64E+00	6.30E+00	1.45E+01
		569.32		15.43	1.59E+01		-3.95E+00	7.83E+00
		604.70		97.60	2.64E+00		-8.00E-01	1.30E+00
		795.84		85.40	3.69E+00		3.56E-02	1.82E+00
		801.93		8.73	3.66E+01		1.26E+01	1.80E+01
	CS-135	268.24		16.00	4.29E+00	4.29E+00	1.42E+00	2.12E+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

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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-136	153.22		7.46	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		163.89		4.61	1.00E+26		1.00E+26	1.00E+20
@		176.55		13.56	1.00E+26		1.00E+26	1.00E+20
@		273.65		12.66	1.00E+26		1.00E+26	1.00E+20
@		340.57		48.50	1.00E+26		1.00E+26	1.00E+20
@		818.50		99.70	1.00E+26		1.00E+26	1.00E+20
@		1048.07		79.60	1.00E+26		1.00E+26	1.00E+20
@		1235.34		19.70	1.00E+26		1.00E+26	1.00E+20
+	CS-137	661.65	*	85.12	1.92E+00	1.92E+00	8.93E+01	9.52E-01
	LA-138	788.74		34.00	3.38E+00	4.94E-01	-3.03E-01	1.66E+00
		1435.80		66.00	4.94E-01		-1.94E-01	2.23E-01
+	CE-139	165.85	*	80.35	1.61E+02	1.61E+02	1.20E+02	7.98E+01
@	BA-140	162.64		6.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		304.84		4.50	1.00E+26		1.00E+26	1.00E+20
@		423.70		3.20	1.00E+26		1.00E+26	1.00E+20
@		437.55		2.00	1.00E+26		1.00E+26	1.00E+20
@		537.32		25.00	1.00E+26		1.00E+26	1.00E+20
@	LA-140	328.77		20.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		487.03		45.50	1.00E+26		1.00E+26	1.00E+20
@		815.85		23.50	1.00E+26		1.00E+26	1.00E+20
@		1596.49		95.49	1.00E+26		1.00E+26	1.00E+20
	CE-141	145.44		48.40	1.19E+10	1.19E+10	-5.62E+09	5.88E+09
@	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	6.46E+01	6.46E+01	-4.31E+00	3.21E+01
	PM-144	476.78		42.00	1.91E+01	7.62E+00	5.38E+00	9.43E+00
		618.01		98.60	7.62E+00		-3.73E+00	3.75E+00
		696.49		99.49	7.70E+00		1.08E-01	3.78E+00
	PM-145	36.85		21.70	1.60E+00	8.81E-01	-3.71E+00	7.95E-01
		37.36		39.70	8.81E-01		-2.59E+00	4.38E-01
		42.30		15.10	2.91E+00		-5.38E+00	1.45E+00
		72.40		2.31	2.22E+01		-1.12E+00	1.10E+01
	PM-146	453.90		39.94	3.54E+00	3.54E+00	-1.30E+00	1.75E+00
		735.90		14.01	1.07E+01		-3.88E+00	5.27E+00
		747.13		13.10	1.14E+01		-4.03E+00	5.62E+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	3.20E+00	2.73E+00	2.19E+01	1.59E+00
		244.69		5.40	1.46E+01		-5.30E+00	7.23E+00
		344.27		19.13	4.56E+00		-2.47E+00	2.25E+00
		778.89		9.20	1.39E+01		-6.13E+00	6.86E+00
		964.01		10.40	1.76E+01		-1.93E+00	8.69E+00
		1085.78		7.22	2.40E+01		-7.68E-01	1.18E+01
		1112.02		9.60	1.82E+01		1.29E+00	8.94E+00
		1407.95		14.94	2.73E+00		-3.50E-01	1.24E+00
	GD-153	97.43		31.30	2.87E+01	2.87E+01	-2.05E+01	1.42E+01
		103.18		22.20	4.22E+01		-9.05E+00	2.09E+01
	EU-154	123.07		40.50	1.76E+00	1.76E+00	1.19E+01	8.76E-01
		723.30		19.70	6.52E+00		-4.01E+00	3.21E+00
		873.19		11.50	1.48E+01		-4.48E+00	7.30E+00
		996.32		10.30	1.75E+01		7.06E+00	8.63E+00

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GAS 1302

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-154	1004.76		17.90	1.02E+01	1.76E+00	-3.31E+00	5.01E+00
		1274.45		35.50	2.41E+00		-3.85E-01	1.15E+00
	EU-155	86.50		30.90	3.88E+00	3.09E+00	9.23E+01	1.93E+00
		105.30		20.70	3.09E+00		-6.20E-01	1.53E+00
@	EU-156	811.77		10.40	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1153.47		7.20	1.00E+26		1.00E+26	1.00E+20
@		1230.71		8.90	1.00E+26		1.00E+26	1.00E+20
	HO-166M	184.41		72.60	8.13E-01	8.13E-01	-7.97E-02	4.03E-01
		280.45		29.60	2.34E+00		3.44E-01	1.16E+00
		410.94		11.10	7.93E+00		5.84E+00	3.92E+00
		711.69		54.10	1.82E+00		-1.35E+00	8.93E-01
+	TM-171	66.72	*	0.14	9.15E+02	9.15E+02	7.28E+02	4.55E+02
	HF-172	81.75		4.52	3.37E+01	1.47E+01	-5.19E+00	1.67E+01
		125.81		11.30	1.47E+01		-3.15E+00	7.32E+00
@	LU-172	181.53		20.60	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		810.06		16.63	1.00E+26		1.00E+26	1.00E+20
@		912.12		15.25	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	3.51E+01	1.47E+01	1.15E+00	1.74E+01
		272.11		21.20	1.47E+01		4.36E+00	7.27E+00
	HF-175	343.40		84.00	4.24E+04	4.24E+04	9.52E+03	2.10E+04
	LU-176	88.34		13.30	5.88E+00	7.18E-01	1.39E+02	2.93E+00
		201.83		86.00	7.18E-01		-7.94E-02	3.56E-01
		306.78		94.00	7.56E-01		-1.63E-01	3.74E-01
	TA-182	67.75		41.20	7.59E+02	7.59E+02	-2.85E+04	3.77E+02
		1121.30		34.90	2.90E+03		1.99E+03	1.42E+03
		1189.05		16.23	4.24E+03		-1.09E+03	2.06E+03
		1221.41		26.98	2.20E+03		1.19E+03	1.06E+03
		1231.02		11.44	4.45E+03		-2.14E+03	2.14E+03
	IR-192	308.46		29.68	6.40E+04	5.43E+04	1.32E+04	3.17E+04
		468.07		48.10	5.43E+04		-5.70E+03	2.68E+04
	HG-203	279.19		77.30	9.41E+06	9.41E+06	2.75E+06	4.66E+06
	BI-207	569.67		97.72	9.83E-01	9.83E-01	-2.44E-01	4.84E-01
		1063.62		74.90	2.14E+00		9.27E-01	1.05E+00
	TL-208	583.14		30.22	3.06E+00	1.03E+00	5.86E-01	1.51E+00
		860.37		4.48	3.00E+01		6.91E+00	1.48E+01
		2614.66		35.85	1.03E+00		6.90E-01	4.45E-01
	BI-210M	262.00		45.00	1.50E+00	1.50E+00	-4.42E-02	7.44E-01
		300.00		23.00	3.03E+00		-9.81E-01	1.50E+00
	PB-210	46.50		4.25	1.34E+01	1.34E+01	1.57E+01	6.67E+00
	PB-211	404.84		2.90	2.96E+01	2.96E+01	-1.07E+01	1.46E+01
		831.96		2.90	4.19E+01		-4.93E-01	2.06E+01
	BI-212	727.17		11.80	8.77E+00	8.77E+00	3.77E+00	4.31E+00
		1620.62		2.75	1.05E+01		-2.83E+00	4.62E+00
	PB-212	238.63		44.60	1.53E+00	1.53E+00	5.81E-01	7.58E-01
		300.09		3.41	2.04E+01		-6.62E+00	1.01E+01
	BI-214	609.31		46.30	2.09E+00	2.09E+00	8.64E-01	1.03E+00
		1120.29		15.10	9.42E+00		7.19E+00	4.63E+00
		1764.49		15.80	2.34E+00		-1.37E+00	1.05E+00
		2204.22		4.98	6.17E+00		-2.36E+00	2.62E+00
	PB-214	295.21		19.19	3.66E+00	2.07E+00	1.03E+00	1.81E+00
		351.92		37.19	2.07E+00		4.57E-01	1.02E+00
	RN-219	401.80		6.50	1.31E+01	1.31E+01	-2.52E+00	6.47E+00

Analysis Report for 1606093-01

GAS 1302

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	RA-223	323.87		3.88	1.84E+01	1.84E+01	-2.35E+00	9.08E+00
	RA-224	240.98		3.95	1.73E+01	1.73E+01	3.48E+00	8.57E+00
@	RA-225	40.00		31.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	RA-226	186.21		3.28	1.82E+01	1.82E+01	-2.57E+00	9.01E+00
	TH-227	50.10		8.40	7.21E+00	5.93E+00	2.15E+01	3.59E+00
		236.00		11.50	5.93E+00		2.50E+00	2.94E+00
		256.20		6.30	1.08E+01		8.26E-01	5.34E+00
	AC-228	338.32		11.40	6.59E+00	5.53E+00	2.99E+00	3.26E+00
		911.07		27.70	5.53E+00		3.93E+00	2.73E+00
		969.11		16.60	9.08E+00		-7.85E-01	4.47E+00
	TH-230	48.44		16.90	3.41E+00	3.41E+00	1.12E+01	1.70E+00
		62.85		4.60	2.22E+01		8.77E+02	1.11E+01
		67.67		0.37	1.17E+02		-4.38E+03	5.80E+01
	PA-231	283.67		1.60	4.33E+01	3.01E+01	-1.53E+01	2.14E+01
		302.67		2.30	3.01E+01		-1.96E+01	1.49E+01
	TH-231	25.64		14.70	5.43E+00	5.43E+00	-1.24E+01	2.71E+00
		84.21		6.40	1.06E+01		2.66E+01	5.26E+00
	PA-233	311.98		38.60	2.50E+12	2.50E+12	1.78E+12	1.24E+12
	PA-234	131.20		20.40	2.34E+00	2.34E+00	-9.40E-01	1.16E+00
		733.99		8.80	1.17E+01		-7.00E-01	5.77E+00
		946.00		12.00	1.35E+01		-2.17E+00	6.67E+00
	PA-234M	1001.03		0.92	1.56E+02	1.56E+02	-2.35E+01	7.66E+01
	TH-234	63.29		3.80	2.31E+01	2.31E+01	5.73E+02	1.15E+01
	U-235	143.76		10.50	4.68E+00	4.68E+00	-3.17E-01	2.32E+00
		163.35		4.70	1.13E+01		-5.45E+00	5.61E+00
		205.31		4.70	1.32E+01		-1.00E+01	6.56E+00
	NP-237	86.50		12.60	6.27E+00	6.27E+00	1.49E+02	3.13E+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	2.99E+00	2.99E+00	1.34E+02	1.49E+00
	AM-243	74.67		66.00	7.06E-01	7.06E-01	2.42E-03	3.51E-01
	CM-243	209.75		3.29	2.10E+01	5.27E+00	-4.39E-01	1.04E+01
		228.14		10.60	6.76E+00		-6.06E+00	3.35E+00
		277.60		14.00	5.27E+00		-1.47E+00	2.61E+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

No Action Level results available for reporting purposes.

Analysis Report for 1606093-01

GAS 1302

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 1302

Elapsed Live time: 1800
Elapsed Real Time: 1818

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	355	1322
17:	1460	1533	2744	10070	20125	17423	8556	7384
25:	5793	2227	842	664	691	874	1172	1149
33:	842	799	826	891	901	829	972	1092
41:	1206	1354	1525	1599	1720	2010	2417	3058
49:	3425	3419	3434	3495	3533	3529	3897	4313
57:	7019	17872	24008	12539	2681	1039	988	1078
65:	1117	1225	1220	1184	1206	1201	1177	1148
73:	1218	1292	1242	1196	1267	1222	1202	1261
81:	1252	1275	1330	1356	1551	3681	7422	6865
89:	2707	846	676	700	676	637	668	650
97:	642	670	654	645	639	661	693	691
105:	672	624	679	681	688	697	668	721
113:	712	702	655	706	711	710	753	1040
121:	1626	1688	1020	674	663	624	635	608
129:	617	687	625	633	645	636	702	756
137:	648	614	627	606	571	637	550	576
145:	573	610	551	548	575	561	553	620
153:	560	581	557	550	595	550	527	547
161:	543	542	528	611	629	630	557	547
169:	544	550	529	534	556	552	542	502
177:	496	562	546	572	546	541	584	558
185:	551	626	588	620	584	554	558	481
193:	595	564	523	579	559	550	561	576
201:	543	538	541	526	517	522	527	587
209:	536	575	540	586	588	552	592	565
217:	562	589	572	591	587	554	557	527
225:	518	545	513	508	486	514	476	534
233:	539	503	470	510	506	549	496	506
241:	488	469	472	439	477	471	468	448
249:	423	478	470	483	442	382	448	455
257:	431	422	418	448	453	431	364	382
265:	392	434	388	401	464	404	424	408
273:	384	386	392	418	374	382	369	377
281:	393	410	373	360	384	358	378	394
289:	390	376	352	379	364	368	343	376
297:	383	326	350	305	324	344	345	359
305:	346	316	336	340	352	362	383	365
313:	363	340	350	349	311	324	336	314
321:	337	302	299	312	267	321	326	300
329:	317	304	338	320	293	326	338	286
337:	305	342	330	318	310	326	301	315
345:	283	317	313	292	300	316	348	325
353:	310	302	299	296	300	322	322	328
361:	326	306	301	329	302	321	305	284

369:	313	304	314	285	275	305	316	292

Sample Title: GAS 1302

Channel								
377:	284	281	303	298	287	329	279	299
385:	315	302	311	305	301	325	307	284
393:	294	309	298	291	309	306	286	300
401:	278	320	263	300	302	308	282	318
409:	300	319	316	290	293	298	300	238
417:	296	308	293	332	269	287	311	302
425:	317	286	287	293	290	262	304	323
433:	307	294	314	303	277	306	307	292
441:	312	331	288	309	322	306	285	331
449:	300	323	309	289	319	265	308	319
457:	318	308	314	345	306	327	281	306
465:	289	295	302	314	280	294	283	323
473:	336	292	302	314	260	300	262	280
481:	250	258	216	252	245	227	244	226
489:	210	219	233	228	224	226	227	237
497:	222	248	197	211	237	226	266	252
505:	171	204	211	216	227	215	244	243
513:	209	223	197	210	214	216	210	221
521:	243	214	203	209	182	207	215	181
529:	196	191	175	181	184	174	173	198
537:	213	204	182	187	174	187	166	199
545:	191	174	168	175	192	190	186	189
553:	199	174	167	204	165	162	173	169
561:	151	168	191	174	178	163	192	156
569:	166	164	171	163	153	157	170	178
577:	165	145	188	148	161	152	164	188
585:	172	154	187	171	163	163	158	186
593:	161	154	162	181	178	173	149	149
601:	174	178	154	153	177	159	149	177
609:	160	173	182	154	175	152	143	175
617:	146	162	151	146	167	153	165	152
625:	163	146	142	141	152	161	157	134
633:	146	139	164	150	168	132	148	173
641:	153	156	129	128	185	156	145	175
649:	143	154	151	177	172	156	154	141
657:	175	189	463	1987	4395	4243	1675	348
665:	144	162	109	138	123	139	121	144
673:	145	148	154	108	150	154	127	138
681:	124	138	117	145	134	154	144	143
689:	138	129	103	115	127	134	139	113
697:	126	131	123	134	134	132	122	148
705:	121	111	126	138	142	123	122	123
713:	123	133	110	140	166	144	149	125
721:	133	124	115	156	132	118	134	164
729:	125	123	150	123	123	136	125	132
737:	127	151	120	118	143	157	122	119
745:	119	135	129	120	122	136	145	117
753:	144	126	137	140	133	137	139	131
761:	126	133	120	119	128	133	145	148
769:	140	146	138	135	126	130	119	139
777:	145	125	146	125	131	147	141	168
785:	140	146	133	134	151	132	146	131
793:	158	153	131	123	150	141	148	142

801:	142	150	149	151	148	128	135	144

Sample Title: GAS 1302

Channel								
809:	142	174	155	142	144	163	152	153
817:	135	129	177	157	175	132	164	135
825:	147	151	132	141	138	127	159	144
833:	132	154	149	144	138	161	131	159
841:	136	152	164	158	166	151	156	143
849:	150	142	160	146	147	167	144	164
857:	186	149	161	173	190	169	143	147
865:	145	171	181	146	143	166	146	154
873:	170	158	178	150	186	161	174	170
881:	169	158	164	163	159	170	157	179
889:	158	172	157	184	153	158	159	165
897:	188	182	179	182	171	162	186	179
905:	184	187	172	188	196	198	199	207
913:	205	178	185	185	169	159	161	185
921:	179	207	191	203	189	183	173	194
929:	215	171	207	210	186	202	203	181
937:	175	201	204	180	214	204	178	202
945:	205	179	209	227	194	205	197	204
953:	222	204	180	207	201	219	215	191
961:	193	193	193	185	175	191	141	173
969:	164	154	172	147	163	141	142	160
977:	151	118	153	151	139	138	144	139
985:	139	134	148	137	130	143	119	147
993:	130	130	149	135	121	156	151	141
1001:	122	144	136	141	143	153	155	129
1009:	151	157	141	139	132	137	142	129
1017:	147	144	140	141	126	142	133	141
1025:	132	142	126	134	140	125	125	124
1033:	143	117	132	132	131	157	142	120
1041:	134	147	119	157	126	135	145	120
1049:	122	136	123	121	125	144	128	138
1057:	138	118	125	137	134	137	146	129
1065:	141	137	145	139	118	123	135	141
1073:	128	131	135	126	129	127	129	117
1081:	123	122	121	117	143	133	122	133
1089:	144	129	148	131	128	150	147	117
1097:	121	136	136	111	154	135	160	131
1105:	122	121	122	146	112	130	148	111
1113:	120	118	126	114	121	136	119	103
1121:	112	99	92	97	80	79	83	75
1129:	75	68	67	79	78	78	80	85
1137:	86	87	73	70	74	72	87	83
1145:	79	78	84	67	69	89	56	79
1153:	93	71	75	73	77	68	78	66
1161:	80	74	66	69	84	90	54	78
1169:	86	116	483	1699	3247	2896	1207	245
1177:	69	64	50	62	67	54	48	47
1185:	43	46	29	53	48	46	51	36
1193:	37	43	42	44	48	41	44	49
1201:	38	43	35	38	52	33	35	44
1209:	38	35	32	27	28	30	29	29
1217:	43	30	39	33	24	18	36	21
1225:	29	28	17	24	18	24	20	23

1233:	27	23	19	27	26	21	21	22

Sample Title: GAS 1302

Channel								
1241:	20	18	15	19	30	13	22	24
1249:	20	30	18	14	27	19	20	20
1257:	16	20	19	15	15	13	12	21
1265:	21	23	23	12	22	28	18	16
1273:	16	22	20	18	13	17	19	22
1281:	20	17	11	16	19	20	17	23
1289:	21	25	17	16	14	15	18	23
1297:	21	19	18	17	16	8	11	21
1305:	18	22	13	18	13	20	17	24
1313:	23	21	18	15	17	17	18	21
1321:	27	20	24	23	15	19	22	15
1329:	42	241	1047	2431	2948	1623	396	51
1337:	8	5	4	5	6	6	3	4
1345:	6	4	15	4	3	6	7	6
1353:	5	6	5	3	5	1	3	7
1361:	3	6	5	5	6	7	3	3
1369:	2	1	5	5	3	1	2	3
1377:	2	5	4	4	2	3	2	3
1385:	0	2	5	4	2	1	2	3
1393:	3	6	4	4	0	2	4	2
1401:	3	4	5	3	5	8	3	5
1409:	0	4	3	3	3	7	3	5
1417:	4	6	4	3	1	7	2	3
1425:	2	3	4	3	4	3	7	2
1433:	6	2	5	1	2	1	3	6
1441:	5	3	4	3	2	4	2	5
1449:	3	2	4	2	2	2	5	4
1457:	0	5	2	3	6	5	2	2
1465:	7	0	2	3	3	4	3	7
1473:	2	2	1	3	0	3	2	4
1481:	4	1	1	2	1	4	3	4
1489:	4	3	4	4	3	2	4	1
1497:	2	1	2	1	5	2	3	2
1505:	1	5	5	6	2	1	4	4
1513:	3	2	3	1	2	2	4	2
1521:	2	3	3	0	4	3	2	4
1529:	4	4	2	1	5	1	2	1
1537:	5	2	5	4	2	2	2	2
1545:	4	1	1	4	2	3	2	3
1553:	3	4	2	1	2	4	4	1
1561:	2	1	1	3	3	4	3	1
1569:	4	3	3	4	8	4	7	2
1577:	2	4	4	3	3	4	2	2
1585:	4	1	3	1	1	1	6	6
1593:	1	2	4	4	3	4	0	2
1601:	3	1	3	3	2	4	2	2
1609:	3	5	3	6	2	0	4	2
1617:	2	1	2	1	3	3	1	3
1625:	1	4	2	3	2	3	1	6
1633:	1	4	2	1	2	4	1	2
1641:	2	1	4	1	2	3	2	3
1649:	5	4	6	0	1	3	2	4
1657:	2	2	2	5	1	3	2	1

1665:	0	8	2	3	5	2	3	1

Sample Title: GAS 1302

Channel								
1673:	1	3	3	2	3	1	1	4
1681:	2	2	2	0	3	1	1	2
1689:	3	1	1	1	2	4	0	0
1697:	1	1	1	4	3	1	1	4
1705:	3	0	0	2	3	2	3	3
1713:	1	3	0	2	3	2	2	3
1721:	2	1	0	2	4	0	4	1
1729:	2	0	1	0	1	4	0	1
1737:	1	1	0	1	3	0	1	2
1745:	0	4	1	3	2	3	3	1
1753:	4	4	4	2	4	4	2	1
1761:	2	2	2	1	4	2	3	3
1769:	2	3	2	7	3	2	3	0
1777:	3	1	2	0	2	1	2	2
1785:	1	0	1	4	2	6	2	1
1793:	2	4	3	1	0	1	2	2
1801:	4	2	4	0	0	2	4	3
1809:	2	1	2	1	4	1	1	1
1817:	0	2	3	4	2	2	3	1
1825:	1	1	3	2	3	3	0	1
1833:	1	4	4	5	9	7	2	1
1841:	3	1	4	3	1	1	2	1
1849:	0	1	2	2	0	0	3	1
1857:	2	0	1	2	1	2	2	2
1865:	1	1	3	1	1	1	0	0
1873:	1	2	1	3	2	2	1	0
1881:	1	1	0	2	0	3	1	4
1889:	4	3	1	1	3	1	1	2
1897:	2	2	3	1	0	6	0	3
1905:	2	2	1	2	1	0	2	0
1913:	2	1	1	2	2	1	3	1
1921:	2	1	2	3	2	2	0	0
1929:	1	1	2	1	1	4	0	4
1937:	1	1	1	2	1	2	0	0
1945:	3	0	0	1	0	1	2	1
1953:	2	4	2	2	3	2	1	4
1961:	3	4	1	3	2	0	0	3
1969:	1	2	1	7	4	2	3	3
1977:	1	1	1	1	1	1	0	1
1985:	2	1	1	4	0	1	2	4
1993:	0	1	1	0	1	3	0	0
2001:	0	1	2	2	5	3	1	0
2009:	0	2	1	2	3	1	1	1
2017:	0	0	1	3	0	0	0	1
2025:	0	1	0	1	2	0	1	1
2033:	2	4	0	0	1	1	0	4
2041:	1	3	2	2	1	1	1	0
2049:	0	0	0	1	1	2	0	1
2057:	0	1	1	4	1	0	0	2
2065:	3	0	0	2	0	2	1	2
2073:	2	1	0	0	0	3	0	1
2081:	1	1	2	1	0	3	2	1
2089:	0	0	0	2	2	2	2	1

2097:	1	0	1	0	2	1	1	1

Sample Title: GAS 1302

Channel								
2105:	0	0	4	3	0	1	2	1
2113:	1	4	1	0	2	1	0	1
2121:	1	0	0	2	2	0	1	2
2129:	4	2	1	1	1	1	1	4
2137:	3	3	0	0	1	0	2	2
2145:	1	0	1	0	1	0	0	3
2153:	1	2	0	0	0	1	2	2
2161:	1	1	1	2	3	0	0	1
2169:	0	2	1	1	0	1	0	4
2177:	0	2	0	0	0	2	1	0
2185:	1	1	2	2	1	1	0	1
2193:	2	6	0	0	1	0	3	0
2201:	1	0	0	1	4	1	0	0
2209:	4	0	4	0	2	0	2	2
2217:	1	0	0	1	0	1	0	1
2225:	2	0	1	1	0	1	2	0
2233:	4	3	0	0	1	3	1	0
2241:	1	1	0	1	4	0	1	2
2249:	2	0	2	3	3	1	0	1
2257:	1	0	1	0	2	2	2	3
2265:	1	1	1	2	1	2	1	0
2273:	0	0	0	3	3	2	1	2
2281:	1	1	0	3	1	1	0	1
2289:	0	0	0	0	2	0	0	0
2297:	2	0	1	1	0	2	0	1
2305:	0	0	0	1	1	0	0	1
2313:	0	0	0	1	0	2	1	1
2321:	1	0	0	1	1	1	0	1
2329:	1	0	1	1	1	0	1	1
2337:	1	0	1	0	1	0	0	0
2345:	1	1	0	1	1	0	0	0
2353:	0	0	1	1	0	1	1	1
2361:	1	0	0	1	0	1	1	2
2369:	2	1	1	0	0	1	1	3
2377:	0	0	0	1	1	0	0	1
2385:	0	2	0	0	1	0	1	2
2393:	0	0	0	0	0	0	0	0
2401:	0	0	1	0	0	0	2	0
2409:	0	1	0	0	1	0	1	0
2417:	0	0	0	0	0	1	0	0
2425:	1	0	1	2	0	0	1	2
2433:	1	0	0	0	0	0	0	0
2441:	1	1	2	0	1	1	1	0
2449:	0	1	0	0	1	0	0	0
2457:	0	0	0	1	0	0	1	0
2465:	0	0	2	0	0	0	0	0
2473:	2	1	0	0	0	0	0	0
2481:	0	0	0	0	0	0	0	0
2489:	0	0	0	0	0	0	0	1
2497:	0	2	2	1	0	0	1	3
2505:	5	15	9	10	4	0	0	0
2513:	0	0	0	0	0	0	0	0
2521:	0	0	0	0	0	1	0	0

2529:	0	0	0	0	0	0	0	0

Sample Title: GAS 1302

Channel								
2537:	0	0	0	0	0	1	0	0
2545:	0	0	0	0	0	1	0	0
2553:	0	0	0	0	0	0	0	0
2561:	1	0	0	0	0	0	0	0
2569:	0	0	0	0	0	0	0	0
2577:	1	0	0	1	0	0	0	1
2585:	0	0	0	0	0	0	0	0
2593:	0	0	0	0	0	0	0	0
2601:	0	0	0	0	0	0	0	0
2609:	0	0	0	0	0	2	1	5
2617:	1	1	2	1	0	0	0	0
2625:	0	0	1	0	0	0	0	0
2633:	0	0	0	0	0	0	0	0
2641:	0	0	0	0	0	0	1	0
2649:	0	0	0	0	0	0	0	1
2657:	1	0	0	0	0	0	0	0
2665:	0	0	0	0	0	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	0	0	0	0	0	0	0	0
2689:	0	0	0	0	0	0	0	0
2697:	0	0	0	0	0	0	0	0
2705:	0	0	0	0	0	0	0	0
2713:	0	0	0	0	0	0	0	0
2721:	0	0	0	0	0	0	0	0
2729:	0	1	0	0	0	0	0	0
2737:	0	3	0	0	0	0	0	0
2745:	0	0	0	0	0	0	0	0
2753:	0	0	0	0	0	0	0	0
2761:	0	0	1	0	0	0	0	0
2769:	1	0	0	0	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	0	1	0	1	1	0	0	0
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	1
2817:	0	0	0	1	0	0	0	0
2825:	0	0	0	0	0	0	0	0
2833:	0	0	1	0	0	1	0	0
2841:	0	2	0	0	0	1	0	0
2849:	0	1	0	0	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	1	0	0	0	0
2881:	0	0	0	0	0	0	0	1
2889:	1	0	1	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	1	0	0	0	0	0
2913:	0	0	1	0	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	1	0	0	0
2937:	0	1	0	0	0	0	1	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	0	0	0

2961:	1	0	0	0	0	0	0	0

Sample Title: GAS 1302

Channel								
2969:	0	1	0	0	0	0	0	0
2977:	0	0	0	0	0	0	0	0
2985:	0	0	0	0	0	0	0	0
2993:	0	0	0	1	0	0	0	0
3001:	0	1	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	0	0	0	0	0	0
3025:	0	0	0	0	0	0	0	0
3033:	0	0	0	0	0	0	0	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	1
3065:	0	0	0	0	0	0	0	1
3073:	0	0	0	0	0	0	0	0
3081:	0	1	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:	0	0	2	0	0	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	0	1	0	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	1	0	0	0
3153:	0	0	0	0	0	1	0	0
3161:	0	0	1	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	1	0
3193:	0	0	0	0	0	0	1	0
3201:	0	0	0	0	0	0	0	0
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	1	0	0
3233:	0	0	0	0	0	0	0	0
3241:	0	0	0	0	0	0	0	0
3249:	0	0	0	0	0	0	0	0
3257:	1	0	0	0	0	0	0	0
3265:	0	0	0	1	0	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	0	0	0	0
3289:	0	1	1	0	0	0	0	1
3297:	0	0	0	0	0	0	0	0
3305:	0	0	1	0	0	1	0	0
3313:	0	0	0	0	0	0	0	0
3321:	0	0	1	0	0	0	0	0
3329:	0	0	0	0	0	0	1	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	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

3393:	0	0	0	0	0	0	0	0

Sample Title: GAS 1302

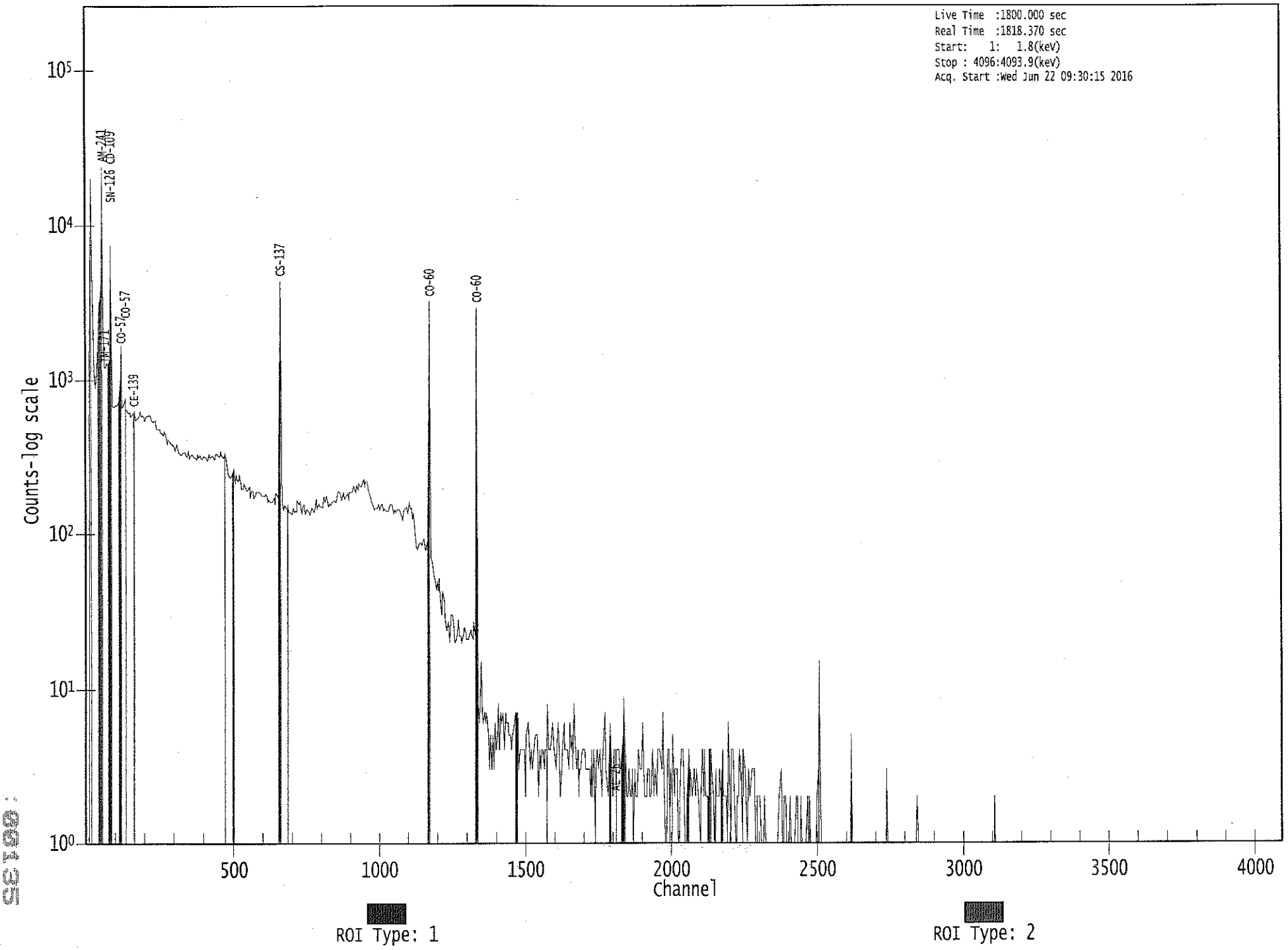
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	1
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	1	0	0	0	1	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	1	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	1	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	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	1	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	0
3649:	0	0	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	1	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	1	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	1	0	0	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	1	1	0	0	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	0	0	0	0	1
3785:	0	0	0	0	0	0	0	1
3793:	0	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

3825:	0	1	0	0	0	0	0	0

Sample Title: GAS 1302

Channel								
3833:	0	0	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	1	0	0	1	0	0
3865:	0	1	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	1
3897:	0	0	1	0	0	0	0	0
3905:	0	0	0	0	0	0	0	1
3913:	0	0	0	0	1	0	0	0
3921:	0	0	0	0	1	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	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	1	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	1
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	1	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	1
4057:	0	0	0	0	0	0	0	1
4065:	0	0	0	0	0	0	1	0
4073:	0	0	0	0	0	0	0	1
4081:	0	0	0	0	0	0	0	0
4089:	1	0	0	0	0	0	0	0

0000039246.CNF



WB 6/22/16

Apex-Gamma

Analysis Report for 1606093-02
BLANK

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1606093-02
Sample Description	: BLANK
Sample Type	: SOIL
Sample Size	: 7.834E+02 grams
Facility	: Countroom
Sample Taken On	: 6/22/2016 8:16:48AM
Acquisition Started	: 6/22/2016 8:28:49AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3607.4 seconds
Dead Time	: 0.21 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 15 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 10/25/2014
Efficiency Calibration Used Done On	: 11/8/2014
Efficiency Calibration Description	:
Sample Number	: 39244

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
6/22/16

Analysis Report for 1606093-02

BLANK

PEAK LOCATE REPORT

Peak Locate Performed on : 6/22/2016 9:29:12AM
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	270.53	269.88	0.0000	0.00
2	465.83	465.27	0.0000	0.00
3	483.30	482.75	0.0000	0.00
4	510.41	509.87	0.0000	0.00
5	531.82	531.29	0.0000	0.00
6	537.84	537.31	0.0000	0.00
7	728.73	728.30	0.0000	0.00
8	762.31	761.90	0.0000	0.00
9	770.37	769.96	0.0000	0.00
10	836.46	836.08	0.0000	0.00
11	997.71	997.42	0.0000	0.00
12	1918.53	1918.80	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1606093-02

BLANK

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/22/2016 9:29:12AM

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	270.53	265 -	272	269.88	1.85E+01	23.49	7.91E+01	1.67
2	465.83	461 -	470	465.27	1.00E+01	13.42	2.00E+01	1.16
3	483.30	471 -	499	482.75	4.74E+01	40.37	8.91E+01	21.05
4	510.41	503 -	515	509.87	5.26E+01	21.98	3.08E+01	4.85
5	531.82	525 -	535	531.29	1.44E+01	17.36	3.13E+01	2.42
6	537.84	535 -	540	537.31	1.02E+01	9.33	9.60E+00	1.20
7	728.73	724 -	731	728.30	7.81E+00	10.00	1.04E+01	3.21
8	762.31	757 -	766	761.90	1.28E+01	12.45	1.44E+01	3.12
9	770.37	767 -	772	769.96	1.10E+01	8.60	6.00E+00	1.11
10	836.46	832 -	839	836.08	9.10E+00	10.39	1.18E+01	2.73
11	997.71	993 -	1001	997.42	1.20E+01	6.93	0.00E+00	3.17
12	1918.53	1916 -	1921	1918.80	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

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/22/2016 9:29:12AM

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	270.53	265 -	272	1.85E+01	23.49	7.91E+01	1.80E+01
2	465.83	461 -	470	1.00E+01	13.42	2.00E+01	9.73E+00
3	483.30	471 -	499	4.74E+01	40.37	8.91E+01	3.12E+01

Analysis Report for 1606093-02

BLANK

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
4	510.41	503 -	515	5.26E+01	21.98	3.08E+01	1.36E+01
5	531.82	525 -	535	1.44E+01	17.36	3.13E+01	1.28E+01
6	537.84	535 -	540	1.02E+01	9.33	9.60E+00	5.59E+00
7	728.73	724 -	731	7.81E+00	10.00	1.04E+01	6.82E+00
8	762.31	757 -	766	1.28E+01	12.45	1.44E+01	8.37E+00
9	770.37	767 -	772	1.10E+01	8.60	6.00E+00	4.50E+00
10	836.46	832 -	839	9.10E+00	10.39	1.18E+01	6.96E+00
11	997.71	993 -	1001	1.20E+01	6.93	0.00E+00	0.00E+00
12	1918.53	1916 -	1921	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

PEAK WITH NID REPORT

Peak Analysis Performed on : 6/22/2016 9:29:12AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 1.000 keV

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
1	270.53	265 -	272	269.88	1.85E+01	23.49	7.91E+01	.....
2	465.83	461 -	470	465.27	1.00E+01	13.42	2.00E+01	.....
3	483.30	471 -	499	482.75	4.74E+01	40.37	8.91E+01	.....
4	510.41	503 -	515	509.87	5.26E+01	21.98	3.08E+01	.....
5	531.82	525 -	535	531.29	1.44E+01	17.36	3.13E+01	ND-147
6	537.84	535 -	540	537.31	1.02E+01	9.33	9.60E+00	BA-140
7	728.73	724 -	731	728.30	7.81E+00	10.00	1.04E+01	.....
8	762.31	757 -	766	761.90	1.28E+01	12.45	1.44E+01	.....
9	770.37	767 -	772	769.96	1.10E+01	8.60	6.00E+00	.....
10	836.46	832 -	839	836.08	9.10E+00	10.39	1.18E+01	.....
11	997.71	993 -	1001	997.42	1.20E+01	6.93	0.00E+00	.....
12	1918.53	1916 -	1921	1918.80	5.00E+00	4.47	0.00E+00	.....

Analysis Report for 1606093-02

BLANK

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 : 6/22/2016 9:29:12AM

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
1	270.53	1.85E+01	23.49	8.43E-03	8.88E-04
2	465.83	1.00E+01	13.42	5.05E-03	6.27E-04
3	483.30	4.74E+01	40.37	4.87E-03	6.02E-04
4	510.41	5.26E+01	21.98	4.61E-03	5.62E-04
5	531.82	1.44E+01	17.36	4.43E-03	5.31E-04
6	537.84	1.02E+01	9.33	4.38E-03	5.22E-04
7	728.73	7.81E+00	10.00	3.25E-03	3.03E-04
8	762.31	1.28E+01	12.45	3.11E-03	2.84E-04
9	770.37	1.10E+01	8.60	3.08E-03	2.79E-04
10	836.46	9.10E+00	10.39	2.84E-03	2.42E-04
11	997.71	1.20E+01	6.93	2.39E-03	1.95E-04
12	1918.53	5.00E+00	4.47	1.34E-03	1.11E-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 : 6/22/2016 9:29:12AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039130.CNF

Analysis Report for 1606093-02

BLANK

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	270.53	1.85E+01	23.49			1.85E+01	2.35E+01
2	465.83	1.00E+01	13.42			1.00E+01	1.34E+01
3	483.30	4.74E+01	40.37			4.74E+01	4.04E+01
4	510.41	5.26E+01	21.98			5.26E+01	2.20E+01
5	531.82	1.44E+01	17.36			1.44E+01	1.74E+01
6	537.84	1.02E+01	9.33			1.02E+01	9.33E+00
7	728.73	7.81E+00	10.00			7.81E+00	1.00E+01
8	762.31	1.28E+01	12.45			1.28E+01	1.24E+01
9	770.37	1.10E+01	8.60			1.10E+01	8.60E+00
10	836.46	9.10E+00	10.39			9.10E+00	1.04E+01
11	997.71	1.20E+01	6.93			1.20E+01	6.93E+00
12	1918.53	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 : 6/22/2016 9:29:12AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039130.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	270.53	1.85E+01	23.49			1.85E+01	2.35E+01
2	465.83	1.00E+01	13.42			1.00E+01	1.34E+01
3	483.30	4.74E+01	40.37			4.74E+01	4.04E+01
4	510.41	5.26E+01	21.98			5.26E+01	2.20E+01
5	531.82	1.44E+01	17.36			1.44E+01	1.74E+01
6	537.84	1.02E+01	9.33			1.02E+01	9.33E+00
7	728.73	7.81E+00	10.00			7.81E+00	1.00E+01
8	762.31	1.28E+01	12.45			1.28E+01	1.24E+01
9	770.37	1.10E+01	8.60			1.10E+01	8.60E+00
10	836.46	9.10E+00	10.39			9.10E+00	1.04E+01
11	997.71	1.20E+01	6.93			1.20E+01	6.93E+00
12	1918.53	5.00E+00	4.47			5.00E+00	4.47E+00

Analysis Report for 1606093-02

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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
		*		?	
		*		?	

* = Energy line found in the spectrum.
- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 9:29:12AM
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	270.53	5.12931E-03	63.62		
2	465.83	2.77778E-03	67.08		
3	483.30	1.31793E-02	42.54		
4	510.41	1.46078E-02	20.90		
5	531.82	3.99074E-03	60.43	Tol.	ND-147
6	537.84	2.83333E-03	45.72	Tol.	BA-140
7	728.73	2.16880E-03	64.04		
8	762.31	3.55556E-03	48.63		

Analysis Report for 1606093-02

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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
9	770.37	3.05556E-03	39.10		
10	836.46	2.52778E-03	57.10		
11	997.71	3.33333E-03	28.87		
12	1918.53	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 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

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Analysis Report for 1606093-02

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Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments

? = 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 1606093-02

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 9:29:12AM
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	270.53	5.12931E-03	63.62		
2	465.83	2.77778E-03	67.08		
3	483.30	1.31793E-02	42.54		
4	510.41	1.46078E-02	20.90		
5	531.82	3.99074E-03	60.43	Tol.	ND-147
6	537.84	2.83333E-03	45.72	Tol.	BA-140
7	728.73	2.16880E-03	64.04		
8	762.31	3.55556E-03	48.63		
9	770.37	3.05556E-03	39.10		
10	836.46	2.52778E-03	57.10		
11	997.71	3.33333E-03	28.87		
12	1918.53	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	4.23E-01	5.86E-01	5.86E-01
+	NA-22	1274.54	99.94	-1.51E-02	6.05E-02	6.05E-02
+	NA-24	1368.53	99.99	5.55E-03	7.04E-02	8.33E-02
		2754.09	99.86	9.56E-03		7.04E-02
+	AL-26	1808.65	99.76	8.35E-03	7.36E-02	7.36E-02

Analysis Report for 1606093-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	K-40	1460.81	10.67	2.13E-01	6.41E-01	6.41E-01
+	AR-41	1293.64	99.16	-5.34E-02	7.19E-02	7.19E-02
+	TI-44	67.88	94.40	-6.29E-03	2.64E-02	2.71E-02
		78.34	96.00	-5.94E-03		2.64E-02
+	SC-46	889.25	99.98	-4.95E-02	6.75E-02	6.75E-02
		1120.51	99.99	5.07E-03		7.79E-02
+	V-48	983.52	99.98	7.91E-03	6.28E-02	6.28E-02
		1312.10	97.50	2.42E-02		7.49E-02
+	CR-51	320.08	9.83	7.65E-02	4.67E-01	4.67E-01
+	MN-54	834.83	99.97	1.50E-03	7.38E-02	7.38E-02
+	CO-56	846.75	99.96	-2.30E-02	6.88E-02	6.88E-02
		1037.75	14.03	8.89E-02		5.38E-01
		1238.25	67.00	-2.50E-02		1.16E-01
		1771.40	15.51	-5.40E-02		5.19E-01
		2598.48	16.90	5.27E-02		3.88E-01
+	CO-57	122.06	85.51	-7.06E-03	3.24E-02	3.24E-02
		136.48	10.60	-4.82E-02		2.99E-01
+	CO-58	810.76	99.40	-2.24E-02	5.98E-02	5.98E-02
+	FE-59	1099.22	56.50	1.99E-02	1.10E-01	1.10E-01
		1291.56	43.20	2.70E-02		1.77E-01
+	CO-60	1173.22	100.00	2.36E-02	8.32E-02	8.79E-02
		1332.49	100.00	7.87E-03		8.32E-02
+	ZN-65	1115.52	50.75	-6.61E-02	1.53E-01	1.53E-01
+	GA-67	93.31	35.70	1.16E-01	9.48E-02	9.48E-02
		208.95	2.24	9.59E-01		1.86E+00
		300.22	16.00	4.27E-02		3.27E-01
+	SE-75	121.11	16.70	-2.72E-02	5.24E-02	1.64E-01
		136.00	59.20	-9.74E-03		5.24E-02
		264.65	59.80	-1.35E-02		6.70E-02
		279.53	25.20	1.46E-02		1.61E-01
		400.65	11.40	-8.94E-02		4.24E-01
+	RB-82	776.52	13.00	-2.30E-01	4.55E-01	4.55E-01
+	RB-83	520.41	46.00	-1.04E-02	1.20E-01	1.20E-01
		529.64	30.30	9.34E-02		1.97E-01
		552.65	16.40	-2.04E-01		3.29E-01
+	KR-85	513.99	0.43	3.44E-01	1.84E+01	1.84E+01
+	SR-85	513.99	99.27	1.51E-03	8.04E-02	8.04E-02
+	Y-88	898.02	93.40	4.31E-02	8.70E-02	8.70E-02
		1836.01	99.38	1.62E-02		9.79E-02
+	NB-93M	16.57	9.43	7.02E-01	3.02E-01	3.02E-01
+	NB-94	702.63	100.00	4.29E-03	6.61E-02	7.12E-02
		871.10	100.00	7.61E-03		6.61E-02
+	NB-95	765.79	99.81	-1.26E-02	7.14E-02	7.14E-02
+	NB-95M	235.69	25.00	-8.81E-03	1.66E-01	1.66E-01
+	ZR-95	724.18	43.70	-3.36E-02	1.04E-01	1.26E-01
		756.72	55.30	-6.77E-03		1.04E-01
+	MO-99	181.06	6.20	-4.50E-01	6.01E-01	6.21E-01

Analysis Report for 1606093-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	MO-99	739.58	12.80	4.24E-01	6.01E-01	6.01E-01
		778.00	4.50	-4.02E-01		1.54E+00
+	RU-103	497.08	89.00	9.10E-03	6.11E-02	6.11E-02
+	RU-106	621.84	9.80	2.19E-01	6.69E-01	6.69E-01
+	AG-108M	433.93	89.90	-9.24E-03	5.56E-02	5.56E-02
		614.37	90.40	-3.03E-02		6.34E-02
		722.95	90.50	-7.55E-03		5.64E-02
+	CD-109	88.03	3.72	-4.40E-01	7.86E-01	7.86E-01
+	AG-110M	657.75	93.14	-2.29E-02	6.10E-02	6.10E-02
		677.61	10.53	-9.00E-02		6.53E-01
		706.67	16.46	9.44E-02		4.75E-01
		763.93	21.98	-4.78E-02		3.31E-01
		884.67	71.63	6.35E-03		1.09E-01
		1384.27	23.94	-1.17E-01		2.72E-01
+	CD-113M	263.70	0.02	-8.05E-01	1.81E+02	1.81E+02
+	SN-113	255.12	1.93	7.96E-01	8.13E-02	2.18E+00
		391.69	64.90	1.77E-03		8.13E-02
+	TE123M	159.00	84.10	-7.11E-03	4.16E-02	4.16E-02
+	SB-124	602.71	97.87	-1.27E-02	6.61E-02	6.61E-02
		645.85	7.26	-4.03E-01		8.10E-01
		722.78	11.10	4.15E-02		4.59E-01
		1691.02	49.00	-1.76E-02		1.22E-01
+	I-125	35.49	6.49	7.49E-02	3.45E-01	3.45E-01
+	SB-125	176.33	6.89	1.10E-01	1.73E-01	5.51E-01
		427.89	29.33	3.20E-02		1.73E-01
		463.38	10.35	-3.04E-02		4.00E-01
		600.56	17.80	6.39E-02		3.74E-01
		635.90	11.32	-1.88E-01		4.58E-01
+	SB-126	414.70	83.30	1.22E-02	5.79E-02	6.70E-02
		666.33	99.60	-2.41E-02		5.79E-02
		695.00	99.60	-1.17E-02		6.80E-02
		720.50	53.80	-2.17E-02		9.46E-02
+	SN-126	87.57	37.00	-4.41E-02	7.88E-02	7.88E-02
+	SB-127	473.00	25.00	-3.32E-02	1.71E-01	2.05E-01
		685.20	35.70	-4.46E-02		1.71E-01
		783.80	14.70	2.82E-01		5.63E-01
+	I-129	29.78	57.00	-1.76E-02	4.19E-02	4.19E-02
		33.60	13.20	-5.28E-02		1.67E-01
		39.58	7.52	-7.30E-02		2.86E-01
+	I-131	284.30	6.05	-1.14E-01	5.74E-02	6.33E-01
		364.48	81.20	1.11E-02		5.74E-02
		636.97	7.26	-4.64E-01		6.47E-01
		722.89	1.80	2.56E-01		2.84E+00
+	TE-132	49.72	13.10	6.02E-02	4.75E-02	1.74E-01
		228.16	88.00	1.06E-02		4.75E-02
+	BA-133	81.00	33.00	-5.57E-02	7.64E-02	7.64E-02
		302.84	17.80	9.51E-02		2.93E-01
		356.01	60.00	6.96E-02		9.09E-02
+	I-133	529.87	86.30	3.36E-02	7.09E-02	7.09E-02

Analysis Report for 1606093-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	XE-133	81.00	38.00	-4.86E-02	6.66E-02	6.66E-02
+	CS-134	563.23	8.38	-2.80E-01	6.29E-02	6.83E-01
		569.32	15.43	1.44E-01		3.96E-01
		604.70	97.60	-2.51E-02		6.29E-02
		795.84	85.40	2.41E-02		8.86E-02
		801.93	8.73	-3.42E-02		8.13E-01
+	CS-135	268.24	16.00	3.61E-02	2.84E-01	2.84E-01
+	I-135	1131.51	22.50	6.92E-02	2.46E-01	3.42E-01
		1260.41	28.60	-2.25E-02		2.46E-01
		1678.03	9.54	3.19E-01		1.15E+00
+	CS-136	153.22	7.46	-2.59E-02	6.03E-02	4.59E-01
		163.89	4.61	-3.37E-02		7.55E-01
		176.55	13.56	5.58E-02		2.81E-01
		273.65	12.66	-1.34E-02		3.73E-01
		340.57	48.50	3.10E-02		1.01E-01
		818.50	99.70	-1.81E-03		6.03E-02
		1048.07	79.60	-1.64E-02		8.80E-02
		1235.34	19.70	2.49E-03		4.33E-01
+	CS-137	661.65	85.12	-1.26E-02	6.34E-02	6.34E-02
+	LA-138	788.74	34.00	0.00E+00	1.11E-01	2.25E-01
		1435.80	66.00	-4.19E-02		1.11E-01
+	CE-139	165.85	80.35	-9.08E-03	4.34E-02	4.34E-02
+	BA-140	162.64	6.70	-3.05E-02	2.23E-01	5.17E-01
		304.84	4.50	1.24E-01		1.08E+00
		423.70	3.20	1.99E-01		1.64E+00
		437.55	2.00	-2.13E-01		2.48E+00
		537.32	25.00	-1.81E-02		2.23E-01
+	LA-140	328.77	20.50	-1.01E-01	9.09E-02	2.03E-01
		487.03	45.50	-5.15E-03		1.15E-01
		815.85	23.50	0.00E+00		2.64E-01
		1596.49	95.49	-1.93E-02		9.09E-02
+	CE-141	145.44	48.40	5.32E-03	7.16E-02	7.16E-02
+	CE-143	57.36	11.80	-2.35E-01	1.09E-01	1.91E-01
		293.26	42.00	-3.59E-02		1.09E-01
		664.55	5.20	-5.41E-01		1.06E+00
+	CE-144	133.54	10.80	-7.23E-02	2.73E-01	2.73E-01
+	PM-144	476.78	42.00	6.17E-02	5.98E-02	1.40E-01
		618.01	98.60	-1.59E-02		5.98E-02
		696.49	99.49	-1.78E-02		6.67E-02
+	PM-145	36.85	21.70	3.10E-02	5.56E-02	1.02E-01
		37.36	39.70	1.86E-02		5.56E-02
		42.30	15.10	-1.79E-02		1.43E-01
		72.40	2.31	2.93E-01		1.09E+00
+	PM-146	453.90	39.94	2.47E-02	1.27E-01	1.27E-01
		735.90	14.01	1.45E-01		4.77E-01
		747.13	13.10	-6.54E-02		4.35E-01
+	ND-147	91.11	28.90	5.26E-02	1.13E-01	1.13E-01
		531.02	13.10	1.43E-03		4.44E-01
+	PM-149	285.90	3.10	2.50E-01	1.28E+00	1.28E+00

Analysis Report for 1606093-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	EU-152	121.78	20.50	-2.94E-02	1.35E-01	1.35E-01
		244.69	5.40	-3.58E-01		6.67E-01
		344.27	19.13	-1.03E-01		2.21E-01
		778.89	9.20	-1.95E-01		7.50E-01
		964.01	10.40	-3.93E-02		7.02E-01
		1085.78	7.22	2.00E-02		9.03E-01
		1112.02	9.60	4.71E-01		9.58E-01
		1407.95	14.94	1.23E-02		2.71E-01
+	GD-153	97.43	31.30	-6.41E-03	9.54E-02	9.54E-02
		103.18	22.20	-7.08E-02		1.20E-01
+	EU-154	123.07	40.50	-3.50E-03	6.99E-02	6.99E-02
		723.30	19.70	-3.47E-02		2.59E-01
		873.19	11.50	-1.57E-01		5.34E-01
		996.32	10.30	1.63E-01		7.31E-01
		1004.76	17.90	-8.34E-02		3.92E-01
		1274.45	35.50	-4.26E-02		1.70E-01
+	EU-155	86.50	30.90	-1.13E-01	8.89E-02	8.89E-02
		105.30	20.70	4.28E-02		1.36E-01
+	EU-156	811.77	10.40	-4.83E-02	5.95E-01	5.95E-01
		1153.47	7.20	2.98E-01		1.06E+00
		1230.71	8.90	8.84E-02		1.03E+00
+	HO-166M	184.41	72.60	1.42E-02	5.81E-02	5.81E-02
		280.45	29.60	3.85E-03		1.36E-01
		410.94	11.10	-3.03E-02		4.87E-01
		711.69	54.10	1.39E-03		1.33E-01
+	TM-171	66.72	0.14	1.34E+01	1.93E+01	1.93E+01
+	HF-172	81.75	4.52	-1.70E-01	2.52E-01	5.72E-01
		125.81	11.30	2.64E-02		2.52E-01
+	LU-172	181.53	20.60	-6.69E-03	8.42E-02	1.98E-01
		810.06	16.63	-1.34E-01		3.58E-01
		912.12	15.25	-1.45E-01		3.83E-01
		1093.66	62.50	7.01E-03		8.42E-02
+	LU-173	100.72	5.24	-4.09E-01	2.22E-01	5.12E-01
		272.11	21.20	-2.92E-02		2.22E-01
+	HF-175	343.40	84.00	-3.55E-03	5.30E-02	5.30E-02
+	LU-176	88.34	13.30	1.92E-03	4.73E-02	2.31E-01
		201.83	86.00	7.59E-03		4.73E-02
		306.78	94.00	-6.95E-03		4.96E-02
+	TA-182	67.75	41.20	-1.44E-02	6.20E-02	6.20E-02
		1121.30	34.90	-3.32E-02		2.14E-01
		1189.05	16.23	5.82E-02		3.82E-01
		1221.41	26.98	6.42E-02		3.26E-01
		1231.02	11.44	6.87E-02		8.03E-01
+	IR-192	308.46	29.68	-4.55E-02	8.68E-02	1.45E-01
		468.07	48.10	-9.24E-02		8.68E-02
+	HG-203	279.19	77.30	4.76E-03	5.24E-02	5.24E-02
+	BI-207	569.67	97.72	2.28E-02	6.26E-02	6.26E-02
		1063.62	74.90	-5.68E-03		1.03E-01
+	TL-208	583.14	30.22	3.66E-02	2.03E-01	2.03E-01

Analysis Report for 1606093-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TL-208	860.37	4.48	8.97E-02	2.03E-01	1.78E+00
		2614.66	35.85	1.25E-01		3.27E-01
+	BI-210M	262.00	45.00	4.26E-02	9.95E-02	9.95E-02
		300.00	23.00	1.14E-01		2.34E-01
+	PB-210	46.50	4.25	-2.64E-02	5.17E-01	5.17E-01
+	PB-211	404.84	2.90	4.67E-01	1.84E+00	1.84E+00
		831.96	2.90	6.57E-01		2.60E+00
+	BI-212	727.17	11.80	2.89E-01	5.17E-01	5.17E-01
		1620.62	2.75	1.03E+00		3.19E+00
+	PB-212	238.63	44.60	1.64E-02	9.37E-02	9.37E-02
		300.09	3.41	7.70E-01		1.58E+00
+	BI-214	609.31	46.30	1.20E-02	1.34E-01	1.34E-01
		1120.29	15.10	3.36E-02		5.16E-01
		1764.49	15.80	-1.03E-01		4.55E-01
		2204.22	4.98	2.66E-02		1.48E+00
+	PB-214	295.21	19.19	2.60E-02	1.35E-01	2.56E-01
		351.92	37.19	3.26E-02		1.35E-01
+	RN-219	401.80	6.50	-1.77E-01	7.35E-01	7.35E-01
+	RA-223	323.87	3.88	7.87E-02	1.14E+00	1.14E+00
+	RA-224	240.98	3.95	4.55E-01	1.05E+00	1.05E+00
+	RA-225	40.00	31.00	-1.78E-02	6.98E-02	6.98E-02
+	RA-226	186.21	3.28	3.76E-01	1.29E+00	1.29E+00
+	TH-227	50.10	8.40	9.35E-02	2.71E-01	2.71E-01
		236.00	11.50	-1.91E-02		3.60E-01
		256.20	6.30	3.66E-02		6.71E-01
+	AC-228	338.32	11.40	1.58E-01	2.31E-01	4.36E-01
		911.07	27.70	-1.50E-02		2.31E-01
		969.11	16.60	-2.96E-02		3.91E-01
+	TH-230	48.44	16.90	3.38E-02	1.32E-01	1.32E-01
		62.85	4.60	5.77E-01		5.88E-01
		67.67	0.37	-1.60E+00		6.90E+00
+	PA-231	283.67	1.60	-1.45E+00	2.26E+00	2.27E+00
		302.67	2.30	7.36E-01		2.26E+00
+	TH-231	25.64	14.70	1.82E-02	1.85E-01	1.85E-01
		84.21	6.40	7.50E-02		4.23E-01
+	PA-233	311.98	38.60	-3.14E-02	1.12E-01	1.12E-01
+	PA-234	131.20	20.40	-2.30E-02	1.41E-01	1.41E-01
		733.99	8.80	3.38E-02		7.00E-01
		946.00	12.00	1.30E-01		5.29E-01
+	PA-234M	1001.03	0.92	-1.94E+00	8.22E+00	8.22E+00
+	TH-234	63.29	3.80	5.54E-01	7.04E-01	7.04E-01
+	U-235	143.76	10.50	1.29E-03	3.24E-01	3.24E-01
		163.35	4.70	-3.29E-02		7.38E-01
		205.31	4.70	5.39E-02		8.54E-01
+	NP-237	86.50	12.60	-2.78E-01	2.18E-01	2.18E-01
+	NP-239	106.10	22.70	3.95E-02	1.26E-01	1.26E-01
		228.18	10.70	9.60E-02		3.92E-01
		277.60	14.10	-1.12E-01		2.94E-01

Analysis Report for 1606093-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	AM-241	59.54	35.90	3.79E-02	7.18E-02	7.18E-02
+	AM-243	74.67	66.00	9.35E-03	3.83E-02	3.83E-02
+	CM-243	209.75	3.29	7.64E-01	2.93E-01	1.24E+00
		228.14	10.60	8.75E-02		3.92E-01
		277.60	14.00	-1.12E-01		2.93E-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	5.86E-01	5.86E-01	4.23E-01	2.68E-01
NA-22	1274.54	99.94	6.05E-02	6.05E-02	-1.51E-02	2.34E-02
NA-24	1368.53	99.99	8.33E-02	7.04E-02	5.55E-03	3.41E-02
	2754.09	99.86	7.04E-02		9.56E-03	2.22E-02
AL-26	1808.65	99.76	7.36E-02	7.36E-02	8.35E-03	2.75E-02
K-40	1460.81	10.67	6.41E-01	6.41E-01	2.13E-01	2.48E-01
AR-41	1293.64	99.16	7.19E-02	7.19E-02	-5.34E-02	2.69E-02
TI-44	67.88	94.40	2.71E-02	2.64E-02	-6.29E-03	1.29E-02
	78.34	96.00	2.64E-02		-5.94E-03	1.26E-02
SC-46	889.25	99.98	6.75E-02	6.75E-02	-4.95E-02	2.89E-02
	1120.51	99.99	7.79E-02		5.07E-03	3.29E-02
V-48	983.52	99.98	6.28E-02	6.28E-02	7.91E-03	2.60E-02
	1312.10	97.50	7.49E-02		2.42E-02	3.03E-02
CR-51	320.08	9.83	4.67E-01	4.67E-01	7.65E-02	2.15E-01
MN-54	834.83	99.97	7.38E-02	7.38E-02	1.50E-03	3.23E-02
CO-56	846.75	99.96	6.88E-02	6.88E-02	-2.30E-02	2.98E-02
	1037.75	14.03	5.38E-01		8.89E-02	2.29E-01
	1238.25	67.00	1.16E-01		-2.50E-02	4.82E-02

Analysis Report for 1606093-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CO-56	1771.40	15.51	5.19E-01	6.88E-02	-5.40E-02	2.01E-01
	2598.48	16.90	3.88E-01		5.27E-02	1.23E-01
CO-57	122.06	85.51	3.24E-02	3.24E-02	-7.06E-03	1.52E-02
	136.48	10.60	2.99E-01		-4.82E-02	1.41E-01
CO-58	810.76	99.40	5.98E-02	5.98E-02	-2.24E-02	2.54E-02
FE-59	1099.22	56.50	1.10E-01	1.10E-01	1.99E-02	4.43E-02
	1291.56	43.20	1.77E-01		2.70E-02	7.27E-02
CO-60	1173.22	100.00	8.79E-02	8.32E-02	2.36E-02	3.76E-02
	1332.49	100.00	8.32E-02		7.87E-03	3.45E-02
ZN-65	1115.52	50.75	1.53E-01	1.53E-01	-6.61E-02	6.45E-02
GA-67	93.31	35.70	9.48E-02	9.48E-02	1.16E-01	4.55E-02
	208.95	2.24	1.86E+00		9.59E-01	8.75E-01
	300.22	16.00	3.27E-01		4.27E-02	1.53E-01
SE-75	121.11	16.70	1.64E-01	5.24E-02	-2.72E-02	7.72E-02
	136.00	59.20	5.24E-02		-9.74E-03	2.47E-02
	264.65	59.80	6.70E-02		-1.35E-02	3.10E-02
	279.53	25.20	1.61E-01		1.46E-02	7.41E-02
	400.65	11.40	4.24E-01		-8.94E-02	1.92E-01
RB-82	776.52	13.00	4.55E-01	4.55E-01	-2.30E-01	1.95E-01
RB-83	520.41	46.00	1.20E-01	1.20E-01	-1.04E-02	5.35E-02
	529.64	30.30	1.97E-01		9.34E-02	8.91E-02
	552.65	16.40	3.29E-01		-2.04E-01	1.46E-01
KR-85	513.99	0.43	1.84E+01	1.84E+01	3.44E-01	8.54E+00
SR-85	513.99	99.27	8.04E-02	8.04E-02	1.51E-03	3.73E-02
Y-88	898.02	93.40	8.70E-02	8.70E-02	4.31E-02	3.83E-02
	1836.01	99.38	9.79E-02		1.62E-02	3.96E-02
NB-93M	16.57	9.43	3.02E-01	3.02E-01	7.02E-01	1.47E-01
NB-94	702.63	100.00	7.12E-02	6.61E-02	4.29E-03	3.18E-02
	871.10	100.00	6.61E-02		7.61E-03	2.83E-02
NB-95	765.79	99.81	7.14E-02	7.14E-02	-1.26E-02	3.15E-02
NB-95M	235.69	25.00	1.66E-01	1.66E-01	-8.81E-03	7.77E-02
ZR-95	724.18	43.70	1.26E-01	1.04E-01	-3.36E-02	5.41E-02
	756.72	55.30	1.04E-01		-6.77E-03	4.46E-02
MO-99	181.06	6.20	6.21E-01	6.01E-01	-4.50E-01	2.93E-01
	739.58	12.80	6.01E-01		4.24E-01	2.69E-01
	778.00	4.50	1.54E+00		-4.02E-01	6.76E-01
RU-103	497.08	89.00	6.11E-02	6.11E-02	9.10E-03	2.75E-02
RU-106	621.84	9.80	6.69E-01	6.69E-01	2.19E-01	2.99E-01
AG-108M	433.93	89.90	5.56E-02	5.56E-02	-9.24E-03	2.51E-02
	614.37	90.40	6.34E-02		-3.03E-02	2.80E-02
	722.95	90.50	5.64E-02		-7.55E-03	2.38E-02
CD-109	88.03	3.72	7.86E-01	7.86E-01	-4.40E-01	3.75E-01
AG-110M	657.75	93.14	6.10E-02	6.10E-02	-2.29E-02	2.66E-02
	677.61	10.53	6.53E-01		-9.00E-02	2.91E-01
	706.67	16.46	4.75E-01		9.44E-02	2.14E-01
	763.93	21.98	3.31E-01		-4.78E-02	1.46E-01
	884.67	71.63	1.09E-01		6.35E-03	4.78E-02
	1384.27	23.94	2.72E-01		-1.17E-01	1.05E-01
CD-113M	263.70	0.02	1.81E+02	1.81E+02	-8.05E-01	8.41E+01
SN-113	255.12	1.93	2.18E+00	8.13E-02	7.96E-01	1.02E+00
	391.69	64.90	8.13E-02		1.77E-03	3.73E-02
TE123M	159.00	84.10	4.16E-02	4.16E-02	-7.11E-03	1.96E-02
SB-124	602.71	97.87	6.61E-02	6.61E-02	-1.27E-02	2.97E-02

Analysis Report for 1606093-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
SB-124	645.85	7.26	8.10E-01	6.61E-02	-4.03E-01	3.56E-01
	722.78	11.10	4.59E-01		4.15E-02	1.94E-01
	1691.02	49.00	1.22E-01		-1.76E-02	4.33E-02
I-125	35.49	6.49	3.45E-01	3.45E-01	7.49E-02	1.65E-01
SB-125	176.33	6.89	5.51E-01	1.73E-01	1.10E-01	2.60E-01
	427.89	29.33	1.73E-01		3.20E-02	7.84E-02
	463.38	10.35	4.00E-01		-3.04E-02	1.75E-01
	600.56	17.80	3.74E-01		6.39E-02	1.69E-01
	635.90	11.32	4.58E-01		-1.88E-01	1.98E-01
SB-126	414.70	83.30	6.70E-02	5.79E-02	1.22E-02	3.07E-02
	666.33	99.60	5.79E-02		-2.41E-02	2.53E-02
	695.00	99.60	6.80E-02		-1.17E-02	3.02E-02
	720.50	53.80	9.46E-02		-2.17E-02	4.00E-02
SN-126	87.57	37.00	7.88E-02	7.88E-02	-4.41E-02	3.76E-02
SB-127	473.00	25.00	2.05E-01	1.71E-01	-3.32E-02	9.19E-02
	685.20	35.70	1.71E-01		-4.46E-02	7.50E-02
	783.80	14.70	5.63E-01		2.82E-01	2.52E-01
I-129	29.78	57.00	4.19E-02	4.19E-02	-1.76E-02	2.02E-02
	33.60	13.20	1.67E-01		-5.28E-02	8.01E-02
	39.58	7.52	2.86E-01		-7.30E-02	1.37E-01
I-131	284.30	6.05	6.33E-01	5.74E-02	-1.14E-01	2.90E-01
	364.48	81.20	5.74E-02		1.11E-02	2.62E-02
	636.97	7.26	6.47E-01		-4.64E-01	2.75E-01
	722.89	1.80	2.84E+00		2.56E-01	1.20E+00
TE-132	49.72	13.10	1.74E-01	4.75E-02	6.02E-02	8.33E-02
	228.16	88.00	4.75E-02		1.06E-02	2.22E-02
BA-133	81.00	33.00	7.64E-02	7.64E-02	-5.57E-02	3.63E-02
	302.84	17.80	2.93E-01		9.51E-02	1.37E-01
	356.01	60.00	9.09E-02		6.96E-02	4.21E-02
I-133	529.87	86.30	7.09E-02	7.09E-02	3.36E-02	3.20E-02
XE-133	81.00	38.00	6.66E-02	6.66E-02	-4.86E-02	3.16E-02
CS-134	563.23	8.38	6.83E-01	6.29E-02	-2.80E-01	3.05E-01
	569.32	15.43	3.96E-01		1.44E-01	1.78E-01
	604.70	97.60	6.29E-02		-2.51E-02	2.81E-02
	795.84	85.40	8.86E-02		2.41E-02	3.92E-02
	801.93	8.73	8.13E-01		-3.42E-02	3.56E-01
CS-135	268.24	16.00	2.84E-01	2.84E-01	3.61E-02	1.32E-01
I-135	1131.51	22.50	3.42E-01	2.46E-01	6.92E-02	1.42E-01
	1260.41	28.60	2.46E-01		-2.25E-02	9.76E-02
	1678.03	9.54	1.15E+00		3.19E-01	4.76E-01
CS-136	153.22	7.46	4.59E-01	6.03E-02	-2.59E-02	2.17E-01
	163.89	4.61	7.55E-01		-3.37E-02	3.56E-01
	176.55	13.56	2.81E-01		5.58E-02	1.32E-01
	273.65	12.66	3.73E-01		-1.34E-02	1.74E-01
	340.57	48.50	1.01E-01		3.10E-02	4.68E-02
	818.50	99.70	6.03E-02		-1.81E-03	2.56E-02
	1048.07	79.60	8.80E-02		-1.64E-02	3.69E-02
	1235.34	19.70	4.33E-01		2.49E-03	1.83E-01
CS-137	661.65	85.12	6.34E-02	6.34E-02	-1.26E-02	2.74E-02
LA-138	788.74	34.00	2.25E-01	1.11E-01	0.00E+00	1.00E-01
	1435.80	66.00	1.11E-01		-4.19E-02	4.42E-02
CE-139	165.85	80.35	4.34E-02	4.34E-02	-9.08E-03	2.04E-02
BA-140	162.64	6.70	5.17E-01	2.23E-01	-3.05E-02	2.43E-01

Analysis Report for 1606093-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BA-140	304.84	4.50	1.08E+00	2.23E-01	1.24E-01	5.04E-01
	423.70	3.20	1.64E+00		1.99E-01	7.46E-01
	437.55	2.00	2.48E+00		-2.13E-01	1.12E+00
	537.32	25.00	2.23E-01		-1.81E-02	9.97E-02
LA-140	328.77	20.50	2.03E-01	9.09E-02	-1.01E-01	9.28E-02
	487.03	45.50	1.15E-01		-5.15E-03	5.18E-02
	815.85	23.50	2.64E-01		0.00E+00	1.13E-01
	1596.49	95.49	9.09E-02		-1.93E-02	3.67E-02
CE-141	145.44	48.40	7.16E-02	7.16E-02	5.32E-03	3.39E-02
CE-143	57.36	11.80	1.91E-01	1.09E-01	-2.35E-01	9.10E-02
	293.26	42.00	1.09E-01		-3.59E-02	5.05E-02
	664.55	5.20	1.06E+00		-5.41E-01	4.58E-01
CE-144	133.54	10.80	2.73E-01	2.73E-01	-7.23E-02	1.29E-01
PM-144	476.78	42.00	1.40E-01	5.98E-02	6.17E-02	6.37E-02
	618.01	98.60	5.98E-02		-1.59E-02	2.65E-02
	696.49	99.49	6.67E-02		-1.78E-02	2.95E-02
PM-145	36.85	21.70	1.02E-01	5.56E-02	3.10E-02	4.91E-02
	37.36	39.70	5.56E-02		1.86E-02	2.66E-02
	42.30	15.10	1.43E-01		-1.79E-02	6.85E-02
	72.40	2.31	1.09E+00		2.93E-01	5.20E-01
PM-146	453.90	39.94	1.27E-01	1.27E-01	2.47E-02	5.71E-02
	735.90	14.01	4.77E-01		1.45E-01	2.10E-01
	747.13	13.10	4.35E-01		-6.54E-02	1.86E-01
ND-147	91.11	28.90	1.13E-01	1.13E-01	5.26E-02	5.42E-02
	531.02	13.10	4.44E-01		1.43E-03	2.00E-01
PM-149	285.90	3.10	1.28E+00	1.28E+00	2.50E-01	5.87E-01
EU-152	121.78	20.50	1.35E-01	1.35E-01	-2.94E-02	6.35E-02
	244.69	5.40	6.67E-01		-3.58E-01	3.07E-01
	344.27	19.13	2.21E-01		-1.03E-01	1.01E-01
	778.89	9.20	7.50E-01		-1.95E-01	3.29E-01
	964.01	10.40	7.02E-01		-3.93E-02	3.00E-01
	1085.78	7.22	9.03E-01		2.00E-02	3.70E-01
	1112.02	9.60	9.58E-01		4.71E-01	4.17E-01
	1407.95	14.94	2.71E-01		1.23E-02	8.58E-02
GD-153	97.43	31.30	9.54E-02	9.54E-02	-6.41E-03	4.55E-02
	103.18	22.20	1.20E-01		-7.08E-02	5.69E-02
EU-154	123.07	40.50	6.99E-02	6.99E-02	-3.50E-03	3.29E-02
	723.30	19.70	2.59E-01		-3.47E-02	1.09E-01
	873.19	11.50	5.34E-01		-1.57E-01	2.25E-01
	996.32	10.30	7.31E-01		1.63E-01	3.13E-01
	1004.76	17.90	3.92E-01		-8.34E-02	1.66E-01
	1274.45	35.50	1.70E-01		-4.26E-02	6.60E-02
EU-155	86.50	30.90	8.89E-02	8.89E-02	-1.13E-01	4.23E-02
	105.30	20.70	1.36E-01		4.28E-02	6.45E-02
EU-156	811.77	10.40	5.95E-01	5.95E-01	-4.83E-02	2.55E-01
	1153.47	7.20	1.06E+00		2.98E-01	4.46E-01
	1230.71	8.90	1.03E+00		8.84E-02	4.42E-01
HO-166M	184.41	72.60	5.81E-02	5.81E-02	1.42E-02	2.75E-02
	280.45	29.60	1.36E-01		3.85E-03	6.26E-02
	410.94	11.10	4.87E-01		-3.03E-02	2.23E-01
	711.69	54.10	1.33E-01		1.39E-03	5.94E-02
TM-171	66.72	0.14	1.93E+01	1.93E+01	1.34E+01	9.25E+00
HF-172	81.75	4.52	5.72E-01	2.52E-01	-1.70E-01	2.72E-01

Analysis Report for 1606093-02

BLANK

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
HF-172	125.81	11.30	2.52E-01	2.52E-01	2.64E-02	1.19E-01
LU-172	181.53	20.60	1.98E-01	8.42E-02	-6.69E-03	9.39E-02
	810.06	16.63	3.58E-01		-1.34E-01	1.52E-01
	912.12	15.25	3.83E-01		-1.45E-01	1.59E-01
	1093.66	62.50	8.42E-02		7.01E-03	3.26E-02
LU-173	100.72	5.24	5.12E-01	2.22E-01	-4.09E-01	2.42E-01
	272.11	21.20	2.22E-01		-2.92E-02	1.03E-01
HF-175	343.40	84.00	5.30E-02	5.30E-02	-3.55E-03	2.42E-02
LU-176	88.34	13.30	2.31E-01	4.73E-02	1.92E-03	1.11E-01
	201.83	86.00	4.73E-02		7.59E-03	2.23E-02
	306.78	94.00	4.96E-02		-6.95E-03	2.30E-02
TA-182	67.75	41.20	6.20E-02	6.20E-02	-1.44E-02	2.96E-02
	1121.30	34.90	2.14E-01		-3.32E-02	8.95E-02
	1189.05	16.23	3.82E-01		5.82E-02	1.51E-01
	1221.41	26.98	3.26E-01		6.42E-02	1.39E-01
	1231.02	11.44	8.03E-01		6.87E-02	3.44E-01
IR-192	308.46	29.68	1.45E-01	8.68E-02	-4.55E-02	6.67E-02
	468.07	48.10	8.68E-02		-9.24E-02	3.81E-02
HG-203	279.19	77.30	5.24E-02	5.24E-02	4.76E-03	2.42E-02
BI-207	569.67	97.72	6.26E-02	6.26E-02	2.28E-02	2.81E-02
	1063.62	74.90	1.03E-01		-5.68E-03	4.39E-02
TL-208	583.14	30.22	2.03E-01	2.03E-01	3.66E-02	9.11E-02
	860.37	4.48	1.78E+00		8.97E-02	7.86E-01
	2614.66	35.85	3.27E-01		1.25E-01	1.30E-01
BI-210M	262.00	45.00	9.95E-02	9.95E-02	4.26E-02	4.64E-02
	300.00	23.00	2.34E-01		1.14E-01	1.09E-01
PB-210	46.50	4.25	5.17E-01	5.17E-01	-2.64E-02	2.47E-01
PB-211	404.84	2.90	1.84E+00	1.84E+00	4.67E-01	8.41E-01
	831.96	2.90	2.60E+00		6.57E-01	1.14E+00
BI-212	727.17	11.80	5.17E-01	5.17E-01	2.89E-01	2.25E-01
	1620.62	2.75	3.19E+00		1.03E+00	1.29E+00
PB-212	238.63	44.60	9.37E-02	9.37E-02	1.64E-02	4.38E-02
	300.09	3.41	1.58E+00		7.70E-01	7.38E-01
BI-214	609.31	46.30	1.34E-01	1.34E-01	1.20E-02	5.96E-02
	1120.29	15.10	5.16E-01		3.36E-02	2.18E-01
	1764.49	15.80	4.55E-01		-1.03E-01	1.70E-01
	2204.22	4.98	1.48E+00		2.66E-02	5.25E-01
PB-214	295.21	19.19	2.56E-01	1.35E-01	2.60E-02	1.19E-01
	351.92	37.19	1.35E-01		3.26E-02	6.22E-02
RN-219	401.80	6.50	7.35E-01	7.35E-01	-1.77E-01	3.33E-01
RA-223	323.87	3.88	1.14E+00	1.14E+00	7.87E-02	5.21E-01
RA-224	240.98	3.95	1.05E+00	1.05E+00	4.55E-01	4.87E-01
RA-225	40.00	31.00	6.98E-02	6.98E-02	-1.78E-02	3.34E-02
RA-226	186.21	3.28	1.29E+00	1.29E+00	3.76E-01	6.11E-01
TH-227	50.10	8.40	2.71E-01	2.71E-01	9.35E-02	1.29E-01
	236.00	11.50	3.60E-01		-1.91E-02	1.68E-01
	256.20	6.30	6.71E-01		3.66E-02	3.12E-01
AC-228	338.32	11.40	4.36E-01	2.31E-01	1.58E-01	2.02E-01
	911.07	27.70	2.31E-01		-1.50E-02	9.75E-02
	969.11	16.60	3.91E-01		-2.96E-02	1.64E-01
TH-230	48.44	16.90	1.32E-01	1.32E-01	3.38E-02	6.31E-02
	62.85	4.60	5.88E-01		5.77E-01	2.82E-01
	67.67	0.37	6.90E+00		-1.60E+00	3.29E+00

Analysis Report for 1606093-02

BLANK

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
PA-231	283.67	1.60	2.27E+00	2.26E+00	-1.45E+00	1.04E+00
	302.67	2.30	2.26E+00		7.36E-01	1.06E+00
TH-231	25.64	14.70	1.85E-01	1.85E-01	1.82E-02	8.97E-02
	84.21	6.40	4.23E-01		7.50E-02	2.01E-01
PA-233	311.98	38.60	1.12E-01	1.12E-01	-3.14E-02	5.12E-02
PA-234	131.20	20.40	1.41E-01	1.41E-01	-2.30E-02	6.64E-02
	733.99	8.80	7.00E-01		3.38E-02	3.04E-01
	946.00	12.00	5.29E-01		1.30E-01	2.21E-01
PA-234M	1001.03	0.92	8.22E+00	8.22E+00	-1.94E+00	3.52E+00
TH-234	63.29	3.80	7.04E-01	7.04E-01	5.54E-01	3.37E-01
U-235	143.76	10.50	3.24E-01	3.24E-01	1.29E-03	1.53E-01
	163.35	4.70	7.38E-01		-3.29E-02	3.47E-01
	205.31	4.70	8.54E-01		5.39E-02	4.01E-01
NP-237	86.50	12.60	2.18E-01	2.18E-01	-2.78E-01	1.04E-01
NP-239	106.10	22.70	1.26E-01	1.26E-01	3.95E-02	5.96E-02
	228.18	10.70	3.92E-01		9.60E-02	1.83E-01
	277.60	14.10	2.94E-01		-1.12E-01	1.36E-01
AM-241	59.54	35.90	7.18E-02	7.18E-02	3.79E-02	3.44E-02
AM-243	74.67	66.00	3.83E-02	3.83E-02	9.35E-03	1.82E-02
CM-243	209.75	3.29	1.24E+00	2.93E-01	7.64E-01	5.83E-01
	228.14	10.60	3.92E-01		8.75E-02	1.84E-01
	277.60	14.00	2.93E-01		-1.12E-01	1.35E-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 1606093-02

BLANK

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: 3607

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	27	89
17:	73	60	59	49	38	48	40	43
25:	41	24	31	31	20	13	27	21
33:	23	23	18	18	23	15	19	21
41:	17	15	17	13	11	30	24	16
49:	12	15	17	16	15	10	19	16
57:	10	12	11	13	27	32	35	18
65:	22	14	7	16	12	18	10	11
73:	18	17	21	15	13	11	15	9
81:	20	7	17	15	20	16	16	11
89:	15	18	23	33	35	15	17	13
97:	19	7	14	9	10	15	9	10
105:	16	12	8	11	20	8	14	11
113:	10	9	15	10	8	9	13	9
121:	13	7	4	13	11	11	7	13
129:	9	7	8	10	12	8	8	11
137:	14	15	8	12	11	16	18	11
145:	10	8	11	15	7	9	14	11
153:	10	15	11	11	8	16	9	7
161:	9	9	11	9	14	5	16	9
169:	6	11	8	14	7	16	10	7
177:	10	13	10	8	11	12	8	13
185:	20	17	13	8	16	2	14	9
193:	10	7	10	15	14	5	10	8
201:	14	5	7	9	15	3	13	6
209:	10	6	10	13	6	3	7	6
217:	2	8	10	11	9	8	5	7
225:	9	7	8	13	7	9	8	5
233:	5	5	10	7	8	13	7	5
241:	5	8	7	5	10	2	1	4
249:	6	7	5	5	8	6	4	6
257:	10	10	10	2	8	7	6	7
265:	6	3	7	5	9	16	9	3
273:	4	7	8	4	8	10	1	2
281:	5	5	4	7	3	5	4	5
289:	4	6	2	3	4	11	10	6
297:	8	7	13	11	5	10	5	5
305:	6	7	6	4	5	5	2	4
313:	7	5	5	7	5	5	5	4
321:	2	8	6	1	3	8	5	4
329:	4	2	3	6	9	5	4	7
337:	10	2	7	4	6	5	2	5
345:	1	6	2	3	3	4	7	5
353:	6	9	8	7	1	6	6	2
361:	2	4	8	4	5	7	1	4

369:	3	0	5	3	6	1	6	1

Sample Title: BLANK

Channel								
377:	3	4	3	5	3	3	6	12
385:	6	1	4	8	5	2	4	7
393:	5	3	4	6	3	1	1	4
401:	7	2	5	4	5	4	5	4
409:	3	6	6	4	4	4	7	6
417:	1	4	5	4	3	5	2	4
425:	3	3	6	2	3	5	4	2
433:	3	1	6	2	4	1	5	6
441:	1	2	3	5	4	3	4	5
449:	3	6	1	4	1	2	3	4
457:	4	2	1	1	1	2	1	3
465:	7	0	1	1	3	1	1	0
473:	4	7	6	3	5	5	3	2
481:	3	4	2	1	2	3	3	7
489:	1	3	1	5	4	5	3	3
497:	2	3	1	3	3	0	1	1
505:	3	3	2	7	9	11	10	9
513:	5	5	2	2	5	3	2	3
521:	2	3	3	2	3	3	1	1
529:	2	4	4	5	6	1	0	1
537:	9	3	2	0	2	1	4	1
545:	2	5	4	2	0	4	3	0
553:	4	1	2	5	2	6	5	4
561:	1	3	2	1	3	3	1	5
569:	2	3	2	4	3	2	2	1
577:	2	1	2	2	4	2	5	2
585:	4	2	2	2	5	2	2	1
593:	3	1	6	2	3	3	5	5
601:	2	3	0	5	2	1	3	2
609:	5	4	2	2	2	2	4	0
617:	2	1	4	3	3	1	3	5
625:	3	1	2	2	3	1	4	3
633:	0	2	1	2	0	2	0	1
641:	4	3	1	0	2	3	2	1
649:	2	5	5	4	0	3	1	2
657:	2	1	3	2	2	1	0	1
665:	2	2	2	2	4	2	4	5
673:	1	4	0	3	6	2	4	1
681:	2	4	1	2	2	0	0	2
689:	4	5	2	1	4	1	3	2
697:	4	0	4	1	2	3	2	2
705:	6	3	3	1	1	7	1	2
713:	5	3	0	1	1	3	2	0
721:	0	0	2	1	1	1	3	4
729:	1	2	0	0	1	1	4	1
737:	3	3	5	2	1	3	2	0
745:	0	2	2	1	4	0	1	2
753:	1	1	1	1	1	1	2	2
761:	5	2	4	1	2	0	1	3
769:	1	2	7	0	1	1	1	1
777:	2	1	3	2	1	5	1	2
785:	4	5	2	1	2	1	2	2
793:	2	0	5	3	2	1	3	1

801:	2	2	3	4	1	0	0	1

Sample Title: BLANK

Channel								
809:	2	1	2	1	2	2	1	2
817:	0	2	0	1	1	2	0	0
825:	3	0	1	4	3	2	1	0
833:	2	1	1	4	3	3	1	1
841:	1	1	4	3	1	2	0	0
849:	1	2	3	0	6	2	1	3
857:	1	1	2	1	3	4	0	4
865:	1	0	2	2	2	0	1	1
873:	0	1	3	1	1	0	3	3
881:	1	3	1	4	1	1	3	0
889:	3	1	2	1	0	3	4	2
897:	4	1	1	2	1	0	1	1
905:	0	4	2	0	2	2	0	2
913:	2	0	0	0	2	1	1	1
921:	1	1	1	1	1	0	5	1
929:	0	0	3	0	1	2	0	0
937:	4	0	2	0	0	0	1	0
945:	1	1	0	1	3	2	0	0
953:	1	2	4	0	3	2	0	2
961:	2	3	1	0	0	2	1	1
969:	2	0	2	1	0	1	1	1
977:	1	0	1	0	0	2	0	0
985:	3	0	2	1	1	0	2	0
993:	0	2	0	1	3	1	4	1
1001:	0	0	2	0	1	2	2	2
1009:	2	1	3	3	0	1	1	2
1017:	2	0	1	1	1	1	1	1
1025:	3	2	0	0	2	0	0	2
1033:	5	0	0	1	0	2	2	0
1041:	1	1	1	1	0	2	2	0
1049:	0	1	1	2	1	2	2	1
1057:	2	1	1	1	3	1	0	2
1065:	0	2	1	1	1	2	3	0
1073:	0	0	2	2	1	1	1	2
1081:	0	2	0	2	2	1	0	0
1089:	0	0	1	0	1	1	1	0
1097:	0	1	0	0	2	0	2	0
1105:	0	0	1	2	3	2	2	0
1113:	1	1	3	1	0	0	2	3
1121:	1	1	1	1	0	0	1	2
1129:	1	0	0	2	0	1	1	0
1137:	0	2	1	1	3	1	1	1
1145:	1	1	0	1	3	0	1	0
1153:	0	0	2	2	1	1	0	0
1161:	0	3	0	0	0	0	1	0
1169:	3	0	2	2	1	2	1	1
1177:	0	1	1	1	1	0	0	1
1185:	1	0	0	0	0	0	1	2
1193:	1	1	0	0	3	3	0	1
1201:	1	3	0	1	0	1	0	1
1209:	0	0	1	0	1	0	1	1
1217:	0	1	1	0	3	2	1	3
1225:	0	1	1	1	0	3	1	3

1233:	1	1	1	3	0	0	0	1

Sample Title: BLANK

Channel								
1241:	0	2	1	2	0	0	0	0
1249:	0	0	1	1	2	0	1	0
1257:	0	1	1	0	0	2	1	0
1265:	1	0	0	1	1	0	1	0
1273:	0	0	0	0	1	2	0	1
1281:	2	1	0	3	1	0	2	2
1289:	1	1	0	1	0	0	0	0
1297:	1	0	1	2	0	0	0	0
1305:	0	0	1	0	2	0	1	0
1313:	0	0	3	0	0	0	0	0
1321:	1	0	0	1	0	0	0	1
1329:	0	1	0	2	2	1	1	0
1337:	1	1	2	0	0	2	1	0
1345:	1	3	0	1	0	1	1	1
1353:	0	1	1	3	2	2	1	0
1361:	2	0	0	2	0	0	0	1
1369:	1	0	3	0	1	0	1	0
1377:	0	2	0	0	0	0	0	3
1385:	1	0	0	0	2	1	1	0
1393:	0	2	0	1	0	1	1	1
1401:	0	2	0	0	1	0	0	0
1409:	0	0	0	0	0	0	0	2
1417:	0	1	0	0	0	1	0	0
1425:	1	1	1	0	1	0	0	0
1433:	1	1	0	2	0	0	0	1
1441:	1	2	2	0	2	0	1	0
1449:	1	0	0	2	0	0	0	0
1457:	1	1	0	0	0	0	1	1
1465:	0	0	0	0	0	0	0	1
1473:	1	2	1	0	0	1	0	1
1481:	0	1	0	0	0	2	0	1
1489:	0	0	0	0	0	0	0	2
1497:	2	0	1	1	0	0	1	0
1505:	2	0	0	0	0	0	0	0
1513:	0	0	2	0	0	0	1	1
1521:	0	2	0	1	0	0	0	1
1529:	0	2	0	0	1	0	1	0
1537:	1	0	1	0	0	1	0	0
1545:	0	1	0	1	1	1	0	0
1553:	0	0	0	0	1	0	0	1
1561:	0	0	0	0	0	0	0	0
1569:	0	0	0	0	0	1	0	0
1577:	3	0	0	1	0	0	0	0
1585:	0	0	0	1	1	0	2	1
1593:	1	3	0	0	0	0	0	2
1601:	0	1	0	2	0	0	0	0
1609:	0	0	0	0	0	1	0	0
1617:	0	1	0	1	1	1	1	1
1625:	0	0	0	0	0	0	0	0
1633:	0	0	0	1	0	1	0	1
1641:	0	2	1	0	0	0	0	0
1649:	0	0	0	2	0	0	0	1
1657:	0	1	0	2	1	0	0	1

1665:	1	0	0	0	0	0	0	0

Sample Title: BLANK

Channel								
1673:	0	1	2	0	0	2	1	1
1681:	0	1	0	1	1	0	1	0
1689:	1	0	0	0	0	0	0	1
1697:	0	0	0	0	0	0	0	0
1705:	0	0	0	0	0	0	1	1
1713:	0	1	0	1	0	0	1	0
1721:	0	0	0	0	1	0	1	0
1729:	0	1	0	0	0	0	2	0
1737:	0	0	0	1	0	0	0	0
1745:	3	1	0	0	0	2	0	0
1753:	1	1	0	0	1	0	0	0
1761:	0	0	0	1	0	1	1	0
1769:	0	0	1	1	0	0	0	0
1777:	1	0	0	1	0	1	0	0
1785:	2	0	0	0	2	0	1	1
1793:	0	0	1	0	1	1	0	0
1801:	0	1	0	0	0	0	1	0
1809:	0	1	1	0	0	0	0	0
1817:	0	1	1	1	0	0	0	1
1825:	0	0	0	0	0	1	0	2
1833:	0	0	0	0	0	1	1	0
1841:	2	1	0	0	0	1	0	0
1849:	0	0	1	0	1	0	1	1
1857:	0	1	0	1	0	0	0	0
1865:	0	0	0	1	0	0	0	0
1873:	1	0	0	2	0	0	0	0
1881:	0	0	0	0	1	0	0	0
1889:	1	1	0	0	1	0	0	0
1897:	0	0	0	1	1	0	1	0
1905:	0	0	2	0	0	0	0	0
1913:	0	1	0	0	0	2	2	1
1921:	0	0	0	0	1	1	1	0
1929:	0	0	0	0	0	1	0	0
1937:	0	0	0	0	0	0	0	0
1945:	0	0	0	0	0	0	1	0
1953:	1	0	1	0	0	0	0	2
1961:	1	1	1	0	3	0	0	1
1969:	0	0	0	0	0	1	0	0
1977:	1	0	2	1	1	0	0	0
1985:	1	2	0	0	1	0	0	1
1993:	0	0	0	1	0	1	0	0
2001:	0	0	0	0	0	0	0	0
2009:	1	0	0	0	0	0	0	0
2017:	0	0	0	0	0	0	0	0
2025:	0	0	1	0	0	1	0	1
2033:	0	0	0	1	1	0	1	0
2041:	0	0	0	0	0	0	0	0
2049:	0	0	0	0	0	0	0	0
2057:	0	0	0	1	0	0	0	0
2065:	0	0	0	1	0	0	0	0
2073:	1	0	0	0	0	1	0	0
2081:	0	1	0	0	0	0	1	1
2089:	0	0	0	0	0	0	1	0

2097:	0	0	0	1	0	1	0	0

Sample Title: BLANK

Channel								
2105:	0	0	0	0	0	0	3	0
2113:	0	0	0	0	0	0	0	0
2121:	0	0	0	0	1	0	0	0
2129:	0	0	0	1	1	0	1	0
2137:	0	0	0	2	0	0	0	2
2145:	0	0	0	0	0	2	0	0
2153:	0	0	0	0	0	0	0	0
2161:	0	0	1	0	1	1	0	0
2169:	0	0	0	0	0	1	0	0
2177:	1	0	0	0	2	0	0	0
2185:	0	1	0	1	0	0	0	0
2193:	1	0	0	1	1	0	0	0
2201:	0	1	0	0	0	0	0	0
2209:	1	0	0	0	0	0	1	0
2217:	0	0	0	0	0	1	0	0
2225:	0	0	1	0	0	0	0	1
2233:	0	0	0	0	0	0	0	0
2241:	0	1	0	0	0	0	1	0
2249:	0	1	0	1	0	0	0	0
2257:	0	0	1	0	0	0	0	0
2265:	0	0	1	1	0	0	0	0
2273:	0	0	0	0	0	1	0	0
2281:	0	0	1	0	1	0	0	0
2289:	0	0	0	0	0	0	0	0
2297:	0	0	0	0	1	1	0	0
2305:	0	0	0	0	0	0	0	0
2313:	0	0	0	0	0	0	1	0
2321:	1	0	1	0	0	0	0	1
2329:	0	1	0	0	0	0	0	0
2337:	0	0	1	1	0	2	0	0
2345:	2	0	0	0	0	0	0	0
2353:	0	0	1	0	2	1	0	1
2361:	0	0	1	0	2	0	0	1
2369:	0	0	0	0	0	0	0	1
2377:	0	0	0	1	0	1	0	0
2385:	0	1	0	0	1	1	0	0
2393:	0	0	0	0	0	1	0	0
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:	0	1	0	0	0	0	0	0
2433:	0	0	0	0	0	0	0	1
2441:	0	1	1	0	0	0	0	1
2449:	0	0	0	1	0	1	1	0
2457:	0	0	0	1	0	0	0	0
2465:	0	0	0	0	1	0	1	0
2473:	1	0	0	0	0	0	0	0
2481:	0	1	0	0	1	0	0	0
2489:	0	0	0	0	0	0	1	0
2497:	0	0	0	0	0	0	1	0
2505:	0	2	0	1	0	0	1	0
2513:	0	0	0	0	0	1	0	0
2521:	0	0	0	0	0	0	2	0

2529:	0	0	0	0	0	0	0	0

Sample Title: BLANK

Channel								
2537:	0	0	1	0	1	1	0	0
2545:	1	0	0	0	1	1	0	0
2553:	0	0	0	0	0	0	0	0
2561:	0	0	0	1	0	0	0	0
2569:	0	0	0	0	0	0	1	0
2577:	0	1	0	0	0	0	0	0
2585:	0	1	1	2	0	0	0	0
2593:	0	0	0	0	0	0	0	1
2601:	0	0	0	0	0	0	0	0
2609:	0	0	0	0	0	1	0	2
2617:	0	1	1	0	0	0	0	0
2625:	0	2	0	0	0	0	0	0
2633:	0	0	0	0	1	0	0	0
2641:	0	0	1	0	0	0	0	0
2649:	0	0	0	0	0	1	0	0
2657:	0	1	0	0	0	0	0	1
2665:	0	1	0	0	0	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	1	0	0	0	0	0	0	1
2689:	0	0	0	2	0	1	0	0
2697:	0	0	1	0	0	0	0	1
2705:	0	0	0	0	0	0	0	0
2713:	0	0	1	0	0	0	0	0
2721:	0	0	0	0	0	0	0	1
2729:	0	0	0	1	1	0	0	0
2737:	0	0	0	1	0	0	0	0
2745:	0	0	0	0	0	0	0	0
2753:	0	0	1	0	0	0	0	0
2761:	0	0	0	0	0	0	1	0
2769:	0	1	0	0	0	0	0	0
2777:	0	0	0	0	1	0	0	0
2785:	0	0	0	0	0	0	0	0
2793:	1	1	0	0	1	0	0	0
2801:	0	0	0	0	1	0	0	0
2809:	1	0	0	0	0	0	0	0
2817:	0	0	0	1	0	0	0	0
2825:	0	0	1	0	0	0	0	0
2833:	0	0	0	0	0	0	1	0
2841:	0	0	0	0	0	2	1	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	0	0	0	0
2865:	1	0	0	0	0	0	0	0
2873:	1	0	0	0	0	1	0	0
2881:	0	0	0	0	1	0	0	0
2889:	0	1	0	0	0	0	0	0
2897:	1	0	0	0	0	0	0	1
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	0	0	0	0	1
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	1	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	1	0	0	0

2961:	0	0	0	0	0	0	0	0

Sample Title: BLANK

Channel								
2969:	1	0	0	0	0	0	0	0
2977:	1	0	0	0	0	0	0	0
2985:	0	0	0	0	0	0	0	1
2993:	1	0	1	0	0	0	0	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	1
3017:	1	0	0	0	0	1	0	1
3025:	0	1	0	0	1	0	0	0
3033:	1	0	1	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	1	0	0	1	0	1	0
3081:	0	0	0	2	0	0	0	0
3089:	0	0	1	0	1	0	0	1
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	0	0	0	0	1
3113:	0	0	0	0	0	0	0	0
3121:	0	0	0	0	0	1	0	1
3129:	1	0	0	0	0	0	0	0
3137:	0	0	0	0	0	1	0	0
3145:	0	0	1	0	0	0	0	0
3153:	1	0	0	0	0	0	0	0
3161:	0	0	0	0	0	0	0	0
3169:	0	1	0	0	0	0	0	0
3177:	0	0	0	0	0	1	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:	0	1	0	1	1	0	0	0
3217:	1	0	0	0	0	0	0	1
3225:	1	0	0	0	0	0	0	0
3233:	0	0	0	0	0	2	0	0
3241:	0	0	0	0	0	1	0	0
3249:	0	0	1	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	0	0	0
3281:	0	0	0	1	1	0	1	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	1	0	0
3313:	1	0	0	1	2	0	0	1
3321:	0	0	0	0	0	0	0	0
3329:	0	1	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0	0
3345:	1	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	1
3361:	1	0	0	0	0	0	0	0
3369:	0	1	0	0	0	0	0	0
3377:	0	0	0	0	0	1	0	1
3385:	0	0	0	0	0	0	1	0

3393:	0	0	0	0	1	0	0	0

Sample Title: BLANK

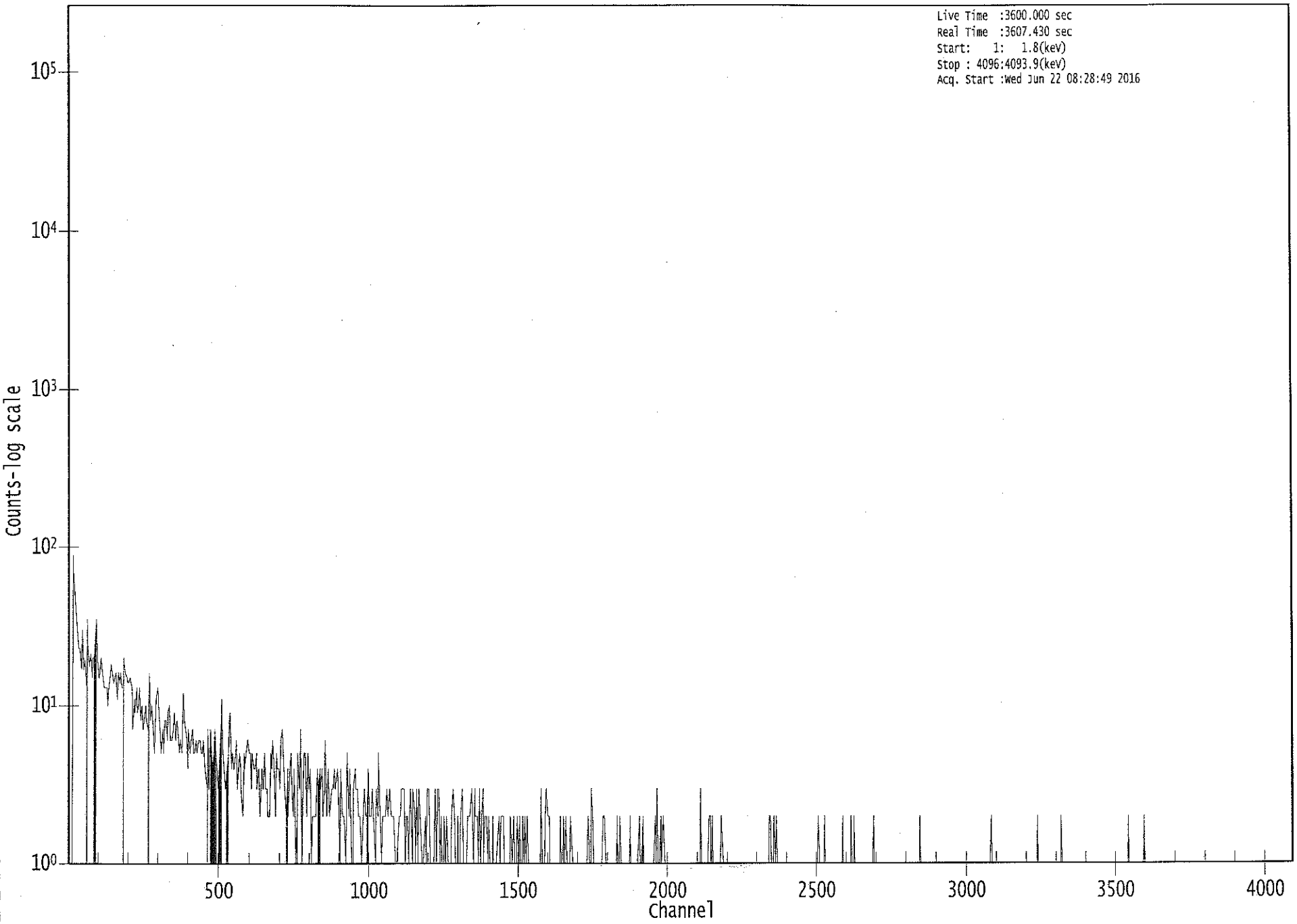
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	1	0	0	1	0
3497:	0	0	0	0	0	0	0	0
3505:	0	1	0	0	0	1	1	1
3513:	0	0	1	1	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	2	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	1	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	1	1	0	0
3577:	1	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	1	0	0	2	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	1	1
3617:	0	0	0	0	0	0	1	0
3625:	0	1	0	0	0	0	0	0
3633:	0	0	0	0	0	1	0	0
3641:	0	0	0	0	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	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	1	0	1	0	0	0
3697:	0	0	0	0	0	0	1	1
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	0	0	0	0
3721:	1	1	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	0	0	0
3753:	0	0	1	0	0	0	0	0
3761:	0	0	0	0	1	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	1	0	0	0	0
3793:	0	0	0	0	0	1	0	0
3801:	0	0	0	0	0	0	0	0
3809:	0	0	0	0	0	1	1	1
3817:	0	0	0	0	1	0	0	0

3825:	0	0	0	0	0	0	0	0

Sample Title: BLANK

Channel								
3833:	0	0	0	0	0	1	1	1
3841:	0	0	0	0	0	0	0	0
3849:	1	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	1	0
3873:	0	0	0	0	0	0	1	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	1	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	1	1
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	1	0	0	1
3929:	0	0	1	0	0	0	0	0
3937:	0	0	0	1	0	0	0	0
3945:	0	1	0	1	0	0	0	0
3953:	0	0	0	0	0	1	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	1	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	1	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	1	1	0	0
4025:	0	0	0	1	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	1	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	1
4081:	0	0	0	0	0	0	0	0
4089:	0	0	1	0	0	0	0	0

0000039244.CNF



ROI Type: 1

Apex-Gamma

Analysis Report for 1606093-03

J1V928 SAF: RC-148

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1606093-03
Sample Description	: J1V928 SAF: RC-148
Sample Type	: SOIL
Sample Size	: 7.217E+02 grams
Facility	: Countroom
Sample Taken On	: 6/16/2016 8:17:17AM
Acquisition Started	: 6/22/2016 8:28:28AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3601.4 seconds
Dead Time	: 0.04 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 5 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 11/2/2014
Efficiency Calibration Used Done On	: 4/6/2016
Efficiency Calibration Description	:
Sample Number	: 39242

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
6/22/16

Analysis Report for 1606093-03

J1V928 SAF: RC-148

PEAK LOCATE REPORT

Peak Locate Performed on : 6/22/2016 9:28:36AM
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	12.88	13.01	0.0000	0.00
2	18.39	18.51	0.0000	0.00
3	76.31	76.39	0.0000	0.00
4	90.13	90.21	0.0000	0.00
5	92.98	93.06	0.0000	0.00
6	185.82	185.85	0.0000	0.00
7	209.38	209.39	0.0000	0.00
8	238.69	238.69	0.0000	0.00
9	270.50	270.48	0.0000	0.00
10	277.37	277.35	0.0000	0.00
11	295.09	295.05	0.0000	0.00
12	300.16	300.12	0.0000	0.00
13	328.10	328.05	0.0000	0.00
14	331.08	331.03	0.0000	0.00
15	338.18	338.12	0.0000	0.00
16	352.03	351.96	0.0000	0.00
17	416.27	416.17	0.0000	0.00
18	462.03	461.91	0.0000	0.00
19	511.09	510.95	0.0000	0.00
20	522.90	522.75	0.0000	0.00
21	583.33	583.15	0.0000	0.00
22	609.38	609.19	0.0000	0.00
23	727.79	727.54	0.0000	0.00
24	732.25	732.00	0.0000	0.00
25	762.13	761.87	0.0000	0.00
26	795.46	795.19	0.0000	0.00
27	860.45	860.14	0.0000	0.00
28	870.11	869.80	0.0000	0.00
29	911.41	911.09	0.0000	0.00
30	965.15	964.80	0.0000	0.00
31	969.48	969.13	0.0000	0.00
32	1120.42	1120.01	0.0000	0.00
33	1184.56	1184.13	0.0000	0.00
34	1228.15	1227.71	0.0000	0.00
35	1400.71	1400.20	0.0000	0.00
36	1461.01	1460.49	0.0000	0.00
37	1538.96	1538.42	0.0000	0.00
38	1582.85	1582.29	0.0000	0.00
39	1587.81	1587.25	0.0000	0.00
40	1591.36	1590.80	0.0000	0.00
41	1617.86	1617.29	0.0000	0.00
42	1621.97	1621.40	0.0000	0.00

Analysis Report for 1606093-03

J1V928 SAF: RC-148

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1630.98	1630.41	0.0000	0.00
44	1661.19	1660.61	0.0000	0.00
45	1677.58	1677.00	0.0000	0.00
46	1729.12	1728.53	0.0000	0.00
47	1764.85	1764.25	0.0000	0.00
48	1768.62	1768.01	0.0000	0.00
49	1803.33	1802.71	0.0000	0.00
50	2039.11	2038.44	0.0000	0.00
51	2102.68	2102.00	0.0000	0.00
52	2118.10	2117.42	0.0000	0.00
53	2375.72	2375.00	0.0000	0.00
54	2614.44	2613.70	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1606093-03

J1V928 SAF: RC-148

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/22/2016 9:28:36AM

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	12.88	12 -	16	13.01	1.93E+03	129.22	1.65E+03	1.00
	2	18.39	17 -	22	18.51	6.78E+01	71.54	9.02E+02	4.09
	3	76.31	72 -	80	76.39	6.43E+02	114.09	1.60E+03	3.45
M	4	90.13	89 -	96	90.21	4.26E+01	35.26	4.06E+02	1.23
m	5	92.98	89 -	96	93.06	1.32E+02	58.10	6.64E+02	1.23
	6	185.82	182 -	189	185.85	1.26E+02	70.26	7.35E+02	1.23
	7	209.38	205 -	214	209.39	1.29E+02	71.41	6.54E+02	2.63
	8	238.69	235 -	240	238.69	1.96E+02	71.29	1.24E+03	1.17
	9	270.50	267 -	273	270.48	5.92E+01	45.25	3.24E+02	2.27
	10	277.37	274 -	281	277.35	7.61E+01	48.74	3.48E+02	2.10
	11	295.09	291 -	298	295.05	2.23E+02	51.11	2.84E+02	1.45
	12	300.16	299 -	303	300.12	5.38E+01	33.25	2.04E+02	1.15
M	13	328.10	326 -	334	328.05	5.73E+01	28.00	1.39E+02	1.86
m	14	331.08	326 -	334	331.03	2.58E+01	40.90	2.35E+02	2.49
	15	338.18	335 -	340	338.12	1.27E+02	39.09	2.05E+02	1.78
	16	352.03	350 -	355	351.96	3.05E+02	47.36	2.10E+02	1.18
	17	416.27	414 -	418	416.17	1.96E+01	23.38	1.03E+02	2.32
	18	462.03	458 -	466	461.91	3.82E+01	38.77	2.10E+02	1.81
	19	511.09	507 -	515	510.95	1.32E+02	42.32	1.95E+02	1.64
	20	522.90	520 -	526	522.75	3.44E+01	22.91	7.11E+01	1.79
	21	583.33	579 -	586	583.15	1.76E+02	40.50	1.56E+02	1.34
	22	609.38	604 -	612	609.19	2.19E+02	46.81	2.02E+02	1.59
M	23	727.79	724 -	735	727.54	3.39E+01	26.51	1.01E+02	2.40
m	24	732.25	724 -	735	732.00	1.90E+01	25.59	8.14E+01	2.35
	25	762.13	758 -	765	761.87	2.59E+01	24.41	7.82E+01	5.68
	26	795.46	792 -	798	795.19	2.45E+01	22.39	7.30E+01	1.61
	27	860.45	858 -	862	860.14	1.49E+01	16.14	4.41E+01	2.67
	28	870.11	864 -	876	869.80	2.45E+01	30.36	9.50E+01	6.89
	29	911.41	907 -	915	911.09	1.60E+02	35.06	9.19E+01	1.57
M	30	965.15	962 -	979	964.80	3.53E+01	22.63	4.24E+01	2.19
m	31	969.48	962 -	979	969.13	8.27E+01	26.38	5.86E+01	2.19
	32	1120.42	1117 -	1124	1120.01	4.08E+01	27.13	9.43E+01	1.67
	33	1184.56	1180 -	1188	1184.13	2.44E+01	23.49	7.53E+01	2.46
	34	1228.15	1225 -	1230	1227.71	1.67E+01	18.76	5.26E+01	2.11
	35	1400.71	1395 -	1403	1400.20	1.05E+01	12.53	1.70E+01	1.88
	36	1461.01	1456 -	1465	1460.49	6.21E+02	51.19	1.79E+01	2.17
	37	1538.96	1535 -	1542	1538.42	1.20E+01	6.93	0.00E+00	2.58
	38	1582.85	1580 -	1585	1582.29	1.09E+01	10.00	1.01E+01	2.55
M	39	1587.81	1585 -	1598	1587.25	1.51E+01	9.73	9.00E+00	2.34
m	40	1591.36	1585 -	1598	1590.80	1.78E+01	16.97	1.74E+01	3.85

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	41	1617.86	1616 -	1624	1617.29	6.50E+00	4.90	4.00E+00	3.28
m	42	1621.97	1616 -	1624	1621.40	9.18E+00	10.44	1.40E+01	3.68
	43	1630.98	1627 -	1633	1630.41	7.50E+00	10.25	1.30E+01	1.83
	44	1661.19	1655 -	1665	1660.61	1.54E+01	10.11	5.28E+00	1.95
	45	1677.58	1674 -	1680	1677.00	6.50E+00	8.03	7.00E+00	2.11
	46	1729.12	1724 -	1732	1728.53	1.90E+01	8.72	0.00E+00	2.96
M	47	1764.85	1760 -	1771	1764.25	3.71E+01	14.83	1.48E+01	2.73
m	48	1768.62	1760 -	1771	1768.01	1.01E+01	14.56	3.94E+00	2.74
	49	1803.33	1799 -	1805	1802.71	7.00E+00	5.29	0.00E+00	2.74
	50	2039.11	2034 -	2041	2038.44	9.00E+00	6.00	0.00E+00	2.09
	51	2102.68	2097 -	2107	2102.00	2.10E+01	9.17	0.00E+00	3.25
	52	2118.10	2114 -	2120	2117.42	1.20E+01	6.93	0.00E+00	2.79
	53	2375.72	2370 -	2378	2375.00	1.10E+01	6.63	0.00E+00	3.92
	54	2614.44	2608 -	2618	2613.70	7.48E+01	20.56	1.63E+01	2.02

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 : 6/22/2016 9:28:36AM

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	12.88	12 -	16	1.93E+03	129.22	1.65E+03	7.79E+01
	2	18.39	17 -	22	6.78E+01	71.54	9.02E+02	5.72E+01
	3	76.31	72 -	80	6.43E+02	114.09	1.60E+03	8.40E+01
M	4	90.13	89 -	96	4.26E+01	35.26	4.06E+02	3.31E+01
m	5	92.98	89 -	96	1.32E+02	58.10	6.64E+02	4.24E+01
	6	185.82	182 -	189	1.26E+02	70.26	7.35E+02	5.47E+01
	7	209.38	205 -	214	1.29E+02	71.41	6.54E+02	5.57E+01
	8	238.69	235 -	240	1.96E+02	71.29	1.24E+03	6.46E+01
	9	270.50	267 -	273	5.92E+01	45.25	3.24E+02	3.50E+01
	10	277.37	274 -	281	7.61E+01	48.74	3.48E+02	3.74E+01
	11	295.09	291 -	298	2.23E+02	51.11	2.84E+02	3.41E+01
	12	300.16	299 -	303	5.38E+01	33.25	2.04E+02	2.45E+01
M	13	328.10	326 -	334	5.73E+01	28.00	1.39E+02	1.94E+01
m	14	331.08	326 -	334	2.58E+01	40.90	2.35E+02	2.52E+01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	15	338.18	335 -	340	1.27E+02	39.09	2.05E+02	2.63E+01
	16	352.03	350 -	355	3.05E+02	47.36	2.10E+02	2.63E+01
	17	416.27	414 -	418	1.96E+01	23.38	1.03E+02	1.78E+01
	18	462.03	458 -	466	3.82E+01	38.77	2.10E+02	3.02E+01
	19	511.09	507 -	515	1.32E+02	42.32	1.95E+02	2.92E+01
	20	522.90	520 -	526	3.44E+01	22.91	7.11E+01	1.62E+01
	21	583.33	579 -	586	1.76E+02	40.50	1.56E+02	2.51E+01
	22	609.38	604 -	612	2.19E+02	46.81	2.02E+02	2.98E+01
M	23	727.79	724 -	735	3.39E+01	26.51	1.01E+02	1.65E+01
m	24	732.25	724 -	735	1.90E+01	25.59	8.14E+01	1.48E+01
	25	762.13	758 -	765	2.59E+01	24.41	7.82E+01	1.82E+01
	26	795.46	792 -	798	2.45E+01	22.39	7.30E+01	1.65E+01
	27	860.45	858 -	862	1.49E+01	16.14	4.41E+01	1.16E+01
	28	870.11	864 -	876	2.45E+01	30.36	9.50E+01	2.36E+01
	29	911.41	907 -	915	1.60E+02	35.06	9.19E+01	1.99E+01
M	30	965.15	962 -	979	3.53E+01	22.63	4.24E+01	1.07E+01
m	31	969.48	962 -	979	8.27E+01	26.38	5.86E+01	1.26E+01
	32	1120.42	1117 -	1124	4.08E+01	27.13	9.43E+01	1.97E+01
	33	1184.56	1180 -	1188	2.44E+01	23.49	7.53E+01	2.35E+01
	34	1228.15	1225 -	1230	1.67E+01	18.76	5.26E+01	1.39E+01
	35	1400.71	1395 -	1403	1.05E+01	12.53	1.70E+01	8.82E+00
	36	1461.01	1456 -	1465	6.21E+02	51.19	1.79E+01	9.58E+00
	37	1538.96	1535 -	1542	1.20E+01	6.93	0.00E+00	0.00E+00
	38	1582.85	1580 -	1585	1.09E+01	10.00	1.01E+01	6.17E+00
M	39	1587.81	1585 -	1598	1.51E+01	9.73	9.00E+00	4.93E+00
m	40	1591.36	1585 -	1598	1.78E+01	16.97	1.74E+01	6.85E+00
M	41	1617.86	1616 -	1624	6.50E+00	4.90	4.00E+00	3.29E+00
m	42	1621.97	1616 -	1624	9.18E+00	10.44	1.40E+01	6.15E+00
	43	1630.98	1627 -	1633	7.50E+00	10.25	1.30E+01	7.12E+00
	44	1661.19	1655 -	1665	1.54E+01	10.11	5.28E+00	5.25E+00
	45	1677.58	1674 -	1680	6.50E+00	8.03	7.00E+00	5.10E+00
	46	1729.12	1724 -	1732	1.90E+01	8.72	0.00E+00	0.00E+00
M	47	1764.85	1760 -	1771	3.71E+01	14.83	1.48E+01	6.33E+00
m	48	1768.62	1760 -	1771	1.01E+01	14.56	3.94E+00	3.26E+00
	49	1803.33	1799 -	1805	7.00E+00	5.29	0.00E+00	0.00E+00
	50	2039.11	2034 -	2041	9.00E+00	6.00	0.00E+00	0.00E+00
	51	2102.68	2097 -	2107	2.10E+01	9.17	0.00E+00	0.00E+00
	52	2118.10	2114 -	2120	1.20E+01	6.93	0.00E+00	0.00E+00
	53	2375.72	2370 -	2378	1.10E+01	6.63	0.00E+00	0.00E+00
	54	2614.44	2608 -	2618	7.48E+01	20.56	1.63E+01	9.13E+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 1606093-03

J1V928 SAF: RC-148

PEAK WITH NID REPORT

Peak Analysis Performed on : 6/22/2016 9:28:36AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 1.000 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	12.88	12 -	16	13.01	1.93E+03	129.22	1.65E+03	.....
	2	18.39	17 -	22	18.51	6.78E+01	71.54	9.02E+02	.....
	3	76.31	72 -	80	76.39	6.43E+02	114.09	1.60E+03	.....
M	4	90.13	89 -	96	90.21	4.26E+01	35.26	4.06E+02	ND-147
m	5	92.98	89 -	96	93.06	1.32E+02	58.10	6.64E+02	GA-67
	6	185.82	182 -	189	185.85	1.26E+02	70.26	7.35E+02	RA-226
	7	209.38	205 -	214	209.39	1.29E+02	71.41	6.54E+02	CM-243
									GA-67
	8	238.69	235 -	240	238.69	1.96E+02	71.29	1.24E+03	PB-212
	9	270.50	267 -	273	270.48	5.92E+01	45.25	3.24E+02	.....
	10	277.37	274 -	281	277.35	7.61E+01	48.74	3.48E+02	CM-243
									NP-239
	11	295.09	291 -	298	295.05	2.23E+02	51.11	2.84E+02	PB-214
	12	300.16	299 -	303	300.12	5.38E+01	33.25	2.04E+02	GA-67
									PB-212
									BI-210M
M	13	328.10	326 -	334	328.05	5.73E+01	28.00	1.39E+02	LA-140
m	14	331.08	326 -	334	331.03	2.58E+01	40.90	2.35E+02	.....
	15	338.18	335 -	340	338.12	1.27E+02	39.09	2.05E+02	AC-228
	16	352.03	350 -	355	351.96	3.05E+02	47.36	2.10E+02	PB-214
	17	416.27	414 -	418	416.17	1.96E+01	23.38	1.03E+02	.....
	18	462.03	458 -	466	461.91	3.82E+01	38.77	2.10E+02	.....
	19	511.09	507 -	515	510.95	1.32E+02	42.32	1.95E+02	.....
	20	522.90	520 -	526	522.75	3.44E+01	22.91	7.11E+01	.....
	21	583.33	579 -	586	583.15	1.76E+02	40.50	1.56E+02	TL-208
	22	609.38	604 -	612	609.19	2.19E+02	46.81	2.02E+02	BI-214
M	23	727.79	724 -	735	727.54	3.39E+01	26.51	1.01E+02	BI-212
m	24	732.25	724 -	735	732.00	1.90E+01	25.59	8.14E+01	.....
	25	762.13	758 -	765	761.87	2.59E+01	24.41	7.82E+01	.....
	26	795.46	792 -	798	795.19	2.45E+01	22.39	7.30E+01	CS-134
	27	860.45	858 -	862	860.14	1.49E+01	16.14	4.41E+01	TL-208
	28	870.11	864 -	876	869.80	2.45E+01	30.36	9.50E+01	NB-94
	29	911.41	907 -	915	911.09	1.60E+02	35.06	9.19E+01	AC-228
									LU-172
M	30	965.15	962 -	979	964.80	3.53E+01	22.63	4.24E+01	.....
m	31	969.48	962 -	979	969.13	8.27E+01	26.38	5.86E+01	AC-228
	32	1120.42	1117 -	1124	1120.01	4.08E+01	27.13	9.43E+01	SC-46
									BI-214
									TA-182
	33	1184.56	1180 -	1188	1184.13	2.44E+01	23.49	7.53E+01	.....
	34	1228.15	1225 -	1230	1227.71	1.67E+01	18.76	5.26E+01	.....

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	35	1400.71	1395 -	1403	1400.20	1.05E+01	12.53	1.70E+01	.....
	36	1461.01	1456 -	1465	1460.49	6.21E+02	51.19	1.79E+01	K-40
	37	1538.96	1535 -	1542	1538.42	1.20E+01	6.93	0.00E+00	.....
	38	1582.85	1580 -	1585	1582.29	1.09E+01	10.00	1.01E+01	.....
M	39	1587.81	1585 -	1598	1587.25	1.51E+01	9.73	9.00E+00	.....
m	40	1591.36	1585 -	1598	1590.80	1.78E+01	16.97	1.74E+01	.....
M	41	1617.86	1616 -	1624	1617.29	6.50E+00	4.90	4.00E+00	.....
m	42	1621.97	1616 -	1624	1621.40	9.18E+00	10.44	1.40E+01	.....
	43	1630.98	1627 -	1633	1630.41	7.50E+00	10.25	1.30E+01	.....
	44	1661.19	1655 -	1665	1660.61	1.54E+01	10.11	5.28E+00	.....
	45	1677.58	1674 -	1680	1677.00	6.50E+00	8.03	7.00E+00	I-135
	46	1729.12	1724 -	1732	1728.53	1.90E+01	8.72	0.00E+00	.....
M	47	1764.85	1760 -	1771	1764.25	3.71E+01	14.83	1.48E+01	BI-214
m	48	1768.62	1760 -	1771	1768.01	1.01E+01	14.56	3.94E+00	.....
	49	1803.33	1799 -	1805	1802.71	7.00E+00	5.29	0.00E+00	.....
	50	2039.11	2034 -	2041	2038.44	9.00E+00	6.00	0.00E+00	.....
	51	2102.68	2097 -	2107	2102.00	2.10E+01	9.17	0.00E+00	.....
	52	2118.10	2114 -	2120	2117.42	1.20E+01	6.93	0.00E+00	.....
	53	2375.72	2370 -	2378	2375.00	1.10E+01	6.63	0.00E+00	.....
	54	2614.44	2608 -	2618	2613.70	7.48E+01	20.56	1.63E+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 : 6/22/2016 9:28:36AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	12.88	1.93E+03	129.22	1.13E-05	1.66E-03
	2	18.39	6.78E+01	71.54	3.67E-04	1.66E-03
	3	76.31	6.43E+02	114.09	2.56E-02	2.02E-03
M	4	90.13	4.26E+01	35.26	2.60E-02	2.27E-03
m	5	92.98	1.32E+02	58.10	2.60E-02	2.27E-03
	6	185.82	1.26E+02	70.26	1.99E-02	2.40E-03
	7	209.38	1.29E+02	71.41	1.85E-02	2.36E-03
	8	238.69	1.96E+02	71.29	1.70E-02	2.31E-03
	9	270.50	5.92E+01	45.25	1.56E-02	2.26E-03
	10	277.37	7.61E+01	48.74	1.54E-02	2.24E-03

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	11	295.09	2.23E+02	51.11	1.47E-02	2.21E-03
	12	300.16	5.38E+01	33.25	1.45E-02	2.21E-03
M	13	328.10	5.73E+01	28.00	1.37E-02	2.16E-03
m	14	331.08	2.58E+01	40.90	1.36E-02	2.15E-03
	15	338.18	1.27E+02	39.09	1.34E-02	2.14E-03
	16	352.03	3.05E+02	47.36	1.30E-02	2.12E-03
	17	416.27	1.96E+01	23.38	1.14E-02	1.92E-03
	18	462.03	3.82E+01	38.77	1.06E-02	1.69E-03
	19	511.09	1.32E+02	42.32	9.76E-03	1.43E-03
	20	522.90	3.44E+01	22.91	9.59E-03	1.37E-03
	21	583.33	1.76E+02	40.50	8.79E-03	1.06E-03
	22	609.38	2.19E+02	46.81	8.48E-03	9.22E-04
M	23	727.79	3.39E+01	26.51	7.34E-03	7.37E-04
m	24	732.25	1.90E+01	25.59	7.30E-03	7.42E-04
	25	762.13	2.59E+01	24.41	7.06E-03	7.81E-04
	26	795.46	2.45E+01	22.39	6.82E-03	8.24E-04
	27	860.45	1.49E+01	16.14	6.39E-03	9.07E-04
	28	870.11	2.45E+01	30.36	6.33E-03	9.20E-04
	29	911.41	1.60E+02	35.06	6.09E-03	9.28E-04
M	30	965.15	3.53E+01	22.63	5.81E-03	8.20E-04
m	31	969.48	8.27E+01	26.38	5.79E-03	8.11E-04
	32	1120.42	4.08E+01	27.13	5.15E-03	5.06E-04
	33	1184.56	2.44E+01	23.49	4.93E-03	3.96E-04
	34	1228.15	1.67E+01	18.76	4.80E-03	3.86E-04
	35	1400.71	1.05E+01	12.53	4.36E-03	3.68E-04
	36	1461.01	6.21E+02	51.19	4.23E-03	3.72E-04
	37	1538.96	1.20E+01	6.93	4.09E-03	3.78E-04
	38	1582.85	1.09E+01	10.00	4.02E-03	3.82E-04
M	39	1587.81	1.51E+01	9.73	4.01E-03	3.82E-04
m	40	1591.36	1.78E+01	16.97	4.00E-03	3.82E-04
M	41	1617.86	6.50E+00	4.90	3.96E-03	3.84E-04
m	42	1621.97	9.18E+00	10.44	3.96E-03	3.85E-04
	43	1630.98	7.50E+00	10.25	3.94E-03	3.85E-04
	44	1661.19	1.54E+01	10.11	3.90E-03	3.88E-04
	45	1677.58	6.50E+00	8.03	3.88E-03	3.89E-04
	46	1729.12	1.90E+01	8.72	3.81E-03	3.93E-04
M	47	1764.85	3.71E+01	14.83	3.77E-03	3.96E-04
m	48	1768.62	1.01E+01	14.56	3.77E-03	3.96E-04
	49	1803.33	7.00E+00	5.29	3.73E-03	3.98E-04
	50	2039.11	9.00E+00	6.00	3.54E-03	4.01E-04
	51	2102.68	2.10E+01	9.17	3.50E-03	4.01E-04
	52	2118.10	1.20E+01	6.93	3.49E-03	4.01E-04
	53	2375.72	1.10E+01	6.63	3.41E-03	4.01E-04
	54	2614.44	7.48E+01	20.56	3.40E-03	4.01E-04

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

Analysis Report for 1606093-03

J1V928 SAF: RC-148

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 6/22/2016 9:28:36AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039128.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	12.88	1.93E+03	129.22			1.93E+03	1.29E+02
	2	18.39	6.78E+01	71.54			6.78E+01	7.15E+01
	3	76.31	6.43E+02	114.09			6.43E+02	1.14E+02
M	4	90.13	4.26E+01	35.26			4.26E+01	3.53E+01
m	5	92.98	1.32E+02	58.10	5.53E+01	7.92E+00	7.68E+01	5.86E+01
	6	185.82	1.26E+02	70.26	3.09E+01	6.97E+00	9.55E+01	7.06E+01
	7	209.38	1.29E+02	71.41			1.29E+02	7.14E+01
	8	238.69	1.96E+02	71.29	5.00E+00	6.32E+00	1.91E+02	7.16E+01
	9	270.50	5.92E+01	45.25			5.92E+01	4.53E+01
	10	277.37	7.61E+01	48.74			7.61E+01	4.87E+01
	11	295.09	2.23E+02	51.11	5.52E+00	5.27E+00	2.17E+02	5.14E+01
	12	300.16	5.38E+01	33.25			5.38E+01	3.32E+01
M	13	328.10	5.73E+01	28.00			5.73E+01	2.80E+01
m	14	331.08	2.58E+01	40.90			2.58E+01	4.09E+01
	15	338.18	1.27E+02	39.09			1.27E+02	3.91E+01
	16	352.03	3.05E+02	47.36	4.46E+00	4.93E+00	3.00E+02	4.76E+01
	17	416.27	1.96E+01	23.38			1.96E+01	2.34E+01
	18	462.03	3.82E+01	38.77			3.82E+01	3.88E+01
	19	511.09	1.32E+02	42.32	6.55E+01	5.04E+00	6.67E+01	4.26E+01
	20	522.90	3.44E+01	22.91			3.44E+01	2.29E+01
	21	583.33	1.76E+02	40.50	3.26E+00	3.64E+00	1.73E+02	4.07E+01
	22	609.38	2.19E+02	46.81	7.35E+00	3.67E+00	2.12E+02	4.70E+01
M	23	727.79	3.39E+01	26.51			3.39E+01	2.65E+01
m	24	732.25	1.90E+01	25.59			1.90E+01	2.56E+01
	25	762.13	2.59E+01	24.41			2.59E+01	2.44E+01
	26	795.46	2.45E+01	22.39			2.45E+01	2.24E+01
	27	860.45	1.49E+01	16.14			1.49E+01	1.61E+01
	28	870.11	2.45E+01	30.36			2.45E+01	3.04E+01
	29	911.41	1.60E+02	35.06	1.08E+00	2.95E+00	1.59E+02	3.52E+01
M	30	965.15	3.53E+01	22.63			3.53E+01	2.26E+01
m	31	969.48	8.27E+01	26.38	8.92E-03	2.31E+00	8.27E+01	2.65E+01
	32	1120.42	4.08E+01	27.13			4.08E+01	2.71E+01
	33	1184.56	2.44E+01	23.49			2.44E+01	2.35E+01
	34	1228.15	1.67E+01	18.76			1.67E+01	1.88E+01
	35	1400.71	1.05E+01	12.53			1.05E+01	1.25E+01
	36	1461.01	6.21E+02	51.19	3.11E+00	2.41E+00	6.18E+02	5.12E+01
	37	1538.96	1.20E+01	6.93			1.20E+01	6.93E+00
	38	1582.85	1.09E+01	10.00			1.09E+01	1.00E+01
M	39	1587.81	1.51E+01	9.73			1.51E+01	9.73E+00
m	40	1591.36	1.78E+01	16.97			1.78E+01	1.70E+01
M	41	1617.86	6.50E+00	4.90			6.50E+00	4.90E+00
m	42	1621.97	9.18E+00	10.44			9.18E+00	1.04E+01
	43	1630.98	7.50E+00	10.25			7.50E+00	1.02E+01
	44	1661.19	1.54E+01	10.11			1.54E+01	1.01E+01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	45	1677.58	6.50E+00	8.03			6.50E+00	8.03E+00
	46	1729.12	1.90E+01	8.72			1.90E+01	8.72E+00
M	47	1764.85	3.71E+01	14.83	6.26E-01	1.97E+00	3.65E+01	1.50E+01
m	48	1768.62	1.01E+01	14.56			1.01E+01	1.46E+01
	49	1803.33	7.00E+00	5.29			7.00E+00	5.29E+00
	50	2039.11	9.00E+00	6.00			9.00E+00	6.00E+00
	51	2102.68	2.10E+01	9.17			2.10E+01	9.17E+00
	52	2118.10	1.20E+01	6.93			1.20E+01	6.93E+00
	53	2375.72	1.10E+01	6.63			1.10E+01	6.63E+00
	54	2614.44	7.48E+01	20.56	5.31E+00	1.43E+00	6.95E+01	2.06E+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 : 6/22/2016 9:28:36AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039128.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	12.88	1.93E+03	129.22			1.93E+03	1.29E+02
	2	18.39	6.78E+01	71.54			6.78E+01	7.15E+01
	3	76.31	6.43E+02	114.09			6.43E+02	1.14E+02
M	4	90.13	4.26E+01	35.26			4.26E+01	3.53E+01
m	5	92.98	1.32E+02	58.10	5.53E+01	7.92E+00	7.68E+01	5.86E+01
	6	185.82	1.26E+02	70.26	3.09E+01	6.97E+00	9.55E+01	7.06E+01
	7	209.38	1.29E+02	71.41			1.29E+02	7.14E+01
	8	238.69	1.96E+02	71.29	5.00E+00	6.32E+00	1.91E+02	7.16E+01
	9	270.50	5.92E+01	45.25			5.92E+01	4.53E+01
	10	277.37	7.61E+01	48.74			7.61E+01	4.87E+01
	11	295.09	2.23E+02	51.11	5.52E+00	5.27E+00	2.17E+02	5.14E+01
	12	300.16	5.38E+01	33.25			5.38E+01	3.32E+01
M	13	328.10	5.73E+01	28.00			5.73E+01	2.80E+01
m	14	331.08	2.58E+01	40.90			2.58E+01	4.09E+01
	15	338.18	1.27E+02	39.09			1.27E+02	3.91E+01
	16	352.03	3.05E+02	47.36	4.46E+00	4.93E+00	3.00E+02	4.76E+01
	17	416.27	1.96E+01	23.38			1.96E+01	2.34E+01
	18	462.03	3.82E+01	38.77			3.82E+01	3.88E+01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	19	511.09	1.32E+02	42.32	6.55E+01	5.04E+00	6.67E+01	4.26E+01
	20	522.90	3.44E+01	22.91			3.44E+01	2.29E+01
	21	583.33	1.76E+02	40.50	3.26E+00	3.64E+00	1.73E+02	4.07E+01
	22	609.38	2.19E+02	46.81	7.35E+00	3.67E+00	2.12E+02	4.70E+01
M	23	727.79	3.39E+01	26.51			3.39E+01	2.65E+01
m	24	732.25	1.90E+01	25.59			1.90E+01	2.56E+01
	25	762.13	2.59E+01	24.41			2.59E+01	2.44E+01
	26	795.46	2.45E+01	22.39			2.45E+01	2.24E+01
	27	860.45	1.49E+01	16.14			1.49E+01	1.61E+01
	28	870.11	2.45E+01	30.36			2.45E+01	3.04E+01
	29	911.41	1.60E+02	35.06	1.08E+00	2.95E+00	1.59E+02	3.52E+01
M	30	965.15	3.53E+01	22.63			3.53E+01	2.26E+01
m	31	969.48	8.27E+01	26.38	8.92E-03	2.31E+00	8.27E+01	2.65E+01
	32	1120.42	4.08E+01	27.13			4.08E+01	2.71E+01
	33	1184.56	2.44E+01	23.49			2.44E+01	2.35E+01
	34	1228.15	1.67E+01	18.76			1.67E+01	1.88E+01
	35	1400.71	1.05E+01	12.53			1.05E+01	1.25E+01
	36	1461.01	6.21E+02	51.19	3.11E+00	2.41E+00	6.18E+02	5.12E+01
	37	1538.96	1.20E+01	6.93			1.20E+01	6.93E+00
	38	1582.85	1.09E+01	10.00			1.09E+01	1.00E+01
M	39	1587.81	1.51E+01	9.73			1.51E+01	9.73E+00
m	40	1591.36	1.78E+01	16.97			1.78E+01	1.70E+01
M	41	1617.86	6.50E+00	4.90			6.50E+00	4.90E+00
m	42	1621.97	9.18E+00	10.44			9.18E+00	1.04E+01
	43	1630.98	7.50E+00	10.25			7.50E+00	1.02E+01
	44	1661.19	1.54E+01	10.11			1.54E+01	1.01E+01
	45	1677.58	6.50E+00	8.03			6.50E+00	8.03E+00
	46	1729.12	1.90E+01	8.72			1.90E+01	8.72E+00
M	47	1764.85	3.71E+01	14.83	6.26E-01	1.97E+00	3.65E+01	1.50E+01
m	48	1768.62	1.01E+01	14.56			1.01E+01	1.46E+01
	49	1803.33	7.00E+00	5.29			7.00E+00	5.29E+00
	50	2039.11	9.00E+00	6.00			9.00E+00	6.00E+00
	51	2102.68	2.10E+01	9.17			2.10E+01	9.17E+00
	52	2118.10	1.20E+01	6.93			1.20E+01	6.93E+00
	53	2375.72	1.10E+01	6.63			1.10E+01	6.63E+00
	54	2614.44	7.48E+01	20.56	5.31E+00	1.43E+00	6.95E+01	2.06E+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 1606093-03

J1V928 SAF: RC-148

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.994	1460.81	*	10.67	1.42E+01	1.75E+00
GA-67	0.970	93.31	*	35.70	3.10E-01	4.86E-01
		208.95	*	2.24	1.16E+01	1.13E+01
		300.22	*	16.00	8.66E-01	1.31E+00
ND-147	0.557	91.11	*	28.90	8.62E-02	7.17E-02
		531.02		13.10		
TL-208	0.993	583.14	*	30.22	6.77E-01	1.79E-01
		860.37	*	4.48	5.43E-01	5.92E-01
		2614.66	*	35.85	5.94E-01	1.89E-01
BI-212	0.718	727.17	*	11.80	4.08E-01	3.21E-01
		1620.62		2.75		
PB-212	0.999	238.63	*	44.60	2.62E-01	1.04E-01
		300.09	*	3.41	1.13E+00	7.18E-01
BI-214	0.924	609.31	*	46.30	5.60E-01	1.38E-01
		1120.29	*	15.10	5.46E-01	3.67E-01
		1764.49	*	15.80	6.36E-01	2.70E-01
		2204.22		4.98		
PB-214	0.998	295.21	*	19.19	8.00E-01	2.24E-01
		351.92	*	37.19	6.48E-01	1.47E-01
RA-226	0.976	186.21	*	3.28	1.52E+00	3.01E+00
AC-228	0.984	338.32	*	11.40	8.65E-01	3.01E-01
		911.07	*	27.70	9.80E-01	2.63E-01
		969.11	*	16.60	8.95E-01	3.13E-01
CM-243	0.367	209.75	*	3.29	2.20E+00	1.25E+00
		228.14		10.60		
		277.60	*	14.00	3.68E-01	2.42E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 9:28:36AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	12.88	5.36213E-01	3.35		
	2	18.39	1.88236E-02	52.79		
	3	76.31	1.78548E-01	8.88		
	9	270.50	1.64423E-02	38.22		
M	13	328.10	1.59300E-02	24.41	Sum	
m	14	331.08	7.16416E-03	79.30	Sum	
	17	416.27	5.44014E-03	59.68		
	18	462.03	1.06177E-02	50.72		
	19	511.09	1.85401E-02	31.93		
	20	522.90	9.56746E-03	33.26		
m	24	732.25	5.28923E-03	67.20		
	25	762.13	7.19658E-03	47.12		
	26	795.46	6.81011E-03	45.66	Sum	
	28	870.11	6.80556E-03	61.96	Tol.	NB-94
M	30	965.15	9.81726E-03	32.01		
	33	1184.56	6.76673E-03	48.21		
	34	1228.15	4.64470E-03	56.10		
	35	1400.71	2.91667E-03	59.67		
	37	1538.96	3.33333E-03	28.87		
	38	1582.85	3.03819E-03	45.71		
M	39	1587.81	4.20578E-03	32.14	Sum	
m	40	1591.36	4.93360E-03	47.77		
M	41	1617.86	1.80640E-03	37.67		
m	42	1621.97	2.55118E-03	56.84		
	43	1630.98	2.08333E-03	68.31		
	44	1661.19	4.26697E-03	32.91		
	45	1677.58	1.80556E-03	61.78	Tol.	I-135
	46	1729.12	5.27778E-03	22.94	Sum	
m	48	1768.62	2.80442E-03	72.11		
	49	1803.33	1.94444E-03	37.80		
	50	2039.11	2.50000E-03	33.33		
	51	2102.68	5.83333E-03	21.82	S-Esc	
	52	2118.10	3.33333E-03	28.87		
	53	2375.72	3.05556E-03	30.15		

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 1606093-03

J1V928 SAF: RC-148

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	1.42E+01	1.75E+00
GA-67	0.97	93.31	*	35.70	3.10E-01	4.86E-01
		208.95	*	2.24	1.16E+01	1.13E+01
		300.22	*	16.00	8.66E-01	1.31E+00
ND-147	0.55	91.11	*	28.90	8.62E-02	7.17E-02
		531.02		13.10		
TL-208	0.99	583.14	*	30.22	6.77E-01	1.79E-01
		860.37	*	4.48	5.43E-01	5.92E-01
		2614.66	*	35.85	5.94E-01	1.89E-01
BI-212	0.71	727.17	*	11.80	4.08E-01	3.21E-01
		1620.62		2.75		
PB-212	0.99	238.63	*	44.60	2.62E-01	1.04E-01
		300.09	*	3.41	1.13E+00	7.18E-01
BI-214	0.92	609.31	*	46.30	5.60E-01	1.38E-01
		1120.29	*	15.10	5.46E-01	3.67E-01
		1764.49	*	15.80	6.36E-01	2.70E-01
		2204.22		4.98		
PB-214	0.99	295.21	*	19.19	8.00E-01	2.24E-01
		351.92	*	37.19	6.48E-01	1.47E-01
RA-226	0.97	186.21	*	3.28	1.52E+00	3.01E+00
AC-228	0.98	338.32	*	11.40	8.65E-01	3.01E-01
		911.07	*	27.70	9.80E-01	2.63E-01
		969.11	*	16.60	8.95E-01	3.13E-01
CM-243	0.36	209.75	*	3.29	2.20E+00	1.25E+00
		228.14		10.60		
		277.60	*	14.00	3.68E-01	2.42E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Analysis Report for 1606093-03

J1V928 SAF: RC-148

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.994	1.42E+01	1.75E+00	
GA-67	0.970	3.75E-01	3.66E-01	
ND-147	0.557	8.62E-02	7.17E-02	
TL-208	0.993	6.33E-01	1.27E-01	
BI-212	0.718	4.08E-01	3.21E-01	
PB-212	0.999	2.70E-01	1.03E-01	
BI-214	0.924	5.73E-01	1.17E-01	
PB-214	0.998	6.94E-01	1.23E-01	
RA-226	0.976	1.52E+00	3.01E+00	
AC-228	0.984	9.20E-01	1.67E-01	
CM-243	0.367	4.31E-01	2.37E-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 1606093-03

J1V928 SAF: RC-148

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 9:28:36AM
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	12.88	5.36213E-01	3.35		
	2	18.39	1.88236E-02	52.79		
	3	76.31	1.78548E-01	8.88		
	9	270.50	1.64423E-02	38.22		
M	13	328.10	1.59300E-02	24.41	Sum	
m	14	331.08	7.16416E-03	79.30	Sum	
	17	416.27	5.44014E-03	59.68		
	18	462.03	1.06177E-02	50.72		
	19	511.09	1.85401E-02	31.93		
	20	522.90	9.56746E-03	33.26		
m	24	732.25	5.28923E-03	67.20		
	25	762.13	7.19658E-03	47.12		
	26	795.46	6.81011E-03	45.66	Sum	
	28	870.11	6.80556E-03	61.96	Tol.	NB-94
M	30	965.15	9.81726E-03	32.01		
	33	1184.56	6.76673E-03	48.21		
	34	1228.15	4.64470E-03	56.10		
	35	1400.71	2.91667E-03	59.67		
	37	1538.96	3.33333E-03	28.87		
	38	1582.85	3.03819E-03	45.71		
M	39	1587.81	4.20578E-03	32.14	Sum	
m	40	1591.36	4.93360E-03	47.77		
M	41	1617.86	1.80640E-03	37.67		
m	42	1621.97	2.55118E-03	56.84		
	43	1630.98	2.08333E-03	68.31		
	44	1661.19	4.26697E-03	32.91		
	45	1677.58	1.80556E-03	61.78	Tol.	I-135
	46	1729.12	5.27778E-03	22.94	Sum	
m	48	1768.62	2.80442E-03	72.11		
	49	1803.33	1.94444E-03	37.80		
	50	2039.11	2.50000E-03	33.33		
	51	2102.68	5.83333E-03	21.82	S-Esc	
	52	2118.10	3.33333E-03	28.87		
	53	2375.72	3.05556E-03	30.15		

Analysis Report for 1606093-03

J1V928 SAF: RC-148

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	-1.13E-01	4.31E-01	4.31E-01
+	NA-22	1274.54		99.94	1.10E-02	7.28E-02	7.28E-02
+	NA-24	1368.53		99.99	-6.87E+00	1.80E+01	4.42E+01
		2754.09		99.86	2.44E+00		1.80E+01
+	AL-26	1808.65		99.76	-9.33E-03	4.67E-02	4.67E-02
+	K-40	1460.81	*	10.67	1.42E+01	5.33E-01	5.33E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-4.37E-03	3.63E-02	3.63E-02
		78.34		96.00	1.76E-01		5.12E-02
+	SC-46	889.25		99.98	-4.48E-03	5.78E-02	5.78E-02
		1120.51		99.99	8.82E-02		9.57E-02
+	V-48	983.52		99.98	1.68E-02	7.67E-02	7.67E-02
		1312.10		97.50	3.33E-02		9.06E-02
+	CR-51	320.08		9.83	-2.42E-01	4.44E-01	4.44E-01
+	MN-54	834.83		99.97	-2.78E-03	6.19E-02	6.19E-02
+	CO-56	846.75		99.96	-2.48E-02	4.85E-02	4.85E-02
		1037.75		14.03	6.60E-02		4.99E-01
		1238.25		67.00	8.25E-02		1.37E-01
		1771.40		15.51	-5.64E-02		3.66E-01
		2598.48		16.90	-2.29E-02		2.51E-01
+	CO-57	122.06		85.51	-1.87E-02	4.23E-02	4.23E-02
		136.48		10.60	-7.24E-02		3.44E-01
+	CO-58	810.76		99.40	-1.91E-02	5.13E-02	5.13E-02
+	FE-59	1099.22		56.50	-2.16E-03	1.39E-01	1.39E-01
		1291.56		43.20	-5.72E-03		1.61E-01
+	CO-60	1173.22		100.00	6.98E-03	6.80E-02	7.19E-02
		1332.49		100.00	1.44E-02		6.80E-02
+	ZN-65	1115.52		50.75	9.32E-03	1.41E-01	1.41E-01
+	GA-67	93.31	*	35.70	3.10E-01	5.76E-01	5.76E-01
		208.95	*	2.24	1.16E+01		1.03E+01
		300.22	*	16.00	8.66E-01		8.34E-01
+	SE-75	121.11		16.70	5.25E-02	6.34E-02	2.21E-01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00	59.20	1.55E-02	6.34E-02	6.34E-02
		264.65	59.80	2.11E-03		6.86E-02
		279.53	25.20	-4.85E-02		1.66E-01
		400.65	11.40	-3.55E-03		3.53E-01
+	RB-82	776.52	13.00	1.21E-01	5.08E-01	5.08E-01
+	RB-83	520.41	46.00	-9.48E-03	7.83E-02	7.83E-02
		529.64	30.30	4.40E-02		1.33E-01
		552.65	16.40	3.48E-02		2.70E-01
+	KR-85	513.99	0.43	-8.02E+00	1.12E+01	1.12E+01
+	SR-85	513.99	99.27	-3.74E-02	5.21E-02	5.21E-02
+	Y-88	898.02	93.40	-2.29E-03	4.15E-02	5.97E-02
		1836.01	99.38	4.58E-03		4.15E-02
+	NB-93M	16.57	9.43	3.77E+01	6.32E+01	6.32E+01
+	NB-94	702.63	100.00	1.63E-03	5.10E-02	5.77E-02
		871.10	100.00	-9.40E-03		5.10E-02
+	NB-95	765.79	99.81	2.67E-02	6.57E-02	6.57E-02
+	NB-95M	235.69	25.00	-4.82E+00	7.21E-01	7.21E-01
+	ZR-95	724.18	43.70	1.51E-02	1.11E-01	1.49E-01
		756.72	55.30	3.15E-03		1.11E-01
+	MO-99	181.06	6.20	8.71E-01	1.89E+00	2.85E+00
		739.58	12.80	1.25E+00		1.89E+00
		778.00	4.50	4.03E-01		5.36E+00
+	RU-103	497.08	89.00	1.56E-02	5.31E-02	5.31E-02
+	RU-106	621.84	9.80	1.03E-01	5.39E-01	5.39E-01
+	AG-108M	433.93	89.90	-8.82E-03	4.11E-02	4.11E-02
		614.37	90.40	-1.61E-02		5.76E-02
		722.95	90.50	1.52E-02		6.08E-02
+	CD-109	88.03	3.72	5.04E-01	1.24E+00	1.24E+00
+	AG-110M	657.75	93.14	-9.44E-03	5.69E-02	5.69E-02
		677.61	10.53	-1.87E-01		4.96E-01
		706.67	16.46	4.37E-02		3.44E-01
		763.93	21.98	-1.47E-01		2.45E-01
		884.67	71.63	2.01E-02		8.73E-02
		1384.27	23.94	1.67E-02		2.31E-01
+	CD-113M	263.70	0.02	2.66E+00	1.71E+02	1.71E+02
+	SN-113	255.12	1.93	-5.49E-01	6.96E-02	2.06E+00
		391.69	64.90	4.44E-02		6.96E-02
+	TE123M	159.00	84.10	-7.45E-03	4.57E-02	4.57E-02
+	SB-124	602.71	97.87	-7.63E-03	6.00E-02	6.00E-02
		645.85	7.26	4.43E-02		7.69E-01
		722.78	11.10	1.33E-01		5.32E-01
		1691.02	49.00	-3.83E-02		8.85E-02
+	I-125	35.49	6.49	2.87E-01	1.13E+00	1.13E+00
+	SB-125	176.33	6.89	-2.06E-01	1.42E-01	5.13E-01
		427.89	29.33	4.60E-02		1.42E-01
		463.38	10.35	2.30E-01		4.60E-01
		600.56	17.80	1.33E-02		3.07E-01
		635.90	11.32	1.09E-01		4.40E-01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	SB-126	414.70	83.30	3.46E-02	6.64E-02	6.64E-02
		666.33	99.60	-1.81E-02		8.17E-02
		695.00	99.60	1.42E-02		7.99E-02
		720.50	53.80	2.33E-02		1.39E-01
+	SN-126	87.57	37.00	5.02E-02	1.24E-01	1.24E-01
+	SB-127	473.00	25.00	5.94E-02	4.30E-01	5.26E-01
		685.20	35.70	-2.01E-01		4.30E-01
		783.80	14.70	2.33E-01		1.08E+00
+	I-129	29.78	57.00	4.00E-02	2.09E-01	2.09E-01
		33.60	13.20	1.24E-02		5.81E-01
		39.58	7.52	1.99E-01		7.03E-01
+	I-131	284.30	6.05	6.67E-01	8.19E-02	1.08E+00
		364.48	81.20	-8.09E-03		8.19E-02
		636.97	7.26	-8.63E-01		1.07E+00
		722.89	1.80	1.29E+00		5.14E+00
+	TE-132	49.72	13.10	-1.92E-01	1.55E-01	9.50E-01
		228.16	88.00	8.58E-02		1.55E-01
+	BA-133	81.00	33.00	-2.72E-02	6.67E-02	9.09E-02
		302.84	17.80	2.85E-02		2.19E-01
		356.01	60.00	7.99E-03		6.67E-02
+	I-133	529.87	86.30	4.35E-02	5.56E+00	5.56E+00
+	XE-133	81.00	38.00	-5.24E-02	1.75E-01	1.75E-01
+	CS-134	563.23	8.38	1.15E-01	5.88E-02	5.47E-01
		569.32	15.43	-2.44E-03		2.98E-01
		604.70	97.60	-1.86E-03		5.88E-02
		795.84	85.40	1.28E-02		7.12E-02
		801.93	8.73	-1.99E-01		6.18E-01
+	CS-135	268.24	16.00	-1.91E-01	2.49E-01	2.49E-01
+	I-135	1131.51	22.50	4.56E+05	9.31E+05	1.23E+06
		1260.41	28.60	4.08E+05		9.31E+05
		1678.03	9.54	3.27E+05		2.05E+06
+	CS-136	153.22	7.46	6.69E-02	7.52E-02	6.95E-01
		163.89	4.61	-3.06E-01		1.08E+00
		176.55	13.56	4.68E-02		3.66E-01
		273.65	12.66	-7.12E-01		4.04E-01
		340.57	48.50	3.25E-02		1.33E-01
		818.50	99.70	7.74E-03		7.52E-02
		1048.07	79.60	-5.98E-02		1.04E-01
		1235.34	19.70	3.67E-01		5.97E-01
+	CS-137	661.65	85.12	1.09E-02	6.46E-02	6.46E-02
+	LA-138	788.74	34.00	6.15E-02	7.17E-02	1.60E-01
		1435.80	66.00	4.39E-03		7.17E-02
+	CE-139	165.85	80.35	1.79E-03	4.64E-02	4.64E-02
+	BA-140	162.64	6.70	1.57E-01	2.34E-01	7.72E-01
		304.84	4.50	3.57E-02		1.13E+00
		423.70	3.20	-1.11E+00		1.64E+00
		437.55	2.00	2.64E-01		2.74E+00
		537.32	25.00	-4.08E-02		2.34E-01
+	LA-140	328.77	20.50	3.64E-01	8.69E-02	3.22E-01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LA-140	487.03		45.50	1.48E-02	8.69E-02	1.19E-01
		815.85		23.50	-1.52E-02		3.02E-01
		1596.49		95.49	-7.56E-03		8.69E-02
+	CE-141	145.44		48.40	3.31E-02	9.21E-02	9.21E-02
+	CE-143	57.36		11.80	6.97E-01	2.71E+00	5.77E+00
		293.26		42.00	1.30E+00		2.71E+00
		664.55		5.20	-3.25E+00		2.36E+01
+	CE-144	133.54		10.80	-1.62E-01	3.37E-01	3.37E-01
+	PM-144	476.78		42.00	-2.62E-02	5.19E-02	9.98E-02
		618.01		98.60	-3.42E-02		5.19E-02
		696.49		99.49	-1.81E-02		5.55E-02
+	PM-145	36.85		21.70	-8.21E-02	1.48E-01	2.81E-01
		37.36		39.70	-4.33E-02		1.48E-01
		42.30		15.10	2.76E-02		2.88E-01
		72.40		2.31	-9.84E-01		1.48E+00
+	PM-146	453.90		39.94	4.90E-02	1.01E-01	1.01E-01
		735.90		14.01	1.43E-01		3.74E-01
		747.13		13.10	1.98E-02		3.84E-01
+	ND-147	91.11	*	28.90	8.62E-02	2.72E-01	2.72E-01
		531.02		13.10	-2.68E-01		4.07E-01
+	PM-149	285.90		3.10	-3.98E+00	8.31E+00	8.31E+00
+	EU-152	121.78		20.50	-7.67E-02	1.74E-01	1.74E-01
		244.69		5.40	-7.90E-01		7.60E-01
		344.27		19.13	-2.14E-02		2.20E-01
		778.89		9.20	2.39E-01		5.86E-01
		964.01		10.40	-1.53E+00		6.24E-01
		1085.78		7.22	2.37E-01		8.46E-01
		1112.02		9.60	-1.26E-01		7.65E-01
		1407.95		14.94	-8.03E-02		3.42E-01
+	GD-153	97.43		31.30	7.83E-02	1.19E-01	1.19E-01
		103.18		22.20	-9.61E-02		1.62E-01
+	EU-154	123.07		40.50	1.88E-02	9.01E-02	9.01E-02
		723.30		19.70	7.00E-02		2.80E-01
		873.19		11.50	6.83E-02		4.45E-01
		996.32		10.30	9.07E-02		5.67E-01
		1004.76		17.90	-1.34E-01		2.92E-01
		1274.45		35.50	3.08E-02		2.04E-01
+	EU-155	86.50		30.90	1.11E-01	1.47E-01	1.47E-01
		105.30		20.70	1.13E-01		1.79E-01
+	EU-156	811.77		10.40	-5.86E-01	5.70E-01	5.70E-01
		1153.47		7.20	3.28E-01		1.33E+00
		1230.71		8.90	-1.43E-01		1.09E+00
+	HO-166M	184.41		72.60	2.76E-02	6.37E-02	6.37E-02
		280.45		29.60	-4.00E-02		1.37E-01
		410.94		11.10	1.39E-01		3.66E-01
		711.69		54.10	9.53E-05		9.49E-02
+	TM-171	66.72		0.14	-3.62E+00	2.44E+01	2.44E+01
+	HF-172	81.75		4.52	-2.89E-01	3.32E-01	7.09E-01
		125.81		11.30	-2.21E-01		3.32E-01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	LU-172	181.53		20.60	3.87E-02	2.03E-01	3.56E-01
		810.06		16.63	-2.01E-01		5.39E-01
		912.12		15.25	3.31E+00		1.43E+00
		1093.66		62.50	9.29E-02		2.03E-01
+	LU-173	100.72		5.24	6.72E-02	1.96E-01	6.88E-01
		272.11		21.20	2.88E-02		1.96E-01
+	HF-175	343.40		84.00	2.84E-02	5.34E-02	5.34E-02
+	LU-176	88.34		13.30	1.40E-01	3.79E-02	3.44E-01
		201.83		86.00	3.43E-02		4.69E-02
		306.78		94.00	-1.86E-02		3.79E-02
+	TA-182	67.75		41.20	-1.04E-02	8.64E-02	8.64E-02
		1121.30		34.90	2.39E-01		2.71E-01
		1189.05		16.23	1.76E-02		4.39E-01
		1221.41		26.98	1.46E-01		3.22E-01
		1231.02		11.44	6.85E-03		6.47E-01
+	IR-192	308.46		29.68	-1.42E-02	8.92E-02	1.29E-01
		468.07		48.10	-1.79E-03		8.92E-02
+	HG-203	279.19		77.30	4.11E-02	6.11E-02	6.11E-02
+	BI-207	569.67		97.72	-3.84E-04	4.68E-02	4.68E-02
		1063.62		74.90	-1.32E-02		8.59E-02
+	TL-208	583.14	*	30.22	6.77E-01	1.93E-01	2.10E-01
		860.37	*	4.48	5.43E-01		9.45E-01
		2614.66	*	35.85	5.94E-01		1.93E-01
+	BI-210M	262.00		45.00	-5.16E-03	8.77E-02	8.77E-02
		300.00		23.00	1.32E-01		1.82E-01
+	PB-210	46.50		4.25	1.96E-01	9.53E-01	9.53E-01
+	PB-211	404.84		2.90	-1.64E-01	1.31E+00	1.31E+00
		831.96		2.90	-3.63E-01		1.93E+00
+	BI-212	727.17	*	11.80	4.08E-01	9.04E-01	9.04E-01
		1620.62		2.75	5.49E-01		2.25E+00
+	PB-212	238.63	*	44.60	2.62E-01	1.82E-01	1.82E-01
		300.09	*	3.41	1.13E+00		1.09E+00
+	BI-214	609.31	*	46.30	5.60E-01	1.68E-01	1.68E-01
		1120.29	*	15.10	5.46E-01		5.62E-01
		1764.49	*	15.80	6.36E-01		3.92E-01
		2204.22		4.98	4.84E-01		1.10E+00
+	PB-214	295.21	*	19.19	8.00E-01	1.22E-01	2.65E-01
		351.92	*	37.19	6.48E-01		1.22E-01
+	RN-219	401.80		6.50	2.51E-02	5.96E-01	5.96E-01
+	RA-223	323.87		3.88	3.00E-01	9.85E-01	9.85E-01
+	RA-224	240.98		3.95	1.62E+00	1.96E+00	1.96E+00
+	RA-225	40.00		31.00	6.24E-02	2.21E-01	2.21E-01
+	RA-226	186.21	*	3.28	1.52E+00	1.82E+00	1.82E+00
+	TH-227	50.10		8.40	-8.24E-02	4.07E-01	4.07E-01
		236.00		11.50	-3.30E+00		4.93E-01
		256.20		6.30	-2.38E-02		6.05E-01
+	AC-228	338.32	*	11.40	8.65E-01	2.65E-01	3.78E-01
		911.07	*	27.70	9.80E-01		2.65E-01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AC-228	969.11	*	16.60	8.95E-01	2.65E-01	7.00E-01
+	TH-230	48.44		16.90	-2.02E-02	2.15E-01	2.15E-01
		62.85		4.60	3.76E-01		8.13E-01
		67.67		0.37	-1.12E+00		9.28E+00
+	PA-231	283.67		1.60	1.50E+00	1.69E+00	2.42E+00
		302.67		2.30	2.20E-01		1.69E+00
+	TH-231	25.64		14.70	3.51E-01	5.60E-01	1.68E+00
		84.21		6.40	7.63E-01		5.60E-01
+	PA-233	311.98		38.60	1.37E-02	1.14E-01	1.14E-01
+	PA-234	131.20		20.40	1.07E-01	1.89E-01	1.89E-01
		733.99		8.80	1.51E-01		6.29E-01
		946.00		12.00	7.39E-02		5.27E-01
+	PA-234M	1001.03		0.92	5.53E-01	6.06E+00	6.06E+00
+	TH-234	63.29		3.80	4.53E-01	9.80E-01	9.80E-01
+	U-235	143.76		10.50	-1.26E-01	3.67E-01	3.67E-01
		163.35		4.70	1.62E-01		7.96E-01
		205.31		4.70	2.99E-01		8.28E-01
+	NP-237	86.50		12.60	2.72E-01	3.61E-01	3.61E-01
+	NP-239	106.10		22.70	3.57E-01	9.45E-01	9.45E-01
		228.18		10.70	1.15E+00		2.08E+00
		277.60		14.10	1.32E+00		1.82E+00
+	AM-241	59.54		35.90	5.08E-02	9.88E-02	9.88E-02
+	AM-243	74.67		66.00	-1.72E-01	6.77E-02	6.77E-02
+	CM-243	209.75	*	3.29	2.20E+00	3.56E-01	1.95E+00
		228.14		10.60	1.98E-01		3.56E-01
		277.60	*	14.00	3.68E-01		3.75E-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
? = 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 1606093-03

J1V928 SAF: RC-148

	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	4.31E-01	4.31E-01	-1.13E-01	2.01E-01
	NA-22	1274.54		99.94	7.28E-02	7.28E-02	1.10E-02	3.34E-02
	NA-24	1368.53		99.99	4.42E+01	1.80E+01	-6.87E+00	1.96E+01
		2754.09		99.86	1.80E+01		2.44E+00	5.68E+00
	AL-26	1808.65		99.76	4.67E-02	4.67E-02	-9.33E-03	1.95E-02
+	K-40	1460.81	*	10.67	5.33E-01	5.33E-01	1.42E+01	2.35E-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	3.63E-02	3.63E-02	-4.37E-03	1.76E-02
		78.34		96.00	5.12E-02		1.76E-01	2.50E-02
	SC-46	889.25		99.98	5.78E-02	5.78E-02	-4.48E-03	2.65E-02
		1120.51		99.99	9.57E-02		8.82E-02	4.50E-02
	V-48	983.52		99.98	7.67E-02	7.67E-02	1.68E-02	3.52E-02
		1312.10		97.50	9.06E-02		3.33E-02	4.12E-02
	CR-51	320.08		9.83	4.44E-01	4.44E-01	-2.42E-01	2.10E-01
	MN-54	834.83		99.97	6.19E-02	6.19E-02	-2.78E-03	2.88E-02
	CO-56	846.75		99.96	4.85E-02	4.85E-02	-2.48E-02	2.20E-02
		1037.75		14.03	4.99E-01		6.60E-02	2.30E-01
		1238.25		67.00	1.37E-01		8.25E-02	6.39E-02
		1771.40		15.51	3.66E-01		-5.64E-02	1.58E-01
		2598.48		16.90	2.51E-01		-2.29E-02	9.94E-02
	CO-57	122.06		85.51	4.23E-02	4.23E-02	-1.87E-02	2.05E-02
		136.48		10.60	3.44E-01		-7.24E-02	1.66E-01
	CO-58	810.76		99.40	5.13E-02	5.13E-02	-1.91E-02	2.34E-02
	FE-59	1099.22		56.50	1.39E-01	1.39E-01	-2.16E-03	6.42E-02
		1291.56		43.20	1.61E-01		-5.72E-03	7.29E-02
	CO-60	1173.22		100.00	7.19E-02	6.80E-02	6.98E-03	3.31E-02
		1332.49		100.00	6.80E-02		1.44E-02	3.09E-02
	ZN-65	1115.52		50.75	1.41E-01	1.41E-01	9.32E-03	6.50E-02
+	GA-67	93.31	*	35.70	5.76E-01	5.76E-01	3.10E-01	2.82E-01
		208.95	*	2.24	1.03E+01		1.16E+01	5.03E+00
		300.22	*	16.00	8.34E-01		8.66E-01	3.95E-01
	SE-75	121.11		16.70	2.21E-01	6.34E-02	5.25E-02	1.07E-01
		136.00		59.20	6.34E-02		1.55E-02	3.06E-02
		264.65		59.80	6.86E-02		2.11E-03	3.28E-02
		279.53		25.20	1.66E-01		-4.85E-02	7.94E-02
		400.65		11.40	3.53E-01		-3.55E-03	1.66E-01
	RB-82	776.52		13.00	5.08E-01	5.08E-01	1.21E-01	2.36E-01
	RB-83	520.41		46.00	7.83E-02	7.83E-02	-9.48E-03	3.58E-02
		529.64		30.30	1.33E-01		4.40E-02	6.12E-02
		552.65		16.40	2.70E-01		3.48E-02	1.25E-01
	KR-85	513.99		0.43	1.12E+01	1.12E+01	-8.02E+00	5.26E+00
	SR-85	513.99		99.27	5.21E-02	5.21E-02	-3.74E-02	2.45E-02
	Y-88	898.02		93.40	5.97E-02	4.15E-02	-2.29E-03	2.73E-02
		1836.01		99.38	4.15E-02		4.58E-03	1.68E-02
	NB-93M	16.57		9.43	6.32E+01	6.32E+01	3.77E+01	3.06E+01
	NB-94	702.63		100.00	5.77E-02	5.10E-02	1.63E-03	2.70E-02
		871.10		100.00	5.10E-02		-9.40E-03	2.33E-02
	NB-95	765.79		99.81	6.57E-02	6.57E-02	2.67E-02	3.06E-02
	NB-95M	235.69		25.00	7.21E-01	7.21E-01	-4.82E+00	3.50E-01
	ZR-95	724.18		43.70	1.49E-01	1.11E-01	1.51E-02	7.00E-02
		756.72		55.30	1.11E-01		3.15E-03	5.18E-02

Analysis Report for 1606093-03

J1V928 SAF: RC-148

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	2.85E+00	1.89E+00	8.71E-01	1.37E+00
	739.58	12.80	1.89E+00		1.25E+00	8.77E-01
	778.00	4.50	5.36E+00		4.03E-01	2.48E+00
RU-103	497.08	89.00	5.31E-02	5.31E-02	1.56E-02	2.48E-02
RU-106	621.84	9.80	5.39E-01	5.39E-01	1.03E-01	2.52E-01
AG-108M	433.93	89.90	4.11E-02	4.11E-02	-8.82E-03	1.91E-02
	614.37	90.40	5.76E-02		-1.61E-02	2.70E-02
	722.95	90.50	6.08E-02		1.52E-02	2.83E-02
CD-109	88.03	3.72	1.24E+00	1.24E+00	5.04E-01	6.06E-01
AG-110M	657.75	93.14	5.69E-02	5.69E-02	-9.44E-03	2.65E-02
	677.61	10.53	4.96E-01		-1.87E-01	2.31E-01
	706.67	16.46	3.44E-01		4.37E-02	1.60E-01
	763.93	21.98	2.45E-01		-1.47E-01	1.13E-01
	884.67	71.63	8.73E-02		2.01E-02	4.04E-02
	1384.27	23.94	2.31E-01		1.67E-02	1.02E-01
CD-113M	263.70	0.02	1.71E+02	1.71E+02	2.66E+00	8.16E+01
SN-113	255.12	1.93	2.06E+00	6.96E-02	-5.49E-01	9.85E-01
	391.69	64.90	6.96E-02		4.44E-02	3.29E-02
TE123M	159.00	84.10	4.57E-02	4.57E-02	-7.45E-03	2.20E-02
SB-124	602.71	97.87	6.00E-02	6.00E-02	-7.63E-03	2.82E-02
	645.85	7.26	7.69E-01		4.43E-02	3.59E-01
	722.78	11.10	5.32E-01		1.33E-01	2.47E-01
	1691.02	49.00	8.85E-02		-3.83E-02	3.63E-02
I-125	35.49	6.49	1.13E+00	1.13E+00	2.87E-01	5.42E-01
SB-125	176.33	6.89	5.13E-01	1.42E-01	-2.06E-01	2.47E-01
	427.89	29.33	1.42E-01		4.60E-02	6.65E-02
	463.38	10.35	4.60E-01		2.30E-01	2.17E-01
	600.56	17.80	3.07E-01		1.33E-02	1.44E-01
	635.90	11.32	4.40E-01		1.09E-01	2.05E-01
SB-126	414.70	83.30	6.64E-02	6.64E-02	3.46E-02	3.11E-02
	666.33	99.60	8.17E-02		-1.81E-02	3.83E-02
	695.00	99.60	7.99E-02		1.42E-02	3.74E-02
	720.50	53.80	1.39E-01		2.33E-02	6.43E-02
SN-126	87.57	37.00	1.24E-01	1.24E-01	5.02E-02	6.04E-02
SB-127	473.00	25.00	5.26E-01	4.30E-01	5.94E-02	2.47E-01
	685.20	35.70	4.30E-01		-2.01E-01	2.00E-01
	783.80	14.70	1.08E+00		2.33E-01	4.99E-01
I-129	29.78	57.00	2.09E-01	2.09E-01	4.00E-02	1.00E-01
	33.60	13.20	5.81E-01		1.24E-02	2.77E-01
	39.58	7.52	7.03E-01		1.99E-01	3.37E-01
I-131	284.30	6.05	1.08E+00	8.19E-02	6.67E-01	5.13E-01
	364.48	81.20	8.19E-02		-8.09E-03	3.86E-02
	636.97	7.26	1.07E+00		-8.63E-01	4.94E-01
	722.89	1.80	5.14E+00		1.29E+00	2.39E+00
TE-132	49.72	13.10	9.50E-01	1.55E-01	-1.92E-01	4.54E-01
	228.16	88.00	1.55E-01		8.58E-02	7.40E-02
BA-133	81.00	33.00	9.09E-02	6.67E-02	-2.72E-02	4.38E-02
	302.84	17.80	2.19E-01		2.85E-02	1.04E-01
	356.01	60.00	6.67E-02		7.99E-03	3.15E-02
I-133	529.87	86.30	5.56E+00	5.56E+00	4.35E-02	2.57E+00
XE-133	81.00	38.00	1.75E-01	1.75E-01	-5.24E-02	8.43E-02
CS-134	563.23	8.38	5.47E-01	5.88E-02	1.15E-01	2.55E-01
	569.32	15.43	2.98E-01		-2.44E-03	1.39E-01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	604.70		97.60	5.88E-02	5.88E-02	-1.86E-03	2.77E-02
		795.84		85.40	7.12E-02		1.28E-02	3.32E-02
		801.93		8.73	6.18E-01		-1.99E-01	2.85E-01
	CS-135	268.24		16.00	2.49E-01	2.49E-01	-1.91E-01	1.19E-01
	I-135	1131.51		22.50	1.23E+06	9.31E+05	4.56E+05	5.66E+05
		1260.41		28.60	9.31E+05		4.08E+05	4.25E+05
		1678.03		9.54	2.05E+06		3.27E+05	8.80E+05
	CS-136	153.22		7.46	6.95E-01	7.52E-02	6.69E-02	3.36E-01
		163.89		4.61	1.08E+00		-3.06E-01	5.21E-01
		176.55		13.56	3.66E-01		4.68E-02	1.76E-01
		273.65		12.66	4.04E-01		-7.12E-01	1.92E-01
		340.57		48.50	1.33E-01		3.25E-02	6.34E-02
		818.50		99.70	7.52E-02		7.74E-03	3.47E-02
		1048.07		79.60	1.04E-01		-5.98E-02	4.74E-02
		1235.34		19.70	5.97E-01		3.67E-01	2.78E-01
	CS-137	661.65		85.12	6.46E-02	6.46E-02	1.09E-02	3.02E-02
	LA-138	788.74		34.00	1.60E-01	7.17E-02	6.15E-02	7.40E-02
		1435.80		66.00	7.17E-02		4.39E-03	3.09E-02
	CE-139	165.85		80.35	4.64E-02	4.64E-02	1.79E-03	2.24E-02
	BA-140	162.64		6.70	7.72E-01	2.34E-01	1.57E-01	3.73E-01
		304.84		4.50	1.13E+00		3.57E-02	5.34E-01
		423.70		3.20	1.64E+00		-1.11E+00	7.66E-01
		437.55		2.00	2.74E+00		2.64E-01	1.28E+00
		537.32		25.00	2.34E-01		-4.08E-02	1.09E-01
	LA-140	328.77		20.50	3.22E-01	8.69E-02	3.64E-01	1.54E-01
		487.03		45.50	1.19E-01		1.48E-02	5.54E-02
		815.85		23.50	3.02E-01		-1.52E-02	1.39E-01
		1596.49		95.49	8.69E-02		-7.56E-03	3.83E-02
	CE-141	145.44		48.40	9.21E-02	9.21E-02	3.31E-02	4.46E-02
	CE-143	57.36		11.80	5.77E+00	2.71E+00	6.97E-01	2.77E+00
		293.26		42.00	2.71E+00		1.30E+00	1.31E+00
		664.55		5.20	2.36E+01		-3.25E+00	1.11E+01
	CE-144	133.54		10.80	3.37E-01	3.37E-01	-1.62E-01	1.63E-01
	PM-144	476.78		42.00	9.98E-02	5.19E-02	-2.62E-02	4.66E-02
		618.01		98.60	5.19E-02		-3.42E-02	2.42E-02
		696.49		99.49	5.55E-02		-1.81E-02	2.59E-02
	PM-145	36.85		21.70	2.81E-01	1.48E-01	-8.21E-02	1.35E-01
		37.36		39.70	1.48E-01		-4.33E-02	7.10E-02
		42.30		15.10	2.88E-01		2.76E-02	1.37E-01
		72.40		2.31	1.48E+00		-9.84E-01	7.16E-01
	PM-146	453.90		39.94	1.01E-01	1.01E-01	4.90E-02	4.74E-02
		735.90		14.01	3.74E-01		1.43E-01	1.73E-01
		747.13		13.10	3.84E-01		1.98E-02	1.77E-01
+	ND-147	91.11	*	28.90	2.72E-01	2.72E-01	8.62E-02	1.33E-01
		531.02		13.10	4.07E-01		-2.68E-01	1.87E-01
	PM-149	285.90		3.10	8.31E+00	8.31E+00	-3.98E+00	3.96E+00
	EU-152	121.78		20.50	1.74E-01	1.74E-01	-7.67E-02	8.40E-02
		244.69		5.40	7.60E-01		-7.90E-01	3.64E-01
		344.27		19.13	2.20E-01		-2.14E-02	1.04E-01
		778.89		9.20	5.86E-01		2.39E-01	2.71E-01
		964.01		10.40	6.24E-01		-1.53E+00	2.89E-01
		1085.78		7.22	8.46E-01		2.37E-01	3.86E-01
		1112.02		9.60	7.65E-01		-1.26E-01	3.54E-01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1407.95		14.94	3.42E-01	1.74E-01	-8.03E-02	1.49E-01
	GD-153	97.43		31.30	1.19E-01	1.19E-01	7.83E-02	5.75E-02
		103.18		22.20	1.62E-01		-9.61E-02	7.86E-02
	EU-154	123.07		40.50	9.01E-02	9.01E-02	1.88E-02	4.36E-02
		723.30		19.70	2.80E-01		7.00E-02	1.30E-01
		873.19		11.50	4.45E-01		6.83E-02	2.03E-01
		996.32		10.30	5.67E-01		9.07E-02	2.59E-01
		1004.76		17.90	2.92E-01		-1.34E-01	1.32E-01
		1274.45		35.50	2.04E-01		3.08E-02	9.37E-02
	EU-155	86.50		30.90	1.47E-01	1.47E-01	1.11E-01	7.20E-02
		105.30		20.70	1.79E-01		1.13E-01	8.68E-02
	EU-156	811.77		10.40	5.70E-01	5.70E-01	-5.86E-01	2.59E-01
		1153.47		7.20	1.33E+00		3.28E-01	6.15E-01
		1230.71		8.90	1.09E+00		-1.43E-01	5.01E-01
	HO-166M	184.41		72.60	6.37E-02	6.37E-02	2.76E-02	3.09E-02
		280.45		29.60	1.37E-01		-4.00E-02	6.54E-02
		410.94		11.10	3.66E-01		1.39E-01	1.72E-01
		711.69		54.10	9.49E-02		9.53E-05	4.40E-02
	TM-171	66.72		0.14	2.44E+01	2.44E+01	-3.62E+00	1.18E+01
	HF-172	81.75		4.52	7.09E-01	3.32E-01	-2.89E-01	3.43E-01
		125.81		11.30	3.32E-01		-2.21E-01	1.61E-01
	LU-172	181.53		20.60	3.56E-01	2.03E-01	3.87E-02	1.72E-01
		810.06		16.63	5.39E-01		-2.01E-01	2.46E-01
		912.12		15.25	1.43E+00		3.31E+00	6.84E-01
		1093.66		62.50	2.03E-01		9.29E-02	9.33E-02
	LU-173	100.72		5.24	6.88E-01	1.96E-01	6.72E-02	3.34E-01
		272.11		21.20	1.96E-01		2.88E-02	9.35E-02
	HF-175	343.40		84.00	5.34E-02	5.34E-02	2.84E-02	2.54E-02
	LU-176	88.34		13.30	3.44E-01	3.79E-02	1.40E-01	1.68E-01
		201.83		86.00	4.69E-02		3.43E-02	2.26E-02
		306.78		94.00	3.79E-02		-1.86E-02	1.79E-02
	TA-182	67.75		41.20	8.64E-02	8.64E-02	-1.04E-02	4.18E-02
		1121.30		34.90	2.71E-01		2.39E-01	1.27E-01
		1189.05		16.23	4.39E-01		1.76E-02	2.01E-01
		1221.41		26.98	3.22E-01		1.46E-01	1.50E-01
		1231.02		11.44	6.47E-01		6.85E-03	2.97E-01
	IR-192	308.46		29.68	1.29E-01	8.92E-02	-1.42E-02	6.08E-02
		468.07		48.10	8.92E-02		-1.79E-03	4.17E-02
	HG-203	279.19		77.30	6.11E-02	6.11E-02	4.11E-02	2.93E-02
	BI-207	569.67		97.72	4.68E-02	4.68E-02	-3.84E-04	2.18E-02
		1063.62		74.90	8.59E-02		-1.32E-02	3.95E-02
+	TL-208	583.14	*	30.22	2.10E-01	1.93E-01	6.77E-01	9.99E-02
		860.37	*	4.48	9.45E-01		5.43E-01	4.24E-01
		2614.66	*	35.85	1.93E-01		5.94E-01	8.51E-02
	BI-210M	262.00		45.00	8.77E-02	8.77E-02	-5.16E-03	4.19E-02
		300.00		23.00	1.82E-01		1.32E-01	8.68E-02
	PB-210	46.50		4.25	9.53E-01	9.53E-01	1.96E-01	4.57E-01
	PB-211	404.84		2.90	1.31E+00	1.31E+00	-1.64E-01	6.14E-01
		831.96		2.90	1.93E+00		-3.63E-01	8.89E-01
+	BI-212	727.17	*	11.80	9.04E-01	9.04E-01	4.08E-01	4.36E-01
		1620.62		2.75	2.25E+00		5.49E-01	9.94E-01
+	PB-212	238.63	*	44.60	1.82E-01	1.82E-01	2.62E-01	8.90E-02
		300.09	*	3.41	1.09E+00		1.13E+00	5.15E-01

Analysis Report for 1606093-03

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BI-214	609.31	*	46.30	1.68E-01	1.68E-01	5.60E-01	8.03E-02
		1120.29	*	15.10	5.62E-01		5.46E-01	2.63E-01
		1764.49	*	15.80	3.92E-01		6.36E-01	1.72E-01
		2204.22		4.98	1.10E+00		4.84E-01	4.67E-01
+	PB-214	295.21	*	19.19	2.65E-01	1.22E-01	8.00E-01	1.27E-01
		351.92	*	37.19	1.22E-01		6.48E-01	5.79E-02
	RN-219	401.80		6.50	5.96E-01	5.96E-01	2.51E-02	2.80E-01
	RA-223	323.87		3.88	9.85E-01	9.85E-01	3.00E-01	4.66E-01
	RA-224	240.98		3.95	1.96E+00	1.96E+00	1.62E+00	9.61E-01
	RA-225	40.00		31.00	2.21E-01	2.21E-01	6.24E-02	1.06E-01
+	RA-226	186.21	*	3.28	1.82E+00	1.82E+00	1.52E+00	8.89E-01
	TH-227	50.10		8.40	4.07E-01	4.07E-01	-8.24E-02	1.95E-01
		236.00		11.50	4.93E-01		-3.30E+00	2.39E-01
		256.20		6.30	6.05E-01		-2.38E-02	2.89E-01
+	AC-228	338.32	*	11.40	3.78E-01	2.65E-01	8.65E-01	1.80E-01
		911.07	*	27.70	2.65E-01		9.80E-01	1.24E-01
		969.11	*	16.60	7.00E-01		8.95E-01	3.35E-01
	TH-230	48.44		16.90	2.15E-01	2.15E-01	-2.02E-02	1.03E-01
		62.85		4.60	8.13E-01		3.76E-01	3.94E-01
		67.67		0.37	9.28E+00		-1.12E+00	4.49E+00
	PA-231	283.67		1.60	2.42E+00	1.69E+00	1.50E+00	1.15E+00
		302.67		2.30	1.69E+00		2.20E-01	8.04E-01
	TH-231	25.64		14.70	1.68E+00	5.60E-01	3.51E-01	8.05E-01
		84.21		6.40	5.60E-01		7.63E-01	2.72E-01
	PA-233	311.98		38.60	1.14E-01	1.14E-01	1.37E-02	5.37E-02
	PA-234	131.20		20.40	1.89E-01	1.89E-01	1.07E-01	9.15E-02
		733.99		8.80	6.29E-01		1.51E-01	2.92E-01
		946.00		12.00	5.27E-01		7.39E-02	2.44E-01
	PA-234M	1001.03		0.92	6.06E+00	6.06E+00	5.53E-01	2.76E+00
	TH-234	63.29		3.80	9.80E-01	9.80E-01	4.53E-01	4.74E-01
	U-235	143.76		10.50	3.67E-01	3.67E-01	-1.26E-01	1.78E-01
		163.35		4.70	7.96E-01		1.62E-01	3.84E-01
		205.31		4.70	8.28E-01		2.99E-01	3.98E-01
	NP-237	86.50		12.60	3.61E-01	3.61E-01	2.72E-01	1.76E-01
	NP-239	106.10		22.70	9.45E-01	9.45E-01	3.57E-01	4.58E-01
		228.18		10.70	2.08E+00		1.15E+00	9.95E-01
		277.60		14.10	1.82E+00		1.32E+00	8.74E-01
	AM-241	59.54		35.90	9.88E-02	9.88E-02	5.08E-02	4.77E-02
	AM-243	74.67		66.00	6.77E-02	6.77E-02	-1.72E-01	3.30E-02
+	CM-243	209.75	*	3.29	1.95E+00	3.56E-01	2.20E+00	9.51E-01
		228.14		10.60	3.56E-01		1.98E-01	1.70E-01
		277.60	*	14.00	3.75E-01		3.68E-01	1.81E-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

Analysis Report for 1606093-03

J1V928 SAF: RC-148

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: J1V928 SAF: RC-148

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	1	4	80	805
9:	1112	706	369	312	2081	146	107	110
17:	117	113	90	82	66	51	60	73
25:	74	61	61	55	55	50	58	48
33:	52	38	63	52	54	57	59	56
41:	58	49	46	46	47	53	85	49
49:	63	57	44	63	83	70	54	62
57:	74	66	70	97	90	76	110	125
65:	91	86	93	94	97	104	105	89
73:	103	124	290	112	348	225	81	70
81:	94	75	103	118	128	76	147	132
89:	87	136	88	114	178	113	65	64
97:	68	73	71	82	55	60	72	62
105:	81	72	70	60	56	65	61	67
113:	73	60	75	54	61	58	57	62
121:	61	67	57	56	75	58	83	54
129:	90	62	69	61	54	59	45	66
137:	62	55	53	60	66	62	56	74
145:	59	59	69	54	49	50	42	66
153:	49	63	58	57	47	48	46	59
161:	58	52	45	55	45	41	48	45
169:	47	47	55	46	39	41	43	38
177:	41	43	52	42	56	42	50	60
185:	57	134	66	42	43	44	35	48
193:	49	44	50	48	46	44	44	49
201:	43	47	56	36	30	44	44	49
209:	67	59	46	49	38	30	35	42
217:	28	37	37	38	40	26	32	39
225:	36	43	34	30	36	28	22	33
233:	41	41	38	38	49	214	429	48
241:	75	102	50	38	47	23	27	25
249:	37	29	26	33	37	21	29	33
257:	32	34	25	35	29	29	33	29
265:	36	25	31	24	26	47	43	31
273:	19	20	32	27	47	42	28	32
281:	22	25	26	27	30	25	18	33
289:	36	21	21	29	30	26	152	79
297:	17	11	19	62	29	23	23	24
305:	23	19	17	19	21	25	20	26
313:	20	17	20	20	28	19	21	19
321:	21	24	25	21	19	17	31	44
329:	36	23	31	20	25	12	20	18
337:	30	87	62	12	24	31	22	25
345:	18	22	25	17	19	9	57	258
353:	50	17	19	20	30	15	20	17
361:	16	14	17	20	26	18	23	16

369:	15	11	21	9	20	18	18	16

Sample Title: J1V928 SAF: RC-148

Channel								
377:	15	22	19	10	18	20	21	18
385:	15	18	14	20	21	21	18	25
393:	20	20	10	16	14	20	14	12
401:	20	21	12	13	16	18	15	12
409:	27	18	10	15	13	10	16	19
417:	19	7	12	15	30	11	14	9
425:	17	17	15	18	15	16	14	13
433:	12	12	14	11	11	16	19	14
441:	15	13	12	8	17	10	13	16
449:	9	11	12	14	15	18	6	17
457:	11	7	15	14	15	21	29	16
465:	14	12	16	9	19	11	12	17
473:	18	18	15	15	15	15	8	18
481:	11	12	11	13	10	8	10	14
489:	16	11	8	7	9	16	14	12
497:	13	16	12	7	13	17	8	19
505:	12	12	7	14	21	39	72	29
513:	15	16	17	7	8	11	2	7
521:	10	9	18	12	8	6	5	15
529:	6	11	11	6	9	15	15	7
537:	14	12	10	13	14	8	12	11
545:	13	11	14	14	10	8	11	10
553:	14	12	8	9	9	8	13	13
561:	7	17	14	16	9	9	10	15
569:	10	12	15	17	13	10	17	12
577:	12	9	10	8	8	25	132	53
585:	11	7	13	11	10	6	15	7
593:	12	15	12	8	11	9	17	10
601:	12	15	8	14	11	13	6	23
609:	149	85	13	6	17	11	9	11
617:	5	13	16	8	5	17	9	12
625:	4	10	8	5	9	10	6	11
633:	11	9	7	10	7	6	11	2
641:	11	13	11	8	6	7	7	13
649:	14	7	6	6	8	7	11	5
657:	7	5	12	10	14	15	10	5
665:	11	12	14	15	12	15	7	10
673:	11	9	8	8	5	11	9	9
681:	13	8	6	9	6	9	12	9
689:	12	10	9	13	9	8	7	8
697:	12	13	7	10	12	10	16	6
705:	10	8	8	7	10	6	8	10
713:	6	7	10	5	7	6	7	10
721:	8	9	10	7	7	10	25	19
729:	11	11	5	16	12	4	2	9
737:	12	4	10	5	8	6	4	6
745:	3	4	8	6	10	10	10	6
753:	5	10	13	7	9	6	12	3
761:	12	10	10	10	2	4	3	23
769:	10	6	6	11	12	6	5	8
777:	10	10	5	5	6	7	3	7
785:	9	11	7	5	9	4	6	5
793:	6	11	18	9	9	3	7	10

801:	9	4	7	5	6	11	9	6

Sample Title: J1V928 SAF: RC-148

Channel								
809:	4	5	4	2	7	4	8	8
817:	4	5	6	10	7	8	6	7
825:	4	6	5	5	7	6	6	4
833:	11	5	10	12	9	8	9	13
841:	6	11	5	3	6	5	2	4
849:	6	7	3	8	4	3	6	4
857:	7	3	11	7	13	3	5	4
865:	6	9	8	4	4	4	5	11
873:	4	5	5	3	3	7	5	8
881:	10	10	8	6	9	6	5	6
889:	7	5	9	4	7	4	3	6
897:	4	5	3	10	8	1	11	5
905:	4	4	3	5	9	30	93	43
913:	8	5	10	3	10	5	7	6
921:	4	4	4	5	6	6	6	6
929:	4	10	8	9	3	10	11	5
937:	5	6	6	5	6	6	8	11
945:	2	6	6	10	8	10	4	5
953:	7	11	5	4	6	7	7	4
961:	2	3	7	6	20	7	7	29
969:	44	23	8	7	6	4	4	6
977:	3	6	2	9	3	4	5	8
985:	4	8	7	4	6	6	6	2
993:	3	5	10	5	6	5	5	6
1001:	5	7	3	4	6	2	3	9
1009:	4	6	6	6	5	8	3	6
1017:	2	6	7	5	4	9	5	0
1025:	4	5	7	7	4	9	3	5
1033:	4	3	8	6	13	7	7	4
1041:	9	6	7	6	4	7	8	7
1049:	4	3	5	10	8	5	5	4
1057:	6	7	5	8	6	7	4	3
1065:	8	7	10	5	7	6	14	5
1073:	5	7	5	7	5	7	8	3
1081:	7	6	9	6	3	4	6	3
1089:	2	5	5	8	5	7	6	10
1097:	10	2	7	5	6	11	11	5
1105:	4	3	13	9	6	8	10	8
1113:	3	13	5	8	5	6	16	31
1121:	16	5	4	5	6	6	4	4
1129:	7	5	7	13	5	7	4	6
1137:	8	5	5	6	6	8	3	2
1145:	6	4	4	6	5	6	10	1
1153:	5	9	6	12	6	6	3	8
1161:	6	3	5	5	5	2	4	11
1169:	7	6	5	6	12	7	6	4
1177:	4	4	6	2	7	7	6	12
1185:	12	8	6	2	5	1	13	6
1193:	7	8	7	7	5	12	6	6
1201:	6	5	5	6	5	7	8	5
1209:	10	6	8	4	5	7	13	8
1217:	3	10	5	9	9	8	10	9
1225:	6	7	11	11	5	3	2	9

1233:	4	8	8	6	6	21	12	5

Sample Title: J1V928 SAF: RC-148

Channel								
1241:	6	4	7	6	6	2	6	5
1249:	6	4	9	3	6	4	2	2
1257:	2	6	7	6	4	6	6	5
1265:	4	5	5	6	2	9	12	6
1273:	6	5	5	4	3	4	6	6
1281:	4	6	7	4	7	6	4	3
1289:	5	6	4	3	5	4	4	4
1297:	1	5	6	2	2	3	6	7
1305:	3	3	4	2	2	5	8	7
1313:	6	2	4	6	1	4	1	6
1321:	1	1	3	6	4	4	4	2
1329:	6	2	3	6	8	2	6	6
1337:	3	2	3	3	2	2	2	4
1345:	5	4	5	4	4	5	1	3
1353:	3	1	3	2	3	6	2	7
1361:	2	2	5	0	3	4	1	3
1369:	5	1	3	5	3	2	2	4
1377:	6	9	2	1	0	3	1	6
1385:	3	3	3	4	3	2	1	0
1393:	1	1	0	2	1	2	1	3
1401:	4	6	0	3	4	1	2	3
1409:	2	1	3	3	4	1	2	2
1417:	4	4	4	4	2	1	2	5
1425:	2	6	1	3	0	2	2	2
1433:	1	2	4	3	1	0	1	2
1441:	4	0	2	2	2	2	0	2
1449:	2	0	4	1	2	1	3	1
1457:	1	5	65	249	252	51	4	2
1465:	0	0	4	3	2	1	1	3
1473:	2	1	3	0	1	0	1	2
1481:	0	1	3	0	2	3	2	3
1489:	0	4	2	5	1	2	5	2
1497:	1	3	1	1	0	0	0	3
1505:	2	4	1	3	5	4	3	4
1513:	1	2	1	5	0	1	1	2
1521:	2	2	1	3	0	1	1	1
1529:	2	2	2	0	1	0	0	1
1537:	2	3	4	1	1	0	0	1
1545:	2	1	1	2	2	1	0	0
1553:	2	0	0	3	1	0	2	0
1561:	1	3	3	0	1	3	0	0
1569:	0	1	3	1	0	1	3	2
1577:	1	1	1	2	3	5	4	2
1585:	0	1	8	8	2	6	3	8
1593:	3	3	2	1	1	0	1	0
1601:	1	2	1	2	4	1	1	3
1609:	0	1	0	0	3	1	1	1
1617:	4	1	2	2	7	1	2	0
1625:	2	2	1	2	0	5	5	1
1633:	0	1	1	2	3	2	2	0
1641:	0	0	1	1	1	2	2	0
1649:	1	2	3	0	3	0	0	2
1657:	1	2	2	0	1	3	5	2

1665:	0	1	2	5	0	1	1	1

Sample Title: J1V928 SAF: RC-148

Channel								
1673:	1	0	0	3	4	2	1	0
1681:	1	0	2	2	1	0	0	1
1689:	0	1	1	1	1	2	1	2
1697:	2	1	0	0	0	3	0	1
1705:	1	1	2	1	0	0	1	0
1713:	0	2	1	0	0	1	0	0
1721:	1	1	0	0	2	1	1	5
1729:	2	7	1	0	0	0	1	0
1737:	0	2	2	0	3	0	1	0
1745:	0	1	0	1	0	0	1	1
1753:	1	1	0	0	1	0	3	0
1761:	0	2	8	15	11	4	3	4
1769:	1	3	0	0	1	0	1	1
1777:	1	2	1	1	0	0	0	0
1785:	1	0	1	0	2	2	0	1
1793:	1	1	2	0	2	0	0	1
1801:	0	2	1	3	0	0	0	1
1809:	1	1	2	1	1	1	2	0
1817:	0	1	0	0	0	0	0	0
1825:	0	0	0	0	1	0	1	0
1833:	0	0	1	1	2	1	0	0
1841:	1	1	1	0	1	2	4	1
1849:	1	1	2	1	2	0	0	1
1857:	0	0	0	2	2	1	1	1
1865:	0	0	0	0	0	1	0	0
1873:	2	1	1	2	0	0	0	1
1881:	1	2	2	1	2	1	0	2
1889:	1	0	0	0	3	1	0	2
1897:	1	2	2	0	0	2	0	0
1905:	0	1	2	2	1	1	2	0
1913:	0	0	0	0	1	2	0	1
1921:	3	1	2	1	0	0	0	0
1929:	2	0	1	0	0	0	0	0
1937:	1	1	0	1	1	3	0	2
1945:	1	0	1	0	0	1	0	1
1953:	1	2	1	1	0	3	0	0
1961:	1	0	4	0	1	0	0	2
1969:	2	1	1	1	1	1	0	0
1977:	2	2	0	0	0	1	1	1
1985:	0	1	2	0	2	3	1	1
1993:	3	4	1	2	0	0	0	2
2001:	1	0	0	1	1	0	2	0
2009:	0	1	1	0	0	0	0	0
2017:	0	0	0	0	1	1	1	1
2025:	1	1	1	0	0	1	1	0
2033:	0	0	1	1	0	1	3	3
2041:	0	0	2	0	2	0	1	0
2049:	1	1	1	0	0	0	0	0
2057:	0	0	1	0	1	2	0	1
2065:	1	0	3	0	0	2	0	2
2073:	1	0	0	2	1	0	1	1
2081:	3	1	1	0	2	1	0	0
2089:	0	3	1	0	0	0	2	0

2097:	0	2	0	2	4	5	4	1

Sample Title: J1V928 SAF: RC-148

Channel								
2105:	2	1	0	0	0	2	0	0
2113:	0	0	1	1	5	2	3	0
2121:	0	0	0	0	1	0	0	0
2129:	1	0	1	0	1	1	1	0
2137:	0	0	1	0	1	0	2	0
2145:	0	2	0	2	2	2	1	1
2153:	1	1	1	0	0	1	2	0
2161:	1	2	1	1	0	0	1	0
2169:	1	1	1	0	0	0	0	3
2177:	1	2	1	0	0	0	0	0
2185:	0	1	0	1	2	0	1	1
2193:	1	0	0	1	0	1	0	2
2201:	0	1	1	4	1	1	1	0
2209:	0	1	0	3	1	1	2	0
2217:	0	1	0	0	0	0	1	1
2225:	1	1	1	0	2	1	2	1
2233:	0	0	0	1	0	0	0	1
2241:	0	1	0	1	0	1	1	1
2249:	0	0	2	4	0	0	1	1
2257:	0	0	2	0	1	1	1	0
2265:	3	2	1	2	2	0	2	1
2273:	2	0	0	1	0	2	0	0
2281:	0	0	1	0	1	1	0	1
2289:	2	0	1	0	1	1	0	0
2297:	3	0	1	2	0	2	1	0
2305:	2	0	1	1	2	0	1	1
2313:	1	0	2	1	0	0	1	0
2321:	0	0	2	0	0	0	2	1
2329:	0	3	2	0	0	1	0	3
2337:	1	2	1	1	1	0	0	0
2345:	0	1	0	0	1	2	2	0
2353:	2	0	1	0	0	0	0	2
2361:	2	2	1	0	0	0	1	0
2369:	0	0	1	0	1	2	2	2
2377:	3	0	0	1	2	1	1	0
2385:	1	0	0	0	0	0	0	1
2393:	0	0	1	1	0	1	1	0
2401:	2	3	0	0	0	0	0	0
2409:	0	2	2	1	0	1	1	1
2417:	2	0	0	0	2	2	0	0
2425:	2	0	1	0	1	1	2	1
2433:	2	1	1	0	0	1	0	1
2441:	0	0	0	0	3	1	1	1
2449:	1	0	1	0	0	0	0	0
2457:	0	0	0	3	1	1	1	1
2465:	0	0	0	1	0	1	0	0
2473:	2	1	0	0	1	0	1	1
2481:	1	0	0	0	1	0	0	0
2489:	1	1	1	0	0	0	1	0
2497:	0	1	0	0	0	0	1	0
2505:	0	0	0	2	0	0	0	1
2513:	0	0	0	0	1	1	0	0
2521:	0	1	1	0	0	1	0	0

2529:	2	1	0	0	1	0	0	0

Sample Title: J1V928 SAF: RC-148

Channel								
2537:	0	0	0	0	0	0	0	0
2545:	0	0	0	0	0	0	0	0
2553:	0	0	0	0	1	0	2	0
2561:	1	1	0	0	1	0	2	0
2569:	1	2	1	0	0	0	0	0
2577:	1	1	0	0	0	0	0	0
2585:	0	0	0	1	1	0	1	2
2593:	1	1	1	1	0	0	0	1
2601:	1	0	0	1	0	0	0	1
2609:	1	0	3	6	20	33	13	5
2617:	1	0	2	0	0	0	0	2
2625:	0	0	0	0	0	0	0	0
2633:	0	1	0	0	0	0	0	1
2641:	1	1	0	0	0	0	0	0
2649:	0	0	0	0	0	0	1	1
2657:	0	0	0	1	0	1	0	1
2665:	0	0	1	0	0	0	0	0
2673:	0	0	0	1	1	0	0	0
2681:	0	3	2	3	1	0	0	0
2689:	0	0	0	0	0	0	1	0
2697:	1	1	0	0	0	0	0	0
2705:	0	0	0	0	1	0	0	0
2713:	2	0	0	2	1	0	0	0
2721:	0	1	0	0	0	0	1	0
2729:	1	0	0	0	0	0	0	1
2737:	0	0	0	0	0	0	0	0
2745:	0	0	0	0	0	0	1	0
2753:	0	0	0	0	0	0	0	0
2761:	0	0	0	0	1	1	1	0
2769:	1	0	1	0	0	0	0	0
2777:	1	0	0	0	0	0	1	0
2785:	1	0	0	0	0	0	0	0
2793:	0	0	0	0	1	0	0	0
2801:	0	0	1	0	0	1	0	0
2809:	0	0	0	0	0	0	1	0
2817:	0	1	0	0	0	0	0	0
2825:	0	0	0	0	1	1	0	0
2833:	1	0	1	0	0	1	1	0
2841:	1	0	0	0	0	1	0	1
2849:	0	0	0	0	1	0	0	0
2857:	0	0	0	0	0	0	1	1
2865:	1	0	0	0	1	0	0	0
2873:	0	0	0	0	0	0	1	0
2881:	0	1	1	1	0	0	0	0
2889:	0	0	0	1	0	0	0	0
2897:	0	0	0	1	0	0	0	0
2905:	1	1	0	0	0	0	0	0
2913:	0	0	1	1	1	0	0	0
2921:	0	0	0	1	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	0	0	0	1	0	0	0
2945:	1	0	0	0	1	0	0	0
2953:	0	0	0	0	0	0	0	0

2961:	2	0	1	0	0	0	0	0

Sample Title: J1V928 SAF: RC-148

Channel								
2969:	0	0	1	0	0	0	0	0
2977:	0	0	1	0	0	1	0	0
2985:	0	0	0	1	0	1	0	0
2993:	1	0	0	0	0	0	0	0
3001:	2	0	0	0	0	0	0	1
3009:	0	0	0	0	0	0	0	0
3017:	0	1	0	0	1	0	0	0
3025:	0	0	0	1	0	0	0	1
3033:	0	0	0	1	0	0	0	0
3041:	0	0	0	0	1	0	0	0
3049:	0	0	0	0	1	0	0	0
3057:	0	0	0	0	0	0	1	0
3065:	0	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	1	1	0	0
3097:	1	0	0	0	0	1	0	0
3105:	0	0	0	0	0	0	0	0
3113:	0	0	0	0	0	0	0	1
3121:	0	0	0	0	0	1	0	0
3129:	0	0	0	0	0	0	0	0
3137:	0	0	1	0	0	0	0	1
3145:	0	1	0	0	0	0	0	0
3153:	0	0	0	0	0	0	0	0
3161:	2	0	0	0	0	0	0	0
3169:	0	1	0	0	0	1	0	0
3177:	0	0	0	0	0	0	0	1
3185:	1	0	0	0	1	0	1	1
3193:	1	1	0	0	1	0	0	0
3201:	0	0	1	0	0	0	0	1
3209:	0	0	1	0	0	1	0	0
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	1	0	0	1	1
3233:	0	0	1	1	0	0	0	0
3241:	0	0	0	0	0	0	0	0
3249:	1	0	1	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	0
3281:	2	0	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	1	0	0
3313:	0	0	1	0	1	0	0	0
3321:	0	0	0	0	1	0	0	0
3329:	0	0	0	1	0	2	0	0
3337:	1	0	0	0	0	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	1	0
3361:	0	0	2	0	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	0	0	0

3393:	0	0	0	0	0	0	0	0

Sample Title: J1V928 SAF: RC-148

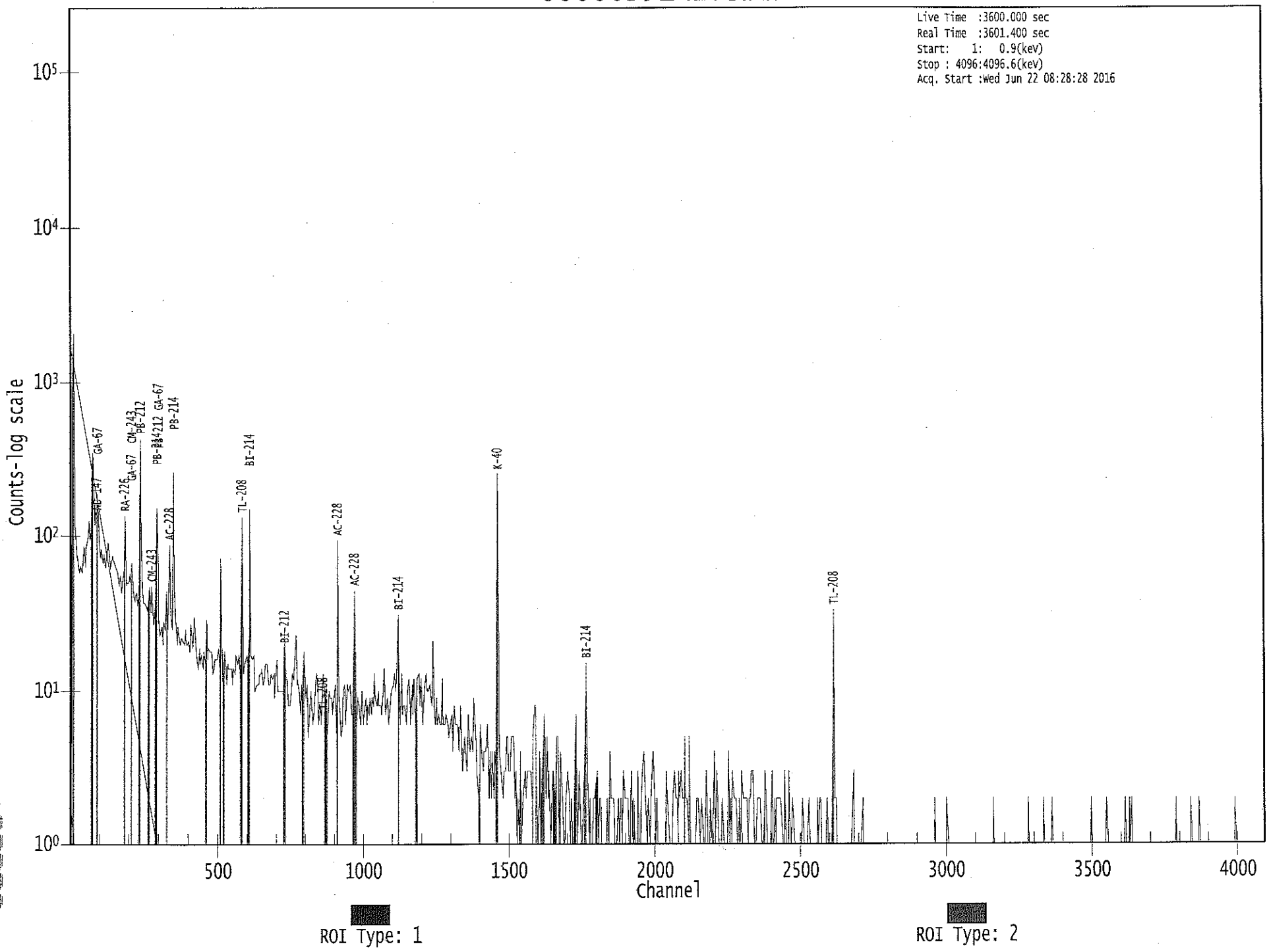
Channel								
3401:	0	0	0	0	1	0	0	0
3409:	0	0	0	0	1	0	0	1
3417:	0	0	0	0	0	1	0	0
3425:	1	0	0	0	1	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	1	0	0	0	0	0
3449:	0	0	0	1	0	1	0	1
3457:	0	0	1	0	0	0	1	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	1	0	0	1	1	0	0	0
3489:	0	0	0	0	0	0	1	0
3497:	0	2	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	1	0	1	0	1	0
3529:	0	0	0	0	0	1	0	0
3537:	0	0	0	0	0	0	0	0
3545:	0	1	0	0	1	2	0	0
3553:	0	0	1	1	0	0	1	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	1	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	1	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	1	0	0	0	2	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	0	2	0	1	0	0
3633:	1	0	0	2	0	0	0	0
3641:	0	0	0	0	1	0	0	0
3649:	0	0	1	0	0	0	0	0
3657:	0	0	0	1	0	0	0	0
3665:	0	0	0	1	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	1	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	1	0	1
3705:	0	0	0	1	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	0	0	0
3737:	1	0	1	0	0	0	1	0
3745:	0	0	0	0	0	1	0	0
3753:	0	0	0	0	0	0	1	0
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	2	0	0	0	0
3793:	1	0	0	0	0	0	0	1
3801:	0	0	0	0	0	0	0	0
3809:	0	0	0	0	0	0	1	0
3817:	0	0	0	1	0	0	0	0

3825:	0	0	0	1	1	0	0	0

Sample Title: J1V928 SAF: RC-148

Channel								
3833:	0	0	0	0	0	2	1	0
3841:	0	0	0	1	1	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	2	0	0	1	0
3873:	0	0	0	0	0	0	0	0
3881:	0	1	1	0	0	0	0	0
3889:	0	1	0	0	0	0	0	1
3897:	0	0	0	0	0	0	0	0
3905:	0	1	0	0	0	0	0	0
3913:	1	0	0	0	0	1	0	1
3921:	0	1	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	0	0
3953:	0	1	0	0	0	0	0	0
3961:	0	0	0	0	1	0	0	0
3969:	0	0	0	1	0	0	0	0
3977:	0	1	0	0	0	0	0	0
3985:	0	0	0	0	0	0	2	0
3993:	1	0	0	1	0	0	0	0
4001:	0	0	0	0	0	0	1	0
4009:	0	0	0	0	0	1	0	0
4017:	0	0	0	0	0	0	1	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	1	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	1	0	0	0	0	1	0
4057:	0	0	0	0	0	1	0	1
4065:	0	0	0	0	0	0	0	0
4073:	0	0	1	0	0	0	0	0
4081:	1	0	0	0	0	0	0	1
4089:	0	0	0	1	1	0	0	1

0000039242.CNF



Apex-Gamma

Analysis Report for 1606093-04

J1V928 SAF: RC-148

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1606093-04
Sample Description	: J1V928 SAF: RC-148
Sample Type	: SOIL
Sample Size	: 7.217E+02 grams
Facility	: Countroom
Sample Taken On	: 6/16/2016 8:17:47AM
Acquisition Started	: 6/22/2016 9:30:04AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3601.4 seconds
Dead Time	: 0.04 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 7 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 11/2/2014
Efficiency Calibration Used Done On	: 4/6/2016
Efficiency Calibration Description	:
Sample Number	: 39245

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
6/22/16

Analysis Report for 1606093-04

J1V928 SAF: RC-148

PEAK LOCATE REPORT

Peak Locate Performed on : 6/22/2016 10:30:10AM
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	12.89	13.01	0.0000	0.00
2	63.88	63.98	0.0000	0.00
3	76.22	76.31	0.0000	0.00
4	88.02	88.10	0.0000	0.00
5	99.64	99.71	0.0000	0.00
6	129.31	129.37	0.0000	0.00
7	152.79	152.83	0.0000	0.00
8	185.85	185.88	0.0000	0.00
9	209.68	209.69	0.0000	0.00
10	236.13	236.13	0.0000	0.00
11	239.13	239.13	0.0000	0.00
12	269.97	269.95	0.0000	0.00
13	295.24	295.20	0.0000	0.00
14	300.16	300.12	0.0000	0.00
15	312.60	312.55	0.0000	0.00
16	338.69	338.63	0.0000	0.00
17	351.90	351.84	0.0000	0.00
18	408.56	408.47	0.0000	0.00
19	452.86	452.74	0.0000	0.00
20	462.65	462.53	0.0000	0.00
21	510.74	510.59	0.0000	0.00
22	530.44	530.29	0.0000	0.00
23	583.23	583.05	0.0000	0.00
24	609.50	609.31	0.0000	0.00
25	667.58	667.36	0.0000	0.00
26	727.07	726.82	0.0000	0.00
27	732.25	732.00	0.0000	0.00
28	795.46	795.19	0.0000	0.00
29	799.09	798.81	0.0000	0.00
30	806.38	806.10	0.0000	0.00
31	848.30	848.00	0.0000	0.00
32	860.48	860.18	0.0000	0.00
33	878.46	878.14	0.0000	0.00
34	911.47	911.15	0.0000	0.00
35	964.94	964.60	0.0000	0.00
36	968.96	968.61	0.0000	0.00
37	977.13	976.78	0.0000	0.00
38	1044.20	1043.82	0.0000	0.00
39	1084.86	1084.47	0.0000	0.00
40	1120.38	1119.97	0.0000	0.00
41	1141.42	1141.00	0.0000	0.00
42	1148.86	1148.44	0.0000	0.00

Analysis Report for 1606093-04

J1V928 SAF: RC-148

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1155.87	1155.45	0.0000	0.00
44	1377.30	1376.81	0.0000	0.00
45	1401.87	1401.36	0.0000	0.00
46	1408.02	1407.51	0.0000	0.00
47	1461.16	1460.64	0.0000	0.00
48	1493.07	1492.54	0.0000	0.00
49	1538.05	1537.50	0.0000	0.00
50	1556.26	1555.71	0.0000	0.00
51	1562.78	1562.23	0.0000	0.00
52	1569.39	1568.83	0.0000	0.00
53	1593.51	1592.95	0.0000	0.00
54	1631.84	1631.27	0.0000	0.00
55	1726.84	1726.25	0.0000	0.00
56	1729.84	1729.25	0.0000	0.00
57	1764.86	1764.25	0.0000	0.00
58	1838.13	1837.51	0.0000	0.00
59	1847.66	1847.04	0.0000	0.00
60	2203.94	2203.25	0.0000	0.00
61	2224.69	2223.99	0.0000	0.00
62	2349.99	2349.27	0.0000	0.00
63	2614.71	2613.97	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1606093-04

J1V928 SAF: RC-148

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/22/2016 10:30:10AM

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)
	1	12.89	12 -	15	13.01	1.93E+03	116.22	1.31E+03	1.00
	2	63.88	60 -	68	63.98	1.10E+02	98.44	1.43E+03	2.20
	3	76.22	72 -	80	76.31	6.33E+02	114.45	1.63E+03	3.34
M	4	88.02	84 -	97	88.10	9.79E+01	47.51	5.09E+02	1.11
	5	99.64	98 -	102	99.71	6.49E+01	53.46	5.74E+02	2.08
	6	129.31	126 -	132	129.37	6.04E+01	67.44	7.81E+02	1.49
	7	152.79	149 -	156	152.83	5.84E+01	70.00	7.81E+02	2.64
	8	185.85	182 -	189	185.88	1.51E+02	67.65	6.59E+02	1.38
	9	209.68	206 -	213	209.69	7.59E+01	63.87	6.24E+02	2.21
M	10	236.13	234 -	246	236.13	3.14E+01	34.47	2.80E+02	1.41
m	11	239.13	234 -	246	239.13	6.11E+02	59.16	2.62E+02	1.41
	12	269.97	267 -	274	269.95	5.11E+01	52.57	4.32E+02	2.15
M	13	295.24	291 -	303	295.20	1.69E+02	41.82	2.37E+02	1.65
m	14	300.16	291 -	303	300.12	4.80E+01	34.77	2.14E+02	1.66
	15	312.60	309 -	318	312.55	4.92E+01	53.24	3.82E+02	4.78
	16	338.69	334 -	343	338.63	1.28E+02	56.06	3.78E+02	1.58
	17	351.90	348 -	355	351.84	3.08E+02	54.22	2.86E+02	1.29
	18	408.56	404 -	411	408.47	3.41E+01	35.78	1.88E+02	1.32
	19	452.86	451 -	455	452.74	1.75E+01	22.30	9.50E+01	1.65
	20	462.65	459 -	465	462.53	5.31E+01	35.12	1.86E+02	1.23
	21	510.74	505 -	516	510.59	1.73E+02	43.54	1.52E+02	1.81
	22	530.44	527 -	533	530.29	3.90E+01	26.21	9.39E+01	4.79
	23	583.23	579 -	587	583.05	1.83E+02	41.28	1.51E+02	1.40
	24	609.50	605 -	612	609.31	1.95E+02	40.55	1.44E+02	1.85
	25	667.58	663 -	674	667.36	3.11E+01	35.16	1.42E+02	6.36
M	26	727.07	724 -	736	726.82	4.43E+01	21.77	5.40E+01	1.98
m	27	732.25	724 -	736	732.00	2.37E+01	19.44	5.40E+01	1.99
M	28	795.46	793 -	801	795.19	2.34E+01	16.00	4.31E+01	2.05
m	29	799.09	793 -	801	798.81	1.50E+01	18.84	4.36E+01	2.05
	30	806.38	802 -	810	806.10	3.25E+01	22.61	5.89E+01	2.46
	31	848.30	845 -	852	848.00	2.17E+01	22.27	6.87E+01	1.63
	32	860.48	855 -	864	860.18	4.50E+01	28.46	8.99E+01	1.90
	33	878.46	876 -	880	878.14	1.70E+01	12.16	1.80E+01	2.54
	34	911.47	907 -	915	911.15	1.37E+02	30.98	6.37E+01	2.00
M	35	964.94	962 -	980	964.60	2.26E+01	18.41	4.72E+01	2.65
m	36	968.96	962 -	980	968.61	7.72E+01	26.45	5.28E+01	2.38
m	37	977.13	962 -	980	976.78	1.74E+01	20.30	5.68E+01	2.66
	38	1044.20	1041 -	1046	1043.82	1.57E+01	17.80	5.06E+01	2.56
	39	1084.86	1081 -	1087	1084.47	2.31E+01	20.50	5.98E+01	3.95
	40	1120.38	1116 -	1123	1119.97	5.67E+01	26.61	8.07E+01	1.41

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	41	1141.42	1140 -	1162	1141.00	1.23E+01	8.37	1.40E+01	2.11
m	42	1148.86	1140 -	1162	1148.44	1.92E+01	20.49	5.60E+01	2.53
m	43	1155.87	1140 -	1162	1155.45	2.54E+01	21.54	5.60E+01	2.57
	44	1377.30	1372 -	1381	1376.81	1.19E+01	15.94	2.82E+01	1.22
	45	1401.87	1399 -	1404	1401.36	1.10E+01	10.20	1.20E+01	1.17
	46	1408.02	1405 -	1409	1407.51	1.08E+01	8.03	4.46E+00	1.03
	47	1461.16	1455 -	1466	1460.64	6.48E+02	54.59	4.93E+01	2.19
	48	1493.07	1488 -	1496	1492.54	1.13E+01	11.52	1.34E+01	1.24
	49	1538.05	1534 -	1541	1537.50	1.13E+01	8.25	3.31E+00	1.87
	50	1556.26	1554 -	1558	1555.71	7.00E+00	5.29	0.00E+00	2.15
	51	1562.78	1560 -	1564	1562.23	6.63E+00	6.18	2.75E+00	2.46
	52	1569.39	1566 -	1572	1568.83	6.23E+00	8.99	9.55E+00	1.36
	53	1593.51	1590 -	1596	1592.95	1.84E+01	12.85	1.52E+01	1.28
	54	1631.84	1629 -	1633	1631.27	5.88E+00	6.67	4.25E+00	1.36
M	55	1726.84	1725 -	1734	1726.25	7.54E+00	3.46	0.00E+00	2.71
m	56	1729.84	1725 -	1734	1729.25	1.28E+01	8.00	0.00E+00	2.71
	57	1764.86	1759 -	1767	1764.25	4.20E+01	16.88	1.80E+01	2.01
	58	1838.13	1835 -	1840	1837.51	4.75E+00	5.74	2.50E+00	1.09
	59	1847.66	1844 -	1849	1847.04	6.56E+00	6.40	2.88E+00	1.61
	60	2203.94	2198 -	2208	2203.25	1.60E+01	8.00	0.00E+00	1.58
	61	2224.69	2218 -	2228	2223.99	8.08E+00	10.61	9.85E+00	7.87
	62	2349.99	2346 -	2352	2349.27	7.44E+00	6.95	3.11E+00	2.92
	63	2614.71	2610 -	2618	2613.97	7.50E+01	17.32	0.00E+00	3.26

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 : 6/22/2016 10:30:10AM

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	12.89	12 -	15	1.93E+03	116.22	1.31E+03	6.25E+01
	2	63.88	60 -	68	1.10E+02	98.44	1.43E+03	7.91E+01
	3	76.22	72 -	80	6.33E+02	114.45	1.63E+03	8.45E+01
M	4	88.02	84 -	97	9.79E+01	47.51	5.09E+02	3.71E+01
	5	99.64	98 -	102	6.49E+01	53.46	5.74E+02	4.19E+01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	6	129.31	126 -	132	6.04E+01	67.44	7.81E+02	5.39E+01
	7	152.79	149 -	156	5.84E+01	70.00	7.81E+02	5.62E+01
	8	185.85	182 -	189	1.51E+02	67.65	6.59E+02	5.18E+01
	9	209.68	206 -	213	7.59E+01	63.87	6.24E+02	5.05E+01
M	10	236.13	234 -	246	3.14E+01	34.47	2.80E+02	2.75E+01
m	11	239.13	234 -	246	6.11E+02	59.16	2.62E+02	2.66E+01
	12	269.97	267 -	274	5.11E+01	52.57	4.32E+02	4.16E+01
M	13	295.24	291 -	303	1.69E+02	41.82	2.37E+02	2.53E+01
m	14	300.16	291 -	303	4.80E+01	34.77	2.14E+02	2.41E+01
	15	312.60	309 -	318	4.92E+01	53.24	3.82E+02	4.22E+01
	16	338.69	334 -	343	1.28E+02	56.06	3.78E+02	4.22E+01
	17	351.90	348 -	355	3.08E+02	54.22	2.86E+02	3.40E+01
	18	408.56	404 -	411	3.41E+01	35.78	1.88E+02	2.78E+01
	19	452.86	451 -	455	1.75E+01	22.30	9.50E+01	1.70E+01
	20	462.65	459 -	465	5.31E+01	35.12	1.86E+02	2.63E+01
	21	510.74	505 -	516	1.73E+02	43.54	1.52E+02	2.85E+01
	22	530.44	527 -	533	3.90E+01	26.21	9.39E+01	1.89E+01
	23	583.23	579 -	587	1.83E+02	41.28	1.51E+02	2.56E+01
	24	609.50	605 -	612	1.95E+02	40.55	1.44E+02	2.42E+01
	25	667.58	663 -	674	3.11E+01	35.16	1.42E+02	2.74E+01
M	26	727.07	724 -	736	4.43E+01	21.77	5.40E+01	1.21E+01
m	27	732.25	724 -	736	2.37E+01	19.44	5.40E+01	1.21E+01
M	28	795.46	793 -	801	2.34E+01	16.00	4.31E+01	1.08E+01
m	29	799.09	793 -	801	1.50E+01	18.84	4.36E+01	1.09E+01
	30	806.38	802 -	810	3.25E+01	22.61	5.89E+01	1.60E+01
	31	848.30	845 -	852	2.17E+01	22.27	6.87E+01	1.66E+01
	32	860.48	855 -	864	4.50E+01	28.46	8.99E+01	2.06E+01
	33	878.46	876 -	880	1.70E+01	12.16	1.80E+01	7.34E+00
	34	911.47	907 -	915	1.37E+02	30.98	6.37E+01	1.67E+01
M	35	964.94	962 -	980	2.26E+01	18.41	4.72E+01	1.13E+01
m	36	968.96	962 -	980	7.72E+01	26.45	5.28E+01	1.19E+01
m	37	977.13	962 -	980	1.74E+01	20.30	5.68E+01	1.24E+01
	38	1044.20	1041 -	1046	1.57E+01	17.80	5.06E+01	1.31E+01
	39	1084.86	1081 -	1087	2.31E+01	20.50	5.98E+01	1.49E+01
	40	1120.38	1116 -	1123	5.67E+01	26.61	8.07E+01	1.80E+01
M	41	1141.42	1140 -	1162	1.23E+01	8.37	1.40E+01	6.15E+00
m	42	1148.86	1140 -	1162	1.92E+01	20.49	5.60E+01	1.23E+01
m	43	1155.87	1140 -	1162	2.54E+01	21.54	5.60E+01	1.23E+01
	44	1377.30	1372 -	1381	1.19E+01	15.94	2.82E+01	1.18E+01
	45	1401.87	1399 -	1404	1.10E+01	10.20	1.20E+01	6.37E+00
	46	1408.02	1405 -	1409	1.08E+01	8.03	4.46E+00	3.80E+00
	47	1461.16	1455 -	1466	6.48E+02	54.59	4.93E+01	1.62E+01
	48	1493.07	1488 -	1496	1.13E+01	11.52	1.34E+01	7.70E+00
	49	1538.05	1534 -	1541	1.13E+01	8.25	3.31E+00	3.91E+00
	50	1556.26	1554 -	1558	7.00E+00	5.29	0.00E+00	0.00E+00
	51	1562.78	1560 -	1564	6.63E+00	6.18	2.75E+00	2.82E+00
	52	1569.39	1566 -	1572	6.23E+00	8.99	9.55E+00	6.14E+00
	53	1593.51	1590 -	1596	1.84E+01	12.85	1.52E+01	7.87E+00
	54	1631.84	1629 -	1633	5.88E+00	6.67	4.25E+00	3.77E+00
M	55	1726.84	1725 -	1734	7.54E+00	3.46	0.00E+00	0.00E+00
m	56	1729.84	1725 -	1734	1.28E+01	8.00	0.00E+00	0.00E+00

Analysis Report for 1606093-04

J1V928 SAF: RC-148

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
57	1764.86	1759 -	1767	4.20E+01	16.88	1.80E+01	8.89E+00
58	1838.13	1835 -	1840	4.75E+00	5.74	2.50E+00	3.08E+00
59	1847.66	1844 -	1849	6.56E+00	6.40	2.88E+00	3.16E+00
60	2203.94	2198 -	2208	1.60E+01	8.00	0.00E+00	0.00E+00
61	2224.69	2218 -	2228	8.08E+00	10.61	9.85E+00	7.36E+00
62	2349.99	2346 -	2352	7.44E+00	6.95	3.11E+00	3.53E+00
63	2614.71	2610 -	2618	7.50E+01	17.32	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 : 6/22/2016 10:30:10AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 1.000 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	12.89	12 -	15	13.01	1.93E+03	116.22	1.31E+03	.....
	2	63.88	60 -	68	63.98	1.10E+02	98.44	1.43E+03	TH-234
	3	76.22	72 -	80	76.31	6.33E+02	114.45	1.63E+03	.....
M	4	88.02	84 -	97	88.10	9.79E+01	47.51	5.09E+02	CD-109
									LU-176
									SN-126
	5	99.64	98 -	102	99.71	6.49E+01	53.46	5.74E+02	.....
	6	129.31	126 -	132	129.37	6.04E+01	67.44	7.81E+02	.....
	7	152.79	149 -	156	152.83	5.84E+01	70.00	7.81E+02	CS-136
	8	185.85	182 -	189	185.88	1.51E+02	67.65	6.59E+02	RA-226
	9	209.68	206 -	213	209.69	7.59E+01	63.87	6.24E+02	CM-243
									GA-67
M	10	236.13	234 -	246	236.13	3.14E+01	34.47	2.80E+02	TH-227
									NB-95M
m	11	239.13	234 -	246	239.13	6.11E+02	59.16	2.62E+02	PB-212
	12	269.97	267 -	274	269.95	5.11E+01	52.57	4.32E+02	.....
M	13	295.24	291 -	303	295.20	1.69E+02	41.82	2.37E+02	PB-214
m	14	300.16	291 -	303	300.12	4.80E+01	34.77	2.14E+02	GA-67
									PB-212

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									BI-210M
	15	312.60	309 -	318	312.55	4.92E+01	53.24	3.82E+02	PA-233
	16	338.69	334 -	343	338.63	1.28E+02	56.06	3.78E+02	AC-228
	17	351.90	348 -	355	351.84	3.08E+02	54.22	2.86E+02	PB-214
	18	408.56	404 -	411	408.47	3.41E+01	35.78	1.88E+02	.....
	19	452.86	451 -	455	452.74	1.75E+01	22.30	9.50E+01	.....
	20	462.65	459 -	465	462.53	5.31E+01	35.12	1.86E+02	SB-125
	21	510.74	505 -	516	510.59	1.73E+02	43.54	1.52E+02	.....
	22	530.44	527 -	533	530.29	3.90E+01	26.21	9.39E+01	I-133
									ND-147
									RB-83
	23	583.23	579 -	587	583.05	1.83E+02	41.28	1.51E+02	TL-208
	24	609.50	605 -	612	609.31	1.95E+02	40.55	1.44E+02	BI-214
	25	667.58	663 -	674	667.36	3.11E+01	35.16	1.42E+02	.....
M	26	727.07	724 -	736	726.82	4.43E+01	21.77	5.40E+01	BI-212
m	27	732.25	724 -	736	732.00	2.37E+01	19.44	5.40E+01	.....
M	28	795.46	793 -	801	795.19	2.34E+01	16.00	4.31E+01	CS-134
m	29	799.09	793 -	801	798.81	1.50E+01	18.84	4.36E+01	.....
	30	806.38	802 -	810	806.10	3.25E+01	22.61	5.89E+01	.....
	31	848.30	845 -	852	848.00	2.17E+01	22.27	6.87E+01	.....
	32	860.48	855 -	864	860.18	4.50E+01	28.46	8.99E+01	TL-208
	33	878.46	876 -	880	878.14	1.70E+01	12.16	1.80E+01	.....
	34	911.47	907 -	915	911.15	1.37E+02	30.98	6.37E+01	AC-228
									LU-172
M	35	964.94	962 -	980	964.60	2.26E+01	18.41	4.72E+01	EU-152
m	36	968.96	962 -	980	968.61	7.72E+01	26.45	5.28E+01	AC-228
m	37	977.13	962 -	980	976.78	1.74E+01	20.30	5.68E+01	.....
	38	1044.20	1041 -	1046	1043.82	1.57E+01	17.80	5.06E+01	.....
	39	1084.86	1081 -	1087	1084.47	2.31E+01	20.50	5.98E+01	EU-152
	40	1120.38	1116 -	1123	1119.97	5.67E+01	26.61	8.07E+01	BI-214
									SC-46
									TA-182
M	41	1141.42	1140 -	1162	1141.00	1.23E+01	8.37	1.40E+01	.....
m	42	1148.86	1140 -	1162	1148.44	1.92E+01	20.49	5.60E+01	.....
m	43	1155.87	1140 -	1162	1155.45	2.54E+01	21.54	5.60E+01	.....
	44	1377.30	1372 -	1381	1376.81	1.19E+01	15.94	2.82E+01	.....
	45	1401.87	1399 -	1404	1401.36	1.10E+01	10.20	1.20E+01	.....
	46	1408.02	1405 -	1409	1407.51	1.08E+01	8.03	4.46E+00	EU-152
	47	1461.16	1455 -	1466	1460.64	6.48E+02	54.59	4.93E+01	K-40
	48	1493.07	1488 -	1496	1492.54	1.13E+01	11.52	1.34E+01	.....
	49	1538.05	1534 -	1541	1537.50	1.13E+01	8.25	3.31E+00	.....
	50	1556.26	1554 -	1558	1555.71	7.00E+00	5.29	0.00E+00	.....
	51	1562.78	1560 -	1564	1562.23	6.63E+00	6.18	2.75E+00	.....
	52	1569.39	1566 -	1572	1568.83	6.23E+00	8.99	9.55E+00	.....
	53	1593.51	1590 -	1596	1592.95	1.84E+01	12.85	1.52E+01	.....
	54	1631.84	1629 -	1633	1631.27	5.88E+00	6.67	4.25E+00	.....
M	55	1726.84	1725 -	1734	1726.25	7.54E+00	3.46	0.00E+00	.....
m	56	1729.84	1725 -	1734	1729.25	1.28E+01	8.00	0.00E+00	.....
	57	1764.86	1759 -	1767	1764.25	4.20E+01	16.88	1.80E+01	BI-214
	58	1838.13	1835 -	1840	1837.51	4.75E+00	5.74	2.50E+00	.....
	59	1847.66	1844 -	1849	1847.04	6.56E+00	6.40	2.88E+00	.....
	60	2203.94	2198 -	2208	2203.25	1.60E+01	8.00	0.00E+00	BI-214
	61	2224.69	2218 -	2228	2223.99	8.08E+00	10.61	9.85E+00	.....
	62	2349.99	2346 -	2352	2349.27	7.44E+00	6.95	3.11E+00	.....

Analysis Report for 1606093-04

J1V928 SAF: RC-148

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
63	2614.71	2610 -	2618	2613.97	7.50E+01	17.32	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 : 6/22/2016 10:30:10AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	12.89	1.93E+03	116.22	1.13E-05	1.66E-03
	2	63.88	1.10E+02	98.44	2.38E-02	1.75E-03
	3	76.22	6.33E+02	114.45	2.56E-02	2.02E-03
M	4	88.02	9.79E+01	47.51	2.60E-02	2.27E-03
	5	99.64	6.49E+01	53.46	2.58E-02	2.27E-03
	6	129.31	6.04E+01	67.44	2.39E-02	2.29E-03
	7	152.79	5.84E+01	70.00	2.22E-02	2.38E-03
	8	185.85	1.51E+02	67.65	1.99E-02	2.40E-03
	9	209.68	7.59E+01	63.87	1.85E-02	2.36E-03
M	10	236.13	3.14E+01	34.47	1.71E-02	2.32E-03
m	11	239.13	6.11E+02	59.16	1.70E-02	2.31E-03
	12	269.97	5.11E+01	52.57	1.57E-02	2.26E-03
M	13	295.24	1.69E+02	41.82	1.47E-02	2.21E-03
m	14	300.16	4.80E+01	34.77	1.45E-02	2.21E-03
	15	312.60	4.92E+01	53.24	1.41E-02	2.18E-03
	16	338.69	1.28E+02	56.06	1.33E-02	2.14E-03
	17	351.90	3.08E+02	54.22	1.30E-02	2.12E-03
	18	408.56	3.41E+01	35.78	1.16E-02	1.96E-03
	19	452.86	1.75E+01	22.30	1.07E-02	1.73E-03
	20	462.65	5.31E+01	35.12	1.06E-02	1.68E-03
	21	510.74	1.73E+02	43.54	9.77E-03	1.43E-03
	22	530.44	3.90E+01	26.21	9.48E-03	1.33E-03
	23	583.23	1.83E+02	41.28	8.79E-03	1.06E-03
	24	609.50	1.95E+02	40.55	8.48E-03	9.22E-04
	25	667.58	3.11E+01	35.16	7.88E-03	6.59E-04
M	26	727.07	4.43E+01	21.77	7.34E-03	7.36E-04
m	27	732.25	2.37E+01	19.44	7.30E-03	7.42E-04
M	28	795.46	2.34E+01	16.00	6.82E-03	8.24E-04
m	29	799.09	1.50E+01	18.84	6.79E-03	8.28E-04

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	30	806.38	3.25E+01	22.61	6.74E-03	8.38E-04
	31	848.30	2.17E+01	22.27	6.46E-03	8.92E-04
	32	860.48	4.50E+01	28.46	6.39E-03	9.07E-04
	33	878.46	1.70E+01	12.16	6.28E-03	9.30E-04
	34	911.47	1.37E+02	30.98	6.09E-03	9.28E-04
M	35	964.94	2.26E+01	18.41	5.81E-03	8.20E-04
m	36	968.96	7.72E+01	26.45	5.79E-03	8.12E-04
m	37	977.13	1.74E+01	20.30	5.75E-03	7.95E-04
	38	1044.20	1.57E+01	17.80	5.45E-03	6.60E-04
	39	1084.86	2.31E+01	20.50	5.29E-03	5.77E-04
	40	1120.38	5.67E+01	26.61	5.15E-03	5.06E-04
M	41	1141.42	1.23E+01	8.37	5.08E-03	4.63E-04
m	42	1148.86	1.92E+01	20.49	5.05E-03	4.48E-04
m	43	1155.87	2.54E+01	21.54	5.03E-03	4.34E-04
	44	1377.30	1.19E+01	15.94	4.41E-03	3.66E-04
	45	1401.87	1.10E+01	10.20	4.35E-03	3.68E-04
	46	1408.02	1.08E+01	8.03	4.34E-03	3.68E-04
	47	1461.16	6.48E+02	54.59	4.23E-03	3.72E-04
	48	1493.07	1.13E+01	11.52	4.17E-03	3.75E-04
	49	1538.05	1.13E+01	8.25	4.09E-03	3.78E-04
	50	1556.26	7.00E+00	5.29	4.06E-03	3.80E-04
	51	1562.78	6.63E+00	6.18	4.05E-03	3.80E-04
	52	1569.39	6.23E+00	8.99	4.04E-03	3.81E-04
	53	1593.51	1.84E+01	12.85	4.00E-03	3.82E-04
	54	1631.84	5.88E+00	6.67	3.94E-03	3.85E-04
M	55	1726.84	7.54E+00	3.46	3.82E-03	3.93E-04
m	56	1729.84	1.28E+01	8.00	3.81E-03	3.93E-04
	57	1764.86	4.20E+01	16.88	3.77E-03	3.96E-04
	58	1838.13	4.75E+00	5.74	3.70E-03	4.01E-04
	59	1847.66	6.56E+00	6.40	3.69E-03	4.01E-04
	60	2203.94	1.60E+01	8.00	3.45E-03	4.01E-04
	61	2224.69	8.08E+00	10.61	3.45E-03	4.01E-04
	62	2349.99	7.44E+00	6.95	3.41E-03	4.01E-04
	63	2614.71	7.50E+01	17.32	3.40E-03	4.01E-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 : 6/22/2016 10:30:10AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039128.CNF

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	12.89	1.93E+03	116.22			1.93E+03	1.16E+02
	2	63.88	1.10E+02	98.44	2.21E+01	9.43E+00	8.76E+01	9.89E+01
	3	76.22	6.33E+02	114.45			6.33E+02	1.14E+02
M	4	88.02	9.79E+01	47.51			9.79E+01	4.75E+01
	5	99.64	6.49E+01	53.46			6.49E+01	5.35E+01
	6	129.31	6.04E+01	67.44			6.04E+01	6.74E+01
	7	152.79	5.84E+01	70.00			5.84E+01	7.00E+01
	8	185.85	1.51E+02	67.65	3.09E+01	6.97E+00	1.20E+02	6.80E+01
	9	209.68	7.59E+01	63.87			7.59E+01	6.39E+01
M	10	236.13	3.14E+01	34.47			3.14E+01	3.45E+01
m	11	239.13	6.11E+02	59.16	5.00E+00	6.32E+00	6.06E+02	5.95E+01
	12	269.97	5.11E+01	52.57			5.11E+01	5.26E+01
M	13	295.24	1.69E+02	41.82	5.52E+00	5.27E+00	1.63E+02	4.22E+01
m	14	300.16	4.80E+01	34.77			4.80E+01	3.48E+01
	15	312.60	4.92E+01	53.24			4.92E+01	5.32E+01
	16	338.69	1.28E+02	56.06			1.28E+02	5.61E+01
	17	351.90	3.08E+02	54.22	4.46E+00	4.93E+00	3.03E+02	5.44E+01
	18	408.56	3.41E+01	35.78			3.41E+01	3.58E+01
	19	452.86	1.75E+01	22.30			1.75E+01	2.23E+01
	20	462.65	5.31E+01	35.12			5.31E+01	3.51E+01
	21	510.74	1.73E+02	43.54	6.55E+01	5.04E+00	1.08E+02	4.38E+01
	22	530.44	3.90E+01	26.21			3.90E+01	2.62E+01
	23	583.23	1.83E+02	41.28	3.26E+00	3.64E+00	1.80E+02	4.14E+01
	24	609.50	1.95E+02	40.55	7.35E+00	3.67E+00	1.88E+02	4.07E+01
	25	667.58	3.11E+01	35.16			3.11E+01	3.52E+01
M	26	727.07	4.43E+01	21.77			4.43E+01	2.18E+01
m	27	732.25	2.37E+01	19.44			2.37E+01	1.94E+01
M	28	795.46	2.34E+01	16.00			2.34E+01	1.60E+01
m	29	799.09	1.50E+01	18.84			1.50E+01	1.88E+01
	30	806.38	3.25E+01	22.61			3.25E+01	2.26E+01
	31	848.30	2.17E+01	22.27			2.17E+01	2.23E+01
	32	860.48	4.50E+01	28.46			4.50E+01	2.85E+01
	33	878.46	1.70E+01	12.16			1.70E+01	1.22E+01
	34	911.47	1.37E+02	30.98	1.08E+00	2.95E+00	1.36E+02	3.11E+01
M	35	964.94	2.26E+01	18.41			2.26E+01	1.84E+01
m	36	968.96	7.72E+01	26.45	8.92E-03	2.31E+00	7.72E+01	2.66E+01
m	37	977.13	1.74E+01	20.30			1.74E+01	2.03E+01
	38	1044.20	1.57E+01	17.80			1.57E+01	1.78E+01
	39	1084.86	2.31E+01	20.50			2.31E+01	2.05E+01
	40	1120.38	5.67E+01	26.61			5.67E+01	2.66E+01
M	41	1141.42	1.23E+01	8.37			1.23E+01	8.37E+00
m	42	1148.86	1.92E+01	20.49			1.92E+01	2.05E+01
m	43	1155.87	2.54E+01	21.54			2.54E+01	2.15E+01
	44	1377.30	1.19E+01	15.94			1.19E+01	1.59E+01
	45	1401.87	1.10E+01	10.20			1.10E+01	1.02E+01
	46	1408.02	1.08E+01	8.03			1.08E+01	8.03E+00
	47	1461.16	6.48E+02	54.59	3.11E+00	2.41E+00	6.45E+02	5.46E+01
	48	1493.07	1.13E+01	11.52			1.13E+01	1.15E+01
	49	1538.05	1.13E+01	8.25			1.13E+01	8.25E+00
	50	1556.26	7.00E+00	5.29			7.00E+00	5.29E+00
	51	1562.78	6.63E+00	6.18			6.63E+00	6.18E+00
	52	1569.39	6.23E+00	8.99			6.23E+00	8.99E+00
	53	1593.51	1.84E+01	12.85	0.00E+00	0.00E+00	1.84E+01	1.29E+01
	54	1631.84	5.88E+00	6.67			5.88E+00	6.67E+00

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	55	1726.84	7.54E+00	3.46			7.54E+00	3.46E+00
m	56	1729.84	1.28E+01	8.00			1.28E+01	8.00E+00
	57	1764.86	4.20E+01	16.88	6.26E-01	1.97E+00	4.14E+01	1.70E+01
	58	1838.13	4.75E+00	5.74			4.75E+00	5.74E+00
	59	1847.66	6.56E+00	6.40			6.56E+00	6.40E+00
	60	2203.94	1.60E+01	8.00			1.60E+01	8.00E+00
	61	2224.69	8.08E+00	10.61			8.08E+00	1.06E+01
	62	2349.99	7.44E+00	6.95			7.44E+00	6.95E+00
	63	2614.71	7.50E+01	17.32	5.31E+00	1.43E+00	6.97E+01	1.74E+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 : 6/22/2016 10:30:10AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039128.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	12.89	1.93E+03	116.22			1.93E+03	1.16E+02
	2	63.88	1.10E+02	98.44	2.21E+01	9.43E+00	8.76E+01	9.89E+01
	3	76.22	6.33E+02	114.45			6.33E+02	1.14E+02
M	4	88.02	9.79E+01	47.51			9.79E+01	4.75E+01
	5	99.64	6.49E+01	53.46			6.49E+01	5.35E+01
	6	129.31	6.04E+01	67.44			6.04E+01	6.74E+01
	7	152.79	5.84E+01	70.00			5.84E+01	7.00E+01
	8	185.85	1.51E+02	67.65	3.09E+01	6.97E+00	1.20E+02	6.80E+01
	9	209.68	7.59E+01	63.87			7.59E+01	6.39E+01
M	10	236.13	3.14E+01	34.47			3.14E+01	3.45E+01
m	11	239.13	6.11E+02	59.16	5.00E+00	6.32E+00	6.06E+02	5.95E+01
	12	269.97	5.11E+01	52.57			5.11E+01	5.26E+01
M	13	295.24	1.69E+02	41.82	5.52E+00	5.27E+00	1.63E+02	4.22E+01
m	14	300.16	4.80E+01	34.77			4.80E+01	3.48E+01
	15	312.60	4.92E+01	53.24			4.92E+01	5.32E+01
	16	338.69	1.28E+02	56.06			1.28E+02	5.61E+01
	17	351.90	3.08E+02	54.22	4.46E+00	4.93E+00	3.03E+02	5.44E+01
	18	408.56	3.41E+01	35.78			3.41E+01	3.58E+01
	19	452.86	1.75E+01	22.30			1.75E+01	2.23E+01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	20	462.65	5.31E+01	35.12			5.31E+01	3.51E+01
	21	510.74	1.73E+02	43.54	6.55E+01	5.04E+00	1.08E+02	4.38E+01
	22	530.44	3.90E+01	26.21			3.90E+01	2.62E+01
	23	583.23	1.83E+02	41.28	3.26E+00	3.64E+00	1.80E+02	4.14E+01
	24	609.50	1.95E+02	40.55	7.35E+00	3.67E+00	1.88E+02	4.07E+01
	25	667.58	3.11E+01	35.16			3.11E+01	3.52E+01
M	26	727.07	4.43E+01	21.77			4.43E+01	2.18E+01
m	27	732.25	2.37E+01	19.44			2.37E+01	1.94E+01
M	28	795.46	2.34E+01	16.00			2.34E+01	1.60E+01
m	29	799.09	1.50E+01	18.84			1.50E+01	1.88E+01
	30	806.38	3.25E+01	22.61			3.25E+01	2.26E+01
	31	848.30	2.17E+01	22.27			2.17E+01	2.23E+01
	32	860.48	4.50E+01	28.46			4.50E+01	2.85E+01
	33	878.46	1.70E+01	12.16			1.70E+01	1.22E+01
	34	911.47	1.37E+02	30.98	1.08E+00	2.95E+00	1.36E+02	3.11E+01
M	35	964.94	2.26E+01	18.41			2.26E+01	1.84E+01
m	36	968.96	7.72E+01	26.45	8.92E-03	2.31E+00	7.72E+01	2.66E+01
m	37	977.13	1.74E+01	20.30			1.74E+01	2.03E+01
	38	1044.20	1.57E+01	17.80			1.57E+01	1.78E+01
	39	1084.86	2.31E+01	20.50			2.31E+01	2.05E+01
	40	1120.38	5.67E+01	26.61			5.67E+01	2.66E+01
M	41	1141.42	1.23E+01	8.37			1.23E+01	8.37E+00
m	42	1148.86	1.92E+01	20.49			1.92E+01	2.05E+01
m	43	1155.87	2.54E+01	21.54			2.54E+01	2.15E+01
	44	1377.30	1.19E+01	15.94			1.19E+01	1.59E+01
	45	1401.87	1.10E+01	10.20			1.10E+01	1.02E+01
	46	1408.02	1.08E+01	8.03			1.08E+01	8.03E+00
	47	1461.16	6.48E+02	54.59	3.11E+00	2.41E+00	6.45E+02	5.46E+01
	48	1493.07	1.13E+01	11.52			1.13E+01	1.15E+01
	49	1538.05	1.13E+01	8.25			1.13E+01	8.25E+00
	50	1556.26	7.00E+00	5.29			7.00E+00	5.29E+00
	51	1562.78	6.63E+00	6.18			6.63E+00	6.18E+00
	52	1569.39	6.23E+00	8.99			6.23E+00	8.99E+00
	53	1593.51	1.84E+01	12.85	0.00E+00	0.00E+00	1.84E+01	1.29E+01
	54	1631.84	5.88E+00	6.67			5.88E+00	6.67E+00
M	55	1726.84	7.54E+00	3.46			7.54E+00	3.46E+00
m	56	1729.84	1.28E+01	8.00			1.28E+01	8.00E+00
	57	1764.86	4.20E+01	16.88	6.26E-01	1.97E+00	4.14E+01	1.70E+01
	58	1838.13	4.75E+00	5.74			4.75E+00	5.74E+00
	59	1847.66	6.56E+00	6.40			6.56E+00	6.40E+00
	60	2203.94	1.60E+01	8.00			1.60E+01	8.00E+00
	61	2224.69	8.08E+00	10.61			8.08E+00	1.06E+01
	62	2349.99	7.44E+00	6.95			7.44E+00	6.95E+00
	63	2614.71	7.50E+01	17.32	5.31E+00	1.43E+00	6.97E+01	1.74E+01

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 1606093-04

J1V928 SAF: RC-148

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	0.980	1460.81	*	10.67	1.49E+01	1.84E+00
NB-95M	0.956	235.69	*	25.00	2.44E-01	2.71E-01
CD-109	1.000	88.03	*	3.72	1.06E+00	5.27E-01
SN-126	0.968	87.57	*	37.00	1.06E-01	5.21E-02
I-133	0.744	529.87	*	86.30	6.38E+00	4.37E+00
TL-208	0.999	583.14	*	30.22	7.05E-01	1.83E-01
		860.37	*	4.48	1.64E+00	1.06E+00
		2614.66	*	35.85	5.95E-01	1.64E-01
BI-212	0.765	727.17	*	11.80	5.32E-01	2.67E-01
		1620.62		2.75		
PB-212	0.963	238.63	*	44.60	8.32E-01	1.39E-01
		300.09	*	3.41	1.01E+00	7.45E-01
BI-214	0.992	609.31	*	46.30	4.97E-01	1.21E-01
		1120.29	*	15.10	7.58E-01	3.63E-01
		1764.49	*	15.80	7.22E-01	3.06E-01
		2204.22	*	4.98	9.68E-01	4.97E-01
PB-214	1.000	295.21	*	19.19	6.01E-01	1.80E-01
		351.92	*	37.19	6.54E-01	1.59E-01
RA-226	0.979	186.21	*	3.28	1.91E+00	3.66E+00
AC-228	0.982	338.32	*	11.40	8.76E-01	4.08E-01
		911.07	*	27.70	8.39E-01	2.31E-01
		969.11	*	16.60	8.35E-01	3.10E-01
PA-233	0.941	311.98	*	38.60	1.10E-01	1.22E-01
TH-234	0.945	63.29	*	3.80	1.01E+00	1.14E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

Analysis Report for 1606093-04

J1V928 SAF: RC-148

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 10:30:10AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	12.89	5.37134E-01	3.01		
	3	76.22	1.75804E-01	9.04		
	5	99.64	1.80311E-02	41.18		
	6	129.31	1.67649E-02	55.87		
	7	152.79	1.62299E-02	59.90	Sum	
	9	209.68	2.10925E-02	42.06	Tol.	GA-67 CM-243
	12	269.97	1.42010E-02	51.42		
	18	408.56	9.48568E-03	52.38		
	19	452.86	4.86111E-03	63.73		
	20	462.65	1.47546E-02	33.06	Tol.	SB-125
	21	510.74	2.99168E-02	20.35		
	25	667.58	8.64243E-03	56.50		
m	27	732.25	6.58504E-03	41.01		
M	28	795.46	6.49518E-03	34.21	Sum	
m	29	799.09	4.17587E-03	62.67		
	30	806.38	9.03898E-03	34.74		
	31	848.30	6.01686E-03	51.41	Sum	
	33	878.46	4.72222E-03	35.75	Sum	
M	35	964.94	6.26589E-03	40.81	Tol.	EU-152
m	37	977.13	4.82972E-03	58.37		
	38	1044.20	4.36314E-03	56.68		
	39	1084.86	6.41247E-03	44.40	Tol.	EU-152
M	41	1141.42	3.41891E-03	33.99		
m	42	1148.86	5.32550E-03	53.45		
m	43	1155.87	7.06408E-03	42.35	Sum	
	44	1377.30	3.30128E-03	67.05		
	45	1401.87	3.05556E-03	46.35		
	46	1408.02	2.99145E-03	37.29	Tol.	EU-152
	48	1493.07	3.13272E-03	51.08		
	49	1538.05	3.15171E-03	36.34		
	50	1556.26	1.94444E-03	37.80		
	51	1562.78	1.84028E-03	46.68		
	52	1569.39	1.72980E-03	72.15		
	53	1593.51	5.11218E-03	34.92	D-Esc	
	54	1631.84	1.63194E-03	56.77		
M	55	1726.84	2.09494E-03	22.97		
m	56	1729.84	3.55672E-03	31.24	Sum	
	58	1838.13	1.31944E-03	60.47		
	59	1847.66	1.82292E-03	48.79	Sum	
	61	2224.69	2.24359E-03	65.66		
	62	2349.99	2.06790E-03	46.65		

Analysis Report for 1606093-04

J1V928 SAF: RC-148

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	1.49E+01	1.84E+00
NB-95M	0.95	235.69	*	25.00	2.44E-01	2.71E-01
CD-109	1.00	88.03	*	3.72	1.06E+00	5.27E-01
SN-126	0.96	87.57	*	37.00	1.06E-01	5.21E-02
I-133	0.74	529.87	*	86.30	6.38E+00	4.37E+00
TL-208	0.99	583.14	*	30.22	7.05E-01	1.83E-01
		860.37	*	4.48	1.64E+00	1.06E+00
		2614.66	*	35.85	5.95E-01	1.64E-01
BI-212	0.76	727.17	*	11.80	5.32E-01	2.67E-01
		1620.62		2.75		
PB-212	0.96	238.63	*	44.60	8.32E-01	1.39E-01
		300.09	*	3.41	1.01E+00	7.45E-01
BI-214	0.99	609.31	*	46.30	4.97E-01	1.21E-01
		1120.29	*	15.10	7.58E-01	3.63E-01
		1764.49	*	15.80	7.22E-01	3.06E-01
		2204.22	*	4.98	9.68E-01	4.97E-01
PB-214	1.00	295.21	*	19.19	6.01E-01	1.80E-01
		351.92	*	37.19	6.54E-01	1.59E-01
RA-226	0.97	186.21	*	3.28	1.91E+00	3.66E+00
AC-228	0.98	338.32	*	11.40	8.76E-01	4.08E-01
		911.07	*	27.70	8.39E-01	2.31E-01
		969.11	*	16.60	8.35E-01	3.10E-01
PA-233	0.94	311.98	*	38.60	1.10E-01	1.22E-01
TH-234	0.94	63.29	*	3.80	1.01E+00	1.14E+00

Analysis Report for 1606093-04

J1V928 SAF: RC-148

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 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	0.980	1.49E+01	1.84E+00	
	NB-95M	0.956	2.44E-01	2.71E-01	
?	CD-109	1.000	1.06E+00	5.27E-01	
?	SN-126	0.968	1.06E-01	5.21E-02	
	I-133	0.744	6.38E+00	4.37E+00	
	TL-208	0.999	6.57E-01	1.21E-01	
	BI-212	0.765	5.32E-01	2.67E-01	
	PB-212	0.963	8.38E-01	1.37E-01	
	BI-214	0.992	5.66E-01	1.05E-01	
	PB-214	1.000	6.31E-01	1.19E-01	
	RA-226	0.979	1.91E+00	3.66E+00	
	AC-228	0.982	8.44E-01	1.69E-01	
	PA-233	0.941	1.10E-01	1.22E-01	
	TH-234	0.945	1.01E+00	1.14E+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 1606093-04

J1V928 SAF: RC-148

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 10:30:10AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	12.89	5.37134E-01	3.01		
	3	76.22	1.75804E-01	9.04		
	5	99.64	1.80311E-02	41.18		
	6	129.31	1.67649E-02	55.87		
	7	152.79	1.62299E-02	59.90	Sum	
	9	209.68	2.10925E-02	42.06	Tol.	GA-67
						CM-243
	12	269.97	1.42010E-02	51.42		
	18	408.56	9.48568E-03	52.38		
	19	452.86	4.86111E-03	63.73		
	20	462.65	1.47546E-02	33.06	Tol.	SB-125
	21	510.74	2.99168E-02	20.35		
	25	667.58	8.64243E-03	56.50		
m	27	732.25	6.58504E-03	41.01		
M	28	795.46	6.49518E-03	34.21	Sum	
m	29	799.09	4.17587E-03	62.67		
	30	806.38	9.03898E-03	34.74		
	31	848.30	6.01686E-03	51.41	Sum	
	33	878.46	4.72222E-03	35.75	Sum	
M	35	964.94	6.26589E-03	40.81	Tol.	EU-152
m	37	977.13	4.82972E-03	58.37		
	38	1044.20	4.36314E-03	56.68		
	39	1084.86	6.41247E-03	44.40	Tol.	EU-152
M	41	1141.42	3.41891E-03	33.99		
m	42	1148.86	5.32550E-03	53.45		
m	43	1155.87	7.06408E-03	42.35	Sum	
	44	1377.30	3.30128E-03	67.05		
	45	1401.87	3.05556E-03	46.35		
	46	1408.02	2.99145E-03	37.29	Tol.	EU-152
	48	1493.07	3.13272E-03	51.08		
	49	1538.05	3.15171E-03	36.34		
	50	1556.26	1.94444E-03	37.80		
	51	1562.78	1.84028E-03	46.68		
	52	1569.39	1.72980E-03	72.15		
	53	1593.51	5.11218E-03	34.92	D-Esc	

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	54	1631.84	1.63194E-03	56.77		
M	55	1726.84	2.09494E-03	22.97		
m	56	1729.84	3.55672E-03	31.24	Sum	
	58	1838.13	1.31944E-03	60.47		
	59	1847.66	1.82292E-03	48.79	Sum	
	61	2224.69	2.24359E-03	65.66		
	62	2349.99	2.06790E-03	46.65		

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\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	1.12E-02	4.34E-01	4.34E-01
+	NA-22	1274.54		99.94	-2.13E-02	5.50E-02	5.50E-02
+	NA-24	1368.53		99.99	-6.22E+00	2.37E+01	3.84E+01
		2754.09		99.86	5.11E+00		2.37E+01
+	AL-26	1808.65		99.76	1.62E-02	3.95E-02	3.95E-02
+	K-40	1460.81	*	10.67	1.49E+01	8.25E-01	8.25E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-9.84E-03	3.45E-02	3.45E-02
		78.34		96.00	1.60E-01		5.11E-02
+	SC-46	889.25		99.98	-2.77E-02	5.39E-02	5.39E-02
		1120.51		99.99	1.19E-01		1.02E-01
+	V-48	983.52		99.98	2.20E-03	6.77E-02	6.77E-02
		1312.10		97.50	1.03E-02		7.15E-02
+	CR-51	320.08		9.83	6.21E-02	4.80E-01	4.80E-01
+	MN-54	834.83		99.97	-2.95E-02	5.79E-02	5.79E-02
+	CO-56	846.75		99.96	2.26E-03	6.04E-02	6.04E-02
		1037.75		14.03	6.98E-02		4.69E-01
		1238.25		67.00	0.00E+00		1.36E-01
		1771.40		15.51	-1.38E-01		2.65E-01
		2598.48		16.90	-9.56E-03		1.78E-01
+	CO-57	122.06		85.51	-4.57E-03	4.16E-02	4.16E-02
		136.48		10.60	-1.86E-01		3.39E-01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CO-58	810.76		99.40	-7.25E-03	5.61E-02	5.61E-02
+	FE-59	1099.22		56.50	-6.02E-03	1.31E-01	1.31E-01
		1291.56		43.20	1.77E-02		1.59E-01
+	CO-60	1173.22		100.00	3.02E-02	5.55E-02	7.40E-02
		1332.49		100.00	-1.64E-02		5.55E-02
+	ZN-65	1115.52		50.75	-1.79E-02	1.28E-01	1.28E-01
+	GA-67	93.31		35.70	4.32E-01	4.67E-01	4.67E-01
		208.95		2.24	2.48E+00		7.08E+00
		300.22		16.00	5.50E-01		9.91E-01
+	SE-75	121.11		16.70	2.65E-02	6.09E-02	2.15E-01
		136.00		59.20	-6.48E-03		6.17E-02
		264.65		59.80	2.38E-02		6.09E-02
		279.53		25.20	-3.48E-02		1.57E-01
		400.65		11.40	-3.91E-03		3.60E-01
+	RB-82	776.52		13.00	1.06E-01	4.96E-01	4.96E-01
+	RB-83	520.41		46.00	1.01E-02	9.10E-02	9.10E-02
		529.64		30.30	1.78E-02		1.53E-01
		552.65		16.40	-3.40E-02		2.28E-01
+	KR-85	513.99		0.43	-9.49E+00	1.05E+01	1.05E+01
+	SR-85	513.99		99.27	-4.42E-02	4.88E-02	4.88E-02
+	Y-88	898.02		93.40	8.49E-03	4.91E-02	6.50E-02
		1836.01		99.38	-4.91E-03		4.91E-02
+	NB-93M	16.57		9.43	-1.71E+01	6.32E+01	6.32E+01
+	NB-94	702.63		100.00	-9.15E-03	5.54E-02	5.54E-02
		871.10		100.00	2.70E-02		5.58E-02
+	NB-95	765.79		99.81	3.69E-02	7.00E-02	7.00E-02
+	NB-95M	235.69	*	25.00	2.44E-01	1.02E+00	1.02E+00
+	ZR-95	724.18		43.70	-1.73E-03	9.88E-02	1.49E-01
		756.72		55.30	-2.30E-03		9.88E-02
+	MO-99	181.06		6.20	-5.21E-01	1.61E+00	2.78E+00
		739.58		12.80	-6.84E-01		1.61E+00
		778.00		4.50	-9.85E-01		5.16E+00
+	RU-103	497.08		89.00	2.86E-02	5.35E-02	5.35E-02
+	RU-106	621.84		9.80	9.86E-02	5.43E-01	5.43E-01
+	AG-108M	433.93		89.90	-4.07E-03	4.35E-02	4.35E-02
		614.37		90.40	1.85E-02		5.37E-02
		722.95		90.50	1.16E-02		6.22E-02
+	CD-109	88.03	*	3.72	1.06E+00	2.30E+00	2.30E+00
+	AG-110M	657.75		93.14	7.25E-03	5.12E-02	5.12E-02
		677.61		10.53	4.76E-02		4.85E-01
		706.67		16.46	1.84E-01		3.49E-01
		763.93		21.98	-9.75E-02		2.56E-01
		884.67		71.63	1.25E-02		7.15E-02
		1384.27		23.94	1.65E-02		1.82E-01
+	CD-113M	263.70		0.02	5.04E+01	1.56E+02	1.56E+02
+	SN-113	255.12		1.93	1.71E-01	6.57E-02	2.03E+00
		391.69		64.90	-6.62E-03		6.57E-02

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TE123M	159.00		84.10	5.75E-03	4.67E-02	4.67E-02
+	SB-124	602.71		97.87	-1.88E-03	5.51E-02	5.51E-02
		645.85		7.26	-2.46E-01		7.24E-01
		722.78		11.10	1.01E-01		5.44E-01
		1691.02		49.00	-2.86E-02		1.03E-01
+	I-125	35.49		6.49	-1.45E-01	1.09E+00	1.09E+00
+	SB-125	176.33		6.89	1.20E-01	1.28E-01	5.50E-01
		427.89		29.33	-4.86E-02		1.28E-01
		463.38		10.35	4.76E-01		5.04E-01
		600.56		17.80	-1.61E-02		2.83E-01
		635.90		11.32	-7.99E-02		4.08E-01
+	SB-126	414.70		83.30	2.60E-02	6.97E-02	6.97E-02
		666.33		99.60	1.26E-02		7.48E-02
		695.00		99.60	2.79E-02		8.22E-02
		720.50		53.80	2.96E-02		1.37E-01
+	SN-126	87.57	*	37.00	1.06E-01	2.29E-01	2.29E-01
+	SB-127	473.00		25.00	-1.56E-01	4.37E-01	4.78E-01
		685.20		35.70	-1.13E-01		4.37E-01
		783.80		14.70	8.24E-02		1.11E+00
+	I-129	29.78		57.00	-7.36E-02	1.90E-01	1.90E-01
		33.60		13.20	-2.36E-01		5.40E-01
		39.58		7.52	-1.43E-01		6.67E-01
+	I-131	284.30		6.05	1.76E-01	7.63E-02	1.05E+00
		364.48		81.20	-1.69E-02		7.63E-02
		636.97		7.26	-1.89E-01		1.06E+00
		722.89		1.80	9.84E-01		5.28E+00
+	TE-132	49.72		13.10	2.38E-01	1.57E-01	1.01E+00
		228.16		88.00	-1.13E-03		1.57E-01
+	BA-133	81.00		33.00	9.63E-03	6.95E-02	9.63E-02
		302.84		17.80	2.82E-02		2.22E-01
		356.01		60.00	-9.24E-03		6.95E-02
+	I-133	529.87	*	86.30	6.38E+00	6.63E+00	6.63E+00
+	XE-133	81.00		38.00	1.86E-02	1.86E-01	1.86E-01
+	CS-134	563.23		8.38	9.73E-02	5.73E-02	4.73E-01
		569.32		15.43	7.17E-02		3.00E-01
		604.70		97.60	-8.66E-04		5.73E-02
		795.84		85.40	6.56E-02		7.63E-02
		801.93		8.73	-5.71E-01		5.69E-01
+	CS-135	268.24		16.00	-1.32E-01	2.53E-01	2.53E-01
+	I-135	1131.51		22.50	3.71E+04	1.02E+06	1.24E+06
		1260.41		28.60	-5.06E+04		1.02E+06
		1678.03		9.54	-4.52E+05		2.02E+06
+	CS-136	153.22		7.46	5.20E-01	7.47E-02	7.31E-01
		163.89		4.61	3.65E-01		1.12E+00
		176.55		13.56	-1.84E-01		3.65E-01
		273.65		12.66	-5.76E-02		4.42E-01
		340.57		48.50	-8.75E-02		1.34E-01
		818.50		99.70	-3.06E-02		7.47E-02
		1048.07		79.60	-1.93E-02		1.11E-01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CS-136	1235.34	19.70	5.02E-02	7.47E-02	6.12E-01
+	CS-137	661.65	85.12	-1.00E-02	5.28E-02	5.28E-02
+	LA-138	788.74	34.00	1.14E-01	7.40E-02	1.83E-01
		1435.80	66.00	2.79E-02		7.40E-02
+	CE-139	165.85	80.35	-4.08E-02	4.57E-02	4.57E-02
+	BA-140	162.64	6.70	4.20E-01	2.27E-01	7.94E-01
		304.84	4.50	5.51E-01		1.15E+00
		423.70	3.20	9.14E-01		1.82E+00
		437.55	2.00	-9.07E-01		2.69E+00
		537.32	25.00	9.88E-02		2.27E-01
+	LA-140	328.77	20.50	-1.19E-02	9.84E-02	2.68E-01
		487.03	45.50	5.01E-02		1.34E-01
		815.85	23.50	-1.66E-02		3.22E-01
		1596.49	95.49	3.41E-03		9.84E-02
+	CE-141	145.44	48.40	4.26E-02	8.80E-02	8.80E-02
+	CE-143	57.36	11.80	-4.35E-01	2.60E+00	5.96E+00
		293.26	42.00	-1.08E+00		2.60E+00
		664.55	5.20	-9.14E-01		1.97E+01
+	CE-144	133.54	10.80	-1.28E-02	3.31E-01	3.31E-01
+	PM-144	476.78	42.00	2.59E-03	5.08E-02	1.01E-01
		618.01	98.60	-2.70E-02		5.08E-02
		696.49	99.49	2.03E-02		5.79E-02
+	PM-145	36.85	21.70	1.04E-01	1.50E-01	2.85E-01
		37.36	39.70	5.49E-02		1.50E-01
		42.30	15.10	2.02E-02		2.87E-01
		72.40	2.31	-1.87E-01		1.45E+00
+	PM-146	453.90	39.94	6.60E-03	9.94E-02	9.94E-02
		735.90	14.01	-5.12E-02		3.51E-01
		747.13	13.10	1.16E-01		4.39E-01
+	ND-147	91.11	28.90	-1.63E-01	2.36E-01	2.36E-01
		531.02	13.10	2.54E-01		4.95E-01
+	PM-149	285.90	3.10	1.80E+00	8.21E+00	8.21E+00
+	EU-152	121.78	20.50	-1.88E-02	1.71E-01	1.71E-01
		244.69	5.40	-1.32E+00		7.13E-01
		344.27	19.13	-6.74E-02		2.03E-01
		778.89	9.20	2.15E-01		5.76E-01
		964.01	10.40	-1.78E+00		6.35E-01
		1085.78	7.22	1.71E-01		1.01E+00
		1112.02	9.60	1.21E-01		7.10E-01
		1407.95	14.94	-2.41E-02		3.23E-01
+	GD-153	97.43	31.30	-2.64E-02	1.17E-01	1.17E-01
		103.18	22.20	-4.41E-03		1.59E-01
+	EU-154	123.07	40.50	4.96E-03	8.66E-02	8.66E-02
		723.30	19.70	5.34E-02		2.86E-01
		873.19	11.50	1.13E-01		4.50E-01
		996.32	10.30	2.27E-01		6.24E-01
		1004.76	17.90	-7.02E-02		3.40E-01
		1274.45	35.50	-5.97E-02		1.54E-01
+	EU-155	86.50	30.90	-9.88E-02	1.46E-01	1.46E-01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-155	105.30		20.70	7.87E-02	1.46E-01	1.71E-01
+	EU-156	811.77		10.40	1.37E-01	6.68E-01	6.68E-01
		1153.47		7.20	-4.51E-01		1.32E+00
		1230.71		8.90	2.85E-01		1.25E+00
+	HO-166M	184.41		72.60	2.15E-02	6.19E-02	6.19E-02
		280.45		29.60	-2.87E-02		1.29E-01
		410.94		11.10	-4.30E-02		3.57E-01
		711.69		54.10	3.01E-02		9.81E-02
+	TM-171	66.72		0.14	1.07E+00	2.40E+01	2.40E+01
+	HF-172	81.75		4.52	-1.58E-01	3.19E-01	7.08E-01
		125.81		11.30	6.51E-02		3.19E-01
+	LU-172	181.53		20.60	5.91E-02	1.93E-01	3.52E-01
		810.06		16.63	-7.65E-02		5.92E-01
		912.12		15.25	2.74E+00		1.30E+00
		1093.66		62.50	-7.53E-02		1.93E-01
+	LU-173	100.72		5.24	-2.22E-02	2.09E-01	6.91E-01
		272.11		21.20	4.67E-02		2.09E-01
+	HF-175	343.40		84.00	-2.28E-02	4.86E-02	4.86E-02
+	LU-176	88.34		13.30	5.23E-01	3.77E-02	3.53E-01
		201.83		86.00	1.46E-02		4.74E-02
		306.78		94.00	6.18E-03		3.77E-02
+	TA-182	67.75		41.20	-2.34E-02	8.21E-02	8.21E-02
		1121.30		34.90	3.86E-01		2.91E-01
		1189.05		16.23	-8.92E-02		4.77E-01
		1221.41		26.98	-1.04E-01		3.12E-01
		1231.02		11.44	1.20E-01		7.57E-01
+	IR-192	308.46		29.68	-2.77E-02	9.05E-02	1.21E-01
		468.07		48.10	-1.11E-03		9.05E-02
+	HG-203	279.19		77.30	-5.44E-03	5.62E-02	5.62E-02
+	BI-207	569.67		97.72	1.13E-02	4.71E-02	4.71E-02
		1063.62		74.90	1.99E-02		8.41E-02
+	TL-208	583.14	*	30.22	7.05E-01	9.09E-02	2.14E-01
		860.37	*	4.48	1.64E+00		1.60E+00
		2614.66	*	35.85	5.95E-01		9.09E-02
+	BI-210M	262.00		45.00	-3.04E-02	7.88E-02	7.88E-02
		300.00		23.00	1.05E-01		1.90E-01
+	PB-210	46.50		4.25	9.41E-01	1.04E+00	1.04E+00
+	PB-211	404.84		2.90	-2.09E-01	1.34E+00	1.34E+00
		831.96		2.90	-6.13E-01		1.93E+00
+	BI-212	727.17	*	11.80	5.32E-01	6.15E-01	6.15E-01
		1620.62		2.75	-6.69E-01		1.92E+00
+	PB-212	238.63	*	44.60	8.32E-01	1.80E-01	1.80E-01
		300.09	*	3.41	1.01E+00		2.33E+00
+	BI-214	609.31	*	46.30	4.97E-01	1.38E-01	1.38E-01
		1120.29	*	15.10	7.58E-01		5.19E-01
		1764.49	*	15.80	7.22E-01		3.66E-01
		2204.22	*	4.98	9.68E-01		1.64E-01
+	PB-214	295.21	*	19.19	6.01E-01	1.54E-01	4.14E-01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PB-214	351.92	*	37.19	6.54E-01	1.54E-01	1.54E-01
+	RN-219	401.80		6.50	4.94E-02	5.78E-01	5.78E-01
+	RA-223	323.87		3.88	-3.64E-01	1.01E+00	1.01E+00
+	RA-224	240.98		3.95	6.73E+00	2.02E+00	2.02E+00
+	RA-225	40.00		31.00	-4.51E-02	2.10E-01	2.10E-01
+	RA-226	186.21	*	3.28	1.91E+00	1.73E+00	1.73E+00
+	TH-227	50.10		8.40	1.01E-01	4.28E-01	4.28E-01
		236.00		11.50	-3.68E+00		4.82E-01
		256.20		6.30	1.67E-01		6.13E-01
+	AC-228	338.32	*	11.40	8.76E-01	2.25E-01	5.96E-01
		911.07	*	27.70	8.39E-01		2.25E-01
		969.11	*	16.60	8.35E-01		7.10E-01
+	TH-230	48.44		16.90	-2.39E-01	2.20E-01	2.20E-01
		62.85		4.60	5.36E-01		8.17E-01
		67.67		0.37	-2.51E+00		8.81E+00
+	PA-231	283.67		1.60	3.94E-01	1.71E+00	2.35E+00
		302.67		2.30	2.18E-01		1.71E+00
+	TH-231	25.64		14.70	-6.04E-01	5.06E-01	1.52E+00
		84.21		6.40	2.25E-01		5.06E-01
+	PA-233	311.98	*	38.60	1.10E-01	1.94E-01	1.94E-01
+	PA-234	131.20		20.40	1.22E-02	1.85E-01	1.85E-01
		733.99		8.80	3.99E-01		6.38E-01
		946.00		12.00	-1.08E-01		4.26E-01
+	PA-234M	1001.03		0.92	2.10E+00	7.07E+00	7.07E+00
+	TH-234	63.29	*	3.80	1.01E+00	1.87E+00	1.87E+00
+	U-235	143.76		10.50	1.28E-01	3.58E-01	3.58E-01
		163.35		4.70	4.31E-01		8.17E-01
		205.31		4.70	8.24E-02		8.51E-01
+	NP-237	86.50		12.60	-2.42E-01	3.57E-01	3.57E-01
+	NP-239	106.10		22.70	1.32E-01	9.33E-01	9.33E-01
		228.18		10.70	-1.53E-02		2.12E+00
		277.60		14.10	1.51E-01		1.71E+00
+	AM-241	59.54		35.90	-4.74E-02	9.29E-02	9.29E-02
+	AM-243	74.67		66.00	-1.74E-01	6.71E-02	6.71E-02
+	CM-243	209.75		3.29	1.19E+00	2.88E-01	1.34E+00
		228.14		10.60	-2.59E-03		3.58E-01
		277.60		14.00	2.55E-02		2.88E-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 1606093-04

J1V928 SAF: RC-148

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	4.34E-01	4.34E-01	1.12E-02	2.03E-01
	NA-22	1274.54		99.94	5.50E-02	5.50E-02	-2.13E-02	2.45E-02
	NA-24	1368.53		99.99	3.84E+01	2.37E+01	-6.22E+00	1.65E+01
		2754.09		99.86	2.37E+01		5.11E+00	8.41E+00
	AL-26	1808.65		99.76	3.95E-02	3.95E-02	1.62E-02	1.60E-02
+	K-40	1460.81	*	10.67	8.25E-01	8.25E-01	1.49E+01	3.81E-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	3.45E-02	3.45E-02	-9.84E-03	1.66E-02
		78.34		96.00	5.11E-02		1.60E-01	2.50E-02
	SC-46	889.25		99.98	5.39E-02	5.39E-02	-2.77E-02	2.46E-02
		1120.51		99.99	1.02E-01		1.19E-01	4.79E-02
	V-48	983.52		99.98	6.77E-02	6.77E-02	2.20E-03	3.06E-02
		1312.10		97.50	7.15E-02		1.03E-02	3.16E-02
	CR-51	320.08		9.83	4.80E-01	4.80E-01	6.21E-02	2.28E-01
	MN-54	834.83		99.97	5.79E-02	5.79E-02	-2.95E-02	2.67E-02
	CO-56	846.75		99.96	6.04E-02	6.04E-02	2.26E-03	2.79E-02
		1037.75		14.03	4.69E-01		6.98E-02	2.15E-01
		1238.25		67.00	1.36E-01		0.00E+00	6.34E-02
		1771.40		15.51	2.65E-01		-1.38E-01	1.07E-01
		2598.48		16.90	1.78E-01		-9.56E-03	6.29E-02
	CO-57	122.06		85.51	4.16E-02	4.16E-02	-4.57E-03	2.01E-02
		136.48		10.60	3.39E-01		-1.86E-01	1.64E-01
	CO-58	810.76		99.40	5.61E-02	5.61E-02	-7.25E-03	2.58E-02
	FE-59	1099.22		56.50	1.31E-01	1.31E-01	-6.02E-03	6.03E-02
		1291.56		43.20	1.59E-01		1.77E-02	7.18E-02
	CO-60	1173.22		100.00	7.40E-02	5.55E-02	3.02E-02	3.42E-02
		1332.49		100.00	5.55E-02		-1.64E-02	2.46E-02
	ZN-65	1115.52		50.75	1.28E-01	1.28E-01	-1.79E-02	5.86E-02
	GA-67	93.31		35.70	4.67E-01	4.67E-01	4.32E-01	2.28E-01
		208.95		2.24	7.08E+00		2.48E+00	3.42E+00
		300.22		16.00	9.91E-01		5.50E-01	4.74E-01
	SE-75	121.11		16.70	2.15E-01	6.09E-02	2.65E-02	1.04E-01
		136.00		59.20	6.17E-02		-6.48E-03	2.98E-02
		264.65		59.80	6.09E-02		2.38E-02	2.89E-02
		279.53		25.20	1.57E-01		-3.48E-02	7.47E-02
		400.65		11.40	3.60E-01		-3.91E-03	1.69E-01
	RB-82	776.52		13.00	4.96E-01	4.96E-01	1.06E-01	2.30E-01
	RB-83	520.41		46.00	9.10E-02	9.10E-02	1.01E-02	4.22E-02
		529.64		30.30	1.53E-01		1.78E-02	7.12E-02
		552.65		16.40	2.28E-01		-3.40E-02	1.04E-01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	KR-85	513.99		0.43	1.05E+01	1.05E+01	-9.49E+00	4.91E+00
	SR-85	513.99		99.27	4.88E-02	4.88E-02	-4.42E-02	2.29E-02
	Y-88	898.02		93.40	6.50E-02	4.91E-02	8.49E-03	3.00E-02
		1836.01		99.38	4.91E-02		-4.91E-03	2.06E-02
	NB-93M	16.57		9.43	6.32E+01	6.32E+01	-1.71E+01	3.06E+01
	NB-94	702.63		100.00	5.54E-02	5.54E-02	-9.15E-03	2.58E-02
		871.10		100.00	5.58E-02		2.70E-02	2.57E-02
	NB-95	765.79		99.81	7.00E-02	7.00E-02	3.69E-02	3.27E-02
+	NB-95M	235.69	*	25.00	1.02E+00	1.02E+00	2.44E-01	4.98E-01
	ZR-95	724.18		43.70	1.49E-01	9.88E-02	-1.73E-03	7.00E-02
		756.72		55.30	9.88E-02		-2.30E-03	4.56E-02
	MO-99	181.06		6.20	2.78E+00	1.61E+00	-5.21E-01	1.34E+00
		739.58		12.80	1.61E+00		-6.84E-01	7.33E-01
		778.00		4.50	5.16E+00		-9.85E-01	2.37E+00
	RU-103	497.08		89.00	5.35E-02	5.35E-02	2.86E-02	2.50E-02
	RU-106	621.84		9.80	5.43E-01	5.43E-01	9.86E-02	2.54E-01
	AG-108M	433.93		89.90	4.35E-02	4.35E-02	-4.07E-03	2.03E-02
		614.37		90.40	5.37E-02		1.85E-02	2.50E-02
		722.95		90.50	6.22E-02		1.16E-02	2.90E-02
+	CD-109	88.03	*	3.72	2.30E+00	2.30E+00	1.06E+00	1.13E+00
	AG-110M	657.75		93.14	5.12E-02	5.12E-02	7.25E-03	2.37E-02
		677.61		10.53	4.85E-01		4.76E-02	2.25E-01
		706.67		16.46	3.49E-01		1.84E-01	1.63E-01
		763.93		21.98	2.56E-01		-9.75E-02	1.19E-01
		884.67		71.63	7.15E-02		1.25E-02	3.26E-02
		1384.27		23.94	1.82E-01		1.65E-02	7.76E-02
	CD-113M	263.70		0.02	1.56E+02	1.56E+02	5.04E+01	7.43E+01
	SN-113	255.12		1.93	2.03E+00	6.57E-02	1.71E-01	9.69E-01
		391.69		64.90	6.57E-02		-6.62E-03	3.10E-02
	TE123M	159.00		84.10	4.67E-02	4.67E-02	5.75E-03	2.26E-02
	SB-124	602.71		97.87	5.51E-02	5.51E-02	-1.88E-03	2.57E-02
		645.85		7.26	7.24E-01		-2.46E-01	3.36E-01
		722.78		11.10	5.44E-01		1.01E-01	2.53E-01
		1691.02		49.00	1.03E-01		-2.86E-02	4.34E-02
	I-125	35.49		6.49	1.09E+00	1.09E+00	-1.45E-01	5.20E-01
	SB-125	176.33		6.89	5.50E-01	1.28E-01	1.20E-01	2.65E-01
		427.89		29.33	1.28E-01		-4.86E-02	5.96E-02
		463.38		10.35	5.04E-01		4.76E-01	2.39E-01
		600.56		17.80	2.83E-01		-1.61E-02	1.32E-01
		635.90		11.32	4.08E-01		-7.99E-02	1.89E-01
	SB-126	414.70		83.30	6.97E-02	6.97E-02	2.60E-02	3.28E-02
		666.33		99.60	7.48E-02		1.26E-02	3.49E-02
		695.00		99.60	8.22E-02		2.79E-02	3.85E-02
		720.50		53.80	1.37E-01		2.96E-02	6.33E-02
+	SN-126	87.57	*	37.00	2.29E-01	2.29E-01	1.06E-01	1.13E-01
	SB-127	473.00		25.00	4.78E-01	4.37E-01	-1.56E-01	2.23E-01
		685.20		35.70	4.37E-01		-1.13E-01	2.03E-01
		783.80		14.70	1.11E+00		8.24E-02	5.13E-01
	I-129	29.78		57.00	1.90E-01	1.90E-01	-7.36E-02	9.03E-02
		33.60		13.20	5.40E-01		-2.36E-01	2.57E-01
		39.58		7.52	6.67E-01		-1.43E-01	3.19E-01
	I-131	284.30		6.05	1.05E+00	7.63E-02	1.76E-01	5.00E-01
		364.48		81.20	7.63E-02		-1.69E-02	3.58E-02

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	I-131	636.97		7.26	1.06E+00	7.63E-02	-1.89E-01	4.91E-01
		722.89		1.80	5.28E+00		9.84E-01	2.46E+00
	TE-132	49.72		13.10	1.01E+00	1.57E-01	2.38E-01	4.83E-01
		228.16		88.00	1.57E-01		-1.13E-03	7.51E-02
	BA-133	81.00		33.00	9.63E-02	6.95E-02	9.63E-03	4.65E-02
		302.84		17.80	2.22E-01		2.82E-02	1.05E-01
		356.01		60.00	6.95E-02		-9.24E-03	3.29E-02
+	I-133	529.87	*	86.30	6.63E+00	6.63E+00	6.38E+00	3.09E+00
	XE-133	81.00		38.00	1.86E-01	1.86E-01	1.86E-02	9.00E-02
	CS-134	563.23		8.38	4.73E-01	5.73E-02	9.73E-02	2.18E-01
		569.32		15.43	3.00E-01		7.17E-02	1.40E-01
		604.70		97.60	5.73E-02		-8.66E-04	2.69E-02
		795.84		85.40	7.63E-02		6.56E-02	3.57E-02
		801.93		8.73	5.69E-01		-5.71E-01	2.60E-01
	CS-135	268.24		16.00	2.53E-01	2.53E-01	-1.32E-01	1.21E-01
	I-135	1131.51		22.50	1.24E+06	1.02E+06	3.71E+04	5.67E+05
		1260.41		28.60	1.02E+06		-5.06E+04	4.66E+05
		1678.03		9.54	2.02E+06		-4.52E+05	8.48E+05
	CS-136	153.22		7.46	7.31E-01	7.47E-02	5.20E-01	3.54E-01
		163.89		4.61	1.12E+00		3.65E-01	5.42E-01
		176.55		13.56	3.65E-01		-1.84E-01	1.76E-01
		273.65		12.66	4.42E-01		-5.76E-02	2.11E-01
		340.57		48.50	1.34E-01		-8.75E-02	6.40E-02
		818.50		99.70	7.47E-02		-3.06E-02	3.44E-02
		1048.07		79.60	1.11E-01		-1.93E-02	5.11E-02
		1235.34		19.70	6.12E-01		5.02E-02	2.85E-01
	CS-137	661.65		85.12	5.28E-02	5.28E-02	-1.00E-02	2.43E-02
	LA-138	788.74		34.00	1.83E-01	7.40E-02	1.14E-01	8.55E-02
		1435.80		66.00	7.40E-02		2.79E-02	3.20E-02
	CE-139	165.85		80.35	4.57E-02	4.57E-02	-4.08E-02	2.20E-02
	BA-140	162.64		6.70	7.94E-01	2.27E-01	4.20E-01	3.84E-01
		304.84		4.50	1.15E+00		5.51E-01	5.45E-01
		423.70		3.20	1.82E+00		9.14E-01	8.58E-01
		437.55		2.00	2.69E+00		-9.07E-01	1.26E+00
		537.32		25.00	2.27E-01		9.88E-02	1.05E-01
	LA-140	328.77		20.50	2.68E-01	9.84E-02	-1.19E-02	1.27E-01
		487.03		45.50	1.34E-01		5.01E-02	6.27E-02
		815.85		23.50	3.22E-01		-1.66E-02	1.49E-01
		1596.49		95.49	9.84E-02		3.41E-03	4.41E-02
	CE-141	145.44		48.40	8.80E-02	8.80E-02	4.26E-02	4.25E-02
	CE-143	57.36		11.80	5.96E+00	2.60E+00	-4.35E-01	2.87E+00
		293.26		42.00	2.60E+00		-1.08E+00	1.25E+00
		664.55		5.20	1.97E+01		-9.14E-01	9.14E+00
	CE-144	133.54		10.80	3.31E-01	3.31E-01	-1.28E-02	1.60E-01
	PM-144	476.78		42.00	1.01E-01	5.08E-02	2.59E-03	4.70E-02
		618.01		98.60	5.08E-02		-2.70E-02	2.37E-02
		696.49		99.49	5.79E-02		2.03E-02	2.71E-02
	PM-145	36.85		21.70	2.85E-01	1.50E-01	1.04E-01	1.36E-01
		37.36		39.70	1.50E-01		5.49E-02	7.19E-02
		42.30		15.10	2.87E-01		2.02E-02	1.37E-01
		72.40		2.31	1.45E+00		-1.87E-01	6.99E-01
	PM-146	453.90		39.94	9.94E-02	9.94E-02	6.60E-03	4.64E-02
		735.90		14.01	3.51E-01		-5.12E-02	1.61E-01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
PM-146	747.13	13.10	4.39E-01	9.94E-02	1.16E-01	2.05E-01
ND-147	91.11	28.90	2.36E-01	2.36E-01	-1.63E-01	1.15E-01
	531.02	13.10	4.95E-01		2.54E-01	2.31E-01
PM-149	285.90	3.10	8.21E+00	8.21E+00	1.80E+00	3.90E+00
EU-152	121.78	20.50	1.71E-01	1.71E-01	-1.88E-02	8.25E-02
	244.69	5.40	7.13E-01		-1.32E+00	3.41E-01
	344.27	19.13	2.03E-01		-6.74E-02	9.61E-02
	778.89	9.20	5.76E-01		2.15E-01	2.66E-01
	964.01	10.40	6.35E-01		-1.78E+00	2.94E-01
	1085.78	7.22	1.01E+00		1.71E-01	4.67E-01
	1112.02	9.60	7.10E-01		1.21E-01	3.26E-01
	1407.95	14.94	3.23E-01		-2.41E-02	1.40E-01
GD-153	97.43	31.30	1.17E-01	1.17E-01	-2.64E-02	5.66E-02
	103.18	22.20	1.59E-01		-4.41E-03	7.68E-02
EU-154	123.07	40.50	8.66E-02	8.66E-02	4.96E-03	4.19E-02
	723.30	19.70	2.86E-01		5.34E-02	1.33E-01
	873.19	11.50	4.50E-01		1.13E-01	2.06E-01
	996.32	10.30	6.24E-01		2.27E-01	2.88E-01
	1004.76	17.90	3.40E-01		-7.02E-02	1.56E-01
	1274.45	35.50	1.54E-01		-5.97E-02	6.86E-02
EU-155	86.50	30.90	1.46E-01	1.46E-01	-9.88E-02	7.12E-02
	105.30	20.70	1.71E-01		7.87E-02	8.27E-02
EU-156	811.77	10.40	6.68E-01	6.68E-01	1.37E-01	3.07E-01
	1153.47	7.20	1.32E+00		-4.51E-01	6.10E-01
	1230.71	8.90	1.25E+00		2.85E-01	5.80E-01
HO-166M	184.41	72.60	6.19E-02	6.19E-02	2.15E-02	3.00E-02
	280.45	29.60	1.29E-01		-2.87E-02	6.16E-02
	410.94	11.10	3.57E-01		-4.30E-02	1.68E-01
	711.69	54.10	9.81E-02		3.01E-02	4.56E-02
TM-171	66.72	0.14	2.40E+01	2.40E+01	1.07E+00	1.16E+01
HF-172	81.75	4.52	7.08E-01	3.19E-01	-1.58E-01	3.42E-01
	125.81	11.30	3.19E-01		6.51E-02	1.54E-01
LU-172	181.53	20.60	3.52E-01	1.93E-01	5.91E-02	1.70E-01
	810.06	16.63	5.92E-01		-7.65E-02	2.72E-01
	912.12	15.25	1.30E+00		2.74E+00	6.20E-01
	1093.66	62.50	1.93E-01		-7.53E-02	8.84E-02
LU-173	100.72	5.24	6.91E-01	2.09E-01	-2.22E-02	3.35E-01
	272.11	21.20	2.09E-01		4.67E-02	1.00E-01
HF-175	343.40	84.00	4.86E-02	4.86E-02	-2.28E-02	2.29E-02
LU-176	88.34	13.30	3.53E-01	3.77E-02	5.23E-01	1.72E-01
	201.83	86.00	4.74E-02		1.46E-02	2.28E-02
	306.78	94.00	3.77E-02		6.18E-03	1.78E-02
TA-182	67.75	41.20	8.21E-02	8.21E-02	-2.34E-02	3.96E-02
	1121.30	34.90	2.91E-01		3.86E-01	1.38E-01
	1189.05	16.23	4.77E-01		-8.92E-02	2.20E-01
	1221.41	26.98	3.12E-01		-1.04E-01	1.45E-01
	1231.02	11.44	7.57E-01		1.20E-01	3.52E-01
IR-192	308.46	29.68	1.21E-01	9.05E-02	-2.77E-02	5.67E-02
	468.07	48.10	9.05E-02		-1.11E-03	4.23E-02
HG-203	279.19	77.30	5.62E-02	5.62E-02	-5.44E-03	2.68E-02
BI-207	569.67	97.72	4.71E-02	4.71E-02	1.13E-02	2.20E-02
	1063.62	74.90	8.41E-02		1.99E-02	3.85E-02
+ TL-208	583.14 *	30.22	2.14E-01	9.09E-02	7.05E-01	1.02E-01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TL-208	860.37	*	4.48	1.60E+00	9.09E-02	1.64E+00	7.50E-01
		2614.66	*	35.85	9.09E-02		5.95E-01	3.39E-02
	BI-210M	262.00		45.00	7.88E-02	7.88E-02	-3.04E-02	3.75E-02
		300.00		23.00	1.90E-01		1.05E-01	9.06E-02
	PB-210	46.50		4.25	1.04E+00	1.04E+00	9.41E-01	5.03E-01
	PB-211	404.84		2.90	1.34E+00	1.34E+00	-2.09E-01	6.31E-01
		831.96		2.90	1.93E+00		-6.13E-01	8.89E-01
+	BI-212	727.17	*	11.80	6.15E-01	6.15E-01	5.32E-01	2.91E-01
		1620.62		2.75	1.92E+00		-6.69E-01	8.32E-01
+	PB-212	238.63	*	44.60	1.80E-01	1.80E-01	8.32E-01	8.80E-02
		300.09	*	3.41	2.33E+00		1.01E+00	1.14E+00
+	BI-214	609.31	*	46.30	1.38E-01	1.38E-01	4.97E-01	6.56E-02
		1120.29	*	15.10	5.19E-01		7.58E-01	2.41E-01
		1764.49	*	15.80	3.66E-01		7.22E-01	1.59E-01
		2204.22	*	4.98	1.64E-01		9.68E-01	0.00E+00
+	PB-214	295.21	*	19.19	4.14E-01	1.54E-01	6.01E-01	2.02E-01
		351.92	*	37.19	1.54E-01		6.54E-01	7.42E-02
	RN-219	401.80		6.50	5.78E-01	5.78E-01	4.94E-02	2.71E-01
	RA-223	323.87		3.88	1.01E+00	1.01E+00	-3.64E-01	4.79E-01
	RA-224	240.98		3.95	2.02E+00	2.02E+00	6.73E+00	9.87E-01
	RA-225	40.00		31.00	2.10E-01	2.10E-01	-4.51E-02	1.00E-01
+	RA-226	186.21	*	3.28	1.73E+00	1.73E+00	1.91E+00	8.44E-01
	TH-227	50.10		8.40	4.28E-01	4.28E-01	1.01E-01	2.05E-01
		236.00		11.50	4.82E-01		-3.68E+00	2.34E-01
		256.20		6.30	6.13E-01		1.67E-01	2.93E-01
+	AC-228	338.32	*	11.40	5.96E-01	2.25E-01	8.76E-01	2.89E-01
		911.07	*	27.70	2.25E-01		8.39E-01	1.04E-01
		969.11	*	16.60	7.10E-01		8.35E-01	3.40E-01
	TH-230	48.44		16.90	2.20E-01	2.20E-01	-2.39E-01	1.05E-01
		62.85		4.60	8.17E-01		5.36E-01	3.96E-01
		67.67		0.37	8.81E+00		-2.51E+00	4.25E+00
	PA-231	283.67		1.60	2.35E+00	1.71E+00	3.94E-01	1.12E+00
		302.67		2.30	1.71E+00		2.18E-01	8.14E-01
	TH-231	25.64		14.70	1.52E+00	5.06E-01	-6.04E-01	7.25E-01
		84.21		6.40	5.06E-01		2.25E-01	2.45E-01
+	PA-233	311.98	*	38.60	1.94E-01	1.94E-01	1.10E-01	9.42E-02
	PA-234	131.20		20.40	1.85E-01	1.85E-01	1.22E-02	8.94E-02
		733.99		8.80	6.38E-01		3.99E-01	2.97E-01
		946.00		12.00	4.26E-01		-1.08E-01	1.93E-01
	PA-234M	1001.03		0.92	7.07E+00	7.07E+00	2.10E+00	3.26E+00
+	TH-234	63.29	*	3.80	1.87E+00	1.87E+00	1.01E+00	9.18E-01
	U-235	143.76		10.50	3.58E-01	3.58E-01	1.28E-01	1.73E-01
		163.35		4.70	8.17E-01		4.31E-01	3.94E-01
		205.31		4.70	8.51E-01		8.24E-02	4.09E-01
	NP-237	86.50		12.60	3.57E-01	3.57E-01	-2.42E-01	1.74E-01
	NP-239	106.10		22.70	9.33E-01	9.33E-01	1.32E-01	4.52E-01
		228.18		10.70	2.12E+00		-1.53E-02	1.01E+00
		277.60		14.10	1.71E+00		1.51E-01	8.14E-01
	AM-241	59.54		35.90	9.29E-02	9.29E-02	-4.74E-02	4.47E-02
	AM-243	74.67		66.00	6.71E-02	6.71E-02	-1.74E-01	3.27E-02
	CM-243	209.75		3.29	1.34E+00	2.88E-01	1.19E+00	6.48E-01
		228.14		10.60	3.58E-01		-2.59E-03	1.71E-01
		277.60		14.00	2.88E-01		2.55E-02	1.37E-01

Analysis Report for 1606093-04

J1V928 SAF: RC-148

+ = 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: J1V928 SAF: RC-148

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	46	646
9:	1041	725	327	208	2098	162	122	130
17:	117	93	121	80	44	57	50	57
25:	53	64	42	63	43	48	42	46
33:	34	55	42	55	58	54	51	54
41:	50	57	45	47	49	47	117	62
49:	56	60	66	52	72	73	65	60
57:	66	81	74	79	73	91	118	105
65:	93	93	92	79	84	92	92	83
73:	108	101	308	108	347	208	98	86
81:	100	83	88	101	94	82	151	157
89:	74	145	82	98	199	117	83	60
97:	59	62	87	79	66	58	53	73
105:	65	68	65	56	69	58	63	57
113:	88	62	72	58	88	46	59	62
121:	55	63	50	62	61	54	56	67
129:	90	67	55	62	47	61	47	58
137:	49	57	62	65	60	54	55	60
145:	73	52	48	47	43	50	50	70
153:	66	62	59	49	55	63	47	51
161:	54	54	70	42	49	42	42	51
169:	50	47	42	45	57	59	39	43
177:	39	58	36	44	48	41	56	53
185:	54	119	69	48	40	37	50	48
193:	45	47	46	42	39	58	42	56
201:	46	42	46	46	43	43	44	49
209:	65	59	43	49	36	36	42	46
217:	41	34	36	48	36	43	47	42
225:	33	32	24	37	41	39	36	41
233:	36	35	37	54	41	196	455	53
241:	85	104	45	30	28	30	29	28
249:	25	30	28	25	25	31	21	35
257:	35	31	29	26	27	24	29	18
265:	29	26	18	35	31	48	46	33
273:	29	27	35	31	40	25	23	30
281:	25	29	21	28	22	25	22	29
289:	24	26	26	20	31	31	118	85
297:	27	26	21	54	32	24	23	18
305:	28	18	23	11	18	18	29	29
313:	25	23	29	21	25	23	23	23
321:	31	22	23	24	23	20	23	39
329:	17	15	17	24	17	15	16	18
337:	21	94	61	20	20	21	31	12
345:	14	22	15	13	18	26	72	223
353:	55	21	23	20	21	25	25	15
361:	17	11	22	14	20	14	19	15

369:	13	23	19	25	13	16	13	15

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Channel								
377:	17	13	16	17	18	15	15	12
385:	17	23	21	12	20	27	13	19
393:	20	13	19	23	6	25	20	13
401:	17	14	18	11	14	20	15	19
409:	18	25	6	13	17	23	14	18
417:	13	16	16	7	11	19	18	16
425:	18	14	17	12	8	14	13	18
433:	12	14	18	8	13	18	11	22
441:	15	14	12	10	15	8	14	16
449:	7	11	8	16	21	11	9	10
457:	15	14	12	19	20	19	41	18
465:	17	10	13	13	17	16	13	9
473:	7	17	18	9	20	11	11	11
481:	18	16	11	8	17	13	13	15
489:	16	15	11	11	10	9	13	11
497:	17	14	13	10	8	9	12	6
505:	4	10	15	11	21	42	73	25
513:	17	15	11	5	10	8	9	12
521:	12	13	12	12	17	11	7	14
529:	16	13	15	14	7	3	13	14
537:	10	7	10	7	11	16	5	10
545:	6	8	13	7	9	3	9	10
553:	5	11	13	5	14	3	9	6
561:	7	11	12	3	13	10	6	13
569:	11	19	14	6	14	9	6	8
577:	10	6	6	9	10	26	125	54
585:	9	10	10	11	8	4	8	11
593:	11	5	7	11	8	11	14	11
601:	11	5	9	15	7	11	12	26
609:	115	83	10	3	11	6	9	15
617:	8	7	8	12	5	16	13	10
625:	8	11	10	14	9	13	11	10
633:	7	9	11	2	10	5	8	6
641:	8	8	11	7	10	8	9	7
649:	6	11	12	10	7	12	9	9
657:	6	5	8	5	9	4	5	10
665:	9	8	8	15	10	12	8	6
673:	7	4	10	3	10	13	7	9
681:	11	9	7	8	9	6	9	12
689:	10	10	7	11	5	8	15	10
697:	10	15	7	10	4	9	9	11
705:	15	9	7	11	5	6	7	11
713:	9	9	4	7	12	6	3	12
721:	10	7	5	4	11	15	24	19
729:	5	7	9	17	9	7	11	3
737:	6	3	7	7	7	4	11	6
745:	6	10	9	16	10	6	10	5
753:	4	9	3	7	8	11	6	6
761:	7	6	5	4	16	6	12	14
769:	14	8	7	10	12	7	2	8
777:	8	9	7	8	2	7	4	7
785:	7	16	9	2	11	15	8	7
793:	6	11	17	11	10	7	11	5

801:	2	4	7	5	6	12	11	7

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Channel								
809:	7	3	4	6	7	11	6	5
817:	7	5	7	6	11	9	8	6
825:	4	4	9	5	8	9	8	9
833:	7	5	3	13	6	8	11	11
841:	7	0	10	2	6	5	9	13
849:	5	8	6	4	5	4	3	3
857:	9	6	6	24	18	10	8	3
865:	8	4	10	6	4	6	7	8
873:	5	9	1	2	7	6	11	0
881:	4	5	2	3	9	4	8	2
889:	4	7	6	5	9	8	9	7
897:	4	10	8	2	7	4	5	5
905:	9	2	4	4	8	23	66	48
913:	4	8	4	4	5	5	6	3
921:	5	9	6	5	3	6	3	9
929:	8	7	8	6	10	7	4	7
937:	0	7	3	6	1	4	8	2
945:	3	4	4	5	6	5	11	5
953:	6	5	5	7	3	4	10	8
961:	3	5	6	9	15	8	8	36
969:	37	20	5	5	2	2	7	6
977:	12	7	4	3	4	2	5	4
985:	6	7	5	6	4	5	3	5
993:	7	6	5	7	4	6	13	4
1001:	8	8	3	7	6	5	5	9
1009:	3	9	3	11	5	3	7	5
1017:	6	4	4	5	8	6	5	5
1025:	6	8	5	2	7	7	10	6
1033:	4	6	7	6	7	6	7	3
1041:	6	5	8	7	11	4	4	7
1049:	3	5	10	8	5	7	3	5
1057:	3	4	5	4	8	4	4	4
1065:	7	10	6	4	11	5	4	10
1073:	5	1	5	2	5	10	9	3
1081:	3	4	10	10	9	10	7	4
1089:	13	6	6	3	5	9	7	5
1097:	8	6	3	6	10	7	5	6
1105:	4	5	10	3	8	6	10	2
1113:	5	9	5	3	7	8	9	40
1121:	20	8	2	10	3	6	9	8
1129:	3	4	7	8	6	3	5	3
1137:	10	6	2	5	9	2	12	10
1145:	7	3	4	12	9	7	5	2
1153:	5	6	13	10	6	7	11	8
1161:	5	3	4	6	6	10	10	4
1169:	8	4	8	8	6	5	8	10
1177:	2	6	4	5	8	12	5	8
1185:	5	10	4	5	7	10	8	5
1193:	13	5	4	3	8	5	5	8
1201:	9	2	2	5	3	9	6	9
1209:	10	5	7	10	8	9	5	14
1217:	14	7	10	10	3	8	7	11
1225:	8	5	6	10	6	9	13	3

1233:	13	5	11	7	6	20	8	5

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Channel								
1241:	6	9	9	11	6	9	4	10
1249:	7	8	5	2	8	5	6	2
1257:	5	3	3	7	9	5	4	8
1265:	5	6	2	7	1	8	3	2
1273:	3	6	3	2	3	6	3	4
1281:	6	5	2	3	0	4	4	4
1289:	7	4	2	4	3	5	6	1
1297:	1	3	5	1	5	1	3	4
1305:	8	6	3	4	5	2	1	2
1313:	2	5	3	2	1	7	6	2
1321:	5	5	4	4	5	5	4	3
1329:	4	1	2	1	5	5	3	6
1337:	3	5	2	6	4	1	4	3
1345:	6	2	1	5	2	3	1	3
1353:	4	4	3	4	4	7	4	1
1361:	2	3	3	1	2	2	3	1
1369:	2	2	1	3	2	2	2	2
1377:	8	3	3	1	0	2	0	1
1385:	5	1	2	5	0	0	2	3
1393:	6	2	2	4	2	1	1	2
1401:	8	2	3	1	1	3	1	8
1409:	0	0	1	3	2	2	2	2
1417:	4	2	2	3	1	2	0	1
1425:	1	2	1	3	2	1	2	0
1433:	4	4	0	3	1	2	0	1
1441:	3	0	2	2	3	4	4	1
1449:	7	2	3	2	2	1	1	3
1457:	0	6	51	222	277	95	10	2
1465:	2	4	2	0	3	1	0	2
1473:	3	1	1	1	2	2	2	0
1481:	4	3	2	3	2	1	0	1
1489:	3	1	1	0	2	7	2	1
1497:	1	3	2	1	3	1	2	2
1505:	0	1	1	2	3	4	2	2
1513:	3	0	2	1	2	2	0	0
1521:	3	1	2	0	2	1	0	0
1529:	2	1	1	2	0	1	2	0
1537:	4	3	1	2	0	0	2	0
1545:	2	3	1	1	4	2	1	1
1553:	0	0	3	3	1	0	0	0
1561:	2	2	4	0	1	1	1	4
1569:	2	2	1	0	1	1	2	2
1577:	3	2	1	2	1	1	1	1
1585:	1	0	6	3	3	1	5	4
1593:	10	2	4	0	1	2	1	1
1601:	1	0	0	1	1	0	1	2
1609:	2	1	0	3	0	1	2	1
1617:	2	0	3	1	3	2	2	0
1625:	4	2	2	2	0	1	5	2
1633:	0	0	1	0	2	0	2	2
1641:	0	0	1	1	3	1	2	0
1649:	0	2	1	2	0	0	2	2
1657:	1	2	2	0	2	3	0	2

1665:	1	3	1	0	0	0	1	0

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Channel								
1673:	0	0	1	1	3	0	2	1
1681:	1	3	2	2	2	3	2	0
1689:	1	2	0	1	0	1	1	2
1697:	1	3	2	0	2	1	1	1
1705:	0	0	2	0	2	1	1	1
1713:	1	0	1	3	2	0	0	3
1721:	0	1	4	0	0	3	2	0
1729:	5	4	1	1	1	0	0	1
1737:	1	1	2	2	1	1	1	2
1745:	1	0	0	0	0	0	0	1
1753:	2	1	2	1	0	1	1	0
1761:	1	2	8	21	13	5	0	2
1769:	2	1	0	1	0	0	0	2
1777:	1	0	1	0	0	0	0	2
1785:	1	2	0	1	0	0	1	0
1793:	3	1	1	0	1	1	1	0
1801:	0	1	0	5	0	0	0	1
1809:	0	0	0	0	0	0	0	0
1817:	1	1	1	1	2	1	0	1
1825:	2	2	1	0	3	0	0	1
1833:	1	1	0	0	4	1	1	0
1841:	0	1	1	0	1	1	4	2
1849:	0	0	0	0	2	1	0	1
1857:	1	0	0	1	0	1	0	1
1865:	0	1	2	2	1	0	1	1
1873:	3	2	0	2	2	2	2	1
1881:	2	0	0	1	1	0	1	1
1889:	0	3	2	1	0	0	2	3
1897:	2	4	1	0	3	1	0	1
1905:	2	1	2	0	1	1	1	1
1913:	1	0	1	1	0	0	1	1
1921:	0	0	0	1	0	2	0	1
1929:	1	3	1	0	3	1	1	0
1937:	0	1	4	0	1	1	1	1
1945:	1	0	2	1	0	0	0	2
1953:	1	1	1	2	0	0	1	0
1961:	3	2	0	0	0	1	0	1
1969:	0	1	1	1	0	2	1	0
1977:	0	0	0	4	0	1	1	1
1985:	0	0	2	2	1	0	2	1
1993:	0	0	1	0	0	3	0	0
2001:	1	1	2	0	0	1	1	1
2009:	0	2	0	0	2	0	1	2
2017:	1	1	1	2	1	1	1	0
2025:	0	2	1	0	1	1	1	0
2033:	0	1	1	1	3	0	3	0
2041:	0	0	1	0	0	1	3	1
2049:	0	0	1	0	2	2	0	0
2057:	0	1	1	1	0	0	0	0
2065:	0	0	2	2	1	0	1	0
2073:	0	0	0	1	1	1	1	0
2081:	1	1	0	0	0	0	1	1
2089:	1	0	2	2	2	1	1	1

2097:	0	1	1	0	1	1	1	0

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Channel								
2105:	4	1	0	2	0	0	0	1
2113:	0	1	2	0	1	1	4	1
2121:	1	0	1	1	0	0	0	1
2129:	2	2	1	0	1	2	3	0
2137:	1	2	0	0	2	2	1	0
2145:	3	1	1	1	1	0	1	0
2153:	1	2	1	0	3	0	0	0
2161:	1	1	0	0	1	0	0	1
2169:	1	1	1	1	1	0	2	0
2177:	1	0	1	2	0	0	0	0
2185:	1	0	0	2	2	0	0	1
2193:	1	0	2	0	0	0	1	0
2201:	1	3	6	1	1	2	1	0
2209:	0	0	0	0	1	1	2	0
2217:	1	1	1	3	1	1	0	0
2225:	1	2	3	0	0	0	0	0
2233:	3	0	1	1	0	0	1	0
2241:	1	0	3	1	0	0	0	0
2249:	3	2	0	1	0	2	0	0
2257:	0	0	0	0	0	0	2	2
2265:	0	0	2	1	1	0	1	0
2273:	0	1	0	1	1	0	1	1
2281:	0	0	2	0	1	1	1	0
2289:	0	0	0	1	3	0	1	1
2297:	0	0	0	0	2	0	2	1
2305:	0	0	0	0	0	1	1	0
2313:	0	0	0	0	1	0	0	1
2321:	1	1	1	3	0	0	0	1
2329:	3	1	1	0	3	1	1	0
2337:	2	1	0	0	1	0	1	1
2345:	1	0	1	2	2	3	1	0
2353:	0	0	1	1	2	1	2	1
2361:	2	0	0	0	0	0	0	0
2369:	1	0	2	1	0	0	1	1
2377:	1	0	0	1	1	0	1	0
2385:	0	0	0	0	0	0	0	1
2393:	0	0	1	1	0	0	0	0
2401:	1	0	0	2	1	1	2	0
2409:	0	0	3	2	0	0	0	0
2417:	0	1	0	0	1	0	1	2
2425:	1	2	0	2	1	0	1	0
2433:	0	0	0	0	0	0	1	1
2441:	2	1	0	1	0	1	1	2
2449:	1	0	2	0	1	0	1	2
2457:	0	0	0	0	0	1	0	1
2465:	0	0	1	1	0	1	0	0
2473:	1	0	2	1	0	1	0	0
2481:	1	0	0	1	0	0	0	0
2489:	0	0	0	0	0	0	0	0
2497:	0	1	0	1	0	0	0	0
2505:	2	1	4	0	1	0	0	0
2513:	0	0	0	0	0	0	0	0
2521:	0	0	0	0	0	1	0	1

2529:	0	0	0	1	0	1	0	0

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Channel								
2537:	0	0	1	0	0	0	0	0
2545:	0	0	1	0	0	0	0	0
2553:	0	0	0	0	0	0	0	0
2561:	0	1	1	0	0	1	0	0
2569:	0	0	3	0	0	1	0	0
2577:	0	0	1	0	1	0	1	0
2585:	1	0	0	0	1	0	0	0
2593:	0	0	0	0	0	0	1	0
2601:	0	1	2	1	0	1	0	1
2609:	0	0	4	5	18	21	18	7
2617:	2	0	0	0	0	0	0	0
2625:	0	0	0	0	1	0	0	0
2633:	0	0	1	2	1	0	0	0
2641:	0	1	0	0	0	0	0	1
2649:	0	0	0	0	1	0	1	0
2657:	1	1	0	0	1	1	0	1
2665:	0	0	0	0	0	0	0	0
2673:	0	0	1	0	0	1	0	0
2681:	0	0	0	0	1	0	0	0
2689:	2	1	1	0	0	1	0	0
2697:	0	1	0	0	0	0	1	0
2705:	0	0	1	0	0	0	1	1
2713:	0	1	0	0	0	0	0	0
2721:	1	0	2	0	0	0	0	0
2729:	0	1	0	1	0	1	0	0
2737:	0	1	1	0	0	1	0	0
2745:	0	0	0	0	0	0	1	0
2753:	1	0	0	0	0	0	0	0
2761:	0	0	0	2	0	0	1	0
2769:	0	0	0	0	0	0	3	0
2777:	0	0	0	0	0	2	0	0
2785:	0	0	0	0	1	0	0	0
2793:	0	0	1	0	0	0	1	1
2801:	0	0	1	0	0	0	1	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	2	0	0
2825:	0	0	0	0	0	0	0	1
2833:	1	1	0	0	0	0	1	0
2841:	1	0	0	0	0	1	0	0
2849:	1	0	0	0	0	1	1	1
2857:	0	0	0	0	0	0	0	1
2865:	0	0	0	0	0	0	1	0
2873:	1	1	0	0	1	0	1	0
2881:	0	0	0	0	0	0	0	0
2889:	0	1	0	0	0	1	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	1	0	0	0	0	1	0
2929:	0	0	0	1	1	0	0	0
2937:	0	0	0	0	0	1	0	0
2945:	1	1	0	0	0	0	1	0
2953:	0	0	0	1	1	0	1	0

2961:	0	1	0	0	0	0	0	0

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Channel								
2969:	1	0	0	0	1	0	0	0
2977:	0	0	0	1	0	1	0	0
2985:	0	0	0	0	1	0	0	0
2993:	0	0	2	1	1	0	0	0
3001:	0	0	0	0	0	0	0	1
3009:	0	0	0	0	0	0	0	0
3017:	0	0	0	0	2	0	0	1
3025:	0	0	0	0	0	0	1	1
3033:	1	0	0	1	0	0	0	0
3041:	0	0	0	0	0	0	1	1
3049:	0	0	0	0	0	0	0	0
3057:	0	0	0	0	1	0	0	0
3065:	0	0	0	0	0	1	0	0
3073:	0	0	0	2	0	0	0	0
3081:	0	0	0	1	1	0	0	0
3089:	0	0	0	0	0	0	0	0
3097:	0	0	2	0	0	1	0	0
3105:	0	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:	1	1	0	1	0	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	0	0	0	0	0	0	0	0
3153:	0	0	0	0	0	0	0	1
3161:	0	1	0	0	0	0	0	0
3169:	0	0	0	0	0	1	0	0
3177:	0	0	0	0	0	1	1	0
3185:	0	1	1	0	0	1	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	0	0	0	0	0	0	1
3209:	0	0	0	0	1	0	0	0
3217:	0	1	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	0	2	0	1
3241:	0	0	0	0	1	1	0	0
3249:	0	1	0	0	0	0	0	0
3257:	0	0	0	0	0	0	0	0
3265:	0	0	0	0	1	0	0	0
3273:	0	0	1	0	0	0	0	0
3281:	0	2	0	0	0	0	1	0
3289:	0	1	2	1	1	1	0	0
3297:	0	1	1	0	1	0	0	0
3305:	0	0	2	1	0	0	0	0
3313:	1	0	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	1
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	0	1	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	0	0	0
3369:	0	0	0	0	0	0	1	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	1	0	0	0

3393:	0	0	2	0	0	0	1	0

Sample Title: J1V928 SAF: RC-148

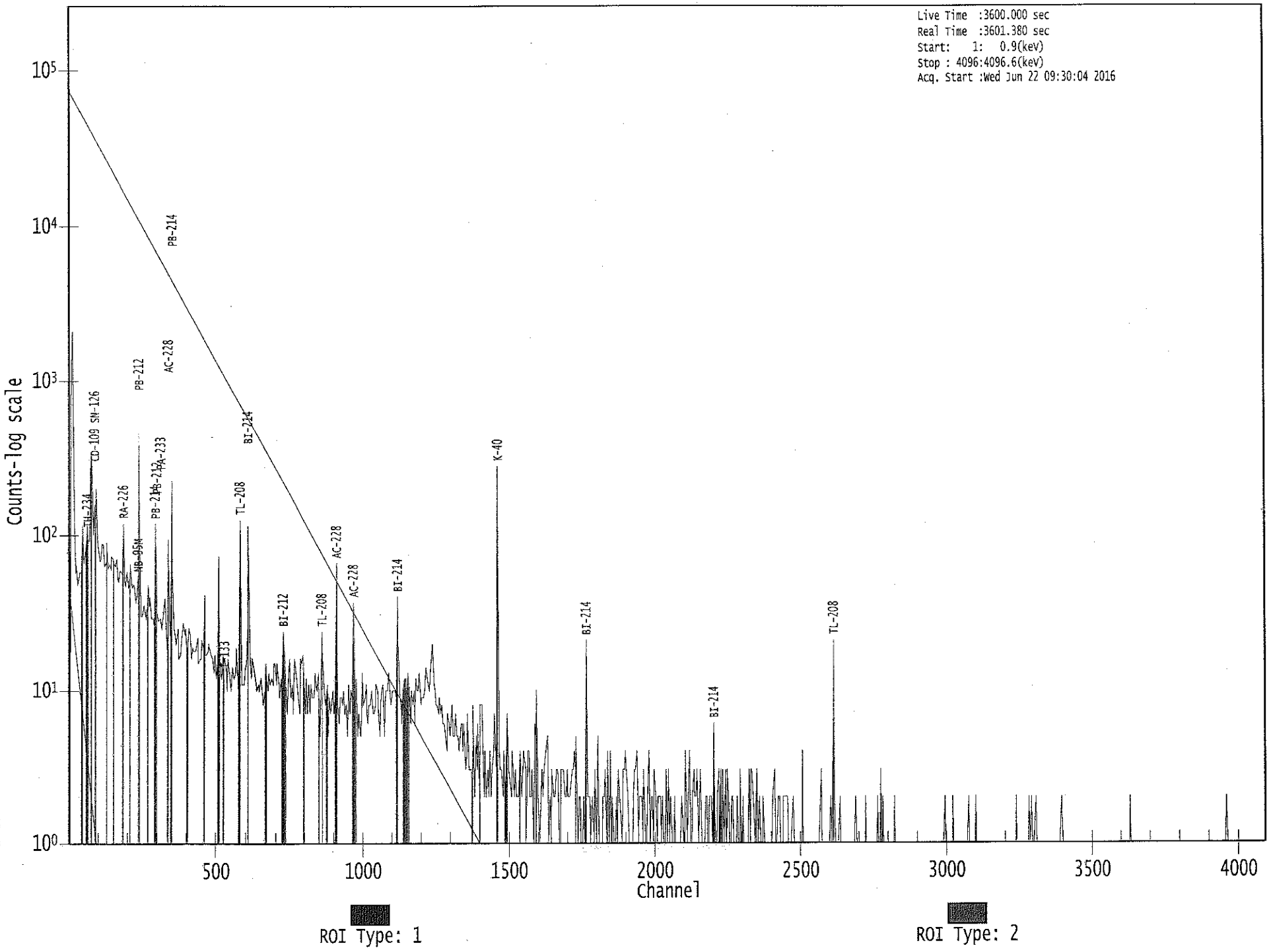
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	1	0	0
3417:	0	0	0	0	0	0	0	1
3425:	0	0	0	1	0	0	0	0
3433:	0	0	1	0	0	0	0	0
3441:	1	0	0	1	0	0	0	0
3449:	0	1	0	0	0	0	0	0
3457:	1	0	0	0	0	0	0	0
3465:	0	0	1	1	1	0	1	0
3473:	0	0	1	0	0	0	0	0
3481:	0	0	0	0	0	1	0	0
3489:	0	0	0	0	0	0	1	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	1	0	0	1	0	0
3521:	1	0	1	0	0	0	0	0
3529:	0	0	1	0	0	0	0	0
3537:	0	1	0	0	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	1	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	1	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	1	0	1	1	0	0
3625:	0	0	0	0	0	0	2	0
3633:	0	0	0	0	0	1	0	0
3641:	0	0	0	0	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	1	0	0	1	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	1	0	0	0	0	0	0
3689:	1	0	0	0	0	0	0	1
3697:	0	0	1	0	0	0	0	0
3705:	0	0	0	0	0	1	0	0
3713:	0	0	0	0	0	1	1	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	1	0	0	0	1
3737:	0	0	0	0	1	0	0	0
3745:	0	0	0	1	0	0	1	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	0	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	0
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:	0	0	0	1	0	0	0	0

3825:	0	0	0	0	0	0	0	0

Sample Title: J1V928 SAF: RC-148

Channel								
3833:	0	0	1	0	1	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	1	0	0	0	0	0	0
3857:	0	0	0	1	0	1	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	1	1	0	0	0
3889:	0	0	0	1	0	0	1	0
3897:	0	0	0	0	0	0	1	0
3905:	0	0	0	0	0	1	0	0
3913:	0	0	0	0	0	0	0	1
3921:	1	0	0	0	0	1	0	0
3929:	0	0	0	0	1	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	1	1	0	0	0
3953:	0	0	1	0	0	0	2	0
3961:	0	1	0	1	1	0	0	0
3969:	0	0	0	0	0	1	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	1	0	0	1	0	0	0
4001:	0	0	0	0	1	0	0	0
4009:	0	0	1	0	0	0	0	1
4017:	0	0	0	0	0	0	0	0
4025:	0	1	0	0	0	0	0	1
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	1	0	0
4057:	0	0	0	0	0	0	0	1
4065:	1	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	1	0
4081:	0	0	0	0	1	1	0	1
4089:	0	0	0	0	2	0	1	0

0000039245.CNF



KB 6/22/16

Apex-Gamma

Analysis Report for 1606093-05

J1V929 SAF: RC-148

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1606093-05
Sample Description	: J1V929 SAF: RC-148
Sample Type	: SOIL
Sample Size	: 8.338E+02 grams
Facility	: Countroom
Sample Taken On	: 6/16/2016 8:18:17AM
Acquisition Started	: 6/22/2016 8:28:41AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3612.8 seconds
Dead Time	: 0.35 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 10/25/2014
Efficiency Calibration Used Done On	: 10/25/2014
Efficiency Calibration Description	:
Sample Number	: 39243

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 6/22/16

Analysis Report for 1606093-05

J1V929 SAF: RC-148

PEAK LOCATE REPORT

Peak Locate Performed on : 6/22/2016 9:28:55AM
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	76.21	76.43	0.0000	0.00
2	88.02	88.23	0.0000	0.00
3	185.57	185.73	0.0000	0.00
4	235.42	235.55	0.0000	0.00
5	239.01	239.14	0.0000	0.00
6	241.76	241.88	0.0000	0.00
7	270.95	271.06	0.0000	0.00
8	277.40	277.51	0.0000	0.00
9	295.30	295.40	0.0000	0.00
10	326.77	326.85	0.0000	0.00
11	338.53	338.61	0.0000	0.00
12	352.13	352.20	0.0000	0.00
13	511.07	511.06	0.0000	0.00
14	583.58	583.53	0.0000	0.00
15	609.35	609.30	0.0000	0.00
16	727.43	727.32	0.0000	0.00
17	747.16	747.04	0.0000	0.00
18	770.11	769.97	0.0000	0.00
19	795.72	795.58	0.0000	0.00
20	863.31	863.13	0.0000	0.00
21	911.62	911.42	0.0000	0.00
22	933.65	933.44	0.0000	0.00
23	968.97	968.75	0.0000	0.00
24	1026.47	1026.22	0.0000	0.00
25	1065.74	1065.48	0.0000	0.00
26	1071.26	1071.00	0.0000	0.00
27	1120.18	1119.89	0.0000	0.00
28	1238.38	1238.05	0.0000	0.00
29	1377.22	1376.83	0.0000	0.00
30	1460.82	1460.40	0.0000	0.00
31	1488.61	1488.18	0.0000	0.00
32	1515.96	1515.52	0.0000	0.00
33	1523.67	1523.22	0.0000	0.00
34	1548.68	1548.22	0.0000	0.00
35	1592.34	1591.87	0.0000	0.00
36	1730.55	1730.03	0.0000	0.00
37	1764.76	1764.23	0.0000	0.00
38	1785.91	1785.38	0.0000	0.00
39	1847.71	1847.15	0.0000	0.00
40	1929.79	1929.20	0.0000	0.00
41	1986.92	1986.32	0.0000	0.00
42	2013.06	2012.44	0.0000	0.00

Analysis Report for 1606093-05

J1V929 SAF: RC-148

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	2081.51	2080.88	0.0000	0.00
44	2205.14	2204.47	0.0000	0.00
45	2614.75	2613.97	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1606093-05

J1V929 SAF: RC-148

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/22/2016 9:28:55AM

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	76.21	71 -	83	76.43	6.34E+02	140.15	2.00E+03	4.04
M	2	88.02	83 -	97	88.23	1.43E+02	70.85	8.10E+02	1.85
	3	185.57	181 -	190	185.73	1.20E+02	78.00	8.03E+02	1.52
M	4	235.42	234 -	245	235.55	5.40E+01	33.35	2.41E+02	1.93
m	5	239.01	234 -	245	239.14	4.60E+02	56.54	2.84E+02	1.70
m	6	241.76	234 -	245	241.88	1.06E+02	66.19	3.85E+02	2.29
	7	270.95	267 -	275	271.06	4.80E+01	55.07	4.38E+02	4.02
	8	277.40	275 -	281	277.51	3.60E+01	42.78	3.04E+02	1.61
	9	295.30	291 -	299	295.40	1.12E+02	59.42	4.78E+02	1.79
	10	326.77	322 -	332	326.85	7.27E+01	54.18	3.55E+02	3.86
	11	338.53	335 -	342	338.61	8.91E+01	44.54	2.70E+02	1.34
	12	352.13	347 -	356	352.20	2.37E+02	53.93	2.80E+02	1.58
	13	511.07	505 -	517	511.06	1.26E+02	50.47	2.40E+02	2.26
	14	583.58	580 -	586	583.53	9.73E+01	32.19	1.15E+02	2.15
	15	609.35	603 -	614	609.30	1.99E+02	44.68	1.50E+02	2.05
	16	727.43	724 -	730	727.32	4.20E+01	22.19	5.81E+01	2.20
	17	747.16	744 -	751	747.04	2.32E+01	22.45	6.96E+01	1.86
	18	770.11	766 -	775	769.97	5.74E+01	26.94	7.32E+01	2.15
	19	795.72	790 -	800	795.58	3.64E+01	29.09	9.31E+01	5.36
	20	863.31	857 -	869	863.13	5.15E+01	31.30	9.10E+01	7.58
	21	911.62	907 -	916	911.42	1.00E+02	32.48	8.94E+01	2.04
	22	933.65	929 -	937	933.44	1.74E+01	22.44	6.52E+01	5.50
	23	968.97	965 -	971	968.75	4.42E+01	24.85	7.96E+01	1.77
	24	1026.47	1024 -	1029	1026.22	9.50E+00	12.65	2.50E+01	2.55
M	25	1065.74	1062 -	1076	1065.48	1.73E+01	17.04	3.50E+01	2.99
m	26	1071.26	1062 -	1076	1071.00	1.31E+01	16.69	3.50E+01	2.25
	27	1120.18	1116 -	1124	1119.89	3.46E+01	26.40	8.68E+01	1.57
	28	1238.38	1234 -	1241	1238.05	2.45E+01	24.00	7.90E+01	1.95
	29	1377.22	1373 -	1379	1376.83	1.49E+01	13.92	2.42E+01	1.18
	30	1460.82	1453 -	1464	1460.40	4.41E+02	45.25	3.33E+01	2.27
	31	1488.61	1485 -	1491	1488.18	1.10E+01	6.63	0.00E+00	4.44
	32	1515.96	1512 -	1518	1515.52	8.83E+00	8.51	6.33E+00	3.82
	33	1523.67	1520 -	1526	1523.22	5.44E+00	7.78	7.11E+00	2.30
	34	1548.68	1546 -	1550	1548.22	6.13E+00	6.67	3.75E+00	1.84
	35	1592.34	1590 -	1594	1591.87	6.50E+00	6.96	5.00E+00	2.11
	36	1730.55	1725 -	1735	1730.03	1.22E+01	11.34	9.65E+00	6.85
	37	1764.76	1760 -	1767	1764.23	3.90E+01	15.10	1.20E+01	2.37
	38	1785.91	1781 -	1788	1785.38	8.00E+00	5.66	0.00E+00	1.98
	39	1847.71	1845 -	1849	1847.15	5.50E+00	6.67	5.00E+00	2.68
	40	1929.79	1925 -	1931	1929.20	5.00E+00	4.47	0.00E+00	1.16

Analysis Report for 1606093-05

J1V929 SAF: RC-148

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1986.92	1982 -	1989	1986.32	5.21E+00	6.63	3.57E+00	2.69
42	2013.06	2009 -	2015	2012.44	9.00E+00	6.00	0.00E+00	3.50
43	2081.51	2077 -	2084	2080.88	8.00E+00	5.66	0.00E+00	1.16
44	2205.14	2199 -	2209	2204.47	1.50E+01	7.75	0.00E+00	1.35
45	2614.75	2609 -	2619	2613.97	4.95E+01	15.44	4.90E+00	1.54

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 : 6/22/2016 9:28:55AM

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	76.21	71 -	83	6.34E+02	140.15	2.00E+03	6.46E+01
M	2	88.02	83 -	97	1.43E+02	70.85	8.10E+02	4.68E+01
	3	185.57	181 -	190	1.20E+02	78.00	8.03E+02	6.15E+01
M	4	235.42	234 -	245	5.40E+01	33.35	2.41E+02	2.55E+01
m	5	239.01	234 -	245	4.60E+02	56.54	2.84E+02	2.77E+01
m	6	241.76	234 -	245	1.06E+02	66.19	3.85E+02	3.23E+01
	7	270.95	267 -	275	4.80E+01	55.07	4.38E+02	2.79E+01
	8	277.40	275 -	281	3.60E+01	42.78	3.04E+02	3.38E+01
	9	295.30	291 -	299	1.12E+02	59.42	4.78E+02	4.56E+01
	10	326.77	322 -	332	7.27E+01	54.18	3.55E+02	4.23E+01
	11	338.53	335 -	342	8.91E+01	44.54	2.70E+02	3.32E+01
	12	352.13	347 -	356	2.37E+02	53.93	2.80E+02	3.64E+01
	13	511.07	505 -	517	1.26E+02	50.47	2.40E+02	3.72E+01
	14	583.58	580 -	586	9.73E+01	32.19	1.15E+02	2.09E+01
	15	609.35	603 -	614	1.99E+02	44.68	1.50E+02	2.85E+01
	16	727.43	724 -	730	4.20E+01	22.19	5.81E+01	1.48E+01
	17	747.16	744 -	751	2.32E+01	22.45	6.96E+01	1.67E+01
	18	770.11	766 -	775	5.74E+01	26.94	7.32E+01	1.83E+01
	19	795.72	790 -	800	3.64E+01	29.09	9.31E+01	2.18E+01
	20	863.31	857 -	869	5.15E+01	31.30	9.10E+01	2.29E+01
	21	911.62	907 -	916	1.00E+02	32.48	8.94E+01	2.10E+01
	22	933.65	929 -	937	1.74E+01	22.44	6.52E+01	1.71E+01

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	23	968.97	965 -	971	4.42E+01	24.85	7.96E+01	1.73E+01
	24	1026.47	1024 -	1029	9.50E+00	12.65	2.50E+01	9.08E+00
M	25	1065.74	1062 -	1076	1.73E+01	17.04	3.50E+01	9.73E+00
m	26	1071.26	1062 -	1076	1.31E+01	16.69	3.50E+01	9.73E+00
	27	1120.18	1116 -	1124	3.46E+01	26.40	8.68E+01	1.94E+01
	28	1238.38	1234 -	1241	2.45E+01	24.00	7.90E+01	1.80E+01
	29	1377.22	1373 -	1379	1.49E+01	13.92	2.42E+01	9.52E+00
	30	1460.82	1453 -	1464	4.41E+02	45.25	3.33E+01	1.38E+01
	31	1488.61	1485 -	1491	1.10E+01	6.63	0.00E+00	0.00E+00
	32	1515.96	1512 -	1518	8.83E+00	8.51	6.33E+00	5.01E+00
	33	1523.67	1520 -	1526	5.44E+00	7.78	7.11E+00	5.12E+00
	34	1548.68	1546 -	1550	6.13E+00	6.67	3.75E+00	3.68E+00
	35	1592.34	1590 -	1594	6.50E+00	6.96	5.00E+00	3.90E+00
	36	1730.55	1725 -	1735	1.22E+01	11.34	9.65E+00	7.34E+00
	37	1764.76	1760 -	1767	3.90E+01	15.10	1.20E+01	6.98E+00
	38	1785.91	1781 -	1788	8.00E+00	5.66	0.00E+00	0.00E+00
	39	1847.71	1845 -	1849	5.50E+00	6.67	5.00E+00	3.90E+00
	40	1929.79	1925 -	1931	5.00E+00	4.47	0.00E+00	0.00E+00
	41	1986.92	1982 -	1989	5.21E+00	6.63	3.57E+00	3.95E+00
	42	2013.06	2009 -	2015	9.00E+00	6.00	0.00E+00	0.00E+00
	43	2081.51	2077 -	2084	8.00E+00	5.66	0.00E+00	0.00E+00
	44	2205.14	2199 -	2209	1.50E+01	7.75	0.00E+00	0.00E+00
	45	2614.75	2609 -	2619	4.95E+01	15.44	4.90E+00	5.20E+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 : 6/22/2016 9:28:55AM

Peak Analysis From Channel : 1
Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB
Peak Match Tolerance : 1.000 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	76.21	71 -	83	76.43	6.34E+02	140.15	2.00E+03	.....
M	2	88.02	83 -	97	88.23	1.43E+02	70.85	8.10E+02	CD-109

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									LU-176
									SN-126
	3	185.57	181 -	190	185.73	1.20E+02	78.00	8.03E+02	RA-226
M	4	235.42	234 -	245	235.55	5.40E+01	33.35	2.41E+02	NB-95M
									TH-227
m	5	239.01	234 -	245	239.14	4.60E+02	56.54	2.84E+02	PB-212
m	6	241.76	234 -	245	241.88	1.06E+02	66.19	3.85E+02	RA-224
	7	270.95	267 -	275	271.06	4.80E+01	55.07	4.38E+02	.....
	8	277.40	275 -	281	277.51	3.60E+01	42.78	3.04E+02	CM-243
									NP-239
	9	295.30	291 -	299	295.40	1.12E+02	59.42	4.78E+02	PB-214
	10	326.77	322 -	332	326.85	7.27E+01	54.18	3.55E+02	.....
	11	338.53	335 -	342	338.61	8.91E+01	44.54	2.70E+02	AC-228
	12	352.13	347 -	356	352.20	2.37E+02	53.93	2.80E+02	PB-214
	13	511.07	505 -	517	511.06	1.26E+02	50.47	2.40E+02	.....
	14	583.58	580 -	586	583.53	9.73E+01	32.19	1.15E+02	TL-208
	15	609.35	603 -	614	609.30	1.99E+02	44.68	1.50E+02	BI-214
	16	727.43	724 -	730	727.32	4.20E+01	22.19	5.81E+01	BI-212
	17	747.16	744 -	751	747.04	2.32E+01	22.45	6.96E+01	PM-146
	18	770.11	766 -	775	769.97	5.74E+01	26.94	7.32E+01	.....
	19	795.72	790 -	800	795.58	3.64E+01	29.09	9.31E+01	CS-134
	20	863.31	857 -	869	863.13	5.15E+01	31.30	9.10E+01	.....
	21	911.62	907 -	916	911.42	1.00E+02	32.48	8.94E+01	LU-172
									AC-228
	22	933.65	929 -	937	933.44	1.74E+01	22.44	6.52E+01	.....
	23	968.97	965 -	971	968.75	4.42E+01	24.85	7.96E+01	AC-228
	24	1026.47	1024 -	1029	1026.22	9.50E+00	12.65	2.50E+01	.....
M	25	1065.74	1062 -	1076	1065.48	1.73E+01	17.04	3.50E+01	.....
m	26	1071.26	1062 -	1076	1071.00	1.31E+01	16.69	3.50E+01	.....
	27	1120.18	1116 -	1124	1119.89	3.46E+01	26.40	8.68E+01	BI-214
									SC-46
	28	1238.38	1234 -	1241	1238.05	2.45E+01	24.00	7.90E+01	CO-56
	29	1377.22	1373 -	1379	1376.83	1.49E+01	13.92	2.42E+01	.....
	30	1460.82	1453 -	1464	1460.40	4.41E+02	45.25	3.33E+01	K-40
	31	1488.61	1485 -	1491	1488.18	1.10E+01	6.63	0.00E+00	.....
	32	1515.96	1512 -	1518	1515.52	8.83E+00	8.51	6.33E+00	.....
	33	1523.67	1520 -	1526	1523.22	5.44E+00	7.78	7.11E+00	.....
	34	1548.68	1546 -	1550	1548.22	6.13E+00	6.67	3.75E+00	.....
	35	1592.34	1590 -	1594	1591.87	6.50E+00	6.96	5.00E+00	.....
	36	1730.55	1725 -	1735	1730.03	1.22E+01	11.34	9.65E+00	.....
	37	1764.76	1760 -	1767	1764.23	3.90E+01	15.10	1.20E+01	BI-214
	38	1785.91	1781 -	1788	1785.38	8.00E+00	5.66	0.00E+00	.....
	39	1847.71	1845 -	1849	1847.15	5.50E+00	6.67	5.00E+00	.....
	40	1929.79	1925 -	1931	1929.20	5.00E+00	4.47	0.00E+00	.....
	41	1986.92	1982 -	1989	1986.32	5.21E+00	6.63	3.57E+00	.....
	42	2013.06	2009 -	2015	2012.44	9.00E+00	6.00	0.00E+00	.....
	43	2081.51	2077 -	2084	2080.88	8.00E+00	5.66	0.00E+00	.....
	44	2205.14	2199 -	2209	2204.47	1.50E+01	7.75	0.00E+00	BI-214
	45	2614.75	2609 -	2619	2613.97	4.95E+01	15.44	4.90E+00	TL-208

Analysis Report for 1606093-05

J1V929 SAF: RC-148

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 : 6/22/2016 9:28:55AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	76.21	6.34E+02	140.15	2.38E-02	2.13E-03
M	2	88.02	1.43E+02	70.85	2.44E-02	2.52E-03
	3	185.57	1.20E+02	78.00	1.83E-02	1.42E-03
M	4	235.42	5.40E+01	33.35	1.54E-02	1.20E-03
m	5	239.01	4.60E+02	56.54	1.52E-02	1.18E-03
m	6	241.76	1.06E+02	66.19	1.51E-02	1.17E-03
	7	270.95	4.80E+01	55.07	1.38E-02	1.03E-03
	8	277.40	3.60E+01	42.78	1.35E-02	1.00E-03
	9	295.30	1.12E+02	59.42	1.28E-02	9.74E-04
	10	326.77	7.27E+01	54.18	1.18E-02	9.29E-04
	11	338.53	8.91E+01	44.54	1.14E-02	9.13E-04
	12	352.13	2.37E+02	53.93	1.11E-02	8.93E-04
	13	511.07	1.26E+02	50.47	8.01E-03	7.18E-04
	14	583.58	9.73E+01	32.19	7.13E-03	6.46E-04
	15	609.35	1.99E+02	44.68	6.87E-03	6.20E-04
	16	727.43	4.20E+01	22.19	5.89E-03	5.14E-04
	17	747.16	2.32E+01	22.45	5.75E-03	4.98E-04
	18	770.11	5.74E+01	26.94	5.61E-03	4.79E-04
	19	795.72	3.64E+01	29.09	5.45E-03	4.58E-04
	20	863.31	5.15E+01	31.30	5.08E-03	4.03E-04
	21	911.62	1.00E+02	32.48	4.85E-03	3.72E-04
	22	933.65	1.74E+01	22.44	4.75E-03	3.68E-04
	23	968.97	4.42E+01	24.85	4.60E-03	3.61E-04
	24	1026.47	9.50E+00	12.65	4.39E-03	3.51E-04
M	25	1065.74	1.73E+01	17.04	4.25E-03	3.43E-04
m	26	1071.26	1.31E+01	16.69	4.23E-03	3.42E-04
	27	1120.18	3.46E+01	26.40	4.08E-03	3.33E-04
	28	1238.38	2.45E+01	24.00	3.75E-03	3.09E-04
	29	1377.22	1.49E+01	13.92	3.45E-03	2.82E-04
	30	1460.82	4.41E+02	45.25	3.29E-03	2.69E-04
	31	1488.61	1.10E+01	6.63	3.24E-03	2.65E-04
	32	1515.96	8.83E+00	8.51	3.20E-03	2.61E-04
	33	1523.67	5.44E+00	7.78	3.19E-03	2.60E-04
	34	1548.68	6.13E+00	6.67	3.15E-03	2.56E-04

Analysis Report for 1606093-05

J1V929 SAF: RC-148

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
35	1592.34	6.50E+00	6.96	3.08E-03	2.50E-04
36	1730.55	1.22E+01	11.34	2.90E-03	2.29E-04
37	1764.76	3.90E+01	15.10	2.86E-03	2.24E-04
38	1785.91	8.00E+00	5.66	2.83E-03	2.21E-04
39	1847.71	5.50E+00	6.67	2.77E-03	2.13E-04
40	1929.79	5.00E+00	4.47	2.68E-03	2.13E-04
41	1986.92	5.21E+00	6.63	2.63E-03	2.13E-04
42	2013.06	9.00E+00	6.00	2.61E-03	2.13E-04
43	2081.51	8.00E+00	5.66	2.55E-03	2.13E-04
44	2205.14	1.50E+01	7.75	2.46E-03	2.13E-04
45	2614.75	4.95E+01	15.44	2.24E-03	2.13E-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 : 6/22/2016 9:28:55AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039129.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	76.21	6.34E+02	140.15	6.39E+00	4.68E+00	6.28E+02	1.40E+02
M	2	88.02	1.43E+02	70.85	7.58E+00	2.36E+00	1.35E+02	7.09E+01
	3	185.57	1.20E+02	78.00	3.42E+01	6.46E+00	8.53E+01	7.83E+01
M	4	235.42	5.40E+01	33.35			5.40E+01	3.33E+01
m	5	239.01	4.60E+02	56.54	1.33E+01	5.60E+00	4.47E+02	5.68E+01
m	6	241.76	1.06E+02	66.19			1.06E+02	6.62E+01
	7	270.95	4.80E+01	55.07			4.80E+01	5.51E+01
	8	277.40	3.60E+01	42.78			3.60E+01	4.28E+01
	9	295.30	1.12E+02	59.42	4.79E-01	4.81E+00	1.12E+02	5.96E+01
	10	326.77	7.27E+01	54.18			7.27E+01	5.42E+01
	11	338.53	8.91E+01	44.54			8.91E+01	4.45E+01
	12	352.13	2.37E+02	53.93	2.25E+00	3.58E+00	2.35E+02	5.40E+01
	13	511.07	1.26E+02	50.47	5.80E+01	4.89E+00	6.80E+01	5.07E+01
	14	583.58	9.73E+01	32.19	1.49E+00	2.92E+00	9.58E+01	3.23E+01
	15	609.35	1.99E+02	44.68	6.79E+00	3.66E+00	1.92E+02	4.48E+01
	16	727.43	4.20E+01	22.19			4.20E+01	2.22E+01
	17	747.16	2.32E+01	22.45			2.32E+01	2.24E+01
	18	770.11	5.74E+01	26.94			5.74E+01	2.69E+01
	19	795.72	3.64E+01	29.09			3.64E+01	2.91E+01

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	20	863.31	5.15E+01	31.30			5.15E+01	3.13E+01
	21	911.62	1.00E+02	32.48	2.46E+00	2.65E+00	9.79E+01	3.26E+01
	22	933.65	1.74E+01	22.44			1.74E+01	2.24E+01
	23	968.97	4.42E+01	24.85			4.42E+01	2.49E+01
	24	1026.47	9.50E+00	12.65			9.50E+00	1.26E+01
M	25	1065.74	1.73E+01	17.04			1.73E+01	1.70E+01
m	26	1071.26	1.31E+01	16.69			1.31E+01	1.67E+01
	27	1120.18	3.46E+01	26.40			3.46E+01	2.64E+01
	28	1238.38	2.45E+01	24.00			2.45E+01	2.40E+01
	29	1377.22	1.49E+01	13.92			1.49E+01	1.39E+01
	30	1460.82	4.41E+02	45.25	1.76E+00	1.91E+00	4.40E+02	4.53E+01
	31	1488.61	1.10E+01	6.63			1.10E+01	6.63E+00
	32	1515.96	8.83E+00	8.51			8.83E+00	8.51E+00
	33	1523.67	5.44E+00	7.78			5.44E+00	7.78E+00
	34	1548.68	6.13E+00	6.67			6.13E+00	6.67E+00
	35	1592.34	6.50E+00	6.96			6.50E+00	6.96E+00
	36	1730.55	1.22E+01	11.34			1.22E+01	1.13E+01
	37	1764.76	3.90E+01	15.10			3.90E+01	1.51E+01
	38	1785.91	8.00E+00	5.66			8.00E+00	5.66E+00
	39	1847.71	5.50E+00	6.67			5.50E+00	6.67E+00
	40	1929.79	5.00E+00	4.47			5.00E+00	4.47E+00
	41	1986.92	5.21E+00	6.63			5.21E+00	6.63E+00
	42	2013.06	9.00E+00	6.00			9.00E+00	6.00E+00
	43	2081.51	8.00E+00	5.66			8.00E+00	5.66E+00
	44	2205.14	1.50E+01	7.75			1.50E+01	7.75E+00
	45	2614.75	4.95E+01	15.44	2.72E+00	1.24E+00	4.68E+01	1.55E+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 : 6/22/2016 9:28:55AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000039129.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	76.21	6.34E+02	140.15	6.39E+00	4.68E+00	6.28E+02	1.40E+02
M	2	88.02	1.43E+02	70.85	7.58E+00	2.36E+00	1.35E+02	7.09E+01

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	3	185.57	1.20E+02	78.00	3.42E+01	6.46E+00	8.53E+01	7.83E+01
M	4	235.42	5.40E+01	33.35			5.40E+01	3.33E+01
m	5	239.01	4.60E+02	56.54	1.33E+01	5.60E+00	4.47E+02	5.68E+01
m	6	241.76	1.06E+02	66.19			1.06E+02	6.62E+01
	7	270.95	4.80E+01	55.07			4.80E+01	5.51E+01
	8	277.40	3.60E+01	42.78			3.60E+01	4.28E+01
	9	295.30	1.12E+02	59.42	4.79E-01	4.81E+00	1.12E+02	5.96E+01
	10	326.77	7.27E+01	54.18			7.27E+01	5.42E+01
	11	338.53	8.91E+01	44.54			8.91E+01	4.45E+01
	12	352.13	2.37E+02	53.93	2.25E+00	3.58E+00	2.35E+02	5.40E+01
	13	511.07	1.26E+02	50.47	5.80E+01	4.89E+00	6.80E+01	5.07E+01
	14	583.58	9.73E+01	32.19	1.49E+00	2.92E+00	9.58E+01	3.23E+01
	15	609.35	1.99E+02	44.68	6.79E+00	3.66E+00	1.92E+02	4.48E+01
	16	727.43	4.20E+01	22.19			4.20E+01	2.22E+01
	17	747.16	2.32E+01	22.45			2.32E+01	2.24E+01
	18	770.11	5.74E+01	26.94			5.74E+01	2.69E+01
	19	795.72	3.64E+01	29.09			3.64E+01	2.91E+01
	20	863.31	5.15E+01	31.30			5.15E+01	3.13E+01
	21	911.62	1.00E+02	32.48	2.46E+00	2.65E+00	9.79E+01	3.26E+01
	22	933.65	1.74E+01	22.44			1.74E+01	2.24E+01
	23	968.97	4.42E+01	24.85			4.42E+01	2.49E+01
	24	1026.47	9.50E+00	12.65			9.50E+00	1.26E+01
M	25	1065.74	1.73E+01	17.04			1.73E+01	1.70E+01
m	26	1071.26	1.31E+01	16.69			1.31E+01	1.67E+01
	27	1120.18	3.46E+01	26.40			3.46E+01	2.64E+01
	28	1238.38	2.45E+01	24.00			2.45E+01	2.40E+01
	29	1377.22	1.49E+01	13.92			1.49E+01	1.39E+01
	30	1460.82	4.41E+02	45.25	1.76E+00	1.91E+00	4.40E+02	4.53E+01
	31	1488.61	1.10E+01	6.63			1.10E+01	6.63E+00
	32	1515.96	8.83E+00	8.51			8.83E+00	8.51E+00
	33	1523.67	5.44E+00	7.78			5.44E+00	7.78E+00
	34	1548.68	6.13E+00	6.67			6.13E+00	6.67E+00
	35	1592.34	6.50E+00	6.96			6.50E+00	6.96E+00
	36	1730.55	1.22E+01	11.34			1.22E+01	1.13E+01
	37	1764.76	3.90E+01	15.10			3.90E+01	1.51E+01
	38	1785.91	8.00E+00	5.66			8.00E+00	5.66E+00
	39	1847.71	5.50E+00	6.67			5.50E+00	6.67E+00
	40	1929.79	5.00E+00	4.47			5.00E+00	4.47E+00
	41	1986.92	5.21E+00	6.63			5.21E+00	6.63E+00
	42	2013.06	9.00E+00	6.00			9.00E+00	6.00E+00
	43	2081.51	8.00E+00	5.66			8.00E+00	5.66E+00
	44	2205.14	1.50E+01	7.75			1.50E+01	7.75E+00
	45	2614.75	4.95E+01	15.44	2.72E+00	1.24E+00	4.68E+01	1.55E+01

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 1606093-05

J1V929 SAF: RC-148

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	1.13E+01	1.50E+00
NB-95M	0.975	235.69	*	25.00	4.02E-01	2.50E-01
CD-109	1.000	88.03	*	3.72	1.35E+00	7.27E-01
SN-126	0.968	87.57	*	37.00	1.35E-01	7.20E-02
TL-208	0.874	583.14	*	30.22	4.00E-01	1.40E-01
		860.37		4.48		
		2614.66	*	35.85	5.25E-01	1.81E-01
BI-212	0.762	727.17	*	11.80	5.44E-01	2.91E-01
		1620.62		2.75		
PB-212	0.874	238.63	*	44.60	5.93E-01	8.84E-02
		300.09		3.41		
BI-214	0.989	609.31	*	46.30	5.44E-01	1.36E-01
		1120.29	*	15.10	5.06E-01	3.88E-01
		1764.49	*	15.80	7.78E-01	3.07E-01
		2204.22	*	4.98	1.10E+00	5.77E-01
PB-214	0.995	295.21	*	19.19	4.08E-01	2.20E-01
		351.92	*	37.19	5.14E-01	1.25E-01
RA-224	0.909	240.98	*	3.95	1.60E+00	1.01E+00
RA-226	0.937	186.21	*	3.28	1.28E+00	2.62E+00
AC-228	0.974	338.32	*	11.40	6.15E-01	3.12E-01
		911.07	*	27.70	6.56E-01	2.24E-01
		969.11	*	16.60	5.21E-01	2.96E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 9:28:55AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	76.21	1.74473E-01	11.16		
	7	270.95	1.33396E-02	57.33		
	8	277.40	9.98966E-03	59.48	Tol.	NP-239 CM-243
	10	326.77	2.02022E-02	37.25	Sum	
	13	511.07	1.88871E-02	37.29		
	17	747.16	6.44397E-03	48.39	Tol.	PM-146
	18	770.11	1.59456E-02	23.47	Sum	
	19	795.72	1.01222E-02	39.92	Sum	
	20	863.31	1.43056E-02	30.39		
	22	933.65	4.83333E-03	64.50		
	24	1026.47	2.63889E-03	66.57		
M	25	1065.74	4.80842E-03	49.23	Sum	
m	26	1071.26	3.63791E-03	63.71		
	28	1238.38	6.80556E-03	48.98		
	29	1377.22	4.13580E-03	46.74		
	31	1488.61	3.05556E-03	30.15		
	32	1515.96	2.45370E-03	48.20		
	33	1523.67	1.51235E-03	71.43		
	34	1548.68	1.70139E-03	54.46	Sum	
	35	1592.34	1.80556E-03	53.57	D-Esc	
	36	1730.55	3.38235E-03	46.55		
	38	1785.91	2.22222E-03	35.36		
	39	1847.71	1.52778E-03	60.64	Sum	
	40	1929.79	1.38889E-03	44.72		
	41	1986.92	1.44841E-03	63.61		
	42	2013.06	2.50000E-03	33.33		
	43	2081.51	2.22222E-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 IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Analysis Report for 1606093-05

J1V929 SAF: RC-148

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	1.00	1460.81	*	10.67	1.13E+01	1.50E+00
NB-95M	0.97	235.69	*	25.00	4.02E-01	2.50E-01
CD-109	1.00	88.03	*	3.72	1.35E+00	7.27E-01
SN-126	0.96	87.57	*	37.00	1.35E-01	7.20E-02
TL-208	0.87	583.14	*	30.22	4.00E-01	1.40E-01
		860.37		4.48		
		2614.66	*	35.85	5.25E-01	1.81E-01
BI-212	0.76	727.17	*	11.80	5.44E-01	2.91E-01
		1620.62		2.75		
PB-212	0.87	238.63	*	44.60	5.93E-01	8.84E-02
		300.09		3.41		
BI-214	0.98	609.31	*	46.30	5.44E-01	1.36E-01
		1120.29	*	15.10	5.06E-01	3.88E-01
		1764.49	*	15.80	7.78E-01	3.07E-01
		2204.22	*	4.98	1.10E+00	5.77E-01
PB-214	0.99	295.21	*	19.19	4.08E-01	2.20E-01
		351.92	*	37.19	5.14E-01	1.25E-01
RA-224	0.90	240.98	*	3.95	1.60E+00	1.01E+00
RA-226	0.93	186.21	*	3.28	1.28E+00	2.62E+00
AC-228	0.97	338.32	*	11.40	6.15E-01	3.12E-01
		911.07	*	27.70	6.56E-01	2.24E-01
		969.11	*	16.60	5.21E-01	2.96E-01

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 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	1.13E+01	1.50E+00	
	NB-95M	0.975	4.02E-01	2.50E-01	
?	CD-109	1.000	1.35E+00	7.27E-01	
?	SN-126	0.968	1.35E-01	7.20E-02	
	TL-208	0.874	4.47E-01	1.11E-01	

Analysis Report for 1606093-05

J1V929 SAF: RC-148

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
BI-212	0.762	5.44E-01	2.91E-01	
PB-212	0.874	5.93E-01	8.84E-02	
BI-214	0.989	5.97E-01	1.16E-01	
PB-214	0.995	4.88E-01	1.09E-01	
RA-224	0.909	1.60E+00	1.01E+00	
RA-226	0.937	1.28E+00	2.62E+00	
AC-228	0.974	6.09E-01	1.55E-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 1606093-05

J1V929 SAF: RC-148

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/22/2016 9:28:55AM
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	76.21	1.74473E-01	11.16		
	7	270.95	1.33396E-02	57.33		
	8	277.40	9.98966E-03	59.48	Tol.	NP-239
						CM-243
	10	326.77	2.02022E-02	37.25	Sum	
	13	511.07	1.88871E-02	37.29		
	17	747.16	6.44397E-03	48.39	Tol.	PM-146
	18	770.11	1.59456E-02	23.47	Sum	
	19	795.72	1.01222E-02	39.92	Sum	
	20	863.31	1.43056E-02	30.39		
	22	933.65	4.83333E-03	64.50		
	24	1026.47	2.63889E-03	66.57		
M	25	1065.74	4.80842E-03	49.23	Sum	
m	26	1071.26	3.63791E-03	63.71		
	28	1238.38	6.80556E-03	48.98		
	29	1377.22	4.13580E-03	46.74		
	31	1488.61	3.05556E-03	30.15		
	32	1515.96	2.45370E-03	48.20		
	33	1523.67	1.51235E-03	71.43		
	34	1548.68	1.70139E-03	54.46	Sum	
	35	1592.34	1.80556E-03	53.57	D-Esc	
	36	1730.55	3.38235E-03	46.55		
	38	1785.91	2.22222E-03	35.36		
	39	1847.71	1.52778E-03	60.64	Sum	
	40	1929.79	1.38889E-03	44.72		
	41	1986.92	1.44841E-03	63.61		
	42	2013.06	2.50000E-03	33.33		
	43	2081.51	2.22222E-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

Analysis Report for 1606093-05

J1V929 SAF: RC-148

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	1.80E-01	5.21E-01	5.21E-01
+	NA-22	1274.54		99.94	3.02E-02	8.11E-02	8.11E-02
+	NA-24	1368.53		99.99	-1.25E+01	8.94E+00	5.00E+01
		2754.09		99.86	0.00E+00		8.94E+00
+	AL-26	1808.65		99.76	5.89E-03	5.10E-02	5.10E-02
+	K-40	1460.81	*	10.67	1.13E+01	7.92E-01	7.92E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	2.60E-04	4.12E-02	4.12E-02
		78.34		96.00	8.89E-02		5.02E-02
+	SC-46	889.25		99.98	-9.86E-03	6.00E-02	6.00E-02
		1120.51		99.99	7.62E-02		9.47E-02
+	V-48	983.52		99.98	-3.86E-03	7.25E-02	7.25E-02
		1312.10		97.50	2.51E-02		1.06E-01
+	CR-51	320.08		9.83	1.11E-02	5.12E-01	5.12E-01
+	MN-54	834.83		99.97	-4.04E-03	5.48E-02	5.48E-02
+	CO-56	846.75		99.96	-1.54E-02	5.56E-02	5.56E-02
		1037.75		14.03	-1.83E-03		4.65E-01
		1238.25		67.00	8.14E-02		1.44E-01
		1771.40		15.51	-4.63E-01		3.23E-01
		2598.48		16.90	1.25E-01		3.28E-01
+	CO-57	122.06		85.51	-9.35E-03	3.71E-02	3.71E-02
		136.48		10.60	5.22E-02		3.18E-01
+	CO-58	810.76		99.40	-2.12E-02	5.35E-02	5.35E-02
+	FE-59	1099.22		56.50	1.12E-02	1.33E-01	1.33E-01
		1291.56		43.20	-3.15E-03		1.80E-01
+	CO-60	1173.22		100.00	7.65E-03	6.85E-02	7.88E-02
		1332.49		100.00	-1.24E-02		6.85E-02
+	ZN-65	1115.52		50.75	7.23E-03	1.45E-01	1.45E-01
+	GA-67	93.31		35.70	4.43E-01	4.10E-01	4.10E-01
		208.95		2.24	5.93E+00		7.13E+00
		300.22		16.00	4.01E-01		1.06E+00
+	SE-75	121.11		16.70	-1.38E-01	5.86E-02	1.86E-01
		136.00		59.20	4.26E-03		5.86E-02
		264.65		59.80	-6.19E-03		7.03E-02
		279.53		25.20	1.34E-03		1.77E-01
		400.65		11.40	1.32E-01		4.31E-01
+	RB-82	776.52		13.00	9.32E-02	5.36E-01	5.36E-01
+	RB-83	520.41		46.00	-1.15E-02	1.04E-01	1.04E-01
		529.64		30.30	-2.98E-02		1.64E-01
		552.65		16.40	-1.36E-01		2.96E-01

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	KR-85	513.99		0.43	1.50E+01	1.54E+01	1.54E+01
+	SR-85	513.99		99.27	6.99E-02	7.18E-02	7.18E-02
+	Y-88	898.02		93.40	8.05E-03	5.09E-02	7.40E-02
		1836.01		99.38	-3.88E-03		5.09E-02
+	NB-93M	16.57		9.43	1.21E+01	5.30E+01	5.30E+01
+	NB-94	702.63		100.00	2.37E-02	5.87E-02	5.97E-02
		871.10		100.00	-1.87E-03		5.87E-02
+	NB-95	765.79		99.81	1.34E-02	7.15E-02	7.15E-02
+	NB-95M	235.69	*	25.00	4.02E-01	8.50E-01	8.50E-01
+	ZR-95	724.18		43.70	1.58E-02	9.92E-02	1.49E-01
		756.72		55.30	-8.49E-03		9.92E-02
+	MO-99	181.06		6.20	-3.31E-03	1.99E+00	2.55E+00
		739.58		12.80	1.08E+00		1.99E+00
		778.00		4.50	-1.03E+00		5.34E+00
+	RU-103	497.08		89.00	-4.46E-03	6.08E-02	6.08E-02
+	RU-106	621.84		9.80	4.34E-01	5.92E-01	5.92E-01
+	AG-108M	433.93		89.90	-2.40E-02	4.81E-02	4.81E-02
		614.37		90.40	1.69E-02		6.08E-02
		722.95		90.50	9.60E-04		5.93E-02
+	CD-109	88.03	*	3.72	1.35E+00	2.17E+00	2.17E+00
+	AG-110M	657.75		93.14	-2.41E-02	5.64E-02	5.64E-02
		677.61		10.53	-2.05E-01		4.36E-01
		706.67		16.46	9.09E-02		3.31E-01
		763.93		21.98	4.57E-02		2.32E-01
		884.67		71.63	4.32E-02		8.80E-02
		1384.27		23.94	-7.30E-02		2.56E-01
+	CD-113M	263.70		0.02	2.23E+01	1.80E+02	1.80E+02
+	SN-113	255.12		1.93	-3.56E-01	6.61E-02	2.26E+00
		391.69		64.90	-3.77E-02		6.61E-02
+	TE123M	159.00		84.10	-7.51E-03	4.12E-02	4.12E-02
+	SB-124	602.71		97.87	-2.05E-03	5.68E-02	5.68E-02
		645.85		7.26	-1.67E-01		7.95E-01
		722.78		11.10	8.39E-03		5.18E-01
		1691.02		49.00	-6.68E-03		1.11E-01
+	I-125	35.49		6.49	-5.39E-01	1.32E+00	1.32E+00
+	SB-125	176.33		6.89	1.85E-01	1.66E-01	5.13E-01
		427.89		29.33	9.72E-02		1.66E-01
		463.38		10.35	5.90E-02		4.62E-01
		600.56		17.80	-5.45E-02		2.89E-01
		635.90		11.32	-3.97E-02		4.71E-01
+	SB-126	414.70		83.30	-7.17E-02	6.82E-02	6.82E-02
		666.33		99.60	3.44E-02		8.73E-02
		695.00		99.60	9.50E-02		9.48E-02
		720.50		53.80	-2.94E-02		1.43E-01
+	SN-126	87.57	*	37.00	1.35E-01	2.16E-01	2.16E-01
+	SB-127	473.00		25.00	-1.81E-01	3.82E-01	5.89E-01
		685.20		35.70	-1.01E-01		3.82E-01
		783.80		14.70	3.97E-01		1.22E+00

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	I-129	29.78	57.00	-3.05E-02	2.61E-01	2.61E-01
		33.60	13.20	3.44E-03		7.46E-01
		39.58	7.52	-9.44E-03		8.27E-01
+	I-131	284.30	6.05	-3.63E-01	8.39E-02	1.10E+00
		364.48	81.20	-2.07E-02		8.39E-02
		636.97	7.26	-4.83E-02		1.24E+00
		722.89	1.80	8.12E-02		5.01E+00
+	TE-132	49.72	13.10	-1.73E+00	1.78E-01	1.17E+00
		228.16	88.00	-4.82E-02		1.78E-01
+	BA-133	81.00	33.00	-2.41E-01	8.79E-02	1.06E-01
		302.84	17.80	-4.64E-02		2.43E-01
		356.01	60.00	-2.47E-02		8.79E-02
+	I-133	529.87	86.30	-1.24E+00	6.81E+00	6.81E+00
+	XE-133	81.00	38.00	-4.63E-01	2.05E-01	2.05E-01
+	CS-134	563.23	8.38	2.76E-01	5.77E-02	6.66E-01
		569.32	15.43	-9.52E-02		3.24E-01
		604.70	97.60	-3.12E-01		5.77E-02
		795.84	85.40	6.04E-02		7.82E-02
		801.93	8.73	-1.38E-01		6.50E-01
+	CS-135	268.24	16.00	-4.15E-02	2.73E-01	2.73E-01
+	I-135	1131.51	22.50	-2.88E+05	8.56E+05	1.10E+06
		1260.41	28.60	6.33E+04		8.56E+05
		1678.03	9.54	-5.38E+05		1.85E+06
+	CS-136	153.22	7.46	2.99E-01	6.48E-02	6.39E-01
		163.89	4.61	5.00E-01		1.05E+00
		176.55	13.56	1.36E-01		3.53E-01
		273.65	12.66	-2.19E-03		5.10E-01
		340.57	48.50	-1.22E-03		1.54E-01
		818.50	99.70	-2.86E-03		6.48E-02
		1048.07	79.60	-4.27E-03		1.13E-01
		1235.34	19.70	-4.48E-02		6.10E-01
+	CS-137	661.65	85.12	-7.47E-03	6.94E-02	6.94E-02
+	LA-138	788.74	34.00	-1.34E-02	8.95E-02	1.58E-01
		1435.80	66.00	4.16E-02		8.95E-02
+	CE-139	165.85	80.35	-3.06E-03	4.32E-02	4.32E-02
+	BA-140	162.64	6.70	3.11E-01	2.84E-01	7.34E-01
		304.84	4.50	-1.32E+00		1.26E+00
		423.70	3.20	-7.53E-01		1.91E+00
		437.55	2.00	9.76E-01		3.14E+00
		537.32	25.00	2.28E-02		2.84E-01
+	LA-140	328.77	20.50	1.88E-01	8.55E-02	3.30E-01
		487.03	45.50	2.14E-02		1.43E-01
		815.85	23.50	8.51E-02		2.85E-01
		1596.49	95.49	1.57E-02		8.55E-02
+	CE-141	145.44	48.40	4.54E-03	8.27E-02	8.27E-02
+	CE-143	57.36	11.80	9.68E-01	2.83E+00	7.26E+00
		293.26	42.00	3.02E+00		2.83E+00
		664.55	5.20	1.26E+01		2.53E+01
+	CE-144	133.54	10.80	1.11E-03	3.20E-01	3.20E-01

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-144	476.78	42.00	3.95E-02	5.27E-02	1.21E-01
		618.01	98.60	-5.90E-04		5.27E-02
		696.49	99.49	5.87E-03		6.48E-02
+	PM-145	36.85	21.70	-8.60E-02	1.80E-01	3.33E-01
		37.36	39.70	2.13E-02		1.80E-01
		42.30	15.10	-3.89E-01		3.59E-01
		72.40	2.31	-8.00E-01		1.99E+00
+	PM-146	453.90	39.94	-5.81E-02	1.16E-01	1.16E-01
		735.90	14.01	3.64E-02		3.82E-01
		747.13	13.10	2.72E-01		4.38E-01
+	ND-147	91.11	28.90	-6.11E-02	2.10E-01	2.10E-01
		531.02	13.10	-2.17E-01		5.30E-01
+	PM-149	285.90	3.10	7.04E-01	8.77E+00	8.77E+00
+	EU-152	121.78	20.50	-3.84E-02	1.52E-01	1.52E-01
		244.69	5.40	-1.10E-01		8.90E-01
		344.27	19.13	3.95E-02		2.18E-01
		778.89	9.20	-1.48E-01		6.05E-01
		964.01	10.40	-5.69E-02		6.67E-01
		1085.78	7.22	1.21E-01		9.13E-01
		1112.02	9.60	-4.58E-02		7.35E-01
		1407.95	14.94	2.94E-01		4.28E-01
+	GD-153	97.43	31.30	5.06E-02	1.09E-01	1.09E-01
		103.18	22.20	-2.80E-02		1.44E-01
+	EU-154	123.07	40.50	1.47E-02	7.89E-02	7.89E-02
		723.30	19.70	4.42E-03		2.73E-01
		873.19	11.50	2.24E-01		5.28E-01
		996.32	10.30	1.56E-01		6.46E-01
		1004.76	17.90	-1.96E-01		2.77E-01
		1274.45	35.50	8.47E-02		2.27E-01
+	EU-155	86.50	30.90	8.49E-02	1.33E-01	1.33E-01
		105.30	20.70	2.96E-02		1.53E-01
+	EU-156	811.77	10.40	-5.02E-01	6.00E-01	6.00E-01
		1153.47	7.20	2.11E-01		1.47E+00
		1230.71	8.90	1.59E-01		1.26E+00
+	HO-166M	184.41	72.60	5.63E-02	5.64E-02	5.64E-02
		280.45	29.60	-6.84E-03		1.39E-01
		410.94	11.10	7.34E-02		4.22E-01
		711.69	54.10	-4.35E-02		9.59E-02
+	TM-171	66.72	0.14	-9.82E+00	2.83E+01	2.83E+01
+	HF-172	81.75	4.52	-1.89E+00	3.00E-01	7.82E-01
		125.81	11.30	-2.57E-02		3.00E-01
+	LU-172	181.53	20.60	-3.47E-01	2.26E-01	3.14E-01
		810.06	16.63	5.76E-02		6.12E-01
		912.12	15.25	2.08E+00		1.24E+00
		1093.66	62.50	1.06E-01		2.26E-01
+	LU-173	100.72	5.24	2.01E-02	2.24E-01	6.23E-01
		272.11	21.20	1.54E-01		2.24E-01
+	HF-175	343.40	84.00	9.53E-03	5.28E-02	5.28E-02
+	LU-176	88.34	13.30	5.85E-02	4.57E-02	3.16E-01

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LU-176	201.83		86.00	9.21E-03	4.57E-02	5.06E-02
		306.78		94.00	5.11E-03		4.57E-02
+	TA-182	67.75		41.20	6.17E-04	9.79E-02	9.79E-02
		1121.30		34.90	1.72E-01		2.66E-01
		1189.05		16.23	2.07E-01		4.82E-01
		1221.41		26.98	9.32E-03		3.09E-01
		1231.02		11.44	4.33E-02		7.49E-01
+	IR-192	308.46		29.68	7.15E-02	1.10E-01	1.60E-01
		468.07		48.10	2.47E-02		1.10E-01
+	HG-203	279.19		77.30	3.99E-02	6.30E-02	6.30E-02
+	BI-207	569.67		97.72	-5.50E-03	5.20E-02	5.20E-02
		1063.62		74.90	-2.82E-03		9.08E-02
+	TL-208	583.14	*	30.22	4.00E-01	1.64E-01	1.88E-01
		860.37		4.48	6.15E-01		1.46E+00
		2614.66	*	35.85	5.25E-01		1.64E-01
+	BI-210M	262.00		45.00	-9.95E-03	9.17E-02	9.17E-02
		300.00		23.00	7.74E-02		2.04E-01
+	PB-210	46.50		4.25	9.60E-01	1.23E+00	1.23E+00
+	PB-211	404.84		2.90	7.99E-01	1.71E+00	1.71E+00
		831.96		2.90	-6.97E-01		1.84E+00
+	BI-212	727.17	*	11.80	5.44E-01	4.19E-01	4.19E-01
		1620.62		2.75	-1.79E-01		1.79E+00
+	PB-212	238.63	*	44.60	5.93E-01	1.54E-01	1.54E-01
		300.09		3.41	5.22E-01		1.38E+00
+	BI-214	609.31	*	46.30	5.44E-01	1.72E-01	1.72E-01
		1120.29	*	15.10	5.06E-01		6.08E-01
		1764.49	*	15.80	7.78E-01		3.32E-01
		2204.22	*	4.98	1.10E+00		1.99E-01
+	PB-214	295.21	*	19.19	4.08E-01	1.66E-01	3.46E-01
		351.92	*	37.19	5.14E-01		1.66E-01
+	RN-219	401.80		6.50	-3.93E-01	7.13E-01	7.13E-01
+	RA-223	323.87		3.88	-1.16E+00	1.14E+00	1.14E+00
+	RA-224	240.98	*	3.95	1.60E+00	1.78E+00	1.78E+00
+	RA-225	40.00		31.00	-2.96E-03	2.60E-01	2.60E-01
+	RA-226	186.21	*	3.28	1.28E+00	1.92E+00	1.92E+00
+	TH-227	50.10		8.40	-7.42E-01	5.01E-01	5.01E-01
		236.00		11.50	7.99E-01		5.89E-01
		256.20		6.30	1.07E-01		6.71E-01
+	AC-228	338.32	*	11.40	6.15E-01	3.04E-01	4.77E-01
		911.07	*	27.70	6.56E-01		3.04E-01
		969.11	*	16.60	5.21E-01		4.39E-01
+	TH-230	48.44		16.90	6.54E-02	2.84E-01	2.84E-01
		62.85		4.60	2.03E-01		9.21E-01
		67.67		0.37	6.63E-02		1.05E+01
+	PA-231	283.67		1.60	-8.14E-01	1.88E+00	2.47E+00
		302.67		2.30	-3.58E-01		1.88E+00
+	TH-231	25.64		14.70	-1.03E+00	5.57E-01	1.86E+00
		84.21		6.40	-8.41E-01		5.57E-01

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-233	311.98	38.60	-2.78E-02	1.34E-01	1.34E-01
+	PA-234	131.20	20.40	5.32E-02	1.72E-01	1.72E-01
		733.99	8.80	-1.72E-01		5.63E-01
		946.00	12.00	2.66E-02		4.50E-01
+	PA-234M	1001.03	0.92	-3.00E+00	5.97E+00	5.97E+00
+	TH-234	63.29	3.80	4.05E-01	1.12E+00	1.12E+00
+	U-235	143.76	10.50	1.44E-01	3.36E-01	3.36E-01
		163.35	4.70	3.56E-01		7.50E-01
		205.31	4.70	-5.84E-01		9.08E-01
+	NP-237	86.50	12.60	2.08E-01	3.25E-01	3.25E-01
+	NP-239	106.10	22.70	3.03E-01	8.29E-01	8.29E-01
		228.18	10.70	-6.49E-01		2.39E+00
		277.60	14.10	6.00E-01		1.86E+00
+	AM-241	59.54	35.90	-1.14E-01	1.13E-01	1.13E-01
+	AM-243	74.67	66.00	8.31E-02	7.82E-02	7.82E-02
+	CM-243	209.75	3.29	7.61E-01	3.17E-01	1.32E+00
		228.14	10.60	-1.11E-01		4.10E-01
		277.60	14.00	1.03E-01		3.17E-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	5.21E-01	5.21E-01	1.80E-01	2.45E-01
NA-22	1274.54	99.94	8.11E-02	8.11E-02	3.02E-02	3.72E-02
NA-24	1368.53	99.99	5.00E+01	8.94E+00	-1.25E+01	2.22E+01
	2754.09	99.86	8.94E+00		0.00E+00	0.00E+00

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	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	5.10E-02	5.10E-02	5.89E-03	2.12E-02
+	K-40	1460.81	*	10.67	7.92E-01	7.92E-01	1.13E+01	3.61E-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	4.12E-02	4.12E-02	2.60E-04	2.00E-02
		78.34		96.00	5.02E-02		8.89E-02	2.46E-02
	SC-46	889.25		99.98	6.00E-02	6.00E-02	-9.86E-03	2.74E-02
		1120.51		99.99	9.47E-02		7.62E-02	4.42E-02
	V-48	983.52		99.98	7.25E-02	7.25E-02	-3.86E-03	3.28E-02
		1312.10		97.50	1.06E-01		2.51E-02	4.86E-02
	CR-51	320.08		9.83	5.12E-01	5.12E-01	1.11E-02	2.44E-01
	MN-54	834.83		99.97	5.48E-02	5.48E-02	-4.04E-03	2.50E-02
	CO-56	846.75		99.96	5.56E-02	5.56E-02	-1.54E-02	2.53E-02
		1037.75		14.03	4.65E-01		-1.83E-03	2.11E-01
		1238.25		67.00	1.44E-01		8.14E-02	6.69E-02
		1771.40		15.51	3.23E-01		-4.63E-01	1.32E-01
		2598.48		16.90	3.28E-01		1.25E-01	1.30E-01
	CO-57	122.06		85.51	3.71E-02	3.71E-02	-9.35E-03	1.79E-02
		136.48		10.60	3.18E-01		5.22E-02	1.54E-01
	CO-58	810.76		99.40	5.35E-02	5.35E-02	-2.12E-02	2.43E-02
	FE-59	1099.22		56.50	1.33E-01	1.33E-01	1.12E-02	6.06E-02
		1291.56		43.20	1.80E-01		-3.15E-03	8.17E-02
	CO-60	1173.22		100.00	7.88E-02	6.85E-02	7.65E-03	3.63E-02
		1332.49		100.00	6.85E-02		-1.24E-02	3.08E-02
	ZN-65	1115.52		50.75	1.45E-01	1.45E-01	7.23E-03	6.65E-02
	GA-67	93.31		35.70	4.10E-01	4.10E-01	4.43E-01	2.00E-01
		208.95		2.24	7.13E+00		5.93E+00	3.45E+00
		300.22		16.00	1.06E+00		4.01E-01	5.07E-01
	SE-75	121.11		16.70	1.86E-01	5.86E-02	-1.38E-01	8.99E-02
		136.00		59.20	5.86E-02		4.26E-03	2.83E-02
		264.65		59.80	7.03E-02		-6.19E-03	3.36E-02
		279.53		25.20	1.77E-01		1.34E-03	8.49E-02
		400.65		11.40	4.31E-01		1.32E-01	2.04E-01
	RB-82	776.52		13.00	5.36E-01	5.36E-01	9.32E-02	2.48E-01
	RB-83	520.41		46.00	1.04E-01	1.04E-01	-1.15E-02	4.85E-02
		529.64		30.30	1.64E-01		-2.98E-02	7.65E-02
		552.65		16.40	2.96E-01		-1.36E-01	1.38E-01
	KR-85	513.99		0.43	1.54E+01	1.54E+01	1.50E+01	7.35E+00
	SR-85	513.99		99.27	7.18E-02	7.18E-02	6.99E-02	3.42E-02
	Y-88	898.02		93.40	7.40E-02	5.09E-02	8.05E-03	3.42E-02
		1836.01		99.38	5.09E-02		-3.88E-03	2.09E-02
	NB-93M	16.57		9.43	5.30E+01	5.30E+01	1.21E+01	2.57E+01
	NB-94	702.63		100.00	5.97E-02	5.87E-02	2.37E-02	2.78E-02
		871.10		100.00	5.87E-02		-1.87E-03	2.69E-02
	NB-95	765.79		99.81	7.15E-02	7.15E-02	1.34E-02	3.33E-02
+	NB-95M	235.69	*	25.00	8.50E-01	8.50E-01	4.02E-01	4.15E-01
	ZR-95	724.18		43.70	1.49E-01	9.92E-02	1.58E-02	6.92E-02
		756.72		55.30	9.92E-02		-8.49E-03	4.55E-02
	MO-99	181.06		6.20	2.55E+00	1.99E+00	-3.31E-03	1.23E+00
		739.58		12.80	1.99E+00		1.08E+00	9.19E-01
		778.00		4.50	5.34E+00		-1.03E+00	2.45E+00
	RU-103	497.08		89.00	6.08E-02	6.08E-02	-4.46E-03	2.85E-02
	RU-106	621.84		9.80	5.92E-01	5.92E-01	4.34E-01	2.77E-01
	AG-108M	433.93		89.90	4.81E-02	4.81E-02	-2.40E-02	2.26E-02

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	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	6.08E-02	4.81E-02	1.69E-02	2.84E-02
		722.95		90.50	5.93E-02		9.60E-04	2.74E-02
+	CD-109	88.03	*	3.72	2.17E+00	2.17E+00	1.35E+00	1.07E+00
	AG-110M	657.75		93.14	5.64E-02	5.64E-02	-2.41E-02	2.61E-02
		677.61		10.53	4.36E-01		-2.05E-01	1.99E-01
		706.67		16.46	3.31E-01		9.09E-02	1.53E-01
		763.93		21.98	2.32E-01		4.57E-02	1.06E-01
		884.67		71.63	8.80E-02		4.32E-02	4.05E-02
		1384.27		23.94	2.56E-01		-7.30E-02	1.13E-01
	CD-113M	263.70		0.02	1.80E+02	1.80E+02	2.23E+01	8.62E+01
	SN-113	255.12		1.93	2.26E+00	6.61E-02	-3.56E-01	1.08E+00
		391.69		64.90	6.61E-02		-3.77E-02	3.11E-02
	TE123M	159.00		84.10	4.12E-02	4.12E-02	-7.51E-03	1.98E-02
	SB-124	602.71		97.87	5.68E-02	5.68E-02	-2.05E-03	2.65E-02
		645.85		7.26	7.95E-01		-1.67E-01	3.70E-01
		722.78		11.10	5.18E-01		8.39E-03	2.39E-01
		1691.02		49.00	1.11E-01		-6.68E-03	4.66E-02
	I-125	35.49		6.49	1.32E+00	1.32E+00	-5.39E-01	6.35E-01
	SB-125	176.33		6.89	5.13E-01	1.66E-01	1.85E-01	2.47E-01
		427.89		29.33	1.66E-01		9.72E-02	7.86E-02
		463.38		10.35	4.62E-01		5.90E-02	2.17E-01
		600.56		17.80	2.89E-01		-5.45E-02	1.35E-01
		635.90		11.32	4.71E-01		-3.97E-02	2.19E-01
	SB-126	414.70		83.30	6.82E-02	6.82E-02	-7.17E-02	3.20E-02
		666.33		99.60	8.73E-02		3.44E-02	4.09E-02
		695.00		99.60	9.48E-02		9.50E-02	4.46E-02
		720.50		53.80	1.43E-01		-2.94E-02	6.62E-02
+	SN-126	87.57	*	37.00	2.16E-01	2.16E-01	1.35E-01	1.07E-01
	SB-127	473.00		25.00	5.89E-01	3.82E-01	-1.81E-01	2.78E-01
		685.20		35.70	3.82E-01		-1.01E-01	1.75E-01
		783.80		14.70	1.22E+00		3.97E-01	5.67E-01
	I-129	29.78		57.00	2.61E-01	2.61E-01	-3.05E-02	1.26E-01
		33.60		13.20	7.46E-01		3.44E-03	3.60E-01
		39.58		7.52	8.27E-01		-9.44E-03	3.98E-01
	I-131	284.30		6.05	1.10E+00	8.39E-02	-3.63E-01	5.25E-01
		364.48		81.20	8.39E-02		-2.07E-02	3.96E-02
		636.97		7.26	1.24E+00		-4.83E-02	5.78E-01
		722.89		1.80	5.01E+00		8.12E-02	2.31E+00
	TE-132	49.72		13.10	1.17E+00	1.78E-01	-1.73E+00	5.65E-01
		228.16		88.00	1.78E-01		-4.82E-02	8.58E-02
	BA-133	81.00		33.00	1.06E-01	8.79E-02	-2.41E-01	5.16E-02
		302.84		17.80	2.43E-01		-4.64E-02	1.16E-01
		356.01		60.00	8.79E-02		-2.47E-02	4.21E-02
	I-133	529.87		86.30	6.81E+00	6.81E+00	-1.24E+00	3.18E+00
	XE-133	81.00		38.00	2.05E-01	2.05E-01	-4.63E-01	9.94E-02
	CS-134	563.23		8.38	6.66E-01	5.77E-02	2.76E-01	3.13E-01
		569.32		15.43	3.24E-01		-9.52E-02	1.51E-01
		604.70		97.60	5.77E-02		-3.12E-01	2.70E-02
		795.84		85.40	7.82E-02		6.04E-02	3.65E-02
		801.93		8.73	6.50E-01		-1.38E-01	2.99E-01
	CS-135	268.24		16.00	2.73E-01	2.73E-01	-4.15E-02	1.31E-01
	I-135	1131.51		22.50	1.10E+06	8.56E+05	-2.88E+05	4.97E+05
		1260.41		28.60	8.56E+05		6.33E+04	3.84E+05

Analysis Report for 1606093-05

J1V929 SAF: RC-148

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	1.85E+06	8.56E+05	-5.38E+05	7.60E+05
CS-136	153.22	7.46	6.39E-01	6.48E-02	2.99E-01	3.08E-01
	163.89	4.61	1.05E+00		5.00E-01	5.08E-01
	176.55	13.56	3.53E-01		1.36E-01	1.70E-01
	273.65	12.66	5.10E-01		-2.19E-03	2.45E-01
	340.57	48.50	1.54E-01		-1.22E-03	7.38E-02
	818.50	99.70	6.48E-02		-2.86E-03	2.92E-02
	1048.07	79.60	1.13E-01		-4.27E-03	5.17E-02
	1235.34	19.70	6.10E-01		-4.48E-02	2.83E-01
CS-137	661.65	85.12	6.94E-02	6.94E-02	-7.47E-03	3.24E-02
LA-138	788.74	34.00	1.58E-01	8.95E-02	-1.34E-02	7.27E-02
	1435.80	66.00	8.95E-02		4.16E-02	3.92E-02
CE-139	165.85	80.35	4.32E-02	4.32E-02	-3.06E-03	2.08E-02
BA-140	162.64	6.70	7.34E-01	2.84E-01	3.11E-01	3.54E-01
	304.84	4.50	1.26E+00		-1.32E+00	6.01E-01
	423.70	3.20	1.91E+00		-7.53E-01	8.98E-01
	437.55	2.00	3.14E+00		9.76E-01	1.48E+00
	537.32	25.00	2.84E-01		2.28E-02	1.33E-01
LA-140	328.77	20.50	3.30E-01	8.55E-02	1.88E-01	1.58E-01
	487.03	45.50	1.43E-01		2.14E-02	6.70E-02
	815.85	23.50	2.85E-01		8.51E-02	1.29E-01
	1596.49	95.49	8.55E-02		1.57E-02	3.70E-02
CE-141	145.44	48.40	8.27E-02	8.27E-02	4.54E-03	4.00E-02
CE-143	57.36	11.80	7.26E+00	2.83E+00	9.68E-01	3.52E+00
	293.26	42.00	2.83E+00		3.02E+00	1.37E+00
	664.55	5.20	2.53E+01		1.26E+01	1.19E+01
CE-144	133.54	10.80	3.20E-01	3.20E-01	1.11E-03	1.55E-01
PM-144	476.78	42.00	1.21E-01	5.27E-02	3.95E-02	5.69E-02
	618.01	98.60	5.27E-02		-5.90E-04	2.45E-02
	696.49	99.49	6.48E-02		5.87E-03	3.04E-02
PM-145	36.85	21.70	3.33E-01	1.80E-01	-8.60E-02	1.61E-01
	37.36	39.70	1.80E-01		2.13E-02	8.69E-02
	42.30	15.10	3.59E-01		-3.89E-01	1.73E-01
	72.40	2.31	1.99E+00		-8.00E-01	9.70E-01
PM-146	453.90	39.94	1.16E-01	1.16E-01	-5.81E-02	5.46E-02
	735.90	14.01	3.82E-01		3.64E-02	1.76E-01
	747.13	13.10	4.38E-01		2.72E-01	2.03E-01
ND-147	91.11	28.90	2.10E-01	2.10E-01	-6.11E-02	1.03E-01
	531.02	13.10	5.30E-01		-2.17E-01	2.47E-01
PM-149	285.90	3.10	8.77E+00	8.77E+00	7.04E-01	4.19E+00
EU-152	121.78	20.50	1.52E-01	1.52E-01	-3.84E-02	7.35E-02
	244.69	5.40	8.90E-01		-1.10E-01	4.30E-01
	344.27	19.13	2.18E-01		3.95E-02	1.03E-01
	778.89	9.20	6.05E-01		-1.48E-01	2.78E-01
	964.01	10.40	6.67E-01		-5.69E-02	3.08E-01
	1085.78	7.22	9.13E-01		1.21E-01	4.16E-01
	1112.02	9.60	7.35E-01		-4.58E-02	3.37E-01
	1407.95	14.94	4.28E-01		2.94E-01	1.90E-01
GD-153	97.43	31.30	1.09E-01	1.09E-01	5.06E-02	5.30E-02
	103.18	22.20	1.44E-01		-2.80E-02	6.98E-02
EU-154	123.07	40.50	7.89E-02	7.89E-02	1.47E-02	3.81E-02
	723.30	19.70	2.73E-01		4.42E-03	1.26E-01
	873.19	11.50	5.28E-01		2.24E-01	2.43E-01

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	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	6.46E-01	7.89E-02	1.56E-01	2.97E-01
		1004.76		17.90	2.77E-01		-1.96E-01	1.23E-01
		1274.45		35.50	2.27E-01		8.47E-02	1.04E-01
	EU-155	86.50		30.90	1.33E-01	1.33E-01	8.49E-02	6.47E-02
		105.30		20.70	1.53E-01		2.96E-02	7.42E-02
	EU-156	811.77		10.40	6.00E-01	6.00E-01	-5.02E-01	2.71E-01
		1153.47		7.20	1.47E+00		2.11E-01	6.81E-01
		1230.71		8.90	1.26E+00		1.59E-01	5.81E-01
	HO-166M	184.41		72.60	5.64E-02	5.64E-02	5.63E-02	2.73E-02
		280.45		29.60	1.39E-01		-6.84E-03	6.65E-02
		410.94		11.10	4.22E-01		7.34E-02	2.00E-01
		711.69		54.10	9.59E-02		-4.35E-02	4.42E-02
	TM-171	66.72		0.14	2.83E+01	2.83E+01	-9.82E+00	1.37E+01
	HF-172	81.75		4.52	7.82E-01	3.00E-01	-1.89E+00	3.80E-01
		125.81		11.30	3.00E-01		-2.57E-02	1.45E-01
	LU-172	181.53		20.60	3.14E-01	2.26E-01	-3.47E-01	1.51E-01
		810.06		16.63	6.12E-01		5.76E-02	2.80E-01
		912.12		15.25	1.24E+00		2.08E+00	5.91E-01
		1093.66		62.50	2.26E-01		1.06E-01	1.04E-01
	LU-173	100.72		5.24	6.23E-01	2.24E-01	2.01E-02	3.02E-01
		272.11		21.20	2.24E-01		1.54E-01	1.08E-01
	HF-175	343.40		84.00	5.28E-02	5.28E-02	9.53E-03	2.50E-02
	LU-176	88.34		13.30	3.16E-01	4.57E-02	5.85E-02	1.54E-01
		201.83		86.00	5.06E-02		9.21E-03	2.45E-02
		306.78		94.00	4.57E-02		5.11E-03	2.18E-02
	TA-182	67.75		41.20	9.79E-02	9.79E-02	6.17E-04	4.76E-02
		1121.30		34.90	2.66E-01		1.72E-01	1.24E-01
		1189.05		16.23	4.82E-01		2.07E-01	2.21E-01
		1221.41		26.98	3.09E-01		9.32E-03	1.42E-01
		1231.02		11.44	7.49E-01		4.33E-02	3.45E-01
	IR-192	308.46		29.68	1.60E-01	1.10E-01	7.15E-02	7.66E-02
		468.07		48.10	1.10E-01		2.47E-02	5.19E-02
	HG-203	279.19		77.30	6.30E-02	6.30E-02	3.99E-02	3.02E-02
	BI-207	569.67		97.72	5.20E-02	5.20E-02	-5.50E-03	2.43E-02
		1063.62		74.90	9.08E-02		-2.82E-03	4.16E-02
+	TL-208	583.14	*	30.22	1.88E-01	1.64E-01	4.00E-01	8.84E-02
		860.37		4.48	1.46E+00		6.15E-01	6.74E-01
		2614.66	*	35.85	1.64E-01		5.25E-01	6.68E-02
	BI-210M	262.00		45.00	9.17E-02	9.17E-02	-9.95E-03	4.39E-02
		300.00		23.00	2.04E-01		7.74E-02	9.79E-02
	PB-210	46.50		4.25	1.23E+00	1.23E+00	9.60E-01	5.95E-01
	PB-211	404.84		2.90	1.71E+00	1.71E+00	7.99E-01	8.14E-01
		831.96		2.90	1.84E+00		-6.97E-01	8.38E-01
+	BI-212	727.17	*	11.80	4.19E-01	4.19E-01	5.44E-01	1.92E-01
		1620.62		2.75	1.79E+00		-1.79E-01	7.51E-01
+	PB-212	238.63	*	44.60	1.54E-01	1.54E-01	5.93E-01	7.53E-02
		300.09		3.41	1.38E+00		5.22E-01	6.61E-01
+	BI-214	609.31	*	46.30	1.72E-01	1.72E-01	5.44E-01	8.20E-02
		1120.29	*	15.10	6.08E-01		5.06E-01	2.84E-01
		1764.49	*	15.80	3.32E-01		7.78E-01	1.39E-01
		2204.22	*	4.98	1.99E-01		1.10E+00	0.00E+00
+	PB-214	295.21	*	19.19	3.46E-01	1.66E-01	4.08E-01	1.68E-01
		351.92	*	37.19	1.66E-01		5.14E-01	8.02E-02

Analysis Report for 1606093-05

J1V929 SAF: RC-148

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	RN-219	401.80		6.50	7.13E-01	7.13E-01	-3.93E-01	3.38E-01
	RA-223	323.87		3.88	1.14E+00	1.14E+00	-1.16E+00	5.42E-01
+	RA-224	240.98	*	3.95	1.78E+00	1.78E+00	1.60E+00	8.69E-01
	RA-225	40.00		31.00	2.60E-01	2.60E-01	-2.96E-03	1.25E-01
+	RA-226	186.21	*	3.28	1.92E+00	1.92E+00	1.28E+00	9.38E-01
	TH-227	50.10		8.40	5.01E-01	5.01E-01	-7.42E-01	2.42E-01
		236.00		11.50	5.89E-01		7.99E-01	2.88E-01
		256.20		6.30	6.71E-01		1.07E-01	3.22E-01
+	AC-228	338.32	*	11.40	4.77E-01	3.04E-01	6.15E-01	2.29E-01
		911.07	*	27.70	3.04E-01		6.56E-01	1.43E-01
		969.11	*	16.60	4.39E-01		5.21E-01	2.03E-01
	TH-230	48.44		16.90	2.84E-01	2.84E-01	6.54E-02	1.38E-01
		62.85		4.60	9.21E-01		2.03E-01	4.48E-01
		67.67		0.37	1.05E+01		6.63E-02	5.11E+00
	PA-231	283.67		1.60	2.47E+00	1.88E+00	-8.14E-01	1.18E+00
		302.67		2.30	1.88E+00		-3.58E-01	8.97E-01
	TH-231	25.64		14.70	1.86E+00	5.57E-01	-1.03E+00	8.97E-01
		84.21		6.40	5.57E-01		-8.41E-01	2.71E-01
	PA-233	311.98		38.60	1.34E-01	1.34E-01	-2.78E-02	6.38E-02
	PA-234	131.20		20.40	1.72E-01	1.72E-01	5.32E-02	8.34E-02
		733.99		8.80	5.63E-01		-1.72E-01	2.58E-01
		946.00		12.00	4.50E-01		2.66E-02	2.03E-01
	PA-234M	1001.03		0.92	5.97E+00	5.97E+00	-3.00E+00	2.69E+00
	TH-234	63.29		3.80	1.12E+00	1.12E+00	4.05E-01	5.45E-01
	U-235	143.76		10.50	3.36E-01	3.36E-01	1.44E-01	1.63E-01
		163.35		4.70	7.50E-01		3.56E-01	3.62E-01
		205.31		4.70	9.08E-01		-5.84E-01	4.39E-01
	NP-237	86.50		12.60	3.25E-01	3.25E-01	2.08E-01	1.58E-01
	NP-239	106.10		22.70	8.29E-01	8.29E-01	3.03E-01	4.01E-01
		228.18		10.70	2.39E+00		-6.49E-01	1.15E+00
		277.60		14.10	1.86E+00		6.00E-01	8.90E-01
	AM-241	59.54		35.90	1.13E-01	1.13E-01	-1.14E-01	5.47E-02
	AM-243	74.67		66.00	7.82E-02	7.82E-02	8.31E-02	3.83E-02
	CM-243	209.75		3.29	1.32E+00	3.17E-01	7.61E-01	6.38E-01
		228.14		10.60	4.10E-01		-1.11E-01	1.98E-01
		277.60		14.00	3.17E-01		1.03E-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

No Action Level results available for reporting purposes.

Analysis Report for 1606093-05

J1V929 SAF: RC-148

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: J1V929 SAF: RC-148

Elapsed Live time: 3600
Elapsed Real Time: 3613

Channel								
1:	0	0	0	0	0	0	0	0
9:	15	184	153	135	93	71	80	91
17:	80	64	74	75	55	83	65	59
25:	56	48	45	46	56	52	48	58
33:	60	46	41	51	53	40	47	53
41:	51	53	46	52	45	74	102	56
49:	51	52	56	52	60	68	58	62
57:	69	73	67	83	76	72	109	111
65:	78	86	89	75	89	76	86	95
73:	85	133	223	152	219	258	86	73
81:	93	74	59	89	99	83	112	148
89:	97	104	112	92	153	143	75	72
97:	63	76	85	63	57	58	67	62
105:	64	60	57	71	48	57	70	72
113:	70	58	62	68	62	55	45	56
121:	49	49	57	64	67	64	50	70
129:	65	79	57	63	66	59	63	54
137:	55	58	53	50	47	65	54	67
145:	57	61	55	59	49	68	49	67
153:	44	58	55	38	41	54	44	46
161:	57	60	49	46	54	52	43	38
169:	49	38	45	42	37	51	55	36
177:	48	45	46	40	36	48	49	46
185:	45	95	68	52	39	43	41	41
193:	34	40	45	37	41	43	47	42
201:	50	37	44	39	42	42	38	40
209:	39	59	43	36	28	25	31	28
217:	34	29	33	36	25	39	28	39
225:	31	41	36	35	38	31	36	47
233:	37	24	56	47	37	84	303	136
241:	61	82	48	32	23	30	32	26
249:	26	44	26	23	21	23	35	30
257:	33	28	24	24	31	20	38	22
265:	19	22	25	23	28	41	34	31
273:	38	25	22	28	39	29	28	22
281:	20	21	16	22	13	28	22	21
289:	30	21	22	32	26	23	69	93
297:	39	26	21	41	24	13	21	15
305:	18	21	23	24	23	24	28	18
313:	17	25	17	26	21	16	27	26
321:	11	18	20	20	21	27	25	33
329:	29	18	22	17	18	19	17	22
337:	18	43	77	15	18	14	18	15
345:	22	12	14	13	20	18	31	144
353:	81	20	17	19	11	14	12	20
361:	17	10	14	18	14	12	13	15

369:	9	17	9	18	14	15	17	14

Sample Title: J1V929 SAF: RC-148

Channel								
377:	18	21	14	22	20	9	14	11
385:	15	12	18	19	16	18	9	13
393:	10	9	13	11	19	19	19	8
401:	14	23	11	19	13	13	26	17
409:	13	19	23	7	14	12	8	12
417:	14	9	14	15	13	7	16	5
425:	13	17	16	16	15	13	15	9
433:	13	11	10	8	14	11	19	15
441:	10	6	12	11	16	11	11	7
449:	20	16	10	11	13	18	13	11
457:	9	18	9	11	9	12	17	12
465:	12	14	11	9	22	13	14	8
473:	12	15	17	13	11	19	9	8
481:	15	8	10	8	8	13	11	11
489:	16	10	4	18	12	14	12	11
497:	15	14	7	7	5	15	16	9
505:	10	10	16	15	18	30	49	32
513:	17	14	11	12	12	6	11	9
521:	8	11	7	5	10	16	9	4
529:	10	13	10	7	14	9	8	15
537:	11	16	13	5	8	13	5	9
545:	10	10	9	13	10	7	7	7
553:	11	10	8	9	9	12	6	15
561:	19	8	13	10	13	6	11	8
569:	7	9	12	12	9	12	10	8
577:	7	13	13	10	8	18	50	48
585:	16	5	6	13	10	6	11	9
593:	8	10	6	13	13	10	9	9
601:	11	6	7	11	10	10	6	25
609:	72	93	24	7	7	2	10	9
617:	11	5	9	6	10	12	11	12
625:	15	4	5	12	7	6	6	3
633:	12	7	10	7	7	7	11	13
641:	12	9	10	8	10	11	12	4
649:	6	13	6	6	8	8	7	5
657:	12	7	8	6	9	13	10	12
665:	13	14	10	5	14	6	8	3
673:	13	4	6	10	3	6	5	6
681:	2	10	4	5	4	5	7	4
689:	12	5	4	14	14	12	15	13
697:	8	10	4	9	13	3	12	10
705:	11	7	4	10	6	3	4	6
713:	11	7	10	13	9	9	6	5
721:	10	9	4	6	7	8	20	20
729:	8	2	5	6	3	6	6	6
737:	8	10	8	9	5	5	2	5
745:	7	7	9	13	6	6	5	5
753:	11	7	5	6	7	4	6	6
761:	5	5	11	6	3	1	7	19
769:	16	7	8	12	9	11	4	6
777:	3	8	12	3	5	9	5	11
785:	9	10	6	5	5	4	8	4
793:	4	13	12	15	3	8	10	2

801:	6	4	11	5	7	8	11	9

Sample Title: J1V929 SAF: RC-148

Channel								
809:	5	5	5	2	4	4	5	5
817:	7	3	3	2	4	3	6	7
825:	4	9	6	5	2	11	5	4
833:	6	4	5	10	6	3	5	3
841:	9	7	6	7	5	6	2	5
849:	8	2	4	8	3	8	8	4
857:	3	4	7	13	14	7	6	5
865:	5	14	8	8	3	4	7	10
873:	6	4	7	7	3	4	4	6
881:	7	5	7	4	11	3	9	4
889:	3	5	6	8	5	5	8	5
897:	4	10	9	5	11	12	5	5
905:	11	6	7	9	6	15	47	37
913:	10	7	3	4	2	4	4	6
921:	7	7	6	2	3	1	6	7
929:	3	8	3	3	10	8	9	3
937:	3	2	6	8	4	3	4	3
945:	4	6	4	4	5	4	5	5
953:	9	4	7	1	3	5	9	5
961:	4	3	10	9	5	10	9	13
969:	27	16	4	5	4	6	7	10
977:	4	4	5	1	2	7	4	8
985:	6	2	3	6	4	3	2	8
993:	4	5	6	9	10	5	4	6
1001:	4	5	2	2	7	1	3	2
1009:	5	7	4	6	5	3	4	5
1017:	5	4	10	3	2	5	2	1
1025:	5	4	8	2	2	3	7	2
1033:	7	5	6	1	6	7	4	6
1041:	4	5	3	6	3	8	5	6
1049:	3	6	7	7	6	4	5	1
1057:	6	4	7	8	0	5	4	7
1065:	6	10	3	7	5	4	8	2
1073:	7	6	3	1	4	7	3	1
1081:	5	7	6	6	2	3	9	8
1089:	2	3	4	8	8	8	6	11
1097:	3	5	7	4	5	3	4	4
1105:	6	5	4	8	4	6	5	8
1113:	6	7	4	4	8	5	10	22
1121:	12	6	4	7	4	7	4	6
1129:	4	8	3	2	6	2	6	5
1137:	8	3	4	4	3	9	4	4
1145:	3	8	3	7	7	14	2	3
1153:	9	8	6	8	8	4	13	8
1161:	6	7	4	3	0	7	5	6
1169:	8	7	7	6	11	5	4	6
1177:	8	3	5	2	8	8	11	4
1185:	5	9	3	8	8	7	4	2
1193:	3	4	4	3	6	5	3	7
1201:	2	5	2	12	5	5	7	6
1209:	6	4	5	5	6	6	6	5
1217:	7	8	5	5	6	6	10	5
1225:	9	4	9	7	7	10	6	6

1233:	5	6	7	7	6	16	13	7

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Channel								
1241:	2	7	3	5	10	3	4	9
1249:	7	5	10	5	3	4	0	6
1257:	4	3	3	5	5	3	2	5
1265:	2	3	3	0	2	4	8	4
1273:	4	5	3	6	3	5	1	9
1281:	6	3	7	3	5	2	4	7
1289:	1	3	4	1	4	3	4	2
1297:	5	3	5	9	5	2	6	3
1305:	6	4	3	5	3	5	5	4
1313:	3	2	9	3	5	2	4	0
1321:	5	2	3	4	4	3	3	2
1329:	2	1	6	4	5	2	3	2
1337:	5	3	3	3	5	0	3	1
1345:	5	2	0	2	4	3	1	2
1353:	2	4	0	2	2	2	1	0
1361:	2	5	1	1	3	1	4	2
1369:	3	2	1	4	1	5	3	3
1377:	4	10	1	1	3	2	2	3
1385:	1	2	2	3	0	1	3	2
1393:	1	2	4	2	0	3	3	1
1401:	5	1	0	3	4	2	1	3
1409:	3	2	0	3	1	0	2	0
1417:	1	0	1	3	2	2	2	2
1425:	1	2	1	0	1	0	1	3
1433:	2	2	0	2	2	1	4	1
1441:	1	2	2	1	0	0	1	2
1449:	1	0	2	1	1	2	2	3
1457:	1	12	47	171	164	52	2	1
1465:	3	2	3	0	0	1	0	2
1473:	2	1	1	1	0	1	1	2
1481:	1	0	1	0	0	2	1	3
1489:	3	2	0	0	1	2	2	1
1497:	3	0	0	2	2	1	5	1
1505:	2	2	2	1	3	2	1	1
1513:	0	4	1	3	3	0	0	0
1521:	0	2	3	2	2	0	2	1
1529:	1	0	0	0	0	0	1	1
1537:	0	3	1	1	1	1	2	2
1545:	1	1	2	2	3	0	0	0
1553:	1	1	1	0	1	1	0	1
1561:	1	1	2	0	1	0	1	1
1569:	2	0	1	0	0	1	1	2
1577:	1	0	2	0	1	6	1	0
1585:	2	3	3	2	1	0	3	4
1593:	2	0	1	2	1	1	1	2
1601:	0	1	2	1	2	1	0	0
1609:	0	0	0	0	0	0	1	0
1617:	2	0	0	1	2	2	0	2
1625:	3	1	1	0	3	1	2	1
1633:	0	2	0	1	2	2	2	2
1641:	0	2	1	0	1	1	0	0
1649:	0	2	0	1	0	0	0	0
1657:	1	1	1	1	0	2	1	0

1665:	3	1	2	0	0	0	1	0

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Channel								
1673:	2	0	2	0	1	0	1	1
1681:	2	0	2	1	1	0	2	1
1689:	2	1	0	0	2	1	0	1
1697:	3	0	0	0	0	1	0	0
1705:	0	1	0	1	2	1	0	0
1713:	1	0	1	0	0	2	1	0
1721:	0	0	0	2	0	0	3	3
1729:	3	1	3	1	2	1	0	0
1737:	1	1	1	0	0	2	1	1
1745:	1	0	0	3	1	1	2	4
1753:	0	0	0	0	2	1	1	1
1761:	3	1	7	16	11	6	0	1
1769:	0	0	0	2	0	2	2	0
1777:	0	1	0	0	0	1	0	1
1785:	1	3	2	0	0	0	1	2
1793:	1	0	0	1	0	0	0	0
1801:	2	1	0	2	0	1	0	0
1809:	0	0	4	1	0	0	1	0
1817:	1	0	0	0	1	0	1	1
1825:	0	2	1	2	0	0	2	1
1833:	1	1	0	1	0	1	0	0
1841:	1	2	0	1	0	3	1	4
1849:	0	1	3	0	1	1	0	1
1857:	0	2	0	0	1	1	1	2
1865:	0	0	1	0	2	2	0	0
1873:	2	0	1	0	0	1	1	1
1881:	1	0	1	0	3	1	0	0
1889:	0	0	1	0	0	2	0	1
1897:	0	0	0	0	0	0	1	2
1905:	1	2	0	0	0	0	0	0
1913:	1	1	2	0	2	0	0	1
1921:	1	0	0	0	0	0	0	0
1929:	4	1	0	0	0	1	1	1
1937:	1	0	2	0	0	0	2	0
1945:	0	1	2	0	0	1	1	0
1953:	0	1	0	0	0	1	1	0
1961:	0	0	1	0	0	1	1	0
1969:	1	0	2	0	0	0	0	0
1977:	0	1	0	1	0	0	1	0
1985:	0	2	2	2	0	1	0	0
1993:	0	2	0	0	0	0	0	1
2001:	1	2	0	2	2	1	0	0
2009:	0	0	2	3	2	2	0	0
2017:	0	0	0	0	0	0	1	1
2025:	0	0	1	1	2	0	1	0
2033:	0	0	0	0	0	0	1	0
2041:	2	1	0	0	1	0	0	1
2049:	1	0	5	3	0	2	3	2
2057:	0	1	1	2	0	1	1	0
2065:	3	0	0	0	0	2	0	1
2073:	0	0	2	0	0	0	2	0
2081:	4	1	1	0	0	0	0	0
2089:	0	0	0	1	1	1	0	0

2097:	1	3	1	0	3	4	5	4

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Channel								
2105:	0	2	1	0	0	0	0	0
2113:	0	0	4	1	0	1	1	1
2121:	0	0	0	0	0	0	1	0
2129:	1	1	0	0	0	1	0	1
2137:	0	1	0	1	0	1	1	1
2145:	0	0	0	4	2	0	1	0
2153:	0	0	0	0	1	0	0	3
2161:	1	0	1	1	0	1	1	0
2169:	2	1	1	1	2	1	0	1
2177:	2	1	1	0	0	2	2	0
2185:	0	0	0	0	0	1	1	0
2193:	0	0	1	2	0	0	0	0
2201:	1	1	2	6	1	1	1	2
2209:	0	0	1	0	0	3	1	0
2217:	1	0	1	0	1	2	0	1
2225:	2	0	0	0	0	0	0	0
2233:	1	2	0	2	1	1	1	0
2241:	0	1	0	0	0	0	0	0
2249:	0	0	0	2	0	1	2	2
2257:	1	1	1	0	0	0	1	1
2265:	0	1	3	2	0	2	0	1
2273:	2	0	1	1	1	0	1	0
2281:	0	0	0	0	1	1	1	1
2289:	0	0	0	1	1	0	0	1
2297:	0	0	1	1	0	1	0	2
2305:	1	1	0	2	1	0	1	2
2313:	0	1	0	0	1	1	1	0
2321:	0	0	0	2	0	1	1	0
2329:	0	0	0	2	0	0	1	1
2337:	0	0	0	0	0	0	0	0
2345:	0	0	2	1	0	1	4	0
2353:	0	2	1	1	0	1	3	0
2361:	1	0	1	0	0	0	1	2
2369:	0	3	0	0	0	0	2	1
2377:	0	2	1	0	1	0	0	0
2385:	1	0	0	1	0	0	0	0
2393:	1	0	3	0	2	1	1	0
2401:	2	1	0	0	1	1	1	0
2409:	0	0	0	0	0	0	0	0
2417:	0	2	0	2	0	1	1	0
2425:	2	0	0	0	0	0	0	0
2433:	0	1	1	0	0	2	0	0
2441:	0	3	0	0	2	1	0	2
2449:	0	0	0	0	2	0	1	0
2457:	0	0	1	1	0	2	0	0
2465:	0	1	0	0	0	0	1	0
2473:	1	0	1	0	0	0	0	0
2481:	0	1	0	0	0	1	0	0
2489:	0	0	0	1	0	0	2	0
2497:	0	1	1	0	0	1	0	0
2505:	0	0	0	0	0	0	0	1
2513:	1	0	0	1	1	1	0	0
2521:	1	0	0	0	0	0	0	0

2529:	0	0	0	0	0	0	0	0

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Channel								
2537:	0	0	1	0	0	0	0	0
2545:	0	0	0	0	0	0	2	0
2553:	0	1	1	1	0	0	0	0
2561:	0	0	0	0	0	1	0	0
2569:	0	0	2	1	0	0	0	1
2577:	0	0	0	1	0	1	0	0
2585:	0	1	1	1	0	1	0	0
2593:	0	0	0	2	0	0	0	1
2601:	1	1	0	0	0	2	0	0
2609:	1	0	0	6	10	23	6	3
2617:	2	1	0	0	0	0	0	1
2625:	0	0	0	0	0	0	0	1
2633:	0	0	0	0	0	1	1	0
2641:	0	0	1	0	0	0	1	0
2649:	0	0	2	1	0	1	0	0
2657:	0	0	0	0	0	0	0	0
2665:	0	0	1	0	0	0	0	1
2673:	0	1	0	0	1	0	0	0
2681:	0	0	1	0	0	0	1	1
2689:	1	1	1	0	0	0	0	0
2697:	0	0	1	0	1	1	0	0
2705:	0	0	0	0	1	1	0	0
2713:	0	0	0	0	0	0	0	0
2721:	1	1	0	0	0	0	1	0
2729:	1	1	0	0	0	0	0	0
2737:	1	0	0	0	0	0	0	0
2745:	0	0	1	0	0	0	0	0
2753:	0	0	0	0	0	0	0	0
2761:	0	1	0	0	0	0	1	0
2769:	0	0	0	0	0	0	0	0
2777:	0	0	0	1	0	0	0	0
2785:	0	0	1	0	0	0	0	0
2793:	0	0	0	0	0	0	1	0
2801:	2	1	0	0	0	1	1	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	0	1	0	1	0	0	0	0
2833:	0	1	0	0	0	1	0	0
2841:	0	0	1	0	0	0	0	0
2849:	1	0	0	1	0	0	0	0
2857:	0	0	0	0	0	1	0	1
2865:	1	0	0	0	0	0	0	0
2873:	0	0	0	0	1	0	1	0
2881:	0	0	0	0	0	0	0	0
2889:	0	0	1	1	0	0	0	1
2897:	0	0	0	0	1	1	0	0
2905:	0	0	0	0	0	0	0	0
2913:	1	0	0	2	0	0	0	0
2921:	0	1	1	0	1	0	0	1
2929:	0	1	0	0	1	0	0	0
2937:	0	1	0	0	0	0	0	0
2945:	1	2	0	1	0	0	1	0
2953:	0	0	0	0	0	0	0	0

2961:	0	0	0	0	0	1	0	0

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Channel								
2969:	0	0	0	0	1	0	0	0
2977:	0	1	0	0	0	0	0	0
2985:	0	0	0	1	0	0	1	0
2993:	0	0	0	0	0	0	0	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	1	0
3017:	0	0	0	0	1	0	0	0
3025:	0	0	2	0	1	2	0	0
3033:	0	1	0	0	2	0	0	0
3041:	0	0	0	0	0	1	0	0
3049:	0	0	0	0	0	0	0	0
3057:	0	0	0	0	1	0	0	0
3065:	0	0	0	0	1	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	1	0	0
3097:	0	0	0	0	1	0	0	0
3105:	0	0	0	0	0	1	0	0
3113:	1	0	0	0	0	0	0	0
3121:	1	0	1	0	0	0	0	0
3129:	0	0	0	0	0	0	0	0
3137:	0	0	1	0	0	0	0	0
3145:	0	0	0	0	0	0	1	1
3153:	0	0	0	0	0	0	0	0
3161:	1	0	0	1	0	0	1	0
3169:	0	0	1	0	0	0	0	0
3177:	0	0	0	0	0	0	0	1
3185:	0	1	0	0	0	0	0	0
3193:	0	1	0	0	0	0	0	0
3201:	0	0	0	0	0	0	0	0
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	0	0	0	0
3241:	0	1	0	0	0	1	0	0
3249:	0	0	0	0	1	0	2	0
3257:	0	1	1	1	1	0	0	0
3265:	1	0	1	0	0	0	0	1
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	0	0	0	0
3289:	0	0	0	0	0	0	1	0
3297:	0	0	0	0	0	1	1	0
3305:	0	0	0	0	0	0	0	1
3313:	0	0	1	0	0	1	0	0
3321:	0	0	0	0	0	0	0	1
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0	0
3345:	0	0	0	0	0	1	0	0
3353:	0	0	0	0	0	0	0	1
3361:	0	0	0	1	0	1	0	0
3369:	0	0	0	0	0	0	0	1
3377:	0	0	0	0	0	0	1	0
3385:	0	0	0	0	0	0	0	0

3393:	0	0	0	1	0	0	0	0

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Channel								
3401:	0	0	0	0	0	0	1	0
3409:	0	0	0	0	0	1	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	1	0
3433:	0	0	0	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	1	0	0	0	0
3473:	1	1	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	1	0	0	0	0	1	0
3497:	0	1	0	0	0	0	0	1
3505:	0	0	0	0	0	0	0	0
3513:	0	1	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	1	0	0	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:	1	1	0	0	1	0	0	0
3569:	0	0	0	0	1	0	0	0
3577:	0	0	1	0	0	0	0	0
3585:	0	0	0	0	0	0	0	1
3593:	0	1	0	0	0	0	0	0
3601:	1	0	0	0	0	0	1	0
3609:	0	0	0	0	0	1	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	0
3649:	0	0	0	0	1	0	0	0
3657:	0	0	1	0	0	0	0	0
3665:	0	1	0	0	0	0	0	0
3673:	0	0	0	0	1	0	0	0
3681:	0	0	0	0	0	1	1	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	0
3713:	0	1	0	0	0	0	0	0
3721:	0	1	0	0	0	0	0	0
3729:	1	0	0	0	0	0	0	0
3737:	0	1	0	0	0	0	0	0
3745:	0	0	0	0	0	0	1	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	1
3769:	0	0	0	0	0	0	1	0
3777:	0	0	0	0	1	0	0	0
3785:	1	0	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	1
3801:	0	0	0	0	0	0	1	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0

3825:	0	0	0	1	0	0	0	0

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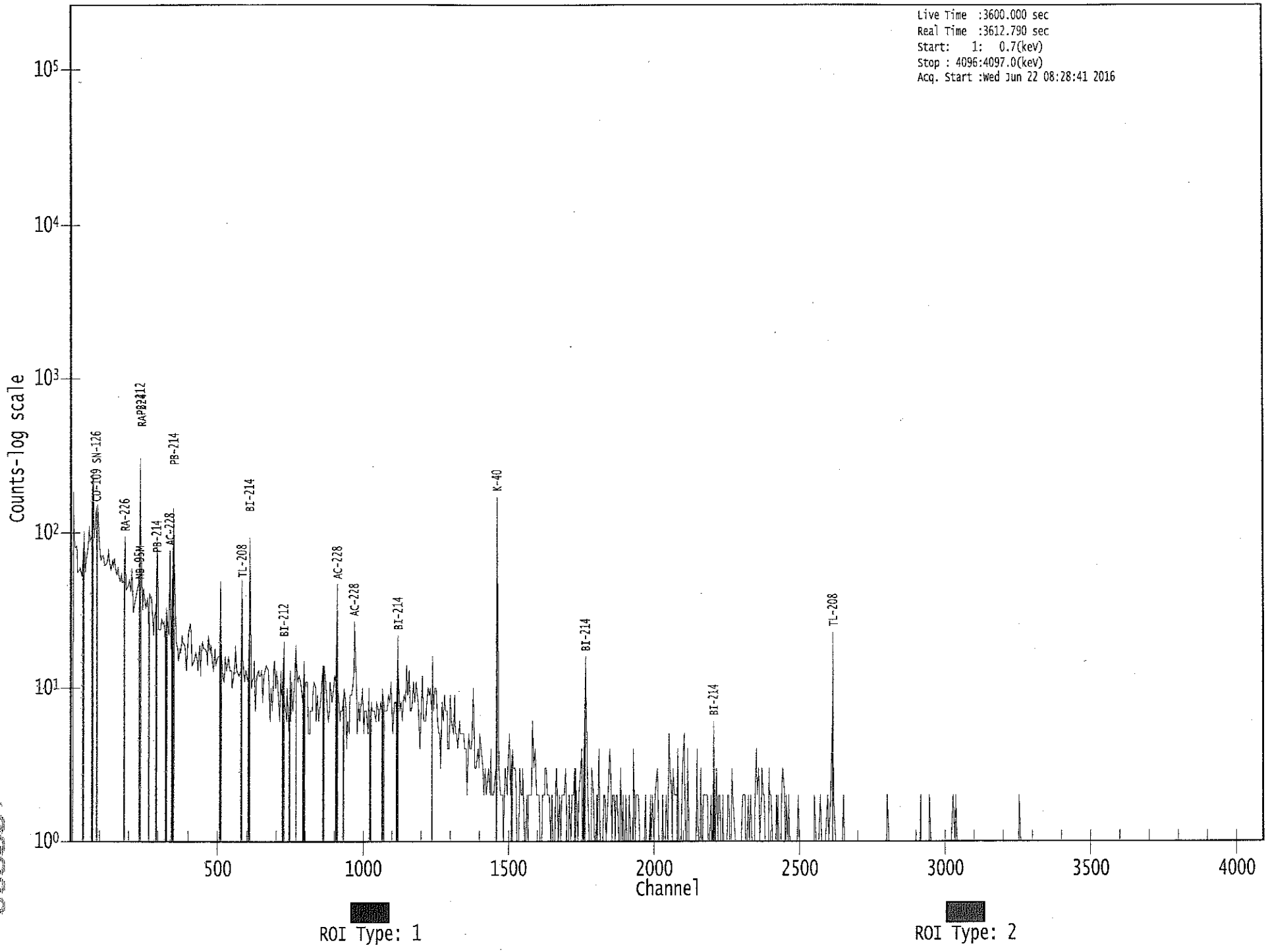
Channel								
3833:	0	0	0	0	0	1	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	1	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	1
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	1	1	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	1	0	1	0	0	1	0
3921:	0	1	0	0	0	0	1	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	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	1	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	1	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	1	0	0	0	0
4041:	0	0	0	0	0	0	0	1
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	1	1	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	1	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	0

0000039243.CNF



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*****************************************************************************
*****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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Last Results Report
6/22/16 5:53:19 AM

AG
6/22/16

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: 6/22/16 5:38:06 AM
Measurement Date: 6/22/16 5:38:09 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.2 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE2 [SD:-2.4237E+035+/-******]	3.4267E+000	3.7743E-002 < : : : >

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)

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****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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Last Results Report
6/22/16 5:53:49 AM

AG
6/22/16

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)A File:              \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000003B.QCK

)etector:           GE3
;eometry:           <None>
:ertificate:        <None>
;ample ID:            QA Background Ch
;ample Desc:          QA Count
;ample Quantity:       1.0000E+000
;ample Date:          6/22/16   5:38:32 AM
leasurement Date:     6/22/16   5:38:35 AM
:lapsed Live Time:        900.0 seconds
:lapsed Real Time:        902.9 seconds

'arameter Description            Value                 Deviation/Flags
 [Mean +/- Std. Dev.]                              < LU : SD : UD : BS >

)AILY BKG CT RATE GE3          1.5240E+003             -5.2005E-001
 [SD: 2.2330E+003+/-1363.3]                        <    :    :    :    >


'lags 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)
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****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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Last Results Report
6/22/16 5:54:08 AM

AG
6/22/16

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)A File:            \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000004B.QCK

)etector:          GE4
;eometry:          <None>
:ertificate:       <None>
;ample ID:           QA Background Ch
;ample Desc:         QA Count
;ample Quantity:      1.0000E+000
;ample Date:         6/22/16   5:38:55 AM
leasurement Date:   6/22/16   5:38:58 AM
:lapsed Live Time:       900.0 seconds
:lapsed Real Time:       900.2 seconds


'arameter Description          Value                Deviation/Flags
 [Mean +/- Std. Dev.]                            < LU : SD : UD : BS >

)AILY BKG CT RATE GE4        1.6256E+000            -5.0240E-002
 [SD: 9.4992E+000+/-156.72]                      <    :    :    :    >
 Trend Test: The last     9 samples exhibit a bias trend.


'lags 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)
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*************************************************************************
****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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AG
6/22/16

Last Results Report
6/22/16 6:11:24 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002GAS-1401C.QC

Detector: GE2
Geometry: <None>
Certificate: GAS-1401
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 6/22/16 5:55:45 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 928.0 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54kev	6.0000E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 kev	6.6154E+002	
Boundary Limits: [6.600E+002, 6.640E+002]		< : : : >
Peak centroid 1332.49 ke	1.3324E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1836.1 kev	1.8356E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	1.2058E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	2.0317E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.0535E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.4174E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	1.4803E+005	
Boundary Limits: [1.224E-001, 1.836E-001]		< : : : >
Decay corrected activity	6.1677E+004	
Boundary Limits: [4.971E-002, 7.457E-002]		< : : : >

ecay corrected activity 9.8677E+004
Boundary Limits: [7.978E-002, 1.197E-001] < : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity Boundary Limits: [1.714E-001, 2.571E-001]	2.0772E+005	< : : : >

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)

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*****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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AG
6/22/16

Last Results Report
6/22/16 6:11:46 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000003GAS-1402C.QC

Detector: GE3
Geometry: <None>
Certificate: GAS-1402
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 6/22/16 5:56:03 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 930.0 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	6.0000E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6160E+002	
Boundary Limits: [6.600E+002, 6.640E+002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1332.49 ke	1.3321E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.1 kev	1.8354E+003	
Boundary Limits: [1.833E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.4287E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	1.9971E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	2.2670E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.5305E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.7982E+005	
Boundary Limits: [1.223E-001, 1.834E-001]		< : : : >
Decay corrected activity	6.5819E+004	

Boundary Limits: [4.969E-002, 7.453E-002] < : : : >

Decay corrected activity 1.0084E+005
Boundary Limits: [7.972E-002, 1.120E-001] < : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	2.0584E+005	
Boundary Limits: [1.713E-001, 2.569E-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)

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*****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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AG
6/22/16

Last Results Report
6/22/16 6:12:02 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000004GAW-14C.QCK

Detector: GE4
Geometry: <None>
Certificate: GAW-14
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 6/22/16 5:56:18 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 934.7 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.8834E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6133E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Peak centroid 1332.49 ke	1.3328E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.1 kev	1.8369E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	2.2376E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	2.6550E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.8401E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	3.1306E+000	
Boundary Limits: [5.000E-001, 3.500E+000]		< : : : >
Decay corrected activity	1.2602E+005	
Boundary Limits: [1.200E-001, 1.816E-001]		< : : : >
Decay corrected activity	6.7608E+004	
Boundary Limits: [4.918E-002, 7.377E-002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		

ecay corrected activity 1.0215E+005
Boundary Limits: [7.892E-002, 1.184E-001] < : : : >
Trend Test: The last 9 samples exhibit a bias trend.

arameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
ecay corrected activity Boundary Limits: [1.695E-001, 2.543E-001]	2.1931E+005	< : : : >

lags 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)