

AUXIER & ASSOCIATES, INC.

PAP/KAN

**STANDARD LEVEL IV
REPORT OF ANALYSIS**

WORK ORDER #16-06013-OR

June 23, 2016

**EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN**

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**Eberline Services – Oak Ridge Laboratory
LABORATORY DATA SUPPORT CHECKLIST**

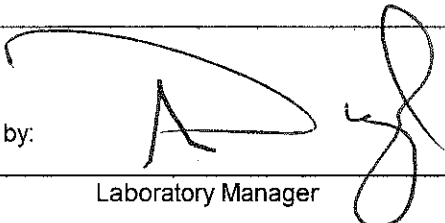
MP-001-3

Eberline Services Work Order # 16-06013

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

Date for Partial	Initials	Date	Initials	Checklist Items
		6/6/16	JEB	Sample Log-In
		6/9/16	KB.S	Data Compilation
		6-14-16	MLT	First Technical Data Review
		6/14/16	MSK	Second Technical Data Review
		6/22/16		Data Entry/Electronic Deliverable
		6/22/16		Case Narrative
		6/22/16	KB.S	Electronic Deliverable Proof
		6/23/16	MSK	Samples Analyzed within Holding Time Yes? <input checked="" type="checkbox"/> No? <input type="checkbox"/>
		6/23/16	MSK	QA/QC Review
		06/09/16	EJT	Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by:  6/23/16
 Laboratory Manager Date

Copy No. _____

SECTION I
CHAIN OF CUSTODY

Chain of Custody Record

No 7239

Eberline Services
601 Scarborough Road
Oak Ridge, TN 37830
(865) 481-0683 Phone • (865) 483-4621 Fax



EBERLINE
SERVICES

Page 1 of 1

Project Name: PAP/KAN		Project Number:	
Send Report To: CECILIA GREENE		Sampler (Print Name): THEO REUTER	
Address: 9821 CEDAR RD		Sampler (Print Name):	
SUITE 1		Shipment Method: FEDEX	
KNOXVILLE, TN 37932		Airbill Number:	
Phone: 865-675-3669		Laboratory Receiving:	
Fax: cs.greenegreener.com; HCOHENE SSPA.COM		Field Sample ID	
CP-5026-S(10-1.5) 4		6/2/16 16:30 SOIL	
Analysis Requested		Number of Containers	
ISOTOPIC URANIUM (METHOD 300)		1	
ISOTOPIC THORIUM (METHOD 300)			
GAMMA SPECTROSCOPY (METHOD 300)			
ISOTOPIC ER130 (METHOD 300)			
Comments, Special Instructions, etc.		Lab Sample ID (to be completed by lab)	
16-06013		1800 W JAN	
REC'D JUN 06 2016		Purchase Order #:	
Sample Custodian Remarks (Completed By Laboratory):		Turnaround	
QA/QC Level		Routine <input type="checkbox"/>	
Level I <input type="checkbox"/>		24 Hour <input type="checkbox"/>	
Level II <input type="checkbox"/>		1 Week <input checked="" type="checkbox"/>	
Level III <input type="checkbox"/>		Other <input type="checkbox"/>	
Other <input type="checkbox"/>		Total # Containers Received?	
Received by: (Signature)		COC Seals Present?	
Received by: (Signature)		COC Seals Intact?	
Received by: (Signature)		Received Containers Intact?	
Received by: (Signature)		Temperature?	



EBERLINE
SERVICES
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #

16-06013

Lab Deadline

6/10/2016

Analysis

Gamma - Level 4

Sample Matrix

Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
Report Ac228, Bi214, K40, Pb212/214, Ra226 from Bi214, Ra228 from Ac228, Tl208, Th234	04	54	G1.1

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	0960 <i>Kerry Seig</i>	6-6-16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	0731 <i>Kerry Seig</i>	6.7.16
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	0731 <i>[Signature]</i>	6/7/16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	0944 <i>[Signature]</i>	6/7/16
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



Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 16-06013

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	<u>Y</u>	N	
If aqueous, properly preserved	Y	N	<u>N/A</u>

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	<u>Y</u>	N
Unbroken on outside of package?	<u>Y</u>	N
Present on samples?	<u>Y</u>	N
Unbroken on samples?	<u>Y</u>	N
Was chain of custody present upon sample receipt?	<u>Y</u>	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: 6/8/16

SECTION III
CASE NARRATIVE



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

EBS-OR-40901

June 23, 2016

Cecilia Greene
Auxier & Associates, Inc.
9821 Cogdill Road #1
Knoxville, TN 37932

CASE NARRATIVE
Work Order # 16-06013-OR

SAMPLE RECEIPT

This work order contains one soil sample received 06/06/2016. Sample was analyzed for Isotopic Uranium, Isotopic Thorium and by Gamma Spectroscopy.

<u>CLIENT ID</u>	<u>LAB ID</u>
CP-5026-S 1 0-1 5	16-06013-04

ANALYTICAL METHODS

Isotopic Uranium was analyzed using Method EML U-02 Modified. Isotopic Thorium was analyzed using Method EML Th-01 Modified. Gamma Spectroscopy was performed using Method LANL ER-130 Modified.

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

Sample was 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

Sample demonstrated acceptable results for all Uranium analyses. Chemical recovery was acceptable for the laboratory control sample and method blank. Chemical recovery was low for sample fractions -03 and -04 (Client ID: CP-5026-S 1 0-1 5 DUP & DO). Due to the positive sample nature, reanalysis was not performed. The Uranium-234 method blank demonstrated a result slightly greater than the method detection limit. The Uranium-235 and Uranium-238 method blank demonstrated acceptable results. Results for the Uranium-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.

ISOTOPIC THORIUM

Sample was prepared by removing a representative aliquot followed by mixed acid digestions as appropriate. Thorium was selectively extracted by ion exchange. Thorium 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 Thorium-228, Thorium-230 and Thorium-232. Chemical recovery was determined by the use of a Thorium-229 tracer. Activity of the Thorium-229 tracer was determined by alpha spectroscopy using an energy specific region of interest.

Sample demonstrated acceptable results for all Thorium analyses. Chemical recovery was acceptable for all samples. The Thorium-228, Thorium-230 and Thorium-232 method blank demonstrated acceptable results. Results for the Thorium-228 and Thorium-230 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Thorium-232 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Thorium-228, Thorium-230 and Thorium-232 laboratory control sample demonstrated an acceptable percent recovery.

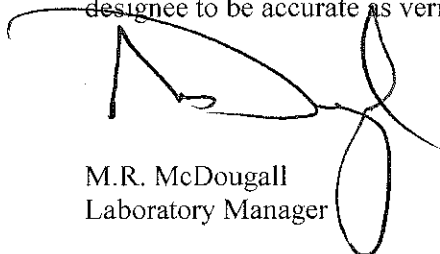
GAMMA SPECTROSCOPY

Sample for Gamma Spectroscopy analysis was prepared by transferring a known mass/aliquot of the prepared and homogenized sample to a standard geometry container. Sample was counted on a High Purity Germanium (HPGe) gamma ray detector.

Sample demonstrated acceptable results for all gamma-emitting radionuclides as reported. The method blank demonstrated acceptable results for all radionuclides as reported. Results for the Bismuth-214 and Potassium-40 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Lead-214 replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. 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: 6/23/2016

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

Eberline Analytical

Final Report of Analysis

Cecilia Greene
Auxier & Associates, Inc.
 9821 Cogdill Road, Suite 1
 Knoxville, TN 37932

SDG: 16-06013
Project: PAP-KAN
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Work Order Details:

Report To:

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-06013-01	LCS	KNOWN	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Cobalt-60	LANL ER-130 Modified	1.37E+02	5.48E+00				pC/g
16-06013-01	LCS	KNOWN	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Cesium-137	LANL ER-130 Modified	8.69E+01	3.48E+00				pC/g
16-06013-01	LCS	SPIKE	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Cobalt-60	LANL ER-130 Modified	1.40E+02	8.09E+00	1.08E+01	1.14E+00	9.00E-01	pC/g
16-06013-01	LCS	SPIKE	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Cesium-137	LANL ER-130 Modified	9.09E+01	8.05E+00	9.30E+00	1.25E+00	6.19E-01	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Actinium-228	LANL ER-130 Modified	-8.41E-02	9.43E-02	9.44E-02	9.39E-02	3.71E-02	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Bismuth-214	LANL ER-130 Modified	2.13E-02	5.07E-02	5.07E-02	8.62E-02	3.90E-02	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Potassium-40	LANL ER-130 Modified	2.73E-02	5.35E-02	5.35E-02	2.07E-01	6.35E-02	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Lead-212	LANL ER-130 Modified	2.74E-02	3.89E-02	3.89E-02	6.37E-02	2.99E-02	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Lead-214	LANL ER-130 Modified	6.25E-02	6.18E-02	6.18E-02	1.02E-01	4.77E-02	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Radium-228	LANL ER-130 Modified	2.19E-02	5.07E-02	5.07E-02	8.62E-02	3.90E-02	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Radium-226	LANL ER-130 Modified	-8.41E-02	9.43E-02	9.44E-02	9.39E-02	3.71E-02	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Thorium-234	LANL ER-130 Modified	8.30E-02	4.50E-01	4.51E-01	6.10E-01	2.89E-01	pC/g
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/7/2016	16-06013	Thallium-208	LANL ER-130 Modified	6.88E-02	7.00E-02	7.01E-02	1.11E-01	5.94E-02	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Actinium-228	LANL ER-130 Modified	8.31E-01	5.62E-01	5.64E-01	1.04E+00	5.08E-01	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Bismuth-214	LANL ER-130 Modified	1.69E+00	4.80E-01	4.88E-01	8.22E-01	4.05E-01	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Potassium-40	LANL ER-130 Modified	1.16E+01	2.02E+00	2.11E+00	2.05E+00	9.73E-01	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Lead-212	LANL ER-130 Modified	1.50E+00	5.59E-01	5.58E-01	8.50E-01	4.22E-01	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Lead-214	LANL ER-130 Modified	1.34E+00	4.72E-01	4.77E-01	8.18E-01	4.04E-01	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Radium-228	LANL ER-130 Modified	1.69E+00	4.80E-01	4.88E-01	8.22E-01	4.05E-01	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Radium-226	LANL ER-130 Modified	8.31E-01	5.62E-01	5.64E-01	1.04E+00	5.08E-01	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Thorium-234	LANL ER-130 Modified	1.43E+03	1.04E+02	1.27E+02	1.92E+01	9.57E+00	pC/g
16-06013-03	DUP	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Thallium-208	LANL ER-130 Modified	9.49E-01	6.69E-01	6.70E-01	4.74E-01	4.99E-01	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Actinium-228	LANL ER-130 Modified	6.41E-01	6.44E-01	6.45E-01	9.82E-01	4.77E-01	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Bismuth-214	LANL ER-130 Modified	1.36E+00	3.84E-01	3.91E-01	7.45E-01	3.67E-01	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Potassium-40	LANL ER-130 Modified	9.69E+00	1.87E+00	1.94E+00	2.06E+00	9.79E-01	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Lead-212	LANL ER-130 Modified	7.59E-01	3.99E-01	3.98E-01	6.35E-01	3.14E-01	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Lead-214	LANL ER-130 Modified	1.95E+00	5.27E-01	5.36E-01	8.83E-01	4.37E-01	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Radium-226	LANL ER-130 Modified	1.36E+00	3.84E-01	3.91E-01	7.45E-01	3.67E-01	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Radium-228	LANL ER-130 Modified	6.41E-01	6.44E-01	6.45E-01	9.82E-01	4.77E-01	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Thorium-234	LANL ER-130 Modified	1.40E+03	1.02E+02	1.24E+02	1.70E+01	8.49E+00	pC/g
16-06013-04	DO	CP-5026-S 10-1 5	06/02/16 16:30	6/6/2016	6/7/2016	16-06013	Thallium-208	LANL ER-130 Modified	4.08E-01	1.75E-01	1.76E-01	1.97E-01	6.24E-01	pC/g

CU=Counting Uncertainty; CSU=Combined Standard Uncertainty (2-sigma); MDA=Minimal Detected Activity; LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original; CV=Critical Value



EBERLINE
SERVICES

EBERLINE ANALYTICAL CORPORATION

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

Eberline Analytical

Final Report of Analysis

Cecilia Greene
Auxier & Associates, Inc.
9821 Cogdill Road, Suite 1
Knoxville, TN 37932

SDG: 16-06013
Project: PAP-KAN
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Work Order Details:

Report To:

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-06013-01	LCS	KNOWN	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-228	EML Th-01 Modified	4.80E+00	1.73E-01	9.61E-01	1.06E-01	3.49E-02	pCig
16-06013-01	LCS	SPIKE	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-228	EML Th-01 Modified	5.41E+00	8.15E-01	5.23E-02	7.30E-02	1.30E-02	pCig
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-228	EML Th-01 Modified	4.61E-02	5.21E-02	2.14E-01	1.47E-01	2.59E-02	pCig
16-06013-03	DUP	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Thorium-228	EML Th-01 Modified	3.98E-01	2.11E-01	2.40E-01	9.69E-02	1.52E-02	pCig
16-06013-04	DO	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Thorium-228	EML Th-01 Modified	6.47E-01	2.32E-01				pCig
16-06013-01	LCS	KNOWN	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-230	EML Th-01 Modified	5.35E+00	1.49E-01				pCig
16-06013-01	LCS	SPIKE	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-230	EML Th-01 Modified	6.30E+00	9.22E-01	1.21E+00	7.79E-02	7.69E-02	pCig
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-230	EML Th-01 Modified	3.85E-02	4.65E-02	4.67E-02	6.54E-02	6.82E-02	pCig
16-06013-03	DUP	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Thorium-230	EML Th-01 Modified	1.70E+00	5.24E-01	5.65E-01	1.21E-01	1.32E-01	pCig
16-06013-04	DO	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Thorium-230	EML Th-01 Modified	1.03E+00	3.10E-01	3.36E-01	9.04E-02	9.47E-02	pCig
16-06013-01	LCS	KNOWN	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-232	EML Th-01 Modified	4.80E+00	1.73E-01				pCig
16-06013-01	LCS	SPIKE	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-232	EML Th-01 Modified	5.30E+00	8.01E-01	9.27E-01	8.77E-02	2.02E-02	pCig
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Thorium-232	EML Th-01 Modified	2.12E-02	3.25E-02	3.25E-02	4.83E-02	3.21E-03	pCig
16-06013-03	DUP	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Thorium-232	EML Th-01 Modified	6.43E-01	2.74E-01	2.79E-01	9.64E-02	6.40E-03	pCig
16-06013-04	DO	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Thorium-232	EML Th-01 Modified	6.69E-01	2.34E-01	2.42E-01	6.67E-02	4.43E-03	pCig
16-06013-01	LCS	KNOWN	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Uranium-234	EML U-02 Modified	7.26E+00	2.61E-01				pCig
16-06013-01	LCS	SPIKE	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Uranium-234	EML U-02 Modified	7.14E+00	1.07E+00	1.18E+00	9.87E-02	4.24E-02	pCig
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Uranium-234	EML U-02 Modified	1.51E+00	4.13E-01	4.27E-01	1.23E-01	5.15E-02	pCig
16-06013-03	DUP	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Uranium-234	EML U-02 Modified	6.68E-01	2.94E+01	2.98E+01	9.42E-01	4.20E-01	pCig
16-06013-04	DO	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Uranium-234	EML U-02 Modified	7.87E-01	2.55E+01	2.61E+01	1.03E+00	5.33E-01	pCig
16-06013-01	LCS	SPIKE	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Uranium-235	EML U-02 Modified	5.54E-01	2.14E-01	2.18E-01	9.24E-02	7.72E-03	pCig
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Uranium-235	EML U-02 Modified	5.38E-02	9.18E-02	9.17E-02	1.61E-01	3.35E-03	pCig
16-06013-03	DUP	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Uranium-235	EML U-02 Modified	3.14E+01	1.45E+01	1.47E+01	1.33E+00	1.12E-01	pCig
16-06013-04	DO	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Uranium-235	EML U-02 Modified	7.47E+01	2.44E+01	2.49E+01	9.81E-01	1.62E-01	pCig
16-06013-01	LCS	KNOWN	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Uranium-238	EML U-02 Modified	7.03E+00	2.53E-01				pCig
16-06013-01	LCS	SPIKE	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Uranium-238	EML U-02 Modified	6.36E+00	9.72E-01	1.07E+00	7.46E-02	1.39E-02	pCig
16-06013-02	MBL	BLANK	06/06/16 00:00	6/6/2016	6/9/2016	16-06013	Uranium-238	EML U-02 Modified	1.66E-01	1.29E-01	1.23E-01	1.04E-01	1.93E-02	pCig
16-06013-03	DUP	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Uranium-238	EML U-02 Modified	7.12E+02	3.03E+02	3.07E+02	9.38E-01	1.63E-01	pCig
16-06013-04	DO	CP-5026-S 1 0-1 5	06/02/16 16:30	6/6/2016	6/9/2016	16-06013	Uranium-238	EML U-02 Modified	8.18E+02	2.58E+02	2.64E+02	6.78E-01	1.49E-01	pCig

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original; CV=Critical Value



EBERLINE
 SERVICES

EBERLINE ANALYTICAL CORPORATION
 601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

SECTION V
ANALYTICAL STANDARD

U-8

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

CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

Radionuclide: U-238NAT
Half Life: $(4.468 \pm 0.005) \times 10^9$ years
Catalog No.: 7338
Source No.: 479-50

Customer: TMA EBERLINE
P.O.No.: OR2778
Reference Date: January 1 1995 12:00 PST.
Contained Radioactivity: (Total U) 8.016 μ Ci
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 μ Ci/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement
a. Systematic uncertainty in instrument calibration: $\pm 3.0\%$
b. Random uncertainty in assay: $\pm 0.0\%$
c. Random uncertainty in weighing(s): $\pm 2.0\%$
d. Total uncertainty at the 99% confidence level: $\pm 3.6\%$

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
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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

SOLUTION REFERENCE # IPL 479-50 CURRENT DATE 10/1/2015 0:00
SOLUTION # U-8

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

Radionuclide ^{234, 235, 238}U Reference Date 1/1/1995 0:00
Certified Activity 8.016E+00 μCi
Certified Concentration 8.0160 $\mu\text{Ci per gram}$

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 HNO₃

Dilution Instructions: Dilution Solvent Used 1M HNO₃

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 [Signature]

Date: 10/1/2015 0:00

QC Approval [Signature]

Date: 10/1/15



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

Solution Reference # MP-009 Date 10/1/2015 0:00
IPL 479-50 Solution # U-8a

Principal Radionuclide ^{234, 235, 238}U Half Life, Years 4.468E+09 Half Life, Days 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 HNO₃

Dilution Instructions: Dilution Solvent Used 1M HNO₃

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 4.0000 ml
Total Activity: 7.1182E+04 dpm Final Activity Concentration: 7.1182E+01 dpm/ml
Final Volume: 1000.00 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 [Signature]

Date: 10/1/2015 0:00

QC Approval [Signature]

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**

Accuracy Method of measurement (see reverse of this certificate)
Random uncertainty is: $\pm 0.7\%$ Systematic uncertainty: $\pm 0.5\%$
Overall uncertainty in the radioactive concentration quoted above: $\pm 1.7\%$
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

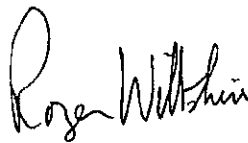
Chemical Composition Calculated weight of U-232, 4.42E-08 grams, as 2M HNO₃ solution in a flame sealed glass vial.
This Tracer solution has been produced 'carrier free'.

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

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



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

SOLUTION REFERENCE # AEA/Amersham 92/232/67 CURRENT DATE 10/27/2015 0:00
SOLUTION # U-10

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

Radionuclide ²³²U Reference Date 3/1/2000 0:00
Certified Activity 9.760E-01 μCi
Certified Concentration $\mu\text{Ci per gram}$

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
²³²U(NO₃)₆ in 2M HNO₃

Dilution Instructions: Dilution Solvent Used 2M HNO₃

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 [Signature]

Date: 10/27/2015 0:00

QC Approval [Signature]

Date: 10/28/15



QUALITY CONTROL PROGRAM
MP-009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP-009		Date	10/27/2015 0:00
Solution Reference #	AEA/Amersham 92/232/67	Solution #	U-10a
Principal Radionuclide	Half Life, Years	Half Life, Days	
²³² U	7.200E+01	2.630E+04	
Radionuclide of Interest	²³² U	Reference Date	3/1/2000 0:00
Parent Solution Conc.	2.167E+03 dpm/ml		
Chemical Composition of Standard Solution			
²³² U(NO ₃) ₆ in 2M HNO ₃			

Dilution Instructions: Dilution Solvent Used 2M HNO₃

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

CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

Radionuclide:	Th-232	Customer:	TMA EBERLINE
Half Life:	$(1.405 \pm 0.006) \times 10^{10}$ years	P.O.No.:	VH1632
Catalog No.:	7232	Reference Date:	November 1 1993 12:00 PST.
Source No.:	435-104-2	Contained Radioactivity:	(Th-232) 0.0933 μ Ci.
		Contained Radioactivity:	(Th-232) 3.45 kBq.

Description of Solution

- a. Mass of solution: 11.9712 g (in a 10 ml flame sealed ampoule)
- b. Chemical form: Th(NO₃)₄ in water
- c. Carrier content: None added
- d. Density: Approx. 1.21 g/ml @ 20°C.

Radioimpurities: None detected (other than daughters).

Radioactive Daughters

Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Po-212, Tl-208

Radionuclide Concentration

(Th-232) 0.00779 μ Ci/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement

- a. Systematic uncertainty in instrument calibration: $\pm 3.0\%$
- b. Random uncertainty in assay: $\pm 0.0\%$
- c. Random uncertainty in weighing(s): $\pm 2.0\%$
- d. Total uncertainty at the 99% confidence level: $\pm 3.6\%$

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).



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Anna U. Khan

 QUALITY CONTROL

Nov. 8, 1993

 Date Signed



QUALITY CONTROL PROGRAM
MP-009

Rev.8; 1/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

SOLUTION REFERENCE # IPL 435-104-2 CURRENT DATE 9/29/2015 0:00
SOLUTION # Th-8

Principal Radionuclide ²³²Th, ²²⁸Th Half Life, Years 1.405E+10 Half Life, Days 5.132E+12

Radionuclide ²³² & ²²⁸ Th Reference Date 11/1/1993 0:00
Certified Activity 9.330E-02 μCi
Certified Concentration $\mu\text{Ci per gram}$

Ampoule /Solution Gross 18.8415 Weight, Grams
Empty Ampoule 6.9296 Weight, Grams
Solution Net 11.9119 Weight, Grams
Total Activity in Ampoule 0.0933 μCi

Chemical Composition of Standard Solution
Th(NO₃)₄ in H₂O

Dilution Instructions: Dilution Solvent Used 1% Nitric Acid

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 0.0933 μCi Which Equals 2.071E+05 dpm at the date listed above

And after dilution the activity of this solution is 2.071E+02 dpm/ml This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: August 25, 2016

Verified & Approved By [Signature] Date: 9/29/2015 0:00
QC Approval [Signature] Date: 9/30/15



QUALITY CONTROL PROGRAM
MP-009

Rev.8; 1/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

Solution Reference # MP-009 IPL 435-104-2 Date 9/29/2015 0:00
Solution # Th-8b

Principal Radionuclide	Half Life, Years	Half Life, Days
^{228 & 232} Th	1.405E+10	5.132E+12

Radionuclide of Interest ^{228 & 232}Th Reference Date 11/1/1993 0:00
Parent Solution Conc. 2.07E+02 dpm/ml

Chemical Composition of Standard Solution
Th(NO₃)₄ in 1% HNO₃

Dilution Instructions: Dilution Solvent Used 1% Nitric Acid

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 500.0000 ml
Total Activity: 1.0355E+05 dpm
Final Volume: 1000.00 ml
Final Activity Concentration: 1.0355E+02 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: August 25, 2016

Verified & Approved By [Signature]

Date: 9/29/2015 0:00

QC Approval [Signature]

Date: 9/30/15

QA/QC REVIEWED

Date 10/14/91 Initials ut

CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

Received
OCT 14 1991
TMA/Eberline
Oak Ridge Lab

Radionuclide: Th-230
Half Life: $(7.54 \pm 0.03) \times 10^4$ years
Catalog No.: 7230
Source No.: 388-116

Customer: TMA EBERLINE
P.O.No.: TT4944
Reference Date: November 1 1991 12:00 PST.
Contained Radioactivity: 1.036 μ Ci.

Description of Solution

- a. Mass of solution: 5.0042 grams.
- b. Chemical form: Th(NO3)4 in 0.1N HNO3
- c. Carrier content: None added
- d. Density: 1.0016 gram/ml @ 20°C.

Radioimpurities

See attached technical data sheet

Radioactive Daughters

See attached technical data sheet

Radionuclide Concentration

0.207 μ Ci/gram.

Method of Calibration

Weighed aliquots of the solution were assayed using a liquid scintillation counter.

Uncertainty of Measurement

- a. Systematic uncertainty in instrument calibration: $\pm 2.0\%$
- b. Random uncertainty in assay: $\pm 0.5\%$
- c. Random uncertainty in weighing(s): $\pm 0.2\%$
- d. Total uncertainty at the 99% confidence level: $\pm 2.7\%$

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Notes

1. Nuclear data were taken from "Table of Isotopes", Seventh Edition, edited by Virginia S. Shirley.
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)



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[Signature]
QUALITY CONTROL



QUALITY CONTROL PROGRAM

MP-009

Rev.14; 10/10/2012

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY RADIOACTIVE REFERENCE SOLUTIONS PRIMARY DILUTION RECERTIFICATION MP 009

SOLUTION REFERENCE # IPL 388-116 CURRENT DATE 4/15/2015 0:00
SOLUTION # Th-1

Principal Radionuclide ²³⁰Th Half Life, Years 7.540E+04 Half Life, Days 2.754E+07

Radionuclide ²³⁰Thorium Reference Date 11/1/1991 0:00
Certified Activity 1.036E+00 μCi
Certified Concentration $\mu\text{Ci per gram}$

Ampoule /Solution Gross 9.2660 Weight, Grams
Empty Ampoule 4.6218 Weight, Grams
Solution Net 4.6442 Weight, Grams
Total Activity in Ampoule 1.0360 μCi

Chemical Composition of Standard Solution

²³⁰Th(NO₃)₄ in 0.1N HNO₃

Dilution Instructions: Dilution Solvent Used 0.1N HNO₃

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0360 μCi Which Equals 2.300E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.300E+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: February 12, 2016

Recertified By

Date: 4/15/2015 0:00

QC Approval

Date: 4/15/15



QUALITY CONTROL PROGRAM
MP-009

Rev.14; 10/10/2012
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

Solution Reference # MP-009 IPL 388-116 Date 4/15/2015 0:00
Solution # Th-1b

Principal Radionuclide ²³⁰Th Half Life, Years 7.540E+04 Half Life, Days 2.754E+07

Radionuclide of Interest ²³⁰Thorium Reference Date 11/1/1991 0:00
Parent Solution Conc. 2.30E+03 dpm/ml

Chemical Composition of Standard Solution
²³⁰Th(NO₃)₄ in 0.1N HNO₃

Dilution Instructions: Dilution Solvent Used 0.1N HNO₃

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml
Total Activity: 2.2999E+04 dpm Final Activity Concentration: 2.2999E+01 dpm/ml
Final Volume: 1000.00 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: February 12, 2016

Recertified By [Signature]

Date: 4/15/2015 0:00

QC Approval [Signature]

Date: 4/15/15



**Isotope Products
Laboratories**

An Eckert & Ziegler Company

24937 Avenue Tibbitts
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Tel 661•309•1010
Fax 661•257•8303

Th-18

CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

Radionuclide: Th-229	Customer: EBERLINE SERVICES
Half-life: 7340 ± 160 years	P.O. No.: 00009633
Catalog No.: 7229	Reference Date: 15-Jan-02 12:00 PST
Source No.: 867-54	Contained Radioactivity: 1.013 μCi 37.48 kBq (Th-229 only)

Physical Description:

- | | |
|----------------------|--|
| A. Mass of solution: | 5.0147 g in 5 mL flame-sealed ampoule |
| B. Chemical form: | Th(NO ₃) ₄ in 0.1M HNO ₃ |
| C. Carrier content: | 10μg Th/mL |
| D. Density: | 1.0016 g/mL @ 20°C. |

Radioimpurities:

None detected (daughters in equilibrium)

Radionuclide Concentration: 0.2020 μCi/g, 7.474 kBq/g

Method of Calibration:

This source was prepared from a weighed aliquot of solution whose activity in μCi/g was determined using gamma ray spectrometry.

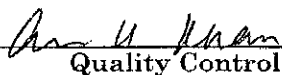
Peak energy used for integration:	193.5 keV
Branching ratio used:	0.0441 gammas per decay

Uncertainty of Measurement:

- | | |
|---|---------|
| A. Type A (random) uncertainty: | ± 0.7 % |
| B. Type B (systematic) uncertainty: | ± 3.0 % |
| C. Uncertainty in aliquot weighing: | ± 0.0 % |
| D. Total uncertainty at the 99% confidence level: | ± 3.1 % |

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a 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).
- Nuclear data was taken from IAEA Technical Report Series No. 261.
- This solution has a working life of 5 years.


Quality Control

9-Jan-02
Date Signed

IPL Ref. No.: 867-54

ISO 9001 CERTIFIED

Medical Imaging Laboratory
24937 Avenue Tibbitts Valencia, California 91355

Industrial Gauging Laboratory
1800 North Keystone Street Burbank, California 91504

: 00032



QUALITY CONTROL PROGRAM

MP-009

Rev.8; 1/10/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY RADIOACTIVE REFERENCE SOLUTIONS PRIMARY DILUTION RECERTIFICATION MP 009

SOLUTION REFERENCE # IPL 867-54 CURRENT DATE 9/29/2015 0:00
SOLUTION # Th-18

Principal Radionuclide ²²⁹Th Half Life, Years 7.340E+03 Half Life, Days 2.681E+06

Radionuclide ²²⁹Th Reference Date 1/15/2002 0:00
Certified Activity 1.013E+00 μCi
Certified Concentration $\mu\text{Ci per gram}$

Ampoule /Solution Gross 8.7752 Weight, Grams
Empty Ampoule 3.7591 Weight, Grams
Solution Net 5.0161 Weight, Grams
Total Activity in Ampoule 1.0130 μCi

Chemical Composition of Standard Solution

²²⁹Th(NO₃)₄ in 0.1M HNO₃

Dilution Instructions: Dilution Solvent Used 0.1 M HNO₃

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0130 μCi Which Equals 2.249E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.249E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: August 24, 2016

Verified & Approved By 

Date: 9/29/2015 0:00

QC Approval 

Date: 9/30/15



QUALITY CONTROL PROGRAM
MP-009

Rev.7; 9/29/99
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP-009
Solution Reference # IPL 867-54 Date 9/29/2015 0:00
Solution # Th-18a

Principal Radionuclide ²²⁹Th Half Life, Years 7.340E+03 Half Life, Days 2.681E+06

Radionuclide of Interest ²²⁹Th Reference Date 1/15/2002 0:00
Parent Solution Conc. 2.25E+03 dpm/ml

Chemical Composition of Standard Solution
Th(NO₃)₄ in 0.1M HNO₃

Dilution Instructions: Dilution Solvent Used 0.1M HNO₃

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml
Total Activity: 2.2490E+04 dpm Final Activity Concentration: 2.2490E+01 dpm/ml
Final Volume: 1000.00 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: August 24, 2016

Verified & Approved By [Signature]
QC Approval [Signature]

Date: 9/29/2015 0:00
Date: 9/30/15



Eckert & Ziegler

Analytix

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404-352-8677
Fax 404-352-2837
www.analytixinc.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 Analytix (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* $\mu\text{ps/gram}$	This Source μps	Uncertainty*, %			Calibration Method*
					u_A	u_B	U	
Am-241	59.5	1.580E+05	—	2.030E+03	0.1	1.8	3.6	4 π 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	1.966E+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 Analytix' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4 π 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. ---



SECTION VI
QUALITY CONTROL SAMPLE RESULTS SUMMARY

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06013	UUIISO	1	pCi	g	Auxier & Associates, Inc.

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	98.37%	16.58%	100.00%	3.60%	7.26E+00	2.61E-01	7.14E+00	1.18E+00	U-8a	3.20E+01	3.60E+00	5.04E-01
U-238	90.40%	16.88%	100.00%	3.60%	7.03E+00	2.53E-01	6.36E+00	1.07E+00	U-8a	3.10E+01	3.60E+00	5.04E-01

Matrix Spike

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

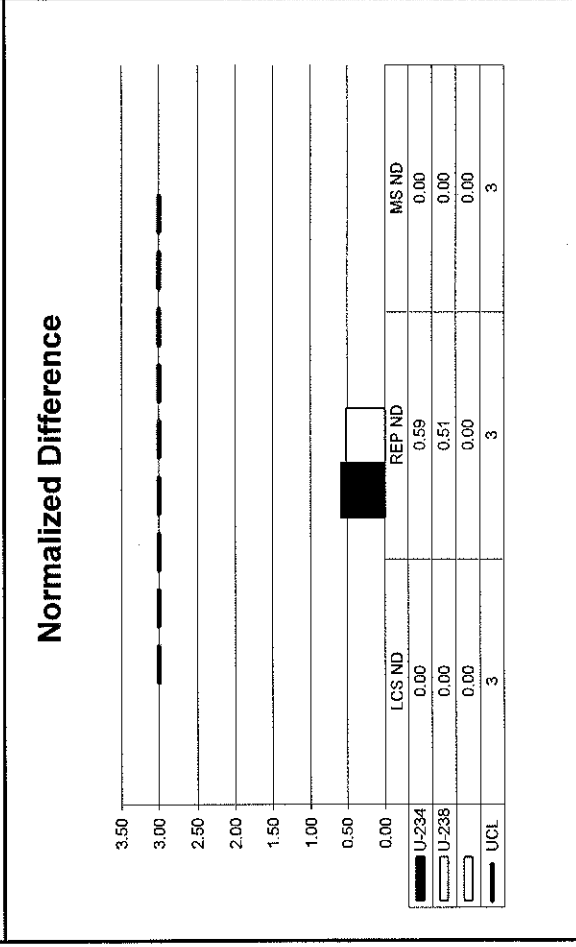
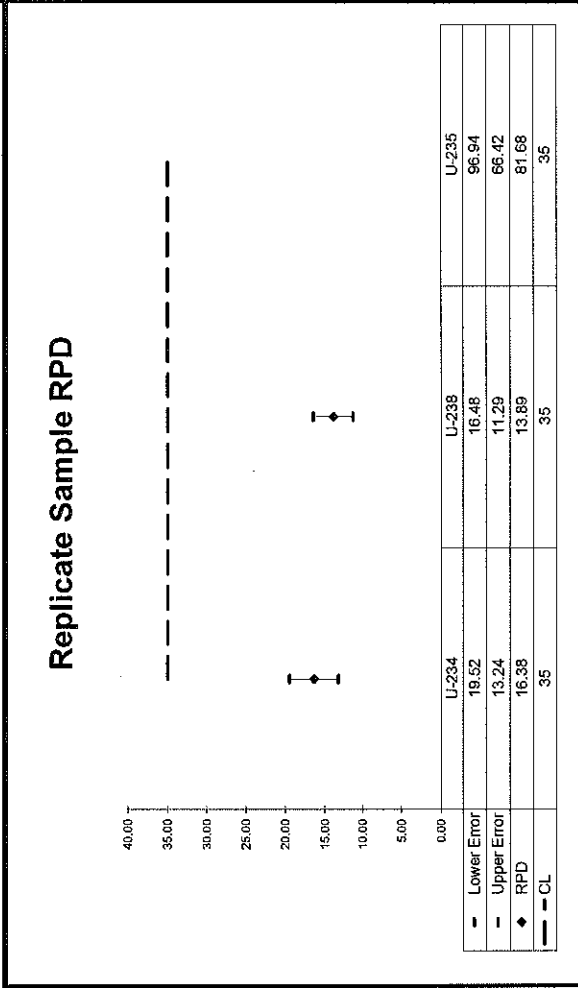
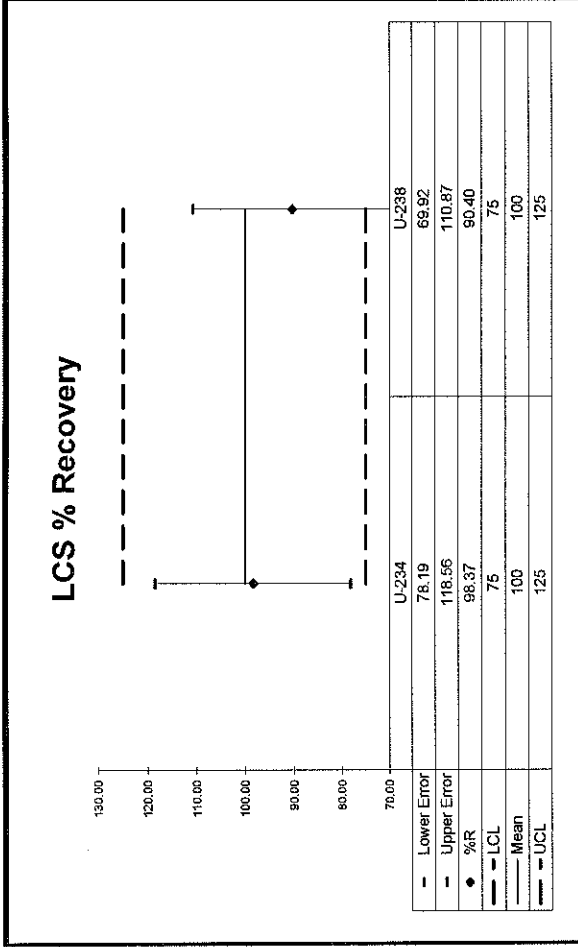
Replicate Sample

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND
U-234	0.59	16.38	7.87E+01	2.61E+01	6.68E+01	2.98E+01	0.98	OK			OK	OK
U-238	0.51	13.89	8.18E+02	2.64E+02	7.12E+02	3.07E+02	0.90	OK			OK	OK
U-235	2.93	81.68	7.47E+01	2.49E+01	3.14E+01	1.47E+01		OK			INV	OK

QC Summary

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND
U-234	0.59	16.38	7.87E+01	2.61E+01	6.68E+01	2.98E+01	0.98	OK			OK	OK
U-238	0.51	13.89	8.18E+02	2.64E+02	7.12E+02	3.07E+02	0.90	OK			OK	OK
U-235	2.93	81.68	7.47E+01	2.49E+01	3.14E+01	1.47E+01		OK			INV	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06013	UUIISO	1	pCi	g	Auxier & Associates, Inc.



No Matrix Spike

WO	Analysis		Run	Activity Units	Aliquot Units	Client Name
16-06013	THISO	1	pCi	g	Auxier & Associates, Inc.	

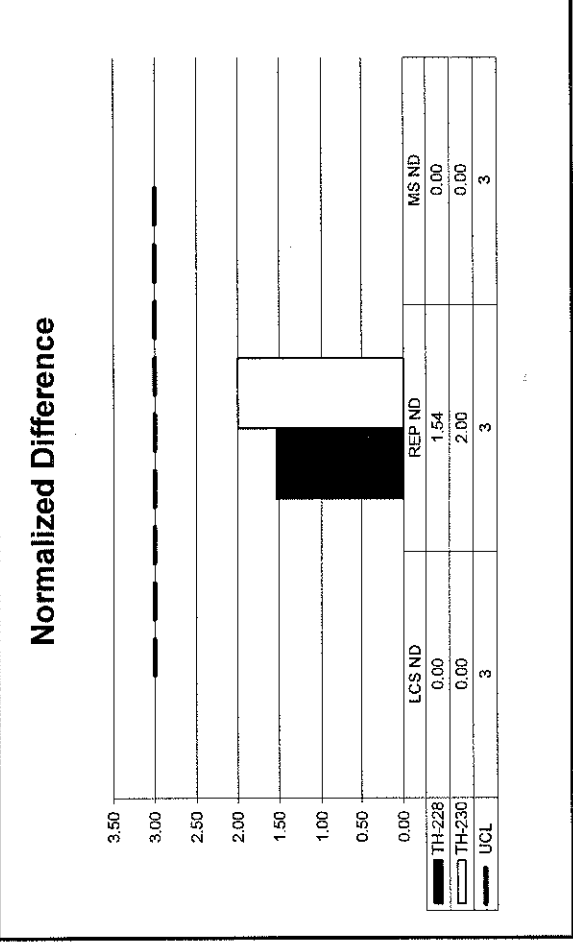
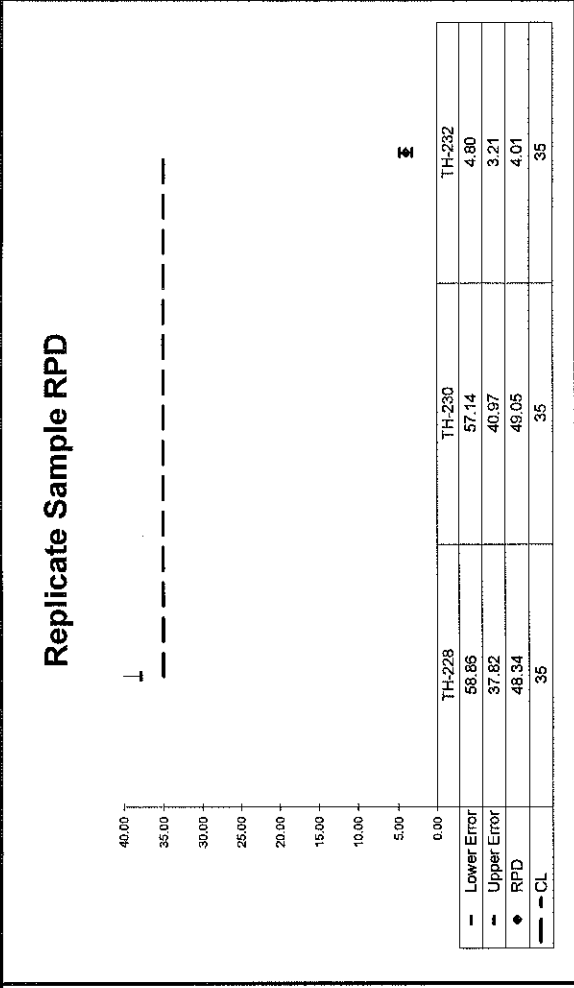
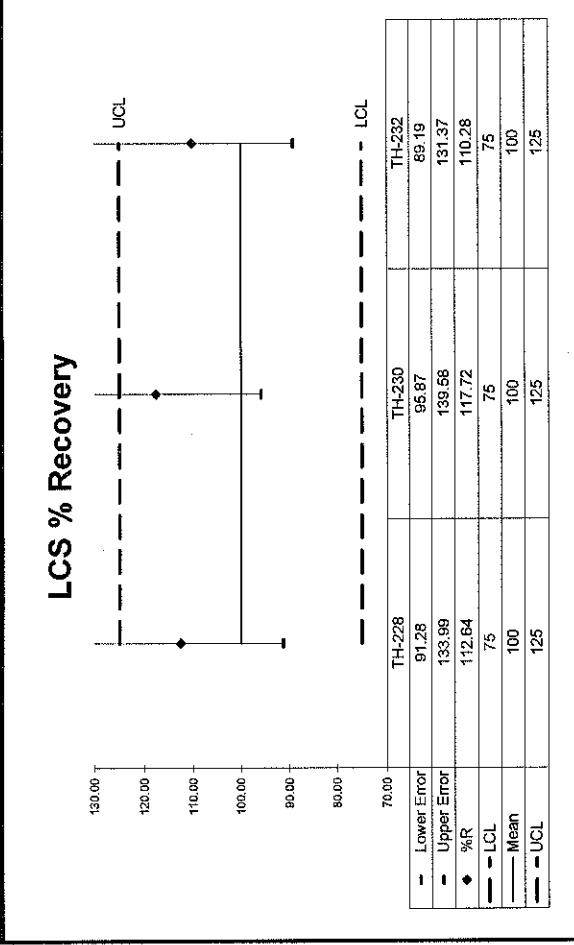
Laboratory Control Sample												
Analyte	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
TH-228	112.64%	17.76%	100.00%	3.60%	4.80E+00	1.73E-01	5.41E+00	9.61E-01	Th-8b	1.04E+02	3.60E+00	1.03E-01
TH-230	117.72%	19.15%	100.00%	2.70%	5.35E+00	1.45E-01	6.30E+00	1.21E+00	Th-1b	2.35E+01	2.70E+00	5.05E-01
TH-232	110.28%	17.49%	100.00%	3.60%	4.80E+00	1.73E-01	5.30E+00	9.27E-01	Th-8b	1.04E+02	3.60E+00	1.03E-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											QC Summary			
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND		
TH-228	1.54	48.34	6.47E-01	2.40E-01	3.95E-01	2.14E-01	1.13	OK			INV	OK		
TH-230	2.00	49.05	1.03E+00	3.36E-01	1.70E+00	5.65E-01	1.18	OK			INV	OK		
TH-232	0.14	4.01	6.69E-01	2.42E-01	6.43E-01	2.79E-01	1.10	OK			OK	OK		



WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06013	THISO	1	pCi	g	Auxier & Associates, Inc.



No Matrix Spike



WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06013	Gamma	1	pCi	9	Auxier & Associates, Inc.

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	101.85%	7.74%	100.00%	4.00%	1.37E+02	5.48E+00	1.40E+02	1.08E+01	GAS-1302	1.37E+02	5.48E+00	7.36E+02
CS-137	104.59%	10.23%	100.00%	4.00%	8.69E+01	3.48E+00	9.09E+01	9.30E+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)

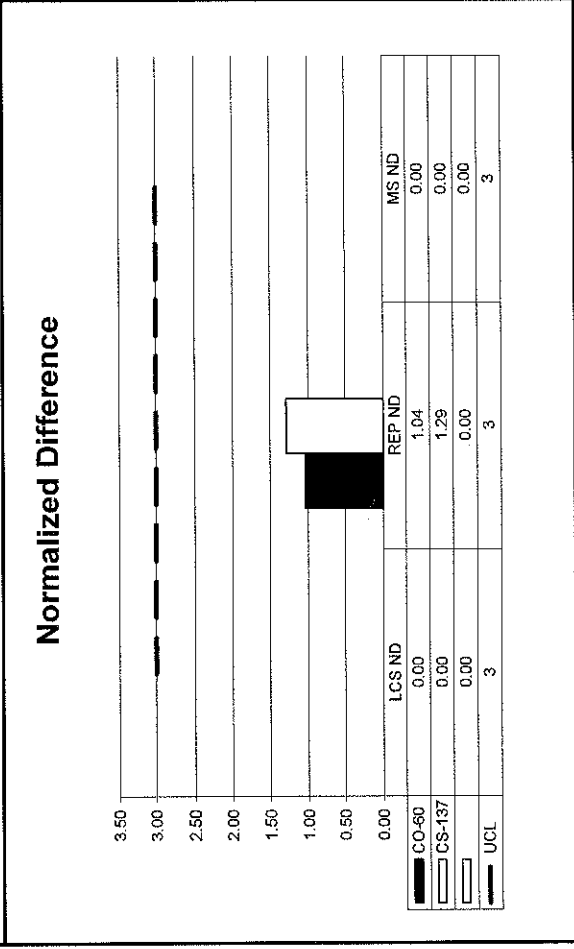
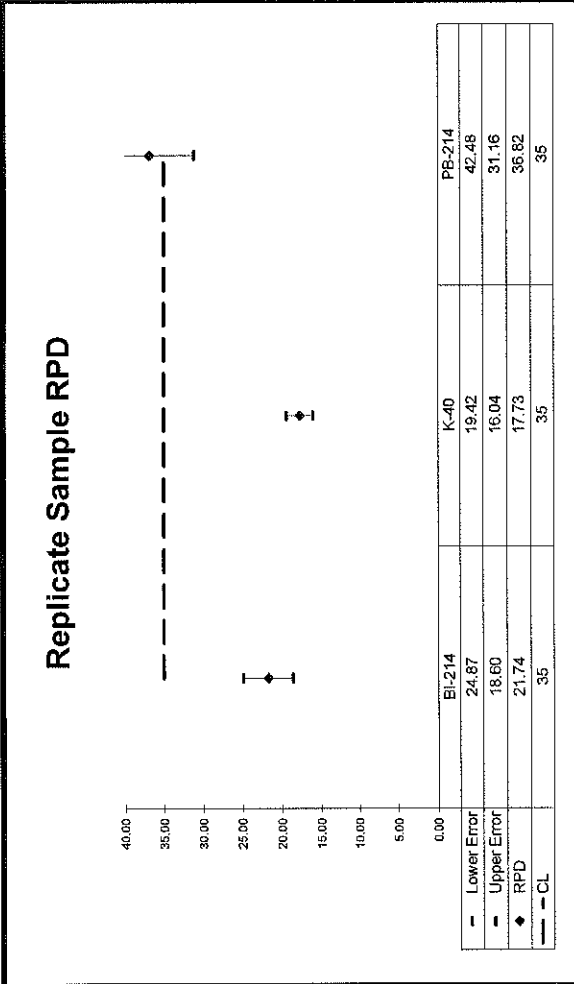
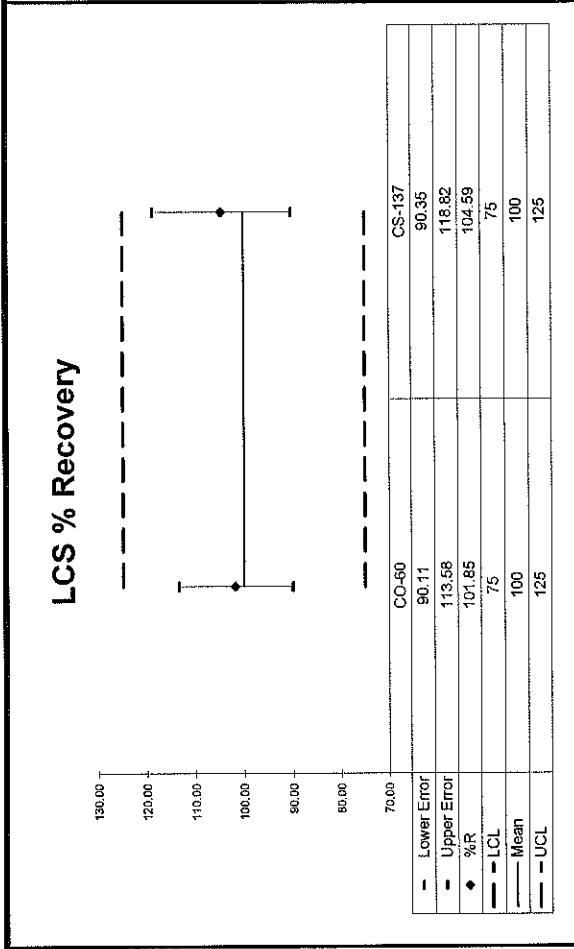
Replicate Sample

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND
BI-214	1.04	21.74	1.36E+00	3.91E-01	1.69E+00	4.88E-01	1.02	OK	<CS-137	BI-214>	NA	
K-40	1.29	17.73	9.69E+00	1.94E+00	1.16E+01	2.11E+00	1.05	OK	<CO-60	K-40>	NA	OK
PB-214	1.66	36.82	1.95E+00	5.36E-01	1.34E+00	4.77E-01				PB-214>	NA	OK

QC Summary

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND
BI-214	1.04	21.74	1.36E+00	3.91E-01	1.69E+00	4.88E-01	1.02	OK	<CS-137	BI-214>	NA	
K-40	1.29	17.73	9.69E+00	1.94E+00	1.16E+01	2.11E+00	1.05	OK	<CO-60	K-40>	NA	OK
PB-214	1.66	36.82	1.95E+00	5.36E-01	1.34E+00	4.77E-01				PB-214>	NA	OK


WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-06013	Gamma	1	pCi	g	Auxier & Associates, Inc.



No Matrix Spike


SECTION VII
LABORATORY TECHNICIAN'S NOTES
& RUN LOGS

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	16-06013
		Analysis Code	UUISO
		Run Number	1


#	Date	Dept	User	Notes
1	06/07/16 08:12	PREP	JWOLFE	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS

J Wolfe
6/7/16

 EBERLINE <small>SERVICES</small> Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-06013
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	06/07/16 08:12	PREP	JWOLFE	ALIUQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS
2	06/08/16 15:47	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.

JDEMELAS
 6/8/16

 EBERLINE <small>SERVICES</small> Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-06013
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	06/07/16 08:12	PREP	JWOLFE	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS
2	06/08/16 15:47	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	06/09/16 05:08	CHEM	TSMITH	Followed steps 12.1.7 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Uranium 0

*0.916
mm*



Reagents Used in an Analysis

Internal Work Order

16-06013

Analysis Code

Run

UUISO

1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
017559P	Hydrofluoric Acid	Reagent Grade	JWOLFE	6/7/2016
017349P	Nitric Acid	Reagent Grade	JWOLFE	6/7/2016
017361P	Perchloric Acid	Reagent Grade	JWOLFE	6/7/2016
017243P	Sulfuric Acid	Reagent Grade	JWOLFE	6/7/2016
017344P	Anion Exchange Resin	Reagent Grade	JDEMELAS	6/8/2016
017644S	HCl - HF	6.5N - 0.04N	JDEMELAS	6/8/2016
017518D03	Hydrochloric Acid	0.5N	JDEMELAS	6/8/2016
017577S	Hydrochloric Acid	6.5N	JDEMELAS	6/8/2016
017638P	Hydrochloric Acid	Reagent Grade	JDEMELAS	6/8/2016
017667S	Hydrochloric Acid	8N	JDEMELAS	6/8/2016
017668S	HCl - NH4I	8N - 0.1M	JDEMELAS	6/8/2016
017629S	Carbon substrate	Solution	TSMITH	6/9/2016
017047P	Hydrofluoric Acid	Reagent Grade	TSMITH	6/9/2016
017340S	Neodymium Carrier	1 mg/ml	TSMITH	6/9/2016
016606P	Titanous Chloride	Reagent Grade	TSMITH	6/9/2016
017649P	Reagent Alcohol	Reagent Grade	TSMITH	6/9/2016

Alpha #3

Date	Account	Client	Invoice	CT Time	Analysis	Fee
6/2	1605100A(8-20)	Searcy	0819	245-	Am 241	-
6/2	1605099A(4-4)	Searcy	0821	245-	Puzo	-
6/8/16	1605116A(1-19)	Orange Co. Waste Dis.	1120	2450-	UU	KB
6/8/16	1605127A(1-4)	UCOR	1121	2450-	TH 229	KB
6/8/16	1605128A(1-4)	UCOR	1121	2450-	TH 229	KB
6/8/16	1605103A(1-5)	Unitech	1417	2450-	ISO-TH	KB
6/8/16	1605108A(1-5)	Unitech	1418	2450-	UU	KB
6/8/16	1605122A(1-5)	Tetra-Tech	1418	2450-	Ru 4	KB
6/15/16	Daly Puzo	IAS	0715	1-	NA	-
6/15	1605100A(3-20)	Searcy	0811	245-	Puzo	-
6/15	1606017A(1-4)	Auxier	0812	245-	UU ISO	-
6/15	1605128A(1-4)	UCOR	0812	245-	UU ISO	-
6/15	Regent 1605128A (1-4)	IAS	0812	245-	Puzo	-

ISO TH NOTES

 EBERLINE <small>SERVICES</small> Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-06013
		Analysis Code	ThISO
		Run Number	1


#	Date	Dept	User	Notes
1	06/07/16 08:12	PREP	JWOLFE	ALIQOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS

JWOLFE
6/7/16

 EBERLINE <small>SERVICES</small> Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-06013
		Analysis Code	ThISO
		Run Number	1

#	Date	Dept	User	Notes
1	06/07/16 08:12	PREP	JWOLFE	ALIUQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS
2	06/08/16 15:48	CHEM	JDEMELAS	Added concentrated HNO ₃ to sample beakers and heated to dryness; Added 20 ml 8N HNO ₃ to samples and transferred to new, labeled C-Tubes, adding 8N HNO ₃ to bring volume to ~35 ml; Preconditioned resin columns with 50 ml 8N HNO ₃ ; Centrifuged samples as needed, and passed through columns; Rinsed C-Tubes with 20 ml 8N HNO ₃ ; Centrifuged rinsates and loaded onto columns; Rinsed columns with 40 ml 8N HNO ₃ ; Eluted Thorium with 50 ml of 8N 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 deionized water, bringing volume to ~15ml. Set samples aside for later precipitation and filtering.

John A. [Signature]
6/8/16

 EBERLINE <small>SERVICES</small> Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-06013
		Analysis Code	ThISO
		Run Number	1

#	Date	Dept	User	Notes
1	06/07/16 08:12	PREP	JWOLFE	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS.
2	06/08/16 15:48	CHEM	JDEMELAS	Added concentrated HNO3 to sample beakers and heated to dryness; Added 20 ml 8N HNO3 to samples and transferred to new, labeled C-Tubes, adding 8N HNO3 to bring volume to ~35 ml; Preconditioned resin columns with 50 ml 8N HNO3; Centrifuged samples as needed, and passed through columns; Rinsed C-Tubes with 20 ml 8N HNO3; Centrifuged rinsates and loaded onto columns; Rinsed columns with 40 ml 8N HNO3; Eluted Thorium with 50 ml of 8N 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 deionized water, bringing volume to ~15ml. Set samples aside for later precipitation and filtering.
3	06/09/16 05:10	CHEM	TSMITH	Followed steps 12.2.5 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Thorium)

6-9-16
TSM



EBERLINE
SERVICES

Reagents Used in an Analysis

Internal Work Order

16-06013

Analysis Code

Run

THISO

1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
017559P	Hydrofluoric Acid	Reagent Grade	JWOLFE	6/7/2016
017349P	Nitric Acid	Reagent Grade	JWOLFE	6/7/2016
017361P	Perchloric Acid	Reagent Grade	JWOLFE	6/7/2016
017243P	Sulfuric Acid	Reagent Grade	JWOLFE	6/7/2016
017344P	Anion Exchange Resin	Reagent Grade	JDEMELAS	6/8/2016
017667S	Hydrochloric Acid	8N	JDEMELAS	6/8/2016
017638P	Hydrochloric Acid	Reagent Grade	JDEMELAS	6/8/2016
017663S	Nitric Acid	8N	JDEMELAS	6/8/2016
017546P	Nitric Acid	Reagent Grade	JDEMELAS	6/8/2016
017629S	Carbon substrate	Solution	TSMITH	6/9/2016
017491S	Cerrium Carrier	0.1mg/ml	TSMITH	6/9/2016
017047P	Hydrofluoric Acid	Reagent Grade	TSMITH	6/9/2016
017649P	Reagent Alcohol	Reagent Grade	TSMITH	6/9/2016

Alpha #1

Route	Account	Client	Product	CTTime	Analysed	Spec
6/3/16	1605736A(1-5)	USA	0822	2h5-	Tutso	-
6/3/16	1605086A(1-2)	Ucom	0822	2h5-	An-241	-
6/3/16	System B (52)	Lab	1652	16:40 hr	2	KB
6/16/16	Daily Pulse	IAS	0517	1-	1A	-
6/16/16	1606004A(1-4)	MCL	0809	2h5-	An-241	C
6/16/16	1606004A(1-3)	MCL	0810	2h5-	Pulse	-
6/16/16	1605099A(13-13)	Searay	1104	2hr00-	ISO-TH	KB
6/16/16	Regent 27A(1)	Lab	1105	2hr00-	PWT	KB
6/17/16	Daily Pulse	IAS	0520	1-	1A	-
6/17/16	1605099A(1-7)	Searay	0846	2h5-	An-241	C
6/18/16	Daily Pulse	IAS	0518	1-	1A	-
6/18/16	1605100A(1-7)	Searay	0819	2h5-	An-241	C
6/18/16	1605099A(15-17)	Searay	1114	2hr00-	ISO-TH	KB
6/18/16	1605128A(1-4)	Ucom	1117	2hr00-	Raw	KB
6/19/16	Daily Pulse	IAS	0519	1-	1A	-
6/19/16	1605108A(1-5)	United	0810	2h5-	An-241	C
6/19/16	1605100A(1-2)	Searay	0811	2h5-	Pulse	-
6/19/16	1605108A(1-5)	Unitech	1103	2hr00-	AP	KB
6/19/16	1606013A(1-2)	Auxiex	1109	2hr00-	ISO-TH	KB

Alpha # 3

Code	Account #	Client	Location	CT Time	Analysis	Fee
6/2	1605100A(B-20)	Searcy	0819	2h50	Amvri	-
6/2	1605099A(U-14)	Searcy	0821	2h50	Puzso	-
6/8/16	1605116A(CI-19)	Orange Co. Waste Dis.	1120	2h50-	ULL	KB
6/8/16	1605127A(CI-4)	UCOR	1121	2h50-	TH229	KB
6/8/16	1605128A(CI-4)	UCOR	1121	2h50-	TH229	KB
6/8/16	1605108A(CI-5)	Unitech	1417	2h50-	ISO-TH	KB
6/8/16	1605108A(CI-5)	Unitech	1418	2h50-	ULL	KB
6/8/16	1605122A(CI-5)	Tetra-Tech	1418	2h50-	Raw	KB
6/15/16	Daily Puzso	IAS	0715	1h	NA	-
6/19	1605100A(3-20)	Searcy	0811	2h50-	Puzso	-
6/19	1606017A(CI-4)	Auxier	0812	2h50-	ULLISO	-
6/19	1605128A(CI-4)	UCOR	0812	2h50-	ULLISO	-
6/19	Regent test R28 ANT-RUC	IAS	0812	2h50-	PM17	-
6/9/16	1606013A(CI-4)	Auxier	1109	2h50-	ISO-TH	KB
6/9/16	1605128A(CI-4)	UCOR	1110	2h50-	ISO-TH	KB
6/9/16	1605106A(CI-5)	Data Resources	1110	2h50-	Raw	KB
6/9/16	1605100A(CI-16)	Searcy	1112	2h50-	ISO-TH	KB

GAMMA NOTES

DATE	Sample #	Client	LoadTime	CT-Time	Analysis	Tech
6/6/16	1605127-02	UCOR	1403	15mins	Da	KB
6/7	16051401	LAB	0519	15-	r	C
6/7	Dawn	LAB	0541	15	r	-
6/7	160507505	Auxie	0600	2h	r	C
6/7	1606017-03	Auxie	0732	2h	r	C
6/7	1606013-04	Auxie	0844	2h	r	C

DATE	SAMPLE #	CLIENT	LOAD TIME	CT TIME	ANALYSIS	TECH
6/6/16	1606009-01	United	0724	30	✓	C
6/6/16	1606027-03	Lecon	2403	15 min	Da	LD
6/7	16060202	IAS	0549	15	✓	C
6/7	1606017-02	IAS	0541	15	✓	C
6/7	1606017-02	Aurora	0737	30	✓	C
6/7	160601701	Aurora	0844	30	✓	C

SECTION VIII
ANALYTICAL DATA (ISOTOPIC URANIUM)

Work Order	16-06013
Analysis Code	UIISO
Run	1
Date Received	6/6/2016
Lab Deadline	6/10/2016
Client	Auxier & Associates, Inc.
Project	PAP-KAN
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)	18.53
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		06/06/16 00:00	1.0000E+00
02	MBL	BLANK		06/06/16 00:00	1.0000E+00
03	DUP	CP-5026-S 1 0-1 5	54	06/02/16 16:30	1.0030E+00
04	DO	CP-5026-S 1 0-1 5	54	06/02/16 16:30	1.0089E+00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
 ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.


Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.6086	11.3		0.00								
02	MBL	0.6077	11.3		0.00								
03	DUP	0.6087	11.3		0.00								
04	DO	0.6080	11.3		0.00								

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
 ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

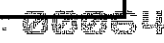
Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			06/07/16 05:15	JWOLFE				
02	MBL			06/07/16 05:15	JWOLFE				
03	DUP			06/07/16 05:15	JWOLFE				
04	DO	06/07/16 07:24	KSALLINGS	06/07/16 05:15	JWOLFE				

* 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.

00000

	Client	Auxier & Associates, Inc.
Run	Analysis Code	16-06013
1	UUIISO	

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	7.14E+00	1.07E+00	9.87E-02	7.26E+00	98.37	OK		OK	
02	U-234	MBL	BLANK	pCi/g	1.51E+00	4.13E-01	1.23E-01					OK	OK
03	U-234	DUP	CP-5026-S 1 0-1 5	pCi/g	6.68E+01	2.94E+01	9.42E-01				OK	OK	
04	U-234	DO	CP-5026-S 1 0-1 5	pCi/g	7.87E+01	2.55E+01	1.03E+00					INV	



Preliminary Data Report & Analytical Calculations
Work Order: 16-06013-UJISO-1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep 10 Date/Time	Sep 11 Date/Time
01	U-234	LCS	06/06/16 00:00	1.00E+00	98.04	0.00	0.00	0.00		
02	U-234	MBL	06/06/16 00:00	1.00E+00	80.34	0.00	0.00	0.00		
03	U-234	DUP	06/02/16 16:30	1.00E+00	8.60	0.00	0.00	0.00		
04	U-234	DO	06/02/16 16:30	1.01E+00	13.42	0.00	0.00	0.00		

Client	Auxier & Associates, Inc.
Eberline Analytical Work Order	16-06013
Analysis Code	UJISO
Run	1

	1	UUISO	16-06013	Auxier & Associates, Inc.
Run		Analysis Code	Eberline Analytical Work Order	Client


Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Half-life (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-234	LCS	06/09/16 08:12		A_Spec	Alpha_052	170	4.56 E+02	6.00 E-03	17.3
02	U-234	MBL	06/09/16 08:12		A_Spec	Alpha_053	170	6.93 E+01	4.00 E-03	15.2
03	U-234	DUP	06/09/16 08:12		A_Spec	Alpha_054	170	2.96 E+02	1.00 E-03	13.6
04	U-234	DO	06/09/16 08:12		A_Spec	Alpha_055	170	6.52 E+02	1.60 E-02	16.2

99000

	Run	1
Eberline Analytical Work Order	Analysis Code	UUISO
16-06013		
Client	Auxier & Associates, Inc.	

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	6.36E+00	9.72E-01	7.46E-02	7.03E+00	90.40	OK		OK	
02	U-238	MBL	BLANK	pCi/g	1.66E-01	1.23E-01	1.04E-01					OK	OK
03	U-238	DUP	CP-5026-S 1 0-1 5	pCi/g	7.12E+02	3.03E+02	9.38E-01				OK	OK	
04	U-238	DO	CP-5026-S 1 0-1 5	pCi/g	8.18E+02	2.58E+02	6.78E-01					OK	

79999

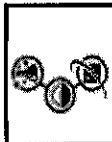
	Run	1	UISO Analysis Code	16-06013 Eberline Analytical Work Order	Auxier & Associates, Inc. Client
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Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep 10 Date/Time	Sep 11 Date/Time
01	U-238	LCS	06/06/16 00:00	1.00E+00	98.04	0.00	0.00			
02	U-238	MBL	06/06/16 00:00	1.00E+00	80.34	0.00	0.00			
03	U-238	DUP	06/02/16 16:30	1.00E+00	8.60	0.00	0.00			
04	U-238	DO	06/02/16 16:30	1.01E+00	13.42	0.00	0.00			

	Run	1
Analysis Code	UUISO	
Eberline Analytical Work Order	16-06013	
Client	Auxier & Associates, Inc.	

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	5.54E-01	2.14E-01	9.24E-02					OK	
02	U-235	MBL	BLANK	pCi/g	5.38E-02	9.16E-02	1.61E-01					OK	OK
03	U-235	DUP	CP-5026-S 1 0-1 5	pCi/g	3.14E+01	1.45E+01	1.33E+00				INV	INV	
04	U-235	DO	CP-5026-S 1 0-1 5	pCi/g	7.47E+01	2.44E+01	9.81E-01					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 16-06013-UUISO-1



Run

UUISO
Analysis Code

16-06013
Eberline Analytical Work Order

Auxier & Associates, Inc.

Client

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep 10 Date/Time	Sep 11 Date/Time
01	U-235	LCS	06/06/16 00:00	1.00E+00	98.04	0.00	0.00			
02	U-235	MBL	06/06/16 00:00	1.00E+00	80.34	0.00	0.00			
03	U-235	DUP	06/02/16 16:30	1.00E+00	8.60	0.00	0.00			
04	U-235	DO	06/02/16 16:30	1.01E+00	13.42	0.00	0.00			

1 2 0 0 7

	Run	1
Eberline Analytical Work Order	Analysis Code	UJISO
Client	16-06013	Auxier & Associates, Inc.

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Half-life (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-235	LCS	06/09/16 08:12		A_Spec	Alpha_052	170	2.87 E+01	2.00 E-03	17.3
02	U-235	MBL	06/09/16 08:12		A_Spec	Alpha_053	170	2.00 E+00	0.00 E+00	15.2
03	U-235	DUP	06/09/16 08:12		A_Spec	Alpha_054	170	1.13 E+02	2.00 E-03	13.6
04	U-235	DO	06/09/16 08:12		A_Spec	Alpha_055	170	5.02 E+02	7.00 E-03	16.2

Count Room Report
 Client: Auxier Associates, Inc.

16-06013-UUISO-1 (pCi/g) in SO
 Tracer ID: U-10a

2.8

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	06/06/16 00:00	1.0000	0.6086	11.2774		0.00		
02	MBL	BLANK	06/06/16 00:00	1.0000	0.6077	11.2607		0.00		
03	DUP	CP-5026-S 1 0-1 5	06/02/16 16:30	1.0030	0.6087	11.2792		0.00		
04	DO	CP-5026-S 1 0-1 5	06/02/16 16:30	1.0089	0.6080	11.2662		0.00		

S/S
08/28
SP

Internal Work Order		Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials						
16-06013		1	UIISO	6/7/2016 5:12	JWOLFE	<i>[Signature]</i>							
LCS & Matrix Spikes		LCS	MS	LCS	MS	LCS	MS						
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	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	6/7/2016	0.550	0.5037	7.26	0.261	0.00	0.000	0.00	0.000	0.00	0.000
U-238	U-8a	31,000	6/7/2016	0.550	0.5037	7.03	0.253	0.00	0.000	0.00	0.000	0.00	0.000
IC-99MS	IC-2a	22043.636	7/5/2014	0.1									
Tracers		Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition							
01	U-232	U-10a	18,530	6/7/2016	0.6086	0.6500							
02	U-232	U-10a	18,530	6/7/2016	0.6077	0.6500							
03	U-232	U-10a	18,530	6/7/2016	0.6087	0.6500							
04	U-232	U-10a	18,530	6/7/2016	0.6080	0.6500							
Balance Printer Tapes													
Tracer				LCS									
Matrix Spike													

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
16-06013	1	UUISO	grams	6/10/2016	JWOLFE

Lab Fraction	Auxier & Associates, Inc.		Sample Type	Muffle Data		Dilution Data			Aliquot Data			MS Aliquot Data		H-3 Solids Only		
	Client ID	Ratio Post/Pre		No of Dils	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Met Equiv	Water Added (ml)	H3 Dist Aliq				
01	LCS		LCS					1.0000E+00	1.0000E+00							
02	BLANK		MBL					1.0000E+00	1.0000E+00							
03	CP-5026-S 1 0-1 5		DUP					1.0030E+00	1.0030E+00							
04	CP-5026-S 1 0-1 5		DO					1.0089E+00	1.0089E+00							

Comments

Technician: JWOLFE Date: 6/7/16

Rough Sample Preparation Log Book

Work Order	16-06013	Lab Deadline	6/10/2016	Date Received in Prep	6/6/2016	Date Sealed	6/7/2016	Date Returned	6/8/2016	Technician	KSALLINGS
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Eberline Fraction	Client ID	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special Info
			Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	
04	CP-5026-S 1 0-1 5	14.4500	555.9800	505.0000	541.5300	490.5500	9.41%	90.59%	0.0000	0.0000	

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

00076



768
6/9/16

Sample Description: SPIKE
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001536
 Batch Identification: 1606013A-UU
 Sample Identification: 01
 Sample Geometry: Shelf 2
 Procedure Description: U iso
 Detector Name: Alpha_052
 Chamber Serial Number: 10006123B
 Detector Serial Number: 52
 Env. Background: System Bkgd 155384
 Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
 Sample Date/Time: 6/9/2016 5:49:44 AM
 Acquisition Date/Time: 6/9/2016 8:12:29 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
 Tracer Quantity: 0.609 mL
 Effective Efficiency: 0.1695 +/- 0.0102
 Counting Efficiency: 0.1729 +/- 0.0030 on 12/11/2015 11:36:36 AM
 Chem. Recovery Factor: 0.9804 +/- 0.0616

Control Certificate Name: NatU_U-8A
 Chem. Recov. of Control: U-238 0.795235 +/- 0.066479
 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 5.278	322.66	10.92	0.34	0.00E+000	6.9
U-234	4.727	455.98	9.19	1.02	0.00E+000	17.1
U-235	4.373	28.66	36.86	0.34	0.00E+000	5.4
U-238	4.151	407.66	9.71	0.34	0.00E+000	14.9

T = Tracer Peak used for Effective Efficiency

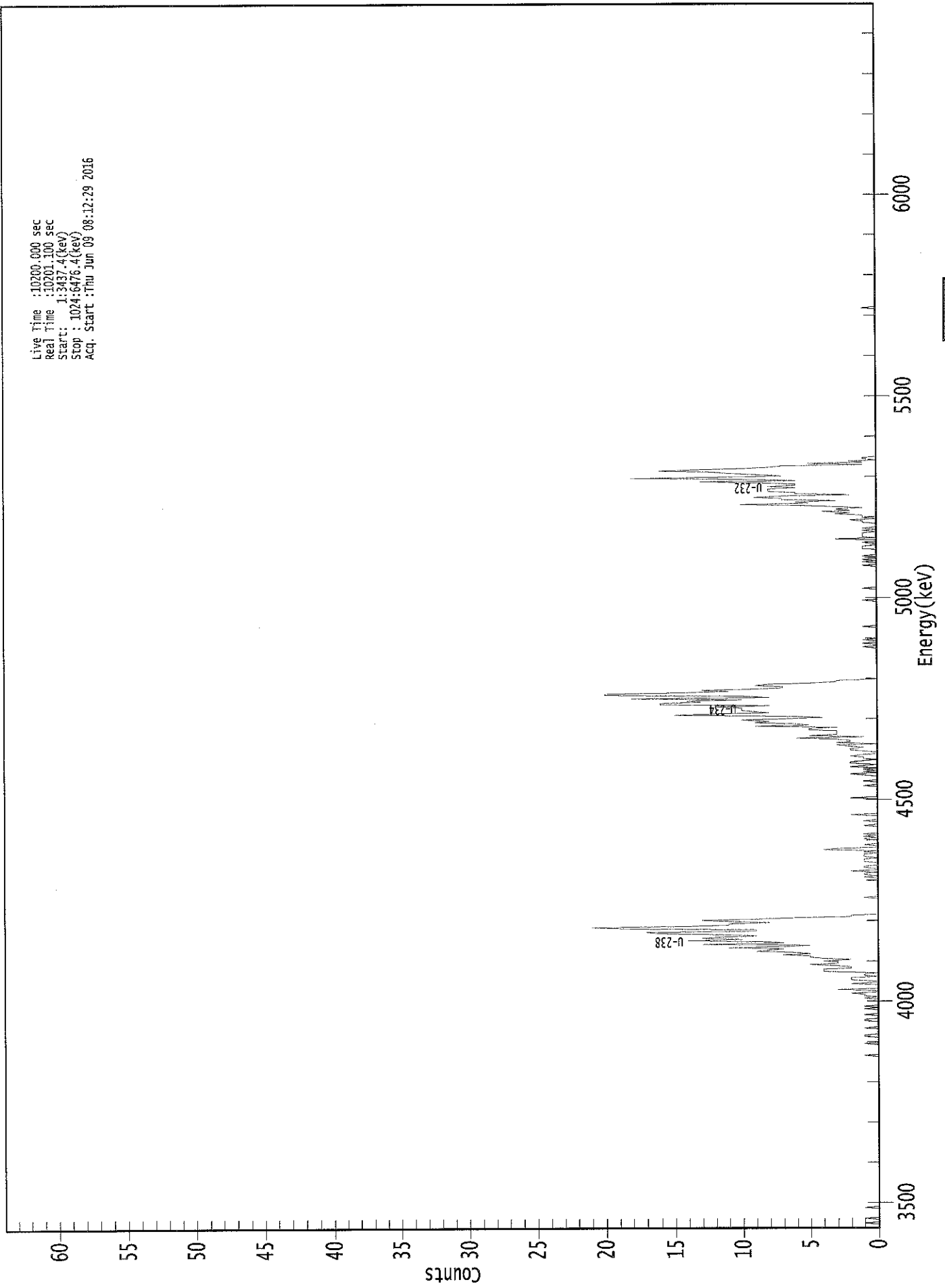
 NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	5.05E+000 +/- 5.97E-001	7.49E-002 +/- 8.85E-003
U-234	0.992	4761.50*	7.14E+000 +/- 1.07E+000	9.87E-002 +/- 1.17E-002
U-235	0.999	4385.50*	5.54E-001 +/- 2.14E-001	9.24E-002 +/- 1.09E-002
U-238	0.992	4184.40*	6.36E+000 +/- 9.72E-001	7.46E-002 +/- 8.81E-003

AG
6/9/16

0000153677.CNF

Live Time : 10200.000 sec
Real Time : 10201.100 sec
Start : 1:3437.4(kev)
Stop : 1024:0476.4(kev)
Acq. Start : Thu Jun 09 08:12:29 2016



819978

ROI Type: 1

ROI Type: 3

 ***** 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: 10201

Channel	1	2	3	4	5	6	7	8	9
1:	0	0	0	0	1	0	0	0	0
9:	1	0	0	0	0	0	0	0	0
17:	0	1	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0	0
145:	1	0	0	0	0	0	0	0	0
153:	0	0	1	0	0	0	0	0	0
161:	1	1	0	0	0	0	0	0	1
169:	0	0	0	0	0	1	1	0	0
177:	0	0	1	0	0	0	0	0	1
185:	0	1	0	0	0	0	0	0	0
193:	1	0	1	1	2	0	0	0	3
201:	0	0	0	0	2	0	0	0	2
209:	2	2	0	1	1	0	4	4	4
217:	4	2	2	3	5	3	3	4	4
225:	2	4	5	5	7	5	6	9	9
233:	8	7	11	7	5	13	7	8	8
241:	14	10	13	12	9	11	16	17	17
249:	9	9	18	21	14	11	11	8	8
257:	11	13	9	6	2	2	0	0	0
265:	0	0	0	0	0	0	0	0	0
273:	0	0	0	0	1	0	0	0	0
281:	0	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	1	0	1	1
297:	1	0	2	0	0	1	1	0	0
305:	0	0	1	1	1	0	1	1	1
313:	1	0	1	0	4	3	0	0	0
321:	1	0	0	0	0	1	0	1	1
329:	0	1	0	0	0	0	0	0	0
337:	1	0	0	0	1	0	0	0	0
345:	0	2	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	2	2
361:	0	0	0	0	0	0	0	0	0

369: 0 1 0 0 0 1 0 0

Sample Title: 01

Channel	1	2	3	4	5	6	7	8
377:	0	0	1	2	0	1	0	1
385:	0	2	1	0	2	2	1	0
393:	1	1	2	1	0	0	1	2
401:	2	1	2	3	0	3	2	2
409:	3	6	1	5	3	3	3	3
417:	5	5	3	9	5	6	9	8
425:	10	7	4	6	15	13	8	9
433:	10	10	10	12	8	16	16	13
441:	14	10	18	8	10	20	20	15
449:	11	13	9	7	7	9	8	5
457:	3	3	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	1	0	0
489:	1	0	0	1	0	0	0	0
497:	0	0	0	0	0	0	1	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	1	0	0	0
529:	0	0	0	0	0	0	1	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	1	0	0	1	0	1	0
561:	0	1	0	0	0	0	0	1
569:	1	1	0	0	1	0	0	3
577:	0	1	1	1	1	0	1	0
585:	1	0	0	0	0	1	1	2
593:	0	1	1	1	3	2	4	2
601:	3	1	3	6	10	5	6	3
609:	7	7	9	7	2	6	6	8
617:	8	8	6	8	6	6	8	13
625:	6	9	18	10	7	9	11	12
633:	16	13	10	8	7	1	5	1
641:	2	0	1	1	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	1	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	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

KB
6/9/16

Apex-Alpha™

Sample Description: BLANK
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001536
 Batch Identification: 1606013A-UU
 Sample Identification: 02
 Sample Geometry: Shelf 2
 Procedure Description: U iso

Detector Name: Alpha_053
 Chamber Serial Number: 10006122A
 Detector Serial Number: 53
 Env. Background: System Bkgd 155385
 Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
 Sample Date/Time: 6/9/2016 5:49:44 AM
 Acquisition Date/Time: 6/9/2016 8:12:22 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
 Tracer Quantity: 0.608 mL
 Effective Efficiency: 0.1218 +/- 0.0085
 Counting Efficiency: 0.1516 +/- 0.0027 on 12/11/2015 11:36:34 AM
 Chem. Recovery Factor: 0.8034 +/- 0.0578

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 5.278	231.49	12.90	0.51	0.00E+000	15.0
U-234	4.725	69.32	23.68	0.68	0.00E+000	5.4
U-235	4.388	2.00	169.74	0.00	0.00E+000	3.0
U-238	4.144	7.66	72.63	0.34	0.00E+000	3.0

T = Tracer Peak used for Effective Efficiency

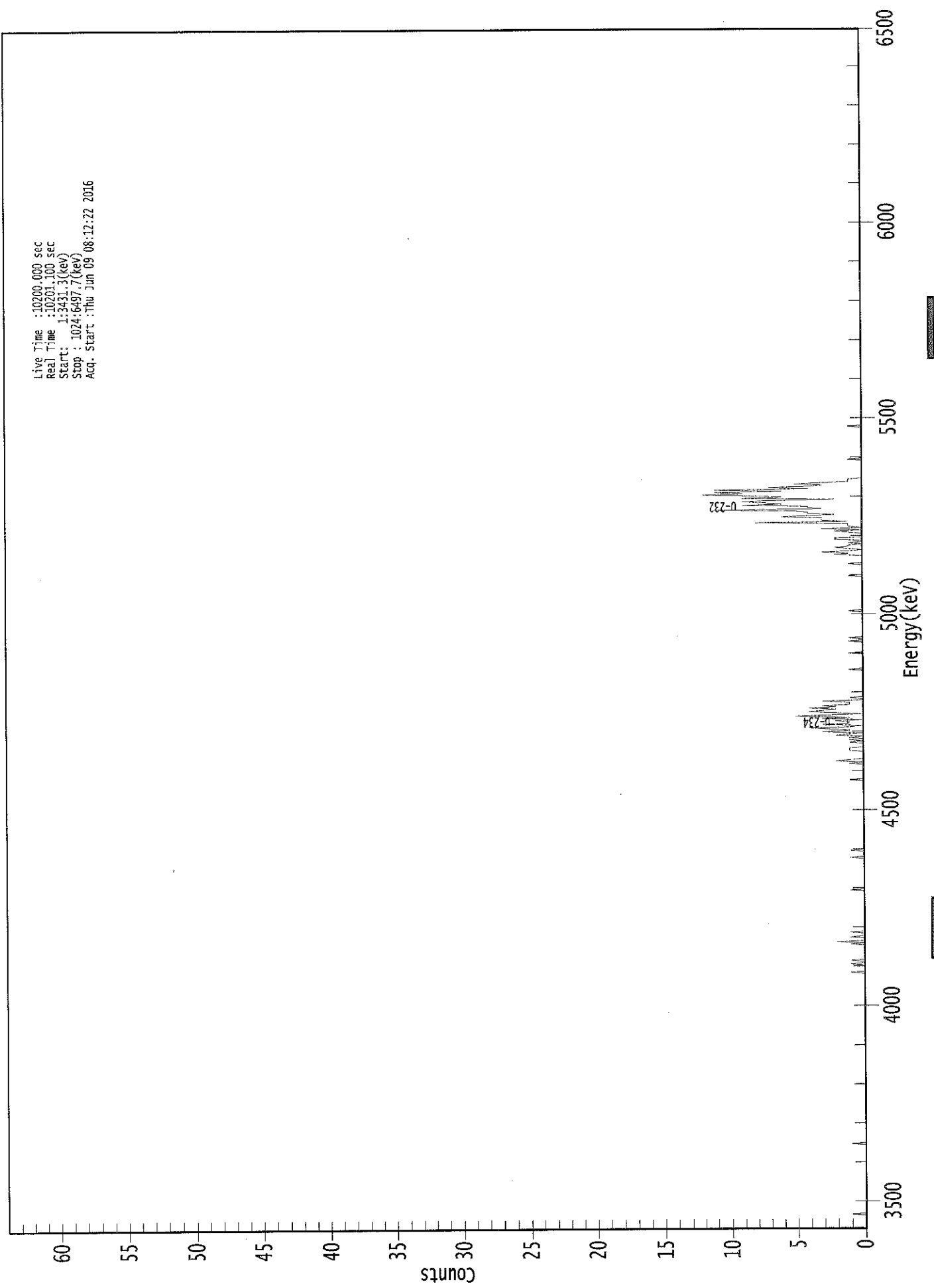
 NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	5.05E+000 +/- 6.90E-001	1.14E-001 +/- 1.56E-002
U-234	0.991	4761.50*	1.51E+000 +/- 4.13E-001	1.23E-001 +/- 1.68E-002
U-235	1.000	4385.50*	5.38E-002 +/- 9.16E-002	1.61E-001 +/- 2.20E-002
U-238	0.988	4184.40*	1.66E-001 +/- 1.23E-001	1.04E-001 +/- 1.42E-002

KB
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0000153678.CNF

Live Time : 10200.000 sec
Real Time : 10201.100 sec
Start : 1:3431.3(kev)
Stop : 1024:6497.7(kev)
Acq. Start : Thu Jun 09 08:12:22 2016



ROI Type: 1

ROI Type: 3

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

Sample Title: 02

Elapsed Live time: 10200

Elapsed Real Time: 10201

Channel	1	2	3	4	5	6	7	8	9
1:	0	0	0	0	0	0	0	0	0
9:	0	0	0	0	1	0	0	0	0
17:	0	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0	0
73:	1	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0	0
217:	0	0	1	0	0	0	0	0	0
225:	0	1	0	0	1	0	0	0	0
233:	0	0	0	0	0	0	0	0	0
241:	0	0	1	0	2	0	0	0	0
249:	1	0	0	0	1	0	0	0	0
257:	0	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0
289:	1	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0	0
313:	0	0	0	0	1	0	0	0	0
321:	0	0	1	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0	0

369: 0 0 0 0 0 0 0 0 0

Sample Title: 02

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

801: 0 0 0 0 0 0 0 0

Sample Title: 02

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



6/9/16

Sample Description: CP-5026-S 1 0-1 5-DUP
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001536
 Batch Identification: 1606013A-UU
 Sample Identification: 03
 Sample Geometry: Shelf 2
 Procedure Description: U iso

Detector Name: Alpha_054
 Chamber Serial Number: 10006122B
 Detector Serial Number: 54
 Env. Background: System Bkgd 155386
 Reagent Blank: <not performed>

Sample Size: 1.003E+000 +/- 0.000E+000 gram
 Sample Date/Time: 6/2/2016 5:49:44 AM
 Acquisition Date/Time: 6/9/2016 8:12:24 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
 Tracer Quantity: 0.609 mL
 Effective Efficiency: 0.0117 +/- 0.0025
 Counting Efficiency: 0.1363 +/- 0.0025 on 12/11/2015 11:36:32 AM
 Chem. Recovery Factor: 0.0860 +/- 0.0187

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 5.238	22.32	42.22	0.68	0.00E+000	4.5
U-234	4.700	295.83	11.40	0.17	0.00E+000	23.8
U-235	4.412	112.66	18.50	0.34	0.00E+000	4.3
U-238	4.111	3164.83	3.48	0.17	0.00E+000	126.0

T = Tracer Peak used for Effective Efficiency

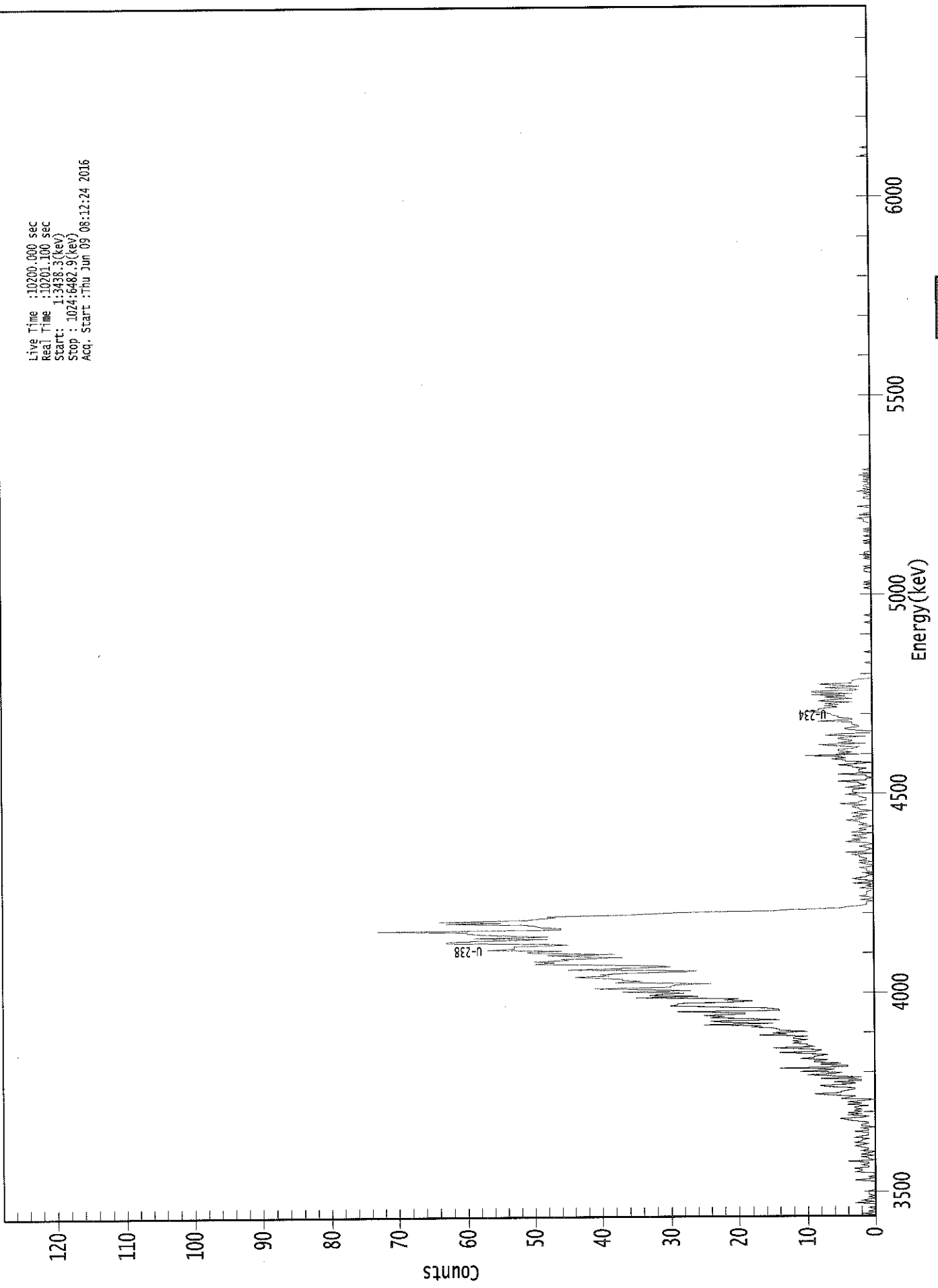
 ----- NUCLIDE ANALYSIS RESULTS -----

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.970	5302.50*	5.04E+000 +/- 2.14E+000	1.27E+000 +/- 5.41E-001
U-234	0.974	4761.50*	6.68E+001 +/- 2.94E+001	9.42E-001 +/- 4.00E-001
U-235	0.995	4385.50*	3.14E+001 +/- 1.45E+001	1.33E+000 +/- 5.65E-001
U-238	0.963	4184.40*	7.12E+002 +/- 3.03E+002	9.38E-001 +/- 3.98E-001

AG
6/9/16

0000153679.CNF

Live Time : 10200.000 sec
Real Time : 10201.100 sec
Start : 1:3438.3(rev)
Stop : 1024:6482.9(rev)
Acq. Start : Thu Jun 09 08:12:24 2016



ROI Type: 3

ROI Type: 1

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

Sample Title: 03

Elapsed Live time: 10200
 Elapsed Real Time: 10201

Channel	1	0	2	0	1	0	0	1
1:	1	0	2	0	1	0	0	1
9:	0	0	0	3	0	2	1	0
17:	1	0	1	1	1	1	0	0
25:	0	0	0	0	0	0	3	1
33:	0	1	0	0	0	3	2	2
41:	3	1	1	2	1	1	4	0
49:	1	1	2	0	2	1	0	2
57:	1	1	2	3	2	1	3	2
65:	2	1	3	2	1	1	1	3
73:	1	1	2	0	2	2	1	1
81:	3	4	5	2	1	4	2	4
89:	2	3	2	3	3	1	4	2
97:	4	2	0	5	4	3	6	9
105:	5	5	4	3	3	7	8	4
113:	3	6	2	2	8	2	6	10
121:	6	5	11	7	6	14	4	4
129:	8	5	9	9	7	11	9	9
137:	7	9	14	9	8	10	15	9
145:	10	10	12	11	12	10	12	12
153:	10	17	13	15	10	14	14	15
161:	18	17	25	15	22	24	14	19
169:	24	22	25	19	19	29	14	14
177:	16	22	30	29	29	21	18	22
185:	20	35	26	33	31	28	37	27
193:	34	41	30	30	29	24	38	34
201:	37	37	40	44	39	40	37	28
209:	26	45	39	30	31	40	50	47
217:	50	45	46	37	42	48	38	50
225:	51	46	57	53	53	53	45	48
233:	63	63	57	48	59	48	53	58
241:	60	60	73	46	46	49	50	51
249:	63	55	64	51	50	47	48	36
257:	32	28	15	12	5	4	2	1
265:	1	1	0	2	0	0	2	1
273:	1	1	1	0	0	2	0	1
281:	0	3	0	0	2	3	1	1
289:	0	1	0	1	1	1	2	0
297:	0	1	2	0	2	1	1	2
305:	2	3	0	4	1	1	0	1
313:	2	1	0	1	4	2	3	1
321:	2	3	1	1	3	2	1	2
329:	1	0	2	1	2	2	4	2
337:	1	3	2	1	3	2	0	2
345:	2	3	3	1	5	2	2	1
353:	1	1	2	2	4	2	3	3
361:	3	1	4	2	1	2	2	5

369: 1 1 0 1 1 5 0 2

Sample Title: 03

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

801: 0 0 0 0 0 0 0 0

Sample Title: 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	1
897:	0	0	0	0	0	0	1	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



ICB
6/9/16

Sample Description: CP-5026-S 1 0-1 5
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001536
 Batch Identification: 1606013A-UU
 Sample Identification: 04
 Sample Geometry: Shelf 2
 Procedure Description: U iso

Detector Name: Alpha_055
 Chamber Serial Number: 10006124A
 Detector Serial Number: 55
 Env. Background: System Bkgd 155387
 Reagent Blank: <not performed>

Sample Size: 1.009E+000 +/- 0.000E+000 gram
 Sample Date/Time: 6/2/2016 5:49:44 AM
 Acquisition Date/Time: 6/9/2016 8:12:26 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
 Tracer Quantity: 0.608 mL
 Effective Efficiency: 0.0218 +/- 0.0035
 Counting Efficiency: 0.1625 +/- 0.0029 on 12/11/2015 11:36:31 AM
 Chem. Recovery Factor: 0.1342 +/- 0.0216

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	41.47	31.09	1.53	0.00E+000	3.7
U-234	4.706	652.28	7.69	2.72	0.00E+000	6.2
U-235	4.401	501.81	8.76	1.19	0.00E+000	9.9
U-238	4.120	6805.32	2.38	0.68	0.00E+000	182.0

T = Tracer Peak used for Effective Efficiency

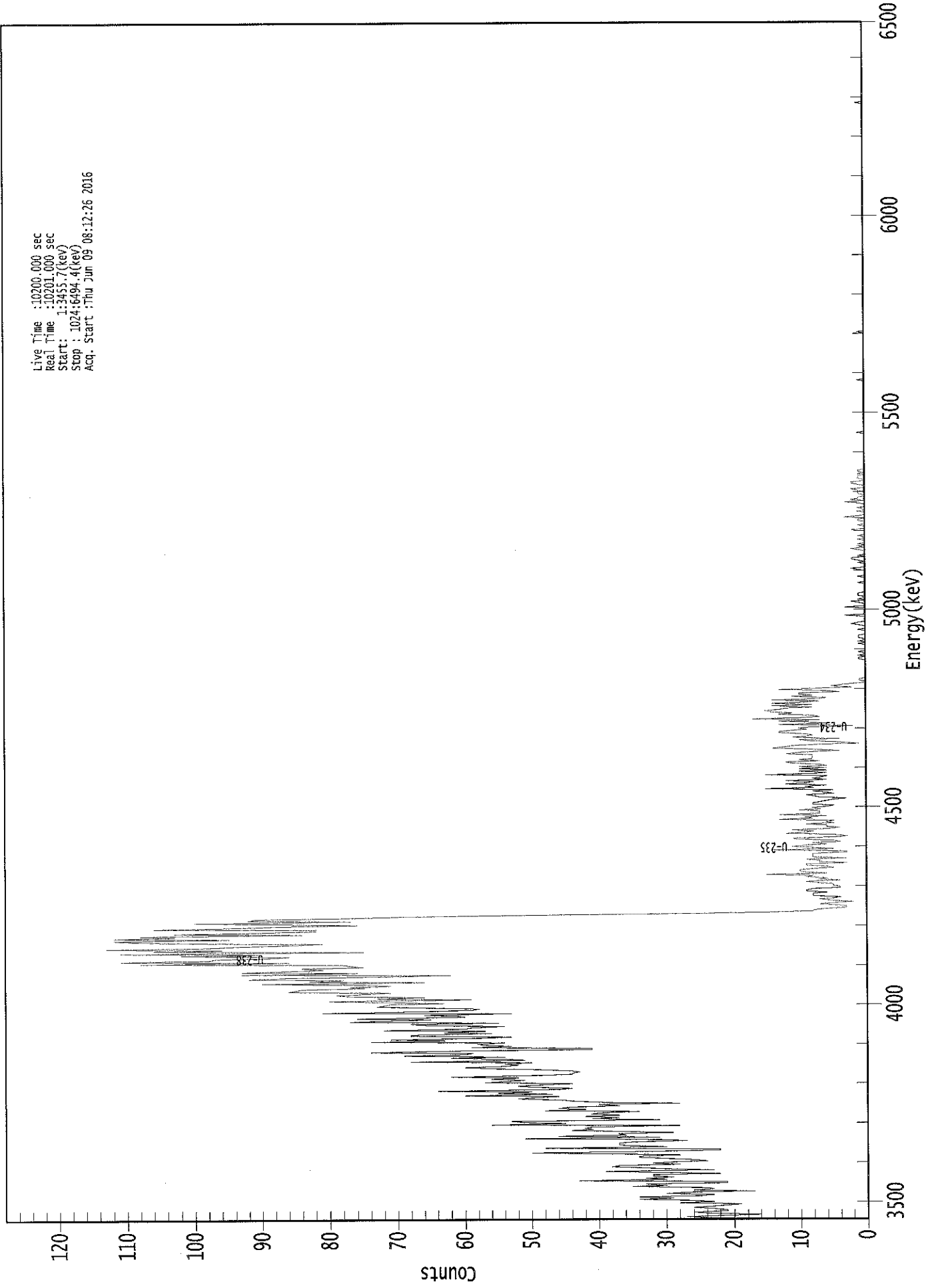
 NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.990	5302.50*	5.01E+000 +/- 1.57E+000	8.58E-001 +/- 2.69E-001
U-234	0.978	4761.50*	7.87E+001 +/- 2.55E+001	1.03E+000 +/- 3.25E-001
U-235	0.998	4385.50*	7.47E+001 +/- 2.44E+001	9.81E-001 +/- 3.08E-001
U-238	0.971	4184.40*	8.18E+002 +/- 2.58E+002	6.78E-001 +/- 2.13E-001

AG
6/9/16

0000153680.CNF

Live Time : 10200.000 sec
Real Time : 10201.000 sec
Start : 1:2455.7(kev)
Stop : 1024:6494.4(kev)
Acq. Start : Thu Jun 09 08:12:26 2016



ROI Type: 3

ROI Type: 1

 ***** 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: 10201

Channel	1	2	3	4	5	6	7	8	9
1:	17	23	27	21	16	24	26	21	
9:	21	23	26	23	21	19	28	23	
17:	26	34	29	34	25	23	30	26	
25:	17	26	23	24	35	30	33	21	
33:	21	43	30	33	29	32	32	22	
41:	32	39	23	30	34	38	37	28	
49:	32	29	24	26	30	34	34	28	
57:	37	50	33	22	22	48	30	36	
65:	37	37	35	27	31	51	31	46	
73:	36	37	29	36	44	41	42	41	
81:	28	56	45	51	53	31	41	37	
89:	42	37	41	40	34	48	42	46	
97:	44	37	40	28	39	44	45	52	
105:	50	46	60	47	55	50	64	46	
113:	44	50	52	48	44	57	54	51	
121:	56	52	62	49	44	44	43	44	
129:	49	56	60	54	52	54	50	68	
137:	51	53	62	54	69	60	59	74	
145:	63	41	41	59	53	57	58	54	
153:	74	63	71	58	53	68	68	56	
161:	63	57	72	60	59	54	65	68	
169:	55	77	73	65	76	60	61	66	
177:	53	81	66	59	58	65	73	72	
185:	71	63	73	80	59	73	66	77	
193:	79	75	71	86	85	84	75	77	
201:	71	75	90	66	83	78	92	86	
209:	74	62	93	76	93	84	81	84	
217:	75	77	78	108	86	111	98	97	
225:	89	86	102	90	111	75	106	96	
233:	113	98	94	87	81	100	109	112	
241:	95	112	103	108	84	103	89	82	
249:	82	106	95	87	76	88	100	77	
257:	92	91	77	69	53	26	15	8	
265:	8	6	3	3	4	7	5	2	
273:	5	7	5	4	8	8	8	6	
281:	9	9	8	4	4	5	5	7	
289:	9	4	7	6	9	8	15	6	
297:	9	10	10	8	5	6	9	9	
305:	3	7	7	9	3	8	8	8	
313:	8	3	3	14	5	8	11	9	
321:	6	8	4	5	10	11	4	3	
329:	5	12	9	8	11	6	4	6	
337:	6	9	5	6	5	13	8	9	
345:	6	13	7	7	7	10	7	8	
353:	6	5	8	8	7	6	5	3	
361:	7	8	9	5	6	8	5	15	

369: 8 9 6 12 9 8 12 6

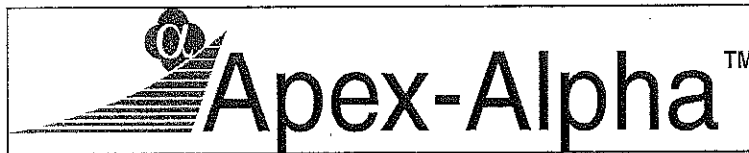
Sample Title: 04

Channel	8	9	6	12	9	8	12	6
377:	8	7	6	15	8	6	10	6
385:	10	6	10	6	7	11	12	7
393:	10	8	8	8	8	12	10	7
401:	4	9	14	12	11	7	1	4
409:	8	10	4	11	9	8	9	13
417:	13	11	9	10	8	2	13	6
425:	8	13	7	17	9	7	8	13
433:	11	14	15	13	12	8	14	8
441:	14	10	7	14	7	6	11	8
449:	10	10	4	6	13	7	2	5
457:	4	2	0	0	1	1	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	1	1
481:	0	1	0	0	1	0	0	0
489:	0	0	0	1	0	1	0	0
497:	1	1	1	0	0	0	0	1
505:	0	0	0	1	2	1	0	0
513:	0	0	0	3	0	0	0	0
521:	0	0	3	0	0	0	1	2
529:	0	1	0	0	1	1	1	0
537:	0	0	0	0	0	0	0	1
545:	0	0	0	0	1	0	0	0
553:	0	0	1	2	0	0	0	0
561:	1	0	1	2	2	0	1	0
569:	0	0	0	1	2	0	1	0
577:	1	0	0	0	1	0	0	1
585:	0	0	0	0	2	0	0	0
593:	1	0	0	0	1	1	0	3
601:	1	0	0	0	1	0	0	1
609:	0	0	0	1	3	0	2	1
617:	1	0	0	1	1	1	1	2
625:	0	0	0	1	2	2	0	0
633:	1	1	1	0	1	0	1	1
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	1
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	1	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	1	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	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	1	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0




QA SUMMARY REPORT

Review Of QA Results - Pulser Check

Date : 6/9/2016
 Time : 6:07:49 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha 001	21f	ALL	Not Done	
Alpha 002	21f	ALL	Not Done	
Alpha 003	21f	ALL	Passed	6/9/2016 5:19:08 AM
Alpha 004	21f	ALL	Passed	6/9/2016 5:19:09 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	6/9/2016 5:19:10 AM
Alpha 011	21f	ALL	Passed	6/9/2016 5:19:11 AM
Alpha 012	21f	ALL	Passed	6/9/2016 5:19:12 AM
Alpha 013	21f	ALL	Not Done	
Alpha 014	21f	ALL	Passed	6/9/2016 5:19:12 AM
Alpha 015	21f	Peak Energy <i>6/9/2016</i>	Action	6/9/2016 5:19:13 AM
Alpha 016	21f	ALL	Not Done	
Alpha 033	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:14 AM
Alpha 034	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:16 AM
Alpha 035	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:18 AM
Alpha 036	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:19 AM
Alpha 037	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:21 AM
Alpha 038	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:23 AM
Alpha 039	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:26 AM
Alpha 040	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:28 AM
Alpha 041	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:31 AM
Alpha 042	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:33 AM
Alpha 043	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:35 AM
Alpha 044	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:38 AM
Alpha 045	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:41 AM
Alpha 046	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:43 AM
Alpha 047	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:46 AM
Alpha 048	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:49 AM
Alpha 049	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:51 AM
Alpha 050	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:54 AM
Alpha 051	Alpha Analyst100DC	ALL	Not Done	
Alpha 052	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:57 AM
Alpha 053	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:00 AM
Alpha 054	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:02 AM
Alpha 055	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:05 AM
Alpha 056	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:07 AM
Alpha 057	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:10 AM
Alpha 058	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:13 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha 059	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:16 AM
Alpha 060	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:19 AM

APPROVED BY: _____ 

APPROVAL DATE: 6/9/16

***** LIBRARY LISTING REPORT *****

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 (ISOTOPIC THORIUM)

16-06013
THISO
Run 1

Work Order	16-06013
Analysis Code	THISO
Run	1
Date Received	6/6/2016
Lab Deadline	6/10/2016
Client	Auxier & Associates, Inc.
Project	PAP-KAN
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EML Th-01 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	Th-229
Radiometric Sol#	Th-18a
Tracer Act (dpm/g)	22.46
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		06/06/16 00:00	1.0000E+00
02	MBL	BLANK		06/06/16 00:00	1.0000E+00
03	DUP	CP-5026-S 1 0-1 5	54	06/02/16 16:30	1.0159E+00
04	DO	CP-5026-S 1 0-1 5	54	06/02/16 16:30	1.0126E+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.

160101

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	0.4652	10.4		0.00								
02	MBL	0.2329	5.2		0.00								
03	DUP	0.2326	5.2		0.00								
04	DO	0.2323	5.2		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.

 Run	Analysis Code THISO	Eberline Analytical Work Order 16-06013	Client Auxier & Associates, Inc.
	1	THISO	

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep 10 Date/Time	Sep 11 Date/Time
01	TH-228	LCS	06/06/16 00:00	1.00E+00	117.74	0.00	0.00			
02	TH-228	MBL	06/06/16 00:00	1.00E+00	99.81	0.00	0.00			
03	TH-228	DUP	06/02/16 16:30	1.02E+00	64.12	0.00	0.00			
04	TH-228	DO	06/02/16 16:30	1.01E+00	92.36	0.00	0.00			

	Run	1
Analysis Code	THISO	
Eberline Analytical Work Order	16-06013	
Client	Auxier & Associates, Inc.	

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Half-life (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-228	LCS	06/09/16 11:08		A_Spec	Alpha_014	170	4.38 E+02	1.60 E-02	18.2
02	TH-228	MBL	06/09/16 11:08		A_Spec	Alpha_015	170.02	3.98 E+00	6.00 E-03	22.9
03	TH-228	DUP	06/09/16 11:09		A_Spec	Alpha_033	170	1.70 E+01	6.00 E-03	17.6
04	TH-228	DO	06/09/16 11:09		A_Spec	Alpha_034	170	4.02 E+01	5.00 E-03	17.7

Preliminary Data Report & Analytical Calculations
Work Order: 16-06013-THISO-1

Run	1
Analysis Code	THISO
Eberline Analytical Work Order	16-06013
Client	Auxier & Associates, Inc.

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	TH-230	LCS	LCS	pCi/g	6.30E+00	9.22E-01	7.79E-02	5.35E+00	117.72	OK		OK	
02	TH-230	MBL	BLANK	pCi/g	3.85E-02	4.65E-02	6.54E-02					OK	OK
03	TH-230	DUP	CP-5026-S 1 0-1 5	pCi/g	1.70E+00	5.24E-01	1.21E-01				INV	OK	
04	TH-230	DO	CP-5026-S 1 0-1 5	pCi/g	1.03E+00	3.10E-01	9.04E-02					OK	



Run 1	Analysis Code THISO	Eberline Analytical Work Order 16-06013	Client Auxier & Associates, Inc.
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Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep 10 Date/Time	Sep 11 Date/Time
01	TH-230	LCS	06/06/16 00:00	1.00E+00	117.74	0.00	0.00			
02	TH-230	MBL	06/06/16 00:00	1.00E+00	99.81	0.00	0.00			
03	TH-230	DUP	06/02/16 16:30	1.02E+00	64.12	0.00	0.00			
04	TH-230	DO	06/02/16 16:30	1.01E+00	92.36	0.00	0.00			

00100

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Half-life (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-230	LCS	06/09/16 11:08		A_Spec	Alpha_014	170	5.10 E+02	6.00 E-03	18.2
02	TH-230	MBL	06/09/16 11:08		A_Spec	Alpha_015	170.02	3.32 E+00	4.00 E-03	22.9
03	TH-230	DUP	06/09/16 11:09		A_Spec	Alpha_033	170	7.35 E+01	3.00 E-03	17.6
04	TH-230	DO	06/09/16 11:09		A_Spec	Alpha_034	170	6.43 E+01	4.00 E-03	17.7

	Run	1
	Analysis Code	THISO
	Eberline Analytical Work Order	16-06013
	Client	Auxier & Associates, Inc.

	Run	1
Client	Auxier & Associates, Inc.	
Eberline Analytical Work Order	16-06013	
Analysis Code	THISO	

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	TH-232	LCS	LCS	pCi/g	5.30E+00	8.01E-01	8.77E-02	4.80E+00	110.28	OK		OK	
02	TH-232	MBL	BLANK	pCi/g	2.12E-02	3.25E-02	4.83E-02					OK	OK
03	TH-232	DUP	CP-5026-S 1 0-1 5	pCi/g	6.43E-01	2.74E-01	9.64E-02				OK	OK	OK
04	TH-232	DO	CP-5026-S 1 0-1 5	pCi/g	6.69E-01	2.34E-01	6.67E-02					OK	OK

01122

	Run	1
	Analysis Code	THISO
Client	Auxier & Associates, Inc.	
Eberline Analytical Work Order	16-06013	

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Half-life (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-232	LCS	06/09/16 11:08		A_Spec	Alpha_014	170	4.29 E+02	9.00 E-03	18.2
02	TH-232	MBL	06/09/16 11:08		A_Spec	Alpha_015	170.02	1.83 E+00	1.00 E-03	22.9
03	TH-232	DUP	06/09/16 11:09		A_Spec	Alpha_033	170	2.78 E+01	1.00 E-03	17.6
04	TH-232	DO	06/09/16 11:09		A_Spec	Alpha_034	170	4.18 E+01	1.00 E-03	17.7

Spike and Tracer Worksheet

Internal Work Order			Run		Analysis Code		Date		Technician		Technician Initials		Witness Initials							
16-06013			1		THISO		6/7/2016 5:09		JWOLFE		<i>JW</i>									
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)	Volume Used (g)	Known pCi	Error Estimate	Known pCi	Error Estimate	Known pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate	
Th-228	Th-8b	103.560	6/7/2016	0.100	0.1030					4.80	0.173							0.00	0.000	
Th-230	Th-1b	23.520	6/7/2016	0.500	0.5054					5.35	0.145							0.00	0.000	
Th-232	Th-8b	103.560	6/7/2016	0.100	0.1030					4.80	0.173							0.00	0.000	
IC-99 MS IC-2a			22043636		7/5/2014		0.1													
Tracers			Tracers		Tracers		Tracers		Tracers		Tracers		Tracers		Tracers		Tracers		Tracers	
fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Known pCi	Error Estimate	Known pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate	
01	Th-229	Th-18a	22.460	6/7/2016	0.4652															
02	Th-229	Th-18a	22.460	6/7/2016	0.2329															
03	Th-229	Th-18a	22.460	6/7/2016	0.2326															
04	Th-229	Th-18a	22.460	6/7/2016	0.2323															
Balance Printer Tapes																				
Tracer										LCS										
0.4652 g										0.2651 g										
0.2329 g										0.1639 g										
0.2326 g										Matrix Spike										
0.2323 g																				

**Rough Sample Preparation
 Log Book**

Work Order 16-06013	Lab Deadline 6/10/2016	Date Received in Prep 6/6/2016	Date Sealed 6/7/2016	Date Returned 6/8/2016	Technician KSALLINGS
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Eberline Fraction	Auxier & Associates, Inc. Client ID	Tare (g)		Gross (g)		Net (g)		Percent		Gamma		Special Info
		Pan Wt	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	
04	CP-5026-S 1 0-1 5	14.4500	14.4500	555.9800	505.0000	541.5300	490.5500	9.41%	90.59%	0.0000	0.0000	

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

00116



Sample Description: SPIKE
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001537
 Batch Identification: 1606013A-TH
 Sample Identification: 01
 Sample Geometry: Shelf 2
 Procedure Description: Th iso

Detector Name: Alpha_014
 Chamber Serial Number:
 Detector Serial Number: 14
 Env. Background: System Bkgd 155364
 Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
 Sample Date/Time: 6/9/2016 6:05:25 AM
 Acquisition Date/Time: 6/9/2016 11:08:56 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
 Tracer Quantity: 0.465 mL
 Effective Efficiency: 0.2148 +/- 0.0129
 Counting Efficiency: 0.1824 +/- 0.0032 on 12/11/2015 2:46:16 PM
 Chem. Recovery Factor: 1.1774 +/- 0.0736

Control Certificate Name: NatTh_Th-8
 Chem. Recov. of Control: TH-232 1.102824 +/- 0.091217
 Peak Match Tolerance: 0.175 MeV

 ----- PEAK AREA REPORT -----

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.790	15.43	56.25	3.57	0.00E+000	2.9
TH-228	5.365	438.28	9.40	2.72	0.00E+000	6.2
TH-229 T	4.872	381.45	10.07	2.55	0.00E+000	32.3
TH-230	4.630	509.98	8.69	1.02	0.00E+000	22.9
TH-232	3.955	429.47	9.48	1.53	0.00E+000	12.2

T = Tracer Peak used for Effective Efficiency

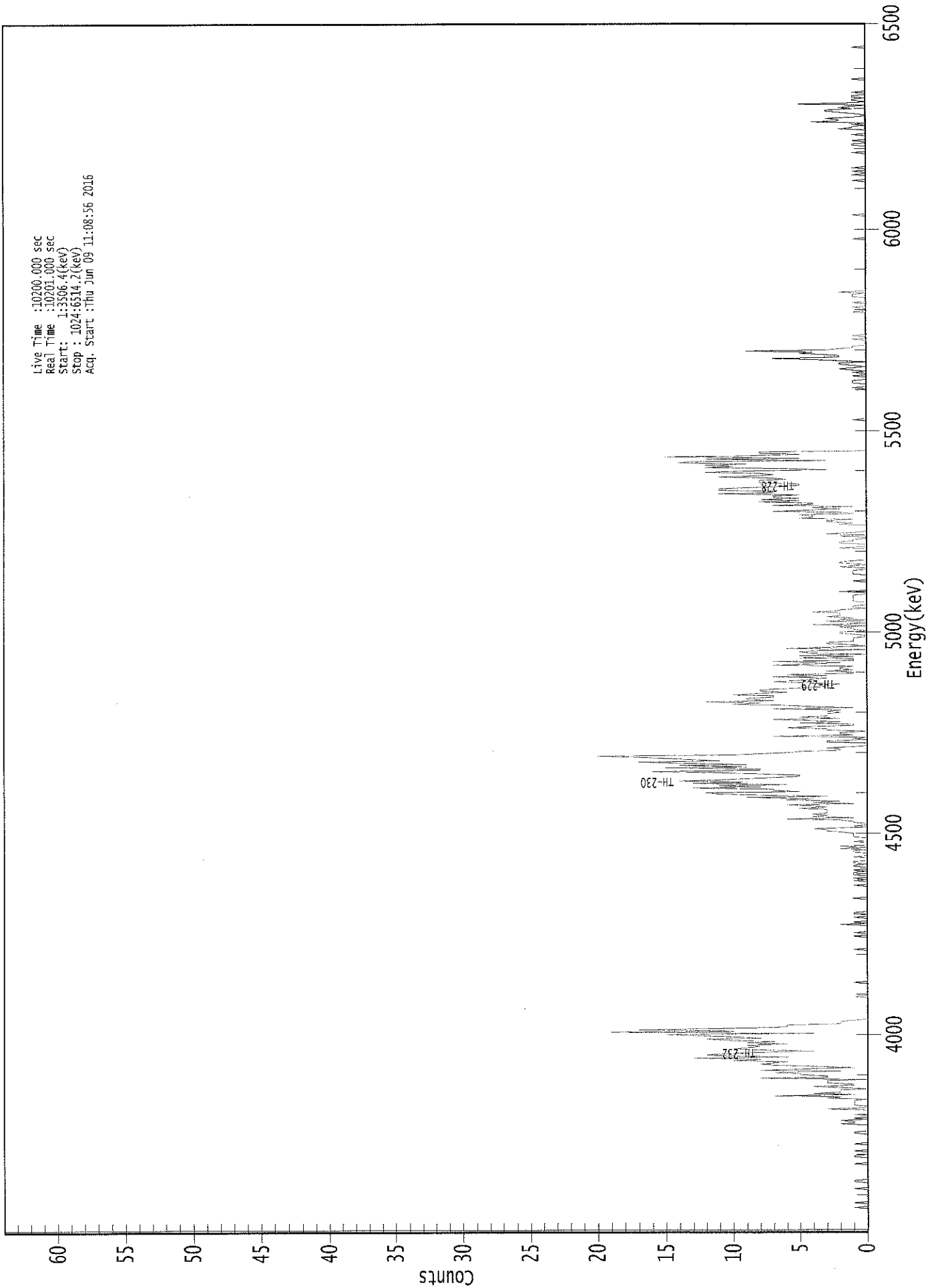
 ----- NUCLIDE ANALYSIS RESULTS -----

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.981	5850.00*	1.95E-001 +/- 1.12E-001	1.19E-001 +/- 1.40E-002
TH-228	0.994	5400.00*	5.41E+000 +/- 8.15E-001	1.06E-001 +/- 1.25E-002
TH-229	1.000	4872.00*	4.73E+000 +/- 5.56E-001	1.04E-001 +/- 1.22E-002
TH-230	0.991	4672.00*	6.30E+000 +/- 9.22E-001	7.79E-002 +/- 9.16E-003
TH-232	0.991	3997.00*	5.30E+000 +/- 8.01E-001	8.77E-002 +/- 1.03E-002

AG
 6/9/16

0000153701.CNF

Live Time : 10200.000 sec
Real Time : 10201.000 sec
Start : 1:3506.4(keV)
Stop : 1024:6314.2(keV)
Acq. Start : Thu Jun 09 11:08:56 2016



ROI Type: 3

ROI Type: 1

 ***** 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: 10201

Channel	10201	10200	0	0	0	0	0	0	0
1:	10201	10200	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	1	0	0	0
25:	0	1	0	0	0	0	0	0	0
33:	0	0	0	0	0	1	0	0	0
41:	0	0	0	1	1	0	0	0	0
49:	0	0	0	0	0	0	0	0	0
57:	0	0	1	0	0	0	0	0	0
65:	1	1	0	0	0	1	0	0	0
73:	0	0	0	1	0	0	0	0	0
81:	0	0	0	0	1	1	0	0	0
89:	0	0	0	0	2	1	1	2	2
97:	0	1	0	0	1	0	0	0	0
105:	0	3	0	0	1	1	1	1	1
113:	1	0	3	2	7	1	4	2	2
121:	2	2	0	2	4	1	1	3	3
129:	3	3	0	8	3	3	5	5	5
137:	7	2	8	4	1	4	7	8	8
145:	7	6	10	8	13	6	11	12	12
153:	10	8	4	8	10	9	8	9	9
161:	6	9	7	10	12	8	10	12	12
169:	15	4	19	10	17	12	7	6	6
177:	6	2	2	2	1	0	0	0	0
185:	0	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0	0
201:	1	0	0	0	0	0	0	0	0
209:	0	0	0	0	1	0	0	0	0
217:	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0	0
241:	1	0	0	0	0	0	0	0	0
249:	0	0	0	1	0	0	1	0	0
257:	0	0	0	0	0	2	0	1	1
265:	0	0	0	1	0	0	1	1	1
273:	0	0	0	0	0	0	0	0	0
281:	0	0	0	1	0	0	0	0	0
289:	0	0	0	0	0	0	1	0	0
297:	0	0	1	0	1	0	0	1	1
305:	1	1	0	1	0	0	1	1	1
313:	0	1	1	0	0	0	1	0	0
321:	0	0	1	1	0	2	0	2	2
329:	0	0	0	1	0	0	0	1	1
337:	1	1	1	2	3	3	4	0	0
345:	1	0	0	1	1	2	6	1	1
353:	4	3	4	3	3	3	3	5	5
361:	3	4	6	1	4	2	6	4	4

369: 9 3 8 11 12 5 7 7

Sample Title: 01

Channel	1	2	3	4	5	6	7	8
377:	13	8	11	6	13	9	14	11
385:	9	7	5	5	8	11	16	8
393:	8	15	9	14	9	14	17	11
401:	13	15	17	20	10	8	6	5
409:	2	2	3	1	0	0	0	3
417:	3	0	1	0	7	1	2	2
425:	0	3	3	6	4	1	1	5
433:	2	4	7	2	5	3	3	3
441:	2	3	2	7	1	4	6	10
449:	8	12	7	9	9	7	7	10
457:	8	6	8	8	6	4	3	3
465:	2	5	7	5	4	3	7	3
473:	6	1	1	3	1	2	2	1
481:	7	4	2	7	1	1	5	1
489:	5	0	4	5	4	0	6	3
497:	0	1	3	3	1	1	1	1
505:	0	0	1	2	2	0	1	1
513:	2	0	4	0	0	3	0	2
521:	1	3	2	2	2	4	2	2
529:	0	1	1	0	0	0	1	1
537:	1	1	1	1	0	0	2	0
545:	0	0	0	0	0	0	0	1
553:	0	0	0	0	0	1	1	1
561:	1	0	0	2	1	0	2	2
569:	1	0	0	0	0	0	0	0
577:	0	0	0	2	0	0	0	2
585:	2	1	1	0	0	2	0	3
593:	1	0	0	0	0	0	0	2
601:	1	3	3	1	5	4	4	5
609:	1	2	7	4	2	4	1	7
617:	4	4	8	5	8	5	7	7
625:	5	11	7	7	11	11	9	6
633:	5	5	8	8	8	6	7	11
641:	8	7	8	12	9	3	6	12
649:	10	12	9	14	13	3	12	5
657:	15	9	5	8	8	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	1
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	1	0	0	0	1	1
721:	1	0	0	0	1	0	0	1
729:	0	1	2	1	0	1	2	2
737:	0	2	4	7	2	2	3	5
745:	4	9	3	2	1	1	0	0
753:	0	0	0	1	0	0	1	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	1	0	0	0	1	0
785:	0	0	1	0	0	0	0	1
793:	1	1	0	2	0	0	0	0

801: 0 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:	1	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	1	0	0	0	0	1	0
897:	0	1	0	0	1	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	1	0	0	0	0	0	1
921:	1	0	0	1	0	0	0	0
929:	1	0	0	0	0	2	1	1
937:	0	1	0	4	2	2	3	1
945:	0	0	1	2	3	3	1	2
953:	1	0	5	1	0	1	1	0
961:	1	1	0	0	1	0	0	0
969:	0	0	0	0	0	0	0	1
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	1	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



Sample Description: BLANK
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001537
 Batch Identification: 1606013A-TH
 Sample Identification: 02
 Sample Geometry: Shelf 2
 Procedure Description: Th iso

Detector Name: Alpha_015
 Chamber Serial Number:
 Detector Serial Number: 15
 Env. Background: System Bkgd 155365
 Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
 Sample Date/Time: 6/9/2016 6:05:25 AM
 Acquisition Date/Time: 6/9/2016 11:08:57 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
 Tracer Quantity: 0.233 mL
 Effective Efficiency: 0.2288 +/- 0.0176
 Counting Efficiency: 0.2292 +/- 0.0039 on 12/11/2015 2:46:18 PM
 Chem. Recovery Factor: 0.9981 +/- 0.0785

Peak Match Tolerance: 0.175 MeV

 PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.871	2.11	217.70	2.89	0.00E+000	3.0
TH-228	5.356	3.98	112.01	1.02	0.00E+000	3.0
TH-229 T	4.895	203.49	13.76	0.51	0.00E+000	11.8
TH-230	4.621	3.32	119.77	0.68	0.00E+000	3.0
TH-232	4.010	1.83	152.56	0.17	0.00E+000	6.0

T = Tracer Peak used for Effective Efficiency

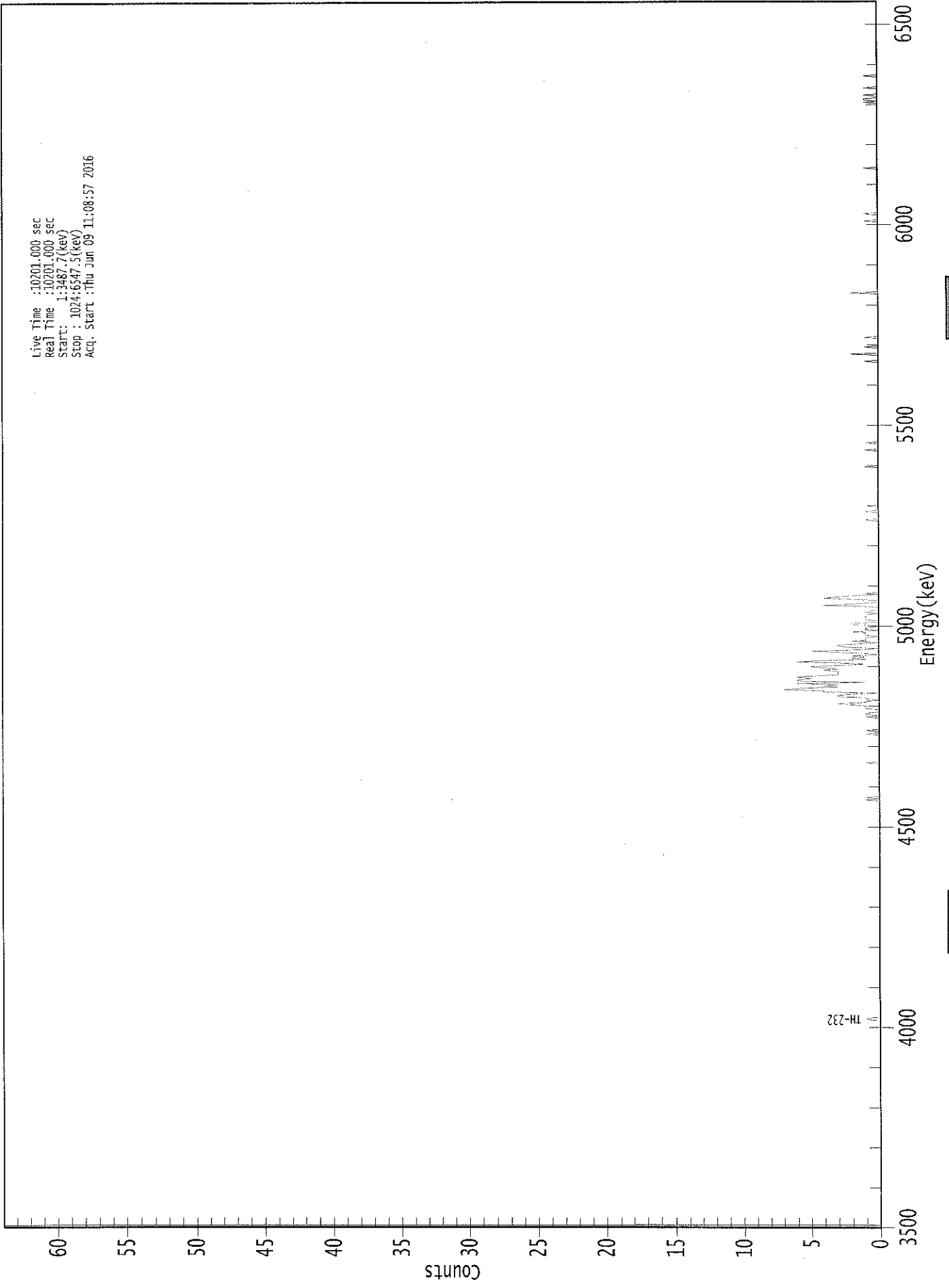
 NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.998	5850.00*	2.51E-002 +/- 5.47E-002	1.04E-001 +/- 1.56E-002
TH-228	0.990	5400.00*	4.61E-002 +/- 5.21E-002	7.30E-002 +/- 1.10E-002
TH-229	0.997	4872.00*	2.37E+000 +/- 3.56E-001	6.11E-002 +/- 9.18E-003
TH-230	0.987	4672.00*	3.85E-002 +/- 4.65E-002	6.54E-002 +/- 9.84E-003
TH-232	0.999	3997.00*	2.12E-002 +/- 3.25E-002	4.83E-002 +/- 7.27E-003

AG
6/9/16

0000153702.CNF

Live Time : 10201.000 sec
Real Time : 10201.000 sec
Start : 1:3487.7(keV)
Stop : 1024:6547.5(keV)
Acq. Start : Thu Jun 09 11:08:57 2016



00120

ROI Type: 1

ROI Type: 3

 ***** 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	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	1	1
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	1	0	1
361:	0	0	0	0	0	0	0	0

369: 0 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	1	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	1	0	0	1
417:	0	0	0	0	0	0	0	0
425:	0	0	1	0	1	1	0	0
433:	0	1	1	1	2	3	1	1
441:	0	1	1	3	3	2	0	4
449:	4	7	6	3	4	3	6	1
457:	6	6	5	6	5	3	3	3
465:	3	4	3	4	5	3	1	3
473:	6	4	1	2	1	2	0	1
481:	3	5	2	0	2	3	3	1
489:	0	2	1	1	1	0	1	1
497:	1	2	0	1	1	0	0	2
505:	2	0	0	1	1	1	1	1
513:	0	1	1	0	0	0	1	4
521:	2	1	0	0	2	4	3	2
529:	0	1	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	1	0
593:	0	0	0	0	0	1	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	1	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	1	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	1	0	0	0	0	0
729:	2	0	0	0	0	0	1	0
737:	0	0	0	0	0	0	1	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	2	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 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	1
841:	0	0	0	0	0	1	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	1	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	1	0	1	1	0	0
945:	1	0	0	0	0	0	1	0
953:	0	0	0	0	0	0	0	0
961:	1	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



Sample Description: CP-5026-S 1 0-1 5-DUP
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001537
 Batch Identification: 1606013A-TH
 Sample Identification: 03
 Sample Geometry: Shelf 2
 Procedure Description: Th iso

Detector Name: Alpha_033
 Chamber Serial Number: 04026479A
 Detector Serial Number: 91132
 Env. Background: System Bkgd 155366
 Reagent Blank: <not performed>

Sample Size: 1.016E+000 +/- 0.000E+000 gram
 Sample Date/Time: 6/2/2016 6:05:25 AM
 Acquisition Date/Time: 6/9/2016 11:09:15 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
 Tracer Quantity: 0.233 mL
 Effective Efficiency: 0.1130 +/- 0.0119
 Counting Efficiency: 0.1762 +/- 0.0031 on 12/11/2015 8:20:59 AM
 Chem. Recovery Factor: 0.6412 +/- 0.0682

Peak Match Tolerance: 0.175 MeV

 ----- PEAK AREA REPORT -----

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.796	6.81	82.43	1.19	0.00E+000	3.0
TH-228	5.385	16.98	49.21	1.02	0.00E+000	4.5
TH-229 T	4.888	100.32	19.65	0.68	0.00E+000	7.0
TH-230	4.664	73.49	22.96	0.51	0.00E+000	5.4
TH-232	3.987	27.83	37.29	0.17	0.00E+000	8.9

T = Tracer Peak used for Effective Efficiency

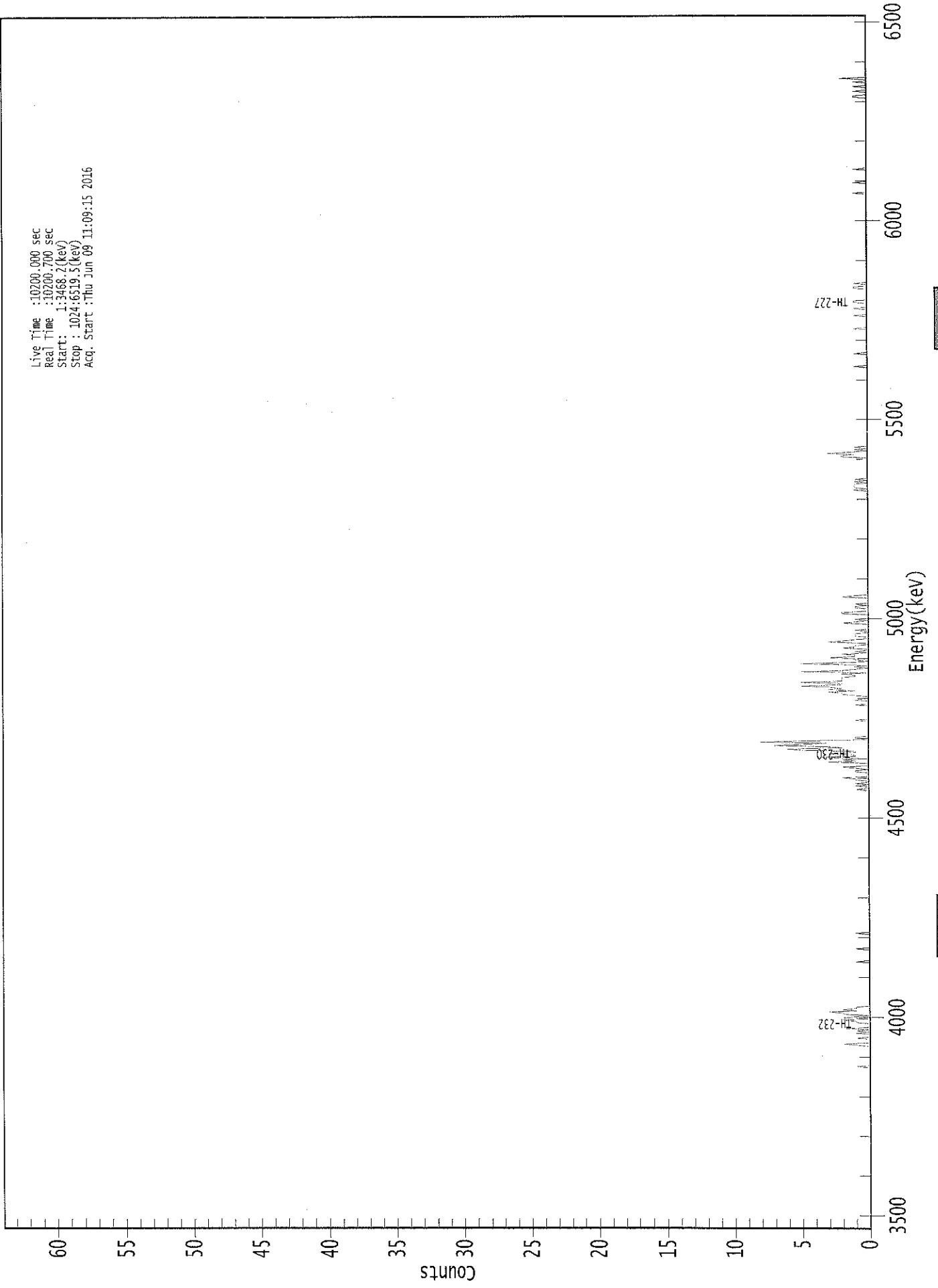
 ----- NUCLIDE ANALYSIS RESULTS -----

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.985	5850.00*	1.61E-001 +/- 1.37E-001	1.56E-001 +/- 3.21E-002
TH-228	0.999	5400.00*	3.95E-001 +/- 2.11E-001	1.47E-001 +/- 3.01E-002
TH-229	0.999	4872.00*	2.33E+000 +/- 4.79E-001	1.31E-001 +/- 2.69E-002
TH-230	1.000	4672.00*	1.70E+000 +/- 5.24E-001	1.21E-001 +/- 2.50E-002
TH-232	1.000	3997.00*	6.43E-001 +/- 2.74E-001	9.64E-002 +/- 1.98E-002

AG
 6/9/16

0000153716.CNF

Live Time : 10200.000 sec
Real Time : 10200.700 sec
Start : 1:34:68.2(keV)
Stop : 1024:65:19.5(keV)
Acq. Start : Thu Jun 09 11:09:15 2016



ROI Type: 3

ROI Type: 1

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

Sample Title: 03

Elapsed Live time: 10200

Elapsed Real Time: 10201

Channel									
1:	0	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0	0
137:	0	1	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0	0
153:	0	0	0	1	2	0	0	0	0
161:	0	1	0	0	0	1	0	1	1
169:	0	2	0	0	0	0	1	1	1
177:	2	0	2	1	0	2	2	3	3
185:	1	2	1	1	0	0	0	0	0
193:	0	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0	0
225:	0	1	0	0	0	0	0	0	0
233:	0	0	0	0	1	0	0	0	0
241:	0	0	0	0	0	0	0	0	0
249:	0	1	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0	0

369: 0 0 1 0 0 1 0 1

Sample Title: 03

Channel	1	2	3	4	5	6	7	8
377:	0	0	1	1	2	0	0	0
385:	0	1	1	0	1	2	0	0
393:	0	3	1	2	0	4	1	1
401:	3	1	1	5	6	2	3	7
409:	5	3	8	4	0	1	1	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	1	0	0	0
433:	0	0	0	0	0	0	0	0
441:	0	1	0	0	0	1	0	0
449:	0	1	2	2	3	1	3	2
457:	3	5	2	2	5	2	2	2
465:	2	1	1	2	0	5	2	1
473:	0	1	0	2	5	1	0	1
481:	1	3	1	1	2	0	1	0
489:	0	2	1	1	0	0	3	2
497:	1	0	0	1	1	1	0	0
505:	1	0	0	0	0	0	2	1
513:	0	1	0	0	0	0	2	2
521:	0	0	0	1	1	0	1	0
529:	0	0	0	0	2	1	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	1	0
625:	1	1	1	1	0	1	0	1
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	2	2	1	3	1	0
657:	1	0	1	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	1	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	1	0
761:	0	0	0	0	0	0	0	0
769:	0	1	0	0	0	0	0	1
777:	0	0	0	0	1	1	0	0
785:	0	0	0	0	0	0	0	0
793:	1	1	0	0	1	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:	1	0	0	0	0	0	0	0
881:	0	1	0	0	0	0	0	0
889:	0	0	0	0	1	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	1	1	0	0	0	1	0
961:	0	0	1	0	0	0	1	0
969:	0	2	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



Sample Description: CP-5026-S 0-1 5
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001537
 Batch Identification: 1606013A-TH
 Sample Identification: 04
 Sample Geometry: Shelf 2
 Procedure Description: Th iso

Detector Name: Alpha_034
 Chamber Serial Number: 04026479B
 Detector Serial Number: 91136
 Env. Background: System Bkgd 155367
 Reagent Blank: <not performed>

Sample Size: 1.013E+000 +/- 0.000E+000 gram
 Sample Date/Time: 6/2/2016 6:05:25 AM
 Acquisition Date/Time: 6/9/2016 11:09:16 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
 Tracer Quantity: 0.232 mL
 Effective Efficiency: 0.1637 +/- 0.0145
 Counting Efficiency: 0.1772 +/- 0.0031 on 12/11/2015 8:20:57 AM
 Chem. Recovery Factor: 0.9236 +/- 0.0837

Peak Match Tolerance: 0.175 MeV

 ----- PEAK AREA REPORT -----

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.834	6.32	82.73	0.68	0.00E+000	3.0
TH-228	5.394	40.15	31.31	0.85	0.00E+000	4.5
TH-229 T	4.886	145.15	16.32	0.85	0.00E+000	5.6
TH-230	4.663	64.32	24.59	0.68	0.00E+000	6.0
TH-232	3.977	41.83	30.38	0.17	0.00E+000	3.0

T = Tracer Peak used for Effective Efficiency

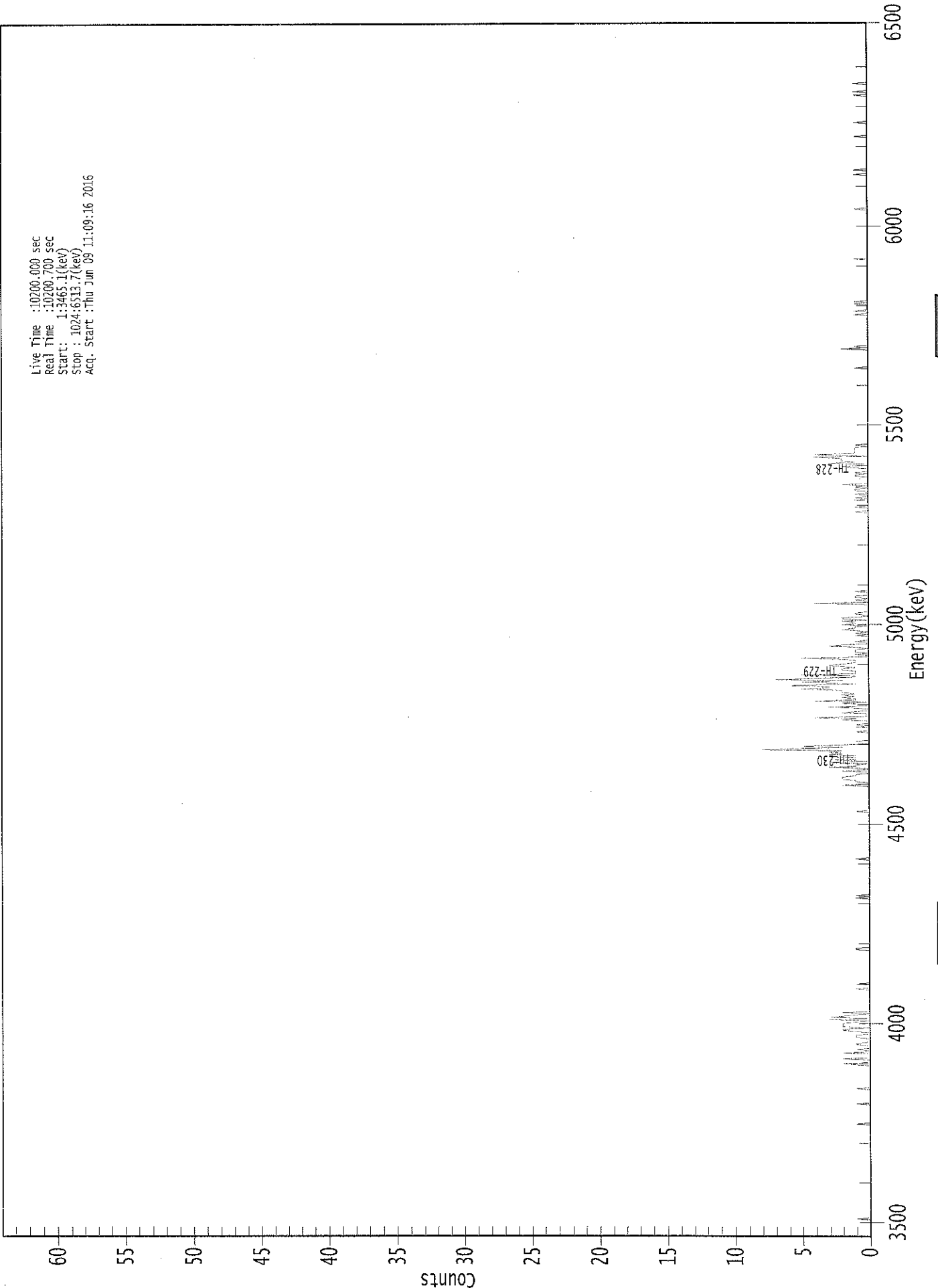
 ----- NUCLIDE ANALYSIS RESULTS -----

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.999	5850.00*	1.04E-001 +/- 8.77E-002	9.26E-002 +/- 1.61E-002
TH-228	1.000	5400.00*	6.47E-001 +/- 2.32E-001	9.65E-002 +/- 1.68E-002
TH-229	0.999	4872.00*	2.33E+000 +/- 4.06E-001	9.62E-002 +/- 1.68E-002
TH-230	1.000	4672.00*	1.03E+000 +/- 3.10E-001	9.04E-002 +/- 1.57E-002
TH-232	0.998	3997.00*	6.69E-001 +/- 2.34E-001	6.67E-002 +/- 1.16E-002

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 6/9/16

0000153703.CNF

Live Time :10200.000 sec
Real Time :10200.700 sec
Start : 1:3465.1(keV)
Stop : 1024:6513.7(keV)
Acq. Start :Thu Jun 09 11:09:16 2016



00133

 ***** 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: 10201

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	1
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	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	1
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	1	0	0	0	0	0	0	0
121:	0	0	0	0	0	1	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	1	2	0	0	0	2	0
153:	0	0	0	2	0	0	1	0
161:	0	0	1	1	0	0	0	0
169:	1	1	1	0	0	1	2	2
177:	0	2	2	2	2	1	0	3
185:	0	3	2	1	0	2	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	1	0	0	0	1	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	1	1	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	1	0	1
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	1	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	1	0
361:	0	0	0	0	0	0	0	0

369: 0 0 0 0 0 0 0 0

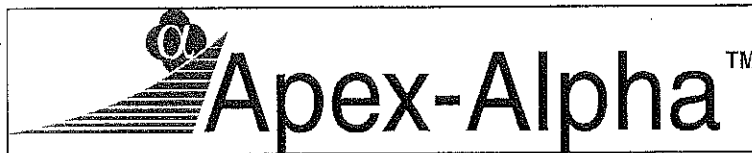
Sample Title: 04

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	0	0	0	0	2	0	0	1
385:	1	2	2	2	1	1	0	0
393:	2	0	0	3	1	1	0	3
401:	0	2	1	1	3	1	3	2
409:	3	2	8	5	2	5	2	0
417:	1	1	0	0	0	0	0	0
425:	0	1	0	0	0	1	0	1
433:	0	0	0	2	1	4	0	0
441:	0	2	1	0	0	1	3	0
449:	0	2	0	4	1	1	2	1
457:	2	1	2	2	2	5	3	3
465:	6	1	3	5	2	7	4	1
473:	1	5	1	1	1	2	2	1
481:	2	3	2	1	1	1	2	5
489:	0	0	1	0	1	1	1	0
497:	1	3	2	0	0	1	0	0
505:	0	0	1	0	1	0	1	2
513:	1	1	0	2	1	1	2	0
521:	2	2	0	0	1	1	0	0
529:	0	0	0	0	0	4	0	0
537:	1	0	1	1	0	0	0	1
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	1	0	0	0	1	0
617:	0	0	0	0	1	0	1	0
625:	0	1	0	0	1	1	0	1
633:	0	2	0	0	0	0	0	0
641:	1	1	0	1	0	0	0	1
649:	2	0	0	3	1	2	2	2
657:	4	0	4	1	1	1	1	1
665:	1	0	1	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	1	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	2	0	1	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	1	0	0	1	0	0	0	0
785:	0	1	0	1	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	1
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	1	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	1	0
897:	0	0	1	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	1	0
929:	0	0	0	0	0	0	0	0
937:	0	0	1	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	1	0	0	1	0	0	0
969:	0	0	0	1	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



QA SUMMARY REPORT


Review Of QA Results - Pulser Check

Date : 6/9/2016

Time : 6:07:49 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha 001	21f	ALL	Not Done	
Alpha 002	21f	ALL	Not Done	
Alpha 003	21f	ALL	Passed	6/9/2016 5:19:08 AM
Alpha 004	21f	ALL	Passed	6/9/2016 5:19:09 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	6/9/2016 5:19:10 AM
Alpha 011	21f	ALL	Passed	6/9/2016 5:19:11 AM
Alpha 012	21f	ALL	Passed	6/9/2016 5:19:12 AM
Alpha 013	21f	ALL	Not Done	
Alpha 014	21f	ALL	Passed	6/9/2016 5:19:12 AM
Alpha 015	21f	Peak Energy <i>6/9/16</i>	Action	6/9/2016 5:19:13 AM
Alpha 016	21f	ALL	Not Done	
Alpha 033	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:14 AM
Alpha 034	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:16 AM
Alpha 035	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:18 AM
Alpha 036	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:19 AM
Alpha 037	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:21 AM
Alpha 038	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:23 AM
Alpha 039	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:26 AM
Alpha 040	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:28 AM
Alpha 041	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:31 AM
Alpha 042	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:33 AM
Alpha 043	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:35 AM
Alpha 044	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:38 AM
Alpha 045	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:41 AM
Alpha 046	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:43 AM
Alpha 047	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:46 AM
Alpha 048	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:49 AM
Alpha 049	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:51 AM
Alpha 050	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:54 AM
Alpha 051	Alpha Analyst100DC	ALL	Not Done	
Alpha 052	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:19:57 AM
Alpha 053	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:00 AM
Alpha 054	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:02 AM
Alpha 055	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:05 AM
Alpha 056	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:07 AM
Alpha 057	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:10 AM
Alpha 058	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:13 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha 059	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:16 AM
Alpha 060	Alpha Analyst100DC	ALL	Passed	6/9/2016 5:20:19 AM

APPROVED BY: _____ 

APPROVAL DATE: 6/9/16

***** LIBRARY LISTING REPORT *****

Nuclide Library Title: Thorium

Nuclide Library Description: Th-227,-228,-229,-230,-232

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert. (Abs.+)
TH-227	6.873E+008	5850.000*	0.000	97.5000	0.0000
TH-228	6.034E+007	5400.000*	0.000	99.9400	0.0000
TH-229	2.487E+011	4872.000*	0.000	99.5200	0.0000
TH-230	2.379E+012	4672.000*	0.000	99.8200	0.0000
TH-232	4.434E+017	3997.000*	0.000	100.0000	0.0000

* = key line

TOTALS: 5 Nuclides 5 Energy Lines

SECTION X
ANALYTICAL DATA (GAMMA SPECTROSCOPY)

Work Order	16-06013
Analysis Code	Gamma
Run	1
Date Received	6/6/2016
Lab Deadline	6/10/2016
Client	Auxier & Associates, Inc.
Project	PAP-KAN
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		06/06/16 00:00	1.0000E+00
02	MBL	BLANK		06/06/16 00:00	1.0000E+00
03	DUP	CP-5026-S 1 0-1 5	54	06/02/16 16:30	4.3664E+02
04	DO	CP-5026-S 1 0-1 5	54	06/02/16 16:30	4.3664E+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.

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	1.40E+02	8.09E+00	1.14E+00	1.37E+02	101.85	OK		06/06/16 00:00	1.00E+00	06/07/16 08:44	YES
01	CS-137	LCS	LCS	pCi/g	9.09E+01	8.05E+00	1.25E+00	8.69E+01	104.59	OK		06/06/16 00:00	1.00E+00	06/07/16 08:44	YES
02	AC-228	MBL	BLANK	pCi/g	-8.41E-02	9.43E-02	9.35E-02					06/06/16 00:00	1.00E+00	06/07/16 07:37	NO
02	BI-214	MBL	BLANK	pCi/g	2.13E-02	5.07E-02	8.62E-02					06/06/16 00:00	1.00E+00	06/07/16 07:37	NO
02	K-40	MBL	BLANK	pCi/g	2.73E-02	5.35E-02	2.01E-01					06/06/16 00:00	1.00E+00	06/07/16 07:37	NO
02	PB-212	MBL	BLANK	pCi/g	2.74E-02	3.89E-02	6.37E-02					06/06/16 00:00	1.00E+00	06/07/16 07:37	NO
02	PB-214	MBL	BLANK	pCi/g	6.25E-02	6.18E-02	1.02E-01					06/06/16 00:00	1.00E+00	06/07/16 07:37	YES
02	RA-226	MBL	BLANK	pCi/g	2.13E-02	5.07E-02	8.62E-02					06/06/16 00:00	1.00E+00	06/07/16 07:37	NO
02	RA-228	MBL	BLANK	pCi/g	-8.41E-02	9.43E-02	9.35E-02					06/06/16 00:00	1.00E+00	06/07/16 07:37	NO
02	TH-234	MBL	BLANK	pCi/g	8.30E-02	4.50E-01	6.10E-01					06/06/16 00:00	1.00E+00	06/07/16 07:37	NO
02	TL-208	MBL	BLANK	pCi/g	6.88E-02	7.00E-02	1.11E-01					06/06/16 00:00	1.00E+00	06/07/16 07:37	NO
03	AC-228	DUP	CP-5026-S 1 0-1 5	pCi/g	8.31E-01	5.62E-01	1.04E+00					06/02/16 16:30	4.37E+02	06/07/16 07:37	YES
03	BI-214	DUP	CP-5026-S 1 0-1 5	pCi/g	1.69E+00	4.80E-01	8.22E-01			NA		06/02/16 16:30	4.37E+02	06/07/16 07:37	YES
03	K-40	DUP	CP-5026-S 1 0-1 5	pCi/g	1.16E+01	2.02E+00	2.05E+00			NA		06/02/16 16:30	4.37E+02	06/07/16 07:37	YES
03	PB-212	DUP	CP-5026-S 1 0-1 5	pCi/g	1.50E+00	5.53E-01	8.50E-01					06/02/16 16:30	4.37E+02	06/07/16 07:37	YES
03	PB-214	DUP	CP-5026-S 1 0-1 5	pCi/g	1.34E+00	4.72E-01	8.18E-01				NA	06/02/16 16:30	4.37E+02	06/07/16 07:37	YES
03	RA-226	DUP	CP-5026-S 1 0-1 5	pCi/g	1.69E+00	4.80E-01	8.22E-01					06/02/16 16:30	4.37E+02	06/07/16 07:37	YES
03	RA-228	DUP	CP-5026-S 1 0-1 5	pCi/g	8.31E-01	5.62E-01	1.04E+00					06/02/16 16:30	4.37E+02	06/07/16 07:37	YES
03	TH-234	DUP	CP-5026-S 1 0-1 5	pCi/g	1.43E+03	1.04E+02	1.92E+01					06/02/16 16:30	4.37E+02	06/07/16 07:37	YES
03	TL-208	DUP	CP-5026-S 1 0-1 5	pCi/g	9.49E-01	6.69E-01	4.74E-01					06/02/16 16:30	4.37E+02	06/07/16 07:37	NO
04	AC-228	DO	CP-5026-S 1 0-1 5	pCi/g	6.41E-01	6.44E-01	9.82E-01					06/02/16 16:30	4.37E+02	06/07/16 08:44	NO
04	BI-214	DO	CP-5026-S 1 0-1 5	pCi/g	1.36E+00	3.84E-01	7.45E-01					06/02/16 16:30	4.37E+02	06/07/16 08:44	YES
04	K-40	DO	CP-5026-S 1 0-1 5	pCi/g	9.69E+00	1.87E+00	2.06E+00					06/02/16 16:30	4.37E+02	06/07/16 08:44	YES
04	PB-212	DO	CP-5026-S 1 0-1 5	pCi/g	7.55E-01	3.96E-01	6.35E-01					06/02/16 16:30	4.37E+02	06/07/16 08:44	YES
04	PB-214	DO	CP-5026-S 1 0-1 5	pCi/g	1.95E+00	5.27E-01	8.83E-01					06/02/16 16:30	4.37E+02	06/07/16 08:44	YES
04	RA-226	DO	CP-5026-S 1 0-1 5	pCi/g	1.36E+00	3.84E-01	7.45E-01					06/02/16 16:30	4.37E+02	06/07/16 08:44	YES
04	RA-228	DO	CP-5026-S 1 0-1 5	pCi/g	6.41E-01	6.44E-01	9.82E-01					06/02/16 16:30	4.37E+02	06/07/16 08:44	NO
04	TH-234	DO	CP-5026-S 1 0-1 5	pCi/g	1.40E+03	1.02E+02	1.70E+01					06/02/16 16:30	4.37E+02	06/07/16 08:44	YES
04	TL-208	DO	CP-5026-S 1 0-1 5	pCi/g	4.06E-01	1.75E-01	1.97E-01					06/02/16 16:30	4.37E+02	06/07/16 08:44	YES

Work Order	16-06013	Lab Deadline	6/10/2016	Date Received in Prep	6/6/2016	Date Sealed	6/7/2016	Date Returned	6/8/2016	Technician	KSALLINGS
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Eberline Fraction	Auxier & Associates, Inc. Client ID	Tare (g) Pan Wt	Gross (g)		Net (g)		Percent		Gamma		Special Info
			Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	
04	CP-5026-S 1 0-1 5	14.4500	555.9800	505.0000	541.5300	490.5500	9.41%	90.59%	0.0000	0.0000	

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

00147

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* yps/gram	This Source yps	Uncertainty*, %			Calibration Method*
					U _A	U _B	U	
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)



Analysis Report for 1606013-01
GAS-1302

✓
6/7/16

GAMMA SPECTRUM ANALYSIS

Sample Identification : 1606013-01
Sample Description : GAS-1302
Sample Type : SOIL

Sample Size : 7.360E+02 grams
Facility : Countroom

Sample Taken On : 7/1/2013 7:35:09AM
Acquisition Started : 6/7/2016 8:44:23AM

Procedure : GAS-1402 pCi
Operator : Administrator
Detector Name : GE3
Geometry : GAS-1402
Live Time : 1800.0 seconds
Real Time : 1843.9 seconds

Dead Time : 2.38 %

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 : 38356

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
6/7/16

Analysis Report for 1606013-01

GAS-1302

PEAK LOCATE REPORT

Peak Locate Performed on : 6/7/2016 9:15:10AM
 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	22.05	22.29	0.0000	0.00
2	24.46	24.71	0.0000	0.00
3	32.16	32.40	0.0000	0.00
4	51.19	51.42	0.0000	0.00
5	56.00	56.22	0.0000	0.00
6	59.64	59.87	0.0000	0.00
7	68.84	69.06	0.0000	0.00
8	88.19	88.40	0.0000	0.00
9	122.33	122.52	0.0000	0.00
10	136.65	136.83	0.0000	0.00
11	166.09	166.26	0.0000	0.00
12	220.60	220.74	0.0000	0.00
13	260.95	261.07	0.0000	0.00
14	391.83	391.88	0.0000	0.00
15	474.20	474.21	0.0000	0.00
16	661.94	661.86	0.0000	0.00
17	683.32	683.23	0.0000	0.00
18	1081.22	1080.95	0.0000	0.00
19	1173.44	1173.13	0.0000	0.00
20	1332.68	1332.31	0.0000	0.00
21	1385.18	1384.79	0.0000	0.00
22	1688.09	1687.59	0.0000	0.00
23	1745.18	1744.65	0.0000	0.00
24	1836.29	1835.73	0.0000	0.00
25	1997.23	1996.62	0.0000	0.00
26	2262.25	2261.56	0.0000	0.00
27	2322.88	2322.18	0.0000	0.00
28	2505.76	2505.01	0.0000	0.00
29	2614.36	2613.58	0.0000	0.00

? = Adjacent peak noted
 Errors quoted at 2.000sigma

Analysis Report for 1606013-01

GAS-1302

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/7/2016 9:15:10AM

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)
M	1	22.05	19 -	29	22.29	7.74E+04	631.54	1.61E+04	1.59
m	2	24.46	19 -	29	24.71	2.48E+04	682.07	1.20E+04	1.69
	3	32.16	30 -	35	32.40	1.54E+03	251.36	1.15E+04	1.81
M	4	51.19	45 -	63	51.42	1.30E+04	624.07	4.15E+04	3.79
m	5	56.00	45 -	63	56.22	1.12E+04	768.49	3.18E+04	2.87
m	6	59.64	45 -	63	59.87	9.43E+04	678.76	1.63E+04	1.79
	7	68.84	65 -	75	69.06	1.08E+03	510.97	3.44E+04	5.86
	8	88.19	83 -	92	88.40	2.93E+04	550.89	2.66E+04	1.97
	9	122.33	118 -	126	122.52	4.81E+03	347.28	1.55E+04	1.96
	10	136.65	134 -	139	136.83	4.54E+02	225.83	9.81E+03	1.28
	11	166.09	164 -	168	166.26	3.30E+02	185.94	7.39E+03	1.54
	12	220.60	219 -	223	220.74	2.37E+02	188.22	7.65E+03	2.71
	13	260.95	259 -	264	261.07	2.06E+02	185.71	6.73E+03	2.43
	14	391.83	389 -	395	391.88	1.55E+02	182.48	5.95E+03	1.44
	15	474.20	472 -	477	474.21	1.58E+02	161.25	5.06E+03	1.72
	16	661.94	657 -	667	661.86	2.27E+04	354.57	4.61E+03	1.84
	17	683.32	681 -	686	683.23	1.13E+02	105.98	2.15E+03	3.78
	18	1081.22	1079 -	1084	1080.95	9.42E+01	107.29	2.24E+03	2.28
	19	1173.44	1167 -	1178	1173.13	1.82E+04	305.57	2.56E+03	2.12
	20	1332.68	1325 -	1338	1332.31	1.65E+04	268.86	7.14E+02	2.27
	21	1385.18	1381 -	1388	1384.79	2.87E+01	28.07	1.13E+02	4.39
	22	1688.09	1683 -	1693	1687.59	2.61E+01	26.94	8.38E+01	2.00
	23	1745.18	1739 -	1750	1744.65	2.85E+01	28.64	8.30E+01	5.03
	24	1836.29	1832 -	1838	1835.73	3.46E+01	23.70	7.68E+01	1.87
	25	1997.23	1990 -	2006	1996.62	3.33E+01	30.70	7.94E+01	13.69
	26	2262.25	2259 -	2264	2261.56	1.06E+01	13.78	2.88E+01	1.79
	27	2322.88	2317 -	2326	2322.18	1.33E+01	12.45	1.35E+01	4.02
	28	2505.76	2500 -	2508	2505.01	1.48E+02	24.33	0.00E+00	2.92
	29	2614.36	2609 -	2617	2613.58	1.20E+01	6.93	0.00E+00	1.99

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 1606013-01

GAS-1302

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/7/2016 9:15:10AM

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
M	1	22.05	19 -	29	7.74E+04	631.54	1.61E+04	2.08E+02
m	2	24.46	19 -	29	2.48E+04	682.07	1.20E+04	1.80E+02
	3	32.16	30 -	35	1.54E+03	251.36	1.15E+04	1.96E+02
M	4	51.19	45 -	63	1.30E+04	624.07	4.15E+04	3.35E+02
m	5	56.00	45 -	63	1.12E+04	768.49	3.18E+04	2.93E+02
m	6	59.64	45 -	63	9.43E+04	678.76	1.63E+04	2.10E+02
	7	68.84	65 -	75	1.08E+03	510.97	3.44E+04	4.17E+02
	8	88.19	83 -	92	2.93E+04	550.89	2.66E+04	3.55E+02
	9	122.33	118 -	126	4.81E+03	347.28	1.55E+04	2.62E+02
	10	136.65	134 -	139	4.54E+02	225.83	9.81E+03	1.82E+02
	11	166.09	164 -	168	3.30E+02	185.94	7.39E+03	1.50E+02
	12	220.60	219 -	223	2.37E+02	188.22	7.65E+03	1.53E+02
	13	260.95	259 -	264	2.06E+02	185.71	6.73E+03	1.51E+02
	14	391.83	389 -	395	1.55E+02	182.48	5.95E+03	1.49E+02
	15	474.20	472 -	477	1.58E+02	161.25	5.06E+03	1.31E+02
	16	661.94	657 -	667	2.27E+04	354.57	4.61E+03	1.54E+02
	17	683.32	681 -	686	1.13E+02	105.98	2.15E+03	8.54E+01
	18	1081.22	1079 -	1084	9.42E+01	107.29	2.24E+03	8.67E+01
	19	1173.44	1167 -	1178	1.82E+04	305.57	2.56E+03	1.18E+02
	20	1332.68	1325 -	1338	1.65E+04	268.86	7.14E+02	6.56E+01
	21	1385.18	1381 -	1388	2.87E+01	28.07	1.13E+02	2.13E+01
	22	1688.09	1683 -	1693	2.61E+01	26.94	8.38E+01	2.05E+01
	23	1745.18	1739 -	1750	2.85E+01	28.64	8.30E+01	2.18E+01
	24	1836.29	1832 -	1838	3.46E+01	23.70	7.68E+01	1.69E+01
	25	1997.23	1990 -	2006	3.33E+01	30.70	7.94E+01	2.34E+01
	26	2262.25	2259 -	2264	1.06E+01	13.78	2.88E+01	9.99E+00
	27	2322.88	2317 -	2326	1.33E+01	12.45	1.35E+01	8.30E+00
	28	2505.76	2500 -	2508	1.48E+02	24.33	0.00E+00	0.00E+00
	29	2614.36	2609 -	2617	1.20E+01	6.93	0.00E+00	0.00E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1606013-01

GAS-1302

PEAK WITH NID REPORT

Peak Analysis Performed on : 6/7/2016 9:15:10AM

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
M	1	22.05	19 -	29	22.29	7.74E+04	631.54	1.61E+04	.....
m	2	24.46	19 -	29	24.71	2.48E+04	682.07	1.20E+04	.....
	3	32.16	30 -	35	32.40	1.54E+03	251.36	1.15E+04	.....
M	4	51.19	45 -	63	51.42	1.30E+04	624.07	4.15E+04	.....
m	5	56.00	45 -	63	56.22	1.12E+04	768.49	3.18E+04	.....
m	6	59.64	45 -	63	59.87	9.43E+04	678.76	1.63E+04	AM-241
	7	68.84	65 -	75	69.06	1.08E+03	510.97	3.44E+04	TI-44
	8	88.19	83 -	92	88.40	2.93E+04	550.89	2.66E+04	LU-176 CD-109 SN-126
	9	122.33	118 -	126	122.52	4.81E+03	347.28	1.55E+04	CO-57 EU-152 EU-154
	10	136.65	134 -	139	136.83	4.54E+02	225.83	9.81E+03	CO-57 SE-75
	11	166.09	164 -	168	166.26	3.30E+02	185.94	7.39E+03	CE-139
	12	220.60	219 -	223	220.74	2.37E+02	188.22	7.65E+03	.....
	13	260.95	259 -	264	261.07	2.06E+02	185.71	6.73E+03	.....
	14	391.83	389 -	395	391.88	1.55E+02	182.48	5.95E+03	SN-113
	15	474.20	472 -	477	474.21	1.58E+02	161.25	5.06E+03	.....
	16	661.94	657 -	667	661.86	2.27E+04	354.57	4.61E+03	CS-137
	17	683.32	681 -	686	683.23	1.13E+02	105.98	2.15E+03	.....
	18	1081.22	1079 -	1084	1080.95	9.42E+01	107.29	2.24E+03	.....
	19	1173.44	1167 -	1178	1173.13	1.82E+04	305.57	2.56E+03	CO-60
	20	1332.68	1325 -	1338	1332.31	1.65E+04	268.86	7.14E+02	CO-60
	21	1385.18	1381 -	1388	1384.79	2.87E+01	28.07	1.13E+02	AG-110M
	22	1688.09	1683 -	1693	1687.59	2.61E+01	26.94	8.38E+01	.....
	23	1745.18	1739 -	1750	1744.65	2.85E+01	28.64	8.30E+01	.....
	24	1836.29	1832 -	1838	1835.73	3.46E+01	23.70	7.68E+01	Y-88
	25	1997.23	1990 -	2006	1996.62	3.33E+01	30.70	7.94E+01	.....
	26	2262.25	2259 -	2264	2261.56	1.06E+01	13.78	2.88E+01	.....
	27	2322.88	2317 -	2326	2322.18	1.33E+01	12.45	1.35E+01	.....
	28	2505.76	2500 -	2508	2505.01	1.48E+02	24.33	0.00E+00	.....
	29	2614.36	2609 -	2617	2613.58	1.20E+01	6.93	0.00E+00	TL-208

Analysis Report for 1606013-01

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 EFFICIENCY REPORT

Peak Analysis Performed on : 6/7/2016 9:15:10AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	22.05	7.74E+04	631.54	1.17E-03	1.58E-03
m	2	24.46	2.48E+04	682.07	2.03E-03	1.58E-03
	3	32.16	1.54E+03	251.36	6.14E-03	1.58E-03
M	4	51.19	1.30E+04	624.07	1.73E-02	1.58E-03
m	5	56.00	1.12E+04	768.49	1.93E-02	1.58E-03
m	6	59.64	9.43E+04	678.76	2.06E-02	1.59E-03
	7	68.84	1.08E+03	510.97	2.28E-02	1.89E-03
	8	88.19	2.93E+04	550.89	2.44E-02	2.52E-03
	9	122.33	4.81E+03	347.28	2.30E-02	1.73E-03
	10	136.65	4.54E+02	225.83	2.19E-02	1.66E-03
	11	166.09	3.30E+02	185.94	1.97E-02	1.51E-03
	12	220.60	2.37E+02	188.22	1.62E-02	1.26E-03
	13	260.95	2.06E+02	185.71	1.42E-02	1.08E-03
	14	391.83	1.55E+02	182.48	1.01E-02	8.37E-04
	15	474.20	1.58E+02	161.25	8.55E-03	7.55E-04
	16	661.94	2.27E+04	354.57	6.39E-03	5.68E-04
	17	683.32	1.13E+02	105.98	6.22E-03	5.50E-04
	18	1081.22	9.42E+01	107.29	4.20E-03	3.41E-04
	19	1173.44	1.82E+04	305.57	3.92E-03	3.23E-04
	20	1332.68	1.65E+04	268.86	3.54E-03	2.89E-04
	21	1385.18	2.87E+01	28.07	3.43E-03	2.81E-04
	22	1688.09	2.61E+01	26.94	2.95E-03	2.35E-04
	23	1745.18	2.85E+01	28.64	2.88E-03	2.27E-04
	24	1836.29	3.46E+01	23.70	2.78E-03	2.13E-04
	25	1997.23	3.33E+01	30.70	2.62E-03	2.13E-04
	26	2262.25	1.06E+01	13.78	2.42E-03	2.13E-04
	27	2322.88	1.33E+01	12.45	2.39E-03	2.13E-04
	28	2505.76	1.48E+02	24.33	2.29E-03	2.13E-04
	29	2614.36	1.20E+01	6.93	2.24E-03	2.13E-04

Analysis Report for 1606013-01

GAS-1302

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 : 6/7/2016 9:15:10AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000037621.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.	
M	1	22.05	7.74E+04	631.54		7.74E+04	6.32E+02	
m	2	24.46	2.48E+04	682.07		2.48E+04	6.82E+02	
	3	32.16	1.54E+03	251.36		1.54E+03	2.51E+02	
M	4	51.19	1.30E+04	624.07		1.30E+04	6.24E+02	
m	5	56.00	1.12E+04	768.49		1.12E+04	7.68E+02	
m	6	59.64	9.43E+04	678.76	6.19E+00	4.45E-01	9.43E+04	6.79E+02
	7	68.84	1.08E+03	510.97		1.08E+03	5.11E+02	
	8	88.19	2.93E+04	550.89		2.93E+04	5.51E+02	
	9	122.33	4.81E+03	347.28		4.81E+03	3.47E+02	
	10	136.65	4.54E+02	225.83		4.54E+02	2.26E+02	
	11	166.09	3.30E+02	185.94		3.30E+02	1.86E+02	
	12	220.60	2.37E+02	188.22		2.37E+02	1.88E+02	
	13	260.95	2.06E+02	185.71		2.06E+02	1.86E+02	
	14	391.83	1.55E+02	182.48		1.55E+02	1.82E+02	
	15	474.20	1.58E+02	161.25		1.58E+02	1.61E+02	
	16	661.94	2.27E+04	354.57	4.12E+00	1.67E+00	2.27E+04	3.55E+02
	17	683.32	1.13E+02	105.98		1.13E+02	1.06E+02	
	18	1081.22	9.42E+01	107.29		9.42E+01	1.07E+02	
	19	1173.44	1.82E+04	305.57	8.40E-01	1.24E+00	1.82E+04	3.06E+02
	20	1332.68	1.65E+04	268.86	1.45E+00	1.05E+00	1.65E+04	2.69E+02
	21	1385.18	2.87E+01	28.07		2.87E+01	2.81E+01	
	22	1688.09	2.61E+01	26.94		2.61E+01	2.69E+01	
	23	1745.18	2.85E+01	28.64		2.85E+01	2.86E+01	
	24	1836.29	3.46E+01	23.70		3.46E+01	2.37E+01	
	25	1997.23	3.33E+01	30.70		3.33E+01	3.07E+01	
	26	2262.25	1.06E+01	13.78		1.06E+01	1.38E+01	
	27	2322.88	1.33E+01	12.45		1.33E+01	1.24E+01	
	28	2505.76	1.48E+02	24.33		1.48E+02	2.43E+01	
	29	2614.36	1.20E+01	6.93		1.20E+01	6.93E+00	

Analysis Report for 1606013-01

GAS-1302

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

AREA CORRECTION REPORT REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 6/7/2016 9:15:10AM
 Ref. Peak Energy : 0.00 Reference Date :
 Peak Ratio : 0.00 Uncertainty : 0.00
 Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000037621.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	1	22.05	7.74E+04	631.54			7.74E+04	6.32E+02
m	2	24.46	2.48E+04	682.07			2.48E+04	6.82E+02
	3	32.16	1.54E+03	251.36			1.54E+03	2.51E+02
M	4	51.19	1.30E+04	624.07			1.30E+04	6.24E+02
m	5	56.00	1.12E+04	768.49			1.12E+04	7.68E+02
m	6	59.64	9.43E+04	678.76	6.19E+00	4.45E-01	9.43E+04	6.79E+02
	7	68.84	1.08E+03	510.97			1.08E+03	5.11E+02
	8	88.19	2.93E+04	550.89			2.93E+04	5.51E+02
	9	122.33	4.81E+03	347.28			4.81E+03	3.47E+02
	10	136.65	4.54E+02	225.83			4.54E+02	2.26E+02
	11	166.09	3.30E+02	185.94			3.30E+02	1.86E+02
	12	220.60	2.37E+02	188.22			2.37E+02	1.88E+02
	13	260.95	2.06E+02	185.71			2.06E+02	1.86E+02
	14	391.83	1.55E+02	182.48			1.55E+02	1.82E+02
	15	474.20	1.58E+02	161.25			1.58E+02	1.61E+02
	16	661.94	2.27E+04	354.57	4.12E+00	1.67E+00	2.27E+04	3.55E+02
	17	683.32	1.13E+02	105.98			1.13E+02	1.06E+02
	18	1081.22	9.42E+01	107.29			9.42E+01	1.07E+02
	19	1173.44	1.82E+04	305.57	8.40E-01	1.24E+00	1.82E+04	3.06E+02
	20	1332.68	1.65E+04	268.86	1.45E+00	1.05E+00	1.65E+04	2.69E+02
	21	1385.18	2.87E+01	28.07			2.87E+01	2.81E+01
	22	1688.09	2.61E+01	26.94			2.61E+01	2.69E+01
	23	1745.18	2.85E+01	28.64			2.85E+01	2.86E+01
	24	1836.29	3.46E+01	23.70			3.46E+01	2.37E+01
	25	1997.23	3.33E+01	30.70			3.33E+01	3.07E+01
	26	2262.25	1.06E+01	13.78			1.06E+01	1.38E+01
	27	2322.88	1.33E+01	12.45			1.33E+01	1.24E+01
	28	2505.76	1.48E+02	24.33			1.48E+02	2.43E+01
	29	2614.36	1.20E+01	6.93			1.20E+01	6.93E+00

Analysis Report for 1606013-01
GAS-1302

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

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
CO-57	0.915	122.06 *	85.51	7.75E+01	8.14E+00
		136.48 *	10.60	6.19E+01	3.12E+01
CO-60	0.992	1173.22 *	100.00	1.39E+02	1.17E+01
		1332.49 *	100.00	1.40E+02	1.16E+01
CD-109	0.970	88.03 *	3.72	3.26E+03	3.93E+02
SN-113	0.610	255.12	1.93		
		391.69 *	64.90	3.07E+02	3.63E+02
SN-126	0.941	87.57 *	37.00	6.61E+01	6.94E+00
CS-137	0.987	661.65 *	85.12	9.09E+01	8.21E+00
CE-139	0.731	165.85 *	80.35	9.40E+01	5.35E+01
AM-241	0.998	59.54 *	35.90	2.62E+02	2.03E+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 : 6/7/2016 9:15:10AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Analysis Report for 1606013-01

GAS-1302

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M 1	22.05	4.29875E+01	0.41		
m 2	24.46	1.37792E+01	1.38		
3	32.16	8.57428E-01	8.14		
M 4	51.19	7.20086E+00	2.41		
m 5	56.00	6.23328E+00	3.42		
7	68.84	5.99134E-01	23.69	Tol.	TI-44
12	220.60	1.31540E-01	39.75		
13	260.95	1.14709E-01	44.97		
15	474.20	8.78121E-02	51.01		
17	683.32	6.26113E-02	47.02		
18	1081.22	5.23404E-02	56.94		
21	1385.18	1.59346E-02	48.93	Tol.	AG-110M
22	1688.09	1.45057E-02	51.59		
23	1745.18	1.58333E-02	50.24		
24	1836.29	1.92352E-02	34.22	Sum	
25	1997.23	1.84893E-02	46.12		
26	2262.25	5.88889E-03	65.02		
27	2322.88	7.36111E-03	46.98		
28	2505.76	8.22222E-02	8.22	Sum	
29	2614.36	6.66667E-03	28.87	Tol.	TL-208

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

NUCLIDE 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
CO-57	0.91	122.06 *	85.51	7.75E+01	8.14E+00
		136.48 *	10.60	6.19E+01	3.12E+01
CO-60	0.99	1173.22 *	100.00	1.39E+02	1.17E+01
		1332.49 *	100.00	1.40E+02	1.16E+01
CD-109	0.97	88.03 *	3.72	3.26E+03	3.93E+02
SN-113	0.61	255.12	1.93		
		391.69 *	64.90	3.07E+02	3.63E+02
SN-126	0.94	87.57 *	37.00	6.61E+01	6.94E+00

: 00158

Analysis Report for 1606013-01

GAS-1302

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
CS-137	0.98	661.65	*	85.12	9.09E+01	8.21E+00
CE-139	0.73	165.85	*	80.35	9.40E+01	5.35E+01
AM-241	0.99	59.54	*	35.90	2.62E+02	2.03E+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
CO-57	0.915	7.65E+01	7.88E+00	
CO-60	0.992	1.40E+02	8.25E+00	
? CD-109	0.970	3.26E+03	3.93E+02	
SN-113	0.610	3.07E+02	3.63E+02	
? SN-126	0.941	6.61E+01	6.94E+00	
CS-137	0.987	9.09E+01	8.21E+00	
CE-139	0.731	9.40E+01	5.35E+01	
AM-241	0.998	2.62E+02	2.03E+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 1606013-01

GAS-1302

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/7/2016 9:15:10AM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	22.05	4.29875E+01	0.41	
m	2	24.46	1.37792E+01	1.38	
	3	32.16	8.57428E-01	8.14	
M	4	51.19	7.20086E+00	2.41	
m	5	56.00	6.23328E+00	3.42	
	7	68.84	5.99134E-01	23.69	Tol. TI-44
	12	220.60	1.31540E-01	39.75	
	13	260.95	1.14709E-01	44.97	
	15	474.20	8.78121E-02	51.01	
	17	683.32	6.26113E-02	47.02	
	18	1081.22	5.23404E-02	56.94	
	21	1385.18	1.59346E-02	48.93	Tol. AG-110M
	22	1688.09	1.45057E-02	51.59	
	23	1745.18	1.58333E-02	50.24	
	24	1836.29	1.92352E-02	34.22	Sum
	25	1997.23	1.84893E-02	46.12	
	26	2262.25	5.88889E-03	65.02	
	27	2322.88	7.36111E-03	46.98	
	28	2505.76	8.22222E-02	8.22	Sum
	29	2614.36	6.66667E-03	28.87	Tol. TL-208

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

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

: 00160

Analysis Report for 1606013-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	-3.70E+05	6.33E+06	6.33E+06
+	NA-22	1274.54	99.94	-2.38E-01	9.31E-01	9.31E-01
+	@ NA-24	1368.53	99.99	1.00E+26	1.00E+26	1.00E+26
	@	2754.09	99.86	1.00E+26		1.00E+26
+	AL-26	1808.65	99.76	1.50E-01	2.76E-01	2.76E-01
+	K-40	1460.81	10.67	2.99E-01	2.86E+00	2.86E+00
+	@ AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88	94.40	4.90E-01	3.89E-01	4.26E-01
		78.34	96.00	-1.63E-01		3.89E-01
+	SC-46	889.25	99.98	-2.48E+03	5.62E+03	5.78E+03
		1120.51	99.99	-1.68E+03		5.62E+03
+	@ 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	-1.18E+12	2.07E+12	2.07E+12
+	MN-54	834.83	99.97	-1.24E+00	7.88E+00	7.88E+00
+	CO-56	846.75	99.96	-1.61E+03	6.25E+03	9.30E+03
		1037.75	14.03	8.18E+03		7.68E+04
		1238.25	67.00	4.87E+02		8.05E+03
		1771.40	15.51	-2.59E+03		1.75E+04
		2598.48	16.90	1.12E+02		6.25E+03
+	CO-57	122.06	* 85.51	7.75E+01	8.48E+00	8.48E+00
		136.48	* 10.60	6.19E+01		5.01E+01
+	CO-58	810.76	99.40	8.80E+03	2.55E+04	2.55E+04
+	FE-59	1099.22	56.50	-9.32E+06	1.69E+07	2.64E+07
		1291.56	43.20	-3.40E+06		1.69E+07
+	CO-60	1173.22	* 100.00	1.39E+02	1.14E+00	1.82E+00
		1332.49	* 100.00	1.40E+02		1.14E+00
+	ZN-65	1115.52	50.75	1.08E+01	3.54E+01	3.54E+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	1.11E+04	2.46E+02	1.16E+03
		136.00	59.20	3.62E+02		2.46E+02
		264.65	59.80	2.62E+00		3.59E+02
		279.53	25.20	1.88E+02		8.75E+02
		400.65	11.40	5.49E+02		2.32E+03
+	RB-82	776.52	13.00	-1.65E+13	2.15E+13	2.15E+13
+	RB-83	520.41	46.00	-4.42E+02	6.67E+03	6.67E+03
		529.64	30.30	2.86E+03		1.02E+04
		552.65	16.40	2.52E+02		1.83E+04
+	KR-85	513.99	0.43	-1.22E+00	1.58E+02	1.58E+02
+	SR-85	513.99	99.27	-4.18E+02	5.41E+04	5.41E+04
+	Y-88	898.02	93.40	1.28E+02	3.63E+02	9.78E+02
		1836.01	99.38	2.31E+02		3.63E+02
+	NB-93M	16.57	9.43	1.31E+03	6.81E+02	6.81E+02
+	NB-94	702.63	100.00	-5.67E-02	5.84E-01	5.84E-01
		871.10	100.00	-2.75E-01		7.82E-01

Analysis Report for 1606013-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-95	765.79	99.81	-9.30E+07	1.04E+09	1.04E+09
+	@ NB-95M	235.69	25.00	1.00E+26	1.00E+26	1.00E+26
+	ZR-95	724.18	43.70	8.05E+04	1.25E+05	1.56E+05
		756.72	55.30	2.66E+04		1.25E+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	6.93E+06	1.00E+08	1.00E+08
+	RU-106	621.84	9.80	1.79E+01	4.43E+01	4.43E+01
+	AG-108M	433.93	89.90	-2.26E-02	6.33E-01	6.53E-01
		614.37	90.40	-5.56E-01		6.33E-01
		722.95	90.50	1.77E-01		6.94E-01
+	CD-109	88.03	* 3.72	3.26E+03	7.95E+01	7.95E+01
+	AG-110M	657.75	93.14	9.28E-01	2.23E+01	2.93E+01
		677.61	10.53	-1.49E+01		1.06E+02
		706.67	16.46	-1.61E+01		6.83E+01
		763.93	21.98	-1.78E+01		5.67E+01
		884.67	71.63	5.23E+00		2.23E+01
		1384.27	23.94	-8.54E+00		2.31E+01
+	CD-113M	263.70	0.02	-2.09E+02	2.18E+03	2.18E+03
+	SN-113	255.12	1.93	-3.84E+03	5.95E+02	1.42E+04
		391.69	* 64.90	3.07E+02		5.95E+02
+	TE123M	159.00	84.10	-1.78E+01	1.70E+02	1.70E+02
+	SB-124	602.71	97.87	3.33E+04	1.18E+05	1.33E+05
		645.85	7.26	-4.94E+05		1.87E+06
		722.78	11.10	3.25E+05		1.28E+06
		1691.02	49.00	-1.57E+04		1.18E+05
+	I-125	35.49	6.49	3.01E+06	3.05E+06	3.05E+06
+	SB-125	176.33	6.89	-1.75E+00	4.06E+00	9.10E+00
		427.89	29.33	1.20E+00		4.06E+00
		463.38	10.35	4.15E+00		1.27E+01
		600.56	17.80	6.19E-01		6.58E+00
		635.90	11.32	9.73E-01		1.08E+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	6.61E+01	1.61E+00	1.61E+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	-3.53E+01	2.68E+00	2.68E+00
		33.60	13.20	1.55E+01		8.28E+00
		39.58	7.52	-3.39E+01		9.19E+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

Analysis Report for 1606013-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	@ 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	-7.27E-01	9.90E-01	1.33E+00
		302.84	17.80	-1.82E+00		3.05E+00
		356.01	60.00	1.55E-01		9.90E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	@ XE-133	81.00	38.00	1.00E+26	1.00E+26	1.00E+26
+	CS-134	563.23	8.38	-1.01E+01	1.57E+00	1.74E+01
		569.32	15.43	1.93E+00		9.64E+00
		604.70	97.60	-4.47E-01		1.57E+00
		795.84	85.40	8.19E-01		2.15E+00
		801.93	8.73	2.51E+00		2.08E+01
+	CS-135	268.24	16.00	-1.41E+00	2.72E+00	2.72E+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	9.09E+01	1.25E+00	1.25E+00
+	LA-138	788.74	34.00	-5.27E-01	3.93E-01	1.98E+00
		1435.80	66.00	-1.39E-01		3.93E-01
+	CE-139	165.85	* 80.35	9.40E+01	8.62E+01	8.62E+01
+	@ 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	-3.13E+09	4.93E+09	4.93E+09
+	@ 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	6.78E+00	3.57E+01	3.57E+01
+	PM-144	476.78	42.00	1.19E+00	4.46E+00	1.14E+01
		618.01	98.60	-2.82E+00		4.46E+00
		696.49	99.49	-3.13E-01		4.60E+00
+	PM-145	36.85	21.70	4.91E+00	2.17E+00	4.03E+00
		37.36	39.70	-5.83E-01		2.17E+00
		42.30	15.10	-2.02E+00		5.17E+00

Analysis Report for 1606013-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-145	72.40	2.31	-7.59E+00	2.17E+00	1.81E+01
+	PM-146	453.90	39.94	2.39E-01	2.21E+00	2.21E+00
		735.90	14.01	-1.65E+00		6.42E+00
		747.13	13.10	-4.55E+00		6.64E+00
+	@ ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26
	@	531.02	13.10	1.00E+26		1.00E+26
+	@ PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26
+	EU-152	121.78	20.50	2.44E+01	2.18E+00	2.24E+00
		244.69	5.40	2.23E+00		9.42E+00
		344.27	19.13	3.78E-01		2.95E+00
		778.89	9.20	-3.03E+00		8.34E+00
		964.01	10.40	3.09E+00		1.02E+01
		1085.78	7.22	4.31E+00		1.36E+01
		1112.02	9.60	-8.57E-01		1.06E+01
		1407.95	14.94	1.15E+00		2.18E+00
+	GD-153	97.43	31.30	-7.15E+00	1.79E+01	1.79E+01
		103.18	22.20	9.93E+00		2.59E+01
+	EU-154	123.07	40.50	1.31E+01	1.23E+00	1.23E+00
		723.30	19.70	1.01E+00		3.95E+00
		873.19	11.50	-5.48E+00		8.59E+00
		996.32	10.30	3.33E+00		1.05E+01
		1004.76	17.90	2.94E+00		6.03E+00
		1274.45	35.50	-3.86E-01		1.51E+00
+	EU-155	86.50	30.90	1.10E+02	1.94E+00	3.57E+00
		105.30	20.70	-4.79E-01		1.94E+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
+	HQ-166M	184.41	72.60	-8.12E-02	4.43E-01	4.43E-01
		280.45	29.60	1.12E+00		1.52E+00
		410.94	11.10	1.74E+00		4.98E+00
		711.69	54.10	-1.86E-01		1.09E+00
+	TM-171	66.72	0.14	2.94E+02	7.99E+02	7.99E+02
+	HF-172	81.75	4.52	-4.88E+00	7.32E+00	2.38E+01
		125.81	11.30	1.21E+00		7.32E+00
+	@ 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	-3.91E-01	9.21E+00	2.22E+01
		272.11	21.20	9.78E-01		9.21E+00
+	HF-175	343.40	84.00	2.27E+03	2.37E+04	2.37E+04
+	LU-176	88.34	13.30	1.77E+02	4.63E-01	5.44E+00
		201.83	86.00	-9.57E-02		4.63E-01
		306.78	94.00	1.95E-01		4.88E-01
+	TA-182	67.75	41.20	7.20E+02	6.26E+02	6.26E+02
		1121.30	34.90	2.90E+02		1.50E+03
		1189.05	16.23	1.06E+03		2.36E+03
		1221.41	26.98	2.85E+02		1.17E+03

Analysis Report for 1606013-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TA-182	1231.02	11.44	4.20E+02	6.26E+02	2.53E+03
+	IR-192	308.46	29.68	2.52E+04	2.97E+04	3.57E+04
		468.07	48.10	-7.60E+03		2.97E+04
+	HG-203	279.19	77.30	-6.37E+05	4.85E+06	4.85E+06
+	BI-207	569.67	97.72	5.18E-01	6.11E-01	6.11E-01
		1063.62	74.90	3.63E-01		1.22E+00
+	TL-208	583.14	30.22	-5.36E-01	4.78E-01	1.85E+00
		860.37	4.48	5.99E+00		1.72E+01
		2614.66	35.85	3.05E-01		4.78E-01
+	BI-210M	262.00	45.00	1.60E-01	9.65E-01	9.65E-01
		300.00	23.00	-9.17E-01		1.93E+00
+	PB-210	46.50	4.25	-1.34E+02	1.95E+01	1.95E+01
+	PB-211	404.84	2.90	-7.40E+00	1.84E+01	1.84E+01
		831.96	2.90	2.40E+00		2.50E+01
+	BI-212	727.17	11.80	2.07E+00	5.30E+00	5.30E+00
		1620.62	2.75	2.99E-01		9.60E+00
+	PB-212	238.63	44.60	3.58E-01	9.98E-01	9.98E-01
		300.09	3.41	-6.19E+00		1.30E+01
+	BI-214	609.31	46.30	2.69E-02	1.25E+00	1.25E+00
		1120.29	15.10	-1.57E+00		5.27E+00
		1764.49	15.80	5.88E-01		1.58E+00
		2204.22	4.98	1.41E+00		4.90E+00
+	PB-214	295.21	19.19	1.12E-01	1.31E+00	2.35E+00
		351.92	37.19	-1.79E-02		1.31E+00
+	RN-219	401.80	6.50	4.52E+00	8.26E+00	8.26E+00
+	RA-223	323.87	3.88	9.84E-01	1.20E+01	1.20E+01
+	RA-224	240.98	3.95	8.28E+00	1.13E+01	1.13E+01
+	@ RA-225	40.00	31.00	1.00E+26	1.00E+26	1.00E+26
+	RA-226	186.21	3.28	-4.95E-01	9.95E+00	9.95E+00
+	TH-227	50.10	8.40	4.53E+01	3.86E+00	9.97E+00
		236.00	11.50	2.11E-01		3.86E+00
		256.20	6.30	-2.29E+00		6.84E+00
+	AC-228	338.32	11.40	1.58E-01	3.16E+00	4.24E+00
		911.07	27.70	1.24E+00		3.16E+00
		969.11	16.60	6.07E-01		5.29E+00
+	TH-230	48.44	16.90	1.88E+01	4.96E+00	4.96E+00
		62.85	4.60	-5.07E+02		1.41E+01
		67.67	0.37	1.21E+02		1.06E+02
+	PA-231	283.67	1.60	4.42E+00	1.94E+01	2.78E+01
		302.67	2.30	-1.16E+01		1.94E+01
+	TH-231	25.64	14.70	-1.02E+03	5.81E+00	4.76E+01
		84.21	6.40	-2.63E+02		5.81E+00
+	PA-233	311.98	38.60	7.59E+10	1.07E+12	1.07E+12
+	PA-234	131.20	20.40	-2.56E-02	1.36E+00	1.36E+00
		733.99	8.80	9.91E-01		7.09E+00
		946.00	12.00	4.95E+00		7.90E+00
+	PA-234M	1001.03	0.92	2.52E+01	9.27E+01	9.27E+01

Analysis Report for 1606013-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TH-234	63.29	3.80	-6.80E+02	1.03E+01	1.03E+01
+	U-235	143.76	10.50	2.36E+00	2.73E+00	2.73E+00
		163.35	4.70	-7.44E-02		6.41E+00
		205.31	4.70	-4.48E+00		8.56E+00
+	NP-237	86.50	12.60	1.79E+02	5.81E+00	5.81E+00
+	@ NP-239	106.10	22.70	1.00E+26	1.00E+26	1.00E+26
	@	228.18	10.70	1.00E+26		1.00E+26
	@	277.60	14.10	1.00E+26		1.00E+26
+	AM-241	59.54	* 35.90	2.62E+02	3.68E+00	3.68E+00
+	AM-243	74.67	66.00	1.19E-01	5.58E-01	5.58E-01
+	CM-243	209.75	3.29	4.80E-01	3.39E+00	1.37E+01
		228.14	10.60	5.85E-01		4.46E+00
		277.60	14.00	-1.54E+00		3.39E+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	6.33E+06	6.33E+06	-3.70E+05	3.13E+06
NA-22	1274.54	99.94	9.31E-01	9.31E-01	-2.38E-01	4.49E-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		1.00E+26	1.00E+20
AL-26	1808.65	99.76	2.76E-01	2.76E-01	1.50E-01	1.28E-01
K-40	1460.81	10.67	2.86E+00	2.86E+00	2.99E-01	1.35E+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	4.26E-01	3.89E-01	4.90E-01	2.12E-01
	78.34	96.00	3.89E-01		-1.63E-01	1.93E-01

: 00166

Analysis Report for 1606013-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
SC-46	889.25	99.98	5.78E+03	5.62E+03	-2.48E+03	2.85E+03
	1120.51	99.99	5.62E+03		-1.68E+03	2.76E+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	2.07E+12	2.07E+12	-1.18E+12	1.03E+12
MN-54	834.83	99.97	7.88E+00	7.88E+00	-1.24E+00	3.88E+00
CO-56	846.75	99.96	9.30E+03	6.25E+03	-1.61E+03	4.58E+03
	1037.75	14.03	7.68E+04		8.18E+03	3.78E+04
	1238.25	67.00	8.05E+03		4.87E+02	3.89E+03
	1771.40	15.51	1.75E+04		-2.59E+03	7.95E+03
	2598.48	16.90	6.25E+03		1.12E+02	2.21E+03
+ CO-57	122.06	* 85.51	8.48E+00	8.48E+00	7.75E+01	4.22E+00
	136.48	* 10.60	5.01E+01		6.19E+01	2.48E+01
CO-58	810.76	99.40	2.55E+04	2.55E+04	8.80E+03	1.26E+04
FE-59	1099.22	56.50	2.64E+07	1.69E+07	-9.32E+06	1.30E+07
	1291.56	43.20	1.69E+07		-3.40E+06	8.16E+06
+ CO-60	1173.22	* 100.00	1.82E+00	1.14E+00	1.39E+02	9.00E-01
	1332.49	* 100.00	1.14E+00		1.40E+02	5.57E-01
ZN-65	1115.52	50.75	3.54E+01	3.54E+01	1.08E+01	1.74E+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	1.16E+03	2.46E+02	1.11E+04	5.76E+02
	136.00	59.20	2.46E+02		3.62E+02	1.22E+02
	264.65	59.80	3.59E+02		2.62E+00	1.78E+02
	279.53	25.20	8.75E+02		1.88E+02	4.33E+02
	400.65	11.40	2.32E+03		5.49E+02	1.15E+03
RB-82	776.52	13.00	2.15E+13	2.15E+13	-1.65E+13	1.06E+13
RB-83	520.41	46.00	6.67E+03	6.67E+03	-4.42E+02	3.29E+03
	529.64	30.30	1.02E+04		2.86E+03	5.04E+03
	552.65	16.40	1.83E+04		1.52E+02	9.04E+03
KR-85	513.99	0.43	1.58E+02	1.58E+02	-1.22E+00	7.78E+01
SR-85	513.99	99.27	5.41E+04	5.41E+04	-4.18E+02	2.67E+04
Y-88	898.02	93.40	9.78E+02	3.63E+02	1.28E+02	4.83E+02
	1836.01	99.38	3.63E+02		2.31E+02	1.71E+02
NB-93M	16.57	9.43	6.81E+02	6.81E+02	1.31E+03	3.39E+02
NB-94	702.63	100.00	5.84E-01	5.84E-01	-5.67E-02	2.88E-01
	871.10	100.00	7.82E-01		-2.75E-01	3.86E-01
NB-95	765.79	99.81	1.04E+09	1.04E+09	-9.30E+07	5.12E+08
@ NB-95M	235.69	25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
ZR-95	724.18	43.70	1.56E+05	1.25E+05	8.05E+04	7.68E+04
	756.72	55.30	1.25E+05		2.66E+04	6.15E+04
@ 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	1.00E+08	1.00E+08	6.93E+06	4.96E+07
RU-106	621.84	9.80	4.43E+01	4.43E+01	1.79E+01	2.18E+01
AG-108M	433.93	89.90	6.53E-01	6.33E-01	-2.26E-02	3.23E-01
	614.37	90.40	6.33E-01		-5.56E-01	3.12E-01
	722.95	90.50	6.94E-01		1.77E-01	3.42E-01
+ CD-109	88.03	* 3.72	7.95E+01	7.95E+01	3.26E+03	3.96E+01
AG-110M	657.75	93.14	2.93E+01	2.23E+01	9.28E-01	1.46E+01
	677.61	10.53	1.06E+02		-1.49E+01	5.21E+01

Analysis Report for 1606013-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AG-110M	706.67	16.46	6.83E+01	2.23E+01	-1.61E+01	3.36E+01
	763.93	21.98	5.67E+01		-1.78E+01	2.79E+01
	884.67	71.63	2.23E+01		5.23E+00	1.10E+01
	1384.27	23.94	2.31E+01		-8.54E+00	1.09E+01
CD-113M	263.70	0.02	2.18E+03	2.18E+03	-2.09E+02	1.08E+03
+ SN-113	255.12	1.93	1.42E+04	5.95E+02	-3.84E+03	7.06E+03
	391.69	*	5.95E+02		3.07E+02	2.95E+02
TE123M	159.00	84.10	1.70E+02	1.70E+02	-1.78E+01	8.44E+01
SB-124	602.71	97.87	1.33E+05	1.18E+05	3.33E+04	6.56E+04
	645.85	7.26	1.87E+06		-4.94E+05	9.24E+05
	722.78	11.10	1.28E+06		3.25E+05	6.29E+05
	1691.02	49.00	1.18E+05		-1.57E+04	5.44E+04
I-125	35.49	6.49	3.05E+06	3.05E+06	3.01E+06	1.51E+06
SB-125	176.33	6.89	9.10E+00	4.06E+00	-1.75E+00	4.51E+00
	427.89	29.33	4.06E+00		1.20E+00	2.01E+00
	463.38	10.35	1.27E+01		4.15E+00	6.26E+00
	600.56	17.80	6.58E+00		6.19E-01	3.25E+00
	635.90	11.32	1.08E+01		9.73E-01	5.31E+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	*	1.61E+00	1.61E+00	6.61E+01	8.02E-01
@ 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	2.68E+00	2.68E+00	-3.53E+01	1.33E+00
	33.60	13.20	8.28E+00		1.55E+01	4.11E+00
	39.58	7.52	9.19E+00		-3.39E+01	4.56E+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	1.33E+00	9.90E-01	-7.27E-01	6.58E-01
	302.84	17.80	3.05E+00		-1.82E+00	1.51E+00
	356.01	60.00	9.90E-01		1.55E-01	4.90E-01
@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@ XE-133	81.00	38.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
CS-134	563.23	8.38	1.74E+01	1.57E+00	-1.01E+01	8.60E+00
	569.32	15.43	9.64E+00		1.93E+00	4.75E+00
	604.70	97.60	1.57E+00		-4.47E-01	7.73E-01
	795.84	85.40	2.15E+00		8.19E-01	1.06E+00
	801.93	8.73	2.08E+01		2.51E+00	1.02E+01
CS-135	268.24	16.00	2.72E+00	2.72E+00	-1.41E+00	1.35E+00
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
@ CS-136	153.22	7.46	1.00E+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

Analysis Report for 1606013-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@ CS-136	340.57	48.50	1.00E+26	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	1.25E+00	1.25E+00	9.09E+01	6.18E-01
LA-138	788.74	34.00	1.98E+00	3.93E-01	-5.27E-01	9.77E-01
	1435.80	66.00	3.93E-01		-1.39E-01	1.84E-01
+ CE-139	165.85 *	80.35	8.62E+01	8.62E+01	9.40E+01	4.27E+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	4.93E+09	4.93E+09	-3.13E+09	2.44E+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	3.57E+01	3.57E+01	6.78E+00	1.77E+01
PM-144	476.78	42.00	1.14E+01	4.46E+00	1.19E+00	5.62E+00
	618.01	98.60	4.46E+00		-2.82E+00	2.20E+00
	696.49	99.49	4.60E+00		-3.13E-01	2.27E+00
PM-145	36.85	21.70	4.03E+00	2.17E+00	4.91E+00	2.00E+00
	37.36	39.70	2.17E+00		-5.83E-01	1.07E+00
	42.30	15.10	5.17E+00		-2.02E+00	2.57E+00
	72.40	2.31	1.81E+01		-7.59E+00	9.00E+00
PM-146	453.90	39.94	2.21E+00	2.21E+00	2.39E-01	1.09E+00
	735.90	14.01	6.42E+00		-1.65E+00	3.16E+00
	747.13	13.10	6.64E+00		-4.55E+00	3.27E+00
@ ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	531.02	13.10	1.00E+26		1.00E+26	1.00E+20
@ PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
EU-152	121.78	20.50	2.24E+00	2.18E+00	2.44E+01	1.11E+00
	244.69	5.40	9.42E+00		2.23E+00	4.67E+00
	344.27	19.13	2.95E+00		3.78E-01	1.46E+00
	778.89	9.20	8.34E+00		-3.03E+00	4.11E+00
	964.01	10.40	1.02E+01		3.09E+00	5.03E+00
	1085.78	7.22	1.36E+01		4.31E+00	6.71E+00
	1112.02	9.60	1.06E+01		-8.57E-01	5.20E+00
	1407.95	14.94	2.18E+00		1.15E+00	1.03E+00
GD-153	97.43	31.30	1.79E+01	1.79E+01	-7.15E+00	8.88E+00
	103.18	22.20	2.59E+01		9.93E+00	1.29E+01
EU-154	123.07	40.50	1.23E+00	1.23E+00	1.31E+01	6.11E-01
	723.30	19.70	3.95E+00		1.01E+00	1.95E+00
	873.19	11.50	8.59E+00		-5.48E+00	4.24E+00
	996.32	10.30	1.05E+01		3.33E+00	5.19E+00
	1004.76	17.90	6.03E+00		2.94E+00	2.97E+00
	1274.45	35.50	1.51E+00		-3.86E-01	7.29E-01
EU-155	86.50	30.90	3.57E+00	1.94E+00	1.10E+02	1.78E+00
	105.30	20.70	1.94E+00		-4.79E-01	9.59E-01

Analysis Report for 1606013-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@ 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	4.43E-01	4.43E-01	-8.12E-02	2.19E-01
	280.45	29.60	1.52E+00		1.12E+00	7.51E-01
	410.94	11.10	4.98E+00		1.74E+00	2.46E+00
	711.69	54.10	1.09E+00		-1.86E-01	5.37E-01
TM-171	66.72	0.14	7.99E+02	7.99E+02	2.94E+02	3.97E+02
HF-172	81.75	4.52	2.38E+01	7.32E+00	-4.88E+00	1.18E+01
	125.81	11.30	7.32E+00		1.21E+00	3.63E+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	2.22E+01	9.21E+00	-3.91E-01	1.10E+01
	272.11	21.20	9.21E+00		9.78E-01	4.56E+00
HF-175	343.40	84.00	2.37E+04	2.37E+04	2.27E+03	1.17E+04
LU-176	88.34	13.30	5.44E+00	4.63E-01	1.77E+02	2.71E+00
	201.83	86.00	4.63E-01		-9.57E-02	2.30E-01
	306.78	94.00	4.88E-01		1.95E-01	2.42E-01
TA-182	67.75	41.20	6.26E+02	6.26E+02	7.20E+02	3.11E+02
	1121.30	34.90	1.50E+03		2.90E+02	7.35E+02
	1189.05	16.23	2.36E+03		1.06E+03	1.15E+03
	1221.41	26.98	1.17E+03		2.85E+02	5.70E+02
	1231.02	11.44	2.53E+03		4.20E+02	1.22E+03
IR-192	308.46	29.68	3.57E+04	2.97E+04	2.52E+04	1.77E+04
	468.07	48.10	2.97E+04		-7.60E+03	1.47E+04
HG-203	279.19	77.30	4.85E+06	4.85E+06	-6.37E+05	2.40E+06
BI-207	569.67	97.72	6.11E-01	6.11E-01	5.18E-01	3.01E-01
	1063.62	74.90	1.22E+00		3.63E-01	6.02E-01
TL-208	583.14	30.22	1.85E+00	4.78E-01	-5.36E-01	9.11E-01
	860.37	4.48	1.72E+01		5.99E+00	8.49E+00
	2614.66	35.85	4.78E-01		3.05E-01	2.05E-01
BI-210M	262.00	45.00	9.65E-01	9.65E-01	1.60E-01	4.78E-01
	300.00	23.00	1.93E+00		-9.17E-01	9.56E-01
PB-210	46.50	4.25	1.95E+01	1.95E+01	-1.34E+02	9.69E+00
PB-211	404.84	2.90	1.84E+01	1.84E+01	-7.40E+00	9.12E+00
	831.96	2.90	2.50E+01		2.40E+00	1.23E+01
BI-212	727.17	11.80	5.30E+00	5.30E+00	2.07E+00	2.61E+00
	1620.62	2.75	9.60E+00		2.99E-01	4.47E+00
PB-212	238.63	44.60	9.98E-01	9.98E-01	3.58E-01	4.95E-01
	300.09	3.41	1.30E+01		-6.19E+00	6.45E+00
BI-214	609.31	46.30	1.25E+00	1.25E+00	2.69E-02	6.15E-01
	1120.29	15.10	5.27E+00		-1.57E+00	2.59E+00
	1764.49	15.80	1.58E+00		5.88E-01	7.29E-01
	2204.22	4.98	4.90E+00		1.41E+00	2.23E+00
PB-214	295.21	19.19	2.35E+00	1.31E+00	1.12E-01	1.17E+00
	351.92	37.19	1.31E+00		-1.79E-02	6.47E-01
RN-219	401.80	6.50	8.26E+00	8.26E+00	4.52E+00	4.09E+00
RA-223	323.87	3.88	1.20E+01	1.20E+01	9.84E-01	5.92E+00
RA-224	240.98	3.95	1.13E+01	1.13E+01	8.28E+00	5.60E+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	9.95E+00	9.95E+00	-4.95E-01	4.93E+00

Analysis Report for 1606013-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
TH-227	50.10	8.40	9.97E+00	3.86E+00	4.53E+01	4.96E+00
	236.00	11.50	3.86E+00		2.11E-01	1.92E+00
	256.20	6.30	6.84E+00		-2.29E+00	3.39E+00
AC-228	338.32	11.40	4.24E+00	3.16E+00	1.58E-01	2.10E+00
	911.07	27.70	3.16E+00		1.24E+00	1.56E+00
	969.11	16.60	5.29E+00		6.07E-01	2.61E+00
TH-230	48.44	16.90	4.96E+00	4.96E+00	1.88E+01	2.47E+00
	62.85	4.60	1.41E+01		-5.07E+02	7.03E+00
	67.67	0.37	1.06E+02		1.21E+02	5.24E+01
PA-231	283.67	1.60	2.78E+01	1.94E+01	4.42E+00	1.38E+01
	302.67	2.30	1.94E+01		-1.16E+01	9.63E+00
TH-231	25.64	14.70	4.76E+01	5.81E+00	-1.02E+03	2.37E+01
	84.21	6.40	5.81E+00		-2.63E+02	2.89E+00
PA-233	311.98	38.60	1.07E+12	1.07E+12	7.59E+10	5.31E+11
PA-234	131.20	20.40	1.36E+00	1.36E+00	-2.56E-02	6.72E-01
	733.99	8.80	7.09E+00		9.91E-01	3.49E+00
	946.00	12.00	7.90E+00		4.95E+00	3.90E+00
PA-234M	1001.03	0.92	9.27E+01	9.27E+01	2.52E+01	4.57E+01
TH-234	63.29	3.80	1.03E+01	1.03E+01	-6.80E+02	5.09E+00
U-235	143.76	10.50	2.73E+00	2.73E+00	2.36E+00	1.35E+00
	163.35	4.70	6.41E+00		-7.44E-02	3.18E+00
	205.31	4.70	8.56E+00		-4.48E+00	4.24E+00
NP-237	86.50	12.60	5.81E+00	5.81E+00	1.79E+02	2.90E+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	3.68E+00	3.68E+00	2.62E+02	1.83E+00
AM-243	74.67	66.00	5.58E-01	5.58E-01	1.19E-01	2.77E-01
CM-243	209.75	3.29	1.37E+01	3.39E+00	4.80E-01	6.78E+00
	228.14	10.60	4.46E+00		5.85E-01	2.21E+00
	277.60	14.00	3.39E+00		-1.54E+00	1.68E+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 1606013-01
GAS-1302

DATA REVIEW COMMENTS REPORT

<i>Creation Date</i>	<i>Comment</i>	<i>User</i>
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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: 1844

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	192	1450	2204	4603	4178	2039	2180	1799
17:	1802	2453	1705	1826	6602	39459	36469	6084
25:	14096	10926	2501	1038	876	900	960	1843
33:	1667	987	922	1087	1258	1175	1131	1137
41:	1346	1436	1709	1937	2012	2199	2534	3092
49:	4289	5097	4830	4580	4674	4724	4774	5207
57:	5346	6084	21740	56131	15266	1812	1368	1475
65:	1458	1633	1678	1732	1737	1717	1697	1688
73:	1666	1651	1600	1684	1668	1672	1592	1613
81:	1678	1710	1701	1758	1886	1893	2830	14613
89:	13905	2030	984	938	984	952	852	874
97:	840	838	886	892	883	883	890	930
105:	911	870	862	925	924	919	896	882
113:	952	892	853	840	935	910	919	961
121:	1062	2921	3102	1092	844	768	858	825
129:	832	806	824	847	869	812	855	910
137:	1152	864	768	835	775	825	871	797
145:	785	810	755	725	789	787	781	816
153:	753	755	773	756	766	786	708	718
161:	728	748	724	754	731	962	864	714
169:	764	728	765	742	685	727	709	708
177:	695	699	690	753	696	715	732	751
185:	767	768	783	797	834	790	769	816
193:	870	767	806	794	759	769	763	784
201:	747	722	703	722	730	710	765	785
209:	743	765	757	814	764	811	800	814
217:	766	772	790	873	819	819	759	749
225:	767	773	764	736	715	736	755	725
233:	745	755	683	725	698	745	733	736
241:	687	687	714	654	637	655	654	659
249:	595	632	630	635	588	618	655	614
257:	598	533	588	628	607	587	571	592
265:	531	582	596	571	585	539	567	607
273:	583	565	560	573	539	575	551	544
281:	537	578	567	557	507	505	530	511
289:	536	528	532	518	520	540	536	533
297:	482	514	490	530	482	472	467	496
305:	487	498	494	551	495	514	510	498
313:	481	463	513	480	464	465	470	477
321:	460	458	467	461	501	490	466	484
329:	446	472	513	446	482	501	443	437
337:	481	498	493	483	492	443	477	484
345:	468	454	453	442	445	453	476	473
353:	441	432	417	458	441	456	475	420
361:	406	432	409	414	420	423	406	441

369: 437 444 393 424 441 428 403 463

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	408	440	453	420	439	434	468	381
385:	434	427	435	405	426	428	453	505
393:	445	430	444	421	447	423	422	430
401:	439	437	438	453	435	404	399	421
409:	451	442	468	460	433	423	436	465
417:	420	450	414	452	366	405	448	436
425:	432	421	440	466	462	428	447	438
433:	408	462	423	464	454	439	446	446
441:	457	446	461	451	438	426	433	445
449:	449	470	465	473	464	458	428	471
457:	450	422	479	486	487	470	453	493
465:	419	458	432	481	480	442	448	418
473:	486	495	415	453	422	406	398	397
481:	360	377	361	355	337	369	346	326
489:	295	356	359	340	328	332	374	311
497:	319	313	333	321	339	304	344	321
505:	325	293	322	344	300	352	329	330
513:	330	283	333	290	306	290	323	275
521:	286	312	269	272	299	275	286	291
529:	304	278	335	273	261	278	276	268
537:	297	271	288	257	292	254	247	272
545:	258	264	275	269	253	249	269	254
553:	223	249	276	258	248	248	249	245
561:	268	249	273	245	235	221	296	255
569:	241	267	255	229	266	236	241	243
577:	252	257	237	235	243	239	254	262
585:	227	254	268	247	247	242	234	223
593:	253	218	239	228	224	220	238	217
601:	241	228	264	243	232	246	256	212
609:	267	257	243	214	252	237	222	225
617:	200	256	231	238	228	246	247	218
625:	229	233	205	239	206	210	239	238
633:	229	248	234	224	241	220	224	219
641:	225	214	220	223	257	215	244	235
649:	224	252	253	223	253	242	236	240
657:	246	205	233	973	6676	11696	3799	466
665:	246	250	190	177	220	214	196	192
673:	196	183	193	206	201	202	201	175
681:	193	223	192	219	203	158	194	200
689:	192	203	190	180	196	196	196	209
697:	209	196	206	209	224	168	210	190
705:	174	178	191	193	194	175	212	172
713:	187	189	215	213	186	207	186	190
721:	212	215	180	231	205	208	198	205
729:	191	225	180	220	177	213	220	210
737:	210	188	202	221	212	205	200	166
745:	203	190	171	202	176	181	191	208
753:	183	193	206	190	173	211	209	196
761:	180	197	221	188	213	199	192	219
769:	200	211	230	228	205	199	223	178
777:	203	211	213	221	220	203	206	235
785:	210	200	233	213	227	187	214	203
793:	207	222	220	231	199	195	221	186

801: 214 210 223 188 201 197 218 214

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	213	202	239	221	199	238	201	219
817:	207	186	232	241	247	245	224	254
825:	230	218	207	222	214	228	220	205
833:	233	231	228	230	219	234	220	249
841:	259	233	230	206	241	227	231	223
849:	231	229	233	230	214	268	213	231
857:	253	220	262	210	227	254	243	227
865:	241	254	244	247	252	221	240	224
873:	247	248	236	264	253	275	239	263
881:	233	259	246	259	249	267	273	239
889:	254	251	228	258	273	273	282	255
897:	270	280	317	246	270	260	277	261
905:	305	236	279	253	246	259	307	285
913:	295	301	274	273	277	243	285	285
921:	275	267	271	271	307	282	304	319
929:	282	286	294	287	289	291	277	286
937:	298	297	298	270	305	283	305	304
945:	302	316	308	291	325	297	269	311
953:	290	293	320	312	278	306	268	315
961:	279	318	292	264	269	254	250	247
969:	250	255	278	228	216	254	204	225
977:	237	250	205	237	226	245	237	237
985:	212	225	231	244	228	217	211	251
993:	218	249	232	208	263	234	215	235
1001:	198	231	214	247	205	203	244	233
1009:	215	203	226	203	230	207	177	191
1017:	217	224	180	207	193	210	202	220
1025:	207	187	218	210	212	218	218	234
1033:	231	192	203	230	185	241	232	200
1041:	217	208	219	221	221	225	193	193
1049:	178	205	173	179	221	191	219	214
1057:	172	193	195	189	200	223	216	202
1065:	206	211	192	214	203	196	200	189
1073:	196	181	202	187	213	182	171	221
1081:	232	211	196	182	205	197	169	200
1089:	205	205	157	217	205	211	201	206
1097:	201	173	220	205	202	206	213	216
1105:	215	206	231	218	201	214	178	183
1113:	215	184	206	192	169	178	172	172
1121:	151	129	155	153	139	133	134	120
1129:	143	118	134	105	141	133	142	136
1137:	117	140	141	126	127	114	151	132
1145:	117	116	111	118	116	118	112	105
1153:	115	124	110	118	108	106	121	113
1161:	114	125	136	104	113	114	118	112
1169:	113	143	602	3735	8244	5076	990	166
1177:	104	107	87	93	91	67	87	80
1185:	74	89	67	83	62	86	70	77
1193:	62	65	83	73	68	72	66	62
1201:	55	63	58	60	46	63	65	48
1209:	63	53	58	54	53	58	44	54
1217:	58	44	50	65	60	34	50	43
1225:	44	35	35	44	41	39	42	38

1233: 49 30 47 35 40 34 43 40

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1241:	32	36	38	26	22	46	35	25
1249:	25	32	36	33	26	41	27	33
1257:	28	21	29	34	29	37	27	24
1265:	21	31	20	34	23	21	36	31
1273:	20	32	35	22	31	24	28	35
1281:	19	15	25	24	28	23	26	20
1289:	37	25	28	31	30	22	32	34
1297:	32	37	29	22	27	26	29	27
1305:	23	24	32	35	24	16	21	22
1313:	24	23	33	24	30	34	37	26
1321:	27	31	34	32	31	42	39	35
1329:	44	353	2665	6729	5343	1314	134	43
1337:	39	23	15	11	19	7	14	10
1345:	14	8	6	8	6	20	12	8
1353:	12	13	9	10	13	11	9	14
1361:	6	7	9	7	9	9	9	9
1369:	8	10	6	13	8	20	6	8
1377:	10	10	13	8	5	8	13	12
1385:	16	13	12	6	9	17	10	13
1393:	10	10	16	10	8	11	8	20
1401:	18	7	9	18	7	6	9	7
1409:	10	12	10	10	8	5	2	8
1417:	8	5	6	8	9	7	9	10
1425:	7	6	6	7	5	8	8	5
1433:	10	10	7	9	6	10	8	12
1441:	13	8	8	12	5	6	13	11
1449:	7	11	6	7	15	10	10	10
1457:	10	12	10	14	10	7	13	14
1465:	8	14	6	6	9	6	8	5
1473:	6	3	11	11	4	14	10	10
1481:	4	7	9	11	13	7	9	7
1489:	7	4	3	10	8	9	10	6
1497:	14	9	6	7	7	11	6	4
1505:	10	2	6	13	10	8	7	6
1513:	6	6	7	11	8	4	6	11
1521:	0	5	7	5	6	4	7	7
1529:	5	7	6	6	6	8	4	4
1537:	4	10	6	9	9	9	9	9
1545:	9	5	6	4	2	5	4	8
1553:	13	4	7	13	8	10	5	5
1561:	4	11	5	7	7	5	3	9
1569:	12	7	10	9	10	4	11	10
1577:	6	4	8	4	2	8	11	7
1585:	5	8	6	8	9	11	10	8
1593:	10	16	2	6	4	11	10	6
1601:	9	9	11	11	2	8	5	5
1609:	10	7	7	6	6	6	4	8
1617:	7	5	10	9	4	9	5	5
1625:	10	6	9	4	6	5	7	4
1633:	9	3	5	9	9	6	8	5
1641:	6	11	7	8	8	12	7	3
1649:	7	3	4	5	6	3	7	4
1657:	2	7	7	6	6	5	6	3

1665: 5 7 3 6 1 9 4 5

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1673:	7	6	3	7	4	6	7	5
1681:	8	3	3	5	6	8	12	7
1689:	4	6	4	7	6	3	3	4
1697:	4	8	4	5	3	8	9	6
1705:	4	3	4	4	4	6	4	7
1713:	6	7	4	4	6	6	3	8
1721:	7	5	5	2	4	3	7	5
1729:	7	6	6	5	4	7	4	5
1737:	1	8	3	7	7	6	10	5
1745:	7	7	11	4	2	1	3	6
1753:	1	8	2	4	3	3	4	5
1761:	4	6	6	5	9	5	1	7
1769:	5	5	3	5	4	2	3	4
1777:	2	3	6	8	3	5	8	4
1785:	3	3	0	3	3	4	6	4
1793:	1	4	2	3	3	6	5	3
1801:	3	6	6	8	7	7	5	7
1809:	4	7	5	7	5	3	2	4
1817:	4	7	6	3	5	3	6	3
1825:	8	1	5	3	8	6	11	2
1833:	7	6	24	16	12	6	3	6
1841:	11	4	5	4	7	5	3	5
1849:	4	5	1	3	2	1	9	4
1857:	5	5	4	4	5	10	2	2
1865:	1	4	3	8	7	5	6	6
1873:	6	3	11	7	3	5	5	6
1881:	4	9	5	4	2	6	5	6
1889:	3	4	1	6	1	2	6	5
1897:	4	6	3	6	5	3	2	4
1905:	3	3	5	4	3	4	5	6
1913:	7	1	2	7	3	8	4	6
1921:	5	5	2	4	2	4	6	5
1929:	7	3	6	7	3	3	3	2
1937:	6	3	8	4	3	6	6	3
1945:	5	3	8	2	5	4	8	8
1953:	4	6	7	5	1	5	8	2
1961:	5	2	4	6	1	1	3	4
1969:	10	4	5	7	5	3	5	3
1977:	2	3	5	4	5	1	2	2
1985:	4	1	8	6	0	3	3	9
1993:	5	5	5	2	7	3	2	6
2001:	5	3	5	2	7	1	5	1
2009:	4	3	2	5	2	6	6	7
2017:	5	2	5	4	3	1	3	4
2025:	3	3	5	2	3	7	4	2
2033:	8	7	2	1	6	3	5	6
2041:	4	3	5	3	4	3	4	4
2049:	6	2	3	5	5	3	5	0
2057:	2	1	5	2	3	2	6	5
2065:	7	3	5	3	3	4	2	7
2073:	5	4	6	2	4	2	3	2
2081:	4	3	5	5	4	6	4	3
2089:	10	5	4	3	1	3	2	6

2097: 4 3 1 5 3 2 0 2

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2105:	6	0	0	5	3	3	6	6
2113:	4	1	4	4	5	6	3	3
2121:	8	6	1	1	3	4	3	4
2129:	3	4	5	4	3	2	2	0
2137:	5	2	3	6	4	2	4	4
2145:	2	4	3	2	3	9	8	2
2153:	4	1	5	2	3	1	7	1
2161:	1	3	2	4	4	5	0	3
2169:	3	6	4	3	2	4	5	1
2177:	0	6	2	3	0	5	5	5
2185:	4	4	4	5	9	5	3	2
2193:	4	3	6	2	3	2	2	5
2201:	2	3	4	6	3	6	4	0
2209:	5	1	3	3	2	2	2	5
2217:	3	6	3	3	3	5	4	2
2225:	2	3	0	1	2	3	2	2
2233:	3	5	5	1	3	6	2	2
2241:	1	3	4	4	1	1	6	2
2249:	3	2	4	4	1	2	2	5
2257:	5	3	3	1	9	8	3	1
2265:	3	5	5	1	3	5	5	5
2273:	1	3	3	4	3	4	4	3
2281:	5	3	2	2	0	10	1	3
2289:	4	2	4	4	4	3	6	6
2297:	3	4	1	3	2	0	4	1
2305:	2	1	3	0	1	1	2	4
2313:	0	4	4	2	1	2	0	2
2321:	5	3	3	3	1	0	0	2
2329:	1	1	4	2	3	1	1	5
2337:	1	2	2	2	2	1	2	2
2345:	2	3	1	2	1	1	1	2
2353:	3	4	4	0	6	1	0	2
2361:	2	3	2	1	4	1	2	3
2369:	2	2	3	2	1	3	3	0
2377:	1	1	2	1	0	2	0	0
2385:	1	2	1	2	1	0	2	0
2393:	0	2	1	0	1	2	0	2
2401:	0	1	1	2	1	0	0	4
2409:	1	1	0	0	2	1	2	0
2417:	0	0	0	0	0	0	0	0
2425:	1	0	1	2	1	0	0	0
2433:	0	1	0	1	0	1	0	0
2441:	0	1	1	0	0	2	0	0
2449:	0	0	1	0	0	1	1	0
2457:	1	1	0	0	1	2	0	0
2465:	0	1	0	0	0	1	1	0
2473:	0	0	0	1	0	2	2	0
2481:	0	0	0	0	0	1	0	0
2489:	0	1	1	0	2	0	0	0
2497:	0	2	0	0	1	2	10	33
2505:	49	42	11	0	0	0	0	0
2513:	1	0	0	0	0	0	0	0
2521:	0	1	0	0	1	0	1	0

2529: 0 0 1 0 0 0 0 0

Sample Title: GAS-1302

Channel	1	2	3	4	5	6	7	8
2537:	0	0	1	0	0	1	0	0
2545:	0	0	1	0	0	0	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:	0	0	0	0	0	0	0	0
2585:	1	0	0	0	0	0	0	0
2593:	1	0	0	0	1	0	0	0
2601:	0	1	0	0	0	0	0	0
2609:	0	0	0	2	5	3	0	2
2617:	0	0	0	0	0	0	0	0
2625:	0	0	0	0	0	0	1	0
2633:	0	0	0	0	0	0	0	0
2641:	0	0	0	0	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	0	0	0	0	0
2665:	0	0	0	0	2	0	1	0
2673:	0	0	0	1	1	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	1	0	0	0	0
2721:	0	0	0	1	0	0	0	0
2729:	1	0	0	0	0	1	0	0
2737:	0	0	0	0	0	0	1	0
2745:	0	0	0	0	1	0	0	0
2753:	0	1	0	0	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	1	0	2	0	0	0	0	0
2777:	0	0	0	0	0	0	1	0
2785:	0	0	0	0	0	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	1	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	1	0	0	0	0	0	0	1
2833:	0	0	0	1	0	0	0	0
2841:	0	0	0	0	0	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	0	0	0	1
2865:	0	0	0	0	0	1	1	0
2873:	0	0	0	0	0	0	0	0
2881:	0	0	0	0	0	1	0	0
2889:	0	0	0	0	0	0	0	0
2897:	1	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	1	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	1	0
2937:	0	0	0	0	0	0	0	0
2945:	1	0	0	0	0	0	0	0
2953:	0	0	0	0	1	1	0	0

2961: 0 1 0 0 0 0 0 0

Sample Title: GAS-1302

Channel	1	2	3	4	5	6	7	8
2969:	0	3	0	1	0	0	0	0
2977:	0	0	1	0	0	0	0	0
2985:	0	0	0	0	0	0	0	0
2993:	0	0	0	0	0	0	0	1
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	1	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	0	0	0	0
3049:	0	0	0	0	1	0	0	0
3057:	0	0	0	0	0	0	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	0	0	0	0	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	0	0	1	0	0
3113:	0	0	0	0	0	0	0	0
3121:	0	0	0	0	0	0	0	0
3129:	0	0	0	0	0	0	0	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	0
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	0	0	0	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	0	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	0	1	0	0	0	0	0
3209:	0	0	0	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	0	0	0	0	1	0	0
3249:	0	0	0	0	1	0	0	0
3257:	0	0	0	0	0	0	0	0
3265:	0	0	0	0	0	0	0	0
3273:	0	0	1	0	0	0	0	0
3281:	0	1	0	0	0	0	0	0
3289:	0	0	0	0	0	0	0	1
3297:	0	0	0	0	0	0	1	0
3305:	0	0	0	1	0	0	0	0
3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	1	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	1	0
3361:	0	0	0	0	0	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	1	0	0	0	0	0	0	0
3385:	0	0	0	0	0	0	1	0

3393: 0 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	1	0
3417:	0	0	0	0	1	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	1	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	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	0	0	0	0	0
3497:	0	1	1	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	1	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	1	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	1	0	0	0	0	0
3601:	1	0	0	0	0	0	0	0
3609:	0	0	0	1	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	1	1	0	0	0
3657:	1	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	1	1	0	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	1
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	1	0	0
3713:	0	0	0	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	1	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	1
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	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	1	0	0

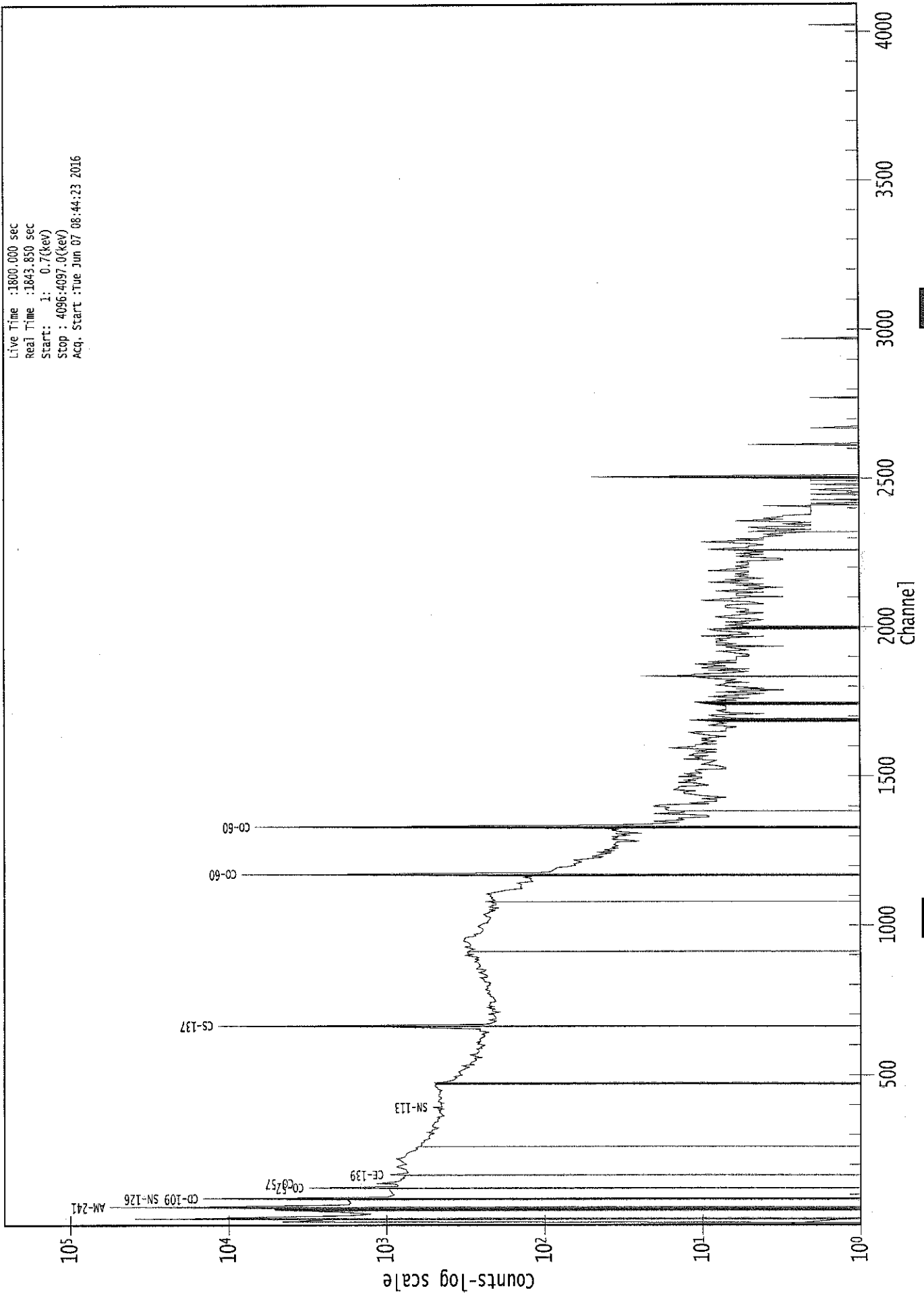
3825: 0 0 0 0 0 0 0 0 0

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	1	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	1	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	1	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	1	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	1	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	1	0	0	0
3969:	0	1	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	2	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	1	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	1	0	0	0	0	0	0	0
4073:	0	0	0	0	1	0	0	0
4081:	0	1	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	0

0000038356.CNF

Live Time :1800.000 sec
Real Time :1843.850 sec
Start : 1: 0.7(keV)
Stop : 4096.4097.0(keV)
Acq. Start :Tue Jun 07 08:44:23 2016



88100

Analysis Report for 1606013-02
BLANK

✓
6/7/16

GAMMA SPECTRUM ANALYSIS

Sample Identification : 1606013-02
Sample Description : BLANK
Sample Type : SOIL

Sample Size : 7.834E+02 grams
Facility : Countroom

Sample Taken On : 6/7/2016 7:35:30AM
Acquisition Started : 6/7/2016 7:37:23AM

Procedure : GAS-1402 pCi
Operator : Administrator
Detector Name : GE3
Geometry : GAS-1402
Live Time : 3600.0 seconds
Real Time : 3611.3 seconds

Dead Time : 0.31 %

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 : 38353

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
6/7/16

Analysis Report for 1606013-02

BLANK

PEAK LOCATE REPORT

Peak Locate Performed on : 6/7/2016 8:37:35AM
 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	22.66	22.91	0.0000	0.00
2	240.10	240.23	0.0000	0.00
3	254.86	254.98	0.0000	0.00
4	270.18	270.29	0.0000	0.00
5	289.07	289.18	0.0000	0.00
6	292.08	292.18	0.0000	0.00
7	301.08	301.18	0.0000	0.00
8	352.82	352.89	0.0000	0.00
9	375.64	375.70	0.0000	0.00
10	469.23	469.24	0.0000	0.00
11	582.93	582.89	0.0000	0.00
12	648.27	648.19	0.0000	0.00
13	661.21	661.13	0.0000	0.00
14	766.21	766.08	0.0000	0.00
15	804.01	803.86	0.0000	0.00
16	899.31	899.12	0.0000	0.00
17	1034.96	1034.71	0.0000	0.00
18	1088.19	1087.92	0.0000	0.00
19	1202.10	1201.78	0.0000	0.00
20	1312.70	1312.33	0.0000	0.00
21	1317.83	1317.47	0.0000	0.00
22	1332.33	1331.96	0.0000	0.00

? = Adjacent peak noted

Errors quoted at 2.000sigma

Analysis Report for 1606013-02

BLANK

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/7/2016 8:37:35AM

 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	22.66	20 -	26	22.91	3.83E+01	47.28	3.73E+02	1.83	
2	240.10	236 -	246	240.23	5.58E+01	32.97	1.14E+02	4.88	
3	254.86	250 -	260	254.98	2.96E+01	27.86	8.68E+01	5.99	
4	270.18	267 -	273	270.29	1.81E+01	17.87	4.38E+01	3.43	
M	5	289.07	288 -	307	289.18	1.25E+01	8.06	1.25E+01	1.94
m	6	292.08	288 -	307	292.18	1.55E+01	18.57	4.26E+01	1.94
m	7	301.08	288 -	307	301.18	1.34E+01	17.69	5.63E+01	1.95
8	352.82	349 -	360	352.89	3.09E+01	26.61	7.62E+01	5.64	
9	375.64	373 -	379	375.70	1.39E+01	15.83	3.62E+01	1.54	
10	469.23	464 -	474	469.24	2.17E+01	19.38	3.85E+01	2.11	
11	582.93	580 -	587	582.89	2.10E+01	16.00	2.99E+01	1.73	
12	648.27	643 -	655	648.19	1.55E+01	16.64	2.31E+01	2.98	
13	661.21	657 -	664	661.13	1.30E+01	11.14	1.21E+01	2.01	
14	766.21	761 -	771	766.08	1.10E+01	14.46	2.20E+01	8.00	
15	804.01	796 -	811	803.86	3.05E+01	18.87	2.11E+01	13.42	
16	899.31	895 -	903	899.12	9.53E+00	11.17	1.29E+01	6.70	
17	1034.96	1031 -	1038	1034.71	1.40E+01	7.48	0.00E+00	5.32	
18	1088.19	1084 -	1091	1087.92	8.20E+00	7.48	3.60E+00	1.60	
19	1202.10	1199 -	1205	1201.78	5.00E+00	6.34	4.00E+00	1.68	
20	1312.70	1309 -	1314	1312.33	6.00E+00	4.90	0.00E+00	1.92	
21	1317.83	1315 -	1320	1317.47	5.29E+00	6.08	3.43E+00	2.83	
22	1332.33	1327 -	1335	1331.96	1.25E+01	10.42	9.00E+00	4.00	

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 : 6/7/2016 8:37:35AM

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

: 00186

Analysis Report for 1606013-02

BLANK

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
1	22.66	20 -	26	3.83E+01	47.28	3.73E+02	3.75E+01
2	240.10	236 -	246	5.58E+01	32.97	1.14E+02	2.42E+01
3	254.86	250 -	260	2.96E+01	27.86	8.68E+01	2.11E+01
4	270.18	267 -	273	1.81E+01	17.87	4.38E+01	1.29E+01
M 5	289.07	288 -	307	1.25E+01	8.06	1.25E+01	5.82E+00
m 6	292.08	288 -	307	1.55E+01	18.57	4.26E+01	1.07E+01
m 7	301.08	288 -	307	1.34E+01	17.69	5.63E+01	1.23E+01
8	352.82	349 -	360	3.09E+01	26.61	7.62E+01	1.99E+01
9	375.64	373 -	379	1.39E+01	15.83	3.62E+01	1.15E+01
10	469.23	464 -	474	2.17E+01	19.38	3.85E+01	1.40E+01
11	582.93	580 -	587	2.10E+01	16.00	2.99E+01	1.08E+01
12	648.27	643 -	655	1.55E+01	16.64	2.31E+01	1.21E+01
13	661.21	657 -	664	1.30E+01	11.14	1.21E+01	6.98E+00
14	766.21	761 -	771	1.10E+01	14.46	2.20E+01	1.06E+01
15	804.01	796 -	811	3.05E+01	18.87	2.11E+01	1.26E+01
16	899.31	895 -	903	9.53E+00	11.17	1.29E+01	7.65E+00
17	1034.96	1031 -	1038	1.40E+01	7.48	0.00E+00	0.00E+00
18	1088.19	1084 -	1091	8.20E+00	7.48	3.60E+00	3.96E+00
19	1202.10	1199 -	1205	5.00E+00	6.34	4.00E+00	3.70E+00
20	1312.70	1309 -	1314	6.00E+00	4.90	0.00E+00	0.00E+00
21	1317.83	1315 -	1320	5.29E+00	6.08	3.43E+00	3.27E+00
22	1332.33	1327 -	1335	1.25E+01	10.42	9.00E+00	6.29E+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 : 6/7/2016 8:37:35AM

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
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: 00187

Analysis Report for 1606013-02

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	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	22.66	20 -	26	22.91	3.83E+01	47.28	3.73E+02	.....
	2	240.10	236 -	246	240.23	5.58E+01	32.97	1.14E+02	RA-224
	3	254.86	250 -	260	254.98	2.96E+01	27.86	8.68E+01	SN-113
	4	270.18	267 -	273	270.29	1.81E+01	17.87	4.38E+01	.....
M	5	289.07	288 -	307	289.18	1.25E+01	8.06	1.25E+01	.....
m	6	292.08	288 -	307	292.18	1.55E+01	18.57	4.26E+01	.....
m	7	301.08	288 -	307	301.18	1.34E+01	17.69	5.63E+01	GA-67 PB-212
	8	352.82	349 -	360	352.89	3.09E+01	26.61	7.62E+01	PB-214
	9	375.64	373 -	379	375.70	1.39E+01	15.83	3.62E+01	.....
	10	469.23	464 -	474	469.24	2.17E+01	19.38	3.85E+01	.....
	11	582.93	580 -	587	582.89	2.10E+01	16.00	2.99E+01	TL-208
	12	648.27	643 -	655	648.19	1.55E+01	16.64	2.31E+01	.....
	13	661.21	657 -	664	661.13	1.30E+01	11.14	1.21E+01	CS-137
	14	766.21	761 -	771	766.08	1.10E+01	14.46	2.20E+01	NB-95
	15	804.01	796 -	811	803.86	3.05E+01	18.87	2.11E+01	.....
	16	899.31	895 -	903	899.12	9.53E+00	11.17	1.29E+01	.....
	17	1034.96	1031 -	1038	1034.71	1.40E+01	7.48	0.00E+00	.....
	18	1088.19	1084 -	1091	1087.92	8.20E+00	7.48	3.60E+00	.....
	19	1202.10	1199 -	1205	1201.78	5.00E+00	6.34	4.00E+00	.....
	20	1312.70	1309 -	1314	1312.33	6.00E+00	4.90	0.00E+00	V-48
	21	1317.83	1315 -	1320	1317.47	5.29E+00	6.08	3.43E+00	.....
	22	1332.33	1327 -	1335	1331.96	1.25E+01	10.42	9.00E+00	CO-60

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 : 6/7/2016 8:37:35AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	22.66	3.83E+01	47.28	1.37E-03	1.58E-03
	2	240.10	5.58E+01	32.97	1.51E-02	1.17E-03
	3	254.86	2.96E+01	27.86	1.45E-02	1.11E-03
	4	270.18	1.81E+01	17.87	1.38E-02	1.04E-03
M	5	289.07	1.25E+01	8.06	1.30E-02	9.83E-04
m	6	292.08	1.55E+01	18.57	1.29E-02	9.79E-04
m	7	301.08	1.34E+01	17.69	1.26E-02	9.66E-04

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Analysis Report for 1606013-02

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Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
8	352.82	3.09E+01	26.61	1.10E-02	8.92E-04
9	375.64	1.39E+01	15.83	1.05E-02	8.60E-04
10	469.23	2.17E+01	19.38	8.63E-03	7.60E-04
11	582.93	2.10E+01	16.00	7.14E-03	6.46E-04
12	648.27	1.55E+01	16.64	6.51E-03	5.81E-04
13	661.21	1.30E+01	11.14	6.40E-03	5.68E-04
14	766.21	1.10E+01	14.46	5.63E-03	4.82E-04
15	804.01	3.05E+01	18.87	5.40E-03	4.51E-04
16	899.31	9.53E+00	11.17	4.91E-03	3.74E-04
17	1034.96	1.40E+01	7.48	4.36E-03	3.49E-04
18	1088.19	8.20E+00	7.48	4.18E-03	3.39E-04
19	1202.10	5.00E+00	6.34	3.85E-03	3.17E-04
20	1312.70	6.00E+00	4.90	3.58E-03	2.93E-04
21	1317.83	5.29E+00	6.08	3.57E-03	2.92E-04
22	1332.33	1.25E+01	10.42	3.54E-03	2.89E-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 : 6/7/2016 8:37:35AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000037621.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	22.66	3.83E+01	47.28			3.83E+01	4.73E+01
2	240.10	5.58E+01	32.97			5.58E+01	3.30E+01
3	254.86	2.96E+01	27.86			2.96E+01	2.79E+01
4	270.18	1.81E+01	17.87			1.81E+01	1.79E+01
M	5	289.07	1.25E+01	8.06		1.25E+01	8.06E+00
m	6	292.08	1.55E+01	18.57		1.55E+01	1.86E+01
m	7	301.08	1.34E+01	17.69		1.34E+01	1.77E+01
8	352.82	3.09E+01	26.61	4.15E+00	3.98E+00	2.68E+01	2.69E+01
9	375.64	1.39E+01	15.83			1.39E+01	1.58E+01
10	469.23	2.17E+01	19.38			2.17E+01	1.94E+01
11	582.93	2.10E+01	16.00			2.10E+01	1.60E+01
12	648.27	1.55E+01	16.64			1.55E+01	1.66E+01
13	661.21	1.30E+01	11.14			1.30E+01	1.11E+01
14	766.21	1.10E+01	14.46			1.10E+01	1.45E+01
15	804.01	3.05E+01	18.87	4.27E+00	2.83E+00	2.62E+01	1.91E+01

: 00189

Analysis Report for 1606013-02

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Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
16	899.31	9.53E+00	11.17			9.53E+00	1.12E+01
17	1034.96	1.40E+01	7.48			1.40E+01	7.48E+00
18	1088.19	8.20E+00	7.48			8.20E+00	7.48E+00
19	1202.10	5.00E+00	6.34			5.00E+00	6.34E+00
20	1312.70	6.00E+00	4.90			6.00E+00	4.90E+00
21	1317.83	5.29E+00	6.08			5.29E+00	6.08E+00
22	1332.33	1.25E+01	10.42	2.90E+00	2.11E+00	9.60E+00	1.06E+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 : 6/7/2016 8:37:35AM
 Ref. Peak Energy : 0.00 Reference Date :
 Peak Ratio : 0.00 Uncertainty : 0.00
 Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000037621.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	22.66	3.83E+01	47.28			3.83E+01	4.73E+01
2	240.10	5.58E+01	32.97			5.58E+01	3.30E+01
3	254.86	2.96E+01	27.86			2.96E+01	2.79E+01
4	270.18	1.81E+01	17.87			1.81E+01	1.79E+01
M 5	289.07	1.25E+01	8.06			1.25E+01	8.06E+00
m 6	292.08	1.55E+01	18.57			1.55E+01	1.86E+01
m 7	301.08	1.34E+01	17.69			1.34E+01	1.77E+01
8	352.82	3.09E+01	26.61	4.15E+00	3.98E+00	2.68E+01	2.69E+01
9	375.64	1.39E+01	15.83			1.39E+01	1.58E+01
10	469.23	2.17E+01	19.38			2.17E+01	1.94E+01
11	582.93	2.10E+01	16.00			2.10E+01	1.60E+01
12	648.27	1.55E+01	16.64			1.55E+01	1.66E+01
13	661.21	1.30E+01	11.14			1.30E+01	1.11E+01
14	766.21	1.10E+01	14.46			1.10E+01	1.45E+01
15	804.01	3.05E+01	18.87	4.27E+00	2.83E+00	2.62E+01	1.91E+01
16	899.31	9.53E+00	11.17			9.53E+00	1.12E+01
17	1034.96	1.40E+01	7.48			1.40E+01	7.48E+00
18	1088.19	8.20E+00	7.48			8.20E+00	7.48E+00
19	1202.10	5.00E+00	6.34			5.00E+00	6.34E+00
20	1312.70	6.00E+00	4.90			6.00E+00	4.90E+00
21	1317.83	5.29E+00	6.08			5.29E+00	6.08E+00

Analysis Report for 1606013-02

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Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
22	1332.33	1.25E+01	10.42	2.90E+00	2.11E+00	9.60E+00	1.06E+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

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
NB-95	0.973	765.79 *	99.81	1.88E-02	2.47E-02
CS-137	0.970	661.65 *	85.12	2.28E-02	1.97E-02
PB-214	0.346	295.21	19.19		
		351.92 *	37.19	6.25E-02	6.30E-02
RA-224	0.884	240.98 *	3.95	8.93E-01	5.33E-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 : 6/7/2016 8:37:35AM
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	22.66	1.06333E-02	61.75		

: 00191

Analysis Report for 1606013-02

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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide	
	3	254.86	8.22108E-03	47.06	Tol.	SN-113
	4	270.18	5.03125E-03	49.32		
M	5	289.07	3.47836E-03	32.19		
m	6	292.08	4.31433E-03	59.79		
m	7	301.08	3.72353E-03	65.99	Tol.	GA-67 PB-212
	9	375.64	3.86285E-03	56.91		
	10	469.23	6.03659E-03	44.60		
	11	582.93	5.84491E-03	38.02	Tol.	TL-208
	12	648.27	4.29527E-03	53.82		
	15	804.01	7.27655E-03	36.42		
	16	899.31	2.64757E-03	58.59		
	17	1034.96	3.88889E-03	26.73		
	18	1088.19	2.27778E-03	45.63		
	19	1202.10	1.38889E-03	63.44		
	20	1312.70	1.66667E-03	40.82	Tol.	V-48
	21	1317.83	1.46825E-03	57.54		
	22	1332.33	2.66671E-03	55.35	Tol.	CO-60

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
NB-95	0.97	765.79 *	99.81	1.88E-02	2.47E-02
CS-137	0.97	661.65 *	85.12	2.28E-02	1.97E-02
PB-214	0.34	295.21	19.19		
		351.92 *	37.19	6.25E-02	6.30E-02
RA-224	0.88	240.98 *	3.95	8.93E-01	5.33E-01

Analysis Report for 1606013-02

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* = Energy line found in the spectrum.
 - = Manually added nuclide.
 ? = Manually edited nuclide.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 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
NB-95	0.973	1.88E-02	2.47E-02	
CS-137	0.970	2.28E-02	1.97E-02	
PB-214	0.346	6.25E-02	6.30E-02	
RA-224	0.884	8.93E-01	5.33E-01	

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 1606013-02

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/7/2016 8:37:35AM
 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	22.66	1.06333E-02	61.75		
3	254.86	8.22108E-03	47.06	Tol.	SN-113
4	270.18	5.03125E-03	49.32		
M 5	289.07	3.47836E-03	32.19		
m 6	292.08	4.31433E-03	59.79		
m 7	301.08	3.72353E-03	65.99	Tol.	GA-67 PB-212
9	375.64	3.86285E-03	56.91		
10	469.23	6.03659E-03	44.60		
11	582.93	5.84491E-03	38.02	Tol.	TL-208
12	648.27	4.29527E-03	53.82		
15	804.01	7.27655E-03	36.42		
16	899.31	2.64757E-03	58.59		
17	1034.96	3.88889E-03	26.73		
18	1088.19	2.27778E-03	45.63		
19	1202.10	1.38889E-03	63.44		
20	1312.70	1.66667E-03	40.82	Tol.	V-48
21	1317.83	1.46825E-03	57.54		
22	1332.33	2.66671E-03	55.35	Tol.	CO-60

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet
 Errors quoted at 2.00sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

: 00194

Analysis Report for 1606013-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	-6.88E-02	2.18E-01	2.18E-01
+	NA-22	1274.54	99.94	-7.84E-03	3.69E-02	3.69E-02
+	NA-24	1368.53	99.99	-2.13E-03	2.63E-02	2.63E-02
		2754.09	99.86	4.50E-03		3.31E-02
+	AL-26	1808.65	99.76	-1.03E-02	3.68E-02	3.68E-02
+	K-40	1460.81	10.67	2.73E-02	2.01E-01	2.01E-01
+	AR-41	1293.64	99.16	-1.30E-03	4.25E-02	4.25E-02
+	TI-44	67.88	94.40	-5.41E-04	1.79E-02	1.79E-02
		78.34	96.00	2.08E-03		2.02E-02
+	SC-46	889.25	99.98	-8.92E-03	3.22E-02	3.22E-02
		1120.51	99.99	1.73E-02		4.58E-02
+	V-48	983.52	99.98	8.18E-03	3.35E-02	3.35E-02
		1312.10	97.50	1.28E-02		4.12E-02
+	CR-51	320.08	9.83	-7.03E-02	2.29E-01	2.29E-01
+	MN-54	834.83	99.97	2.26E-03	3.80E-02	3.80E-02
+	CO-56	846.75	99.96	-4.83E-03	3.23E-02	3.23E-02
		1037.75	14.03	-3.14E-02		2.74E-01
		1238.25	67.00	1.33E-02		4.99E-02
		1771.40	15.51	-7.23E-02		1.60E-01
		2598.48	16.90	3.09E-02		2.72E-01
+	CO-57	122.06	85.51	3.31E-03	1.83E-02	1.83E-02
		136.48	10.60	2.69E-03		1.58E-01
+	CO-58	810.76	99.40	-8.99E-04	3.50E-02	3.50E-02
+	FE-59	1099.22	56.50	-1.02E-02	4.92E-02	4.92E-02
		1291.56	43.20	-6.11E-02		5.68E-02
+	CO-60	1173.22	100.00	1.83E-02	4.07E-02	4.07E-02
		1332.49	100.00	3.66E-02		6.08E-02
+	ZN-65	1115.52	50.75	-3.92E-02	5.54E-02	5.54E-02
+	GA-67	93.31	35.70	9.55E-02	6.51E-02	6.51E-02
		208.95	2.24	2.44E-01		1.01E+00
		300.22	16.00	5.21E-02		1.66E-01
+	SE-75	121.11	16.70	3.53E-03	2.76E-02	9.32E-02
		136.00	59.20	-2.06E-03		2.76E-02
		264.65	59.80	7.87E-03		3.41E-02
		279.53	25.20	-2.46E-02		8.46E-02
		400.65	11.40	1.94E-02		2.04E-01
+	RB-82	776.52	13.00	-6.40E-02	2.21E-01	2.21E-01
+	RB-83	520.41	46.00	-2.81E-02	6.07E-02	6.07E-02
		529.64	30.30	-1.77E-02		9.36E-02
		552.65	16.40	3.25E-02		1.80E-01
+	KR-85	513.99	0.43	9.14E+00	1.10E+01	1.10E+01
+	SR-85	513.99	99.27	4.00E-02	4.80E-02	4.80E-02
+	Y-88	898.02	93.40	-7.14E-03	3.93E-02	3.93E-02
		1836.01	99.38	7.23E-03		4.17E-02
+	NB-93M	16.57	9.43	-4.36E+00	4.05E+01	4.05E+01
+	NB-94	702.63	100.00	-3.16E-03	2.97E-02	2.97E-02
		871.10	100.00	1.34E-02		3.45E-02

Analysis Report for 1606013-02

BLANK

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-95	765.79	*	99.81	1.88E-02	4.07E-02	4.07E-02
+	NB-95M	235.69		25.00	3.37E-03	1.08E-01	1.08E-01
+	ZR-95	724.18		43.70	-4.59E-03	5.73E-02	8.53E-02
		756.72		55.30	-5.84E-03		5.73E-02
+	MO-99	181.06		6.20	-1.13E-01	2.69E-01	2.71E-01
		739.58		12.80	9.08E-03		2.69E-01
		778.00		4.50	-1.61E-01		6.42E-01
+	RU-103	497.08		89.00	1.25E-02	3.09E-02	3.09E-02
+	RU-106	621.84		9.80	-2.32E-02	3.00E-01	3.00E-01
+	AG-108M	433.93		89.90	-1.36E-02	2.83E-02	2.83E-02
		614.37		90.40	-2.53E-02		3.65E-02
		722.95		90.50	4.11E-03		4.20E-02
+	CD-109	88.03		3.72	1.25E-01	4.68E-01	4.68E-01
+	AG-110M	657.75		93.14	-2.13E-02	2.79E-02	2.79E-02
		677.61		10.53	2.63E-02		3.10E-01
		706.67		16.46	-9.64E-03		2.06E-01
		763.93		21.98	-5.58E-02		1.50E-01
		884.67		71.63	-1.59E-02		4.68E-02
		1384.27		23.94	-6.02E-02		1.25E-01
+	CD-113M	263.70		0.02	3.56E+00	8.84E+01	8.84E+01
+	SN-113	255.12		1.93	4.03E-01	4.19E-02	1.24E+00
		391.69		64.90	7.84E-03		4.19E-02
+	TE123M	159.00		84.10	-7.74E-03	1.59E-02	1.59E-02
+	SB-124	602.71		97.87	2.16E-02	4.27E-02	4.27E-02
		645.85		7.26	1.40E-01		4.54E-01
		722.78		11.10	3.35E-02		3.43E-01
		1691.02		49.00	-3.10E-02		7.15E-02
+	I-125	35.49		6.49	3.91E-01	7.38E-01	7.38E-01
+	SB-125	176.33		6.89	3.86E-02	8.22E-02	2.61E-01
		427.89		29.33	-9.44E-03		8.22E-02
		463.38		10.35	3.71E-02		2.38E-01
		600.56		17.80	-2.06E-03		2.25E-01
		635.90		11.32	-7.03E-02		2.57E-01
+	SB-126	414.70		83.30	-6.90E-03	3.06E-02	3.06E-02
		666.33		99.60	-6.32E-03		3.23E-02
		695.00		99.60	6.05E-03		3.70E-02
		720.50		53.80	-5.76E-03		6.74E-02
+	SN-126	87.57		37.00	1.25E-02	4.70E-02	4.70E-02
+	SB-127	473.00		25.00	-5.05E-03	8.74E-02	1.10E-01
		685.20		35.70	1.46E-02		8.74E-02
		783.80		14.70	2.37E-02		1.67E-01
+	I-129	29.78		57.00	5.92E-02	1.64E-01	1.64E-01
		33.60		13.20	-2.98E-01		3.96E-01
		39.58		7.52	-1.78E-01		4.63E-01
+	I-131	284.30		6.05	-1.45E-01	3.29E-02	3.53E-01
		364.48		81.20	8.76E-03		3.29E-02
		636.97		7.26	-9.00E-02		3.90E-01
		722.89		1.80	2.07E-01		2.12E+00

Analysis Report for 1606013-02

BLANK

	<i>Nuclide Name</i>	<i>Energy (keV)</i>	<i>Yield(%)</i>	<i>Activity (pCi/grams)</i>	<i>Nuclide MDA (pCi/grams)</i>	<i>Line MDA (pCi/grams)</i>
+	TE-132	49.72	13.10	-3.06E-01	2.43E-02	1.71E-01
		228.16	88.00	-9.43E-03		2.43E-02
+	BA-133	81.00	33.00	-1.93E-02	4.74E-02	5.14E-02
		302.84	17.80	6.71E-02		1.53E-01
		356.01	60.00	6.63E-03		4.74E-02
+	I-133	529.87	86.30	-6.32E-03	3.35E-02	3.35E-02
+	XE-133	81.00	38.00	-1.68E-02	4.48E-02	4.48E-02
+	CS-134	563.23	8.38	-2.31E-01	3.82E-02	3.96E-01
		569.32	15.43	7.45E-02		2.29E-01
		604.70	97.60	-2.86E-02		3.82E-02
		795.84	85.40	3.38E-03		4.62E-02
		801.93	8.73	1.43E-01		4.97E-01
+	CS-135	268.24	16.00	-4.32E-03	1.37E-01	1.37E-01
+	I-135	1131.51	22.50	-2.23E-02	1.03E-01	1.46E-01
		1260.41	28.60	-4.78E-03		1.03E-01
		1678.03	9.54	2.15E-01		5.05E-01
+	CS-136	153.22	7.46	1.67E-02	2.72E-02	2.22E-01
		163.89	4.61	1.33E-01		3.83E-01
		176.55	13.56	2.62E-02		1.32E-01
		273.65	12.66	1.11E-02		1.66E-01
		340.57	48.50	2.49E-03		5.90E-02
		818.50	99.70	-4.39E-03		2.72E-02
		1048.07	79.60	1.43E-02		4.44E-02
		1235.34	19.70	1.55E-02		1.70E-01
+	CS-137	661.65	* 85.12	2.28E-02	2.93E-02	2.93E-02
+	LA-138	788.74	34.00	-5.90E-02	4.77E-02	4.77E-02
		1435.80	66.00	1.74E-02		5.23E-02
+	CE-139	165.85	80.35	6.83E-03	2.33E-02	2.33E-02
+	BA-140	162.64	6.70	-2.89E-03	1.23E-01	2.46E-01
		304.84	4.50	9.93E-03		5.67E-01
		423.70	3.20	-6.89E-01		7.14E-01
		437.55	2.00	-1.07E-01		1.38E+00
		537.32	25.00	3.45E-02		1.23E-01
+	LA-140	328.77	20.50	6.29E-02	3.92E-02	1.33E-01
		487.03	45.50	2.34E-02		6.32E-02
		815.85	23.50	3.15E-02		1.28E-01
		1596.49	95.49	-1.63E-02		3.92E-02
+	CE-141	145.44	48.40	-8.57E-04	3.50E-02	3.50E-02
+	CE-143	57.36	11.80	-1.62E-01	6.19E-02	1.50E-01
		293.26	42.00	1.25E-02		6.19E-02
		664.55	5.20	1.12E-01		7.18E-01
+	CE-144	133.54	10.80	-6.48E-02	1.41E-01	1.41E-01
+	PM-144	476.78	42.00	-7.84E-03	3.29E-02	5.72E-02
		618.01	98.60	5.84E-03		3.29E-02
		696.49	99.49	2.13E-03		3.70E-02
+	PM-145	36.85	21.70	-1.42E-02	1.02E-01	1.92E-01
		37.36	39.70	4.89E-03		1.02E-01
		42.30	15.10	-8.17E-02		2.12E-01
		72.40	2.31	-1.60E-02		7.55E-01

Analysis Report for 1606013-02

BLANK

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-146	453.90	39.94	1.91E-02	7.02E-02	7.02E-02
		735.90	14.01	6.76E-02		2.70E-01
		747.13	13.10	1.35E-02		2.71E-01
+	ND-147	91.11	28.90	2.40E-02	7.47E-02	7.47E-02
		531.02	13.10	1.85E-02		2.32E-01
+	PM-149	285.90	3.10	-2.36E-02	7.33E-01	7.33E-01
+	EU-152	121.78	20.50	1.38E-02	7.61E-02	7.61E-02
		244.69	5.40	3.32E-02		4.46E-01
		344.27	19.13	8.78E-02		1.55E-01
		778.89	9.20	2.63E-02		3.27E-01
		964.01	10.40	-3.65E-02		2.81E-01
		1085.78	7.22	1.74E-01		5.29E-01
		1112.02	9.60	4.87E-02		3.19E-01
		1407.95	14.94	3.79E-02		2.27E-01
+	GD-153	97.43	31.30	-3.03E-02	4.72E-02	4.72E-02
		103.18	22.20	-2.14E-02		6.18E-02
+	EU-154	123.07	40.50	5.30E-03	3.83E-02	3.83E-02
		723.30	19.70	1.89E-02		1.93E-01
		873.19	11.50	-1.57E-01		2.49E-01
		996.32	10.30	1.01E-01		4.03E-01
		1004.76	17.90	1.35E-02		1.90E-01
		1274.45	35.50	-2.21E-02		1.04E-01
+	EU-155	86.50	30.90	-1.77E-02	5.26E-02	5.26E-02
		105.30	20.70	3.52E-03		7.16E-02
+	EU-156	811.77	10.40	-3.44E-02	3.24E-01	3.24E-01
		1153.47	7.20	-1.67E-02		5.83E-01
		1230.71	8.90	8.28E-02		3.74E-01
+	HO-166M	184.41	72.60	2.66E-02	3.22E-02	3.22E-02
		280.45	29.60	-2.57E-02		7.03E-02
		410.94	11.10	5.80E-02		2.55E-01
		711.69	54.10	2.33E-03		6.78E-02
+	TM-171	66.72	0.14	-1.68E+01	1.25E+01	1.25E+01
+	HF-172	81.75	4.52	-1.15E-02	1.28E-01	3.82E-01
		125.81	11.30	-8.70E-02		1.28E-01
+	LU-172	181.53	20.60	-9.73E-02	5.55E-02	8.33E-02
		810.06	16.63	-2.69E-02		1.95E-01
		912.12	15.25	-8.01E-02		1.83E-01
		1093.66	62.50	1.29E-02		5.55E-02
+	LU-173	100.72	5.24	1.34E-02	1.07E-01	2.69E-01
		272.11	21.20	-4.40E-03		1.07E-01
+	HF-175	343.40	84.00	-3.06E-03	3.32E-02	3.32E-02
+	LU-176	88.34	13.30	-1.37E-01	2.54E-02	1.33E-01
		201.83	86.00	2.91E-04		2.54E-02
		306.78	94.00	-4.79E-03		2.55E-02
+	TA-182	67.75	41.20	-1.24E-03	4.12E-02	4.12E-02
		1121.30	34.90	8.05E-02		1.44E-01
		1189.05	16.23	3.04E-02		1.41E-01
		1221.41	26.98	4.05E-02		1.32E-01
		1231.02	11.44	1.11E-02		2.67E-01

Analysis Report for 1606013-02

BLANK

	<i>Nuclide Name</i>	<i>Energy (keV)</i>	<i>Yield(%)</i>	<i>Activity (pCi/grams)</i>	<i>Nuclide MDA (pCi/grams)</i>	<i>Line MDA (pCi/grams)</i>
+	IR-192	308.46	29.68	2.86E-02	6.59E-02	8.39E-02
		468.07	48.10	3.03E-02		6.59E-02
+	HG-203	279.19	77.30	5.12E-03	2.79E-02	2.79E-02
+	BI-207	569.67	97.72	8.56E-04	3.30E-02	3.30E-02
		1063.62	74.90	1.20E-03		5.24E-02
+	TL-208	583.14	30.22	6.88E-02	1.11E-01	1.31E-01
		860.37	4.48	3.43E-01		8.70E-01
		2614.66	35.85	0.00E+00		1.11E-01
+	BI-210M	262.00	45.00	3.01E-03	4.73E-02	4.73E-02
		300.00	23.00	3.60E-02		1.15E-01
+	PB-210	46.50	4.25	8.68E-01	7.63E-01	7.63E-01
+	PB-211	404.84	2.90	-7.67E-01	7.18E-01	7.18E-01
		831.96	2.90	2.64E-01		1.23E+00
+	BI-212	727.17	11.80	-2.94E-02	3.17E-01	3.17E-01
		1620.62	2.75	-9.55E-03		1.62E+00
+	PB-212	238.63	44.60	2.74E-02	6.37E-02	6.37E-02
		300.09	3.41	2.43E-01		7.76E-01
+	BI-214	609.31	46.30	2.13E-02	8.62E-02	8.62E-02
		1120.29	15.10	1.14E-01		3.03E-01
		1764.49	15.80	1.63E-01		3.54E-01
		2204.22	4.98	2.34E-01		8.41E-01
+	PB-214	295.21	19.19	5.89E-02	1.02E-01	1.39E-01
		351.92	* 37.19	6.25E-02		1.02E-01
+	RN-219	401.80	6.50	-3.36E-02	3.51E-01	3.51E-01
+	RA-223	323.87	3.88	2.93E-01	6.91E-01	6.91E-01
+	RA-224	240.98	* 3.95	8.93E-01	8.18E-01	8.18E-01
+	RA-225	40.00	31.00	-4.22E-02	1.10E-01	1.10E-01
+	RA-226	186.21	3.28	6.64E-01	7.25E-01	7.25E-01
+	TH-227	50.10	8.40	-4.70E-01	2.35E-01	2.62E-01
		236.00	11.50	7.31E-03		2.35E-01
		256.20	6.30	2.25E-01		3.90E-01
+	AC-228	338.32	11.40	2.51E-02	9.35E-02	2.42E-01
		911.07	27.70	-8.41E-02		9.35E-02
		969.11	16.60	-1.25E-01		1.88E-01
+	TH-230	48.44	16.90	9.61E-02	1.70E-01	1.70E-01
		62.85	4.60	3.71E-01		5.27E-01
		67.67	0.37	-1.38E-01		4.59E+00
+	PA-231	283.67	1.60	-5.48E-01	1.18E+00	1.33E+00
		302.67	2.30	5.19E-01		1.18E+00
+	TH-231	25.64	14.70	0.00E+00	2.51E-01	1.40E+00
		84.21	6.40	-5.50E-02		2.51E-01
+	PA-233	311.98	38.60	-1.33E-02	6.05E-02	6.05E-02
+	PA-234	131.20	20.40	1.05E-03	7.68E-02	7.68E-02
		733.99	8.80	8.19E-02		4.28E-01
		946.00	12.00	3.28E-02		3.42E-01
+	PA-234M	1001.03	0.92	-1.11E+00	3.49E+00	3.49E+00
+	TH-234	63.29	3.80	8.30E-02	6.10E-01	6.10E-01

Analysis Report for 1606013-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	U-235	143.76	10.50	-5.73E-02	1.55E-01	1.55E-01
		163.35	4.70	1.30E-01		3.75E-01
		205.31	4.70	-7.10E-03		4.77E-01
+	NP-237	86.50	12.60	-4.35E-02	1.29E-01	1.29E-01
+	NP-239	106.10	22.70	-6.82E-03	6.64E-02	6.64E-02
		228.18	10.70	-7.77E-02		2.00E-01
		277.60	14.10	8.40E-02		1.59E-01
+	AM-241	59.54	35.90	-5.03E-02	5.30E-02	5.30E-02
+	AM-243	74.67	66.00	-2.00E-03	2.85E-02	2.85E-02
+	CM-243	209.75	3.29	2.05E-01	1.59E-01	6.88E-01
		228.14	10.60	-7.79E-02		2.00E-01
		277.60	14.00	8.40E-02		1.59E-01

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	2.18E-01	2.18E-01	-6.88E-02	9.42E-02
NA-22	1274.54	99.94	3.69E-02	3.69E-02	-7.84E-03	1.49E-02
NA-24	1368.53	99.99	2.63E-02	2.63E-02	-2.13E-03	9.33E-03
	2754.09	99.86	3.31E-02		4.50E-03	1.05E-02
AL-26	1808.65	99.76	3.68E-02	3.68E-02	-1.03E-02	1.38E-02
K-40	1460.81	10.67	2.01E-01	2.01E-01	2.73E-02	6.35E-02
AR-41	1293.64	99.16	4.25E-02	4.25E-02	-1.30E-03	1.69E-02
TI-44	67.88	94.40	1.79E-02	1.79E-02	-5.41E-04	8.36E-03
	78.34	96.00	2.02E-02		2.08E-03	9.54E-03
SC-46	889.25	99.98	3.22E-02	3.22E-02	-8.92E-03	1.35E-02

Analysis Report for 1606013-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
SC-46	1120.51	99.99	4.58E-02	3.22E-02	1.73E-02	1.97E-02
V-48	983.52	99.98	3.35E-02	3.35E-02	8.18E-03	1.39E-02
	1312.10	97.50	4.12E-02		1.28E-02	1.69E-02
CR-51	320.08	9.83	2.29E-01	2.29E-01	-7.03E-02	1.04E-01
MN-54	834.83	99.97	3.80E-02	3.80E-02	2.26E-03	1.65E-02
CO-56	846.75	99.96	3.23E-02	3.23E-02	-4.83E-03	1.37E-02
	1037.75	14.03	2.74E-01		-3.14E-02	1.16E-01
	1238.25	67.00	4.99E-02		1.33E-02	1.98E-02
	1771.40	15.51	1.60E-01		-7.23E-02	5.05E-02
	2598.48	16.90	2.72E-01		3.09E-02	1.02E-01
CO-57	122.06	85.51	1.83E-02	1.83E-02	3.31E-03	8.47E-03
	136.48	10.60	1.58E-01		2.69E-03	7.36E-02
CO-58	810.76	99.40	3.50E-02	3.50E-02	-8.99E-04	1.51E-02
FE-59	1099.22	56.50	4.92E-02	4.92E-02	-1.02E-02	1.91E-02
	1291.56	43.20	5.68E-02		-6.11E-02	2.01E-02
CO-60	1173.22	100.00	4.07E-02	4.07E-02	1.83E-02	1.70E-02
	1332.49	100.00	6.08E-02		3.66E-02	2.67E-02
ZN-65	1115.52	50.75	5.54E-02	5.54E-02	-3.92E-02	2.15E-02
GA-67	93.31	35.70	6.51E-02	6.51E-02	9.55E-02	3.10E-02
	208.95	2.24	1.01E+00		2.44E-01	4.71E-01
	300.22	16.00	1.66E-01		5.21E-02	7.67E-02
SE-75	121.11	16.70	9.32E-02	2.76E-02	3.53E-03	4.32E-02
	136.00	59.20	2.76E-02		-2.06E-03	1.28E-02
	264.65	59.80	3.41E-02		7.87E-03	1.55E-02
	279.53	25.20	8.46E-02		-2.46E-02	3.85E-02
	400.65	11.40	2.04E-01		1.94E-02	9.06E-02
RB-82	776.52	13.00	2.21E-01	2.21E-01	-6.40E-02	9.25E-02
RB-83	520.41	46.00	6.07E-02	6.07E-02	-2.81E-02	2.68E-02
	529.64	30.30	9.36E-02		-1.77E-02	4.13E-02
	552.65	16.40	1.80E-01		3.25E-02	7.92E-02
KR-85	513.99	0.43	1.10E+01	1.10E+01	9.14E+00	5.12E+00
SR-85	513.99	99.27	4.80E-02	4.80E-02	4.00E-02	2.24E-02
Y-88	898.02	93.40	3.93E-02	3.93E-02	-7.14E-03	1.68E-02
	1836.01	99.38	4.17E-02		7.23E-03	1.62E-02
NB-93M	16.57	9.43	4.05E+01	4.05E+01	-4.36E+00	1.94E+01
NB-94	702.63	100.00	2.97E-02	2.97E-02	-3.16E-03	1.27E-02
	871.10	100.00	3.45E-02		1.34E-02	1.47E-02
+ NB-95	765.79	* 99.81	4.07E-02	4.07E-02	1.88E-02	1.80E-02
NB-95M	235.69	25.00	1.08E-01	1.08E-01	3.37E-03	5.08E-02
ZR-95	724.18	43.70	8.53E-02	5.73E-02	-4.59E-03	3.76E-02
	756.72	55.30	5.73E-02		-5.84E-03	2.45E-02
MO-99	181.06	6.20	2.71E-01	2.69E-01	-1.13E-01	1.24E-01
	739.58	12.80	2.69E-01		9.08E-03	1.17E-01
	778.00	4.50	6.42E-01		-1.61E-01	2.69E-01
RU-103	497.08	89.00	3.09E-02	3.09E-02	1.25E-02	1.37E-02
RU-106	621.84	9.80	3.00E-01	3.00E-01	-2.32E-02	1.31E-01
AG-108M	433.93	89.90	2.83E-02	2.83E-02	-1.36E-02	1.26E-02
	614.37	90.40	3.65E-02		-2.53E-02	1.62E-02
	722.95	90.50	4.20E-02		4.11E-03	1.86E-02
CD-109	88.03	3.72	4.68E-01	4.68E-01	1.25E-01	2.20E-01
AG-110M	657.75	93.14	2.79E-02	2.79E-02	-2.13E-02	1.18E-02
	677.61	10.53	3.10E-01		2.63E-02	1.35E-01
	706.67	16.46	2.06E-01		-9.64E-03	8.97E-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AG-110M	763.93	21.98	1.50E-01	2.79E-02	-5.58E-02	6.48E-02
	884.67	71.63	4.68E-02		-1.59E-02	1.98E-02
	1384.27	23.94	1.25E-01		-6.02E-02	4.70E-02
CD-113M	263.70	0.02	8.84E+01	8.84E+01	3.56E+00	4.02E+01
SN-113	255.12	1.93	1.24E+00	4.19E-02	4.03E-01	5.71E-01
	391.69	64.90	4.19E-02		7.84E-03	1.90E-02
TE123M	159.00	84.10	1.59E-02	1.59E-02	-7.74E-03	7.18E-03
SB-124	602.71	97.87	4.27E-02	4.27E-02	2.16E-02	1.94E-02
	645.85	7.26	4.54E-01		1.40E-01	2.00E-01
	722.78	11.10	3.43E-01		3.35E-02	1.52E-01
	1691.02	49.00	7.15E-02		-3.10E-02	2.67E-02
I-125	35.49	6.49	7.38E-01	7.38E-01	3.91E-01	3.45E-01
SB-125	176.33	6.89	2.61E-01	8.22E-02	3.86E-02	1.21E-01
	427.89	29.33	8.22E-02		-9.44E-03	3.64E-02
	463.38	10.35	2.38E-01		3.71E-02	1.05E-01
	600.56	17.80	2.25E-01		-2.06E-03	1.02E-01
	635.90	11.32	2.57E-01		-7.03E-02	1.11E-01
SB-126	414.70	83.30	3.06E-02	3.06E-02	-6.90E-03	1.37E-02
	666.33	99.60	3.23E-02		-6.32E-03	1.41E-02
	695.00	99.60	3.70E-02		6.05E-03	1.64E-02
	720.50	53.80	6.74E-02		-5.76E-03	2.96E-02
SN-126	87.57	37.00	4.70E-02	4.70E-02	1.25E-02	2.21E-02
SB-127	473.00	25.00	1.10E-01	8.74E-02	-5.05E-03	4.90E-02
	685.20	35.70	8.74E-02		1.46E-02	3.78E-02
	783.80	14.70	1.67E-01		2.37E-02	6.76E-02
I-129	29.78	57.00	1.64E-01	1.64E-01	5.92E-02	7.72E-02
	33.60	13.20	3.96E-01		-2.98E-01	1.84E-01
	39.58	7.52	4.63E-01		-1.78E-01	2.15E-01
I-131	284.30	6.05	3.53E-01	3.29E-02	-1.45E-01	1.60E-01
	364.48	81.20	3.29E-02		8.76E-03	1.49E-02
	636.97	7.26	3.90E-01		-9.00E-02	1.68E-01
	722.89	1.80	2.12E+00		2.07E-01	9.37E-01
TE-132	49.72	13.10	1.71E-01	2.43E-02	-3.06E-01	7.95E-02
	228.16	88.00	2.43E-02		-9.43E-03	1.12E-02
BA-133	81.00	33.00	5.14E-02	4.74E-02	-1.93E-02	2.41E-02
	302.84	17.80	1.53E-01		6.71E-02	7.06E-02
	356.01	60.00	4.74E-02		6.63E-03	2.17E-02
I-133	529.87	86.30	3.35E-02	3.35E-02	-6.32E-03	1.48E-02
XE-133	81.00	38.00	4.48E-02	4.48E-02	-1.68E-02	2.10E-02
CS-134	563.23	8.38	3.96E-01	3.82E-02	-2.31E-01	1.77E-01
	569.32	15.43	2.29E-01		7.45E-02	1.03E-01
	604.70	97.60	3.82E-02		-2.86E-02	1.72E-02
	795.84	85.40	4.62E-02		3.38E-03	2.03E-02
	801.93	8.73	4.97E-01		1.43E-01	2.21E-01
CS-135	268.24	16.00	1.37E-01	1.37E-01	-4.32E-03	6.27E-02
I-135	1131.51	22.50	1.46E-01	1.03E-01	-2.23E-02	5.79E-02
	1260.41	28.60	1.03E-01		-4.78E-03	3.86E-02
	1678.03	9.54	5.05E-01		2.15E-01	2.04E-01
CS-136	153.22	7.46	2.22E-01	2.72E-02	1.67E-02	1.02E-01
	163.89	4.61	3.83E-01		1.33E-01	1.78E-01
	176.55	13.56	1.32E-01		2.62E-02	6.08E-02
	273.65	12.66	1.66E-01		1.11E-02	7.53E-02
	340.57	48.50	5.90E-02		2.49E-03	2.71E-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)	
CS-136	818.50	99.70	2.72E-02	2.72E-02	-4.39E-03	1.11E-02	
	1048.07	79.60	4.44E-02		1.43E-02	1.84E-02	
	1235.34	19.70	1.70E-01		1.55E-02	6.73E-02	
+ CS-137	661.65	* 85.12	2.93E-02	2.93E-02	2.28E-02	1.23E-02	
LA-138	788.74	34.00	4.77E-02	4.77E-02	-5.90E-02	1.69E-02	
	1435.80	66.00	5.23E-02		1.74E-02	2.02E-02	
CE-139	165.85	80.35	2.33E-02	2.33E-02	6.83E-03	1.08E-02	
BA-140	162.64	6.70	2.46E-01	1.23E-01	-2.89E-03	1.13E-01	
	304.84	4.50	5.67E-01		9.93E-03	2.61E-01	
	423.70	3.20	7.14E-01		-6.89E-01	3.14E-01	
	437.55	2.00	1.38E+00		-1.07E-01	6.21E-01	
	537.32	25.00	1.23E-01		3.45E-02	5.46E-02	
LA-140	328.77	20.50	1.33E-01	3.92E-02	6.29E-02	6.09E-02	
	487.03	45.50	6.32E-02		2.34E-02	2.82E-02	
	815.85	23.50	1.28E-01		3.15E-02	5.34E-02	
	1596.49	95.49	3.92E-02		-1.63E-02	1.52E-02	
CE-141	145.44	48.40	3.50E-02	3.50E-02	-8.57E-04	1.62E-02	
CE-143	57.36	11.80	1.50E-01	6.19E-02	-1.62E-01	6.95E-02	
	293.26	42.00	6.19E-02		1.25E-02	2.85E-02	
	664.55	5.20	7.18E-01		1.12E-01	3.19E-01	
CE-144	133.54	10.80	1.41E-01	1.41E-01	-6.48E-02	6.51E-02	
PM-144	476.78	42.00	5.72E-02	3.29E-02	-7.84E-03	2.50E-02	
	618.01	98.60	3.29E-02		5.84E-03	1.45E-02	
	696.49	99.49	3.70E-02		2.13E-03	1.64E-02	
PM-145	36.85	21.70	1.92E-01	1.02E-01	-1.42E-02	8.97E-02	
	37.36	39.70	1.02E-01		4.89E-03	4.77E-02	
	42.30	15.10	2.12E-01		-8.17E-02	9.94E-02	
	72.40	2.31	7.55E-01		-1.60E-02	3.54E-01	
PM-146	453.90	39.94	7.02E-02	7.02E-02	1.91E-02	3.14E-02	
	735.90	14.01	2.70E-01		6.76E-02	1.19E-01	
	747.13	13.10	2.71E-01		1.35E-02	1.18E-01	
ND-147	91.11	28.90	7.47E-02	7.47E-02	2.40E-02	3.55E-02	
	531.02	13.10	2.32E-01		1.85E-02	1.03E-01	
PM-149	285.90	3.10	7.33E-01	7.33E-01	-2.36E-02	3.35E-01	
EU-152	121.78	20.50	7.61E-02	7.61E-02	1.38E-02	3.53E-02	
	244.69	5.40	4.46E-01		3.32E-02	2.07E-01	
	344.27	19.13	1.55E-01		8.78E-02	7.16E-02	
	778.89	9.20	3.27E-01		2.63E-02	1.38E-01	
	964.01	10.40	2.81E-01		-3.65E-02	1.14E-01	
	1085.78	7.22	5.29E-01		1.74E-01	2.21E-01	
	1112.02	9.60	3.19E-01		4.87E-02	1.27E-01	
	1407.95	14.94	2.27E-01		3.79E-02	8.81E-02	
	GD-153	97.43	31.30	4.72E-02	4.72E-02	-3.03E-02	2.19E-02
		103.18	22.20	6.18E-02		-2.14E-02	2.85E-02
EU-154	123.07	40.50	3.83E-02	3.83E-02	5.30E-03	1.78E-02	
	723.30	19.70	1.93E-01		1.89E-02	8.55E-02	
	873.19	11.50	2.49E-01		-1.57E-01	1.02E-01	
	996.32	10.30	4.03E-01		1.01E-01	1.74E-01	
	1004.76	17.90	1.90E-01		1.35E-02	7.89E-02	
	1274.45	35.50	1.04E-01		-2.21E-02	4.19E-02	
EU-155	86.50	30.90	5.26E-02	5.26E-02	-1.77E-02	2.46E-02	
	105.30	20.70	7.16E-02		3.52E-03	3.32E-02	
EU-156	811.77	10.40	3.24E-01	3.24E-01	-3.44E-02	1.39E-01	

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-156	1153.47	7.20	5.83E-01	3.24E-01	-1.67E-02	2.46E-01
	1230.71	8.90	3.74E-01		8.28E-02	1.49E-01
HO-166M	184.41	72.60	3.22E-02	3.22E-02	2.66E-02	1.51E-02
	280.45	29.60	7.03E-02		-2.57E-02	3.19E-02
	410.94	11.10	2.55E-01		5.80E-02	1.16E-01
	711.69	54.10	6.78E-02		2.33E-03	2.99E-02
TM-171	66.72	0.14	1.25E+01	1.25E+01	-1.68E+01	5.83E+00
HF-172	81.75	4.52	3.82E-01	1.28E-01	-1.15E-02	1.79E-01
	125.81	11.30	1.28E-01		-8.70E-02	5.88E-02
LU-172	181.53	20.60	8.33E-02	5.55E-02	-9.73E-02	3.83E-02
	810.06	16.63	1.95E-01		-2.69E-02	8.30E-02
	912.12	15.25	1.83E-01		-8.01E-02	7.40E-02
	1093.66	62.50	5.55E-02		1.29E-02	2.27E-02
LU-173	100.72	5.24	2.69E-01	1.07E-01	1.34E-02	1.24E-01
	272.11	21.20	1.07E-01		-4.40E-03	4.91E-02
HF-175	343.40	84.00	3.32E-02	3.32E-02	-3.06E-03	1.52E-02
LU-176	88.34	13.30	1.33E-01	2.54E-02	-1.37E-01	6.26E-02
	201.83	86.00	2.54E-02		2.91E-04	1.18E-02
	306.78	94.00	2.55E-02		-4.79E-03	1.16E-02
TA-182	67.75	41.20	4.12E-02	4.12E-02	-1.24E-03	1.92E-02
	1121.30	34.90	1.44E-01		8.05E-02	6.27E-02
	1189.05	16.23	1.41E-01		3.04E-02	5.01E-02
	1221.41	26.98	1.32E-01		4.05E-02	5.33E-02
	1231.02	11.44	2.67E-01		1.11E-02	1.03E-01
IR-192	308.46	29.68	8.39E-02	6.59E-02	2.86E-02	3.84E-02
	468.07	48.10	6.59E-02		3.03E-02	2.98E-02
HG-203	279.19	77.30	2.79E-02	2.79E-02	5.12E-03	1.27E-02
BI-207	569.67	97.72	3.30E-02	3.30E-02	8.56E-04	1.47E-02
	1063.62	74.90	5.24E-02		1.20E-03	2.21E-02
	TL-208	583.14	30.22		1.31E-01	1.11E-01	6.88E-02	5.94E-02
BI-210M	860.37	4.48	8.70E-01	4.73E-02	3.43E-01	3.78E-01
	2614.66	35.85	1.11E-01		0.00E+00	3.93E-02
	262.00	45.00	4.73E-02		3.01E-03	2.16E-02
PB-210	300.00	23.00	1.15E-01	7.63E-01	3.60E-02	5.31E-02
	46.50	4.25	7.63E-01		8.68E-01	3.61E-01
PB-211	404.84	2.90	7.18E-01	7.18E-01	-7.67E-01	3.14E-01
	831.96	2.90	1.23E+00		2.64E-01	5.28E-01
BI-212	727.17	11.80	3.17E-01	3.17E-01	-2.94E-02	1.40E-01
	1620.62	2.75	1.62E+00		-9.55E-03	6.53E-01
PB-212	238.63	44.60	6.37E-02	6.37E-02	2.74E-02	2.99E-02
	300.09	3.41	7.76E-01		2.43E-01	3.58E-01
BI-214	609.31	46.30	8.62E-02	8.62E-02	2.13E-02	3.90E-02
	1120.29	15.10	3.03E-01		1.14E-01	1.31E-01
	1764.49	15.80	3.54E-01		1.63E-01	1.48E-01
	2204.22	4.98	8.41E-01		2.34E-01	3.15E-01
+ PB-214	295.21	19.19	1.39E-01	1.02E-01	5.89E-02	6.41E-02
	351.92	* 37.19	1.02E-01		6.25E-02	4.77E-02
RN-219	401.80	6.50	3.51E-01	3.51E-01	-3.36E-02	1.55E-01
RA-223	323.87	3.88	6.91E-01	6.91E-01	2.93E-01	3.18E-01
+ RA-224	240.98	* 3.95	8.18E-01	8.18E-01	8.93E-01	3.87E-01
RA-225	40.00	31.00	1.10E-01	1.10E-01	-4.22E-02	5.11E-02
RA-226	186.21	3.28	7.25E-01	7.25E-01	6.64E-01	3.41E-01
TH-227	50.10	8.40	2.62E-01	2.35E-01	-4.70E-01	1.22E-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)
TH-227	236.00	11.50	2.35E-01	2.35E-01	7.31E-03	1.10E-01
	256.20	6.30	3.90E-01		2.25E-01	1.81E-01
AC-228	338.32	11.40	2.42E-01	9.35E-02	2.51E-02	1.11E-01
	911.07	27.70	9.35E-02		-8.41E-02	3.71E-02
	969.11	16.60	1.88E-01		-1.25E-01	7.72E-02
TH-230	48.44	16.90	1.70E-01	1.70E-01	9.61E-02	8.02E-02
	62.85	4.60	5.27E-01		3.71E-01	2.50E-01
	67.67	0.37	4.59E+00		-1.38E-01	2.14E+00
PA-231	283.67	1.60	1.33E+00	1.18E+00	-5.48E-01	6.04E-01
	302.67	2.30	1.18E+00		5.19E-01	5.46E-01
TH-231	25.64	14.70	1.40E+00	2.51E-01	0.00E+00	6.64E-01
	84.21	6.40	2.51E-01		-5.50E-02	1.17E-01
PA-233	311.98	38.60	6.05E-02	6.05E-02	-1.33E-02	2.75E-02
PA-234	131.20	20.40	7.68E-02	7.68E-02	1.05E-03	3.56E-02
	733.99	8.80	4.28E-01		8.19E-02	1.89E-01
	946.00	12.00	3.42E-01		3.28E-02	1.48E-01
PA-234M	1001.03	0.92	3.49E+00	3.49E+00	-1.11E+00	1.43E+00
TH-234	63.29	3.80	6.10E-01	6.10E-01	8.30E-02	2.89E-01
U-235	143.76	10.50	1.55E-01	1.55E-01	-5.73E-02	7.16E-02
	163.35	4.70	3.75E-01		1.30E-01	1.74E-01
	205.31	4.70	4.77E-01		-7.10E-03	2.23E-01
NP-237	86.50	12.60	1.29E-01	1.29E-01	-4.35E-02	6.03E-02
NP-239	106.10	22.70	6.64E-02	6.64E-02	-6.82E-03	3.08E-02
	228.18	10.70	2.00E-01		-7.77E-02	9.22E-02
	277.60	14.10	1.59E-01		8.40E-02	7.27E-02
AM-241	59.54	35.90	5.30E-02	5.30E-02	-5.03E-02	2.48E-02
AM-243	74.67	66.00	2.85E-02	2.85E-02	-2.00E-03	1.34E-02
CM-243	209.75	3.29	6.88E-01	1.59E-01	2.05E-01	3.20E-01
	228.14	10.60	2.00E-01		-7.79E-02	9.25E-02
	277.60	14.00	1.59E-01		8.40E-02	7.28E-02

- + = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = MDA value not calculated
 @ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date

Comment

User

: 00205

Analysis Report for 1606013-02
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: 3611

Channel	1	2	3	4	5	6	7	8	9
1:	0	0	0	0	0	0	0	0	0
9:	1	117	111	55	55	61	45	51	
17:	45	24	31	30	27	45	42	27	
25:	27	27	21	21	19	17	17	12	
33:	10	14	12	11	18	14	9	13	
41:	13	14	14	15	16	21	46	19	
49:	5	7	18	11	13	14	14	4	
57:	12	4	10	22	23	8	29	48	
65:	15	13	20	14	5	12	12	14	
73:	11	6	30	21	20	32	14	12	
81:	19	15	14	17	8	13	18	12	
89:	18	19	16	13	60	44	14	15	
97:	5	13	16	7	10	6	11	9	
105:	11	13	11	12	13	16	10	13	
113:	14	12	13	12	12	16	8	10	
121:	12	15	11	8	9	8	13	8	
129:	7	22	7	11	6	11	10	11	
137:	14	10	14	14	14	9	12	13	
145:	8	10	13	12	14	10	11	7	
153:	7	12	13	7	8	2	11	4	
161:	5	5	11	14	11	12	10	12	
169:	8	13	8	10	6	12	10	12	
177:	6	10	11	8	8	7	7	13	
185:	12	30	20	9	12	7	14	13	
193:	8	6	13	8	11	6	8	17	
201:	2	6	12	9	8	6	12	11	
209:	10	8	5	11	6	8	7	12	
217:	7	8	8	8	6	10	11	6	
225:	10	4	7	9	6	5	7	8	
233:	10	10	6	5	12	12	21	11	
241:	8	14	13	7	7	3	7	5	
249:	6	3	7	6	7	12	10	7	
257:	5	4	9	3	4	6	6	6	
265:	4	4	4	4	8	10	5	7	
273:	2	3	6	5	6	2	7	7	
281:	5	3	4	4	9	4	4	2	
289:	10	6	2	12	7	11	2	7	
297:	8	3	5	6	12	5	9	7	
305:	5	6	4	7	6	2	9	6	
313:	1	5	5	8	4	3	3	2	
321:	4	8	6	6	3	9	7	3	
329:	8	6	3	7	3	4	5	7	
337:	6	5	10	3	6	5	9	7	
345:	6	6	9	2	2	8	7	8	
353:	11	4	9	5	2	6	4	3	
361:	5	2	6	7	6	3	5	5	

369: 3 4 2 3 1 5 5 11

Sample Title: BLANK

Channel	1	2	3	4	5	6	7	8	9
377:	6	3	1	5	2	2	4	1	
385:	2	1	3	6	4	4	3	6	
393:	6	4	4	4	2	3	2	7	
401:	5	1	2	1	2	3	4	3	
409:	4	6	5	3	8	2	1	6	
417:	0	4	2	5	4	5	1	5	
425:	2	1	0	3	10	2	2	5	
433:	2	5	3	2	3	3	5	7	
441:	3	4	5	2	4	5	1	0	
449:	1	2	5	4	1	0	4	6	
457:	5	2	5	5	2	2	3	0	
465:	3	3	2	8	7	4	4	3	
473:	4	3	1	3	3	1	3	2	
481:	1	3	2	2	6	3	0	3	
489:	4	5	2	1	2	4	3	2	
497:	4	3	1	3	3	0	1	4	
505:	3	4	3	4	7	9	22	24	
513:	7	3	5	2	0	1	6	2	
521:	4	3	3	5	5	0	2	4	
529:	1	3	4	2	3	5	3	6	
537:	3	1	3	1	4	0	3	3	
545:	0	3	4	3	3	4	2	1	
553:	5	1	4	2	1	2	11	3	
561:	2	1	3	5	5	5	4	5	
569:	2	4	2	5	0	2	2	2	
577:	3	4	1	1	4	5	12	7	
585:	2	2	3	2	3	2	2	3	
593:	2	3	7	1	4	6	3	7	
601:	4	3	6	3	5	7	1	2	
609:	7	8	3	3	2	4	3	2	
617:	3	3	4	1	3	3	0	1	
625:	3	2	2	2	4	2	3	2	
633:	3	1	1	2	3	3	1	2	
641:	4	1	2	2	4	4	4	1	
649:	1	1	1	2	2	2	1	0	
657:	1	2	2	1	3	6	4	0	
665:	2	2	5	1	2	5	3	3	
673:	3	0	2	2	2	2	2	3	
681:	3	2	3	1	1	4	2	1	
689:	0	1	3	4	1	4	2	6	
697:	3	0	4	1	3	0	0	2	
705:	5	1	2	2	1	3	7	1	
713:	4	1	2	2	4	2	2	2	
721:	0	5	3	6	1	3	1	5	
729:	2	1	4	1	3	3	3	3	
737:	2	4	1	2	1	2	1	2	
745:	5	2	1	3	1	2	2	3	
753:	0	0	1	3	1	3	3	1	
761:	1	4	2	2	0	1	3	4	
769:	3	2	0	2	1	4	0	1	
777:	1	1	1	3	2	1	1	0	
785:	1	1	0	0	0	1	0	0	
793:	3	2	2	1	4	2	4	2	

801: 1 5 5 4 1 2 1 2

Sample Title: BLANK

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

1233: 1 0 1 0 0 2 1 1

Sample Title: BLANK

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

1665: 1 0 0 1 0 1 1 0

Sample Title: BLANK

Channel	1	2	3	4	5	6	7	8
1673:	0	1	0	0	2	2	0	0
1681:	0	1	0	0	1	0	1	0
1689:	1	0	1	0	0	0	0	0
1697:	1	2	0	0	0	1	0	0
1705:	0	0	0	0	1	0	0	0
1713:	0	0	1	0	2	2	0	0
1721:	2	0	1	0	2	0	0	1
1729:	3	0	0	1	1	1	1	0
1737:	1	0	0	0	0	0	1	0
1745:	0	1	0	0	2	0	0	0
1753:	0	2	0	0	0	0	1	0
1761:	1	1	1	3	2	0	0	1
1769:	0	0	0	0	0	0	0	0
1777:	1	0	0	0	0	0	0	0
1785:	0	1	0	0	1	1	0	0
1793:	0	1	0	0	0	1	0	0
1801:	1	0	1	0	0	0	1	0
1809:	0	1	1	0	1	0	1	2
1817:	0	0	0	0	0	1	0	1
1825:	0	1	1	0	1	0	0	0
1833:	0	0	1	1	0	2	0	0
1841:	0	0	2	1	0	2	1	1
1849:	0	1	0	0	0	0	0	1
1857:	2	0	1	0	1	0	2	0
1865:	0	0	0	0	2	0	1	0
1873:	0	0	2	1	1	1	0	2
1881:	2	0	2	0	0	0	1	1
1889:	1	0	0	0	0	0	0	0
1897:	1	0	0	0	1	0	0	0
1905:	1	0	0	0	0	1	1	0
1913:	1	2	2	2	0	0	1	0
1921:	1	1	0	0	0	0	0	0
1929:	0	0	0	0	2	0	0	1
1937:	0	0	0	1	0	1	0	0
1945:	0	0	0	1	1	1	2	0
1953:	0	1	2	0	0	0	0	0
1961:	0	0	1	1	1	0	0	1
1969:	0	0	0	0	1	0	0	1
1977:	0	0	0	1	0	0	0	0
1985:	0	1	0	1	0	0	1	0
1993:	0	2	0	1	0	0	0	0
2001:	1	0	0	1	0	0	1	1
2009:	1	0	0	0	0	0	0	0
2017:	0	0	0	1	0	0	0	0
2025:	1	1	0	0	0	0	0	0
2033:	0	0	0	0	0	0	1	0
2041:	0	1	1	1	0	0	0	0
2049:	0	0	0	0	0	0	0	0
2057:	0	1	0	0	0	0	0	1
2065:	1	0	0	1	0	0	0	1
2073:	1	0	0	0	0	0	0	0
2081:	1	2	1	0	0	1	0	0
2089:	0	0	0	0	0	1	1	0

2097: 0 0 0 0 0 0 0 0 1

Sample Title: BLANK

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

2529: 0 0 0 0 0 1 1 0

Sample Title: BLANK

Channel	1	2	3	4	5	6	7	8
2537:	0	1	0	0	0	0	0	0
2545:	0	0	0	0	1	0	0	0
2553:	0	0	1	1	0	0	0	0
2561:	0	1	0	0	0	0	0	0
2569:	0	0	0	0	0	0	1	0
2577:	0	1	0	0	0	0	0	0
2585:	0	0	1	0	0	0	1	0
2593:	0	0	0	0	1	0	1	0
2601:	0	1	0	0	0	1	0	0
2609:	0	0	0	0	0	1	0	0
2617:	0	1	0	1	1	0	0	0
2625:	1	0	0	0	0	0	0	0
2633:	0	0	0	0	0	0	0	0
2641:	1	2	0	0	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	1	0	0	0	1
2665:	0	0	0	0	0	0	0	0
2673:	0	0	0	2	1	0	0	0
2681:	0	0	0	0	0	0	0	0
2689:	0	0	0	1	0	0	0	0
2697:	0	1	0	0	1	0	0	0
2705:	0	1	0	0	0	0	0	0
2713:	0	0	0	0	0	0	0	0
2721:	0	0	0	0	0	0	1	1
2729:	0	2	0	0	1	1	0	1
2737:	0	0	0	1	0	0	0	0
2745:	0	0	0	0	0	0	0	0
2753:	0	1	0	0	0	0	0	0
2761:	0	1	0	1	0	0	0	0
2769:	0	1	0	0	0	0	0	0
2777:	0	0	0	1	0	0	0	0
2785:	1	0	0	0	0	0	0	0
2793:	0	1	0	0	0	0	0	0
2801:	0	0	0	0	0	1	0	0
2809:	1	0	0	0	0	0	0	0
2817:	1	0	0	1	0	1	0	0
2825:	0	0	0	0	0	0	0	1
2833:	0	0	0	0	0	0	1	0
2841:	0	0	0	0	0	1	0	0
2849:	1	0	0	0	0	1	0	0
2857:	0	0	0	0	0	0	1	1
2865:	0	0	0	0	0	0	0	0
2873:	0	0	0	2	0	0	0	0
2881:	1	1	0	0	0	1	0	0
2889:	1	1	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	1	0	0	0	0	0
2921:	0	0	0	0	2	2	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	0	1	0	0	0	0	0
2945:	0	0	0	0	1	1	0	0
2953:	0	0	0	0	0	0	0	0

2961: 1 0 0 0 0 0 0 0 0

Sample Title: BLANK

Channel	1	2	3	4	5	6	7	8	9
2969:	1	1	0	0	0	0	0	0	0
2977:	1	1	1	0	0	0	0	1	0
2985:	0	0	0	0	0	0	0	0	0
2993:	0	0	1	0	0	0	0	0	0
3001:	1	0	0	0	0	0	0	1	1
3009:	1	0	0	0	0	0	0	0	0
3017:	0	0	0	0	0	0	0	0	0
3025:	0	0	0	0	0	0	1	0	1
3033:	0	0	0	0	0	1	0	1	0
3041:	1	0	0	0	0	0	0	0	0
3049:	0	0	0	0	0	0	1	1	0
3057:	1	0	0	1	1	0	0	0	0
3065:	0	0	0	0	0	0	0	1	0
3073:	1	0	0	1	0	0	0	1	0
3081:	0	1	0	1	0	0	0	0	0
3089:	0	0	0	1	0	0	0	0	0
3097:	0	1	1	0	0	0	0	1	0
3105:	1	0	0	0	0	0	0	0	0
3113:	0	0	1	0	0	0	0	0	1
3121:	0	0	0	0	0	0	0	0	0
3129:	0	0	0	1	0	0	2	0	0
3137:	0	0	0	0	0	0	0	0	0
3145:	0	0	0	0	0	0	0	0	0
3153:	0	0	0	0	0	1	0	0	0
3161:	0	0	0	0	0	1	0	0	0
3169:	0	0	1	0	0	0	0	0	2
3177:	1	0	0	1	0	0	0	1	0
3185:	0	0	0	0	0	0	0	0	0
3193:	0	0	0	0	0	1	0	0	0
3201:	0	0	0	1	0	0	0	0	0
3209:	0	0	0	0	0	0	0	0	0
3217:	0	1	0	0	0	0	0	0	1
3225:	0	0	1	0	0	0	0	0	0
3233:	1	0	0	0	0	0	1	0	0
3241:	0	0	0	0	0	0	0	0	0
3249:	0	0	0	0	0	0	0	0	0
3257:	0	0	0	0	0	0	0	0	0
3265:	0	1	0	1	0	0	0	0	0
3273:	0	0	0	0	0	0	0	0	1
3281:	0	1	0	0	0	0	0	0	0
3289:	0	0	0	0	0	0	0	0	1
3297:	0	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0	0
3313:	0	0	1	0	0	1	0	0	0
3321:	0	1	0	0	0	0	0	0	0
3329:	0	0	0	0	0	1	0	0	0
3337:	0	0	0	0	0	0	1	0	0
3345:	0	0	0	0	0	1	0	0	0
3353:	0	0	0	0	0	0	1	0	0
3361:	0	0	1	0	0	0	0	0	0
3369:	0	0	0	0	0	0	0	0	0
3377:	0	1	0	0	0	1	0	0	0
3385:	0	0	0	0	0	0	0	0	0

3393: 0 0 0 1 0 0 1 0

Sample Title: BLANK

Channel	1	2	3	4	5	6	7	8
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	1	0	0	0	0	1
3425:	1	0	0	0	0	0	0	0
3433:	0	0	1	0	0	0	0	1
3441:	0	0	1	1	0	0	0	0
3449:	0	0	0	0	0	0	1	0
3457:	0	0	0	0	0	0	1	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	1	1	0	0
3481:	1	0	1	0	0	0	0	2
3489:	0	0	1	0	0	1	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	1	1	0	0	0	0	0
3513:	0	1	0	0	0	0	0	1
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	0	1	1	0	0
3545:	0	0	0	0	0	0	0	1
3553:	1	0	0	0	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	1	0
3585:	0	0	1	0	0	0	0	0
3593:	0	0	1	0	0	0	0	1
3601:	0	0	0	0	0	0	0	0
3609:	1	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	1	0	0	1	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	0	0	1	0	1
3649:	1	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	1	0	0	0	0	0	1
3673:	0	0	0	0	0	0	0	1
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	1	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	1	0	1	0	0	0	0
3721:	1	1	0	0	1	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	1	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	1	0
3769:	0	0	0	0	1	0	0	0
3777:	0	0	0	0	0	1	0	0
3785:	0	1	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	1	0	0	0	0	1	0	0

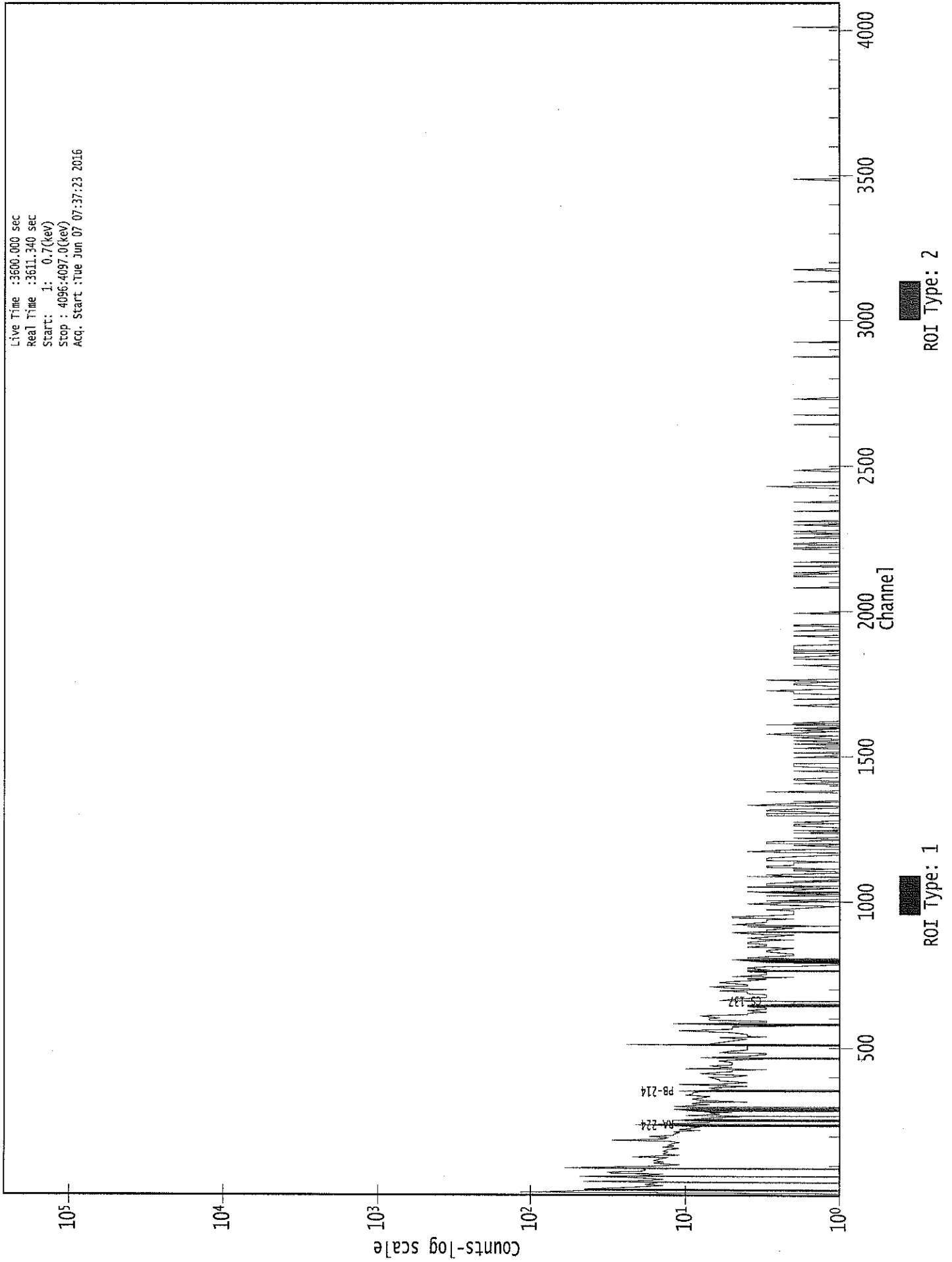
3825: 0 0 0 0 0 0 0 0 0

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	1	0	0	0	1	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	1
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	1	0	0	0	0
3897:	0	0	0	0	1	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	1	0	0
3921:	0	0	1	0	0	0	1	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	1	0	0	0	0	0	0	0
3953:	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	1	0	0	0	0	1	0
3993:	0	1	1	0	1	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	2	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	1	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	1	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	1
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	1	0	0	0	0
4089:	0	0	0	0	0	0	0	0

0000038353.CNF

Live Time :3600.000 sec
Real Time :3611.340 sec
Start: 1: 0.7(keV)
Stop : 4096.4097.0(keV)
Acq. Start :Tue Jun 07 07:37:23 2016



Analysis Report for 1606013-03
CP-5026-S 1 0-1 5

✓
6/7/16

GAMMA SPECTRUM ANALYSIS

Sample Identification : 1606013-03
Sample Description : CP-5026-S 1 0-1 5
Sample Type : SOIL

Sample Size : 4.366E+02 grams
Facility : Countroom

Sample Taken On : 6/2/2016 7:36:10AM
Acquisition Started : 6/7/2016 7:37:14AM

Procedure : GAS-1402 pCi
Operator : Administrator
Detector Name : GE2
Geometry : GAS-1402
Live Time : 3600.0 seconds
Real Time : 3624.8 seconds

Dead Time : 0.68 %

Peak Locate Threshold : 2.50
Peak Locate Range (in channels) : 1 - 4096
Peak Area Range (in channels) : 6 - 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 : 38352

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
6/7/16

Analysis Report for 1606013-03
CP-5026-S 1 0-1 5

PEAK LOCATE REPORT

Peak Locate Performed on : 6/7/2016 8:37:52AM
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	17.15	17.27	0.0000	0.00
2	25.26	25.38	0.0000	0.00
3	32.20	32.31	0.0000	0.00
4	52.87	52.97	0.0000	0.00
5	63.16	63.25	0.0000	0.00
6	72.51	72.60	0.0000	0.00
7	83.63	83.72	0.0000	0.00
8	89.92	90.00	0.0000	0.00
9	94.92	95.00	0.0000	0.00
10	98.42	98.49	0.0000	0.00
11	108.93	109.00	0.0000	0.00
12	112.59	112.66	0.0000	0.00
13	131.37	131.42	0.0000	0.00
14	143.77	143.82	0.0000	0.00
15	163.29	163.33	0.0000	0.00
16	185.73	185.76	0.0000	0.00
17	202.01	202.03	0.0000	0.00
18	205.17	205.19	0.0000	0.00
19	226.50	226.50	0.0000	0.00
20	239.46	239.45	0.0000	0.00
21	258.28	258.27	0.0000	0.00
22	295.17	295.14	0.0000	0.00
23	338.81	338.75	0.0000	0.00
24	351.95	351.89	0.0000	0.00
25	362.16	362.09	0.0000	0.00
26	387.97	387.88	0.0000	0.00
27	569.56	569.39	0.0000	0.00
28	609.55	609.36	0.0000	0.00
29	692.35	692.12	0.0000	0.00
30	699.30	699.07	0.0000	0.00
31	702.06	701.82	0.0000	0.00
32	740.27	740.02	0.0000	0.00
33	743.21	742.95	0.0000	0.00
34	766.73	766.46	0.0000	0.00
35	786.80	786.52	0.0000	0.00
36	806.45	806.17	0.0000	0.00
37	846.02	845.72	0.0000	0.00
38	853.16	852.86	0.0000	0.00
39	866.02	865.71	0.0000	0.00
40	882.41	882.10	0.0000	0.00
41	911.74	911.42	0.0000	0.00
42	926.62	926.29	0.0000	0.00

Analysis Report for 1606013-03
 CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	946.99	946.65	0.0000	0.00
44	1001.59	1001.23	0.0000	0.00
45	1062.70	1062.31	0.0000	0.00
46	1121.80	1121.40	0.0000	0.00
47	1194.83	1194.40	0.0000	0.00
48	1209.04	1208.60	0.0000	0.00
49	1238.21	1237.76	0.0000	0.00
50	1377.48	1376.98	0.0000	0.00
51	1394.55	1394.05	0.0000	0.00
52	1435.12	1434.60	0.0000	0.00
53	1461.52	1460.99	0.0000	0.00
54	1511.01	1510.47	0.0000	0.00
55	1516.67	1516.13	0.0000	0.00
56	1530.95	1530.41	0.0000	0.00
57	1555.54	1554.99	0.0000	0.00
58	1717.65	1717.05	0.0000	0.00
59	1729.69	1729.10	0.0000	0.00
60	1738.74	1738.14	0.0000	0.00
61	1744.35	1743.75	0.0000	0.00
62	1761.36	1760.75	0.0000	0.00
63	1765.85	1765.25	0.0000	0.00
64	1810.10	1809.49	0.0000	0.00
65	1821.73	1821.11	0.0000	0.00
66	1832.04	1831.42	0.0000	0.00
67	1848.38	1847.75	0.0000	0.00
68	1867.92	1867.30	0.0000	0.00
69	1876.35	1875.71	0.0000	0.00
70	1894.85	1894.22	0.0000	0.00
71	1913.10	1912.46	0.0000	0.00
72	1939.01	1938.36	0.0000	0.00
73	1969.64	1968.99	0.0000	0.00
74	2105.11	2104.43	0.0000	0.00
75	2204.59	2203.90	0.0000	0.00
76	2367.48	2366.76	0.0000	0.00
77	2615.49	2614.75	0.0000	0.00

? = Adjacent peak noted

Errors quoted at 2.000sigma

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/7/2016 8:37:52AM

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	17.15	15 -	21	17.27	3.12E+03	366.35	2.20E+04	1.73
2	25.26	23 -	28	25.38	7.04E+02	287.11	1.58E+04	3.36
3	32.20	30 -	35	32.31	5.92E+02	295.89	1.72E+04	1.14
4	52.87	52 -	55	52.97	7.98E+02	388.08	3.72E+04	1.51
5	63.16	59 -	65	63.25	7.45E+04	817.25	6.78E+04	1.50
6	72.51	69 -	78	72.60	3.64E+03	879.10	1.08E+05	6.36
7	83.63	81 -	86	83.72	3.37E+03	589.29	6.67E+04	1.65
M 8	89.92	89 -	97	90.00	1.10E+03	167.31	1.12E+04	1.01
m 9	94.92	89 -	97	95.00	2.02E+03	646.60	3.26E+04	1.03
10	98.42	97 -	102	98.49	1.01E+04	443.47	3.01E+04	1.82
M 11	108.93	108 -	118	109.00	6.47E+02	106.11	4.41E+03	1.06
m 12	112.59	108 -	118	112.66	9.86E+03	405.00	2.24E+04	1.89
13	131.37	129 -	134	131.42	7.11E+02	291.34	1.63E+04	1.59
14	143.77	140 -	147	143.82	3.28E+03	358.12	1.91E+04	1.19
15	163.29	160 -	166	163.33	1.37E+03	288.04	1.40E+04	1.50
16	185.73	182 -	189	185.76	1.54E+04	367.25	1.21E+04	1.30
M 17	202.01	200 -	207	202.03	3.36E+02	143.79	4.93E+03	1.43
m 18	205.17	200 -	207	205.19	1.45E+03	156.95	4.72E+03	1.40
19	226.50	224 -	229	226.50	3.62E+02	174.61	5.79E+03	1.96
20	239.46	235 -	243	239.45	6.70E+02	231.54	7.79E+03	4.31
21	258.28	255 -	261	258.27	1.24E+03	185.40	5.33E+03	1.25
22	295.17	292 -	298	295.14	2.65E+02	159.77	4.44E+03	1.48
23	338.81	337 -	341	338.75	1.10E+02	106.29	2.40E+03	2.94
24	351.95	349 -	355	351.89	3.68E+02	142.81	3.44E+03	1.12
25	362.16	360 -	364	362.09	9.71E+01	100.71	2.16E+03	2.53
26	387.97	385 -	390	387.88	1.27E+02	113.87	2.48E+03	1.96
27	569.56	566 -	572	569.39	1.34E+02	110.74	2.13E+03	1.70
28	609.55	606 -	613	609.36	3.75E+02	118.73	2.11E+03	1.73
29	692.35	688 -	696	692.12	1.91E+02	108.45	1.69E+03	5.62
M 30	699.30	697 -	704	699.07	9.15E+01	70.01	9.87E+02	1.70
m 31	702.06	697 -	704	701.82	1.29E+02	82.34	1.25E+03	1.88
M 32	740.27	737 -	746	740.02	1.26E+02	105.14	1.50E+03	2.20
m 33	743.21	737 -	746	742.95	7.22E+02	88.94	1.06E+03	1.68
34	766.73	761 -	771	766.46	2.52E+03	167.75	2.41E+03	1.98
35	786.80	783 -	790	786.52	3.57E+02	111.73	1.83E+03	1.88
36	806.45	802 -	810	806.17	1.69E+02	98.78	1.39E+03	1.85
37	846.02	843 -	849	845.72	6.90E+01	73.23	9.26E+02	3.13
38	853.16	849 -	856	852.86	7.64E+01	79.82	1.00E+03	1.19
39	866.02	861 -	869	865.71	1.09E+02	84.39	1.01E+03	3.93
40	882.41	878 -	885	882.10	2.83E+02	78.00	8.19E+02	4.36

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)	
41	911.74	908 -	914	911.42	7.14E+01	62.86	6.63E+02	1.92	
42	926.62	923 -	930	926.29	1.26E+02	74.43	8.14E+02	2.93	
43	946.99	943 -	951	946.65	1.86E+02	78.42	8.30E+02	1.73	
44	1001.59	996 -	1006	1001.23	5.42E+03	168.45	8.74E+02	1.81	
45	1062.70	1059 -	1065	1062.31	4.81E+01	47.32	3.68E+02	1.32	
46	1121.80	1117 -	1125	1121.40	8.10E+01	59.29	4.92E+02	1.68	
47	1194.83	1189 -	1200	1194.40	1.20E+02	61.97	4.20E+02	2.40	
48	1209.04	1205 -	1212	1208.60	4.99E+01	41.13	2.50E+02	3.28	
49	1238.21	1233 -	1241	1237.76	6.84E+01	43.66	2.49E+02	1.77	
50	1377.48	1373 -	1380	1376.98	3.31E+01	30.40	1.32E+02	3.05	
51	1394.55	1390 -	1399	1394.05	3.40E+01	38.29	1.90E+02	4.20	
52	1435.12	1431 -	1438	1434.60	5.88E+01	28.07	9.24E+01	1.87	
53	1461.52	1456 -	1466	1460.99	3.08E+02	46.64	1.25E+02	1.94	
M	54	1511.01	1506 -	1519	1510.47	9.04E+01	27.64	6.81E+01	2.66
m	55	1516.67	1506 -	1519	1516.13	1.43E+01	22.00	5.19E+01	2.58
	56	1530.95	1521 -	1540	1530.41	7.40E+01	41.67	1.20E+02	14.40
	57	1555.54	1550 -	1562	1554.99	5.37E+01	39.06	1.49E+02	2.40
	58	1717.65	1715 -	1719	1717.05	6.33E+00	6.96	5.33E+00	2.73
	59	1729.69	1723 -	1733	1729.10	1.82E+01	16.71	2.75E+01	1.89
M	60	1738.74	1734 -	1747	1738.14	8.76E+01	20.59	1.24E+01	2.79
m	61	1744.35	1734 -	1747	1743.75	8.76E+00	14.99	9.53E+00	3.62
M	62	1761.36	1758 -	1770	1760.75	1.31E+01	12.17	9.48E+00	2.70
m	63	1765.85	1758 -	1770	1765.25	6.76E+01	21.73	3.22E+01	2.64
	64	1810.10	1806 -	1812	1809.49	1.87E+01	10.61	6.64E+00	2.06
	65	1821.73	1817 -	1825	1821.11	8.57E+00	10.99	1.29E+01	2.93
	66	1832.04	1826 -	1836	1831.42	7.40E+01	21.47	2.19E+01	2.09
	67	1848.38	1845 -	1850	1847.75	8.00E+00	5.66	0.00E+00	1.96
	68	1867.92	1863 -	1873	1867.30	2.88E+01	22.28	5.45E+01	2.41
	69	1876.35	1873 -	1879	1875.71	2.95E+01	15.28	2.10E+01	3.71
	70	1894.85	1890 -	1899	1894.22	1.65E+01	11.75	1.09E+01	3.78
	71	1913.10	1907 -	1917	1912.46	2.83E+01	15.32	1.54E+01	2.05
	72	1939.01	1933 -	1945	1938.36	2.40E+01	16.21	2.01E+01	3.80
	73	1969.64	1962 -	1972	1968.99	9.00E+00	10.98	1.20E+01	2.68
	74	2105.11	2101 -	2107	2104.43	6.60E+00	8.03	6.80E+00	1.08
	75	2204.59	2200 -	2208	2203.90	2.05E+01	10.59	5.00E+00	5.44
	76	2367.48	2364 -	2369	2366.76	6.75E+00	6.40	2.50E+00	1.91
	77	2615.49	2610 -	2618	2614.75	4.40E+01	13.27	0.00E+00	1.48

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/7/2016 8:37:52AM

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	17.15	15 -	21	3.12E+03	366.35	2.20E+04	2.87E+02
2	25.26	23 -	28	7.04E+02	287.11	1.58E+04	2.32E+02
3	32.20	30 -	35	5.92E+02	295.89	1.72E+04	2.40E+02
4	52.87	52 -	55	7.98E+02	388.08	3.72E+04	3.16E+02
5	63.16	59 -	65	7.45E+04	817.25	6.78E+04	5.00E+02
6	72.51	69 -	78	3.64E+03	879.10	1.08E+05	7.16E+02
7	83.63	81 -	86	3.37E+03	589.29	6.67E+04	4.75E+02
M 8	89.92	89 -	97	1.10E+03	167.31	1.12E+04	1.74E+02
m 9	94.92	89 -	97	2.02E+03	646.60	3.26E+04	2.97E+02
10	98.42	97 -	102	1.01E+04	443.47	3.01E+04	3.25E+02
M 11	108.93	108 -	118	6.47E+02	106.11	4.41E+03	1.09E+02
m 12	112.59	108 -	118	9.86E+03	405.00	2.24E+04	2.46E+02
13	131.37	129 -	134	7.11E+02	291.34	1.63E+04	2.35E+02
14	143.77	140 -	147	3.28E+03	358.12	1.91E+04	2.79E+02
15	163.29	160 -	166	1.37E+03	288.04	1.40E+04	2.29E+02
16	185.73	182 -	189	1.54E+04	367.25	1.21E+04	2.22E+02
M 17	202.01	200 -	207	3.36E+02	143.79	4.93E+03	1.15E+02
m 18	205.17	200 -	207	1.45E+03	156.95	4.72E+03	1.13E+02
19	226.50	224 -	229	3.62E+02	174.61	5.79E+03	1.40E+02
20	239.46	235 -	243	6.70E+02	231.54	7.79E+03	1.86E+02
21	258.28	255 -	261	1.24E+03	185.40	5.33E+03	1.41E+02
22	295.17	292 -	298	2.65E+02	159.77	4.44E+03	1.29E+02
23	338.81	337 -	341	1.10E+02	106.29	2.40E+03	8.57E+01
24	351.95	349 -	355	3.68E+02	142.81	3.44E+03	1.13E+02
25	362.16	360 -	364	9.71E+01	100.71	2.16E+03	8.12E+01
26	387.97	385 -	390	1.27E+02	113.87	2.48E+03	9.17E+01
27	569.56	566 -	572	1.34E+02	110.74	2.13E+03	8.90E+01
28	609.55	606 -	613	3.75E+02	118.73	2.11E+03	9.23E+01
29	692.35	688 -	696	1.91E+02	108.45	1.69E+03	8.62E+01
M 30	699.30	697 -	704	9.15E+01	70.01	9.87E+02	5.16E+01
m 31	702.06	697 -	704	1.29E+02	82.34	1.25E+03	5.80E+01
M 32	740.27	737 -	746	1.26E+02	105.14	1.50E+03	6.37E+01
m 33	743.21	737 -	746	7.22E+02	88.94	1.06E+03	5.36E+01
34	766.73	761 -	771	2.52E+03	167.75	2.41E+03	1.10E+02
35	786.80	783 -	790	3.57E+02	111.73	1.83E+03	8.64E+01
36	806.45	802 -	810	1.69E+02	98.78	1.39E+03	7.83E+01
37	846.02	843 -	849	6.90E+01	73.23	9.26E+02	5.86E+01
38	853.16	849 -	856	7.64E+01	79.82	1.00E+03	6.40E+01
39	866.02	861 -	869	1.09E+02	84.39	1.01E+03	6.72E+01
40	882.41	878 -	885	2.83E+02	78.00	8.19E+02	5.78E+01
41	911.74	908 -	914	7.14E+01	62.86	6.63E+02	4.98E+01

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level	
42	926.62	923 -	930	1.26E+02	74.43	8.14E+02	5.83E+01	
43	946.99	943 -	951	1.86E+02	78.42	8.30E+02	6.04E+01	
44	1001.59	996 -	1006	5.42E+03	168.45	8.74E+02	6.72E+01	
45	1062.70	1059 -	1065	4.81E+01	47.32	3.68E+02	3.72E+01	
46	1121.80	1117 -	1125	8.10E+01	59.29	4.92E+02	4.64E+01	
47	1194.83	1189 -	1200	1.20E+02	61.97	4.20E+02	4.76E+01	
48	1209.04	1205 -	1212	4.99E+01	41.13	2.50E+02	3.18E+01	
49	1238.21	1233 -	1241	6.84E+01	43.66	2.49E+02	3.32E+01	
50	1377.48	1373 -	1380	3.31E+01	30.40	1.32E+02	2.31E+01	
51	1394.55	1390 -	1399	3.40E+01	38.29	1.90E+02	3.00E+01	
52	1435.12	1431 -	1438	5.88E+01	28.07	9.24E+01	1.93E+01	
53	1461.52	1456 -	1466	3.08E+02	46.64	1.25E+02	2.53E+01	
M	54	1511.01	1506 -	1519	9.04E+01	27.64	6.81E+01	1.36E+01
m	55	1516.67	1506 -	1519	1.43E+01	22.00	5.19E+01	1.18E+01
	56	1530.95	1521 -	1540	7.40E+01	41.67	1.20E+02	3.12E+01
	57	1555.54	1550 -	1562	5.37E+01	39.06	1.49E+02	1.65E+01
	58	1717.65	1715 -	1719	6.33E+00	6.96	5.33E+00	3.96E+00
	59	1729.69	1723 -	1733	1.82E+01	16.71	2.75E+01	1.18E+01
M	60	1738.74	1734 -	1747	8.76E+01	20.59	1.24E+01	5.80E+00
m	61	1744.35	1734 -	1747	8.76E+00	14.99	9.53E+00	5.08E+00
M	62	1761.36	1758 -	1770	1.31E+01	12.17	9.48E+00	5.06E+00
m	63	1765.85	1758 -	1770	6.76E+01	21.73	3.22E+01	9.33E+00
	64	1810.10	1806 -	1812	1.87E+01	10.61	6.64E+00	5.05E+00
	65	1821.73	1817 -	1825	8.57E+00	10.99	1.29E+01	7.64E+00
	66	1832.04	1826 -	1836	7.40E+01	21.47	2.19E+01	1.06E+01
	67	1848.38	1845 -	1850	8.00E+00	5.66	0.00E+00	0.00E+00
	68	1867.92	1863 -	1873	2.88E+01	22.28	5.45E+01	1.60E+01
	69	1876.35	1873 -	1879	2.95E+01	15.28	2.10E+01	8.83E+00
	70	1894.85	1890 -	1899	1.65E+01	11.75	1.09E+01	6.97E+00
	71	1913.10	1907 -	1917	2.83E+01	15.32	1.54E+01	9.06E+00
	72	1939.01	1933 -	1945	2.40E+01	16.21	2.01E+01	1.06E+01
	73	1969.64	1962 -	1972	9.00E+00	10.98	1.20E+01	7.56E+00
	74	2105.11	2101 -	2107	6.60E+00	8.03	6.80E+00	5.07E+00
	75	2204.59	2200 -	2208	2.05E+01	10.59	5.00E+00	4.52E+00
	76	2367.48	2364 -	2369	6.75E+00	6.40	2.50E+00	3.08E+00
	77	2615.49	2610 -	2618	4.40E+01	13.27	0.00E+00	0.00E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

PEAK WITH NID REPORT

Peak Analysis Performed on : 6/7/2016 8:37:52AM

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	17.15	15 -	21	17.27	3.12E+03	366.35	2.20E+04	NB-93M
2	25.26	23 -	28	25.38	7.04E+02	287.11	1.58E+04	TH-231
3	32.20	30 -	35	32.31	5.92E+02	295.89	1.72E+04	.....
4	52.87	52 -	55	52.97	7.98E+02	388.08	3.72E+04	.....
5	63.16	59 -	65	63.25	7.45E+04	817.25	6.78E+04	TH-234 TH-230
6	72.51	69 -	78	72.60	3.64E+03	879.10	1.08E+05	PM-145
7	83.63	81 -	86	83.72	3.37E+03	589.29	6.67E+04	TH-231
M 8	89.92	89 -	97	90.00	1.10E+03	167.31	1.12E+04	.....
m 9	94.92	89 -	97	95.00	2.02E+03	646.60	3.26E+04	.....
10	98.42	97 -	102	98.49	1.01E+04	443.47	3.01E+04	GD-153
M 11	108.93	108 -	118	109.00	6.47E+02	106.11	4.41E+03	.....
m 12	112.59	108 -	118	112.66	9.86E+03	405.00	2.24E+04	.....
13	131.37	129 -	134	131.42	7.11E+02	291.34	1.63E+04	PA-234
14	143.77	140 -	147	143.82	3.28E+03	358.12	1.91E+04	U-235
15	163.29	160 -	166	163.33	1.37E+03	288.04	1.40E+04	U-235 CS-136 BA-140
16	185.73	182 -	189	185.76	1.54E+04	367.25	1.21E+04	RA-226
M 17	202.01	200 -	207	202.03	3.36E+02	143.79	4.93E+03	LU-176
m 18	205.17	200 -	207	205.19	1.45E+03	156.95	4.72E+03	U-235
19	226.50	224 -	229	226.50	3.62E+02	174.61	5.79E+03	.....
20	239.46	235 -	243	239.45	6.70E+02	231.54	7.79E+03	PB-212
21	258.28	255 -	261	258.27	1.24E+03	185.40	5.33E+03	.....
22	295.17	292 -	298	295.14	2.65E+02	159.77	4.44E+03	PB-214
23	338.81	337 -	341	338.75	1.10E+02	106.29	2.40E+03	AC-228
24	351.95	349 -	355	351.89	3.68E+02	142.81	3.44E+03	PB-214
25	362.16	360 -	364	362.09	9.71E+01	100.71	2.16E+03	.....
26	387.97	385 -	390	387.88	1.27E+02	113.87	2.48E+03	.....
27	569.56	566 -	572	569.39	1.34E+02	110.74	2.13E+03	BI-207 CS-134
28	609.55	606 -	613	609.36	3.75E+02	118.73	2.11E+03	BI-214
29	692.35	688 -	696	692.12	1.91E+02	108.45	1.69E+03	.....
M 30	699.30	697 -	704	699.07	9.15E+01	70.01	9.87E+02	.....
m 31	702.06	697 -	704	701.82	1.29E+02	82.34	1.25E+03	NB-94
M 32	740.27	737 -	746	740.02	1.26E+02	105.14	1.50E+03	MO-99
m 33	743.21	737 -	746	742.95	7.22E+02	88.94	1.06E+03	.....
34	766.73	761 -	771	766.46	2.52E+03	167.75	2.41E+03	NB-95
35	786.80	783 -	790	786.52	3.57E+02	111.73	1.83E+03	.....
36	806.45	802 -	810	806.17	1.69E+02	98.78	1.39E+03	.....
37	846.02	843 -	849	845.72	6.90E+01	73.23	9.26E+02	CO-56

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
38	853.16	849 -	856	852.86	7.64E+01	79.82	1.00E+03	.....
39	866.02	861 -	869	865.71	1.09E+02	84.39	1.01E+03	.....
40	882.41	878 -	885	882.10	2.83E+02	78.00	8.19E+02	.....
41	911.74	908 -	914	911.42	7.14E+01	62.86	6.63E+02	LU-172 AC-228
42	926.62	923 -	930	926.29	1.26E+02	74.43	8.14E+02	.....
43	946.99	943 -	951	946.65	1.86E+02	78.42	8.30E+02	PA-234
44	1001.59	996 -	1006	1001.23	5.42E+03	168.45	8.74E+02	PA-234M
45	1062.70	1059 -	1065	1062.31	4.81E+01	47.32	3.68E+02	BI-207
46	1121.80	1117 -	1125	1121.40	8.10E+01	59.29	4.92E+02	TA-182
47	1194.83	1189 -	1200	1194.40	1.20E+02	61.97	4.20E+02	.....
48	1209.04	1205 -	1212	1208.60	4.99E+01	41.13	2.50E+02	.....
49	1238.21	1233 -	1241	1237.76	6.84E+01	43.66	2.49E+02	CO-56
50	1377.48	1373 -	1380	1376.98	3.31E+01	30.40	1.32E+02	.....
51	1394.55	1390 -	1399	1394.05	3.40E+01	38.29	1.90E+02	.....
52	1435.12	1431 -	1438	1434.60	5.88E+01	28.07	9.24E+01	LA-138
53	1461.52	1456 -	1466	1460.99	3.08E+02	46.64	1.25E+02	K-40
M 54	1511.01	1506 -	1519	1510.47	9.04E+01	27.64	6.81E+01	.....
m 55	1516.67	1506 -	1519	1516.13	1.43E+01	22.00	5.19E+01	.....
56	1530.95	1521 -	1540	1530.41	7.40E+01	41.67	1.20E+02	.....
57	1555.54	1550 -	1562	1554.99	5.37E+01	39.06	1.49E+02	.....
58	1717.65	1715 -	1719	1717.05	6.33E+00	6.96	5.33E+00	.....
59	1729.69	1723 -	1733	1729.10	1.82E+01	16.71	2.75E+01	.....
M 60	1738.74	1734 -	1747	1738.14	8.76E+01	20.59	1.24E+01	.....
m 61	1744.35	1734 -	1747	1743.75	8.76E+00	14.99	9.53E+00	.....
M 62	1761.36	1758 -	1770	1760.75	1.31E+01	12.17	9.48E+00	.....
m 63	1765.85	1758 -	1770	1765.25	6.76E+01	21.73	3.22E+01	.....
64	1810.10	1806 -	1812	1809.49	1.87E+01	10.61	6.64E+00	.....
65	1821.73	1817 -	1825	1821.11	8.57E+00	10.99	1.29E+01	.....
66	1832.04	1826 -	1836	1831.42	7.40E+01	21.47	2.19E+01	.....
67	1848.38	1845 -	1850	1847.75	8.00E+00	5.66	0.00E+00	.....
68	1867.92	1863 -	1873	1867.30	2.88E+01	22.28	5.45E+01	.....
69	1876.35	1873 -	1879	1875.71	2.95E+01	15.28	2.10E+01	.....
70	1894.85	1890 -	1899	1894.22	1.65E+01	11.75	1.09E+01	.....
71	1913.10	1907 -	1917	1912.46	2.83E+01	15.32	1.54E+01	.....
72	1939.01	1933 -	1945	1938.36	2.40E+01	16.21	2.01E+01	.....
73	1969.64	1962 -	1972	1968.99	9.00E+00	10.98	1.20E+01	.....
74	2105.11	2101 -	2107	2104.43	6.60E+00	8.03	6.80E+00	.....
75	2204.59	2200 -	2208	2203.90	2.05E+01	10.59	5.00E+00	BI-214
76	2367.48	2364 -	2369	2366.76	6.75E+00	6.40	2.50E+00	.....
77	2615.49	2610 -	2618	2614.75	4.40E+01	13.27	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

Analysis Report for 1606013-03

CP-5026-S 10-1 5

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 6/7/2016 8:37:52AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	17.15	3.12E+03	366.35	2.08E-04	1.66E-03
	2	25.26	7.04E+02	287.11	2.66E-03	1.66E-03
	3	32.20	5.92E+02	295.89	7.14E-03	1.66E-03
	4	52.87	7.98E+02	388.08	2.02E-02	1.66E-03
	5	63.16	7.45E+04	817.25	2.36E-02	1.74E-03
	6	72.51	3.64E+03	879.10	2.53E-02	1.94E-03
	7	83.63	3.37E+03	589.29	2.60E-02	2.18E-03
M	8	89.92	1.10E+03	167.31	2.60E-02	2.27E-03
m	9	94.92	2.02E+03	646.60	2.60E-02	2.27E-03
	10	98.42	1.01E+04	443.47	2.58E-02	2.27E-03
M	11	108.93	6.47E+02	106.11	2.53E-02	2.27E-03
m	12	112.59	9.86E+03	405.00	2.51E-02	2.27E-03
	13	131.37	7.11E+02	291.34	2.38E-02	2.30E-03
	14	143.77	3.28E+03	358.12	2.28E-02	2.35E-03
	15	163.29	1.37E+03	288.04	2.14E-02	2.43E-03
	16	185.73	1.54E+04	367.25	1.99E-02	2.40E-03
M	17	202.01	3.36E+02	143.79	1.89E-02	2.37E-03
m	18	205.17	1.45E+03	156.95	1.88E-02	2.37E-03
	19	226.50	3.62E+02	174.61	1.76E-02	2.33E-03
	20	239.46	6.70E+02	231.54	1.70E-02	2.31E-03
	21	258.28	1.24E+03	185.40	1.61E-02	2.28E-03
	22	295.17	2.65E+02	159.77	1.47E-02	2.21E-03
	23	338.81	1.10E+02	106.29	1.33E-02	2.14E-03
	24	351.95	3.68E+02	142.81	1.30E-02	2.12E-03
	25	362.16	9.71E+01	100.71	1.27E-02	2.10E-03
	26	387.97	1.27E+02	113.87	1.21E-02	2.06E-03
	27	569.56	1.34E+02	110.74	8.96E-03	1.13E-03
	28	609.55	3.75E+02	118.73	8.48E-03	9.21E-04
	29	692.35	1.91E+02	108.45	7.64E-03	6.91E-04
M	30	699.30	9.15E+01	70.01	7.58E-03	7.00E-04
m	31	702.06	1.29E+02	82.34	7.56E-03	7.04E-04
M	32	740.27	1.26E+02	105.14	7.23E-03	7.53E-04
m	33	743.21	7.22E+02	88.94	7.21E-03	7.57E-04
	34	766.73	2.52E+03	167.75	7.03E-03	7.87E-04
	35	786.80	3.57E+02	111.73	6.88E-03	8.13E-04
	36	806.45	1.69E+02	98.78	6.74E-03	8.38E-04
	37	846.02	6.90E+01	73.23	6.48E-03	8.89E-04
	38	853.16	7.64E+01	79.82	6.43E-03	8.98E-04
	39	866.02	1.09E+02	84.39	6.35E-03	9.14E-04
	40	882.41	2.83E+02	78.00	6.26E-03	9.35E-04
	41	911.74	7.14E+01	62.86	6.09E-03	9.28E-04
	42	926.62	1.26E+02	74.43	6.01E-03	8.98E-04
	43	946.99	1.86E+02	78.42	5.90E-03	8.56E-04
	44	1001.59	5.42E+03	168.45	5.64E-03	7.46E-04
	45	1062.70	4.81E+01	47.32	5.38E-03	6.22E-04

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	46	1121.80	8.10E+01	59.29	5.15E-03	5.03E-04
	47	1194.83	1.20E+02	61.97	4.90E-03	3.94E-04
	48	1209.04	4.99E+01	41.13	4.86E-03	3.91E-04
	49	1238.21	6.84E+01	43.66	4.77E-03	3.84E-04
	50	1377.48	3.31E+01	30.40	4.41E-03	3.66E-04
	51	1394.55	3.40E+01	38.29	4.37E-03	3.67E-04
	52	1435.12	5.88E+01	28.07	4.28E-03	3.70E-04
	53	1461.52	3.08E+02	46.64	4.23E-03	3.72E-04
M	54	1511.01	9.04E+01	27.64	4.14E-03	3.76E-04
m	55	1516.67	1.43E+01	22.00	4.13E-03	3.77E-04
	56	1530.95	7.40E+01	41.67	4.10E-03	3.78E-04
	57	1555.54	5.37E+01	39.06	4.06E-03	3.80E-04
	58	1717.65	6.33E+00	6.96	3.83E-03	3.92E-04
	59	1729.69	1.82E+01	16.71	3.81E-03	3.93E-04
M	60	1738.74	8.76E+01	20.59	3.80E-03	3.94E-04
m	61	1744.35	8.76E+00	14.99	3.80E-03	3.94E-04
M	62	1761.36	1.31E+01	12.17	3.78E-03	3.95E-04
m	63	1765.85	6.76E+01	21.73	3.77E-03	3.96E-04
	64	1810.10	1.87E+01	10.61	3.72E-03	3.99E-04
	65	1821.73	8.57E+00	10.99	3.71E-03	4.00E-04
	66	1832.04	7.40E+01	21.47	3.70E-03	4.01E-04
	67	1848.38	8.00E+00	5.66	3.69E-03	4.01E-04
	68	1867.92	2.88E+01	22.28	3.67E-03	4.01E-04
	69	1876.35	2.95E+01	15.28	3.66E-03	4.01E-04
	70	1894.85	1.65E+01	11.75	3.64E-03	4.01E-04
	71	1913.10	2.83E+01	15.32	3.63E-03	4.01E-04
	72	1939.01	2.40E+01	16.21	3.61E-03	4.01E-04
	73	1969.64	9.00E+00	10.98	3.58E-03	4.01E-04
	74	2105.11	6.60E+00	8.03	3.50E-03	4.01E-04
	75	2204.59	2.05E+01	10.59	3.45E-03	4.01E-04
	76	2367.48	6.75E+00	6.40	3.41E-03	4.01E-04
	77	2615.49	4.40E+01	13.27	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 : 6/7/2016 8:37:52AM

Env. Background File : \\OR-GAMMA1\ApexRoof\Countroom\Data\0000037620.CNF

: 00228

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	17.15	3.12E+03	366.35			3.12E+03	3.66E+02
2	25.26	7.04E+02	287.11			7.04E+02	2.87E+02
3	32.20	5.92E+02	295.89			5.92E+02	2.96E+02
4	52.87	7.98E+02	388.08			7.98E+02	3.88E+02
5	63.16	7.45E+04	817.25	3.21E+01	5.65E+00	7.45E+04	8.17E+02
6	72.51	3.64E+03	879.10			3.64E+03	8.79E+02
7	83.63	3.37E+03	589.29	8.33E-01	6.64E+00	3.37E+03	5.89E+02
M 8	89.92	1.10E+03	167.31			1.10E+03	1.67E+02
m 9	94.92	2.02E+03	646.60			2.02E+03	6.47E+02
10	98.42	1.01E+04	443.47			1.01E+04	4.43E+02
M 11	108.93	6.47E+02	106.11			6.47E+02	1.06E+02
m 12	112.59	9.86E+03	405.00			9.86E+03	4.05E+02
13	131.37	7.11E+02	291.34			7.11E+02	2.91E+02
14	143.77	3.28E+03	358.12	6.27E+00	6.84E+00	3.27E+03	3.58E+02
15	163.29	1.37E+03	288.04			1.37E+03	2.88E+02
16	185.73	1.54E+04	367.25	2.52E+01	6.98E+00	1.54E+04	3.67E+02
M 17	202.01	3.36E+02	143.79			3.36E+02	1.44E+02
m 18	205.17	1.45E+03	156.95	5.64E+00	6.16E+00	1.44E+03	1.57E+02
19	226.50	3.62E+02	174.61			3.62E+02	1.75E+02
20	239.46	6.70E+02	231.54	8.15E+00	6.18E+00	6.62E+02	2.32E+02
21	258.28	1.24E+03	185.40			1.24E+03	1.85E+02
22	295.17	2.65E+02	159.77	4.80E+00	5.42E+00	2.61E+02	1.60E+02
23	338.81	1.10E+02	106.29			1.10E+02	1.06E+02
24	351.95	3.68E+02	142.81	1.16E+01	4.76E+00	3.57E+02	1.43E+02
25	362.16	9.71E+01	100.71			9.71E+01	1.01E+02
26	387.97	1.27E+02	113.87			1.27E+02	1.14E+02
27	569.56	1.34E+02	110.74			1.34E+02	1.11E+02
28	609.55	3.75E+02	118.73	7.00E+00	3.58E+00	3.68E+02	1.19E+02
29	692.35	1.91E+02	108.45			1.91E+02	1.08E+02
M 30	699.30	9.15E+01	70.01			9.15E+01	7.00E+01
m 31	702.06	1.29E+02	82.34			1.29E+02	8.23E+01
M 32	740.27	1.26E+02	105.14	2.08E-01	2.75E+00	1.26E+02	1.05E+02
m 33	743.21	7.22E+02	88.94			7.22E+02	8.89E+01
34	766.73	2.52E+03	167.75			2.52E+03	1.68E+02
35	786.80	3.57E+02	111.73	7.53E-01	2.65E+00	3.56E+02	1.12E+02
36	806.45	1.69E+02	98.78			1.69E+02	9.88E+01
37	846.02	6.90E+01	73.23			6.90E+01	7.32E+01
38	853.16	7.64E+01	79.82			7.64E+01	7.98E+01
39	866.02	1.09E+02	84.39			1.09E+02	8.44E+01
40	882.41	2.83E+02	78.00			2.83E+02	7.80E+01
41	911.74	7.14E+01	62.86	1.26E+00	2.67E+00	7.01E+01	6.29E+01
42	926.62	1.26E+02	74.43			1.26E+02	7.44E+01
43	946.99	1.86E+02	78.42			1.86E+02	7.84E+01
44	1001.59	5.42E+03	168.45	1.41E+00	2.55E+00	5.42E+03	1.68E+02
45	1062.70	4.81E+01	47.32			4.81E+01	4.73E+01
46	1121.80	8.10E+01	59.29			8.10E+01	5.93E+01
47	1194.83	1.20E+02	61.97			1.20E+02	6.20E+01
48	1209.04	4.99E+01	41.13			4.99E+01	4.11E+01
49	1238.21	6.84E+01	43.66			6.84E+01	4.37E+01
50	1377.48	3.31E+01	30.40			3.31E+01	3.04E+01
51	1394.55	3.40E+01	38.29			3.40E+01	3.83E+01
52	1435.12	5.88E+01	28.07			5.88E+01	2.81E+01
53	1461.52	3.08E+02	46.64	3.84E+00	1.88E+00	3.04E+02	4.67E+01
M 54	1511.01	9.04E+01	27.64			9.04E+01	2.76E+01

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	55	1516.67	1.43E+01	22.00			1.43E+01	2.20E+01
	56	1530.95	7.40E+01	41.67			7.40E+01	4.17E+01
	57	1555.54	5.37E+01	39.06			5.37E+01	3.91E+01
	58	1717.65	6.33E+00	6.96			6.33E+00	6.96E+00
	59	1729.69	1.82E+01	16.71			1.82E+01	1.67E+01
M	60	1738.74	8.76E+01	20.59			8.76E+01	2.06E+01
m	61	1744.35	8.76E+00	14.99			8.76E+00	1.50E+01
M	62	1761.36	1.31E+01	12.17			1.31E+01	1.22E+01
m	63	1765.85	6.76E+01	21.73			6.76E+01	2.17E+01
	64	1810.10	1.87E+01	10.61			1.87E+01	1.06E+01
	65	1821.73	8.57E+00	10.99			8.57E+00	1.10E+01
	66	1832.04	7.40E+01	21.47			7.40E+01	2.15E+01
	67	1848.38	8.00E+00	5.66			8.00E+00	5.66E+00
	68	1867.92	2.88E+01	22.28			2.88E+01	2.23E+01
	69	1876.35	2.95E+01	15.28			2.95E+01	1.53E+01
	70	1894.85	1.65E+01	11.75			1.65E+01	1.17E+01
	71	1913.10	2.83E+01	15.32			2.83E+01	1.53E+01
	72	1939.01	2.40E+01	16.21			2.40E+01	1.62E+01
	73	1969.64	9.00E+00	10.98			9.00E+00	1.10E+01
	74	2105.11	6.60E+00	8.03			6.60E+00	8.03E+00
	75	2204.59	2.05E+01	10.59	5.23E-01	9.79E-01	2.00E+01	1.06E+01
	76	2367.48	6.75E+00	6.40			6.75E+00	6.40E+00
	77	2615.49	4.40E+01	13.27	3.94E+00	1.42E+00	4.01E+01	1.33E+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 : 6/7/2016 8:37:52AM

Ref. Peak Energy : 0.00

Reference Date :

Peak Ratio : 0.00

Uncertainty : 0.00

Background File

: \\OR-GAMMA1\ApexRoot\Countroom\Data\0000037620.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	17.15	3.12E+03	366.35			3.12E+03	3.66E+02
2	25.26	7.04E+02	287.11			7.04E+02	2.87E+02
3	32.20	5.92E+02	295.89			5.92E+02	2.96E+02
4	52.87	7.98E+02	388.08			7.98E+02	3.88E+02
5	63.16	7.45E+04	817.25	3.21E+01	5.65E+00	7.45E+04	8.17E+02

: 00230

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	6	72.51	3.64E+03	879.10		3.64E+03	8.79E+02
	7	83.63	3.37E+03	589.29	8.33E-01	6.64E+00	5.89E+02
M	8	89.92	1.10E+03	167.31		1.10E+03	1.67E+02
m	9	94.92	2.02E+03	646.60		2.02E+03	6.47E+02
	10	98.42	1.01E+04	443.47		1.01E+04	4.43E+02
M	11	108.93	6.47E+02	106.11		6.47E+02	1.06E+02
m	12	112.59	9.86E+03	405.00		9.86E+03	4.05E+02
	13	131.37	7.11E+02	291.34		7.11E+02	2.91E+02
	14	143.77	3.28E+03	358.12	6.27E+00	6.84E+00	3.58E+02
	15	163.29	1.37E+03	288.04		1.37E+03	2.88E+02
	16	185.73	1.54E+04	367.25	2.52E+01	6.98E+00	3.67E+02
M	17	202.01	3.36E+02	143.79		3.36E+02	1.44E+02
m	18	205.17	1.45E+03	156.95	5.64E+00	6.16E+00	1.57E+02
	19	226.50	3.62E+02	174.61		3.62E+02	1.75E+02
	20	239.46	6.70E+02	231.54	8.15E+00	6.18E+00	2.32E+02
	21	258.28	1.24E+03	185.40		1.24E+03	1.85E+02
	22	295.17	2.65E+02	159.77	4.80E+00	5.42E+00	1.60E+02
	23	338.81	1.10E+02	106.29		1.10E+02	1.06E+02
	24	351.95	3.68E+02	142.81	1.16E+01	4.76E+00	1.43E+02
	25	362.16	9.71E+01	100.71		9.71E+01	1.01E+02
	26	387.97	1.27E+02	113.87		1.27E+02	1.14E+02
	27	569.56	1.34E+02	110.74		1.34E+02	1.11E+02
	28	609.55	3.75E+02	118.73	7.00E+00	3.58E+00	1.19E+02
	29	692.35	1.91E+02	108.45		1.91E+02	1.08E+02
M	30	699.30	9.15E+01	70.01		9.15E+01	7.00E+01
m	31	702.06	1.29E+02	82.34		1.29E+02	8.23E+01
M	32	740.27	1.26E+02	105.14	2.08E-01	2.75E+00	1.05E+02
m	33	743.21	7.22E+02	88.94		7.22E+02	8.89E+01
	34	766.73	2.52E+03	167.75		2.52E+03	1.68E+02
	35	786.80	3.57E+02	111.73	7.53E-01	2.65E+00	1.12E+02
	36	806.45	1.69E+02	98.78		1.69E+02	9.88E+01
	37	846.02	6.90E+01	73.23		6.90E+01	7.32E+01
	38	853.16	7.64E+01	79.82		7.64E+01	7.98E+01
	39	866.02	1.09E+02	84.39		1.09E+02	8.44E+01
	40	882.41	2.83E+02	78.00		2.83E+02	7.80E+01
	41	911.74	7.14E+01	62.86	1.26E+00	2.67E+00	6.29E+01
	42	926.62	1.26E+02	74.43		1.26E+02	7.44E+01
	43	946.99	1.86E+02	78.42		1.86E+02	7.84E+01
	44	1001.59	5.42E+03	168.45	1.41E+00	2.55E+00	1.68E+02
	45	1062.70	4.81E+01	47.32		4.81E+01	4.73E+01
	46	1121.80	8.10E+01	59.29		8.10E+01	5.93E+01
	47	1194.83	1.20E+02	61.97		1.20E+02	6.20E+01
	48	1209.04	4.99E+01	41.13		4.99E+01	4.11E+01
	49	1238.21	6.84E+01	43.66		6.84E+01	4.37E+01
	50	1377.48	3.31E+01	30.40		3.31E+01	3.04E+01
	51	1394.55	3.40E+01	38.29		3.40E+01	3.83E+01
	52	1435.12	5.88E+01	28.07		5.88E+01	2.81E+01
	53	1461.52	3.08E+02	46.64	3.84E+00	1.88E+00	4.67E+01
M	54	1511.01	9.04E+01	27.64		9.04E+01	2.76E+01
m	55	1516.67	1.43E+01	22.00		1.43E+01	2.20E+01
	56	1530.95	7.40E+01	41.67		7.40E+01	4.17E+01
	57	1555.54	5.37E+01	39.06		5.37E+01	3.91E+01
	58	1717.65	6.33E+00	6.96		6.33E+00	6.96E+00
	59	1729.69	1.82E+01	16.71		1.82E+01	1.67E+01

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	60	1738.74	8.76E+01	20.59			8.76E+01	2.06E+01
m	61	1744.35	8.76E+00	14.99			8.76E+00	1.50E+01
M	62	1761.36	1.31E+01	12.17			1.31E+01	1.22E+01
m	63	1765.85	6.76E+01	21.73			6.76E+01	2.17E+01
	64	1810.10	1.87E+01	10.61			1.87E+01	1.06E+01
	65	1821.73	8.57E+00	10.99			8.57E+00	1.10E+01
	66	1832.04	7.40E+01	21.47			7.40E+01	2.15E+01
	67	1848.38	8.00E+00	5.66			8.00E+00	5.66E+00
	68	1867.92	2.88E+01	22.28			2.88E+01	2.23E+01
	69	1876.35	2.95E+01	15.28			2.95E+01	1.53E+01
	70	1894.85	1.65E+01	11.75			1.65E+01	1.17E+01
	71	1913.10	2.83E+01	15.32			2.83E+01	1.53E+01
	72	1939.01	2.40E+01	16.21			2.40E+01	1.62E+01
	73	1969.64	9.00E+00	10.98			9.00E+00	1.10E+01
	74	2105.11	6.60E+00	8.03			6.60E+00	8.03E+00
	75	2204.59	2.05E+01	10.59	5.23E-01	9.79E-01	2.00E+01	1.06E+01
	76	2367.48	6.75E+00	6.40			6.75E+00	6.40E+00
	77	2615.49	4.40E+01	13.27	3.94E+00	1.42E+00	4.01E+01	1.33E+01

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

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.923	1460.81 *	10.67	1.16E+01	2.06E+00
CO-56	0.656	846.75 *	99.96	1.91E-01	2.05E-01
		1037.75	14.03		
		1238.25 *	67.00	3.85E-01	2.48E-01
		1771.40	15.51		
		2598.48	16.90		
NB-93M	0.948	16.57 *	9.43	2.73E+03	2.18E+04
NB-95	0.869	765.79 *	99.81	6.82E+00	8.88E-01
LA-138	0.320	788.74	34.00		
		1435.80 *	66.00	3.58E-01	1.74E-01
BI-207	0.942	569.67 *	97.72	2.63E-01	2.20E-01
		1063.62 *	74.90	2.05E-01	2.03E-01
PB-212	0.797	238.63 *	44.60	1.50E+00	5.64E-01

: 00232

Analysis Report for 1606013-03
 CP-5026-S 1 0-1 5

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
PB-212	0.797	300.09	3.41		
BI-214	0.497	609.31 *	46.30	1.61E+00	5.49E-01
		1120.29	15.10		
		1764.49	15.80		
		2204.22 *	4.98	2.00E+00	1.09E+00
PB-214	1.000	295.21 *	19.19	1.59E+00	1.00E+00
		351.92 *	37.19	1.27E+00	5.50E-01
RA-226	0.964	186.21 *	3.28	4.06E+02	7.44E+02
AC-228	0.531	338.32 *	11.40	1.24E+00	1.22E+00
		911.07 *	27.70	7.15E-01	6.50E-01
		969.11	16.60		
TH-231	0.968	25.64 *	14.70	3.09E+01	2.31E+01
		84.21 *	6.40	3.49E+01	6.76E+00
PA-234	0.704	131.20 *	20.40	2.52E+00	1.06E+00
		733.99	8.80		
		946.00 *	12.00	4.52E+00	2.01E+00
PA-234M	0.951	1001.03 *	0.92	1.80E+03	2.44E+02
TH-234	0.997	63.29 *	3.80	1.43E+03	1.06E+02
U-235	0.999	143.76 *	10.50	2.35E+01	5.02E+00
		163.35 *	4.70	2.34E+01	6.87E+00
		205.31 *	4.70	2.81E+01	6.70E+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

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/7/2016 8:37:52AM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
3	32.20	1.64434E-01	24.99		
4	52.87	2.21544E-01	24.33		
6	72.51	1.01139E+00	12.07	Tol.	PM-145
M 8	89.92	3.05603E-01	7.60		
m 9	94.92	5.60536E-01	16.02		
10	98.42	2.81708E+00	2.19	Tol.	GD-153
M 11	108.93	1.79837E-01	8.20	Sum	
m 12	112.59	2.73904E+00	2.05		

Analysis Report for 1606013-03

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	17	202.01	9.32114E-02	21.43	Sum
	19	226.50	1.00599E-01	24.11	Sum
	21	258.28	3.45671E-01	7.45	
	25	362.16	2.69718E-02	51.86	
	26	387.97	3.52686E-02	44.84	
	29	692.35	5.31752E-02	28.33	Sum
M	30	699.30	2.54286E-02	38.24	
m	31	702.06	3.59568E-02	31.81	Tol. NB-94
M	32	740.27	3.50329E-02	41.70	Sum
m	33	743.21	2.00510E-01	6.16	
	35	786.80	9.89978E-02	15.68	
	36	806.45	4.69252E-02	29.24	
	38	853.16	2.12132E-02	52.26	
	39	866.02	3.01822E-02	38.83	
	40	882.41	7.87013E-02	13.77	
	42	926.62	3.49982E-02	29.54	
	46	1121.80	2.25098E-02	36.58	Tol. TA-182
	47	1194.83	3.33333E-02	25.82	Sum
	48	1209.04	1.38619E-02	41.21	
	50	1377.48	9.18911E-03	45.94	
	51	1394.55	9.44444E-03	56.31	
M	54	1511.01	2.51191E-02	15.28	
m	55	1516.67	3.97440E-03	76.88	Sum
	56	1530.95	2.05556E-02	28.15	
	57	1555.54	1.49110E-02	36.39	Sum
	58	1717.65	1.75926E-03	54.98	
	59	1729.69	5.06510E-03	45.82	Sum
M	60	1738.74	2.43373E-02	11.75	
m	61	1744.35	2.43275E-03	85.59	
M	62	1761.36	3.63992E-03	46.42	
m	63	1765.85	1.87774E-02	16.07	
	64	1810.10	5.18939E-03	28.39	
	65	1821.73	2.37963E-03	64.14	
	66	1832.04	2.05637E-02	14.50	
	67	1848.38	2.22222E-03	35.36	Sum
	68	1867.92	7.98859E-03	38.73	
	69	1876.35	8.19444E-03	25.90	
	70	1894.85	4.59596E-03	35.50	Sum
	71	1913.10	7.85880E-03	27.08	Sum
	72	1939.01	6.65850E-03	33.81	
	73	1969.64	2.50000E-03	60.98	
	74	2105.11	1.83333E-03	60.84	
	76	2367.48	1.87500E-03	47.43	Sum
	77	2615.49	1.11278E-02	16.65	Tol. TL-208

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1606013-03

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NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty	
K-40	0.92	1460.81	*	10.67	1.16E+01	2.06E+00
CO-56	0.65	846.75	*	99.96	1.91E-01	2.05E-01
		1037.75		14.03		
		1238.25	*	67.00	3.85E-01	2.48E-01
		1771.40		15.51		
		2598.48		16.90		
NB-93M	0.94	16.57	*	9.43	2.73E+03	2.18E+04
NB-95	0.86	765.79	*	99.81	6.82E+00	8.88E-01
LA-138	0.32	788.74		34.00		
		1435.80	*	66.00	3.58E-01	1.74E-01
BI-207	0.94	569.67	*	97.72	2.63E-01	2.20E-01
		1063.62	*	74.90	2.05E-01	2.03E-01
PB-212	0.79	238.63	*	44.60	1.50E+00	5.64E-01
		300.09		3.41		
BI-214	0.49	609.31	*	46.30	1.61E+00	5.49E-01
		1120.29		15.10		
		1764.49		15.80		
PB-214	1.00	2204.22	*	4.98	2.00E+00	1.09E+00
		295.21	*	19.19	1.59E+00	1.00E+00
		351.92	*	37.19	1.27E+00	5.50E-01
RA-226	0.96	186.21	*	3.28	4.06E+02	7.44E+02
AC-228	0.53	338.32	*	11.40	1.24E+00	1.22E+00
		911.07	*	27.70	7.15E-01	6.50E-01
		969.11		16.60		
TH-231	0.96	25.64	*	14.70	3.09E+01	2.31E+01
		84.21	*	6.40	3.49E+01	6.76E+00
PA-234	0.70	131.20	*	20.40	2.52E+00	1.06E+00
		733.99		8.80		
		946.00	*	12.00	4.52E+00	2.01E+00
PA-234M	0.95	1001.03	*	0.92	1.80E+03	2.44E+02
TH-234	0.99	63.29	*	3.80	1.43E+03	1.06E+02
U-235	0.99	143.76	*	10.50	2.35E+01	5.02E+00
		163.35	*	4.70	2.34E+01	6.87E+00
		205.31	*	4.70	2.81E+01	6.70E+00

Analysis Report for 1606013-03

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* = Energy line found in the spectrum.
 - = Manually added nuclide.
 ? = Manually edited nuclide.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 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	0.923	1.16E+01	2.06E+00	
CO-56	0.656	2.70E-01	1.58E-01	
NB-93M	0.948	2.73E+03	2.18E+04	
NB-95	0.869	6.82E+00	8.88E-01	
LA-138	0.320	3.58E-01	1.74E-01	
BI-207	0.942	2.32E-01	1.49E-01	
PB-212	0.797	1.50E+00	5.64E-01	
BI-214	0.497	1.69E+00	4.90E-01	
PB-214	1.000	1.34E+00	4.82E-01	
RA-226	0.964	4.06E+02	7.44E+02	
AC-228	0.531	8.31E-01	5.74E-01	
TH-231	0.968	3.45E+01	6.48E+00	
PA-234	0.704	2.96E+00	9.39E-01	
PA-234M	0.951	1.80E+03	2.44E+02	
TH-234	0.997	1.43E+03	1.06E+02	
U-235	0.999	2.47E+01	3.47E+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 1606013-03

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 UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/7/2016 8:37:52AM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
3	32.20	1.64434E-01	24.99		
4	52.87	2.21544E-01	24.33		
6	72.51	1.01139E+00	12.07	Tol.	PM-145
M 8	89.92	3.05603E-01	7.60		
m 9	94.92	5.60536E-01	16.02		
10	98.42	2.81708E+00	2.19	Tol.	GD-153
M 11	108.93	1.79837E-01	8.20	Sum	
m 12	112.59	2.73904E+00	2.05		
M 17	202.01	9.32114E-02	21.43	Sum	
19	226.50	1.00599E-01	24.11	Sum	
21	258.28	3.45671E-01	7.45		
25	362.16	2.69718E-02	51.86		
26	387.97	3.52686E-02	44.84		
29	692.35	5.31752E-02	28.33	Sum	
M 30	699.30	2.54286E-02	38.24		
m 31	702.06	3.59568E-02	31.81	Tol.	NB-94
M 32	740.27	3.50329E-02	41.70	Sum	
m 33	743.21	2.00510E-01	6.16		
35	786.80	9.89978E-02	15.68		
36	806.45	4.69252E-02	29.24		
38	853.16	2.12132E-02	52.26		
39	866.02	3.01822E-02	38.83		
40	882.41	7.87013E-02	13.77		
42	926.62	3.49982E-02	29.54		
46	1121.80	2.25098E-02	36.58	Tol.	TA-182
47	1194.83	3.33333E-02	25.82	Sum	
48	1209.04	1.38619E-02	41.21		
50	1377.48	9.18911E-03	45.94		
51	1394.55	9.44444E-03	56.31		
M 54	1511.01	2.51191E-02	15.28		
m 55	1516.67	3.97440E-03	76.88	Sum	
56	1530.95	2.05556E-02	28.15		
57	1555.54	1.49110E-02	36.39	Sum	
58	1717.65	1.75926E-03	54.98		
59	1729.69	5.06510E-03	45.82	Sum	

Analysis Report for 1606013-03
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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	60	1738.74	2.43373E-02	11.75	
m	61	1744.35	2.43275E-03	85.59	
M	62	1761.36	3.63992E-03	46.42	
m	63	1765.85	1.87774E-02	16.07	
	64	1810.10	5.18939E-03	28.39	
	65	1821.73	2.37963E-03	64.14	
	66	1832.04	2.05637E-02	14.50	
	67	1848.38	2.22222E-03	35.36	Sum
	68	1867.92	7.98859E-03	38.73	
	69	1876.35	8.19444E-03	25.90	
	70	1894.85	4.59596E-03	35.50	Sum
	71	1913.10	7.85880E-03	27.08	Sum
	72	1939.01	6.65850E-03	33.81	
	73	1969.64	2.50000E-03	60.98	
	74	2105.11	1.83333E-03	60.84	
	76	2367.48	1.87500E-03	47.43	Sum
	77	2615.49	1.11278E-02	16.65	Tol. TL-208

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

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	8.79E-01	2.40E+00	2.40E+00
+	NA-22	1274.54	99.94	-8.75E-02	1.86E-01	1.86E-01
+	NA-24	1368.53	99.99	5.85E+00	3.57E+00	4.35E+01
		2754.09	99.86	0.00E+00		3.57E+00
+	AL-26	1808.65	99.76	3.86E-03	1.22E-01	1.22E-01
+	K-40	1460.81	* 10.67	1.16E+01	2.05E+00	2.05E+00
+	AR-41	1293.64	99.16	-1.08E+18	1.33E+19	1.33E+19
+	TI-44	67.88	94.40	-6.64E-01	4.21E-01	4.24E-01
		78.34	96.00	-7.23E-03		4.21E-01
+	SC-46	889.25	99.98	-9.04E-02	2.68E-01	2.83E-01
		1120.51	99.99	1.47E-01		2.68E-01

Analysis Report for 1606013-03

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	V-48	983.52	99.98	3.59E-01	2.28E-01	3.39E-01
		1312.10	97.50	9.67E-02		2.28E-01
+	CR-51	320.08	9.83	-8.51E-01	2.47E+00	2.47E+00
+	MN-54	834.83	99.97	-2.89E-02	2.92E-01	2.92E-01
+	CO-56	846.75	* 99.96	1.91E-01	3.33E-01	3.33E-01
		1037.75	14.03	-1.54E-01		1.73E+00
		1238.25	* 67.00	3.85E-01		3.89E-01
		1771.40	15.51	-9.23E-03		8.81E-01
		2598.48	16.90	-5.22E-02		3.37E-01
+	CO-57	122.06	85.51	-1.72E-01	3.40E-01	3.40E-01
		136.48	10.60	1.25E+00		2.68E+00
+	CO-58	810.76	99.40	-2.57E-02	3.14E-01	3.14E-01
+	FE-59	1099.22	56.50	2.23E-01	4.18E-01	4.18E-01
		1291.56	43.20	5.83E-02		4.59E-01
+	CO-60	1173.22	100.00	-7.13E-02	1.78E-01	2.04E-01
		1332.49	100.00	4.58E-02		1.78E-01
+	ZN-65	1115.52	50.75	4.05E-02	4.28E-01	4.28E-01
+	GA-67	93.31	35.70	6.77E+02	4.01E+00	9.69E+00
		208.95	2.24	2.06E+01		3.09E+01
		300.22	16.00	2.09E+00		4.01E+00
+	SE-75	121.11	16.70	1.02E+00	3.74E-01	1.78E+00
		136.00	59.20	7.51E-02		4.87E-01
		264.65	59.80	-2.98E-03		3.74E-01
		279.53	25.20	1.59E-01		8.88E-01
		400.65	11.40	5.62E-01		1.99E+00
+	RB-82	776.52	13.00	-1.72E+00	2.79E+00	2.79E+00
+	RB-83	520.41	46.00	1.94E-01	5.58E-01	5.58E-01
		529.64	30.30	-4.50E-01		8.17E-01
		552.65	16.40	6.00E-01		1.55E+00
+	KR-85	513.99	0.43	-3.62E+01	5.63E+01	5.63E+01
+	SR-85	513.99	99.27	-1.67E-01	2.59E-01	2.59E-01
+	Y-88	898.02	93.40	-4.78E-02	2.08E-01	2.90E-01
		1836.01	99.38	-1.13E-02		2.08E-01
+	NB-93M	16.57	* 9.43	2.73E+03	5.05E+02	5.05E+02
+	NB-94	702.63	100.00	2.23E-01	2.69E-01	3.25E-01
		871.10	100.00	4.81E-02		2.69E-01
+	NB-95	765.79	* 99.81	6.82E+00	6.06E-01	6.06E-01
+	NB-95M	235.69	25.00	-4.64E+00	2.45E+00	2.45E+00
+	ZR-95	724.18	43.70	6.98E-02	6.18E-01	7.60E-01
		756.72	55.30	3.19E-01		6.18E-01
+	MO-99	181.06	6.20	-8.37E+00	1.00E+01	1.47E+01
		739.58	12.80	-4.33E+01		1.00E+01
		778.00	4.50	-1.17E+01		2.53E+01
+	RU-103	497.08	89.00	-2.98E-03	2.86E-01	2.86E-01
+	RU-106	621.84	9.80	-1.64E+00	2.95E+00	2.95E+00
+	AG-108M	433.93	89.90	2.16E-02	2.45E-01	2.45E-01
		614.37	90.40	9.43E-03		3.32E-01

Analysis Report for 1606013-03

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AG-108M	722.95	90.50	2.59E-02	2.45E-01	3.47E-01
+	CD-109	88.03	3.72	1.72E+00	1.42E+01	1.42E+01
+	AG-110M	657.75	93.14	-2.52E-01	3.13E-01	3.13E-01
		677.61	10.53	-1.87E+00		2.78E+00
		706.67	16.46	8.82E-01		1.92E+00
		763.93	21.98	2.63E+01		2.98E+00
		884.67	71.63	-5.61E-02		4.54E-01
		1384.27	23.94	-2.24E-01		6.52E-01
+	CD-113M	263.70	0.02	5.73E+00	9.48E+02	9.48E+02
+	SN-113	255.12	1.93	2.90E-01	3.41E-01	1.18E+01
		391.69	64.90	-2.00E-01		3.41E-01
+	TE123M	159.00	84.10	-4.83E-02	3.29E-01	3.29E-01
+	SB-124	602.71	97.87	1.80E-02	2.50E-01	3.15E-01
		645.85	7.26	-8.36E-01		4.33E+00
		722.78	11.10	2.24E-01		3.00E+00
		1691.02	49.00	-2.66E-02		2.50E-01
+	I-125	35.49	6.49	-3.29E+00	9.51E+00	9.51E+00
+	SB-125	176.33	6.89	3.64E+00	7.63E-01	3.80E+00
		427.89	29.33	3.09E-01		7.63E-01
		463.38	10.35	-3.85E-01		2.22E+00
		600.56	17.80	-5.52E-02		1.63E+00
		635.90	11.32	-1.00E+00		2.54E+00
+	SB-126	414.70	83.30	-1.06E-01	3.50E-01	3.50E-01
		666.33	99.60	-8.09E-02		4.00E-01
		695.00	99.60	-5.18E-01		3.98E-01
		720.50	53.80	-1.28E-01		7.67E-01
+	SN-126	87.57	37.00	1.72E-01	1.42E+00	1.42E+00
+	SB-127	473.00	25.00	3.03E-01	2.00E+00	2.31E+00
		685.20	35.70	1.16E+00		2.00E+00
		783.80	14.70	1.02E+00		6.76E+00
+	I-129	29.78	57.00	-6.25E+00	1.63E+00	1.63E+00
		33.60	13.20	-4.65E+00		5.10E+00
		39.58	7.52	-3.24E+00		6.37E+00
+	I-131	284.30	6.05	-3.36E+00	4.17E-01	5.39E+00
		364.48	81.20	6.09E-02		4.17E-01
		636.97	7.26	-2.23E+00		6.11E+00
		722.89	1.80	2.01E+00		2.69E+01
+	TE-132	49.72	13.10	-2.25E+01	7.97E-01	9.94E+00
		228.16	88.00	7.26E-01		7.97E-01
+	BA-133	81.00	33.00	-3.93E+00	3.72E-01	1.22E+00
		302.84	17.80	-7.20E-02		1.23E+00
		356.01	60.00	1.10E-01		3.72E-01
+	I-133	529.87	86.30	-5.83E-01	1.57E+01	1.57E+01
+	XE-133	81.00	38.00	-6.63E+00	2.06E+00	2.06E+00
+	CS-134	563.23	8.38	6.21E-01	3.02E-01	3.05E+00
		569.32	15.43	1.78E+00		1.78E+00
		604.70	97.60	-1.18E-02		3.02E-01
		795.84	85.40	2.13E-01		3.76E-01
		801.93	8.73	3.87E-01		3.48E+00

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CS-135	268.24	16.00	3.48E-01	1.37E+00	1.37E+00
+	I-135	1131.51	22.50	-7.90E+03	1.83E+05	3.15E+05
		1260.41	28.60	-5.98E+04		1.83E+05
		1678.03	9.54	-1.10E+03		3.78E+05
+	CS-136	153.22	7.46	1.71E+00	3.57E-01	4.71E+00
		163.89	4.61	3.33E+01		8.46E+00
		176.55	13.56	4.25E-01		2.48E+00
		273.65	12.66	1.16E+00		2.29E+00
		340.57	48.50	-1.58E-01		5.81E-01
		818.50	99.70	-1.35E-01		3.64E-01
		1048.07	79.60	-1.09E-01		3.57E-01
		1235.34	19.70	4.94E-01		1.43E+00
+	CS-137	661.65	85.12	-2.10E-03	3.47E-01	3.47E-01
+	LA-138	788.74	34.00	3.23E+00	2.52E-01	1.19E+00
		1435.80	* 66.00	3.58E-01		2.52E-01
+	CE-139	165.85	80.35	1.01E-01	3.53E-01	3.53E-01
+	BA-140	162.64	6.70	2.15E+01	1.30E+00	5.87E+00
		304.84	4.50	-9.71E-02		6.33E+00
		423.70	3.20	-3.63E+00		8.90E+00
		437.55	2.00	-3.46E+00		1.47E+01
		537.32	25.00	1.01E-01		1.30E+00
+	LA-140	328.77	20.50	1.00E-01	2.16E-01	1.38E+00
		487.03	45.50	-1.71E-01		6.63E-01
		815.85	23.50	-2.34E-01		1.57E+00
		1596.49	95.49	-3.43E-02		2.16E-01
+	CE-141	145.44	48.40	5.69E+00	7.74E-01	7.74E-01
+	CE-143	57.36	11.80	-4.19E+01	7.00E+00	4.86E+01
		293.26	42.00	1.20E+00		7.00E+00
		664.55	5.20	8.04E+01		7.43E+01
+	CE-144	133.54	10.80	-4.66E-02	2.67E+00	2.67E+00
+	PM-144	476.78	42.00	2.06E-01	3.00E-01	5.63E-01
		618.01	98.60	2.78E-02		3.00E-01
		696.49	99.49	-1.73E-01		3.09E-01
+	PM-145	36.85	21.70	-2.08E+00	1.30E+00	2.46E+00
		37.36	39.70	-1.10E+00		1.30E+00
		42.30	15.10	-2.91E+00		2.86E+00
		72.40	2.31	1.53E+00		1.84E+01
+	PM-146	453.90	39.94	2.35E-02	5.76E-01	5.76E-01
		735.90	14.01	1.21E+00		2.36E+00
		747.13	13.10	1.20E+00		2.53E+00
+	ND-147	91.11	28.90	3.70E+02	2.56E+00	5.61E+00
		531.02	13.10	1.81E-01		2.56E+00
+	PM-149	285.90	3.10	-1.12E+01	3.31E+01	3.31E+01
+	EU-152	121.78	20.50	-7.06E-01	1.12E+00	1.40E+00
		244.69	5.40	-4.78E-01		4.10E+00
		344.27	19.13	6.82E-01		1.13E+00
		778.89	9.20	1.17E+00		3.58E+00
		964.01	10.40	-8.99E-02		2.39E+00
		1085.78	7.22	-5.19E-01		3.05E+00

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-152	1112.02	9.60	1.42E-01	1.12E+00	2.26E+00
		1407.95	14.94	-4.53E-01		1.12E+00
+	GD-153	97.43	31.30	5.99E+00	1.52E+00	1.57E+00
		103.18	22.20	2.70E-01		1.52E+00
+	EU-154	123.07	40.50	3.48E-02	5.21E-01	7.12E-01
		723.30	19.70	1.19E-01		1.60E+00
		873.19	11.50	9.50E-01		2.38E+00
		996.32	10.30	3.78E-01		2.66E+00
		1004.76	17.90	7.67E+01		5.62E+00
		1274.45	35.50	-2.46E-01		5.21E-01
+	EU-155	86.50	30.90	2.06E-01	1.62E+00	1.68E+00
		105.30	20.70	-4.12E-01		1.62E+00
+	EU-156	811.77	10.40	7.14E-01	2.82E+00	3.56E+00
		1153.47	7.20	1.21E+00		3.71E+00
		1230.71	8.90	2.98E-01		2.82E+00
+	HO-166M	184.41	72.60	1.73E+01	5.65E-01	7.64E-01
		280.45	29.60	1.32E-01		7.36E-01
		410.94	11.10	3.43E-01		2.01E+00
		711.69	54.10	-1.89E-01		5.65E-01
+	TM-171	66.72	0.14	-7.65E+02	2.75E+02	2.75E+02
+	HF-172	81.75	4.52	-3.86E+01	2.54E+00	9.21E+00
		125.81	11.30	1.04E+00		2.54E+00
+	LU-172	181.53	20.60	-3.39E-01	6.03E-01	2.11E+00
		810.06	16.63	-2.46E-01		3.00E+00
		912.12	15.25	2.12E+00		3.01E+00
		1093.66	62.50	6.60E-02		6.03E-01
+	LU-173	100.72	5.24	-3.56E+01	1.06E+00	7.72E+00
		272.11	21.20	4.69E-01		1.06E+00
+	HF-175	343.40	84.00	3.12E-02	2.68E-01	2.68E-01
+	LU-176	88.34	13.30	4.78E-01	2.32E-01	3.94E+00
		201.83	86.00	-2.60E+00		2.88E-01
		306.78	94.00	1.04E-01		2.32E-01
+	TA-182	67.75	41.20	-1.57E+00	7.20E-01	1.00E+00
		1121.30	34.90	7.82E-01		7.82E-01
		1189.05	16.23	2.90E-01		1.35E+00
		1221.41	26.98	-4.58E-01		7.20E-01
		1231.02	11.44	1.71E-01		1.75E+00
+	IR-192	308.46	29.68	3.20E-01	5.10E-01	7.64E-01
		468.07	48.10	1.78E-01		5.10E-01
+	HG-203	279.19	77.30	-6.23E-03	3.04E-01	3.04E-01
+	BI-207	569.67	* 97.72	2.63E-01	3.29E-01	3.55E-01
		1063.62	* 74.90	2.05E-01		3.29E-01
+	TL-208	583.14	30.22	9.49E-01	4.74E-01	9.98E-01
		860.37	4.48	-2.38E-01		6.14E+00
		2614.66	35.85	6.21E-01		4.74E-01
+	BI-210M	262.00	45.00	1.15E-01	4.85E-01	4.85E-01
		300.00	23.00	5.01E-01		9.59E-01
+	PB-210	46.50	4.25	-2.11E+01	1.00E+01	1.00E+01
+	PB-211	404.84	2.90	-2.10E+00	7.62E+00	7.62E+00

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PB-211	831.96	2.90	7.50E+00	7.62E+00	1.04E+01
+	BI-212	727.17	11.80	3.96E-02	2.67E+00	2.67E+00
		1620.62	2.75	9.57E-01		5.25E+00
+	PB-212	238.63	* 44.60	1.50E+00	8.50E-01	8.50E-01
		300.09	3.41	3.38E+00		6.47E+00
+	BI-214	609.31	* 46.30	1.61E+00	8.22E-01	8.22E-01
		1120.29	15.10	9.34E-01		1.70E+00
		1764.49	15.80	1.96E+00		1.35E+00
		2204.22	* 4.98	2.00E+00		1.22E+00
+	PB-214	295.21	* 19.19	1.59E+00	8.18E-01	1.58E+00
		351.92	* 37.19	1.27E+00		8.18E-01
+	RN-219	401.80	6.50	-8.24E-02	3.37E+00	3.37E+00
+	RA-223	323.87	3.88	1.10E+00	5.64E+00	5.64E+00
+	RA-224	240.98	3.95	6.41E+00	6.14E+00	6.14E+00
+	RA-225	40.00	31.00	-9.72E-01	1.91E+00	1.91E+00
+	RA-226	186.21	* 3.28	4.06E+02	1.18E+01	1.18E+01
+	TH-227	50.10	8.40	-1.19E+01	2.04E+00	5.27E+00
		236.00	11.50	-3.85E+00		2.04E+00
		256.20	6.30	2.75E+00		4.24E+00
+	AC-228	338.32	* 11.40	1.24E+00	1.04E+00	1.97E+00
		911.07	* 27.70	7.15E-01		1.04E+00
		969.11	16.60	8.59E-01		1.58E+00
+	TH-230	48.44	16.90	-2.81E+00	2.62E+00	2.62E+00
		62.85	4.60	1.15E+03		2.18E+01
		67.67	0.37	-1.70E+02		1.08E+02
+	PA-231	283.67	1.60	-8.23E+00	9.48E+00	1.32E+01
		302.67	2.30	-5.57E-01		9.48E+00
+	TH-231	25.64	* 14.70	3.09E+01	9.85E+00	2.05E+01
		84.21	* 6.40	3.49E+01		9.85E+00
+	PA-233	311.98	38.60	-1.37E-01	6.31E-01	6.31E-01
+	PA-234	131.20	* 20.40	2.52E+00	1.68E+00	1.68E+00
		733.99	8.80	1.75E+00		3.71E+00
		946.00	* 12.00	4.52E+00		3.00E+00
+	PA-234M	1001.03	* 0.92	1.80E+03	4.55E+01	4.55E+01
+	TH-234	63.29	* 3.80	1.43E+03	1.92E+01	1.92E+01
+	U-235	143.76	* 10.50	2.35E+01	4.02E+00	4.02E+00
		163.35	* 4.70	2.34E+01		7.87E+00
		205.31	* 4.70	2.81E+01		7.08E+00
+	NP-237	86.50	12.60	5.05E-01	4.11E+00	4.11E+00
+	NP-239	106.10	22.70	-6.93E-02	6.53E+00	6.53E+00
		228.18	10.70	8.99E+00		9.88E+00
		277.60	14.10	3.05E+00		6.84E+00
+	AM-241	59.54	35.90	-2.13E+00	1.31E+00	1.31E+00
+	AM-243	74.67	66.00	4.74E-02	6.31E-01	6.31E-01
+	CM-243	209.75	3.29	3.97E+00	1.57E+00	7.27E+00
		228.14	10.60	2.07E+00		2.28E+00
		277.60	14.00	7.00E-01		1.57E+00

Analysis Report for 1606013-03

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- + = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = MDA value not calculated
 @ = Half-life too short to be able to perform the decay correction
 ? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	2.40E+00	2.40E+00	8.79E-01	1.18E+00
NA-22	1274.54	99.94	1.86E-01	1.86E-01	-8.75E-02	8.78E-02
NA-24	1368.53	99.99	4.35E+01	3.57E+00	5.85E+00	2.04E+01
	2754.09	99.86	3.57E+00		0.00E+00	0.00E+00
AL-26	1808.65	99.76	1.22E-01	1.22E-01	3.86E-03	5.49E-02
+ K-40	1460.81 *	10.67	2.05E+00	2.05E+00	1.16E+01	9.73E-01
AR-41	1293.64	99.16	1.33E+19	1.33E+19	-1.08E+18	6.27E+18
TI-44	67.88	94.40	4.24E-01	4.21E-01	-6.64E-01	2.11E-01
	78.34	96.00	4.21E-01		-7.23E-03	2.09E-01
SC-46	889.25	99.98	2.83E-01	2.68E-01	-9.04E-02	1.38E-01
	1120.51	99.99	2.68E-01		1.47E-01	1.29E-01
V-48	983.52	99.98	3.39E-01	2.28E-01	3.59E-01	1.64E-01
	1312.10	97.50	2.28E-01		9.67E-02	1.08E-01
CR-51	320.08	9.83	2.47E+00	2.47E+00	-8.51E-01	1.22E+00
MN-54	834.83	99.97	2.92E-01	2.92E-01	-2.89E-02	1.42E-01
+ CO-56	846.75 *	99.96	3.33E-01	3.33E-01	1.91E-01	1.63E-01
	1037.75	14.03	1.73E+00		-1.54E-01	8.35E-01
	1238.25 *	67.00	3.89E-01		3.85E-01	1.87E-01
	1771.40	15.51	8.81E-01		-9.23E-03	3.99E-01
	2598.48	16.90	3.37E-01		-5.22E-02	1.26E-01
CO-57	122.06	85.51	3.40E-01	3.40E-01	-1.72E-01	1.69E-01
	136.48	10.60	2.68E+00		1.25E+00	1.33E+00
CO-58	810.76	99.40	3.14E-01	3.14E-01	-2.57E-02	1.53E-01
FE-59	1099.22	56.50	4.18E-01	4.18E-01	2.23E-01	2.01E-01
	1291.56	43.20	4.59E-01		5.83E-02	2.17E-01
CO-60	1173.22	100.00	2.04E-01	1.78E-01	-7.13E-02	9.71E-02
	1332.49	100.00	1.78E-01		4.58E-02	8.37E-02
ZN-65	1115.52	50.75	4.28E-01	4.28E-01	4.05E-02	2.05E-01
GA-67	93.31	35.70	9.69E+00	4.01E+00	6.77E+02	4.84E+00

Analysis Report for 1606013-03

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
GA-67	208.95	2.24	3.09E+01	4.01E+00	2.06E+01	1.53E+01
	300.22	16.00	4.01E+00		2.09E+00	1.98E+00
SE-75	121.11	16.70	1.78E+00	3.74E-01	1.02E+00	8.83E-01
	136.00	59.20	4.87E-01		7.51E-02	2.42E-01
	264.65	59.80	3.74E-01		-2.98E-03	1.85E-01
	279.53	25.20	8.88E-01		1.59E-01	4.38E-01
	400.65	11.40	1.99E+00		5.62E-01	9.76E-01
RB-82	776.52	13.00	2.79E+00	2.79E+00	-1.72E+00	1.36E+00
RB-83	520.41	46.00	5.58E-01	5.58E-01	1.94E-01	2.73E-01
	529.64	30.30	8.17E-01		-4.50E-01	4.00E-01
	552.65	16.40	1.55E+00		6.00E-01	7.61E-01
KR-85	513.99	0.43	5.63E+01	5.63E+01	-3.62E+01	2.76E+01
SR-85	513.99	99.27	2.59E-01	2.59E-01	-1.67E-01	1.27E-01
Y-88	898.02	93.40	2.90E-01	2.08E-01	-4.78E-02	1.41E-01
	1836.01	99.38	2.08E-01		-1.13E-02	9.74E-02
+ NB-93M	16.57	*	9.43	5.05E+02	2.73E+03	2.51E+02
NB-94	702.63	100.00	3.25E-01	2.69E-01	2.23E-01	1.59E-01
	871.10	100.00	2.69E-01		4.81E-02	1.31E-01
+ NB-95	765.79	*	99.81	6.06E-01	6.82E+00	2.99E-01
NB-95M	235.69	25.00	2.45E+00	2.45E+00	-4.64E+00	1.21E+00
ZR-95	724.18	43.70	7.60E-01	6.18E-01	6.98E-02	3.72E-01
	756.72	55.30	6.18E-01		3.19E-01	3.03E-01
MO-99	181.06	6.20	1.47E+01	1.00E+01	-8.37E+00	7.31E+00
	739.58	12.80	1.00E+01		-4.33E+01	4.93E+00
	778.00	4.50	2.53E+01		-1.17E+01	1.24E+01
RU-103	497.08	89.00	2.86E-01	2.86E-01	-2.98E-03	1.40E-01
RU-106	621.84	9.80	2.95E+00	2.95E+00	-1.64E+00	1.44E+00
AG-108M	433.93	89.90	2.45E-01	2.45E-01	2.16E-02	1.20E-01
	614.37	90.40	3.32E-01		9.43E-03	1.63E-01
	722.95	90.50	3.47E-01		2.59E-02	1.70E-01
CD-109	88.03	3.72	1.42E+01	1.42E+01	1.72E+00	7.07E+00
AG-110M	657.75	93.14	3.13E-01	3.13E-01	-2.52E-01	1.53E-01
	677.61	10.53	2.78E+00		-1.87E+00	1.36E+00
	706.67	16.46	1.92E+00		8.82E-01	9.42E-01
	763.93	21.98	2.98E+00		2.63E+01	1.48E+00
	884.67	71.63	4.54E-01		-5.61E-02	2.22E-01
	1384.27	23.94	6.52E-01		-2.24E-01	3.04E-01
CD-113M	263.70	0.02	9.48E+02	9.48E+02	5.73E+00	4.68E+02
SN-113	255.12	1.93	1.18E+01	3.41E-01	2.90E-01	5.81E+00
	391.69	64.90	3.41E-01		-2.00E-01	1.68E-01
TE123M	159.00	84.10	3.29E-01	3.29E-01	-4.83E-02	1.63E-01
SB-124	602.71	97.87	3.15E-01	2.50E-01	1.80E-02	1.55E-01
	645.85	7.26	4.33E+00		-8.36E-01	2.12E+00
	722.78	11.10	3.00E+00		2.24E-01	1.47E+00
	1691.02	49.00	2.50E-01		-2.66E-02	1.12E-01
	I-125	35.49	6.49		9.51E+00	9.51E+00	-3.29E+00	4.72E+00
SB-125	176.33	6.89	3.80E+00	7.63E-01	3.64E+00	1.89E+00
	427.89	29.33	7.63E-01		3.09E-01	3.74E-01
	463.38	10.35	2.22E+00		-3.85E-01	1.09E+00
	600.56	17.80	1.63E+00		-5.52E-02	7.98E-01
	635.90	11.32	2.54E+00		-1.00E+00	1.24E+00
SB-126	414.70	83.30	3.50E-01	3.50E-01	-1.06E-01	1.72E-01
	666.33	99.60	4.00E-01		-8.09E-02	1.96E-01

Analysis Report for 1606013-03

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
SB-126	695.00	99.60	3.98E-01	3.50E-01	-5.18E-01	1.95E-01
	720.50	53.80	7.67E-01		-1.28E-01	3.76E-01
SN-126	87.57	37.00	1.42E+00	1.42E+00	1.72E-01	7.05E-01
SB-127	473.00	25.00	2.31E+00	2.00E+00	3.03E-01	1.13E+00
	685.20	35.70	2.00E+00		1.16E+00	9.80E-01
	783.80	14.70	6.76E+00		1.02E+00	3.33E+00
I-129	29.78	57.00	1.63E+00	1.63E+00	-6.25E+00	8.07E-01
	33.60	13.20	5.10E+00		-4.65E+00	2.53E+00
	39.58	7.52	6.37E+00		-3.24E+00	3.16E+00
I-131	284.30	6.05	5.39E+00	4.17E-01	-3.36E+00	2.66E+00
	364.48	81.20	4.17E-01		6.09E-02	2.05E-01
	636.97	7.26	6.11E+00		-2.23E+00	3.00E+00
	722.89	1.80	2.69E+01		2.01E+00	1.32E+01
TE-132	49.72	13.10	9.94E+00	7.97E-01	-2.25E+01	4.94E+00
	228.16	88.00	7.97E-01		7.26E-01	3.94E-01
BA-133	81.00	33.00	1.22E+00	3.72E-01	-3.93E+00	6.07E-01
	302.84	17.80	1.23E+00		-7.20E-02	6.04E-01
	356.01	60.00	3.72E-01		1.10E-01	1.83E-01
I-133	529.87	86.30	1.57E+01	1.57E+01	-5.83E-01	7.69E+00
XE-133	81.00	38.00	2.06E+00	2.06E+00	-6.63E+00	1.02E+00
CS-134	563.23	8.38	3.05E+00	3.02E-01	6.21E-01	1.50E+00
	569.32	15.43	1.78E+00		1.78E+00	8.74E-01
	604.70	97.60	3.02E-01		-1.18E-02	1.48E-01
	795.84	85.40	3.76E-01		2.13E-01	1.84E-01
	801.93	8.73	3.48E+00		3.87E-01	1.70E+00
	268.24	16.00	1.37E+00		1.37E+00	3.48E-01	6.78E-01
I-135	1131.51	22.50	3.15E+05	1.83E+05	-7.90E+03	1.51E+05
	1260.41	28.60	1.83E+05		-5.98E+04	8.64E+04
	1678.03	9.54	3.78E+05		-1.10E+03	1.70E+05
CS-136	153.22	7.46	4.71E+00	3.57E-01	1.71E+00	2.33E+00
	163.89	4.61	8.46E+00		3.33E+01	4.20E+00
	176.55	13.56	2.48E+00		4.25E-01	1.23E+00
	273.65	12.66	2.29E+00		1.16E+00	1.13E+00
	340.57	48.50	5.81E-01		-1.58E-01	2.86E-01
	818.50	99.70	3.64E-01		-1.35E-01	1.77E-01
	1048.07	79.60	3.57E-01		-1.09E-01	1.72E-01
	1235.34	19.70	1.43E+00		4.94E-01	6.85E-01
CS-137	661.65	85.12	3.47E-01	3.47E-01	-2.10E-03	1.70E-01
+ LA-138	788.74	34.00	1.19E+00	2.52E-01	3.23E+00	5.84E-01
	1435.80	* 66.00	2.52E-01		3.58E-01	1.18E-01
CE-139	165.85	80.35	3.53E-01	3.53E-01	1.01E-01	1.75E-01
BA-140	162.64	6.70	5.87E+00	1.30E+00	2.15E+01	2.91E+00
	304.84	4.50	6.33E+00		-9.71E-02	3.12E+00
	423.70	3.20	8.90E+00		-3.63E+00	4.37E+00
	437.55	2.00	1.47E+01		-3.46E+00	7.19E+00
	537.32	25.00	1.30E+00		1.01E-01	6.36E-01
LA-140	328.77	20.50	1.38E+00	2.16E-01	1.00E-01	6.80E-01
	487.03	45.50	6.63E-01		-1.71E-01	3.25E-01
	815.85	23.50	1.57E+00		-2.34E-01	7.66E-01
	1596.49	95.49	2.16E-01		-3.43E-02	1.00E-01
CE-141	145.44	48.40	7.74E-01	7.74E-01	5.69E+00	3.84E-01
CE-143	57.36	11.80	4.86E+01	7.00E+00	-4.19E+01	2.42E+01
	293.26	42.00	7.00E+00		1.20E+00	3.45E+00

Analysis Report for 1606013-03

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CE-143	664.55	5.20	7.43E+01	7.00E+00	8.04E+01	3.65E+01
CE-144	133.54	10.80	2.67E+00	2.67E+00	-4.66E-02	1.33E+00
PM-144	476.78	42.00	5.63E-01	3.00E-01	2.06E-01	2.76E-01
	618.01	98.60	3.00E-01		2.78E-02	1.47E-01
	696.49	99.49	3.09E-01		-1.73E-01	1.52E-01
PM-145	36.85	21.70	2.46E+00	1.30E+00	-2.08E+00	1.22E+00
	37.36	39.70	1.30E+00		-1.10E+00	6.45E-01
	42.30	15.10	2.86E+00		-2.91E+00	1.42E+00
	72.40	2.31	1.84E+01		1.53E+00	9.14E+00
PM-146	453.90	39.94	5.76E-01	5.76E-01	2.35E-02	2.83E-01
	735.90	14.01	2.36E+00		1.21E+00	1.16E+00
	747.13	13.10	2.53E+00		1.20E+00	1.24E+00
ND-147	91.11	28.90	5.61E+00	2.56E+00	3.70E+02	2.80E+00
	531.02	13.10	2.56E+00		1.81E-01	1.25E+00
PM-149	285.90	3.10	3.31E+01	3.31E+01	-1.12E+01	1.63E+01
EU-152	121.78	20.50	1.40E+00	1.12E+00	-7.06E-01	6.94E-01
	244.69	5.40	4.10E+00		-4.78E-01	2.02E+00
	344.27	19.13	1.13E+00		6.82E-01	5.57E-01
	778.89	9.20	3.58E+00		1.17E+00	1.75E+00
	964.01	10.40	2.39E+00		-8.99E-02	1.16E+00
	1085.78	7.22	3.05E+00		-5.19E-01	1.47E+00
	1112.02	9.60	2.26E+00		1.42E-01	1.08E+00
	1407.95	14.94	1.12E+00		-4.53E-01	5.24E-01
GD-153	97.43	31.30	1.57E+00	1.52E+00	5.99E+00	7.83E-01
	103.18	22.20	1.52E+00		2.70E-01	7.57E-01
EU-154	123.07	40.50	7.12E-01	5.21E-01	3.48E-02	3.53E-01
	723.30	19.70	1.60E+00		1.19E-01	7.83E-01
	873.19	11.50	2.38E+00		9.50E-01	1.16E+00
	996.32	10.30	2.66E+00		3.78E-01	1.29E+00
	1004.76	17.90	5.62E+00		7.67E+01	2.78E+00
	1274.45	35.50	5.21E-01		-2.46E-01	2.47E-01
EU-155	86.50	30.90	1.68E+00	1.62E+00	2.06E-01	8.36E-01
	105.30	20.70	1.62E+00		-4.12E-01	8.07E-01
EU-156	811.77	10.40	3.56E+00	2.82E+00	7.14E-01	1.74E+00
	1153.47	7.20	3.71E+00		1.21E+00	1.78E+00
	1230.71	8.90	2.82E+00		2.98E-01	1.34E+00
HO-166M	184.41	72.60	7.64E-01	5.65E-01	1.73E+01	3.81E-01
	280.45	29.60	7.36E-01		1.32E-01	3.63E-01
	410.94	11.10	2.01E+00		3.43E-01	9.88E-01
	711.69	54.10	5.65E-01		-1.89E-01	2.77E-01
TM-171	66.72	0.14	2.75E+02	2.75E+02	-7.65E+02	1.37E+02
HF-172	81.75	4.52	9.21E+00	2.54E+00	-3.86E+01	4.59E+00
	125.81	11.30	2.54E+00		1.04E+00	1.26E+00
LU-172	181.53	20.60	2.11E+00	6.03E-01	-3.39E-01	1.04E+00
	810.06	16.63	3.00E+00		-2.46E-01	1.46E+00
	912.12	15.25	3.01E+00		2.12E+00	1.46E+00
	1093.66	62.50	6.03E-01		6.60E-02	2.90E-01
LU-173	100.72	5.24	7.72E+00	1.06E+00	-3.56E+01	3.84E+00
	272.11	21.20	1.06E+00		4.69E-01	5.22E-01
HF-175	343.40	84.00	2.68E-01	2.68E-01	3.12E-02	1.32E-01
LU-176	88.34	13.30	3.94E+00	2.32E-01	4.78E-01	1.96E+00
	201.83	86.00	2.88E-01		-2.60E+00	1.43E-01
	306.78	94.00	2.32E-01		1.04E-01	1.14E-01

Analysis Report for 1606013-03
CP-5026-S 1 0-1 5

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)	
TA-182	67.75	41.20	1.00E+00	7.20E-01	-1.57E+00	4.99E-01	
	1121.30	34.90	7.82E-01		7.82E-01	3.78E-01	
	1189.05	16.23	1.35E+00		2.90E-01	6.43E-01	
	1221.41	26.98	7.20E-01		-4.58E-01	3.42E-01	
	1231.02	11.44	1.75E+00		1.71E-01	8.31E-01	
IR-192	308.46	29.68	7.64E-01	5.10E-01	3.20E-01	3.76E-01	
	468.07	48.10	5.10E-01		1.78E-01	2.50E-01	
HG-203	279.19	77.30	3.04E-01	3.04E-01	-6.23E-03	1.50E-01	
+ BI-207	569.67	*	97.72	3.29E-01	2.63E-01	1.75E-01	
	1063.62	*	74.90	3.29E-01	2.05E-01	1.59E-01	
TL-208	583.14	30.22	9.98E-01	4.74E-01	9.49E-01	4.90E-01	
	860.37	4.48	6.14E+00		-2.38E-01	2.99E+00	
	2614.66	35.85	4.74E-01		6.21E-01	2.18E-01	
BI-210M	262.00	45.00	4.85E-01	4.85E-01	1.15E-01	2.39E-01	
	300.00	23.00	9.59E-01		5.01E-01	4.73E-01	
PB-210	46.50	4.25	1.00E+01	1.00E+01	-2.11E+01	4.98E+00	
PB-211	404.84	2.90	7.62E+00	7.62E+00	-2.10E+00	3.74E+00	
	831.96	2.90	1.04E+01		7.50E+00	5.07E+00	
BI-212	727.17	11.80	2.67E+00	2.67E+00	3.96E-02	1.31E+00	
	1620.62	2.75	5.25E+00		9.57E-01	2.41E+00	
+ PB-212	238.63	*	44.60	8.50E-01	1.50E+00	4.22E-01	
	300.09		3.41	6.47E+00	3.38E+00	3.19E+00	
+ BI-214	609.31	*	46.30	8.22E-01	1.61E+00	4.05E-01	
	1120.29		15.10	1.70E+00	9.34E-01	8.22E-01	
	1764.49		15.80	1.35E+00	1.96E+00	6.37E-01	
	2204.22	*	4.98	1.22E+00	2.00E+00	4.74E-01	
+ PB-214	295.21	*	19.19	1.58E+00	1.59E+00	7.84E-01	
	351.92	*	37.19	8.18E-01	1.27E+00	4.04E-01	
RN-219	401.80	6.50	3.37E+00	3.37E+00	-8.24E-02	1.65E+00	
RA-223	323.87	3.88	5.64E+00	5.64E+00	1.10E+00	2.77E+00	
RA-224	240.98	3.95	6.14E+00	6.14E+00	6.41E+00	3.03E+00	
RA-225	40.00	31.00	1.91E+00	1.91E+00	-9.72E-01	9.48E-01	
+ RA-226	186.21	*	3.28	1.18E+01	1.18E+01	4.06E+02	5.86E+00
	TH-227	50.10	8.40	5.27E+00	2.04E+00	-1.19E+01	2.62E+00
+ AC-228	236.00		11.50	2.04E+00	-3.85E+00	1.01E+00	
	256.20		6.30	4.24E+00	2.75E+00	2.10E+00	
	338.32	*	11.40	1.97E+00	1.04E+00	1.24E+00	9.69E-01
	911.07	*	27.70	1.04E+00		7.15E-01	5.08E-01
TH-230	969.11		16.60	1.58E+00	8.59E-01	7.68E-01	
	48.44	16.90	2.62E+00	2.62E+00	-2.81E+00	1.30E+00	
	62.85	4.60	2.18E+01		1.15E+03	1.09E+01	
PA-231	67.67	0.37	1.08E+02		-1.70E+02	5.39E+01	
	283.67	1.60	1.32E+01	9.48E+00	-8.23E+00	6.50E+00	
+ TH-231	302.67	2.30	9.48E+00		-5.57E-01	4.67E+00	
	25.64	*	14.70	2.05E+01	9.85E+00	3.09E+01	1.02E+01
+ PA-233	84.21	*	6.40	9.85E+00		3.49E+01	4.91E+00
	311.98	38.60	6.31E-01	6.31E-01	-1.37E-01	3.11E-01	
+ PA-234	131.20	*	20.40	1.68E+00	1.68E+00	2.52E+00	8.36E-01
	733.99		8.80	3.71E+00		1.75E+00	1.82E+00
	946.00	*	12.00	3.00E+00		4.52E+00	1.47E+00
+ PA-234M	1001.03	*	0.92	4.55E+01	4.55E+01	1.80E+03	2.23E+01
+ TH-234	63.29	*	3.80	1.92E+01	1.92E+01	1.43E+03	9.57E+00
+ U-235	143.76	*	10.50	4.02E+00	4.02E+00	2.35E+01	2.00E+00

Analysis Report for 1606013-03
CP-5026-S 1 0-1 5

Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
U-235	163.35	*	4.70	7.87E+00	4.02E+00	2.34E+01	3.91E+00
	205.31	*	4.70	7.08E+00		2.81E+01	3.51E+00
NP-237	86.50		12.60	4.11E+00	4.11E+00	5.05E-01	2.05E+00
NP-239	106.10		22.70	6.53E+00	6.53E+00	-6.93E-02	3.25E+00
	228.18		10.70	9.88E+00		8.99E+00	4.89E+00
	277.60		14.10	6.84E+00		3.05E+00	3.38E+00
AM-241	59.54		35.90	1.31E+00	1.31E+00	-2.13E+00	6.51E-01
AM-243	74.67		66.00	6.31E-01	6.31E-01	4.74E-02	3.14E-01
CM-243	209.75		3.29	7.27E+00	1.57E+00	3.97E+00	3.60E+00
	228.14		10.60	2.28E+00		2.07E+00	1.13E+00
	277.60		14.00	1.57E+00		7.00E-01	7.76E-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
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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: CP-5026-S 1 0-1 5

Elapsed Live time: 3600

Elapsed Real Time: 3625

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	4	983	2285
9:	2169	1808	1489	2551	2845	1863	1420	2796
17:	3032	1492	1840	1940	1617	1440	1375	1592
25:	1441	1547	1386	1274	1241	1304	1342	1876
33:	1570	1522	1566	1537	1685	1703	1823	1908
41:	1852	2030	2100	2228	2303	2495	2743	2881
49:	3377	3644	3873	4598	5130	4909	4751	5042
57:	5151	5379	5672	5844	6013	6591	52041	28272
65:	3997	4069	4396	5038	5565	5935	5932	5818
73:	5973	5868	5882	5705	5719	5489	5559	5537
81:	5618	5655	6606	7534	5914	5415	5685	5553
89:	5622	6600	5871	50794	78416	6443	7283	3624
97:	2617	8220	7544	2419	2184	2218	2192	2270
105:	2404	2281	2171	2336	2731	2920	4401	4068
113:	7337	2546	2490	1854	1583	1614	1543	1540
121:	1596	1520	1501	1413	1563	1498	1456	1438
129:	1401	1397	1810	1596	1372	1307	1337	1354
137:	1363	1258	1317	1279	1317	1204	1860	3640
145:	1227	1190	1093	1124	1107	1102	1129	1047
153:	1200	1079	1017	1048	1053	1034	1067	1078
161:	994	966	1936	1477	984	941	952	962
169:	897	904	938	867	858	893	896	869
177:	870	883	799	827	839	877	831	800
185:	4876	11702	1029	693	678	664	692	706
193:	729	673	730	629	612	646	661	605
201:	660	833	671	606	1506	975	551	583
209:	646	583	608	569	582	564	592	557
217:	569	544	551	527	562	510	483	508
225:	525	602	660	519	445	503	487	480
233:	487	462	478	478	475	567	647	472
241:	507	536	403	403	431	420	432	443
249:	449	436	426	413	404	394	391	380
257:	393	1310	694	390	353	391	374	344
265:	354	367	374	344	357	379	354	395
273:	370	337	344	368	335	331	381	323
281:	321	320	324	300	317	289	341	304
289:	322	314	342	305	302	363	507	391
297:	320	298	327	309	302	329	289	280
305:	307	300	303	274	291	278	253	272
313:	303	287	283	274	296	291	248	267
321:	261	275	270	270	293	267	273	256
329:	265	274	243	255	252	253	275	240
337:	258	281	278	269	226	244	232	272
345:	235	250	227	262	231	240	314	563
353:	239	255	246	244	271	228	224	227
361:	247	244	259	199	220	240	225	208

369: 213 220 223 249 206 225 213 221

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	188	229	217	213	222	203	205	217
385:	225	228	217	251	248	196	196	215
393:	217	175	238	175	203	188	213	202
401:	203	200	195	198	192	217	204	216
409:	196	199	208	195	206	167	205	200
417:	182	195	206	197	200	190	174	173
425:	173	193	175	201	187	183	192	164
433:	182	178	191	185	176	165	193	191
441:	198	200	162	170	192	166	192	191
449:	174	175	189	167	173	179	206	185
457:	166	194	179	161	193	177	186	152
465:	170	192	182	183	164	181	180	173
473:	165	173	190	186	159	166	174	159
481:	165	177	162	182	161	168	184	143
489:	160	171	167	141	186	184	163	168
497:	158	158	167	144	153	172	162	171
505:	174	196	146	174	194	201	239	189
513:	175	164	173	144	156	177	175	162
521:	156	175	160	171	151	166	138	167
529:	136	165	157	180	166	172	155	170
537:	174	159	149	159	147	177	151	188
545:	157	139	156	148	137	146	142	163
553:	149	157	136	145	132	163	172	146
561:	161	161	163	158	152	150	150	158
569:	235	203	159	146	161	164	169	141
577:	154	120	131	150	126	138	202	171
585:	134	140	150	119	133	125	132	140
593:	148	146	137	141	120	136	122	127
601:	142	145	131	139	116	135	133	143
609:	331	262	137	146	141	132	119	138
617:	149	138	116	124	124	114	129	122
625:	127	126	125	143	129	136	122	130
633:	120	120	124	129	115	118	100	127
641:	124	130	116	126	122	131	122	122
649:	127	131	125	128	122	127	119	105
657:	114	118	97	101	132	127	133	116
665:	121	128	131	101	118	144	100	127
673:	115	102	116	110	97	113	118	99
681:	111	129	112	101	107	107	108	81
689:	106	132	133	122	128	122	113	100
697:	87	110	147	131	119	170	120	99
705:	118	150	103	124	112	102	115	112
713:	120	97	110	114	102	114	116	109
721:	124	112	120	119	123	100	108	118
729:	110	122	103	122	155	141	111	108
737:	110	110	128	170	135	277	529	201
745:	96	96	112	110	114	116	92	102
753:	124	101	121	121	121	111	94	113
761:	103	125	99	122	229	1243	1260	207
769:	113	123	99	123	97	114	92	106
777:	108	96	111	117	118	124	123	91
785:	137	305	268	114	123	112	103	95
793:	108	120	96	105	94	90	96	81

801: 90 73 89 85 113 145 103 98

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	85	74	74	85	72	93	68	77
817:	68	64	82	77	74	75	76	82
825:	86	90	74	76	77	79	106	86
833:	74	75	87	83	55	71	62	72
841:	78	67	63	77	92	78	82	72
849:	68	66	73	101	66	76	67	60
857:	54	81	64	61	71	64	63	71
865:	84	68	83	69	43	55	65	71
873:	67	59	58	67	68	49	60	110
881:	119	60	142	108	45	45	80	79
889:	54	56	51	57	64	49	56	52
897:	51	62	61	47	57	70	46	60
905:	53	44	56	45	55	47	83	84
913:	50	39	51	47	48	55	64	49
921:	71	81	51	60	99	94	86	54
929:	42	47	34	43	56	50	46	55
937:	67	42	37	38	58	54	41	42
945:	66	141	98	60	51	58	44	46
953:	37	37	40	33	44	30	37	32
961:	42	37	45	48	44	42	47	46
969:	57	46	46	57	44	33	28	35
977:	42	52	33	55	62	42	35	59
985:	58	46	29	38	43	46	44	45
993:	44	49	59	54	41	43	62	786
1001:	2923	1717	152	27	34	22	28	36
1009:	25	36	42	33	43	31	32	30
1017:	37	42	27	25	32	27	40	30
1025:	41	28	24	27	28	34	31	44
1033:	27	39	27	26	37	41	25	41
1041:	41	27	29	35	33	31	23	27
1049:	29	27	33	35	29	35	35	35
1057:	43	34	26	31	36	51	28	34
1065:	26	21	22	35	32	21	24	31
1073:	34	28	20	28	22	37	33	35
1081:	34	30	33	27	24	30	23	28
1089:	27	25	35	27	43	17	26	27
1097:	19	36	29	31	26	20	19	25
1105:	26	19	21	28	33	28	22	32
1113:	27	19	21	29	23	25	25	56
1121:	67	23	37	38	33	24	36	23
1129:	27	24	31	25	28	41	24	31
1137:	21	24	22	30	27	16	24	15
1145:	20	28	12	17	28	24	19	24
1153:	23	33	16	25	22	16	19	27
1161:	33	20	19	19	19	14	18	18
1169:	21	13	27	23	19	19	17	27
1177:	22	32	23	24	20	14	26	15
1185:	18	28	23	19	16	24	26	19
1193:	34	55	47	27	16	18	26	22
1201:	13	20	22	10	18	14	22	30
1209:	26	25	21	19	15	25	23	18
1217:	21	17	19	20	24	15	10	11
1225:	23	22	21	20	24	18	14	16

1233: 16 14 21 21 26 39 23 21

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Channel	1	2	3	4	5	6	7	8
1241:	12	12	17	21	13	20	20	17
1249:	17	15	20	14	14	18	18	18
1257:	13	13	14	10	11	13	15	12
1265:	13	12	10	18	12	16	14	16
1273:	13	12	17	21	11	20	23	11
1281:	14	18	9	10	11	14	15	14
1289:	11	17	13	14	14	17	14	11
1297:	13	20	13	10	12	12	13	15
1305:	9	10	10	9	17	14	15	8
1313:	20	6	13	13	9	12	12	13
1321:	17	8	10	14	9	10	9	13
1329:	12	13	12	15	20	8	9	12
1337:	10	14	10	15	13	8	13	10
1345:	10	12	13	12	11	6	10	13
1353:	13	16	11	8	12	8	11	7
1361:	15	12	10	13	11	9	17	8
1369:	8	9	12	12	5	13	5	17
1377:	18	20	13	8	8	8	12	9
1385:	7	9	9	12	10	9	15	12
1393:	16	20	16	8	14	12	7	12
1401:	6	12	14	11	12	8	6	10
1409:	11	14	10	15	10	20	11	10
1417:	9	12	12	5	5	8	9	13
1425:	10	10	12	9	5	8	3	7
1433:	17	29	16	15	14	4	8	7
1441:	12	7	8	8	15	8	4	5
1449:	7	9	7	10	14	8	6	7
1457:	13	9	15	67	147	80	13	4
1465:	7	8	2	10	2	9	8	1
1473:	4	8	8	7	6	5	5	6
1481:	7	7	5	4	5	4	7	5
1489:	7	13	5	14	6	6	12	5
1497:	10	13	6	7	6	4	5	5
1505:	3	7	2	3	18	42	34	15
1513:	6	8	4	9	3	9	3	3
1521:	3	7	4	5	8	11	12	8
1529:	8	5	8	7	7	5	7	6
1537:	4	8	10	1	5	5	8	4
1545:	8	6	5	8	9	6	5	10
1553:	13	23	23	11	9	4	10	5
1561:	5	4	5	4	3	7	3	2
1569:	2	8	9	7	3	6	3	7
1577:	3	6	9	6	7	4	11	2
1585:	5	1	1	5	1	4	5	5
1593:	7	11	5	5	2	7	4	7
1601:	5	11	2	6	4	8	0	4
1609:	2	2	3	1	6	4	7	2
1617:	9	4	4	5	5	7	1	6
1625:	3	3	6	6	6	4	3	4
1633:	3	5	4	3	1	6	6	3
1641:	4	7	3	1	2	2	3	4
1649:	2	2	0	4	4	2	2	4
1657:	7	5	2	3	2	9	4	4

1665: 1 6 6 8 10 3 2 0

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Channel	1	2	3	4	5	6	7	8
1673:	6	3	4	1	2	3	3	1
1681:	3	5	3	3	1	3	2	4
1689:	3	1	2	4	2	4	3	5
1697:	4	2	4	2	5	1	1	1
1705:	2	0	3	3	2	4	2	1
1713:	0	0	0	2	3	3	1	1
1721:	1	1	2	1	3	3	2	1
1729:	6	7	2	3	2	0	2	7
1737:	15	38	22	9	1	1	4	1
1745:	1	2	0	1	1	2	3	3
1753:	1	0	1	1	0	1	2	4
1761:	6	2	4	15	25	20	13	1
1769:	3	4	3	2	3	2	0	2
1777:	1	2	0	1	3	3	0	0
1785:	2	0	1	0	2	2	2	3
1793:	0	1	2	1	2	0	1	1
1801:	0	3	1	2	2	0	1	4
1809:	6	9	2	0	0	0	5	1
1817:	1	0	4	1	4	1	2	2
1825:	0	1	2	1	2	7	26	32
1833:	8	2	2	2	1	1	1	3
1841:	1	1	1	0	0	0	3	4
1849:	1	0	0	1	2	1	0	3
1857:	0	3	1	0	2	0	0	3
1865:	5	2	10	16	12	2	3	2
1873:	1	8	8	11	9	3	0	3
1881:	1	0	0	4	2	0	1	0
1889:	0	0	2	1	4	4	4	3
1897:	2	2	0	2	0	0	0	2
1905:	0	1	2	0	0	4	6	11
1913:	6	1	3	3	0	0	2	3
1921:	2	1	0	1	0	1	2	1
1929:	1	0	1	1	0	1	0	5
1937:	4	7	7	2	1	3	1	2
1945:	1	1	3	0	0	0	0	0
1953:	0	0	0	0	0	1	0	0
1961:	2	0	1	1	1	0	2	3
1969:	1	5	1	0	0	3	1	1
1977:	3	1	2	0	0	1	1	1
1985:	0	0	0	0	0	0	1	0
1993:	0	0	0	2	2	1	0	0
2001:	2	0	0	0	0	2	1	3
2009:	1	3	2	2	0	1	0	1
2017:	0	0	0	1	0	1	0	0
2025:	0	1	1	1	1	3	1	0
2033:	0	2	0	0	1	1	0	1
2041:	0	0	0	0	1	1	1	1
2049:	0	0	0	1	0	0	2	0
2057:	1	0	0	0	0	0	1	0
2065:	1	2	1	0	1	1	1	2
2073:	0	1	1	0	0	2	1	1
2081:	0	0	1	1	0	0	1	1
2089:	1	0	0	1	0	0	0	0

2097: 0 1 1 0 0 0 2 1

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Channel	1	2	3	4	5	6	7	8
2105:	6	1	0	2	1	0	0	0
2113:	0	1	0	1	3	0	0	4
2121:	1	0	2	0	1	0	0	2
2129:	1	2	1	1	0	1	1	2
2137:	1	0	4	0	0	1	1	0
2145:	0	1	0	0	0	0	0	2
2153:	0	0	0	0	0	1	1	1
2161:	2	0	0	0	1	2	0	0
2169:	0	0	0	1	1	0	0	3
2177:	0	0	1	1	2	1	1	1
2185:	1	0	0	1	2	0	0	1
2193:	0	0	1	1	0	0	0	0
2201:	4	1	2	7	3	5	1	0
2209:	1	0	0	1	0	0	1	2
2217:	3	1	1	1	0	0	0	2
2225:	0	2	0	0	0	0	1	1
2233:	0	0	1	0	0	0	0	0
2241:	0	1	1	0	0	1	0	1
2249:	1	2	0	0	0	0	1	1
2257:	1	0	2	1	0	2	0	0
2265:	1	1	1	2	0	1	2	1
2273:	1	1	0	2	0	1	2	0
2281:	0	0	2	0	1	0	0	0
2289:	1	0	1	0	1	3	3	0
2297:	1	1	0	2	0	0	2	0
2305:	1	0	0	1	1	0	0	1
2313:	0	0	0	3	0	1	1	1
2321:	0	1	0	1	1	0	0	0
2329:	0	0	0	2	1	1	2	0
2337:	1	1	0	1	2	1	1	0
2345:	1	1	0	0	1	0	0	0
2353:	1	1	1	0	0	1	0	1
2361:	1	2	0	1	1	1	3	2
2369:	0	0	0	1	0	0	0	0
2377:	1	0	1	1	0	1	0	0
2385:	0	0	1	1	0	0	0	1
2393:	1	1	1	0	1	0	1	1
2401:	0	0	0	0	0	0	0	0
2409:	3	0	0	0	0	0	0	0
2417:	0	1	0	0	0	1	0	1
2425:	1	0	0	0	0	0	1	0
2433:	0	1	0	0	1	1	0	0
2441:	0	2	0	0	0	1	0	2
2449:	3	0	1	1	1	0	0	1
2457:	0	1	3	1	2	1	0	0
2465:	1	0	0	0	0	0	1	2
2473:	2	0	1	0	0	1	0	2
2481:	0	0	0	0	0	0	2	0
2489:	0	1	1	0	1	0	0	0
2497:	0	0	0	0	0	1	1	1
2505:	1	0	0	0	0	1	1	0
2513:	0	0	0	0	1	1	0	0
2521:	0	0	0	0	0	1	0	1

2529: 0 0 0 0 1 0 0 2

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
2537:	1	0	0	0	0	0	0	0
2545:	0	0	0	1	0	0	1	0
2553:	0	1	0	0	0	0	1	0
2561:	0	0	0	0	0	0	0	0
2569:	0	1	0	0	1	0	1	0
2577:	1	0	1	0	0	0	2	1
2585:	0	0	1	0	0	0	0	0
2593:	0	0	1	1	1	0	0	0
2601:	0	0	0	0	2	0	0	0
2609:	0	0	0	0	3	11	25	4
2617:	1	0	0	0	0	1	0	0
2625:	1	0	1	0	1	0	0	0
2633:	0	0	0	0	0	1	0	0
2641:	0	0	0	0	0	0	2	0
2649:	0	0	0	0	0	1	0	1
2657:	0	0	0	0	1	0	0	0
2665:	2	0	1	0	0	0	2	0
2673:	0	0	1	0	0	0	1	0
2681:	0	0	0	0	1	0	0	0
2689:	0	0	0	0	1	0	0	0
2697:	0	0	0	0	0	0	0	1
2705:	1	0	0	1	0	0	1	0
2713:	0	0	1	0	0	0	0	0
2721:	0	0	0	1	0	1	0	0
2729:	1	0	1	0	1	1	0	0
2737:	1	0	0	1	0	1	0	0
2745:	0	0	0	1	0	0	0	0
2753:	0	0	0	0	0	1	0	0
2761:	0	1	1	0	0	0	0	0
2769:	0	2	1	0	0	0	0	0
2777:	0	0	1	0	0	1	0	1
2785:	1	0	0	0	0	0	0	0
2793:	0	0	0	0	0	0	1	0
2801:	0	0	0	1	1	1	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	1	0	0	0	0	0	0	0
2833:	0	0	1	0	0	0	0	0
2841:	0	0	0	1	1	1	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	0	0	1	0
2865:	0	0	0	0	0	0	1	2
2873:	1	0	0	1	0	1	0	0
2881:	3	0	2	0	0	0	0	0
2889:	0	0	0	0	0	0	0	0
2897:	0	1	0	0	0	0	0	1
2905:	0	1	0	0	0	0	0	0
2913:	0	0	0	1	0	0	0	0
2921:	1	0	0	0	0	1	0	0
2929:	0	0	0	0	0	0	0	1
2937:	0	0	0	1	1	0	0	0
2945:	0	0	1	1	0	0	0	0
2953:	0	0	0	0	1	0	0	0

2961: 0 0 0 0 0 0 0 0 0

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
2969:	0	0	1	0	0	0	0	0
2977:	1	0	0	1	0	0	1	0
2985:	0	2	1	1	0	0	1	0
2993:	1	0	1	0	1	0	1	0
3001:	0	0	0	1	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	1	0	0	1	0	0	1	0
3025:	0	0	0	0	0	0	0	0
3033:	0	1	0	0	0	0	1	0
3041:	0	0	0	0	0	0	0	0
3049:	0	0	0	0	0	0	0	1
3057:	0	1	0	0	0	0	0	0
3065:	0	0	1	1	0	0	1	0
3073:	0	1	0	0	0	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	1	0
3105:	0	1	0	0	0	0	0	0
3113:	0	0	0	0	0	0	1	0
3121:	0	0	0	0	1	0	0	0
3129:	0	0	0	0	0	0	1	3
3137:	1	1	0	0	0	0	0	0
3145:	1	0	0	0	0	0	1	0
3153:	1	0	0	0	0	1	1	0
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	2	0	2	0
3177:	0	0	0	0	0	0	0	0
3185:	0	1	1	0	0	0	0	0
3193:	0	0	1	0	1	0	0	0
3201:	0	0	0	0	1	0	1	0
3209:	0	0	0	2	0	0	0	1
3217:	0	0	0	0	1	1	0	0
3225:	1	0	2	0	1	0	0	0
3233:	0	0	0	1	0	0	0	0
3241:	0	0	1	0	0	1	0	1
3249:	0	0	0	0	1	0	0	0
3257:	0	0	0	0	0	1	0	0
3265:	0	1	0	0	0	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	0	0	0	0
3289:	0	0	1	0	0	0	0	0
3297:	0	0	1	0	0	0	0	1
3305:	0	0	1	0	0	0	0	0
3313:	0	0	0	0	0	0	0	1
3321:	0	0	0	0	1	1	0	0
3329:	0	1	1	0	1	0	0	0
3337:	0	0	0	0	0	0	1	0
3345:	0	0	1	0	0	0	1	0
3353:	0	0	0	1	0	0	0	0
3361:	0	0	0	0	0	0	0	0
3369:	1	0	0	0	0	1	0	0
3377:	0	0	0	2	0	0	0	1
3385:	0	0	0	0	0	0	0	0

3393: 1 0 0 0 0 0 0 0 0

Sample Title: CP-5026-S 1 0-1 5

Channel	1	2	3	4	5	6	7	8	9
3401:	0	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0	0
3433:	1	0	1	1	0	0	0	0	0
3441:	0	0	0	1	0	0	0	0	0
3449:	0	0	0	0	1	1	1	1	0
3457:	0	0	0	0	0	1	0	0	0
3465:	0	0	0	0	0	1	0	0	0
3473:	0	0	0	0	2	0	0	0	0
3481:	0	0	0	0	0	0	1	1	0
3489:	0	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	1	1	0
3505:	1	0	0	0	0	0	0	0	0
3513:	0	0	1	0	0	0	0	0	0
3521:	0	0	0	0	1	0	0	0	0
3529:	0	0	0	1	0	0	0	0	0
3537:	0	0	0	0	0	0	0	0	0
3545:	0	0	0	0	1	2	1	1	0
3553:	0	0	0	0	0	0	0	0	0
3561:	0	0	1	0	1	0	1	0	0
3569:	0	1	0	1	0	0	0	0	0
3577:	0	0	0	0	0	1	0	0	0
3585:	1	2	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	1	0	0
3601:	1	0	0	0	0	0	0	0	0
3609:	1	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	1	0	0
3625:	0	0	0	0	0	0	0	0	0
3633:	0	0	0	0	0	2	0	0	0
3641:	0	0	0	0	1	0	0	0	0
3649:	0	0	0	0	0	1	0	0	0
3657:	0	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0	0
3673:	0	2	1	0	0	0	0	0	0
3681:	0	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	0	0
3697:	0	0	1	1	0	0	0	1	0
3705:	0	2	1	0	1	0	0	0	0
3713:	0	0	0	0	0	0	0	1	0
3721:	1	0	1	0	0	0	0	0	0
3729:	1	0	0	0	1	0	0	0	0
3737:	0	0	0	0	0	0	1	0	0
3745:	0	0	0	0	0	0	1	0	0
3753:	0	0	0	0	1	0	0	0	0
3761:	0	1	0	1	0	0	0	0	0
3769:	0	0	0	0	0	0	0	0	0
3777:	0	0	1	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	0	0
3793:	0	0	1	0	0	1	0	0	0
3801:	0	0	0	0	0	0	0	0	0
3809:	0	1	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	1	0

3825: 1 0 0 0 0 0 0 0 0

Sample Title: CP-5026-S 1 0-1 5

Channel	1	0	0	0	0	0	0	0
3833:	0	0	0	0	0	0	0	0
3841:	0	1	1	0	0	0	0	0
3849:	0	1	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	1
3897:	0	0	0	0	0	0	0	0
3905:	0	1	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	3	0	0	0
3929:	0	1	1	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	1	0	3	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	1	1	1	1	0	0
3985:	0	1	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	1	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	1	0	1	0
4033:	0	0	0	0	0	0	1	0
4041:	0	0	0	0	0	0	0	0
4049:	0	1	0	0	0	1	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	1	0	0	0	0
4081:	0	0	0	0	1	1	0	0
4089:	0	0	0	0	0	0	0	0

Analysis Report for 1606013-04
CP-5026-S 1 0-1 5

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GAMMA SPECTRUM ANALYSIS

Sample Identification : 1606013-04
Sample Description : CP-5026-S 1 0-1 5
Sample Type : SOIL

Sample Size : 4.366E+02 grams
Facility : Countroom

Sample Taken On : 6/2/2016 7:36:41AM
Acquisition Started : 6/7/2016 8:44:16AM

Procedure : GAS-1402 pCi
Operator : Administrator
Detector Name : GE2
Geometry : GAS-1402
Live Time : 3600.0 seconds
Real Time : 3624.8 seconds

Dead Time : 0.68 %

Peak Locate Threshold : 2.50
Peak Locate Range (in channels) : 1 - 4096
Peak Area Range (in channels) : 6 - 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 : 38355

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
6/7/16

Analysis Report for 1606013-04
CP-5026-S 1 0-1 5

PEAK LOCATE REPORT

Peak Locate Performed on : 6/7/2016 9:44:43AM
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	17.25	17.37	0.0000	0.00
2	24.90	25.02	0.0000	0.00
3	32.10	32.21	0.0000	0.00
4	53.01	53.11	0.0000	0.00
5	63.20	63.29	0.0000	0.00
6	72.97	73.06	0.0000	0.00
7	83.59	83.67	0.0000	0.00
8	89.92	90.00	0.0000	0.00
9	94.92	95.00	0.0000	0.00
10	98.42	98.49	0.0000	0.00
11	110.93	111.00	0.0000	0.00
12	114.93	115.00	0.0000	0.00
13	131.29	131.35	0.0000	0.00
14	141.18	141.24	0.0000	0.00
15	143.83	143.88	0.0000	0.00
16	152.85	152.89	0.0000	0.00
17	163.25	163.29	0.0000	0.00
18	185.72	185.75	0.0000	0.00
19	202.07	202.09	0.0000	0.00
20	205.10	205.11	0.0000	0.00
21	226.75	226.75	0.0000	0.00
22	238.46	238.45	0.0000	0.00
23	258.24	258.22	0.0000	0.00
24	295.07	295.03	0.0000	0.00
25	338.92	338.87	0.0000	0.00
26	351.80	351.74	0.0000	0.00
27	387.98	387.90	0.0000	0.00
28	474.43	474.31	0.0000	0.00
29	496.01	495.87	0.0000	0.00
30	570.43	570.26	0.0000	0.00
31	583.88	583.70	0.0000	0.00
32	609.64	609.45	0.0000	0.00
33	691.90	691.67	0.0000	0.00
34	698.79	698.56	0.0000	0.00
35	734.14	733.89	0.0000	0.00
36	740.17	739.91	0.0000	0.00
37	743.23	742.98	0.0000	0.00
38	749.91	749.65	0.0000	0.00
39	766.70	766.44	0.0000	0.00
40	781.88	781.61	0.0000	0.00
41	786.62	786.35	0.0000	0.00
42	831.67	831.38	0.0000	0.00

Analysis Report for 1606013-04
CP-5026-S 1 0-1 5

<i>Peak No.</i>	<i>Energy (keV)</i>	<i>Centroid Channel</i>	<i>Centroid Uncertainty</i>	<i>Peak Significance</i>
43	851.47	851.17	0.0000	0.00
44	866.27	865.97	0.0000	0.00
45	882.25	881.93	0.0000	0.00
46	922.05	921.72	0.0000	0.00
47	926.55	926.22	0.0000	0.00
48	946.54	946.20	0.0000	0.00
49	1001.57	1001.20	0.0000	0.00
50	1120.99	1120.58	0.0000	0.00
51	1125.85	1125.44	0.0000	0.00
52	1147.41	1146.99	0.0000	0.00
53	1167.64	1167.22	0.0000	0.00
54	1188.62	1188.19	0.0000	0.00
55	1194.22	1193.79	0.0000	0.00
56	1203.88	1203.44	0.0000	0.00
57	1234.46	1234.01	0.0000	0.00
58	1238.32	1237.87	0.0000	0.00
59	1244.67	1244.22	0.0000	0.00
60	1254.46	1254.00	0.0000	0.00
61	1270.03	1269.57	0.0000	0.00
62	1304.47	1304.00	0.0000	0.00
63	1379.98	1379.48	0.0000	0.00
64	1434.63	1434.12	0.0000	0.00
65	1461.38	1460.86	0.0000	0.00
66	1510.51	1509.97	0.0000	0.00
67	1549.31	1548.76	0.0000	0.00
68	1554.61	1554.06	0.0000	0.00
69	1594.28	1593.72	0.0000	0.00
70	1716.21	1715.62	0.0000	0.00
71	1738.58	1737.98	0.0000	0.00
72	1765.63	1765.02	0.0000	0.00
73	1809.23	1808.62	0.0000	0.00
74	1832.64	1832.02	0.0000	0.00
75	1847.67	1847.04	0.0000	0.00
76	1868.88	1868.25	0.0000	0.00
77	1876.89	1876.25	0.0000	0.00
78	1894.46	1893.82	0.0000	0.00
79	1912.88	1912.24	0.0000	0.00
80	1938.77	1938.13	0.0000	0.00
81	1946.42	1945.78	0.0000	0.00
82	2012.09	2011.43	0.0000	0.00
83	2204.60	2203.90	0.0000	0.00
84	2426.15	2425.43	0.0000	0.00
85	2615.22	2614.48	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 6/7/2016 9:44:43AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
1	17.25	15 -	21	17.37	3.45E+03	363.16	2.13E+04	1.71
2	24.90	24 -	27	25.02	3.29E+02	214.71	1.11E+04	3.24
3	32.10	31 -	35	32.21	4.09E+02	259.40	1.47E+04	1.09
4	53.01	51 -	55	53.11	8.79E+02	449.36	4.45E+04	1.78
5	63.20	60 -	65	63.29	7.31E+04	763.57	5.82E+04	1.51
6	72.97	69 -	78	73.06	4.20E+03	876.77	1.08E+05	7.77
7	83.59	81 -	87	83.67	3.14E+03	670.13	7.95E+04	1.80
M 8	89.92	89 -	97	90.00	1.12E+03	166.93	1.12E+04	1.01
m 9	94.92	89 -	97	95.00	2.34E+03	649.17	3.21E+04	1.03
10	98.42	97 -	102	98.49	9.86E+03	442.95	3.03E+04	1.84
M 11	110.93	108 -	118	111.00	2.75E+03	239.30	1.24E+04	1.06
m 12	114.93	108 -	118	115.00	9.91E+02	257.66	1.03E+04	1.07
13	131.29	129 -	134	131.35	7.64E+02	289.59	1.61E+04	1.78
M 14	141.18	140 -	147	141.24	1.24E+02	122.85	5.00E+03	1.36
m 15	143.83	140 -	147	143.88	3.23E+03	225.96	9.63E+03	1.19
16	152.85	152 -	155	152.89	2.45E+02	189.77	8.71E+03	1.30
17	163.25	160 -	165	163.29	1.39E+03	255.80	1.19E+04	1.70
18	185.72	182 -	189	185.75	1.57E+04	369.13	1.22E+04	1.31
M 19	202.07	200 -	208	202.09	3.19E+02	146.71	5.12E+03	1.48
m 20	205.10	200 -	208	205.11	1.32E+03	158.77	4.90E+03	1.49
21	226.75	224 -	230	226.75	3.49E+02	199.52	6.95E+03	1.43
22	238.46	235 -	240	238.45	3.42E+02	172.52	5.67E+03	1.70
23	258.24	255 -	261	258.22	1.29E+03	185.83	5.34E+03	1.32
24	295.07	292 -	298	295.03	3.52E+02	157.16	4.23E+03	1.49
25	338.92	336 -	341	338.87	1.07E+02	124.17	2.97E+03	2.20
26	351.80	348 -	355	351.74	5.41E+02	155.86	3.69E+03	1.33
27	387.98	386 -	391	387.90	9.02E+01	110.10	2.35E+03	2.94
28	474.43	471 -	477	474.31	1.20E+02	111.11	2.16E+03	4.16
29	496.01	494 -	498	495.87	8.59E+01	84.87	1.53E+03	2.72
30	570.43	567 -	575	570.26	1.98E+02	134.24	2.61E+03	2.26
31	583.88	580 -	587	583.70	9.83E+01	118.79	2.28E+03	1.43
32	609.64	606 -	612	609.45	2.56E+02	106.56	1.88E+03	1.78
33	691.90	689 -	695	691.67	8.79E+01	93.47	1.52E+03	2.49
34	698.79	696 -	701	698.56	8.07E+01	84.37	1.37E+03	1.20
M 35	734.14	730 -	747	733.89	1.01E+02	81.89	1.28E+03	1.91
m 36	740.17	730 -	747	739.91	1.60E+02	86.80	1.25E+03	2.00
m 37	743.23	730 -	747	742.98	7.83E+02	90.11	1.02E+03	1.75
38	749.91	747 -	753	749.65	7.75E+01	89.12	1.40E+03	1.56
39	766.70	762 -	770	766.44	2.53E+03	147.50	1.79E+03	2.01
M 40	781.88	777 -	789	781.61	1.02E+02	93.73	1.53E+03	2.18

: 00264

Analysis Report for 1606013-04

CP-5026-S 10-1 5

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
m	41	786.62	777 -	789	786.35	3.92E+02	79.96	1.10E+03	1.62
	42	831.67	829 -	834	831.38	1.06E+02	65.49	7.58E+02	2.24
	43	851.47	848 -	854	851.17	7.72E+01	70.14	8.36E+02	3.89
	44	866.27	863 -	869	865.97	5.91E+01	67.14	7.82E+02	2.90
	45	882.25	877 -	885	881.93	1.69E+02	90.82	1.16E+03	3.83
M	46	922.05	918 -	930	921.72	1.07E+02	63.19	6.63E+02	2.39
m	47	926.55	918 -	930	926.22	1.97E+02	65.89	6.14E+02	2.30
	48	946.54	941 -	950	946.20	2.76E+02	79.22	7.36E+02	1.91
	49	1001.57	997 -	1005	1001.20	5.56E+03	163.89	7.08E+02	1.78
M	50	1120.99	1117 -	1129	1120.58	8.62E+01	39.67	2.49E+02	2.10
m	51	1125.85	1117 -	1129	1125.44	6.55E+01	46.73	3.24E+02	2.54
	52	1147.41	1145 -	1150	1146.99	2.93E+01	36.15	2.39E+02	2.59
	53	1167.64	1164 -	1171	1167.22	3.82E+01	42.19	2.70E+02	4.43
M	54	1188.62	1185 -	1198	1188.19	3.75E+01	37.10	2.14E+02	2.36
m	55	1194.22	1185 -	1198	1193.79	9.95E+01	40.94	2.34E+02	2.36
	56	1203.88	1200 -	1206	1203.44	3.25E+01	35.19	1.99E+02	3.74
M	57	1234.46	1232 -	1256	1234.01	5.46E+01	17.32	6.15E+01	3.15
m	58	1238.32	1232 -	1256	1237.87	8.81E+01	46.99	2.24E+02	3.19
m	59	1244.67	1232 -	1256	1244.22	4.01E+01	33.29	1.74E+02	2.40
m	60	1254.46	1232 -	1256	1254.00	2.36E+01	24.33	1.38E+02	2.19
	61	1270.03	1265 -	1273	1269.57	4.60E+01	39.70	2.10E+02	3.69
	62	1304.47	1300 -	1307	1304.00	3.01E+01	34.41	1.72E+02	3.11
	63	1379.98	1374 -	1384	1379.48	4.15E+01	42.40	2.11E+02	2.33
	64	1434.63	1430 -	1438	1434.12	5.05E+01	31.92	1.25E+02	2.64
	65	1461.38	1457 -	1466	1460.86	2.58E+02	44.62	1.42E+02	2.17
	66	1510.51	1503 -	1516	1509.97	1.17E+02	38.42	1.12E+02	2.54
M	67	1549.31	1546 -	1560	1548.76	2.75E+01	18.25	6.09E+01	2.60
m	68	1554.61	1546 -	1560	1554.06	6.01E+01	25.38	6.53E+01	2.60
	69	1594.28	1588 -	1600	1593.72	3.15E+01	33.35	1.13E+02	2.22
	70	1716.21	1711 -	1719	1715.62	2.10E+01	9.17	0.00E+00	6.63
	71	1738.58	1734 -	1744	1737.98	9.23E+01	24.15	3.14E+01	2.91
	72	1765.63	1759 -	1770	1765.02	8.81E+01	26.23	4.18E+01	2.16
	73	1809.23	1804 -	1812	1808.62	1.20E+01	13.90	2.21E+01	1.21
	74	1832.64	1827 -	1836	1832.02	7.06E+01	22.14	2.89E+01	2.78
	75	1847.67	1841 -	1853	1847.04	1.39E+01	16.52	2.42E+01	1.25
M	76	1868.88	1864 -	1880	1868.25	2.53E+01	16.25	2.77E+01	2.79
m	77	1876.89	1864 -	1880	1876.25	2.36E+01	15.62	1.98E+01	2.80
	78	1894.46	1890 -	1897	1893.82	1.30E+01	12.96	1.80E+01	2.62
	79	1912.88	1908 -	1916	1912.24	2.90E+01	10.77	0.00E+00	3.21
	80	1938.77	1933 -	1941	1938.13	7.67E+00	9.41	8.67E+00	1.84
	81	1946.42	1942 -	1950	1945.78	9.50E+00	8.26	5.00E+00	3.22
	82	2012.09	2008 -	2013	2011.43	7.00E+00	5.29	0.00E+00	1.47
	83	2204.60	2200 -	2207	2203.90	1.91E+01	10.00	3.76E+00	1.96
	84	2426.15	2422 -	2428	2425.43	7.00E+00	5.29	0.00E+00	3.00
	85	2615.22	2610 -	2618	2614.48	3.18E+01	12.50	4.41E+00	2.52

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

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 : 6/7/2016 9:44:43AM

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	17.25	15 -	21	3.45E+03	363.16	2.13E+04	2.82E+02
2	24.90	24 -	27	3.29E+02	214.71	1.11E+04	1.74E+02
3	32.10	31 -	35	4.09E+02	259.40	1.47E+04	2.11E+02
4	53.01	51 -	55	8.79E+02	449.36	4.45E+04	3.66E+02
5	63.20	60 -	65	7.31E+04	763.57	5.82E+04	4.43E+02
6	72.97	69 -	78	4.20E+03	876.77	1.08E+05	7.13E+02
7	83.59	81 -	87	3.14E+03	670.13	7.95E+04	5.43E+02
M 8	89.92	89 -	97	1.12E+03	166.93	1.12E+04	1.74E+02
m 9	94.92	89 -	97	2.34E+03	649.17	3.21E+04	2.95E+02
10	98.42	97 -	102	9.86E+03	442.95	3.03E+04	3.25E+02
M 11	110.93	108 -	118	2.75E+03	239.30	1.24E+04	1.83E+02
m 12	114.93	108 -	118	9.91E+02	257.66	1.03E+04	1.67E+02
13	131.29	129 -	134	7.64E+02	289.59	1.61E+04	2.34E+02
M 14	141.18	140 -	147	1.24E+02	122.85	5.00E+03	1.16E+02
m 15	143.83	140 -	147	3.23E+03	225.96	9.63E+03	1.61E+02
16	152.85	152 -	155	2.45E+02	189.77	8.71E+03	1.54E+02
17	163.25	160 -	165	1.39E+03	255.80	1.19E+04	2.01E+02
18	185.72	182 -	189	1.57E+04	369.13	1.22E+04	2.23E+02
M 19	202.07	200 -	208	3.19E+02	146.71	5.12E+03	1.18E+02
m 20	205.10	200 -	208	1.32E+03	158.77	4.90E+03	1.15E+02
21	226.75	224 -	230	3.49E+02	199.52	6.95E+03	1.61E+02
22	238.46	235 -	240	3.42E+02	172.52	5.67E+03	1.39E+02
23	258.24	255 -	261	1.29E+03	185.83	5.34E+03	1.41E+02
24	295.07	292 -	298	3.52E+02	157.16	4.23E+03	1.25E+02
25	338.92	336 -	341	1.07E+02	124.17	2.97E+03	1.01E+02
26	351.80	348 -	355	5.41E+02	155.86	3.69E+03	1.22E+02
27	387.98	386 -	391	9.02E+01	110.10	2.35E+03	8.91E+01
28	474.43	471 -	477	1.20E+02	111.11	2.16E+03	8.95E+01
29	496.01	494 -	498	8.59E+01	84.87	1.53E+03	6.81E+01
30	570.43	567 -	575	1.98E+02	134.24	2.61E+03	1.08E+02
31	583.88	580 -	587	9.83E+01	118.79	2.28E+03	9.63E+01

Analysis Report for 1606013-04

CP-5026-S 10-15

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	32	609.64	606 -	612	2.56E+02	106.56	1.88E+03	8.36E+01
	33	691.90	689 -	695	8.79E+01	93.47	1.52E+03	7.53E+01
	34	698.79	696 -	701	8.07E+01	84.37	1.37E+03	6.78E+01
M	35	734.14	730 -	747	1.01E+02	81.89	1.28E+03	5.87E+01
m	36	740.17	730 -	747	1.60E+02	86.80	1.25E+03	5.80E+01
m	37	743.23	730 -	747	7.83E+02	90.11	1.02E+03	5.25E+01
	38	749.91	747 -	753	7.75E+01	89.12	1.40E+03	7.18E+01
	39	766.70	762 -	770	2.53E+03	147.50	1.79E+03	8.86E+01
M	40	781.88	777 -	789	1.02E+02	93.73	1.53E+03	6.43E+01
m	41	786.62	777 -	789	3.92E+02	79.96	1.10E+03	5.45E+01
	42	831.67	829 -	834	1.06E+02	65.49	7.58E+02	5.11E+01
	43	851.47	848 -	854	7.72E+01	70.14	8.36E+02	5.58E+01
	44	866.27	863 -	869	5.91E+01	67.14	7.82E+02	5.37E+01
	45	882.25	877 -	885	1.69E+02	90.82	1.16E+03	7.15E+01
M	46	922.05	918 -	930	1.07E+02	63.19	6.63E+02	4.23E+01
m	47	926.55	918 -	930	1.97E+02	65.89	6.14E+02	4.07E+01
	48	946.54	941 -	950	2.76E+02	79.22	7.36E+02	5.91E+01
	49	1001.57	997 -	1005	5.56E+03	163.89	7.08E+02	5.58E+01
M	50	1120.99	1117 -	1129	8.62E+01	39.67	2.49E+02	2.59E+01
m	51	1125.85	1117 -	1129	6.55E+01	46.73	3.24E+02	2.96E+01
	52	1147.41	1145 -	1150	2.93E+01	36.15	2.39E+02	2.84E+01
	53	1167.64	1164 -	1171	3.82E+01	42.19	2.70E+02	3.32E+01
M	54	1188.62	1185 -	1198	3.75E+01	37.10	2.14E+02	2.40E+01
m	55	1194.22	1185 -	1198	9.95E+01	40.94	2.34E+02	2.51E+01
	56	1203.88	1200 -	1206	3.25E+01	35.19	1.99E+02	2.74E+01
M	57	1234.46	1232 -	1256	5.46E+01	17.32	6.15E+01	1.29E+01
m	58	1238.32	1232 -	1256	8.81E+01	46.99	2.24E+02	2.46E+01
m	59	1244.67	1232 -	1256	4.01E+01	33.29	1.74E+02	2.17E+01
m	60	1254.46	1232 -	1256	2.36E+01	24.33	1.38E+02	1.93E+01
	61	1270.03	1265 -	1273	4.60E+01	39.70	2.10E+02	3.07E+01
	62	1304.47	1300 -	1307	3.01E+01	34.41	1.72E+02	2.68E+01
	63	1379.98	1374 -	1384	4.15E+01	42.40	2.11E+02	3.32E+01
	64	1434.63	1430 -	1438	5.05E+01	31.92	1.25E+02	2.35E+01
	65	1461.38	1457 -	1466	2.58E+02	44.62	1.42E+02	2.54E+01
	66	1510.51	1503 -	1516	1.17E+02	38.42	1.12E+02	2.61E+01
M	67	1549.31	1546 -	1560	2.75E+01	18.25	6.09E+01	1.28E+01
m	68	1554.61	1546 -	1560	6.01E+01	25.38	6.53E+01	1.33E+01
	69	1594.28	1588 -	1600	3.15E+01	33.35	1.13E+02	2.58E+01
	70	1716.21	1711 -	1719	2.10E+01	9.17	0.00E+00	0.00E+00
	71	1738.58	1734 -	1744	9.23E+01	24.15	3.14E+01	1.20E+01
	72	1765.63	1759 -	1770	8.81E+01	26.23	4.18E+01	1.51E+01
	73	1809.23	1804 -	1812	1.20E+01	13.90	2.21E+01	9.91E+00
	74	1832.64	1827 -	1836	7.06E+01	22.14	2.89E+01	1.18E+01
	75	1847.67	1841 -	1853	1.39E+01	16.52	2.42E+01	1.21E+01
M	76	1868.88	1864 -	1880	2.53E+01	16.25	2.77E+01	8.65E+00
m	77	1876.89	1864 -	1880	2.36E+01	15.62	1.98E+01	7.31E+00
	78	1894.46	1890 -	1897	1.30E+01	12.96	1.80E+01	8.85E+00
	79	1912.88	1908 -	1916	2.90E+01	10.77	0.00E+00	0.00E+00
	80	1938.77	1933 -	1941	7.67E+00	9.41	8.67E+00	6.25E+00
	81	1946.42	1942 -	1950	9.50E+00	8.26	5.00E+00	4.52E+00
	82	2012.09	2008 -	2013	7.00E+00	5.29	0.00E+00	0.00E+00

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
83	2204.60	2200 -	2207	1.91E+01	10.00	3.76E+00	3.99E+00
84	2426.15	2422 -	2428	7.00E+00	5.29	0.00E+00	0.00E+00
85	2615.22	2610 -	2618	3.18E+01	12.50	4.41E+00	4.43E+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 : 6/7/2016 9:44:43AM

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	17.25	15 -	21	17.37	3.45E+03	363.16	2.13E+04	NB-93M	
2	24.90	24 -	27	25.02	3.29E+02	214.71	1.11E+04	TH-231	
3	32.10	31 -	35	32.21	4.09E+02	259.40	1.47E+04	.....
4	53.01	51 -	55	53.11	8.79E+02	449.36	4.45E+04	.....
5	63.20	60 -	65	63.29	7.31E+04	763.57	5.82E+04	TH-234	
								TH-230	
6	72.97	69 -	78	73.06	4.20E+03	876.77	1.08E+05	PM-145	
7	83.59	81 -	87	83.67	3.14E+03	670.13	7.95E+04	TH-231	
M	89.92	89 -	97	90.00	1.12E+03	166.93	1.12E+04	.....
m	94.92	89 -	97	95.00	2.34E+03	649.17	3.21E+04	.....
10	98.42	97 -	102	98.49	9.86E+03	442.95	3.03E+04	GD-153	
M	110.93	108 -	118	111.00	2.75E+03	239.30	1.24E+04	.....
m	114.93	108 -	118	115.00	9.91E+02	257.66	1.03E+04	.....
13	131.29	129 -	134	131.35	7.64E+02	289.59	1.61E+04	PA-234	
M	141.18	140 -	147	141.24	1.24E+02	122.85	5.00E+03	.....
m	143.83	140 -	147	143.88	3.23E+03	225.96	9.63E+03	U-235	
16	152.85	152 -	155	152.89	2.45E+02	189.77	8.71E+03	CS-136	
17	163.25	160 -	165	163.29	1.39E+03	255.80	1.19E+04	U-235	
								BA-140	
								CS-136	
18	185.72	182 -	189	185.75	1.57E+04	369.13	1.22E+04	RA-226	
M	19	202.07	200 -	208	202.09	3.19E+02	146.71	5.12E+03	LU-176
m	20	205.10	200 -	208	205.11	1.32E+03	158.77	4.90E+03	U-235

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
21	226.75	224 -	230	226.75	3.49E+02	199.52	6.95E+03	.....
22	238.46	235 -	240	238.45	3.42E+02	172.52	5.67E+03	PB-212
23	258.24	255 -	261	258.22	1.29E+03	185.83	5.34E+03	.....
24	295.07	292 -	298	295.03	3.52E+02	157.16	4.23E+03	PB-214
25	338.92	336 -	341	338.87	1.07E+02	124.17	2.97E+03	AC-228
26	351.80	348 -	355	351.74	5.41E+02	155.86	3.69E+03	PB-214
27	387.98	386 -	391	387.90	9.02E+01	110.10	2.35E+03	.....
28	474.43	471 -	477	474.31	1.20E+02	111.11	2.16E+03	.....
29	496.01	494 -	498	495.87	8.59E+01	84.87	1.53E+03	.....
30	570.43	567 -	575	570.26	1.98E+02	134.24	2.61E+03	BI-207
31	583.88	580 -	587	583.70	9.83E+01	118.79	2.28E+03	TL-208
32	609.64	606 -	612	609.45	2.56E+02	106.56	1.88E+03	BI-214
33	691.90	689 -	695	691.67	8.79E+01	93.47	1.52E+03	.....
34	698.79	696 -	701	698.56	8.07E+01	84.37	1.37E+03	.....
M 35	734.14	730 -	747	733.89	1.01E+02	81.89	1.28E+03	PA-234
m 36	740.17	730 -	747	739.91	1.60E+02	86.80	1.25E+03	MO-99
m 37	743.23	730 -	747	742.98	7.83E+02	90.11	1.02E+03	.....
38	749.91	747 -	753	749.65	7.75E+01	89.12	1.40E+03	.....
39	766.70	762 -	770	766.44	2.53E+03	147.50	1.79E+03	NB-95
M 40	781.88	777 -	789	781.61	1.02E+02	93.73	1.53E+03	.....
m 41	786.62	777 -	789	786.35	3.92E+02	79.96	1.10E+03	.....
42	831.67	829 -	834	831.38	1.06E+02	65.49	7.58E+02	PB-211
43	851.47	848 -	854	851.17	7.72E+01	70.14	8.36E+02	.....
44	866.27	863 -	869	865.97	5.91E+01	67.14	7.82E+02	.....
45	882.25	877 -	885	881.93	1.69E+02	90.82	1.16E+03	.....
M 46	922.05	918 -	930	921.72	1.07E+02	63.19	6.63E+02	.....
m 47	926.55	918 -	930	926.22	1.97E+02	65.89	6.14E+02	.....
48	946.54	941 -	950	946.20	2.76E+02	79.22	7.36E+02	PA-234
49	1001.57	997 -	1005	1001.20	5.56E+03	163.89	7.08E+02	PA-234M
M 50	1120.99	1117 -	1129	1120.58	8.62E+01	39.67	2.49E+02	TA-182 SC-46 BI-214
m 51	1125.85	1117 -	1129	1125.44	6.55E+01	46.73	3.24E+02	.....
52	1147.41	1145 -	1150	1146.99	2.93E+01	36.15	2.39E+02	.....
53	1167.64	1164 -	1171	1167.22	3.82E+01	42.19	2.70E+02	.....
M 54	1188.62	1185 -	1198	1188.19	3.75E+01	37.10	2.14E+02	TA-182
m 55	1194.22	1185 -	1198	1193.79	9.95E+01	40.94	2.34E+02	.....
56	1203.88	1200 -	1206	1203.44	3.25E+01	35.19	1.99E+02	.....
M 57	1234.46	1232 -	1256	1234.01	5.46E+01	17.32	6.15E+01	CS-136
m 58	1238.32	1232 -	1256	1237.87	8.81E+01	46.99	2.24E+02	CO-56
m 59	1244.67	1232 -	1256	1244.22	4.01E+01	33.29	1.74E+02	.....
m 60	1254.46	1232 -	1256	1254.00	2.36E+01	24.33	1.38E+02	.....
61	1270.03	1265 -	1273	1269.57	4.60E+01	39.70	2.10E+02	.....
62	1304.47	1300 -	1307	1304.00	3.01E+01	34.41	1.72E+02	.....
63	1379.98	1374 -	1384	1379.48	4.15E+01	42.40	2.11E+02	.....
64	1434.63	1430 -	1438	1434.12	5.05E+01	31.92	1.25E+02	.....
65	1461.38	1457 -	1466	1460.86	2.58E+02	44.62	1.42E+02	K-40
66	1510.51	1503 -	1516	1509.97	1.17E+02	38.42	1.12E+02	.....
M 67	1549.31	1546 -	1560	1548.76	2.75E+01	18.25	6.09E+01	.....
m 68	1554.61	1546 -	1560	1554.06	6.01E+01	25.38	6.53E+01	.....
69	1594.28	1588 -	1600	1593.72	3.15E+01	33.35	1.13E+02	.....
70	1716.21	1711 -	1719	1715.62	2.10E+01	9.17	0.00E+00	.....
71	1738.58	1734 -	1744	1737.98	9.23E+01	24.15	3.14E+01	.....
72	1765.63	1759 -	1770	1765.02	8.81E+01	26.23	4.18E+01	.....

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	73	1809.23	1804 -	1812	1808.62	1.20E+01	13.90	2.21E+01	AL-26
	74	1832.64	1827 -	1836	1832.02	7.06E+01	22.14	2.89E+01	.....
	75	1847.67	1841 -	1853	1847.04	1.39E+01	16.52	2.42E+01	.....
M	76	1868.88	1864 -	1880	1868.25	2.53E+01	16.25	2.77E+01	.....
m	77	1876.89	1864 -	1880	1876.25	2.36E+01	15.62	1.98E+01	.....
	78	1894.46	1890 -	1897	1893.82	1.30E+01	12.96	1.80E+01	.....
	79	1912.88	1908 -	1916	1912.24	2.90E+01	10.77	0.00E+00	.....
	80	1938.77	1933 -	1941	1938.13	7.67E+00	9.41	8.67E+00	.....
	81	1946.42	1942 -	1950	1945.78	9.50E+00	8.26	5.00E+00	.....
	82	2012.09	2008 -	2013	2011.43	7.00E+00	5.29	0.00E+00	.....
	83	2204.60	2200 -	2207	2203.90	1.91E+01	10.00	3.76E+00	BI-214
	84	2426.15	2422 -	2428	2425.43	7.00E+00	5.29	0.00E+00	.....
	85	2615.22	2610 -	2618	2614.48	3.18E+01	12.50	4.41E+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 : 6/7/2016 9:44:43AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	17.25	3.45E+03	363.16	2.19E-04	1.66E-03
	2	24.90	3.29E+02	214.71	2.48E-03	1.66E-03
	3	32.10	4.09E+02	259.40	7.07E-03	1.66E-03
	4	53.01	8.79E+02	449.36	2.03E-02	1.66E-03
	5	63.20	7.31E+04	763.57	2.37E-02	1.74E-03
	6	72.97	4.20E+03	876.77	2.53E-02	1.95E-03
	7	83.59	3.14E+03	670.13	2.60E-02	2.18E-03
M	8	89.92	1.12E+03	166.93	2.60E-02	2.27E-03
m	9	94.92	2.34E+03	649.17	2.60E-02	2.27E-03
	10	98.42	9.86E+03	442.95	2.58E-02	2.27E-03
M	11	110.93	2.75E+03	239.30	2.52E-02	2.27E-03
m	12	114.93	9.91E+02	257.66	2.49E-02	2.26E-03
	13	131.29	7.64E+02	289.59	2.38E-02	2.30E-03
M	14	141.18	1.24E+02	122.85	2.30E-02	2.34E-03
m	15	143.83	3.23E+03	225.96	2.28E-02	2.35E-03
	16	152.85	2.45E+02	189.77	2.22E-02	2.38E-03
	17	163.25	1.39E+03	255.80	2.14E-02	2.42E-03

: 00270

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	18	185.72	1.57E+04	369.13	1.99E-02	2.40E-03
M	19	202.07	3.19E+02	146.71	1.89E-02	2.37E-03
m	20	205.10	1.32E+03	158.77	1.88E-02	2.37E-03
	21	226.75	3.49E+02	199.52	1.76E-02	2.33E-03
	22	238.46	3.42E+02	172.52	1.70E-02	2.31E-03
	23	258.24	1.29E+03	185.83	1.61E-02	2.28E-03
	24	295.07	3.52E+02	157.16	1.47E-02	2.21E-03
	25	338.92	1.07E+02	124.17	1.33E-02	2.14E-03
	26	351.80	5.41E+02	155.86	1.30E-02	2.12E-03
	27	387.98	9.02E+01	110.10	1.21E-02	2.06E-03
	28	474.43	1.20E+02	111.11	1.04E-02	1.62E-03
	29	496.01	8.59E+01	84.87	1.00E-02	1.51E-03
	30	570.43	1.98E+02	134.24	8.95E-03	1.12E-03
	31	583.88	9.83E+01	118.79	8.78E-03	1.05E-03
	32	609.64	2.56E+02	106.56	8.48E-03	9.21E-04
	33	691.90	8.79E+01	93.47	7.65E-03	6.91E-04
	34	698.79	8.07E+01	84.37	7.59E-03	6.99E-04
M	35	734.14	1.01E+02	81.89	7.28E-03	7.45E-04
m	36	740.17	1.60E+02	86.80	7.24E-03	7.53E-04
m	37	743.23	7.83E+02	90.11	7.21E-03	7.57E-04
	38	749.91	7.75E+01	89.12	7.16E-03	7.65E-04
	39	766.70	2.53E+03	147.50	7.03E-03	7.87E-04
M	40	781.88	1.02E+02	93.73	6.92E-03	8.06E-04
m	41	786.62	3.92E+02	79.96	6.88E-03	8.12E-04
	42	831.67	1.06E+02	65.49	6.57E-03	8.70E-04
	43	851.47	7.72E+01	70.14	6.44E-03	8.96E-04
	44	866.27	5.91E+01	67.14	6.35E-03	9.15E-04
	45	882.25	1.69E+02	90.82	6.26E-03	9.35E-04
M	46	922.05	1.07E+02	63.19	6.03E-03	9.07E-04
m	47	926.55	1.97E+02	65.89	6.01E-03	8.98E-04
	48	946.54	2.76E+02	79.22	5.91E-03	8.57E-04
	49	1001.57	5.56E+03	163.89	5.64E-03	7.46E-04
M	50	1120.99	8.62E+01	39.67	5.15E-03	5.04E-04
m	51	1125.85	6.55E+01	46.73	5.13E-03	4.95E-04
	52	1147.41	2.93E+01	36.15	5.06E-03	4.51E-04
	53	1167.64	3.82E+01	42.19	4.99E-03	4.10E-04
M	54	1188.62	3.75E+01	37.10	4.92E-03	3.95E-04
m	55	1194.22	9.95E+01	40.94	4.90E-03	3.94E-04
	56	1203.88	3.25E+01	35.19	4.87E-03	3.92E-04
M	57	1234.46	5.46E+01	17.32	4.78E-03	3.85E-04
m	58	1238.32	8.81E+01	46.99	4.77E-03	3.84E-04
m	59	1244.67	4.01E+01	33.29	4.75E-03	3.83E-04
m	60	1254.46	2.36E+01	24.33	4.72E-03	3.80E-04
	61	1270.03	4.60E+01	39.70	4.68E-03	3.77E-04
	62	1304.47	3.01E+01	34.41	4.59E-03	3.69E-04
	63	1379.98	4.15E+01	42.40	4.40E-03	3.66E-04
	64	1434.63	5.05E+01	31.92	4.28E-03	3.70E-04
	65	1461.38	2.58E+02	44.62	4.23E-03	3.72E-04
	66	1510.51	1.17E+02	38.42	4.14E-03	3.76E-04
M	67	1549.31	2.75E+01	18.25	4.07E-03	3.79E-04
m	68	1554.61	6.01E+01	25.38	4.06E-03	3.80E-04
	69	1594.28	3.15E+01	33.35	4.00E-03	3.83E-04
	70	1716.21	2.10E+01	9.17	3.83E-03	3.92E-04

Analysis Report for 1606013-04
CP-5026-S 1 0-1 5

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	71	1738.58	9.23E+01	24.15	3.80E-03	3.94E-04
	72	1765.63	8.81E+01	26.23	3.77E-03	3.96E-04
	73	1809.23	1.20E+01	13.90	3.72E-03	3.99E-04
	74	1832.64	7.06E+01	22.14	3.70E-03	4.01E-04
	75	1847.67	1.39E+01	16.52	3.69E-03	4.01E-04
M	76	1868.88	2.53E+01	16.25	3.67E-03	4.01E-04
m	77	1876.89	2.36E+01	15.62	3.66E-03	4.01E-04
	78	1894.46	1.30E+01	12.96	3.64E-03	4.01E-04
	79	1912.88	2.90E+01	10.77	3.63E-03	4.01E-04
	80	1938.77	7.67E+00	9.41	3.61E-03	4.01E-04
	81	1946.42	9.50E+00	8.26	3.60E-03	4.01E-04
	82	2012.09	7.00E+00	5.29	3.55E-03	4.01E-04
	83	2204.60	1.91E+01	10.00	3.45E-03	4.01E-04
	84	2426.15	7.00E+00	5.29	3.40E-03	4.01E-04
	85	2615.22	3.18E+01	12.50	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 : 6/7/2016 9:44:43AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000037620.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	17.25	3.45E+03	363.16			3.45E+03	3.63E+02
	2	24.90	3.29E+02	214.71	5.51E+01	2.29E+01	2.74E+02	2.16E+02
	3	32.10	4.09E+02	259.40			4.09E+02	2.59E+02
	4	53.01	8.79E+02	449.36			8.79E+02	4.49E+02
	5	63.20	7.31E+04	763.57	3.21E+01	5.65E+00	7.30E+04	7.64E+02
	6	72.97	4.20E+03	876.77			4.20E+03	8.77E+02
	7	83.59	3.14E+03	670.13	8.33E-01	6.64E+00	3.14E+03	6.70E+02
M	8	89.92	1.12E+03	166.93			1.12E+03	1.67E+02
m	9	94.92	2.34E+03	649.17			2.34E+03	6.49E+02
	10	98.42	9.86E+03	442.95			9.86E+03	4.43E+02
M	11	110.93	2.75E+03	239.30			2.75E+03	2.39E+02
m	12	114.93	9.91E+02	257.66			9.91E+02	2.58E+02
	13	131.29	7.64E+02	289.59			7.64E+02	2.90E+02
M	14	141.18	1.24E+02	122.85			1.24E+02	1.23E+02
m	15	143.83	3.23E+03	225.96	6.27E+00	6.84E+00	3.23E+03	2.26E+02

Analysis Report for 1606013-04

CP-5026-S 10-1 5

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
16	152.85	2.45E+02	189.77			2.45E+02	1.90E+02
17	163.25	1.39E+03	255.80			1.39E+03	2.56E+02
18	185.72	1.57E+04	369.13	2.52E+01	6.98E+00	1.56E+04	3.69E+02
M 19	202.07	3.19E+02	146.71			3.19E+02	1.47E+02
m 20	205.10	1.32E+03	158.77	5.64E+00	6.16E+00	1.32E+03	1.59E+02
21	226.75	3.49E+02	199.52			3.49E+02	2.00E+02
22	238.46	3.42E+02	172.52	8.15E+00	6.18E+00	3.33E+02	1.73E+02
23	258.24	1.29E+03	185.83			1.29E+03	1.86E+02
24	295.07	3.52E+02	157.16	4.80E+00	5.42E+00	3.47E+02	1.57E+02
25	338.92	1.07E+02	124.17			1.07E+02	1.24E+02
26	351.80	5.41E+02	155.86	1.16E+01	4.76E+00	5.30E+02	1.56E+02
27	387.98	9.02E+01	110.10			9.02E+01	1.10E+02
28	474.43	1.20E+02	111.11			1.20E+02	1.11E+02
29	496.01	8.59E+01	84.87			8.59E+01	8.49E+01
30	570.43	1.98E+02	134.24			1.98E+02	1.34E+02
31	583.88	9.83E+01	118.79			9.83E+01	1.19E+02
32	609.64	2.56E+02	106.56	7.00E+00	3.58E+00	2.49E+02	1.07E+02
33	691.90	8.79E+01	93.47			8.79E+01	9.35E+01
34	698.79	8.07E+01	84.37			8.07E+01	8.44E+01
M 35	734.14	1.01E+02	81.89			1.01E+02	8.19E+01
m 36	740.17	1.60E+02	86.80	2.08E-01	2.75E+00	1.60E+02	8.68E+01
m 37	743.23	7.83E+02	90.11			7.83E+02	9.01E+01
38	749.91	7.75E+01	89.12			7.75E+01	8.91E+01
39	766.70	2.53E+03	147.50			2.53E+03	1.47E+02
M 40	781.88	1.02E+02	93.73			1.02E+02	9.37E+01
m 41	786.62	3.92E+02	79.96	7.53E-01	2.65E+00	3.92E+02	8.00E+01
42	831.67	1.06E+02	65.49			1.06E+02	6.55E+01
43	851.47	7.72E+01	70.14			7.72E+01	7.01E+01
44	866.27	5.91E+01	67.14			5.91E+01	6.71E+01
45	882.25	1.69E+02	90.82			1.69E+02	9.08E+01
M 46	922.05	1.07E+02	63.19			1.07E+02	6.32E+01
m 47	926.55	1.97E+02	65.89			1.97E+02	6.59E+01
48	946.54	2.76E+02	79.22			2.76E+02	7.92E+01
49	1001.57	5.56E+03	163.89	1.41E+00	2.55E+00	5.56E+03	1.64E+02
M 50	1120.99	8.62E+01	39.67			8.62E+01	3.97E+01
m 51	1125.85	6.55E+01	46.73			6.55E+01	4.67E+01
52	1147.41	2.93E+01	36.15			2.93E+01	3.62E+01
53	1167.64	3.82E+01	42.19			3.82E+01	4.22E+01
M 54	1188.62	3.75E+01	37.10			3.75E+01	3.71E+01
m 55	1194.22	9.95E+01	40.94			9.95E+01	4.09E+01
56	1203.88	3.25E+01	35.19			3.25E+01	3.52E+01
M 57	1234.46	5.46E+01	17.32			5.46E+01	1.73E+01
m 58	1238.32	8.81E+01	46.99			8.81E+01	4.70E+01
m 59	1244.67	4.01E+01	33.29			4.01E+01	3.33E+01
m 60	1254.46	2.36E+01	24.33			2.36E+01	2.43E+01
61	1270.03	4.60E+01	39.70			4.60E+01	3.97E+01
62	1304.47	3.01E+01	34.41			3.01E+01	3.44E+01
63	1379.98	4.15E+01	42.40			4.15E+01	4.24E+01
64	1434.63	5.05E+01	31.92			5.05E+01	3.19E+01
65	1461.38	2.58E+02	44.62	3.84E+00	1.88E+00	2.54E+02	4.47E+01
66	1510.51	1.17E+02	38.42			1.17E+02	3.84E+01
M 67	1549.31	2.75E+01	18.25			2.75E+01	1.82E+01
m 68	1554.61	6.01E+01	25.38			6.01E+01	2.54E+01
69	1594.28	3.15E+01	33.35			3.15E+01	3.34E+01

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	70	1716.21	2.10E+01	9.17		2.10E+01	9.17E+00
	71	1738.58	9.23E+01	24.15		9.23E+01	2.42E+01
	72	1765.63	8.81E+01	26.23	1.55E+00	1.49E+00	8.65E+01
	73	1809.23	1.20E+01	13.90		1.20E+01	1.39E+01
	74	1832.64	7.06E+01	22.14		7.06E+01	2.21E+01
	75	1847.67	1.39E+01	16.52		1.39E+01	1.65E+01
M	76	1868.88	2.53E+01	16.25		2.53E+01	1.62E+01
m	77	1876.89	2.36E+01	15.62		2.36E+01	1.56E+01
	78	1894.46	1.30E+01	12.96		1.30E+01	1.30E+01
	79	1912.88	2.90E+01	10.77		2.90E+01	1.08E+01
	80	1938.77	7.67E+00	9.41		7.67E+00	9.41E+00
	81	1946.42	9.50E+00	8.26		9.50E+00	8.26E+00
	82	2012.09	7.00E+00	5.29		7.00E+00	5.29E+00
	83	2204.60	1.91E+01	10.00	5.23E-01	9.79E-01	1.86E+01
	84	2426.15	7.00E+00	5.29		7.00E+00	5.29E+00
	85	2615.22	3.18E+01	12.50	3.94E+00	1.42E+00	2.79E+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 : 6/7/2016 9:44:43AM
Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000037620.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	17.25	3.45E+03	363.16		3.45E+03	3.63E+02
	2	24.90	3.29E+02	214.71	5.51E+01	2.29E+01	2.74E+02
	3	32.10	4.09E+02	259.40		4.09E+02	2.59E+02
	4	53.01	8.79E+02	449.36		8.79E+02	4.49E+02
	5	63.20	7.31E+04	763.57	3.21E+01	5.65E+00	7.30E+04
	6	72.97	4.20E+03	876.77		4.20E+03	8.77E+02
	7	83.59	3.14E+03	670.13	8.33E-01	6.64E+00	3.14E+03
M	8	89.92	1.12E+03	166.93		1.12E+03	1.67E+02
m	9	94.92	2.34E+03	649.17		2.34E+03	6.49E+02
	10	98.42	9.86E+03	442.95		9.86E+03	4.43E+02
M	11	110.93	2.75E+03	239.30		2.75E+03	2.39E+02
m	12	114.93	9.91E+02	257.66		9.91E+02	2.58E+02

: 00274

Analysis Report for 1606013-04

CP-5026-S 10-15

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	13	131.29	7.64E+02	289.59			7.64E+02	2.90E+02
M	14	141.18	1.24E+02	122.85			1.24E+02	1.23E+02
m	15	143.83	3.23E+03	225.96	6.27E+00	6.84E+00	3.23E+03	2.26E+02
	16	152.85	2.45E+02	189.77			2.45E+02	1.90E+02
	17	163.25	1.39E+03	255.80			1.39E+03	2.56E+02
	18	185.72	1.57E+04	369.13	2.52E+01	6.98E+00	1.56E+04	3.69E+02
M	19	202.07	3.19E+02	146.71			3.19E+02	1.47E+02
m	20	205.10	1.32E+03	158.77	5.64E+00	6.16E+00	1.32E+03	1.59E+02
	21	226.75	3.49E+02	199.52			3.49E+02	2.00E+02
	22	238.46	3.42E+02	172.52	8.15E+00	6.18E+00	3.33E+02	1.73E+02
	23	258.24	1.29E+03	185.83			1.29E+03	1.86E+02
	24	295.07	3.52E+02	157.16	4.80E+00	5.42E+00	3.47E+02	1.57E+02
	25	338.92	1.07E+02	124.17			1.07E+02	1.24E+02
	26	351.80	5.41E+02	155.86	1.16E+01	4.76E+00	5.30E+02	1.56E+02
	27	387.98	9.02E+01	110.10			9.02E+01	1.10E+02
	28	474.43	1.20E+02	111.11			1.20E+02	1.11E+02
	29	496.01	8.59E+01	84.87			8.59E+01	8.49E+01
	30	570.43	1.98E+02	134.24			1.98E+02	1.34E+02
	31	583.88	9.83E+01	118.79			9.83E+01	1.19E+02
	32	609.64	2.56E+02	106.56	7.00E+00	3.58E+00	2.49E+02	1.07E+02
	33	691.90	8.79E+01	93.47			8.79E+01	9.35E+01
	34	698.79	8.07E+01	84.37			8.07E+01	8.44E+01
M	35	734.14	1.01E+02	81.89			1.01E+02	8.19E+01
m	36	740.17	1.60E+02	86.80	2.08E-01	2.75E+00	1.60E+02	8.68E+01
m	37	743.23	7.83E+02	90.11			7.83E+02	9.01E+01
	38	749.91	7.75E+01	89.12			7.75E+01	8.91E+01
	39	766.70	2.53E+03	147.50			2.53E+03	1.47E+02
M	40	781.88	1.02E+02	93.73			1.02E+02	9.37E+01
m	41	786.62	3.92E+02	79.96	7.53E-01	2.65E+00	3.92E+02	8.00E+01
	42	831.67	1.06E+02	65.49			1.06E+02	6.55E+01
	43	851.47	7.72E+01	70.14			7.72E+01	7.01E+01
	44	866.27	5.91E+01	67.14			5.91E+01	6.71E+01
	45	882.25	1.69E+02	90.82			1.69E+02	9.08E+01
M	46	922.05	1.07E+02	63.19			1.07E+02	6.32E+01
m	47	926.55	1.97E+02	65.89			1.97E+02	6.59E+01
	48	946.54	2.76E+02	79.22			2.76E+02	7.92E+01
	49	1001.57	5.56E+03	163.89	1.41E+00	2.55E+00	5.56E+03	1.64E+02
M	50	1120.99	8.62E+01	39.67			8.62E+01	3.97E+01
m	51	1125.85	6.55E+01	46.73			6.55E+01	4.67E+01
	52	1147.41	2.93E+01	36.15			2.93E+01	3.62E+01
	53	1167.64	3.82E+01	42.19			3.82E+01	4.22E+01
M	54	1188.62	3.75E+01	37.10			3.75E+01	3.71E+01
m	55	1194.22	9.95E+01	40.94			9.95E+01	4.09E+01
	56	1203.88	3.25E+01	35.19			3.25E+01	3.52E+01
M	57	1234.46	5.46E+01	17.32			5.46E+01	1.73E+01
m	58	1238.32	8.81E+01	46.99			8.81E+01	4.70E+01
m	59	1244.67	4.01E+01	33.29			4.01E+01	3.33E+01
m	60	1254.46	2.36E+01	24.33			2.36E+01	2.43E+01
	61	1270.03	4.60E+01	39.70			4.60E+01	3.97E+01
	62	1304.47	3.01E+01	34.41			3.01E+01	3.44E+01
	63	1379.98	4.15E+01	42.40			4.15E+01	4.24E+01
	64	1434.63	5.05E+01	31.92			5.05E+01	3.19E+01
	65	1461.38	2.58E+02	44.62	3.84E+00	1.88E+00	2.54E+02	4.47E+01
	66	1510.51	1.17E+02	38.42			1.17E+02	3.84E+01

: 00275

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	67	1549.31	2.75E+01	18.25			2.75E+01	1.82E+01
m	68	1554.61	6.01E+01	25.38			6.01E+01	2.54E+01
	69	1594.28	3.15E+01	33.35			3.15E+01	3.34E+01
	70	1716.21	2.10E+01	9.17			2.10E+01	9.17E+00
	71	1738.58	9.23E+01	24.15			9.23E+01	2.42E+01
	72	1765.63	8.81E+01	26.23	1.55E+00	1.49E+00	8.65E+01	2.63E+01
	73	1809.23	1.20E+01	13.90			1.20E+01	1.39E+01
	74	1832.64	7.06E+01	22.14			7.06E+01	2.21E+01
	75	1847.67	1.39E+01	16.52			1.39E+01	1.65E+01
M	76	1868.88	2.53E+01	16.25			2.53E+01	1.62E+01
m	77	1876.89	2.36E+01	15.62			2.36E+01	1.56E+01
	78	1894.46	1.30E+01	12.96			1.30E+01	1.30E+01
	79	1912.88	2.90E+01	10.77			2.90E+01	1.08E+01
	80	1938.77	7.67E+00	9.41			7.67E+00	9.41E+00
	81	1946.42	9.50E+00	8.26			9.50E+00	8.26E+00
	82	2012.09	7.00E+00	5.29			7.00E+00	5.29E+00
	83	2204.60	1.91E+01	10.00	5.23E-01	9.79E-01	1.86E+01	1.00E+01
	84	2426.15	7.00E+00	5.29			7.00E+00	5.29E+00
	85	2615.22	3.18E+01	12.50	3.94E+00	1.42E+00	2.79E+01	1.26E+01

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

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
AL-26	0.947	1808.65 *	99.76	5.53E-02	6.46E-02
K-40	0.949	1460.81 *	10.67	9.69E+00	1.91E+00
NB-93M	0.928	16.57 *	9.43	2.87E+03	2.18E+04
NB-95	0.876	765.79 *	99.81	6.87E+00	8.66E-01
BI-207	0.352	569.67 *	97.72	3.89E-01	2.69E-01
		1063.62	74.90		
TL-208	0.831	583.14 *	30.22	6.37E-01	7.73E-01
		860.37	4.48		
		2614.66 *	35.85	3.93E-01	1.84E-01
PB-212	0.890	238.63 *	44.60	7.55E-01	4.04E-01
		300.09	3.41		
BI-214	0.740	609.31 *	46.30	1.09E+00	4.82E-01

: 00276

Analysis Report for 1606013-04
CP-5026-S 10-1 5

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-214	0.740	1120.29 *	15.10	1.90E+00	8.97E-01
		1764.49	15.80		
		2204.22 *	4.98	1.86E+00	1.03E+00
PB-214	0.997	295.21 *	19.19	2.11E+00	1.01E+00
		351.92 *	37.19	1.89E+00	6.35E-01
RA-226	0.962	186.21 *	3.28	4.11E+02	7.54E+02
TH-231	0.923	25.64 *	14.70	1.29E+01	1.34E+01
		84.21 *	6.40	3.24E+01	7.44E+00
PA-234	0.985	131.20 *	20.40	2.71E+00	1.06E+00
		733.99 *	8.80	2.71E+00	2.21E+00
		946.00 *	12.00	6.69E+00	2.15E+00
PA-234M	0.955	1001.03 *	0.92	1.84E+03	2.50E+02
TH-234	0.999	63.29 *	3.80	1.40E+03	1.04E+02
U-235	0.998	143.76 *	10.50	2.31E+01	4.55E+00
		163.35 *	4.70	2.37E+01	6.52E+00
		205.31 *	4.70	2.57E+01	6.27E+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

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/7/2016 9:44:43AM

Peak Locate From Channel : 1

Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	3	32.10	1.13722E-01		
	4	53.01	2.44069E-01		
	6	72.97	1.16541E+00	Tol.	PM-145
M	8	89.92	3.10822E-01		
m	9	94.92	6.51031E-01		
	10	98.42	2.73907E+00	D-Esc	
M	11	110.93	7.63846E-01		
m	12	114.93	2.75309E-01		
M	14	141.18	3.45151E-02		
	16	152.85	6.79396E-02	Tol.	CS-136
M	19	202.07	8.86335E-02	Sum	
	21	226.75	9.69450E-02	Sum	
	23	258.24	3.57287E-01		

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
25	338.92	2.97148E-02	58.04	Tol.	AC-228
27	387.98	2.50477E-02	61.05		
28	474.43	3.33148E-02	46.32		
29	496.01	2.38671E-02	49.39	Sum	
33	691.90	2.44121E-02	53.18		
34	698.79	2.24270E-02	52.25		
m 36	740.17	4.44254E-02	27.15	Sum	
m 37	743.23	2.17507E-01	5.75		
38	749.91	2.15158E-02	57.53		
M 40	781.88	2.82057E-02	46.15		
m 41	786.62	1.08798E-01	10.21	D-Esc	
42	831.67	2.94158E-02	30.92	Tol.	PB-211
43	851.47	2.14520E-02	45.41		
44	866.27	1.64052E-02	56.84	Sum	
45	882.25	4.69012E-02	26.90		
M 46	922.05	2.95939E-02	29.66	Sum	
m 47	926.55	5.46972E-02	16.73		
m 51	1125.85	1.81810E-02	35.70		
52	1147.41	8.12733E-03	61.78		
53	1167.64	1.06214E-02	55.17	Sum	
M 54	1188.62	1.04226E-02	49.44	Tol.	TA-182
m 55	1194.22	2.76382E-02	20.57	Sum	
56	1203.88	9.02778E-03	54.14	Sum	
M 57	1234.46	1.51586E-02	15.87	Tol.	CS-136
m 58	1238.32	2.44624E-02	26.68	Tol.	CO-56
m 59	1244.67	1.11297E-02	41.54		
m 60	1254.46	6.54844E-03	51.60		
61	1270.03	1.27677E-02	43.19		
62	1304.47	8.35848E-03	57.18	Sum	
63	1379.98	1.15193E-02	51.13		
64	1434.63	1.40204E-02	31.62		
66	1510.51	3.24647E-02	16.44		
M 67	1549.31	7.63812E-03	33.18		
m 68	1554.61	1.66883E-02	21.12		
69	1594.28	8.75000E-03	52.94		
70	1716.21	5.83333E-03	21.82		
71	1738.58	2.56443E-02	13.08		
72	1765.63	2.40388E-02	15.18		
74	1832.64	1.96013E-02	15.68		
75	1847.67	3.86752E-03	59.34		
M 76	1868.88	7.01736E-03	32.16		
m 77	1876.89	6.54738E-03	33.14		
78	1894.46	3.61742E-03	49.76		
79	1912.88	8.05556E-03	18.57		
80	1938.77	2.12963E-03	61.35		
81	1946.42	2.63889E-03	43.48		
82	2012.09	1.94444E-03	37.80		
84	2426.15	1.94444E-03	37.80		

Analysis Report for 1606013-04
CP-5026-S 1 0-1 5

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	0.94	1808.65 *	99.76	5.53E-02	6.46E-02
K-40	0.94	1460.81 *	10.67	9.69E+00	1.91E+00
NB-93M	0.92	16.57 *	9.43	2.87E+03	2.18E+04
NB-95	0.87	765.79 *	99.81	6.87E+00	8.66E-01
BI-207	0.35	569.67 *	97.72	3.89E-01	2.69E-01
		1063.62	74.90		
TL-208	0.83	583.14 *	30.22	6.37E-01	7.73E-01
		860.37	4.48		
		2614.66 *	35.85	3.93E-01	1.84E-01
PB-212	0.89	238.63 *	44.60	7.55E-01	4.04E-01
		300.09	3.41		
BI-214	0.74	609.31 *	46.30	1.09E+00	4.82E-01
		1120.29 *	15.10	1.90E+00	8.97E-01
		1764.49	15.80		
		2204.22 *	4.98	1.86E+00	1.03E+00
PB-214	0.99	295.21 *	19.19	2.11E+00	1.01E+00
		351.92 *	37.19	1.89E+00	6.35E-01
RA-226	0.96	186.21 *	3.28	4.11E+02	7.54E+02
TH-231	0.92	25.64 *	14.70	1.29E+01	1.34E+01
		84.21 *	6.40	3.24E+01	7.44E+00
PA-234	0.98	131.20 *	20.40	2.71E+00	1.06E+00
		733.99 *	8.80	2.71E+00	2.21E+00
		946.00 *	12.00	6.69E+00	2.15E+00
PA-234M	0.95	1001.03 *	0.92	1.84E+03	2.50E+02
TH-234	0.99	63.29 *	3.80	1.40E+03	1.04E+02
U-235	0.99	143.76 *	10.50	2.31E+01	4.55E+00
		163.35 *	4.70	2.37E+01	6.52E+00
		205.31 *	4.70	2.57E+01	6.27E+00

Analysis Report for 1606013-04

CP-5026-S 1 0-1 5

* = 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
AL-26	0.947	5.53E-02	6.46E-02	
K-40	0.949	9.69E+00	1.91E+00	
NB-93M	0.928	2.87E+03	2.18E+04	
NB-95	0.876	6.87E+00	8.66E-01	
BI-207	0.352	3.89E-01	2.69E-01	
TL-208	0.831	4.06E-01	1.79E-01	
PB-212	0.890	7.55E-01	4.04E-01	
BI-214	0.740	1.36E+00	3.92E-01	
PB-214	0.997	1.95E+00	5.37E-01	
RA-226	0.962	4.11E+02	7.54E+02	
TH-231	0.923	2.78E+01	6.50E+00	
PA-234	0.985	3.37E+00	8.74E-01	
PA-234M	0.955	1.84E+03	2.50E+02	
TH-234	0.999	1.40E+03	1.04E+02	
U-235	0.998	2.39E+01	3.21E+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 1606013-04
CP-5026-S 1 0-1 5

UNIDENTIFIED PEAKS

Peak Locate Performed on : 6/7/2016 9:44:43AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide	
3	32.10	1.13722E-01	31.68			
4	53.01	2.44069E-01	25.57			
6	72.97	1.16541E+00	10.45	Tol.	PM-145	
M	8	89.92	3.10822E-01	7.46		
m	9	94.92	6.51031E-01	13.85		
10	98.42	2.73907E+00	2.25	D-Esc		
M	11	110.93	7.63846E-01	4.35		
m	12	114.93	2.75309E-01	13.00		
M	14	141.18	3.45151E-02	49.43		
16	152.85	6.79396E-02	38.79	Tol.	CS-136	
M	19	202.07	8.86335E-02	22.99	Sum	
21	226.75	9.69450E-02	28.58	Sum		
23	258.24	3.57287E-01	7.22			
25	338.92	2.97148E-02	58.04	Tol.	AC-228	
27	387.98	2.50477E-02	61.05			
28	474.43	3.33148E-02	46.32			
29	496.01	2.38671E-02	49.39	Sum		
33	691.90	2.44121E-02	53.18			
34	698.79	2.24270E-02	52.25			
m	36	740.17	4.44254E-02	27.15	Sum	
m	37	743.23	2.17507E-01	5.75		
38	749.91	2.15158E-02	57.53			
M	40	781.88	2.82057E-02	46.15		
m	41	786.62	1.08798E-01	10.21	D-Esc	
42	831.67	2.94158E-02	30.92	Tol.	PB-211	
43	851.47	2.14520E-02	45.41			
44	866.27	1.64052E-02	56.84	Sum		
45	882.25	4.69012E-02	26.90			
M	46	922.05	2.95939E-02	29.66	Sum	
m	47	926.55	5.46972E-02	16.73		
m	51	1125.85	1.81810E-02	35.70		
52	1147.41	8.12733E-03	61.78			
53	1167.64	1.06214E-02	55.17	Sum		
M	54	1188.62	1.04226E-02	49.44	Tol.	TA-182
m	55	1194.22	2.76382E-02	20.57	Sum	

Analysis Report for 1606013-04
CP-5026-S 1 0-1 5

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	56	1203.88	9.02778E-03	54.14	Sum	
M	57	1234.46	1.51586E-02	15.87	Tol.	CS-136
m	58	1238.32	2.44624E-02	26.68	Tol.	CO-56
m	59	1244.67	1.11297E-02	41.54		
m	60	1254.46	6.54844E-03	51.60		
	61	1270.03	1.27677E-02	43.19		
	62	1304.47	8.35848E-03	57.18	Sum	
	63	1379.98	1.15193E-02	51.13		
	64	1434.63	1.40204E-02	31.62		
	66	1510.51	3.24647E-02	16.44		
M	67	1549.31	7.63812E-03	33.18		
m	68	1554.61	1.66883E-02	21.12		
	69	1594.28	8.75000E-03	52.94		
	70	1716.21	5.83333E-03	21.82		
	71	1738.58	2.56443E-02	13.08		
	72	1765.63	2.40388E-02	15.18		
	74	1832.64	1.96013E-02	15.68		
	75	1847.67	3.86752E-03	59.34		
M	76	1868.88	7.01736E-03	32.16		
m	77	1876.89	6.54738E-03	33.14		
	78	1894.46	3.61742E-03	49.76		
	79	1912.88	8.05556E-03	18.57		
	80	1938.77	2.12963E-03	61.35		
	81	1946.42	2.63889E-03	43.48		
	82	2012.09	1.94444E-03	37.80		
	84	2426.15	1.94444E-03	37.80		

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

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	2.38E-01	2.39E+00	2.39E+00

Analysis Report for 1606013-04
CP-5026-S 1 0-1 5

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NA-22	1274.54	99.94	-6.80E-02	1.76E-01	1.76E-01
+	NA-24	1368.53	99.99	5.48E+00	1.02E+01	4.78E+01
		2754.09	99.86	-2.78E+00		1.02E+01
+	AL-26	1808.65	* 99.76	5.53E-02	1.04E-01	1.04E-01
+	K-40	1460.81	* 10.67	9.69E+00	2.06E+00	2.06E+00
+	@ AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88	94.40	-7.13E-01	4.21E-01	4.24E-01
		78.34	96.00	8.12E-02		4.21E-01
+	SC-46	889.25	99.98	1.28E-02	2.54E-01	2.90E-01
		1120.51	99.99	2.25E-02		2.54E-01
+	V-48	983.52	99.98	1.83E-01	2.31E-01	3.24E-01
		1312.10	97.50	8.65E-02		2.31E-01
+	CR-51	320.08	9.83	1.12E+00	2.54E+00	2.54E+00
+	MN-54	834.83	99.97	-4.99E-03	2.81E-01	2.81E-01
+	CO-56	846.75	99.96	8.78E-02	2.91E-01	2.93E-01
		1037.75	14.03	-3.94E-01		1.64E+00
		1238.25	67.00	3.67E-01		3.78E-01
		1771.40	15.51	1.62E-01		8.00E-01
		2598.48	16.90	0.00E+00		2.91E-01
+	CO-57	122.06	85.51	7.33E-02	3.43E-01	3.43E-01
		136.48	10.60	1.19E+00		2.65E+00
+	CO-58	810.76	99.40	-1.62E-01	3.13E-01	3.13E-01
+	FE-59	1099.22	56.50	-3.32E-02	4.28E-01	4.28E-01
		1291.56	43.20	-5.68E-02		4.65E-01
+	CO-60	1173.22	100.00	-1.52E-03	1.80E-01	1.85E-01
		1332.49	100.00	9.00E-02		1.80E-01
+	ZN-65	1115.52	50.75	-1.09E-02	4.09E-01	4.09E-01
+	GA-67	93.31	35.70	6.89E+02	3.92E+00	9.81E+00
		208.95	2.24	1.40E+01		3.09E+01
		300.22	16.00	3.20E-01		3.92E+00
+	SE-75	121.11	16.70	1.05E-01	3.73E-01	1.78E+00
		136.00	59.20	3.45E-02		4.81E-01
		264.65	59.80	-2.10E-01		3.73E-01
		279.53	25.20	-3.17E-01		8.83E-01
		400.65	11.40	1.71E-01		1.96E+00
+	RB-82	776.52	13.00	4.49E-01	2.92E+00	2.92E+00
+	RB-83	520.41	46.00	-2.76E-01	5.24E-01	5.24E-01
		529.64	30.30	-6.02E-01		8.03E-01
		552.65	16.40	5.42E-01		1.61E+00
+	KR-85	513.99	0.43	1.18E+01	5.72E+01	5.72E+01
+	SR-85	513.99	99.27	5.43E-02	2.64E-01	2.64E-01
+	Y-88	898.02	93.40	4.52E-02	2.09E-01	2.76E-01
		1836.01	99.38	-9.14E-03		2.09E-01
+	NB-93M	16.57	* 9.43	2.87E+03	4.73E+02	4.73E+02
+	NB-94	702.63	100.00	2.77E-02	2.78E-01	3.26E-01
		871.10	100.00	-3.99E-02		2.78E-01
+	NB-95	765.79	* 99.81	6.87E+00	4.88E-01	4.88E-01

Analysis Report for 1606013-04
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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-95M	235.69	25.00	-4.97E+00	2.52E+00	2.52E+00
+	ZR-95	724.18	43.70	-2.49E-02	6.25E-01	7.47E-01
		756.72	55.30	4.78E-01		6.25E-01
+	MO-99	181.06	6.20	8.91E-01	1.03E+01	1.52E+01
		739.58	12.80	-5.02E+01		1.03E+01
		778.00	4.50	-3.41E+00		2.65E+01
+	RU-103	497.08	89.00	5.84E-02	2.94E-01	2.94E-01
+	RU-106	621.84	9.80	1.10E-01	3.01E+00	3.01E+00
+	AG-108M	433.93	89.90	1.02E-01	2.50E-01	2.50E-01
		614.37	90.40	-3.40E-02		3.18E-01
		722.95	90.50	5.09E-02		3.41E-01
+	CD-109	88.03	3.72	7.43E-01	1.43E+01	1.43E+01
+	AG-110M	657.75	93.14	-7.07E-02	3.23E-01	3.23E-01
		677.61	10.53	2.15E-01		2.91E+00
		706.67	16.46	-8.11E-02		1.94E+00
		763.93	21.98	2.40E+01		2.93E+00
		884.67	71.63	8.77E-02		4.61E-01
		1384.27	23.94	1.81E-01		7.35E-01
+	CD-113M	263.70	0.02	-7.43E+02	9.36E+02	9.36E+02
+	SN-113	255.12	1.93	1.41E+00	3.37E-01	1.19E+01
		391.69	64.90	-1.17E-01		3.37E-01
+	TE123M	159.00	84.10	-1.19E-01	3.26E-01	3.26E-01
+	SB-124	602.71	97.87	2.70E-02	2.16E-01	3.12E-01
		645.85	7.26	-1.33E+00		4.13E+00
		722.78	11.10	4.40E-01		2.95E+00
		1691.02	49.00	-8.24E-02		2.16E-01
+	I-125	35.49	6.49	-1.61E+00	9.58E+00	9.58E+00
+	SB-125	176.33	6.89	-1.78E+00	7.51E-01	3.77E+00
		427.89	29.33	2.23E-01		7.51E-01
		463.38	10.35	7.24E-01		2.26E+00
		600.56	17.80	-6.08E-01		1.62E+00
		635.90	11.32	-2.13E-01		2.58E+00
+	SB-126	414.70	83.30	7.26E-02	3.50E-01	3.50E-01
		666.33	99.60	7.90E-02		4.05E-01
		695.00	99.60	-5.14E-01		4.09E-01
		720.50	53.80	-1.33E-01		7.49E-01
+	SN-126	87.57	37.00	7.41E-02	1.43E+00	1.43E+00
+	SB-127	473.00	25.00	1.38E-01	2.09E+00	2.29E+00
		685.20	35.70	-1.12E-01		2.09E+00
		783.80	14.70	1.70E+01		6.91E+00
+	I-129	29.78	57.00	-1.38E-01	1.65E+00	1.65E+00
		33.60	13.20	-6.20E+00		5.05E+00
		39.58	7.52	-4.42E+00		6.27E+00
+	I-131	284.30	6.05	-1.16E+00	3.99E-01	5.49E+00
		364.48	81.20	-1.71E-01		3.99E-01
		636.97	7.26	-2.57E+00		6.22E+00
		722.89	1.80	3.96E+00		2.66E+01
+	TE-132	49.72	13.10	-3.17E+00	8.10E-01	1.01E+01

Analysis Report for 1606013-04

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TE-132	228.16	88.00	8.58E-01	8.10E-01	8.10E-01
+	BA-133	81.00	33.00	-4.21E+00	3.63E-01	1.22E+00
		302.84	17.80	7.78E-01		1.21E+00
		356.01	60.00	1.85E-01		3.63E-01
+	I-133	529.87	86.30	-1.24E+00	1.60E+01	1.60E+01
+	XE-133	81.00	38.00	-7.14E+00	2.08E+00	2.08E+00
+	CS-134	563.23	8.38	-1.43E+00	2.96E-01	2.92E+00
		569.32	15.43	1.52E+00		1.81E+00
		604.70	97.60	2.57E-02		2.96E-01
		795.84	85.40	9.60E-02		3.83E-01
		801.93	8.73	-2.14E+00		3.57E+00
+	CS-135	268.24	16.00	-1.70E-01	1.38E+00	1.38E+00
+	I-135	1131.51	22.50	8.20E+04	2.28E+05	3.19E+05
		1260.41	28.60	8.19E+04		2.28E+05
		1678.03	9.54	2.17E+05		4.32E+05
+	CS-136	153.22	7.46	5.31E+00	3.55E-01	4.81E+00
		163.89	4.61	3.60E+01		8.44E+00
		176.55	13.56	6.77E-01		2.50E+00
		273.65	12.66	-1.13E+00		2.26E+00
		340.57	48.50	5.55E-02		5.87E-01
		818.50	99.70	1.06E-01		3.77E-01
		1048.07	79.60	-1.02E-01		3.55E-01
		1235.34	19.70	4.97E-01		1.51E+00
+	CS-137	661.65	85.12	-6.61E-03	3.57E-01	3.57E-01
+	LA-138	788.74	34.00	-4.83E-02	2.92E-01	1.17E+00
		1435.80	66.00	2.60E-01		2.92E-01
+	CE-139	165.85	80.35	-2.61E-02	3.50E-01	3.50E-01
+	BA-140	162.64	6.70	1.95E+01	1.27E+00	5.84E+00
		304.84	4.50	-3.79E-01		6.25E+00
		423.70	3.20	-3.38E+00		8.88E+00
		437.55	2.00	2.17E+00		1.49E+01
		537.32	25.00	5.02E-02		1.27E+00
+	LA-140	328.77	20.50	-2.81E-01	2.33E-01	1.39E+00
		487.03	45.50	2.38E-01		6.87E-01
		815.85	23.50	1.95E-01		1.61E+00
		1596.49	95.49	1.33E-01		2.33E-01
+	CE-141	145.44	48.40	5.23E+00	7.73E-01	7.73E-01
+	CE-143	57.36	11.80	-7.34E+01	7.16E+00	4.94E+01
		293.26	42.00	4.40E+00		7.16E+00
		664.55	5.20	4.46E+01		7.62E+01
+	CE-144	133.54	10.80	6.06E-01	2.65E+00	2.65E+00
+	PM-144	476.78	42.00	5.57E-02	2.91E-01	5.60E-01
		618.01	98.60	-1.24E-01		2.91E-01
		696.49	99.49	-1.77E-01		3.17E-01
+	PM-145	36.85	21.70	-2.03E-01	1.31E+00	2.48E+00
		37.36	39.70	-1.07E-01		1.31E+00
		42.30	15.10	-1.03E+00		2.87E+00
		72.40	2.31	3.41E+00		1.83E+01
+	PM-146	453.90	39.94	-1.89E-01	5.72E-01	5.72E-01

Analysis Report for 1606013-04

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-146	735.90	14.01	-1.94E+00	5.72E-01	2.38E+00
		747.13	13.10	-1.16E+01		2.62E+00
+	ND-147	91.11	28.90	3.71E+02	2.52E+00	5.64E+00
		531.02	13.10	-1.28E-01		2.52E+00
+	PM-149	285.90	3.10	-9.24E+00	3.42E+01	3.42E+01
+	EU-152	121.78	20.50	3.02E-01	1.03E+00	1.41E+00
		244.69	5.40	-4.68E+00		4.21E+00
		344.27	19.13	3.01E-01		1.12E+00
		778.89	9.20	2.53E+00		3.75E+00
		964.01	10.40	-2.98E-01		2.41E+00
		1085.78	7.22	-1.12E+00		2.91E+00
		1112.02	9.60	4.35E-01		2.23E+00
		1407.95	14.94	-2.02E-01		1.03E+00
+	GD-153	97.43	31.30	3.99E+00	1.52E+00	1.56E+00
		103.18	22.20	5.82E-01		1.52E+00
+	EU-154	123.07	40.50	5.15E-02	4.94E-01	7.15E-01
		723.30	19.70	2.34E-01		1.57E+00
		873.19	11.50	1.15E+00		2.46E+00
		996.32	10.30	9.20E-01		2.62E+00
		1004.76	17.90	2.69E-01		5.71E+00
		1274.45	35.50	-1.91E-01		4.94E-01
+	EU-155	86.50	30.90	-1.32E+01	1.62E+00	1.69E+00
		105.30	20.70	-1.79E-01		1.62E+00
+	EU-156	811.77	10.40	-1.54E+00	2.76E+00	3.58E+00
		1153.47	7.20	3.27E+00		4.00E+00
		1230.71	8.90	-2.38E-01		2.76E+00
+	HO-166M	184.41	72.60	1.75E+01	5.74E-01	7.69E-01
		280.45	29.60	-2.62E-01		7.31E-01
		410.94	11.10	4.81E-01		2.01E+00
		711.69	54.10	5.32E-02		5.74E-01
+	TM-171	66.72	0.14	-8.12E+02	2.74E+02	2.74E+02
+	HF-172	81.75	4.52	-2.93E+01	2.53E+00	9.29E+00
		125.81	11.30	8.25E-01		2.53E+00
+	LU-172	181.53	20.60	-2.94E-02	5.93E-01	2.13E+00
		810.06	16.63	-1.55E+00		3.01E+00
		912.12	15.25	1.11E+00		3.00E+00
		1093.66	62.50	-2.58E-01		5.93E-01
+	LU-173	100.72	5.24	-2.73E+01	1.06E+00	7.74E+00
		272.11	21.20	2.26E-01		1.06E+00
+	HF-175	343.40	84.00	1.85E-02	2.64E-01	2.64E-01
+	LU-176	88.34	13.30	2.06E-01	2.26E-01	3.97E+00
		201.83	86.00	-2.28E+00		2.94E-01
		306.78	94.00	2.25E-02		2.26E-01
+	TA-182	67.75	41.20	-1.69E+00	7.33E-01	1.00E+00
		1121.30	34.90	2.43E-01		7.33E-01
		1189.05	16.23	-1.93E+00		1.36E+00
		1221.41	26.98	-5.98E-02		7.80E-01
		1231.02	11.44	-2.91E-01		1.69E+00
+	IR-192	308.46	29.68	-3.01E-01	4.98E-01	7.40E-01

Analysis Report for 1606013-04

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	IR-192	468.07	48.10	1.55E-01	4.98E-01	4.98E-01
+	HG-203	279.19	77.30	2.40E-01	3.06E-01	3.06E-01
+	BI-207	569.67	* 97.72	3.89E-01	3.09E-01	4.30E-01
		1063.62	74.90	1.40E-01		3.09E-01
+	TL-208	583.14	* 30.22	6.37E-01	1.97E-01	1.27E+00
		860.37	4.48	3.12E+00		6.05E+00
		2614.66	* 35.85	3.93E-01		1.97E-01
+	BI-210M	262.00	45.00	9.34E-02	4.89E-01	4.89E-01
		300.00	23.00	7.57E-02		9.28E-01
+	PB-210	46.50	4.25	-2.78E+01	9.88E+00	9.88E+00
+	PB-211	404.84	2.90	1.15E+00	7.63E+00	7.63E+00
		831.96	2.90	6.29E+00		1.01E+01
+	BI-212	727.17	11.80	6.09E-01	2.65E+00	2.65E+00
		1620.62	2.75	-4.01E-01		5.08E+00
+	PB-212	238.63	* 44.60	7.55E-01	6.35E-01	6.35E-01
		300.09	3.41	5.11E-01		6.26E+00
+	BI-214	609.31	* 46.30	1.09E+00	7.45E-01	7.45E-01
		1120.29	* 15.10	1.90E+00		2.35E+00
		1764.49	15.80	2.39E+00		1.43E+00
		2204.22	* 4.98	1.86E+00		1.12E+00
+	PB-214	295.21	* 19.19	2.11E+00	8.83E-01	1.55E+00
		351.92	* 37.19	1.89E+00		8.83E-01
+	RN-219	401.80	6.50	-1.40E+00	3.34E+00	3.34E+00
+	RA-223	323.87	3.88	2.66E+00	5.66E+00	5.66E+00
+	RA-224	240.98	3.95	4.29E+00	6.18E+00	6.18E+00
+	RA-225	40.00	31.00	-1.33E+00	1.88E+00	1.88E+00
+	RA-226	186.21	* 3.28	4.11E+02	1.18E+01	1.18E+01
+	TH-227	50.10	8.40	-1.67E+00	2.08E+00	5.32E+00
		236.00	11.50	-4.09E+00		2.08E+00
		256.20	6.30	2.43E+00		4.23E+00
+	AC-228	338.32	11.40	1.65E+00	9.82E-01	1.98E+00
		911.07	27.70	6.41E-01		9.82E-01
		969.11	16.60	1.54E-01		1.58E+00
+	TH-230	48.44	16.90	-2.23E+00	2.63E+00	2.63E+00
		62.85	4.60	1.14E+03		2.17E+01
		67.67	0.37	-1.82E+02		1.08E+02
+	PA-231	283.67	1.60	-2.83E+00	9.38E+00	1.34E+01
		302.67	2.30	6.01E+00		9.38E+00
+	TH-231	25.64	* 14.70	1.29E+01	1.13E+01	1.67E+01
		84.21	* 6.40	3.24E+01		1.13E+01
+	PA-233	311.98	38.60	8.00E-02	6.33E-01	6.33E-01
+	PA-234	131.20	* 20.40	2.71E+00	1.67E+00	1.67E+00
		733.99	* 8.80	2.71E+00		8.45E+00
		946.00	* 12.00	6.69E+00		2.94E+00
+	PA-234M	1001.03	* 0.92	1.84E+03	3.80E+01	3.80E+01
+	TH-234	63.29	* 3.80	1.40E+03	1.70E+01	1.70E+01
+	U-235	143.76	* 10.50	2.31E+01	3.69E+00	3.69E+00

Analysis Report for 1606013-04
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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	U-235	163.35	*	4.70	2.37E+01	3.69E+00	6.92E+00
		205.31	*	4.70	2.57E+01		7.92E+00
+	NP-237	86.50		12.60	-3.24E+01	4.13E+00	4.13E+00
+	NP-239	106.10		22.70	-4.16E+00	6.57E+00	6.57E+00
		228.18		10.70	1.07E+01		1.01E+01
		277.60		14.10	1.50E+00		6.91E+00
+	AM-241	59.54		35.90	-1.94E+00	1.31E+00	1.31E+00
+	AM-243	74.67		66.00	-6.44E-02	6.34E-01	6.34E-01
+	CM-243	209.75		3.29	2.96E+00	1.57E+00	7.15E+00
		228.14		10.60	2.43E+00		2.29E+00
		277.60		14.00	3.41E-01		1.57E+00

- + = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = MDA value not calculated
 @ = Half-life too short to be able to perform the decay correction
 ? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	2.39E+00	2.39E+00	2.38E-01	1.17E+00
	NA-22	1274.54		99.94	1.76E-01	1.76E-01	-6.80E-02	8.30E-02
	NA-24	1368.53		99.99	4.78E+01	1.02E+01	5.48E+00	2.24E+01
		2754.09		99.86	1.02E+01		-2.78E+00	3.23E+00
+	AL-26	1808.65	*	99.76	1.04E-01	1.04E-01	5.53E-02	4.59E-02
+	K-40	1460.81	*	10.67	2.06E+00	2.06E+00	9.69E+00	9.79E-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	4.24E-01	4.21E-01	-7.13E-01	2.11E-01
		78.34		96.00	4.21E-01		8.12E-02	2.10E-01
	SC-46	889.25		99.98	2.90E-01	2.54E-01	1.28E-02	1.41E-01
		1120.51		99.99	2.54E-01		2.25E-02	1.22E-01
	V-48	983.52		99.98	3.24E-01	2.31E-01	1.83E-01	1.57E-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)
V-48	1312.10	97.50	2.31E-01	2.31E-01	8.65E-02	1.09E-01
CR-51	320.08	9.83	2.54E+00	2.54E+00	1.12E+00	1.25E+00
MN-54	834.83	99.97	2.81E-01	2.81E-01	-4.99E-03	1.37E-01
CO-56	846.75	99.96	2.93E-01	2.91E-01	8.78E-02	1.43E-01
	1037.75	14.03	1.64E+00		-3.94E-01	7.88E-01
	1238.25	67.00	3.78E-01		3.67E-01	1.81E-01
	1771.40	15.51	8.00E-01		1.62E-01	3.58E-01
	2598.48	16.90	2.91E-01		0.00E+00	1.03E-01
CO-57	122.06	85.51	3.43E-01	3.43E-01	7.33E-02	1.70E-01
	136.48	10.60	2.65E+00		1.19E+00	1.32E+00
CO-58	810.76	99.40	3.13E-01	3.13E-01	-1.62E-01	1.53E-01
FE-59	1099.22	56.50	4.28E-01	4.28E-01	-3.32E-02	2.05E-01
	1291.56	43.20	4.65E-01		-5.68E-02	2.20E-01
CO-60	1173.22	100.00	1.85E-01	1.80E-01	-1.52E-03	8.79E-02
	1332.49	100.00	1.80E-01		9.00E-02	8.47E-02
ZN-65	1115.52	50.75	4.09E-01	4.09E-01	-1.09E-02	1.96E-01
GA-67	93.31	35.70	9.81E+00	3.92E+00	6.89E+02	4.90E+00
	208.95	2.24	3.09E+01		1.40E+01	1.53E+01
	300.22	16.00	3.92E+00		3.20E-01	1.93E+00
SE-75	121.11	16.70	1.78E+00	3.73E-01	1.05E-01	8.84E-01
	136.00	59.20	4.81E-01		3.45E-02	2.39E-01
	264.65	59.80	3.73E-01		-2.10E-01	1.84E-01
	279.53	25.20	8.83E-01		-3.17E-01	4.35E-01
	400.65	11.40	1.96E+00		1.71E-01	9.62E-01
RB-82	776.52	13.00	2.92E+00	2.92E+00	4.49E-01	1.43E+00
RB-83	520.41	46.00	5.24E-01	5.24E-01	-2.76E-01	2.57E-01
	529.64	30.30	8.03E-01		-6.02E-01	3.93E-01
	552.65	16.40	1.61E+00		5.42E-01	7.90E-01
KR-85	513.99	0.43	5.72E+01	5.72E+01	1.18E+01	2.80E+01
SR-85	513.99	99.27	2.64E-01	2.64E-01	5.43E-02	1.29E-01
Y-88	898.02	93.40	2.76E-01	2.09E-01	4.52E-02	1.34E-01
	1836.01	99.38	2.09E-01		-9.14E-03	9.81E-02
+ NB-93M	16.57	* 9.43	4.73E+02	4.73E+02	2.87E+03	2.35E+02
NB-94	702.63	100.00	3.26E-01	2.78E-01	2.77E-02	1.60E-01
	871.10	100.00	2.78E-01		-3.99E-02	1.35E-01
+ NB-95	765.79	* 99.81	4.88E-01	4.88E-01	6.87E+00	2.40E-01
NB-95M	235.69	25.00	2.52E+00	2.52E+00	-4.97E+00	1.25E+00
ZR-95	724.18	43.70	7.47E-01	6.25E-01	-2.49E-02	3.66E-01
	756.72	55.30	6.25E-01		4.78E-01	3.06E-01
MO-99	181.06	6.20	1.52E+01	1.03E+01	8.91E-01	7.53E+00
	739.58	12.80	1.03E+01		-5.02E+01	5.04E+00
	778.00	4.50	2.65E+01		-3.41E+00	1.30E+01
RU-103	497.08	89.00	2.94E-01	2.94E-01	5.84E-02	1.44E-01
RU-106	621.84	9.80	3.01E+00	3.01E+00	1.10E-01	1.48E+00
AG-108M	433.93	89.90	2.50E-01	2.50E-01	1.02E-01	1.23E-01
	614.37	90.40	3.18E-01		-3.40E-02	1.56E-01
	722.95	90.50	3.41E-01		5.09E-02	1.67E-01
CD-109	88.03	3.72	1.43E+01	1.43E+01	7.43E-01	7.12E+00
AG-110M	657.75	93.14	3.23E-01	3.23E-01	-7.07E-02	1.58E-01
	677.61	10.53	2.91E+00		2.15E-01	1.43E+00
	706.67	16.46	1.94E+00		-8.11E-02	9.50E-01
	763.93	21.98	2.93E+00		2.40E+01	1.45E+00
	884.67	71.63	4.61E-01		8.77E-02	2.25E-01

Analysis Report for 1606013-04

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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-110M	1384.27	23.94	7.35E-01	3.23E-01	1.81E-01	3.45E-01
CD-113M	263.70	0.02	9.36E+02	9.36E+02	-7.43E+02	4.62E+02
SN-113	255.12	1.93	1.19E+01	3.37E-01	1.41E+00	5.86E+00
	391.69	64.90	3.37E-01		-1.17E-01	1.65E-01
TE123M	159.00	84.10	3.26E-01	3.26E-01	-1.19E-01	1.61E-01
SB-124	602.71	97.87	3.12E-01	2.16E-01	2.70E-02	1.53E-01
	645.85	7.26	4.13E+00		-1.33E+00	2.02E+00
	722.78	11.10	2.95E+00		4.40E-01	1.44E+00
	1691.02	49.00	2.16E-01		-8.24E-02	9.51E-02
I-125	35.49	6.49	9.58E+00	9.58E+00	-1.61E+00	4.75E+00
SB-125	176.33	6.89	3.77E+00	7.51E-01	-1.78E+00	1.87E+00
	427.89	29.33	7.51E-01		2.23E-01	3.69E-01
	463.38	10.35	2.26E+00		7.24E-01	1.11E+00
	600.56	17.80	1.62E+00		-6.08E-01	7.92E-01
	635.90	11.32	2.58E+00		-2.13E-01	1.26E+00
SB-126	414.70	83.30	3.50E-01	3.50E-01	7.26E-02	1.72E-01
	666.33	99.60	4.05E-01		7.90E-02	1.98E-01
	695.00	99.60	4.09E-01		-5.14E-01	2.01E-01
	720.50	53.80	7.49E-01		-1.33E-01	3.67E-01
SN-126	87.57	37.00	1.43E+00	1.43E+00	7.41E-02	7.11E-01
SB-127	473.00	25.00	2.29E+00	2.09E+00	1.38E-01	1.12E+00
	685.20	35.70	2.09E+00		-1.12E-01	1.03E+00
	783.80	14.70	6.91E+00		1.70E+01	3.40E+00
I-129	29.78	57.00	1.65E+00	1.65E+00	-1.38E-01	8.16E-01
	33.60	13.20	5.05E+00		-6.20E+00	2.50E+00
	39.58	7.52	6.27E+00		-4.42E+00	3.11E+00
I-131	284.30	6.05	5.49E+00	3.99E-01	-1.16E+00	2.70E+00
	364.48	81.20	3.99E-01		-1.71E-01	1.96E-01
	636.97	7.26	6.22E+00		-2.57E+00	3.05E+00
	722.89	1.80	2.66E+01		3.96E+00	1.30E+01
TE-132	49.72	13.10	1.01E+01	8.10E-01	-3.17E+00	5.03E+00
	228.16	88.00	8.10E-01		8.58E-01	4.01E-01
BA-133	81.00	33.00	1.22E+00	3.63E-01	-4.21E+00	6.09E-01
	302.84	17.80	1.21E+00		7.78E-01	5.98E-01
	356.01	60.00	3.63E-01		1.85E-01	1.78E-01
I-133	529.87	86.30	1.60E+01	1.60E+01	-1.24E+00	7.83E+00
XE-133	81.00	38.00	2.08E+00	2.08E+00	-7.14E+00	1.03E+00
CS-134	563.23	8.38	2.92E+00	2.96E-01	-1.43E+00	1.43E+00
	569.32	15.43	1.81E+00		1.52E+00	8.86E-01
	604.70	97.60	2.96E-01		2.57E-02	1.45E-01
	795.84	85.40	3.83E-01		9.60E-02	1.87E-01
	801.93	8.73	3.57E+00		-2.14E+00	1.74E+00
CS-135	268.24	16.00	1.38E+00	1.38E+00	-1.70E-01	6.82E-01
I-135	1131.51	22.50	3.19E+05	2.28E+05	8.20E+04	1.53E+05
	1260.41	28.60	2.28E+05		8.19E+04	1.08E+05
	1678.03	9.54	4.32E+05		2.17E+05	1.94E+05
CS-136	153.22	7.46	4.81E+00	3.55E-01	5.31E+00	2.39E+00
	163.89	4.61	8.44E+00		3.60E+01	4.19E+00
	176.55	13.56	2.50E+00		6.77E-01	1.24E+00
	273.65	12.66	2.26E+00		-1.13E+00	1.12E+00
	340.57	48.50	5.87E-01		5.55E-02	2.89E-01
	818.50	99.70	3.77E-01		1.06E-01	1.84E-01
	1048.07	79.60	3.55E-01		-1.02E-01	1.71E-01

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CS-136	1235.34	19.70	1.51E+00	3.55E-01	4.97E-01	7.22E-01
CS-137	661.65	85.12	3.57E-01	3.57E-01	-6.61E-03	1.75E-01
LA-138	788.74	34.00	1.17E+00	2.92E-01	-4.83E-02	5.75E-01
	1435.80	66.00	2.92E-01		2.60E-01	1.38E-01
CE-139	165.85	80.35	3.50E-01	3.50E-01	-2.61E-02	1.74E-01
BA-140	162.64	6.70	5.84E+00	1.27E+00	1.95E+01	2.90E+00
	304.84	4.50	6.25E+00		-3.79E-01	3.08E+00
	423.70	3.20	8.88E+00		-3.38E+00	4.36E+00
	437.55	2.00	1.49E+01		2.17E+00	7.30E+00
	537.32	25.00	1.27E+00		5.02E-02	6.22E-01
LA-140	328.77	20.50	1.39E+00	2.33E-01	-2.81E-01	6.87E-01
	487.03	45.50	6.87E-01		2.38E-01	3.37E-01
	815.85	23.50	1.61E+00		1.95E-01	7.86E-01
	1596.49	95.49	2.33E-01		1.33E-01	1.09E-01
CE-141	145.44	48.40	7.73E-01	7.73E-01	5.23E+00	3.84E-01
CE-143	57.36	11.80	4.94E+01	7.16E+00	-7.34E+01	2.46E+01
	293.26	42.00	7.16E+00		4.40E+00	3.53E+00
	664.55	5.20	7.62E+01		4.46E+01	3.74E+01
CE-144	133.54	10.80	2.65E+00	2.65E+00	6.06E-01	1.32E+00
PM-144	476.78	42.00	5.60E-01	2.91E-01	5.57E-02	2.75E-01
	618.01	98.60	2.91E-01		-1.24E-01	1.43E-01
	696.49	99.49	3.17E-01		-1.77E-01	1.56E-01
PM-145	36.85	21.70	2.48E+00	1.31E+00	-2.03E-01	1.23E+00
	37.36	39.70	1.31E+00		-1.07E-01	6.50E-01
	42.30	15.10	2.87E+00		-1.03E+00	1.42E+00
	72.40	2.31	1.83E+01		3.41E+00	9.13E+00
PM-146	453.90	39.94	5.72E-01	5.72E-01	-1.89E-01	2.81E-01
	735.90	14.01	2.38E+00		-1.94E+00	1.16E+00
	747.13	13.10	2.62E+00		-1.16E+01	1.29E+00
ND-147	91.11	28.90	5.64E+00	2.52E+00	3.71E+02	2.81E+00
	531.02	13.10	2.52E+00		-1.28E-01	1.23E+00
PM-149	285.90	3.10	3.42E+01	3.42E+01	-9.24E+00	1.68E+01
EU-152	121.78	20.50	1.41E+00	1.03E+00	3.02E-01	7.01E-01
	244.69	5.40	4.21E+00		-4.68E+00	2.08E+00
	344.27	19.13	1.12E+00		3.01E-01	5.49E-01
	778.89	9.20	3.75E+00		2.53E+00	1.84E+00
	964.01	10.40	2.41E+00		-2.98E-01	1.17E+00
	1085.78	7.22	2.91E+00		-1.12E+00	1.39E+00
	1112.02	9.60	2.23E+00		4.35E-01	1.07E+00
	1407.95	14.94	1.03E+00		-2.02E-01	4.78E-01
GD-153	97.43	31.30	1.56E+00	1.52E+00	3.99E+00	7.78E-01
	103.18	22.20	1.52E+00		5.82E-01	7.58E-01
EU-154	123.07	40.50	7.15E-01	4.94E-01	5.15E-02	3.55E-01
	723.30	19.70	1.57E+00		2.34E-01	7.69E-01
	873.19	11.50	2.46E+00		1.15E+00	1.20E+00
	996.32	10.30	2.62E+00		9.20E-01	1.27E+00
	1004.76	17.90	5.71E+00		2.69E-01	2.83E+00
	1274.45	35.50	4.94E-01		-1.91E-01	2.33E-01
EU-155	86.50	30.90	1.69E+00	1.62E+00	-1.32E+01	8.41E-01
	105.30	20.70	1.62E+00		-1.79E-01	8.06E-01
EU-156	811.77	10.40	3.58E+00	2.76E+00	-1.54E+00	1.75E+00
	1153.47	7.20	4.00E+00		3.27E+00	1.92E+00
	1230.71	8.90	2.76E+00		-2.38E-01	1.31E+00

Analysis Report for 1606013-04

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
HO-166M	184.41	72.60	7.69E-01	5.74E-01	1.75E+01	3.83E-01
	280.45	29.60	7.31E-01		-2.62E-01	3.60E-01
	410.94	11.10	2.01E+00		4.81E-01	9.88E-01
	711.69	54.10	5.74E-01		5.32E-02	2.81E-01
TM-171	66.72	0.14	2.74E+02	2.74E+02	-8.12E+02	1.37E+02
HF-172	81.75	4.52	9.29E+00	2.53E+00	-2.93E+01	4.63E+00
	125.81	11.30	2.53E+00		8.25E-01	1.26E+00
LU-172	181.53	20.60	2.13E+00	5.93E-01	-2.94E-02	1.06E+00
	810.06	16.63	3.01E+00		-1.55E+00	1.47E+00
	912.12	15.25	3.00E+00		1.11E+00	1.46E+00
	1093.66	62.50	5.93E-01		-2.58E-01	2.84E-01
LU-173	100.72	5.24	7.74E+00	1.06E+00	-2.73E+01	3.85E+00
	272.11	21.20	1.06E+00		2.26E-01	5.22E-01
HF-175	343.40	84.00	2.64E-01	2.64E-01	1.85E-02	1.30E-01
LU-176	88.34	13.30	3.97E+00	2.26E-01	2.06E-01	1.98E+00
	201.83	86.00	2.94E-01		-2.28E+00	1.45E-01
	306.78	94.00	2.26E-01		2.25E-02	1.11E-01
TA-182	67.75	41.20	1.00E+00	7.33E-01	-1.69E+00	4.99E-01
	1121.30	34.90	7.33E-01		2.43E-01	3.53E-01
	1189.05	16.23	1.36E+00		-1.93E+00	6.51E-01
	1221.41	26.98	7.80E-01		-5.98E-02	3.71E-01
	1231.02	11.44	1.69E+00		-2.91E-01	8.00E-01
IR-192	308.46	29.68	7.40E-01	4.98E-01	-3.01E-01	3.64E-01
	468.07	48.10	4.98E-01		1.55E-01	2.44E-01
HG-203	279.19	77.30	3.06E-01	3.06E-01	2.40E-01	1.51E-01
+ BI-207	569.67	*	97.72	3.09E-01	3.89E-01	2.12E-01
	1063.62		74.90	3.09E-01	1.40E-01	1.49E-01
	860.37	*	4.48	6.05E+00	3.12E+00	2.94E+00
+ TL-208	2614.66	*	35.85	1.97E-01	3.93E-01	7.95E-02
	262.00		45.00	4.89E-01	9.34E-02	2.41E-01
	300.00		23.00	9.28E-01	7.57E-02	4.57E-01
PB-210	46.50	4.25	9.88E+00	9.88E+00	-2.78E+01	4.91E+00
PB-211	404.84	2.90	7.63E+00	7.63E+00	1.15E+00	3.75E+00
	831.96	2.90	1.01E+01		6.29E+00	4.91E+00
BI-212	727.17	11.80	2.65E+00	2.65E+00	6.09E-01	1.30E+00
	1620.62	2.75	5.08E+00		-4.01E-01	2.32E+00
+ PB-212	238.63	*	44.60	6.35E-01	7.55E-01	3.14E-01
	300.09		3.41	6.26E+00	5.11E-01	3.08E+00
+ BI-214	609.31	*	46.30	7.45E-01	1.09E+00	3.67E-01
	1120.29	*	15.10	2.35E+00	1.90E+00	1.14E+00
	1764.49		15.80	1.43E+00	2.39E+00	6.74E-01
	2204.22	*	4.98	1.12E+00	1.86E+00	4.24E-01
+ PB-214	295.21	*	19.19	1.55E+00	2.11E+00	7.65E-01
	351.92	*	37.19	8.83E-01	1.89E+00	4.37E-01
RN-219	401.80	6.50	3.34E+00	3.34E+00	-1.40E+00	1.64E+00
RA-223	323.87	3.88	5.66E+00	5.66E+00	2.66E+00	2.78E+00
RA-224	240.98	3.95	6.18E+00	6.18E+00	4.29E+00	3.05E+00
RA-225	40.00	31.00	1.88E+00	1.88E+00	-1.33E+00	9.34E-01
+ RA-226	186.21	*	3.28	1.18E+01	4.11E+02	5.88E+00
	50.10		8.40	5.32E+00	2.08E+00	-1.67E+00
	236.00		11.50	2.08E+00		-4.09E+00
TH-227	256.20	6.30	4.23E+00		2.43E+00	2.09E+00

Analysis Report for 1606013-04
CP-5026-S 1 0-1 5

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AC-228	338.32	11.40	1.98E+00	9.82E-01	1.65E+00	9.73E-01
	911.07	27.70	9.82E-01		6.41E-01	4.77E-01
	969.11	16.60	1.58E+00		1.54E-01	7.67E-01
TH-230	48.44	16.90	2.63E+00	2.63E+00	-2.23E+00	1.31E+00
	62.85	4.60	2.17E+01		1.14E+03	1.08E+01
	67.67	0.37	1.08E+02		-1.82E+02	5.39E+01
PA-231	283.67	1.60	1.34E+01	9.38E+00	-2.83E+00	6.60E+00
	302.67	2.30	9.38E+00		6.01E+00	4.62E+00
+ TH-231	25.64 *	14.70	1.67E+01	1.13E+01	1.29E+01	8.28E+00
	84.21 *	6.40	1.13E+01		3.24E+01	5.62E+00
PA-233	311.98	38.60	6.33E-01	6.33E-01	8.00E-02	3.12E-01
+ PA-234	131.20 *	20.40	1.67E+00	1.67E+00	2.71E+00	8.29E-01
	733.99 *	8.80	8.45E+00		2.71E+00	4.19E+00
	946.00 *	12.00	2.94E+00		6.69E+00	1.44E+00
+ PA-234M	1001.03 *	0.92	3.80E+01	3.80E+01	1.84E+03	1.85E+01
+ TH-234	63.29 *	3.80	1.70E+01	1.70E+01	1.40E+03	8.49E+00
+ U-235	143.76 *	10.50	3.69E+00	3.69E+00	2.31E+01	1.84E+00
	163.35 *	4.70	6.92E+00		2.37E+01	3.44E+00
	205.31 *	4.70	7.92E+00		2.57E+01	3.94E+00
NP-237	86.50	12.60	4.13E+00	4.13E+00	-3.24E+01	2.06E+00
NP-239	106.10	22.70	6.57E+00	6.57E+00	-4.16E+00	3.27E+00
	228.18	10.70	1.01E+01		1.07E+01	4.98E+00
	277.60	14.10	6.91E+00		1.50E+00	3.41E+00
AM-241	59.54	35.90	1.31E+00	1.31E+00	-1.94E+00	6.50E-01
AM-243	74.67	66.00	6.34E-01	6.34E-01	-6.44E-02	3.16E-01
CM-243	209.75	3.29	7.15E+00	1.57E+00	2.96E+00	3.54E+00
	228.14	10.60	2.29E+00		2.43E+00	1.13E+00
	277.60	14.00	1.57E+00		3.41E-01	7.73E-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 1606013-04
CP-5026-S 1 0-1 5

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: CP-5026-S 1 0-1 5

Elapsed Live time: 3600
 Elapsed Real Time: 3625

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	3	988	2306
9:	2232	1777	1516	2593	2964	1879	1423	2783
17:	3125	1470	1770	1957	1560	1304	1398	1600
25:	1468	1452	1358	1291	1282	1351	1342	1858
33:	1564	1437	1560	1546	1744	1713	1738	1770
41:	1889	1967	2145	2190	2397	2398	2639	2852
49:	3358	3792	3941	4422	5040	4984	4765	4993
57:	5048	5273	5713	5639	6159	6594	51467	28295
65:	3986	4049	4452	4955	5591	5706	5858	5866
73:	5976	5940	6062	5633	5862	5480	5447	5521
81:	5597	5810	6798	7397	5845	5559	5885	5651
89:	5597	6645	5869	50658	78965	6566	7500	3497
97:	2702	7960	7587	2371	2229	2172	2309	2198
105:	2374	2260	2142	2330	2668	2934	4438	4142
113:	7184	2597	2540	1775	1673	1632	1497	1579
121:	1655	1488	1508	1480	1542	1496	1390	1394
129:	1387	1422	1765	1591	1366	1287	1331	1288
137:	1258	1303	1289	1242	1320	1242	1794	3683
145:	1201	1159	1140	1173	1116	1098	1099	1188
153:	1262	1072	1078	1038	1013	1010	1060	1084
161:	961	1043	1832	1509	914	949	918	934
169:	956	894	943	914	922	867	846	917
177:	833	872	879	843	866	849	888	784
185:	4996	11822	1026	696	687	677	649	679
193:	664	681	813	663	657	689	664	655
201:	679	822	740	615	1447	1015	594	555
209:	611	590	579	555	559	566	618	534
217:	494	548	502	555	547	547	519	528
225:	535	566	694	545	481	475	479	550
233:	516	485	479	481	500	612	670	435
241:	496	548	450	446	422	450	434	451
249:	443	442	399	398	392	393	374	405
257:	431	1255	709	395	388	372	359	370
265:	337	344	388	389	363	359	398	357
273:	350	367	354	336	356	333	353	348
281:	325	297	338	315	307	337	328	322
289:	328	282	312	303	312	364	524	385
297:	300	278	318	295	273	299	301	296
305:	307	256	272	282	281	263	270	274
313:	292	299	271	230	276	272	264	300
321:	298	283	262	272	279	289	235	295
329:	221	308	269	261	247	223	280	262
337:	245	297	303	265	221	242	237	235
345:	239	244	237	225	256	245	336	578
353:	293	229	223	237	258	235	212	232
361:	249	202	215	230	198	211	208	231

369: 261 232 206 253 198 225 224 189

Sample Title: CP-5026-S 1 0-1 5

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	194	240	197	230	187	218	209	208
385:	197	202	233	218	228	190	193	193
393:	205	190	223	208	199	194	195	199
401:	193	202	194	194	218	191	212	194
409:	224	207	184	185	205	183	193	199
417:	179	182	191	194	184	179	185	170
425:	178	182	213	167	193	156	167	180
433:	188	187	185	195	189	180	184	170
441:	188	153	186	167	165	196	171	188
449:	180	172	212	189	171	179	179	180
457:	176	198	179	185	184	192	180	170
465:	186	165	170	185	170	167	136	169
473:	180	181	192	188	154	159	174	142
481:	169	176	156	175	179	161	199	181
489:	153	173	156	143	147	154	183	187
497:	178	147	161	179	171	184	140	162
505:	178	155	155	172	188	206	177	183
513:	184	173	172	161	178	131	152	156
521:	155	150	164	151	170	173	135	157
529:	143	156	146	174	153	166	159	153
537:	148	159	149	169	127	165	174	172
545:	142	156	171	181	171	151	158	169
553:	172	165	137	140	163	150	140	147
561:	135	138	157	142	155	191	145	163
569:	227	218	176	160	146	139	129	128
577:	137	146	160	131	146	142	206	173
585:	146	155	141	140	139	140	155	137
593:	160	133	139	153	129	129	135	130
601:	130	129	128	125	138	134	116	136
609:	295	252	139	122	143	117	124	113
617:	122	118	131	121	126	125	137	120
625:	133	126	138	119	142	136	113	136
633:	132	130	116	111	114	112	139	133
641:	113	142	120	93	119	113	110	120
649:	109	104	118	126	113	119	136	110
657:	124	117	123	129	102	143	118	143
665:	132	132	122	104	111	125	109	126
673:	113	104	114	126	113	120	137	117
681:	119	112	108	116	123	112	103	129
689:	101	127	148	138	121	114	97	110
697:	119	123	166	124	123	121	139	124
705:	112	117	122	127	99	112	128	111
713:	110	120	120	98	120	96	107	114
721:	115	110	94	110	116	119	113	114
729:	111	105	122	105	147	152	109	110
737:	98	119	142	188	135	270	538	252
745:	116	91	90	108	115	138	110	109
753:	106	108	144	113	116	107	116	109
761:	81	110	115	117	240	1206	1191	228
769:	125	97	109	113	125	126	98	113
777:	105	115	112	121	137	156	110	104
785:	121	312	257	120	100	120	95	97
793:	125	95	116	121	115	90	74	99

801: 108 97 86 92 102 127 85 92

Sample Title: CP-5026-S 1 0-1 5

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	89	94	73	76	81	78	77	82
817:	70	71	90	90	66	73	65	65
825:	106	83	75	69	80	81	97	104
833:	72	51	61	78	53	72	75	64
841:	59	80	77	69	73	68	74	51
849:	76	81	68	87	70	62	53	77
857:	69	69	66	70	71	54	45	61
865:	68	78	70	68	60	62	68	63
873:	67	69	67	77	55	61	75	91
881:	114	80	123	93	59	68	81	72
889:	45	54	69	53	57	50	40	44
897:	54	59	56	51	44	48	38	56
905:	51	49	44	53	54	29	96	67
913:	49	58	48	54	56	43	50	60
921:	72	92	59	65	86	114	108	54
929:	42	39	44	46	38	57	52	47
937:	46	48	45	44	37	49	37	44
945:	77	160	105	63	39	33	34	49
953:	41	41	58	44	39	49	44	39
961:	38	54	40	40	53	51	36	37
969:	62	61	54	39	46	50	40	30
977:	41	34	52	39	52	46	44	56
985:	50	37	34	39	45	34	46	43
993:	45	50	52	46	38	38	74	778
1001:	3022	1749	141	43	32	42	42	32
1009:	34	24	32	31	40	23	27	27
1017:	42	29	30	24	27	35	30	26
1025:	28	29	28	32	41	23	30	26
1033:	34	41	26	33	28	28	26	28
1041:	36	32	31	39	32	33	28	32
1049:	29	22	24	22	36	25	24	31
1057:	23	28	29	35	27	41	33	27
1065:	43	18	30	23	21	33	32	27
1073:	29	36	24	23	23	30	31	34
1081:	28	24	32	21	24	25	25	25
1089:	31	23	19	29	24	32	33	31
1097:	34	35	22	19	31	25	22	31
1105:	25	25	24	29	31	23	26	17
1113:	25	25	29	19	23	22	30	53
1121:	55	26	20	31	45	29	29	23
1129:	15	25	23	26	29	20	21	25
1137:	18	25	17	29	23	19	33	22
1145:	15	31	31	29	22	21	21	33
1153:	28	28	34	26	14	21	16	24
1161:	24	19	20	16	24	24	25	28
1169:	25	16	15	17	23	16	18	14
1177:	18	20	28	14	21	22	17	13
1185:	16	14	22	32	25	21	15	30
1193:	43	61	29	21	17	17	19	14
1201:	16	26	19	25	21	11	14	26
1209:	14	24	25	21	18	28	20	24
1217:	24	20	22	19	19	21	19	17
1225:	19	16	21	15	18	22	10	10

1233: 27 11 23 25 29 44 32 22

Sample Title: CP-5026-S 1 0-1 5

Channel	-----	-----	-----	-----	-----	-----	-----
1241:	17	22	13	30	17	16	13
1249:	15	18	21	15	12	24	9
1257:	19	18	11	18	12	19	13
1265:	16	18	15	16	18	22	20
1273:	8	11	11	8	17	20	21
1281:	15	20	12	18	12	21	18
1289:	12	18	19	15	10	11	13
1297:	18	13	14	15	11	14	19
1305:	16	11	10	6	13	12	15
1313:	15	15	15	15	12	9	10
1321:	14	13	11	8	19	14	10
1329:	14	13	5	18	9	17	5
1337:	12	20	10	12	10	14	8
1345:	16	6	11	9	12	7	7
1353:	12	12	9	10	16	5	12
1361:	7	10	6	12	15	13	10
1369:	13	8	10	9	15	11	13
1377:	16	22	19	11	12	13	6
1385:	8	10	18	8	7	10	14
1393:	14	16	14	11	12	7	12
1401:	11	12	12	10	7	9	12
1409:	10	5	9	7	9	13	11
1417:	7	10	7	9	10	5	11
1425:	4	11	9	9	6	9	5
1433:	18	25	22	10	8	7	7
1441:	9	11	10	10	11	7	12
1449:	6	5	8	10	11	9	5
1457:	5	13	13	73	125	69	5
1465:	6	8	9	5	6	6	5
1473:	1	6	8	11	8	7	9
1481:	4	6	7	5	5	10	3
1489:	9	10	5	6	6	4	7
1497:	5	3	7	8	7	4	7
1505:	8	6	5	14	18	33	18
1513:	6	9	5	2	7	4	5
1521:	8	7	6	6	6	5	5
1529:	12	4	4	6	8	9	7
1537:	7	6	9	4	6	2	9
1545:	8	3	8	8	16	5	8
1553:	20	28	14	5	8	8	3
1561:	3	6	6	7	4	6	2
1569:	6	4	7	2	3	5	5
1577:	5	4	5	4	7	1	6
1585:	11	4	4	7	5	7	8
1593:	8	13	12	4	3	7	4
1601:	3	3	6	2	6	1	4
1609:	5	3	5	4	2	3	4
1617:	4	4	4	5	7	4	4
1625:	2	7	4	4	6	6	2
1633:	5	1	5	3	4	4	2
1641:	2	4	6	5	3	2	3
1649:	5	3	7	4	2	3	1
1657:	3	0	2	2	5	3	4

1665: 0 2 3 6 5 2 1 2

Sample Title: CP-5026-S 1 0-1 5

Channel	1	2	3	4	5	6	7	8	9
1673:	3	3	4	4	2	4	3	1	
1681:	3	2	1	2	3	1	1	2	
1689:	2	2	1	2	3	4	5	2	
1697:	0	3	4	3	4	1	2	5	
1705:	0	2	4	1	2	0	0	3	
1713:	1	1	4	4	3	5	0	0	
1721:	3	3	0	2	1	0	2	0	
1729:	2	2	4	2	0	1	3	5	
1737:	24	33	27	9	2	2	1	1	
1745:	3	3	1	1	2	0	0	1	
1753:	1	0	0	3	1	0	4	3	
1761:	2	4	8	14	34	23	9	4	
1769:	3	1	2	2	3	1	0	0	
1777:	0	0	1	0	1	1	0	2	
1785:	1	2	1	1	0	2	1	0	
1793:	2	0	1	3	2	0	2	1	
1801:	1	5	1	2	1	2	1	4	
1809:	10	1	2	0	2	2	0	0	
1817:	2	0	1	3	1	2	0	0	
1825:	2	3	2	3	1	6	26	22	
1833:	17	2	6	0	1	2	0	2	
1841:	1	1	2	2	3	3	7	1	
1849:	2	1	1	1	1	0	1	2	
1857:	0	2	0	0	2	1	3	1	
1865:	2	3	10	11	7	7	1	1	
1873:	1	2	10	10	6	4	3	0	
1881:	2	2	3	0	1	0	1	0	
1889:	2	2	2	0	8	4	5	1	
1897:	0	1	0	3	0	2	0	2	
1905:	0	1	0	0	0	1	8	9	
1913:	6	4	1	0	0	1	0	1	
1921:	0	2	0	0	1	1	1	0	
1929:	0	0	1	1	1	0	1	1	
1937:	2	4	2	1	0	0	1	1	
1945:	4	0	4	1	1	0	1	1	
1953:	1	0	2	0	0	0	0	1	
1961:	0	0	4	0	3	1	2	2	
1969:	3	2	0	0	0	0	1	2	
1977:	1	1	1	0	0	2	1	0	
1985:	0	0	1	1	1	1	1	1	
1993:	0	2	0	1	0	1	1	1	
2001:	0	2	1	0	0	0	0	0	
2009:	0	1	2	4	0	0	1	0	
2017:	1	0	2	0	1	0	1	0	
2025:	2	1	1	0	1	1	1	0	
2033:	1	0	2	1	0	0	1	0	
2041:	0	2	0	1	1	3	1	0	
2049:	0	0	0	1	0	0	0	1	
2057:	0	0	0	1	0	0	2	0	
2065:	2	1	2	2	1	2	0	1	
2073:	0	0	0	0	2	0	1	0	
2081:	0	1	1	1	0	1	0	1	
2089:	0	0	0	0	0	1	2	0	

2097: 1 1 2 0 0 1 2 2

Sample Title: CP-5026-S 1 0-1 5

Channel	1	2	3	4	5	6	7	8
2105:	1	1	1	2	1	0	1	0
2113:	0	1	3	0	1	2	3	0
2121:	1	0	1	0	1	2	0	1
2129:	1	0	0	2	0	0	1	3
2137:	0	0	1	2	1	0	0	0
2145:	0	1	0	1	0	0	3	0
2153:	3	1	2	2	0	0	0	0
2161:	1	0	0	1	0	1	1	1
2169:	0	0	0	0	0	0	1	0
2177:	1	2	0	1	0	0	1	1
2185:	1	1	0	0	0	0	0	1
2193:	0	0	1	0	1	1	0	1
2201:	0	1	5	9	4	1	0	0
2209:	0	1	0	1	0	0	0	0
2217:	0	1	0	1	1	1	1	0
2225:	1	0	1	1	0	0	0	0
2233:	2	0	0	0	0	0	0	1
2241:	0	0	1	1	0	0	1	0
2249:	1	1	0	0	0	1	0	0
2257:	0	0	0	0	1	0	0	1
2265:	2	0	1	0	2	0	1	0
2273:	1	0	1	0	0	1	1	1
2281:	0	1	0	0	0	0	2	0
2289:	1	0	0	0	0	0	0	2
2297:	1	2	1	0	3	1	1	1
2305:	0	0	0	1	1	1	0	0
2313:	0	1	0	1	0	0	0	1
2321:	1	0	0	2	0	0	0	0
2329:	2	1	0	2	0	0	0	1
2337:	2	1	1	0	0	0	1	0
2345:	1	0	1	0	0	1	0	1
2353:	2	0	2	0	0	1	0	0
2361:	0	1	2	0	0	1	0	0
2369:	1	1	0	1	0	1	0	0
2377:	1	0	1	0	0	1	0	1
2385:	0	0	0	0	0	0	0	1
2393:	1	0	1	2	0	0	0	0
2401:	1	0	0	0	0	0	1	0
2409:	0	2	0	0	2	0	0	2
2417:	1	1	1	1	0	0	0	2
2425:	1	3	1	0	0	0	0	0
2433:	0	3	1	0	0	0	0	0
2441:	0	0	0	1	1	1	0	3
2449:	1	1	1	1	0	1	0	0
2457:	0	0	0	0	1	0	2	1
2465:	0	0	0	0	0	0	0	0
2473:	0	0	1	1	0	0	0	0
2481:	0	1	0	0	0	0	0	0
2489:	0	1	0	0	0	4	0	0
2497:	0	0	0	0	1	0	0	0
2505:	0	0	0	0	0	0	0	1
2513:	1	0	0	0	0	1	0	0
2521:	0	0	0	0	0	0	0	0

2529: 0 0 0 0 0 0 0 0 1

Sample Title: CP-5026-S 1 0-1 5

Channel	1	2	3	4	5	6	7	8	9
2537:	2	0	0	0	0	0	0	0	1
2545:	1	0	0	0	0	0	0	0	0
2553:	0	0	1	0	0	0	0	0	1
2561:	0	0	1	0	0	0	2	0	0
2569:	0	0	0	0	0	0	1	0	0
2577:	0	1	0	1	1	1	1	0	0
2585:	0	0	0	1	0	0	0	0	0
2593:	0	0	0	0	0	0	1	0	0
2601:	0	1	0	1	1	0	0	0	1
2609:	1	0	3	0	4	9	11	5	5
2617:	2	0	0	0	0	0	0	0	0
2625:	0	0	0	1	1	0	0	0	0
2633:	1	0	0	0	1	2	0	0	0
2641:	0	0	3	0	0	1	0	0	0
2649:	0	0	0	0	1	0	0	0	0
2657:	1	0	0	0	0	0	2	0	0
2665:	0	0	0	1	0	0	1	0	0
2673:	0	0	0	0	0	0	0	0	1
2681:	0	2	0	0	1	0	0	0	0
2689:	2	0	0	0	0	0	0	1	0
2697:	0	0	1	1	2	0	1	0	0
2705:	0	0	0	0	0	0	0	0	0
2713:	0	0	0	0	1	0	0	0	0
2721:	1	0	0	1	0	0	2	1	1
2729:	0	0	0	0	0	0	0	0	0
2737:	0	0	0	0	1	0	0	0	0
2745:	0	0	0	1	0	0	1	0	0
2753:	0	0	0	0	0	0	1	0	0
2761:	1	0	0	1	0	0	0	0	0
2769:	0	0	1	1	0	0	0	0	0
2777:	0	0	0	0	0	0	0	0	0
2785:	0	0	0	0	0	0	0	0	1
2793:	1	1	0	0	0	0	1	0	0
2801:	0	0	0	1	0	1	0	1	1
2809:	0	0	0	0	0	0	0	0	1
2817:	0	0	2	0	0	0	0	0	0
2825:	0	1	0	1	1	1	0	0	0
2833:	0	0	0	0	0	0	0	0	0
2841:	0	0	0	0	0	0	0	0	0
2849:	0	0	0	1	1	0	0	0	1
2857:	0	0	0	1	0	0	0	0	0
2865:	0	0	0	0	0	0	0	0	0
2873:	1	0	0	0	0	0	0	0	0
2881:	0	1	0	0	0	1	1	0	0
2889:	1	0	0	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0	0
2905:	0	0	1	0	1	0	1	0	0
2913:	1	0	0	0	0	1	0	0	0
2921:	0	1	1	0	0	0	0	0	0
2929:	0	0	1	2	0	0	0	0	0
2937:	1	0	0	0	0	0	0	0	0
2945:	0	0	0	0	0	1	1	0	0
2953:	0	0	0	0	0	0	0	0	0

2961: 0 0 0 0 1 0 0 0

Sample Title: CP-5026-S 1 0-1 5

Channel	1	2	3	4	5	6	7	8
2969:	1	1	1	0	0	0	0	0
2977:	0	0	0	0	2	0	0	0
2985:	0	1	0	1	0	0	0	0
2993:	0	0	0	1	0	0	0	0
3001:	0	0	0	0	0	0	0	1
3009:	0	0	1	0	0	0	0	1
3017:	1	0	1	0	0	1	0	0
3025:	1	0	0	0	0	0	0	0
3033:	1	0	0	0	1	0	0	0
3041:	0	0	0	0	0	0	0	0
3049:	0	0	0	0	1	0	1	0
3057:	1	0	0	0	0	0	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	1	0	0	0
3081:	1	0	1	0	0	0	0	0
3089:	0	0	0	0	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	1	0	1	0	1
3113:	0	0	0	0	0	0	1	0
3121:	0	0	0	0	0	0	0	0
3129:	0	0	1	0	0	0	0	0
3137:	1	1	1	0	0	1	0	0
3145:	1	0	0	0	0	1	0	1
3153:	0	0	0	0	0	0	0	0
3161:	0	1	0	1	0	1	0	0
3169:	0	0	0	0	0	0	1	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	0	0	0
3193:	0	0	0	0	0	0	1	2
3201:	0	0	0	0	0	0	1	0
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	1	0	0	0	0
3225:	0	0	1	0	0	0	0	0
3233:	0	0	1	0	0	0	0	0
3241:	0	0	0	0	1	0	1	0
3249:	0	1	0	0	0	0	0	1
3257:	0	0	0	0	0	0	0	0
3265:	0	0	0	0	0	0	0	0
3273:	0	0	2	0	0	0	0	0
3281:	0	0	0	0	0	1	1	0
3289:	0	0	0	0	0	0	0	0
3297:	0	0	0	0	0	1	0	1
3305:	0	0	0	0	0	0	0	0
3313:	0	0	0	1	0	0	0	0
3321:	1	0	0	0	0	0	0	0
3329:	1	0	0	0	1	1	1	0
3337:	0	0	0	0	0	1	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	1	0	0	0	0	0
3361:	0	0	0	1	1	1	0	1
3369:	0	0	1	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 1 0 0 1 0

Sample Title: CP-5026-S 1 0-1 5

Channel	1	2	3	4	5	6	7	8
3401:	1	1	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	1	0	0	0	0	0	0
3425:	0	0	1	0	1	0	0	0
3433:	0	0	0	0	0	0	0	2
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	1	0	0	2	0
3457:	0	1	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	1	0	0	1
3481:	0	1	0	0	0	0	0	0
3489:	0	1	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	1	0
3513:	0	0	0	1	1	0	1	0
3521:	0	0	0	0	0	0	1	1
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	0	0	0	0	0
3545:	0	1	0	0	0	0	0	0
3553:	0	0	1	0	1	0	0	0
3561:	0	0	0	1	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	1	0	0	0
3585:	0	0	0	0	0	1	1	0
3593:	0	0	0	0	0	2	0	0
3601:	1	0	0	0	0	1	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	1	0	0	0
3625:	0	0	0	0	0	1	0	0
3633:	1	0	0	0	0	1	0	0
3641:	0	0	0	0	1	0	0	0
3649:	0	0	1	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	1	0	0	0	0	0
3681:	0	0	0	0	1	2	0	0
3689:	0	1	0	0	0	0	1	0
3697:	0	0	0	0	0	0	0	0
3705:	0	1	0	0	0	0	0	0
3713:	0	0	0	0	0	0	1	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	1	0	0	0
3761:	0	0	0	0	0	0	1	0
3769:	0	0	0	1	0	0	0	1
3777:	0	0	0	0	0	1	0	0
3785:	1	0	1	0	1	1	0	0
3793:	1	0	0	0	0	0	0	0
3801:	0	1	0	0	0	1	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	1	1	1	0	0	1	0

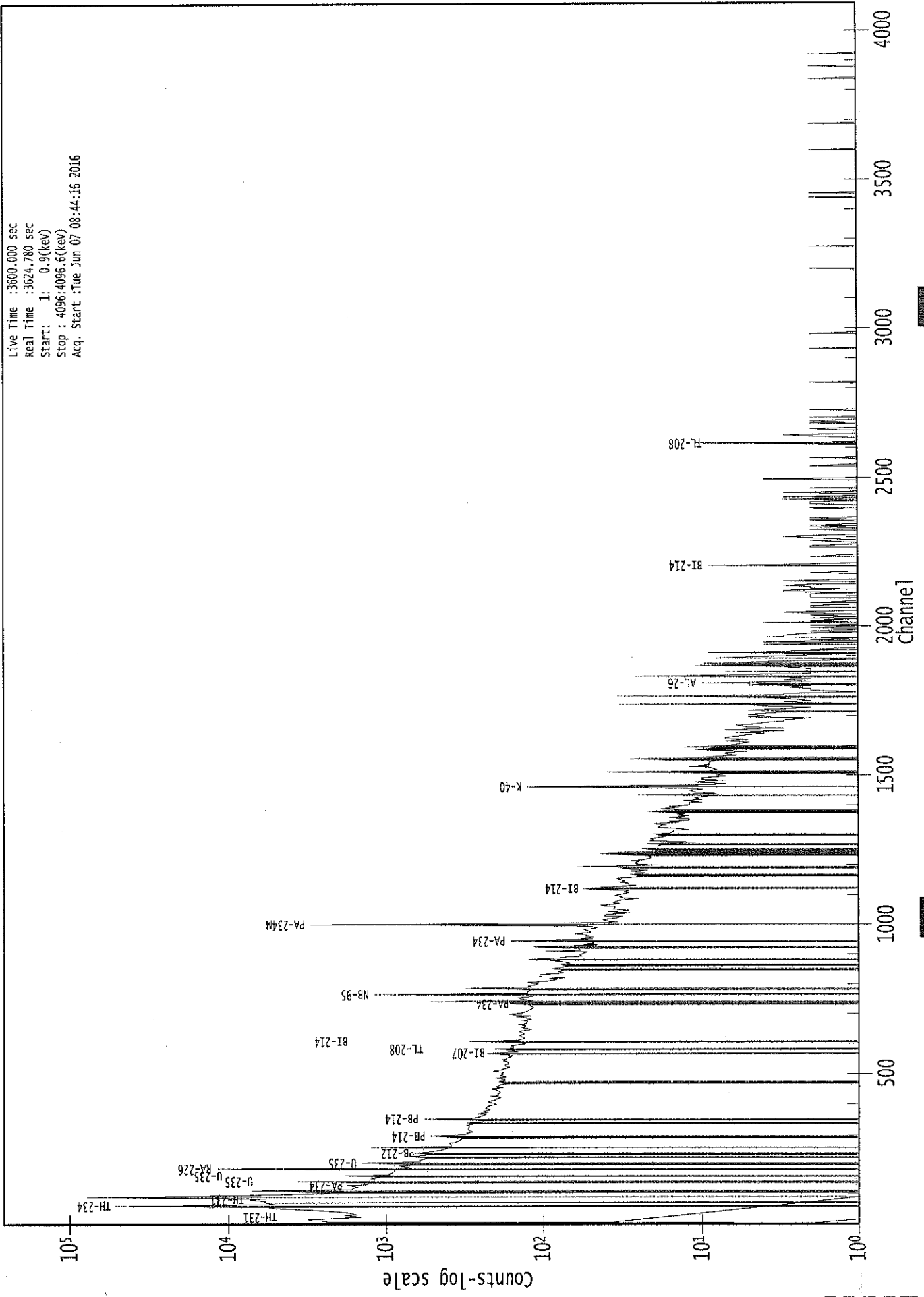
3825: 0 0 0 0 0 0 0 0 0

Sample Title: CP-5026-S 1 0-1 5

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	0	0	2	0	0	0
3841:	0	0	1	0	0	1	0	0
3849:	1	0	0	0	0	0	0	0
3857:	0	0	0	0	1	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	1	0	0	0	2
3881:	0	0	0	0	1	0	0	0
3889:	1	1	0	0	0	0	0	0
3897:	0	0	1	0	0	1	0	0
3905:	0	1	1	0	0	0	0	0
3913:	0	0	0	0	0	1	0	1
3921:	0	2	0	1	0	0	0	0
3929:	0	0	0	0	0	1	0	1
3937:	0	0	0	0	0	0	0	0
3945:	0	1	0	0	0	0	0	0
3953:	1	0	0	0	1	0	0	0
3961:	1	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	1	0	0	0	0	0	1
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:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	1	1	0	0
4025:	1	0	0	0	0	0	0	0
4033:	1	0	0	0	0	0	0	0
4041:	0	0	1	0	0	0	0	0
4049:	1	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	1	0	0	0	0	0
4073:	1	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	1	0
4089:	0	0	0	0	0	0	0	0

0000038355.CNF

Live Time :3600.000 sec
Real Time :3624.780 sec
Start: 1: 0.9(keV)
Stop : 4096.4096.6(keV)
Acq. Start :Tue Jun 07 08:44:16 2016



ROI Type: 2

ROI Type: 1

59000 :

 ***** GENIE QUALITY ASSURANCE *****

Last Results Report
 6/7/16 5:56:40 AM

←
 617

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000003B.QCK

Detector: GE3
 Geometry: <None>
 Certificate: <None>
 Sample ID: QA Background Ch
 Sample Desc: QA Count
 Sample Quantity: 1.0000E+000
 Sample Date: 6/7/16 5:41:25 AM
 Measurement Date: 6/7/16 5:41:27 AM
 Elapsed Live Time: 900.0 seconds
 Elapsed Real Time: 902.8 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE3 [SD: 2.2392E+003+/-1370.6]	1.6210E+003	-4.5103E-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)

 ***** G E N I E Q U A L I T Y A S S U R A N C E *****

Last Results Report
 6/7/16 5:56:32 AM

617

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D000000002B.QCK

Detector: GE2
 Geometry: <None>
 Certificate: <None>
 Sample ID: QA Background Ch
 Sample Desc: QA Count
 Sample Quantity: 1.0000E+000
 Sample Date: 6/7/16 5:41:17 AM
 Measurement Date: 6/7/16 5:41:18 AM
 Elapsed Live Time: 900.0 seconds
 Elapsed Real Time: 900.2 seconds

Parameter Description	Value	Deviation/Flags
[Mean +/- Std. Dev.]		< LU : SD : UD : BS >
DAILY BKG CT RATE GE2	3.6522E+000	3.8042E-002
[SD:-2.4622E+035+/-*****]		< : : : >
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)

***** G E N I E Q U A L I T Y A S S U R A N C E *****

Last Results Report
6/7/16 5:34:53 AM

6/7/16

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D000000003GAS-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: 6/7/16 5:19:14 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 929.0 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	6.6169E+002	
Boundary Limits: [6.600E+002, 6.640E+002]		< : : : >
Peak centroid 1332.49 keV	1.3324E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.1 keV	1.8356E+003	
Boundary Limits: [1.833E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.4213E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	1.8660E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.2969E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.5651E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.8001E+005	
Boundary Limits: [1.223E-001, 1.834E-001]		< : : : >
Decay corrected activity	6.6772E+004	
Boundary Limits: [4.969E-002, 7.453E-002]		< : : : >

Decay corrected activity 1.0332E+005

Boundary Limits: [7.972E-002, 1.120E-001]

< : : : >

Parameter Description
[Mean +/- Std. Dev.]

Value

Deviation/Flags

< LU : SD : UD : BS >

Decay corrected activity 2.1710E+005

Boundary Limits: [1.713E-001, 2.569E-001]

< ; : : : >

Flags Key:

LU = Lower/Upper Bounds Test

SD = Sample Driven N-Sigma Test

UD = User Driven N-Sigma Test

BS = Measurement Bias Test

(Ab = Above, Be = Below)

(In = Investigate, Ac = Action)

(In = Investigate, Ac = Action)

(In = Investigate, Ac = Action)

***** GENIE QUALITY ASSURANCE *****

Last Results Report
6/7/16 5:34:43 AM

Handwritten mark and date 6/7/16

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D000000002GAS-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: 6/7/16 5:19:04 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 928.3 seconds

Table with 3 columns: Parameter Description, Value, and Deviation/Flags. It lists various peak and FWHM measurements with their respective values and deviation flags.

Decay corrected activity 6.0429E+004

Boundary Limits: [4.971E-002, 7.457E-002]

< : : : >

Parameter Description

Value

Deviation/Flags

[Mean +/- Std. Dev.]

< LU : SD : UD : BS >

Decay corrected activity 9.8474E+004

Boundary Limits: [7.978E-002, 1.197E-001]

< : : : >

Trend Test: The last 9 samples exhibit a bias trend.

Decay corrected activity 2.0722E+005

Boundary Limits: [1.714E-001, 2.571E-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)