AUXIER & ASSOCIATES, INC.

ENG-EOR-AA12
West Lake Landfill

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #16-01047-OR

March 3, 2016

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
I	Chain of Custody	0004
II	Sample Acknowledgement	0009
III	Case Narrative	0012
IV	Analytical Results Summary	0016
V	Analytical Standards	0021
VI	Quality Control Sample Results Summary	0038
VII	Laboratory Technician's Notes	0045
VIII	Analytical Data (Isotopic Uranium)	0064
IX	Analytical Data (Isotopic Thorium)	0114
X	Analytical Data (Gamma Spectroscopy)	0167
	Last Page	0420

Eberline Services – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Services Work Order # 16-01047

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

Date for Partial	Initials	Date	Initials	Checklist Items
		1/13/16	SEB	Sample Log-In
		2/5/16	JG	Data Compilation
		2-10-16	MET	First Technical Data Review
		2/11/16	[illegible]	Second Technical Data Review
		2/29/16	[illegible]	Data Entry/Electronic Deliverable
		2/29/16	[illegible]	Case Narrative
		3/3/16	RBS	Electronic Deliverable Proof
		3/3/16	[illegible]	Samples Analyzed within Holding Time Yes? [X] No? [ ]
		3/3/16	[illegible]	QA/QC Review
				Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

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

Date package approved by: [signature] 3/3/16

Laboratory Manager Date

Copy No. _____

SECTION I

CHAIN OF CUSTODY

Chain of Custody Record

№ 1604

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

EBERLINE SERVICES

Project Name: WEST LAKE LANDFILL
Project Number: ENG-EOR-AA12
Send Report To: Cecilia Greene
Sampler (Print Name): B. Abernathy
Address:
Sampler (Print Name):
9821 Cogdill Rd #1
Shipment Method: FedEx
Knoxville, TN 37932
Airbill Number: 7753 7298 8534
Phone: 865-675-3669
Laboratory Receiving:
Fax:

Page 1 of 1

Purchase Order #: ENG-EOR-AA12

Analysis Requested: Iso Radium, Iso Thorium, Iso Uranium

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	Iso Radium	Iso Thorium	Iso Uranium	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
SED1 4	1/8/16	0920	S	1	✓	✓	✓		
SED2 5	1/8/16	0906	S	1	✓	✓	✓		
SED4 7	1/8/16	0836	S	1	✓	✓	✓		

16-01047

RECD JAN 12 2016

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	FedEx 7753 7298 8534	1/8/16	1230
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
	[signature]	1/12/16	1100
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level		Turnaround		Sample Receipt	
Level I	☐	Routine	☐	Total # Containers Received?	
Level II	☐	24 Hour	☐	COC Seals Present?	
Level III	☐	1 Week	☐	COC Seals Intact?	
Other	☐	Other _____		Received Containers Intact?	
				Temperature?	

00005

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	16-01047
		Lab Deadline	2/4/2016
		Analysis	UUISO - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	36	D1.3
	05	32	D1.3
	06	34	D1.3

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1400	Kenyscy	1-13-16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0735	Kenyscy	1-14-16
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	JNorpe	1/14/16 0735
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	JNorpe	1/15/16 0740
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	1-25-16 0740
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	1-25-16 0817
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	[illegible]
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	2/2/16 1206
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	16-01047
		Lab Deadline	2/4/2016
		Analysis	ThISO - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	36	D1.3
	05	32	D1.3
	06	34	D1.3

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1400	Kem Seis	1-13-16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0235	Kem Seis	1-14-16
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	JWOlle	1-14-16 0235
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	JWOlle	1-15-16 0740
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	1-25-16 0740
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	2-2-16 0817
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	[illegible]
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	JCB	2/2/16 1502
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

Printed: 1/13/2016 12:12 PM

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	16-01047
		Lab Deadline	2/4/2016
		Analysis	Gamma - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
21 day ingrowth: Report Ac228, Bi214, K40, Pa231, Pb210/212/214, Ra226 from Bi214, Ra228 from Ac228, Tl208, Th234 & positives.	04	36	D1.3
	05	32	D1.3
	06	34	D1.3

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1400	Kenyseij	1-13-16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0735	Kenyseij	1-14-16
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	[illegible]
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	[illegible]
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

SECTION II

SAMPLE ACKNOWLEDGEMENT

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
AMO Environmental Decisions	ENG-EOR-AA12	Environmental	01/12/2016	28	16-01047
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
ENG-EOR-AA12	WESTLAKE LANDFILL SOIL	H	02/04/2016	02/08/2016	02/09/2016

Internal ID	Client ID	Sample Date	Matrix	Storage	Gamma	ThISO	UUISO																					Ttl
01	LCS	01/13/16	SO	D1.3	X	X	X																					3
02	BLANK	01/13/16	SO	D1.3	X	X	X																					3
03	DUP	01/13/16	SO	D1.3	X	X	X																					3
04	SED1	01/08/16 09:20	SO	D1.3	X	X	X																					3
05	SED2	01/08/16 09:06	SO	D1.3	X	X	X																					3
06	SED4	01/08/16 08:36	SO	D1.3	X	X	X																					3
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
																												0
				Totals Per Analysis (non QA samples)	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice
West Lake Landfill OU-1 Resp
AMO Environmental Decisions
PO Box 410
Danboro, PA 18916

Voice 215-230-8282
Fax 215-230-8283

Contact
Ralph T. Golia
Voice 215-230-8282
Fax 215-230-8283

Report Data
Cecilia Greene
Auxier & Associates, Inc.
9821 Cogdill St, Suite 1
Knoxville, TN 37932

Voice 865-675-0379
Fax 865-675-3677

Printed: 1/13/2016 12:42 PM

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 16-01047

SAMPLE MATRIX/MATRICES: (CIRCLE ONE OR BOTH)

AQUEOUS NON-AQUEOUS

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

WERE SAMPLES:

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

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	Y	N
Unbroken on outside of package?	Y	N
Present on samples?	Y	N
Unbroken on samples?	Y	N
Was chain of custody present upon sample receipt?	Y	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: James E Bailey DATE: 1/13/16

SECTION III

CASE NARRATIVE

EBERLINE SERVICES

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

EBS-OR-40380

March 3, 2016

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

CASE NARRATIVE
Work Order # 16-01047-OR

SAMPLE RECEIPT

This work order contains three soil samples received 01/12/2016. These samples were analyzed for Isotopic Uranium, Isotopic Thorium and by Gamma Spectroscopy.

CLIENT ID	LAB ID
SED1	16-01047-04
SED2	16-01047-05
SED4	16-01047-06

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

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

ANALYTICAL RESULTS CONTINUED

ISOTOPIC URANIUM CONTINUED

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

ISOTOPIC THORIUM

Samples were prepared by removing representative aliquots 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-227, 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.

Samples demonstrated acceptable results for all Thorium analyses. Actinium-227 results were reported from Thorium-227 assuming secular equilibrium. Chemical recovery was acceptable for all samples. The Thorium-227, Thorium-228, Thorium-230 and Thorium-232 method blank demonstrated acceptable results. Results for the Thorium-228 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Thorium-230 and 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

Samples were dried, homogenized and placed into appropriate gamma spectroscopy geometry containers. Samples were then sealed for 21 days to allow for ingrowth of Radon-222 and progeny. Samples were counted on High Purity Germanium (HPGe) gamma ray detectors. Energy lines from Lead-214 and Bismuth-214 were analyzed for determinations of Radium-226 activity.

Samples demonstrated acceptable results for all gamma-emitting radionuclides as reported. The method blank demonstrated acceptable results for all radionuclides as reported. Results for the Bismuth-214, Potassium-40 and Lead-214 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Cobalt-60 and Cesium-137 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report is in compliance with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

M.R. McDougall
Laboratory Manager

Date: 3/3/2016

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

Report To:

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

Work Order Details:

SDG:	**16-01047**
Project:	ENG-EOR-AA12
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-01047-01	LCS	KNOWN	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Cobalt-60	LANL ER-130 Modified	1.37E+02	5.48E+00				pCi/g
16-01047-01	LCS	KNOWN	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Cesium-137	LANL ER-130 Modified	8.69E+01	3.48E+00				pCi/g
16-01047-01	LCS	SPIKE	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Cobalt-60	LANL ER-130 Modified	1.46E+02	1.01E+01	1.26E+01	1.39E+00	1.43E+00	pCi/g
16-01047-01	LCS	SPIKE	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Cesium-137	LANL ER-130 Modified	8.86E+01	8.52E+00	9.66E+00	2.07E+00	1.02E+00	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Actinium-228	LANL ER-130 Modified	6.95E-02	5.82E-02	5.83E-02	1.34E-01	5.75E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Bismuth-214	LANL ER-130 Modified	7.94E-02	4.74E-02	4.76E-02	9.57E-02	4.38E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Potassium-40	LANL ER-130 Modified	-1.07E-01	3.02E-01	3.02E-01	4.10E-01	1.68E-01	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Protactinium-231	LANL ER-130 Modified	3.48E-01	6.52E-01	6.52E-01	1.09E+00	5.00E-01	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Lead-210	LANL ER-130 Modified	9.66E-01	6.79E-01	6.81E-01	1.01E+00	4.83E-01	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Lead-212	LANL ER-130 Modified	3.51E-02	3.67E-02	3.68E-02	6.15E-02	2.88E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Lead-214	LANL ER-130 Modified	3.97E-02	4.88E-02	4.89E-02	8.37E-02	3.87E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Radium-226	LANL ER-130 Modified	7.94E-02	4.74E-02	4.76E-02	9.57E-02	3.35E-01	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Radium-228	LANL ER-130 Modified	6.95E-02	5.82E-02	5.83E-02	1.34E-01	5.75E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Thorium-234	LANL ER-130 Modified	5.90E-01	5.44E-01	5.44E-01	7.69E-01	3.69E-01	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/3/2016	16-01047	Thallium-208	LANL ER-130 Modified	4.29E-02	5.80E-02	5.81E-02	1.07E-01	4.74E-02	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Actinium-228	LANL ER-130 Modified	1.00E+00	1.73E-01	1.80E-01	6.71E-01	3.45E-01	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Bismuth-214	LANL ER-130 Modified	1.05E+00	1.58E-01	1.67E-01	2.07E-01	9.89E-02	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Potassium-40	LANL ER-130 Modified	1.37E+01	1.75E+00	1.89E+00	1.12E+00	5.20E-01	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Protactinium-231	LANL ER-130 Modified	2.89E-01	6.84E-01	6.84E-01	2.23E+00	1.06E+00	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Lead-210	LANL ER-130 Modified	2.25E+00	1.57E+00	1.57E+00	2.55E+00	1.25E+00	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Lead-212	LANL ER-130 Modified	9.37E-01	1.37E-01	1.45E-01	2.38E-01	1.17E-01	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Lead-214	LANL ER-130 Modified	1.22E+00	1.44E-01	1.57E-01	1.82E-01	8.73E-02	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Radium-226	LANL ER-130 Modified	1.05E+00	1.58E-01	1.67E-01	2.07E-01	1.57E+00	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Radium-228	LANL ER-130 Modified	1.00E+00	1.73E-01	1.80E-01	6.71E-01	3.45E-01	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Thorium-234	LANL ER-130 Modified	2.38E+00	1.75E+00	1.76E+00	2.90E+00	1.43E+00	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Thallium-208	LANL ER-130 Modified	8.24E-01	1.84E-01	1.89E-01	4.46E-01	2.58E-01	pCi/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

00017

Eberline Analytical
Final Report of Analysis

Report To:

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

Work Order Details:

SDG:	**16-01047**
Project:	ENG-EOR-AA12
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Actinium-228	LANL ER-130 Modified	8.06E-01	2.09E-01	2.13E-01	4.02E-01	1.90E-01	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Bismuth-214	LANL ER-130 Modified	1.04E+00	1.77E-01	1.85E-01	2.28E-01	1.09E-01	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Potassium-40	LANL ER-130 Modified	1.37E+01	1.81E+00	1.94E+00	1.08E+00	4.98E-01	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Protactinium-231	LANL ER-130 Modified	-2.51E-01	1.33E+00	1.33E+00	2.14E+00	1.01E+00	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Lead-210	LANL ER-130 Modified	1.94E+00	1.56E+00	1.56E+00	2.56E+00	1.25E+00	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Lead-212	LANL ER-130 Modified	8.53E-01	1.26E-01	1.34E-01	2.26E-01	1.11E-01	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Lead-214	LANL ER-130 Modified	1.24E+00	1.67E-01	1.79E-01	2.23E-01	1.08E-01	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Radium-226	LANL ER-130 Modified	1.04E+00	1.77E-01	1.85E-01	2.28E-01	1.04E+00	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Radium-228	LANL ER-130 Modified	8.06E-01	2.09E-01	2.13E-01	4.02E-01	1.90E-01	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Thorium-234	LANL ER-130 Modified	2.40E+00	1.34E+00	1.35E+00	1.88E+00	9.20E-01	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/4/2016	16-01047	Thallium-208	LANL ER-130 Modified	9.14E-01	2.03E-01	2.09E-01	3.83E-01	1.84E-01	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Actinium-228	LANL ER-130 Modified	7.81E-01	2.03E-01	2.07E-01	3.93E-01	1.84E-01	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Bismuth-214	LANL ER-130 Modified	1.05E+00	1.67E-01	1.75E-01	2.06E-01	9.76E-02	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Potassium-40	LANL ER-130 Modified	1.17E+01	1.83E+00	1.92E+00	1.14E+00	5.25E-01	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Protactinium-231	LANL ER-130 Modified	-2.10E-01	1.93E+00	1.93E+00	2.48E+00	1.17E+00	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Lead-210	LANL ER-130 Modified	4.69E+00	2.24E+00	2.25E+00	3.50E+00	1.71E+00	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Lead-212	LANL ER-130 Modified	7.37E-01	1.27E-01	1.32E-01	2.38E-01	1.16E-01	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Lead-214	LANL ER-130 Modified	1.01E+00	1.51E-01	1.60E-01	2.39E-01	1.15E-01	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Radium-226	LANL ER-130 Modified	1.05E+00	1.67E-01	1.75E-01	2.06E-01	1.38E+00	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Radium-228	LANL ER-130 Modified	7.81E-01	2.03E-01	2.07E-01	3.93E-01	1.84E-01	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Thorium-234	LANL ER-130 Modified	1.73E+00	1.67E+00	1.67E+00	2.78E+00	1.36E+00	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/4/2016	16-01047	Thallium-208	LANL ER-130 Modified	6.54E-01	1.54E-01	1.58E-01	1.95E-01	1.78E-01	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Actinium-228	LANL ER-130 Modified	7.94E-01	2.16E-01	2.20E-01	3.68E-01	1.73E-01	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Bismuth-214	LANL ER-130 Modified	1.61E+00	2.02E-01	2.18E-01	2.33E-01	1.12E-01	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Potassium-40	LANL ER-130 Modified	1.76E+01	2.34E+00	2.50E+00	9.46E-01	4.32E-01	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Protactinium-231	LANL ER-130 Modified	-2.73E+00	2.28E+00	2.28E+00	2.55E+00	1.22E+00	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Lead-210	LANL ER-130 Modified	4.68E+00	2.30E+00	2.32E+00	3.64E+00	1.78E+00	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Lead-212	LANL ER-130 Modified	9.00E-01	1.35E-01	1.43E-01	2.29E-01	1.12E-01	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Lead-214	LANL ER-130 Modified	1.66E+00	2.46E-01	2.61E-01	4.60E-01	2.26E-01	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Radium-226	LANL ER-130 Modified	1.61E+00	2.02E-01	2.18E-01	2.33E-01	1.20E+00	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Radium-228	LANL ER-130 Modified	7.94E-01	2.16E-01	2.20E-01	3.68E-01	1.73E-01	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Thorium-234	LANL ER-130 Modified	1.21E+00	9.59E-01	9.61E-01	1.55E+00	7.51E-01	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/4/2016	16-01047	Thallium-208	LANL ER-130 Modified	7.51E-01	1.47E-01	1.52E-01	1.19E-01	1.60E-01	pCi/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 Analytical
Final Report of Analysis

Report To:

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

Work Order Details:

SDG: **16-01047**
Project: ENG-EOR-AA12
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Actinium-227	EML Th-01 Modified	3.04E-02	5.17E-02	5.19E-02	8.75E-02	8.24E-03	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Actinium-227	EML Th-01 Modified	3.27E-02	5.58E-02	5.59E-02	9.80E-02	1.95E-03	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Actinium-227	EML Th-01 Modified	9.93E-02	8.03E-02	8.12E-02	8.51E-02	1.69E-03	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/2/2016	16-01047	Actinium-227	EML Th-01 Modified	3.35E-02	5.44E-02	5.45E-02	9.32E-02	1.47E-02	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/2/2016	16-01047	Actinium-227	EML Th-01 Modified	1.50E-01	9.47E-02	9.65E-02	8.04E-02	1.27E-02	pCi/g
16-01047-01	LCS	KNOWN	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-228	EML Th-01 Modified	4.73E+00	1.70E-01				pCi/g
16-01047-01	LCS	SPIKE	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-228	EML Th-01 Modified	5.12E+00	8.49E-01	9.76E-01	1.37E-01	4.81E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-228	EML Th-01 Modified	7.71E-02	8.03E-02	8.07E-02	1.01E-01	1.37E-02	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Thorium-228	EML Th-01 Modified	8.94E-01	2.82E-01	2.94E-01	6.81E-02	4.15E-03	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Thorium-228	EML Th-01 Modified	6.74E-01	2.23E-01	2.32E-01	9.71E-02	2.00E-02	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/2/2016	16-01047	Thorium-228	EML Th-01 Modified	6.47E-01	2.28E-01	2.36E-01	1.06E-01	2.20E-02	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/2/2016	16-01047	Thorium-228	EML Th-01 Modified	9.07E-01	2.61E-01	2.74E-01	9.19E-02	1.90E-02	pCi/g
16-01047-01	LCS	KNOWN	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-230	EML Th-01 Modified	5.32E+00	1.44E-01				pCi/g
16-01047-01	LCS	SPIKE	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-230	EML Th-01 Modified	6.29E+00	1.00E+00	1.27E+00	1.16E-01	1.02E-01	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-230	EML Th-01 Modified	8.94E-02	8.73E-02	8.80E-02	1.07E-01	8.54E-02	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Thorium-230	EML Th-01 Modified	2.63E+00	6.01E-01	6.83E-01	6.65E-02	7.91E-02	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Thorium-230	EML Th-01 Modified	2.70E+00	5.80E-01	6.69E-01	6.61E-02	7.09E-02	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/2/2016	16-01047	Thorium-230	EML Th-01 Modified	2.74E+00	6.11E-01	6.98E-01	7.96E-02	8.05E-02	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/2/2016	16-01047	Thorium-230	EML Th-01 Modified	1.47E+01	2.46E+00	3.06E+00	7.83E-02	7.39E-02	pCi/g
16-01047-01	LCS	KNOWN	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-232	EML Th-01 Modified	4.73E+00	1.70E-01				pCi/g
16-01047-01	LCS	SPIKE	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-232	EML Th-01 Modified	5.34E+00	8.76E-01	9.95E-01	1.05E-01	2.24E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Thorium-232	EML Th-01 Modified	8.62E-02	7.99E-02	8.03E-02	7.44E-02	5.00E-03	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Thorium-232	EML Th-01 Modified	8.93E-01	2.81E-01	2.91E-01	9.52E-02	1.53E-02	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Thorium-232	EML Th-01 Modified	9.20E-01	2.67E-01	2.79E-01	6.60E-02	6.22E-03	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/2/2016	16-01047	Thorium-232	EML Th-01 Modified	8.12E-01	2.58E-01	2.67E-01	7.24E-02	6.84E-03	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/2/2016	16-01047	Thorium-232	EML Th-01 Modified	1.46E+00	3.56E-01	3.78E-01	7.83E-02	1.45E-03	pCi/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

Report To:

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

Work Order Details:

SDG:	**16-01047**
Project:	ENG-EOR-AA12
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-01047-01	LCS	KNOWN	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Uranium-234	EML U-02 Modified	7.26E+00	2.61E-01				pCi/g
16-01047-01	LCS	SPIKE	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Uranium-234	EML U-02 Modified	6.32E+00	8.94E-01	1.00E+00	9.28E-02	4.28E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Uranium-234	EML U-02 Modified	1.19E-01	8.02E-02	8.06E-02	5.60E-02	2.60E-02	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Uranium-234	EML U-02 Modified	7.57E-01	2.31E-01	2.37E-01	1.00E-01	4.47E-02	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Uranium-234	EML U-02 Modified	1.10E+00	3.32E-01	3.41E-01	1.29E-01	5.68E-02	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/2/2016	16-01047	Uranium-234	EML U-02 Modified	8.81E-01	2.63E-01	2.71E-01	9.49E-02	4.09E-02	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/2/2016	16-01047	Uranium-234	EML U-02 Modified	8.86E-01	2.41E-01	2.49E-01	1.16E-01	6.08E-02	pCi/g
16-01047-01	LCS	SPIKE	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Uranium-235	EML U-02 Modified	4.91E-01	1.84E-01	1.87E-01	8.45E-02	8.63E-03	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Uranium-235	EML U-02 Modified	1.30E-01	9.31E-02	9.36E-02	6.91E-02	4.36E-03	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Uranium-235	EML U-02 Modified	2.87E-01	1.51E-01	1.53E-01	1.06E-01	1.26E-02	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Uranium-235	EML U-02 Modified	1.01E-01	1.11E-01	1.12E-01	1.51E-01	3.15E-03	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/2/2016	16-01047	Uranium-235	EML U-02 Modified	2.84E-01	1.56E-01	1.58E-01	9.93E-02	8.28E-03	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/2/2016	16-01047	Uranium-235	EML U-02 Modified	1.76E-01	1.11E-01	1.12E-01	8.78E-02	9.01E-03	pCi/g
16-01047-01	LCS	KNOWN	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Uranium-238	EML U-02 Modified	7.04E+00	2.53E-01				pCi/g
16-01047-01	LCS	SPIKE	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Uranium-238	EML U-02 Modified	6.16E+00	8.74E-01	9.78E-01	8.56E-02	2.00E-02	pCi/g
16-01047-02	MBL	BLANK	01/13/16 00:00	1/12/2016	2/2/2016	16-01047	Uranium-238	EML U-02 Modified	2.22E-02	3.77E-02	3.77E-02	6.39E-02	9.26E-03	pCi/g
16-01047-03	DUP	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Uranium-238	EML U-02 Modified	1.02E+00	2.73E-01	2.82E-01	7.94E-02	1.30E-02	pCi/g
16-01047-04	DO	SED1	01/08/16 09:20	1/12/2016	2/2/2016	16-01047	Uranium-238	EML U-02 Modified	1.06E+00	3.23E-01	3.32E-01	1.22E-01	2.45E-02	pCi/g
16-01047-05	TRG	SED2	01/08/16 09:06	1/12/2016	2/2/2016	16-01047	Uranium-238	EML U-02 Modified	9.02E-01	2.65E-01	2.73E-01	6.99E-02	8.68E-03	pCi/g
16-01047-06	TRG	SED4	01/08/16 08:36	1/12/2016	2/2/2016	16-01047	Uranium-238	EML U-02 Modified	9.56E-01	2.49E-01	2.58E-01	8.90E-02	2.09E-02	pCi/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

SECTION V

ANALYTICAL STANDARD

QA/QC REVIEWED
Date 1/16/95 Initials [illegible]

U-8

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

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

Description of Solution

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

b. Chemical form: Uranyl Nitrate in H2O

c. Carrier content: None

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

Radioimpurities

Refer to attached technical data sheet

Radioactive Daughters

Refer to attached technical data sheet

Radionuclide Concentration

(Total U) 0.1228 μCi/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement

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

NIST Traceability

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

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

ERIC ALLAS
QUALITY CONTROL

29 DECEMBER 1994
Date Signed

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

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

CURRENT DATE: 10/1/2015 0:00

SOLUTION REFERENCE #: IPL 479-50

SOLUTION #: U-8

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

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

Reference Date: 1/1/1995 0:00

Certified Activity: 8.016E+00 µCi

Certified Concentration: µCi per gram

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

Chemical Composition of Standard Solution

Uranyl nitrate in dilute HNO_3

Dilution Instructions:

Dilution Solvent Used: 1M HNO_3

Dilute to a volume of 1000.00 milliliters

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

And after dilution the activity of this solution is 1.77955E+04 dpm/ml

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

Expiration Date: July 27, 2016

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

QC Approval _____ Date: 10/1/15

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

MP-009

Solution Reference # IPL 479-50

Date 10/1/2015 0:00
Solution # U-8a

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

Radionuclide of Interest $^{234,235,238}U$
Parent Solution Conc. 1.7796E+04 **dpm/ml**

Reference Date 1/1/1995 0:00

Chemical Composition of Standard Solution
Uranly Nitrate in 1M HNO_3

Dilution Instructions:

Dilution Solvent Used 1M HNO_3

SECONDARY VOLUMETRIC DILUTION

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

Final Activity Concentration: 7.1182E+01 **dpm/ml**

NOTES:

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

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

Isotopic ratios from manufacturer's data sheet

Expiration Date: July 27, 2016

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

QC Approval _____ Date: 10/1/15

RECORD COPY

Tracer Solution for Environmental Analysis & Disequilibrium Studies

Product Description & Measurement Certificate

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

Method of measurement (see reverse of this certificate)

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

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

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

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

Not measured

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

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

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

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

Approved Signatory

Roger Wiltshire

Project Ref. AE2315

Roger Wiltshire

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

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

CURRENT DATE: 10/27/2015 0:00

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

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

Radionuclide: ^{232}U Reference Date: 3/1/2000 0:00

Certified Activity: 9.760E-01 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross: Weight, Grams

Empty Ampoule: Weight, Grams

Solution Net: Weight, Grams

Total Activity in Ampoule: 0.9760 µCi

Chemical Composition of Standard Solution

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

Dilution Instructions: Dilution Solvent Used: 2M HNO_3

Dilute to a volume of 1000.00 milliliters

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

And after dilution the activity of this solution is 2.167E+03 dpm/ml

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

Expiration Date: October 26, 2016

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

QC Approval _____ Date: 10/28/15

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

MP-009
Solution Reference # AEA/Amersham 92/232/67

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

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

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

Reference Date 3/1/2000 0:00

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

Dilution Instructions:

Dilution Solvent Used 2M HNO_3

SECONDARY VOLUMETRIC DILUTION

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

Final Activity Concentration: 2.1670E+01 dpm/ml

NOTES:

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

Expiration Date: October 26, 2016

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

QC Approval _____ Date: 10/28/15

Th-8

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	Th-232	Customer:	TMA EBERLINE
Half Life:	(1.405 ± 0.006) x 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 µCi.
		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 µCi/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement

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

NIST Traceability

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

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

Anna U. Khan
QUALITY CONTROL

Nov. 8, 1993
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 North Keystone Street
Burbank, California 91504
(818) 843 - 7000

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

CURRENT DATE: 9/29/2015 0:00

SOLUTION REFERENCE #: IPL 435-104-2

SOLUTION #: Th-8

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

Radionuclide: $^{232\&228}Th$

Reference Date: 11/1/1993 0:00

Certified Activity: 9.330E-02 µCi

Certified Concentration: µCi 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

$Th(NO_3)_4$ 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 _____ Date: 9/29/2015 0:00

QC Approval _____ Date: 9/30/15

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE 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 $^{228\ \&\ 232}Th$
Parent Solution Conc. 2.07E+02 dpm/ml

Reference Date 11/1/1993 0:00

Chemical Composition of Standard Solution
$Th(NO_3)_4$ in 1% HNO_3

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 _____ Date: 9/29/2015 0:00

QC Approval _____ Date: 9/30/15

QA/QC REVIEWED
Date 10/14/91 Initials WT 10/14/91 WT

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Received
OCT 14 1991
TMA/Eberline
Oak Ridge Lab

Radionuclide	Th-230	Customer:	TMA EBERLINE
Half Life:	(7.54 ± 0.03) x 10^4 years	P.O.No.:	TT4944
Catalog No.:	7230	Reference Date:	November 1 1991 12:00 PST.
Source No.:	388-116	Contained Radioactivity:	1.036 µCi.

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 µCi/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: ±2.0%
b. Random uncertainty in assay: ±0.5%
c. Random uncertainty in weighing(s): ±0.2%
d. Total uncertainty at the 99% confidence level: ±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)

QUALITY CONTROL

ISOTOPE PRODUCTS LABORATORIES
1800 No. Keystone Street.,
Burbank, California 91504
(818) 843 - 7000

EBERLINE SERVICES

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

CURRENT DATE: 4/15/2015 0:00

SOLUTION REFERENCE #: IPL 388-116

SOLUTION #: Th-1

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

Radionuclide: ^{230}Thorium

Reference Date: 11/1/1991 0:00

Certified Activity: 1.036E+00 µCi

Certified Concentration: µCi 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

$^{230}Th(NO_3)_4$ in 0.1N HNO_3

Dilution Instructions:

Dilution Solvent Used: 0.1N HNO_3

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

EBERLINE SERVICES

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

MP-009

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

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

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

Chemical Composition of Standard Solution
$^{230}Th(NO_3)_4$ in 0.1N HNO_3

Dilution Instructions: **Dilution Solvent Used** 0.1N HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml
Total Activity: 2.2999E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 2.2999E+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: February 12, 2016

Recertified By _____ Date: 4/15/2015 0:00

QC Approval _____ Date: 4/15/15

Th-18

Isotope Products Laboratories
An Eckert & Ziegler Company

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

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: (Th-229 only)**	1.013 µCi 37.48 kBq

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 — Date Signed: 9-Jan-02 — IPL Ref. No.: 867-54

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

CURRENT DATE: 9/29/2015 0:00

SOLUTION REFERENCE #: IPL 867-54

SOLUTION #: Th-18

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

Radionuclide: ^{229}Th

Reference Date: 1/15/2002 0:00

Certified Activity: 1.013E+00 µCi

Certified Concentration: µCi 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

$^{229}Th(NO_3)_4$ in 0.1M HNO_3

Dilution Instructions:

Dilution Solvent Used: 0.1 M HNO_3

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

EBERLINE SERVICES

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

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

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

Radionuclide of Interest ^{229}Th
Parent Solution Conc. 2.25E+03 dpm/ml

Reference Date 1/15/2002 0:00

Chemical Composition of Standard Solution
$TH(NO_3)_4$ in 0.1M HNO_3

Dilution Instructions:

Dilution Solvent Used 0.1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml
Total Activity: 2.2490E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 2.2490E+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: August 24, 2016

Verified & Approved By _____ Date: 9/29/2015 0:00

QC Approval _____ Date: 9/30/15

Eckert & Ziegler
Analytics

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

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

GAS-1402

98503

Sand in 16 Ounce PP Taral Jar Filled to Capacity

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

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

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

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

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

(Certificate continued on reverse side)

ANA Form005 Rev. —

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

Eberline Services
Analysis Control Chart

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-01047	UUISO	1	pCi	g	AMO Environmental Decisions

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		87.05%	15.83%	100.00%	3.60%	7.26E+00	2.61E-01	6.32E+00	1.00E+00	U-8a	3.20E+01	3.60E+00	5.04E-01
U-238		87.50%	15.89%	100.00%	3.60%	7.04E+00	2.53E-01	6.16E+00	9.78E-01	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
U-234	1.63	37.20	1.10E+00	3.41E-01	7.57E-01	2.37E-01
U-238	0.18	3.81	1.06E+00	3.32E-01	1.02E+00	2.82E-01
U-235	1.93	96.07	1.01E-01	1.12E-01	2.87E-01	1.53E-01

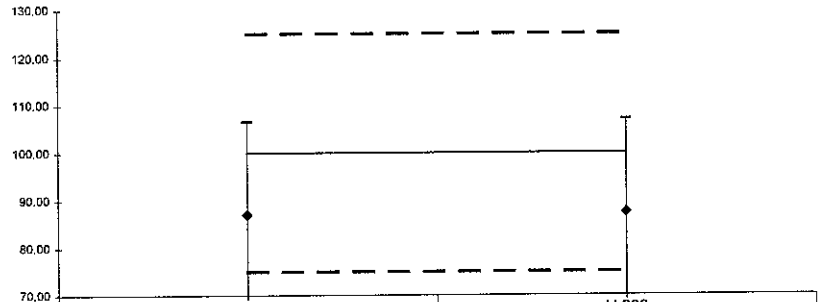
QC Summary

LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
0.87	OK				INV	OK
0.88	OK				OK	OK
	OK				NA	OK

Version

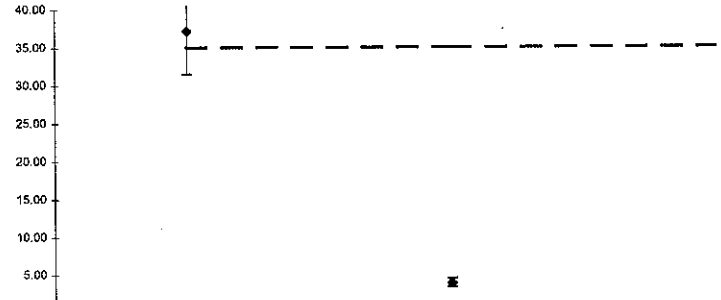
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-01047	UUISO	1	pCi	g	AMO Environmental Decisions

LCS % Recovery



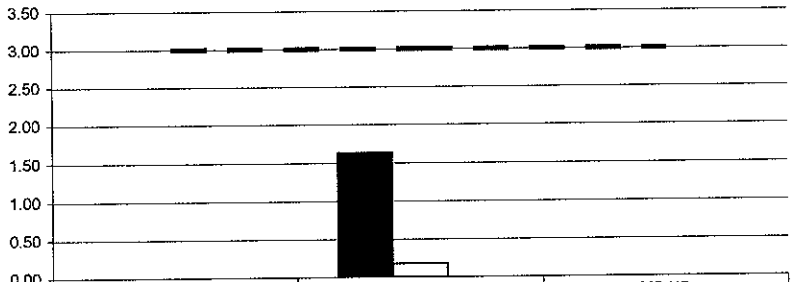
	U-234	U-238
Lower Error	67.62	68.02
Upper Error	106.48	106.99
%R	87.05	87.50
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	U-234	U-238	U-235
Lower Error	42.98	4.37	128.78
Upper Error	31.42	3.25	63.37
RPD	37.20	3.81	96.07
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
U-234	0.00	1.63	0.00
U-238	0.00	0.18	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-01047	ThISO	1	pCi	g	AMO Environmental Decisions

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		108.27%	19.06%	100.00%	3.60%	4.73E+00	1.70E-01	5.12E+00	9.76E-01	Th-8b	1.04E+02	3.60E+00	1.01E-01
TH-230		118.26%	20.14%	100.00%	2.70%	5.32E+00	1.44E-01	6.29E+00	1.27E+00	Th-1b	2.35E+01	2.70E+00	5.02E-01
TH-232		112.94%	18.62%	100.00%	3.60%	4.73E+00	1.70E-01	5.34E+00	9.95E-01	Th-8b	1.04E+02	3.60E+00	1.01E-01

Matrix Spike

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

Replicate Sample

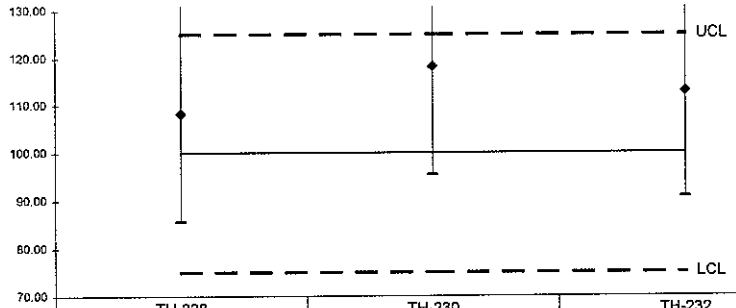
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU
TH-228	1.15	28.05	6.74E-01	2.32E-01	8.94E-01	2.94E-01
TH-230	0.16	2.97	2.70E+00	6.69E-01	2.63E+00	6.83E-01
TH-232	0.13	2.98	9.20E-01	2.79E-01	8.93E-01	2.91E-01

QC Summary

LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
1.08	OK				INV	OK
1.18	OK				OK	OK
1.13	OK				OK	OK

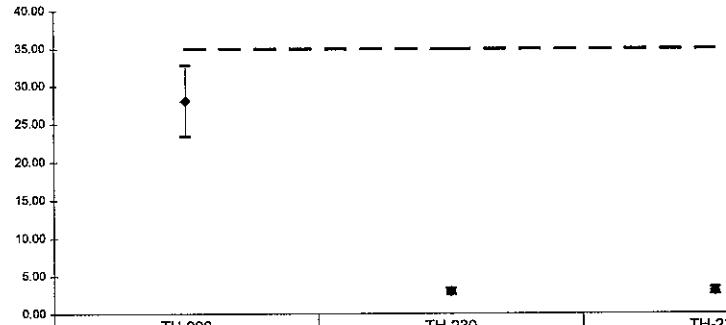
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-01047	ThISO	1	pCi	g	AMO Environmental Decisions

LCS % Recovery



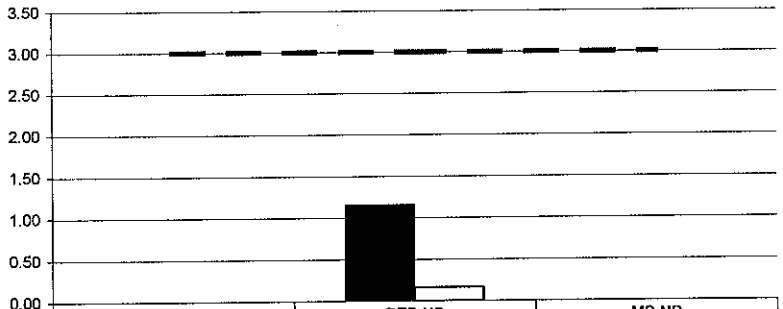
	TH-228	TH-230	TH-232
Lower Error	85.61	95.42	90.72
Upper Error	130.93	141.09	135.16
%R	108.27	118.26	112.94
LCL	75	75	75
Mean	100	100	100
UCL	125	125	125

Replicate Sample RPD



	TH-228	TH-230	TH-232
Lower Error	32.76	3.34	3.45
Upper Error	23.34	2.59	2.51
RPD	28.05	2.97	2.98
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
TH-228	0.00	1.15	0.00
TH-230	0.00	0.16	0.00
UCL	3	3	3

No Matrix Spike

00012

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-01047	Gamma	1	pCi	g	AMO Environmental Decisions

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		106.88%	8.60%	100.00%	4.00%	1.37E+02	5.48E+00	1.46E+02	1.26E+01	GAS-1302	1.37E+02	5.48E+00	7.36E+02
CS-137		101.93%	10.90%	100.00%	4.00%	8.69E+01	3.48E+00	8.86E+01	9.66E+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
BI-214	0.12	1.40	1.04E+00	1.85E-01	1.05E+00	1.67E-01
K-40	0.04	0.45	1.37E+01	1.94E+00	1.37E+01	1.89E+00
PB-214	0.16	1.59	1.24E+00	1.79E-01	1.22E+00	1.57E-01

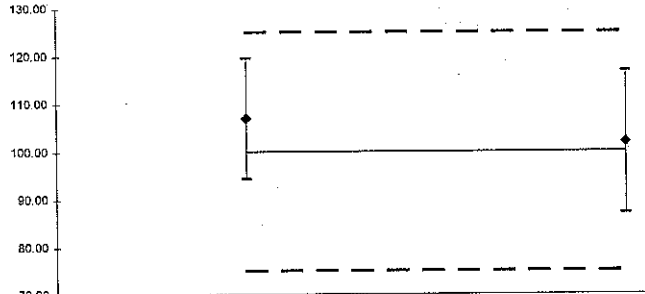
QC Summary

LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
1.07	OK		<CS-137	BI-214>	OK	
1.02	OK		<CO-60	K-40>	OK	OK
				PB-214>	OK	OK

00043

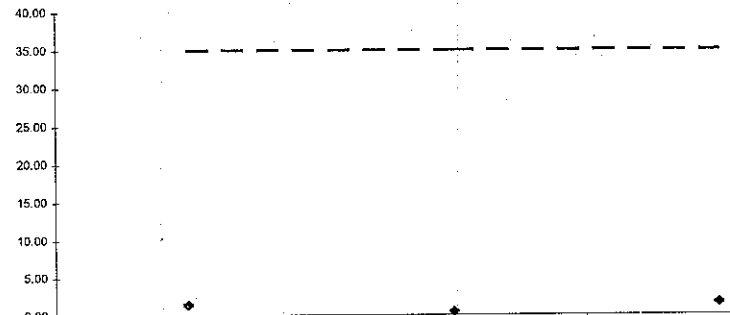
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-01047	Gamma	1	pCi	g	AMO Environmental Decisions

LCS % Recovery



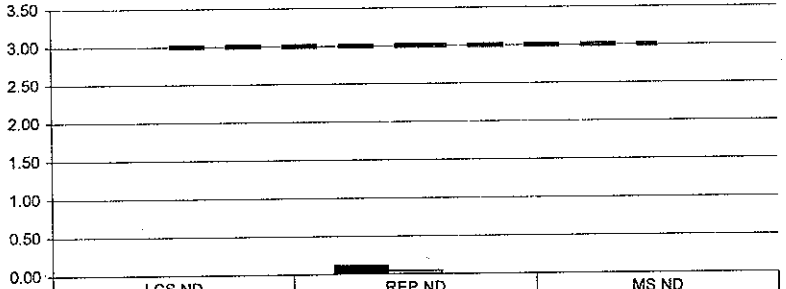
	CO-60	CS-137
Lower Error	94.27	87.03
Upper Error	119.48	116.83
%R	106.88	101.93
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	BI-214	K-40	PB-214
Lower Error	1.51	0.48	1.70
Upper Error	1.28	0.41	1.48
RPD	1.40	0.45	1.59
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
CO-60	0.00	0.12	0.00
CS-137	0.00	0.04	0.00
	0.00	0.00	0.00
UCL	3	3	3

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	16-01047
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	01/26/16 11:34	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

JWolfe
1/26/16

EBERLINE SERVICES **Work Order Analysis Notes**	**Oak Ridge Laboratory** **601 Scarboro Rd.** **Oak Ridge, TN 37830** **Voice: 865.481.0683** **www.eberlineservices.com**	Internal Work Order	16-01047
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	01/26/16 11:34	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	02/01/16 17:01	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.

2/1/16

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	16-01047
Analysis Code	UUISO
Run Number	1

#	Date	Dept	User	Notes
1	01/26/16 11:34	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	02/01/16 17:01	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	02/02/16 05:06	CHEM	TSMITH	Followed steps 12.1.7 to 12.4.5 in AP-005 . (Preciptiated and filtered samples for Uranium)

2-2-16
MM

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
16-01047	
Analysis Code	Run
UUISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
016982P	Hydrofluoric Acid	Reagent Grade	JWOLFE	1/26/2016
016886P	Nitric Acid	Reagent Grade	JWOLFE	1/26/2016
017116P	Perchloric Acid	Reagent Grade	JWOLFE	1/26/2016
016679P	Sulfuric Acid	Reagent Grade	JWOLFE	1/26/2016
017115P	Anion Exchange Resin	Reagent Grade	JDEMELAS	2/1/2016
017151D01	Hydrochloric Acid	0.5N	JDEMELAS	2/1/2016
017181S	Hydrochloric Acid	6.5N	JDEMELAS	2/1/2016
017151P	Hydrochloric Acid	Reagent Grade	JDEMELAS	2/1/2016
017228S	Hydrochloric Acid	8N	JDEMELAS	2/1/2016
017235S	HCl - NH4I	8N - 0.1M	JDEMELAS	2/1/2016
017217S	HCl - HF	6.5N - 0.04N	JDEMELAS	2/1/2016
016949P	Ethanol	Reagent Grade	TSMITH	2/2/2016
017047P	Hydrofluoric Acid	Reagent Grade	TSMITH	2/2/2016
016973S	Neodymium Carrier	1 mg/ml	TSMITH	2/2/2016
016606P	Titanous Chloride	Reagent Grade	TSMITH	2/2/2016
017204S	Carbon substrate	Solution	TSMITH	2/2/2016

Alpha #3

Date	Sample #	Client	Sample Time	CT Time	Analysis	Tech
2/1/16	1601050A (1-3)	UCOR	1148	2hr 50 min	Am243	KB
2/1/16	1601050A (1-3)	UCOR	1149	2hr 50 min	Am241	KB
2/1/16	1601069A (1-5)	Accutest	1150	2hr 50 min	Rad	KB
2/1/16	1601068A (1-10)	Accutest	1143	2hr 50 min	Rad	KB
2/2	Rad Purge	VAB	0522	10	10	—
2/2	1601126A(4)	UCOR	0845	2hr 5 min	Am243	—
2/2	1601126A(1-4)	UCOR	0846	2hr 5 min	U238	—
2/2	1601126A(1-4)	UCOR	0846	2hr 5 min	Pu242	—
2/2	1601126A(1-4)	UCOR	0847	2hr 5 min	Th229	—
2/2	1601047A(1-6)	AMO	0847	2hr 5 min	U238	—
2/2	1601050A(1-4)	UCOR	0848	2hr 5 min	Pu242	—
2/2	1601047A(1-5)	AMO	0843	2hr 5 min	Th232	—

ISO TH 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	16-01047
		Analysis Code	ThISO
		Run Number	1

#	Date	Dept	User	Notes
1	01/26/16 11:34	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

JWolfe
1/26/16

EBERLINE SERVICES **Work Order Analysis Notes**	**Oak Ridge Laboratory** **601 Scarboro Rd.** **Oak Ridge, TN 37830** **Voice: 865.481.0683** **www.eberlineservices.com**	Internal Work Order	16-01047
		Analysis Code	ThISO
		Run Number	1

#	Date	Dept	User	Notes
1	01/26/16 11:34	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	02/01/16 17:03	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 deiononized water, bringing volume to ~15ml. Set samples aside for later precipitation and filtering.

2/1/16

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	16-01047
Analysis Code	ThISO
Run Number	1

#	Date	Dept	User	Notes
1	01/26/16 11:34	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	02/01/16 17:03	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 deiononized water, bringing volume to ~15ml. Set samples aside for later precipitation and filtering.
3	02/02/16 05:09	CHEM	TSMITH	Followed steps 12.2.5 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Thorium)

2-2-16
JMW

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
16-01047	
Analysis Code	Run
ThISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
016982P	Hydrofluoric Acid	Reagent Grade	JWOLFE	1/26/2016
016886P	Nitric Acid	Reagent Grade	JWOLFE	1/26/2016
017116P	Perchloric Acid	Reagent Grade	JWOLFE	1/26/2016
016679P	Sulfuric Acid	Reagent Grade	JWOLFE	1/26/2016
017115P	Anion Exchange Resin	Reagent Grade	JDEMELAS	2/1/2016
017151P	Hydrochloric Acid	Reagent Grade	JDEMELAS	2/1/2016
017038P	Nitric Acid	Reagent Grade	JDEMELAS	2/1/2016
017228S	Hydrochloric Acid	8N	JDEMELAS	2/1/2016
017226S	Nitric Acid	8N	JDEMELAS	2/1/2016
017236S	Nitric Acid	8N	JDEMELAS	2/1/2016
017063S	Cerrium Carrier	0.1mg/ml	TSMITH	2/2/2016
016949P	Ethanol	Reagent Grade	TSMITH	2/2/2016
017047P	Hydrofluoric Acid	Reagent Grade	TSMITH	2/2/2016
017204S	Carbon substrate	Solution	TSMITH	2/2/2016

Alpha #1

Date	Sample #	Client	Load Time	CT Time	Analysis	Tech
1/28	1601087A(1-5)	United	0832	24hr	Am241	C
1/28	1601087A(1,2)	United	0833	24hr	U-Iso	—
1/28/16	1601062A(1-7)	TetraTech	1720	2hr-80 =	Rad	KB
1/29	Daily Pulser	LAB	0456	1	NA	C
1/29	SGC(1-3-16)	LAB	1154	24hr	NA	C
1/29	1601023B(4-5,7)	UCON	0856	24hr	Pu-Iso	—
1/29	1601041A(7,4)	UCON	0856	24hr	U-Iso	C
1/29/16	1601041A(1-4,9)	UCON	1459	2hr-80 =	Pu-Iso	KB
1/29/16	1601050A(1-2)	UCON	1500	2hr-80 =	Am243	KB
1/29/16	System Blank	Lab	1754	16.40 hr	—	KB
1/30/16	Daily Pulser	Lab	1040	10 mins	NA	KB
1/30/16	1601063A(1-3)	TetraTech	1056	2hr-80 =	Iso-U	KB
2/1	Daily Pulser	LAB	0529	1	NA	C
2/1	1601126A(1-47)	UCON	0877	24hr	Pu-Iso	—
2/1	1601126A(1,2)	UCON	~~0877~~ 0848	24hr	U-Iso	—
2/1	1601126A(3,4)	UC				
2/1/16	1601026A(8-14)	Auxcin	1144	2hr-80 =	Iso-Th	KB
2/2	Daily Pulser	LAB	0522	1	NA	—
2/2	1601126A(1-4)	UCON	0845	24hr	Am241	C
2/2	1601126A(1-3)	UCON	0845	24hr	Am243	—
2/2/16	1601047A(6)	AMO	1150	2hr-80 =	Iso-Th	KB
2/2/16	1601061A(1-6)	Tetra Tech	1151	2hr-80 =	Ra4	KB

Alpha #3

Date	Sample #	Client	Sample Time	CT Time	Analyst	Tech
2/1/16	1601050A (1-3)	UCON	1148	2hr 50	Am243	KB
2/1/16	1601050A (1-3)	UCON	1149	2hr 50	Am241	KB
2/1/16	1601069A (1-5)	Accutest	1150	2hr 50	Rak	KB
2/1/16	1601068A (1-10)	Accutest	1143	2hr 50	Rak	KB
2/2	Pad up Purge	LAB	0522	10	AM	—
2/2	1601126A (4)	UCON	0845	2hr 50	Am243	—
2/2	1601126A (1-4)	UCON	0846	2hr 50	U238	—
2/2	1601126A (1-4)	UCON	0846	2hr 50	Pu242	—
2/2	1601126A (1-4)	UCON	0847	2hr 50	Th229	—
2/2	1601047A (1-6)	AMO	0847	2hr 50	U238	—
2/2	1601050A (1-4)	UCON	0848	2hr 50	Pu242	—
2/2	1601047A (1-5)	AMO	0843	2hr 50	Th229	—

GAMMA NOTES

GG 1

Date	Sample #	Client	Load Time	CT. Time	Analysis	Tech
2/4	1601047.03	AMO	0607	1h	r	e
2/4	1601047.04	AMO	0710	1h	r	c

DATE	Sample #	Client	Load Time	CT Time	Analysis	Tech
2/1	1601115-04	UCOR	0614	4L	V	C
2/1/16	1601069-01	Accutest	1015	15 mins	Ba	KB
2/1/16	1601069-03	Accutest	1033	15 mins	Ba	KB
2/1/16	1601069-05	Accutest	1048	15 min	Ba	KB
2/1	1601068-03	Accutest	1105	15	Ba	—
2/1	1601068-06	Accutest	1121	15	Ba	—
2/1	1601068-09	Accutest	1136	15	Ba	—
2/1	1602001-03	United	1317	1h	V	C
2/1	1602001-04	United	1418	1h	V	C
2/1/16	1601139-05	Test America	1603	4hr	V	KB
2/2	GFS 1401	LAB	0521	15	V	C
2/2	Dailyn	LAB	0550	15	V	C
2/2	1601061-02	Tetra Tech	0800	15	Ba	C
2/2	1601061-06	Tetra Tech	0817	15	Ba	C
2/2	1601061-10	Tetra Tech	0834	15	Ba	C
2/2	1601061-14	Tetra Tech	0851	15	Ba	C
2/2	1601061-18	Tetra Tech	0907	15	Ba	—
2/2/16	1602003-02	Env. Dimensions	1040	1hr	V	KB
2/2/16	1601147-03	Republic Serv.	1201	2hr	V	KB
2/2/16	1601147-04	Republic Serv.	1402	2hr	V	KB
2/2/16	1601091-03	UCOR	1603	15 mins	Ba	KB
2/3	GFS 1401	LAB	0523	15	V	C
2/3	Dailyn	LAB	0549	15	V	C
2/3	~~Dailyn~~	LAB	0612	15	V	C
2/3/16	1601682-02	Accutest	1117	15	Ba	KB
2/3	1602005-02	UCOR	1142	2L	V	—
2/4	GFS 1401	LAB	0528	15	V	C
2/4	Dailyn	LAB	0548	15	V	C
2/4	1601047-05	AMO	0607	1h	V	C
2/4	1601047-06	AMO	0710	1h	V	C

GE 3

DATE	SAmple #	Client	Load Time	CT. Time	Analysis	Tech
2/1/16	1601109-12	ERT	0615	4L	V	—
2/1/16	1601069-02	Accutest	1016	15mins	Ba	KB
2/1/16	1601069-04	Accutest	1033	15mins	Ba	KB
2/1/16	1601068-01	Accutest	1050	15mins	Ba	KB
2/1/16	1601068-04	Accutest	1105	15	Ba	—
2/1/16	1601068-07	Accutest	1121	15	Ba	—
2/1/16	1601068-10	Accutest	1136	15	Ba	—
2/1/16	1602001-02	United	1318	1L	V	—
2/1/16	1602001-01	United	1419	15	V	—
2/2	GB1402	LAB	0521	15	V	C
2/2	Daily	LAB	0550	15	V	C
2/2	1601061-03	Tetra Tech	0800	15	Ba	C
2/2	1601061-07	Tetra Tech	0817	15	Ba	C
2/2	1601061-11	Tetra Tech	0834	15	Ba	C
2/2	1601061-15	Tetra Tech	0851	15	Ba	C
2/2	1601061-19	Tetra Tech	0907	15	Ba	C
2/2/16	1602003-01	Env. Dimensions	1040	30mins	V	KB
2/2/16	1601147-02	Republic Serv.	1202	2 hrs	V	KB
2/2/16	1601137-02	Lake Shore HO	1533	15mins	Ba	KB
2/2/16	1601091-01	UCOR	1551	15mins	Ba	KB
2/3	GB1402	LAB	0527	15	V	C
2/3	Daily	LAB	0545	15	V	
2/3	1601047-02	[illegible]	0613	1L	V	C

GE 4

DATE	Sample #	Client	Lab Time	CT Time	Analysis	Tech
2/1	1601137-02	UCOR	0755	3h	V	C
2/1	1601137-01	UCOR	1102	3h	V	C
2/1	1601139-01	Test America	1134	3h	V	C
2/1/16	1601139-02	Test America	1603	4 hrs	V	KB
2/2	GW-14	LAB	0724	15	V	C
2/2	Daily	LAB	0770	15	V	C
2/2	1601061-04	Tetra Tech	0800	15	Ba	C
2/2	1601061-08	Tetra Tech	0817	15	Ba	C
2/2	1601061-12	Tetra Tech	0834	15	Ba	C
2/2	1601061-16	Tetra Tech	0851	15	Ba	C
2/2	1601061-20	Tetra Tech	0907	15	Ba	C
2/2/16	1601147-01	Republic Serv.	1044	30 mins	V	KB
2/2/16	1601134-03	Lake Shuretto	1533	15 mins	Ba	KB
2/2/16	1601091-02	UCOR	1551	15 mins	Ba	KB
2/3	GW-14	LAB	0723	15	V	C
2/3	Daily	LAB	0749	15	V	C
2/3	1601047-01	APM	0613	3h	V	—

SECTION VIII

ANALYTICAL DATA (ISOTOPIC URANIUM)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

16-01047
UUISO
Run 1

Work Order	16-01047
Analysis Code	UUISO
Run	1
Date Received	1/12/2016
Lab Deadline	2/4/2016
Client	AMO Environmental Decisions
Project	ENG-EOR-AA12
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)	18.59
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		01/13/16 00:00	1.0000E+00
02	MBL	BLANK		01/13/16 00:00	1.0000E+00
03	DUP	SED1	36	01/08/16 09:20	1.0066E+00
04	DO	SED1	36	01/08/16 09:20	1.0034E+00
05	TRG	SED2	32	01/08/16 09:06	1.0009E+00
06	TRG	SED4	34	01/08/16 08:36	1.0068E+00

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

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

16-01047
UUISO
Run 1

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.6055	11.3		0.00								
02	MBL	0.6054	11.3		0.00								
03	DUP	0.6048	11.2		0.00								
04	DO	0.6046	11.2		0.00								
05	TRG	0.6038	11.2		0.00								
06	TRG	0.6052	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.

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

16-01047
UUISO
Run 1

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			01/26/16 10:50	JWOLFE				
02	MBL			01/26/16 10:50	JWOLFE				
03	DUP			01/26/16 10:50	JWOLFE				
04	DO	01/14/16 07:15	KSALLINGS	01/26/16 10:50	JWOLFE				
05	TRG	01/14/16 07:15	KSALLINGS	01/26/16 10:50	JWOLFE				
06	TRG	01/14/16 07:15	KSALLINGS	01/26/16 10:50	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.

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-UUISO-1

Client: AMO Environmental Decisions

Eberline Services Work Order: 16-01047

Analysis Code: UUISO

Run: 1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-234	LCS	LCS	pCi/g	6.32E+00	8.94E-01	9.28E-02	7.26E+00	87.05	OK		OK	
02	U-234	MBL	BLANK	pCi/g	1.19E-01	8.02E-02	5.60E-02					OK	OK
03	U-234	DUP	SED1	pCi/g	7.57E-01	2.31E-01	1.00E-01				INV	OK	
04	U-234	DO	SED1	pCi/g	1.10E+00	3.32E-01	1.29E-01					OK	
05	U-234	TRG	SED2	pCi/g	8.81E-01	2.63E-01	9.49E-02					OK	
06	U-234	TRG	SED4	pCi/g	8.86E-01	2.41E-01	1.16E-01					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 16-01047-UUISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	UUISO	1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	U-234	LCS	01/13/16 00:00	1.00E+00	112.67	0.00	0.00			
02	U-234	MBL	01/13/16 00:00	1.00E+00	115.96	0.00	0.00			
03	U-234	DUP	01/08/16 09:20	1.01E+00	98.76	0.00	0.00			
04	U-234	DO	01/08/16 09:20	1.00E+00	85.70	0.00	0.00			
05	U-234	TRG	01/08/16 09:06	1.00E+00	107.53	0.00	0.00			
06	U-234	TRG	01/08/16 08:36	1.01E+00	132.89	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-UUISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	UUISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-234	LCS	02/02/16 08:47		A_Spec	Alpha_046	170	4.84 E+02	9.00 E-03	18.1
02	U-234	MBL	02/02/16 08:47		A_Spec	Alpha_047	170	8.83 E+00	1.00 E-03	17
03	U-234	DUP	02/02/16 08:47		A_Spec	Alpha_048	170	4.98 E+01	7.00 E-03	17.6
04	U-234	DO	02/02/16 08:47		A_Spec	Alpha_049	170	5.40 E+01	6.00 E-03	15.1
05	U-234	TRG	02/02/16 08:47		A_Spec	Alpha_050	170	5.23 E+01	4.00 E-03	14.7
06	U-234	TRG	02/02/16 08:47		A_Spec	Alpha_051	170	6.53 E+01	1.60 E-02	14.6

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-UUISO-1

Client: AMO Environmental Decisions

Eberline Services Work Order: 16-01047

Analysis Code: UUISO

Run: 1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-238	LCS	LCS	pCi/g	6.16E+00	8.74E-01	8.56E-02	7.04E+00	87.50	OK		OK	
02	U-238	MBL	BLANK	pCi/g	2.22E-02	3.77E-02	6.39E-02					OK	OK
03	U-238	DUP	SED1	pCi/g	1.02E+00	2.73E-01	7.94E-02				OK	OK	
04	U-238	DO	SED1	pCi/g	1.06E+00	3.23E-01	1.22E-01					OK	
05	U-238	TRG	SED2	pCi/g	9.02E-01	2.65E-01	6.99E-02					OK	
06	U-238	TRG	SED4	pCi/g	9.56E-01	2.49E-01	8.90E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-UUISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	UUISO	1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	U-238	LCS	01/13/16 00:00	1.00E+00	112.67	0.00	0.00			
02	U-238	MBL	01/13/16 00:00	1.00E+00	115.96	0.00	0.00			
03	U-238	DUP	01/08/16 09:20	1.01E+00	98.76	0.00	0.00			
04	U-238	DO	01/08/16 09:20	1.00E+00	85.70	0.00	0.00			
05	U-238	TRG	01/08/16 09:06	1.00E+00	107.53	0.00	0.00			
06	U-238	TRG	01/08/16 08:36	1.01E+00	132.89	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-UUISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	UUISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-238	LCS	02/02/16 08:47		A_Spec	Alpha_046	170	4.74 E+02	7.00 E-03	18.1
02	U-238	MBL	02/02/16 08:47		A_Spec	Alpha_047	170	1.66 E+00	2.00 E-03	17
03	U-238	DUP	02/02/16 08:47		A_Spec	Alpha_048	170	6.75 E+01	3.00 E-03	17.6
04	U-238	DO	02/02/16 08:47		A_Spec	Alpha_049	170	5.22 E+01	5.00 E-03	15.1
05	U-238	TRG	02/02/16 08:47		A_Spec	Alpha_050	170	5.38 E+01	1.00 E-03	14.7
06	U-238	TRG	02/02/16 08:47		A_Spec	Alpha_051	170	7.08 E+01	7.00 E-03	14.6

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-UUISO-1

Client: AMO Environmental Decisions

Eberline Services Work Order: 16-01047

Analysis Code: UUISO

Run: 1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-235	LCS	LCS	pCi/g	4.91E-01	1.84E-01	8.45E-02					OK	
02	U-235	MBL	BLANK	pCi/g	1.30E-01	9.31E-02	6.91E-02					OK	OK
03	U-235	DUP	SED1	pCi/g	2.87E-01	1.51E-01	1.06E-01				NA	OK	
04	U-235	DO	SED1	pCi/g	1.01E-01	1.11E-01	1.51E-01					OK	
05	U-235	TRG	SED2	pCi/g	2.84E-01	1.56E-01	9.93E-02					OK	
06	U-235	TRG	SED4	pCi/g	1.76E-01	1.11E-01	8.78E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-UUISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	UUISO	1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	U-235	LCS	01/13/16 00:00	1.00E+00	112.67	0.00	0.00			
02	U-235	MBL	01/13/16 00:00	1.00E+00	115.96	0.00	0.00			
03	U-235	DUP	01/08/16 09:20	1.01E+00	98.76	0.00	0.00			
04	U-235	DO	01/08/16 09:20	1.00E+00	85.70	0.00	0.00			
05	U-235	TRG	01/08/16 09:06	1.00E+00	107.53	0.00	0.00			
06	U-235	TRG	01/08/16 08:36	1.01E+00	132.89	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-UUISO-1

Run	Analysis Code	Eberline Services Work Order	Client
1	UUISO	16-01047	AMO Environmental Decisions

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-235	LCS	02/02/16 08:47		A_Spec	Alpha_046	170	3.05 E+01	3.00 E-03	18.1
02	U-235	MBL	02/02/16 08:47		A_Spec	Alpha_047	170	7.83 E+00	1.00 E-03	17
03	U-235	DUP	02/02/16 08:47		A_Spec	Alpha_048	170	1.53 E+01	4.00 E-03	17.6
04	U-235	DO	02/02/16 08:47		A_Spec	Alpha_049	170	4.00 E+00	0.00 E+00	15.1
05	U-235	TRG	02/02/16 08:47		A_Spec	Alpha_050	170	1.37 E+01	2.00 E-03	14.7
06	U-235	TRG	02/02/16 08:47		A_Spec	Alpha_051	170	1.05 E+01	3.00 E-03	14.6

Count Room Report
Client: AMO Environmental Decisio

16-01047-UUISO-1 (pCi/g) in SO
Tracer ID: U-10a

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	01/13/16 00:00	1.0000	0.6055	11.2562		0.00		
02	MBL	BLANK	01/13/16 00:00	1.0000	0.6054	11.2544		0.00		
03	DUP	SED1	01/08/16 09:20	1.0066	0.6048	11.2432		0.00		
04	DO	SED1	01/08/16 09:20	1.0034	0.6046	11.2395		0.00		
05	TRG	SED2	01/08/16 09:06	1.0009	0.6038	11.2246		0.00		
06	TRG	SED4	01/08/16 08:36	1.0068	0.6052	11.2507		0.00		

0844-46
48
49
51

0007

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 1/26/2016 10:50 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
16-01047	1	UUISO	1/26/2016 10:47	JWOLFE	JW	

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
U-234	U-8a	32.000	1/26/2016	0.550	0.5039				7.26	0.261	0.00	0.000	0.00	0.000	0.00	0.000
U-238	U-8a	31.000	1/26/2016	0.550	0.5039				7.04	0.253	0.00	0.000	0.00	0.000	0.00	0.000
Tc-99 MS	Tc-2a	22043.636	7/5/2014	0.1												

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	U-232	U-10a	18.590	1/26/2016	0.6055	0.6500
02	U-232	U-10a	18.590	1/26/2016	0.6054	0.6500
03	U-232	U-10a	18.590	1/26/2016	0.6048	0.6500
04	U-232	U-10a	18.590	1/26/2016	0.6046	0.6500
05	U-232	U-10a	18.590	1/26/2016	0.6038	0.6500
06	U-232	U-10a	18.590	1/26/2016	0.6052	0.6500

Balance Printer Tapes

Tracer

0.6055 g
0.6054 g
0.6048 g
0.6046 g
0.6038 g
0.6052 g

LCS

0.5039 g

Matrix Spike

00078

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
16-01047	1	UUISO	grams	2/4/2016	JWOLFE

Lab Fraction	AMO Environmental Decisions Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	SED1	DUP					1.0066E+00	1.0066E+00				
04	SED1	DO					1.0034E+00	1.0034E+00				
05	SED2	TRG					1.0009E+00	1.0009E+00				
06	SED4	TRG					1.0068E+00	1.0068E+00				

Comments	

Technician: JWolfe Date: 1 26 16

000179

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

Rough Sample Preparation Log Book

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
16-01047	2/4/2016	1/13/2016	1/14/2016	1/15/2016	KSALLINGS

Eberline	AMO Environmental Decisions	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special
Fraction	Client ID	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	Info
04	SED1	14.1200	711.5500	556.9300	697.4300	542.8100	22.17%	77.83%	0.0000	0.0000	
05	SED2	28.3000	1126.0800	532.0100	1097.7800	503.7100	54.12%	45.88%	0.0000	0.0000	
06	SED4	14.1400	1125.7400	808.3200	1111.6000	794.1800	28.56%	71.44%	0.0000	0.0000	

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

Technician: Kenny Sally

Date: **Analysis: Rough Prep Logbook**

Analysis: UUISO Page No. 9505

JCG 2/2/16

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-UU
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_046
Chamber Serial Number: 04026482B
Detector Serial Number: 58762
Env. Background: System Bkgd 141513
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 2/2/2016 5:52:30 AM
Acquisition Date/Time: 2/2/2016 8:47:41 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.2034 +/- 0.0114
Counting Efficiency: 0.1806 +/- 0.0032 on 12/11/2015 8:21:03 AM
Chem. Recovery Factor: 1.1267 +/- 0.0660

Control Certificate Name: NatU_U-8A
Chem. Recov. of Control: U-238 0.769805 +/- 0.060338
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	386.64	9.99	1.36	0.00E+000	7.4
U-234		4.727	484.47	8.92	1.53	0.00E+000	26.9
U-235		4.394	30.49	35.84	0.51	0.00E+000	3.0
U-238		4.147	473.81	9.02	1.19	0.00E+000	5.2

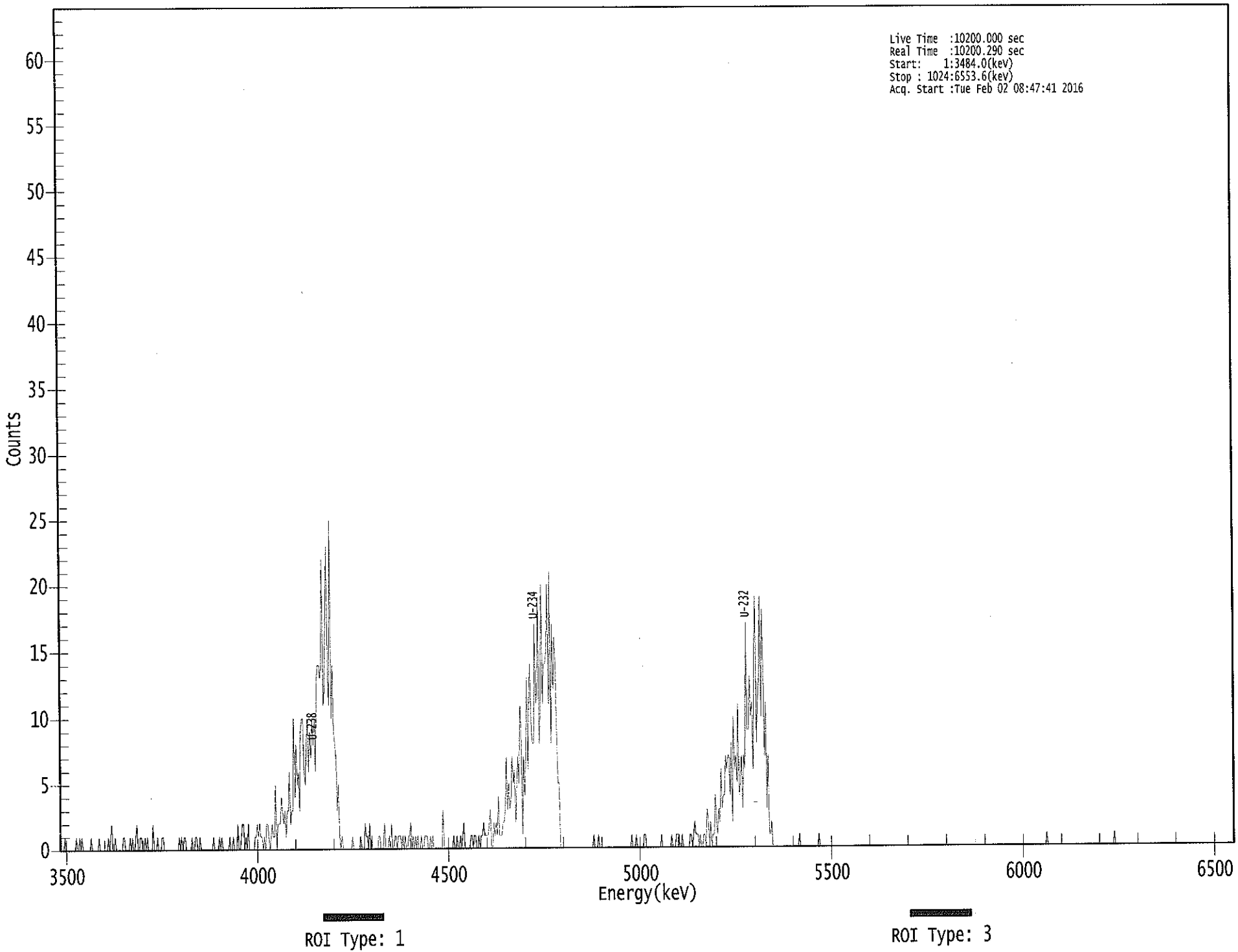
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	5.05E+000 +/- 5.53E-001	8.95E-002 +/- 9.81E-003
U-234	0.991	4761.50*	6.32E+000 +/- 8.94E-001	9.28E-002 +/- 1.02E-002
U-235	0.999	4385.50*	4.91E-001 +/- 1.84E-001	8.45E-002 +/- 9.26E-003
U-238	0.990	4184.40*	6.16E+000 +/- 8.74E-001	8.56E-002 +/- 9.38E-003

AG
2/2/16

0000140706.CNF



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

Sample Title: 01

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	1	0	0	0
9:	0	0	0	0	0	0	1	0
17:	0	1	0	1	0	0	0	0
25:	0	0	0	1	0	0	0	0
33:	0	0	1	0	0	0	0	0
41:	0	0	1	0	1	2	0	0
49:	1	0	0	0	0	0	0	1
57:	1	0	0	0	0	1	0	1
65:	0	0	1	2	0	0	1	1
73:	0	0	1	0	1	0	0	0
81:	0	2	0	0	0	1	0	0
89:	0	1	1	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	1	0	1	0	1	1	0	0
113:	0	0	0	1	0	0	1	1
121:	0	0	1	0	0	0	0	0
129:	0	0	0	0	0	0	1	0
137:	0	0	0	1	0	1	0	0
145:	0	0	0	0	1	0	0	1
153:	0	0	0	2	0	0	1	2
161:	2	0	1	0	2	0	0	0
169:	0	0	1	1	2	1	2	1
177:	1	0	1	0	2	2	1	0
185:	1	2	1	1	5	0	2	2
193:	2	4	3	2	3	1	3	3
201:	6	2	3	3	10	4	8	5
209:	6	3	9	10	10	6	5	8
217:	10	6	9	7	10	8	10	6
225:	13	14	14	13	14	22	11	12
233:	18	23	13	11	25	10	14	9
241:	8	7	3	5	1	0	1	0
249:	0	0	0	0	0	0	0	1
257:	0	0	0	0	0	0	1	0
265:	0	0	2	1	1	0	2	0
273:	1	0	0	0	0	0	1	1
281:	0	0	0	2	0	0	0	1
289:	0	2	0	0	1	1	0	1
297:	1	1	0	1	0	1	0	0
305:	1	1	2	0	1	0	1	0
313:	1	0	0	1	0	0	1	1
321:	1	0	0	1	0	1	0	0
329:	0	0	0	0	0	0	3	0
337:	0	0	0	0	0	0	0	1
345:	0	0	1	0	0	1	0	1
353:	2	0	0	0	0	0	1	1
361:	0	1	1	0	0	1	0	1

369:	1	2	1	1	1	1	2	3

Sample Title: 01

Channel								
377:	0	0	2	1	2	1	4	1
385:	1	1	2	2	3	7	3	5
393:	3	4	7	5	6	2	5	7
401:	5	11	9	1	7	4	7	13
409:	6	12	14	9	8	8	17	11
417:	12	19	8	11	20	11	14	14
425:	15	20	11	21	8	17	12	16
433:	14	9	5	5	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	1	0	0	0	1	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	1	0	0	0	1	0
505:	0	0	0	0	0	1	1	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	1	0	0
537:	0	1	1	1	0	0	1	0
545:	0	0	0	0	0	1	1	0
553:	1	2	1	1	1	0	1	0
561:	0	1	1	0	3	2	0	2
569:	0	1	1	4	2	1	3	2
577:	6	3	4	4	7	6	7	7
585:	4	8	2	10	6	7	5	11
593:	4	5	7	3	7	6	17	9
601:	9	13	10	11	6	15	19	8
609:	11	13	19	10	18	13	7	11
617:	3	7	1	1	2	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	1	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	1	0	0
665:	0	0	0	0	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: 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	1	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	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	1	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	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 2/2/16

Apex-Alpha™

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-UU
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_047
Chamber Serial Number: 02030596A
Detector Serial Number: 91086
Env. Background: System Bkgd 141514
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 2/2/2016 5:52:30 AM
Acquisition Date/Time: 2/2/2016 8:47:36 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1977 +/- 0.0112
Counting Efficiency: 0.1705 +/- 0.0030 on 12/11/2015 8:21:02 AM
Chem. Recovery Factor: 1.1596 +/- 0.0687

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	5.273	375.66	10.12	0.34	0.00E+000	8.2
U-234		4.711	8.83	66.70	0.17	0.00E+000	3.0
U-235		4.422	7.83	70.93	0.17	0.00E+000	3.0
U-238		4.087	1.66	169.38	0.34	0.00E+000	3.0

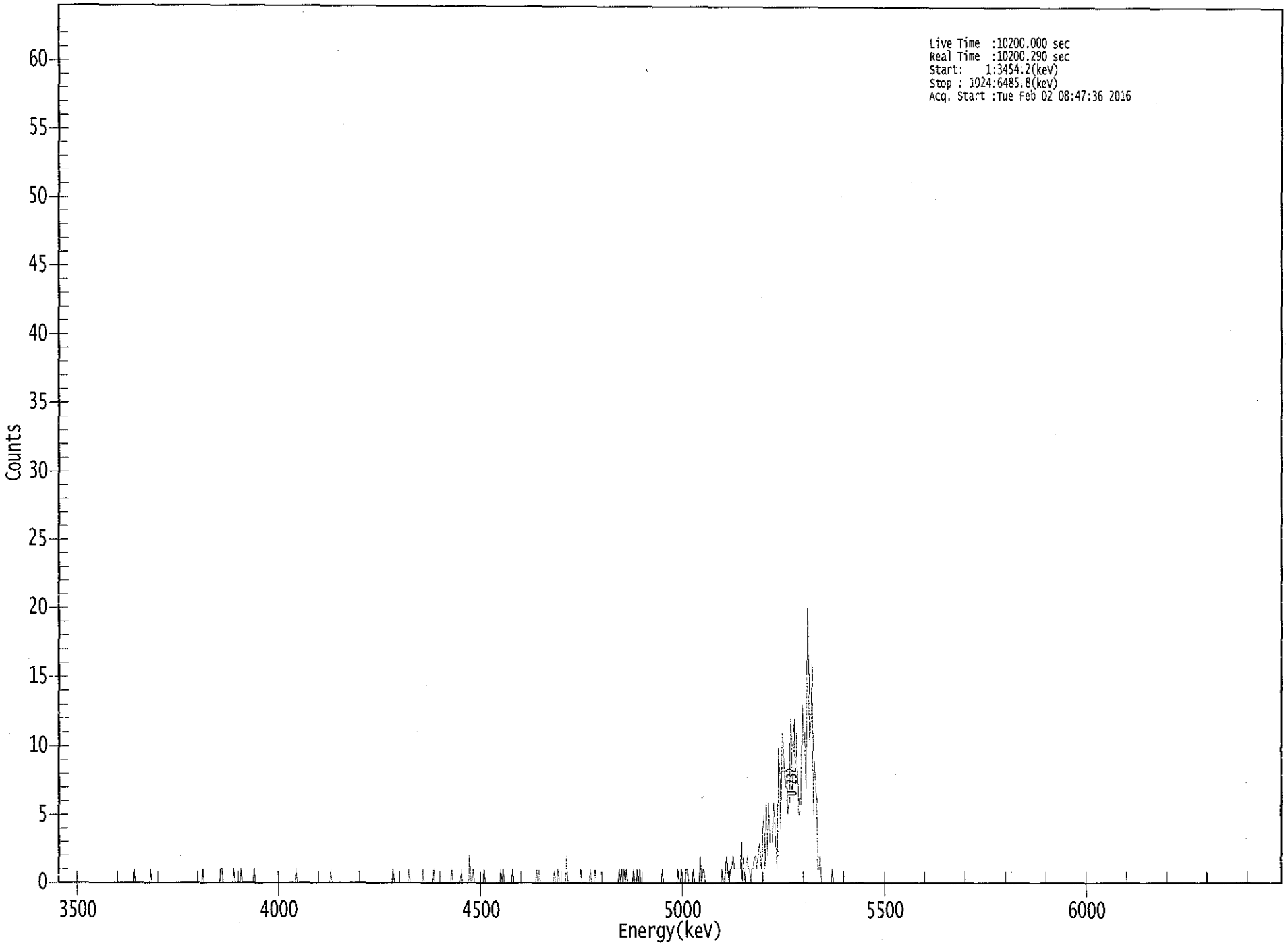
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.994	5302.50*	5.05E+000 +/- 5.59E-001	6.42E-002 +/- 7.11E-003
U-234	0.982	4761.50*	1.19E-001 +/- 8.02E-002	5.60E-002 +/- 6.21E-003
U-235	0.990	4385.50*	1.30E-001 +/- 9.31E-002	6.91E-002 +/- 7.66E-003
U-238	0.935	4184.40*	2.22E-002 +/- 3.77E-002	6.39E-002 +/- 7.08E-003

AG 02/2/16

0000140712.CNF



: 00087

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

Sample Title: 02

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	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	1
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	1	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	1	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	1	1	0	0	0	0	0	0
145:	0	0	0	1	0	0	0	0
153:	0	1	0	0	0	0	0	0
161:	0	0	0	0	1	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	1
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	1	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:	1	0	0	0	0	0	0	0
289:	0	0	0	0	0	1	0	0
297:	0	0	0	0	0	0	0	0
305:	0	1	0	0	0	0	0	0
313:	0	0	1	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	1	0	0	0	0	0	0
337:	0	1	0	0	0	0	0	0
345:	2	0	0	1	0	0	0	0
353:	0	0	0	0	1	0	0	0
361:	0	0	0	0	0	0	0	0

369:	0	0	1	0	1	0	0	0

Sample Title: 02

Channel								
377:	0	0	0	0	1	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	1	0	1	0	0	0	0	0
409:	0	0	0	0	0	0	0	1
417:	0	0	1	0	0	0	0	0
425:	0	2	0	0	0	0	0	0
433:	0	0	0	0	0	1	0	0
441:	0	0	0	0	0	1	0	0
449:	0	1	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	1	0	1
473:	0	1	0	1	0	0	0	0
481:	0	1	0	0	1	0	1	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	1	0	0	0	0	0	0
513:	0	0	0	0	0	0	1	0
521:	0	1	0	0	0	1	1	0
529:	0	0	0	1	0	0	0	0
537:	0	2	0	1	1	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	1	0	0	1	2
561:	1	0	1	1	2	1	1	1
569:	1	1	1	3	0	2	0	1
577:	2	1	1	0	1	1	2	2
585:	1	2	3	2	1	4	5	1
593:	6	2	6	3	3	3	6	5
601:	2	1	10	8	4	11	10	8
609:	7	7	5	6	12	10	6	12
617:	8	11	8	5	5	8	13	10
625:	11	7	20	16	10	12	16	5
633:	9	7	6	1	1	2	0	0
641:	0	0	0	0	0	0	0	1
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 02

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

Apex-Alpha™

KB 2/2/16

Sample Description: SED1-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-UU
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_048
Chamber Serial Number: 02030596B
Detector Serial Number: 83111
Env. Background: System Bkgd 141515
Reagent Blank: <not performed>

Sample Size: 1.007E+000 +/- 0.000E+000 gram
Sample Date/Time: 1/8/2016 5:52:30 AM
Acquisition Date/Time: 2/2/2016 8:47:38 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1735 +/- 0.0104
Counting Efficiency: 0.1756 +/- 0.0031 on 12/11/2015 8:21:00 AM
Chem. Recovery Factor: 0.9876 +/- 0.0615

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	5.279	329.32	10.81	0.68	0.00E+000	19.3
U-234		4.731	49.81	28.16	1.19	0.00E+000	3.5
U-235		4.396	15.32	51.36	0.68	0.00E+000	3.0
U-238		4.136	67.49	23.96	0.51	0.00E+000	3.5

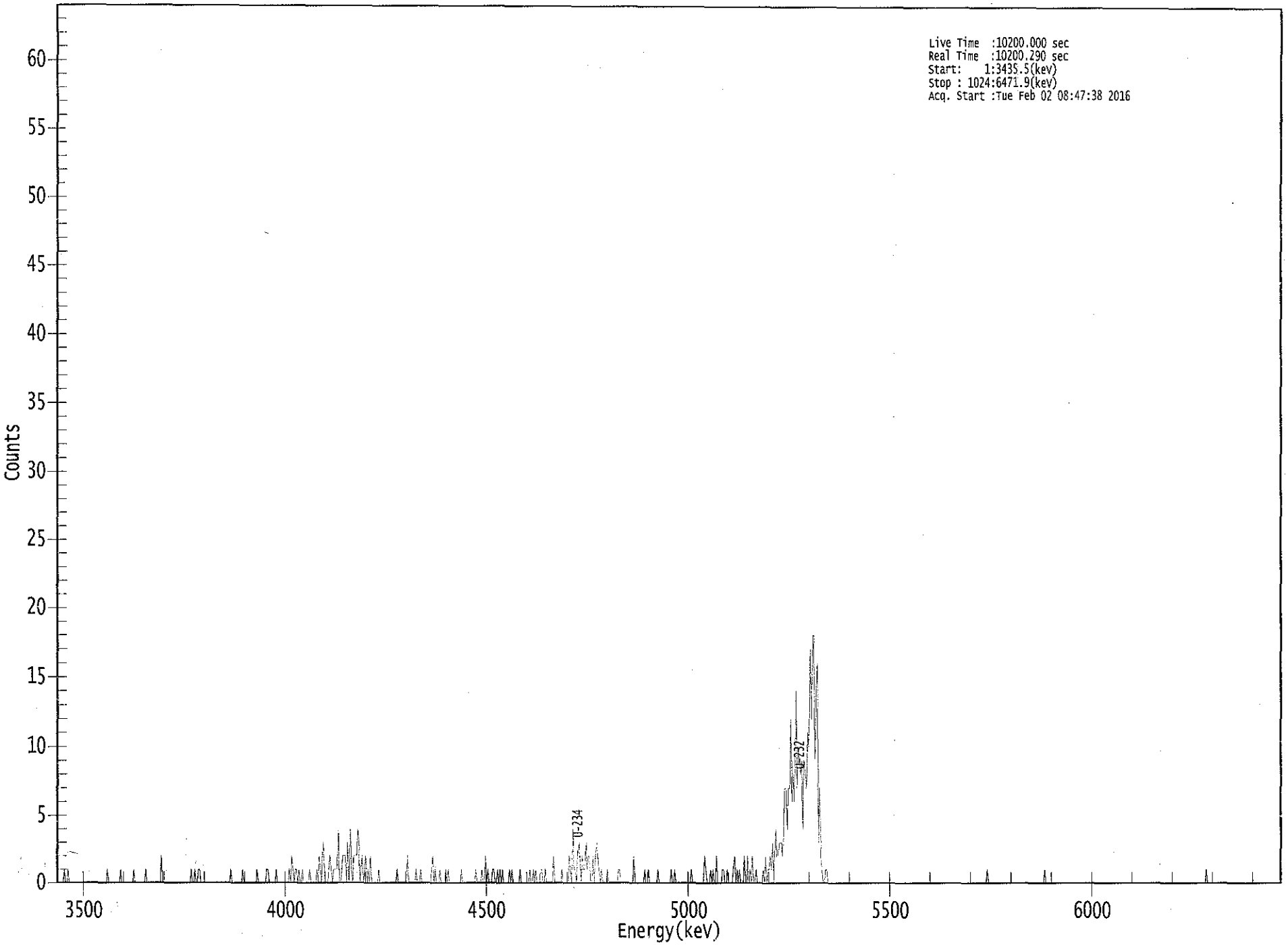
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	5.01E+000 +/- 5.87E-001	8.58E-002 +/- 1.01E-002
U-234	0.993	4761.50*	7.57E-001 +/- 2.31E-001	1.00E-001 +/- 1.17E-002
U-235	0.999	4385.50*	2.87E-001 +/- 1.51E-001	1.06E-001 +/- 1.24E-002
U-238	0.983	4184.40*	1.02E+000 +/- 2.73E-001	7.94E-002 +/- 9.31E-003

AG
2/2/16

0000140714.CNF



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

Sample Title: 03

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	1	0	0	0	0	0	1	0
9:	0	1	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	1	0	0	0	0	0
49:	0	0	0	0	0	1	0	0
57:	0	0	0	0	0	0	0	0
65:	1	0	0	0	0	0	0	0
73:	0	0	1	0	0	0	0	0
81:	0	0	0	0	0	0	0	2
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:	1	0	0	1	0	0	1	1
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	1	0	0	0	0	0	0
153:	0	0	0	1	0	0	0	0
161:	0	0	0	0	0	0	0	1
169:	0	0	0	0	0	0	0	1
177:	1	0	0	0	0	0	0	1
185:	0	0	0	0	0	0	0	0
193:	0	0	1	0	2	1	0	1
201:	1	0	1	0	0	1	0	0
209:	0	0	0	1	0	0	0	0
217:	0	1	0	2	1	0	3	2
225:	0	0	0	1	2	1	0	1
233:	1	1	1	4	0	0	1	2
241:	2	2	0	3	0	4	1	0
249:	2	2	2	4	3	0	1	2
257:	0	1	2	0	1	0	2	0
265:	0	0	0	0	0	1	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	1	0	0	0
289:	0	0	0	0	0	2	0	0
297:	0	0	0	0	1	0	0	0
305:	1	0	0	0	0	0	0	0
313:	0	1	2	0	1	0	0	0
321:	1	0	0	0	0	1	0	1
329:	0	0	0	0	0	0	0	0
337:	0	0	1	0	0	0	0	0
345:	0	0	0	0	0	0	1	0
353:	0	0	0	1	0	0	2	0
361:	1	0	0	0	1	1	0	0

369:	1	0	1	0	1	0	0	0

Sample Title: 03

Channel								
377:	0	0	1	0	1	0	0	0
385:	0	0	0	1	0	0	0	0
393:	0	0	0	1	0	0	1	0
401:	1	0	0	0	1	1	0	0
409:	1	0	0	0	0	0	0	2
417:	0	0	0	0	0	0	1	0
425:	0	0	0	0	2	1	0	4
433:	1	1	0	2	3	2	0	2
441:	1	1	3	1	2	2	0	0
449:	2	0	2	3	2	1	0	1
457:	0	0	0	0	1	0	0	0
465:	0	0	0	0	0	1	1	0
473:	0	0	0	0	0	0	0	0
481:	0	0	2	0	0	0	0	0
489:	0	0	0	1	0	0	1	0
497:	0	0	0	0	0	0	1	0
505:	0	0	0	0	0	0	0	0
513:	0	1	0	0	1	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	1	0	0	0	0	0
537:	0	0	0	0	0	2	1	0
545:	0	0	1	0	1	0	0	2
553:	0	0	0	0	1	1	0	0
561:	1	0	0	0	0	1	2	0
569:	1	0	1	0	0	0	2	0
577:	0	2	0	1	0	2	0	0
585:	1	0	0	0	0	0	1	0
593:	2	0	1	1	2	1	3	0
601:	4	2	2	3	3	3	2	5
609:	7	7	4	7	7	12	6	8
617:	6	14	7	10	9	8	9	4
625:	9	8	7	11	10	17	12	18
633:	18	9	14	16	3	7	2	1
641:	0	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:	0	0	0	0	0	0	0	0
777:	0	1	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	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	1	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	1	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KB 2/2/16

Sample Description: SED1
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-UU
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_049
Chamber Serial Number: 10006121A
Detector Serial Number: 49
Env. Background: System Bkgd 141516
Reagent Blank: <not performed>

Sample Size: 1.003E+000 +/- 0.000E+000 gram
Sample Date/Time: 1/8/2016 5:52:30 AM
Acquisition Date/Time: 2/2/2016 8:47:43 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1294 +/- 0.0088
Counting Efficiency: 0.1510 +/- 0.0027 on 12/11/2015 11:36:41 AM
Chem. Recovery Factor: 0.8570 +/- 0.0602

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	5.284	245.66	12.52	0.34	0.00E+000	15.3
U-234		4.721	53.98	26.97	1.02	0.00E+000	3.5
U-235		4.418	4.00	109.57	0.00	0.00E+000	3.0
U-238		4.162	52.15	27.40	0.85	0.00E+000	7.9

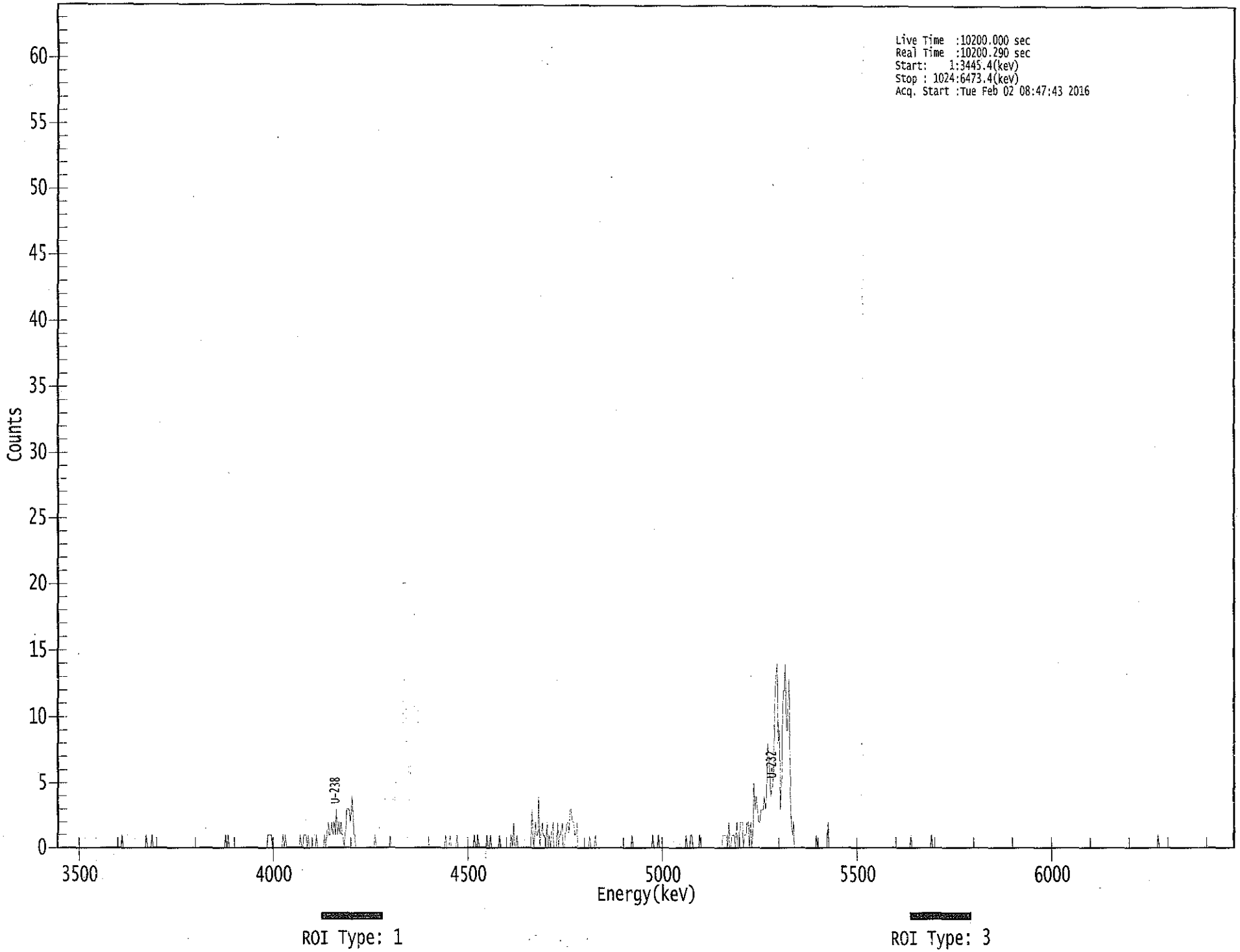
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.998	5302.50*	5.02E+000 +/- 6.69E-001	9.78E-002 +/- 1.30E-002
U-234	0.989	4761.50*	1.10E+000 +/- 3.32E-001	1.29E-001 +/- 1.71E-002
U-235	0.993	4385.50*	1.01E-001 +/- 1.11E-001	1.51E-001 +/- 2.01E-002
U-238	0.996	4184.40*	1.06E+000 +/- 3.23E-001	1.22E-001 +/- 1.62E-002

AG 2/2/16

0000140715.CNF



L6000 : 0009T

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

Sample Title: 04

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	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:	1	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	1	0	0
81:	0	0	1	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	1	0	1	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	1
185:	1	1	1	0	0	0	0	0
193:	0	0	0	0	1	0	1	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	1	0	0	1	1
217:	1	0	1	0	0	0	0	0
225:	0	1	0	0	0	0	0	0
233:	1	0	1	2	1	1	2	1
241:	2	1	3	1	2	1	2	1
249:	1	0	1	3	3	3	2	3
257:	4	1	1	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	1	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	1	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	1	0	0	0	1	0	0
345:	0	0	0	1	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	1	0	0	1	0	0

369:	0	0	0	0	0	1	0	0

Sample Title: 04

Channel								
377:	1	0	0	0	0	0	0	0
385:	1	0	0	0	0	0	0	0
393:	0	0	1	0	2	0	0	1
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	3	1	0	2
417:	1	1	4	0	1	2	1	1
425:	0	2	0	1	0	1	2	0
433:	0	0	2	0	1	1	2	0
441:	0	1	2	2	1	3	3	2
449:	2	1	1	2	0	0	0	0
457:	0	0	0	0	0	0	1	0
465:	0	0	0	1	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	1	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	1	0	0
521:	0	0	1	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	1	0	0	0	1	1
553:	0	0	0	0	0	0	1	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	1	1	1	1	0	2
585:	0	0	1	1	1	0	2	0
593:	0	2	2	2	0	1	1	2
601:	2	0	2	0	1	5	3	4
609:	3	2	2	3	3	3	4	3
617:	4	8	7	5	4	5	6	12
625:	13	14	8	9	3	6	12	12
633:	14	9	9	13	7	2	1	2
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	1	0	0	0	0
665:	0	0	0	0	0	2	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	1	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	1
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 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	0	0	0	1	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

KG 2/2/16

Apex-Alpha™

Sample Description: SED2
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-UU
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_050
Chamber Serial Number: 10006121B
Detector Serial Number: 50
Env. Background: System Bkgd 141517
Reagent Blank: <not performed>

Sample Size: 1.001E+000 +/- 0.000E+000 gram
Sample Date/Time: 1/8/2016 5:52:30 AM
Acquisition Date/Time: 2/2/2016 8:47:45 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.604 mL
Effective Efficiency: 0.1576 +/- 0.0098
Counting Efficiency: 0.1465 +/- 0.0026 on 12/11/2015 11:36:39 AM
Chem. Recovery Factor: 1.0753 +/- 0.0697

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	5.279	298.66	11.35	0.34	0.00E+000	23.1
U-234		4.728	52.32	27.30	0.68	0.00E+000	4.4
U-235		4.393	13.66	53.80	0.34	0.00E+000	3.0
U-238		4.158	53.83	26.76	0.17	0.00E+000	5.9

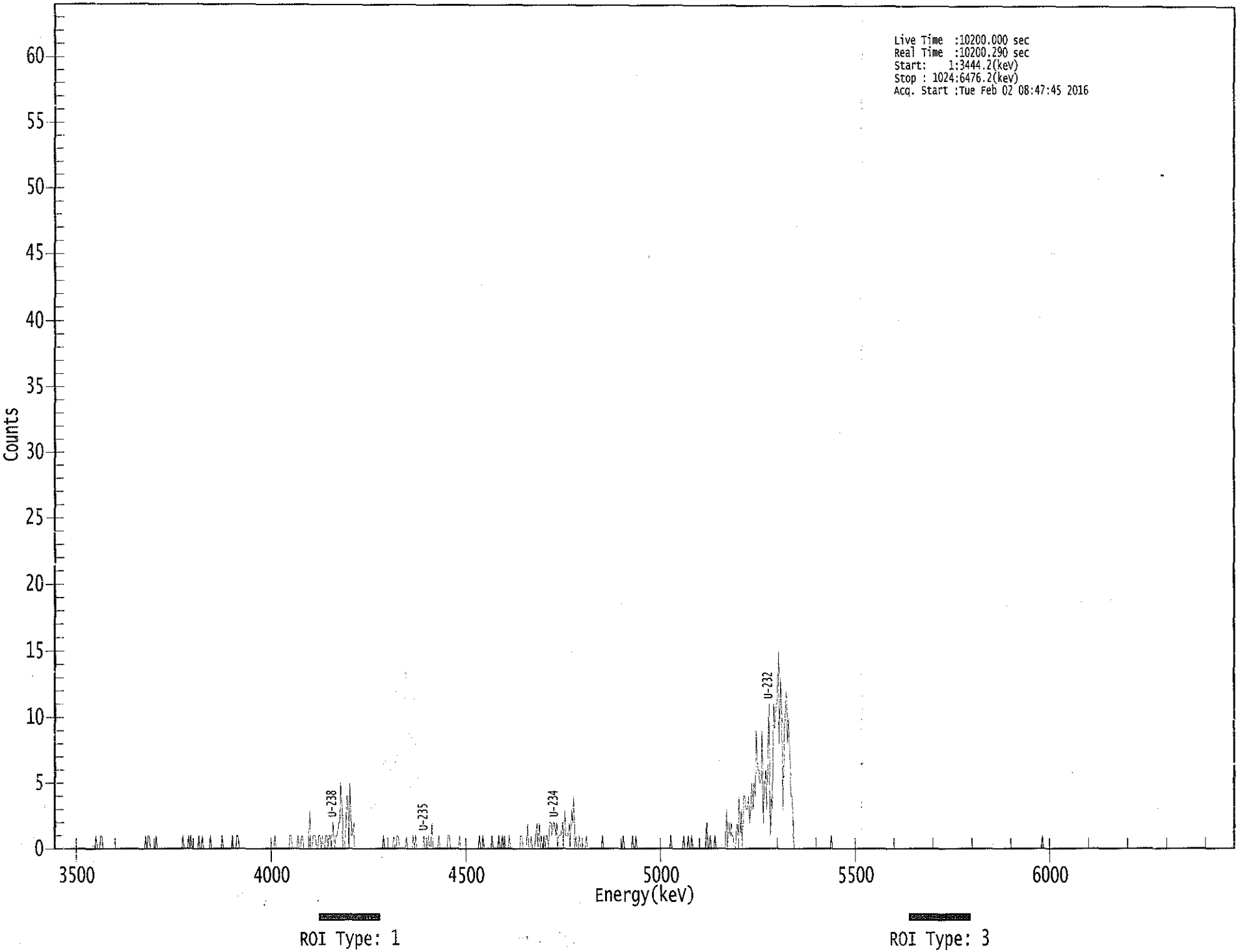
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	5.03E+000 +/- 6.14E-001	8.05E-002 +/- 9.84E-003
U-234	0.992	4761.50*	8.81E-001 +/- 2.63E-001	9.49E-002 +/- 1.16E-002
U-235	1.000	4385.50*	2.84E-001 +/- 1.56E-001	9.93E-002 +/- 1.21E-002
U-238	0.995	4184.40*	9.02E-001 +/- 2.65E-001	6.99E-002 +/- 8.54E-003

AG
2/2/16

0000140716.CNF



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

Sample Title: 05

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	1	0	0	1	0	0	0	0

Sample Title: 05

Channel								
377:	0	0	0	1	0	0	0	0
385:	0	1	0	0	1	0	1	0
393:	0	0	1	0	0	0	0	0
401:	0	0	0	0	1	1	0	0
409:	0	0	2	0	0	1	0	0
417:	0	1	2	0	2	0	1	0
425:	1	0	1	1	0	2	2	1
433:	2	2	1	2	0	1	1	1
441:	2	0	3	1	1	1	2	0
449:	3	2	4	0	1	0	0	1
457:	0	0	0	0	0	1	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	1	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	1	0	0
497:	0	0	0	0	0	1	0	0
505:	1	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	1	0
537:	0	0	0	0	0	0	0	0
545:	0	1	0	0	0	1	0	0
553:	1	0	0	0	0	0	0	0
561:	0	0	0	0	0	2	0	0
569:	1	0	0	0	1	0	0	0
577:	0	0	0	0	0	0	3	0
585:	2	1	2	1	1	0	0	2
593:	1	4	1	3	0	4	4	3
601:	3	4	2	3	5	3	5	4
609:	9	6	6	5	5	9	2	5
617:	6	3	7	11	1	4	3	11
625:	9	11	11	15	8	13	10	3
633:	8	11	12	8	10	7	4	4
641:	1	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	1	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	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: 05

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	1	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KB 2/2/16

Sample Description: SED4
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-UU
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_051
Chamber Serial Number: 10006123A
Detector Serial Number: 51
Env. Background: System Bkgd 141518
Reagent Blank: <not performed>

Sample Size: 1.007E+000 +/- 0.000E+000 gram
Sample Date/Time: 1/8/2016 5:52:30 AM
Acquisition Date/Time: 2/2/2016 8:47:47 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1944 +/- 0.0111
Counting Efficiency: 0.1463 +/- 0.0026 on 12/11/2015 11:36:37 AM
Chem. Recovery Factor: 1.3289 +/- 0.0796

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	5.283	369.28	10.24	2.72	0.00E+000	14.2
U-234		4.717	65.28	24.84	2.72	0.00E+000	3.0
U-235		4.392	10.49	62.21	0.51	0.00E+000	3.0
U-238		4.158	70.81	23.52	1.19	0.00E+000	3.5

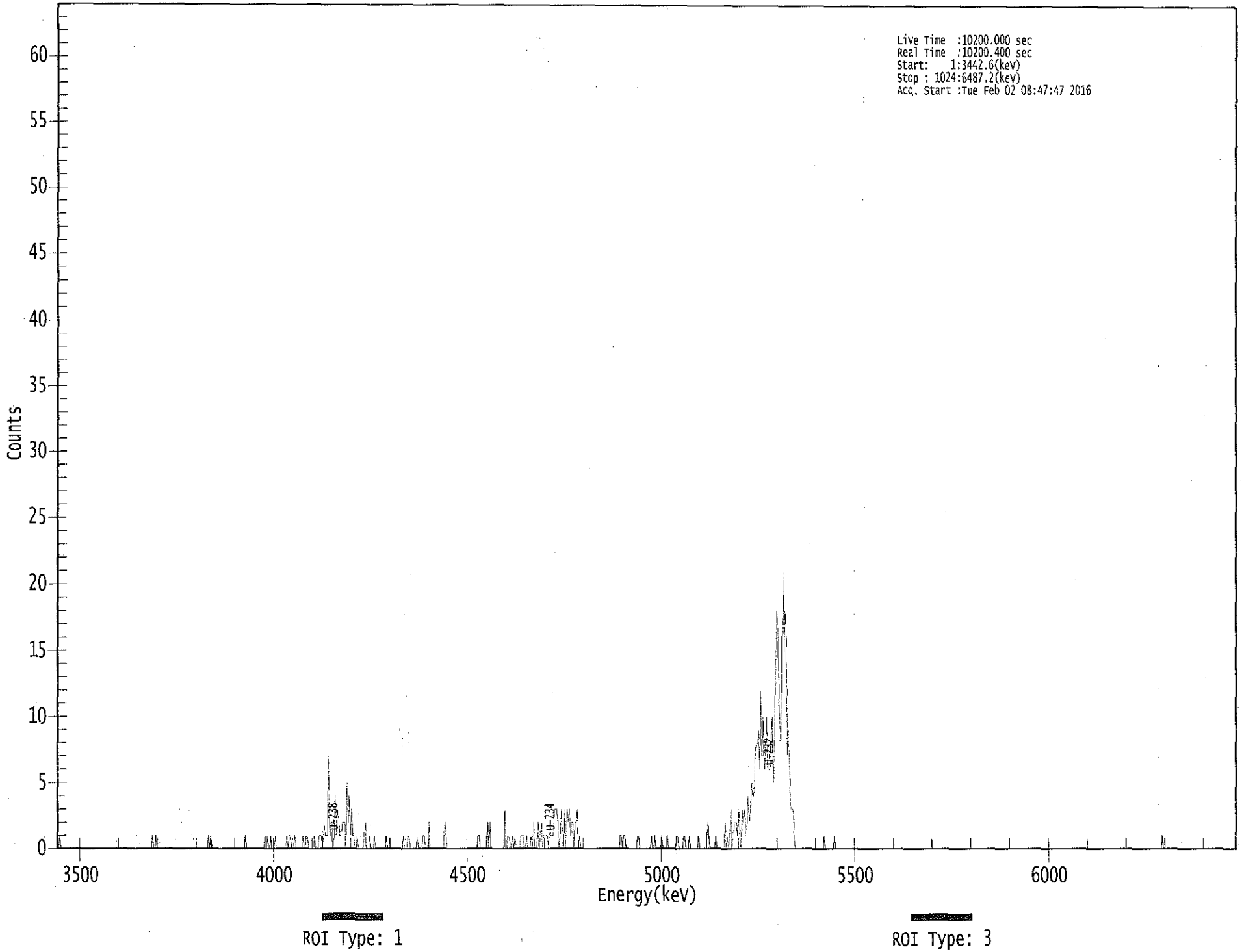
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.997	5302.50*	5.01E+000 +/- 5.61E-001	1.16E-001 +/- 1.30E-002
U-234	0.986	4761.50*	8.86E-001 +/- 2.41E-001	1.16E-001 +/- 1.30E-002
U-235	1.000	4385.50*	1.76E-001 +/- 1.11E-001	8.78E-002 +/- 9.83E-003
U-238	0.995	4184.40*	9.56E-001 +/- 2.49E-001	8.90E-002 +/- 9.96E-003

AG 2/2/16

0000140717.CNF



: 00107

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

Sample Title: 06

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	0	0	0	0	2	0	2

Sample Title: 06

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	3	1	0	1
393:	1	0	0	1	0	1	0	0
401:	0	0	1	1	1	0	0	1
409:	0	0	0	1	0	2	0	0
417:	0	2	0	1	2	0	1	1
425:	1	1	0	2	1	1	1	3
433:	3	3	2	0	1	3	0	0
441:	3	0	3	2	3	1	2	2
449:	0	2	2	3	0	1	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	1	1	0	1	1	0	0	0
497:	0	0	0	0	0	0	0	1
505:	1	0	0	0	0	0	0	0
513:	0	0	0	1	0	0	1	0
521:	0	0	0	0	1	0	0	0
529:	0	1	0	0	0	0	0	0
537:	0	1	1	0	0	0	0	1
545:	1	0	0	0	1	0	0	0
553:	0	0	0	0	1	0	0	0
561:	0	0	0	0	2	1	0	0
569:	0	0	0	1	0	0	0	0
577:	0	0	0	2	0	1	0	1
585:	3	0	1	2	2	2	1	3
593:	1	0	3	2	3	1	2	4
601:	2	3	5	4	4	7	8	8
609:	9	6	12	7	10	6	7	10
617:	6	6	6	9	10	5	8	14
625:	18	16	11	8	11	21	15	18
633:	16	7	9	6	3	3	3	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	1	0	0	0	0	0	0
673:	0	0	1	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: 06

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	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	1	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

2/2/2016 6:17:52 AM

Apex-Alpha™

QA SUMMARY REPORT

Review Of QA Results - Pulser Check

Date : 2/2/2016
Time : 6:17:52 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Passed	2/2/2016 5:23:16 AM
Alpha_004	21f	ALL	Passed	2/2/2016 5:23:17 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	2/2/2016 5:23:18 AM
Alpha_011	21f	ALL	Passed	2/2/2016 5:23:19 AM
Alpha_012	21f	ALL	Passed	2/2/2016 5:23:20 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Passed	2/2/2016 5:23:20 AM
Alpha_015	21f	ALL	Passed	2/2/2016 5:23:21 AM
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:23 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:24 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:25 AM
Alpha_036	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:27 AM
Alpha_037	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:28 AM
Alpha_038	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:30 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:32 AM
Alpha_040	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:34 AM
Alpha_041	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:35 AM
Alpha_042	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:37 AM
Alpha_043	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:39 AM
Alpha_044	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:41 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:42 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:44 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:45 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:47 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:49 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:51 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:53 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:55 AM
Alpha_053	Alpha Analyst100DC	Peak FWHM	Action	2/2/2016 5:23:57 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:59 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:01 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:03 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:05 AM
Alpha_058	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:07 AM

2/2/2016 6:17:52 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:09 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:11 AM

APPROVED BY: _____

APPROVAL DATE: 2/2/16

```
*************************************************************************
*****          L I B R A R Y   L I S T I N G   R E P O R T          *****
*************************************************************************
```

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)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

16-01047
ThISO
Run 1

Work Order	16-01047
Analysis Code	ThISO
Run	1
Date Received	1/12/2016
Lab Deadline	2/4/2016
Client	AMO Environmental Decisions
Project	ENG-EOR-AA12
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		01/13/16 00:00	1.0000E+00
02	MBL	BLANK		01/13/16 00:00	1.0000E+00
03	DUP	SED1	36	01/08/16 09:20	1.0047E+00
04	DO	SED1	36	01/08/16 09:20	1.0280E+00
05	TRG	SED2	32	01/08/16 09:06	1.0221E+00
06	TRG	SED4	34	01/08/16 08:36	9.9990E-01

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

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

16-01047
ThISO
Run 1

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.4792	10.8		0.00								
02	MBL	0.2395	5.4		0.00								
03	DUP	0.2395	5.4		0.00								
04	DO	0.2393	5.4		0.00								
05	TRG	0.2391	5.4		0.00								
06	TRG	0.2384	5.4		0.00								

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

16-01047
ThISO
Run 1

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			01/26/16 10:46	JWOLFE				
02	MBL			01/26/16 10:46	JWOLFE				
03	DUP			01/26/16 10:46	JWOLFE				
04	DO	01/14/16 07:15	KSALLINGS	01/26/16 10:46	JWOLFE				
05	TRG	01/14/16 07:15	KSALLINGS	01/26/16 10:46	JWOLFE				
06	TRG	01/14/16 07:15	KSALLINGS	01/26/16 10:46	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.

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-ThISO-1

Client: AMO Environmental Decisions

Eberline Services Work Order: 16-01047

Analysis Code: ThISO

Run: 1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	TH-228	LCS	LCS	pCi/g	5.12E+00	8.49E-01	1.37E-01	4.73E+00	108.27	OK		OK	
02	TH-228	MBL	BLANK	pCi/g	7.71E-02	8.03E-02	1.01E-01					OK	OK
03	TH-228	DUP	SED1	pCi/g	8.94E-01	2.82E-01	6.81E-02				INV	OK	
04	TH-228	DO	SED1	pCi/g	6.74E-01	2.23E-01	9.71E-02					OK	
05	TH-228	TRG	SED2	pCi/g	6.47E-01	2.28E-01	1.06E-01					OK	
06	TH-228	TRG	SED4	pCi/g	9.07E-01	2.61E-01	9.19E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 16-01047-ThISO-1

Client: AMO Environmental Decisions
Eberline Services Work Order: 16-01047
Analysis Code: ThISO
Run: 1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	TH-228	LCS	01/13/16 00:00	1.00E+00	105.29	0.00	0.00			
02	TH-228	MBL	01/13/16 00:00	1.00E+00	90.79	0.00	0.00			
03	TH-228	DUP	01/08/16 09:20	1.00E+00	98.70	0.00	0.00			
04	TH-228	DO	01/08/16 09:20	1.03E+00	108.60	0.00	0.00			
05	TH-228	TRG	01/08/16 09:06	1.02E+00	112.49	0.00	0.00			
06	TH-228	TRG	01/08/16 08:36	1.00E+00	125.82	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-ThISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	ThISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-228	LCS	02/02/16 08:48		A_Spec	Alpha_056	170	3.35 E+02	1.80 E-02	16.5
02	TH-228	MBL	02/02/16 08:48		A_Spec	Alpha_057	170	4.32 E+00	4.00 E-03	16.4
03	TH-228	DUP	02/02/16 08:48		A_Spec	Alpha_058	170	5.48 E+01	1.00 E-03	16.8
04	TH-228	DO	02/02/16 08:48		A_Spec	Alpha_059	170	4.76 E+01	8.00 E-03	17.2
05	TH-228	TRG	02/02/16 08:48		A_Spec	Alpha_060	170	4.16 E+01	8.00 E-03	15.2
06	TH-228	TRG	02/02/16 11:50		A_Spec	Alpha_003	170.02	6.76 E+01	8.00 E-03	16.1

Eberline Services
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 16-01047
Client: AMO Environmental Decisions

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	6.29E+00	1.00E+00	1.16E-01	5.32E+00	118.26	OK		OK	
02	TH-230	MBL	BLANK	pCi/g	8.94E-02	8.73E-02	1.07E-01					OK	OK
03	TH-230	DUP	SED1	pCi/g	2.63E+00	6.01E-01	6.65E-02				OK	OK	
04	TH-230	DO	SED1	pCi/g	2.70E+00	5.80E-01	6.61E-02					OK	
05	TH-230	TRG	SED2	pCi/g	2.74E+00	6.11E-01	7.96E-02					OK	
06	TH-230	TRG	SED4	pCi/g	1.47E+01	2.46E+00	7.83E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 16-01047-ThISO-1

Client: AMO Environmental Decisions

Eberline Services Work Order: 16-01047

Analysis Code: ThISO

Run: 1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	TH-230	LCS	01/13/16 00:00	1.00E+00	105.29	0.00	0.00			
02	TH-230	MBL	01/13/16 00:00	1.00E+00	90.79	0.00	0.00			
03	TH-230	DUP	01/08/16 09:20	1.00E+00	98.70	0.00	0.00			
04	TH-230	DO	01/08/16 09:20	1.03E+00	108.60	0.00	0.00			
05	TH-230	TRG	01/08/16 09:06	1.02E+00	112.49	0.00	0.00			
06	TH-230	TRG	01/08/16 08:36	1.00E+00	125.82	0.00	0.00			

Preliminary Data Report & Analytical Calculations
Work Order: 16-01047-ThISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	ThISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-230	LCS	02/02/16 08:48		A_Spec	Alpha_056	170	4.11 E+02	1.10 E-02	16.5
02	TH-230	MBL	02/02/16 08:48		A_Spec	Alpha_057	170	5.00 E+00	0.00 E+00	16.4
03	TH-230	DUP	02/02/16 08:48		A_Spec	Alpha_058	170	1.65 E+02	1.00 E-03	16.8
04	TH-230	DO	02/02/16 08:48		A_Spec	Alpha_059	170	1.96 E+02	2.00 E-03	17.2
05	TH-230	TRG	02/02/16 08:48		A_Spec	Alpha_060	170	1.80 E+02	3.00 E-03	15.2
06	TH-230	TRG	02/02/16 11:50		A_Spec	Alpha_003	170.02	1.12 E+03	5.00 E-03	16.1

Preliminary Data Report & Analytical Calculations
Work Order: 16-01047-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 16-01047
Client: AMO Environmental Decisions

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	5.34E+00	8.76E-01	1.05E-01	4.73E+00	112.94	OK		OK	
02	TH-232	MBL	BLANK	pCi/g	8.62E-02	7.99E-02	7.44E-02					OK	OK
03	TH-232	DUP	SED1	pCi/g	8.93E-01	2.81E-01	9.52E-02				OK	OK	
04	TH-232	DO	SED1	pCi/g	9.20E-01	2.67E-01	6.60E-02					OK	
05	TH-232	TRG	SED2	pCi/g	8.12E-01	2.58E-01	7.24E-02					OK	
06	TH-232	TRG	SED4	pCi/g	1.46E+00	3.56E-01	7.83E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-ThISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	ThISO	1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	TH-232	LCS	01/13/16 00:00	1.00E+00	105.29	0.00	0.00			
02	TH-232	MBL	01/13/16 00:00	1.00E+00	90.79	0.00	0.00			
03	TH-232	DUP	01/08/16 09:20	1.00E+00	98.70	0.00	0.00			
04	TH-232	DO	01/08/16 09:20	1.03E+00	108.60	0.00	0.00			
05	TH-232	TRG	01/08/16 09:06	1.02E+00	112.49	0.00	0.00			
06	TH-232	TRG	01/08/16 08:36	1.00E+00	125.82	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-ThISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	ThISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-232	LCS	02/02/16 08:48		A_Spec	Alpha_056	170	3.50 E+02	8.00 E-03	16.5
02	TH-232	MBL	02/02/16 08:48		A_Spec	Alpha_057	170	4.83 E+00	1.00 E-03	16.4
03	TH-232	DUP	02/02/16 08:48		A_Spec	Alpha_058	170	5.62 E+01	5.00 E-03	16.8
04	TH-232	DO	02/02/16 08:48		A_Spec	Alpha_059	170	6.67 E+01	2.00 E-03	17.2
05	TH-232	TRG	02/02/16 08:48		A_Spec	Alpha_060	170	5.37 E+01	2.00 E-03	15.2
06	TH-232	TRG	02/02/16 11:50		A_Spec	Alpha_003	170.02	1.12 E+02	0.00 E+00	16.1

Eberline Services
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-ThISO-1

Client: AMO Environmental Decisions

Eberline Services Work Order: 16-01047

Analysis Code: ThISO

Run: 1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
02	TH-227	MBL	BLANK	pCi/g	3.04E-02	5.17E-02	8.75E-02					OK	OK
03	TH-227	DUP	SED1	pCi/g	3.27E-02	5.58E-02	9.80E-02				NA	OK	
04	TH-227	DO	SED1	pCi/g	9.93E-02	8.03E-02	8.51E-02					OK	
05	TH-227	TRG	SED2	pCi/g	3.35E-02	5.44E-02	9.32E-02					OK	
06	TH-227	TRG	SED4	pCi/g	1.50E-01	9.47E-02	8.04E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 16-01047-ThISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	ThISO	1

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
02	TH-227	MBL	01/13/16 00:00	1.00E+00	90.79	0.00	0.00			
03	TH-227	DUP	01/08/16 09:20	1.00E+00	98.70	0.00	0.00			
04	TH-227	DO	01/08/16 09:20	1.03E+00	108.60	0.00	0.00			
05	TH-227	TRG	01/08/16 09:06	1.02E+00	112.49	0.00	0.00			
06	TH-227	TRG	01/08/16 08:36	1.00E+00	125.82	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-ThISO-1

Client	Eberline Services Work Order	Analysis Code	Run
AMO Environmental Decisions	16-01047	ThISO	1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
02	TH-227	MBL	02/02/16 08:48		A_Spec	Alpha_057	170	1.66 E+00	2.00 E-03	16.4
03	TH-227	DUP	02/02/16 08:48		A_Spec	Alpha_058	170	2.00 E+00	0.00 E+00	16.8
04	TH-227	DO	02/02/16 08:48		A_Spec	Alpha_059	170	7.00 E+00	0.00 E+00	17.2
05	TH-227	TRG	02/02/16 08:48		A_Spec	Alpha_060	170	2.15 E+00	5.00 E-03	15.2
06	TH-227	TRG	02/02/16 11:50		A_Spec	Alpha_003	170.02	1.11 E+01	5.00 E-03	16.1

Count Room Report
Client: AMO Environmental Decisio

16-01047-ThISO-1 (pCi/g) in SO
Tracer ID: Th-18a

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	01/13/16 00:00	1.0000	0.4792	10.7628		0.00		
02	MBL	BLANK	01/13/16 00:00	1.0000	0.2395	5.3792		0.00		
03	DUP	SED1	01/08/16 09:20	1.0047	0.2395	5.3792		0.00		
04	DO	SED1	01/08/16 09:20	1.0280	0.2393	5.3747		0.00		
05	TRG	SED2	01/08/16 09:06	1.0221	0.2391	5.3702		0.00		
06	TRG	SED4	01/08/16 08:36	0.9999	0.2384	5.3545		0.00		

LC
0.0048
60
#3

00130

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 1/26/2016 10:46 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
16-01047	1	ThISO	1/26/2016 10:41	JWOLFE	JW	

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
Th-228	Th-8b	103.560	1/26/2016	0.100	0.1014				4.73	0.170	0.00	0.000	0.00	0.000	0.00	0.000
Th-230	Th-1b	23.520	1/26/2016	0.500	0.5023				5.32	0.144	0.00	0.000	0.00	0.000	0.00	0.000
Th-232	Th-8b	103.560	1/26/2016	0.100	0.1014				4.73	0.170	0.00	0.000	0.00	0.000	0.00	0.000
Tc-99 MS	Tc-2a	22043.636	7/5/2014	0.1												

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	Th-229	Th-18a	22.460	1/26/2016	0.4792	0.2200
02	Th-229	Th-18a	22.460	1/26/2016	0.2395	0.2200
03	Th-229	Th-18a	22.460	1/26/2016	0.2395	0.2200
04	Th-229	Th-18a	22.460	1/26/2016	0.2393	0.2200
05	Th-229	Th-18a	22.460	1/26/2016	0.2391	0.2200
06	Th-229	Th-18a	22.460	1/26/2016	0.2384	0.2200

Balance Printer Tapes

Tracer

0.4792 g
0.2395 g
0.2395 g
0.2393 g
0.2391 g
0.2384 g

LCS

0.5023 g
0.1014 g

Matrix Spike

16-01131

Version 2.0 08/99

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
16-01047	1	ThISO	grams	2/4/2016	JWOLFE

Lab Fraction	AMO Environmental Decisions Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	SED1	DUP					1.0047E+00	1.0047E+00				
04	SED1	DO					1.0280E+00	1.0280E+00				
05	SED2	TRG					1.0221E+00	1.0221E+00				
06	SED4	TRG					9.9990E-01	9.9990E-01				

Comments	

Technician: JWOLFE Date: 1/20/16

00132

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

Rough Sample Preparation Log Book

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
16-01047	2/4/2016	1/13/2016	1/14/2016	1/15/2016	KSALLINGS

Eberline	AMO Environmental Decisions	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special
Fraction	Client ID	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	Info
04	SED1	14.1200	711.5500	556.9300	697.4300	542.8100	22.17%	77.83%	0.0000	0.0000	
05	SED2	28.3000	1126.0800	532.0100	1097.7800	503.7100	54.12%	45.88%	0.0000	0.0000	
06	SED4	14.1400	1125.7400	808.3200	1111.6000	794.1800	28.56%	71.44%	0.0000	0.0000	

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

Technician: Kerry Sallings Date: **Analysis: Rough Prep Logbook**

Analysis: ThISO Page No. 9505

00133

KB 2/3/16

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-TH
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_056
Chamber Serial Number: 10006124B
Detector Serial Number: 56
Env. Background: System Bkgd 141523
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 2/2/2016 6:06:07 AM
Acquisition Date/Time: 2/2/2016 8:48:41 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.479 mL
Effective Efficiency: 0.1734 +/- 0.0111
Counting Efficiency: 0.1647 +/- 0.0029 on 12/11/2015 11:36:29 AM
Chem. Recovery Factor: 1.0529 +/- 0.0702

Control Certificate Name: NatTh_Th-8
Chem. Recov. of Control: TH-232 1.129411 +/- 0.100419
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		5.867	8.83	66.70	0.17	0.00E+000	3.0
TH-228		5.345	334.94	10.77	3.06	0.00E+000	41.4
TH-229	T	4.859	317.30	11.04	1.70	0.00E+000	5.3
TH-230		4.604	411.13	9.69	1.87	0.00E+000	5.9
TH-232		3.941	349.64	10.51	1.36	0.00E+000	14.1

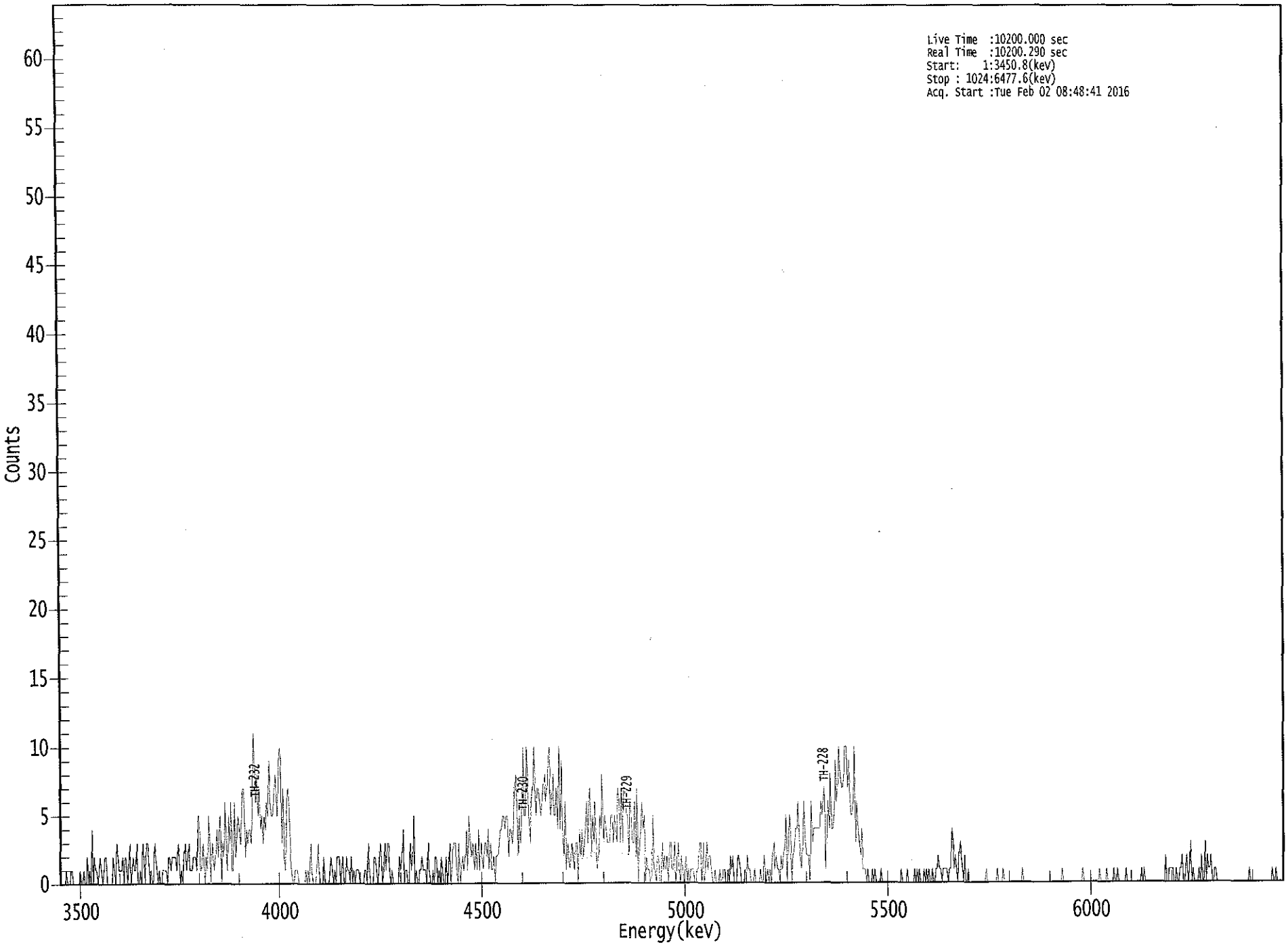
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.998	5850.00*	1.38E-001 +/- 9.39E-002	6.54E-002 +/- 8.24E-003
TH-228	0.985	5400.00*	5.12E+000 +/- 8.49E-001	1.37E-001 +/- 1.72E-002
TH-229	0.999	4872.00*	4.87E+000 +/- 6.14E-001	1.13E-001 +/- 1.42E-002
TH-230	0.976	4672.00*	6.29E+000 +/- 1.00E+000	1.16E-001 +/- 1.46E-002
TH-232	0.984	3997.00*	5.34E+000 +/- 8.76E-001	1.05E-001 +/- 1.32E-002

AG
2/3/16

0000140723.CNF



ROI Type: 1

ROI Type: 3

: 00135

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

Sample Title: 01

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	2	3	4	4	5	5	4	5

Sample Title: 01

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

801:	0	0	0	0	0	1	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	1	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	1
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	1	0	0
873:	0	0	0	1	0	0	0	0
881:	0	1	0	0	1	0	0	0
889:	0	0	0	1	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	1	0	1	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	2	0	0	1
929:	1	1	1	0	0	1	0	0
937:	1	1	2	0	0	1	2	0
945:	1	3	0	1	0	0	0	0
953:	1	0	2	0	0	3	0	2
961:	1	1	2	0	0	1	1	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	1	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	1	0	0
1017:	1	0	0	0	0	0	0	0

Apex-Alpha™

KB 2/2/16

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-TH
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_057
Chamber Serial Number: 01017326A
Detector Serial Number: 57
Env. Background: System Bkgd 141524
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 2/2/2016 6:06:07 AM
Acquisition Date/Time: 2/2/2016 8:48:33 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.240 mL
Effective Efficiency: 0.1485 +/- 0.0136
Counting Efficiency: 0.1636 +/- 0.0029 on 12/11/2015 11:36:28 AM
Chem. Recovery Factor: 0.9079 +/- 0.0844

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		5.903	1.66	169.38	0.34	0.00E+000	3.0
TH-228		5.302	4.32	102.62	0.68	0.00E+000	3.0
TH-229	T	4.883	135.83	16.83	0.17	0.00E+000	3.6
TH-230		4.626	5.00	96.02	0.00	0.00E+000	5.9
TH-232		3.997	4.83	91.00	0.17	0.00E+000	3.0

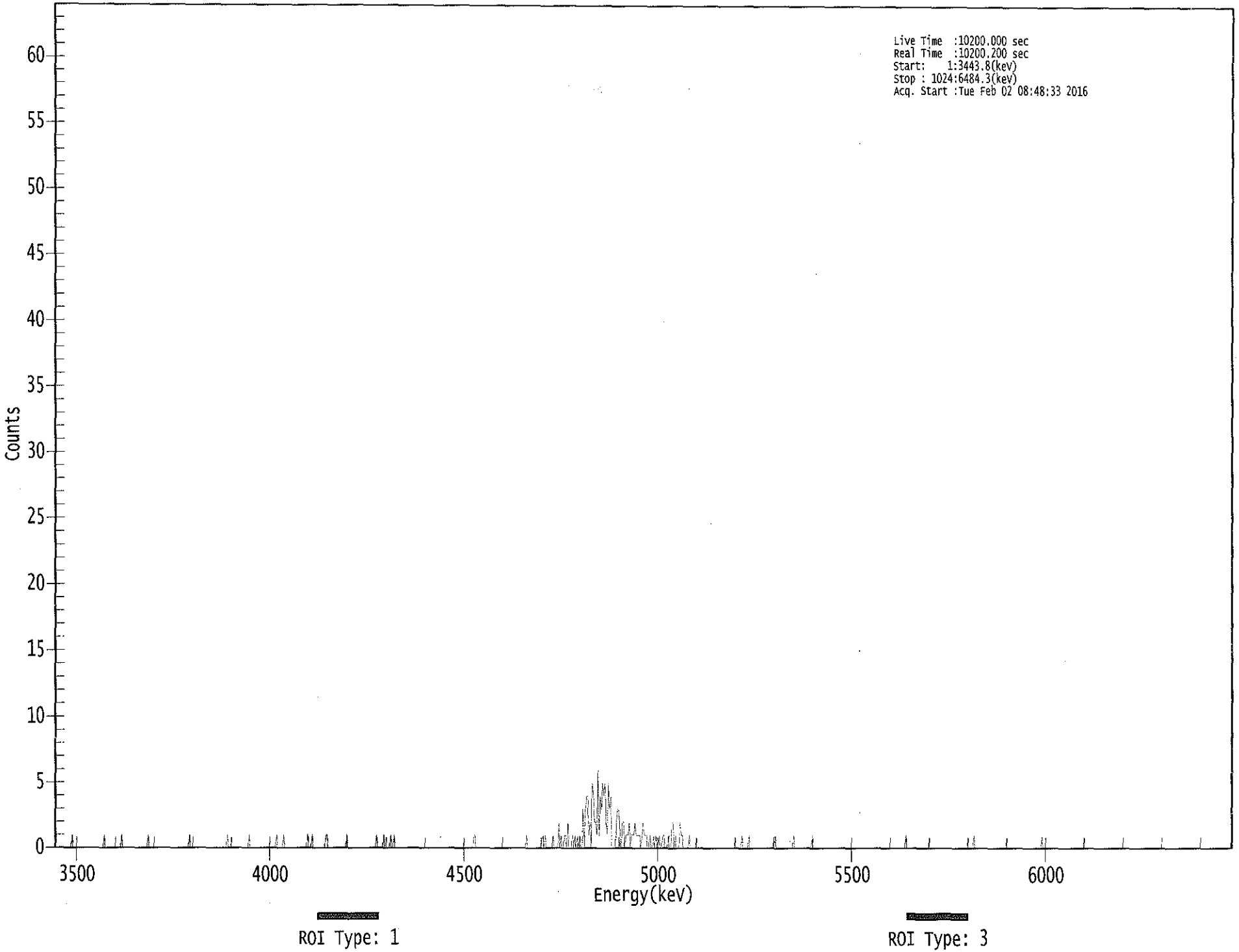
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.985	5850.00*	3.04E-002 +/- 5.17E-002	8.75E-002 +/- 1.57E-002
TH-228	0.951	5400.00*	7.71E-002 +/- 8.03E-002	1.01E-001 +/- 1.80E-002
TH-229	0.999	4872.00*	2.43E+000 +/- 4.36E-001	7.48E-002 +/- 1.34E-002
TH-230	0.989	4672.00*	8.94E-002 +/- 8.73E-002	1.07E-001 +/- 1.92E-002
TH-232	1.000	3997.00*	8.62E-002 +/- 7.99E-002	7.44E-002 +/- 1.33E-002

KG 2/3/16

0000140724.CNF



00140

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

Sample Title: 02

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	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	1	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	1	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	1	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	1	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	1	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	1	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	1	0	0	0	0	0	1
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	1	0	0	0
225:	1	0	0	0	0	0	0	0
233:	0	0	0	0	1	1	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	1	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:	1	0	0	0	0	0	1	0
289:	0	0	0	0	1	0	0	1
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	1	1	0	0

369:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	1	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	1	0	1	0	0	0	0	0
433:	0	1	0	0	0	0	2	0
441:	1	0	0	1	1	0	2	0
449:	0	0	1	0	1	0	1	0
457:	1	0	0	3	0	3	4	4
465:	1	2	0	5	4	2	2	1
473:	6	1	4	3	5	4	5	2
481:	1	5	3	4	0	0	0	0
489:	2	3	3	1	0	2	2	0
497:	1	1	1	2	0	1	1	1
505:	2	1	1	1	1	0	1	2
513:	1	1	1	0	0	1	0	0
521:	1	0	1	0	0	1	0	0
529:	1	1	0	0	0	1	0	0
537:	2	2	0	1	0	0	0	2
545:	1	1	0	0	0	0	0	1
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	1	0	0
601:	0	0	0	1	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	1	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	1	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	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	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	1	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	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	1	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	1	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

KP 2/3/16

Apex-Alpha™

Sample Description: SED1-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-TH
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_058
Chamber Serial Number: 01017326B
Detector Serial Number: 58
Env. Background: System Bkgd 141525
Reagent Blank: <not performed>

Sample Size: 1.005E+000 +/- 0.000E+000 gram
Sample Date/Time: 1/8/2016 6:06:07 AM
Acquisition Date/Time: 2/2/2016 8:48:35 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.240 mL
Effective Efficiency: 0.1658 +/- 0.0144
Counting Efficiency: 0.1680 +/- 0.0030 on 12/11/2015 11:36:26 AM
Chem. Recovery Factor: 0.9870 +/- 0.0876

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		5.981	2.00	169.74	0.00	0.00E+000	3.0
TH-228		5.374	54.83	26.52	0.17	0.00E+000	3.5
TH-229	T	4.887	151.66	15.94	0.34	0.00E+000	5.2
TH-230		4.644	164.83	15.28	0.17	0.00E+000	7.2
TH-232		3.972	56.15	26.39	0.85	0.00E+000	6.0

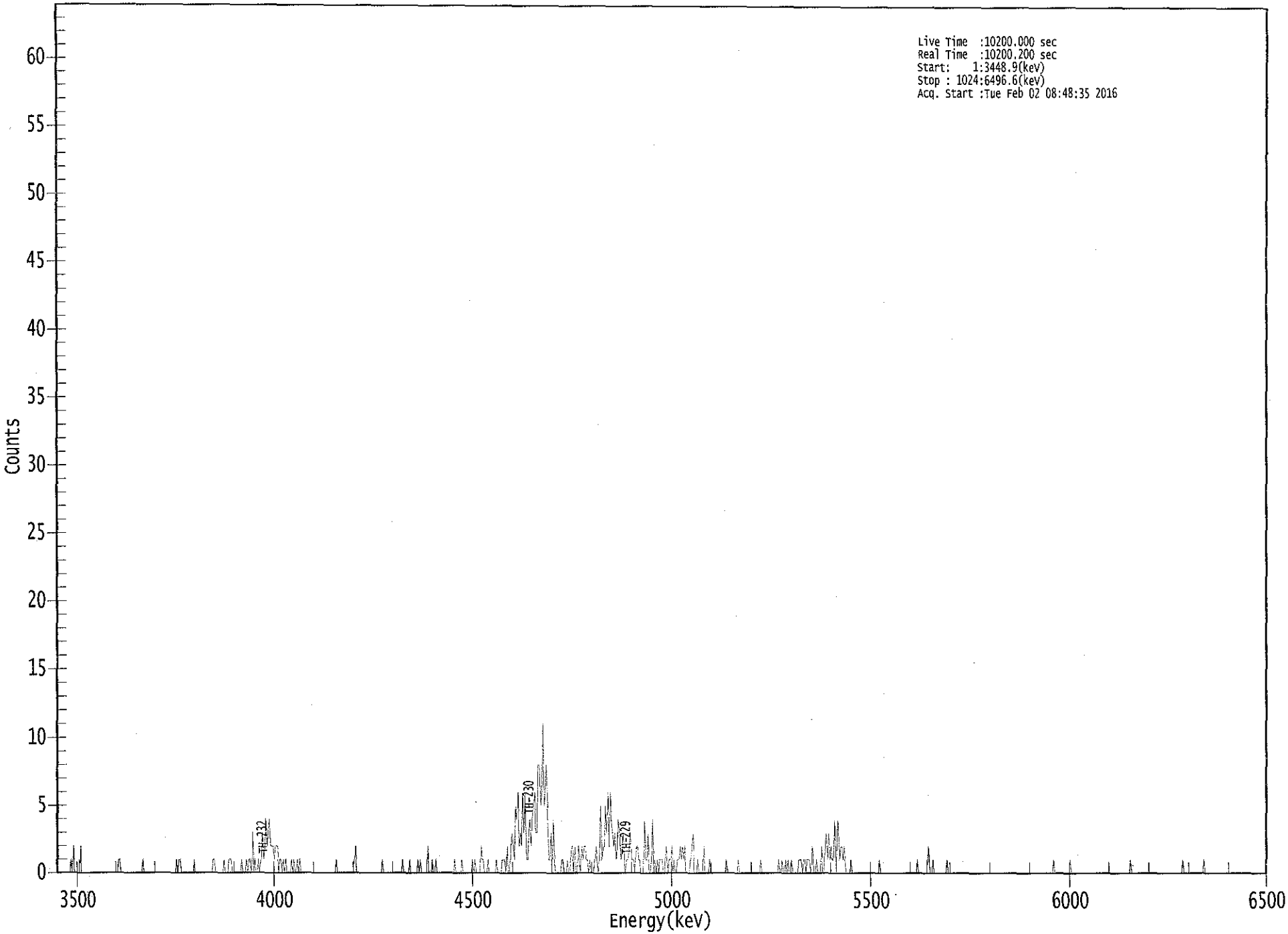
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.914	5850.00*	3.27E-002 +/- 5.58E-002	9.80E-002 +/- 1.67E-002
TH-228	0.997	5400.00*	8.94E-001 +/- 2.82E-001	6.81E-002 +/- 1.16E-002
TH-229	0.999	4872.00*	2.42E+000 +/- 4.13E-001	7.64E-002 +/- 1.30E-002
TH-230	0.996	4672.00*	2.63E+000 +/- 6.01E-001	6.65E-002 +/- 1.13E-002
TH-232	0.997	3997.00*	8.93E-001 +/- 2.81E-001	9.52E-002 +/- 1.62E-002

AG 2/3/16

0000140720.CNF



ROI Type: 1

ROI Type: 3

Sh T00 :

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

Sample Title: 03

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	0	0	0	0	1	0	0

Sample Title: 03

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

801:	0	0	0	0	0	0	0	0

Sample Title: 03

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	1	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	1	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	1	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:	1	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	1	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

ICB 2/2/16

Sample Description: SED1
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-TH
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_059
Chamber Serial Number: 10006125A
Detector Serial Number: 59
Env. Background: System Bkgd 141526
Reagent Blank: <not performed>

Sample Size: 1.028E+000 +/- 0.000E+000 gram
Sample Date/Time: 1/8/2016 6:06:07 AM
Acquisition Date/Time: 2/2/2016 8:48:37 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.239 mL
Effective Efficiency: 0.1868 +/- 0.0154
Counting Efficiency: 0.1720 +/- 0.0030 on 12/11/2015 11:36:25 AM
Chem. Recovery Factor: 1.0860 +/- 0.0918

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		5.859	7.00	79.20	0.00	0.00E+000	3.0
TH-228		5.386	47.64	28.87	1.36	0.00E+000	5.0
TH-229	T	4.890	170.66	15.02	0.34	0.00E+000	8.9
TH-230		4.647	195.66	14.03	0.34	0.00E+000	24.5
TH-232		3.960	66.66	24.08	0.34	0.00E+000	3.5

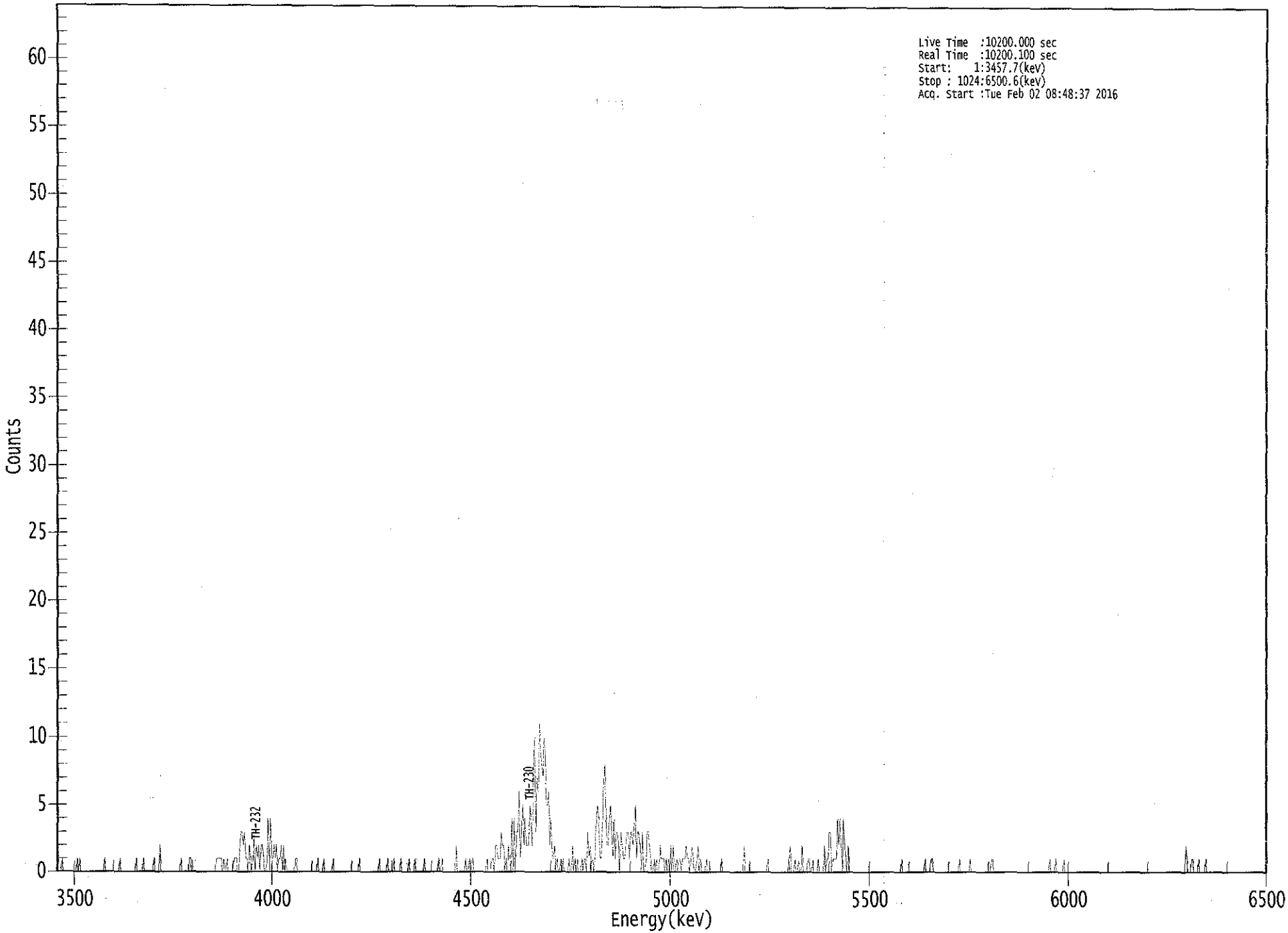
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	1.000	5850.00*	9.93E-002 +/- 8.03E-002	8.51E-002 +/- 1.38E-002
TH-228	0.999	5400.00*	6.74E-001 +/- 2.23E-001	9.71E-002 +/- 1.57E-002
TH-229	0.998	4872.00*	2.37E+000 +/- 3.83E-001	6.63E-002 +/- 1.07E-002
TH-230	0.997	4672.00*	2.70E+000 +/- 5.80E-001	6.61E-002 +/- 1.07E-002
TH-232	0.993	3997.00*	9.20E-001 +/- 2.67E-001	6.60E-002 +/- 1.07E-002

NG 2/3/16

0000140725.CNF



00150

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

Sample Title: 04

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	1	1	0	2	2	1	1	1

Sample Title: 04

Channel								
377:	3	2	2	0	1	0	2	1
385:	1	4	0	4	0	3	3	6
393:	1	3	5	2	4	2	2	2
401:	5	4	2	8	10	3	7	6
409:	11	9	8	7	10	9	5	5
417:	6	2	4	1	1	2	0	1
425:	0	0	1	0	1	0	0	0
433:	0	1	0	0	2	0	1	0
441:	1	0	0	0	1	0	1	1
449:	0	3	1	2	0	1	0	1
457:	4	5	4	1	1	3	6	8
465:	5	2	2	4	5	3	1	4
473:	1	3	3	2	0	3	2	1
481:	1	2	3	3	1	3	3	2
489:	3	5	1	3	3	2	0	3
497:	0	0	1	3	3	2	1	0
505:	0	1	0	1	0	0	2	1
513:	1	1	0	1	0	1	0	2
521:	0	2	0	0	1	0	1	1
529:	0	1	1	1	2	1	1	0
537:	1	2	1	0	0	1	2	0
545:	1	0	0	0	0	1	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	1	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	2	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	1	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	1	2	0	0	0
625:	1	0	0	1	0	0	2	0
633:	0	0	0	1	1	0	0	1
641:	0	0	0	0	1	0	0	0
649:	0	2	0	1	1	3	3	0
657:	1	1	1	1	4	2	4	2
665:	0	4	2	1	0	2	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	1	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	1	0
737:	0	0	0	1	1	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	1	0	0	0	0
769:	0	0	0	0	1	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	1	1
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	1
841:	0	0	0	0	1	0	0	0
849:	0	0	0	1	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	2	1	0	0	0	1
961:	1	0	0	0	0	1	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

KB 2/2/16

Apex-Alpha™

Sample Description: SED2
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-TH
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_060
Chamber Serial Number: 10006125B
Detector Serial Number: 60
Env. Background: System Bkgd 141527
Reagent Blank: <not performed>

Sample Size: 1.022E+000 +/- 0.000E+000 gram
Sample Date/Time: 1/8/2016 6:06:07 AM
Acquisition Date/Time: 2/2/2016 8:48:38 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.239 mL
Effective Efficiency: 0.1712 +/- 0.0147
Counting Efficiency: 0.1522 +/- 0.0027 on 12/11/2015 11:36:23 AM
Chem. Recovery Factor: 1.1249 +/- 0.0988

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		5.830	2.15	161.66	0.85	0.00E+000	3.0
TH-228		5.383	41.64	30.95	1.36	0.00E+000	5.9
TH-229	T	4.897	156.32	15.72	0.68	0.00E+000	5.2
TH-230		4.642	180.49	14.61	0.51	0.00E+000	21.6
TH-232		3.974	53.66	26.86	0.34	0.00E+000	3.8

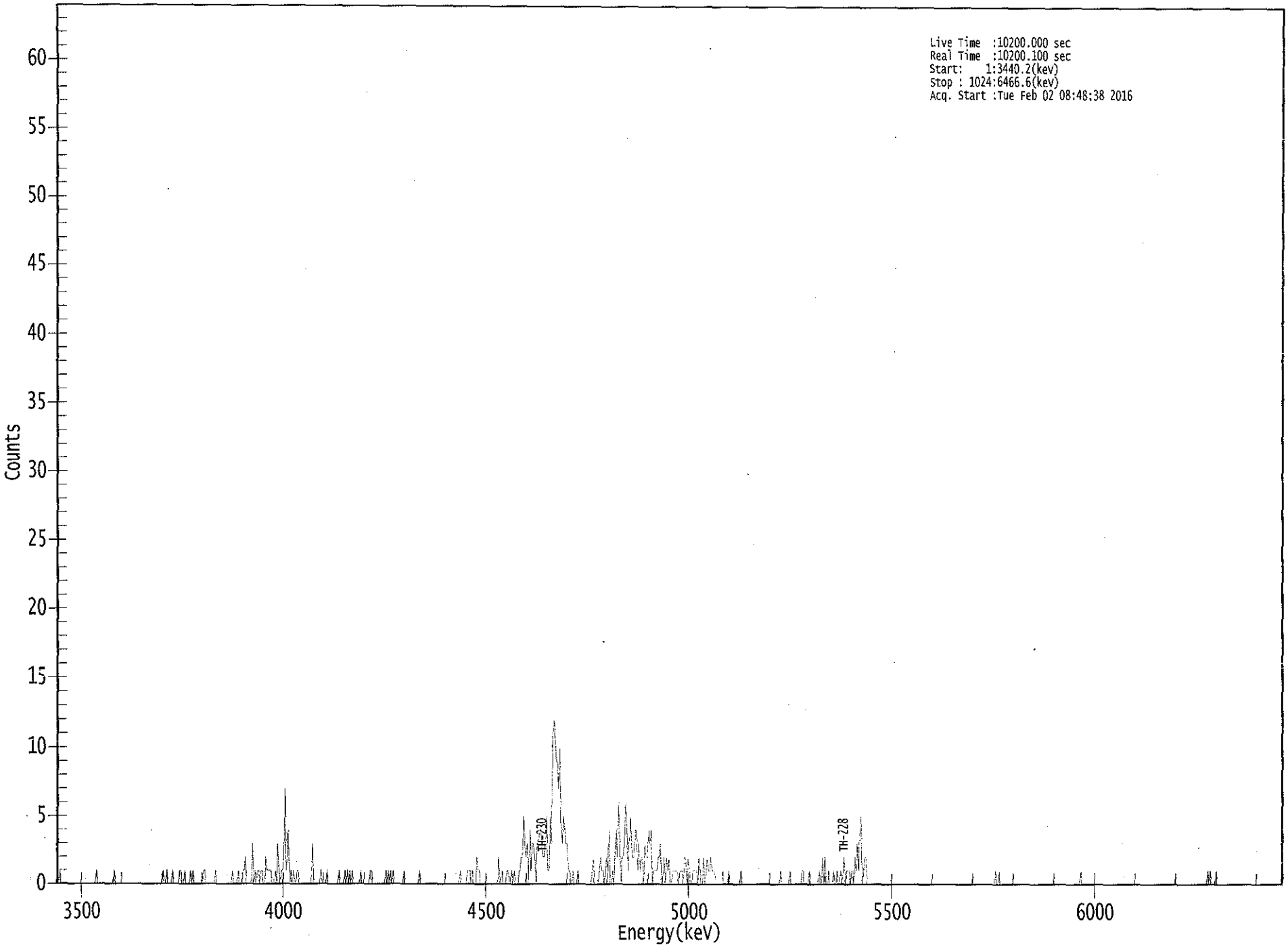
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.998	5850.00*	3.35E-002 +/- 5.44E-002	9.32E-002 +/- 1.57E-002
TH-228	0.998	5400.00*	6.47E-001 +/- 2.28E-001	1.06E-001 +/- 1.79E-002
TH-229	0.997	4872.00*	2.38E+000 +/- 4.01E-001	8.58E-002 +/- 1.45E-002
TH-230	0.995	4672.00*	2.74E+000 +/- 6.11E-001	7.96E-002 +/- 1.34E-002
TH-232	0.997	3997.00*	8.12E-001 +/- 2.58E-001	7.24E-002 +/- 1.22E-002

AG 2/3/16

0000140713.CNF



ROI Type: 1

ROI Type: 3

00155

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

Sample Title: 05

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	2	0	0	1	0	0	0

Sample Title: 05

Channel								
377:	1	1	0	0	1	0	1	0
385:	0	0	1	1	2	2	5	3
393:	2	3	0	4	1	3	3	2
401:	0	3	3	4	4	3	2	2
409:	3	5	1	1	5	3	11	12
417:	11	9	9	7	10	4	3	5
425:	4	3	3	1	1	0	0	1
433:	0	0	0	1	0	0	0	0
441:	0	0	0	0	0	0	0	1
449:	2	0	0	0	0	1	2	1
457:	1	0	1	2	1	4	0	0
465:	1	0	2	4	2	6	3	0
473:	2	2	3	6	4	1	3	5
481:	3	2	2	4	4	1	3	1
489:	2	2	0	3	2	2	4	3
497:	4	0	1	1	1	1	2	2
505:	3	0	0	2	0	2	1	2
513:	0	0	1	1	1	1	1	0
521:	1	1	1	0	2	2	0	2
529:	1	0	0	1	1	1	1	0
537:	2	1	0	0	2	0	1	2
545:	1	1	2	1	1	1	0	0
553:	0	0	0	0	1	0	0	0
561:	0	1	0	0	0	0	0	0
569:	0	0	0	1	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	1	0	0	0
609:	0	0	0	0	1	0	0	0
617:	0	0	0	0	0	0	1	1
625:	0	0	0	0	1	0	0	0
633:	0	0	0	0	1	0	0	2
641:	0	2	0	0	1	0	0	0
649:	1	0	0	1	0	0	1	0
657:	1	2	0	1	1	1	0	1
665:	1	0	2	1	3	1	4	5
673:	0	1	2	2	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	1
785:	0	0	1	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 05

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	1	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	1	0	1	0	0	0	0	1
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KB 2/2/16

Sample Description: SED4
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001407
Batch Identification: 1601047A-TH
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_003
Chamber Serial Number:
Detector Serial Number: 3
Env. Background: System Bkgd 141493
Reagent Blank: <not performed>

Sample Size: 9.999E-001 +/- 0.000E+000 gram
Sample Date/Time: 1/8/2016 6:06:07 AM
Acquisition Date/Time: 2/2/2016 11:50:42 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.238 mL
Effective Efficiency: 0.2028 +/- 0.0162
Counting Efficiency: 0.1612 +/- 0.0029 on 12/11/2015 2:46:09 PM
Chem. Recovery Factor: 1.2582 +/- 0.1030

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		5.841	11.15	61.26	0.85	0.00E+000	4.5
TH-228		5.375	67.64	24.11	1.36	0.00E+000	6.3
TH-229	T	4.888	184.66	14.44	0.34	0.00E+000	8.6
TH-230		4.645	1123.15	5.85	0.85	0.00E+000	39.9
TH-232		3.958	112.00	18.60	0.00	0.00E+000	11.9

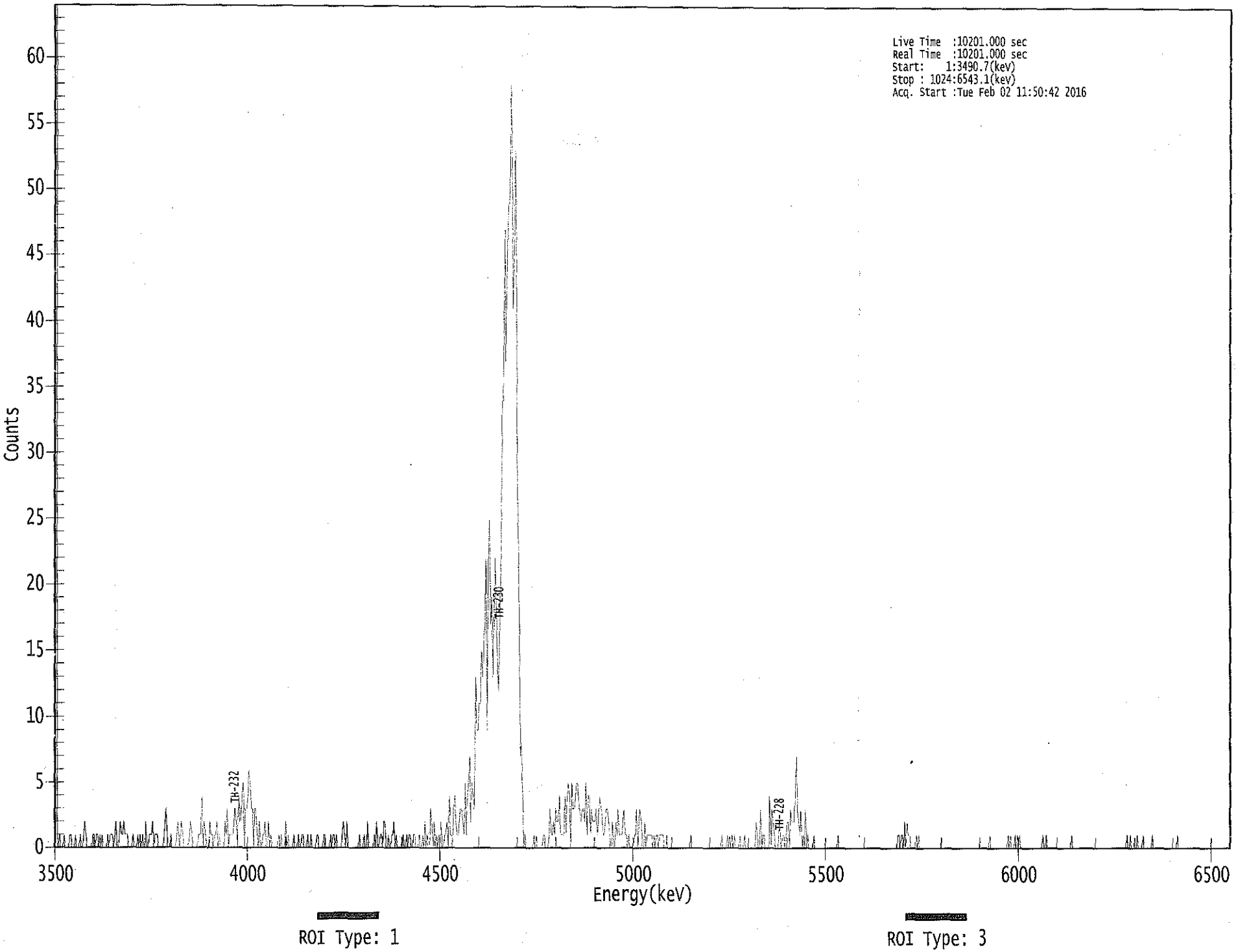
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	1.000	5850.00*	1.50E-001 +/- 9.47E-002	8.04E-002 +/- 1.26E-002
TH-228	0.997	5400.00*	9.07E-001 +/- 2.61E-001	9.19E-002 +/- 1.44E-002
TH-229	0.999	4872.00*	2.42E+000 +/- 3.80E-001	6.28E-002 +/- 9.83E-003
TH-230	0.996	4672.00*	1.47E+001 +/- 2.46E+000	7.83E-002 +/- 1.23E-002
TH-232	0.992	3997.00*	1.46E+000 +/- 3.56E-001	7.83E-002 +/- 1.23E-002

AG 2/3/16

0000140735.CNF



: 00169

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

Sample Title: 06

Elapsed Live time: 10201
Elapsed Real Time: 10201

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

369:	9	11	11	15	13	15	18	22

Sample Title: 06

Channel								
377:	9	22	25	17	19	13	18	22
385:	18	14	12	17	21	34	34	47
393:	37	45	48	50	58	51	41	45
401:	53	44	29	23	17	7	8	4
409:	0	1	0	0	0	0	0	0
417:	0	1	0	1	0	0	0	0
425:	0	1	1	0	0	0	1	3
433:	1	1	2	1	3	2	2	4
441:	1	1	1	1	4	1	4	5
449:	4	0	5	3	3	4	5	5
457:	3	3	2	3	3	2	5	1
465:	4	4	1	3	2	2	2	3
473:	1	2	4	3	3	1	1	2
481:	3	3	2	0	0	2	0	0
489:	2	1	3	1	1	1	2	3
497:	1	1	0	1	0	0	0	0
505:	1	1	3	0	2	3	2	0
513:	0	2	0	1	1	1	1	1
521:	0	1	0	1	1	0	1	1
529:	1	1	0	0	1	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	1	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	1	0	0	0
585:	0	1	0	1	0	1	0	1
593:	0	0	0	0	1	0	0	0
601:	1	0	0	0	0	0	0	0
609:	0	0	2	1	0	0	3	0
617:	1	1	0	0	0	0	4	0
625:	3	2	1	0	0	0	2	1
633:	0	1	1	0	1	2	2	0
641:	3	2	2	2	4	7	3	2
649:	1	3	0	1	0	3	0	1
657:	0	0	0	0	1	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	1	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	1	1	0
737:	1	1	0	2	0	2	1	1
745:	0	0	0	0	0	1	0	1
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 06

Channel								
809:	0	0	0	0	0	1	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	1	0	1
833:	0	0	0	1	0	1	0	1
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	1	0	0	1	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	1	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	1	0	0	1
937:	0	0	0	0	0	1	0	0
945:	0	0	1	0	0	0	0	0
953:	0	0	1	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	1	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

2/2/2016 6:17:52 AM

Apex-Alpha™

QA SUMMARY REPORT
Review Of QA Results - Pulser Check

Date : 2/2/2016
Time : 6:17:52 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Passed	2/2/2016 5:23:16 AM
Alpha_004	21f	ALL	Passed	2/2/2016 5:23:17 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	2/2/2016 5:23:18 AM
Alpha_011	21f	ALL	Passed	2/2/2016 5:23:19 AM
Alpha_012	21f	ALL	Passed	2/2/2016 5:23:20 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Passed	2/2/2016 5:23:20 AM
Alpha_015	21f	ALL	Passed	2/2/2016 5:23:21 AM
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:23 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:24 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:25 AM
Alpha_036	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:27 AM
Alpha_037	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:28 AM
Alpha_038	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:30 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:32 AM
Alpha_040	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:34 AM
Alpha_041	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:35 AM
Alpha_042	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:37 AM
Alpha_043	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:39 AM
Alpha_044	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:41 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:42 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:44 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:45 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:47 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:49 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:51 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:53 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:55 AM
Alpha_053	Alpha Analyst100DC	Peak FWHM	Action	2/2/2016 5:23:57 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:23:59 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:01 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:03 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:05 AM
Alpha_058	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:07 AM

2/2/2016 6:17:52 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:09 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	2/2/2016 5:24:11 AM

APPROVED BY: _____

APPROVAL DATE: 2/2/16

****
***** L I B R A R Y L I S T I N G R E P O R T *****
****

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)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

16-01047
Gamma
Run 1

Work Order	16-01047
Analysis Code	Gamma
Run	1
Date Received	1/12/2016
Lab Deadline	2/4/2016
Client	AMO Environmental Decisions
Project	ENG-EOR-AA12
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		01/13/16 00:00	1.0000E+00
02	MBL	BLANK		01/13/16 00:00	1.0000E+00
03	DUP	SED1	36	01/08/16 09:20	4.7550E+02
04	DO	SED1	36	01/08/16 09:20	4.7550E+02
05	TRG	SED2	32	01/08/16 09:06	4.3597E+02
06	TRG	SED4	34	01/08/16 08:36	4.9815E+02

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

16-01047
Gamma
Run 1

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

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

00159

16-01047
Gamma
Run 1

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS								
02	MBL								
03	DUP								
04	DO	01/14/16 07:15	KSALLINGS						
05	TRG	01/14/16 07:15	KSALLINGS						
06	TRG	01/14/16 07:15	KSALLINGS						

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

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-Gamma-1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LSC Known	LCS %R	LCS Flag	RPD Flag	Sample Date	Sample Aliquot	Counting Date/Time	Identified
01	CO-60	LCS	LCS	pCi/g	1.46E+02	1.01E+01	1.39E+00	1.37E+02	106.88	OK		01/13/16 00:00	1.00E+00	02/03/16 06:18	YES
01	CS-137	LCS	LCS	pCi/g	8.86E+01	8.52E+00	2.07E+00	8.69E+01	101.93	OK		01/13/16 00:00	1.00E+00	02/03/16 06:18	YES
02	AC-228	MBL	BLANK	pCi/g	6.95E-02	5.82E-02	1.34E-01					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	BI-214	MBL	BLANK	pCi/g	7.94E-02	4.74E-02	9.57E-02					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	K-40	MBL	BLANK	pCi/g	-1.07E-01	3.02E-01	4.10E-01					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	PA-231	MBL	BLANK	pCi/g	3.48E-01	6.52E-01	1.09E+00					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	PB-210	MBL	BLANK	pCi/g	9.66E-01	6.79E-01	1.01E+00					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	PB-212	MBL	BLANK	pCi/g	3.51E-02	3.67E-02	6.15E-02					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	PB-214	MBL	BLANK	pCi/g	3.97E-02	4.88E-02	8.37E-02					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	RA-226	MBL	BLANK	pCi/g	7.94E-02	4.74E-02	9.57E-02					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	RA-228	MBL	BLANK	pCi/g	6.95E-02	5.82E-02	1.34E-01					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	TH-234	MBL	BLANK	pCi/g	5.90E-01	5.44E-01	7.69E-01					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
02	TL-208	MBL	BLANK	pCi/g	4.29E-02	5.80E-02	1.07E-01					01/13/16 00:00	1.00E+00	02/03/16 06:18	NO
03	AC-228	DUP	SED1	pCi/g	1.00E+00	1.73E-01	6.71E-01					01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	BI-214	DUP	SED1	pCi/g	1.05E+00	1.58E-01	2.07E-01				OK	01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	K-40	DUP	SED1	pCi/g	1.37E+01	1.75E+00	1.12E+00				OK	01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	PA-231	DUP	SED1	pCi/g	2.89E-01	6.84E-01	2.23E+00					01/08/16 09:20	4.76E+02	02/04/16 06:07	NO
03	PB-210	DUP	SED1	pCi/g	2.25E+00	1.57E+00	2.55E+00					01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	PB-212	DUP	SED1	pCi/g	9.37E-01	1.37E-01	2.38E-01					01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	PB-214	DUP	SED1	pCi/g	1.22E+00	1.44E-01	1.82E-01				OK	01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	RA-226	DUP	SED1	pCi/g	1.05E+00	1.58E-01	2.07E-01					01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	RA-228	DUP	SED1	pCi/g	1.00E+00	1.73E-01	6.71E-01					01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	TH-234	DUP	SED1	pCi/g	2.38E+00	1.75E+00	2.90E+00					01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
03	TL-208	DUP	SED1	pCi/g	8.24E-01	1.84E-01	4.46E-01					01/08/16 09:20	4.76E+02	02/04/16 06:07	YES
04	AC-228	DO	SED1	pCi/g	8.06E-01	2.09E-01	4.02E-01					01/08/16 09:20	4.76E+02	02/04/16 07:10	YES
04	BI-214	DO	SED1	pCi/g	1.04E+00	1.77E-01	2.28E-01					01/08/16 09:20	4.76E+02	02/04/16 07:10	YES
04	K-40	DO	SED1	pCi/g	1.37E+01	1.81E+00	1.08E+00					01/08/16 09:20	4.76E+02	02/04/16 07:10	YES
04	PA-231	DO	SED1	pCi/g	-2.51E-01	1.33E+00	2.14E+00					01/08/16 09:20	4.76E+02	02/04/16 07:10	NO
04	PB-210	DO	SED1	pCi/g	1.94E+00	1.56E+00	2.56E+00					01/08/16 09:20	4.76E+02	02/04/16 07:10	YES
04	PB-212	DO	SED1	pCi/g	8.53E-01	1.26E-01	2.26E-01					01/08/16 09:20	4.76E+02	02/04/16 07:10	YES
04	PB-214	DO	SED1	pCi/g	1.24E+00	1.67E-01	2.23E-01					01/08/16 09:20	4.76E+02	02/04/16 07:10	YES
04	RA-226	DO	SED1	pCi/g	1.04E+00	1.77E-01	2.28E-01					01/08/16 09:20	4.76E+02	02/04/16 07:10	YES
04	RA-228	DO	SED1	pCi/g	8.06E-01	2.09E-01	4.02E-01					01/08/16 09:20	4.76E+02	02/04/16 07:10	YES
04	TH-234	DO	SED1	pCi/g	2.40E+00	1.34E+00	1.88E+00					01/08/16 09:20	4.76E+02	02/04/16 07:10	NO
04	TL-208	DO	SED1	pCi/g	9.14E-01	2.03E-01	3.83E-01					01/08/16 09:20	4.76E+02	02/04/16 07:10	NO
05	AC-228	TRG	SED2	pCi/g	7.81E-01	2.03E-01	3.93E-01					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
05	BI-214	TRG	SED2	pCi/g	1.05E+00	1.67E-01	2.06E-01					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
05	K-40	TRG	SED2	pCi/g	1.17E+01	1.83E+00	1.14E+00					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES

Preliminary Data Report & Analytical Calculations

Work Order: 16-01047-Gamma-1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LSC Known	LCS %R	LCS Flag	RPD Flag	Sample Date	Sample Aliquot	Counting Date/Time	Identified
05	PA-231	TRG	SED2	pCi/g	-2.10E-01	1.93E+00	2.48E+00					01/08/16 09:06	4.36E+02	02/04/16 06:07	NO
05	PB-210	TRG	SED2	pCi/g	4.69E+00	2.24E+00	3.50E+00					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
05	PB-212	TRG	SED2	pCi/g	7.37E-01	1.27E-01	2.38E-01					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
05	PB-214	TRG	SED2	pCi/g	1.01E+00	1.51E-01	2.39E-01					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
05	RA-226	TRG	SED2	pCi/g	1.05E+00	1.67E-01	2.06E-01					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
05	RA-228	TRG	SED2	pCi/g	7.81E-01	2.03E-01	3.93E-01					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
05	TH-234	TRG	SED2	pCi/g	1.73E+00	1.67E+00	2.78E+00					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
05	TL-208	TRG	SED2	pCi/g	6.54E-01	1.54E-01	1.95E-01					01/08/16 09:06	4.36E+02	02/04/16 06:07	YES
06	AC-228	TRG	SED4	pCi/g	7.94E-01	2.16E-01	3.68E-01					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES
06	BI-214	TRG	SED4	pCi/g	1.61E+00	2.02E-01	2.33E-01					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES
06	K-40	TRG	SED4	pCi/g	1.76E+01	2.34E+00	9.46E-01					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES
06	PA-231	TRG	SED4	pCi/g	-2.73E+00	2.28E+00	2.55E+00					01/08/16 08:36	4.98E+02	02/04/16 07:10	NO
06	PB-210	TRG	SED4	pCi/g	4.68E+00	2.30E+00	3.64E+00					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES
06	PB-212	TRG	SED4	pCi/g	9.00E-01	1.35E-01	2.29E-01					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES
06	PB-214	TRG	SED4	pCi/g	1.66E+00	2.46E-01	4.60E-01					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES
06	RA-226	TRG	SED4	pCi/g	1.61E+00	2.02E-01	2.33E-01					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES
06	RA-228	TRG	SED4	pCi/g	7.94E-01	2.16E-01	3.68E-01					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES
06	TH-234	TRG	SED4	pCi/g	1.21E+00	9.59E-01	1.55E+00					01/08/16 08:36	4.98E+02	02/04/16 07:10	NO
06	TL-208	TRG	SED4	pCi/g	7.51E-01	1.47E-01	1.19E-01					01/08/16 08:36	4.98E+02	02/04/16 07:10	YES

Count Room Report
Client: AMO Environmental Decisio

16-01047-Gamma-1 (pCi/g) in SO
Tracer ID:

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	01/13/16 00:00	1.0000				0.00		
02	MBL	BLANK	01/13/16 00:00	1.0000				0.00		
03	DUP	SED1	01/08/16 09:20	475.5000				0.00		
04	DO	SED1	01/08/16 09:20	475.5000				0.00		
05	TRG	SED2	01/08/16 09:06	435.9700				0.00		
06	TRG	SED4	01/08/16 08:36	498.1500				0.00		

GS1

00173

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
16-01047	1	Gamma	grams	2/4/2016	KSALLINGS

Lab Fraction	AMO Environmental Decisions Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	SED1	DUP					4.7550E+02	4.7550E+02				
04	SED1	DO					4.7550E+02	4.7550E+02				
05	SED2	TRG					4.3597E+02	4.3597E+02				
06	SED4	TRG					4.9815E+02	4.9815E+02				

Comments	

Technician: Kenny Sacri Date: 1/14/16

00171

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

Rough Sample Preparation Log Book

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
16-01047	2/4/2016	1/13/2016	1/14/2016	1/15/2016	KSALLINGS

Eberline	AMO Environmental Decisions	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special
Fraction	Client ID	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	Info
04	SED1	14.1200	711.5500	556.9300	697.4300	542.8100	22.17%	77.83%	0.0000	0.0000	
05	SED2	28.3000	1126.0800	532.0100	1097.7800	503.7100	54.12%	45.88%	0.0000	0.0000	
06	SED4	14.1400	1125.7400	808.3200	1111.6000	794.1800	28.56%	71.44%	0.0000	0.0000	

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

00175

Technician: Kenny Sallings

Date: **Analysis: Rough Prep Logbook**

Analysis: Gamma Page No. 9505

Eckert & Ziegler
Analytics

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

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

GAS-1302

94268

Sand in 16 Ounce PP Taral Jar Filled to Top

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

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

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

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

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

(Certificate continued on reverse side)

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Apex-Gamma

Analysis Report for 1601047-01

GAS-1302

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1601047-01
Sample Description	: GAS-1302
Sample Type	: SOIL
Sample Size	: 7.360E+02 grams
Facility	: Countroom
Sample Taken On	: 7/1/2013 6:17:26AM
Acquisition Started	: 2/3/2016 6:18:24AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-1402
Live Time	: 1800.0 seconds
Real Time	: 1854.2 seconds
Dead Time	: 2.92 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 14 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 10/25/2014
Efficiency Calibration Used Done On	: 11/8/2014
Efficiency Calibration Description	:
Sample Number	: 32409

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
2/4/16

Analysis Report for 1601047-01

GAS-1302

PEAK LOCATE REPORT

Peak Locate Performed on : 2/3/2016 6:49:21AM
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	22.34	21.59	0.0000	0.00
2	32.07	31.32	0.0000	0.00
3	53.81	53.07	0.0000	0.00
4	59.41	58.67	0.0000	0.00
5	68.31	67.58	0.0000	0.00
6	87.95	87.22	0.0000	0.00
7	122.06	121.34	0.0000	0.00
8	136.54	135.84	0.0000	0.00
9	165.91	165.21	0.0000	0.00
10	390.96	390.36	0.0000	0.00
11	466.43	465.87	0.0000	0.00
12	518.37	517.83	0.0000	0.00
13	661.62	661.15	0.0000	0.00
14	1173.21	1173.01	0.0000	0.00
15	1290.19	1290.06	0.0000	0.00
16	1332.46	1332.35	0.0000	0.00
17	1378.43	1378.35	0.0000	0.00
18	1392.76	1392.69	0.0000	0.00
19	1589.91	1589.96	0.0000	0.00
20	1639.88	1639.96	0.0000	0.00
21	1666.09	1666.19	0.0000	0.00
22	1675.35	1675.46	0.0000	0.00
23	1791.40	1791.58	0.0000	0.00
24	1836.02	1836.23	0.0000	0.00
25	1897.01	1897.27	0.0000	0.00
26	2041.48	2041.83	0.0000	0.00
27	2269.17	2269.68	0.0000	0.00
28	2306.57	2307.11	0.0000	0.00
29	2505.60	2506.29	0.0000	0.00
30	2614.85	2615.63	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1601047-01

GAS-1302

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/3/2016 6:49:21AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	22.34	19 -	25	21.59	6.42E+04	729.73	5.14E+04	2.44
	2	32.07	29 -	34	31.32	1.27E+03	225.35	9.18E+03	2.46
M	3	53.81	43 -	62	53.07	1.81E+04	980.15	5.46E+04	6.63
m	4	59.41	43 -	62	58.67	5.55E+04	595.50	1.75E+04	2.22
	5	68.31	64 -	71	67.58	6.07E+02	356.96	2.09E+04	4.71
	6	87.95	83 -	92	87.22	2.17E+04	490.16	2.09E+04	2.37
	7	122.06	117 -	126	121.34	4.09E+03	335.47	1.36E+04	2.33
	8	136.54	132 -	140	135.84	6.05E+02	275.35	1.13E+04	2.12
	9	165.91	162 -	169	165.21	4.29E+02	239.46	9.26E+03	2.35
	10	390.96	387 -	394	390.36	2.39E+02	173.36	4.86E+03	2.80
	11	466.43	462 -	469	465.87	2.24E+02	171.51	4.74E+03	4.77
	12	518.37	515 -	521	517.83	1.25E+02	126.75	2.83E+03	4.52
	13	661.62	655 -	666	661.15	1.24E+04	283.39	3.82E+03	2.64
	14	1173.21	1165 -	1178	1173.01	1.05E+04	239.73	1.75E+03	2.76
	15	1290.19	1286 -	1295	1290.06	4.71E+01	46.74	2.86E+02	2.88
	16	1332.46	1325 -	1338	1332.35	9.29E+03	199.75	3.08E+02	2.89
	17	1378.43	1371 -	1385	1378.35	4.00E+01	24.20	4.39E+01	11.49
	18	1392.76	1386 -	1399	1392.69	3.98E+01	23.19	4.24E+01	10.10
	19	1589.91	1585 -	1595	1589.96	2.11E+01	18.26	3.37E+01	8.59
	20	1639.88	1633 -	1645	1639.96	2.19E+01	20.43	3.82E+01	3.41
	21	1666.09	1664 -	1669	1666.19	1.19E+01	7.81	2.15E+00	2.98
	22	1675.35	1670 -	1682	1675.46	2.31E+01	14.30	1.38E+01	8.58
	23	1791.40	1785 -	1800	1791.58	1.96E+01	23.49	4.47E+01	4.06
	24	1836.02	1830 -	1844	1836.23	3.52E+01	30.44	8.36E+01	2.48
	25	1897.01	1893 -	1900	1897.27	1.59E+01	9.38	4.11E+00	2.81
	26	2041.48	2037 -	2045	2041.83	1.25E+01	10.42	9.06E+00	4.35
	27	2269.17	2266 -	2272	2269.68	7.45E+00	8.28	7.09E+00	3.64
	28	2306.57	2303 -	2310	2307.11	9.00E+00	6.00	0.00E+00	1.66
	29	2505.60	2502 -	2509	2506.29	3.70E+01	14.00	8.00E+00	2.86
	30	2614.85	2612 -	2618	2615.63	8.00E+00	5.66	0.00E+00	1.92

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

Analysis Report for 1601047-01

GAS-1302

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/3/2016 6:49:21AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	22.34	19 -	25	6.42E+04	729.73	5.14E+04	4.32E+02
	2	32.07	29 -	34	1.27E+03	225.35	9.18E+03	1.76E+02
M	3	53.81	43 -	62	1.81E+04	980.15	5.46E+04	3.84E+02
m	4	59.41	43 -	62	5.55E+04	595.50	1.75E+04	2.17E+02
	5	68.31	64 -	71	6.07E+02	356.96	2.09E+04	2.91E+02
	6	87.95	83 -	92	2.17E+04	490.16	2.09E+04	3.22E+02
	7	122.06	117 -	126	4.09E+03	335.47	1.36E+04	2.55E+02
	8	136.54	132 -	140	6.05E+02	275.35	1.13E+04	2.23E+02
	9	165.91	162 -	169	4.29E+02	239.46	9.26E+03	1.94E+02
	10	390.96	387 -	394	2.39E+02	173.36	4.86E+03	1.40E+02
	11	466.43	462 -	469	2.24E+02	171.51	4.74E+03	1.39E+02
	12	518.37	515 -	521	1.25E+02	126.75	2.83E+03	1.03E+02
	13	661.62	655 -	666	1.24E+04	283.39	3.82E+03	1.44E+02
	14	1173.21	1165 -	1178	1.05E+04	239.73	1.75E+03	1.02E+02
	15	1290.19	1286 -	1295	4.71E+01	46.74	2.86E+02	3.67E+01
	16	1332.46	1325 -	1338	9.29E+03	199.75	3.08E+02	4.29E+01
	17	1378.43	1371 -	1385	4.00E+01	24.20	4.39E+01	1.70E+01
	18	1392.76	1386 -	1399	3.98E+01	23.19	4.24E+01	1.60E+01
	19	1589.91	1585 -	1595	2.11E+01	18.26	3.37E+01	1.30E+01
	20	1639.88	1633 -	1645	2.19E+01	20.43	3.82E+01	1.49E+01
	21	1666.09	1664 -	1669	1.19E+01	7.81	2.15E+00	3.00E+00
	22	1675.35	1670 -	1682	2.31E+01	14.30	1.38E+01	8.70E+00
	23	1791.40	1785 -	1800	1.96E+01	23.49	4.47E+01	1.79E+01
	24	1836.02	1830 -	1844	3.52E+01	30.44	8.36E+01	2.30E+01
	25	1897.01	1893 -	1900	1.59E+01	9.38	4.11E+00	4.05E+00
	26	2041.48	2037 -	2045	1.25E+01	10.42	9.06E+00	6.29E+00
	27	2269.17	2266 -	2272	7.45E+00	8.28	7.09E+00	5.11E+00
	28	2306.57	2303 -	2310	9.00E+00	6.00	0.00E+00	0.00E+00
	29	2505.60	2502 -	2509	3.70E+01	14.00	8.00E+00	5.70E+00
	30	2614.85	2612 -	2618	8.00E+00	5.66	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 1601047-01

GAS-1302

PEAK WITH NID REPORT

Peak Analysis Performed on : 2/3/2016 6:49:21AM

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

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	22.34	19 -	25	21.59	6.42E+04	729.73	5.14E+04	.....
	2	32.07	29 -	34	31.32	1.27E+03	225.35	9.18E+03	.....
M	3	53.81	43 -	62	53.07	1.81E+04	980.15	5.46E+04	.....
m	4	59.41	43 -	62	58.67	5.55E+04	595.50	1.75E+04	AM-241
	5	68.31	64 -	71	67.58	6.07E+02	356.96	2.09E+04	TI-44 TA-182 TH-230
	6	87.95	83 -	92	87.22	2.17E+04	490.16	2.09E+04	CD-109 SN-126 LU-176
	7	122.06	117 -	126	121.34	4.09E+03	335.47	1.36E+04	CO-57 EU-152 SE-75
	8	136.54	132 -	140	135.84	6.05E+02	275.35	1.13E+04	CO-57 SE-75
	9	165.91	162 -	169	165.21	4.29E+02	239.46	9.26E+03	CE-139
	10	390.96	387 -	394	390.36	2.39E+02	173.36	4.86E+03	SN-113
	11	466.43	462 -	469	465.87	2.24E+02	171.51	4.74E+03	.....
	12	518.37	515 -	521	517.83	1.25E+02	126.75	2.83E+03	.....
	13	661.62	655 -	666	661.15	1.24E+04	283.39	3.82E+03	CS-137
	14	1173.21	1165 -	1178	1173.01	1.05E+04	239.73	1.75E+03	CO-60
	15	1290.19	1286 -	1295	1290.06	4.71E+01	46.74	2.86E+02	.....
	16	1332.46	1325 -	1338	1332.35	9.29E+03	199.75	3.08E+02	CO-60
	17	1378.43	1371 -	1385	1378.35	4.00E+01	24.20	4.39E+01	.....
	18	1392.76	1386 -	1399	1392.69	3.98E+01	23.19	4.24E+01	.....
	19	1589.91	1585 -	1595	1589.96	2.11E+01	18.26	3.37E+01	.....
	20	1639.88	1633 -	1645	1639.96	2.19E+01	20.43	3.82E+01	.....
	21	1666.09	1664 -	1669	1666.19	1.19E+01	7.81	2.15E+00	.....
	22	1675.35	1670 -	1682	1675.46	2.31E+01	14.30	1.38E+01	.....
	23	1791.40	1785 -	1800	1791.58	1.96E+01	23.49	4.47E+01	.....
	24	1836.02	1830 -	1844	1836.23	3.52E+01	30.44	8.36E+01	Y-88
	25	1897.01	1893 -	1900	1897.27	1.59E+01	9.38	4.11E+00	.....
	26	2041.48	2037 -	2045	2041.83	1.25E+01	10.42	9.06E+00	.....
	27	2269.17	2266 -	2272	2269.68	7.45E+00	8.28	7.09E+00	.....
	28	2306.57	2303 -	2310	2307.11	9.00E+00	6.00	0.00E+00	.....
	29	2505.60	2502 -	2509	2506.29	3.70E+01	14.00	8.00E+00	.....
	30	2614.85	2612 -	2618	2615.63	8.00E+00	5.66	0.00E+00	TL-208

Analysis Report for 1601047-01

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 : 2/3/2016 6:49:21AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	22.34	6.42E+04	729.73	3.04E-02	1.78E-03
	2	32.07	1.27E+03	225.35	2.90E-02	1.78E-03
M	3	53.81	1.81E+04	980.15	2.49E-02	1.78E-03
m	4	59.41	5.55E+04	595.50	2.39E-02	1.78E-03
	5	68.31	6.07E+02	356.96	2.24E-02	1.73E-03
	6	87.95	2.17E+04	490.16	1.96E-02	1.63E-03
	7	122.06	4.09E+03	335.47	1.59E-02	1.53E-03
	8	136.54	6.05E+02	275.35	1.47E-02	1.42E-03
	9	165.91	4.29E+02	239.46	1.27E-02	1.21E-03
	10	390.96	2.39E+02	173.36	5.98E-03	7.37E-04
	11	466.43	2.24E+02	171.51	5.04E-03	6.26E-04
	12	518.37	1.25E+02	126.75	4.55E-03	5.50E-04
	13	661.62	1.24E+04	283.39	3.57E-03	3.40E-04
	14	1173.21	1.05E+04	239.73	2.05E-03	1.73E-04
	15	1290.19	4.71E+01	46.74	1.88E-03	2.04E-04
	16	1332.46	9.29E+03	199.75	1.83E-03	2.16E-04
	17	1378.43	4.00E+01	24.20	1.77E-03	2.06E-04
	18	1392.76	3.98E+01	23.19	1.76E-03	2.03E-04
	19	1589.91	2.11E+01	18.26	1.57E-03	1.62E-04
	20	1639.88	2.19E+01	20.43	1.52E-03	1.52E-04
	21	1666.09	1.19E+01	7.81	1.50E-03	1.46E-04
	22	1675.35	2.31E+01	14.30	1.50E-03	1.44E-04
	23	1791.40	1.96E+01	23.49	1.42E-03	1.20E-04
	24	1836.02	3.52E+01	30.44	1.39E-03	1.11E-04
	25	1897.01	1.59E+01	9.38	1.35E-03	1.11E-04
	26	2041.48	1.25E+01	10.42	1.28E-03	1.11E-04
	27	2269.17	7.45E+00	8.28	1.18E-03	1.11E-04
	28	2306.57	9.00E+00	6.00	1.17E-03	1.11E-04
	29	2505.60	3.70E+01	14.00	1.10E-03	1.11E-04
	30	2614.85	8.00E+00	5.66	1.07E-03	1.11E-04

Analysis Report for 1601047-01

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 : 2/3/2016 6:49:21AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032285.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	22.34	6.42E+04	729.73			6.42E+04	7.30E+02
	2	32.07	1.27E+03	225.35			1.27E+03	2.25E+02
M	3	53.81	1.81E+04	980.15			1.81E+04	9.80E+02
m	4	59.41	5.55E+04	595.50			5.55E+04	5.95E+02
	5	68.31	6.07E+02	356.96			6.07E+02	3.57E+02
	6	87.95	2.17E+04	490.16			2.17E+04	4.90E+02
	7	122.06	4.09E+03	335.47			4.09E+03	3.35E+02
	8	136.54	6.05E+02	275.35			6.05E+02	2.75E+02
	9	165.91	4.29E+02	239.46			4.29E+02	2.39E+02
	10	390.96	2.39E+02	173.36			2.39E+02	1.73E+02
	11	466.43	2.24E+02	171.51			2.24E+02	1.72E+02
	12	518.37	1.25E+02	126.75			1.25E+02	1.27E+02
	13	661.62	1.24E+04	283.39	6.49E-01	1.65E+00	1.24E+04	2.83E+02
	14	1173.21	1.05E+04	239.73	6.95E-01	7.82E-01	1.05E+04	2.40E+02
	15	1290.19	4.71E+01	46.74			4.71E+01	4.67E+01
	16	1332.46	9.29E+03	199.75			9.29E+03	2.00E+02
	17	1378.43	4.00E+01	24.20			4.00E+01	2.42E+01
	18	1392.76	3.98E+01	23.19			3.98E+01	2.32E+01
	19	1589.91	2.11E+01	18.26			2.11E+01	1.83E+01
	20	1639.88	2.19E+01	20.43			2.19E+01	2.04E+01
	21	1666.09	1.19E+01	7.81			1.19E+01	7.81E+00
	22	1675.35	2.31E+01	14.30			2.31E+01	1.43E+01
	23	1791.40	1.96E+01	23.49			1.96E+01	2.35E+01
	24	1836.02	3.52E+01	30.44			3.52E+01	3.04E+01
	25	1897.01	1.59E+01	9.38			1.59E+01	9.38E+00
	26	2041.48	1.25E+01	10.42			1.25E+01	1.04E+01
	27	2269.17	7.45E+00	8.28			7.45E+00	8.28E+00
	28	2306.57	9.00E+00	6.00			9.00E+00	6.00E+00
	29	2505.60	3.70E+01	14.00			3.70E+01	1.40E+01
	30	2614.85	8.00E+00	5.66			8.00E+00	5.66E+00

Analysis Report for 1601047-01

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 : 2/3/2016 6:49:21AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032285.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	22.34	6.42E+04	729.73			6.42E+04	7.30E+02
	2	32.07	1.27E+03	225.35			1.27E+03	2.25E+02
M	3	53.81	1.81E+04	980.15			1.81E+04	9.80E+02
m	4	59.41	5.55E+04	595.50			5.55E+04	5.95E+02
	5	68.31	6.07E+02	356.96			6.07E+02	3.57E+02
	6	87.95	2.17E+04	490.16			2.17E+04	4.90E+02
	7	122.06	4.09E+03	335.47			4.09E+03	3.35E+02
	8	136.54	6.05E+02	275.35			6.05E+02	2.75E+02
	9	165.91	4.29E+02	239.46			4.29E+02	2.39E+02
	10	390.96	2.39E+02	173.36			2.39E+02	1.73E+02
	11	466.43	2.24E+02	171.51			2.24E+02	1.72E+02
	12	518.37	1.25E+02	126.75			1.25E+02	1.27E+02
	13	661.62	1.24E+04	283.39	6.49E-01	1.65E+00	1.24E+04	2.83E+02
	14	1173.21	1.05E+04	239.73	6.95E-01	7.82E-01	1.05E+04	2.40E+02
	15	1290.19	4.71E+01	46.74			4.71E+01	4.67E+01
	16	1332.46	9.29E+03	199.75			9.29E+03	2.00E+02
	17	1378.43	4.00E+01	24.20			4.00E+01	2.42E+01
	18	1392.76	3.98E+01	23.19			3.98E+01	2.32E+01
	19	1589.91	2.11E+01	18.26			2.11E+01	1.83E+01
	20	1639.88	2.19E+01	20.43			2.19E+01	2.04E+01
	21	1666.09	1.19E+01	7.81			1.19E+01	7.81E+00
	22	1675.35	2.31E+01	14.30			2.31E+01	1.43E+01
	23	1791.40	1.96E+01	23.49			1.96E+01	2.35E+01
	24	1836.02	3.52E+01	30.44			3.52E+01	3.04E+01
	25	1897.01	1.59E+01	9.38			1.59E+01	9.38E+00
	26	2041.48	1.25E+01	10.42			1.25E+01	1.04E+01
	27	2269.17	7.45E+00	8.28			7.45E+00	8.28E+00
	28	2306.57	9.00E+00	6.00			9.00E+00	6.00E+00
	29	2505.60	3.70E+01	14.00			3.70E+01	1.40E+01
	30	2614.85	8.00E+00	5.66			8.00E+00	5.66E+00

Analysis Report for 1601047-01

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	0.941	122.06	*	85.51	6.91E+01	8.74E+00
		136.48	*	10.60	8.91E+01	4.16E+01
CO-60	0.999	1173.22	*	100.00	1.47E+02	1.28E+01
		1332.49	*	100.00	1.46E+02	1.75E+01
CD-109	0.978	88.03	*	3.72	2.49E+03	2.61E+02
SN-113	0.617	255.12		1.93		
		391.69	*	64.90	3.76E+02	2.77E+02
SN-126	0.978	87.57	*	37.00	6.08E+01	5.24E+00
CS-137	1.000	661.65	*	85.12	8.86E+01	8.69E+00
CE-139	0.789	165.85	*	80.35	1.01E+02	5.71E+01
AM-241	0.997	59.54	*	35.90	1.32E+02	9.95E+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 : 2/3/2016 6:49:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Analysis Report for 1601047-01

GAS-1302

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	22.34	3.56854E+01	0.57		
	2	32.07	7.05014E-01	8.88		
M	3	53.81	1.00734E+01	2.70		
	5	68.31	3.37206E-01	29.41	Tol.	TA-182 TH-230
	11	466.43	1.24452E-01	38.28		
	12	518.37	6.94315E-02	50.71		
	15	1290.19	2.61915E-02	49.57		
	17	1378.43	2.22491E-02	30.21		
	18	1392.76	2.21220E-02	29.12	Sum	
	19	1589.91	1.17398E-02	43.21		
	20	1639.88	1.21680E-02	46.65		
	21	1666.09	6.62393E-03	32.75		
	22	1675.35	1.28333E-02	30.95		
	23	1791.40	1.09127E-02	59.80		
	24	1836.02	1.95491E-02	43.26	Tol.	Y-88
	25	1897.01	8.85803E-03	29.42		
	26	2041.48	6.92810E-03	41.76		
	27	2269.17	4.14141E-03	55.51		
	28	2306.57	5.00000E-03	33.33		
	29	2505.60	2.05556E-02	18.92	Sum	
	30	2614.85	4.44444E-03	35.36	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	0.94	122.06	*	85.51	6.91E+01	8.74E+00
		136.48	*	10.60	8.91E+01	4.16E+01
CO-60	0.99	1173.22	*	100.00	1.47E+02	1.28E+01
		1332.49	*	100.00	1.46E+02	1.75E+01
CD-109	0.97	88.03	*	3.72	2.49E+03	2.61E+02

Analysis Report for 1601047-01

GAS-1302

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
SN-113	0.61	255.12		1.93		
		391.69	*	64.90	3.76E+02	2.77E+02
SN-126	0.97	87.57	*	37.00	6.08E+01	5.24E+00
CS-137	1.00	661.65	*	85.12	8.86E+01	8.69E+00
CE-139	0.78	165.85	*	80.35	1.01E+02	5.71E+01
AM-241	0.99	59.54	*	35.90	1.32E+02	9.95E+00

* = Energy line found in the spectrum.
\- = Manually added nuclide.
? = Manually edited nuclide.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 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	0.941	6.99E+01	8.56E+00	
	CO-60	0.999	1.46E+02	1.03E+01	
?	CD-109	0.978	2.49E+03	2.61E+02	
	SN-113	0.617	3.76E+02	2.77E+02	
?	SN-126	0.978	6.08E+01	5.24E+00	
	CS-137	1.000	8.86E+01	8.69E+00	
	CE-139	0.789	1.01E+02	5.71E+01	
	AM-241	0.997	1.32E+02	9.95E+00	

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

Errors quoted at 2.000sigma

Analysis Report for 1601047-01

GAS-1302

UNIDENTIFIED PEAKS

Peak Locate Performed on : 2/3/2016 6:49:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	22.34	3.56854E+01	0.57		
	2	32.07	7.05014E-01	8.88		
M	3	53.81	1.00734E+01	2.70		
	5	68.31	3.37206E-01	29.41	Tol.	TA-182 TH-230
	11	466.43	1.24452E-01	38.28		
	12	518.37	6.94315E-02	50.71		
	15	1290.19	2.61915E-02	49.57		
	17	1378.43	2.22491E-02	30.21		
	18	1392.76	2.21220E-02	29.12	Sum	
	19	1589.91	1.17398E-02	43.21		
	20	1639.88	1.21680E-02	46.65		
	21	1666.09	6.62393E-03	32.75		
	22	1675.35	1.28333E-02	30.95		
	23	1791.40	1.09127E-02	59.80		
	24	1836.02	1.95491E-02	43.26	Tol.	Y-88
	25	1897.01	8.85803E-03	29.42		
	26	2041.48	6.92810E-03	41.76		
	27	2269.17	4.14141E-03	55.51		
	28	2306.57	5.00000E-03	33.33		
	29	2505.60	2.05556E-02	18.92	Sum	
	30	2614.85	4.44444E-03	35.36	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 1601047-01

GAS-1302

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	1.17E+06	2.08E+06	2.08E+06
+	NA-22	1274.54		99.94	6.03E-01	1.40E+00	1.40E+00
+	@ 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	7.41E-02	3.71E-01	3.71E-01
+	K-40	1460.81		10.67	1.10E+00	3.25E+00	3.25E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.30E+01	5.11E-01	5.11E-01
		78.34		96.00	-1.17E+00		5.53E-01
+	SC-46	889.25		99.98	1.03E+03	3.68E+03	3.68E+03
		1120.51		99.99	9.66E+02		3.69E+03
+	V-48	983.52		99.98	2.51E+17	4.80E+17	1.04E+18
		1312.10		97.50	-2.27E+16		4.80E+17
+	CR-51	320.08		9.83	5.67E+10	1.50E+11	1.50E+11
+	MN-54	834.83		99.97	-8.97E-01	1.05E+01	1.05E+01
+	CO-56	846.75		99.96	1.89E+03	1.26E+03	5.59E+03
		1037.75		14.03	9.02E+03		4.44E+04
		1238.25		67.00	7.20E+01		4.78E+03
		1771.40		15.51	4.51E+03		1.14E+04
		2598.48		16.90	0.00E+00		1.26E+03
+	CO-57	122.06	*	85.51	6.91E+01	8.65E+00	8.65E+00
		136.48	*	10.60	8.91E+01		6.61E+01
+	CO-58	810.76		99.40	5.80E+03	1.30E+04	1.30E+04
+	FE-59	1099.22		56.50	2.86E+06	3.96E+06	6.93E+06
		1291.56		43.20	3.69E+05		3.96E+06
+	CO-60	1173.22	*	100.00	1.47E+02	1.39E+00	2.89E+00
		1332.49	*	100.00	1.46E+02		1.39E+00
+	ZN-65	1115.52		50.75	2.08E+01	4.46E+01	4.46E+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	7.88E+03	2.07E+02	8.75E+02
		136.00		59.20	2.94E+02		2.07E+02
		264.65		59.80	-6.63E+01		2.76E+02
		279.53		25.20	-3.07E+02		6.63E+02
		400.65		11.40	8.71E+02		1.89E+03
+	RB-82	776.52		13.00	4.39E+11	1.29E+12	1.29E+12
+	RB-83	520.41		46.00	3.68E+02	4.20E+03	4.20E+03
		529.64		30.30	5.74E+02		6.19E+03
		552.65		16.40	3.84E+02		1.13E+04
+	KR-85	513.99		0.43	1.09E+02	2.62E+02	2.62E+02
+	SR-85	513.99		99.27	1.00E+04	2.41E+04	2.41E+04

Analysis Report for 1601047-01

GAS-1302

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		Y-88	898.02		93.40	-2.97E+02	2.85E+02	7.56E+02
			1836.01		99.38	2.89E+02		2.85E+02
+		NB-93M	16.57		9.43	-2.12E+02	5.75E+00	5.75E+00
+		NB-94	702.63		100.00	-1.40E-01	1.02E+00	1.02E+00
			871.10		100.00	3.75E-01		1.40E+00
+		NB-95	765.79		99.81	-4.54E+07	1.50E+08	1.50E+08
+	@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26
+		ZR-95	724.18		43.70	1.31E+04	5.73E+04	6.88E+04
			756.72		55.30	3.00E+04		5.73E+04
+	@	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	3.77E+06	1.83E+07	1.83E+07
+		RU-106	621.84		9.80	-7.58E+00	5.97E+01	5.97E+01
+		AG-108M	433.93		89.90	3.39E-01	1.06E+00	1.06E+00
			614.37		90.40	-4.94E-02		1.08E+00
			722.95		90.50	2.57E-02		1.19E+00
+		CD-109	88.03	*	3.72	2.49E+03	7.45E+01	7.45E+01
+		AG-110M	657.75		93.14	1.05E+00	1.99E+01	3.80E+01
			677.61		10.53	3.38E+00		1.30E+02
			706.67		16.46	-1.05E+01		8.49E+01
			763.93		21.98	-1.78E+01		6.97E+01
			884.67		71.63	9.03E+00		2.78E+01
			1384.27		23.94	-1.06E+01		1.99E+01
+		CD-113M	263.70		0.02	-1.29E+02	3.40E+03	3.40E+03
+		SN-113	255.12		1.93	1.47E+03	4.46E+02	1.08E+04
			391.69	*	64.90	3.76E+02		4.46E+02
+		TE123M	159.00		84.10	-3.92E+01	1.53E+02	1.53E+02
+		SB-124	602.71		97.87	-3.78E+02	3.34E+04	5.38E+04
			645.85		7.26	-1.74E+04		7.79E+05
			722.78		11.10	-8.34E+04		5.18E+05
			1691.02		49.00	-1.54E+04		3.34E+04
+		I-125	35.49		6.49	-7.23E+05	2.67E+05	2.67E+05
+		SB-125	176.33		6.89	4.92E+00	5.99E+00	1.56E+01
			427.89		29.33	-2.67E+00		5.99E+00
			463.38		10.35	9.82E-02		1.89E+01
			600.56		17.80	3.72E+00		1.05E+01
			635.90		11.32	-6.48E+00		1.70E+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	6.08E+01	1.82E+00	1.82E+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	-4.63E+00	6.98E-01	6.98E-01
			33.60		13.20	-2.20E+00		2.32E+00

Analysis Report for 1601047-01

GAS-1302

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		I-129	39.58		7.52	-2.17E+01	6.98E-01	4.63E+00
+	@	I-131	284.30		6.05	1.00E+26	1.00E+26	1.00E+26
	@		364.48		81.20	1.00E+26		1.00E+26
	@		636.97		7.26	1.00E+26		1.00E+26
	@		722.89		1.80	1.00E+26		1.00E+26
+	@	TE-132	49.72		13.10	1.00E+26	1.00E+26	1.00E+26
	@		228.16		88.00	1.00E+26		1.00E+26
+		BA-133	81.00		33.00	-3.10E+00	1.58E+00	1.91E+00
			302.84		17.80	-7.55E-01		4.78E+00
			356.01		60.00	1.25E-01		1.58E+00
+	@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	@	XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26
+		CS-134	563.23		8.38	-4.50E+00	2.37E+00	2.65E+01
			569.32		15.43	-4.79E+00		1.43E+01
			604.70		97.60	1.32E-01		2.37E+00
			795.84		85.40	-3.73E-01		3.37E+00
			801.93		8.73	-5.12E+00		3.31E+01
+		CS-135	268.24		16.00	1.49E+00	4.37E+00	4.37E+00
+	@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41		28.60	1.00E+26		1.00E+26
	@		1678.03		9.54	1.00E+26		1.00E+26
+	@	CS-136	153.22		7.46	1.00E+26	1.00E+26	1.00E+26
	@		163.89		4.61	1.00E+26		1.00E+26
	@		176.55		13.56	1.00E+26		1.00E+26
	@		273.65		12.66	1.00E+26		1.00E+26
	@		340.57		48.50	1.00E+26		1.00E+26
	@		818.50		99.70	1.00E+26		1.00E+26
	@		1048.07		79.60	1.00E+26		1.00E+26
	@		1235.34		19.70	1.00E+26		1.00E+26
+		CS-137	661.65	*	85.12	8.86E+01	2.07E+00	2.07E+00
+		LA-138	788.74		34.00	1.27E-01	5.39E-01	3.43E+00
			1435.80		66.00	-8.19E-02		5.39E-01
+		CE-139	165.85	*	80.35	1.01E+02	9.18E+01	9.18E+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	-4.27E+08	6.08E+08	6.08E+08
+	@	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	-2.87E+00	4.70E+01	4.70E+01
+		PM-144	476.78		42.00	1.49E+01	5.97E+00	1.47E+01

Analysis Report for 1601047-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-144	618.01	98.60	-4.20E+00	5.97E+00	5.97E+00
		696.49	99.49	4.48E+00		6.38E+00
+	PM-145	36.85	21.70	-5.79E+00	8.89E-01	1.61E+00
		37.36	39.70	-3.89E+00		8.89E-01
		42.30	15.10	-4.59E+00		2.96E+00
		72.40	2.31	1.33E+00		2.37E+01
+	PM-146	453.90	39.94	1.16E-01	3.42E+00	3.42E+00
		735.90	14.01	-1.66E+00		1.02E+01
		747.13	13.10	5.15E+00		1.15E+01
+	@ ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26
	@	531.02	13.10	1.00E+26		1.00E+26
+	@ PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26
+	EU-152	121.78	20.50	2.94E+01	2.91E+00	3.38E+00
		244.69	5.40	-7.80E+00		1.45E+01
		344.27	19.13	4.13E-01		4.67E+00
		778.89	9.20	-1.19E+00		1.44E+01
		964.01	10.40	-3.60E+00		1.73E+01
		1085.78	7.22	-4.06E+00		2.40E+01
		1112.02	9.60	7.10E+00		1.86E+01
		1407.95	14.94	-6.85E-02		2.91E+00
+	GD-153	97.43	31.30	-5.15E+00	2.02E+01	2.02E+01
		103.18	22.20	1.85E+01		2.97E+01
+	EU-154	123.07	40.50	1.58E+01	1.84E+00	1.84E+00
		723.30	19.70	1.43E-01		6.63E+00
		873.19	11.50	3.54E+00		1.50E+01
		996.32	10.30	7.24E+00		1.76E+01
		1004.76	17.90	-4.23E+00		1.00E+01
		1274.45	35.50	1.04E+00		2.43E+00
+	EU-155	86.50	30.90	1.07E+02	3.04E+00	4.01E+00
		105.30	20.70	-1.40E+00		3.04E+00
+	EU-156	811.77	10.40	4.25E+19	5.10E+19	6.91E+19
		1153.47	7.20	1.31E+18		1.02E+20
		1230.71	8.90	-6.29E+18		5.10E+19
+	HO-166M	184.41	72.60	-2.80E-01	8.12E-01	8.12E-01
		280.45	29.60	-1.07E+00		2.36E+00
		410.94	11.10	-1.35E+00		8.15E+00
		711.69	54.10	-5.39E-01		1.88E+00
+	TM-171	66.72	0.14	-7.41E+04	8.35E+02	8.35E+02
+	HF-172	81.75	4.52	-4.69E+01	1.36E+01	3.15E+01
		125.81	11.30	-9.96E-01		1.36E+01
+	@ LU-172	181.53	20.60	1.00E+26	1.00E+26	1.00E+26
	@	810.06	16.63	1.00E+26		1.00E+26
	@	912.12	15.25	1.00E+26		1.00E+26
	@	1093.66	62.50	1.00E+26		1.00E+26
+	LU-173	100.72	5.24	-5.27E+00	1.24E+01	3.02E+01
		272.11	21.20	6.73E+00		1.24E+01
+	HF-175	343.40	84.00	3.03E+03	1.10E+04	1.10E+04
+	LU-176	88.34	13.30	1.69E+02	7.33E-01	6.40E+00
		201.83	86.00	8.44E-03		7.33E-01

Analysis Report for 1601047-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LU-176	306.78	94.00	-1.42E-01	7.33E-01	7.68E-01
+	TA-182	67.75	41.20	-8.99E+03	3.52E+02	3.52E+02
		1121.30	34.90	3.13E+01		1.28E+03
		1189.05	16.23	-4.30E+02		1.90E+03
		1221.41	26.98	1.72E+01		9.33E+02
		1231.02	11.44	-2.59E+02		2.10E+03
+	IR-192	308.46	29.68	7.12E+03	1.52E+04	1.75E+04
		468.07	48.10	-1.44E+03		1.52E+04
+	HG-203	279.19	77.30	-5.46E+05	1.18E+06	1.18E+06
+	BI-207	569.67	97.72	-3.34E-01	9.99E-01	9.99E-01
		1063.62	74.90	-2.83E-01		2.10E+00
+	TL-208	583.14	30.22	9.13E-01	8.42E-01	3.15E+00
		860.37	4.48	-6.89E+00		2.95E+01
		2614.66	35.85	3.30E-01		8.42E-01
+	BI-210M	262.00	45.00	-4.40E-01	1.52E+00	1.52E+00
		300.00	23.00	-6.43E-01		3.12E+00
+	PB-210	46.50	4.25	1.53E+01	1.36E+01	1.36E+01
+	PB-211	404.84	2.90	-1.58E+01	3.08E+01	3.08E+01
		831.96	2.90	4.37E+00		4.41E+01
+	BI-212	727.17	11.80	-4.98E-01	8.96E+00	8.96E+00
		1620.62	2.75	-1.73E+00		1.13E+01
+	PB-212	238.63	44.60	8.40E-01	1.55E+00	1.55E+00
		300.09	3.41	-4.34E+00		2.11E+01
+	BI-214	609.31	46.30	-4.55E-01	2.09E+00	2.09E+00
		1120.29	15.10	2.55E+00		9.73E+00
		1764.49	15.80	-1.57E-01		2.50E+00
		2204.22	4.98	2.83E-01		5.92E+00
+	PB-214	295.21	19.19	9.63E-01	2.15E+00	3.76E+00
		351.92	37.19	6.59E-01		2.15E+00
+	RN-219	401.80	6.50	7.11E+00	1.38E+01	1.38E+01
+	RA-223	323.87	3.88	-2.33E+00	1.93E+01	1.93E+01
+	RA-224	240.98	3.95	1.13E+01	1.76E+01	1.76E+01
+	RA-225	40.00	31.00	-9.67E+19	2.06E+19	2.06E+19
+	RA-226	186.21	3.28	1.01E+01	1.83E+01	1.83E+01
+	TH-227	50.10	8.40	1.87E+01	5.99E+00	7.37E+00
		236.00	11.50	-1.89E+00		5.99E+00
		256.20	6.30	1.47E-01		1.09E+01
+	AC-228	338.32	11.40	1.31E+00	5.64E+00	6.72E+00
		911.07	27.70	4.51E-01		5.64E+00
		969.11	16.60	1.42E+00		9.13E+00
+	TH-230	48.44	16.90	1.01E+01	3.49E+00	3.49E+00
		62.85	4.60	8.23E+02		2.21E+01
		67.67	0.37	-3.23E+03		1.27E+02
+	PA-231	283.67	1.60	3.10E+00	3.11E+01	4.42E+01
		302.67	2.30	-4.92E+00		3.11E+01
+	TH-231	25.64	14.70	-1.76E+01	5.93E+00	5.93E+00
		84.21	6.40	-6.99E+00		1.19E+01
+	PA-233	311.98	38.60	7.87E+09	6.92E+10	6.92E+10

Analysis Report for 1601047-01

GAS-1302

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-234	131.20		20.40	-3.04E-01	2.35E+00	2.35E+00
		733.99		8.80	2.56E-01		1.18E+01
		946.00		12.00	-3.65E+00		1.38E+01
+	PA-234M	1001.03		0.92	-6.16E+00	1.60E+02	1.60E+02
+	TH-234	63.29		3.80	4.12E+02	2.24E+01	2.24E+01
+	U-235	143.76		10.50	-1.95E+00	4.74E+00	4.74E+00
		163.35		4.70	-2.18E+00		1.19E+01
		205.31		4.70	-9.40E+00		1.35E+01
+	NP-237	86.50		12.60	1.83E+02	6.84E+00	6.84E+00
+	@ NP-239	106.10		22.70	1.00E+26	1.00E+26	1.00E+26
	@	228.18		10.70	1.00E+26		1.00E+26
	@	277.60		14.10	1.00E+26		1.00E+26
+	AM-241	59.54	*	35.90	1.32E+02	2.95E+00	2.95E+00
+	AM-243	74.67		66.00	-3.53E-01	7.57E-01	7.57E-01
+	CM-243	209.75		3.29	-4.87E+00	5.29E+00	2.11E+01
		228.14		10.60	6.04E+00		6.96E+00
		277.60		14.00	-2.43E+00		5.29E+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	2.08E+06	2.08E+06	1.17E+06	1.03E+06
	NA-22	1274.54	99.94	1.40E+00	1.40E+00	6.03E-01	6.72E-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	3.71E-01	3.71E-01	7.41E-02	1.66E-01

Analysis Report for 1601047-01

GAS-1302

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	K-40	1460.81		10.67	3.25E+00	3.25E+00	1.10E+00	1.47E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	5.11E-01	5.11E-01	-1.30E+01	2.54E-01
		78.34		96.00	5.53E-01		-1.17E+00	2.75E-01
	SC-46	889.25		99.98	3.68E+03	3.68E+03	1.03E+03	1.81E+03
		1120.51		99.99	3.69E+03		9.66E+02	1.81E+03
	V-48	983.52		99.98	1.04E+18	4.80E+17	2.51E+17	5.12E+17
		1312.10		97.50	4.80E+17		-2.27E+16	2.29E+17
	CR-51	320.08		9.83	1.50E+11	1.50E+11	5.67E+10	7.41E+10
	MN-54	834.83		99.97	1.05E+01	1.05E+01	-8.97E-01	5.15E+00
	CO-56	846.75		99.96	5.59E+03	1.26E+03	1.89E+03	2.75E+03
		1037.75		14.03	4.44E+04		9.02E+03	2.18E+04
		1238.25		67.00	4.78E+03		7.20E+01	2.30E+03
		1771.40		15.51	1.14E+04		4.51E+03	5.20E+03
		2598.48		16.90	1.26E+03		0.00E+00	0.00E+00
+	CO-57	122.06	*	85.51	8.65E+00	8.65E+00	6.91E+01	4.30E+00
		136.48	*	10.60	6.61E+01		8.91E+01	3.28E+01
	CO-58	810.76		99.40	1.30E+04	1.30E+04	5.80E+03	6.42E+03
	FE-59	1099.22		56.50	6.93E+06	3.96E+06	2.86E+06	3.41E+06
		1291.56		43.20	3.96E+06		3.69E+05	1.90E+06
+	CO-60	1173.22	*	100.00	2.89E+00	1.39E+00	1.47E+02	1.43E+00
		1332.49	*	100.00	1.39E+00		1.46E+02	6.74E-01
	ZN-65	1115.52		50.75	4.46E+01	4.46E+01	2.08E+01	2.19E+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	8.75E+02	2.07E+02	7.88E+03	4.35E+02
		136.00		59.20	2.07E+02		2.94E+02	1.03E+02
		264.65		59.80	2.76E+02		-6.63E+01	1.37E+02
		279.53		25.20	6.63E+02		-3.07E+02	3.28E+02
		400.65		11.40	1.89E+03		8.71E+02	9.33E+02
	RB-82	776.52		13.00	1.29E+12	1.29E+12	4.39E+11	6.37E+11
	RB-83	520.41		46.00	4.20E+03	4.20E+03	3.68E+02	2.07E+03
		529.64		30.30	6.19E+03		5.74E+02	3.05E+03
		552.65		16.40	1.13E+04		3.84E+02	5.59E+03
	KR-85	513.99		0.43	2.62E+02	2.62E+02	1.09E+02	1.29E+02
	SR-85	513.99		99.27	2.41E+04	2.41E+04	1.00E+04	1.19E+04
	Y-88	898.02		93.40	7.56E+02	2.85E+02	-2.97E+02	3.73E+02
		1836.01		99.38	2.85E+02		2.89E+02	1.33E+02
	NB-93M	16.57		9.43	5.75E+00	5.75E+00	-2.12E+02	2.87E+00
	NB-94	702.63		100.00	1.02E+00	1.02E+00	-1.40E-01	5.03E-01
		871.10		100.00	1.40E+00		3.75E-01	6.90E-01
	NB-95	765.79		99.81	1.50E+08	1.50E+08	-4.54E+07	7.39E+07
@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	ZR-95	724.18		43.70	6.88E+04	5.73E+04	1.31E+04	3.39E+04
		756.72		55.30	5.73E+04		3.00E+04	2.82E+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	1.83E+07	1.83E+07	3.77E+06	9.04E+06
	RU-106	621.84		9.80	5.97E+01	5.97E+01	-7.58E+00	2.94E+01
	AG-108M	433.93		89.90	1.06E+00	1.06E+00	3.39E-01	5.23E-01
		614.37		90.40	1.08E+00		-4.94E-02	5.33E-01

Analysis Report for 1601047-01

GAS-1302

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	AG-108M	722.95		90.50	1.19E+00	1.06E+00	2.57E-02	5.87E-01
+	CD-109	88.03	*	3.72	7.45E+01	7.45E+01	2.49E+03	3.71E+01
	AG-110M	657.75		93.14	3.80E+01	1.99E+01	1.05E+00	1.89E+01
		677.61		10.53	1.30E+02		3.38E+00	6.38E+01
		706.67		16.46	8.49E+01		-1.05E+01	4.18E+01
		763.93		21.98	6.97E+01		-1.78E+01	3.43E+01
		884.67		71.63	2.78E+01		9.03E+00	1.37E+01
		1384.27		23.94	1.99E+01		-1.06E+01	9.06E+00
	CD-113M	263.70		0.02	3.40E+03	3.40E+03	-1.29E+02	1.69E+03
+	SN-113	255.12		1.93	1.08E+04	4.46E+02	1.47E+03	5.33E+03
		391.69	*	64.90	4.46E+02		3.76E+02	2.21E+02
	TE123M	159.00		84.10	1.53E+02	1.53E+02	-3.92E+01	7.60E+01
	SB-124	602.71		97.87	5.38E+04	3.34E+04	-3.78E+02	2.65E+04
		645.85		7.26	7.79E+05		-1.74E+04	3.84E+05
		722.78		11.10	5.18E+05		-8.34E+04	2.55E+05
		1691.02		49.00	3.34E+04		-1.54E+04	1.46E+04
	I-125	35.49		6.49	2.67E+05	2.67E+05	-7.23E+05	1.33E+05
	SB-125	176.33		6.89	1.56E+01	5.99E+00	4.92E+00	7.75E+00
		427.89		29.33	5.99E+00		-2.67E+00	2.96E+00
		463.38		10.35	1.89E+01		9.82E-02	9.36E+00
		600.56		17.80	1.05E+01		3.72E+00	5.15E+00
		635.90		11.32	1.70E+01		-6.48E+00	8.37E+00
@	SB-126	414.70		83.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		666.33		99.60	1.00E+26		1.00E+26	1.00E+20
@		695.00		99.60	1.00E+26		1.00E+26	1.00E+20
@		720.50		53.80	1.00E+26		1.00E+26	1.00E+20
+	SN-126	87.57	*	37.00	1.82E+00	1.82E+00	6.08E+01	9.06E-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	6.98E-01	6.98E-01	-4.63E+00	3.47E-01
		33.60		13.20	2.32E+00		-2.20E+00	1.15E+00
		39.58		7.52	4.63E+00		-2.17E+01	2.30E+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	1.91E+00	1.58E+00	-3.10E+00	9.48E-01
		302.84		17.80	4.78E+00		-7.55E-01	2.36E+00
		356.01		60.00	1.58E+00		1.25E-01	7.80E-01
@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	CS-134	563.23		8.38	2.65E+01	2.37E+00	-4.50E+00	1.30E+01
		569.32		15.43	1.43E+01		-4.79E+00	7.06E+00
		604.70		97.60	2.37E+00		1.32E-01	1.17E+00
		795.84		85.40	3.37E+00		-3.73E-01	1.66E+00
		801.93		8.73	3.31E+01		-5.12E+00	1.63E+01
	CS-135	268.24		16.00	4.37E+00	4.37E+00	1.49E+00	2.17E+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

Analysis Report for 1601047-01

GAS-1302

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@	CS-136	153.22		7.46	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		163.89		4.61	1.00E+26		1.00E+26	1.00E+20
@		176.55		13.56	1.00E+26		1.00E+26	1.00E+20
@		273.65		12.66	1.00E+26		1.00E+26	1.00E+20
@		340.57		48.50	1.00E+26		1.00E+26	1.00E+20
@		818.50		99.70	1.00E+26		1.00E+26	1.00E+20
@		1048.07		79.60	1.00E+26		1.00E+26	1.00E+20
@		1235.34		19.70	1.00E+26		1.00E+26	1.00E+20
+	CS-137	661.65	*	85.12	2.07E+00	2.07E+00	8.86E+01	1.02E+00
	LA-138	788.74		34.00	3.43E+00	5.39E-01	1.27E-01	1.69E+00
		1435.80		66.00	5.39E-01		-8.19E-02	2.45E-01
+	CE-139	165.85	*	80.35	9.18E+01	9.18E+01	1.01E+02	4.56E+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	6.08E+08	6.08E+08	-4.27E+08	3.02E+08
@	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	4.70E+01	4.70E+01	-2.87E+00	2.33E+01
	PM-144	476.78		42.00	1.47E+01	5.97E+00	1.49E+01	7.26E+00
		618.01		98.60	5.97E+00		-4.20E+00	2.94E+00
		696.49		99.49	6.38E+00		4.48E+00	3.14E+00
	PM-145	36.85		21.70	1.61E+00	8.89E-01	-5.79E+00	8.01E-01
		37.36		39.70	8.89E-01		-3.89E+00	4.42E-01
		42.30		15.10	2.96E+00		-4.59E+00	1.47E+00
		72.40		2.31	2.37E+01		1.33E+00	1.18E+01
	PM-146	453.90		39.94	3.42E+00	3.42E+00	1.16E-01	1.69E+00
		735.90		14.01	1.02E+01		-1.66E+00	5.04E+00
		747.13		13.10	1.15E+01		5.15E+00	5.67E+00
@	ND-147	91.11		28.90	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		531.02		13.10	1.00E+26		1.00E+26	1.00E+20
@	PM-149	285.90		3.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	EU-152	121.78		20.50	3.38E+00	2.91E+00	2.94E+01	1.68E+00
		244.69		5.40	1.45E+01		-7.80E+00	7.19E+00
		344.27		19.13	4.67E+00		4.13E-01	2.31E+00
		778.89		9.20	1.44E+01		-1.19E+00	7.08E+00
		964.01		10.40	1.73E+01		-3.60E+00	8.51E+00
		1085.78		7.22	2.40E+01		-4.06E+00	1.18E+01
		1112.02		9.60	1.86E+01		7.10E+00	9.16E+00
		1407.95		14.94	2.91E+00		-6.85E-02	1.33E+00
	GD-153	97.43		31.30	2.02E+01	2.02E+01	-5.15E+00	1.00E+01
		103.18		22.20	2.97E+01		1.85E+01	1.47E+01
	EU-154	123.07		40.50	1.84E+00	1.84E+00	1.58E+01	9.15E-01
		723.30		19.70	6.63E+00		1.43E-01	3.26E+00
		873.19		11.50	1.50E+01		3.54E+00	7.40E+00
		996.32		10.30	1.76E+01		7.24E+00	8.67E+00

Analysis Report for 1601047-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-154	1004.76	17.90	1.00E+01	1.84E+00	-4.23E+00	4.92E+00
	1274.45	35.50	2.43E+00		1.04E+00	1.16E+00
EU-155	86.50	30.90	4.01E+00	3.04E+00	1.07E+02	2.00E+00
	105.30	20.70	3.04E+00		-1.40E+00	1.51E+00
EU-156	811.77	10.40	6.91E+19	5.10E+19	4.25E+19	3.40E+19
	1153.47	7.20	1.02E+20		1.31E+18	4.99E+19
	1230.71	8.90	5.10E+19		-6.29E+18	2.46E+19
HO-166M	184.41	72.60	8.12E-01	8.12E-01	-2.80E-01	4.03E-01
	280.45	29.60	2.36E+00		-1.07E+00	1.17E+00
	410.94	11.10	8.15E+00		-1.35E+00	4.03E+00
	711.69	54.10	1.88E+00		-5.39E-01	9.27E-01
TM-171	66.72	0.14	8.35E+02	8.35E+02	-7.41E+04	4.15E+02
HF-172	81.75	4.52	3.15E+01	1.36E+01	-4.69E+01	1.57E+01
	125.81	11.30	1.36E+01		-9.96E-01	6.74E+00
@ LU-172	181.53	20.60	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	810.06	16.63	1.00E+26		1.00E+26	1.00E+20
@	912.12	15.25	1.00E+26		1.00E+26	1.00E+20
@	1093.66	62.50	1.00E+26		1.00E+26	1.00E+20
LU-173	100.72	5.24	3.02E+01	1.24E+01	-5.27E+00	1.50E+01
	272.11	21.20	1.24E+01		6.73E+00	6.12E+00
HF-175	343.40	84.00	1.10E+04	1.10E+04	3.03E+03	5.44E+03
LU-176	88.34	13.30	6.40E+00	7.33E-01	1.69E+02	3.19E+00
	201.83	86.00	7.33E-01		8.44E-03	3.63E-01
	306.78	94.00	7.68E-01		-1.42E-01	3.80E-01
TA-182	67.75	41.20	3.52E+02	3.52E+02	-8.99E+03	1.75E+02
	1121.30	34.90	1.28E+03		3.13E+01	6.28E+02
	1189.05	16.23	1.90E+03		-4.30E+02	9.22E+02
	1221.41	26.98	9.33E+02		1.72E+01	4.50E+02
	1231.02	11.44	2.10E+03		-2.59E+02	1.01E+03
IR-192	308.46	29.68	1.75E+04	1.52E+04	7.12E+03	8.66E+03
	468.07	48.10	1.52E+04		-1.44E+03	7.53E+03
HG-203	279.19	77.30	1.18E+06	1.18E+06	-5.46E+05	5.84E+05
BI-207	569.67	97.72	9.99E-01	9.99E-01	-3.34E-01	4.92E-01
	1063.62	74.90	2.10E+00		-2.83E-01	1.03E+00
TL-208	583.14	30.22	3.15E+00	8.42E-01	9.13E-01	1.55E+00
	860.37	4.48	2.95E+01		-6.89E+00	1.45E+01
	2614.66	35.85	8.42E-01		3.30E-01	3.49E-01
BI-210M	262.00	45.00	1.52E+00	1.52E+00	-4.40E-01	7.54E-01
	300.00	23.00	3.12E+00		-6.43E-01	1.55E+00
PB-210	46.50	4.25	1.36E+01	1.36E+01	1.53E+01	6.76E+00
PB-211	404.84	2.90	3.08E+01	3.08E+01	-1.58E+01	1.52E+01
	831.96	2.90	4.41E+01		4.37E+00	2.17E+01
BI-212	727.17	11.80	8.96E+00	8.96E+00	-4.98E-01	4.41E+00
	1620.62	2.75	1.13E+01		-1.73E+00	5.01E+00
PB-212	238.63	44.60	1.55E+00	1.55E+00	8.40E-01	7.68E-01
	300.09	3.41	2.11E+01		-4.34E+00	1.04E+01
BI-214	609.31	46.30	2.09E+00	2.09E+00	-4.55E-01	1.03E+00
	1120.29	15.10	9.73E+00		2.55E+00	4.78E+00
	1764.49	15.80	2.50E+00		-1.57E-01	1.13E+00
	2204.22	4.98	5.92E+00		2.83E-01	2.50E+00
PB-214	295.21	19.19	3.76E+00	2.15E+00	9.63E-01	1.86E+00
	351.92	37.19	2.15E+00		6.59E-01	1.06E+00
RN-219	401.80	6.50	1.38E+01	1.38E+01	7.11E+00	6.84E+00

Analysis Report for 1601047-01

GAS-1302

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	RA-223	323.87		3.88	1.93E+01	1.93E+01	-2.33E+00	9.57E+00
	RA-224	240.98		3.95	1.76E+01	1.76E+01	1.13E+01	8.71E+00
	RA-225	40.00		31.00	2.06E+19	2.06E+19	-9.67E+19	1.02E+19
	RA-226	186.21		3.28	1.83E+01	1.83E+01	1.01E+01	9.08E+00
	TH-227	50.10		8.40	7.37E+00	5.99E+00	1.87E+01	3.67E+00
		236.00		11.50	5.99E+00		-1.89E+00	2.97E+00
		256.20		6.30	1.09E+01		1.47E-01	5.41E+00
	AC-228	338.32		11.40	6.72E+00	5.64E+00	1.31E+00	3.33E+00
		911.07		27.70	5.64E+00		4.51E-01	2.78E+00
		969.11		16.60	9.13E+00		1.42E+00	4.50E+00
	TH-230	48.44		16.90	3.49E+00	3.49E+00	1.01E+01	1.74E+00
		62.85		4.60	2.21E+01		8.23E+02	1.10E+01
		67.67		0.37	1.27E+02		-3.23E+03	6.29E+01
	PA-231	283.67		1.60	4.42E+01	3.11E+01	3.10E+00	2.19E+01
		302.67		2.30	3.11E+01		-4.92E+00	1.54E+01
	TH-231	25.64		14.70	5.93E+00	5.93E+00	-1.76E+01	2.96E+00
		84.21		6.40	1.19E+01		-6.99E+00	5.90E+00
	PA-233	311.98		38.60	6.92E+10	6.92E+10	7.87E+09	3.42E+10
	PA-234	131.20		20.40	2.35E+00	2.35E+00	-3.04E-01	1.17E+00
		733.99		8.80	1.18E+01		2.56E-01	5.82E+00
		946.00		12.00	1.38E+01		-3.65E+00	6.79E+00
	PA-234M	1001.03		0.92	1.60E+02	1.60E+02	-6.16E+00	7.89E+01
	TH-234	63.29		3.80	2.24E+01	2.24E+01	4.12E+02	1.12E+01
	U-235	143.76		10.50	4.74E+00	4.74E+00	-1.95E+00	2.35E+00
		163.35		4.70	1.19E+01		-2.18E+00	5.90E+00
		205.31		4.70	1.35E+01		-9.40E+00	6.69E+00
	NP-237	86.50		12.60	6.84E+00	6.84E+00	1.83E+02	3.41E+00
@	NP-239	106.10		22.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		228.18		10.70	1.00E+26		1.00E+26	1.00E+20
@		277.60		14.10	1.00E+26		1.00E+26	1.00E+20
+	AM-241	59.54	*	35.90	2.95E+00	2.95E+00	1.32E+02	1.47E+00
	AM-243	74.67		66.00	7.57E-01	7.57E-01	-3.53E-01	3.77E-01
	CM-243	209.75		3.29	2.11E+01	5.29E+00	-4.87E+00	1.05E+01
		228.14		10.60	6.96E+00		6.04E+00	3.45E+00
		277.60		14.00	5.29E+00		-2.43E+00	2.62E+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 1601047-01

GAS-1302

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

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

Sample Title: GAS-1302

Elapsed Live time: 1800
Elapsed Real Time: 1854

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	1	400	1464
17:	1539	1710	3951	14475	26335	19924	9782	9161
25:	6299	2146	820	699	755	973	1255	1225
33:	901	751	833	906	913	985	1007	1167
41:	1322	1459	1561	1750	1872	2072	2528	3173
49:	3546	3597	3636	3590	3688	3987	3953	4477
57:	8240	20081	23423	10222	2144	1085	1157	1243
65:	1293	1373	1420	1464	1403	1458	1422	1373
73:	1386	1433	1374	1440	1361	1384	1375	1429
81:	1481	1542	1487	1540	2000	5184	9612	7577
89:	2439	794	716	741	706	736	708	709
97:	718	766	739	687	721	737	686	728
105:	729	789	696	704	699	748	787	709
113:	750	733	725	797	706	751	810	1378
121:	2316	1967	1019	719	642	595	659	645
129:	615	685	623	642	660	667	780	849
137:	706	678	628	637	608	622	591	614
145:	567	609	570	604	576	607	583	618
153:	582	594	581	613	591	622	603	633
161:	551	623	581	660	704	734	575	588
169:	594	551	513	582	602	540	537	550
177:	533	584	569	589	528	575	559	552
185:	618	584	557	614	624	612	592	556
193:	568	591	573	563	569	607	571	582
201:	528	595	534	562	568	563	559	564
209:	565	537	621	596	576	585	605	594
217:	579	595	607	569	550	542	582	579
225:	579	564	493	608	546	544	535	516
233:	517	485	490	535	520	547	533	464
241:	537	507	484	451	477	480	475	490
249:	481	488	471	455	470	466	462	452
257:	429	430	421	443	431	405	429	430
265:	424	416	443	393	434	436	436	431
273:	394	437	403	397	389	388	393	372
281:	398	377	413	389	394	403	401	425
289:	373	375	340	402	418	385	408	373
297:	343	408	348	367	359	349	346	333
305:	363	357	374	332	359	383	367	385
313:	336	362	345	351	378	356	353	382
321:	317	368	381	331	363	317	311	350
329:	342	334	319	311	318	329	336	327
337:	334	301	341	373	362	299	335	363
345:	315	300	344	336	323	347	351	308
353:	343	322	341	348	307	324	310	323
361:	334	299	320	315	329	304	314	305

369:	338	299	326	316	331	293	284	291

Sample Title: GAS-1302

Channel								
377:	306	289	297	292	334	311	329	317
385:	316	298	290	314	350	383	363	331
393:	312	326	297	335	348	323	359	312
401:	293	321	340	346	339	326	302	315
409:	322	334	334	325	303	319	314	303
417:	316	302	324	325	358	306	307	308
425:	301	319	291	311	276	314	320	298
433:	313	312	333	324	305	316	264	312
441:	337	308	295	304	316	314	324	285
449:	324	332	314	301	316	310	326	302
457:	303	316	311	326	310	304	315	339
465:	349	348	328	340	271	305	325	305
473:	327	301	341	301	281	304	261	276
481:	251	256	246	261	229	233	230	268
489:	241	219	233	232	234	208	243	250
497:	231	224	207	246	245	237	203	239
505:	223	232	236	237	218	257	284	229
513:	239	215	183	242	231	239	223	237
521:	187	223	217	208	213	203	205	196
529:	194	208	215	190	203	181	185	201
537:	213	196	178	196	196	207	209	226
545:	158	202	193	174	190	182	182	183
553:	166	180	197	195	180	172	191	172
561:	188	201	198	169	171	175	164	179
569:	195	185	182	183	147	160	166	206
577:	173	169	173	171	187	154	176	196
585:	192	164	192	154	161	176	156	179
593:	184	175	161	180	168	169	184	177
601:	165	177	196	159	158	166	165	175
609:	184	155	161	190	159	168	181	157
617:	166	146	155	160	161	171	172	186
625:	189	178	161	174	171	174	178	171
633:	186	156	149	164	156	176	168	185
641:	183	161	175	169	173	168	169	163
649:	197	161	172	181	158	183	141	163
657:	181	211	681	2781	4760	3738	1214	199
665:	139	145	167	165	164	134	151	158
673:	147	161	128	135	145	154	128	142
681:	136	132	150	127	137	143	148	125
689:	138	143	131	138	154	160	139	147
697:	150	163	153	137	150	122	130	132
705:	150	136	135	151	143	130	122	141
713:	134	122	152	155	150	127	143	147
721:	145	143	139	145	136	163	142	129
729:	152	153	113	140	146	135	143	120
737:	134	126	137	130	119	136	155	135
745:	148	145	155	137	149	126	135	142
753:	130	145	151	149	155	128	152	161
761:	130	132	144	140	155	148	130	127
769:	158	142	138	156	154	165	132	152
777:	126	157	155	173	134	144	158	150
785:	145	137	142	157	151	151	142	146
793:	152	142	146	181	163	142	168	135

801:	165	174	138	150	152	147	161	146

Sample Title: GAS-1302

Channel								
809:	140	159	152	158	144	161	163	135
817:	124	147	179	146	163	169	159	182
825:	160	150	172	153	147	161	166	151
833:	149	203	149	150	135	162	164	156
841:	167	169	162	169	165	185	181	179
849:	150	165	162	169	157	170	188	140
857:	166	144	154	157	146	188	165	172
865:	147	165	159	171	165	195	179	186
873:	163	189	163	163	180	182	160	185
881:	177	166	175	179	176	186	174	198
889:	179	173	163	218	183	191	169	182
897:	198	178	193	200	195	184	202	203
905:	204	186	203	175	192	201	233	203
913:	202	193	193	197	195	201	190	207
921:	183	207	198	172	192	174	190	219
929:	202	176	217	200	202	217	196	221
937:	200	212	221	206	205	177	194	229
945:	206	190	205	212	209	249	222	223
953:	205	243	200	203	191	205	208	200
961:	209	194	183	169	182	194	146	154
969:	176	172	175	152	148	165	151	132
977:	141	146	148	149	167	133	151	154
985:	153	165	139	160	150	145	159	144
993:	126	157	149	151	164	149	159	151
1001:	127	135	141	129	174	153	144	139
1009:	144	144	153	158	164	153	151	156
1017:	151	146	163	135	140	156	147	161
1025:	137	146	142	155	146	147	126	135
1033:	149	146	123	142	152	142	135	132
1041:	154	143	152	123	139	157	133	150
1049:	113	139	146	146	129	147	157	125
1057:	172	135	122	128	153	133	125	127
1065:	138	148	134	124	143	125	131	147
1073:	140	143	136	131	127	150	127	134
1081:	151	125	113	118	139	149	129	151
1089:	135	146	136	130	144	136	136	153
1097:	120	137	153	148	155	158	157	139
1105:	143	138	130	139	141	138	136	139
1113:	147	118	128	143	137	106	128	116
1121:	104	111	101	115	99	93	110	97
1129:	83	102	78	85	89	94	83	85
1137:	85	93	103	67	76	75	90	61
1145:	74	97	84	70	85	84	88	83
1153:	61	83	83	75	84	93	74	67
1161:	68	70	74	67	78	68	85	76
1169:	67	182	804	2546	3755	2617	840	138
1177:	80	43	56	51	54	74	49	44
1185:	40	49	60	52	50	40	49	42
1193:	44	45	47	44	49	47	41	47
1201:	41	38	56	38	33	39	46	44
1209:	43	41	31	42	46	30	31	39
1217:	30	29	22	31	33	33	28	30
1225:	31	34	20	25	31	23	26	25

1233:	30	33	26	25	21	26	30	24

Sample Title: GAS-1302

Channel								
1241:	29	18	27	25	22	18	25	20
1249:	28	19	23	23	24	24	16	17
1257:	18	19	21	17	24	18	16	19
1265:	14	21	17	15	22	17	21	16
1273:	20	24	24	24	15	21	16	13
1281:	20	18	22	20	15	13	17	26
1289:	19	32	16	21	23	13	10	19
1297:	19	25	19	17	16	15	20	10
1305:	21	19	13	21	17	11	23	17
1313:	13	17	21	11	19	19	12	14
1321:	19	22	22	19	14	20	19	23
1329:	72	408	1668	2978	2747	1229	237	26
1337:	2	5	5	9	4	12	6	2
1345:	6	3	12	3	3	6	2	6
1353:	7	5	4	5	5	7	5	5
1361:	2	3	5	2	6	6	6	6
1369:	5	1	3	6	6	3	4	1
1377:	1	5	6	4	9	4	7	2
1385:	1	1	2	4	9	3	7	3
1393:	6	3	6	3	5	8	1	3
1401:	5	5	5	3	4	8	2	4
1409:	4	8	4	4	2	6	5	0
1417:	5	5	2	6	5	3	4	8
1425:	5	9	1	4	7	3	9	3
1433:	2	6	4	2	1	5	8	3
1441:	2	2	3	4	6	2	2	6
1449:	4	3	4	3	0	3	2	1
1457:	2	4	2	7	5	2	3	2
1465:	4	2	4	2	4	3	2	2
1473:	3	6	5	5	3	6	5	5
1481:	2	4	3	3	5	3	5	4
1489:	6	6	4	4	5	3	3	6
1497:	1	5	4	2	6	2	4	4
1505:	4	4	4	1	5	4	4	4
1513:	8	2	3	3	1	2	6	4
1521:	5	3	7	2	2	6	1	3
1529:	5	3	7	2	1	4	1	4
1537:	3	3	2	3	8	2	3	4
1545:	0	4	2	2	3	6	5	1
1553:	3	5	3	2	8	3	4	3
1561:	4	7	1	2	3	4	4	3
1569:	5	5	2	2	1	4	3	5
1577:	6	3	3	6	6	1	5	2
1585:	0	5	6	3	4	1	2	7
1593:	3	7	0	4	2	2	4	2
1601:	6	2	1	6	2	6	1	7
1609:	5	3	0	2	4	2	6	3
1617:	1	4	1	1	3	3	2	2
1625:	3	3	0	2	4	3	2	2
1633:	2	3	4	2	4	0	1	7
1641:	6	7	4	1	0	2	1	2
1649:	2	9	2	2	3	4	1	1
1657:	7	2	3	4	2	1	1	0

1665:	4	4	4	1	0	0	3	3

Sample Title: GAS-1302

Channel								
1673:	2	3	3	0	3	5	4	1
1681:	2	1	1	2	2	1	0	4
1689:	2	3	2	1	1	3	1	4
1697:	2	6	2	0	1	2	2	2
1705:	5	3	4	3	3	4	2	4
1713:	1	0	0	6	2	2	3	1
1721:	0	4	1	1	3	4	2	4
1729:	2	3	1	2	3	3	4	3
1737:	2	1	3	4	1	4	2	1
1745:	3	2	2	2	5	1	3	4
1753:	2	2	1	3	1	3	1	2
1761:	4	4	3	0	3	2	3	4
1769:	2	2	3	4	4	0	2	10
1777:	0	2	1	4	3	4	3	1
1785:	3	2	2	1	6	5	4	5
1793:	3	2	1	3	2	1	2	0
1801:	2	4	3	2	3	3	2	1
1809:	2	2	2	2	2	3	0	0
1817:	2	2	2	0	2	3	2	2
1825:	3	1	1	2	2	3	3	4
1833:	4	4	9	16	14	6	2	3
1841:	2	1	1	5	1	1	3	3
1849:	2	2	5	1	0	1	2	2
1857:	2	0	4	4	1	1	2	2
1865:	2	2	3	2	2	2	1	2
1873:	3	1	4	1	4	1	1	1
1881:	1	1	1	1	2	1	4	0
1889:	4	3	0	1	0	2	2	1
1897:	4	5	4	0	0	3	3	1
1905:	1	5	4	0	2	5	1	6
1913:	1	2	3	1	3	3	1	4
1921:	2	1	1	6	2	1	3	2
1929:	2	3	5	1	4	2	0	4
1937:	2	3	2	1	0	3	1	2
1945:	1	3	1	0	1	3	2	4
1953:	3	3	3	2	0	3	0	0
1961:	2	1	2	0	1	2	1	3
1969:	0	1	1	2	0	1	0	0
1977:	1	1	1	2	3	2	3	3
1985:	2	3	0	0	0	3	4	2
1993:	4	1	1	3	0	3	1	0
2001:	2	1	2	2	0	2	1	2
2009:	0	1	0	1	2	4	3	1
2017:	0	2	2	2	0	2	2	6
2025:	2	2	1	0	2	0	2	1
2033:	1	3	0	2	0	1	0	4
2041:	4	2	4	2	0	0	3	2
2049:	1	1	3	3	1	2	1	4
2057:	1	1	3	0	2	2	0	0
2065:	3	1	1	2	1	1	1	2
2073:	3	2	5	0	3	1	2	5
2081:	1	2	3	1	0	3	1	2
2089:	1	2	2	3	2	5	0	2

2097:	3	2	0	2	1	3	2	3

Sample Title: GAS-1302

Channel								
2105:	1	2	2	4	0	4	0	1
2113:	1	2	1	3	0	1	1	0
2121:	1	1	1	0	0	1	2	1
2129:	1	1	1	0	0	2	3	0
2137:	1	2	0	1	2	0	0	0
2145:	2	1	1	3	2	3	1	3
2153:	3	2	0	2	2	1	2	0
2161:	0	1	1	0	2	2	3	1
2169:	1	3	1	1	3	0	1	1
2177:	2	2	0	0	1	1	1	1
2185:	0	1	2	2	0	2	0	2
2193:	0	2	1	3	1	0	1	2
2201:	0	0	1	1	1	1	0	0
2209:	3	1	0	0	3	1	3	0
2217:	2	1	1	1	1	1	0	0
2225:	0	2	1	0	0	0	3	1
2233:	1	1	0	0	1	1	2	2
2241:	1	0	1	1	0	0	0	1
2249:	1	0	1	0	2	2	1	0
2257:	1	1	0	1	0	2	1	0
2265:	2	0	0	3	2	3	3	0
2273:	0	3	2	0	1	2	1	1
2281:	0	0	0	3	0	4	1	2
2289:	2	3	2	2	2	0	0	3
2297:	0	1	0	0	0	0	0	0
2305:	1	1	4	2	1	0	0	0
2313:	3	0	0	3	0	1	0	0
2321:	0	2	0	0	1	0	1	0
2329:	0	0	3	2	0	0	1	2
2337:	1	0	0	0	0	0	2	1
2345:	2	2	0	0	1	0	2	0
2353:	0	1	1	1	0	0	0	2
2361:	0	0	0	0	0	0	2	0
2369:	0	0	1	0	0	0	0	2
2377:	2	0	0	0	2	0	0	0
2385:	0	0	0	0	1	1	0	0
2393:	0	0	0	1	0	0	0	1
2401:	0	0	0	1	0	0	0	0
2409:	0	1	0	0	1	0	0	1
2417:	0	0	1	1	0	3	0	0
2425:	0	1	0	2	0	0	1	0
2433:	0	0	0	0	1	0	1	0
2441:	0	0	0	0	1	0	0	1
2449:	0	0	0	0	0	0	1	0
2457:	1	0	0	0	1	1	0	0
2465:	1	0	1	0	0	0	1	0
2473:	0	1	0	0	1	0	0	1
2481:	1	0	0	0	0	2	0	0
2489:	0	0	0	1	1	0	0	0
2497:	1	1	1	2	1	0	0	3
2505:	7	14	10	7	0	1	0	1
2513:	0	1	0	0	0	0	0	0
2521:	0	0	0	0	0	1	0	0

2529:	0	0	0	0	0	0	0	0

Sample Title: GAS-1302

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

2961:	1	0	0	0	0	0	0	1

Sample Title: GAS-1302

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

3393:	0	0	0	0	0	0	0	0

Sample Title: GAS-1302

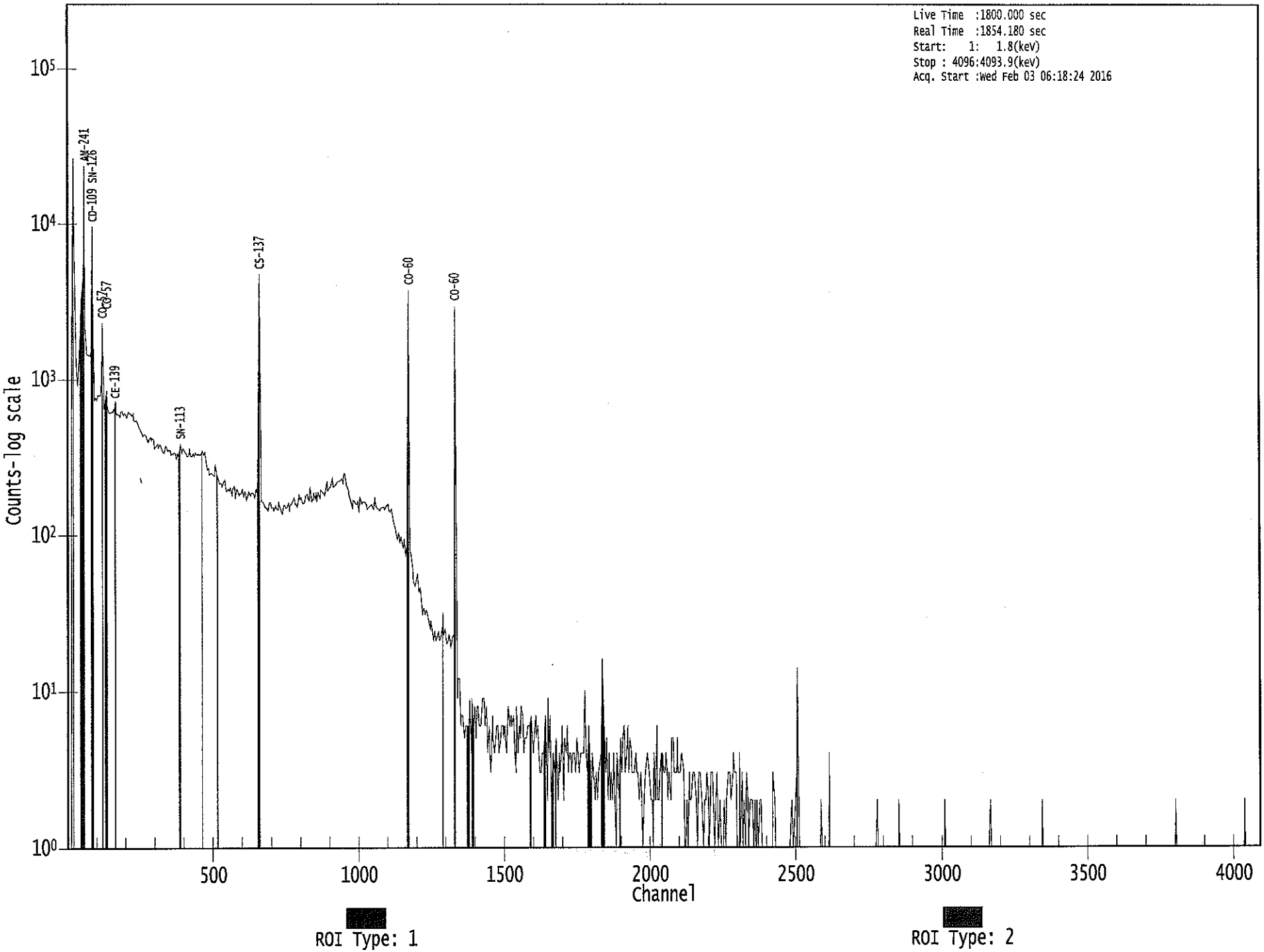
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	1
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	1	0	0	0	0
3465:	0	0	1	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	1	0	0
3497:	0	0	0	0	0	1	0	0
3505:	0	0	0	0	1	1	1	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	1	0	0	0	0	0	0	0
3537:	0	0	0	0	0	0	0	0
3545:	1	0	0	0	0	0	0	0
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	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	1	0	0	0	0	0
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	0	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	1	0	0	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	1	0
3705:	0	0	0	0	0	0	0	0
3713:	0	1	0	0	0	0	0	0
3721:	0	0	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:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	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	2	0	1	0	0	0	0
3809:	1	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0

3825:	0	0	0	1	0	0	0	0

Sample Title: GAS-1302

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

0000032409.CNF



: 00211

Apex-Gamma

Analysis Report for 1601047-02

BLANK

2/2

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1601047-02
Sample Description	: BLANK
Sample Type	: SOIL
Sample Size	: 7.834E+02 grams
Facility	: Countroom
Sample Taken On	: 2/3/2016 6:17:47AM
Acquisition Started	: 2/3/2016 6:18:08AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3616.8 seconds
Dead Time	: 0.46 %
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	: 32408

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
2/4/16

Analysis Report for 1601047-02

BLANK

PEAK LOCATE REPORT

Peak Locate Performed on : 2/3/2016 7:18:26AM
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	27.50	27.74	0.0000	0.00
2	85.32	85.53	0.0000	0.00
3	357.78	357.85	0.0000	0.00
4	371.12	371.18	0.0000	0.00
5	379.76	379.82	0.0000	0.00
6	388.84	388.89	0.0000	0.00
7	435.09	435.12	0.0000	0.00
8	508.01	508.00	0.0000	0.00
9	513.01	513.00	0.0000	0.00
10	524.78	524.77	0.0000	0.00
11	601.44	601.39	0.0000	0.00
12	606.72	606.66	0.0000	0.00
13	611.06	611.00	0.0000	0.00
14	699.41	699.31	0.0000	0.00
15	803.20	803.05	0.0000	0.00
16	912.70	912.50	0.0000	0.00
17	937.18	936.97	0.0000	0.00
18	1064.64	1064.38	0.0000	0.00
19	1073.27	1073.00	0.0000	0.00
20	1229.19	1228.86	0.0000	0.00
21	1347.09	1346.71	0.0000	0.00
22	1498.94	1498.50	0.0000	0.00
23	2065.25	2064.63	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1601047-02

BLANK

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/3/2016 7:18:26AM

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	27.50	21 -	36	27.74	1.56E+02	92.48	7.97E+02	13.05
	2	85.32	81 -	91	85.53	6.04E+01	66.45	5.59E+02	5.86
m	3	357.78	348 -	363	357.85	1.43E+01	19.29	3.88E+01	2.67
	4	371.12	367 -	376	371.18	2.12E+01	21.42	4.97E+01	4.45
	5	379.76	377 -	383	379.82	1.64E+01	14.20	2.52E+01	3.65
	6	388.84	385 -	392	388.89	2.59E+01	17.09	3.01E+01	3.80
	7	435.09	432 -	437	435.12	1.36E+01	12.81	1.88E+01	2.04
M	8	508.01	507 -	516	508.00	9.41E+00	7.14	9.00E+00	1.93
m	9	513.01	507 -	516	513.00	1.44E+01	19.47	5.45E+01	1.94
	10	524.78	522 -	527	524.77	1.02E+01	13.49	2.56E+01	1.70
	11	601.44	598 -	604	601.39	9.50E+00	12.39	2.10E+01	2.81
M	12	606.72	604 -	614	606.66	1.28E+01	12.73	2.07E+01	2.66
m	13	611.06	604 -	614	611.00	1.24E+01	13.19	1.50E+01	2.00
	14	699.41	694 -	702	699.31	1.13E+01	14.61	2.35E+01	3.48
	15	803.20	798 -	807	803.05	1.50E+01	14.00	1.80E+01	7.18
	16	912.70	909 -	915	912.50	1.20E+01	6.93	0.00E+00	2.36
	17	937.18	933 -	940	936.97	7.19E+00	10.00	1.16E+01	3.60
	18	1064.64	1059 -	1069	1064.38	1.60E+01	8.00	0.00E+00	1.32
	19	1073.27	1070 -	1075	1073.00	7.00E+00	5.29	0.00E+00	2.99
	20	1229.19	1226 -	1231	1228.86	7.00E+00	5.29	0.00E+00	1.66
	21	1347.09	1343 -	1349	1346.71	7.00E+00	5.29	0.00E+00	1.16
	22	1498.94	1495 -	1502	1498.50	8.00E+00	5.66	0.00E+00	1.16
	23	2065.25	2061 -	2068	2064.63	8.00E+00	5.66	0.00E+00	1.33

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 1601047-02

BLANK

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/3/2016 7:18:26AM

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	27.50	21 -	36	1.56E+02	92.48	7.97E+02	7.32E+01
	2	85.32	81 -	91	6.04E+01	66.45	5.59E+02	5.31E+01
m	3	357.78	348 -	363	1.43E+01	19.29	3.88E+01	1.02E+01
	4	371.12	367 -	376	2.12E+01	21.42	4.97E+01	1.59E+01
	5	379.76	377 -	383	1.64E+01	14.20	2.52E+01	9.59E+00
	6	388.84	385 -	392	2.59E+01	17.09	3.01E+01	1.13E+01
	7	435.09	432 -	437	1.36E+01	12.81	1.88E+01	8.60E+00
M	8	508.01	507 -	516	9.41E+00	7.14	9.00E+00	4.93E+00
m	9	513.01	507 -	516	1.44E+01	19.47	5.45E+01	1.21E+01
	10	524.78	522 -	527	1.02E+01	13.49	2.56E+01	9.77E+00
	11	601.44	598 -	604	9.50E+00	12.39	2.10E+01	8.83E+00
M	12	606.72	604 -	614	1.28E+01	12.73	2.07E+01	7.48E+00
m	13	611.06	604 -	614	1.24E+01	13.19	1.50E+01	6.37E+00
	14	699.41	694 -	702	1.13E+01	14.61	2.35E+01	1.07E+01
	15	803.20	798 -	807	1.50E+01	14.00	1.80E+01	9.59E+00
	16	912.70	909 -	915	1.20E+01	6.93	0.00E+00	0.00E+00
	17	937.18	933 -	940	7.19E+00	10.00	1.16E+01	6.94E+00
	18	1064.64	1059 -	1069	1.60E+01	8.00	0.00E+00	0.00E+00
	19	1073.27	1070 -	1075	7.00E+00	5.29	0.00E+00	0.00E+00
	20	1229.19	1226 -	1231	7.00E+00	5.29	0.00E+00	0.00E+00
	21	1347.09	1343 -	1349	7.00E+00	5.29	0.00E+00	0.00E+00
	22	1498.94	1495 -	1502	8.00E+00	5.66	0.00E+00	0.00E+00
	23	2065.25	2061 -	2068	8.00E+00	5.66	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 1601047-02

BLANK

PEAK WITH NID REPORT

Peak Analysis Performed on : 2/3/2016 7:18:26AM

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	27.50	21 -	36	27.74	1.56E+02	92.48	7.97E+02	.....
	2	85.32	81 -	91	85.53	6.04E+01	66.45	5.59E+02	.....
m	3	357.78	348 -	363	357.85	1.43E+01	19.29	3.88E+01	.....
	4	371.12	367 -	376	371.18	2.12E+01	21.42	4.97E+01	.....
	5	379.76	377 -	383	379.82	1.64E+01	14.20	2.52E+01	.....
	6	388.84	385 -	392	388.89	2.59E+01	17.09	3.01E+01	.....
	7	435.09	432 -	437	435.12	1.36E+01	12.81	1.88E+01	.....
M	8	508.01	507 -	516	508.00	9.41E+00	7.14	9.00E+00	.....
m	9	513.01	507 -	516	513.00	1.44E+01	19.47	5.45E+01	KR-85 SR-85
	10	524.78	522 -	527	524.77	1.02E+01	13.49	2.56E+01	.....
	11	601.44	598 -	604	601.39	9.50E+00	12.39	2.10E+01	SB-125
M	12	606.72	604 -	614	606.66	1.28E+01	12.73	2.07E+01	.....
m	13	611.06	604 -	614	611.00	1.24E+01	13.19	1.50E+01	.....
	14	699.41	694 -	702	699.31	1.13E+01	14.61	2.35E+01	.....
	15	803.20	798 -	807	803.05	1.50E+01	14.00	1.80E+01	.....
	16	912.70	909 -	915	912.50	1.20E+01	6.93	0.00E+00	LU-172
	17	937.18	933 -	940	936.97	7.19E+00	10.00	1.16E+01	.....
	18	1064.64	1059 -	1069	1064.38	1.60E+01	8.00	0.00E+00	.....
	19	1073.27	1070 -	1075	1073.00	7.00E+00	5.29	0.00E+00	.....
	20	1229.19	1226 -	1231	1228.86	7.00E+00	5.29	0.00E+00	.....
	21	1347.09	1343 -	1349	1346.71	7.00E+00	5.29	0.00E+00	.....
	22	1498.94	1495 -	1502	1498.50	8.00E+00	5.66	0.00E+00	.....
	23	2065.25	2061 -	2068	2064.63	8.00E+00	5.66	0.00E+00	.....

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

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 2/3/2016 7:18:26AM

Analysis Report for 1601047-02

BLANK

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	27.50	1.56E+02	92.48	3.44E-03	1.58E-03
	2	85.32	6.04E+01	66.45	2.43E-02	2.43E-03
m	3	357.78	1.43E+01	19.29	1.09E-02	8.85E-04
	4	371.12	2.12E+01	21.42	1.06E-02	8.66E-04
	5	379.76	1.64E+01	14.20	1.04E-02	8.54E-04
	6	388.84	2.59E+01	17.09	1.02E-02	8.41E-04
	7	435.09	1.36E+01	12.81	9.21E-03	7.94E-04
M	8	508.01	9.41E+00	7.14	8.05E-03	7.21E-04
m	9	513.01	1.44E+01	19.47	7.98E-03	7.16E-04
	10	524.78	1.02E+01	13.49	7.83E-03	7.04E-04
	11	601.44	9.50E+00	12.39	6.95E-03	6.28E-04
M	12	606.72	1.28E+01	12.73	6.90E-03	6.23E-04
m	13	611.06	1.24E+01	13.19	6.85E-03	6.18E-04
	14	699.41	1.13E+01	14.61	6.09E-03	5.37E-04
	15	803.20	1.50E+01	14.00	5.41E-03	4.52E-04
	16	912.70	1.20E+01	6.93	4.85E-03	3.72E-04
	17	937.18	7.19E+00	10.00	4.74E-03	3.67E-04
	18	1064.64	1.60E+01	8.00	4.25E-03	3.44E-04
	19	1073.27	7.00E+00	5.29	4.23E-03	3.42E-04
	20	1229.19	7.00E+00	5.29	3.78E-03	3.11E-04
	21	1347.09	7.00E+00	5.29	3.51E-03	2.86E-04
	22	1498.94	8.00E+00	5.66	3.23E-03	2.64E-04
	23	2065.25	8.00E+00	5.66	2.57E-03	2.13E-04

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

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 2/3/2016 7:18:26AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032284.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	27.50	1.56E+02	92.48			1.56E+02	9.25E+01
	2	85.32	6.04E+01	66.45			6.04E+01	6.64E+01
m	3	357.78	1.43E+01	19.29			1.43E+01	1.93E+01
	4	371.12	2.12E+01	21.42			2.12E+01	2.14E+01
	5	379.76	1.64E+01	14.20			1.64E+01	1.42E+01

Analysis Report for 1601047-02

BLANK

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	6	388.84	2.59E+01	17.09			2.59E+01	1.71E+01
	7	435.09	1.36E+01	12.81			1.36E+01	1.28E+01
M	8	508.01	9.41E+00	7.14			9.41E+00	7.14E+00
m	9	513.01	1.44E+01	19.47			1.44E+01	1.95E+01
	10	524.78	1.02E+01	13.49			1.02E+01	1.35E+01
	11	601.44	9.50E+00	12.39			9.50E+00	1.24E+01
M	12	606.72	1.28E+01	12.73			1.28E+01	1.27E+01
m	13	611.06	1.24E+01	13.19			1.24E+01	1.32E+01
	14	699.41	1.13E+01	14.61			1.13E+01	1.46E+01
	15	803.20	1.50E+01	14.00	1.45E+00	3.11E+00	1.35E+01	1.43E+01
	16	912.70	1.20E+01	6.93			1.20E+01	6.93E+00
	17	937.18	7.19E+00	10.00			7.19E+00	1.00E+01
	18	1064.64	1.60E+01	8.00			1.60E+01	8.00E+00
	19	1073.27	7.00E+00	5.29			7.00E+00	5.29E+00
	20	1229.19	7.00E+00	5.29			7.00E+00	5.29E+00
	21	1347.09	7.00E+00	5.29			7.00E+00	5.29E+00
	22	1498.94	8.00E+00	5.66			8.00E+00	5.66E+00
	23	2065.25	8.00E+00	5.66			8.00E+00	5.66E+00

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

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 2/3/2016 7:18:26AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032284.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	27.50	1.56E+02	92.48			1.56E+02	9.25E+01
	2	85.32	6.04E+01	66.45			6.04E+01	6.64E+01
m	3	357.78	1.43E+01	19.29			1.43E+01	1.93E+01
	4	371.12	2.12E+01	21.42			2.12E+01	2.14E+01
	5	379.76	1.64E+01	14.20			1.64E+01	1.42E+01
	6	388.84	2.59E+01	17.09			2.59E+01	1.71E+01
	7	435.09	1.36E+01	12.81			1.36E+01	1.28E+01
M	8	508.01	9.41E+00	7.14			9.41E+00	7.14E+00
m	9	513.01	1.44E+01	19.47			1.44E+01	1.95E+01
	10	524.78	1.02E+01	13.49			1.02E+01	1.35E+01

Analysis Report for 1601047-02

BLANK

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	11	601.44	9.50E+00	12.39			9.50E+00	1.24E+01
M	12	606.72	1.28E+01	12.73			1.28E+01	1.27E+01
m	13	611.06	1.24E+01	13.19			1.24E+01	1.32E+01
	14	699.41	1.13E+01	14.61			1.13E+01	1.46E+01
	15	803.20	1.50E+01	14.00	1.45E+00	3.11E+00	1.35E+01	1.43E+01
	16	912.70	1.20E+01	6.93			1.20E+01	6.93E+00
	17	937.18	7.19E+00	10.00			7.19E+00	1.00E+01
	18	1064.64	1.60E+01	8.00			1.60E+01	8.00E+00
	19	1073.27	7.00E+00	5.29			7.00E+00	5.29E+00
	20	1229.19	7.00E+00	5.29			7.00E+00	5.29E+00
	21	1347.09	7.00E+00	5.29			7.00E+00	5.29E+00
	22	1498.94	8.00E+00	5.66			8.00E+00	5.66E+00
	23	2065.25	8.00E+00	5.66			8.00E+00	5.66E+00

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
KR-85	0.858	513.99	*	0.43	3.98E+00	5.40E+00
SR-85	0.858	513.99	*	99.27	1.74E-02	2.36E-02

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

Analysis Report for 1601047-02

BLANK

UNIDENTIFIED PEAKS

Peak Locate Performed on : 2/3/2016 7:18:26AM
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	27.50	4.32278E-02	29.71		
	2	85.32	1.67770E-02	55.01		
m	3	357.78	3.97624E-03	67.37		
	4	371.12	5.87862E-03	50.62		
	5	379.76	4.54981E-03	43.36		
	6	388.84	7.20190E-03	32.95		
	7	435.09	3.78019E-03	47.05		
M	8	508.01	2.61420E-03	37.94		
	10	524.78	2.83816E-03	66.02		
	11	601.44	2.63889E-03	65.21	Tol.	SB-125
M	12	606.72	3.56086E-03	49.64		
m	13	611.06	3.45785E-03	52.98		
	14	699.41	3.12802E-03	64.88		
	15	803.20	3.76373E-03	52.92		
	16	912.70	3.33333E-03	28.87	Tol.	LU-172
	17	937.18	1.99786E-03	69.52		
	18	1064.64	4.44444E-03	25.00		
	19	1073.27	1.94444E-03	37.80		
	20	1229.19	1.94444E-03	37.80		
	21	1347.09	1.94444E-03	37.80		
	22	1498.94	2.22222E-03	35.36		
	23	2065.25	2.22222E-03	35.36		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Analysis Report for 1601047-02

BLANK

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
KR-85	0.85	513.99	*	0.43	3.98E+00	5.40E+00
SR-85	0.85	513.99	*	99.27	1.74E-02	2.36E-02

* = 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
?	KR-85	0.858	3.98E+00	5.40E+00	
?	SR-85	0.858	1.74E-02	2.36E-02	

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

Errors quoted at 2.000sigma

Analysis Report for 1601047-02

BLANK

UNIDENTIFIED PEAKS

Peak Locate Performed on : 2/3/2016 7:18:26AM
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	27.50	4.32278E-02	29.71		
	2	85.32	1.67770E-02	55.01		
m	3	357.78	3.97624E-03	67.37		
	4	371.12	5.87862E-03	50.62		
	5	379.76	4.54981E-03	43.36		
	6	388.84	7.20190E-03	32.95		
	7	435.09	3.78019E-03	47.05		
M	8	508.01	2.61420E-03	37.94		
	10	524.78	2.83816E-03	66.02		
	11	601.44	2.63889E-03	65.21	Tol.	SB-125
M	12	606.72	3.56086E-03	49.64		
m	13	611.06	3.45785E-03	52.98		
	14	699.41	3.12802E-03	64.88		
	15	803.20	3.76373E-03	52.92		
	16	912.70	3.33333E-03	28.87	Tol.	LU-172
	17	937.18	1.99786E-03	69.52		
	18	1064.64	4.44444E-03	25.00		
	19	1073.27	1.94444E-03	37.80		
	20	1229.19	1.94444E-03	37.80		
	21	1347.09	1.94444E-03	37.80		
	22	1498.94	2.22222E-03	35.36		
	23	2065.25	2.22222E-03	35.36		

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

NUCLIDE MDA REPORT

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

Analysis Report for 1601047-02

BLANK

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	-4.72E-02	2.60E-01	2.60E-01
+	NA-22	1274.54		99.94	7.84E-03	3.43E-02	3.43E-02
+	NA-24	1368.53		99.99	4.04E-04	4.25E-02	4.25E-02
		2754.09		99.86	1.50E-03		4.84E-02
+	AL-26	1808.65		99.76	-3.42E-03	3.18E-02	3.18E-02
+	K-40	1460.81		10.67	-1.07E-01	4.10E-01	4.10E-01
+	AR-41	1293.64		99.16	1.53E-02	5.10E-02	5.10E-02
+	TI-44	67.88		94.40	1.09E-02	2.31E-02	2.45E-02
		78.34		96.00	-9.01E-03		2.31E-02
+	SC-46	889.25		99.98	9.29E-03	3.08E-02	3.37E-02
		1120.51		99.99	-9.41E-04		3.08E-02
+	V-48	983.52		99.98	-4.22E-03	3.35E-02	3.35E-02
		1312.10		97.50	9.61E-03		4.36E-02
+	CR-51	320.08		9.83	5.99E-02	2.46E-01	2.46E-01
+	MN-54	834.83		99.97	-2.75E-03	3.91E-02	3.91E-02
+	CO-56	846.75		99.96	-1.21E-03	3.62E-02	3.62E-02
		1037.75		14.03	2.16E-02		2.49E-01
		1238.25		67.00	1.52E-02		4.58E-02
		1771.40		15.51	-1.18E-01		2.33E-01
		2598.48		16.90	0.00E+00		6.83E-02
+	CO-57	122.06		85.51	1.32E-02	2.51E-02	2.51E-02
		136.48		10.60	-5.10E-02		1.58E-01
+	CO-58	810.76		99.40	4.56E-03	3.50E-02	3.50E-02
+	FE-59	1099.22		56.50	2.22E-02	6.15E-02	6.15E-02
		1291.56		43.20	2.14E-02		9.70E-02
+	CO-60	1173.22		100.00	1.34E-02	4.07E-02	4.07E-02
		1332.49		100.00	2.71E-03		4.72E-02
+	ZN-65	1115.52		50.75	4.62E-03	6.51E-02	6.51E-02
+	GA-67	93.31		35.70	7.24E-02	7.69E-02	7.69E-02
		208.95		2.24	5.88E-02		1.06E+00
		300.22		16.00	-8.83E-02		1.49E-01
+	SE-75	121.11		16.70	-3.82E-03	2.81E-02	1.23E-01
		136.00		59.20	-3.83E-03		2.81E-02
		264.65		59.80	-1.06E-02		3.54E-02
		279.53		25.20	-2.91E-02		9.11E-02
		400.65		11.40	3.82E-02		2.36E-01
+	RB-82	776.52		13.00	5.96E-02	2.58E-01	2.58E-01
+	RB-83	520.41		46.00	1.32E-03	6.86E-02	6.86E-02
		529.64		30.30	3.28E-02		9.14E-02
		552.65		16.40	-5.47E-02		1.67E-01
+	KR-85	513.99	*	0.43	3.98E+00	1.08E+01	1.08E+01
+	SR-85	513.99	*	99.27	1.74E-02	4.70E-02	4.70E-02
+	Y-88	898.02		93.40	1.57E-02	3.79E-02	3.79E-02
		1836.01		99.38	6.94E-03		4.55E-02
+	NB-93M	16.57		9.43	-8.21E+00	3.96E+01	3.96E+01
+	NB-94	702.63		100.00	2.98E-03	3.17E-02	3.27E-02
		871.10		100.00	1.05E-02		3.17E-02

Analysis Report for 1601047-02

BLANK

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-95	765.79	99.81	1.68E-02	3.63E-02	3.63E-02
+	NB-95M	235.69	25.00	3.91E-03	1.02E-01	1.02E-01
+	ZR-95	724.18	43.70	-2.16E-02	6.84E-02	7.46E-02
		756.72	55.30	2.83E-02		6.84E-02
+	MO-99	181.06	6.20	-4.17E-02	2.35E-01	2.83E-01
		739.58	12.80	-1.49E-01		2.35E-01
		778.00	4.50	1.31E-01		6.99E-01
+	RU-103	497.08	89.00	8.20E-03	3.22E-02	3.22E-02
+	RU-106	621.84	9.80	6.52E-02	3.00E-01	3.00E-01
+	AG-108M	433.93	89.90	2.19E-02	3.15E-02	3.15E-02
		614.37	90.40	-1.55E-03		3.40E-02
		722.95	90.50	-1.56E-03		3.81E-02
+	CD-109	88.03	3.72	3.23E-01	6.71E-01	6.71E-01
+	AG-110M	657.75	93.14	-2.76E-02	3.22E-02	3.22E-02
		677.61	10.53	1.14E-01		3.42E-01
		706.67	16.46	6.64E-02		2.16E-01
		763.93	21.98	-2.27E-02		1.65E-01
		884.67	71.63	1.34E-02		5.06E-02
		1384.27	23.94	5.83E-03		1.53E-01
+	CD-113M	263.70	0.02	-2.40E+01	9.07E+01	9.07E+01
+	SN-113	255.12	1.93	-1.17E-03	3.73E-02	1.15E+00
		391.69	64.90	-8.54E-03		3.73E-02
+	TE123M	159.00	84.10	-1.49E-03	1.89E-02	1.89E-02
+	SB-124	602.71	97.87	8.52E-03	3.86E-02	3.86E-02
		645.85	7.26	-8.32E-02		3.94E-01
		722.78	11.10	-1.28E-02		3.11E-01
		1691.02	49.00	5.75E-03		8.70E-02
+	I-125	35.49	6.49	1.49E-01	1.07E+00	1.07E+00
+	SB-125	176.33	6.89	-4.89E-03	8.57E-02	2.71E-01
		427.89	29.33	1.91E-03		8.57E-02
		463.38	10.35	-1.16E-01		2.38E-01
		600.56	17.80	7.33E-02		1.82E-01
		635.90	11.32	7.35E-02		2.87E-01
+	SB-126	414.70	83.30	5.62E-03	3.06E-02	3.06E-02
		666.33	99.60	1.01E-04		3.14E-02
		695.00	99.60	3.14E-03		3.53E-02
		720.50	53.80	1.09E-02		6.90E-02
+	SN-126	87.57	37.00	3.25E-02	6.75E-02	6.75E-02
+	SB-127	473.00	25.00	1.90E-03	8.74E-02	1.19E-01
		685.20	35.70	1.55E-04		8.74E-02
		783.80	14.70	-4.81E-02		1.88E-01
+	I-129	29.78	57.00	-1.40E-02	2.34E-01	2.34E-01
		33.60	13.20	-8.21E-02		6.45E-01
		39.58	7.52	-1.77E-01		6.53E-01
+	I-131	284.30	6.05	-6.03E-02	2.96E-02	3.86E-01
		364.48	81.20	-4.68E-03		2.96E-02
		636.97	7.26	1.92E-01		4.49E-01
		722.89	1.80	-7.88E-02		1.92E+00

Analysis Report for 1601047-02

BLANK

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TE-132	49.72	13.10	-3.34E-01	2.45E-02	2.70E-01
		228.16	88.00	-6.94E-03		2.45E-02
+	BA-133	81.00	33.00	-1.08E-02	5.00E-02	6.80E-02
		302.84	17.80	4.50E-02		1.41E-01
		356.01	60.00	-1.31E-02		5.00E-02
+	I-133	529.87	86.30	1.17E-02	3.27E-02	3.27E-02
+	XE-133	81.00	38.00	-9.42E-03	5.92E-02	5.92E-02
+	CS-134	563.23	8.38	-2.55E-02	3.27E-02	3.73E-01
		569.32	15.43	3.45E-02		2.05E-01
		604.70	97.60	-1.52E-02		3.88E-02
		795.84	85.40	3.43E-03		3.27E-02
		801.93	8.73	2.23E-01		4.66E-01
+	CS-135	268.24	16.00	2.12E-02	1.31E-01	1.31E-01
+	I-135	1131.51	22.50	-6.11E-02	1.03E-01	1.46E-01
		1260.41	28.60	-4.77E-03		1.03E-01
		1678.03	9.54	-1.19E-02		3.85E-01
+	CS-136	153.22	7.46	-6.96E-02	3.41E-02	2.02E-01
		163.89	4.61	5.01E-02		3.70E-01
		176.55	13.56	1.97E-02		1.39E-01
		273.65	12.66	-6.48E-02		1.66E-01
		340.57	48.50	-3.57E-02		4.68E-02
		818.50	99.70	6.18E-03		3.41E-02
		1048.07	79.60	4.61E-03		4.87E-02
		1235.34	19.70	-3.56E-02		1.20E-01
+	CS-137	661.65	85.12	1.06E-02	4.14E-02	4.14E-02
+	LA-138	788.74	34.00	5.13E-03	4.68E-02	1.06E-01
		1435.80	66.00	-8.70E-03		4.68E-02
+	CE-139	165.85	80.35	-6.81E-03	2.21E-02	2.21E-02
+	BA-140	162.64	6.70	4.79E-03	1.18E-01	2.43E-01
		304.84	4.50	-5.54E-02		5.30E-01
		423.70	3.20	-6.36E-02		7.31E-01
		437.55	2.00	7.32E-02		1.28E+00
		537.32	25.00	-1.43E-02		1.18E-01
+	LA-140	328.77	20.50	9.15E-02	4.61E-02	1.37E-01
		487.03	45.50	-1.43E-02		6.44E-02
		815.85	23.50	-7.56E-02		1.21E-01
		1596.49	95.49	4.90E-03		4.61E-02
+	CE-141	145.44	48.40	7.66E-04	3.66E-02	3.66E-02
+	CE-143	57.36	11.80	6.05E-02	5.81E-02	2.41E-01
		293.26	42.00	8.73E-05		5.81E-02
		664.55	5.20	-2.44E-02		6.56E-01
+	CE-144	133.54	10.80	-2.40E-02	1.54E-01	1.54E-01
+	PM-144	476.78	42.00	4.31E-03	2.70E-02	6.71E-02
		618.01	98.60	2.03E-03		2.70E-02
		696.49	99.49	6.46E-03		3.70E-02
+	PM-145	36.85	21.70	1.49E-01	1.45E-01	2.90E-01
		37.36	39.70	5.85E-02		1.45E-01
		42.30	15.10	-2.22E-01		2.67E-01
		72.40	2.31	2.58E-01		1.05E+00

Analysis Report for 1601047-02

BLANK

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-146	453.90	39.94	-2.93E-02	5.91E-02	5.91E-02
		735.90	14.01	9.24E-02		2.50E-01
		747.13	13.10	-1.20E-01		2.39E-01
+	ND-147	91.11	28.90	4.78E-02	8.92E-02	8.92E-02
		531.02	13.10	8.26E-02		2.17E-01
+	PM-149	285.90	3.10	1.44E-01	7.60E-01	7.60E-01
+	EU-152	121.78	20.50	5.49E-02	1.04E-01	1.04E-01
		244.69	5.40	-1.12E-01		4.15E-01
		344.27	19.13	-1.39E-03		1.29E-01
		778.89	9.20	-3.75E-02		3.27E-01
		964.01	10.40	5.25E-02		3.61E-01
		1085.78	7.22	-6.34E-02		3.41E-01
		1112.02	9.60	-4.46E-02		3.43E-01
		1407.95	14.94	-5.68E-02		2.67E-01
+	GD-153	97.43	31.30	-1.19E-02	7.04E-02	7.04E-02
		103.18	22.20	-3.01E-02		9.63E-02
+	EU-154	123.07	40.50	1.39E-03	5.24E-02	5.24E-02
		723.30	19.70	-7.19E-03		1.75E-01
		873.19	11.50	-2.07E-01		2.63E-01
		996.32	10.30	-1.03E-02		2.23E-01
		1004.76	17.90	5.49E-02		1.69E-01
		1274.45	35.50	2.21E-02		9.65E-02
+	EU-155	86.50	30.90	4.59E-02	8.11E-02	8.11E-02
		105.30	20.70	4.74E-02		1.11E-01
+	EU-156	811.77	10.40	2.82E-02	3.12E-01	3.12E-01
		1153.47	7.20	-4.39E-02		5.31E-01
		1230.71	8.90	0.00E+00		4.29E-01
+	HO-166M	184.41	72.60	2.96E-02	3.18E-02	3.18E-02
		280.45	29.60	5.03E-02		8.29E-02
		410.94	11.10	-8.51E-03		2.19E-01
		711.69	54.10	-1.51E-02		6.46E-02
+	TM-171	66.72	0.14	-1.46E+01	1.68E+01	1.68E+01
+	HF-172	81.75	4.52	-1.45E-01	1.82E-01	5.10E-01
		125.81	11.30	7.48E-02		1.82E-01
+	LU-172	181.53	20.60	-9.84E-02	5.55E-02	8.68E-02
		810.06	16.63	3.23E-02		2.10E-01
		912.12	15.25	1.10E-01		2.45E-01
		1093.66	62.50	1.16E-02		5.55E-02
+	LU-173	100.72	5.24	-1.85E-01	1.01E-01	3.97E-01
		272.11	21.20	-2.02E-03		1.01E-01
+	HF-175	343.40	84.00	9.60E-03	3.01E-02	3.01E-02
+	LU-176	88.34	13.30	-2.12E-01	2.48E-02	1.80E-01
		201.83	86.00	1.24E-02		2.76E-02
		306.78	94.00	2.70E-03		2.48E-02
+	TA-182	67.75	41.20	2.50E-02	5.62E-02	5.62E-02
		1121.30	34.90	-2.02E-02		8.10E-02
		1189.05	16.23	6.52E-02		2.28E-01
		1221.41	26.98	3.07E-02		1.40E-01
		1231.02	11.44	0.00E+00		3.33E-01

Analysis Report for 1601047-02

BLANK

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	IR-192	308.46	29.68	-9.93E-03	5.98E-02	7.36E-02
		468.07	48.10	1.08E-02		5.98E-02
+	HG-203	279.19	77.30	-5.04E-03	3.04E-02	3.04E-02
+	BI-207	569.67	97.72	5.25E-03	3.16E-02	3.16E-02
		1063.62	74.90	2.38E-02		5.85E-02
+	TL-208	583.14	30.22	4.29E-02	1.07E-01	1.07E-01
		860.37	4.48	1.05E-01		8.18E-01
		2614.66	35.85	5.17E-02		1.56E-01
+	BI-210M	262.00	45.00	1.19E-02	5.00E-02	5.00E-02
		300.00	23.00	-6.11E-02		1.03E-01
+	PB-210	46.50	4.25	9.66E-01	1.01E+00	1.01E+00
+	PB-211	404.84	2.90	7.61E-03	9.64E-01	9.64E-01
		831.96	2.90	-6.11E-01		1.23E+00
+	BI-212	727.17	11.80	8.41E-02	2.86E-01	2.86E-01
		1620.62	2.75	-1.04E+00		1.72E+00
+	PB-212	238.63	44.60	3.51E-02	6.15E-02	6.15E-02
		300.09	3.41	-4.12E-01		6.97E-01
+	BI-214	609.31	46.30	7.94E-02	9.57E-02	9.57E-02
		1120.29	15.10	-6.23E-03		2.04E-01
		1764.49	15.80	-3.03E-03		3.19E-01
		2204.22	4.98	3.78E-01		1.10E+00
+	PB-214	295.21	19.19	5.06E-02	8.37E-02	1.31E-01
		351.92	37.19	3.97E-02		8.37E-02
+	RN-219	401.80	6.50	5.08E-02	4.21E-01	4.21E-01
+	RA-223	323.87	3.88	-1.47E-02	6.37E-01	6.37E-01
+	RA-224	240.98	3.95	5.62E-01	7.36E-01	7.36E-01
+	RA-225	40.00	31.00	-4.20E-02	1.55E-01	1.55E-01
+	RA-226	186.21	3.28	7.27E-01	7.13E-01	7.13E-01
+	TH-227	50.10	8.40	-5.13E-01	2.21E-01	4.14E-01
		236.00	11.50	8.47E-03		2.21E-01
		256.20	6.30	-2.26E-02		3.55E-01
+	AC-228	338.32	11.40	5.44E-02	1.34E-01	2.19E-01
		911.07	27.70	6.95E-02		1.34E-01
		969.11	16.60	-1.88E-02		1.99E-01
+	TH-230	48.44	16.90	1.93E-02	2.37E-01	2.37E-01
		62.85	4.60	2.75E-01		6.27E-01
		67.67	0.37	2.78E+00		6.26E+00
+	PA-231	283.67	1.60	-2.27E-01	1.09E+00	1.45E+00
		302.67	2.30	3.48E-01		1.09E+00
+	TH-231	25.64	14.70	-4.35E-01	3.80E-01	1.72E+00
		84.21	6.40	-5.22E-03		3.80E-01
+	PA-233	311.98	38.60	-1.68E-02	5.80E-02	5.80E-02
+	PA-234	131.20	20.40	-3.16E-02	8.45E-02	8.45E-02
		733.99	8.80	4.84E-02		3.86E-01
		946.00	12.00	1.79E-02		2.83E-01
+	PA-234M	1001.03	0.92	6.05E-01	3.05E+00	3.05E+00
+	TH-234	63.29	3.80	5.90E-01	7.69E-01	7.69E-01

Analysis Report for 1601047-02

BLANK

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	U-235	143.76	10.50	1.25E-02	1.74E-01	1.74E-01
		163.35	4.70	4.89E-02		3.62E-01
		205.31	4.70	-1.27E-01		4.60E-01
+	NP-237	86.50	12.60	1.13E-01	1.99E-01	1.99E-01
+	NP-239	106.10	22.70	5.66E-03	1.02E-01	1.02E-01
		228.18	10.70	-5.72E-02		2.02E-01
		277.60	14.10	2.78E-02		1.70E-01
+	AM-241	59.54	35.90	-6.19E-02	7.53E-02	7.53E-02
+	AM-243	74.67	66.00	1.89E-02	3.83E-02	3.83E-02
+	CM-243	209.75	3.29	3.13E-01	1.70E-01	7.27E-01
		228.14	10.60	-5.74E-02		2.02E-01
		277.60	14.00	2.79E-02		1.70E-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	2.60E-01	2.60E-01	-4.72E-02	1.15E-01
NA-22	1274.54	99.94	3.43E-02	3.43E-02	7.84E-03	1.36E-02
NA-24	1368.53	99.99	4.25E-02	4.25E-02	4.04E-04	1.74E-02
	2754.09	99.86	4.84E-02		1.50E-03	1.81E-02
AL-26	1808.65	99.76	3.18E-02	3.18E-02	-3.42E-03	1.13E-02
K-40	1460.81	10.67	4.10E-01	4.10E-01	-1.07E-01	1.68E-01
AR-41	1293.64	99.16	5.10E-02	5.10E-02	1.53E-02	2.11E-02
TI-44	67.88	94.40	2.45E-02	2.31E-02	1.09E-02	1.16E-02
	78.34	96.00	2.31E-02		-9.01E-03	1.10E-02
SC-46	889.25	99.98	3.37E-02	3.08E-02	9.29E-03	1.42E-02

Analysis Report for 1601047-02

BLANK

	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	3.08E-02	3.08E-02	-9.41E-04	1.22E-02
	V-48	983.52		99.98	3.35E-02	3.35E-02	-4.22E-03	1.39E-02
		1312.10		97.50	4.36E-02		9.61E-03	1.81E-02
	CR-51	320.08		9.83	2.46E-01	2.46E-01	5.99E-02	1.12E-01
	MN-54	834.83		99.97	3.91E-02	3.91E-02	-2.75E-03	1.71E-02
	CO-56	846.75		99.96	3.62E-02	3.62E-02	-1.21E-03	1.56E-02
		1037.75		14.03	2.49E-01		2.16E-02	1.03E-01
		1238.25		67.00	4.58E-02		1.52E-02	1.77E-02
		1771.40		15.51	2.33E-01		-1.18E-01	8.74E-02
		2598.48		16.90	6.83E-02		0.00E+00	0.00E+00
	CO-57	122.06		85.51	2.51E-02	2.51E-02	1.32E-02	1.19E-02
		136.48		10.60	1.58E-01		-5.10E-02	7.36E-02
	CO-58	810.76		99.40	3.50E-02	3.50E-02	4.56E-03	1.51E-02
	FE-59	1099.22		56.50	6.15E-02	6.15E-02	2.22E-02	2.52E-02
		1291.56		43.20	9.70E-02		2.14E-02	4.02E-02
	CO-60	1173.22		100.00	4.07E-02	4.07E-02	1.34E-02	1.70E-02
		1332.49		100.00	4.72E-02		2.71E-03	1.99E-02
	ZN-65	1115.52		50.75	6.51E-02	6.51E-02	4.62E-03	2.63E-02
	GA-67	93.31		35.70	7.69E-02	7.69E-02	7.24E-02	3.70E-02
		208.95		2.24	1.06E+00		5.88E-02	4.93E-01
		300.22		16.00	1.49E-01		-8.83E-02	6.82E-02
	SE-75	121.11		16.70	1.23E-01	2.81E-02	-3.82E-03	5.84E-02
		136.00		59.20	2.81E-02		-3.83E-03	1.30E-02
		264.65		59.80	3.54E-02		-1.06E-02	1.62E-02
		279.53		25.20	9.11E-02		-2.91E-02	4.17E-02
		400.65		11.40	2.36E-01		3.82E-02	1.06E-01
	RB-82	776.52		13.00	2.58E-01	2.58E-01	5.96E-02	1.11E-01
	RB-83	520.41		46.00	6.86E-02	6.86E-02	1.32E-03	3.07E-02
		529.64		30.30	9.14E-02		3.28E-02	4.02E-02
		552.65		16.40	1.67E-01		-5.47E-02	7.27E-02
+	KR-85	513.99	*	0.43	1.08E+01	1.08E+01	3.98E+00	5.01E+00
+	SR-85	513.99	*	99.27	4.70E-02	4.70E-02	1.74E-02	2.19E-02
	Y-88	898.02		93.40	3.79E-02	3.79E-02	1.57E-02	1.61E-02
		1836.01		99.38	4.55E-02		6.94E-03	1.81E-02
	NB-93M	16.57		9.43	3.96E+01	3.96E+01	-8.21E+00	1.90E+01
	NB-94	702.63		100.00	3.27E-02	3.17E-02	2.98E-03	1.42E-02
		871.10		100.00	3.17E-02		1.05E-02	1.33E-02
	NB-95	765.79		99.81	3.63E-02	3.63E-02	1.68E-02	1.59E-02
	NB-95M	235.69		25.00	1.02E-01	1.02E-01	3.91E-03	4.77E-02
	ZR-95	724.18		43.70	7.46E-02	6.84E-02	-2.16E-02	3.23E-02
		756.72		55.30	6.84E-02		2.83E-02	3.01E-02
	MO-99	181.06		6.20	2.83E-01	2.35E-01	-4.17E-02	1.30E-01
		739.58		12.80	2.35E-01		-1.49E-01	1.00E-01
		778.00		4.50	6.99E-01		1.31E-01	2.97E-01
	RU-103	497.08		89.00	3.22E-02	3.22E-02	8.20E-03	1.43E-02
	RU-106	621.84		9.80	3.00E-01	3.00E-01	6.52E-02	1.31E-01
	AG-108M	433.93		89.90	3.15E-02	3.15E-02	2.19E-02	1.42E-02
		614.37		90.40	3.40E-02		-1.55E-03	1.49E-02
		722.95		90.50	3.81E-02		-1.56E-03	1.66E-02
	CD-109	88.03		3.72	6.71E-01	6.71E-01	3.23E-01	3.21E-01
	AG-110M	657.75		93.14	3.22E-02	3.22E-02	-2.76E-02	1.39E-02
		677.61		10.53	3.42E-01		1.14E-01	1.51E-01
		706.67		16.46	2.16E-01		6.64E-02	9.52E-02

Analysis Report for 1601047-02

BLANK

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	1.65E-01	3.22E-02	-2.27E-02	7.19E-02
	884.67	71.63	5.06E-02		1.34E-02	2.17E-02
	1384.27	23.94	1.53E-01		5.83E-03	6.06E-02
CD-113M	263.70	0.02	9.07E+01	9.07E+01	-2.40E+01	4.14E+01
SN-113	255.12	1.93	1.15E+00	3.73E-02	-1.17E-03	5.31E-01
	391.69	64.90	3.73E-02		-8.54E-03	1.67E-02
TE123M	159.00	84.10	1.89E-02	1.89E-02	-1.49E-03	8.70E-03
SB-124	602.71	97.87	3.86E-02	3.86E-02	8.52E-03	1.74E-02
	645.85	7.26	3.94E-01		-8.32E-02	1.70E-01
	722.78	11.10	3.11E-01		-1.28E-02	1.36E-01
	1691.02	49.00	8.70E-02		5.75E-03	3.45E-02
I-125	35.49	6.49	1.07E+00	1.07E+00	1.49E-01	5.12E-01
SB-125	176.33	6.89	2.71E-01	8.57E-02	-4.89E-03	1.25E-01
	427.89	29.33	8.57E-02		1.91E-03	3.81E-02
	463.38	10.35	2.38E-01		-1.16E-01	1.05E-01
	600.56	17.80	1.82E-01		7.33E-02	8.05E-02
	635.90	11.32	2.87E-01		7.35E-02	1.26E-01
SB-126	414.70	83.30	3.06E-02	3.06E-02	5.62E-03	1.37E-02
	666.33	99.60	3.14E-02		1.01E-04	1.37E-02
	695.00	99.60	3.53E-02		3.14E-03	1.55E-02
	720.50	53.80	6.90E-02		1.09E-02	3.05E-02
SN-126	87.57	37.00	6.75E-02	6.75E-02	3.25E-02	3.23E-02
SB-127	473.00	25.00	1.19E-01	8.74E-02	1.90E-03	5.33E-02
	685.20	35.70	8.74E-02		1.55E-04	3.78E-02
	783.80	14.70	1.88E-01		-4.81E-02	7.80E-02
I-129	29.78	57.00	2.34E-01	2.34E-01	-1.40E-02	1.12E-01
	33.60	13.20	6.45E-01		-8.21E-02	3.08E-01
	39.58	7.52	6.53E-01		-1.77E-01	3.11E-01
I-131	284.30	6.05	3.86E-01	2.96E-02	-6.03E-02	1.77E-01
	364.48	81.20	2.96E-02		-4.68E-03	1.33E-02
	636.97	7.26	4.49E-01		1.92E-01	1.97E-01
	722.89	1.80	1.92E+00		-7.88E-02	8.38E-01
TE-132	49.72	13.10	2.70E-01	2.45E-02	-3.34E-01	1.29E-01
	228.16	88.00	2.45E-02		-6.94E-03	1.13E-02
BA-133	81.00	33.00	6.80E-02	5.00E-02	-1.08E-02	3.24E-02
	302.84	17.80	1.41E-01		4.50E-02	6.47E-02
	356.01	60.00	5.00E-02		-1.31E-02	2.30E-02
I-133	529.87	86.30	3.27E-02	3.27E-02	1.17E-02	1.44E-02
XE-133	81.00	38.00	5.92E-02	5.92E-02	-9.42E-03	2.82E-02
CS-134	563.23	8.38	3.73E-01	3.27E-02	-2.55E-02	1.66E-01
	569.32	15.43	2.05E-01		3.45E-02	9.08E-02
	604.70	97.60	3.88E-02		-1.52E-02	1.75E-02
	795.84	85.40	3.27E-02		3.43E-03	1.35E-02
	801.93	8.73	4.66E-01		2.23E-01	2.06E-01
CS-135	268.24	16.00	1.31E-01	1.31E-01	2.12E-02	5.94E-02
I-135	1131.51	22.50	1.46E-01	1.03E-01	-6.11E-02	5.78E-02
	1260.41	28.60	1.03E-01		-4.77E-03	3.85E-02
	1678.03	9.54	3.85E-01		-1.19E-02	1.44E-01
CS-136	153.22	7.46	2.02E-01	3.41E-02	-6.96E-02	9.27E-02
	163.89	4.61	3.70E-01		5.01E-02	1.71E-01
	176.55	13.56	1.39E-01		1.97E-02	6.45E-02
	273.65	12.66	1.66E-01		-6.48E-02	7.53E-02
	340.57	48.50	4.68E-02		-3.57E-02	2.10E-02

Analysis Report for 1601047-02

BLANK

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	3.41E-02	3.41E-02	6.18E-03	1.46E-02
	1048.07	79.60	4.87E-02		4.61E-03	2.06E-02
	1235.34	19.70	1.20E-01		-3.56E-02	4.26E-02
CS-137	661.65	85.12	4.14E-02	4.14E-02	1.06E-02	1.83E-02
LA-138	788.74	34.00	1.06E-01	4.68E-02	5.13E-03	4.62E-02
	1435.80	66.00	4.68E-02		-8.70E-03	1.75E-02
CE-139	165.85	80.35	2.21E-02	2.21E-02	-6.81E-03	1.02E-02
BA-140	162.64	6.70	2.43E-01	1.18E-01	4.79E-03	1.12E-01
	304.84	4.50	5.30E-01		-5.54E-02	2.42E-01
	423.70	3.20	7.31E-01		-6.36E-02	3.22E-01
	437.55	2.00	1.28E+00		7.32E-02	5.71E-01
	537.32	25.00	1.18E-01		-1.43E-02	5.21E-02
LA-140	328.77	20.50	1.37E-01	4.61E-02	9.15E-02	6.30E-02
	487.03	45.50	6.44E-02		-1.43E-02	2.88E-02
	815.85	23.50	1.21E-01		-7.56E-02	5.04E-02
	1596.49	95.49	4.61E-02		4.90E-03	1.86E-02
CE-141	145.44	48.40	3.66E-02	3.66E-02	7.66E-04	1.71E-02
CE-143	57.36	11.80	2.41E-01	5.81E-02	6.05E-02	1.15E-01
	293.26	42.00	5.81E-02		8.73E-05	2.66E-02
	664.55	5.20	6.56E-01		-2.44E-02	2.89E-01
CE-144	133.54	10.80	1.54E-01	1.54E-01	-2.40E-02	7.15E-02
PM-144	476.78	42.00	6.71E-02	2.70E-02	4.31E-03	2.99E-02
	618.01	98.60	2.70E-02		2.03E-03	1.15E-02
	696.49	99.49	3.70E-02		6.46E-03	1.64E-02
PM-145	36.85	21.70	2.90E-01	1.45E-01	1.49E-01	1.38E-01
	37.36	39.70	1.45E-01		5.85E-02	6.90E-02
	42.30	15.10	2.67E-01		-2.22E-01	1.27E-01
	72.40	2.31	1.05E+00		2.58E-01	5.00E-01
PM-146	453.90	39.94	5.91E-02	5.91E-02	-2.93E-02	2.59E-02
	735.90	14.01	2.50E-01		9.24E-02	1.09E-01
	747.13	13.10	2.39E-01		-1.20E-01	1.02E-01
ND-147	91.11	28.90	8.92E-02	8.92E-02	4.78E-02	4.28E-02
	531.02	13.10	2.17E-01		8.26E-02	9.59E-02
PM-149	285.90	3.10	7.60E-01	7.60E-01	1.44E-01	3.48E-01
EU-152	121.78	20.50	1.04E-01	1.04E-01	5.49E-02	4.95E-02
	244.69	5.40	4.15E-01		-1.12E-01	1.92E-01
	344.27	19.13	1.29E-01		-1.39E-03	5.85E-02
	778.89	9.20	3.27E-01		-3.75E-02	1.38E-01
	964.01	10.40	3.61E-01		5.25E-02	1.54E-01
	1085.78	7.22	3.41E-01		-6.34E-02	1.28E-01
	1112.02	9.60	3.43E-01		-4.46E-02	1.39E-01
	1407.95	14.94	2.67E-01		-5.68E-02	1.08E-01
GD-153	97.43	31.30	7.04E-02	7.04E-02	-1.19E-02	3.35E-02
	103.18	22.20	9.63E-02		-3.01E-02	4.57E-02
EU-154	123.07	40.50	5.24E-02	5.24E-02	1.39E-03	2.48E-02
	723.30	19.70	1.75E-01		-7.19E-03	7.65E-02
	873.19	11.50	2.63E-01		-2.07E-01	1.09E-01
	996.32	10.30	2.23E-01		-1.03E-02	8.34E-02
	1004.76	17.90	1.69E-01		5.49E-02	6.83E-02
	1274.45	35.50	9.65E-02		2.21E-02	3.83E-02
EU-155	86.50	30.90	8.11E-02	8.11E-02	4.59E-02	3.88E-02
	105.30	20.70	1.11E-01		4.74E-02	5.30E-02
EU-156	811.77	10.40	3.12E-01	3.12E-01	2.82E-02	1.33E-01

Analysis Report for 1601047-02

BLANK

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	5.31E-01	3.12E-01	-4.39E-02	2.20E-01
	1230.71	8.90	4.29E-01		0.00E+00	1.76E-01
HO-166M	184.41	72.60	3.18E-02	3.18E-02	2.96E-02	1.49E-02
	280.45	29.60	8.29E-02		5.03E-02	3.82E-02
	410.94	11.10	2.19E-01		-8.51E-03	9.73E-02
	711.69	54.10	6.46E-02		-1.51E-02	2.83E-02
TM-171	66.72	0.14	1.68E+01	1.68E+01	-1.46E+01	7.99E+00
HF-172	81.75	4.52	5.10E-01	1.82E-01	-1.45E-01	2.43E-01
	125.81	11.30	1.82E-01		7.48E-02	8.58E-02
LU-172	181.53	20.60	8.68E-02	5.55E-02	-9.84E-02	4.00E-02
	810.06	16.63	2.10E-01		3.23E-02	9.03E-02
	912.12	15.25	2.45E-01		1.10E-01	1.05E-01
	1093.66	62.50	5.55E-02		1.16E-02	2.27E-02
LU-173	100.72	5.24	3.97E-01	1.01E-01	-1.85E-01	1.88E-01
	272.11	21.20	1.01E-01		-2.02E-03	4.60E-02
HF-175	343.40	84.00	3.01E-02	3.01E-02	9.60E-03	1.37E-02
LU-176	88.34	13.30	1.80E-01	2.48E-02	-2.12E-01	8.58E-02
	201.83	86.00	2.76E-02		1.24E-02	1.29E-02
	306.78	94.00	2.48E-02		2.70E-03	1.13E-02
TA-182	67.75	41.20	5.62E-02	5.62E-02	2.50E-02	2.67E-02
	1121.30	34.90	8.10E-02		-2.02E-02	3.14E-02
	1189.05	16.23	2.28E-01		6.52E-02	9.36E-02
	1221.41	26.98	1.40E-01		3.07E-02	5.76E-02
	1231.02	11.44	3.33E-01		0.00E+00	1.37E-01
IR-192	308.46	29.68	7.36E-02	5.98E-02	-9.93E-03	3.33E-02
	468.07	48.10	5.98E-02		1.08E-02	2.68E-02
HG-203	279.19	77.30	3.04E-02	3.04E-02	-5.04E-03	1.39E-02
BI-207	569.67	97.72	3.16E-02	3.16E-02	5.25E-03	1.40E-02
	1063.62	74.90	5.85E-02		2.38E-02	2.52E-02
TL-208	583.14	30.22	1.07E-01	1.07E-01	4.29E-02	4.74E-02
	860.37	4.48	8.18E-01		1.05E-01	3.52E-01
	2614.66	35.85	1.56E-01		5.17E-02	6.21E-02
BI-210M	262.00	45.00	5.00E-02	5.00E-02	1.19E-02	2.30E-02
	300.00	23.00	1.03E-01		-6.11E-02	4.72E-02
PB-210	46.50	4.25	1.01E+00	1.01E+00	9.66E-01	4.83E-01
PB-211	404.84	2.90	9.64E-01	9.64E-01	7.61E-03	4.36E-01
	831.96	2.90	1.23E+00		-6.11E-01	5.28E-01
BI-212	727.17	11.80	2.86E-01	2.86E-01	8.41E-02	1.24E-01
	1620.62	2.75	1.72E+00		-1.04E+00	7.05E-01
PB-212	238.63	44.60	6.15E-02	6.15E-02	3.51E-02	2.88E-02
	300.09	3.41	6.97E-01		-4.12E-01	3.19E-01
BI-214	609.31	46.30	9.57E-02	9.57E-02	7.94E-02	4.38E-02
	1120.29	15.10	2.04E-01		-6.23E-03	8.10E-02
	1764.49	15.80	3.19E-01		-3.03E-03	1.31E-01
	2204.22	4.98	1.10E+00		3.78E-01	4.45E-01
PB-214	295.21	19.19	1.31E-01	8.37E-02	5.06E-02	6.01E-02
	351.92	37.19	8.37E-02		3.97E-02	3.87E-02
RN-219	401.80	6.50	4.21E-01	4.21E-01	5.08E-02	1.90E-01
RA-223	323.87	3.88	6.37E-01	6.37E-01	-1.47E-02	2.91E-01
RA-224	240.98	3.95	7.36E-01	7.36E-01	5.62E-01	3.47E-01
RA-225	40.00	31.00	1.55E-01	1.55E-01	-4.20E-02	7.37E-02
RA-226	186.21	3.28	7.13E-01	7.13E-01	7.27E-01	3.35E-01
TH-227	50.10	8.40	4.14E-01	2.21E-01	-5.13E-01	1.98E-01

Analysis Report for 1601047-02

BLANK

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	2.21E-01	2.21E-01	8.47E-03	1.03E-01
	256.20	6.30	3.55E-01		-2.26E-02	1.63E-01
AC-228	338.32	11.40	2.19E-01	1.34E-01	5.44E-02	9.97E-02
	911.07	27.70	1.34E-01		6.95E-02	5.75E-02
	969.11	16.60	1.99E-01		-1.88E-02	8.25E-02
TH-230	48.44	16.90	2.37E-01	2.37E-01	1.93E-02	1.13E-01
	62.85	4.60	6.27E-01		2.75E-01	3.00E-01
	67.67	0.37	6.26E+00		2.78E+00	2.98E+00
PA-231	283.67	1.60	1.45E+00	1.09E+00	-2.27E-01	6.65E-01
	302.67	2.30	1.09E+00		3.48E-01	5.00E-01
TH-231	25.64	14.70	1.72E+00	3.80E-01	-4.35E-01	8.25E-01
	84.21	6.40	3.80E-01		-5.22E-03	1.82E-01
PA-233	311.98	38.60	5.80E-02	5.80E-02	-1.68E-02	2.63E-02
PA-234	131.20	20.40	8.45E-02	8.45E-02	-3.16E-02	3.94E-02
	733.99	8.80	3.86E-01		4.84E-02	1.68E-01
	946.00	12.00	2.83E-01		1.79E-02	1.19E-01
PA-234M	1001.03	0.92	3.05E+00	3.05E+00	6.05E-01	1.21E+00
TH-234	63.29	3.80	7.69E-01	7.69E-01	5.90E-01	3.69E-01
U-235	143.76	10.50	1.74E-01	1.74E-01	1.25E-02	8.12E-02
	163.35	4.70	3.62E-01		4.89E-02	1.67E-01
	205.31	4.70	4.60E-01		-1.27E-01	2.14E-01
NP-237	86.50	12.60	1.99E-01	1.99E-01	1.13E-01	9.52E-02
NP-239	106.10	22.70	1.02E-01	1.02E-01	5.66E-03	4.85E-02
	228.18	10.70	2.02E-01		-5.72E-02	9.31E-02
	277.60	14.10	1.70E-01		2.78E-02	7.82E-02
AM-241	59.54	35.90	7.53E-02	7.53E-02	-6.19E-02	3.59E-02
AM-243	74.67	66.00	3.83E-02	3.83E-02	1.89E-02	1.83E-02
CM-243	209.75	3.29	7.27E-01	1.70E-01	3.13E-01	3.40E-01
	228.14	10.60	2.02E-01		-5.74E-02	9.34E-02
	277.60	14.00	1.70E-01		2.79E-02	7.83E-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

Analysis Report for 1601047-02

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: 3617

Channel								
1:	0	0	0	0	0	0	0	0
9:	4	121	116	101	93	58	45	40
17:	42	25	35	30	15	33	42	42
25:	43	38	28	39	41	29	38	35
33:	43	30	37	21	33	31	30	21
41:	24	25	27	23	18	39	68	41
49:	25	27	29	36	33	18	32	26
57:	30	31	23	32	21	34	43	54
65:	25	28	30	22	21	23	17	25
73:	34	35	35	39	21	36	24	24
81:	23	34	29	32	28	38	44	33
89:	29	27	23	31	73	53	26	24
97:	33	27	24	23	21	21	26	32
105:	21	33	28	25	24	35	28	29
113:	43	23	32	26	21	21	19	17
121:	21	27	18	27	14	14	32	11
129:	12	11	15	12	15	10	14	8
137:	10	16	11	13	18	10	17	17
145:	8	15	12	10	12	11	7	4
153:	10	8	12	8	11	11	11	5
161:	6	13	5	12	9	10	9	13
169:	21	10	13	12	8	10	11	17
177:	7	9	11	12	9	7	6	13
185:	9	35	17	7	8	7	5	10
193:	6	3	10	10	11	12	17	10
201:	11	8	6	12	10	4	7	12
209:	9	10	14	13	6	10	6	5
217:	10	9	7	7	6	4	7	6
225:	7	4	7	7	10	9	5	12
233:	8	6	4	3	7	15	24	10
241:	11	7	11	8	8	9	2	3
249:	10	4	6	5	2	7	7	10
257:	6	7	5	10	5	8	4	4
265:	7	3	5	6	5	7	2	5
273:	4	4	9	8	2	7	7	4
281:	7	7	6	8	4	1	7	2
289:	12	2	4	6	3	5	16	5
297:	3	6	3	8	6	9	3	6
305:	6	4	6	3	3	7	4	3
313:	4	4	6	5	8	3	5	6
321:	4	8	1	3	3	10	7	5
329:	5	7	3	9	4	3	5	5
337:	8	4	3	4	5	4	4	3
345:	4	10	2	5	6	3	2	19
353:	9	8	4	3	9	6	7	5
361:	7	5	1	3	5	2	6	5

369:	1	8	6	8	3	5	3	1

Sample Title: BLANK

Channel								
377:	2	3	9	7	2	6	0	4
385:	2	6	3	12	3	6	8	1
393:	1	2	3	5	2	4	1	5
401:	7	2	7	3	5	2	7	5
409:	3	3	2	3	3	3	2	3
417:	6	4	4	2	4	1	4	1
425:	5	2	2	3	3	2	5	3
433:	4	4	6	6	0	0	1	5
441:	4	2	0	4	3	0	5	2
449:	6	3	0	3	4	4	1	0
457:	5	1	6	3	4	4	0	2
465:	3	2	4	5	5	1	5	4
473:	5	4	2	5	2	3	4	3
481:	2	2	4	3	6	4	2	5
489:	0	4	6	4	2	2	1	4
497:	4	3	4	4	1	2	4	3
505:	4	2	2	7	3	15	19	8
513:	12	4	3	4	7	2	4	0
521:	5	3	4	5	7	3	1	1
529:	4	0	5	4	3	2	0	2
537:	3	7	3	3	4	2	2	1
545:	5	4	3	6	4	1	3	2
553:	3	5	0	2	2	2	5	2
561:	1	2	7	5	1	3	4	2
569:	2	4	4	2	2	2	3	4
577:	4	0	2	3	2	5	5	2
585:	3	1	1	3	2	3	3	0
593:	0	3	2	3	1	2	1	3
601:	6	4	4	0	3	8	4	5
609:	7	6	7	2	3	1	1	2
617:	1	2	1	1	4	2	0	4
625:	3	3	0	2	1	2	2	2
633:	2	0	5	1	4	2	4	2
641:	1	0	2	3	2	1	3	2
649:	0	5	2	2	5	5	1	2
657:	2	2	3	3	1	7	1	4
665:	1	1	3	2	3	0	1	2
673:	2	2	0	4	4	2	3	5
681:	2	2	1	2	5	1	3	0
689:	1	1	0	3	3	3	2	1
697:	2	4	5	3	3	0	0	3
705:	5	1	4	0	3	2	2	3
713:	2	3	2	3	5	1	1	4
721:	4	3	1	0	4	0	2	4
729:	2	3	1	0	3	2	5	2
737:	2	0	2	2	1	2	5	1
745:	1	0	2	4	0	4	3	2
753:	0	1	3	3	0	3	4	4
761:	1	2	3	1	4	3	2	2
769:	1	0	1	2	3	1	1	1
777:	3	3	1	2	0	0	1	3
785:	1	2	1	1	3	7	0	1
793:	1	3	1	1	0	0	2	1

801:	2	3	2	4	5	4	1	3

Sample Title: BLANK

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

1233:	0	0	1	0	0	1	1	1

Sample Title: BLANK

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

1665:	0	1	0	1	1	0	1	2

Sample Title: BLANK

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

2097:	0	0	0	1	0	0	0	0

Sample Title: BLANK

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

2529:	0	0	0	0	1	0	0	0

Sample Title: BLANK

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

2961:	0	0	1	1	0	0	0	0

Sample Title: BLANK

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

3393:	0	0	0	0	0	0	1	0

Sample Title: BLANK

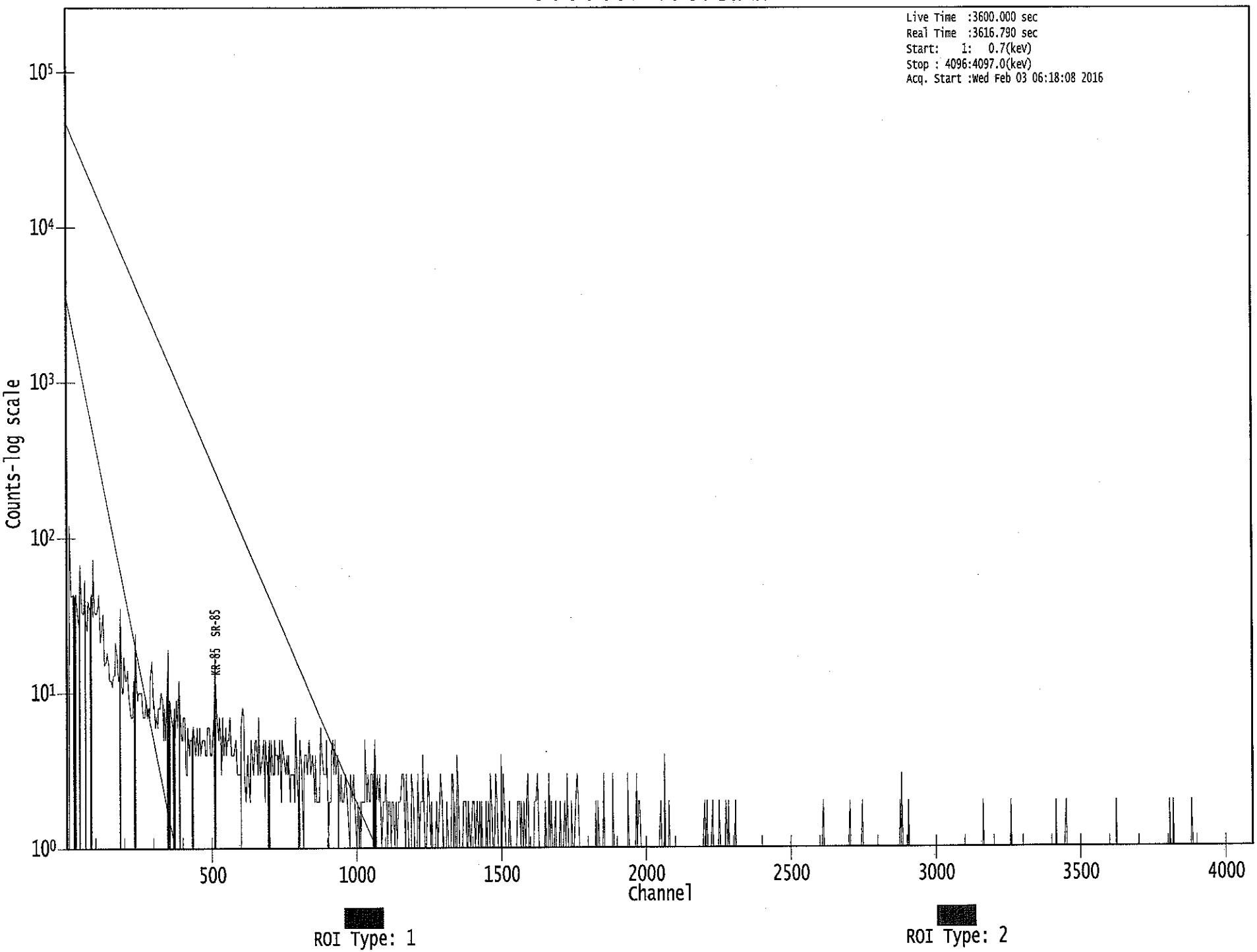
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	2
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	1
3441:	0	0	0	1	1	0	1	0
3449:	0	2	0	0	1	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	1	0
3473:	0	0	0	0	0	0	0	0
3481:	0	1	0	0	0	0	0	0
3489:	0	0	1	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	1	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	1	0	0
3577:	0	0	0	0	0	0	0	1
3585:	1	0	0	0	0	0	0	1
3593:	0	0	0	0	0	1	0	0
3601:	1	0	0	1	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	2	0
3625:	1	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	1	0	0	1	0	0
3657:	0	0	1	0	0	0	0	0
3665:	0	0	1	0	0	1	0	0
3673:	0	1	0	0	0	0	0	0
3681:	0	0	0	0	0	0	1	1
3689:	0	0	0	0	0	1	1	0
3697:	1	0	0	0	0	0	0	0
3705:	0	0	1	0	0	0	1	0
3713:	0	0	0	0	0	0	0	0
3721:	0	0	0	0	0	0	1	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	1	0	0	0
3745:	0	1	0	0	0	0	1	0
3753:	0	0	0	1	0	1	0	0
3761:	0	0	0	0	0	0	0	1
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	2	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	2	0	0	0	0	0	0

3825:	0	0	0	1	0	1	0	0

Sample Title: BLANK

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

0000032408.CNF



:00245

Apex-Gamma

Analysis Report for 1601047-03
SED1

214

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1601047-03
Sample Description	: SED1
Sample Type	: SOIL
Sample Size	: 4.755E+02 grams
Facility	: Countroom
Sample Taken On	: 1/8/2016 7:25:21AM
Acquisition Started	: 2/4/2016 6:07:20AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3600.9 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 18 - 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	: 32434

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
2/4/16

Analysis Report for 1601047-03

SED1

PEAK LOCATE REPORT

Peak Locate Performed on : 2/4/2016 7:07:25AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	46.55	46.90	0.0000	0.00
2	63.46	63.81	0.0000	0.00
3	76.33	76.67	0.0000	0.00
4	87.75	88.08	0.0000	0.00
5	92.65	92.98	0.0000	0.00
6	104.85	105.18	0.0000	0.00
7	182.84	183.15	0.0000	0.00
8	185.84	186.15	0.0000	0.00
9	189.55	189.85	0.0000	0.00
10	192.64	192.94	0.0000	0.00
11	210.17	210.47	0.0000	0.00
12	238.56	238.85	0.0000	0.00
13	242.03	242.32	0.0000	0.00
14	269.51	269.79	0.0000	0.00
15	295.09	295.36	0.0000	0.00
16	299.63	299.90	0.0000	0.00
17	327.69	327.95	0.0000	0.00
18	338.78	339.03	0.0000	0.00
19	351.83	352.08	0.0000	0.00
20	409.73	409.96	0.0000	0.00
21	421.23	421.46	0.0000	0.00
22	462.82	463.03	0.0000	0.00
23	472.80	473.00	0.0000	0.00
24	501.29	501.49	0.0000	0.00
25	522.23	522.42	0.0000	0.00
26	583.01	583.18	0.0000	0.00
27	592.81	592.98	0.0000	0.00
28	609.15	609.31	0.0000	0.00
29	727.49	727.61	0.0000	0.00
30	767.95	768.05	0.0000	0.00
31	771.29	771.40	0.0000	0.00
32	793.72	793.82	0.0000	0.00
33	796.90	797.00	0.0000	0.00
34	860.78	860.85	0.0000	0.00
35	910.98	911.03	0.0000	0.00
36	916.95	917.00	0.0000	0.00
37	964.32	964.36	0.0000	0.00
38	968.61	968.65	0.0000	0.00
39	972.38	972.42	0.0000	0.00
40	1120.09	1120.07	0.0000	0.00
41	1237.03	1236.97	0.0000	0.00
42	1267.99	1267.91	0.0000	0.00

Analysis Report for 1601047-03

SED1

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1460.34	1460.19	0.0000	0.00
44	1464.36	1464.22	0.0000	0.00
45	1496.43	1496.27	0.0000	0.00
46	1508.09	1507.93	0.0000	0.00
47	1544.32	1544.15	0.0000	0.00
48	1588.53	1588.34	0.0000	0.00
49	1592.23	1592.04	0.0000	0.00
50	1598.36	1598.17	0.0000	0.00
51	1648.07	1647.86	0.0000	0.00
52	1725.76	1725.52	0.0000	0.00
53	1729.76	1729.52	0.0000	0.00
54	1763.94	1763.69	0.0000	0.00
55	1797.37	1797.11	0.0000	0.00
56	1846.91	1846.63	0.0000	0.00
57	1887.05	1886.74	0.0000	0.00
58	2103.24	2102.86	0.0000	0.00
59	2203.45	2203.03	0.0000	0.00
60	2319.67	2319.20	0.0000	0.00
61	2613.11	2612.53	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1601047-03

SED1

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/4/2016 7:07:25AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	46.55	44 -	50	46.90	1.43E+02	70.89	8.18E+02	1.34
	2	63.46	59 -	68	63.81	2.24E+02	106.01	1.48E+03	1.54
	3	76.33	72 -	83	76.67	7.27E+02	141.94	2.14E+03	3.78
m	4	87.75	83 -	97	88.08	2.04E+02	79.36	9.48E+02	2.17
m	5	92.65	83 -	97	92.98	2.86E+02	79.18	8.25E+02	2.18
	6	104.85	103 -	107	105.18	5.70E+01	49.72	5.00E+02	1.19
M	7	182.84	182 -	196	183.15	3.26E+01	26.93	1.74E+02	1.62
m	8	185.84	182 -	196	186.15	1.91E+02	47.72	3.05E+02	1.62
m	9	189.55	182 -	196	189.85	3.69E+01	42.72	3.19E+02	1.62
m	10	192.64	182 -	196	192.94	4.01E+01	41.20	3.31E+02	1.63
	11	210.17	205 -	215	210.47	1.23E+02	74.77	6.74E+02	5.62
M	12	238.56	233 -	246	238.85	5.30E+02	62.37	3.21E+02	1.85
m	13	242.03	233 -	246	242.32	1.46E+02	50.85	2.96E+02	1.85
	14	269.51	265 -	273	269.79	1.08E+02	52.38	3.56E+02	2.53
M	15	295.09	291 -	303	295.36	2.67E+02	45.00	2.29E+02	1.58
m	16	299.63	291 -	303	299.90	4.76E+01	38.72	2.67E+02	1.99
	17	327.69	323 -	333	327.95	8.21E+01	56.31	3.78E+02	4.52
	18	338.78	335 -	344	339.03	1.41E+02	52.92	3.19E+02	2.06
	19	351.83	348 -	354	352.08	4.15E+02	54.49	2.39E+02	1.46
	20	409.73	407 -	413	409.96	2.83E+01	32.63	1.69E+02	2.08
	21	421.23	418 -	424	421.46	2.43E+01	30.38	1.49E+02	3.65
	22	462.82	460 -	466	463.03	3.80E+01	30.63	1.42E+02	1.10
	23	472.80	470 -	476	473.00	2.65E+01	29.29	1.37E+02	4.61
	24	501.29	499 -	506	501.49	2.53E+01	26.61	1.03E+02	3.65
m	25	522.23	506 -	528	522.42	2.26E+01	26.21	1.03E+02	2.32
M	26	583.01	579 -	598	583.18	1.62E+02	33.99	9.77E+01	1.94
m	27	592.81	579 -	598	592.98	1.87E+01	24.06	1.19E+02	1.97
	28	609.15	605 -	613	609.31	2.83E+02	47.98	1.79E+02	1.58
	29	727.49	723 -	733	727.61	4.06E+01	36.21	1.51E+02	2.39
M	30	767.95	765 -	777	768.05	3.65E+01	24.78	9.06E+01	2.28
m	31	771.29	765 -	777	771.40	1.65E+01	25.26	7.84E+01	2.29
M	32	793.72	790 -	814	793.82	1.67E+01	22.09	6.00E+01	2.53
m	33	796.90	790 -	814	797.00	1.32E+01	18.03	4.75E+01	2.09
	34	860.78	856 -	865	860.85	3.34E+01	26.31	7.92E+01	4.59
M	35	910.98	897 -	919	911.03	1.20E+02	26.10	4.91E+01	1.76
m	36	916.95	897 -	919	917.00	1.74E+01	17.20	4.37E+01	2.16
M	37	964.32	962 -	976	964.36	2.14E+01	14.80	2.63E+01	2.40
m	38	968.61	962 -	976	968.65	7.79E+01	24.15	4.24E+01	2.39
m	39	972.38	962 -	976	972.42	1.14E+01	21.05	4.75E+01	2.41
	40	1120.09	1116 -	1124	1120.07	6.25E+01	28.37	8.50E+01	2.08

Analysis Report for 1601047-03

SED1

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1237.03	1232 -	1241	1236.97	2.43E+01	28.21	9.95E+01	2.03
	42	1267.99	1263 -	1272	1267.91	2.74E+01	22.07	5.12E+01	2.60
M	43	1460.34	1455 -	1470	1460.19	4.68E+02	44.65	1.80E+01	2.06
m	44	1464.36	1455 -	1470	1464.22	1.49E+01	29.21	2.10E+01	2.42
	45	1496.43	1492 -	1502	1496.27	1.75E+01	12.35	1.10E+01	1.23
	46	1508.09	1503 -	1514	1507.93	2.66E+01	15.87	1.87E+01	4.94
	47	1544.32	1540 -	1547	1544.15	1.14E+01	11.83	1.52E+01	3.86
M	48	1588.53	1584 -	1604	1588.34	1.93E+01	12.83	1.25E+01	3.08
m	49	1592.23	1584 -	1604	1592.04	1.26E+01	13.64	9.27E+00	3.29
m	50	1598.36	1584 -	1604	1598.17	8.80E+00	11.22	3.77E+00	3.29
	51	1648.07	1645 -	1650	1647.86	7.00E+00	5.29	0.00E+00	1.12
M	52	1725.76	1722 -	1732	1725.52	7.14E+00	5.29	0.00E+00	2.78
m	53	1729.76	1722 -	1732	1729.52	1.45E+01	9.17	0.00E+00	2.78
	54	1763.94	1760 -	1769	1763.69	6.69E+01	18.49	1.22E+01	2.15
	55	1797.37	1793 -	1799	1797.11	6.56E+00	6.65	2.88E+00	1.39
	56	1846.91	1841 -	1852	1846.63	1.94E+01	11.14	5.27E+00	3.24
	57	1887.05	1884 -	1889	1886.74	4.88E+00	7.07	6.25E+00	1.37
	58	2103.24	2099 -	2105	2102.86	8.27E+00	9.42	9.46E+00	2.43
	59	2203.45	2198 -	2206	2203.03	1.65E+01	11.16	9.00E+00	2.22
	60	2319.67	2317 -	2321	2319.20	5.00E+00	4.47	0.00E+00	2.75
	61	2613.11	2609 -	2617	2612.53	5.90E+01	15.36	0.00E+00	2.19

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 : 2/4/2016 7:07:25AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	46.55	44 -	50	1.43E+02	70.89	8.18E+02	5.49E+01
	2	63.46	59 -	68	2.24E+02	106.01	1.48E+03	8.36E+01
	3	76.33	72 -	83	7.27E+02	141.94	2.14E+03	1.08E+02
m	4	87.75	83 -	97	2.04E+02	79.36	9.48E+02	5.06E+01
m	5	92.65	83 -	97	2.86E+02	79.18	8.25E+02	4.72E+01
	6	104.85	103 -	107	5.70E+01	49.72	5.00E+02	3.89E+01
M	7	182.84	182 -	196	3.26E+01	26.93	1.74E+02	2.17E+01

Analysis Report for 1601047-03

SED1

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
m	8	185.84	182 -	196	1.91E+02	47.72	3.05E+02	2.87E+01
m	9	189.55	182 -	196	3.69E+01	42.72	3.19E+02	2.93E+01
m	10	192.64	182 -	196	4.01E+01	41.20	3.31E+02	2.99E+01
	11	210.17	205 -	215	1.23E+02	74.77	6.74E+02	5.87E+01
M	12	238.56	233 -	246	5.30E+02	62.37	3.21E+02	2.95E+01
m	13	242.03	233 -	246	1.46E+02	50.85	2.96E+02	2.83E+01
	14	269.51	265 -	273	1.08E+02	52.38	3.56E+02	3.95E+01
M	15	295.09	291 -	303	2.67E+02	45.00	2.29E+02	2.49E+01
m	16	299.63	291 -	303	4.76E+01	38.72	2.67E+02	2.69E+01
	17	327.69	323 -	333	8.21E+01	56.31	3.78E+02	4.38E+01
	18	338.78	335 -	344	1.41E+02	52.92	3.19E+02	3.89E+01
	19	351.83	348 -	354	4.15E+02	54.49	2.39E+02	2.98E+01
	20	409.73	407 -	413	2.83E+01	32.63	1.69E+02	2.54E+01
	21	421.23	418 -	424	2.43E+01	30.38	1.49E+02	2.36E+01
	22	462.82	460 -	466	3.80E+01	30.63	1.42E+02	2.30E+01
	23	472.80	470 -	476	2.65E+01	29.29	1.37E+02	2.25E+01
	24	501.29	499 -	506	2.53E+01	26.61	1.03E+02	2.02E+01
m	25	522.23	506 -	528	2.26E+01	26.21	1.03E+02	1.67E+01
M	26	583.01	579 -	598	1.62E+02	33.99	9.77E+01	1.62E+01
m	27	592.81	579 -	598	1.87E+01	24.06	1.19E+02	1.79E+01
	28	609.15	605 -	613	2.83E+02	47.98	1.79E+02	2.81E+01
	29	727.49	723 -	733	4.06E+01	36.21	1.51E+02	2.79E+01
M	30	767.95	765 -	777	3.65E+01	24.78	9.06E+01	1.57E+01
m	31	771.29	765 -	777	1.65E+01	25.26	7.84E+01	1.46E+01
M	32	793.72	790 -	814	1.67E+01	22.09	6.00E+01	1.27E+01
m	33	796.90	790 -	814	1.32E+01	18.03	4.75E+01	1.13E+01
	34	860.78	856 -	865	3.34E+01	26.31	7.92E+01	1.94E+01
M	35	910.98	897 -	919	1.20E+02	26.10	4.91E+01	1.15E+01
m	36	916.95	897 -	919	1.74E+01	17.20	4.37E+01	1.09E+01
M	37	964.32	962 -	976	2.14E+01	14.80	2.63E+01	8.43E+00
m	38	968.61	962 -	976	7.79E+01	24.15	4.24E+01	1.07E+01
m	39	972.38	962 -	976	1.14E+01	21.05	4.75E+01	1.13E+01
	40	1120.09	1116 -	1124	6.25E+01	28.37	8.50E+01	1.94E+01
	41	1237.03	1232 -	1241	2.43E+01	28.21	9.95E+01	2.17E+01
	42	1267.99	1263 -	1272	2.74E+01	22.07	5.12E+01	1.60E+01
M	43	1460.34	1455 -	1470	4.68E+02	44.65	1.80E+01	6.97E+00
m	44	1464.36	1455 -	1470	1.49E+01	29.21	2.10E+01	7.53E+00
	45	1496.43	1492 -	1502	1.75E+01	12.35	1.10E+01	7.47E+00
	46	1508.09	1503 -	1514	2.66E+01	15.87	1.87E+01	9.91E+00
	47	1544.32	1540 -	1547	1.14E+01	11.83	1.52E+01	7.98E+00
M	48	1588.53	1584 -	1604	1.93E+01	12.83	1.25E+01	5.82E+00
m	49	1592.23	1584 -	1604	1.26E+01	13.64	9.27E+00	5.01E+00
m	50	1598.36	1584 -	1604	8.80E+00	11.22	3.77E+00	3.19E+00
	51	1648.07	1645 -	1650	7.00E+00	5.29	0.00E+00	0.00E+00
M	52	1725.76	1722 -	1732	7.14E+00	5.29	0.00E+00	0.00E+00
m	53	1729.76	1722 -	1732	1.45E+01	9.17	0.00E+00	0.00E+00
	54	1763.94	1760 -	1769	6.69E+01	18.49	1.22E+01	7.09E+00
	55	1797.37	1793 -	1799	6.56E+00	6.65	2.88E+00	3.49E+00
	56	1846.91	1841 -	1852	1.94E+01	11.14	5.27E+00	5.61E+00
	57	1887.05	1884 -	1889	4.88E+00	7.07	6.25E+00	4.54E+00
	58	2103.24	2099 -	2105	8.27E+00	9.42	9.46E+00	6.13E+00

Analysis Report for 1601047-03

SED1

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
59	2203.45	2198 -	2206	1.65E+01	11.16	9.00E+00	6.29E+00
60	2319.67	2317 -	2321	5.00E+00	4.47	0.00E+00	0.00E+00
61	2613.11	2609 -	2617	5.90E+01	15.36	0.00E+00	0.00E+00

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

PEAK WITH NID REPORT

Peak Analysis Performed on : 2/4/2016 7:07:25AM

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	46.55	44 -	50	46.90	1.43E+02	70.89	8.18E+02	PB-210
	2	63.46	59 -	68	63.81	2.24E+02	106.01	1.48E+03	TH-234
									TH-230
	3	76.33	72 -	83	76.67	7.27E+02	141.94	2.14E+03	.....
m	4	87.75	83 -	97	88.08	2.04E+02	79.36	9.48E+02	SN-126
									CD-109
									LU-176
m	5	92.65	83 -	97	92.98	2.86E+02	79.18	8.25E+02	GA-67
	6	104.85	103 -	107	105.18	5.70E+01	49.72	5.00E+02	EU-155
M	7	182.84	182 -	196	183.15	3.26E+01	26.93	1.74E+02	.....
m	8	185.84	182 -	196	186.15	1.91E+02	47.72	3.05E+02	RA-226
m	9	189.55	182 -	196	189.85	3.69E+01	42.72	3.19E+02	.....
m	10	192.64	182 -	196	192.94	4.01E+01	41.20	3.31E+02	.....
	11	210.17	205 -	215	210.47	1.23E+02	74.77	6.74E+02	CM-243
M	12	238.56	233 -	246	238.85	5.30E+02	62.37	3.21E+02	PB-212
m	13	242.03	233 -	246	242.32	1.46E+02	50.85	2.96E+02	.....
	14	269.51	265 -	273	269.79	1.08E+02	52.38	3.56E+02	.....
M	15	295.09	291 -	303	295.36	2.67E+02	45.00	2.29E+02	PB-214
m	16	299.63	291 -	303	299.90	4.76E+01	38.72	2.67E+02	BI-210M
									PB-212
									GA-67
	17	327.69	323 -	333	327.95	8.21E+01	56.31	3.78E+02	.....
	18	338.78	335 -	344	339.03	1.41E+02	52.92	3.19E+02	AC-228

Analysis Report for 1601047-03

SED1

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	19	351.83	348 -	354	352.08	4.15E+02	54.49	2.39E+02	PB-214
	20	409.73	407 -	413	409.96	2.83E+01	32.63	1.69E+02	.....
	21	421.23	418 -	424	421.46	2.43E+01	30.38	1.49E+02	.....
	22	462.82	460 -	466	463.03	3.80E+01	30.63	1.42E+02	SB-125
	23	472.80	470 -	476	473.00	2.65E+01	29.29	1.37E+02	SB-127
	24	501.29	499 -	506	501.49	2.53E+01	26.61	1.03E+02	.....
m	25	522.23	506 -	528	522.42	2.26E+01	26.21	1.03E+02	.....
M	26	583.01	579 -	598	583.18	1.62E+02	33.99	9.77E+01	TL-208
m	27	592.81	579 -	598	592.98	1.87E+01	24.06	1.19E+02	.....
	28	609.15	605 -	613	609.31	2.83E+02	47.98	1.79E+02	BI-214
	29	727.49	723 -	733	727.61	4.06E+01	36.21	1.51E+02	BI-212
M	30	767.95	765 -	777	768.05	3.65E+01	24.78	9.06E+01	.....
m	31	771.29	765 -	777	771.40	1.65E+01	25.26	7.84E+01	.....
M	32	793.72	790 -	814	793.82	1.67E+01	22.09	6.00E+01	.....
m	33	796.90	790 -	814	797.00	1.32E+01	18.03	4.75E+01	.....
	34	860.78	856 -	865	860.85	3.34E+01	26.31	7.92E+01	TL-208
M	35	910.98	897 -	919	911.03	1.20E+02	26.10	4.91E+01	AC-228
m	36	916.95	897 -	919	917.00	1.74E+01	17.20	4.37E+01	.....
M	37	964.32	962 -	976	964.36	2.14E+01	14.80	2.63E+01	EU-152
m	38	968.61	962 -	976	968.65	7.79E+01	24.15	4.24E+01	AC-228
m	39	972.38	962 -	976	972.42	1.14E+01	21.05	4.75E+01	.....
	40	1120.09	1116 -	1124	1120.07	6.25E+01	28.37	8.50E+01	BI-214 SC-46
	41	1237.03	1232 -	1241	1236.97	2.43E+01	28.21	9.95E+01	.....
	42	1267.99	1263 -	1272	1267.91	2.74E+01	22.07	5.12E+01	.....
M	43	1460.34	1455 -	1470	1460.19	4.68E+02	44.65	1.80E+01	K-40
m	44	1464.36	1455 -	1470	1464.22	1.49E+01	29.21	2.10E+01	.....
	45	1496.43	1492 -	1502	1496.27	1.75E+01	12.35	1.10E+01	.....
	46	1508.09	1503 -	1514	1507.93	2.66E+01	15.87	1.87E+01	.....
	47	1544.32	1540 -	1547	1544.15	1.14E+01	11.83	1.52E+01	.....
M	48	1588.53	1584 -	1604	1588.34	1.93E+01	12.83	1.25E+01	.....
m	49	1592.23	1584 -	1604	1592.04	1.26E+01	13.64	9.27E+00	.....
m	50	1598.36	1584 -	1604	1598.17	8.80E+00	11.22	3.77E+00	.....
	51	1648.07	1645 -	1650	1647.86	7.00E+00	5.29	0.00E+00	.....
M	52	1725.76	1722 -	1732	1725.52	7.14E+00	5.29	0.00E+00	.....
m	53	1729.76	1722 -	1732	1729.52	1.45E+01	9.17	0.00E+00	.....
	54	1763.94	1760 -	1769	1763.69	6.69E+01	18.49	1.22E+01	BI-214
	55	1797.37	1793 -	1799	1797.11	6.56E+00	6.65	2.88E+00	.....
	56	1846.91	1841 -	1852	1846.63	1.94E+01	11.14	5.27E+00	.....
	57	1887.05	1884 -	1889	1886.74	4.88E+00	7.07	6.25E+00	.....
	58	2103.24	2099 -	2105	2102.86	8.27E+00	9.42	9.46E+00	.....
	59	2203.45	2198 -	2206	2203.03	1.65E+01	11.16	9.00E+00	BI-214
	60	2319.67	2317 -	2321	2319.20	5.00E+00	4.47	0.00E+00	.....
	61	2613.11	2609 -	2617	2612.53	5.90E+01	15.36	0.00E+00	.....

Analysis Report for 1601047-03

SED1

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 : 2/4/2016 7:07:25AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.55	1.43E+02	70.89	1.68E-02	1.78E-03
	2	63.46	2.24E+02	106.01	2.50E-02	1.91E-03
	3	76.33	7.27E+02	141.94	2.77E-02	2.35E-03
m	4	87.75	2.04E+02	79.36	2.85E-02	2.73E-03
m	5	92.65	2.86E+02	79.18	2.86E-02	2.65E-03
	6	104.85	5.70E+01	49.72	2.83E-02	2.41E-03
M	7	182.84	3.26E+01	26.93	2.26E-02	2.05E-03
m	8	185.84	1.91E+02	47.72	2.24E-02	2.03E-03
m	9	189.55	3.69E+01	42.72	2.21E-02	2.00E-03
m	10	192.64	4.01E+01	41.20	2.19E-02	1.98E-03
	11	210.17	1.23E+02	74.77	2.08E-02	1.85E-03
M	12	238.56	5.30E+02	62.37	1.92E-02	1.64E-03
m	13	242.03	1.46E+02	50.85	1.90E-02	1.61E-03
	14	269.51	1.08E+02	52.38	1.77E-02	1.41E-03
M	15	295.09	2.67E+02	45.00	1.67E-02	1.31E-03
m	16	299.63	4.76E+01	38.72	1.65E-02	1.30E-03
	17	327.69	8.21E+01	56.31	1.55E-02	1.24E-03
	18	338.78	1.41E+02	52.92	1.52E-02	1.22E-03
	19	351.83	4.15E+02	54.49	1.48E-02	1.19E-03
	20	409.73	2.83E+01	32.63	1.32E-02	1.10E-03
	21	421.23	2.43E+01	30.38	1.30E-02	1.08E-03
	22	462.82	3.80E+01	30.63	1.21E-02	1.04E-03
	23	472.80	2.65E+01	29.29	1.19E-02	1.03E-03
	24	501.29	2.53E+01	26.61	1.14E-02	1.00E-03
m	25	522.23	2.26E+01	26.21	1.11E-02	9.79E-04
M	26	583.01	1.62E+02	33.99	1.02E-02	9.16E-04
m	27	592.81	1.87E+01	24.06	1.00E-02	9.06E-04
	28	609.15	2.83E+02	47.98	9.83E-03	8.89E-04
	29	727.49	4.06E+01	36.21	8.55E-03	7.75E-04
M	30	767.95	3.65E+01	24.78	8.19E-03	7.39E-04
m	31	771.29	1.65E+01	25.26	8.17E-03	7.36E-04
M	32	793.72	1.67E+01	22.09	7.98E-03	7.16E-04
m	33	796.90	1.32E+01	18.03	7.96E-03	7.13E-04
	34	860.78	3.34E+01	26.31	7.48E-03	6.56E-04

Analysis Report for 1601047-03

SED1

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	35	910.98	1.20E+02	26.10	7.15E-03	6.16E-04
m	36	916.95	1.74E+01	17.20	7.11E-03	6.12E-04
M	37	964.32	2.14E+01	14.80	6.83E-03	5.88E-04
m	38	968.61	7.79E+01	24.15	6.81E-03	5.86E-04
m	39	972.38	1.14E+01	21.05	6.79E-03	5.84E-04
	40	1120.09	6.25E+01	28.37	6.07E-03	5.07E-04
	41	1237.03	2.43E+01	28.21	5.62E-03	4.68E-04
	42	1267.99	2.74E+01	22.07	5.51E-03	4.62E-04
M	43	1460.34	4.68E+02	44.65	4.97E-03	4.19E-04
m	44	1464.36	1.49E+01	29.21	4.96E-03	4.18E-04
	45	1496.43	1.75E+01	12.35	4.89E-03	4.10E-04
	46	1508.09	2.66E+01	15.87	4.86E-03	4.07E-04
	47	1544.32	1.14E+01	11.83	4.78E-03	3.98E-04
M	48	1588.53	1.93E+01	12.83	4.69E-03	3.87E-04
m	49	1592.23	1.26E+01	13.64	4.69E-03	3.87E-04
m	50	1598.36	8.80E+00	11.22	4.68E-03	3.85E-04
	51	1648.07	7.00E+00	5.29	4.58E-03	3.73E-04
M	52	1725.76	7.14E+00	5.29	4.45E-03	3.53E-04
m	53	1729.76	1.45E+01	9.17	4.45E-03	3.52E-04
	54	1763.94	6.69E+01	18.49	4.40E-03	3.44E-04
	55	1797.37	6.56E+00	6.65	4.35E-03	3.35E-04
	56	1846.91	1.94E+01	11.14	4.28E-03	3.26E-04
	57	1887.05	4.88E+00	7.07	4.23E-03	3.26E-04
	58	2103.24	8.27E+00	9.42	4.02E-03	3.26E-04
	59	2203.45	1.65E+01	11.16	3.95E-03	3.26E-04
	60	2319.67	5.00E+00	4.47	3.88E-03	3.26E-04
	61	2613.11	5.90E+01	15.36	3.79E-03	3.26E-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 : 2/4/2016 7:07:25AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032282.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	46.55	1.43E+02	70.89	4.13E+01	8.55E+00	1.02E+02	7.14E+01
2	63.46	2.24E+02	106.01	8.11E+01	1.42E+01	1.43E+02	1.07E+02
3	76.33	7.27E+02	141.94	0.00E+00	0.00E+00	7.27E+02	1.42E+02

Analysis Report for 1601047-03

SED1

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	4	87.75	2.04E+02	79.36			2.04E+02	7.94E+01
m	5	92.65	2.86E+02	79.18	1.37E+02	2.04E+01	1.49E+02	8.18E+01
	6	104.85	5.70E+01	49.72			5.70E+01	4.97E+01
M	7	182.84	3.26E+01	26.93			3.26E+01	2.69E+01
m	8	185.84	1.91E+02	47.72	5.71E+01	7.67E+00	1.34E+02	4.83E+01
m	9	189.55	3.69E+01	42.72			3.69E+01	4.27E+01
m	10	192.64	4.01E+01	41.20			4.01E+01	4.12E+01
	11	210.17	1.23E+02	74.77			1.23E+02	7.48E+01
M	12	238.56	5.30E+02	62.37	1.67E+01	5.12E+00	5.13E+02	6.26E+01
m	13	242.03	1.46E+02	50.85			1.46E+02	5.09E+01
	14	269.51	1.08E+02	52.38			1.08E+02	5.24E+01
M	15	295.09	2.67E+02	45.00			2.67E+02	4.50E+01
m	16	299.63	4.76E+01	38.72			4.76E+01	3.87E+01
	17	327.69	8.21E+01	56.31			8.21E+01	5.63E+01
	18	338.78	1.41E+02	52.92			1.41E+02	5.29E+01
	19	351.83	4.15E+02	54.49	7.40E+00	4.96E+00	4.07E+02	5.47E+01
	20	409.73	2.83E+01	32.63			2.83E+01	3.26E+01
	21	421.23	2.43E+01	30.38			2.43E+01	3.04E+01
	22	462.82	3.80E+01	30.63			3.80E+01	3.06E+01
	23	472.80	2.65E+01	29.29			2.65E+01	2.93E+01
	24	501.29	2.53E+01	26.61			2.53E+01	2.66E+01
m	25	522.23	2.26E+01	26.21			2.26E+01	2.62E+01
M	26	583.01	1.62E+02	33.99	5.14E+00	3.70E+00	1.57E+02	3.42E+01
m	27	592.81	1.87E+01	24.06			1.87E+01	2.41E+01
	28	609.15	2.83E+02	47.98	4.81E+00	3.60E+00	2.78E+02	4.81E+01
	29	727.49	4.06E+01	36.21			4.06E+01	3.62E+01
M	30	767.95	3.65E+01	24.78			3.65E+01	2.48E+01
m	31	771.29	1.65E+01	25.26			1.65E+01	2.53E+01
M	32	793.72	1.67E+01	22.09			1.67E+01	2.21E+01
m	33	796.90	1.32E+01	18.03			1.32E+01	1.80E+01
	34	860.78	3.34E+01	26.31			3.34E+01	2.63E+01
M	35	910.98	1.20E+02	26.10	5.62E+00	2.94E+00	1.14E+02	2.63E+01
m	36	916.95	1.74E+01	17.20			1.74E+01	1.72E+01
M	37	964.32	2.14E+01	14.80			2.14E+01	1.48E+01
m	38	968.61	7.79E+01	24.15	0.00E+00	0.00E+00	7.79E+01	2.41E+01
m	39	972.38	1.14E+01	21.05			1.14E+01	2.10E+01
	40	1120.09	6.25E+01	28.37	1.83E+00	2.55E+00	6.07E+01	2.85E+01
	41	1237.03	2.43E+01	28.21			2.43E+01	2.82E+01
	42	1267.99	2.74E+01	22.07			2.74E+01	2.21E+01
M	43	1460.34	4.68E+02	44.65	6.57E+00	2.34E+00	4.62E+02	4.47E+01
m	44	1464.36	1.49E+01	29.21			1.49E+01	2.92E+01
	45	1496.43	1.75E+01	12.35			1.75E+01	1.23E+01
	46	1508.09	2.66E+01	15.87			2.66E+01	1.59E+01
	47	1544.32	1.14E+01	11.83			1.14E+01	1.18E+01
M	48	1588.53	1.93E+01	12.83			1.93E+01	1.28E+01
m	49	1592.23	1.26E+01	13.64			1.26E+01	1.36E+01
m	50	1598.36	8.80E+00	11.22			8.80E+00	1.12E+01
	51	1648.07	7.00E+00	5.29			7.00E+00	5.29E+00
M	52	1725.76	7.14E+00	5.29			7.14E+00	5.29E+00
m	53	1729.76	1.45E+01	9.17			1.45E+01	9.17E+00
	54	1763.94	6.69E+01	18.49	1.45E+00	1.83E+00	6.55E+01	1.86E+01
	55	1797.37	6.56E+00	6.65			6.56E+00	6.65E+00
	56	1846.91	1.94E+01	11.14			1.94E+01	1.11E+01
	57	1887.05	4.88E+00	7.07			4.88E+00	7.07E+00

Analysis Report for 1601047-03

SED1

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
58	2103.24	8.27E+00	9.42			8.27E+00	9.42E+00
59	2203.45	1.65E+01	11.16	4.47E-01	1.28E+00	1.61E+01	1.12E+01
60	2319.67	5.00E+00	4.47			5.00E+00	4.47E+00
61	2613.11	5.90E+01	15.36	4.95E+00	1.43E+00	5.40E+01	1.54E+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 : 2/4/2016 7:07:25AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032282.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	46.55	1.43E+02	70.89	4.13E+01	8.55E+00	1.02E+02	7.14E+01
	2	63.46	2.24E+02	106.01	8.11E+01	1.42E+01	1.43E+02	1.07E+02
	3	76.33	7.27E+02	141.94	0.00E+00	0.00E+00	7.27E+02	1.42E+02
m	4	87.75	2.04E+02	79.36			2.04E+02	7.94E+01
m	5	92.65	2.86E+02	79.18	1.37E+02	2.04E+01	1.49E+02	8.18E+01
	6	104.85	5.70E+01	49.72			5.70E+01	4.97E+01
M	7	182.84	3.26E+01	26.93			3.26E+01	2.69E+01
m	8	185.84	1.91E+02	47.72	5.71E+01	7.67E+00	1.34E+02	4.83E+01
m	9	189.55	3.69E+01	42.72			3.69E+01	4.27E+01
m	10	192.64	4.01E+01	41.20			4.01E+01	4.12E+01
	11	210.17	1.23E+02	74.77			1.23E+02	7.48E+01
M	12	238.56	5.30E+02	62.37	1.67E+01	5.12E+00	5.13E+02	6.26E+01
m	13	242.03	1.46E+02	50.85			1.46E+02	5.09E+01
	14	269.51	1.08E+02	52.38			1.08E+02	5.24E+01
M	15	295.09	2.67E+02	45.00			2.67E+02	4.50E+01
m	16	299.63	4.76E+01	38.72			4.76E+01	3.87E+01
	17	327.69	8.21E+01	56.31			8.21E+01	5.63E+01
	18	338.78	1.41E+02	52.92			1.41E+02	5.29E+01
	19	351.83	4.15E+02	54.49	7.40E+00	4.96E+00	4.07E+02	5.47E+01
	20	409.73	2.83E+01	32.63			2.83E+01	3.26E+01
	21	421.23	2.43E+01	30.38			2.43E+01	3.04E+01
	22	462.82	3.80E+01	30.63			3.80E+01	3.06E+01
	23	472.80	2.65E+01	29.29			2.65E+01	2.93E+01
	24	501.29	2.53E+01	26.61			2.53E+01	2.66E+01

Analysis Report for 1601047-03

SED1

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
m	25	522.23	2.26E+01	26.21			2.26E+01	2.62E+01
M	26	583.01	1.62E+02	33.99	5.14E+00	3.70E+00	1.57E+02	3.42E+01
m	27	592.81	1.87E+01	24.06			1.87E+01	2.41E+01
	28	609.15	2.83E+02	47.98	4.81E+00	3.60E+00	2.78E+02	4.81E+01
	29	727.49	4.06E+01	36.21			4.06E+01	3.62E+01
M	30	767.95	3.65E+01	24.78			3.65E+01	2.48E+01
m	31	771.29	1.65E+01	25.26			1.65E+01	2.53E+01
M	32	793.72	1.67E+01	22.09			1.67E+01	2.21E+01
m	33	796.90	1.32E+01	18.03			1.32E+01	1.80E+01
	34	860.78	3.34E+01	26.31			3.34E+01	2.63E+01
M	35	910.98	1.20E+02	26.10	5.62E+00	2.94E+00	1.14E+02	2.63E+01
m	36	916.95	1.74E+01	17.20			1.74E+01	1.72E+01
M	37	964.32	2.14E+01	14.80			2.14E+01	1.48E+01
m	38	968.61	7.79E+01	24.15	0.00E+00	0.00E+00	7.79E+01	2.41E+01
m	39	972.38	1.14E+01	21.05			1.14E+01	2.10E+01
	40	1120.09	6.25E+01	28.37	1.83E+00	2.55E+00	6.07E+01	2.85E+01
	41	1237.03	2.43E+01	28.21			2.43E+01	2.82E+01
	42	1267.99	2.74E+01	22.07			2.74E+01	2.21E+01
M	43	1460.34	4.68E+02	44.65	6.57E+00	2.34E+00	4.62E+02	4.47E+01
m	44	1464.36	1.49E+01	29.21			1.49E+01	2.92E+01
	45	1496.43	1.75E+01	12.35			1.75E+01	1.23E+01
	46	1508.09	2.66E+01	15.87			2.66E+01	1.59E+01
	47	1544.32	1.14E+01	11.83			1.14E+01	1.18E+01
M	48	1588.53	1.93E+01	12.83			1.93E+01	1.28E+01
m	49	1592.23	1.26E+01	13.64			1.26E+01	1.36E+01
m	50	1598.36	8.80E+00	11.22			8.80E+00	1.12E+01
	51	1648.07	7.00E+00	5.29			7.00E+00	5.29E+00
M	52	1725.76	7.14E+00	5.29			7.14E+00	5.29E+00
m	53	1729.76	1.45E+01	9.17			1.45E+01	9.17E+00
	54	1763.94	6.69E+01	18.49	1.45E+00	1.83E+00	6.55E+01	1.86E+01
	55	1797.37	6.56E+00	6.65			6.56E+00	6.65E+00
	56	1846.91	1.94E+01	11.14			1.94E+01	1.11E+01
	57	1887.05	4.88E+00	7.07			4.88E+00	7.07E+00
	58	2103.24	8.27E+00	9.42			8.27E+00	9.42E+00
	59	2203.45	1.65E+01	11.16	4.47E-01	1.28E+00	1.61E+01	1.12E+01
	60	2319.67	5.00E+00	4.47			5.00E+00	4.47E+00
	61	2613.11	5.90E+01	15.36	4.95E+00	1.43E+00	5.40E+01	1.54E+01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Analysis Report for 1601047-03

SED1

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.965	1460.81	*	10.67	1.37E+01	1.79E+00
GA-67	0.624	93.31	*	35.70	7.10E+01	2.65E+02
		208.95		2.24		
		300.22	*	16.00	8.77E+01	3.31E+02
CD-109	0.987	88.03	*	3.72	3.16E+00	1.28E+00
SN-126	0.995	87.57	*	37.00	3.06E-01	1.22E-01
TL-208	0.371	583.14	*	30.22	8.06E-01	1.90E-01
		860.37	*	4.48	1.57E+00	1.25E+00
		2614.66		35.85		
PB-210	1.000	46.50	*	4.25	2.25E+00	1.60E+00
BI-212	0.753	727.17	*	11.80	6.35E-01	5.69E-01
		1620.62		2.75		
PB-212	0.997	238.63	*	44.60	9.45E-01	1.41E-01
		300.09	*	3.41	1.33E+00	1.09E+00
BI-214	0.981	609.31	*	46.30	9.66E-01	1.88E-01
		1120.29	*	15.10	1.05E+00	4.99E-01
		1764.49	*	15.80	1.49E+00	4.38E-01
		2204.22	*	4.98	1.29E+00	9.08E-01
PB-214	0.998	295.21	*	19.19	1.32E+00	2.45E-01
		351.92	*	37.19	1.17E+00	1.84E-01
RA-226	0.978	186.21	*	3.28	2.87E+00	5.37E+00
AC-228	0.981	338.32	*	11.40	1.29E+00	4.94E-01
		911.07	*	27.70	9.12E-01	2.24E-01
		969.11	*	16.60	1.09E+00	3.50E-01
TH-234	0.995	63.29	*	3.80	2.38E+00	1.79E+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 : 2/4/2016 7:07:25AM
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	76.33	2.01864E-01	9.77		

Analysis Report for 1601047-03

SED1

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	6	104.85	1.58356E-02	43.60	Tol.	EU-155
M	7	182.84	9.04828E-03	41.34		
m	9	189.55	1.02543E-02	57.87		
m	10	192.64	1.11474E-02	51.33		
	11	210.17	3.41860E-02	30.38	Tol.	CM-243
m	13	242.03	4.04959E-02	17.44		
	14	269.51	3.00355E-02	24.22		
	17	327.69	2.28162E-02	34.28		
	20	409.73	7.85521E-03	57.69		
	21	421.23	6.75505E-03	62.46		
	22	462.82	1.05670E-02	40.26	Tol.	SB-125
	23	472.80	7.34942E-03	55.35	Tol.	SB-127
	24	501.29	7.03102E-03	52.56		
m	25	522.23	6.28589E-03	57.91		
m	27	592.81	5.20084E-03	64.26		
M	30	767.95	1.01494E-02	33.91	Sum	
m	31	771.29	4.57820E-03	76.63		
M	32	793.72	4.63406E-03	66.21		
m	33	796.90	3.67988E-03	68.04		
m	36	916.95	4.82518E-03	49.52		
M	37	964.32	5.94006E-03	34.60	Tol.	EU-152
m	39	972.38	3.16991E-03	92.22		
	41	1237.03	6.73799E-03	58.16		
	42	1267.99	7.60744E-03	40.29	Sum	
m	44	1464.36	4.14789E-03	97.82		
	45	1496.43	4.86111E-03	35.28		
	46	1508.09	7.39969E-03	29.80		
	47	1544.32	3.17251E-03	51.80		
M	48	1588.53	5.37045E-03	33.17	Sum	
m	49	1592.23	3.50754E-03	54.00		
m	50	1598.36	2.44431E-03	63.78		
	51	1648.07	1.94444E-03	37.80		
M	52	1725.76	1.98452E-03	37.03		
m	53	1729.76	4.02931E-03	31.59	Sum	
	55	1797.37	1.82292E-03	50.68		
	56	1846.91	5.37879E-03	28.75	Sum	
	57	1887.05	1.35417E-03	72.52		
	58	2103.24	2.29701E-03	56.96	Sum	
	60	2319.67	1.38889E-03	44.72		
	61	2613.11	1.50136E-02	14.27		

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 1601047-03

SED1

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.96	1460.81	*	10.67	1.37E+01	1.79E+00
GA-67	0.62	93.31	*	35.70	7.10E+01	2.65E+02
		208.95		2.24		
		300.22	*	16.00	8.77E+01	3.31E+02
CD-109	0.98	88.03	*	3.72	3.16E+00	1.28E+00
SN-126	0.99	87.57	*	37.00	3.06E-01	1.22E-01
TL-208	0.37	583.14	*	30.22	8.06E-01	1.90E-01
		860.37	*	4.48	1.57E+00	1.25E+00
		2614.66		35.85		
PB-210	1.00	46.50	*	4.25	2.25E+00	1.60E+00
BI-212	0.75	727.17	*	11.80	6.35E-01	5.69E-01
		1620.62		2.75		
PB-212	0.99	238.63	*	44.60	9.45E-01	1.41E-01
		300.09	*	3.41	1.33E+00	1.09E+00
BI-214	0.98	609.31	*	46.30	9.66E-01	1.88E-01
		1120.29	*	15.10	1.05E+00	4.99E-01
		1764.49	*	15.80	1.49E+00	4.38E-01
		2204.22	*	4.98	1.29E+00	9.08E-01
PB-214	0.99	295.21	*	19.19	1.32E+00	2.45E-01
		351.92	*	37.19	1.17E+00	1.84E-01
RA-226	0.97	186.21	*	3.28	2.87E+00	5.37E+00
AC-228	0.98	338.32	*	11.40	1.29E+00	4.94E-01
		911.07	*	27.70	9.12E-01	2.24E-01
		969.11	*	16.60	1.09E+00	3.50E-01
TH-234	0.99	63.29	*	3.80	2.38E+00	1.79E+00

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

Analysis Report for 1601047-03

SED1

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.965	1.37E+01	1.79E+00	
	GA-67	0.624	6.05E+01	2.15E+02	
?	CD-109	0.987	3.16E+00	1.28E+00	
?	SN-126	0.995	3.06E-01	1.22E-01	
	TL-208	0.371	8.24E-01	1.88E-01	
	PB-210	1.000	2.25E+00	1.60E+00	
	BI-212	0.753	6.35E-01	5.69E-01	
	PB-212	0.997	9.37E-01	1.40E-01	
	BI-214	0.981	1.05E+00	1.61E-01	
	PB-214	0.998	1.22E+00	1.47E-01	
	RA-226	0.978	2.87E+00	5.37E+00	
	AC-228	0.981	1.00E+00	1.76E-01	
	TH-234	0.995	2.38E+00	1.79E+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 1601047-03

SED1

UNIDENTIFIED PEAKS

Peak Locate Performed on : 2/4/2016 7:07:25AM
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	76.33	2.01864E-01	9.77		
	6	104.85	1.58356E-02	43.60	Tol.	EU-155
M	7	182.84	9.04828E-03	41.34		
m	9	189.55	1.02543E-02	57.87		
m	10	192.64	1.11474E-02	51.33		
	11	210.17	3.41860E-02	30.38	Tol.	CM-243
m	13	242.03	4.04959E-02	17.44		
	14	269.51	3.00355E-02	24.22		
	17	327.69	2.28162E-02	34.28		
	20	409.73	7.85521E-03	57.69		
	21	421.23	6.75505E-03	62.46		
	22	462.82	1.05670E-02	40.26	Tol.	SB-125
	23	472.80	7.34942E-03	55.35	Tol.	SB-127
	24	501.29	7.03102E-03	52.56		
m	25	522.23	6.28589E-03	57.91		
m	27	592.81	5.20084E-03	64.26		
M	30	767.95	1.01494E-02	33.91	Sum	
m	31	771.29	4.57820E-03	76.63		
M	32	793.72	4.63406E-03	66.21		
m	33	796.90	3.67988E-03	68.04		
m	36	916.95	4.82518E-03	49.52		
M	37	964.32	5.94006E-03	34.60	Tol.	EU-152
m	39	972.38	3.16991E-03	92.22		
	41	1237.03	6.73799E-03	58.16		
	42	1267.99	7.60744E-03	40.29	Sum	
m	44	1464.36	4.14789E-03	97.82		
	45	1496.43	4.86111E-03	35.28		
	46	1508.09	7.39969E-03	29.80		
	47	1544.32	3.17251E-03	51.80		
M	48	1588.53	5.37045E-03	33.17	Sum	
m	49	1592.23	3.50754E-03	54.00		
m	50	1598.36	2.44431E-03	63.78		
	51	1648.07	1.94444E-03	37.80		
M	52	1725.76	1.98452E-03	37.03		
m	53	1729.76	4.02931E-03	31.59	Sum	

Analysis Report for 1601047-03

SED1

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
55	1797.37	1.82292E-03	50.68		
56	1846.91	5.37879E-03	28.75	Sum	
57	1887.05	1.35417E-03	72.52		
58	2103.24	2.29701E-03	56.96	Sum	
60	2319.67	1.38889E-03	44.72		
61	2613.11	1.50136E-02	14.27		

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	2.29E-01	8.52E-01	8.52E-01
+	NA-22	1274.54		99.94	4.89E-04	7.34E-02	7.34E-02
+	NA-24	1368.53		99.99	-4.32E+11	5.33E+11	5.35E+11
		2754.09		99.86	2.03E+11		5.33E+11
+	AL-26	1808.65		99.76	1.60E-02	5.79E-02	5.79E-02
+	K-40	1460.81	*	10.67	1.37E+01	1.12E+00	1.12E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.47E-02	6.38E-02	6.38E-02
		78.34		96.00	1.75E-01		8.32E-02
+	SC-46	889.25		99.98	2.46E-02	8.99E-02	8.99E-02
		1120.51		99.99	2.15E-01		1.59E-01
+	V-48	983.52		99.98	8.33E-02	1.95E-01	2.26E-01
		1312.10		97.50	-1.26E-01		1.95E-01
+	CR-51	320.08		9.83	-3.20E-02	9.26E-01	9.26E-01
+	MN-54	834.83		99.97	-3.43E-02	7.49E-02	7.49E-02
+	CO-56	846.75		99.96	-3.01E-02	8.49E-02	8.49E-02
		1037.75		14.03	-1.39E-01		6.15E-01
		1238.25		67.00	1.02E-01		2.05E-01
		1771.40		15.51	-4.41E-02		3.17E-01
		2598.48		16.90	-3.12E-02		2.30E-01
+	CO-57	122.06		85.51	1.42E-02	5.54E-02	5.54E-02
		136.48		10.60	-2.73E-01		4.46E-01
+	CO-58	810.76		99.40	-5.15E-03	8.76E-02	8.76E-02

Analysis Report for 1601047-03

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	FE-59	1099.22		56.50	7.16E-03	2.19E-01	2.19E-01
		1291.56		43.20	1.07E-01		2.92E-01
+	CO-60	1173.22		100.00	-6.76E-03	7.36E-02	7.56E-02
		1332.49		100.00	-2.22E-02		7.36E-02
+	ZN-65	1115.52		50.75	1.70E-02	1.91E-01	1.91E-01
+	GA-67	93.31	*	35.70	7.10E+01	1.05E+02	1.05E+02
		208.95		2.24	3.72E+02		7.82E+02
		300.22	*	16.00	8.77E+01		2.06E+02
+	SE-75	121.11		16.70	-2.25E-01	8.85E-02	3.05E-01
		136.00		59.20	3.07E-02		8.85E-02
		264.65		59.80	-6.87E-04		9.11E-02
		279.53		25.20	5.65E-02		2.44E-01
		400.65		11.40	-7.33E-02		5.30E-01
+	RB-82	776.52		13.00	-2.95E-01	9.87E-01	9.87E-01
+	RB-83	520.41		46.00	4.02E-02	1.78E-01	1.78E-01
		529.64		30.30	3.55E-04		2.41E-01
		552.65		16.40	-2.26E-02		4.13E-01
+	KR-85	513.99		0.43	2.06E+01	2.13E+01	2.13E+01
+	SR-85	513.99		99.27	1.20E-01	1.24E-01	1.24E-01
+	Y-88	898.02		93.40	1.67E-02	7.34E-02	8.85E-02
		1836.01		99.38	3.67E-03		7.34E-02
+	NB-93M	16.57		9.43	-1.89E+01	7.69E+01	7.69E+01
+	NB-94	702.63		100.00	-1.90E-02	6.96E-02	6.96E-02
		871.10		100.00	-1.01E-02		7.00E-02
+	NB-95	765.79		99.81	1.83E-02	1.45E-01	1.45E-01
+	NB-95M	235.69		25.00	-1.30E+02	4.98E+01	4.98E+01
+	ZR-95	724.18		43.70	-7.65E-03	1.60E-01	2.41E-01
		756.72		55.30	4.84E-02		1.60E-01
+	MO-99	181.06		6.20	6.78E+01	4.77E+02	6.57E+02
		739.58		12.80	1.23E+02		4.77E+02
		778.00		4.50	5.95E+01		1.27E+03
+	RU-103	497.08		89.00	-6.66E-03	1.00E-01	1.00E-01
+	RU-106	621.84		9.80	1.36E-01	6.79E-01	6.79E-01
+	AG-108M	433.93		89.90	1.73E-02	6.13E-02	6.13E-02
		614.37		90.40	-1.46E-02		7.20E-02
		722.95		90.50	-9.43E-03		7.81E-02
+	CD-109	88.03	*	3.72	3.16E+00	3.33E+00	3.33E+00
+	AG-110M	657.75		93.14	-2.98E-02	7.34E-02	7.34E-02
		677.61		10.53	-1.62E-01		6.00E-01
		706.67		16.46	2.44E-02		4.61E-01
		763.93		21.98	1.06E-02		3.38E-01
		884.67		71.63	2.37E-02		1.11E-01
		1384.27		23.94	-7.29E-02		2.85E-01
+	CD-113M	263.70		0.02	2.18E+01	2.03E+02	2.03E+02
+	SN-113	255.12		1.93	-5.23E-01	1.00E-01	2.82E+00
		391.69		64.90	3.98E-02		1.00E-01
+	TE123M	159.00		84.10	-3.17E-02	6.75E-02	6.75E-02

Analysis Report for 1601047-03

SED1

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		SB-124	602.71		97.87	-3.21E-03	8.93E-02	8.93E-02
			645.85		7.26	-5.33E-02		1.10E+00
			722.78		11.10	-1.05E-01		8.68E-01
			1691.02		49.00	-5.36E-02		1.55E-01
+		I-125	35.49		6.49	1.93E-01	2.94E+00	2.94E+00
+		SB-125	176.33		6.89	-1.46E-01	1.96E-01	7.05E-01
			427.89		29.33	4.09E-02		1.96E-01
			463.38		10.35	4.83E-01		6.56E-01
			600.56		17.80	7.06E-02		3.73E-01
			635.90		11.32	-2.04E-01		5.65E-01
+		SB-126	414.70		83.30	3.93E-02	2.89E-01	2.89E-01
			666.33		99.60	1.21E-01		3.29E-01
			695.00		99.60	2.97E-03		2.95E-01
			720.50		53.80	5.53E-02		5.77E-01
+		SN-126	87.57	*	37.00	3.06E-01	3.21E-01	3.21E-01
+		SB-127	473.00		25.00	8.28E+00	2.38E+01	3.27E+01
			685.20		35.70	1.10E+01		2.38E+01
			783.80		14.70	4.89E+01		6.52E+01
+		I-129	29.78		57.00	2.15E-02	4.96E-01	4.96E-01
			33.60		13.20	-4.14E-01		1.27E+00
			39.58		7.52	1.69E-01		1.38E+00
+		I-131	284.30		6.05	2.08E-01	6.22E-01	8.40E+00
			364.48		81.20	7.59E-02		6.22E-01
			636.97		7.26	1.04E+00		8.93E+00
			722.89		1.80	-4.84E+00		4.01E+01
+		TE-132	49.72		13.10	-6.53E+01	1.80E+01	1.70E+02
			228.16		88.00	5.16E+00		1.80E+01
+		BA-133	81.00		33.00	-4.08E-01	8.37E-02	1.70E-01
			302.84		17.80	3.76E-02		2.89E-01
			356.01		60.00	-1.12E-01		8.37E-02
+		I-133	529.87		86.30	2.33E+05	1.59E+08	1.59E+08
+		XE-133	81.00		38.00	-1.25E+01	5.19E+00	5.19E+00
+		CS-134	563.23		8.38	2.68E-01	8.26E-02	7.17E-01
			569.32		15.43	-1.00E-01		4.02E-01
			604.70		97.60	1.09E-02		8.26E-02
			795.84		85.40	1.21E-02		8.55E-02
			801.93		8.73	1.44E-01		8.26E-01
+		CS-135	268.24		16.00	4.62E-01	3.76E-01	3.76E-01
+	@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41		28.60	1.00E+26		1.00E+26
	@		1678.03		9.54	1.00E+26		1.00E+26
+		CS-136	153.22		7.46	2.98E-01	2.67E-01	2.74E+00
			163.89		4.61	1.55E+00		4.33E+00
			176.55		13.56	-3.03E-01		1.46E+00
			273.65		12.66	-6.92E-01		1.56E+00
			340.57		48.50	3.78E-01		5.47E-01
			818.50		99.70	1.79E-02		2.67E-01
			1048.07		79.60	7.37E-02		4.03E-01
			1235.34		19.70	3.85E-01		2.19E+00

Analysis Report for 1601047-03

SED1

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CS-137	661.65	85.12	3.40E-02	8.56E-02	8.56E-02
+	LA-138	788.74	34.00	1.22E-02	9.56E-02	1.77E-01
		1435.80	66.00	-2.45E-02		9.56E-02
+	CE-139	165.85	80.35	2.44E-02	6.86E-02	6.86E-02
+	BA-140	162.64	6.70	-7.70E-02	9.90E-01	3.08E+00
		304.84	4.50	2.34E-01		4.71E+00
		423.70	3.20	1.65E-01		8.18E+00
		437.55	2.00	-9.44E-01		1.17E+01
		537.32	25.00	-5.69E-01		9.90E-01
+	LA-140	328.77	20.50	9.83E-01	3.16E-01	1.26E+00
		487.03	45.50	-2.53E-01		5.13E-01
		815.85	23.50	3.71E-01		1.16E+00
		1596.49	95.49	-2.69E-02		3.16E-01
+	CE-141	145.44	48.40	1.10E-01	1.83E-01	1.83E-01
+	CE-143	57.36	11.80	1.20E+04	1.64E+05	4.19E+05
		293.26	42.00	4.39E+05		1.64E+05
		664.55	5.20	3.01E+05		1.12E+06
+	CE-144	133.54	10.80	2.69E-01	4.46E-01	4.46E-01
+	PM-144	476.78	42.00	2.93E-02	6.98E-02	1.59E-01
		618.01	98.60	2.93E-02		6.98E-02
		696.49	99.49	-1.98E-02		7.02E-02
+	PM-145	36.85	21.70	-3.19E-02	2.99E-01	5.69E-01
		37.36	39.70	-1.12E-01		2.99E-01
		42.30	15.10	1.88E-01		6.02E-01
		72.40	2.31	-2.22E+00		3.07E+00
+	PM-146	453.90	39.94	-9.27E-02	1.31E-01	1.31E-01
		735.90	14.01	-4.28E-02		4.31E-01
		747.13	13.10	-3.81E-01		4.88E-01
+	ND-147	91.11	28.90	-1.90E+00	1.21E+00	1.21E+00
		531.02	13.10	8.17E-01		2.57E+00
+	PM-149	285.90	3.10	6.64E+02	7.50E+03	7.50E+03
+	EU-152	121.78	20.50	5.55E-02	2.16E-01	2.16E-01
		244.69	5.40	-4.78E-01		1.03E+00
		344.27	19.13	-7.89E-04		2.49E-01
		778.89	9.20	1.83E-01		7.14E-01
		964.01	10.40	-1.54E+00		7.87E-01
		1085.78	7.22	-3.57E-01		9.17E-01
		1112.02	9.60	5.41E-02		7.63E-01
		1407.95	14.94	1.36E-01		5.20E-01
+	GD-153	97.43	31.30	9.65E-03	1.55E-01	1.55E-01
		103.18	22.20	1.49E-01		2.29E-01
+	EU-154	123.07	40.50	-2.83E-03	1.08E-01	1.08E-01
		723.30	19.70	-4.36E-02		3.61E-01
		873.19	11.50	-1.15E-01		6.07E-01
		996.32	10.30	-4.44E-01		6.82E-01
		1004.76	17.90	-1.31E-01		3.90E-01
		1274.45	35.50	1.36E-03		2.04E-01
+	EU-155	86.50	30.90	1.11E-01	2.08E-01	2.08E-01
		105.30	20.70	1.56E-01		2.32E-01

Analysis Report for 1601047-03

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	EU-156	811.77		10.40	5.39E-01	2.23E+00	2.23E+00
		1153.47		7.20	-2.03E-01		4.07E+00
		1230.71		8.90	-5.24E-01		3.34E+00
+	HO-166M	184.41		72.60	2.16E-01	9.07E-02	9.07E-02
		280.45		29.60	-2.05E-02		1.70E-01
		410.94		11.10	2.68E-01		5.57E-01
		711.69		54.10	5.52E-03		1.28E-01
+	TM-171	66.72		0.14	-7.15E+01	4.51E+01	4.51E+01
+	HF-172	81.75		4.52	-8.41E-01	4.14E-01	1.27E+00
		125.81		11.30	7.12E-02		4.14E-01
+	LU-172	181.53		20.60	1.08E+00	2.01E+00	3.63E+00
		810.06		16.63	1.54E+00		6.74E+00
		912.12		15.25	2.46E+01		1.40E+01
		1093.66		62.50	2.99E-01		2.01E+00
+	LU-173	100.72		5.24	1.26E-01	2.82E-01	8.82E-01
		272.11		21.20	1.97E-01		2.82E-01
+	HF-175	343.40		84.00	-9.35E-03	7.53E-02	7.53E-02
+	LU-176	88.34		13.30	4.90E-01	5.16E-02	4.79E-01
		201.83		86.00	-1.57E-02		5.56E-02
		306.78		94.00	5.49E-03		5.16E-02
+	TA-182	67.75		41.20	-3.97E-02	1.72E-01	1.72E-01
		1121.30		34.90	5.65E-01		4.26E-01
		1189.05		16.23	3.43E-02		5.40E-01
		1221.41		26.98	-1.02E-01		4.08E-01
		1231.02		11.44	-1.40E-01		8.94E-01
+	IR-192	308.46		29.68	3.58E-02	1.55E-01	2.07E-01
		468.07		48.10	-3.83E-02		1.55E-01
+	HG-203	279.19		77.30	4.98E-02	1.05E-01	1.05E-01
+	BI-207	569.67		97.72	-3.89E-02	5.96E-02	5.96E-02
		1063.62		74.90	-4.37E-02		9.97E-02
+	TL-208	583.14	*	30.22	8.06E-01	4.46E-01	5.30E-01
		860.37	*	4.48	1.57E+00		1.96E+00
		2614.66		35.85	6.35E-01		4.46E-01
+	BI-210M	262.00		45.00	-1.06E-02	1.04E-01	1.04E-01
		300.00		23.00	-2.82E-01		2.47E-01
+	PB-210	46.50	*	4.25	2.25E+00	2.55E+00	2.55E+00
+	PB-211	404.84		2.90	4.69E-01	1.85E+00	1.85E+00
		831.96		2.90	1.72E-01		2.47E+00
+	BI-212	727.17	*	11.80	6.35E-01	9.15E-01	9.15E-01
		1620.62		2.75	-1.32E-01		1.97E+00
+	PB-212	238.63	*	44.60	9.45E-01	2.38E-01	2.38E-01
		300.09	*	3.41	1.33E+00		3.13E+00
+	BI-214	609.31	*	46.30	9.66E-01	2.07E-01	2.07E-01
		1120.29	*	15.10	1.05E+00		7.23E-01
		1764.49	*	15.80	1.49E+00		4.03E-01
		2204.22	*	4.98	1.29E+00		1.26E+00
+	PB-214	295.21	*	19.19	1.32E+00	1.82E-01	5.45E-01
		351.92	*	37.19	1.17E+00		1.82E-01

Analysis Report for 1601047-03

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	RN-219	401.80		6.50	4.85E-02	8.20E-01	8.20E-01
+	RA-223	323.87		3.88	-6.72E-01	1.33E+00	1.33E+00
+	RA-224	240.98		3.95	8.76E+00	2.57E+00	2.57E+00
+	RA-225	40.00		31.00	1.41E-01	1.15E+00	1.15E+00
+	RA-226	186.21	*	3.28	2.87E+00	3.21E+00	3.21E+00
+	TH-227	50.10		8.40	-3.25E-01	6.11E-01	8.45E-01
		236.00		11.50	-1.59E+00		6.11E-01
		256.20		6.30	-2.71E-01		7.21E-01
+	AC-228	338.32	*	11.40	1.29E+00	6.71E-01	7.35E-01
		911.07	*	27.70	9.12E-01		7.12E-01
		969.11	*	16.60	1.09E+00		6.71E-01
+	TH-230	48.44		16.90	5.87E-01	5.14E-01	5.14E-01
		62.85		4.60	2.04E+00		1.55E+00
		67.67		0.37	-3.76E+00		1.63E+01
+	PA-231	283.67		1.60	-1.19E+00	2.23E+00	3.01E+00
		302.67		2.30	2.89E-01		2.23E+00
+	TH-231	25.64		14.70	6.38E-01	9.23E-01	4.05E+00
		84.21		6.40	-1.38E+00		9.23E-01
+	PA-233	311.98		38.60	-7.83E-03	2.36E-01	2.36E-01
+	PA-234	131.20		20.40	-7.89E-02	2.14E-01	2.14E-01
		733.99		8.80	-7.09E-02		6.87E-01
		946.00		12.00	1.26E-02		5.81E-01
+	PA-234M	1001.03		0.92	1.06E+00	8.50E+00	8.50E+00
+	TH-234	63.29	*	3.80	2.38E+00	2.90E+00	2.90E+00
+	U-235	143.76		10.50	6.42E-02	4.83E-01	4.83E-01
		163.35		4.70	3.66E-01		1.02E+00
		205.31		4.70	-1.05E+00		1.05E+00
+	NP-237	86.50		12.60	2.70E-01	5.05E-01	5.05E-01
+	NP-239	106.10		22.70	3.94E+02	5.88E+02	5.88E+02
		228.18		10.70	3.83E+02		1.33E+03
		277.60		14.10	4.41E+02		1.07E+03
+	AM-241	59.54		35.90	-1.96E-01	1.71E-01	1.71E-01
+	AM-243	74.67		66.00	1.04E-03	1.29E-01	1.29E-01
+	CM-243	209.75		3.29	1.29E+00	3.85E-01	1.74E+00
		228.14		10.60	1.38E-01		4.82E-01
		277.60		14.00	1.59E-01		3.85E-01

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

Analysis Report for 1601047-03

SED1

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	8.52E-01	8.52E-01	2.29E-01	4.01E-01
	NA-22	1274.54		99.94	7.34E-02	7.34E-02	4.89E-04	3.27E-02
	NA-24	1368.53		99.99	5.35E+11	5.33E+11	-4.32E+11	2.28E+11
		2754.09		99.86	5.33E+11		2.03E+11	2.12E+11
	AL-26	1808.65		99.76	5.79E-02	5.79E-02	1.60E-02	2.40E-02
+	K-40	1460.81	*	10.67	1.12E+00	1.12E+00	1.37E+01	5.20E-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	6.38E-02	6.38E-02	-1.47E-02	3.10E-02
		78.34		96.00	8.32E-02		1.75E-01	4.08E-02
	SC-46	889.25		99.98	8.99E-02	8.99E-02	2.46E-02	4.13E-02
		1120.51		99.99	1.59E-01		2.15E-01	7.53E-02
	V-48	983.52		99.98	2.26E-01	1.95E-01	8.33E-02	1.03E-01
		1312.10		97.50	1.95E-01		-1.26E-01	8.45E-02
	CR-51	320.08		9.83	9.26E-01	9.26E-01	-3.20E-02	4.36E-01
	MN-54	834.83		99.97	7.49E-02	7.49E-02	-3.43E-02	3.45E-02
	CO-56	846.75		99.96	8.49E-02	8.49E-02	-3.01E-02	3.89E-02
		1037.75		14.03	6.15E-01		-1.39E-01	2.77E-01
		1238.25		67.00	2.05E-01		1.02E-01	9.51E-02
		1771.40		15.51	3.17E-01		-4.41E-02	1.19E-01
		2598.48		16.90	2.30E-01		-3.12E-02	7.26E-02
	CO-57	122.06		85.51	5.54E-02	5.54E-02	1.42E-02	2.67E-02
		136.48		10.60	4.46E-01		-2.73E-01	2.15E-01
	CO-58	810.76		99.40	8.76E-02	8.76E-02	-5.15E-03	4.02E-02
	FE-59	1099.22		56.50	2.19E-01	2.19E-01	7.16E-03	1.00E-01
		1291.56		43.20	2.92E-01		1.07E-01	1.32E-01
	CO-60	1173.22		100.00	7.56E-02	7.36E-02	-6.76E-03	3.41E-02
		1332.49		100.00	7.36E-02		-2.22E-02	3.27E-02
	ZN-65	1115.52		50.75	1.91E-01	1.91E-01	1.70E-02	8.80E-02
+	GA-67	93.31	*	35.70	1.05E+02	1.05E+02	7.10E+01	5.17E+01
		208.95		2.24	7.82E+02		3.72E+02	3.77E+02
		300.22	*	16.00	2.06E+02		8.77E+01	1.00E+02
	SE-75	121.11		16.70	3.05E-01	8.85E-02	-2.25E-01	1.47E-01
		136.00		59.20	8.85E-02		3.07E-02	4.26E-02
		264.65		59.80	9.11E-02		-6.87E-04	4.32E-02
		279.53		25.20	2.44E-01		5.65E-02	1.16E-01
		400.65		11.40	5.30E-01		-7.33E-02	2.49E-01
	RB-82	776.52		13.00	9.87E-01	9.87E-01	-2.95E-01	4.52E-01
	RB-83	520.41		46.00	1.78E-01	1.78E-01	4.02E-02	8.39E-02
		529.64		30.30	2.41E-01		3.55E-04	1.13E-01
		552.65		16.40	4.13E-01		-2.26E-02	1.91E-01

Analysis Report for 1601047-03

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	KR-85	513.99		0.43	2.13E+01	2.13E+01	2.06E+01	1.02E+01
	SR-85	513.99		99.27	1.24E-01	1.24E-01	1.20E-01	5.93E-02
	Y-88	898.02		93.40	8.85E-02	7.34E-02	1.67E-02	4.05E-02
		1836.01		99.38	7.34E-02		3.67E-03	3.07E-02
	NB-93M	16.57		9.43	7.69E+01	7.69E+01	-1.89E+01	3.57E+01
	NB-94	702.63		100.00	6.96E-02	6.96E-02	-1.90E-02	3.24E-02
		871.10		100.00	7.00E-02		-1.01E-02	3.21E-02
	NB-95	765.79		99.81	1.45E-01	1.45E-01	1.83E-02	6.79E-02
	NB-95M	235.69		25.00	4.98E+01	4.98E+01	-1.30E+02	2.41E+01
	ZR-95	724.18		43.70	2.41E-01	1.60E-01	-7.65E-03	1.13E-01
		756.72		55.30	1.60E-01		4.84E-02	7.36E-02
	MO-99	181.06		6.20	6.57E+02	4.77E+02	6.78E+01	3.15E+02
		739.58		12.80	4.77E+02		1.23E+02	2.21E+02
		778.00		4.50	1.27E+03		5.95E+01	5.83E+02
	RU-103	497.08		89.00	1.00E-01	1.00E-01	-6.66E-03	4.66E-02
	RU-106	621.84		9.80	6.79E-01	6.79E-01	1.36E-01	3.16E-01
	AG-108M	433.93		89.90	6.13E-02	6.13E-02	1.73E-02	2.88E-02
		614.37		90.40	7.20E-02		-1.46E-02	3.36E-02
		722.95		90.50	7.81E-02		-9.43E-03	3.63E-02
+	CD-109	88.03	*	3.72	3.33E+00	3.33E+00	3.16E+00	1.64E+00
	AG-110M	657.75		93.14	7.34E-02	7.34E-02	-2.98E-02	3.40E-02
		677.61		10.53	6.00E-01		-1.62E-01	2.76E-01
		706.67		16.46	4.61E-01		2.44E-02	2.15E-01
		763.93		21.98	3.38E-01		1.06E-02	1.56E-01
		884.67		71.63	1.11E-01		2.37E-02	5.12E-02
		1384.27		23.94	2.85E-01		-7.29E-02	1.24E-01
	CD-113M	263.70		0.02	2.03E+02	2.03E+02	2.18E+01	9.63E+01
	SN-113	255.12		1.93	2.82E+00	1.00E-01	-5.23E-01	1.34E+00
		391.69		64.90	1.00E-01		3.98E-02	4.72E-02
	TE123M	159.00		84.10	6.75E-02	6.75E-02	-3.17E-02	3.25E-02
	SB-124	602.71		97.87	8.93E-02	8.93E-02	-3.21E-03	4.16E-02
		645.85		7.26	1.10E+00		-5.33E-02	5.09E-01
		722.78		11.10	8.68E-01		-1.05E-01	4.03E-01
		1691.02		49.00	1.55E-01		-5.36E-02	6.41E-02
	I-125	35.49		6.49	2.94E+00	2.94E+00	1.93E-01	1.42E+00
	SB-125	176.33		6.89	7.05E-01	1.96E-01	-1.46E-01	3.39E-01
		427.89		29.33	1.96E-01		4.09E-02	9.22E-02
		463.38		10.35	6.56E-01		4.83E-01	3.11E-01
		600.56		17.80	3.73E-01		7.06E-02	1.74E-01
		635.90		11.32	5.65E-01		-2.04E-01	2.63E-01
	SB-126	414.70		83.30	2.89E-01	2.89E-01	3.93E-02	1.36E-01
		666.33		99.60	3.29E-01		1.21E-01	1.54E-01
		695.00		99.60	2.95E-01		2.97E-03	1.37E-01
		720.50		53.80	5.77E-01		5.53E-02	2.68E-01
+	SN-126	87.57	*	37.00	3.21E-01	3.21E-01	3.06E-01	1.59E-01
	SB-127	473.00		25.00	3.27E+01	2.38E+01	8.28E+00	1.54E+01
		685.20		35.70	2.38E+01		1.10E+01	1.10E+01
		783.80		14.70	6.52E+01		4.89E+01	3.03E+01
	I-129	29.78		57.00	4.96E-01	4.96E-01	2.15E-02	2.40E-01
		33.60		13.20	1.27E+00		-4.14E-01	6.12E-01
		39.58		7.52	1.38E+00		1.69E-01	6.68E-01
	I-131	284.30		6.05	8.40E+00	6.22E-01	2.08E-01	3.99E+00
		364.48		81.20	6.22E-01		7.59E-02	2.93E-01

Analysis Report for 1601047-03

SED1

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
I-131	636.97	7.26	8.93E+00	6.22E-01	1.04E+00	4.15E+00
	722.89	1.80	4.01E+01		-4.84E+00	1.86E+01
TE-132	49.72	13.10	1.70E+02	1.80E+01	-6.53E+01	8.24E+01
	228.16	88.00	1.80E+01		5.16E+00	8.60E+00
BA-133	81.00	33.00	1.70E-01	8.37E-02	-4.08E-01	8.26E-02
	302.84	17.80	2.89E-01		3.76E-02	1.37E-01
	356.01	60.00	8.37E-02		-1.12E-01	3.94E-02
I-133	529.87	86.30	1.59E+08	1.59E+08	2.33E+05	7.41E+07
XE-133	81.00	38.00	5.19E+00	5.19E+00	-1.25E+01	2.52E+00
CS-134	563.23	8.38	7.17E-01	8.26E-02	2.68E-01	3.33E-01
	569.32	15.43	4.02E-01		-1.00E-01	1.87E-01
	604.70	97.60	8.26E-02		1.09E-02	3.90E-02
	795.84	85.40	8.55E-02		1.21E-02	3.95E-02
	801.93	8.73	8.26E-01		1.44E-01	3.81E-01
CS-135	268.24	16.00	3.76E-01	3.76E-01	4.62E-01	1.81E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	2.74E+00	2.67E-01	2.98E-01	1.32E+00
	163.89	4.61	4.33E+00		1.55E+00	2.08E+00
	176.55	13.56	1.46E+00		-3.03E-01	7.00E-01
	273.65	12.66	1.56E+00		-6.92E-01	7.43E-01
	340.57	48.50	5.47E-01		3.78E-01	2.62E-01
	818.50	99.70	2.67E-01		1.79E-02	1.22E-01
	1048.07	79.60	4.03E-01		7.37E-02	1.84E-01
	1235.34	19.70	2.19E+00		3.85E-01	1.02E+00
CS-137	661.65	85.12	8.56E-02	8.56E-02	3.40E-02	4.01E-02
LA-138	788.74	34.00	1.77E-01	9.56E-02	1.22E-02	8.08E-02
	1435.80	66.00	9.56E-02		-2.45E-02	4.14E-02
CE-139	165.85	80.35	6.86E-02	6.86E-02	2.44E-02	3.30E-02
BA-140	162.64	6.70	3.08E+00	9.90E-01	-7.70E-02	1.49E+00
	304.84	4.50	4.71E+00		2.34E-01	2.23E+00
	423.70	3.20	8.18E+00		1.65E-01	3.87E+00
	437.55	2.00	1.17E+01		-9.44E-01	5.51E+00
	537.32	25.00	9.90E-01		-5.69E-01	4.61E-01
LA-140	328.77	20.50	1.26E+00	3.16E-01	9.83E-01	6.03E-01
	487.03	45.50	5.13E-01		-2.53E-01	2.39E-01
	815.85	23.50	1.16E+00		3.71E-01	5.32E-01
	1596.49	95.49	3.16E-01		-2.69E-02	1.37E-01
CE-141	145.44	48.40	1.83E-01	1.83E-01	1.10E-01	8.83E-02
CE-143	57.36	11.80	4.19E+05	1.64E+05	1.20E+04	2.03E+05
	293.26	42.00	1.64E+05		4.39E+05	7.95E+04
	664.55	5.20	1.12E+06		3.01E+05	5.27E+05
CE-144	133.54	10.80	4.46E-01	4.46E-01	2.69E-01	2.15E-01
PM-144	476.78	42.00	1.59E-01	6.98E-02	2.93E-02	7.50E-02
	618.01	98.60	6.98E-02		2.93E-02	3.25E-02
	696.49	99.49	7.02E-02		-1.98E-02	3.26E-02
PM-145	36.85	21.70	5.69E-01	2.99E-01	-3.19E-02	2.74E-01
	37.36	39.70	2.99E-01		-1.12E-01	1.44E-01
	42.30	15.10	6.02E-01		1.88E-01	2.91E-01
	72.40	2.31	3.07E+00		-2.22E+00	1.50E+00
PM-146	453.90	39.94	1.31E-01	1.31E-01	-9.27E-02	6.09E-02
	735.90	14.01	4.31E-01		-4.28E-02	1.97E-01

Analysis Report for 1601047-03

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PM-146	747.13		13.10	4.88E-01	1.31E-01	-3.81E-01	2.24E-01
	ND-147	91.11		28.90	1.21E+00	1.21E+00	-1.90E+00	5.91E-01
		531.02		13.10	2.57E+00		8.17E-01	1.20E+00
	PM-149	285.90		3.10	7.50E+03	7.50E+03	6.64E+02	3.56E+03
	EU-152	121.78		20.50	2.16E-01	2.16E-01	5.55E-02	1.04E-01
		244.69		5.40	1.03E+00		-4.78E-01	4.94E-01
		344.27		19.13	2.49E-01		-7.89E-04	1.17E-01
		778.89		9.20	7.14E-01		1.83E-01	3.28E-01
		964.01		10.40	7.87E-01		-1.54E+00	3.63E-01
		1085.78		7.22	9.17E-01		-3.57E-01	4.11E-01
		1112.02		9.60	7.63E-01		5.41E-02	3.45E-01
		1407.95		14.94	5.20E-01		1.36E-01	2.32E-01
	GD-153	97.43		31.30	1.55E-01	1.55E-01	9.65E-03	7.48E-02
		103.18		22.20	2.29E-01		1.49E-01	1.11E-01
	EU-154	123.07		40.50	1.08E-01	1.08E-01	-2.83E-03	5.22E-02
		723.30		19.70	3.61E-01		-4.36E-02	1.68E-01
		873.19		11.50	6.07E-01		-1.15E-01	2.78E-01
		996.32		10.30	6.82E-01		-4.44E-01	3.10E-01
		1004.76		17.90	3.90E-01		-1.31E-01	1.77E-01
		1274.45		35.50	2.04E-01		1.36E-03	9.09E-02
	EU-155	86.50		30.90	2.08E-01	2.08E-01	1.11E-01	1.02E-01
		105.30		20.70	2.32E-01		1.56E-01	1.12E-01
	EU-156	811.77		10.40	2.23E+00	2.23E+00	5.39E-01	1.02E+00
		1153.47		7.20	4.07E+00		-2.03E-01	1.86E+00
		1230.71		8.90	3.34E+00		-5.24E-01	1.52E+00
	HO-166M	184.41		72.60	9.07E-02	9.07E-02	2.16E-01	4.41E-02
		280.45		29.60	1.70E-01		-2.05E-02	8.06E-02
		410.94		11.10	5.57E-01		2.68E-01	2.64E-01
		711.69		54.10	1.28E-01		5.52E-03	5.94E-02
	TM-171	66.72		0.14	4.51E+01	4.51E+01	-7.15E+01	2.20E+01
	HF-172	81.75		4.52	1.27E+00	4.14E-01	-8.41E-01	6.18E-01
		125.81		11.30	4.14E-01		7.12E-02	2.00E-01
	LU-172	181.53		20.60	3.63E+00	2.01E+00	1.08E+00	1.74E+00
		810.06		16.63	6.74E+00		1.54E+00	3.11E+00
		912.12		15.25	1.40E+01		2.46E+01	6.68E+00
		1093.66		62.50	2.01E+00		2.99E-01	9.15E-01
	LU-173	100.72		5.24	8.82E-01	2.82E-01	1.26E-01	4.26E-01
		272.11		21.20	2.82E-01		1.97E-01	1.35E-01
	HF-175	343.40		84.00	7.53E-02	7.53E-02	-9.35E-03	3.55E-02
	LU-176	88.34		13.30	4.79E-01	5.16E-02	4.90E-01	2.34E-01
		201.83		86.00	5.56E-02		-1.57E-02	2.66E-02
		306.78		94.00	5.16E-02		5.49E-03	2.44E-02
	TA-182	67.75		41.20	1.72E-01	1.72E-01	-3.97E-02	8.38E-02
		1121.30		34.90	4.26E-01		5.65E-01	2.01E-01
		1189.05		16.23	5.40E-01		3.43E-02	2.43E-01
		1221.41		26.98	4.08E-01		-1.02E-01	1.87E-01
		1231.02		11.44	8.94E-01		-1.40E-01	4.08E-01
	IR-192	308.46		29.68	2.07E-01	1.55E-01	3.58E-02	9.79E-02
		468.07		48.10	1.55E-01		-3.83E-02	7.28E-02
	HG-203	279.19		77.30	1.05E-01	1.05E-01	4.98E-02	5.00E-02
	BI-207	569.67		97.72	5.96E-02	5.96E-02	-3.89E-02	2.77E-02
		1063.62		74.90	9.97E-02		-4.37E-02	4.53E-02
+	TL-208	583.14	*	30.22	5.30E-01	4.46E-01	8.06E-01	2.58E-01

Analysis Report for 1601047-03

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TL-208	860.37	*	4.48	1.96E+00	4.46E-01	1.57E+00	9.16E-01
		2614.66		35.85	4.46E-01		6.35E-01	2.07E-01
	BI-210M	262.00		45.00	1.04E-01	1.04E-01	-1.06E-02	4.94E-02
		300.00		23.00	2.47E-01		-2.82E-01	1.18E-01
+	PB-210	46.50	*	4.25	2.55E+00	2.55E+00	2.25E+00	1.25E+00
	PB-211	404.84		2.90	1.85E+00	1.85E+00	4.69E-01	8.69E-01
		831.96		2.90	2.47E+00		1.72E-01	1.14E+00
+	BI-212	727.17	*	11.80	9.15E-01	9.15E-01	6.35E-01	4.36E-01
		1620.62		2.75	1.97E+00		-1.32E-01	8.15E-01
+	PB-212	238.63	*	44.60	2.38E-01	2.38E-01	9.45E-01	1.17E-01
		300.09	*	3.41	3.13E+00		1.33E+00	1.53E+00
+	BI-214	609.31	*	46.30	2.07E-01	2.07E-01	9.66E-01	9.89E-02
		1120.29	*	15.10	7.23E-01		1.05E+00	3.38E-01
		1764.49	*	15.80	4.03E-01		1.49E+00	1.71E-01
		2204.22	*	4.98	1.26E+00		1.29E+00	5.20E-01
+	PB-214	295.21	*	19.19	5.45E-01	1.82E-01	1.32E+00	2.66E-01
		351.92	*	37.19	1.82E-01		1.17E+00	8.73E-02
	RN-219	401.80		6.50	8.20E-01	8.20E-01	4.85E-02	3.86E-01
	RA-223	323.87		3.88	1.33E+00	1.33E+00	-6.72E-01	6.29E-01
	RA-224	240.98		3.95	2.57E+00	2.57E+00	8.76E+00	1.26E+00
	RA-225	40.00		31.00	1.15E+00	1.15E+00	1.41E-01	5.57E-01
+	RA-226	186.21	*	3.28	3.21E+00	3.21E+00	2.87E+00	1.57E+00
	TH-227	50.10		8.40	8.45E-01	6.11E-01	-3.25E-01	4.09E-01
		236.00		11.50	6.11E-01		-1.59E+00	2.96E-01
		256.20		6.30	7.21E-01		-2.71E-01	3.42E-01
+	AC-228	338.32	*	11.40	7.35E-01	6.71E-01	1.29E+00	3.55E-01
		911.07	*	27.70	7.12E-01		9.12E-01	3.45E-01
		969.11	*	16.60	6.71E-01		1.09E+00	3.17E-01
	TH-230	48.44		16.90	5.14E-01	5.14E-01	5.87E-01	2.50E-01
		62.85		4.60	1.55E+00		2.04E+00	7.56E-01
		67.67		0.37	1.63E+01		-3.76E+00	7.93E+00
	PA-231	283.67		1.60	3.01E+00	2.23E+00	-1.19E+00	1.43E+00
		302.67		2.30	2.23E+00		2.89E-01	1.06E+00
	TH-231	25.64		14.70	4.05E+00	9.23E-01	6.38E-01	1.96E+00
		84.21		6.40	9.23E-01		-1.38E+00	4.50E-01
	PA-233	311.98		38.60	2.36E-01	2.36E-01	-7.83E-03	1.11E-01
	PA-234	131.20		20.40	2.14E-01	2.14E-01	-7.89E-02	1.03E-01
		733.99		8.80	6.87E-01		-7.09E-02	3.15E-01
		946.00		12.00	5.81E-01		1.26E-02	2.65E-01
	PA-234M	1001.03		0.92	8.50E+00	8.50E+00	1.06E+00	3.90E+00
+	TH-234	63.29	*	3.80	2.90E+00	2.90E+00	2.38E+00	1.43E+00
	U-235	143.76		10.50	4.83E-01	4.83E-01	6.42E-02	2.34E-01
		163.35		4.70	1.02E+00		3.66E-01	4.93E-01
		205.31		4.70	1.05E+00		-1.05E+00	5.03E-01
	NP-237	86.50		12.60	5.05E-01	5.05E-01	2.70E-01	2.47E-01
	NP-239	106.10		22.70	5.88E+02	5.88E+02	3.94E+02	2.84E+02
		228.18		10.70	1.33E+03		3.83E+02	6.39E+02
		277.60		14.10	1.07E+03		4.41E+02	5.10E+02
	AM-241	59.54		35.90	1.71E-01	1.71E-01	-1.96E-01	8.29E-02
	AM-243	74.67		66.00	1.29E-01	1.29E-01	1.04E-03	6.33E-02
	CM-243	209.75		3.29	1.74E+00	3.85E-01	1.29E+00	8.38E-01
		228.14		10.60	4.82E-01		1.38E-01	2.31E-01
		277.60		14.00	3.85E-01		1.59E-01	1.84E-01

Analysis Report for 1601047-03

SED1

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

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

Sample Title: SED1

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	1	54	63	58	65	58	59
25:	53	55	64	57	53	56	66	46
33:	49	56	44	54	47	49	49	45
41:	61	55	52	49	55	88	166	82
49:	54	58	71	53	84	76	51	77
57:	56	62	70	78	80	76	122	179
65:	94	83	105	79	84	84	101	89
73:	108	109	244	210	304	301	99	99
81:	80	86	68	102	101	90	132	166
89:	91	105	90	95	205	142	75	56
97:	51	56	63	57	60	45	52	65
105:	63	84	43	59	51	47	52	64
113:	63	57	65	58	40	63	52	50
121:	46	55	41	58	42	48	59	53
129:	55	47	46	45	41	51	49	58
137:	35	44	43	57	55	64	52	64
145:	55	57	57	44	42	53	46	46
153:	45	69	45	54	53	52	43	51
161:	42	56	37	53	41	43	40	49
169:	42	52	39	46	41	48	51	39
177:	29	53	35	42	32	25	49	37
185:	65	148	85	39	41	54	42	42
193:	59	49	37	38	30	38	52	32
201:	36	39	30	40	30	36	43	36
209:	64	55	44	45	34	46	27	27
217:	30	35	43	25	40	39	31	32
225:	43	44	31	34	31	33	24	30
233:	28	39	35	36	51	161	320	104
241:	62	103	78	26	35	21	27	29
249:	27	32	24	17	28	23	16	29
257:	25	23	37	24	23	28	27	18
265:	21	23	28	29	35	50	54	31
273:	15	25	25	22	35	37	25	29
281:	23	26	23	24	17	24	33	22
289:	25	19	28	20	17	37	157	131
297:	22	25	27	47	30	19	23	21
305:	25	15	23	23	17	18	18	15
313:	19	18	18	15	15	14	15	24
321:	20	15	21	19	17	36	23	39
329:	33	29	22	15	17	16	17	16
337:	19	71	66	31	22	24	16	18
345:	13	16	20	15	17	18	80	276
353:	114	14	19	20	18	17	17	17
361:	13	12	23	9	16	15	20	15

369:	20	16	13	19	10	16	15	13

Sample Title: SED1

Channel								
377:	15	13	10	12	15	27	19	16
385:	15	23	15	18	16	31	16	17
393:	14	16	14	14	11	14	15	16
401:	18	15	15	20	20	15	14	13
409:	24	24	15	14	9	12	13	9
417:	13	10	9	18	19	17	17	9
425:	11	13	16	15	11	10	10	13
433:	6	17	14	12	8	11	7	9
441:	16	13	10	13	9	18	9	14
449:	15	17	7	7	10	10	7	14
457:	10	10	12	10	15	13	35	12
465:	14	10	9	8	11	8	19	11
473:	20	14	18	5	15	12	14	15
481:	11	13	8	6	10	11	13	12
489:	4	8	15	11	11	2	10	12
497:	16	7	3	15	10	15	13	8
505:	7	6	9	14	19	42	71	36
513:	28	11	9	12	14	10	15	9
521:	11	13	20	10	8	11	7	10
529:	5	4	16	10	15	13	10	6
537:	13	4	4	13	12	12	9	7
545:	17	5	14	10	8	12	5	4
553:	5	13	5	9	7	7	5	6
561:	6	5	10	11	12	10	3	11
569:	8	13	8	10	5	14	11	12
577:	11	3	11	6	12	32	88	56
585:	16	7	11	7	7	10	7	11
593:	20	8	10	11	14	5	16	3
601:	12	13	6	13	8	10	11	39
609:	173	90	22	14	6	13	6	8
617:	10	8	12	10	11	7	2	7
625:	11	7	6	10	9	8	14	9
633:	9	7	9	4	10	10	8	10
641:	8	5	9	8	6	6	4	9
649:	6	7	8	9	10	4	7	8
657:	6	9	8	7	10	11	14	8
665:	15	8	9	8	10	8	5	8
673:	12	6	4	5	11	6	8	4
681:	6	5	8	6	8	13	6	10
689:	5	7	4	11	5	7	8	5
697:	8	9	10	8	9	12	6	9
705:	8	8	11	10	8	7	4	12
713:	10	8	9	4	8	12	7	7
721:	5	9	7	9	7	15	22	18
729:	8	10	6	6	8	4	6	6
737:	5	5	6	3	7	9	18	7
745:	6	9	6	9	6	1	9	7
753:	4	8	5	6	7	7	8	6
761:	4	6	11	7	8	5	10	25
769:	13	5	14	10	11	8	7	6
777:	3	6	3	6	11	9	6	6
785:	11	10	5	4	4	3	5	5
793:	8	12	7	4	10	4	6	10

801:	5	6	12	4	6	6	5	7

Sample Title: SED1

Channel								
809:	8	2	10	8	6	2	8	6
817:	3	5	8	4	4	9	7	4
825:	9	6	5	5	8	11	5	5
833:	4	9	6	9	6	7	10	9
841:	5	6	5	5	10	3	9	5
849:	3	5	12	5	6	5	4	5
857:	3	6	11	11	10	10	7	7
865:	3	4	7	6	10	5	3	4
873:	8	6	7	8	3	8	6	8
881:	8	7	2	5	8	15	5	4
889:	6	1	5	7	6	2	4	10
897:	3	5	7	6	4	8	10	9
905:	6	6	2	5	7	28	68	31
913:	5	6	3	3	12	3	2	5
921:	5	6	4	6	3	5	3	4
929:	8	6	6	4	10	10	9	5
937:	5	3	2	3	2	5	4	3
945:	7	3	5	8	6	7	6	5
953:	2	2	5	3	3	6	7	6
961:	1	4	2	13	12	5	12	26
969:	34	16	4	9	3	5	3	1
977:	6	4	1	3	6	8	5	4
985:	3	5	3	3	5	8	9	1
993:	4	4	4	4	8	5	4	7
1001:	12	7	2	5	5	5	3	5
1009:	4	3	3	1	6	6	4	3
1017:	3	7	4	3	5	3	6	8
1025:	6	1	5	2	4	4	4	7
1033:	4	5	3	4	2	7	3	7
1041:	3	4	7	5	5	6	6	3
1049:	6	5	7	4	3	4	2	6
1057:	4	6	7	4	5	6	7	4
1065:	5	2	5	9	6	6	2	3
1073:	8	2	4	8	6	8	6	6
1081:	4	9	7	1	2	4	4	4
1089:	3	3	5	3	4	6	7	5
1097:	5	4	7	6	4	8	5	4
1105:	7	2	7	1	6	6	4	1
1113:	2	4	7	3	5	5	21	36
1121:	21	6	5	3	6	4	4	2
1129:	4	4	8	6	7	6	10	6
1137:	3	3	3	4	4	10	5	8
1145:	6	6	4	6	7	5	6	7
1153:	3	5	9	5	5	6	4	4
1161:	6	5	3	2	7	8	5	4
1169:	6	2	3	5	3	4	9	3
1177:	3	5	5	3	4	9	7	3
1185:	4	3	3	2	7	3	3	7
1193:	2	6	4	3	4	3	5	7
1201:	5	5	2	2	7	9	4	2
1209:	5	7	6	6	6	7	6	8
1217:	9	5	5	5	7	4	8	10
1225:	7	6	8	4	6	4	8	3

1233:	10	2	9	5	10	16	11	5

Sample Title: SED1

Channel								
1241:	3	6	5	3	5	4	5	2
1249:	4	5	4	8	3	4	4	3
1257:	3	4	4	4	9	3	5	4
1265:	7	3	6	10	8	5	4	1
1273:	2	3	4	5	4	6	3	5
1281:	6	5	5	6	3	4	3	5
1289:	4	6	1	4	8	3	3	2
1297:	3	5	5	2	0	6	0	1
1305:	5	3	7	2	2	3	2	3
1313:	2	1	1	3	4	1	5	2
1321:	3	3	4	7	5	1	7	4
1329:	5	3	4	3	2	4	1	2
1337:	5	2	1	2	3	3	0	2
1345:	4	1	0	3	2	3	3	2
1353:	4	3	4	1	1	4	0	3
1361:	2	3	1	5	1	3	2	3
1369:	1	0	1	1	7	4	1	4
1377:	10	3	4	3	4	0	3	2
1385:	1	4	1	3	2	0	1	2
1393:	2	1	2	2	0	3	1	2
1401:	4	3	3	6	4	2	3	7
1409:	3	3	1	2	0	2	1	2
1417:	1	0	2	1	3	2	2	3
1425:	6	0	2	1	1	3	3	3
1433:	1	2	1	1	7	1	1	3
1441:	2	3	2	2	1	3	3	1
1449:	3	2	3	2	1	1	2	1
1457:	1	9	82	217	139	37	5	8
1465:	3	2	1	1	1	2	1	2
1473:	1	1	2	2	5	2	3	1
1481:	2	1	3	1	0	6	2	0
1489:	2	1	0	1	0	1	9	3
1497:	3	1	2	2	1	0	1	1
1505:	2	5	5	6	6	5	1	1
1513:	1	2	0	4	1	2	1	3
1521:	2	3	0	1	6	2	2	4
1529:	0	3	0	0	1	1	1	2
1537:	2	1	2	1	2	2	4	3
1545:	4	3	0	1	0	4	0	2
1553:	2	0	0	2	0	7	1	1
1561:	0	2	1	1	0	2	1	3
1569:	2	2	0	2	0	2	0	1
1577:	0	3	3	2	3	3	1	1
1585:	1	3	4	8	6	1	6	1
1593:	3	1	2	2	1	4	2	2
1601:	1	1	2	0	0	0	2	2
1609:	0	1	0	1	1	1	2	0
1617:	0	2	2	2	0	1	1	1
1625:	2	2	1	0	1	2	2	1
1633:	1	0	2	0	0	1	2	1
1641:	2	0	3	0	0	1	0	5
1649:	1	0	0	1	0	1	0	1
1657:	3	0	1	1	1	2	0	2

1665:	2	0	0	2	0	2	3	1

Sample Title: SED1

Channel								
1673:	0	1	1	2	2	1	3	0
1681:	0	0	1	0	1	1	0	1
1689:	0	3	0	2	2	0	2	4
1697:	0	2	2	0	0	2	1	2
1705:	1	2	2	0	2	1	1	1
1713:	2	0	1	3	1	1	1	1
1721:	0	0	1	1	1	3	1	5
1729:	4	5	2	0	0	0	0	1
1737:	0	0	0	1	0	1	0	2
1745:	1	1	1	2	2	0	0	1
1753:	1	3	0	0	1	0	0	0
1761:	0	9	20	28	7	6	1	1
1769:	1	1	0	0	0	0	0	1
1777:	1	1	0	0	1	0	5	0
1785:	0	0	1	0	0	0	0	0
1793:	0	0	1	1	2	4	0	1
1801:	0	4	0	0	0	3	0	1
1809:	1	1	2	2	0	1	1	1
1817:	0	0	1	0	3	1	1	0
1825:	1	2	1	0	1	0	1	3
1833:	1	1	2	0	2	3	0	0
1841:	1	1	1	1	4	2	6	3
1849:	1	1	1	0	0	1	0	0
1857:	1	0	0	2	1	0	0	0
1865:	3	0	0	0	0	2	0	2
1873:	0	0	2	0	2	0	0	1
1881:	0	1	0	0	1	1	4	2
1889:	0	2	0	0	0	0	1	2
1897:	0	0	2	0	3	1	0	2
1905:	1	1	1	0	1	0	0	0
1913:	1	1	1	0	0	0	1	3
1921:	0	3	3	0	1	1	1	3
1929:	0	2	0	0	4	0	0	0
1937:	2	1	0	0	0	0	1	0
1945:	1	1	1	1	1	0	0	2
1953:	0	1	0	1	2	1	0	2
1961:	3	2	1	1	1	1	1	3
1969:	1	1	2	1	2	0	1	1
1977:	2	1	0	0	3	0	0	1
1985:	0	0	2	0	3	2	0	0
1993:	0	1	0	1	0	2	0	1
2001:	1	0	1	1	1	1	0	0
2009:	0	0	0	0	1	0	1	1
2017:	0	0	0	0	0	0	0	2
2025:	1	1	1	0	2	1	0	2
2033:	1	2	0	0	1	1	1	1
2041:	0	1	2	1	1	1	0	1
2049:	1	1	0	2	0	0	1	0
2057:	0	0	0	2	0	1	1	3
2065:	1	1	2	1	0	1	0	0
2073:	0	0	1	0	0	1	0	1
2081:	2	0	0	0	0	1	1	2
2089:	0	0	2	0	1	0	1	1

2097:	0	2	1	1	1	4	4	2

Sample Title: SED1

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

2529:	0	1	0	0	1	0	0	0

Sample Title: SED1

Channel								
2537:	0	1	0	0	1	1	0	0
2545:	0	0	0	0	1	1	1	0
2553:	0	0	0	1	0	1	1	1
2561:	1	0	0	0	0	1	2	0
2569:	0	0	0	0	0	1	0	0
2577:	1	1	0	0	0	0	0	0
2585:	0	1	1	0	0	0	0	1
2593:	0	0	0	0	0	0	0	1
2601:	0	0	0	0	0	1	0	0
2609:	0	4	5	19	22	6	2	1
2617:	0	0	1	1	0	0	0	0
2625:	0	0	0	0	0	0	0	0
2633:	0	0	0	1	0	0	1	1
2641:	1	0	0	0	0	0	0	0
2649:	0	1	0	0	0	1	0	0
2657:	0	0	0	0	0	0	0	2
2665:	0	1	0	0	0	0	1	0
2673:	0	1	0	0	0	0	0	0
2681:	0	0	1	0	0	1	0	0
2689:	1	0	1	0	1	0	0	0
2697:	0	1	0	0	1	0	1	0
2705:	0	0	0	0	1	0	0	1
2713:	0	0	0	1	0	0	1	1
2721:	0	0	0	0	0	0	0	0
2729:	0	0	0	0	1	0	1	0
2737:	0	0	0	2	0	0	1	0
2745:	0	0	0	0	1	0	0	2
2753:	1	0	0	1	0	0	0	0
2761:	0	0	0	0	1	0	0	0
2769:	1	0	0	0	1	0	0	0
2777:	0	1	0	1	0	0	1	0
2785:	0	0	0	0	0	1	1	0
2793:	0	1	0	1	1	1	0	0
2801:	0	0	0	0	0	0	0	1
2809:	1	1	0	0	0	1	0	0
2817:	0	0	0	0	1	0	0	1
2825:	0	0	0	0	0	0	0	0
2833:	1	0	1	0	0	0	1	0
2841:	0	3	0	0	0	0	0	1
2849:	0	0	0	0	0	0	0	0
2857:	0	0	1	0	0	0	1	0
2865:	0	0	0	1	0	0	0	0
2873:	0	0	0	0	1	1	0	0
2881:	0	0	0	0	0	0	0	0
2889:	2	0	0	1	1	0	0	1
2897:	0	0	1	0	0	0	0	0
2905:	0	0	0	0	0	1	0	0
2913:	0	0	2	0	0	1	1	0
2921:	0	0	0	0	0	1	0	0
2929:	0	1	0	0	0	0	0	0
2937:	0	0	1	0	0	0	0	0
2945:	0	0	0	1	0	0	0	0
2953:	1	0	0	0	0	0	0	0

2961:	1	0	1	0	0	1	0	0

Sample Title: SED1

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

3393:	0	0	0	0	0	0	0	0

Sample Title: SED1

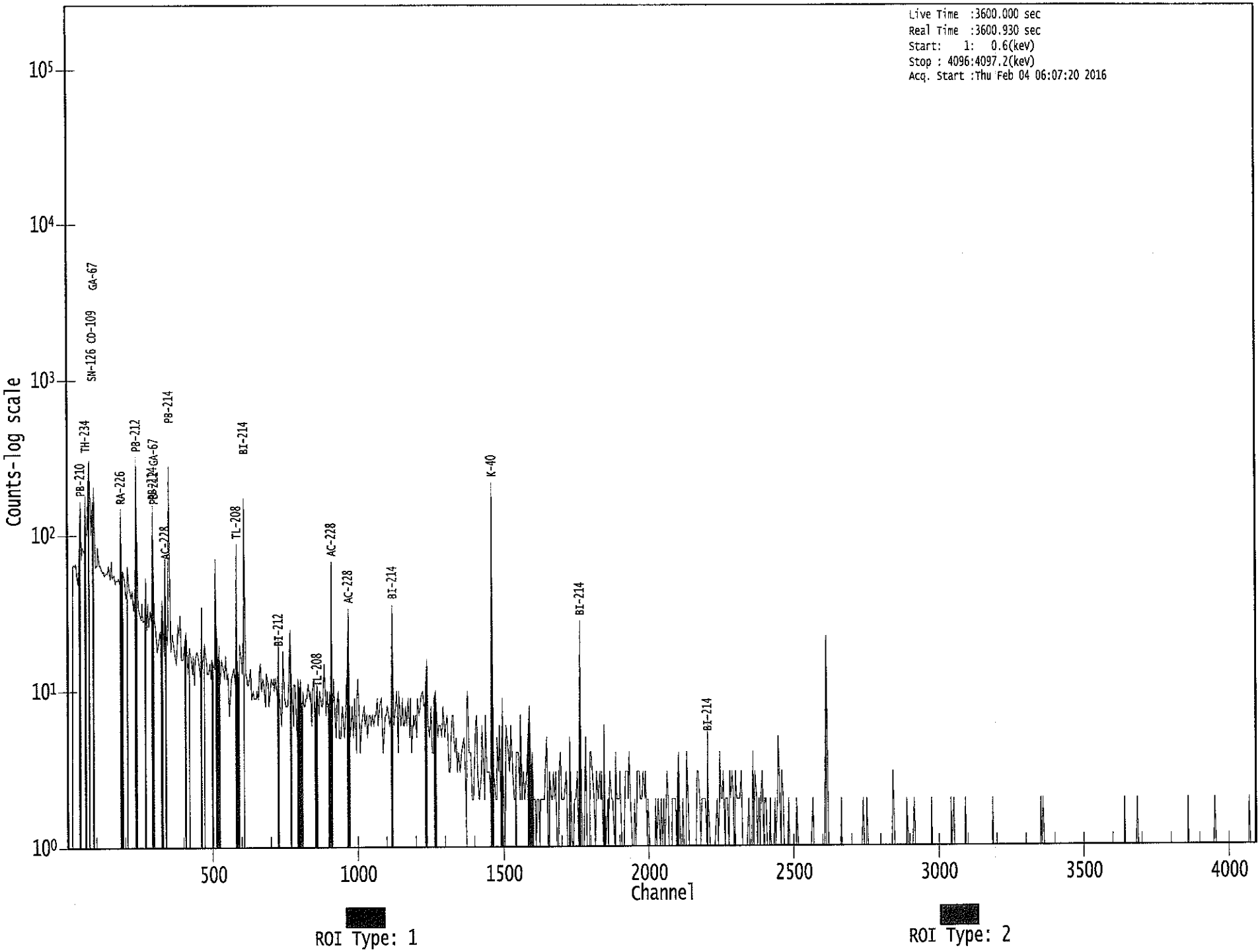
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	1	0	0	0	1	1
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	1	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	1	0	0	0
3473:	0	1	0	1	0	0	0	0
3481:	0	0	0	0	0	1	0	0
3489:	1	0	0	0	1	0	0	0
3497:	0	0	0	0	0	0	1	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: SED1

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

0000032434.CNF



: 00285

Apex-Gamma

Analysis Report for 1601047-04
SED1

C
214

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1601047-04
Sample Description	: SED1
Sample Type	: SOIL
Sample Size	: 4.755E+02 grams
Facility	: Countroom
Sample Taken On	: 1/8/2016 7:25:49AM
Acquisition Started	: 2/4/2016 7:10:17AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3600.9 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 19 - 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	: 32437

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
2/4/16

Analysis Report for 1601047-04

SED1

PEAK LOCATE REPORT

Peak Locate Performed on : 2/4/2016 8:10:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	46.44	46.79	0.0000	0.00
2	76.31	76.65	0.0000	0.00
3	85.94	86.27	0.0000	0.00
4	89.38	89.72	0.0000	0.00
5	92.81	93.15	0.0000	0.00
6	105.02	105.35	0.0000	0.00
7	114.22	114.55	0.0000	0.00
8	145.31	145.63	0.0000	0.00
9	185.80	186.11	0.0000	0.00
10	208.27	208.56	0.0000	0.00
11	238.65	238.94	0.0000	0.00
12	241.87	242.15	0.0000	0.00
13	277.50	277.77	0.0000	0.00
14	295.14	295.41	0.0000	0.00
15	338.07	338.33	0.0000	0.00
16	351.87	352.12	0.0000	0.00
17	426.19	426.42	0.0000	0.00
18	463.88	464.09	0.0000	0.00
19	475.99	476.20	0.0000	0.00
20	510.92	511.11	0.0000	0.00
21	545.39	545.57	0.0000	0.00
22	582.89	583.06	0.0000	0.00
23	609.14	609.30	0.0000	0.00
24	637.20	637.35	0.0000	0.00
25	664.05	664.19	0.0000	0.00
26	723.27	723.39	0.0000	0.00
27	726.90	727.02	0.0000	0.00
28	768.44	768.54	0.0000	0.00
29	774.98	775.08	0.0000	0.00
30	911.09	911.14	0.0000	0.00
31	933.66	933.70	0.0000	0.00
32	968.78	968.82	0.0000	0.00
33	1034.61	1034.62	0.0000	0.00
34	1063.10	1063.10	0.0000	0.00
35	1068.55	1068.55	0.0000	0.00
36	1120.01	1119.99	0.0000	0.00
37	1237.34	1237.27	0.0000	0.00
38	1242.27	1242.21	0.0000	0.00
39	1247.09	1247.02	0.0000	0.00
40	1258.91	1258.84	0.0000	0.00
41	1280.26	1280.18	0.0000	0.00
42	1347.10	1347.00	0.0000	0.00

Analysis Report for 1601047-04

SED1

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1349.89	1349.78	0.0000	0.00
44	1376.89	1376.78	0.0000	0.00
45	1414.96	1414.84	0.0000	0.00
46	1460.24	1460.10	0.0000	0.00
47	1658.72	1658.50	0.0000	0.00
48	1665.72	1665.50	0.0000	0.00
49	1729.31	1729.07	0.0000	0.00
50	1763.79	1763.54	0.0000	0.00
51	1846.26	1845.97	0.0000	0.00
52	1910.18	1909.87	0.0000	0.00
53	1915.65	1915.33	0.0000	0.00
54	1982.83	1982.49	0.0000	0.00
55	1990.59	1990.25	0.0000	0.00
56	2021.08	2020.73	0.0000	0.00
57	2103.75	2103.37	0.0000	0.00
58	2202.97	2202.54	0.0000	0.00
59	2289.98	2289.52	0.0000	0.00
60	2447.49	2446.97	0.0000	0.00
61	2613.32	2612.74	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1601047-04

SED1

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/4/2016 8:10:21AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	46.44	43 -	49	46.79	1.28E+02	70.35	8.09E+02	1.33
	2	76.31	71 -	81	76.65	7.59E+02	132.74	1.94E+03	3.72
M	3	85.94	82 -	96	86.27	1.55E+02	86.32	1.17E+03	2.62
m	4	89.38	82 -	96	89.72	1.30E+02	63.93	6.56E+02	1.63
m	5	92.81	82 -	96	93.15	3.91E+02	81.25	7.82E+02	2.25
	6	105.02	103 -	108	105.35	6.27E+01	55.26	5.65E+02	2.52
	7	114.22	112 -	118	114.55	5.89E+01	62.93	6.74E+02	3.53
	8	145.31	143 -	149	145.63	6.55E+01	59.39	5.85E+02	4.45
	9	185.80	184 -	190	186.11	1.11E+02	60.11	5.86E+02	1.41
	10	208.27	204 -	213	208.56	8.31E+01	70.82	6.54E+02	1.94
M	11	238.65	234 -	246	238.94	4.80E+02	57.44	2.92E+02	1.68
m	12	241.87	234 -	246	242.15	1.20E+02	46.69	2.35E+02	1.68
	13	277.50	275 -	281	277.77	4.06E+01	42.35	2.95E+02	1.97
	14	295.14	292 -	299	295.41	2.31E+02	58.17	4.14E+02	1.94
	15	338.07	334 -	342	338.33	1.15E+02	51.80	3.42E+02	1.77
	16	351.87	348 -	356	352.12	4.57E+02	62.04	3.12E+02	1.44
	17	426.19	422 -	430	426.42	3.19E+01	39.86	2.24E+02	1.78
	18	463.88	460 -	467	464.09	2.96E+01	35.94	1.95E+02	1.39
	19	475.99	471 -	484	476.20	5.40E+01	46.59	2.18E+02	6.83
	20	510.92	506 -	517	511.11	1.37E+02	50.68	2.53E+02	2.45
	21	545.39	541 -	548	545.57	2.46E+01	30.13	1.33E+02	2.01
	22	582.89	578 -	587	583.06	1.92E+02	43.02	1.55E+02	1.61
	23	609.14	605 -	614	609.30	3.15E+02	51.93	2.06E+02	1.96
	24	637.20	635 -	640	637.35	1.65E+01	19.95	6.70E+01	1.46
	25	664.05	659 -	670	664.19	4.07E+01	36.93	1.51E+02	5.19
M	26	723.27	722 -	732	723.39	1.88E+01	12.16	3.13E+01	2.25
m	27	726.90	722 -	732	727.02	2.94E+01	24.53	8.23E+01	2.26
	28	768.44	765 -	772	768.54	3.15E+01	26.46	9.50E+01	2.53
	29	774.98	773 -	777	775.08	1.94E+01	16.19	3.92E+01	2.42
	30	911.09	907 -	917	911.14	1.11E+02	35.40	1.02E+02	2.28
	31	933.66	930 -	938	933.70	2.25E+01	26.56	9.50E+01	1.36
	32	968.78	966 -	972	968.82	4.01E+01	29.21	1.20E+02	1.33
	33	1034.61	1032 -	1038	1034.62	1.33E+01	14.49	2.94E+01	4.47
M	34	1063.10	1060 -	1088	1063.10	2.49E+01	16.32	2.53E+01	4.35
m	35	1068.55	1060 -	1088	1068.55	1.81E+01	20.83	4.47E+01	3.28
	36	1120.01	1115 -	1125	1119.99	3.35E+01	37.03	1.65E+02	2.14
M	37	1237.34	1227 -	1254	1237.27	3.37E+01	25.00	7.01E+01	3.33
m	38	1242.27	1227 -	1254	1242.21	1.82E+01	18.85	3.93E+01	2.32
m	39	1247.09	1227 -	1254	1247.02	1.14E+01	21.80	4.38E+01	3.09
	40	1258.91	1255 -	1262	1258.84	2.26E+01	15.23	2.29E+01	1.42

Analysis Report for 1601047-04

SED1

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1280.26	1273 -	1287	1280.18	3.76E+01	25.49	5.27E+01	7.65
M	42	1347.10	1345 -	1367	1347.00	1.03E+01	5.34	3.85E-01	3.15
m	43	1349.89	1345 -	1367	1349.78	1.05E+01	10.42	3.50E+00	2.37
	44	1376.89	1371 -	1380	1376.78	2.33E+01	16.40	2.55E+01	1.83
	45	1414.96	1411 -	1417	1414.84	1.19E+01	11.88	1.63E+01	1.60
	46	1460.24	1454 -	1465	1460.10	4.66E+02	47.41	4.74E+01	2.17
	47	1658.72	1654 -	1661	1658.50	1.20E+01	9.80	8.00E+00	1.96
	48	1665.72	1663 -	1668	1665.50	6.89E+00	7.35	4.22E+00	1.55
	49	1729.31	1724 -	1733	1729.07	1.66E+01	13.08	1.48E+01	1.52
	50	1763.79	1759 -	1768	1763.54	5.05E+01	20.35	3.10E+01	2.05
	51	1846.26	1842 -	1849	1845.97	1.60E+01	10.58	8.00E+00	2.21
	52	1910.18	1907 -	1911	1909.87	4.57E+00	6.36	4.86E+00	1.03
	53	1915.65	1913 -	1918	1915.33	4.25E+00	5.74	3.50E+00	1.09
	54	1982.83	1979 -	1984	1982.49	4.75E+00	5.74	2.50E+00	1.08
	55	1990.59	1988 -	1992	1990.25	8.00E+00	5.66	0.00E+00	1.96
	56	2021.08	2018 -	2022	2020.73	4.50E+00	6.36	5.00E+00	1.01
	57	2103.75	2099 -	2107	2103.37	1.21E+01	10.22	7.88E+00	2.11
	58	2202.97	2199 -	2206	2202.54	1.73E+01	9.59	3.42E+00	2.89
	59	2289.98	2285 -	2293	2289.52	6.20E+00	8.97	7.60E+00	1.08
	60	2447.49	2443 -	2450	2446.97	7.86E+00	10.95	1.23E+01	1.47
	61	2613.32	2609 -	2616	2612.74	5.82E+01	16.00	3.70E+00	2.41

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

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/4/2016 8:10:21AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	46.44	43 -	49	1.28E+02	70.35	8.09E+02	5.47E+01
	2	76.31	71 -	81	7.59E+02	132.74	1.94E+03	9.93E+01
M	3	85.94	82 -	96	1.55E+02	86.32	1.17E+03	5.62E+01
m	4	89.38	82 -	96	1.30E+02	63.93	6.56E+02	4.21E+01
m	5	92.81	82 -	96	3.91E+02	81.25	7.82E+02	4.60E+01
	6	105.02	103 -	108	6.27E+01	55.26	5.65E+02	4.35E+01
	7	114.22	112 -	118	5.89E+01	62.93	6.74E+02	5.02E+01

Analysis Report for 1601047-04

SED1

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	8	145.31	143 -	149	6.55E+01	59.39	5.85E+02	4.70E+01
	9	185.80	184 -	190	1.11E+02	60.11	5.86E+02	4.63E+01
	10	208.27	204 -	213	8.31E+01	70.82	6.54E+02	5.63E+01
M	11	238.65	234 -	246	4.80E+02	57.44	2.92E+02	2.81E+01
m	12	241.87	234 -	246	1.20E+02	46.69	2.35E+02	2.52E+01
	13	277.50	275 -	281	4.06E+01	42.35	2.95E+02	3.32E+01
	14	295.14	292 -	299	2.31E+02	58.17	4.14E+02	4.08E+01
	15	338.07	334 -	342	1.15E+02	51.80	3.42E+02	3.88E+01
	16	351.87	348 -	356	4.57E+02	62.04	3.12E+02	3.69E+01
	17	426.19	422 -	430	3.19E+01	39.86	2.24E+02	3.14E+01
	18	463.88	460 -	467	2.96E+01	35.94	1.95E+02	2.82E+01
	19	475.99	471 -	484	5.40E+01	46.59	2.18E+02	1.28E+01
	20	510.92	506 -	517	1.37E+02	50.68	2.53E+02	3.69E+01
	21	545.39	541 -	548	2.46E+01	30.13	1.33E+02	2.34E+01
	22	582.89	578 -	587	1.92E+02	43.02	1.55E+02	2.71E+01
	23	609.14	605 -	614	3.15E+02	51.93	2.06E+02	3.12E+01
	24	637.20	635 -	640	1.65E+01	19.95	6.70E+01	1.50E+01
	25	664.05	659 -	670	4.07E+01	36.93	1.51E+02	2.85E+01
M	26	723.27	722 -	732	1.88E+01	12.16	3.13E+01	9.20E+00
m	27	726.90	722 -	732	2.94E+01	24.53	8.23E+01	1.49E+01
	28	768.44	765 -	772	3.15E+01	26.46	9.50E+01	1.97E+01
	29	774.98	773 -	777	1.94E+01	16.19	3.92E+01	1.12E+01
	30	911.09	907 -	917	1.11E+02	35.40	1.02E+02	2.34E+01
	31	933.66	930 -	938	2.25E+01	26.56	9.50E+01	2.04E+01
	32	968.78	966 -	972	4.01E+01	29.21	1.20E+02	2.16E+01
	33	1034.61	1032 -	1038	1.33E+01	14.49	2.94E+01	1.03E+01
M	34	1063.10	1060 -	1088	2.49E+01	16.32	2.53E+01	8.27E+00
m	35	1068.55	1060 -	1088	1.81E+01	20.83	4.47E+01	1.10E+01
	36	1120.01	1115 -	1125	3.35E+01	37.03	1.65E+02	2.89E+01
M	37	1237.34	1227 -	1254	3.37E+01	25.00	7.01E+01	1.38E+01
m	38	1242.27	1227 -	1254	1.82E+01	18.85	3.93E+01	1.03E+01
m	39	1247.09	1227 -	1254	1.14E+01	21.80	4.38E+01	1.09E+01
	40	1258.91	1255 -	1262	2.26E+01	15.23	2.29E+01	9.79E+00
	41	1280.26	1273 -	1287	3.76E+01	25.49	5.27E+01	1.84E+01
M	42	1347.10	1345 -	1367	1.03E+01	5.34	3.85E-01	1.02E+00
m	43	1349.89	1345 -	1367	1.05E+01	10.42	3.50E+00	3.08E+00
	44	1376.89	1371 -	1380	2.33E+01	16.40	2.55E+01	1.09E+01
	45	1414.96	1411 -	1417	1.19E+01	11.88	1.63E+01	7.96E+00
	46	1460.24	1454 -	1465	4.66E+02	47.41	4.74E+01	1.61E+01
	47	1658.72	1654 -	1661	1.20E+01	9.80	8.00E+00	5.70E+00
	48	1665.72	1663 -	1668	6.89E+00	7.35	4.22E+00	4.23E+00
	49	1729.31	1724 -	1733	1.66E+01	13.08	1.48E+01	8.41E+00
	50	1763.79	1759 -	1768	5.05E+01	20.35	3.10E+01	1.20E+01
	51	1846.26	1842 -	1849	1.60E+01	10.58	8.00E+00	5.70E+00
	52	1910.18	1907 -	1911	4.57E+00	6.36	4.86E+00	3.87E+00
	53	1915.65	1913 -	1918	4.25E+00	5.74	3.50E+00	3.29E+00
	54	1982.83	1979 -	1984	4.75E+00	5.74	2.50E+00	3.08E+00
	55	1990.59	1988 -	1992	8.00E+00	5.66	0.00E+00	0.00E+00
	56	2021.08	2018 -	2022	4.50E+00	6.36	5.00E+00	3.90E+00
	57	2103.75	2099 -	2107	1.21E+01	10.22	7.88E+00	6.17E+00
	58	2202.97	2199 -	2206	1.73E+01	9.59	3.42E+00	3.93E+00

Analysis Report for 1601047-04

SED1

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
59	2289.98	2285 -	2293	6.20E+00	8.97	7.60E+00	6.13E+00
60	2447.49	2443 -	2450	7.86E+00	10.95	1.23E+01	7.74E+00
61	2613.32	2609 -	2616	5.82E+01	16.00	3.70E+00	3.98E+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 : 2/4/2016 8:10:21AM

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	46.44	43 -	49	46.79	1.28E+02	70.35	8.09E+02	PB-210
	2	76.31	71 -	81	76.65	7.59E+02	132.74	1.94E+03	.....
M	3	85.94	82 -	96	86.27	1.55E+02	86.32	1.17E+03	EU-155
									NP-237
m	4	89.38	82 -	96	89.72	1.30E+02	63.93	6.56E+02	.....
m	5	92.81	82 -	96	93.15	3.91E+02	81.25	7.82E+02	GA-67
	6	105.02	103 -	108	105.35	6.27E+01	55.26	5.65E+02	EU-155
	7	114.22	112 -	118	114.55	5.89E+01	62.93	6.74E+02	.....
	8	145.31	143 -	149	145.63	6.55E+01	59.39	5.85E+02	CE-141
	9	185.80	184 -	190	186.11	1.11E+02	60.11	5.86E+02	RA-226
	10	208.27	204 -	213	208.56	8.31E+01	70.82	6.54E+02	GA-67
M	11	238.65	234 -	246	238.94	4.80E+02	57.44	2.92E+02	PB-212
m	12	241.87	234 -	246	242.15	1.20E+02	46.69	2.35E+02	RA-224
	13	277.50	275 -	281	277.77	4.06E+01	42.35	2.95E+02	CM-243
									NP-239
	14	295.14	292 -	299	295.41	2.31E+02	58.17	4.14E+02	PB-214
	15	338.07	334 -	342	338.33	1.15E+02	51.80	3.42E+02	AC-228
	16	351.87	348 -	356	352.12	4.57E+02	62.04	3.12E+02	PB-214
	17	426.19	422 -	430	426.42	3.19E+01	39.86	2.24E+02	.....
	18	463.88	460 -	467	464.09	2.96E+01	35.94	1.95E+02	SB-125
	19	475.99	471 -	484	476.20	5.40E+01	46.59	2.18E+02	PM-144
	20	510.92	506 -	517	511.11	1.37E+02	50.68	2.53E+02	.....
	21	545.39	541 -	548	545.57	2.46E+01	30.13	1.33E+02	.....

Analysis Report for 1601047-04

SED1

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	22	582.89	578 -	587	583.06	1.92E+02	43.02	1.55E+02	TL-208
	23	609.14	605 -	614	609.30	3.15E+02	51.93	2.06E+02	BI-214
	24	637.20	635 -	640	637.35	1.65E+01	19.95	6.70E+01	I-131
	25	664.05	659 -	670	664.19	4.07E+01	36.93	1.51E+02	CE-143
M	26	723.27	722 -	732	723.39	1.88E+01	12.16	3.13E+01	EU-154 AG-108M I-131 SB-124 ZR-95
m	27	726.90	722 -	732	727.02	2.94E+01	24.53	8.23E+01	BI-212
	28	768.44	765 -	772	768.54	3.15E+01	26.46	9.50E+01	.....
	29	774.98	773 -	777	775.08	1.94E+01	16.19	3.92E+01	.....
	30	911.09	907 -	917	911.14	1.11E+02	35.40	1.02E+02	AC-228
	31	933.66	930 -	938	933.70	2.25E+01	26.56	9.50E+01	.....
	32	968.78	966 -	972	968.82	4.01E+01	29.21	1.20E+02	AC-228
	33	1034.61	1032 -	1038	1034.62	1.33E+01	14.49	2.94E+01	.....
M	34	1063.10	1060 -	1088	1063.10	2.49E+01	16.32	2.53E+01	BI-207
m	35	1068.55	1060 -	1088	1068.55	1.81E+01	20.83	4.47E+01	.....
	36	1120.01	1115 -	1125	1119.99	3.35E+01	37.03	1.65E+02	BI-214 SC-46
M	37	1237.34	1227 -	1254	1237.27	3.37E+01	25.00	7.01E+01	CO-56
m	38	1242.27	1227 -	1254	1242.21	1.82E+01	18.85	3.93E+01	.....
m	39	1247.09	1227 -	1254	1247.02	1.14E+01	21.80	4.38E+01	.....
	40	1258.91	1255 -	1262	1258.84	2.26E+01	15.23	2.29E+01	.....
	41	1280.26	1273 -	1287	1280.18	3.76E+01	25.49	5.27E+01	.....
M	42	1347.10	1345 -	1367	1347.00	1.03E+01	5.34	3.85E-01	.....
m	43	1349.89	1345 -	1367	1349.78	1.05E+01	10.42	3.50E+00	.....
	44	1376.89	1371 -	1380	1376.78	2.33E+01	16.40	2.55E+01	.....
	45	1414.96	1411 -	1417	1414.84	1.19E+01	11.88	1.63E+01	.....
	46	1460.24	1454 -	1465	1460.10	4.66E+02	47.41	4.74E+01	K-40
	47	1658.72	1654 -	1661	1658.50	1.20E+01	9.80	8.00E+00	.....
	48	1665.72	1663 -	1668	1665.50	6.89E+00	7.35	4.22E+00	.....
	49	1729.31	1724 -	1733	1729.07	1.66E+01	13.08	1.48E+01	.....
	50	1763.79	1759 -	1768	1763.54	5.05E+01	20.35	3.10E+01	BI-214
	51	1846.26	1842 -	1849	1845.97	1.60E+01	10.58	8.00E+00	.....
	52	1910.18	1907 -	1911	1909.87	4.57E+00	6.36	4.86E+00	.....
	53	1915.65	1913 -	1918	1915.33	4.25E+00	5.74	3.50E+00	.....
	54	1982.83	1979 -	1984	1982.49	4.75E+00	5.74	2.50E+00	.....
	55	1990.59	1988 -	1992	1990.25	8.00E+00	5.66	0.00E+00	.....
	56	2021.08	2018 -	2022	2020.73	4.50E+00	6.36	5.00E+00	.....
	57	2103.75	2099 -	2107	2103.37	1.21E+01	10.22	7.88E+00	.....
	58	2202.97	2199 -	2206	2202.54	1.73E+01	9.59	3.42E+00	.....
	59	2289.98	2285 -	2293	2289.52	6.20E+00	8.97	7.60E+00	.....
	60	2447.49	2443 -	2450	2446.97	7.86E+00	10.95	1.23E+01	.....
	61	2613.32	2609 -	2616	2612.74	5.82E+01	16.00	3.70E+00	.....

Analysis Report for 1601047-04

SED1

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 : 2/4/2016 8:10:21AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.44	1.28E+02	70.35	1.67E-02	1.78E-03
	2	76.31	7.59E+02	132.74	2.77E-02	2.35E-03
M	3	85.94	1.55E+02	86.32	2.84E-02	2.67E-03
m	4	89.38	1.30E+02	63.93	2.85E-02	2.71E-03
m	5	92.81	3.91E+02	81.25	2.86E-02	2.65E-03
	6	105.02	6.27E+01	55.26	2.83E-02	2.40E-03
	7	114.22	5.89E+01	62.93	2.78E-02	2.22E-03
	8	145.31	6.55E+01	59.39	2.54E-02	2.13E-03
	9	185.80	1.11E+02	60.11	2.24E-02	2.03E-03
	10	208.27	8.31E+01	70.82	2.09E-02	1.86E-03
M	11	238.65	4.80E+02	57.44	1.92E-02	1.64E-03
m	12	241.87	1.20E+02	46.69	1.91E-02	1.61E-03
	13	277.50	4.06E+01	42.35	1.74E-02	1.35E-03
	14	295.14	2.31E+02	58.17	1.67E-02	1.31E-03
	15	338.07	1.15E+02	51.80	1.52E-02	1.22E-03
	16	351.87	4.57E+02	62.04	1.48E-02	1.19E-03
	17	426.19	3.19E+01	39.86	1.29E-02	1.08E-03
	18	463.88	2.96E+01	35.94	1.21E-02	1.04E-03
	19	475.99	5.40E+01	46.59	1.19E-02	1.03E-03
	20	510.92	1.37E+02	50.68	1.12E-02	9.90E-04
	21	545.39	2.46E+01	30.13	1.07E-02	9.55E-04
	22	582.89	1.92E+02	43.02	1.02E-02	9.16E-04
	23	609.14	3.15E+02	51.93	9.83E-03	8.89E-04
	24	637.20	1.65E+01	19.95	9.49E-03	8.60E-04
	25	664.05	4.07E+01	36.93	9.19E-03	8.32E-04
M	26	723.27	1.88E+01	12.16	8.59E-03	7.79E-04
m	27	726.90	2.94E+01	24.53	8.56E-03	7.76E-04
	28	768.44	3.15E+01	26.46	8.19E-03	7.38E-04
	29	774.98	1.94E+01	16.19	8.13E-03	7.33E-04
	30	911.09	1.11E+02	35.40	7.15E-03	6.16E-04
	31	933.66	2.25E+01	26.56	7.01E-03	6.04E-04
	32	968.78	4.01E+01	29.21	6.81E-03	5.86E-04
	33	1034.61	1.33E+01	14.49	6.46E-03	5.51E-04
M	34	1063.10	2.49E+01	16.32	6.32E-03	5.36E-04

Analysis Report for 1601047-04

SED1

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
m	35	1068.55	1.81E+01	20.83	6.30E-03	5.34E-04
	36	1120.01	3.35E+01	37.03	6.07E-03	5.07E-04
M	37	1237.34	3.37E+01	25.00	5.62E-03	4.68E-04
m	38	1242.27	1.82E+01	18.85	5.60E-03	4.67E-04
m	39	1247.09	1.14E+01	21.80	5.58E-03	4.66E-04
	40	1258.91	2.26E+01	15.23	5.54E-03	4.64E-04
	41	1280.26	3.76E+01	25.49	5.47E-03	4.60E-04
M	42	1347.10	1.03E+01	5.34	5.27E-03	4.48E-04
m	43	1349.89	1.05E+01	10.42	5.26E-03	4.47E-04
	44	1376.89	2.33E+01	16.40	5.19E-03	4.40E-04
	45	1414.96	1.19E+01	11.88	5.08E-03	4.31E-04
	46	1460.24	4.66E+02	47.41	4.97E-03	4.19E-04
	47	1658.72	1.20E+01	9.80	4.56E-03	3.70E-04
	48	1665.72	6.89E+00	7.35	4.55E-03	3.68E-04
	49	1729.31	1.66E+01	13.08	4.45E-03	3.52E-04
	50	1763.79	5.05E+01	20.35	4.40E-03	3.44E-04
	51	1846.26	1.60E+01	10.58	4.28E-03	3.26E-04
	52	1910.18	4.57E+00	6.36	4.21E-03	3.26E-04
	53	1915.65	4.25E+00	5.74	4.20E-03	3.26E-04
	54	1982.83	4.75E+00	5.74	4.13E-03	3.26E-04
	55	1990.59	8.00E+00	5.66	4.12E-03	3.26E-04
	56	2021.08	4.50E+00	6.36	4.09E-03	3.26E-04
	57	2103.75	1.21E+01	10.22	4.02E-03	3.26E-04
	58	2202.97	1.73E+01	9.59	3.95E-03	3.26E-04
	59	2289.98	6.20E+00	8.97	3.90E-03	3.26E-04
	60	2447.49	7.86E+00	10.95	3.83E-03	3.26E-04
	61	2613.32	5.82E+01	16.00	3.79E-03	3.26E-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 : 2/4/2016 8:10:21AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032282.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	46.44	1.28E+02	70.35	4.13E+01	8.55E+00	8.72E+01	7.09E+01
	2	76.31	7.59E+02	132.74	0.00E+00	0.00E+00	7.59E+02	1.33E+02
M	3	85.94	1.55E+02	86.32			1.55E+02	8.63E+01

Analysis Report for 1601047-04

SED1

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	4	89.38	1.30E+02	63.93			1.30E+02	6.39E+01
m	5	92.81	3.91E+02	81.25	1.37E+02	2.04E+01	2.54E+02	8.38E+01
	6	105.02	6.27E+01	55.26			6.27E+01	5.53E+01
	7	114.22	5.89E+01	62.93			5.89E+01	6.29E+01
	8	145.31	6.55E+01	59.39	1.16E+01	6.59E+00	5.40E+01	5.98E+01
	9	185.80	1.11E+02	60.11	5.71E+01	7.67E+00	5.41E+01	6.06E+01
	10	208.27	8.31E+01	70.82			8.31E+01	7.08E+01
M	11	238.65	4.80E+02	57.44	1.67E+01	5.12E+00	4.63E+02	5.77E+01
m	12	241.87	1.20E+02	46.69			1.20E+02	4.67E+01
	13	277.50	4.06E+01	42.35			4.06E+01	4.23E+01
	14	295.14	2.31E+02	58.17			2.31E+02	5.82E+01
	15	338.07	1.15E+02	51.80			1.15E+02	5.18E+01
	16	351.87	4.57E+02	62.04	7.40E+00	4.96E+00	4.50E+02	6.22E+01
	17	426.19	3.19E+01	39.86			3.19E+01	3.99E+01
	18	463.88	2.96E+01	35.94			2.96E+01	3.59E+01
	19	475.99	5.40E+01	46.59			5.40E+01	4.66E+01
	20	510.92	1.37E+02	50.68	8.22E+01	5.46E+00	5.51E+01	5.10E+01
	21	545.39	2.46E+01	30.13			2.46E+01	3.01E+01
	22	582.89	1.92E+02	43.02	5.14E+00	3.70E+00	1.86E+02	4.32E+01
	23	609.14	3.15E+02	51.93	4.81E+00	3.60E+00	3.10E+02	5.21E+01
	24	637.20	1.65E+01	19.95			1.65E+01	1.99E+01
	25	664.05	4.07E+01	36.93			4.07E+01	3.69E+01
M	26	723.27	1.88E+01	12.16			1.88E+01	1.22E+01
m	27	726.90	2.94E+01	24.53			2.94E+01	2.45E+01
	28	768.44	3.15E+01	26.46			3.15E+01	2.65E+01
	29	774.98	1.94E+01	16.19			1.94E+01	1.62E+01
	30	911.09	1.11E+02	35.40	5.62E+00	2.94E+00	1.05E+02	3.55E+01
	31	933.66	2.25E+01	26.56			2.25E+01	2.66E+01
	32	968.78	4.01E+01	29.21	0.00E+00	0.00E+00	4.01E+01	2.92E+01
	33	1034.61	1.33E+01	14.49			1.33E+01	1.45E+01
M	34	1063.10	2.49E+01	16.32			2.49E+01	1.63E+01
m	35	1068.55	1.81E+01	20.83			1.81E+01	2.08E+01
	36	1120.01	3.35E+01	37.03	1.83E+00	2.55E+00	3.17E+01	3.71E+01
M	37	1237.34	3.37E+01	25.00			3.37E+01	2.50E+01
m	38	1242.27	1.82E+01	18.85			1.82E+01	1.88E+01
m	39	1247.09	1.14E+01	21.80			1.14E+01	2.18E+01
	40	1258.91	2.26E+01	15.23			2.26E+01	1.52E+01
	41	1280.26	3.76E+01	25.49			3.76E+01	2.55E+01
M	42	1347.10	1.03E+01	5.34			1.03E+01	5.34E+00
m	43	1349.89	1.05E+01	10.42			1.05E+01	1.04E+01
	44	1376.89	2.33E+01	16.40			2.33E+01	1.64E+01
	45	1414.96	1.19E+01	11.88			1.19E+01	1.19E+01
	46	1460.24	4.66E+02	47.41	6.57E+00	2.34E+00	4.60E+02	4.75E+01
	47	1658.72	1.20E+01	9.80			1.20E+01	9.80E+00
	48	1665.72	6.89E+00	7.35			6.89E+00	7.35E+00
	49	1729.31	1.66E+01	13.08			1.66E+01	1.31E+01
	50	1763.79	5.05E+01	20.35	1.45E+00	1.83E+00	4.91E+01	2.04E+01
	51	1846.26	1.60E+01	10.58			1.60E+01	1.06E+01
	52	1910.18	4.57E+00	6.36			4.57E+00	6.36E+00
	53	1915.65	4.25E+00	5.74			4.25E+00	5.74E+00
	54	1982.83	4.75E+00	5.74			4.75E+00	5.74E+00
	55	1990.59	8.00E+00	5.66			8.00E+00	5.66E+00
	56	2021.08	4.50E+00	6.36			4.50E+00	6.36E+00
	57	2103.75	1.21E+01	10.22			1.21E+01	1.02E+01

Analysis Report for 1601047-04

SED1

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
58	2202.97	1.73E+01	9.59	4.47E-01	1.28E+00	1.68E+01	9.68E+00
59	2289.98	6.20E+00	8.97			6.20E+00	8.97E+00
60	2447.49	7.86E+00	10.95			7.86E+00	1.10E+01
61	2613.32	5.82E+01	16.00	4.95E+00	1.43E+00	5.32E+01	1.61E+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 : 2/4/2016 8:10:21AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032282.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	46.44	1.28E+02	70.35	4.13E+01	8.55E+00	8.72E+01	7.09E+01
	2	76.31	7.59E+02	132.74	0.00E+00	0.00E+00	7.59E+02	1.33E+02
M	3	85.94	1.55E+02	86.32			1.55E+02	8.63E+01
m	4	89.38	1.30E+02	63.93			1.30E+02	6.39E+01
m	5	92.81	3.91E+02	81.25	1.37E+02	2.04E+01	2.54E+02	8.38E+01
	6	105.02	6.27E+01	55.26			6.27E+01	5.53E+01
	7	114.22	5.89E+01	62.93			5.89E+01	6.29E+01
	8	145.31	6.55E+01	59.39	1.16E+01	6.59E+00	5.40E+01	5.98E+01
	9	185.80	1.11E+02	60.11	5.71E+01	7.67E+00	5.41E+01	6.06E+01
	10	208.27	8.31E+01	70.82			8.31E+01	7.08E+01
M	11	238.65	4.80E+02	57.44	1.67E+01	5.12E+00	4.63E+02	5.77E+01
m	12	241.87	1.20E+02	46.69			1.20E+02	4.67E+01
	13	277.50	4.06E+01	42.35			4.06E+01	4.23E+01
	14	295.14	2.31E+02	58.17			2.31E+02	5.82E+01
	15	338.07	1.15E+02	51.80			1.15E+02	5.18E+01
	16	351.87	4.57E+02	62.04	7.40E+00	4.96E+00	4.50E+02	6.22E+01
	17	426.19	3.19E+01	39.86			3.19E+01	3.99E+01
	18	463.88	2.96E+01	35.94			2.96E+01	3.59E+01
	19	475.99	5.40E+01	46.59			5.40E+01	4.66E+01
	20	510.92	1.37E+02	50.68	8.22E+01	5.46E+00	5.51E+01	5.10E+01
	21	545.39	2.46E+01	30.13			2.46E+01	3.01E+01
	22	582.89	1.92E+02	43.02	5.14E+00	3.70E+00	1.86E+02	4.32E+01
	23	609.14	3.15E+02	51.93	4.81E+00	3.60E+00	3.10E+02	5.21E+01
	24	637.20	1.65E+01	19.95			1.65E+01	1.99E+01

Analysis Report for 1601047-04

SED1

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	25	664.05	4.07E+01	36.93			4.07E+01	3.69E+01
M	26	723.27	1.88E+01	12.16			1.88E+01	1.22E+01
m	27	726.90	2.94E+01	24.53			2.94E+01	2.45E+01
	28	768.44	3.15E+01	26.46			3.15E+01	2.65E+01
	29	774.98	1.94E+01	16.19			1.94E+01	1.62E+01
	30	911.09	1.11E+02	35.40	5.62E+00	2.94E+00	1.05E+02	3.55E+01
	31	933.66	2.25E+01	26.56			2.25E+01	2.66E+01
	32	968.78	4.01E+01	29.21	0.00E+00	0.00E+00	4.01E+01	2.92E+01
	33	1034.61	1.33E+01	14.49			1.33E+01	1.45E+01
M	34	1063.10	2.49E+01	16.32			2.49E+01	1.63E+01
m	35	1068.55	1.81E+01	20.83			1.81E+01	2.08E+01
	36	1120.01	3.35E+01	37.03	1.83E+00	2.55E+00	3.17E+01	3.71E+01
M	37	1237.34	3.37E+01	25.00			3.37E+01	2.50E+01
m	38	1242.27	1.82E+01	18.85			1.82E+01	1.88E+01
m	39	1247.09	1.14E+01	21.80			1.14E+01	2.18E+01
	40	1258.91	2.26E+01	15.23			2.26E+01	1.52E+01
	41	1280.26	3.76E+01	25.49			3.76E+01	2.55E+01
M	42	1347.10	1.03E+01	5.34			1.03E+01	5.34E+00
m	43	1349.89	1.05E+01	10.42			1.05E+01	1.04E+01
	44	1376.89	2.33E+01	16.40			2.33E+01	1.64E+01
	45	1414.96	1.19E+01	11.88			1.19E+01	1.19E+01
	46	1460.24	4.66E+02	47.41	6.57E+00	2.34E+00	4.60E+02	4.75E+01
	47	1658.72	1.20E+01	9.80			1.20E+01	9.80E+00
	48	1665.72	6.89E+00	7.35			6.89E+00	7.35E+00
	49	1729.31	1.66E+01	13.08			1.66E+01	1.31E+01
	50	1763.79	5.05E+01	20.35	1.45E+00	1.83E+00	4.91E+01	2.04E+01
	51	1846.26	1.60E+01	10.58			1.60E+01	1.06E+01
	52	1910.18	4.57E+00	6.36			4.57E+00	6.36E+00
	53	1915.65	4.25E+00	5.74			4.25E+00	5.74E+00
	54	1982.83	4.75E+00	5.74			4.75E+00	5.74E+00
	55	1990.59	8.00E+00	5.66			8.00E+00	5.66E+00
	56	2021.08	4.50E+00	6.36			4.50E+00	6.36E+00
	57	2103.75	1.21E+01	10.22			1.21E+01	1.02E+01
	58	2202.97	1.73E+01	9.59	4.47E-01	1.28E+00	1.68E+01	9.68E+00
	59	2289.98	6.20E+00	8.97			6.20E+00	8.97E+00
	60	2447.49	7.86E+00	10.95			7.86E+00	1.10E+01
	61	2613.32	5.82E+01	16.00	4.95E+00	1.43E+00	5.32E+01	1.61E+01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Analysis Report for 1601047-04

SED1

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.950	1460.81	*	10.67	1.37E+01	1.85E+00
GA-67	0.412	93.31	*	35.70	1.23E+02	4.55E+02
		208.95	*	2.24	8.71E+02	3.15E+03
		300.22		16.00		
CE-141	0.994	145.44	*	48.40	1.23E-01	1.39E-01
EU-155	0.965	86.50	*	30.90	2.81E-01	1.59E-01
		105.30	*	20.70	1.71E-01	1.51E-01
PB-210	0.999	46.50	*	4.25	1.94E+00	1.59E+00
BI-212	0.756	727.17	*	11.80	4.60E-01	3.86E-01
		1620.62		2.75		
PB-212	0.894	238.63	*	44.60	8.53E-01	1.29E-01
		300.09		3.41		
BI-214	0.910	609.31	*	46.30	1.08E+00	2.05E-01
		1120.29	*	15.10	5.46E-01	6.41E-01
		1764.49	*	15.80	1.12E+00	4.72E-01
		2204.22		4.98		
PB-214	0.999	295.21	*	19.19	1.14E+00	3.00E-01
		351.92	*	37.19	1.29E+00	2.07E-01
RA-224	0.882	240.98	*	3.95	2.52E+00	1.00E+00
RA-226	0.974	186.21	*	3.28	1.16E+00	2.50E+00
AC-228	0.993	338.32	*	11.40	1.05E+00	4.80E-01
		911.07	*	27.70	8.41E-01	2.92E-01
		969.11	*	16.60	5.61E-01	4.11E-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 : 2/4/2016 8:10:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	76.31	2.10881E-01	8.74		
m	4	89.38	3.59731E-02	24.68		
	7	114.22	1.63594E-02	53.43		

Analysis Report for 1601047-04

SED1

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	13	277.50	1.12832E-02	52.13	Tol.	NP-239 CM-243
	17	426.19	8.86767E-03	62.42		
	18	463.88	8.21632E-03	60.76	Tol.	SB-125
	19	475.99	1.49983E-02	43.15	Tol.	PM-144
	20	510.92	1.53177E-02	46.21		
	21	545.39	6.84066E-03	61.18	Sum	
	22	582.89	5.17841E-02	11.58	Tol.	TL-208
	24	637.20	4.58889E-03	60.38		
	25	664.05	1.13123E-02	45.34	Tol.	CE-143
M	26	723.27	5.23450E-03	32.25	Tol.	ZR-95 AG-108M SB-124 EU-154
	28	768.44	8.75176E-03	41.99		
	29	774.98	5.38462E-03	41.77		
	31	933.66	6.24405E-03	59.07		
	33	1034.61	3.69048E-03	54.54		
M	34	1063.10	6.90762E-03	32.82	Tol.	BI-207
m	35	1068.55	5.02270E-03	57.61		
M	37	1237.34	9.34782E-03	37.14		
m	38	1242.27	5.05127E-03	51.82		
m	39	1247.09	3.16440E-03	95.68		
	40	1258.91	6.26634E-03	33.76		
	41	1280.26	1.04579E-02	33.85		
M	42	1347.10	2.84757E-03	26.04		
m	43	1349.89	2.91903E-03	49.56		
	44	1376.89	6.46219E-03	35.25		
	45	1414.96	3.29167E-03	50.15	Sum	
	47	1658.72	3.33333E-03	40.82		
	48	1665.72	1.91358E-03	53.34		
	49	1729.31	4.60648E-03	39.43	Sum	
	51	1846.26	4.44444E-03	33.07	Sum	
	52	1910.18	1.26984E-03	69.61		
	53	1915.65	1.18056E-03	67.58		
	54	1982.83	1.31944E-03	60.47		
	55	1990.59	2.22222E-03	35.36		
	56	2021.08	1.25000E-03	70.71		
	57	2103.75	3.35069E-03	42.37		
	58	2202.97	4.67859E-03	28.73		
	59	2289.98	1.72222E-03	72.36		
	60	2447.49	2.18254E-03	69.71		
	61	2613.32	1.47775E-02	15.10		

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 1601047-04

SED1

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	0.95	1460.81	*	10.67	1.37E+01	1.85E+00
GA-67	0.41	93.31	*	35.70	1.23E+02	4.55E+02
		208.95	*	2.24	8.71E+02	3.15E+03
		300.22		16.00		
CE-141	0.99	145.44	*	48.40	1.23E-01	1.39E-01
EU-155	0.96	86.50	*	30.90	2.81E-01	1.59E-01
		105.30	*	20.70	1.71E-01	1.51E-01
PB-210	0.99	46.50	*	4.25	1.94E+00	1.59E+00
BI-212	0.75	727.17	*	11.80	4.60E-01	3.86E-01
		1620.62		2.75		
PB-212	0.89	238.63	*	44.60	8.53E-01	1.29E-01
		300.09		3.41		
BI-214	0.91	609.31	*	46.30	1.08E+00	2.05E-01
		1120.29	*	15.10	5.46E-01	6.41E-01
		1764.49	*	15.80	1.12E+00	4.72E-01
		2204.22		4.98		
PB-214	0.99	295.21	*	19.19	1.14E+00	3.00E-01
		351.92	*	37.19	1.29E+00	2.07E-01
RA-224	0.88	240.98	*	3.95	2.52E+00	1.00E+00
RA-226	0.97	186.21	*	3.28	1.16E+00	2.50E+00
AC-228	0.99	338.32	*	11.40	1.05E+00	4.80E-01
		911.07	*	27.70	8.41E-01	2.92E-01
		969.11	*	16.60	5.61E-01	4.11E-01

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

INTERFERENCE CORRECTED REPORT

Analysis Report for 1601047-04

SED1

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.950	1.37E+01	1.85E+00	
	GA-67	0.412	1.49E+02	5.44E+02	
	CE-141	0.994	1.23E-01	1.39E-01	
	EU-155	0.965	2.23E-01	1.10E-01	
	PB-210	0.999	1.94E+00	1.59E+00	
	BI-212	0.756	4.60E-01	3.86E-01	
	PB-212	0.894	8.53E-01	1.29E-01	
	BI-214	0.910	1.04E+00	1.81E-01	
	PB-214	0.999	1.24E+00	1.71E-01	
	RA-224	0.882	2.52E+00	1.00E+00	
	RA-226	0.974	1.16E+00	2.50E+00	
	AC-228	0.993	8.06E-01	2.13E-01	
X	NP-237	0.950			

? = 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 1601047-04

SED1

UNIDENTIFIED PEAKS

Peak Locate Performed on : 2/4/2016 8:10:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	76.31	2.10881E-01	8.74		
m	4	89.38	3.59731E-02	24.68		
	7	114.22	1.63594E-02	53.43		
	13	277.50	1.12832E-02	52.13	Tol.	NP-239
						CM-243
	17	426.19	8.86767E-03	62.42		
	18	463.88	8.21632E-03	60.76	Tol.	SB-125
	19	475.99	1.49983E-02	43.15	Tol.	PM-144
	20	510.92	1.53177E-02	46.21		
	21	545.39	6.84066E-03	61.18	Sum	
	22	582.89	5.17841E-02	11.58	Tol.	TL-208
	24	637.20	4.58889E-03	60.38		
	25	664.05	1.13123E-02	45.34	Tol.	CE-143
M	26	723.27	5.23450E-03	32.25	Tol.	ZR-95
						AG-108M
						SB-124
						EU-154
	28	768.44	8.75176E-03	41.99		
	29	774.98	5.38462E-03	41.77		
	31	933.66	6.24405E-03	59.07		
	33	1034.61	3.69048E-03	54.54		
M	34	1063.10	6.90762E-03	32.82	Tol.	BI-207
m	35	1068.55	5.02270E-03	57.61		
M	37	1237.34	9.34782E-03	37.14		
m	38	1242.27	5.05127E-03	51.82		
m	39	1247.09	3.16440E-03	95.68		
	40	1258.91	6.26634E-03	33.76		
	41	1280.26	1.04579E-02	33.85		
M	42	1347.10	2.84757E-03	26.04		
m	43	1349.89	2.91903E-03	49.56		
	44	1376.89	6.46219E-03	35.25		
	45	1414.96	3.29167E-03	50.15	Sum	
	47	1658.72	3.33333E-03	40.82		
	48	1665.72	1.91358E-03	53.34		

Analysis Report for 1601047-04

SED1

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
49	1729.31	4.60648E-03	39.43	Sum	
51	1846.26	4.44444E-03	33.07	Sum	
52	1910.18	1.26984E-03	69.61		
53	1915.65	1.18056E-03	67.58		
54	1982.83	1.31944E-03	60.47		
55	1990.59	2.22222E-03	35.36		
56	2021.08	1.25000E-03	70.71		
57	2103.75	3.35069E-03	42.37		
58	2202.97	4.67859E-03	28.73		
59	2289.98	1.72222E-03	72.36		
60	2447.49	2.18254E-03	69.71		
61	2613.32	1.47775E-02	15.10		

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	7.71E-01	9.00E-01	9.00E-01
+	NA-22	1274.54		99.94	-8.80E-03	6.90E-02	6.90E-02
+	NA-24	1368.53		99.99	1.24E+11	3.96E+11	6.03E+11
		2754.09		99.86	8.53E+10		3.96E+11
+	AL-26	1808.65		99.76	2.43E-03	5.15E-02	5.15E-02
+	K-40	1460.81	*	10.67	1.37E+01	1.08E+00	1.08E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-7.26E-03	6.59E-02	6.59E-02
		78.34		96.00	1.90E-01		8.23E-02
+	SC-46	889.25		99.98	1.46E-02	8.08E-02	8.08E-02
		1120.51		99.99	1.81E-01		1.56E-01
+	V-48	983.52		99.98	2.91E-02	2.38E-01	2.38E-01
		1312.10		97.50	7.58E-02		2.48E-01
+	CR-51	320.08		9.83	3.76E-01	1.09E+00	1.09E+00
+	MN-54	834.83		99.97	3.27E-02	8.47E-02	8.47E-02
+	CO-56	846.75		99.96	5.55E-02	9.32E-02	9.32E-02

Analysis Report for 1601047-04

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CO-56	1037.75		14.03	-9.97E-02	9.32E-02	5.95E-01
		1238.25		67.00	1.46E-01		2.13E-01
		1771.40		15.51	2.10E-01		5.54E-01
		2598.48		16.90	0.00E+00		2.90E-01
+	CO-57	122.06		85.51	2.80E-02	5.69E-02	5.69E-02
		136.48		10.60	-1.66E-01		4.75E-01
+	CO-58	810.76		99.40	-1.54E-02	8.85E-02	8.85E-02
+	FE-59	1099.22		56.50	1.05E-02	2.32E-01	2.32E-01
		1291.56		43.20	-8.18E-02		2.40E-01
+	CO-60	1173.22		100.00	-8.48E-03	7.51E-02	8.24E-02
		1332.49		100.00	2.11E-02		7.51E-02
+	ZN-65	1115.52		50.75	1.36E-02	2.02E-01	2.02E-01
+	GA-67	93.31	*	35.70	1.23E+02	1.05E+02	1.05E+02
		208.95	*	2.24	8.71E+02		1.21E+03
		300.22		16.00	9.80E+00		1.05E+02
+	SE-75	121.11		16.70	-1.76E-01	9.15E-02	3.07E-01
		136.00		59.20	-4.87E-03		9.22E-02
		264.65		59.80	1.13E-02		9.15E-02
		279.53		25.20	1.03E-01		2.38E-01
		400.65		11.40	-6.53E-03		5.72E-01
+	RB-82	776.52		13.00	-2.90E-01	1.10E+00	1.10E+00
+	RB-83	520.41		46.00	-3.70E-02	1.60E-01	1.60E-01
		529.64		30.30	-8.68E-02		2.40E-01
		552.65		16.40	3.44E-01		4.48E-01
+	KR-85	513.99		0.43	1.29E+01	2.04E+01	2.04E+01
+	SR-85	513.99		99.27	7.48E-02	1.18E-01	1.18E-01
+	Y-88	898.02		93.40	1.95E-02	6.99E-02	8.31E-02
		1836.01		99.38	-1.87E-02		6.99E-02
+	NB-93M	16.57		9.43	-7.24E+01	6.79E+01	6.79E+01
+	NB-94	702.63		100.00	1.10E-02	6.92E-02	7.22E-02
		871.10		100.00	2.79E-02		6.92E-02
+	NB-95	765.79		99.81	-9.86E-03	1.37E-01	1.37E-01
+	NB-95M	235.69		25.00	-1.65E+02	4.77E+01	4.77E+01
+	ZR-95	724.18		43.70	3.02E-02	1.50E-01	2.41E-01
		756.72		55.30	-1.38E-01		1.50E-01
+	MO-99	181.06		6.20	5.95E+02	4.78E+02	7.49E+02
		739.58		12.80	8.50E+01		4.78E+02
		778.00		4.50	-3.47E+02		1.35E+03
+	RU-103	497.08		89.00	-3.98E-02	1.01E-01	1.01E-01
+	RU-106	621.84		9.80	-9.71E-02	6.35E-01	6.35E-01
+	AG-108M	433.93		89.90	-1.25E-02	6.45E-02	6.45E-02
		614.37		90.40	-3.90E-03		7.09E-02
		722.95		90.50	-1.52E-03		8.11E-02
+	CD-109	88.03		3.72	1.88E+00	1.80E+00	1.80E+00
+	AG-110M	657.75		93.14	5.92E-03	6.69E-02	6.69E-02
		677.61		10.53	4.47E-02		6.65E-01
		706.67		16.46	8.00E-02		4.43E-01
		763.93		21.98	1.28E-01		3.62E-01

Analysis Report for 1601047-04

SED1

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AG-110M	884.67	71.63	-1.46E-02	6.69E-02	9.69E-02
		1384.27	23.94	3.67E-02		3.09E-01
+	CD-113M	263.70	0.02	-2.11E+01	2.01E+02	2.01E+02
+	SN-113	255.12	1.93	6.10E-02	9.11E-02	2.95E+00
		391.69	64.90	-9.06E-03		9.11E-02
+	TE123M	159.00	84.10	-3.69E-02	6.26E-02	6.26E-02
+	SB-124	602.71	97.87	-4.44E-02	8.47E-02	8.47E-02
		645.85	7.26	6.29E-02		1.10E+00
		722.78	11.10	-1.69E-02		9.02E-01
		1691.02	49.00	-4.88E-03		1.05E-01
+	I-125	35.49	6.49	-5.46E-01	2.98E+00	2.98E+00
+	SB-125	176.33	6.89	1.42E-01	2.25E-01	7.35E-01
		427.89	29.33	5.52E-02		2.25E-01
		463.38	10.35	4.49E-01		6.73E-01
		600.56	17.80	-8.02E-02		3.58E-01
		635.90	11.32	-5.23E-02		5.47E-01
+	SB-126	414.70	83.30	-1.92E-02	3.09E-01	3.16E-01
		666.33	99.60	1.12E-01		3.39E-01
		695.00	99.60	1.62E-02		3.09E-01
		720.50	53.80	-2.31E-01		5.33E-01
+	SN-126	87.57	37.00	1.82E-01	1.74E-01	1.74E-01
+	SB-127	473.00	25.00	-1.98E+01	2.16E+01	3.04E+01
		685.20	35.70	-5.29E+00		2.16E+01
		783.80	14.70	2.44E+01		6.36E+01
+	I-129	29.78	57.00	1.04E-02	4.79E-01	4.79E-01
		33.60	13.20	-2.28E-01		1.27E+00
		39.58	7.52	8.03E-01		1.43E+00
+	I-131	284.30	6.05	-1.25E+00	6.00E-01	8.20E+00
		364.48	81.20	-9.12E-04		6.00E-01
		636.97	7.26	3.10E+00		8.60E+00
		722.89	1.80	-7.85E-01		4.18E+01
+	TE-132	49.72	13.10	2.95E+01	1.77E+01	1.74E+02
		228.16	88.00	-7.48E-01		1.77E+01
+	BA-133	81.00	33.00	-8.96E-01	8.55E-02	1.66E-01
		302.84	17.80	-3.26E-02		2.78E-01
		356.01	60.00	6.54E-03		8.55E-02
+	I-133	529.87	86.30	-5.91E+07	1.63E+08	1.63E+08
+	XE-133	81.00	38.00	-2.75E+01	5.10E+00	5.10E+00
+	CS-134	563.23	8.38	2.41E-01	8.41E-02	7.49E-01
		569.32	15.43	1.30E-01		4.33E-01
		604.70	97.60	-6.86E-03		8.41E-02
		795.84	85.40	8.62E-04		9.08E-02
		801.93	8.73	-3.29E-01		7.86E-01
+	CS-135	268.24	16.00	8.40E-02	3.20E-01	3.20E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	1.35E+00	2.68E-01	2.68E+00
		163.89	4.61	-9.44E-01		4.40E+00

Analysis Report for 1601047-04

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CS-136	176.55		13.56	2.94E-01	2.68E-01	1.52E+00
		273.65		12.66	8.16E-02		1.62E+00
		340.57		48.50	3.57E-01		5.50E-01
		818.50		99.70	-6.76E-02		2.68E-01
		1048.07		79.60	-5.74E-02		3.34E-01
		1235.34		19.70	-2.05E-01		2.20E+00
+	CS-137	661.65		85.12	4.63E-02	8.67E-02	8.67E-02
+	LA-138	788.74		34.00	-8.80E-02	1.09E-01	1.98E-01
		1435.80		66.00	7.13E-03		1.09E-01
+	CE-139	165.85		80.35	-1.01E-02	6.87E-02	6.87E-02
+	BA-140	162.64		6.70	-2.72E-02	1.01E+00	3.12E+00
		304.84		4.50	-5.67E-01		4.60E+00
		423.70		3.20	3.09E+00		8.75E+00
		437.55		2.00	-3.62E-01		1.26E+01
		537.32		25.00	-3.20E-01		1.01E+00
+	LA-140	328.77		20.50	5.70E-01	3.17E-01	1.20E+00
		487.03		45.50	7.57E-02		5.21E-01
		815.85		23.50	6.72E-02		1.18E+00
		1596.49		95.49	7.64E-03		3.17E-01
+	CE-141	145.44	*	48.40	1.23E-01	2.23E-01	2.23E-01
+	CE-143	57.36		11.80	-1.50E+05	1.66E+05	4.36E+05
		293.26		42.00	4.19E+05		1.66E+05
		664.55		5.20	7.29E+05		1.20E+06
+	CE-144	133.54		10.80	6.57E-03	4.63E-01	4.63E-01
+	PM-144	476.78		42.00	7.84E-02	6.72E-02	1.65E-01
		618.01		98.60	4.11E-03		6.72E-02
		696.49		99.49	6.56E-04		7.26E-02
+	PM-145	36.85		21.70	-1.70E-01	3.20E-01	5.93E-01
		37.36		39.70	1.67E-01		3.20E-01
		42.30		15.10	1.06E-02		5.94E-01
		72.40		2.31	-2.36E+00		3.10E+00
+	PM-146	453.90		39.94	-1.41E-02	1.49E-01	1.49E-01
		735.90		14.01	1.41E-01		4.55E-01
		747.13		13.10	-1.77E-01		4.88E-01
+	ND-147	91.11		28.90	-1.04E+00	1.29E+00	1.29E+00
		531.02		13.10	2.30E-01		2.56E+00
+	PM-149	285.90		3.10	2.14E+03	7.84E+03	7.84E+03
+	EU-152	121.78		20.50	1.09E-01	2.22E-01	2.22E-01
		244.69		5.40	-7.08E-01		9.94E-01
		344.27		19.13	7.49E-02		2.67E-01
		778.89		9.20	-9.11E-04		7.43E-01
		964.01		10.40	2.67E-01		8.44E-01
		1085.78		7.22	4.90E-01		1.12E+00
		1112.02		9.60	-1.10E-01		8.99E-01
		1407.95		14.94	5.82E-02		4.55E-01
+	GD-153	97.43		31.30	8.05E-02	1.55E-01	1.55E-01
		103.18		22.20	-2.37E-02		2.16E-01
+	EU-154	123.07		40.50	-2.50E-02	1.10E-01	1.10E-01
		723.30		19.70	-7.04E-03		3.75E-01

Analysis Report for 1601047-04

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-154	873.19		11.50	-3.39E-01	1.10E-01	5.57E-01
		996.32		10.30	-2.46E-01		6.53E-01
		1004.76		17.90	-6.71E-02		4.16E-01
		1274.45		35.50	-2.44E-02		1.92E-01
+	EU-155	86.50	*	30.90	2.81E-01	2.45E-01	3.95E-01
		105.30	*	20.70	1.71E-01		2.45E-01
+	EU-156	811.77		10.40	-7.92E-01	2.18E+00	2.18E+00
		1153.47		7.20	1.10E+00		4.17E+00
		1230.71		8.90	-1.37E+00		3.30E+00
+	HO-166M	184.41		72.60	8.36E-02	8.42E-02	8.42E-02
		280.45		29.60	-2.52E-02		1.56E-01
		410.94		11.10	1.79E-01		5.64E-01
		711.69		54.10	-2.53E-02		1.22E-01
+	TM-171	66.72		0.14	-8.46E+01	4.61E+01	4.61E+01
+	HF-172	81.75		4.52	-8.98E-01	4.22E-01	1.25E+00
		125.81		11.30	3.43E-03		4.22E-01
+	LU-172	181.53		20.60	3.15E+00	1.97E+00	3.98E+00
		810.06		16.63	-6.11E-01		6.64E+00
		912.12		15.25	2.57E+01		1.38E+01
		1093.66		62.50	-4.82E-01		1.97E+00
+	LU-173	100.72		5.24	-1.76E-02	2.60E-01	8.57E-01
		272.11		21.20	1.56E-01		2.60E-01
+	HF-175	343.40		84.00	1.12E-02	7.74E-02	7.74E-02
+	LU-176	88.34		13.30	4.98E-01	5.04E-02	4.91E-01
		201.83		86.00	-1.15E-02		5.94E-02
		306.78		94.00	-1.55E-02		5.04E-02
+	TA-182	67.75		41.20	-1.96E-02	1.78E-01	1.78E-01
		1121.30		34.90	4.40E-01		4.18E-01
		1189.05		16.23	3.65E-01		6.78E-01
		1221.41		26.98	2.43E-01		4.20E-01
		1231.02		11.44	-3.67E-01		8.83E-01
+	IR-192	308.46		29.68	6.67E-02	1.56E-01	2.12E-01
		468.07		48.10	-3.58E-02		1.56E-01
+	HG-203	279.19		77.30	8.00E-02	1.03E-01	1.03E-01
+	BI-207	569.67		97.72	1.96E-02	6.68E-02	6.68E-02
		1063.62		74.90	1.39E-02		1.09E-01
+	TL-208	583.14		30.22	9.14E-01	3.83E-01	3.83E-01
		860.37		4.48	2.45E-01		1.66E+00
		2614.66		35.85	0.00E+00		4.50E-01
+	BI-210M	262.00		45.00	-9.25E-03	1.02E-01	1.02E-01
		300.00		23.00	2.19E-02		2.35E-01
+	PB-210	46.50	*	4.25	1.94E+00	2.56E+00	2.56E+00
+	PB-211	404.84		2.90	3.48E-01	1.91E+00	1.91E+00
		831.96		2.90	-6.75E-01		2.45E+00
+	BI-212	727.17	*	11.80	4.60E-01	7.97E-01	7.97E-01
		1620.62		2.75	4.96E-01		2.25E+00
+	PB-212	238.63	*	44.60	8.53E-01	2.26E-01	2.26E-01
		300.09		3.41	1.48E-01		1.59E+00

Analysis Report for 1601047-04

SED1

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BI-214	609.31	*	46.30	1.08E+00	2.28E-01	2.28E-01
		1120.29	*	15.10	5.46E-01		1.05E+00
		1764.49	*	15.80	1.12E+00		6.17E-01
		2204.22		4.98	0.00E+00		1.80E+00
+	PB-214	295.21	*	19.19	1.14E+00	2.23E-01	4.16E-01
		351.92	*	37.19	1.29E+00		2.23E-01
+	RN-219	401.80		6.50	3.69E-01	8.91E-01	8.91E-01
+	RA-223	323.87		3.88	-9.12E-01	1.29E+00	1.29E+00
+	RA-224	240.98	*	3.95	2.52E+00	2.53E+00	2.53E+00
+	RA-225	40.00		31.00	6.71E-01	1.20E+00	1.20E+00
+	RA-226	186.21	*	3.28	1.16E+00	2.14E+00	2.14E+00
+	TH-227	50.10		8.40	1.45E-01	5.81E-01	8.58E-01
		236.00		11.50	-2.01E+00		5.81E-01
		256.20		6.30	-2.05E-02		7.64E-01
+	AC-228	338.32	*	11.40	1.05E+00	4.02E-01	7.32E-01
		911.07	*	27.70	8.41E-01		4.02E-01
		969.11	*	16.60	5.61E-01		6.43E-01
+	TH-230	48.44		16.90	5.59E-02	5.08E-01	5.08E-01
		62.85		4.60	2.11E+00		1.57E+00
		67.67		0.37	-1.85E+00		1.68E+01
+	PA-231	283.67		1.60	-6.02E-01	2.14E+00	2.96E+00
		302.67		2.30	-2.51E-01		2.14E+00
+	TH-231	25.64		14.70	1.21E+00	9.19E-01	4.19E+00
		84.21		6.40	-1.16E+00		9.19E-01
+	PA-233	311.98		38.60	-1.55E-02	2.52E-01	2.52E-01
+	PA-234	131.20		20.40	7.06E-03	2.33E-01	2.33E-01
		733.99		8.80	8.45E-02		7.09E-01
		946.00		12.00	3.82E-01		6.69E-01
+	PA-234M	1001.03		0.92	-4.37E+00	7.30E+00	7.30E+00
+	TH-234	63.29		3.80	2.40E+00	1.88E+00	1.88E+00
+	U-235	143.76		10.50	2.89E-01	4.68E-01	4.68E-01
		163.35		4.70	-2.23E-01		1.04E+00
		205.31		4.70	-1.01E+00		1.11E+00
+	NP-237	86.50	*	12.60	6.82E-01	9.58E-01	9.58E-01
+	NP-239	106.10		22.70	3.14E+02	5.78E+02	5.78E+02
		228.18		10.70	-5.57E+01		1.32E+03
		277.60		14.10	8.62E+02		1.10E+03
+	AM-241	59.54		35.90	-1.54E-01	1.78E-01	1.78E-01
+	AM-243	74.67		66.00	-1.30E-01	1.27E-01	1.27E-01
+	CM-243	209.75		3.29	1.26E+00	3.90E-01	1.64E+00
		228.14		10.60	-1.99E-02		4.70E-01
		277.60		14.00	3.07E-01		3.90E-01

Analysis Report for 1601047-04

SED1

+ = 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	9.00E-01	9.00E-01	7.71E-01	4.25E-01
	NA-22	1274.54		99.94	6.90E-02	6.90E-02	-8.80E-03	3.05E-02
	NA-24	1368.53		99.99	6.03E+11	3.96E+11	1.24E+11	2.60E+11
		2754.09		99.86	3.96E+11		8.53E+10	1.40E+11
	AL-26	1808.65		99.76	5.15E-02	5.15E-02	2.43E-03	2.08E-02
+	K-40	1460.81	*	10.67	1.08E+00	1.08E+00	1.37E+01	4.98E-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	6.59E-02	6.59E-02	-7.26E-03	3.21E-02
		78.34		96.00	8.23E-02		1.90E-01	4.03E-02
	SC-46	889.25		99.98	8.08E-02	8.08E-02	1.46E-02	3.67E-02
		1120.51		99.99	1.56E-01		1.81E-01	7.34E-02
	V-48	983.52		99.98	2.38E-01	2.38E-01	2.91E-02	1.09E-01
		1312.10		97.50	2.48E-01		7.58E-02	1.11E-01
	CR-51	320.08		9.83	1.09E+00	1.09E+00	3.76E-01	5.18E-01
	MN-54	834.83		99.97	8.47E-02	8.47E-02	3.27E-02	3.94E-02
	CO-56	846.75		99.96	9.32E-02	9.32E-02	5.55E-02	4.30E-02
		1037.75		14.03	5.95E-01		-9.97E-02	2.68E-01
		1238.25		67.00	2.13E-01		1.46E-01	9.91E-02
		1771.40		15.51	5.54E-01		2.10E-01	2.37E-01
		2598.48		16.90	2.90E-01		0.00E+00	1.03E-01
	CO-57	122.06		85.51	5.69E-02	5.69E-02	2.80E-02	2.75E-02
		136.48		10.60	4.75E-01		-1.66E-01	2.29E-01
	CO-58	810.76		99.40	8.85E-02	8.85E-02	-1.54E-02	4.07E-02
	FE-59	1099.22		56.50	2.32E-01	2.32E-01	1.05E-02	1.07E-01
		1291.56		43.20	2.40E-01		-8.18E-02	1.06E-01
	CO-60	1173.22		100.00	8.24E-02	7.51E-02	-8.48E-03	3.75E-02
		1332.49		100.00	7.51E-02		2.11E-02	3.35E-02
	ZN-65	1115.52		50.75	2.02E-01	2.02E-01	1.36E-02	9.35E-02
+	GA-67	93.31	*	35.70	1.05E+02	1.05E+02	1.23E+02	5.20E+01

Analysis Report for 1601047-04

SED1

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	1.21E+03	1.05E+02	8.71E+02	5.90E+02
	300.22		16.00	1.05E+02		9.80E+00	5.02E+01
SE-75	121.11		16.70	3.07E-01	9.15E-02	-1.76E-01	1.48E-01
	136.00		59.20	9.22E-02		-4.87E-03	4.45E-02
	264.65		59.80	9.15E-02		1.13E-02	4.34E-02
	279.53		25.20	2.38E-01		1.03E-01	1.13E-01
	400.65		11.40	5.72E-01		-6.53E-03	2.70E-01
RB-82	776.52		13.00	1.10E+00	1.10E+00	-2.90E-01	5.07E-01
RB-83	520.41		46.00	1.60E-01	1.60E-01	-3.70E-02	7.49E-02
	529.64		30.30	2.40E-01		-8.68E-02	1.12E-01
	552.65		16.40	4.48E-01		3.44E-01	2.09E-01
KR-85	513.99		0.43	2.04E+01	2.04E+01	1.29E+01	9.76E+00
SR-85	513.99		99.27	1.18E-01	1.18E-01	7.48E-02	5.67E-02
Y-88	898.02		93.40	8.31E-02	6.99E-02	1.95E-02	3.78E-02
	1836.01		99.38	6.99E-02		-1.87E-02	2.90E-02
NB-93M	16.57		9.43	6.79E+01	6.79E+01	-7.24E+01	3.12E+01
NB-94	702.63		100.00	7.22E-02	6.92E-02	1.10E-02	3.37E-02
	871.10		100.00	6.92E-02		2.79E-02	3.17E-02
NB-95	765.79		99.81	1.37E-01	1.37E-01	-9.86E-03	6.40E-02
NB-95M	235.69		25.00	4.77E+01	4.77E+01	-1.65E+02	2.31E+01
ZR-95	724.18		43.70	2.41E-01	1.50E-01	3.02E-02	1.13E-01
	756.72		55.30	1.50E-01		-1.38E-01	6.87E-02
MO-99	181.06		6.20	7.49E+02	4.78E+02	5.95E+02	3.61E+02
	739.58		12.80	4.78E+02		8.50E+01	2.21E+02
	778.00		4.50	1.35E+03		-3.47E+02	6.23E+02
RU-103	497.08		89.00	1.01E-01	1.01E-01	-3.98E-02	4.70E-02
RU-106	621.84		9.80	6.35E-01	6.35E-01	-9.71E-02	2.94E-01
AG-108M	433.93		89.90	6.45E-02	6.45E-02	-1.25E-02	3.04E-02
	614.37		90.40	7.09E-02		-3.90E-03	3.30E-02
	722.95		90.50	8.11E-02		-1.52E-03	3.78E-02
CD-109	88.03		3.72	1.80E+00	1.80E+00	1.88E+00	8.78E-01
AG-110M	657.75		93.14	6.69E-02	6.69E-02	5.92E-03	3.08E-02
	677.61		10.53	6.65E-01		4.47E-02	3.08E-01
	706.67		16.46	4.43E-01		8.00E-02	2.06E-01
	763.93		21.98	3.62E-01		1.28E-01	1.68E-01
	884.67		71.63	9.69E-02		-1.46E-02	4.40E-02
	1384.27		23.94	3.09E-01		3.67E-02	1.36E-01
CD-113M	263.70		0.02	2.01E+02	2.01E+02	-2.11E+01	9.55E+01
SN-113	255.12		1.93	2.95E+00	9.11E-02	6.10E-02	1.40E+00
	391.69		64.90	9.11E-02		-9.06E-03	4.27E-02
TE123M	159.00		84.10	6.26E-02	6.26E-02	-3.69E-02	3.01E-02
SB-124	602.71		97.87	8.47E-02	8.47E-02	-4.44E-02	3.94E-02
	645.85		7.26	1.10E+00		6.29E-02	5.09E-01
	722.78		11.10	9.02E-01		-1.69E-02	4.20E-01
	1691.02		49.00	1.05E-01		-4.88E-03	3.93E-02
I-125	35.49		6.49	2.98E+00	2.98E+00	-5.46E-01	1.44E+00
SB-125	176.33		6.89	7.35E-01	2.25E-01	1.42E-01	3.54E-01
	427.89		29.33	2.25E-01		5.52E-02	1.07E-01
	463.38		10.35	6.73E-01		4.49E-01	3.19E-01
	600.56		17.80	3.58E-01		-8.02E-02	1.67E-01
	635.90		11.32	5.47E-01		-5.23E-02	2.53E-01
SB-126	414.70		83.30	3.16E-01	3.09E-01	-1.92E-02	1.49E-01
	666.33		99.60	3.39E-01		1.12E-01	1.59E-01

Analysis Report for 1601047-04

SED1

	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	3.09E-01	3.09E-01	1.62E-02	1.43E-01
		720.50		53.80	5.33E-01		-2.31E-01	2.46E-01
	SN-126	87.57		37.00	1.74E-01	1.74E-01	1.82E-01	8.49E-02
	SB-127	473.00		25.00	3.04E+01	2.16E+01	-1.98E+01	1.43E+01
		685.20		35.70	2.16E+01		-5.29E+00	9.96E+00
		783.80		14.70	6.36E+01		2.44E+01	2.95E+01
	I-129	29.78		57.00	4.79E-01	4.79E-01	1.04E-02	2.31E-01
		33.60		13.20	1.27E+00		-2.28E-01	6.14E-01
		39.58		7.52	1.43E+00		8.03E-01	6.90E-01
	I-131	284.30		6.05	8.20E+00	6.00E-01	-1.25E+00	3.89E+00
		364.48		81.20	6.00E-01		-9.12E-04	2.81E-01
		636.97		7.26	8.60E+00		3.10E+00	3.98E+00
		722.89		1.80	4.18E+01		-7.85E-01	1.95E+01
	TE-132	49.72		13.10	1.74E+02	1.77E+01	2.95E+01	8.44E+01
		228.16		88.00	1.77E+01		-7.48E-01	8.45E+00
	BA-133	81.00		33.00	1.66E-01	8.55E-02	-8.96E-01	8.07E-02
		302.84		17.80	2.78E-01		-3.26E-02	1.31E-01
		356.01		60.00	8.55E-02		6.54E-03	4.03E-02
	I-133	529.87		86.30	1.63E+08	1.63E+08	-5.91E+07	7.61E+07
	XE-133	81.00		38.00	5.10E+00	5.10E+00	-2.75E+01	2.48E+00
	CS-134	563.23		8.38	7.49E-01	8.41E-02	2.41E-01	3.50E-01
		569.32		15.43	4.33E-01		1.30E-01	2.03E-01
		604.70		97.60	8.41E-02		-6.86E-03	3.98E-02
		795.84		85.40	9.08E-02		8.62E-04	4.22E-02
		801.93		8.73	7.86E-01		-3.29E-01	3.61E-01
	CS-135	268.24		16.00	3.20E-01	3.20E-01	8.40E-02	1.53E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	2.68E+00	2.68E-01	1.35E+00	1.29E+00
		163.89		4.61	4.40E+00		-9.44E-01	2.12E+00
		176.55		13.56	1.52E+00		2.94E-01	7.33E-01
		273.65		12.66	1.62E+00		8.16E-02	7.69E-01
		340.57		48.50	5.50E-01		3.57E-01	2.63E-01
		818.50		99.70	2.68E-01		-6.76E-02	1.23E-01
		1048.07		79.60	3.34E-01		-5.74E-02	1.50E-01
		1235.34		19.70	2.20E+00		-2.05E-01	1.02E+00
	CS-137	661.65		85.12	8.67E-02	8.67E-02	4.63E-02	4.06E-02
	LA-138	788.74		34.00	1.98E-01	1.09E-01	-8.80E-02	9.13E-02
		1435.80		66.00	1.09E-01		7.13E-03	4.82E-02
	CE-139	165.85		80.35	6.87E-02	6.87E-02	-1.01E-02	3.31E-02
	BA-140	162.64		6.70	3.12E+00	1.01E+00	-2.72E-02	1.50E+00
		304.84		4.50	4.60E+00		-5.67E-01	2.17E+00
		423.70		3.20	8.75E+00		3.09E+00	4.15E+00
		437.55		2.00	1.26E+01		-3.62E-01	5.94E+00
		537.32		25.00	1.01E+00		-3.20E-01	4.69E-01
	LA-140	328.77		20.50	1.20E+00	3.17E-01	5.70E-01	5.70E-01
		487.03		45.50	5.21E-01		7.57E-02	2.43E-01
		815.85		23.50	1.18E+00		6.72E-02	5.40E-01
		1596.49		95.49	3.17E-01		7.64E-03	1.38E-01
+	CE-141	145.44	*	48.40	2.23E-01	2.23E-01	1.23E-01	1.09E-01
	CE-143	57.36		11.80	4.36E+05	1.66E+05	-1.50E+05	2.12E+05
		293.26		42.00	1.66E+05		4.19E+05	8.07E+04

Analysis Report for 1601047-04

SED1

	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	1.20E+06	1.66E+05	7.29E+05	5.63E+05
	CE-144	133.54		10.80	4.63E-01	4.63E-01	6.57E-03	2.23E-01
	PM-144	476.78		42.00	1.65E-01	6.72E-02	7.84E-02	7.78E-02
		618.01		98.60	6.72E-02		4.11E-03	3.13E-02
		696.49		99.49	7.26E-02		6.56E-04	3.37E-02
	PM-145	36.85		21.70	5.93E-01	3.20E-01	-1.70E-01	2.86E-01
		37.36		39.70	3.20E-01		1.67E-01	1.54E-01
		42.30		15.10	5.94E-01		1.06E-02	2.87E-01
		72.40		2.31	3.10E+00		-2.36E+00	1.51E+00
	PM-146	453.90		39.94	1.49E-01	1.49E-01	-1.41E-02	7.01E-02
		735.90		14.01	4.55E-01		1.41E-01	2.09E-01
		747.13		13.10	4.88E-01		-1.77E-01	2.24E-01
	ND-147	91.11		28.90	1.29E+00	1.29E+00	-1.04E+00	6.30E-01
		531.02		13.10	2.56E+00		2.30E-01	1.20E+00
	PM-149	285.90		3.10	7.84E+03	7.84E+03	2.14E+03	3.73E+03
	EU-152	121.78		20.50	2.22E-01	2.22E-01	1.09E-01	1.07E-01
		244.69		5.40	9.94E-01		-7.08E-01	4.76E-01
		344.27		19.13	2.67E-01		7.49E-02	1.26E-01
		778.89		9.20	7.43E-01		-9.11E-04	3.43E-01
		964.01		10.40	8.44E-01		2.67E-01	3.92E-01
		1085.78		7.22	1.12E+00		4.90E-01	5.13E-01
		1112.02		9.60	8.99E-01		-1.10E-01	4.13E-01
		1407.95		14.94	4.55E-01		5.82E-02	1.99E-01
	GD-153	97.43		31.30	1.55E-01	1.55E-01	8.05E-02	7.49E-02
		103.18		22.20	2.16E-01		-2.37E-02	1.04E-01
	EU-154	123.07		40.50	1.10E-01	1.10E-01	-2.50E-02	5.29E-02
		723.30		19.70	3.75E-01		-7.04E-03	1.75E-01
		873.19		11.50	5.57E-01		-3.39E-01	2.53E-01
		996.32		10.30	6.53E-01		-2.46E-01	2.95E-01
		1004.76		17.90	4.16E-01		-6.71E-02	1.90E-01
		1274.45		35.50	1.92E-01		-2.44E-02	8.47E-02
+	EU-155	86.50	*	30.90	3.95E-01	2.45E-01	2.81E-01	1.95E-01
		105.30	*	20.70	2.45E-01		1.71E-01	1.19E-01
	EU-156	811.77		10.40	2.18E+00	2.18E+00	-7.92E-01	1.00E+00
		1153.47		7.20	4.17E+00		1.10E+00	1.91E+00
		1230.71		8.90	3.30E+00		-1.37E+00	1.51E+00
	HO-166M	184.41		72.60	8.42E-02	8.42E-02	8.36E-02	4.08E-02
		280.45		29.60	1.56E-01		-2.52E-02	7.39E-02
		410.94		11.10	5.64E-01		1.79E-01	2.67E-01
		711.69		54.10	1.22E-01		-2.53E-02	5.63E-02
	TM-171	66.72		0.14	4.61E+01	4.61E+01	-8.46E+01	2.24E+01
	HF-172	81.75		4.52	1.25E+00	4.22E-01	-8.98E-01	6.06E-01
		125.81		11.30	4.22E-01		3.43E-03	2.04E-01
	LU-172	181.53		20.60	3.98E+00	1.97E+00	3.15E+00	1.91E+00
		810.06		16.63	6.64E+00		-6.11E-01	3.05E+00
		912.12		15.25	1.38E+01		2.57E+01	6.57E+00
		1093.66		62.50	1.97E+00		-4.82E-01	8.93E-01
	LU-173	100.72		5.24	8.57E-01	2.60E-01	-1.76E-02	4.14E-01
		272.11		21.20	2.60E-01		1.56E-01	1.24E-01
	HF-175	343.40		84.00	7.74E-02	7.74E-02	1.12E-02	3.65E-02
	LU-176	88.34		13.30	4.91E-01	5.04E-02	4.98E-01	2.40E-01
		201.83		86.00	5.94E-02		-1.15E-02	2.85E-02
		306.78		94.00	5.04E-02		-1.55E-02	2.38E-02

Analysis Report for 1601047-04

SED1

	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	1.78E-01	1.78E-01	-1.96E-02	8.66E-02
		1121.30		34.90	4.18E-01		4.40E-01	1.97E-01
		1189.05		16.23	6.78E-01		3.65E-01	3.12E-01
		1221.41		26.98	4.20E-01		2.43E-01	1.94E-01
		1231.02		11.44	8.83E-01		-3.67E-01	4.02E-01
	IR-192	308.46		29.68	2.12E-01	1.56E-01	6.67E-02	1.00E-01
		468.07		48.10	1.56E-01		-3.58E-02	7.33E-02
	HG-203	279.19		77.30	1.03E-01	1.03E-01	8.00E-02	4.90E-02
	BI-207	569.67		97.72	6.68E-02	6.68E-02	1.96E-02	3.13E-02
		1063.62		74.90	1.09E-01		1.39E-02	4.98E-02
	TL-208	583.14		30.22	3.83E-01	3.83E-01	9.14E-01	1.84E-01
		860.37		4.48	1.66E+00		2.45E-01	7.67E-01
		2614.66		35.85	4.50E-01		0.00E+00	2.09E-01
	BI-210M	262.00		45.00	1.02E-01	1.02E-01	-9.25E-03	4.86E-02
		300.00		23.00	2.35E-01		2.19E-02	1.12E-01
+	PB-210	46.50	*	4.25	2.56E+00	2.56E+00	1.94E+00	1.25E+00
	PB-211	404.84		2.90	1.91E+00	1.91E+00	3.48E-01	9.00E-01
		831.96		2.90	2.45E+00		-6.75E-01	1.13E+00
+	BI-212	727.17	*	11.80	7.97E-01	7.97E-01	4.60E-01	3.77E-01
		1620.62		2.75	2.25E+00		4.96E-01	9.56E-01
+	PB-212	238.63	*	44.60	2.26E-01	2.26E-01	8.53E-01	1.11E-01
		300.09		3.41	1.59E+00		1.48E-01	7.56E-01
+	BI-214	609.31	*	46.30	2.28E-01	2.28E-01	1.08E+00	1.09E-01
		1120.29	*	15.10	1.05E+00		5.46E-01	5.01E-01
		1764.49	*	15.80	6.17E-01		1.12E+00	2.78E-01
		2204.22		4.98	1.80E+00		0.00E+00	7.93E-01
+	PB-214	295.21	*	19.19	4.16E-01	2.23E-01	1.14E+00	2.01E-01
		351.92	*	37.19	2.23E-01		1.29E+00	1.08E-01
	RN-219	401.80		6.50	8.91E-01	8.91E-01	3.69E-01	4.21E-01
	RA-223	323.87		3.88	1.29E+00	1.29E+00	-9.12E-01	6.08E-01
+	RA-224	240.98	*	3.95	2.53E+00	2.53E+00	2.52E+00	1.23E+00
	RA-225	40.00		31.00	1.20E+00	1.20E+00	6.71E-01	5.78E-01
+	RA-226	186.21	*	3.28	2.14E+00	2.14E+00	1.16E+00	1.04E+00
	TH-227	50.10		8.40	8.58E-01	5.81E-01	1.45E-01	4.16E-01
		236.00		11.50	5.81E-01		-2.01E+00	2.81E-01
		256.20		6.30	7.64E-01		-2.05E-02	3.64E-01
+	AC-228	338.32	*	11.40	7.32E-01	4.02E-01	1.05E+00	3.54E-01
		911.07	*	27.70	4.02E-01		8.41E-01	1.90E-01
		969.11	*	16.60	6.43E-01		5.61E-01	3.03E-01
	TH-230	48.44		16.90	5.08E-01	5.08E-01	5.59E-02	2.47E-01
		62.85		4.60	1.57E+00		2.11E+00	7.66E-01
		67.67		0.37	1.68E+01		-1.85E+00	8.20E+00
	PA-231	283.67		1.60	2.96E+00	2.14E+00	-6.02E-01	1.40E+00
		302.67		2.30	2.14E+00		-2.51E-01	1.01E+00
	TH-231	25.64		14.70	4.19E+00	9.19E-01	1.21E+00	2.03E+00
		84.21		6.40	9.19E-01		-1.16E+00	4.48E-01
	PA-233	311.98		38.60	2.52E-01	2.52E-01	-1.55E-02	1.19E-01
	PA-234	131.20		20.40	2.33E-01	2.33E-01	7.06E-03	1.12E-01
		733.99		8.80	7.09E-01		8.45E-02	3.26E-01
		946.00		12.00	6.69E-01		3.82E-01	3.09E-01
	PA-234M	1001.03		0.92	7.30E+00	7.30E+00	-4.37E+00	3.30E+00
	TH-234	63.29		3.80	1.88E+00	1.88E+00	2.40E+00	9.20E-01
	U-235	143.76		10.50	4.68E-01	4.68E-01	2.89E-01	2.26E-01

Analysis Report for 1601047-04

SED1

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	1.04E+00	4.68E-01	-2.23E-01	5.01E-01
	205.31		4.70	1.11E+00		-1.01E+00	5.34E-01
NP-237	86.50	*	12.60	9.58E-01	9.58E-01	6.82E-01	4.73E-01
NP-239	106.10		22.70	5.78E+02	5.78E+02	3.14E+02	2.80E+02
	228.18		10.70	1.32E+03		-5.57E+01	6.30E+02
	277.60		14.10	1.10E+03		8.62E+02	5.23E+02
AM-241	59.54		35.90	1.78E-01	1.78E-01	-1.54E-01	8.63E-02
AM-243	74.67		66.00	1.27E-01	1.27E-01	-1.30E-01	6.23E-02
CM-243	209.75		3.29	1.64E+00	3.90E-01	1.26E+00	7.88E-01
	228.14		10.60	4.70E-01		-1.99E-02	2.25E-01
	277.60		14.00	3.90E-01		3.07E-01	1.86E-01

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

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

Sample Title: SED1

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	42	77	73	65	65	67
25:	67	62	58	55	52	46	64	41
33:	47	51	47	64	44	51	59	62
41:	48	57	48	60	51	87	155	77
49:	55	70	63	63	63	58	66	67
57:	62	61	84	82	86	84	121	177
65:	97	83	82	97	105	98	94	98
73:	106	105	258	204	269	334	90	83
81:	87	75	77	96	103	67	146	164
89:	91	125	88	116	242	141	94	45
97:	54	62	51	72	52	37	49	52
105:	70	65	60	49	51	58	60	41
113:	77	54	67	63	53	41	52	56
121:	42	48	49	69	40	51	54	56
129:	57	59	63	52	50	51	53	57
137:	45	52	54	62	40	55	41	68
145:	64	45	48	53	39	36	44	52
153:	49	43	58	44	40	51	27	43
161:	45	53	54	44	37	49	54	43
169:	43	53	45	43	43	43	46	43
177:	51	44	42	42	49	60	42	29
185:	55	128	75	37	42	38	54	43
193:	38	40	42	46	47	37	51	44
201:	36	42	41	40	47	37	44	40
209:	63	52	33	28	26	28	30	45
217:	37	38	40	34	28	32	33	24
225:	36	34	35	32	27	36	38	33
233:	37	30	39	38	36	147	326	106
241:	72	95	65	35	31	25	18	24
249:	33	27	30	24	29	29	31	23
257:	21	27	25	28	19	25	22	22
265:	22	24	28	21	24	31	36	30
273:	23	28	17	28	32	41	29	22
281:	19	21	15	20	25	29	25	29
289:	27	25	24	21	23	40	140	133
297:	24	31	26	31	24	22	28	16
305:	18	22	17	28	13	24	22	17
313:	15	23	25	17	31	23	25	24
321:	28	24	16	22	18	21	14	42
329:	27	24	23	26	17	21	24	17
337:	26	59	80	23	19	17	21	20
345:	16	18	21	12	19	23	68	302
353:	133	17	20	19	17	19	11	19
361:	21	10	11	14	18	20	13	15

369:	15	11	21	13	24	16	22	12

Sample Title: SED1

Channel								
377:	13	11	14	18	18	9	11	27
385:	13	15	14	19	23	17	19	14
393:	13	14	14	13	21	17	16	20
401:	17	20	20	23	14	17	16	15
409:	15	20	14	22	15	13	13	11
417:	12	10	12	13	15	11	16	15
425:	15	20	25	14	17	11	13	12
433:	16	12	8	13	15	11	17	12
441:	13	14	10	17	8	9	10	11
449:	16	11	9	18	13	13	13	10
457:	10	12	13	13	11	15	26	17
465:	13	17	15	8	12	9	6	17
473:	10	8	18	12	20	21	11	10
481:	9	9	7	5	11	7	12	11
489:	10	10	9	14	10	11	7	12
497:	8	8	11	9	15	8	7	11
505:	12	8	10	11	23	47	57	32
513:	30	11	11	15	9	13	11	11
521:	12	7	9	7	10	12	8	9
529:	8	8	9	9	15	14	10	9
537:	8	12	4	12	9	9	14	8
545:	13	19	14	5	8	10	12	11
553:	6	10	7	7	4	3	11	8
561:	7	9	16	9	10	7	10	6
569:	8	18	11	14	7	9	9	8
577:	8	8	12	12	11	30	110	58
585:	9	8	11	4	9	8	7	9
593:	9	9	13	9	10	16	9	6
601:	8	4	9	10	10	11	10	50
609:	165	117	25	9	10	11	10	9
617:	9	5	6	10	11	7	6	7
625:	5	9	9	8	9	7	15	7
633:	7	3	7	5	14	10	7	7
641:	5	4	10	6	7	6	3	9
649:	7	8	8	8	3	7	3	8
657:	5	7	5	5	12	13	9	16
665:	15	12	6	9	9	5	8	6
673:	8	7	9	8	6	4	8	11
681:	9	9	6	7	7	3	4	9
689:	2	10	6	8	7	4	17	7
697:	6	9	10	6	10	8	10	10
705:	14	7	8	7	5	5	5	7
713:	15	5	10	9	10	2	5	10
721:	6	4	15	5	10	14	20	16
729:	9	6	6	5	8	6	6	4
737:	9	4	8	1	8	6	16	7
745:	9	4	6	6	6	6	2	10
753:	6	6	7	8	5	5	5	5
761:	14	9	4	8	5	6	13	17
769:	17	6	10	5	6	9	11	11
777:	2	4	7	5	7	12	6	9
785:	9	7	4	4	7	4	12	8
793:	6	11	11	8	6	10	6	10

801:	4	5	8	3	8	9	8	5

Sample Title: SED1

Channel								
809:	5	10	5	5	6	8	3	9
817:	8	1	4	6	5	6	10	5
825:	2	3	5	9	6	7	2	10
833:	7	7	8	7	11	10	9	7
841:	9	6	2	12	5	10	3	7
849:	6	6	4	4	3	6	5	4
857:	4	10	4	12	10	6	3	5
865:	10	4	1	6	11	2	5	4
873:	8	5	4	6	4	9	6	6
881:	5	5	4	5	7	5	5	3
889:	2	9	5	5	2	3	3	7
897:	3	5	4	7	5	4	6	4
905:	7	8	5	6	9	37	52	28
913:	8	5	3	7	2	5	4	4
921:	8	3	6	7	5	7	6	8
929:	4	6	7	7	7	16	9	6
937:	6	6	5	2	4	2	6	6
945:	9	6	7	9	6	9	1	6
953:	7	1	8	6	3	6	4	7
961:	4	7	6	9	17	8	6	23
969:	43	10	6	4	8	2	6	5
977:	4	4	3	5	6	6	6	4
985:	5	6	5	7	4	2	7	4
993:	4	5	7	2	5	5	2	5
1001:	7	4	3	4	9	9	5	3
1009:	3	9	1	8	3	3	2	3
1017:	4	5	2	5	6	5	6	2
1025:	3	4	3	5	6	2	1	2
1033:	5	7	5	2	6	1	4	5
1041:	4	8	6	3	4	4	4	2
1049:	3	5	3	5	3	7	6	3
1057:	7	6	2	1	9	4	8	7
1065:	5	2	6	7	8	1	3	4
1073:	3	2	1	7	5	4	6	4
1081:	3	3	5	5	8	6	8	1
1089:	6	5	3	3	3	7	4	6
1097:	7	4	8	7	6	6	6	7
1105:	5	4	8	7	7	5	4	5
1113:	7	6	9	2	5	8	16	29
1121:	24	7	5	4	7	8	8	6
1129:	1	9	2	2	3	6	3	2
1137:	3	4	5	8	7	5	6	6
1145:	4	12	7	6	3	4	4	7
1153:	8	3	7	9	4	6	8	1
1161:	10	3	8	9	6	3	6	7
1169:	7	4	5	4	4	6	3	9
1177:	6	2	7	5	9	4	4	6
1185:	3	6	5	11	5	4	8	7
1193:	2	5	5	6	6	7	3	2
1201:	8	8	2	7	5	12	4	2
1209:	6	8	5	5	5	3	6	2
1217:	4	6	8	1	11	10	8	3
1225:	4	5	4	4	3	10	8	6

1233:	4	1	3	14	14	13	10	5

Sample Title: SED1

Channel								
1241:	5	11	3	9	6	7	4	9
1249:	1	3	1	4	3	2	2	4
1257:	3	5	12	4	4	0	2	2
1265:	4	1	0	5	5	6	4	0
1273:	3	4	4	4	1	3	8	3
1281:	9	4	6	3	4	6	2	2
1289:	2	6	2	3	2	3	3	5
1297:	5	0	8	4	2	5	3	7
1305:	4	1	1	3	7	3	3	3
1313:	1	2	5	0	5	4	6	6
1321:	4	0	5	3	2	5	4	0
1329:	3	3	3	6	1	2	5	2
1337:	3	4	1	2	3	2	6	0
1345:	0	4	2	4	3	5	1	2
1353:	1	2	4	3	2	2	3	2
1361:	1	2	2	1	4	2	0	2
1369:	2	3	0	2	3	1	1	6
1377:	13	7	2	1	1	1	2	2
1385:	5	5	2	3	3	3	2	0
1393:	5	2	1	3	1	3	7	1
1401:	2	2	2	1	1	0	6	4
1409:	2	2	2	3	2	3	4	6
1417:	0	1	0	2	0	1	0	0
1425:	1	1	1	3	0	1	4	1
1433:	2	2	3	3	0	6	3	1
1441:	4	1	1	6	1	4	2	2
1449:	0	5	4	0	1	1	2	1
1457:	5	13	104	202	114	35	5	5
1465:	3	3	2	0	2	1	3	1
1473:	1	1	1	1	2	3	2	2
1481:	3	3	1	1	0	1	1	0
1489:	2	2	2	0	0	1	3	6
1497:	3	2	0	6	2	1	1	2
1505:	1	1	1	4	2	3	1	3
1513:	0	1	2	1	5	1	3	4
1521:	0	1	0	1	4	3	2	2
1529:	0	5	2	3	2	1	2	0
1537:	6	3	2	2	0	2	2	1
1545:	1	2	4	2	2	1	0	0
1553:	2	1	2	0	4	0	2	3
1561:	1	1	0	4	1	1	2	2
1569:	0	3	2	0	2	2	2	2
1577:	0	3	5	1	1	2	2	1
1585:	1	2	5	3	2	0	2	5
1593:	2	4	0	3	0	4	2	0
1601:	2	0	1	1	2	1	1	0
1609:	1	1	0	0	0	2	2	0
1617:	2	2	1	2	2	2	0	1
1625:	1	3	1	2	2	3	2	0
1633:	2	2	1	0	1	1	2	1
1641:	1	1	1	1	1	4	2	0
1649:	1	1	1	0	1	0	1	2
1657:	2	2	4	5	0	1	1	1

1665:	4	2	1	0	0	2	0	0

Sample Title: SED1

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

2097:	1	1	1	0	1	4	5	2

Sample Title: SED1

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

2529:	1	0	1	0	0	0	0	0

Sample Title: SED1

Channel								
2537:	0	0	0	1	1	0	0	0
2545:	1	0	0	1	0	0	0	0
2553:	0	0	0	0	2	0	1	1
2561:	0	0	0	0	0	1	0	0
2569:	0	0	0	0	0	0	1	0
2577:	0	2	0	2	0	0	1	0
2585:	0	0	0	0	1	1	0	0
2593:	1	0	0	0	0	1	0	0
2601:	0	1	0	0	0	0	3	1
2609:	0	3	2	22	19	11	3	0
2617:	0	0	0	0	0	0	0	0
2625:	1	0	1	0	1	0	0	0
2633:	1	0	0	0	0	0	1	0
2641:	0	0	0	0	0	0	0	0
2649:	0	0	1	1	0	0	0	0
2657:	0	0	0	1	0	1	0	0
2665:	0	0	0	0	0	1	1	1
2673:	0	1	0	1	0	0	0	0
2681:	0	1	0	1	0	0	0	0
2689:	1	0	0	1	1	0	1	0
2697:	0	0	0	0	0	0	0	1
2705:	0	0	0	1	0	1	0	0
2713:	1	0	1	0	0	0	0	0
2721:	0	0	0	0	0	0	0	1
2729:	0	0	1	0	0	0	0	0
2737:	0	1	0	0	0	1	0	0
2745:	0	0	0	0	1	0	0	1
2753:	0	0	0	0	0	0	0	0
2761:	0	1	0	0	0	0	0	0
2769:	0	0	0	0	0	0	0	0
2777:	1	0	0	0	1	0	0	0
2785:	0	1	0	1	1	0	0	0
2793:	2	1	0	1	0	0	0	0
2801:	0	0	0	1	0	0	0	0
2809:	0	0	2	0	0	0	0	0
2817:	0	1	1	0	0	0	0	0
2825:	0	0	0	1	1	1	0	0
2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	0	0	0	0	2
2849:	0	0	0	0	0	0	0	1
2857:	0	0	1	0	0	0	0	0
2865:	1	0	1	1	0	1	0	0
2873:	0	1	0	0	1	1	0	0
2881:	0	0	0	1	0	0	0	0
2889:	0	0	0	0	0	0	0	0
2897:	0	1	0	0	0	0	0	0
2905:	0	1	0	0	0	0	0	0
2913:	1	1	0	0	0	1	0	0
2921:	0	0	1	0	0	0	1	0
2929:	0	2	0	0	0	0	0	0
2937:	0	1	0	0	0	0	0	0
2945:	0	0	0	0	0	0	1	0
2953:	1	1	0	1	0	1	0	0

2961:	1	0	0	1	0	0	0	0

Sample Title: SED1

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

3393:	0	0	0	0	1	0	0	0

Sample Title: SED1

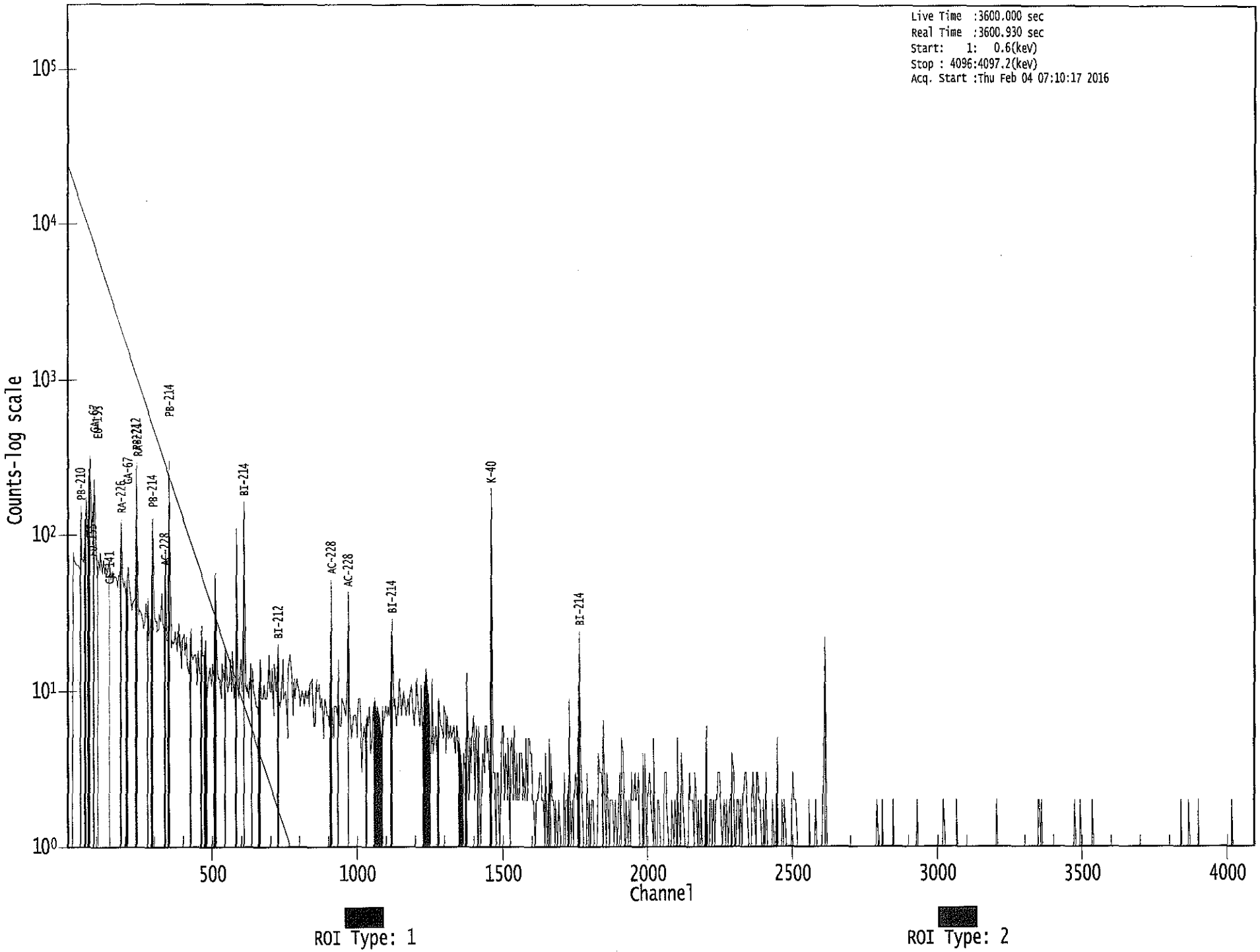
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	1	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	1	0	0	0	0
3449:	1	0	0	0	0	1	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	1	0	0
3473:	0	0	2	1	0	0	0	0
3481:	1	0	0	0	0	0	0	0
3489:	0	1	1	0	2	0	0	0
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	0	1	0	0	0	0

Sample Title: SED1

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

0000032437.CNF



: 00327

Apex-Gamma

Analysis Report for 1601047-05
SED2

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1601047-05
Sample Description	: SED2
Sample Type	: SOIL
Sample Size	: 4.360E+02 grams
Facility	: Countroom
Sample Taken On	: 1/8/2016 7:26:13AM
Acquisition Started	: 2/4/2016 6:07:28AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3600.8 seconds
Dead Time	: 0.02 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 7 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 11/2/2014
Efficiency Calibration Used Done On	: 10/25/2014
Efficiency Calibration Description	:
Sample Number	: 32435

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
2/4/16

Analysis Report for 1601047-05

SED2

PEAK LOCATE REPORT

Peak Locate Performed on : 2/4/2016 7:07:44AM
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	24.99	25.11	0.0000	0.00
2	46.53	46.64	0.0000	0.00
3	62.73	62.82	0.0000	0.00
4	76.32	76.41	0.0000	0.00
5	87.49	87.58	0.0000	0.00
6	92.81	92.89	0.0000	0.00
7	186.08	186.11	0.0000	0.00
8	209.37	209.38	0.0000	0.00
9	238.88	238.87	0.0000	0.00
10	242.13	242.13	0.0000	0.00
11	270.26	270.24	0.0000	0.00
12	288.60	288.57	0.0000	0.00
13	295.13	295.10	0.0000	0.00
14	300.85	300.82	0.0000	0.00
15	338.43	338.38	0.0000	0.00
16	349.21	349.14	0.0000	0.00
17	352.15	352.09	0.0000	0.00
18	463.15	463.03	0.0000	0.00
19	477.70	477.58	0.0000	0.00
20	511.04	510.90	0.0000	0.00
21	572.20	572.02	0.0000	0.00
22	583.44	583.26	0.0000	0.00
23	609.61	609.41	0.0000	0.00
24	617.10	616.91	0.0000	0.00
25	768.45	768.18	0.0000	0.00
26	772.08	771.82	0.0000	0.00
27	838.20	837.90	0.0000	0.00
28	853.70	853.40	0.0000	0.00
29	860.90	860.60	0.0000	0.00
30	911.51	911.18	0.0000	0.00
31	934.91	934.57	0.0000	0.00
32	948.35	948.01	0.0000	0.00
33	953.16	952.81	0.0000	0.00
34	965.07	964.72	0.0000	0.00
35	969.77	969.42	0.0000	0.00
36	1001.61	1001.24	0.0000	0.00
37	1034.41	1034.04	0.0000	0.00
38	1079.39	1079.00	0.0000	0.00
39	1095.30	1094.91	0.0000	0.00
40	1120.41	1120.00	0.0000	0.00
41	1308.44	1307.97	0.0000	0.00
42	1376.82	1376.32	0.0000	0.00

Analysis Report for 1601047-05

SED2

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1461.36	1460.84	0.0000	0.00
44	1508.63	1508.09	0.0000	0.00
45	1588.60	1588.04	0.0000	0.00
46	1729.93	1729.33	0.0000	0.00
47	1765.33	1764.73	0.0000	0.00
48	1830.51	1829.89	0.0000	0.00
49	2103.22	2102.54	0.0000	0.00
50	2118.32	2117.65	0.0000	0.00
51	2193.86	2193.17	0.0000	0.00
52	2227.13	2226.43	0.0000	0.00
53	2324.79	2324.08	0.0000	0.00
54	2614.53	2613.79	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1601047-05

SED2

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/4/2016 7:07:44AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	24.99	21 -	30	25.11	3.12E+02	125.57	1.92E+03	5.98
	2	46.53	43 -	50	46.64	2.04E+02	72.64	7.50E+02	1.28
	3	62.73	59 -	67	62.82	1.16E+02	87.64	1.12E+03	2.15
	4	76.32	73 -	79	76.41	5.82E+02	87.44	9.61E+02	3.68
	5	87.49	86 -	89	87.58	4.92E+01	52.08	6.34E+02	1.54
	6	92.81	90 -	97	92.89	1.91E+02	83.50	9.92E+02	1.51
	7	186.08	182 -	190	186.11	1.45E+02	69.86	6.63E+02	1.50
	8	209.37	206 -	212	209.38	4.64E+01	51.93	4.47E+02	1.91
M	9	238.88	235 -	246	238.87	3.66E+02	50.16	2.04E+02	1.41
m	10	242.13	235 -	246	242.13	1.05E+02	36.99	1.93E+02	1.42
	11	270.26	268 -	274	270.24	3.54E+01	43.38	3.25E+02	2.04
	12	288.60	286 -	291	288.57	3.66E+01	33.50	1.91E+02	3.01
	13	295.13	292 -	299	295.10	1.44E+02	51.46	3.55E+02	1.50
	14	300.85	299 -	304	300.82	3.71E+01	35.43	2.16E+02	4.64
	15	338.43	333 -	341	338.38	7.53E+01	48.72	3.17E+02	1.79
M	16	349.21	348 -	358	349.14	1.74E+01	16.60	6.09E+01	1.57
m	17	352.15	348 -	358	352.09	3.41E+02	43.90	1.17E+02	1.58
	18	463.15	461 -	466	463.03	2.30E+01	25.22	1.10E+02	2.28
	19	477.70	473 -	482	477.58	9.39E+01	41.35	1.92E+02	1.76
	20	511.04	507 -	515	510.90	1.25E+02	37.47	1.38E+02	2.57
	21	572.20	569 -	575	572.02	2.05E+01	24.14	9.10E+01	1.80
	22	583.44	579 -	587	583.26	1.25E+02	41.94	1.93E+02	1.45
	23	609.61	605 -	613	609.41	2.88E+02	44.35	1.24E+02	1.96
	24	617.10	614 -	620	616.91	1.81E+01	22.30	7.78E+01	2.72
M	25	768.45	765 -	774	768.18	1.93E+01	20.88	7.20E+01	2.02
m	26	772.08	765 -	774	771.82	1.54E+01	20.98	7.20E+01	2.03
	27	838.20	833 -	844	837.90	3.70E+01	26.91	7.20E+01	6.23
M	28	853.70	850 -	864	853.40	1.53E+01	17.06	4.60E+01	2.31
m	29	860.90	850 -	864	860.60	2.46E+01	19.26	3.90E+01	2.31
	30	911.51	907 -	916	911.18	9.69E+01	30.85	8.21E+01	1.92
	31	934.91	931 -	937	934.57	2.16E+01	14.20	2.08E+01	3.14
M	32	948.35	946 -	955	948.01	8.22E+00	9.59	2.40E+01	3.34
m	33	953.16	946 -	955	952.81	1.54E+01	13.45	1.89E+01	2.82
M	34	965.07	962 -	982	964.72	2.78E+01	16.63	5.92E+01	2.41
m	35	969.77	962 -	982	969.42	4.15E+01	21.12	5.63E+01	1.97
	36	1001.61	997 -	1003	1001.24	1.37E+01	17.41	4.47E+01	1.71
	37	1034.41	1031 -	1038	1034.04	1.72E+01	16.25	3.36E+01	3.76
	38	1079.39	1076 -	1082	1079.00	1.59E+01	15.44	3.21E+01	1.31
	39	1095.30	1091 -	1098	1094.91	1.80E+01	18.33	4.40E+01	3.13
	40	1120.41	1115 -	1122	1120.00	3.27E+01	23.75	7.25E+01	1.63

Analysis Report for 1601047-05

SED2

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1308.44	1305 -	1310	1307.97	9.56E+00	11.22	1.69E+01	1.99
42	1376.82	1371 -	1380	1376.32	2.80E+01	15.87	2.00E+01	1.46
43	1461.36	1455 -	1466	1460.84	3.49E+02	41.04	3.56E+01	2.24
44	1508.63	1504 -	1511	1508.09	9.09E+00	7.75	3.82E+00	2.05
45	1588.60	1584 -	1592	1588.04	1.21E+01	11.69	1.38E+01	1.63
46	1729.93	1724 -	1732	1729.33	1.89E+01	13.89	1.81E+01	4.57
47	1765.33	1760 -	1770	1764.73	4.69E+01	15.17	6.12E+00	2.67
48	1830.51	1826 -	1833	1829.89	9.00E+00	6.00	0.00E+00	2.75
49	2103.22	2099 -	2105	2102.54	1.30E+01	7.21	0.00E+00	3.36
50	2118.32	2114 -	2121	2117.65	7.90E+00	7.48	4.20E+00	1.36
51	2193.86	2188 -	2196	2193.17	6.67E+00	7.50	4.67E+00	1.74
52	2227.13	2224 -	2229	2226.43	7.00E+00	5.29	0.00E+00	2.22
53	2324.79	2320 -	2328	2324.08	1.20E+01	6.93	0.00E+00	6.70
54	2614.53	2608 -	2618	2613.79	5.82E+01	16.56	5.69E+00	1.73

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 : 2/4/2016 7:07:44AM

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	24.99	21 -	30	3.12E+02	125.57	1.92E+03	1.68E+02
	2	46.53	43 -	50	2.04E+02	72.64	7.50E+02	5.49E+01
	3	62.73	59 -	67	1.16E+02	87.64	1.12E+03	6.98E+01
	4	76.32	73 -	79	5.82E+02	87.44	9.61E+02	5.99E+01
	5	87.49	86 -	89	4.92E+01	52.08	6.34E+02	4.12E+01
	6	92.81	90 -	97	1.91E+02	83.50	9.92E+02	6.48E+01
	7	186.08	182 -	190	1.45E+02	69.86	6.63E+02	5.39E+01
	8	209.37	206 -	212	4.64E+01	51.93	4.47E+02	4.12E+01
M	9	238.88	235 -	246	3.66E+02	50.16	2.04E+02	2.35E+01
m	10	242.13	235 -	246	1.05E+02	36.99	1.93E+02	2.28E+01
	11	270.26	268 -	274	3.54E+01	43.38	3.25E+02	3.43E+01
	12	288.60	286 -	291	3.66E+01	33.50	1.91E+02	2.57E+01
	13	295.13	292 -	299	1.44E+02	51.46	3.55E+02	3.74E+01
	14	300.85	299 -	304	3.71E+01	35.43	2.16E+02	2.73E+01

Analysis Report for 1601047-05

SED2

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	15	338.43	333 -	341	7.53E+01	48.72	3.17E+02	3.74E+01
M	16	349.21	348 -	358	1.74E+01	16.60	6.09E+01	1.28E+01
m	17	352.15	348 -	358	3.41E+02	43.90	1.17E+02	1.78E+01
	18	463.15	461 -	466	2.30E+01	25.22	1.10E+02	1.92E+01
	19	477.70	473 -	482	9.39E+01	41.35	1.92E+02	3.00E+01
	20	511.04	507 -	515	1.25E+02	37.47	1.38E+02	2.47E+01
	21	572.20	569 -	575	2.05E+01	24.14	9.10E+01	1.84E+01
	22	583.44	579 -	587	1.25E+02	41.94	1.93E+02	2.91E+01
	23	609.61	605 -	613	2.88E+02	44.35	1.24E+02	2.35E+01
	24	617.10	614 -	620	1.81E+01	22.30	7.78E+01	1.69E+01
M	25	768.45	765 -	774	1.93E+01	20.88	7.20E+01	1.39E+01
m	26	772.08	765 -	774	1.54E+01	20.98	7.20E+01	1.39E+01
	27	838.20	833 -	844	3.70E+01	26.91	7.20E+01	1.97E+01
M	28	853.70	850 -	864	1.53E+01	17.06	4.60E+01	1.12E+01
m	29	860.90	850 -	864	2.46E+01	19.26	3.90E+01	1.03E+01
	30	911.51	907 -	916	9.69E+01	30.85	8.21E+01	1.95E+01
	31	934.91	931 -	937	2.16E+01	14.20	2.08E+01	8.82E+00
M	32	948.35	946 -	955	8.22E+00	9.59	2.40E+01	8.06E+00
m	33	953.16	946 -	955	1.54E+01	13.45	1.89E+01	7.15E+00
M	34	965.07	962 -	982	2.78E+01	16.63	5.92E+01	1.27E+01
m	35	969.77	962 -	982	4.15E+01	21.12	5.63E+01	1.23E+01
	36	1001.61	997 -	1003	1.37E+01	17.41	4.47E+01	1.30E+01
	37	1034.41	1031 -	1038	1.72E+01	16.25	3.36E+01	1.15E+01
	38	1079.39	1076 -	1082	1.59E+01	15.44	3.21E+01	1.09E+01
	39	1095.30	1091 -	1098	1.80E+01	18.33	4.40E+01	1.34E+01
	40	1120.41	1115 -	1122	3.27E+01	23.75	7.25E+01	1.71E+01
	41	1308.44	1305 -	1310	9.56E+00	11.22	1.69E+01	7.70E+00
	42	1376.82	1371 -	1380	2.80E+01	15.87	2.00E+01	9.73E+00
	43	1461.36	1455 -	1466	3.49E+02	41.04	3.56E+01	1.39E+01
	44	1508.63	1504 -	1511	9.09E+00	7.75	3.82E+00	4.00E+00
	45	1588.60	1584 -	1592	1.21E+01	11.69	1.38E+01	7.73E+00
	46	1729.93	1724 -	1732	1.89E+01	13.89	1.81E+01	8.90E+00
	47	1765.33	1760 -	1770	4.69E+01	15.17	6.12E+00	5.36E+00
	48	1830.51	1826 -	1833	9.00E+00	6.00	0.00E+00	0.00E+00
	49	2103.22	2099 -	2105	1.30E+01	7.21	0.00E+00	0.00E+00
	50	2118.32	2114 -	2121	7.90E+00	7.48	4.20E+00	4.06E+00
	51	2193.86	2188 -	2196	6.67E+00	7.50	4.67E+00	4.47E+00
	52	2227.13	2224 -	2229	7.00E+00	5.29	0.00E+00	0.00E+00
	53	2324.79	2320 -	2328	1.20E+01	6.93	0.00E+00	0.00E+00
	54	2614.53	2608 -	2618	5.82E+01	16.56	5.69E+00	5.30E+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 1601047-05

SED2

PEAK WITH NID REPORT

Peak Analysis Performed on : 2/4/2016 7:07:44AM

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	24.99	21 -	30	25.11	3.12E+02	125.57	1.92E+03	TH-231
	2	46.53	43 -	50	46.64	2.04E+02	72.64	7.50E+02	PB-210
	3	62.73	59 -	67	62.82	1.16E+02	87.64	1.12E+03	TH-230
									TH-234
	4	76.32	73 -	79	76.41	5.82E+02	87.44	9.61E+02	.....
	5	87.49	86 -	89	87.58	4.92E+01	52.08	6.34E+02	SN-126
									CD-109
									LU-176
									NP-237
									EU-155
	6	92.81	90 -	97	92.89	1.91E+02	83.50	9.92E+02	GA-67
	7	186.08	182 -	190	186.11	1.45E+02	69.86	6.63E+02	RA-226
	8	209.37	206 -	212	209.38	4.64E+01	51.93	4.47E+02	CM-243
									GA-67
M	9	238.88	235 -	246	238.87	3.66E+02	50.16	2.04E+02	PB-212
m	10	242.13	235 -	246	242.13	1.05E+02	36.99	1.93E+02	.....
	11	270.26	268 -	274	270.24	3.54E+01	43.38	3.25E+02	.....
	12	288.60	286 -	291	288.57	3.66E+01	33.50	1.91E+02	.....
	13	295.13	292 -	299	295.10	1.44E+02	51.46	3.55E+02	PB-214
	14	300.85	299 -	304	300.82	3.71E+01	35.43	2.16E+02	GA-67
									PB-212
									BI-210M
	15	338.43	333 -	341	338.38	7.53E+01	48.72	3.17E+02	AC-228
M	16	349.21	348 -	358	349.14	1.74E+01	16.60	6.09E+01	.....
m	17	352.15	348 -	358	352.09	3.41E+02	43.90	1.17E+02	PB-214
	18	463.15	461 -	466	463.03	2.30E+01	25.22	1.10E+02	SB-125
	19	477.70	473 -	482	477.58	9.39E+01	41.35	1.92E+02	BE-7
									PM-144
	20	511.04	507 -	515	510.90	1.25E+02	37.47	1.38E+02	.....
	21	572.20	569 -	575	572.02	2.05E+01	24.14	9.10E+01	.....
	22	583.44	579 -	587	583.26	1.25E+02	41.94	1.93E+02	TL-208
	23	609.61	605 -	613	609.41	2.88E+02	44.35	1.24E+02	BI-214
	24	617.10	614 -	620	616.91	1.81E+01	22.30	7.78E+01	PM-144
M	25	768.45	765 -	774	768.18	1.93E+01	20.88	7.20E+01	.....
m	26	772.08	765 -	774	771.82	1.54E+01	20.98	7.20E+01	.....
	27	838.20	833 -	844	837.90	3.70E+01	26.91	7.20E+01	.....
M	28	853.70	850 -	864	853.40	1.53E+01	17.06	4.60E+01	.....
m	29	860.90	850 -	864	860.60	2.46E+01	19.26	3.90E+01	TL-208
	30	911.51	907 -	916	911.18	9.69E+01	30.85	8.21E+01	AC-228
									LU-172
	31	934.91	931 -	937	934.57	2.16E+01	14.20	2.08E+01	.....

Analysis Report for 1601047-05

SED2

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	32	948.35	946 -	955	948.01	8.22E+00	9.59	2.40E+01	.....
m	33	953.16	946 -	955	952.81	1.54E+01	13.45	1.89E+01	.....
M	34	965.07	962 -	982	964.72	2.78E+01	16.63	5.92E+01	.....
m	35	969.77	962 -	982	969.42	4.15E+01	21.12	5.63E+01	AC-228
	36	1001.61	997 -	1003	1001.24	1.37E+01	17.41	4.47E+01	PA-234M
	37	1034.41	1031 -	1038	1034.04	1.72E+01	16.25	3.36E+01	.....
	38	1079.39	1076 -	1082	1079.00	1.59E+01	15.44	3.21E+01	.....
	39	1095.30	1091 -	1098	1094.91	1.80E+01	18.33	4.40E+01	.....
	40	1120.41	1115 -	1122	1120.00	3.27E+01	23.75	7.25E+01	SC-46 BI-214 TA-182
	41	1308.44	1305 -	1310	1307.97	9.56E+00	11.22	1.69E+01	.....
	42	1376.82	1371 -	1380	1376.32	2.80E+01	15.87	2.00E+01	.....
	43	1461.36	1455 -	1466	1460.84	3.49E+02	41.04	3.56E+01	K-40
	44	1508.63	1504 -	1511	1508.09	9.09E+00	7.75	3.82E+00	.....
	45	1588.60	1584 -	1592	1588.04	1.21E+01	11.69	1.38E+01	.....
	46	1729.93	1724 -	1732	1729.33	1.89E+01	13.89	1.81E+01	.....
	47	1765.33	1760 -	1770	1764.73	4.69E+01	15.17	6.12E+00	BI-214
	48	1830.51	1826 -	1833	1829.89	9.00E+00	6.00	0.00E+00	.....
	49	2103.22	2099 -	2105	2102.54	1.30E+01	7.21	0.00E+00	.....
	50	2118.32	2114 -	2121	2117.65	7.90E+00	7.48	4.20E+00	.....
	51	2193.86	2188 -	2196	2193.17	6.67E+00	7.50	4.67E+00	.....
	52	2227.13	2224 -	2229	2226.43	7.00E+00	5.29	0.00E+00	.....
	53	2324.79	2320 -	2328	2324.08	1.20E+01	6.93	0.00E+00	.....
	54	2614.53	2608 -	2618	2613.79	5.82E+01	16.56	5.69E+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 : 2/4/2016 7:07:44AM

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
1	24.99	3.12E+02	125.57	4.39E-04	1.68E-03
2	46.53	2.04E+02	72.64	1.34E-02	1.68E-03
3	62.73	1.16E+02	87.64	2.35E-02	2.00E-03
4	76.32	5.82E+02	87.44	2.74E-02	3.34E-03
5	87.49	4.92E+01	52.08	2.84E-02	4.45E-03

Analysis Report for 1601047-05

SED2

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	6	92.81	1.91E+02	83.50	2.85E-02	4.29E-03
	7	186.08	1.45E+02	69.86	2.11E-02	1.65E-03
	8	209.37	4.64E+01	51.93	1.95E-02	1.63E-03
M	9	238.88	3.66E+02	50.16	1.79E-02	1.60E-03
m	10	242.13	1.05E+02	36.99	1.77E-02	1.60E-03
	11	270.26	3.54E+01	43.38	1.64E-02	1.57E-03
	12	288.60	3.66E+01	33.50	1.57E-02	1.51E-03
	13	295.13	1.44E+02	51.46	1.55E-02	1.48E-03
	14	300.85	3.71E+01	35.43	1.53E-02	1.45E-03
	15	338.43	7.53E+01	48.72	1.41E-02	1.27E-03
M	16	349.21	1.74E+01	16.60	1.38E-02	1.22E-03
m	17	352.15	3.41E+02	43.90	1.37E-02	1.21E-03
	18	463.15	2.30E+01	25.22	1.13E-02	9.47E-04
	19	477.70	9.39E+01	41.35	1.11E-02	9.32E-04
	20	511.04	1.25E+02	37.47	1.06E-02	8.98E-04
	21	572.20	2.05E+01	24.14	9.72E-03	8.36E-04
	22	583.44	1.25E+02	41.94	9.58E-03	8.25E-04
	23	609.61	2.88E+02	44.35	9.27E-03	7.98E-04
	24	617.10	1.81E+01	22.30	9.18E-03	7.90E-04
M	25	768.45	1.93E+01	20.88	7.74E-03	6.77E-04
m	26	772.08	1.54E+01	20.98	7.71E-03	6.74E-04
	27	838.20	3.70E+01	26.91	7.22E-03	6.32E-04
M	28	853.70	1.53E+01	17.06	7.11E-03	6.22E-04
m	29	860.90	2.46E+01	19.26	7.06E-03	6.17E-04
	30	911.51	9.69E+01	30.85	6.74E-03	5.86E-04
	31	934.91	2.16E+01	14.20	6.61E-03	5.75E-04
M	32	948.35	8.22E+00	9.59	6.53E-03	5.68E-04
m	33	953.16	1.54E+01	13.45	6.50E-03	5.65E-04
M	34	965.07	2.78E+01	16.63	6.44E-03	5.59E-04
m	35	969.77	4.15E+01	21.12	6.41E-03	5.57E-04
	36	1001.61	1.37E+01	17.41	6.24E-03	5.40E-04
	37	1034.41	1.72E+01	16.25	6.08E-03	5.24E-04
	38	1079.39	1.59E+01	15.44	5.88E-03	5.01E-04
	39	1095.30	1.80E+01	18.33	5.81E-03	4.93E-04
	40	1120.41	3.27E+01	23.75	5.70E-03	4.80E-04
	41	1308.44	9.56E+00	11.22	5.06E-03	5.15E-04
	42	1376.82	2.80E+01	15.87	4.87E-03	5.08E-04
	43	1461.36	3.49E+02	41.04	4.67E-03	4.73E-04
	44	1508.63	9.09E+00	7.75	4.57E-03	4.53E-04
	45	1588.60	1.21E+01	11.69	4.43E-03	4.20E-04
	46	1729.93	1.89E+01	13.89	4.23E-03	3.62E-04
	47	1765.33	4.69E+01	15.17	4.18E-03	3.47E-04
	48	1830.51	9.00E+00	6.00	4.12E-03	3.20E-04
	49	2103.22	1.30E+01	7.21	3.95E-03	3.18E-04
	50	2118.32	7.90E+00	7.48	3.95E-03	3.18E-04
	51	2193.86	6.67E+00	7.50	3.93E-03	3.18E-04
	52	2227.13	7.00E+00	5.29	3.93E-03	3.18E-04
	53	2324.79	1.20E+01	6.93	3.93E-03	3.18E-04
	54	2614.53	5.82E+01	16.56	4.05E-03	3.18E-04

Analysis Report for 1601047-05

SED2

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 : 2/4/2016 7:07:44AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032283.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	24.99	3.12E+02	125.57			3.12E+02	1.26E+02
	2	46.53	2.04E+02	72.64	4.94E+01	6.51E+00	1.55E+02	7.29E+01
	3	62.73	1.16E+02	87.64	2.61E+01	7.60E+00	8.96E+01	8.80E+01
	4	76.32	5.82E+02	87.44			5.82E+02	8.74E+01
	5	87.49	4.92E+01	52.08	5.10E+00	3.87E+00	4.41E+01	5.22E+01
	6	92.81	1.91E+02	83.50	5.03E+01	2.38E+01	1.40E+02	8.68E+01
	7	186.08	1.45E+02	69.86	4.27E+01	8.05E+00	1.02E+02	7.03E+01
	8	209.37	4.64E+01	51.93			4.64E+01	5.19E+01
M	9	238.88	3.66E+02	50.16	2.30E+01	1.17E+01	3.44E+02	5.15E+01
m	10	242.13	1.05E+02	36.99	4.35E+00	3.40E+00	1.01E+02	3.71E+01
	11	270.26	3.54E+01	43.38			3.54E+01	4.34E+01
	12	288.60	3.66E+01	33.50			3.66E+01	3.35E+01
	13	295.13	1.44E+02	51.46	1.44E+01	5.96E+00	1.30E+02	5.18E+01
	14	300.85	3.71E+01	35.43			3.71E+01	3.54E+01
	15	338.43	7.53E+01	48.72	8.68E-01	5.72E+00	7.45E+01	4.91E+01
M	16	349.21	1.74E+01	16.60			1.74E+01	1.66E+01
m	17	352.15	3.41E+02	43.90	1.55E+01	5.56E+00	3.25E+02	4.43E+01
	18	463.15	2.30E+01	25.22			2.30E+01	2.52E+01
	19	477.70	9.39E+01	41.35			9.39E+01	4.14E+01
	20	511.04	1.25E+02	37.47	8.40E+01	5.63E+00	4.12E+01	3.79E+01
	21	572.20	2.05E+01	24.14			2.05E+01	2.41E+01
	22	583.44	1.25E+02	41.94	1.17E+01	3.57E+00	1.14E+02	4.21E+01
	23	609.61	2.88E+02	44.35	1.16E+01	3.63E+00	2.76E+02	4.45E+01
	24	617.10	1.81E+01	22.30			1.81E+01	2.23E+01
M	25	768.45	1.93E+01	20.88			1.93E+01	2.09E+01
m	26	772.08	1.54E+01	20.98			1.54E+01	2.10E+01
	27	838.20	3.70E+01	26.91			3.70E+01	2.69E+01
M	28	853.70	1.53E+01	17.06			1.53E+01	1.71E+01
m	29	860.90	2.46E+01	19.26			2.46E+01	1.93E+01
	30	911.51	9.69E+01	30.85	4.15E+00	2.76E+00	9.28E+01	3.10E+01
	31	934.91	2.16E+01	14.20			2.16E+01	1.42E+01
M	32	948.35	8.22E+00	9.59			8.22E+00	9.59E+00
m	33	953.16	1.54E+01	13.45			1.54E+01	1.35E+01
M	34	965.07	2.78E+01	16.63			2.78E+01	1.66E+01
m	35	969.77	4.15E+01	21.12			4.15E+01	2.11E+01

Analysis Report for 1601047-05

SED2

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
36	1001.61	1.37E+01	17.41	4.03E-01	2.99E+00	1.33E+01	1.77E+01
37	1034.41	1.72E+01	16.25			1.72E+01	1.62E+01
38	1079.39	1.59E+01	15.44			1.59E+01	1.54E+01
39	1095.30	1.80E+01	18.33			1.80E+01	1.83E+01
40	1120.41	3.27E+01	23.75	3.14E+00	2.82E+00	2.96E+01	2.39E+01
41	1308.44	9.56E+00	11.22			9.56E+00	1.12E+01
42	1376.82	2.80E+01	15.87			2.80E+01	1.59E+01
43	1461.36	3.49E+02	41.04	1.17E+01	2.60E+00	3.38E+02	4.11E+01
44	1508.63	9.09E+00	7.75			9.09E+00	7.75E+00
45	1588.60	1.21E+01	11.69			1.21E+01	1.17E+01
46	1729.93	1.89E+01	13.89			1.89E+01	1.39E+01
47	1765.33	4.69E+01	15.17	3.19E+00	2.23E+00	4.37E+01	1.53E+01
48	1830.51	9.00E+00	6.00			9.00E+00	6.00E+00
49	2103.22	1.30E+01	7.21			1.30E+01	7.21E+00
50	2118.32	7.90E+00	7.48			7.90E+00	7.48E+00
51	2193.86	6.67E+00	7.50			6.67E+00	7.50E+00
52	2227.13	7.00E+00	5.29			7.00E+00	5.29E+00
53	2324.79	1.20E+01	6.93			1.20E+01	6.93E+00
54	2614.53	5.82E+01	16.56	6.35E+00	1.69E+00	5.18E+01	1.66E+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 : 2/4/2016 7:07:44AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032283.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	24.99	3.12E+02	125.57			3.12E+02	1.26E+02
	2	46.53	2.04E+02	72.64	4.94E+01	6.51E+00	1.55E+02	7.29E+01
	3	62.73	1.16E+02	87.64	2.61E+01	7.60E+00	8.96E+01	8.80E+01
	4	76.32	5.82E+02	87.44			5.82E+02	8.74E+01
	5	87.49	4.92E+01	52.08	5.10E+00	3.87E+00	4.41E+01	5.22E+01
	6	92.81	1.91E+02	83.50	5.03E+01	2.38E+01	1.40E+02	8.68E+01
	7	186.08	1.45E+02	69.86	4.27E+01	8.05E+00	1.02E+02	7.03E+01
	8	209.37	4.64E+01	51.93			4.64E+01	5.19E+01
M	9	238.88	3.66E+02	50.16	2.30E+01	1.17E+01	3.44E+02	5.15E+01

Analysis Report for 1601047-05

SED2

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
m	10	242.13	1.05E+02	36.99	4.35E+00	3.40E+00	1.01E+02	3.71E+01
	11	270.26	3.54E+01	43.38			3.54E+01	4.34E+01
	12	288.60	3.66E+01	33.50			3.66E+01	3.35E+01
	13	295.13	1.44E+02	51.46	1.44E+01	5.96E+00	1.30E+02	5.18E+01
	14	300.85	3.71E+01	35.43			3.71E+01	3.54E+01
	15	338.43	7.53E+01	48.72	8.68E-01	5.72E+00	7.45E+01	4.91E+01
M	16	349.21	1.74E+01	16.60			1.74E+01	1.66E+01
m	17	352.15	3.41E+02	43.90	1.55E+01	5.56E+00	3.25E+02	4.43E+01
	18	463.15	2.30E+01	25.22			2.30E+01	2.52E+01
	19	477.70	9.39E+01	41.35			9.39E+01	4.14E+01
	20	511.04	1.25E+02	37.47	8.40E+01	5.63E+00	4.12E+01	3.79E+01
	21	572.20	2.05E+01	24.14			2.05E+01	2.41E+01
	22	583.44	1.25E+02	41.94	1.17E+01	3.57E+00	1.14E+02	4.21E+01
	23	609.61	2.88E+02	44.35	1.16E+01	3.63E+00	2.76E+02	4.45E+01
	24	617.10	1.81E+01	22.30			1.81E+01	2.23E+01
M	25	768.45	1.93E+01	20.88			1.93E+01	2.09E+01
m	26	772.08	1.54E+01	20.98			1.54E+01	2.10E+01
	27	838.20	3.70E+01	26.91			3.70E+01	2.69E+01
M	28	853.70	1.53E+01	17.06			1.53E+01	1.71E+01
m	29	860.90	2.46E+01	19.26			2.46E+01	1.93E+01
	30	911.51	9.69E+01	30.85	4.15E+00	2.76E+00	9.28E+01	3.10E+01
	31	934.91	2.16E+01	14.20			2.16E+01	1.42E+01
M	32	948.35	8.22E+00	9.59			8.22E+00	9.59E+00
m	33	953.16	1.54E+01	13.45			1.54E+01	1.35E+01
M	34	965.07	2.78E+01	16.63			2.78E+01	1.66E+01
m	35	969.77	4.15E+01	21.12			4.15E+01	2.11E+01
	36	1001.61	1.37E+01	17.41	4.03E-01	2.99E+00	1.33E+01	1.77E+01
	37	1034.41	1.72E+01	16.25			1.72E+01	1.62E+01
	38	1079.39	1.59E+01	15.44			1.59E+01	1.54E+01
	39	1095.30	1.80E+01	18.33			1.80E+01	1.83E+01
	40	1120.41	3.27E+01	23.75	3.14E+00	2.82E+00	2.96E+01	2.39E+01
	41	1308.44	9.56E+00	11.22			9.56E+00	1.12E+01
	42	1376.82	2.80E+01	15.87			2.80E+01	1.59E+01
	43	1461.36	3.49E+02	41.04	1.17E+01	2.60E+00	3.38E+02	4.11E+01
	44	1508.63	9.09E+00	7.75			9.09E+00	7.75E+00
	45	1588.60	1.21E+01	11.69			1.21E+01	1.17E+01
	46	1729.93	1.89E+01	13.89			1.89E+01	1.39E+01
	47	1765.33	4.69E+01	15.17	3.19E+00	2.23E+00	4.37E+01	1.53E+01
	48	1830.51	9.00E+00	6.00			9.00E+00	6.00E+00
	49	2103.22	1.30E+01	7.21			1.30E+01	7.21E+00
	50	2118.32	7.90E+00	7.48			7.90E+00	7.48E+00
	51	2193.86	6.67E+00	7.50			6.67E+00	7.50E+00
	52	2227.13	7.00E+00	5.29			7.00E+00	5.29E+00
	53	2324.79	1.20E+01	6.93			1.20E+01	6.93E+00
	54	2614.53	5.82E+01	16.56	6.35E+00	1.69E+00	5.18E+01	1.66E+01

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

Analysis Report for 1601047-05

SED2

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.997	477.59	*	10.42	1.99E+00	8.90E-01
K-40	0.953	1460.81	*	10.67	1.17E+01	1.86E+00
GA-67	0.678	93.31	*	35.70	7.34E+01	2.75E+02
		208.95	*	2.24	5.64E+02	2.08E+03
		300.22	*	16.00	8.06E+01	3.07E+02
CD-109	0.955	88.03	*	3.72	7.48E-01	8.94E-01
SN-126	0.999	87.57	*	37.00	7.22E-02	8.63E-02
TL-208	0.990	583.14	*	30.22	6.76E-01	2.57E-01
		860.37	*	4.48	1.34E+00	1.05E+00
		2614.66	*	35.85	6.14E-01	2.03E-01
PB-210	1.000	46.50	*	4.25	4.69E+00	2.29E+00
PB-212	0.985	238.63	*	44.60	7.43E-01	1.30E-01
		300.09	*	3.41	1.23E+00	1.18E+00
BI-214	0.898	609.31	*	46.30	1.11E+00	2.03E-01
		1120.29	*	15.10	5.92E-01	4.81E-01
		1764.49	*	15.80	1.14E+00	4.11E-01
		2204.22		4.98		
PB-214	0.994	295.21	*	19.19	7.54E-01	3.09E-01
		351.92	*	37.19	1.10E+00	1.78E-01
RA-226	0.997	186.21	*	3.28	2.54E+00	4.96E+00
AC-228	0.964	338.32	*	11.40	7.98E-01	5.31E-01
		911.07	*	27.70	8.55E-01	2.95E-01
		969.11	*	16.60	6.71E-01	3.47E-01
PA-234M	0.948	1001.03	*	0.92	3.98E+00	5.31E+00
TH-234	0.950	63.29	*	3.80	1.73E+00	1.70E+00
NP-237	0.855	86.50	*	12.60	2.12E-01	2.53E-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

Analysis Report for 1601047-05

SED2

UNIDENTIFIED PEAKS

Peak Locate Performed on : 2/4/2016 7:07:44AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	24.99	8.67723E-02	20.10	Tol.	TH-231
	4	76.32	1.61799E-01	7.51		
m	10	242.13	2.80300E-02	18.40		
	11	270.26	9.84217E-03	61.22		
	12	288.60	1.01768E-02	45.71		
M	16	349.21	4.83555E-03	47.67		
	18	463.15	6.39601E-03	54.76	Tol.	SB-125
	20	511.04	1.14386E-02	46.00	Sum	
	21	572.20	5.69444E-03	58.87		
	24	617.10	5.02437E-03	61.66	Tol.	PM-144
M	25	768.45	5.35465E-03	54.16		
m	26	772.08	4.29131E-03	67.89	Sum	
	27	838.20	1.02778E-02	36.36		
M	28	853.70	4.25197E-03	55.72		
	31	934.91	5.99826E-03	32.87	Sum	
M	32	948.35	2.28292E-03	58.35	Sum	
m	33	953.16	4.27090E-03	43.75	Sum	
M	34	965.07	7.72137E-03	29.91		
	37	1034.41	4.77124E-03	47.30		
	38	1079.39	4.42708E-03	48.42		
	39	1095.30	5.00000E-03	50.92	Sum	
	41	1308.44	2.65432E-03	58.74	Sum	
	42	1376.82	7.77778E-03	28.35		
	44	1508.63	2.52525E-03	42.60	Sum	
	45	1588.60	3.35526E-03	48.41		
	46	1729.93	5.25794E-03	36.70	Sum	
	48	1830.51	2.50000E-03	33.33	Sum	
	49	2103.22	3.61111E-03	27.74	S-Esc	
	50	2118.32	2.19444E-03	47.36	Sum	
	51	2193.86	1.85185E-03	56.25		
	52	2227.13	1.94444E-03	37.80		
	53	2324.79	3.33333E-03	28.87		

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

Analysis Report for 1601047-05

SED2

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.99	477.59	*	10.42	1.99E+00	8.90E-01
K-40	0.95	1460.81	*	10.67	1.17E+01	1.86E+00
GA-67	0.67	93.31	*	35.70	7.34E+01	2.75E+02
		208.95	*	2.24	5.64E+02	2.08E+03
		300.22	*	16.00	8.06E+01	3.07E+02
CD-109	0.95	88.03	*	3.72	7.48E-01	8.94E-01
SN-126	0.99	87.57	*	37.00	7.22E-02	8.63E-02
TL-208	0.99	583.14	*	30.22	6.76E-01	2.57E-01
		860.37	*	4.48	1.34E+00	1.05E+00
		2614.66	*	35.85	6.14E-01	2.03E-01
PB-210	1.00	46.50	*	4.25	4.69E+00	2.29E+00
PB-212	0.98	238.63	*	44.60	7.43E-01	1.30E-01
		300.09	*	3.41	1.23E+00	1.18E+00
BI-214	0.89	609.31	*	46.30	1.11E+00	2.03E-01
		1120.29	*	15.10	5.92E-01	4.81E-01
		1764.49	*	15.80	1.14E+00	4.11E-01
		2204.22		4.98		
PB-214	0.99	295.21	*	19.19	7.54E-01	3.09E-01
		351.92	*	37.19	1.10E+00	1.78E-01
RA-226	0.99	186.21	*	3.28	2.54E+00	4.96E+00
AC-228	0.96	338.32	*	11.40	7.98E-01	5.31E-01
		911.07	*	27.70	8.55E-01	2.95E-01
		969.11	*	16.60	6.71E-01	3.47E-01
PA-234M	0.94	1001.03	*	0.92	3.98E+00	5.31E+00
TH-234	0.95	63.29	*	3.80	1.73E+00	1.70E+00
NP-237	0.85	86.50	*	12.60	2.12E-01	2.53E-01

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

Analysis Report for 1601047-05

SED2

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	BE-7	0.997	1.99E+00	8.90E-01	
	K-40	0.953	1.17E+01	1.86E+00	
	GA-67	0.678	6.44E+01	2.30E+02	
?	CD-109	0.955	7.48E-01	8.94E-01	
?	SN-126	0.999	7.22E-02	8.63E-02	
	TL-208	0.990	6.54E-01	1.58E-01	
	PB-210	1.000	4.69E+00	2.29E+00	
	PB-212	0.985	7.37E-01	1.29E-01	
	BI-214	0.898	1.05E+00	1.70E-01	
	PB-214	0.994	1.01E+00	1.54E-01	
	RA-226	0.997	2.54E+00	4.96E+00	
	AC-228	0.964	7.81E-01	2.07E-01	
	PA-234M	0.948	3.98E+00	5.31E+00	
	TH-234	0.950	1.73E+00	1.70E+00	
?	NP-237	0.855	2.12E-01	2.53E-01	

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

Errors quoted at 2.000sigma

Analysis Report for 1601047-05

SED2

UNIDENTIFIED PEAKS

Peak Locate Performed on : 2/4/2016 7:07:44AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	24.99	8.67723E-02	20.10	Tol.	TH-231
	4	76.32	1.61799E-01	7.51		
m	10	242.13	2.80300E-02	18.40		
	11	270.26	9.84217E-03	61.22		
	12	288.60	1.01768E-02	45.71		
M	16	349.21	4.83555E-03	47.67		
	18	463.15	6.39601E-03	54.76	Tol.	SB-125
	20	511.04	1.14386E-02	46.00	Sum	
	21	572.20	5.69444E-03	58.87		
	24	617.10	5.02437E-03	61.66	Tol.	PM-144
M	25	768.45	5.35465E-03	54.16		
m	26	772.08	4.29131E-03	67.89	Sum	
	27	838.20	1.02778E-02	36.36		
M	28	853.70	4.25197E-03	55.72		
	31	934.91	5.99826E-03	32.87	Sum	
M	32	948.35	2.28292E-03	58.35	Sum	
m	33	953.16	4.27090E-03	43.75	Sum	
M	34	965.07	7.72137E-03	29.91		
	37	1034.41	4.77124E-03	47.30		
	38	1079.39	4.42708E-03	48.42		
	39	1095.30	5.00000E-03	50.92	Sum	
	41	1308.44	2.65432E-03	58.74	Sum	
	42	1376.82	7.77778E-03	28.35		
	44	1508.63	2.52525E-03	42.60	Sum	
	45	1588.60	3.35526E-03	48.41		
	46	1729.93	5.25794E-03	36.70	Sum	
	48	1830.51	2.50000E-03	33.33	Sum	
	49	2103.22	3.61111E-03	27.74	S-Esc	
	50	2118.32	2.19444E-03	47.36	Sum	
	51	2193.86	1.85185E-03	56.25		
	52	2227.13	1.94444E-03	37.80		
	53	2324.79	3.33333E-03	28.87		

Analysis Report for 1601047-05

SED2

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	*	10.42	1.99E+00	1.33E+00	1.33E+00
+	NA-22	1274.54		99.94	-1.36E-02	7.65E-02	7.65E-02
+	NA-24	1368.53		99.99	-2.50E+11	1.09E+11	5.15E+11
		2754.09		99.86	0.00E+00		1.09E+11
+	AL-26	1808.65		99.76	3.34E-02	7.57E-02	7.57E-02
+	K-40	1460.81	*	10.67	1.17E+01	1.14E+00	1.14E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	8.18E-04	5.05E-02	5.05E-02
		78.34		96.00	1.80E-01		7.06E-02
+	SC-46	889.25		99.98	-1.12E-03	9.46E-02	9.46E-02
		1120.51		99.99	1.10E-01		1.54E-01
+	V-48	983.52		99.98	6.74E-04	2.34E-01	2.35E-01
		1312.10		97.50	-5.87E-02		2.34E-01
+	CR-51	320.08		9.83	4.33E-01	1.08E+00	1.08E+00
+	MN-54	834.83		99.97	1.30E-02	8.48E-02	8.48E-02
+	CO-56	846.75		99.96	2.38E-02	8.20E-02	8.20E-02
		1037.75		14.03	-5.70E-03		7.34E-01
		1238.25		67.00	1.14E-01		2.36E-01
		1771.40		15.51	8.42E-03		5.87E-01
		2598.48		16.90	6.39E-02		2.97E-01
+	CO-57	122.06		85.51	-3.42E-02	5.69E-02	5.69E-02
		136.48		10.60	1.80E-01		4.98E-01
+	CO-58	810.76		99.40	2.09E-03	9.78E-02	9.78E-02
+	FE-59	1099.22		56.50	5.14E-03	2.26E-01	2.26E-01
		1291.56		43.20	-1.96E-01		2.60E-01
+	CO-60	1173.22		100.00	-3.87E-03	8.78E-02	8.78E-02
		1332.49		100.00	2.31E-02		9.22E-02
+	ZN-65	1115.52		50.75	4.61E-02	1.93E-01	1.93E-01
+	GA-67	93.31	*	35.70	7.34E+01	7.32E+01	7.32E+01
		208.95	*	2.24	5.64E+02		1.04E+03
		300.22	*	16.00	8.06E+01		1.25E+02
+	SE-75	121.11		16.70	1.06E-01	9.82E-02	3.24E-01

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00		59.20	3.39E-02	9.82E-02	9.82E-02
		264.65		59.80	1.24E-02		1.08E-01
		279.53		25.20	-1.38E-02		2.54E-01
		400.65		11.40	-6.58E-02		5.15E-01
+	RB-82	776.52		13.00	0.00E+00	1.18E+00	1.18E+00
+	RB-83	520.41		46.00	-7.23E-02	1.28E-01	1.28E-01
		529.64		30.30	-1.72E-02		2.10E-01
		552.65		16.40	4.38E-02		4.15E-01
+	KR-85	513.99		0.43	-4.66E+00	1.61E+01	1.61E+01
+	SR-85	513.99		99.27	-2.70E-02	9.34E-02	9.34E-02
+	Y-88	898.02		93.40	-1.06E-03	7.08E-02	1.01E-01
		1836.01		99.38	-8.93E-03		7.08E-02
+	NB-93M	16.57		9.43	-1.08E+03	7.49E+03	7.49E+03
+	NB-94	702.63		100.00	-2.52E-02	6.62E-02	7.45E-02
		871.10		100.00	-1.61E-02		6.62E-02
+	NB-95	765.79		99.81	1.89E-02	1.43E-01	1.43E-01
+	NB-95M	235.69		25.00	-2.84E+02	5.41E+01	5.41E+01
+	ZR-95	724.18		43.70	-8.48E-02	1.67E-01	2.46E-01
		756.72		55.30	-4.08E-02		1.67E-01
+	MO-99	181.06		6.20	-3.13E+01	5.36E+02	7.65E+02
		739.58		12.80	-2.71E+00		5.36E+02
		778.00		4.50	3.76E+02		1.47E+03
+	RU-103	497.08		89.00	-4.74E-02	7.76E-02	7.76E-02
+	RU-106	621.84		9.80	-2.34E-03	7.41E-01	7.41E-01
+	AG-108M	433.93		89.90	8.11E-03	6.86E-02	6.86E-02
		614.37		90.40	-8.00E-01		7.83E-02
		722.95		90.50	-1.20E-01		7.87E-02
+	CD-109	88.03	*	3.72	7.48E-01	1.45E+00	1.45E+00
+	AG-110M	657.75		93.14	-7.34E-02	7.88E-02	7.88E-02
		677.61		10.53	-6.58E-02		6.55E-01
		706.67		16.46	-2.04E-01		4.58E-01
		763.93		21.98	4.56E-02		3.45E-01
		884.67		71.63	-1.99E-03		1.12E-01
		1384.27		23.94	-3.44E-02		2.78E-01
+	CD-113M	263.70		0.02	1.70E+02	2.57E+02	2.57E+02
+	SN-113	255.12		1.93	-2.01E+00	9.19E-02	3.19E+00
		391.69		64.90	-5.53E-02		9.19E-02
+	TE123M	159.00		84.10	-2.13E-02	6.83E-02	6.83E-02
+	SB-124	602.71		97.87	-1.66E-02	1.08E-01	1.08E-01
		645.85		7.26	-8.40E-01		1.26E+00
		722.78		11.10	-1.34E+00		8.74E-01
		1691.02		49.00	-2.24E-02		1.68E-01
+	I-125	35.49		6.49	-5.33E-01	4.23E+00	4.23E+00
+	SB-125	176.33		6.89	-3.84E-01	1.95E-01	7.80E-01
		427.89		29.33	-4.20E-02		1.95E-01
		463.38		10.35	1.41E-01		6.14E-01
		600.56		17.80	2.28E-01		4.55E-01
		635.90		11.32	-2.86E-01		5.86E-01

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	SB-126	414.70		83.30	2.29E-02	3.13E-01	3.13E-01
		666.33		99.60	-2.19E-01		3.35E-01
		695.00		99.60	1.91E-01		3.77E-01
		720.50		53.80	3.08E-01		6.43E-01
+	SN-126	87.57	*	37.00	7.22E-02	1.40E-01	1.40E-01
+	SB-127	473.00		25.00	1.23E+00	2.74E+01	2.74E+01
		685.20		35.70	7.14E+00		2.77E+01
		783.80		14.70	1.22E+01		6.20E+01
+	I-129	29.78		57.00	-3.57E-01	1.08E+00	1.08E+00
		33.60		13.20	6.25E-02		1.97E+00
		39.58		7.52	-4.15E-01		1.56E+00
+	I-131	284.30		6.05	2.38E+00	7.70E-01	9.15E+00
		364.48		81.20	1.49E-01		7.70E-01
		636.97		7.26	-6.22E+00		8.89E+00
		722.89		1.80	-6.19E+01		4.04E+01
+	TE-132	49.72		13.10	-3.33E+01	1.90E+01	1.54E+02
		228.16		88.00	1.25E+00		1.90E+01
+	BA-133	81.00		33.00	4.51E-02	8.94E-02	1.32E-01
		302.84		17.80	-2.73E-02		3.22E-01
		356.01		60.00	-2.21E-01		8.94E-02
+	I-133	529.87		86.30	-5.48E+07	1.29E+08	1.29E+08
+	XE-133	81.00		38.00	1.38E+00	4.02E+00	4.02E+00
+	CS-134	563.23		8.38	1.16E-01	8.70E-02	7.41E-01
		569.32		15.43	1.83E-03		3.77E-01
		604.70		97.60	-1.47E-02		8.70E-02
		795.84		85.40	-8.53E-03		9.50E-02
		801.93		8.73	-4.55E-01		8.38E-01
+	CS-135	268.24		16.00	-1.11E-02	3.54E-01	3.54E-01
+	@ I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41		28.60	1.00E+26		1.00E+26
	@	1678.03		9.54	1.00E+26		1.00E+26
+	CS-136	153.22		7.46	8.64E-01	2.43E-01	2.90E+00
		163.89		4.61	1.91E-01		4.64E+00
		176.55		13.56	9.71E-01		1.67E+00
		273.65		12.66	2.36E-01		1.92E+00
		340.57		48.50	7.33E-02		5.51E-01
		818.50		99.70	-5.47E-02		2.43E-01
		1048.07		79.60	2.48E-03		4.19E-01
		1235.34		19.70	3.78E-01		2.48E+00
+	CS-137	661.65		85.12	-1.61E-02	8.95E-02	8.95E-02
+	LA-138	788.74		34.00	3.57E-02	9.20E-02	2.24E-01
		1435.80		66.00	-1.75E-02		9.20E-02
+	CE-139	165.85		80.35	-6.14E-03	7.31E-02	7.31E-02
+	BA-140	162.64		6.70	2.24E-01	1.05E+00	3.32E+00
		304.84		4.50	1.33E+00		5.21E+00
		423.70		3.20	4.21E+00		8.11E+00
		437.55		2.00	2.74E+00		1.34E+01
		537.32		25.00	4.59E-01		1.05E+00
+	LA-140	328.77		20.50	4.99E-01	3.19E-01	1.34E+00

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LA-140	487.03	45.50	4.49E-02	3.19E-01	5.51E-01
		815.85	23.50	6.00E-01		1.24E+00
		1596.49	95.49	1.01E-01		3.19E-01
+	CE-141	145.44	48.40	-6.40E-02	1.90E-01	1.90E-01
+	CE-143	57.36	11.80	-1.88E+05	1.45E+05	3.32E+05
		293.26	42.00	2.40E+04		1.45E+05
		664.55	5.20	1.01E+06		1.31E+06
+	CE-144	133.54	10.80	-2.40E-01	4.82E-01	4.82E-01
+	PM-144	476.78	42.00	3.26E-01	7.58E-02	2.23E-01
		618.01	98.60	2.74E-02		7.58E-02
		696.49	99.49	4.37E-02		8.82E-02
+	PM-145	36.85	21.70	3.49E-01	4.07E-01	7.92E-01
		37.36	39.70	1.79E-01		4.07E-01
		42.30	15.10	-1.16E-01		5.94E-01
		72.40	2.31	3.22E-01		2.04E+00
+	PM-146	453.90	39.94	8.87E-05	1.51E-01	1.51E-01
		735.90	14.01	-1.06E-01		5.31E-01
		747.13	13.10	4.44E-02		6.02E-01
+	ND-147	91.11	28.90	-5.76E-01	1.22E+00	1.22E+00
		531.02	13.10	-6.93E-01		1.95E+00
+	PM-149	285.90	3.10	1.16E+03	8.54E+03	8.54E+03
+	EU-152	121.78	20.50	-1.33E-01	2.22E-01	2.22E-01
		244.69	5.40	-2.11E+00		1.02E+00
		344.27	19.13	3.11E-02		2.66E-01
		778.89	9.20	-4.50E-02		7.52E-01
		964.01	10.40	-8.80E-01		9.44E-01
		1085.78	7.22	1.39E-01		1.17E+00
		1112.02	9.60	2.32E-01		8.85E-01
		1407.95	14.94	-9.58E-02		5.28E-01
+	GD-153	97.43	31.30	4.48E-02	1.59E-01	1.59E-01
		103.18	22.20	-1.46E-01		2.11E-01
+	EU-154	123.07	40.50	7.01E-02	1.16E-01	1.16E-01
		723.30	19.70	-5.57E-01		3.63E-01
		873.19	11.50	-4.51E-02		6.35E-01
		996.32	10.30	-2.68E-02		7.21E-01
		1004.76	17.90	-1.73E-01		4.64E-01
		1274.45	35.50	-3.79E-02		2.12E-01
+	EU-155	86.50	30.90	-8.30E-02	2.00E-01	2.00E-01
		105.30	20.70	1.95E-01		2.25E-01
+	EU-156	811.77	10.40	-4.53E-01	2.34E+00	2.34E+00
		1153.47	7.20	1.09E+00		4.44E+00
		1230.71	8.90	-1.17E-02		3.63E+00
+	HO-166M	184.41	72.60	3.70E-02	9.17E-02	9.17E-02
		280.45	29.60	-1.01E-02		1.85E-01
		410.94	11.10	6.42E-02		5.24E-01
		711.69	54.10	2.74E-02		1.34E-01
+	TM-171	66.72	0.14	-7.27E+00	3.43E+01	3.43E+01
+	HF-172	81.75	4.52	-7.99E-01	4.11E-01	9.69E-01
		125.81	11.30	-3.83E-01		4.11E-01

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	LU-172	181.53		20.60	-6.64E-01	2.33E+00	4.15E+00
		810.06		16.63	1.56E-01		7.30E+00
		912.12		15.25	2.70E+01		1.50E+01
		1093.66		62.50	7.38E-02		2.33E+00
+	LU-173	100.72		5.24	3.13E-01	3.13E-01	8.69E-01
		272.11		21.20	-2.87E-02		3.13E-01
+	HF-175	343.40		84.00	3.57E-02	8.04E-02	8.04E-02
+	LU-176	88.34		13.30	4.45E-01	5.60E-02	4.69E-01
		201.83		86.00	-3.61E-02		6.42E-02
		306.78		94.00	5.46E-03		5.60E-02
+	TA-182	67.75		41.20	2.21E-03	1.36E-01	1.36E-01
		1121.30		34.90	-1.08E-01		4.13E-01
		1189.05		16.23	-1.14E-01		5.63E-01
		1221.41		26.98	4.06E-02		4.32E-01
		1231.02		11.44	-1.09E-01		1.03E+00
+	IR-192	308.46		29.68	-4.57E-02	1.50E-01	2.29E-01
		468.07		48.10	1.84E-02		1.50E-01
+	HG-203	279.19		77.30	1.66E-02	1.08E-01	1.08E-01
+	BI-207	569.67		97.72	2.83E-04	5.82E-02	5.82E-02
		1063.62		74.90	-3.14E-02		9.50E-02
+	TL-208	583.14	*	30.22	6.76E-01	1.95E-01	3.71E-01
		860.37	*	4.48	1.34E+00		2.60E+00
		2614.66	*	35.85	6.14E-01		1.95E-01
+	BI-210M	262.00		45.00	-3.34E-03	1.29E-01	1.29E-01
		300.00		23.00	5.26E-02		2.68E-01
+	PB-210	46.50	*	4.25	4.69E+00	3.50E+00	3.50E+00
+	PB-211	404.84		2.90	4.15E-02	1.88E+00	1.88E+00
		831.96		2.90	-2.73E-02		2.41E+00
+	BI-212	727.17		11.80	2.95E-01	6.99E-01	6.99E-01
		1620.62		2.75	4.77E-02		2.69E+00
+	PB-212	238.63	*	44.60	7.43E-01	2.38E-01	2.38E-01
		300.09	*	3.41	1.23E+00		1.90E+00
+	BI-214	609.31	*	46.30	1.11E+00	2.06E-01	2.06E-01
		1120.29	*	15.10	5.92E-01		7.55E-01
		1764.49	*	15.80	1.14E+00		4.03E-01
		2204.22		4.98	6.72E-01		1.71E+00
+	PB-214	295.21	*	19.19	7.54E-01	2.39E-01	4.59E-01
		351.92	*	37.19	1.10E+00		2.39E-01
+	RN-219	401.80		6.50	-6.27E-01	7.74E-01	7.74E-01
+	RA-223	323.87		3.88	-8.60E-01	1.38E+00	1.38E+00
+	RA-224	240.98		3.95	6.70E+00	2.72E+00	2.72E+00
+	RA-225	40.00		31.00	-3.42E-01	1.29E+00	1.29E+00
+	RA-226	186.21	*	3.28	2.54E+00	2.83E+00	2.83E+00
+	TH-227	50.10		8.40	-1.65E-01	6.64E-01	7.64E-01
		236.00		11.50	-3.49E+00		6.64E-01
		256.20		6.30	-1.99E-01		8.78E-01
+	AC-228	338.32	*	11.40	7.98E-01	3.93E-01	8.39E-01
		911.07	*	27.70	8.55E-01		3.93E-01

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AC-228	969.11	*	16.60	6.71E-01	3.93E-01	1.26E+00
+	TH-230	48.44		16.90	-9.52E-01	4.16E-01	4.16E-01
		62.85		4.60	1.59E+00		1.31E+00
		67.67		0.37	2.09E-01		1.29E+01
+	PA-231	283.67		1.60	8.80E-01	2.48E+00	3.38E+00
		302.67		2.30	-2.10E-01		2.48E+00
+	TH-231	25.64		14.70	6.76E+00	7.12E-01	2.01E+01
		84.21		6.40	3.03E-01		7.12E-01
+	PA-233	311.98		38.60	1.13E-01	2.76E-01	2.76E-01
+	PA-234	131.20		20.40	6.22E-02	2.40E-01	2.40E-01
		733.99		8.80	-1.51E-01		8.10E-01
		946.00		12.00	8.18E-02		5.70E-01
+	PA-234M	1001.03	*	0.92	3.98E+00	8.75E+00	8.75E+00
+	TH-234	63.29	*	3.80	1.73E+00	2.78E+00	2.78E+00
+	U-235	143.76		10.50	2.31E-01	5.07E-01	5.07E-01
		163.35		4.70	7.43E-02		1.10E+00
		205.31		4.70	-2.06E-02		1.22E+00
+	NP-237	86.50	*	12.60	2.12E-01	4.13E-01	4.13E-01
+	NP-239	106.10		22.70	-3.34E+02	5.48E+02	5.48E+02
		228.18		10.70	9.29E+01		1.41E+03
		277.60		14.10	-1.72E+02		1.12E+03
+	AM-241	59.54		35.90	-4.41E-02	1.46E-01	1.46E-01
+	AM-243	74.67		66.00	-1.24E-01	9.98E-02	9.98E-02
+	CM-243	209.75		3.29	8.69E-01	4.03E-01	1.82E+00
		228.14		10.60	3.36E-02		5.10E-01
		277.60		14.00	-6.22E-02		4.03E-01

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

NUCLIDE MDA REPORT

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

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BE-7	477.59	*	10.42	1.33E+00	1.33E+00	1.99E+00	6.35E-01
	NA-22	1274.54		99.94	7.65E-02	7.65E-02	-1.36E-02	3.36E-02
	NA-24	1368.53		99.99	5.15E+11	1.09E+11	-2.50E+11	2.11E+11
		2754.09		99.86	1.09E+11		0.00E+00	0.00E+00
	AL-26	1808.65		99.76	7.57E-02	7.57E-02	3.34E-02	3.22E-02
+	K-40	1460.81	*	10.67	1.14E+00	1.14E+00	1.17E+01	5.25E-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	5.05E-02	5.05E-02	8.18E-04	2.43E-02
		78.34		96.00	7.06E-02		1.80E-01	3.44E-02
	SC-46	889.25		99.98	9.46E-02	9.46E-02	-1.12E-03	4.31E-02
		1120.51		99.99	1.54E-01		1.10E-01	7.19E-02
	V-48	983.52		99.98	2.35E-01	2.34E-01	6.74E-04	1.06E-01
		1312.10		97.50	2.34E-01		-5.87E-02	1.02E-01
	CR-51	320.08		9.83	1.08E+00	1.08E+00	4.33E-01	5.10E-01
	MN-54	834.83		99.97	8.48E-02	8.48E-02	1.30E-02	3.90E-02
	CO-56	846.75		99.96	8.20E-02	8.20E-02	2.38E-02	3.69E-02
		1037.75		14.03	7.34E-01		-5.70E-03	3.32E-01
		1238.25		67.00	2.36E-01		1.14E-01	1.10E-01
		1771.40		15.51	5.87E-01		8.42E-03	2.48E-01
		2598.48		16.90	2.97E-01		6.39E-02	1.05E-01
	CO-57	122.06		85.51	5.69E-02	5.69E-02	-3.42E-02	2.73E-02
		136.48		10.60	4.98E-01		1.80E-01	2.40E-01
	CO-58	810.76		99.40	9.78E-02	9.78E-02	2.09E-03	4.48E-02
	FE-59	1099.22		56.50	2.26E-01	2.26E-01	5.14E-03	1.02E-01
		1291.56		43.20	2.60E-01		-1.96E-01	1.14E-01
	CO-60	1173.22		100.00	8.78E-02	8.78E-02	-3.87E-03	3.96E-02
		1332.49		100.00	9.22E-02		2.31E-02	4.14E-02
	ZN-65	1115.52		50.75	1.93E-01	1.93E-01	4.61E-02	8.81E-02
+	GA-67	93.31	*	35.70	7.32E+01	7.32E+01	7.34E+01	3.59E+01
		208.95	*	2.24	1.04E+03		5.64E+02	5.01E+02
		300.22	*	16.00	1.25E+02		8.06E+01	5.95E+01
	SE-75	121.11		16.70	3.24E-01	9.82E-02	1.06E-01	1.56E-01
		136.00		59.20	9.82E-02		3.39E-02	4.73E-02
		264.65		59.80	1.08E-01		1.24E-02	5.15E-02
		279.53		25.20	2.54E-01		-1.38E-02	1.20E-01
		400.65		11.40	5.15E-01		-6.58E-02	2.38E-01
	RB-82	776.52		13.00	1.18E+00	1.18E+00	0.00E+00	5.41E-01
	RB-83	520.41		46.00	1.28E-01	1.28E-01	-7.23E-02	5.78E-02
		529.64		30.30	2.10E-01		-1.72E-02	9.58E-02
		552.65		16.40	4.15E-01		4.38E-02	1.90E-01
	KR-85	513.99		0.43	1.61E+01	1.61E+01	-4.66E+00	7.54E+00
	SR-85	513.99		99.27	9.34E-02	9.34E-02	-2.70E-02	4.37E-02
	Y-88	898.02		93.40	1.01E-01	7.08E-02	-1.06E-03	4.62E-02
		1836.01		99.38	7.08E-02		-8.93E-03	2.86E-02
	NB-93M	16.57		9.43	7.49E+03	7.49E+03	-1.08E+03	3.65E+03
	NB-94	702.63		100.00	7.45E-02	6.62E-02	-2.52E-02	3.44E-02
		871.10		100.00	6.62E-02		-1.61E-02	2.98E-02
	NB-95	765.79		99.81	1.43E-01	1.43E-01	1.89E-02	6.65E-02
	NB-95M	235.69		25.00	5.41E+01	5.41E+01	-2.84E+02	2.61E+01
	ZR-95	724.18		43.70	2.46E-01	1.67E-01	-8.48E-02	1.14E-01
		756.72		55.30	1.67E-01		-4.08E-02	7.63E-02

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	MO-99	181.06		6.20	7.65E+02	5.36E+02	-3.13E+01	3.67E+02
		739.58		12.80	5.36E+02		-2.71E+00	2.48E+02
		778.00		4.50	1.47E+03		3.76E+02	6.72E+02
	RU-103	497.08		89.00	7.76E-02	7.76E-02	-4.74E-02	3.49E-02
	RU-106	621.84		9.80	7.41E-01	7.41E-01	-2.34E-03	3.43E-01
	AG-108M	433.93		89.90	6.86E-02	6.86E-02	8.11E-03	3.21E-02
		614.37		90.40	7.83E-02		-8.00E-01	3.63E-02
		722.95		90.50	7.87E-02		-1.20E-01	3.62E-02
+	CD-109	88.03	*	3.72	1.45E+00	1.45E+00	7.48E-01	7.04E-01
	AG-110M	657.75		93.14	7.88E-02	7.88E-02	-7.34E-02	3.63E-02
		677.61		10.53	6.55E-01		-6.58E-02	3.00E-01
		706.67		16.46	4.58E-01		-2.04E-01	2.10E-01
		763.93		21.98	3.45E-01		4.56E-02	1.58E-01
		884.67		71.63	1.12E-01		-1.99E-03	5.09E-02
		1384.27		23.94	2.78E-01		-3.44E-02	1.18E-01
	CD-113M	263.70		0.02	2.57E+02	2.57E+02	1.70E+02	1.22E+02
	SN-113	255.12		1.93	3.19E+00	9.19E-02	-2.01E+00	1.51E+00
		391.69		64.90	9.19E-02		-5.53E-02	4.26E-02
	TE123M	159.00		84.10	6.83E-02	6.83E-02	-2.13E-02	3.28E-02
	SB-124	602.71		97.87	1.08E-01	1.08E-01	-1.66E-02	5.07E-02
		645.85		7.26	1.26E+00		-8.40E-01	5.82E-01
		722.78		11.10	8.74E-01		-1.34E+00	4.02E-01
		1691.02		49.00	1.68E-01		-2.24E-02	6.90E-02
	I-125	35.49		6.49	4.23E+00	4.23E+00	-5.33E-01	2.01E+00
	SB-125	176.33		6.89	7.80E-01	1.95E-01	-3.84E-01	3.74E-01
		427.89		29.33	1.95E-01		-4.20E-02	9.07E-02
		463.38		10.35	6.14E-01		1.41E-01	2.87E-01
		600.56		17.80	4.55E-01		2.28E-01	2.13E-01
		635.90		11.32	5.86E-01		-2.86E-01	2.69E-01
	SB-126	414.70		83.30	3.13E-01	3.13E-01	2.29E-02	1.46E-01
		666.33		99.60	3.35E-01		-2.19E-01	1.56E-01
		695.00		99.60	3.77E-01		1.91E-01	1.76E-01
		720.50		53.80	6.43E-01		3.08E-01	2.98E-01
+	SN-126	87.57	*	37.00	1.40E-01	1.40E-01	7.22E-02	6.80E-02
	SB-127	473.00		25.00	2.74E+01	2.74E+01	1.23E+00	1.26E+01
		685.20		35.70	2.77E+01		7.14E+00	1.28E+01
		783.80		14.70	6.20E+01		1.22E+01	2.83E+01
	I-129	29.78		57.00	1.08E+00	1.08E+00	-3.57E-01	5.15E-01
		33.60		13.20	1.97E+00		6.25E-02	9.38E-01
		39.58		7.52	1.56E+00		-4.15E-01	7.42E-01
	I-131	284.30		6.05	9.15E+00	7.70E-01	2.38E+00	4.33E+00
		364.48		81.20	7.70E-01		1.49E-01	3.63E-01
		636.97		7.26	8.89E+00		-6.22E+00	4.08E+00
		722.89		1.80	4.04E+01		-6.19E+01	1.86E+01
	TE-132	49.72		13.10	1.54E+02	1.90E+01	-3.33E+01	7.38E+01
		228.16		88.00	1.90E+01		1.25E+00	9.06E+00
	BA-133	81.00		33.00	1.32E-01	8.94E-02	4.51E-02	6.33E-02
		302.84		17.80	3.22E-01		-2.73E-02	1.52E-01
		356.01		60.00	8.94E-02		-2.21E-01	4.18E-02
	I-133	529.87		86.30	1.29E+08	1.29E+08	-5.48E+07	5.84E+07
	XE-133	81.00		38.00	4.02E+00	4.02E+00	1.38E+00	1.93E+00
	CS-134	563.23		8.38	7.41E-01	8.70E-02	1.16E-01	3.42E-01
		569.32		15.43	3.77E-01		1.83E-03	1.73E-01

Analysis Report for 1601047-05

SED2

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CS-134	604.70	97.60	8.70E-02	8.70E-02	-1.47E-02	4.09E-02
	795.84	85.40	9.50E-02		-8.53E-03	4.38E-02
	801.93	8.73	8.38E-01		-4.55E-01	3.83E-01
CS-135	268.24	16.00	3.54E-01	3.54E-01	-1.11E-02	1.68E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	2.90E+00	2.43E-01	8.64E-01	1.40E+00
	163.89	4.61	4.64E+00		1.91E-01	2.23E+00
	176.55	13.56	1.67E+00		9.71E-01	8.03E-01
	273.65	12.66	1.92E+00		2.36E-01	9.13E-01
	340.57	48.50	5.51E-01		7.33E-02	2.61E-01
	818.50	99.70	2.43E-01		-5.47E-02	1.08E-01
	1048.07	79.60	4.19E-01		2.48E-03	1.90E-01
	1235.34	19.70	2.48E+00		3.78E-01	1.15E+00
CS-137	661.65	85.12	8.95E-02	8.95E-02	-1.61E-02	4.16E-02
LA-138	788.74	34.00	2.24E-01	9.20E-02	3.57E-02	1.03E-01
	1435.80	66.00	9.20E-02		-1.75E-02	3.85E-02
CE-139	165.85	80.35	7.31E-02	7.31E-02	-6.14E-03	3.51E-02
BA-140	162.64	6.70	3.32E+00	1.05E+00	2.24E-01	1.59E+00
	304.84	4.50	5.21E+00		1.33E+00	2.46E+00
	423.70	3.20	8.11E+00		4.21E+00	3.80E+00
	437.55	2.00	1.34E+01		2.74E+00	6.26E+00
	537.32	25.00	1.05E+00		4.59E-01	4.85E-01
LA-140	328.77	20.50	1.34E+00	3.19E-01	4.99E-01	6.37E-01
	487.03	45.50	5.51E-01		4.49E-02	2.55E-01
	815.85	23.50	1.24E+00		6.00E-01	5.64E-01
	1596.49	95.49	3.19E-01		1.01E-01	1.36E-01
CE-141	145.44	48.40	1.90E-01	1.90E-01	-6.40E-02	9.14E-02
CE-143	57.36	11.80	3.32E+05	1.45E+05	-1.88E+05	1.58E+05
	293.26	42.00	1.45E+05		2.40E+04	6.97E+04
	664.55	5.20	1.31E+06		1.01E+06	6.16E+05
CE-144	133.54	10.80	4.82E-01	4.82E-01	-2.40E-01	2.32E-01
PM-144	476.78	42.00	2.23E-01	7.58E-02	3.26E-01	1.06E-01
	618.01	98.60	7.58E-02		2.74E-02	3.52E-02
	696.49	99.49	8.82E-02		4.37E-02	4.12E-02
PM-145	36.85	21.70	7.92E-01	4.07E-01	3.49E-01	3.77E-01
	37.36	39.70	4.07E-01		1.79E-01	1.94E-01
	42.30	15.10	5.94E-01		-1.16E-01	2.81E-01
	72.40	2.31	2.04E+00		3.22E-01	9.82E-01
PM-146	453.90	39.94	1.51E-01	1.51E-01	8.87E-05	7.04E-02
	735.90	14.01	5.31E-01		-1.06E-01	2.44E-01
	747.13	13.10	6.02E-01		4.44E-02	2.78E-01
ND-147	91.11	28.90	1.22E+00	1.22E+00	-5.76E-01	5.95E-01
	531.02	13.10	1.95E+00		-6.93E-01	8.80E-01
PM-149	285.90	3.10	8.54E+03	8.54E+03	1.16E+03	4.05E+03
EU-152	121.78	20.50	2.22E-01	2.22E-01	-1.33E-01	1.07E-01
	244.69	5.40	1.02E+00		-2.11E+00	4.87E-01
	344.27	19.13	2.66E-01		3.11E-02	1.24E-01
	778.89	9.20	7.52E-01		-4.50E-02	3.43E-01
	964.01	10.40	9.44E-01		-8.80E-01	4.37E-01
	1085.78	7.22	1.17E+00		1.39E-01	5.30E-01
	1112.02	9.60	8.85E-01		2.32E-01	4.00E-01

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1407.95		14.94	5.28E-01	2.22E-01	-9.58E-02	2.32E-01
	GD-153	97.43		31.30	1.59E-01	1.59E-01	4.48E-02	7.65E-02
		103.18		22.20	2.11E-01		-1.46E-01	1.02E-01
	EU-154	123.07		40.50	1.16E-01	1.16E-01	7.01E-02	5.56E-02
		723.30		19.70	3.63E-01		-5.57E-01	1.67E-01
		873.19		11.50	6.35E-01		-4.51E-02	2.88E-01
		996.32		10.30	7.21E-01		-2.68E-02	3.24E-01
		1004.76		17.90	4.64E-01		-1.73E-01	2.11E-01
		1274.45		35.50	2.12E-01		-3.79E-02	9.34E-02
	EU-155	86.50		30.90	2.00E-01	2.00E-01	-8.30E-02	9.73E-02
		105.30		20.70	2.25E-01		1.95E-01	1.09E-01
	EU-156	811.77		10.40	2.34E+00	2.34E+00	-4.53E-01	1.07E+00
		1153.47		7.20	4.44E+00		1.09E+00	2.02E+00
		1230.71		8.90	3.63E+00		-1.17E-02	1.65E+00
	HO-166M	184.41		72.60	9.17E-02	9.17E-02	3.70E-02	4.43E-02
		280.45		29.60	1.85E-01		-1.01E-02	8.78E-02
		410.94		11.10	5.24E-01		6.42E-02	2.45E-01
		711.69		54.10	1.34E-01		2.74E-02	6.17E-02
	TM-171	66.72		0.14	3.43E+01	3.43E+01	-7.27E+00	1.65E+01
	HF-172	81.75		4.52	9.69E-01	4.11E-01	-7.99E-01	4.66E-01
		125.81		11.30	4.11E-01		-3.83E-01	1.98E-01
	LU-172	181.53		20.60	4.15E+00	2.33E+00	-6.64E-01	1.99E+00
		810.06		16.63	7.30E+00		1.56E-01	3.34E+00
		912.12		15.25	1.50E+01		2.70E+01	7.15E+00
		1093.66		62.50	2.33E+00		7.38E-02	1.06E+00
	LU-173	100.72		5.24	8.69E-01	3.13E-01	3.13E-01	4.18E-01
		272.11		21.20	3.13E-01		-2.87E-02	1.49E-01
	HF-175	343.40		84.00	8.04E-02	8.04E-02	3.57E-02	3.76E-02
	LU-176	88.34		13.30	4.69E-01	5.60E-02	4.45E-01	2.28E-01
		201.83		86.00	6.42E-02		-3.61E-02	3.07E-02
		306.78		94.00	5.60E-02		5.46E-03	2.64E-02
	TA-182	67.75		41.20	1.36E-01	1.36E-01	2.21E-03	6.56E-02
		1121.30		34.90	4.13E-01		-1.08E-01	1.93E-01
		1189.05		16.23	5.63E-01		-1.14E-01	2.51E-01
		1221.41		26.98	4.32E-01		4.06E-02	1.97E-01
		1231.02		11.44	1.03E+00		-1.09E-01	4.67E-01
	IR-192	308.46		29.68	2.29E-01	1.50E-01	-4.57E-02	1.08E-01
		468.07		48.10	1.50E-01		1.84E-02	6.94E-02
	HG-203	279.19		77.30	1.08E-01	1.08E-01	1.66E-02	5.12E-02
	BI-207	569.67		97.72	5.82E-02	5.82E-02	2.83E-04	2.66E-02
		1063.62		74.90	9.50E-02		-3.14E-02	4.23E-02
+	TL-208	583.14	*	30.22	3.71E-01	1.95E-01	6.76E-01	1.78E-01
		860.37	*	4.48	2.60E+00		1.34E+00	1.23E+00
		2614.66	*	35.85	1.95E-01		6.14E-01	8.15E-02
	BI-210M	262.00		45.00	1.29E-01	1.29E-01	-3.34E-03	6.14E-02
		300.00		23.00	2.68E-01		5.26E-02	1.27E-01
+	PB-210	46.50	*	4.25	3.50E+00	3.50E+00	4.69E+00	1.71E+00
	PB-211	404.84		2.90	1.88E+00	1.88E+00	4.15E-02	8.73E-01
		831.96		2.90	2.41E+00		-2.73E-02	1.09E+00
	BI-212	727.17		11.80	6.99E-01	6.99E-01	2.95E-01	3.25E-01
		1620.62		2.75	2.69E+00		4.77E-02	1.15E+00
+	PB-212	238.63	*	44.60	2.38E-01	2.38E-01	7.43E-01	1.16E-01
		300.09	*	3.41	1.90E+00		1.23E+00	9.05E-01

Analysis Report for 1601047-05

SED2

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BI-214	609.31	*	46.30	2.06E-01	2.06E-01	1.11E+00	9.76E-02
		1120.29	*	15.10	7.55E-01		5.92E-01	3.50E-01
		1764.49	*	15.80	4.03E-01		1.14E+00	1.66E-01
		2204.22		4.98	1.71E+00		6.72E-01	7.38E-01
+	PB-214	295.21	*	19.19	4.59E-01	2.39E-01	7.54E-01	2.22E-01
		351.92	*	37.19	2.39E-01		1.10E+00	1.15E-01
	RN-219	401.80		6.50	7.74E-01	7.74E-01	-6.27E-01	3.58E-01
	RA-223	323.87		3.88	1.38E+00	1.38E+00	-8.60E-01	6.48E-01
	RA-224	240.98		3.95	2.72E+00	2.72E+00	6.70E+00	1.33E+00
	RA-225	40.00		31.00	1.29E+00	1.29E+00	-3.42E-01	6.10E-01
+	RA-226	186.21	*	3.28	2.83E+00	2.83E+00	2.54E+00	1.38E+00
	TH-227	50.10		8.40	7.64E-01	6.64E-01	-1.65E-01	3.65E-01
		236.00		11.50	6.64E-01		-3.49E+00	3.21E-01
		256.20		6.30	8.78E-01		-1.99E-01	4.17E-01
+	AC-228	338.32	*	11.40	8.39E-01	3.93E-01	7.98E-01	4.05E-01
		911.07	*	27.70	3.93E-01		8.55E-01	1.84E-01
		969.11	*	16.60	1.26E+00		6.71E-01	6.09E-01
	TH-230	48.44		16.90	4.16E-01	4.16E-01	-9.52E-01	1.99E-01
		62.85		4.60	1.31E+00		1.59E+00	6.34E-01
		67.67		0.37	1.29E+01		2.09E-01	6.21E+00
	PA-231	283.67		1.60	3.38E+00	2.48E+00	8.80E-01	1.60E+00
		302.67		2.30	2.48E+00		-2.10E-01	1.17E+00
	TH-231	25.64		14.70	2.01E+01	7.12E-01	6.76E+00	9.75E+00
		84.21		6.40	7.12E-01		3.03E-01	3.43E-01
	PA-233	311.98		38.60	2.76E-01	2.76E-01	1.13E-01	1.30E-01
	PA-234	131.20		20.40	2.40E-01	2.40E-01	6.22E-02	1.15E-01
		733.99		8.80	8.10E-01		-1.51E-01	3.72E-01
		946.00		12.00	5.70E-01		8.18E-02	2.55E-01
+	PA-234M	1001.03	*	0.92	8.75E+00	8.75E+00	3.98E+00	3.97E+00
+	TH-234	63.29	*	3.80	2.78E+00	2.78E+00	1.73E+00	1.36E+00
	U-235	143.76		10.50	5.07E-01	5.07E-01	2.31E-01	2.44E-01
		163.35		4.70	1.10E+00		7.43E-02	5.28E-01
		205.31		4.70	1.22E+00		-2.06E-02	5.85E-01
+	NP-237	86.50	*	12.60	4.13E-01	4.13E-01	2.12E-01	2.00E-01
	NP-239	106.10		22.70	5.48E+02	5.48E+02	-3.34E+02	2.64E+02
		228.18		10.70	1.41E+03		9.29E+01	6.73E+02
		277.60		14.10	1.12E+03		-1.72E+02	5.31E+02
	AM-241	59.54		35.90	1.46E-01	1.46E-01	-4.41E-02	7.03E-02
	AM-243	74.67		66.00	9.98E-02	9.98E-02	-1.24E-01	4.86E-02
	CM-243	209.75		3.29	1.82E+00	4.03E-01	8.69E-01	8.72E-01
		228.14		10.60	5.10E-01		3.36E-02	2.43E-01
		277.60		14.00	4.03E-01		-6.22E-02	1.91E-01

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

Analysis Report for 1601047-05

SED2

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

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

Sample Title: SED2

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	30	414
9:	939	1246	1214	538	982	1077	139	130
17:	177	175	181	181	157	164	184	162
25:	145	134	109	100	75	43	46	47
33:	44	35	48	39	47	53	32	53
41:	34	40	38	39	65	91	190	62
49:	45	49	58	51	48	62	68	48
57:	45	54	56	67	69	80	103	111
65:	62	61	66	70	75	74	75	80
73:	71	94	253	124	271	195	55	71
81:	68	72	66	96	78	68	108	122
89:	68	98	70	97	164	98	56	50
97:	54	44	44	55	33	36	54	36
105:	56	51	45	35	53	41	43	49
113:	51	44	43	42	40	34	53	39
121:	45	34	50	43	49	33	35	44
129:	56	35	43	48	48	41	49	39
137:	58	43	36	39	41	62	39	55
145:	51	42	44	44	37	34	45	35
153:	37	57	49	45	28	39	39	44
161:	37	39	43	42	40	36	41	35
169:	38	44	35	34	44	30	41	37
177:	41	41	45	35	34	38	34	40
185:	57	121	71	39	35	41	34	46
193:	33	35	26	23	40	31	42	37
201:	34	37	30	36	42	36	40	35
209:	50	52	31	26	28	36	28	37
217:	28	35	29	27	29	30	34	33
225:	26	32	27	30	25	26	28	27
233:	20	32	22	47	27	147	297	57
241:	57	95	32	27	26	18	29	22
249:	26	20	26	18	23	24	22	20
257:	23	36	31	15	31	30	27	31
265:	24	25	13	19	24	42	41	27
273:	24	21	36	21	26	34	14	21
281:	18	21	20	23	21	18	27	23
289:	29	19	16	11	21	33	120	70
297:	24	16	27	31	27	24	22	14
305:	18	17	23	16	13	18	20	17
313:	19	13	14	11	8	23	17	16
321:	14	17	17	12	18	19	28	26
329:	24	20	20	20	22	19	17	14
337:	14	64	57	15	12	17	14	12
345:	16	9	13	7	20	16	68	239
353:	71	16	17	18	11	10	16	8
361:	14	15	16	21	14	27	19	16

369:	15	15	20	18	19	12	18	6

Sample Title: SED2

Channel								
377:	12	18	17	15	12	12	13	10
385:	9	13	14	18	22	15	8	10
393:	16	7	12	24	14	9	13	8
401:	12	15	5	13	19	13	12	10
409:	21	13	12	14	10	15	13	18
417:	12	16	10	11	5	14	13	12
425:	17	16	9	14	8	14	16	11
433:	9	22	17	14	6	19	17	11
441:	11	10	9	9	13	9	12	8
449:	13	13	12	11	16	10	13	14
457:	15	11	16	12	4	16	22	18
465:	8	10	10	13	9	11	11	9
473:	7	11	9	12	44	61	12	16
481:	9	9	13	8	9	16	7	11
489:	11	14	6	9	6	10	7	7
497:	5	6	2	13	5	10	8	9
505:	11	11	6	12	20	39	53	32
513:	18	9	5	9	11	5	7	4
521:	7	8	8	10	9	15	10	8
529:	6	7	5	5	6	7	7	8
537:	14	11	11	5	10	13	12	8
545:	10	11	6	6	7	9	8	11
553:	2	9	10	5	9	6	9	7
561:	10	11	11	6	9	6	11	5
569:	8	8	8	17	13	8	4	9
577:	5	11	11	12	4	18	97	50
585:	9	9	12	9	6	10	8	3
593:	9	3	8	4	6	14	15	11
601:	15	6	9	11	7	13	11	25
609:	138	131	9	12	4	6	4	14
617:	8	11	8	6	6	6	8	10
625:	9	8	9	2	6	8	8	9
633:	9	4	6	9	4	9	4	6
641:	12	7	3	7	4	6	10	12
649:	5	12	9	3	3	7	9	6
657:	7	4	6	6	9	23	9	2
665:	13	11	8	5	7	5	11	7
673:	4	2	6	6	7	6	6	6
681:	5	8	10	12	8	9	4	6
689:	7	8	4	7	4	9	10	9
697:	16	11	7	7	8	10	9	5
705:	5	2	10	7	6	9	7	6
713:	8	4	5	6	2	8	14	5
721:	10	5	8	3	6	7	18	13
729:	8	5	4	8	3	4	12	4
737:	8	6	9	11	7	5	6	7
745:	9	6	7	5	8	9	8	8
753:	4	9	6	2	8	4	5	5
761:	6	3	8	6	6	3	7	16
769:	11	12	7	14	9	3	9	6
777:	4	8	3	5	7	3	5	5
785:	3	9	6	5	5	5	11	7
793:	5	7	12	8	6	6	3	6

801:	6	6	7	5	4	9	9	3

Sample Title: SED2

Channel								
809:	7	6	3	4	8	5	5	2
817:	1	6	5	2	2	4	1	4
825:	1	4	6	7	6	3	4	5
833:	1	6	8	13	5	6	7	8
841:	9	5	4	1	5	6	6	3
849:	2	5	1	5	11	5	5	4
857:	4	7	6	13	15	5	6	1
865:	4	6	2	2	3	3	7	5
873:	3	4	6	5	3	11	5	6
881:	5	3	4	8	5	6	3	6
889:	3	9	5	3	3	5	6	3
897:	9	7	4	3	6	10	3	6
905:	2	4	2	2	9	19	50	32
913:	7	6	4	7	3	1	6	2
921:	2	2	6	4	4	1	4	3
929:	6	2	0	1	5	9	9	7
937:	1	3	1	6	3	3	3	2
945:	6	1	3	8	2	3	4	9
953:	4	5	0	2	3	6	9	4
961:	7	6	5	8	19	3	5	5
969:	29	24	5	5	5	7	5	6
977:	2	4	2	2	9	3	2	6
985:	5	0	2	2	5	2	3	5
993:	4	4	3	4	4	4	4	3
1001:	11	9	1	4	3	5	1	9
1009:	4	2	4	7	4	3	5	2
1017:	6	8	4	9	1	3	3	4
1025:	1	1	1	5	3	1	1	5
1033:	6	5	7	2	4	4	2	7
1041:	6	4	3	5	4	2	5	4
1049:	5	4	6	3	6	2	3	5
1057:	2	4	4	4	4	3	3	1
1065:	4	3	7	2	2	4	2	2
1073:	3	1	1	1	4	4	10	4
1081:	4	5	2	5	2	5	4	8
1089:	3	3	1	2	4	9	8	8
1097:	5	3	4	4	3	3	2	4
1105:	4	9	1	3	6	2	1	8
1113:	3	6	4	4	3	7	10	25
1121:	14	2	6	2	11	8	3	2
1129:	2	7	5	1	6	6	4	3
1137:	4	4	2	6	2	2	2	4
1145:	4	3	3	5	4	2	6	6
1153:	5	8	4	4	3	4	4	5
1161:	4	4	1	6	8	6	1	2
1169:	4	2	4	5	4	6	2	6
1177:	3	8	4	2	6	1	7	4
1185:	3	7	6	1	1	3	2	2
1193:	2	6	3	4	2	2	4	7
1201:	4	3	4	7	2	4	6	2
1209:	6	2	4	5	7	6	6	6
1217:	5	3	5	3	5	9	5	6
1225:	5	3	3	7	3	6	5	6

1233:	2	7	3	12	7	15	8	8

Sample Title: SED2

Channel								
1241:	5	8	5	6	5	7	2	5
1249:	3	5	4	5	4	3	8	2
1257:	2	1	3	3	6	1	5	2
1265:	0	5	3	2	1	0	3	3
1273:	2	2	3	3	2	7	3	6
1281:	5	5	3	1	8	3	7	0
1289:	2	2	2	2	5	4	4	5
1297:	1	3	2	3	2	4	2	2
1305:	2	3	3	5	5	0	2	1
1313:	1	4	2	3	4	2	4	4
1321:	2	3	1	2	2	4	6	2
1329:	3	7	4	2	4	3	3	2
1337:	2	1	0	1	2	1	3	3
1345:	1	0	4	5	1	1	3	2
1353:	3	3	3	2	5	5	4	0
1361:	3	1	3	3	1	0	2	1
1369:	1	0	2	1	3	4	1	4
1377:	14	6	2	1	1	0	2	0
1385:	2	5	0	3	1	2	4	1
1393:	0	2	2	2	2	4	0	1
1401:	4	6	1	2	1	1	1	9
1409:	1	2	3	2	3	3	1	2
1417:	4	1	1	2	5	3	4	1
1425:	2	2	4	1	3	2	2	0
1433:	1	2	1	3	2	0	2	1
1441:	3	0	4	0	0	2	2	1
1449:	3	1	4	4	1	4	0	2
1457:	1	4	27	103	145	62	18	3
1465:	1	1	1	1	1	4	5	0
1473:	2	1	3	2	2	2	2	3
1481:	1	1	3	1	0	1	4	2
1489:	1	1	0	3	1	0	3	3
1497:	3	3	2	1	2	4	0	0
1505:	1	1	0	4	3	2	0	1
1513:	3	2	2	2	1	0	1	0
1521:	0	1	0	1	0	2	1	1
1529:	1	0	1	3	1	2	1	2
1537:	1	1	4	1	0	1	2	1
1545:	1	0	2	2	2	0	3	0
1553:	3	3	3	1	1	3	2	3
1561:	1	2	2	1	0	0	1	2
1569:	1	1	3	0	1	1	0	2
1577:	2	3	0	4	0	1	1	0
1585:	1	2	2	7	4	1	2	0
1593:	2	2	3	1	1	0	1	1
1601:	0	1	3	0	1	0	3	1
1609:	1	0	0	1	2	4	1	0
1617:	1	1	1	4	1	0	3	1
1625:	0	0	4	1	2	1	1	1
1633:	2	0	1	2	1	1	1	0
1641:	0	0	1	0	1	1	3	2
1649:	0	0	2	3	0	3	0	1
1657:	0	0	0	2	3	2	3	2

1665:	2	2	2	1	0	1	0	0

Sample Title: SED2

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

2097:	1	0	0	1	2	3	3	4

Sample Title: SED2

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

2529:	0	0	1	0	1	0	1	0

Sample Title: SED2

Channel								
2537:	1	0	0	2	0	0	0	0
2545:	0	0	0	1	1	1	0	0
2553:	1	0	1	0	0	0	0	2
2561:	0	0	0	1	1	1	0	0
2569:	0	0	1	0	0	0	0	1
2577:	0	0	0	0	0	0	1	0
2585:	1	0	0	0	0	0	0	0
2593:	0	1	1	0	0	0	0	0
2601:	0	0	0	0	0	0	1	0
2609:	3	1	3	7	10	11	21	3
2617:	2	0	0	0	0	0	0	1
2625:	0	0	0	1	0	0	0	0
2633:	0	0	0	0	0	0	0	0
2641:	0	0	0	0	0	0	2	0
2649:	0	0	0	0	0	0	0	0
2657:	1	1	1	0	0	0	0	0
2665:	0	0	0	0	0	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	0	0	0	0	0	1	2	0
2689:	0	0	0	1	0	0	2	1
2697:	0	0	0	0	0	0	0	0
2705:	0	0	0	0	0	0	0	1
2713:	0	0	0	0	0	0	0	0
2721:	0	1	0	0	0	0	0	0
2729:	1	0	0	0	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	0	0	0	1	0	0	0	0
2753:	0	0	0	0	0	0	0	0
2761:	0	0	0	0	0	0	1	0
2769:	0	0	0	0	1	0	1	1
2777:	0	0	0	0	0	0	0	0
2785:	0	0	0	0	0	0	0	0
2793:	0	0	0	1	0	0	0	1
2801:	0	0	0	0	1	0	0	0
2809:	0	0	1	0	0	0	1	0
2817:	0	0	1	0	0	0	1	0
2825:	0	0	0	1	1	0	0	0
2833:	0	0	0	0	1	0	0	0
2841:	0	0	0	0	0	0	0	1
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	1	0	0	0
2865:	1	0	0	0	0	0	1	0
2873:	0	0	0	0	1	0	0	1
2881:	0	0	0	0	0	0	1	0
2889:	0	1	0	1	0	1	1	0
2897:	1	0	0	0	1	2	0	0
2905:	0	0	0	0	0	2	0	1
2913:	0	0	0	0	0	0	0	0
2921:	1	0	1	0	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	1	0	0	1	0	1	0	2
2945:	0	0	1	0	0	0	0	1
2953:	0	0	0	0	0	0	0	0

2961:	1	0	0	0	0	0	0	0

Sample Title: SED2

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

3393:	0	1	0	0	0	1	0	1

Sample Title: SED2

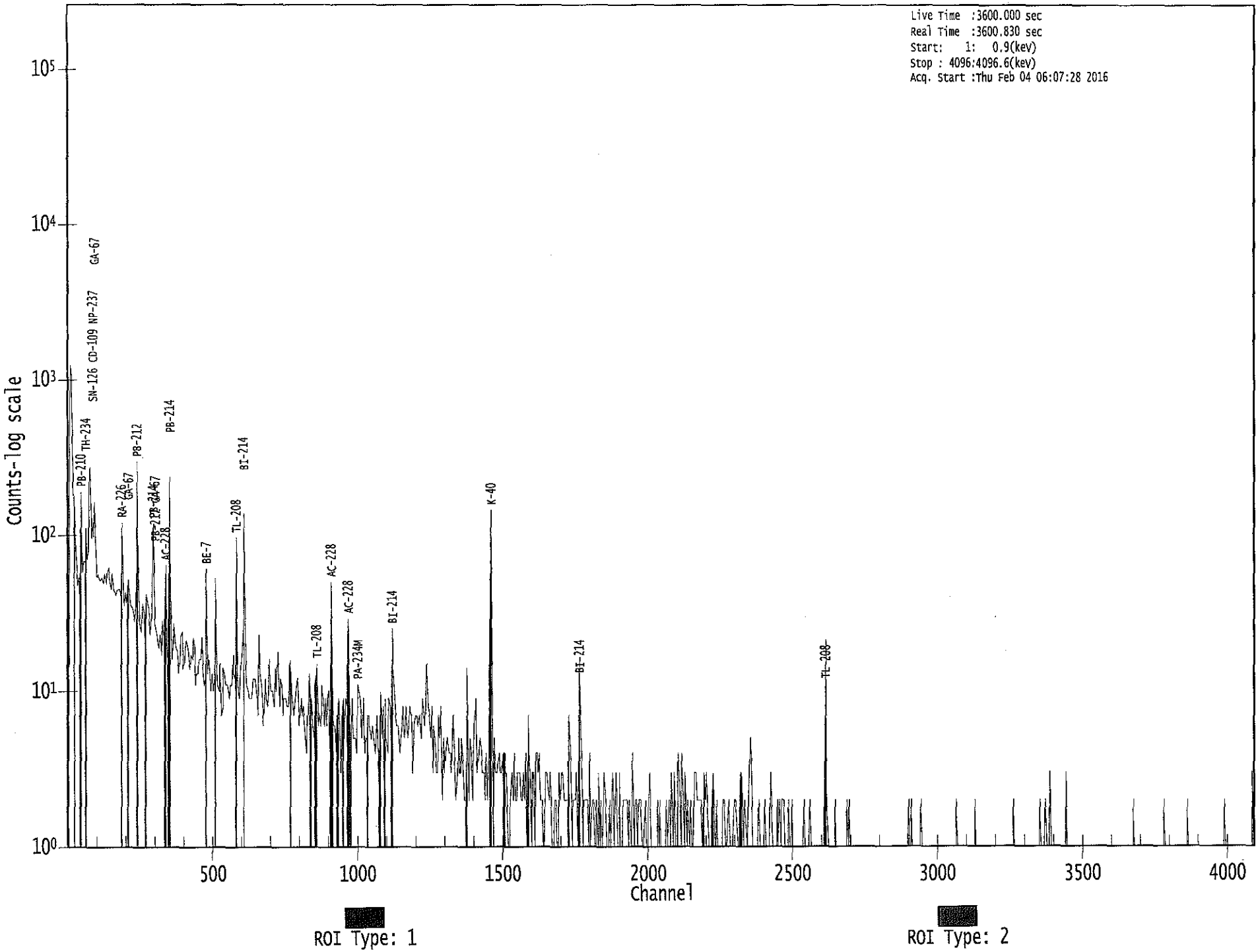
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	1	1	0	0	0	0	0	0
3417:	1	0	0	0	0	1	0	0
3425:	0	0	0	0	0	0	0	1
3433:	0	0	0	1	0	0	0	0
3441:	0	1	3	0	0	0	0	0
3449:	0	0	1	0	0	0	0	0
3457:	0	0	0	0	0	1	0	0
3465:	0	1	0	1	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	1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

3825:	0	1	0	0	0	0	0	0

Sample Title: SED2

Channel								
3833:	1	0	0	0	0	0	0	0
3841:	0	0	0	0	1	0	0	0
3849:	0	0	1	0	0	0	1	0
3857:	0	0	0	0	0	2	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	1
3881:	1	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	1	0	0	0	0	0
3921:	0	0	1	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	1	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	1	0	0	1	0	0
3985:	0	0	1	0	1	2	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	1	0	0	1	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	1	0	0	0	0
4025:	1	0	0	0	0	0	0	0
4033:	0	0	0	1	0	1	0	0
4041:	0	1	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	1	0	0	0	1	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	3	0	1
4089:	0	0	0	0	0	0	0	0

0000032435.CNF



15600 :

Apex-Gamma

Analysis Report for 1601047-06
SED4

214

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1601047-06
Sample Description	: SED4
Sample Type	: SOIL
Sample Size	: 4.981E+02 grams
Facility	: Countroom
Sample Taken On	: 1/8/2016 7:26:37AM
Acquisition Started	: 2/4/2016 7:10:24AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3601.0 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 5 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 11/2/2014
Efficiency Calibration Used Done On	: 10/25/2014
Efficiency Calibration Description	:
Sample Number	: 32438

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
2/4/16

Analysis Report for 1601047-06

SED4

PEAK LOCATE REPORT

Peak Locate Performed on : 2/4/2016 8:10:40AM
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	25.21	25.33	0.0000	0.00
2	46.71	46.81	0.0000	0.00
3	67.75	67.84	0.0000	0.00
4	76.30	76.39	0.0000	0.00
5	84.25	84.33	0.0000	0.00
6	87.25	87.33	0.0000	0.00
7	93.67	93.75	0.0000	0.00
8	154.13	154.17	0.0000	0.00
9	186.28	186.30	0.0000	0.00
10	194.38	194.40	0.0000	0.00
11	202.74	202.75	0.0000	0.00
12	236.13	236.13	0.0000	0.00
13	238.96	238.96	0.0000	0.00
14	241.96	241.95	0.0000	0.00
15	270.61	270.59	0.0000	0.00
16	284.41	284.38	0.0000	0.00
17	295.41	295.38	0.0000	0.00
18	300.61	300.58	0.0000	0.00
19	338.83	338.77	0.0000	0.00
20	352.88	352.81	0.0000	0.00
21	511.00	510.86	0.0000	0.00
22	583.46	583.28	0.0000	0.00
23	609.57	609.38	0.0000	0.00
24	647.17	646.96	0.0000	0.00
25	675.52	675.30	0.0000	0.00
26	683.33	683.11	0.0000	0.00
27	726.83	726.58	0.0000	0.00
28	768.45	768.18	0.0000	0.00
29	772.22	771.95	0.0000	0.00
30	794.36	794.09	0.0000	0.00
31	844.56	844.26	0.0000	0.00
32	911.84	911.51	0.0000	0.00
33	957.08	956.73	0.0000	0.00
34	969.56	969.21	0.0000	0.00
35	1120.38	1119.98	0.0000	0.00
36	1239.47	1239.02	0.0000	0.00
37	1377.88	1377.38	0.0000	0.00
38	1411.58	1411.08	0.0000	0.00
39	1461.37	1460.85	0.0000	0.00
40	1508.77	1508.24	0.0000	0.00
41	1589.67	1589.11	0.0000	0.00
42	1682.58	1682.00	0.0000	0.00

Analysis Report for 1601047-06

SED4

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1730.17	1729.58	0.0000	0.00
44	1765.27	1764.66	0.0000	0.00
45	1824.82	1824.20	0.0000	0.00
46	1848.63	1848.00	0.0000	0.00
47	1953.51	1952.86	0.0000	0.00
48	2104.44	2103.76	0.0000	0.00
49	2118.05	2117.37	0.0000	0.00
50	2140.82	2140.14	0.0000	0.00
51	2204.08	2203.39	0.0000	0.00
52	2448.15	2447.43	0.0000	0.00
53	2614.70	2613.96	0.0000	0.00
54	3042.75	3042.00	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1601047-06

SED4

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/4/2016 8:10:40AM

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	25.21	22 -	29	25.33	2.66E+02	112.96	1.83E+03	4.89
	2	46.71	43 -	50	46.81	2.28E+02	86.58	1.10E+03	1.24
m	3	67.75	61 -	70	67.84	1.21E+02	63.12	8.47E+02	1.33
	4	76.30	73 -	83	76.39	8.11E+02	147.42	2.50E+03	3.81
M	5	84.25	83 -	91	84.33	8.93E+01	36.88	4.02E+02	1.33
m	6	87.25	83 -	91	87.33	1.37E+02	62.10	7.84E+02	1.34
	7	93.67	91 -	96	93.75	1.68E+02	76.43	9.92E+02	1.27
	8	154.13	151 -	158	154.17	8.37E+01	73.21	8.33E+02	3.96
	9	186.28	183 -	190	186.30	1.94E+02	70.60	6.97E+02	1.79
	10	194.38	191 -	198	194.40	7.23E+01	64.81	6.51E+02	3.75
	11	202.74	199 -	206	202.75	6.90E+01	64.53	6.48E+02	4.97
M	12	236.13	234 -	244	236.13	7.65E+01	37.52	2.91E+02	1.41
m	13	238.96	234 -	244	238.96	4.99E+02	58.28	2.88E+02	1.41
m	14	241.96	234 -	244	241.95	1.60E+02	46.48	2.85E+02	1.42
	15	270.61	267 -	274	270.59	6.39E+01	55.96	4.78E+02	2.73
	16	284.41	279 -	288	284.38	4.98E+01	61.90	5.16E+02	4.52
	17	295.41	290 -	298	295.38	3.06E+02	65.10	4.64E+02	1.77
	18	300.61	299 -	304	300.58	5.55E+01	42.28	3.15E+02	1.25
	19	338.83	335 -	342	338.77	9.58E+01	52.38	3.80E+02	1.76
	20	352.88	349 -	368	352.81	6.31E+02	105.13	7.14E+02	1.39
	21	511.00	506 -	516	510.86	2.04E+02	50.04	2.25E+02	2.14
	22	583.46	578 -	587	583.28	1.65E+02	44.61	1.90E+02	1.76
	23	609.57	604 -	614	609.38	4.70E+02	57.64	1.92E+02	2.01
	24	647.17	644 -	650	646.96	2.66E+01	23.10	7.88E+01	3.15
	25	675.52	671 -	679	675.30	3.08E+01	25.47	8.04E+01	3.14
	26	683.33	680 -	687	683.11	2.05E+01	24.82	9.09E+01	3.67
	27	726.83	723 -	730	726.58	6.11E+01	29.53	1.06E+02	1.33
M	28	768.45	765 -	774	768.18	4.16E+01	24.00	9.14E+01	1.99
m	29	772.22	765 -	774	771.95	1.94E+01	22.09	6.38E+01	2.03
	30	794.36	791 -	796	794.09	1.64E+01	21.31	7.73E+01	1.25
	31	844.56	842 -	849	844.26	2.02E+01	24.74	8.96E+01	2.02
	32	911.84	909 -	917	911.51	1.01E+02	32.52	1.05E+02	2.05
	33	957.08	954 -	960	956.73	2.27E+01	19.90	5.45E+01	4.08
	34	969.56	965 -	975	969.21	5.14E+01	40.46	1.71E+02	2.58
	35	1120.38	1114 -	1126	1119.98	1.08E+02	37.80	1.19E+02	2.35
	36	1239.47	1234 -	1244	1239.02	3.03E+01	31.46	1.01E+02	2.56
	37	1377.88	1373 -	1380	1377.38	2.32E+01	16.85	3.17E+01	2.56
	38	1411.58	1404 -	1423	1411.08	4.90E+01	23.66	3.20E+01	5.33
	39	1461.37	1455 -	1465	1460.85	5.92E+02	51.16	3.36E+01	2.33
	40	1508.77	1503 -	1512	1508.24	1.31E+01	16.19	2.99E+01	1.12

Analysis Report for 1601047-06

SED4

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1589.67	1584 -	1593	1589.11	1.52E+01	16.06	2.36E+01	4.72
42	1682.58	1678 -	1684	1682.00	8.00E+00	5.66	0.00E+00	2.96
43	1730.17	1724 -	1735	1729.58	2.07E+01	13.27	1.05E+01	3.63
44	1765.27	1759 -	1771	1764.66	7.45E+01	20.21	1.30E+01	2.25
45	1824.82	1822 -	1826	1824.20	5.00E+00	4.47	0.00E+00	2.31
46	1848.63	1845 -	1850	1848.00	9.19E+00	8.89	7.62E+00	1.85
47	1953.51	1950 -	1955	1952.86	6.00E+00	7.35	6.00E+00	2.99
48	2104.44	2099 -	2109	2103.76	1.60E+01	10.31	6.00E+00	2.15
49	2118.05	2114 -	2121	2117.37	8.00E+00	8.72	6.00E+00	1.52
50	2140.82	2136 -	2143	2140.14	7.00E+00	7.21	4.00E+00	2.82
51	2204.08	2197 -	2209	2203.39	2.75E+01	14.85	1.30E+01	2.33
52	2448.15	2444 -	2449	2447.43	7.00E+00	5.29	0.00E+00	1.47
53	2614.70	2609 -	2619	2613.96	7.60E+01	17.44	0.00E+00	3.10
54	3042.75	3038 -	3044	3042.00	5.00E+00	4.47	0.00E+00	2.98

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

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 2/4/2016 8:10:40AM

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	25.21	22 -	29	2.66E+02	112.96	1.83E+03	8.89E+01
	2	46.71	43 -	50	2.28E+02	86.58	1.10E+03	6.67E+01
m	3	67.75	61 -	70	1.21E+02	63.12	8.47E+02	4.79E+01
	4	76.30	73 -	83	8.11E+02	147.42	2.50E+03	1.12E+02
M	5	84.25	83 -	91	8.93E+01	36.88	4.02E+02	3.30E+01
m	6	87.25	83 -	91	1.37E+02	62.10	7.84E+02	4.60E+01
	7	93.67	91 -	96	1.68E+02	76.43	9.92E+02	5.91E+01
	8	154.13	151 -	158	8.37E+01	73.21	8.33E+02	5.83E+01
	9	186.28	183 -	190	1.94E+02	70.60	6.97E+02	5.33E+01
	10	194.38	191 -	198	7.23E+01	64.81	6.51E+02	5.14E+01
	11	202.74	199 -	206	6.90E+01	64.53	6.48E+02	5.13E+01
M	12	236.13	234 -	244	7.65E+01	37.52	2.91E+02	2.81E+01
m	13	238.96	234 -	244	4.99E+02	58.28	2.88E+02	2.79E+01
m	14	241.96	234 -	244	1.60E+02	46.48	2.85E+02	2.78E+01

Analysis Report for 1601047-06

SED4

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	15	270.61	267 -	274	6.39E+01	55.96	4.78E+02	4.41E+01
	16	284.41	279 -	288	4.98E+01	61.90	5.16E+02	4.95E+01
	17	295.41	290 -	298	3.06E+02	65.10	4.64E+02	4.51E+01
	18	300.61	299 -	304	5.55E+01	42.28	3.15E+02	3.25E+01
	19	338.83	335 -	342	9.58E+01	52.38	3.80E+02	3.99E+01
	20	352.88	349 -	368	6.31E+02	105.13	7.14E+02	1.96E+01
	21	511.00	506 -	516	2.04E+02	50.04	2.25E+02	3.38E+01
	22	583.46	578 -	587	1.65E+02	44.61	1.90E+02	3.00E+01
	23	609.57	604 -	614	4.70E+02	57.64	1.92E+02	3.12E+01
	24	647.17	644 -	650	2.66E+01	23.10	7.88E+01	1.70E+01
	25	675.52	671 -	679	3.08E+01	25.47	8.04E+01	1.88E+01
	26	683.33	680 -	687	2.05E+01	24.82	9.09E+01	1.90E+01
	27	726.83	723 -	730	6.11E+01	29.53	1.06E+02	2.06E+01
M	28	768.45	765 -	774	4.16E+01	24.00	9.14E+01	1.57E+01
m	29	772.22	765 -	774	1.94E+01	22.09	6.38E+01	1.31E+01
	30	794.36	791 -	796	1.64E+01	21.31	7.73E+01	1.62E+01
	31	844.56	842 -	849	2.02E+01	24.74	8.96E+01	1.89E+01
	32	911.84	909 -	917	1.01E+02	32.52	1.05E+02	2.10E+01
	33	957.08	954 -	960	2.27E+01	19.90	5.45E+01	1.44E+01
	34	969.56	965 -	975	5.14E+01	40.46	1.71E+02	3.11E+01
	35	1120.38	1114 -	1126	1.08E+02	37.80	1.19E+02	2.60E+01
	36	1239.47	1234 -	1244	3.03E+01	31.46	1.01E+02	2.42E+01
	37	1377.88	1373 -	1380	2.32E+01	16.85	3.17E+01	1.14E+01
	38	1411.58	1404 -	1423	4.90E+01	23.66	3.20E+01	1.57E+01
	39	1461.37	1455 -	1465	5.92E+02	51.16	3.36E+01	1.30E+01
	40	1508.77	1503 -	1512	1.31E+01	16.19	2.99E+01	1.19E+01
	41	1589.67	1584 -	1593	1.52E+01	16.06	2.36E+01	1.15E+01
	42	1682.58	1678 -	1684	8.00E+00	5.66	0.00E+00	0.00E+00
	43	1730.17	1724 -	1735	2.07E+01	13.27	1.05E+01	7.93E+00
	44	1765.27	1759 -	1771	7.45E+01	20.21	1.30E+01	8.64E+00
	45	1824.82	1822 -	1826	5.00E+00	4.47	0.00E+00	0.00E+00
	46	1848.63	1845 -	1850	9.19E+00	8.89	7.62E+00	5.34E+00
	47	1953.51	1950 -	1955	6.00E+00	7.35	6.00E+00	4.50E+00
	48	2104.44	2099 -	2109	1.60E+01	10.31	6.00E+00	5.34E+00
	49	2118.05	2114 -	2121	8.00E+00	8.72	6.00E+00	5.45E+00
	50	2140.82	2136 -	2143	7.00E+00	7.21	4.00E+00	4.03E+00
	51	2204.08	2197 -	2209	2.75E+01	14.85	1.30E+01	8.64E+00
	52	2448.15	2444 -	2449	7.00E+00	5.29	0.00E+00	0.00E+00
	53	2614.70	2609 -	2619	7.60E+01	17.44	0.00E+00	0.00E+00
	54	3042.75	3038 -	3044	5.00E+00	4.47	0.00E+00	0.00E+00

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

Analysis Report for 1601047-06

SED4

PEAK WITH NID REPORT

Peak Analysis Performed on : 2/4/2016 8:10:40AM

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	25.21	22 -	29	25.33	2.66E+02	112.96	1.83E+03	TH-231
	2	46.71	43 -	50	46.81	2.28E+02	86.58	1.10E+03	PB-210
m	3	67.75	61 -	70	67.84	1.21E+02	63.12	8.47E+02	TA-182
									TH-230
									TI-44
	4	76.30	73 -	83	76.39	8.11E+02	147.42	2.50E+03	.....
M	5	84.25	83 -	91	84.33	8.93E+01	36.88	4.02E+02	TH-231
m	6	87.25	83 -	91	87.33	1.37E+02	62.10	7.84E+02	SN-126
									NP-237
									EU-155
									CD-109
	7	93.67	91 -	96	93.75	1.68E+02	76.43	9.92E+02	GA-67
	8	154.13	151 -	158	154.17	8.37E+01	73.21	8.33E+02	CS-136
	9	186.28	183 -	190	186.30	1.94E+02	70.60	6.97E+02	RA-226
	10	194.38	191 -	198	194.40	7.23E+01	64.81	6.51E+02	.....
	11	202.74	199 -	206	202.75	6.90E+01	64.53	6.48E+02	LU-176
M	12	236.13	234 -	244	236.13	7.65E+01	37.52	2.91E+02	TH-227
									NB-95M
m	13	238.96	234 -	244	238.96	4.99E+02	58.28	2.88E+02	PB-212
m	14	241.96	234 -	244	241.95	1.60E+02	46.48	2.85E+02	RA-224
	15	270.61	267 -	274	270.59	6.39E+01	55.96	4.78E+02	.....
	16	284.41	279 -	288	284.38	4.98E+01	61.90	5.16E+02	I-131
									PA-231
	17	295.41	290 -	298	295.38	3.06E+02	65.10	4.64E+02	PB-214
	18	300.61	299 -	304	300.58	5.55E+01	42.28	3.15E+02	GA-67
									PB-212
									BI-210M
	19	338.83	335 -	342	338.77	9.58E+01	52.38	3.80E+02	AC-228
	20	352.88	349 -	368	352.81	6.31E+02	105.13	7.14E+02	PB-214
	21	511.00	506 -	516	510.86	2.04E+02	50.04	2.25E+02	.....
	22	583.46	578 -	587	583.28	1.65E+02	44.61	1.90E+02	TL-208
	23	609.57	604 -	614	609.38	4.70E+02	57.64	1.92E+02	BI-214
	24	647.17	644 -	650	646.96	2.66E+01	23.10	7.88E+01	.....
	25	675.52	671 -	679	675.30	3.08E+01	25.47	8.04E+01	.....
	26	683.33	680 -	687	683.11	2.05E+01	24.82	9.09E+01	.....
	27	726.83	723 -	730	726.58	6.11E+01	29.53	1.06E+02	BI-212
M	28	768.45	765 -	774	768.18	4.16E+01	24.00	9.14E+01	.....
m	29	772.22	765 -	774	771.95	1.94E+01	22.09	6.38E+01	.....
	30	794.36	791 -	796	794.09	1.64E+01	21.31	7.73E+01	.....
	31	844.56	842 -	849	844.26	2.02E+01	24.74	8.96E+01	.....
	32	911.84	909 -	917	911.51	1.01E+02	32.52	1.05E+02	LU-172

Analysis Report for 1601047-06

SED4

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
								AC-228
33	957.08	954 -	960	956.73	2.27E+01	19.90	5.45E+01	.....
34	969.56	965 -	975	969.21	5.14E+01	40.46	1.71E+02	AC-228
35	1120.38	1114 -	1126	1119.98	1.08E+02	37.80	1.19E+02	BI-214
								SC-46
								TA-182
36	1239.47	1234 -	1244	1239.02	3.03E+01	31.46	1.01E+02	.....
37	1377.88	1373 -	1380	1377.38	2.32E+01	16.85	3.17E+01	.....
38	1411.58	1404 -	1423	1411.08	4.90E+01	23.66	3.20E+01	.....
39	1461.37	1455 -	1465	1460.85	5.92E+02	51.16	3.36E+01	K-40
40	1508.77	1503 -	1512	1508.24	1.31E+01	16.19	2.99E+01	.....
41	1589.67	1584 -	1593	1589.11	1.52E+01	16.06	2.36E+01	.....
42	1682.58	1678 -	1684	1682.00	8.00E+00	5.66	0.00E+00	.....
43	1730.17	1724 -	1735	1729.58	2.07E+01	13.27	1.05E+01	.....
44	1765.27	1759 -	1771	1764.66	7.45E+01	20.21	1.30E+01	BI-214
45	1824.82	1822 -	1826	1824.20	5.00E+00	4.47	0.00E+00	.....
46	1848.63	1845 -	1850	1848.00	9.19E+00	8.89	7.62E+00	.....
47	1953.51	1950 -	1955	1952.86	6.00E+00	7.35	6.00E+00	.....
48	2104.44	2099 -	2109	2103.76	1.60E+01	10.31	6.00E+00	.....
49	2118.05	2114 -	2121	2117.37	8.00E+00	8.72	6.00E+00	.....
50	2140.82	2136 -	2143	2140.14	7.00E+00	7.21	4.00E+00	.....
51	2204.08	2197 -	2209	2203.39	2.75E+01	14.85	1.30E+01	BI-214
52	2448.15	2444 -	2449	2447.43	7.00E+00	5.29	0.00E+00	.....
53	2614.70	2609 -	2619	2613.96	7.60E+01	17.44	0.00E+00	TL-208
54	3042.75	3038 -	3044	3042.00	5.00E+00	4.47	0.00E+00	.....

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

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 2/4/2016 8:10:40AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	25.21	2.66E+02	112.96	4.74E-04	1.68E-03
	2	46.71	2.28E+02	86.58	1.35E-02	1.68E-03
m	3	67.75	1.21E+02	63.12	2.54E-02	2.49E-03
	4	76.30	8.11E+02	147.42	2.74E-02	3.34E-03
M	5	84.25	8.93E+01	36.88	2.83E-02	4.13E-03

Analysis Report for 1601047-06

SED4

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
m	6	87.25	1.37E+02	62.10	2.84E-02	4.43E-03
	7	93.67	1.68E+02	76.43	2.85E-02	4.25E-03
	8	154.13	8.37E+01	73.21	2.37E-02	2.03E-03
	9	186.28	1.94E+02	70.60	2.11E-02	1.65E-03
	10	194.38	7.23E+01	64.81	2.05E-02	1.64E-03
	11	202.74	6.90E+01	64.53	1.99E-02	1.64E-03
M	12	236.13	7.65E+01	37.52	1.80E-02	1.60E-03
m	13	238.96	4.99E+02	58.28	1.79E-02	1.60E-03
m	14	241.96	1.60E+02	46.48	1.77E-02	1.60E-03
	15	270.61	6.39E+01	55.96	1.64E-02	1.57E-03
	16	284.41	4.98E+01	61.90	1.59E-02	1.53E-03
	17	295.41	3.06E+02	65.10	1.55E-02	1.48E-03
	18	300.61	5.55E+01	42.28	1.53E-02	1.45E-03
	19	338.83	9.58E+01	52.38	1.41E-02	1.27E-03
	20	352.88	6.31E+02	105.13	1.37E-02	1.21E-03
	21	511.00	2.04E+02	50.04	1.06E-02	8.98E-04
	22	583.46	1.65E+02	44.61	9.58E-03	8.25E-04
	23	609.57	4.70E+02	57.64	9.27E-03	7.98E-04
	24	647.17	2.66E+01	23.10	8.85E-03	7.60E-04
	25	675.52	3.08E+01	25.47	8.57E-03	7.36E-04
	26	683.33	2.05E+01	24.82	8.49E-03	7.31E-04
	27	726.83	6.11E+01	29.53	8.09E-03	7.03E-04
M	28	768.45	4.16E+01	24.00	7.74E-03	6.77E-04
m	29	772.22	1.94E+01	22.09	7.71E-03	6.74E-04
	30	794.36	1.64E+01	21.31	7.54E-03	6.60E-04
	31	844.56	2.02E+01	24.74	7.17E-03	6.28E-04
	32	911.84	1.01E+02	32.52	6.74E-03	5.86E-04
	33	957.08	2.27E+01	19.90	6.48E-03	5.63E-04
	34	969.56	5.14E+01	40.46	6.41E-03	5.57E-04
	35	1120.38	1.08E+02	37.80	5.70E-03	4.80E-04
	36	1239.47	3.03E+01	31.46	5.27E-03	4.83E-04
	37	1377.88	2.32E+01	16.85	4.87E-03	5.08E-04
	38	1411.58	4.90E+01	23.66	4.78E-03	4.94E-04
	39	1461.37	5.92E+02	51.16	4.67E-03	4.73E-04
	40	1508.77	1.31E+01	16.19	4.57E-03	4.53E-04
	41	1589.67	1.52E+01	16.06	4.43E-03	4.20E-04
	42	1682.58	8.00E+00	5.66	4.29E-03	3.81E-04
	43	1730.17	2.07E+01	13.27	4.23E-03	3.62E-04
	44	1765.27	7.45E+01	20.21	4.18E-03	3.47E-04
	45	1824.82	5.00E+00	4.47	4.12E-03	3.23E-04
	46	1848.63	9.19E+00	8.89	4.10E-03	3.18E-04
	47	1953.51	6.00E+00	7.35	4.02E-03	3.18E-04
	48	2104.44	1.60E+01	10.31	3.95E-03	3.18E-04
	49	2118.05	8.00E+00	8.72	3.95E-03	3.18E-04
	50	2140.82	7.00E+00	7.21	3.94E-03	3.18E-04
	51	2204.08	2.75E+01	14.85	3.93E-03	3.18E-04
	52	2448.15	7.00E+00	5.29	3.96E-03	3.18E-04
	53	2614.70	7.60E+01	17.44	4.05E-03	3.18E-04
	54	3042.75	5.00E+00	4.47	4.52E-03	3.18E-04

Analysis Report for 1601047-06

SED4

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 : 2/4/2016 8:10:40AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032283.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	25.21	2.66E+02	112.96			2.66E+02	1.13E+02
	2	46.71	2.28E+02	86.58	4.94E+01	6.51E+00	1.78E+02	8.68E+01
m	3	67.75	1.21E+02	63.12			1.21E+02	6.31E+01
	4	76.30	8.11E+02	147.42			8.11E+02	1.47E+02
M	5	84.25	8.93E+01	36.88			8.93E+01	3.69E+01
m	6	87.25	1.37E+02	62.10	5.10E+00	3.87E+00	1.32E+02	6.22E+01
	7	93.67	1.68E+02	76.43	5.03E+01	2.38E+01	1.18E+02	8.01E+01
	8	154.13	8.37E+01	73.21			8.37E+01	7.32E+01
	9	186.28	1.94E+02	70.60	4.27E+01	8.05E+00	1.51E+02	7.11E+01
	10	194.38	7.23E+01	64.81			7.23E+01	6.48E+01
	11	202.74	6.90E+01	64.53	4.18E-01	9.87E-01	6.86E+01	6.45E+01
M	12	236.13	7.65E+01	37.52			7.65E+01	3.75E+01
m	13	238.96	4.99E+02	58.28	2.30E+01	1.17E+01	4.76E+02	5.94E+01
m	14	241.96	1.60E+02	46.48	4.35E+00	3.40E+00	1.56E+02	4.66E+01
	15	270.61	6.39E+01	55.96			6.39E+01	5.60E+01
	16	284.41	4.98E+01	61.90			4.98E+01	6.19E+01
	17	295.41	3.06E+02	65.10	1.44E+01	5.96E+00	2.91E+02	6.54E+01
	18	300.61	5.55E+01	42.28			5.55E+01	4.23E+01
	19	338.83	9.58E+01	52.38	8.68E-01	5.72E+00	9.49E+01	5.27E+01
	20	352.88	6.31E+02	105.13	1.55E+01	5.56E+00	6.15E+02	1.05E+02
	21	511.00	2.04E+02	50.04	8.40E+01	5.63E+00	1.20E+02	5.04E+01
	22	583.46	1.65E+02	44.61	1.17E+01	3.57E+00	1.53E+02	4.48E+01
	23	609.57	4.70E+02	57.64	1.16E+01	3.63E+00	4.59E+02	5.78E+01
	24	647.17	2.66E+01	23.10	0.00E+00	0.00E+00	2.66E+01	2.31E+01
	25	675.52	3.08E+01	25.47			3.08E+01	2.55E+01
	26	683.33	2.05E+01	24.82			2.05E+01	2.48E+01
	27	726.83	6.11E+01	29.53			6.11E+01	2.95E+01
M	28	768.45	4.16E+01	24.00			4.16E+01	2.40E+01
m	29	772.22	1.94E+01	22.09			1.94E+01	2.21E+01
	30	794.36	1.64E+01	21.31			1.64E+01	2.13E+01
	31	844.56	2.02E+01	24.74			2.02E+01	2.47E+01
	32	911.84	1.01E+02	32.52	4.15E+00	2.76E+00	9.66E+01	3.26E+01
	33	957.08	2.27E+01	19.90			2.27E+01	1.99E+01
	34	969.56	5.14E+01	40.46			5.14E+01	4.05E+01
	35	1120.38	1.08E+02	37.80	3.14E+00	2.82E+00	1.05E+02	3.79E+01

Analysis Report for 1601047-06

SED4

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
36	1239.47	3.03E+01	31.46			3.03E+01	3.15E+01
37	1377.88	2.32E+01	16.85			2.32E+01	1.69E+01
38	1411.58	4.90E+01	23.66			4.90E+01	2.37E+01
39	1461.37	5.92E+02	51.16	1.17E+01	2.60E+00	5.81E+02	5.12E+01
40	1508.77	1.31E+01	16.19			1.31E+01	1.62E+01
41	1589.67	1.52E+01	16.06			1.52E+01	1.61E+01
42	1682.58	8.00E+00	5.66			8.00E+00	5.66E+00
43	1730.17	2.07E+01	13.27			2.07E+01	1.33E+01
44	1765.27	7.45E+01	20.21	3.19E+00	2.23E+00	7.13E+01	2.03E+01
45	1824.82	5.00E+00	4.47			5.00E+00	4.47E+00
46	1848.63	9.19E+00	8.89			9.19E+00	8.89E+00
47	1953.51	6.00E+00	7.35			6.00E+00	7.35E+00
48	2104.44	1.60E+01	10.31	1.57E+00	1.32E+00	1.44E+01	1.04E+01
49	2118.05	8.00E+00	8.72			8.00E+00	8.72E+00
50	2140.82	7.00E+00	7.21			7.00E+00	7.21E+00
51	2204.08	2.75E+01	14.85	1.32E+00	1.51E+00	2.62E+01	1.49E+01
52	2448.15	7.00E+00	5.29			7.00E+00	5.29E+00
53	2614.70	7.60E+01	17.44	6.35E+00	1.69E+00	6.97E+01	1.75E+01
54	3042.75	5.00E+00	4.47			5.00E+00	4.47E+00

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

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 2/4/2016 8:10:40AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000032283.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	25.21	2.66E+02	112.96			2.66E+02	1.13E+02
	2	46.71	2.28E+02	86.58	4.94E+01	6.51E+00	1.78E+02	8.68E+01
m	3	67.75	1.21E+02	63.12			1.21E+02	6.31E+01
	4	76.30	8.11E+02	147.42			8.11E+02	1.47E+02
M	5	84.25	8.93E+01	36.88			8.93E+01	3.69E+01
m	6	87.25	1.37E+02	62.10	5.10E+00	3.87E+00	1.32E+02	6.22E+01
	7	93.67	1.68E+02	76.43	5.03E+01	2.38E+01	1.18E+02	8.01E+01
	8	154.13	8.37E+01	73.21			8.37E+01	7.32E+01
	9	186.28	1.94E+02	70.60	4.27E+01	8.05E+00	1.51E+02	7.11E+01

Analysis Report for 1601047-06

SED4

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	10	194.38	7.23E+01	64.81			7.23E+01	6.48E+01
	11	202.74	6.90E+01	64.53	4.18E-01	9.87E-01	6.86E+01	6.45E+01
M	12	236.13	7.65E+01	37.52			7.65E+01	3.75E+01
m	13	238.96	4.99E+02	58.28	2.30E+01	1.17E+01	4.76E+02	5.94E+01
m	14	241.96	1.60E+02	46.48	4.35E+00	3.40E+00	1.56E+02	4.66E+01
	15	270.61	6.39E+01	55.96			6.39E+01	5.60E+01
	16	284.41	4.98E+01	61.90			4.98E+01	6.19E+01
	17	295.41	3.06E+02	65.10	1.44E+01	5.96E+00	2.91E+02	6.54E+01
	18	300.61	5.55E+01	42.28			5.55E+01	4.23E+01
	19	338.83	9.58E+01	52.38	8.68E-01	5.72E+00	9.49E+01	5.27E+01
	20	352.88	6.31E+02	105.13	1.55E+01	5.56E+00	6.15E+02	1.05E+02
	21	511.00	2.04E+02	50.04	8.40E+01	5.63E+00	1.20E+02	5.04E+01
	22	583.46	1.65E+02	44.61	1.17E+01	3.57E+00	1.53E+02	4.48E+01
	23	609.57	4.70E+02	57.64	1.16E+01	3.63E+00	4.59E+02	5.78E+01
	24	647.17	2.66E+01	23.10	0.00E+00	0.00E+00	2.66E+01	2.31E+01
	25	675.52	3.08E+01	25.47			3.08E+01	2.55E+01
	26	683.33	2.05E+01	24.82			2.05E+01	2.48E+01
	27	726.83	6.11E+01	29.53			6.11E+01	2.95E+01
M	28	768.45	4.16E+01	24.00			4.16E+01	2.40E+01
m	29	772.22	1.94E+01	22.09			1.94E+01	2.21E+01
	30	794.36	1.64E+01	21.31			1.64E+01	2.13E+01
	31	844.56	2.02E+01	24.74			2.02E+01	2.47E+01
	32	911.84	1.01E+02	32.52	4.15E+00	2.76E+00	9.66E+01	3.26E+01
	33	957.08	2.27E+01	19.90			2.27E+01	1.99E+01
	34	969.56	5.14E+01	40.46			5.14E+01	4.05E+01
	35	1120.38	1.08E+02	37.80	3.14E+00	2.82E+00	1.05E+02	3.79E+01
	36	1239.47	3.03E+01	31.46			3.03E+01	3.15E+01
	37	1377.88	2.32E+01	16.85			2.32E+01	1.69E+01
	38	1411.58	4.90E+01	23.66			4.90E+01	2.37E+01
	39	1461.37	5.92E+02	51.16	1.17E+01	2.60E+00	5.81E+02	5.12E+01
	40	1508.77	1.31E+01	16.19			1.31E+01	1.62E+01
	41	1589.67	1.52E+01	16.06			1.52E+01	1.61E+01
	42	1682.58	8.00E+00	5.66			8.00E+00	5.66E+00
	43	1730.17	2.07E+01	13.27			2.07E+01	1.33E+01
	44	1765.27	7.45E+01	20.21	3.19E+00	2.23E+00	7.13E+01	2.03E+01
	45	1824.82	5.00E+00	4.47			5.00E+00	4.47E+00
	46	1848.63	9.19E+00	8.89			9.19E+00	8.89E+00
	47	1953.51	6.00E+00	7.35			6.00E+00	7.35E+00
	48	2104.44	1.60E+01	10.31	1.57E+00	1.32E+00	1.44E+01	1.04E+01
	49	2118.05	8.00E+00	8.72			8.00E+00	8.72E+00
	50	2140.82	7.00E+00	7.21			7.00E+00	7.21E+00
	51	2204.08	2.75E+01	14.85	1.32E+00	1.51E+00	2.62E+01	1.49E+01
	52	2448.15	7.00E+00	5.29			7.00E+00	5.29E+00
	53	2614.70	7.60E+01	17.44	6.35E+00	1.69E+00	6.97E+01	1.75E+01
	54	3042.75	5.00E+00	4.47			5.00E+00	4.47E+00

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

Analysis Report for 1601047-06

SED4

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	0.951	1460.81	*	10.67	1.76E+01	2.39E+00
GA-67	0.653	93.31	*	35.70	5.43E+01	2.04E+02
		208.95		2.24		
		300.22	*	16.00	1.07E+02	4.02E+02
NB-95M	0.733	235.69	*	25.00	4.58E+01	2.28E+01
CD-109	0.907	88.03	*	3.72	1.96E+00	9.80E-01
SN-126	0.984	87.57	*	37.00	1.89E-01	9.39E-02
EU-155	0.308	86.50	*	30.90	2.28E-01	1.14E-01
		105.30		20.70		
TA-182	0.480	67.75	*	41.20	2.06E-01	1.09E-01
		1121.30	*	34.90	9.32E-01	3.47E-01
		1189.05		16.23		
		1221.41		26.98		
		1231.02		11.44		
TL-208	0.886	583.14	*	30.22	7.98E-01	2.43E-01
		860.37		4.48		
		2614.66	*	35.85	7.23E-01	1.90E-01
PB-210	0.993	46.50	*	4.25	4.68E+00	2.35E+00
BI-212	0.751	727.17	*	11.80	9.64E-01	4.74E-01
		1620.62		2.75		
PB-212	0.981	238.63	*	44.60	9.01E-01	1.38E-01
		300.09	*	3.41	1.61E+00	1.23E+00
BI-214	0.975	609.31	*	46.30	1.61E+00	2.46E-01
		1120.29	*	15.10	1.83E+00	6.81E-01
		1764.49	*	15.80	1.63E+00	4.83E-01
		2204.22	*	4.98	2.02E+00	1.16E+00
PB-214	0.906	295.21	*	19.19	1.48E+00	3.61E-01
		351.92	*	37.19	1.82E+00	3.50E-01
RA-224	0.859	240.98	*	3.95	3.36E+00	1.05E+00
RA-226	0.999	186.21	*	3.28	3.29E+00	6.23E+00
AC-228	0.937	338.32	*	11.40	8.91E-01	5.01E-01
		911.07	*	27.70	7.79E-01	2.72E-01
		969.11	*	16.60	7.28E-01	5.76E-01
TH-231	0.979	25.64	*	14.70	5.76E+01	2.06E+02
		84.21	*	6.40	7.44E-01	3.26E-01
NP-237	0.914	86.50	*	12.60	5.54E-01	2.76E-01

Analysis Report for 1601047-06

SED4

* = 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 : 2/4/2016 8:10:40AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	4	76.30	2.25258E-01	9.09		
	8	154.13	2.32456E-02	43.74	Sum	
	10	194.38	2.00736E-02	44.84		
	11	202.74	1.90506E-02	47.05	Tol.	LU-176
	15	270.61	1.77530E-02	43.78	Sum	
	16	284.41	1.38420E-02	62.11	Tol.	I-131 PA-231
	21	511.00	3.32028E-02	21.06		
	24	647.17	7.38636E-03	43.43		
	25	675.52	8.55634E-03	41.34		
	26	683.33	5.70707E-03	60.40		
M	28	768.45	1.15593E-02	28.84		
m	29	772.22	5.39499E-03	56.87		
	30	794.36	4.54545E-03	65.11	Sum	
	31	844.56	5.61111E-03	61.23		
	33	957.08	6.31667E-03	43.75		
	36	1239.47	8.41907E-03	51.89		
	37	1377.88	6.43162E-03	36.39		
	38	1411.58	1.36111E-02	24.15		
	40	1508.77	3.63095E-03	61.92	Sum	
	41	1589.67	4.22839E-03	52.76		
	42	1682.58	2.22222E-03	35.36		
	43	1730.17	5.75855E-03	32.00	Sum	
	45	1824.82	1.38889E-03	44.72		
	46	1848.63	2.55342E-03	48.35	Sum	
	47	1953.51	1.66667E-03	61.24		
	48	2104.44	4.00716E-03	36.02	S-Esc	
	49	2118.05	2.22222E-03	54.49	Sum	
	50	2140.82	1.94444E-03	51.51		
	52	2448.15	1.94444E-03	37.80		
	54	3042.75	1.38889E-03	44.72		

Analysis Report for 1601047-06

SED4

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	0.95	1460.81	*	10.67	1.76E+01	2.39E+00
GA-67	0.65	93.31	*	35.70	5.43E+01	2.04E+02
		208.95		2.24		
		300.22	*	16.00	1.07E+02	4.02E+02
NB-95M	0.73	235.69	*	25.00	4.58E+01	2.28E+01
CD-109	0.90	88.03	*	3.72	1.96E+00	9.80E-01
SN-126	0.98	87.57	*	37.00	1.89E-01	9.39E-02
EU-155	0.30	86.50	*	30.90	2.28E-01	1.14E-01
		105.30		20.70		
TA-182	0.48	67.75	*	41.20	2.06E-01	1.09E-01
		1121.30	*	34.90	9.32E-01	3.47E-01
		1189.05		16.23		
		1221.41		26.98		
		1231.02		11.44		
TL-208	0.88	583.14	*	30.22	7.98E-01	2.43E-01
		860.37		4.48		
		2614.66	*	35.85	7.23E-01	1.90E-01
PB-210	0.99	46.50	*	4.25	4.68E+00	2.35E+00
BI-212	0.75	727.17	*	11.80	9.64E-01	4.74E-01
		1620.62		2.75		
PB-212	0.98	238.63	*	44.60	9.01E-01	1.38E-01
		300.09	*	3.41	1.61E+00	1.23E+00
BI-214	0.97	609.31	*	46.30	1.61E+00	2.46E-01
		1120.29	*	15.10	1.83E+00	6.81E-01
		1764.49	*	15.80	1.63E+00	4.83E-01
		2204.22	*	4.98	2.02E+00	1.16E+00
PB-214	0.90	295.21	*	19.19	1.48E+00	3.61E-01
		351.92	*	37.19	1.82E+00	3.50E-01
RA-224	0.85	240.98	*	3.95	3.36E+00	1.05E+00
RA-226	0.99	186.21	*	3.28	3.29E+00	6.23E+00
AC-228	0.93	338.32	*	11.40	8.91E-01	5.01E-01
		911.07	*	27.70	7.79E-01	2.72E-01

Analysis Report for 1601047-06

SED4

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
AC-228	0.93	969.11	*	16.60	7.28E-01	5.76E-01
TH-231	0.97	25.64	*	14.70	5.76E+01	2.06E+02
		84.21	*	6.40	7.44E-01	3.26E-01
NP-237	0.91	86.50	*	12.60	5.54E-01	2.76E-01

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

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.951	1.76E+01	2.39E+00	
	GA-67	0.653	5.30E+01	1.90E+02	
	NB-95M	0.733	4.58E+01	2.28E+01	
?	CD-109	0.907	1.96E+00	9.80E-01	
?	SN-126	0.984	1.89E-01	9.39E-02	
?	EU-155	0.308	2.28E-01	1.14E-01	
	TA-182	0.480	1.97E-01	1.04E-01	
	TL-208	0.886	7.51E-01	1.50E-01	
	PB-210	0.993	4.68E+00	2.35E+00	
	BI-212	0.751	9.64E-01	4.74E-01	
	PB-212	0.981	9.00E-01	1.38E-01	
	BI-214	0.975	1.61E+00	2.06E-01	
	PB-214	0.906	1.66E+00	2.51E-01	
	RA-224	0.859	3.36E+00	1.05E+00	
	RA-226	0.999	3.29E+00	6.23E+00	
	AC-228	0.937	7.94E-01	2.21E-01	
	TH-231	0.979	7.44E-01	3.26E-01	
?	NP-237	0.914	5.54E-01	2.76E-01	

Analysis Report for 1601047-06

SED4

? = 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 1601047-06

SED4

UNIDENTIFIED PEAKS

Peak Locate Performed on : 2/4/2016 8:10:40AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	4	76.30	2.25258E-01	9.09		
	8	154.13	2.32456E-02	43.74	Sum	
	10	194.38	2.00736E-02	44.84		
	11	202.74	1.90506E-02	47.05	Tol.	LU-176
	15	270.61	1.77530E-02	43.78	Sum	
	16	284.41	1.38420E-02	62.11	Tol.	I-131 PA-231
	21	511.00	3.32028E-02	21.06		
	24	647.17	7.38636E-03	43.43		
	25	675.52	8.55634E-03	41.34		
	26	683.33	5.70707E-03	60.40		
M	28	768.45	1.15593E-02	28.84		
m	29	772.22	5.39499E-03	56.87		
	30	794.36	4.54545E-03	65.11	Sum	
	31	844.56	5.61111E-03	61.23		
	33	957.08	6.31667E-03	43.75		
	36	1239.47	8.41907E-03	51.89		
	37	1377.88	6.43162E-03	36.39		
	38	1411.58	1.36111E-02	24.15		
	40	1508.77	3.63095E-03	61.92	Sum	
	41	1589.67	4.22839E-03	52.76		
	42	1682.58	2.22222E-03	35.36		
	43	1730.17	5.75855E-03	32.00	Sum	
	45	1824.82	1.38889E-03	44.72		
	46	1848.63	2.55342E-03	48.35	Sum	
	47	1953.51	1.66667E-03	61.24		
	48	2104.44	4.00716E-03	36.02	S-Esc	
	49	2118.05	2.22222E-03	54.49	Sum	
	50	2140.82	1.94444E-03	51.51		
	52	2448.15	1.94444E-03	37.80		
	54	3042.75	1.38889E-03	44.72		

Analysis Report for 1601047-06

SED4

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	1.18E-01	7.91E-01	7.91E-01
+	NA-22	1274.54		99.94	-1.13E-03	7.75E-02	7.75E-02
+	NA-24	1368.53		99.99	3.04E+10	1.00E+11	6.52E+11
		2754.09		99.86	0.00E+00		1.00E+11
+	AL-26	1808.65		99.76	-2.28E-02	6.08E-02	6.08E-02
+	K-40	1460.81	*	10.67	1.76E+01	9.46E-01	9.46E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	1.05E-01	6.45E-02	6.45E-02
		78.34		96.00	2.52E-01		7.76E-02
+	SC-46	889.25		99.98	1.29E-03	9.66E-02	9.66E-02
		1120.51		99.99	3.14E-01		1.88E-01
+	V-48	983.52		99.98	1.26E-01	2.63E-01	2.63E-01
		1312.10		97.50	9.72E-02		2.83E-01
+	CR-51	320.08		9.83	-5.77E-01	1.02E+00	1.02E+00
+	MN-54	834.83		99.97	2.21E-03	8.36E-02	8.36E-02
+	CO-56	846.75		99.96	3.71E-02	1.06E-01	1.06E-01
		1037.75		14.03	-4.89E-01		5.73E-01
		1238.25		67.00	1.45E-01		2.21E-01
		1771.40		15.51	-6.39E-02		5.14E-01
		2598.48		16.90	4.98E-02		3.95E-01
+	CO-57	122.06		85.51	1.48E-02	6.04E-02	6.04E-02
		136.48		10.60	-5.33E-02		5.01E-01
+	CO-58	810.76		99.40	1.46E-02	1.02E-01	1.02E-01
+	FE-59	1099.22		56.50	4.69E-02	2.56E-01	2.56E-01
		1291.56		43.20	1.23E-02		3.26E-01
+	CO-60	1173.22		100.00	2.43E-02	9.34E-02	1.06E-01
		1332.49		100.00	3.14E-02		9.34E-02
+	ZN-65	1115.52		50.75	-1.77E-02	1.82E-01	1.82E-01
+	GA-67	93.31	*	35.70	5.43E+01	5.98E+01	5.98E+01
		208.95		2.24	8.48E+02		8.38E+02
		300.22	*	16.00	1.07E+02		1.30E+02
+	SE-75	121.11		16.70	6.29E-02	9.81E-02	3.36E-01

Analysis Report for 1601047-06

SED4

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00		59.20	-4.66E-04	9.81E-02	9.81E-02
		264.65		59.80	2.91E-02		1.04E-01
		279.53		25.20	-1.91E-01		2.50E-01
		400.65		11.40	3.46E-01		6.18E-01
+	RB-82	776.52		13.00	-1.47E-01	9.98E-01	9.98E-01
+	RB-83	520.41		46.00	-2.85E-02	1.40E-01	1.40E-01
		529.64		30.30	1.05E-01		2.36E-01
		552.65		16.40	-1.17E-01		4.00E-01
+	KR-85	513.99		0.43	-6.28E+00	1.69E+01	1.69E+01
+	SR-85	513.99		99.27	-3.65E-02	9.80E-02	9.80E-02
+	Y-88	898.02		93.40	-2.55E-02	8.27E-02	9.56E-02
		1836.01		99.38	2.05E-02		8.27E-02
+	NB-93M	16.57		9.43	-5.87E+03	6.99E+03	6.99E+03
+	NB-94	702.63		100.00	3.05E-02	6.92E-02	7.45E-02
		871.10		100.00	7.13E-03		6.92E-02
+	NB-95	765.79		99.81	1.99E-02	1.59E-01	1.59E-01
+	NB-95M	235.69	*	25.00	4.58E+01	7.08E+01	7.08E+01
+	ZR-95	724.18		43.70	-2.93E-02	1.83E-01	2.65E-01
		756.72		55.30	2.34E-02		1.83E-01
+	MO-99	181.06		6.20	1.07E+02	5.36E+02	7.67E+02
		739.58		12.80	2.03E+02		5.36E+02
		778.00		4.50	4.69E+02		1.34E+03
+	RU-103	497.08		89.00	-1.85E-02	8.49E-02	8.49E-02
+	RU-106	621.84		9.80	-1.63E-01	7.13E-01	7.13E-01
+	AG-108M	433.93		89.90	1.34E-02	6.30E-02	6.30E-02
		614.37		90.40	-3.49E-03		7.83E-02
		722.95		90.50	-4.46E-03		8.13E-02
+	CD-109	88.03	*	3.72	1.96E+00	2.43E+00	2.43E+00
+	AG-110M	657.75		93.14	3.69E-02	8.41E-02	8.41E-02
		677.61		10.53	-8.85E-02		6.83E-01
		706.67		16.46	-9.19E-02		4.36E-01
		763.93		21.98	6.53E-02		3.71E-01
		884.67		71.63	1.38E-02		1.15E-01
		1384.27		23.94	1.12E-01		3.94E-01
+	CD-113M	263.70		0.02	1.05E+02	2.36E+02	2.36E+02
+	SN-113	255.12		1.93	1.47E+00	1.06E-01	3.48E+00
		391.69		64.90	6.84E-02		1.06E-01
+	TE123M	159.00		84.10	-1.07E-02	6.82E-02	6.82E-02
+	SB-124	602.71		97.87	-1.92E-02	9.30E-02	9.30E-02
		645.85		7.26	-1.21E-01		1.25E+00
		722.78		11.10	-4.96E-02		9.04E-01
		1691.02		49.00	6.28E-02		2.03E-01
+	I-125	35.49		6.49	1.77E+00	4.22E+00	4.22E+00
+	SB-125	176.33		6.89	3.27E-01	1.96E-01	7.95E-01
		427.89		29.33	-1.97E-02		1.96E-01
		463.38		10.35	2.62E-01		5.94E-01
		600.56		17.80	1.61E-01		4.22E-01
		635.90		11.32	7.23E-03		6.25E-01

Analysis Report for 1601047-06

SED4

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		SB-126	414.70		83.30	8.02E-02	3.34E-01	3.40E-01
			666.33		99.60	1.60E-01		3.34E-01
			695.00		99.60	3.58E-03		3.45E-01
			720.50		53.80	-1.33E-01		5.44E-01
+		SN-126	87.57	*	37.00	1.89E-01	2.34E-01	2.34E-01
+		SB-127	473.00		25.00	4.64E+00	2.56E+01	2.91E+01
			685.20		35.70	8.57E+00		2.56E+01
			783.80		14.70	-3.36E+01		5.59E+01
+		I-129	29.78		57.00	-4.98E-01	1.09E+00	1.09E+00
			33.60		13.20	-2.02E+00		1.93E+00
			39.58		7.52	1.01E-01		1.64E+00
+		I-131	284.30		6.05	4.81E+00	7.20E-01	1.03E+01
			364.48		81.20	4.01E-01		7.20E-01
			636.97		7.26	-2.75E+00		9.63E+00
			722.89		1.80	-2.30E+00		4.19E+01
+		TE-132	49.72		13.10	3.17E+01	1.91E+01	1.63E+02
			228.16		88.00	-5.10E+00		1.91E+01
+		BA-133	81.00		33.00	9.34E-02	8.02E-02	1.44E-01
			302.84		17.80	-3.55E-01		3.32E-01
			356.01		60.00	-5.89E-01		8.02E-02
+		I-133	529.87		86.30	1.10E+07	1.57E+08	1.57E+08
+		XE-133	81.00		38.00	2.87E+00	4.43E+00	4.43E+00
+		CS-134	563.23		8.38	-6.46E-03	8.86E-02	7.15E-01
			569.32		15.43	1.57E-01		3.98E-01
			604.70		97.60	2.83E-04		8.86E-02
			795.84		85.40	-1.56E-02		9.17E-02
			801.93		8.73	-8.61E-02		9.02E-01
+		CS-135	268.24		16.00	-3.14E-01	3.74E-01	3.74E-01
+	@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41		28.60	1.00E+26		1.00E+26
	@		1678.03		9.54	1.00E+26		1.00E+26
+		CS-136	153.22		7.46	5.30E-01	2.58E-01	3.11E+00
			163.89		4.61	9.95E-01		4.83E+00
			176.55		13.56	3.65E-01		1.63E+00
			273.65		12.66	-1.04E-01		1.84E+00
			340.57		48.50	1.21E-01		5.64E-01
			818.50		99.70	-1.47E-01		2.58E-01
			1048.07		79.60	-1.14E-01		4.14E-01
			1235.34		19.70	0.00E+00		2.36E+00
+		CS-137	661.65		85.12	-5.41E-02	8.31E-02	8.31E-02
+		LA-138	788.74		34.00	-8.77E-03	1.03E-01	2.08E-01
			1435.80		66.00	9.66E-03		1.03E-01
+		CE-139	165.85		80.35	-3.02E-02	7.42E-02	7.42E-02
+		BA-140	162.64		6.70	1.19E+00	9.60E-01	3.44E+00
			304.84		4.50	-4.78E-01		5.54E+00
			423.70		3.20	6.02E-01		7.82E+00
			437.55		2.00	7.59E+00		1.22E+01
			537.32		25.00	3.07E-01		9.60E-01
+		LA-140	328.77		20.50	2.66E-01	3.20E-01	1.34E+00

Analysis Report for 1601047-06

SED4

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LA-140	487.03		45.50	-1.16E-01	3.20E-01	5.27E-01
		815.85		23.50	-4.33E-01		1.21E+00
		1596.49		95.49	7.60E-02		3.20E-01
+	CE-141	145.44		48.40	9.98E-02	1.92E-01	1.92E-01
+	CE-143	57.36		11.80	-2.06E+05	1.61E+05	3.61E+05
		293.26		42.00	-1.01E+05		1.61E+05
		664.55		5.20	8.06E+05		1.21E+06
+	CE-144	133.54		10.80	-2.42E-02	4.85E-01	4.85E-01
+	PM-144	476.78		42.00	2.17E-02	6.31E-02	1.45E-01
		618.01		98.60	-2.81E-02		6.31E-02
		696.49		99.49	-1.35E-02		7.99E-02
+	PM-145	36.85		21.70	2.81E-01	4.01E-01	7.80E-01
		37.36		39.70	1.44E-01		4.01E-01
		42.30		15.10	-2.75E-01		6.55E-01
		72.40		2.31	9.70E-01		2.12E+00
+	PM-146	453.90		39.94	2.74E-02	1.41E-01	1.41E-01
		735.90		14.01	1.01E-01		5.33E-01
		747.13		13.10	-2.13E-01		5.08E-01
+	ND-147	91.11		28.90	-7.08E-01	1.19E+00	1.19E+00
		531.02		13.10	-1.17E+00		2.21E+00
+	PM-149	285.90		3.10	6.45E+02	8.95E+03	8.95E+03
+	EU-152	121.78		20.50	5.79E-02	2.36E-01	2.36E-01
		244.69		5.40	5.03E-03		1.16E+00
		344.27		19.13	-3.09E-02		2.78E-01
		778.89		9.20	3.33E-01		7.43E-01
		964.01		10.40	4.96E-02		9.08E-01
		1085.78		7.22	-4.55E-01		1.04E+00
		1112.02		9.60	1.15E-01		8.93E-01
		1407.95		14.94	4.41E-01		6.22E-01
+	GD-153	97.43		31.30	1.00E-01	1.68E-01	1.68E-01
		103.18		22.20	-9.43E-02		2.28E-01
+	EU-154	123.07		40.50	4.13E-02	1.21E-01	1.21E-01
		723.30		19.70	-2.06E-02		3.76E-01
		873.19		11.50	-2.38E-01		6.13E-01
		996.32		10.30	1.61E-01		8.12E-01
		1004.76		17.90	-5.31E-03		4.42E-01
		1274.45		35.50	-3.15E-03		2.15E-01
+	EU-155	86.50	*	30.90	2.28E-01	2.29E-01	2.83E-01
		105.30		20.70	-3.68E-02		2.29E-01
+	EU-156	811.77		10.40	4.84E-01	2.50E+00	2.50E+00
		1153.47		7.20	1.13E+00		4.54E+00
		1230.71		8.90	2.13E+00		4.15E+00
+	HO-166M	184.41		72.60	-4.02E-02	8.85E-02	8.85E-02
		280.45		29.60	-1.39E-01		1.82E-01
		410.94		11.10	-3.65E-02		5.27E-01
		711.69		54.10	-2.19E-02		1.27E-01
+	TM-171	66.72		0.14	3.85E+01	4.44E+01	4.44E+01
+	HF-172	81.75		4.52	3.85E-01	4.45E-01	1.04E+00
		125.81		11.30	-2.49E-01		4.45E-01

Analysis Report for 1601047-06

SED4

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	LU-172	181.53		20.60	9.98E-01	2.28E+00	4.17E+00
		810.06		16.63	1.10E+00		7.62E+00
		912.12		15.25	2.16E+01		1.37E+01
		1093.66		62.50	-7.37E-01		2.28E+00
+	LU-173	100.72		5.24	-1.94E-02	3.16E-01	9.55E-01
		272.11		21.20	6.82E-02		3.16E-01
+	HF-175	343.40		84.00	-2.85E-03	8.23E-02	8.23E-02
+	LU-176	88.34		13.30	8.07E-01	5.84E-02	5.02E-01
		201.83		86.00	2.93E-03		6.84E-02
		306.78		94.00	1.02E-02		5.84E-02
+	TA-182	67.75	*	41.20	2.06E-01	3.15E-01	3.15E-01
		1121.30	*	34.90	9.32E-01		4.92E-01
		1189.05		16.23	1.96E-01		7.29E-01
		1221.41		26.98	4.24E-02		4.15E-01
		1231.02		11.44	1.39E-01		1.08E+00
+	IR-192	308.46		29.68	-9.25E-02	1.48E-01	2.34E-01
		468.07		48.10	-4.98E-02		1.48E-01
+	HG-203	279.19		77.30	8.65E-03	1.05E-01	1.05E-01
+	BI-207	569.67		97.72	2.42E-02	6.14E-02	6.14E-02
		1063.62		74.90	4.17E-02		1.23E-01
+	TL-208	583.14	*	30.22	7.98E-01	1.19E-01	3.33E-01
		860.37		4.48	3.40E-01		1.71E+00
		2614.66	*	35.85	7.23E-01		1.19E-01
+	BI-210M	262.00		45.00	-4.66E-02	1.17E-01	1.17E-01
		300.00		23.00	-5.44E-03		2.68E-01
+	PB-210	46.50	*	4.25	4.68E+00	3.64E+00	3.64E+00
+	PB-211	404.84		2.90	4.97E-01	2.11E+00	2.11E+00
		831.96		2.90	-2.86E-01		2.59E+00
+	BI-212	727.17	*	11.80	9.64E-01	6.93E-01	6.93E-01
		1620.62		2.75	7.40E-01		2.74E+00
+	PB-212	238.63	*	44.60	9.01E-01	2.29E-01	2.29E-01
		300.09	*	3.41	1.61E+00		1.96E+00
+	BI-214	609.31	*	46.30	1.61E+00	2.33E-01	2.33E-01
		1120.29	*	15.10	1.83E+00		9.66E-01
		1764.49	*	15.80	1.63E+00		4.86E-01
		2204.22	*	4.98	2.02E+00		1.58E+00
+	PB-214	295.21	*	19.19	1.48E+00	4.60E-01	4.79E-01
		351.92	*	37.19	1.82E+00		4.60E-01
+	RN-219	401.80		6.50	-4.37E-01	9.29E-01	9.29E-01
+	RA-223	323.87		3.88	9.89E-01	1.49E+00	1.49E+00
+	RA-224	240.98	*	3.95	3.36E+00	2.55E+00	2.55E+00
+	RA-225	40.00		31.00	8.32E-02	1.35E+00	1.35E+00
+	RA-226	186.21	*	3.28	3.29E+00	2.45E+00	2.45E+00
+	TH-227	50.10		8.40	1.55E-01	6.89E-01	7.98E-01
		236.00		11.50	-4.27E+00		6.89E-01
		256.20		6.30	-9.46E-02		9.17E-01
+	AC-228	338.32	*	11.40	8.91E-01	3.68E-01	7.81E-01
		911.07	*	27.70	7.79E-01		3.68E-01

Analysis Report for 1601047-06

SED4

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AC-228	969.11	*	16.60	7.28E-01	3.68E-01	9.19E-01
+	TH-230	48.44		16.90	-6.23E-01	4.46E-01	4.46E-01
		62.85		4.60	1.00E+00		1.29E+00
		67.67		0.37	2.69E+01		1.65E+01
+	PA-231	283.67		1.60	1.77E+00	2.55E+00	3.81E+00
		302.67		2.30	-2.73E+00		2.55E+00
+	TH-231	25.64	*	14.70	5.76E+01	1.30E+00	3.91E+01
		84.21	*	6.40	7.44E-01		1.30E+00
+	PA-233	311.98		38.60	8.38E-02	2.87E-01	2.87E-01
+	PA-234	131.20		20.40	6.10E-02	2.48E-01	2.48E-01
		733.99		8.80	-3.56E-01		7.94E-01
		946.00		12.00	2.18E-03		6.44E-01
+	PA-234M	1001.03		0.92	-2.87E+00	9.07E+00	9.07E+00
+	TH-234	63.29		3.80	1.21E+00	1.55E+00	1.55E+00
+	U-235	143.76		10.50	-2.09E-03	4.95E-01	4.95E-01
		163.35		4.70	3.92E-01		1.14E+00
		205.31		4.70	4.82E-01		1.23E+00
+	NP-237	86.50	*	12.60	5.54E-01	6.88E-01	6.88E-01
+	NP-239	106.10		22.70	1.06E+02	5.99E+02	5.99E+02
		228.18		10.70	-3.80E+02		1.42E+03
		277.60		14.10	-1.34E+02		1.09E+03
+	AM-241	59.54		35.90	5.74E-02	1.61E-01	1.61E-01
+	AM-243	74.67		66.00	-1.49E-01	1.07E-01	1.07E-01
+	CM-243	209.75		3.29	2.33E-02	3.89E-01	1.81E+00
		228.14		10.60	-1.36E-01		5.08E-01
		277.60		14.00	-4.77E-02		3.89E-01

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

NUCLIDE MDA REPORT

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

Analysis Report for 1601047-06

SED4

	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	7.91E-01	7.91E-01	1.18E-01	3.71E-01
	NA-22	1274.54		99.94	7.75E-02	7.75E-02	-1.13E-03	3.47E-02
	NA-24	1368.53		99.99	6.52E+11	1.00E+11	3.04E+10	2.84E+11
		2754.09		99.86	1.00E+11		0.00E+00	0.00E+00
	AL-26	1808.65		99.76	6.08E-02	6.08E-02	-2.28E-02	2.55E-02
+	K-40	1460.81	*	10.67	9.46E-01	9.46E-01	1.76E+01	4.32E-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	6.45E-02	6.45E-02	1.05E-01	3.14E-02
		78.34		96.00	7.76E-02		2.52E-01	3.80E-02
	SC-46	889.25		99.98	9.66E-02	9.66E-02	1.29E-03	4.46E-02
		1120.51		99.99	1.88E-01		3.14E-01	8.93E-02
	V-48	983.52		99.98	2.63E-01	2.63E-01	1.26E-01	1.21E-01
		1312.10		97.50	2.83E-01		9.72E-02	1.28E-01
	CR-51	320.08		9.83	1.02E+00	1.02E+00	-5.77E-01	4.84E-01
	MN-54	834.83		99.97	8.36E-02	8.36E-02	2.21E-03	3.88E-02
	CO-56	846.75		99.96	1.06E-01	1.06E-01	3.71E-02	4.93E-02
		1037.75		14.03	5.73E-01		-4.89E-01	2.56E-01
		1238.25		67.00	2.21E-01		1.45E-01	1.03E-01
		1771.40		15.51	5.14E-01		-6.39E-02	2.17E-01
		2598.48		16.90	3.95E-01		4.98E-02	1.60E-01
	CO-57	122.06		85.51	6.04E-02	6.04E-02	1.48E-02	2.92E-02
		136.48		10.60	5.01E-01		-5.33E-02	2.42E-01
	CO-58	810.76		99.40	1.02E-01	1.02E-01	1.46E-02	4.72E-02
	FE-59	1099.22		56.50	2.56E-01	2.56E-01	4.69E-02	1.19E-01
		1291.56		43.20	3.26E-01		1.23E-02	1.49E-01
	CO-60	1173.22		100.00	1.06E-01	9.34E-02	2.43E-02	4.90E-02
		1332.49		100.00	9.34E-02		3.14E-02	4.26E-02
	ZN-65	1115.52		50.75	1.82E-01	1.82E-01	-1.77E-02	8.34E-02
+	GA-67	93.31	*	35.70	5.98E+01	5.98E+01	5.43E+01	2.93E+01
		208.95		2.24	8.38E+02		8.48E+02	4.05E+02
		300.22	*	16.00	1.30E+02		1.07E+02	6.25E+01
	SE-75	121.11		16.70	3.36E-01	9.81E-02	6.29E-02	1.63E-01
		136.00		59.20	9.81E-02		-4.66E-04	4.74E-02
		264.65		59.80	1.04E-01		2.91E-02	4.94E-02
		279.53		25.20	2.50E-01		-1.91E-01	1.19E-01
		400.65		11.40	6.18E-01		3.46E-01	2.92E-01
	RB-82	776.52		13.00	9.98E-01	9.98E-01	-1.47E-01	4.57E-01
	RB-83	520.41		46.00	1.40E-01	1.40E-01	-2.85E-02	6.49E-02
		529.64		30.30	2.36E-01		1.05E-01	1.10E-01
		552.65		16.40	4.00E-01		-1.17E-01	1.85E-01
	KR-85	513.99		0.43	1.69E+01	1.69E+01	-6.28E+00	7.98E+00
	SR-85	513.99		99.27	9.80E-02	9.80E-02	-3.65E-02	4.64E-02
	Y-88	898.02		93.40	9.56E-02	8.27E-02	-2.55E-02	4.40E-02
		1836.01		99.38	8.27E-02		2.05E-02	3.54E-02
	NB-93M	16.57		9.43	6.99E+03	6.99E+03	-5.87E+03	3.41E+03
	NB-94	702.63		100.00	7.45E-02	6.92E-02	3.05E-02	3.48E-02
		871.10		100.00	6.92E-02		7.13E-03	3.17E-02
	NB-95	765.79		99.81	1.59E-01	1.59E-01	1.99E-02	7.52E-02
+	NB-95M	235.69	*	25.00	7.08E+01	7.08E+01	4.58E+01	3.46E+01
	ZR-95	724.18		43.70	2.65E-01	1.83E-01	-2.93E-02	1.25E-01
		756.72		55.30	1.83E-01		2.34E-02	8.53E-02

Analysis Report for 1601047-06

SED4

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	MO-99	181.06		6.20	7.67E+02	5.36E+02	1.07E+02	3.70E+02
		739.58		12.80	5.36E+02		2.03E+02	2.50E+02
		778.00		4.50	1.34E+03		4.69E+02	6.16E+02
	RU-103	497.08		89.00	8.49E-02	8.49E-02	-1.85E-02	3.90E-02
	RU-106	621.84		9.80	7.13E-01	7.13E-01	-1.63E-01	3.32E-01
	AG-108M	433.93		89.90	6.30E-02	6.30E-02	1.34E-02	2.96E-02
		614.37		90.40	7.83E-02		-3.49E-03	3.67E-02
		722.95		90.50	8.13E-02		-4.46E-03	3.79E-02
+	CD-109	88.03	*	3.72	2.43E+00	2.43E+00	1.96E+00	1.19E+00
	AG-110M	657.75		93.14	8.41E-02	8.41E-02	3.69E-02	3.94E-02
		677.61		10.53	6.83E-01		-8.85E-02	3.17E-01
		706.67		16.46	4.36E-01		-9.19E-02	2.02E-01
		763.93		21.98	3.71E-01		6.53E-02	1.73E-01
		884.67		71.63	1.15E-01		1.38E-02	5.29E-02
		1384.27		23.94	3.94E-01		1.12E-01	1.78E-01
	CD-113M	263.70		0.02	2.36E+02	2.36E+02	1.05E+02	1.13E+02
	SN-113	255.12		1.93	3.48E+00	1.06E-01	1.47E+00	1.67E+00
		391.69		64.90	1.06E-01		6.84E-02	5.01E-02
	TE123M	159.00		84.10	6.82E-02	6.82E-02	-1.07E-02	3.29E-02
	SB-124	602.71		97.87	9.30E-02	9.30E-02	-1.92E-02	4.34E-02
		645.85		7.26	1.25E+00		-1.21E-01	5.80E-01
		722.78		11.10	9.04E-01		-4.96E-02	4.21E-01
		1691.02		49.00	2.03E-01		6.28E-02	8.85E-02
	I-125	35.49		6.49	4.22E+00	4.22E+00	1.77E+00	2.02E+00
	SB-125	176.33		6.89	7.95E-01	1.96E-01	3.27E-01	3.84E-01
		427.89		29.33	1.96E-01		-1.97E-02	9.20E-02
		463.38		10.35	5.94E-01		2.62E-01	2.79E-01
		600.56		17.80	4.22E-01		1.61E-01	1.99E-01
		635.90		11.32	6.25E-01		7.23E-03	2.92E-01
	SB-126	414.70		83.30	3.40E-01	3.34E-01	8.02E-02	1.61E-01
		666.33		99.60	3.34E-01		1.60E-01	1.56E-01
		695.00		99.60	3.45E-01		3.58E-03	1.61E-01
		720.50		53.80	5.44E-01		-1.33E-01	2.51E-01
+	SN-126	87.57	*	37.00	2.34E-01	2.34E-01	1.89E-01	1.15E-01
	SB-127	473.00		25.00	2.91E+01	2.56E+01	4.64E+00	1.36E+01
		685.20		35.70	2.56E+01		8.57E+00	1.19E+01
		783.80		14.70	5.59E+01		-3.36E+01	2.56E+01
	I-129	29.78		57.00	1.09E+00	1.09E+00	-4.98E-01	5.25E-01
		33.60		13.20	1.93E+00		-2.02E+00	9.24E-01
		39.58		7.52	1.64E+00		1.01E-01	7.85E-01
	I-131	284.30		6.05	1.03E+01	7.20E-01	4.81E+00	4.96E+00
		364.48		81.20	7.20E-01		4.01E-01	3.41E-01
		636.97		7.26	9.63E+00		-2.75E+00	4.49E+00
		722.89		1.80	4.19E+01		-2.30E+00	1.95E+01
	TE-132	49.72		13.10	1.63E+02	1.91E+01	3.17E+01	7.84E+01
		228.16		88.00	1.91E+01		-5.10E+00	9.15E+00
	BA-133	81.00		33.00	1.44E-01	8.02E-02	9.34E-02	6.99E-02
		302.84		17.80	3.32E-01		-3.55E-01	1.58E-01
		356.01		60.00	8.02E-02		-5.89E-01	3.76E-02
	I-133	529.87		86.30	1.57E+08	1.57E+08	1.10E+07	7.30E+07
	XE-133	81.00		38.00	4.43E+00	4.43E+00	2.87E+00	2.15E+00
	CS-134	563.23		8.38	7.15E-01	8.86E-02	-6.46E-03	3.32E-01
		569.32		15.43	3.98E-01		1.57E-01	1.85E-01

Analysis Report for 1601047-06

SED4

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CS-134	604.70	97.60	8.86E-02	8.86E-02	2.83E-04	4.20E-02
	795.84	85.40	9.17E-02		-1.56E-02	4.26E-02
	801.93	8.73	9.02E-01		-8.61E-02	4.19E-01
CS-135	268.24	16.00	3.74E-01	3.74E-01	-3.14E-01	1.79E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	3.11E+00	2.58E-01	5.30E-01	1.51E+00
	163.89	4.61	4.83E+00		9.95E-01	2.34E+00
	176.55	13.56	1.63E+00		3.65E-01	7.89E-01
	273.65	12.66	1.84E+00		-1.04E-01	8.81E-01
	340.57	48.50	5.64E-01		1.21E-01	2.69E-01
	818.50	99.70	2.58E-01		-1.47E-01	1.17E-01
	1048.07	79.60	4.14E-01		-1.14E-01	1.90E-01
	1235.34	19.70	2.36E+00		0.00E+00	1.10E+00
CS-137	661.65	85.12	8.31E-02	8.31E-02	-5.41E-02	3.88E-02
LA-138	788.74	34.00	2.08E-01	1.03E-01	-8.77E-03	9.62E-02
	1435.80	66.00	1.03E-01		9.66E-03	4.49E-02
CE-139	165.85	80.35	7.42E-02	7.42E-02	-3.02E-02	3.58E-02
BA-140	162.64	6.70	3.44E+00	9.60E-01	1.19E+00	1.66E+00
	304.84	4.50	5.54E+00		-4.78E-01	2.64E+00
	423.70	3.20	7.82E+00		6.02E-01	3.68E+00
	437.55	2.00	1.22E+01		7.59E+00	5.74E+00
	537.32	25.00	9.60E-01		3.07E-01	4.46E-01
LA-140	328.77	20.50	1.34E+00	3.20E-01	2.66E-01	6.38E-01
	487.03	45.50	5.27E-01		-1.16E-01	2.46E-01
	815.85	23.50	1.21E+00		-4.33E-01	5.53E-01
	1596.49	95.49	3.20E-01		7.60E-02	1.39E-01
CE-141	145.44	48.40	1.92E-01	1.92E-01	9.98E-02	9.32E-02
CE-143	57.36	11.80	3.61E+05	1.61E+05	-2.06E+05	1.74E+05
	293.26	42.00	1.61E+05		-1.01E+05	7.77E+04
	664.55	5.20	1.21E+06		8.06E+05	5.69E+05
CE-144	133.54	10.80	4.85E-01	4.85E-01	-2.42E-02	2.35E-01
PM-144	476.78	42.00	1.45E-01	6.31E-02	2.17E-02	6.81E-02
	618.01	98.60	6.31E-02		-2.81E-02	2.92E-02
	696.49	99.49	7.99E-02		-1.35E-02	3.74E-02
PM-145	36.85	21.70	7.80E-01	4.01E-01	2.81E-01	3.74E-01
	37.36	39.70	4.01E-01		1.44E-01	1.92E-01
	42.30	15.10	6.55E-01		-2.75E-01	3.14E-01
	72.40	2.31	2.12E+00		9.70E-01	1.02E+00
PM-146	453.90	39.94	1.41E-01	1.41E-01	2.74E-02	6.58E-02
	735.90	14.01	5.33E-01		1.01E-01	2.48E-01
	747.13	13.10	5.08E-01		-2.13E-01	2.34E-01
ND-147	91.11	28.90	1.19E+00	1.19E+00	-7.08E-01	5.82E-01
	531.02	13.10	2.21E+00		-1.17E+00	1.02E+00
PM-149	285.90	3.10	8.95E+03	8.95E+03	6.45E+02	4.28E+03
EU-152	121.78	20.50	2.36E-01	2.36E-01	5.79E-02	1.14E-01
	244.69	5.40	1.16E+00		5.03E-03	5.60E-01
	344.27	19.13	2.78E-01		-3.09E-02	1.31E-01
	778.89	9.20	7.43E-01		3.33E-01	3.43E-01
	964.01	10.40	9.08E-01		4.96E-02	4.23E-01
	1085.78	7.22	1.04E+00		-4.55E-01	4.71E-01
	1112.02	9.60	8.93E-01		1.15E-01	4.09E-01

Analysis Report for 1601047-06

SED4

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1407.95		14.94	6.22E-01	2.36E-01	4.41E-01	2.82E-01
	GD-153	97.43		31.30	1.68E-01	1.68E-01	1.00E-01	8.17E-02
		103.18		22.20	2.28E-01		-9.43E-02	1.11E-01
	EU-154	123.07		40.50	1.21E-01	1.21E-01	4.13E-02	5.86E-02
		723.30		19.70	3.76E-01		-2.06E-02	1.75E-01
		873.19		11.50	6.13E-01		-2.38E-01	2.81E-01
		996.32		10.30	8.12E-01		1.61E-01	3.74E-01
		1004.76		17.90	4.42E-01		-5.31E-03	2.03E-01
		1274.45		35.50	2.15E-01		-3.15E-03	9.63E-02
+	EU-155	86.50	*	30.90	2.83E-01	2.29E-01	2.28E-01	1.39E-01
		105.30		20.70	2.29E-01		-3.68E-02	1.11E-01
	EU-156	811.77		10.40	2.50E+00	2.50E+00	4.84E-01	1.16E+00
		1153.47		7.20	4.54E+00		1.13E+00	2.10E+00
		1230.71		8.90	4.15E+00		2.13E+00	1.93E+00
	HO-166M	184.41		72.60	8.85E-02	8.85E-02	-4.02E-02	4.29E-02
		280.45		29.60	1.82E-01		-1.39E-01	8.69E-02
		410.94		11.10	5.27E-01		-3.65E-02	2.48E-01
		711.69		54.10	1.27E-01		-2.19E-02	5.90E-02
	TM-171	66.72		0.14	4.44E+01	4.44E+01	3.85E+01	2.16E+01
	HF-172	81.75		4.52	1.04E+00	4.45E-01	3.85E-01	5.04E-01
		125.81		11.30	4.45E-01		-2.49E-01	2.15E-01
	LU-172	181.53		20.60	4.17E+00	2.28E+00	9.98E-01	2.01E+00
		810.06		16.63	7.62E+00		1.10E+00	3.54E+00
		912.12		15.25	1.37E+01		2.16E+01	6.53E+00
		1093.66		62.50	2.28E+00		-7.37E-01	1.05E+00
	LU-173	100.72		5.24	9.55E-01	3.16E-01	-1.94E-02	4.63E-01
		272.11		21.20	3.16E-01		6.82E-02	1.52E-01
	HF-175	343.40		84.00	8.23E-02	8.23E-02	-2.85E-03	3.89E-02
	LU-176	88.34		13.30	5.02E-01	5.84E-02	8.07E-01	2.45E-01
		201.83		86.00	6.84E-02		2.93E-03	3.30E-02
		306.78		94.00	5.84E-02		1.02E-02	2.78E-02
+	TA-182	67.75	*	41.20	3.15E-01	3.15E-01	2.06E-01	1.55E-01
		1121.30	*	34.90	4.92E-01		9.32E-01	2.34E-01
		1189.05		16.23	7.29E-01		1.96E-01	3.37E-01
		1221.41		26.98	4.15E-01		4.24E-02	1.91E-01
		1231.02		11.44	1.08E+00		1.39E-01	5.01E-01
	IR-192	308.46		29.68	2.34E-01	1.48E-01	-9.25E-02	1.11E-01
		468.07		48.10	1.48E-01		-4.98E-02	6.93E-02
	HG-203	279.19		77.30	1.05E-01	1.05E-01	8.65E-03	4.99E-02
	BI-207	569.67		97.72	6.14E-02	6.14E-02	2.42E-02	2.85E-02
		1063.62		74.90	1.23E-01		4.17E-02	5.68E-02
+	TL-208	583.14	*	30.22	3.33E-01	1.19E-01	7.98E-01	1.60E-01
		860.37		4.48	1.71E+00		3.40E-01	7.91E-01
		2614.66	*	35.85	1.19E-01		7.23E-01	4.53E-02
	BI-210M	262.00		45.00	1.17E-01	1.17E-01	-4.66E-02	5.57E-02
		300.00		23.00	2.68E-01		-5.44E-03	1.28E-01
+	PB-210	46.50	*	4.25	3.64E+00	3.64E+00	4.68E+00	1.78E+00
	PB-211	404.84		2.90	2.11E+00	2.11E+00	4.97E-01	9.99E-01
		831.96		2.90	2.59E+00		-2.86E-01	1.20E+00
+	BI-212	727.17	*	11.80	6.93E-01	6.93E-01	9.64E-01	3.25E-01
		1620.62		2.75	2.74E+00		7.40E-01	1.20E+00
+	PB-212	238.63	*	44.60	2.29E-01	2.29E-01	9.01E-01	1.12E-01
		300.09	*	3.41	1.96E+00		1.61E+00	9.41E-01

Analysis Report for 1601047-06

SED4

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BI-214	609.31	*	46.30	2.33E-01	2.33E-01	1.61E+00	1.12E-01
		1120.29	*	15.10	9.66E-01		1.83E+00	4.59E-01
		1764.49	*	15.80	4.86E-01		1.63E+00	2.12E-01
		2204.22	*	4.98	1.58E+00		2.02E+00	6.88E-01
+	PB-214	295.21	*	19.19	4.79E-01	4.60E-01	1.48E+00	2.33E-01
		351.92	*	37.19	4.60E-01		1.82E+00	2.26E-01
	RN-219	401.80		6.50	9.29E-01	9.29E-01	-4.37E-01	4.39E-01
	RA-223	323.87		3.88	1.49E+00	1.49E+00	9.89E-01	7.09E-01
+	RA-224	240.98	*	3.95	2.55E+00	2.55E+00	3.36E+00	1.25E+00
	RA-225	40.00		31.00	1.35E+00	1.35E+00	8.32E-02	6.47E-01
+	RA-226	186.21	*	3.28	2.45E+00	2.45E+00	3.29E+00	1.20E+00
	TH-227	50.10		8.40	7.98E-01	6.89E-01	1.55E-01	3.84E-01
		236.00		11.50	6.89E-01		-4.27E+00	3.35E-01
		256.20		6.30	9.17E-01		-9.46E-02	4.40E-01
+	AC-228	338.32	*	11.40	7.81E-01	3.68E-01	8.91E-01	3.78E-01
		911.07	*	27.70	3.68E-01		7.79E-01	1.73E-01
		969.11	*	16.60	9.19E-01		7.28E-01	4.41E-01
	TH-230	48.44		16.90	4.46E-01	4.46E-01	-6.23E-01	2.15E-01
		62.85		4.60	1.29E+00		1.00E+00	6.25E-01
		67.67		0.37	1.65E+01		2.69E+01	8.03E+00
	PA-231	283.67		1.60	3.81E+00	2.55E+00	1.77E+00	1.82E+00
		302.67		2.30	2.55E+00		-2.73E+00	1.22E+00
+	TH-231	25.64	*	14.70	3.91E+01	1.30E+00	5.76E+01	1.92E+01
		84.21	*	6.40	1.30E+00		7.44E-01	6.41E-01
	PA-233	311.98		38.60	2.87E-01	2.87E-01	8.38E-02	1.36E-01
	PA-234	131.20		20.40	2.48E-01	2.48E-01	6.10E-02	1.20E-01
		733.99		8.80	7.94E-01		-3.56E-01	3.68E-01
		946.00		12.00	6.44E-01		2.18E-03	2.96E-01
	PA-234M	1001.03		0.92	9.07E+00	9.07E+00	-2.87E+00	4.18E+00
	TH-234	63.29		3.80	1.55E+00	1.55E+00	1.21E+00	7.51E-01
	U-235	143.76		10.50	4.95E-01	4.95E-01	-2.09E-03	2.39E-01
		163.35		4.70	1.14E+00		3.92E-01	5.51E-01
		205.31		4.70	1.23E+00		4.82E-01	5.93E-01
+	NP-237	86.50	*	12.60	6.88E-01	6.88E-01	5.54E-01	3.38E-01
	NP-239	106.10		22.70	5.99E+02	5.99E+02	1.06E+02	2.90E+02
		228.18		10.70	1.42E+03		-3.80E+02	6.82E+02
		277.60		14.10	1.09E+03		-1.34E+02	5.21E+02
	AM-241	59.54		35.90	1.61E-01	1.61E-01	5.74E-02	7.80E-02
	AM-243	74.67		66.00	1.07E-01	1.07E-01	-1.49E-01	5.22E-02
	CM-243	209.75		3.29	1.81E+00	3.89E-01	2.33E-02	8.73E-01
		228.14		10.60	5.08E-01		-1.36E-01	2.43E-01
		277.60		14.00	3.89E-01		-4.77E-02	1.85E-01

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

Analysis Report for 1601047-06

SED4

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

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

Sample Title: SED4

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	2	17	48	102	132	468
9:	929	1244	1226	634	820	1220	215	179
17:	199	173	215	202	186	158	189	186
25:	166	153	135	103	92	66	64	78
33:	64	49	48	74	54	50	53	69
41:	52	60	70	74	70	112	215	79
49:	76	82	62	64	79	84	80	61
57:	81	80	92	121	96	89	129	155
65:	103	108	134	199	128	93	117	110
73:	94	165	355	190	402	330	97	112
81:	112	112	91	151	113	109	182	168
89:	100	142	91	98	185	113	115	62
97:	59	79	78	89	63	69	56	67
105:	78	63	67	69	72	54	67	55
113:	68	68	71	57	61	48	68	47
121:	70	62	68	68	52	65	68	63
129:	76	70	56	61	64	60	50	65
137:	64	63	58	63	60	63	54	87
145:	64	44	64	48	64	61	50	63
153:	77	73	74	67	46	50	49	49
161:	52	56	66	62	49	53	55	45
169:	55	51	42	49	44	51	55	50
177:	52	53	47	46	54	51	43	45
185:	66	150	107	48	43	40	42	43
193:	58	64	49	58	44	40	41	46
201:	58	51	59	48	59	31	50	39
209:	55	71	48	41	51	39	53	46
217:	53	42	37	44	45	47	40	42
225:	42	44	37	38	31	33	39	51
233:	34	39	40	83	46	183	393	83
241:	79	149	85	29	42	36	36	42
249:	28	40	23	29	28	32	39	35
257:	44	31	44	30	28	31	36	19
265:	27	39	23	24	47	49	64	46
273:	27	23	35	25	34	27	29	27
281:	23	32	38	42	26	37	33	21
289:	27	26	23	29	24	31	205	155
297:	27	18	32	60	33	23	38	27
305:	27	31	18	27	23	21	29	26
313:	26	23	21	25	29	26	18	15
321:	15	28	24	27	22	29	21	50
329:	28	26	29	28	35	34	31	28
337:	19	65	77	26	21	19	16	18
345:	25	21	23	18	17	24	107	407
353:	145	15	14	14	11	22	29	31
361:	15	12	29	15	28	22	16	15

369:	21	16	18	16	21	19	25	17

Sample Title: SED4

Channel								
377:	18	18	19	17	14	18	21	24
385:	21	21	35	21	11	18	16	21
393:	22	24	16	12	23	14	16	20
401:	29	20	19	16	31	22	18	18
409:	17	18	21	17	21	23	18	25
417:	20	21	17	14	18	14	23	13
425:	21	17	16	19	12	18	10	25
433:	11	10	15	20	20	9	16	12
441:	9	21	16	18	8	10	12	12
449:	15	15	14	7	11	15	25	15
457:	15	8	17	8	15	12	25	21
465:	11	8	18	17	10	16	21	13
473:	11	15	10	6	19	24	15	20
481:	8	20	21	8	7	13	14	15
489:	16	16	14	13	10	10	8	3
497:	11	10	12	12	9	11	7	12
505:	13	8	19	20	21	56	85	44
513:	23	12	15	13	7	10	7	7
521:	15	12	15	11	11	8	12	16
529:	7	15	12	9	8	16	12	15
537:	11	8	10	10	4	16	6	13
545:	18	6	14	12	14	8	8	7
553:	13	12	14	7	11	12	15	12
561:	9	15	13	12	9	7	14	12
569:	11	15	8	9	10	5	6	15
577:	10	10	8	8	8	29	102	63
585:	13	11	8	10	17	12	9	10
593:	8	10	14	10	14	16	18	10
601:	10	8	10	9	8	14	10	54
609:	227	189	29	9	6	11	5	5
617:	11	7	7	7	9	12	9	11
625:	10	10	14	7	7	7	9	10
633:	11	6	15	10	5	14	8	8
641:	12	11	4	4	10	10	14	10
649:	9	9	5	9	9	8	11	11
657:	12	9	5	10	14	8	6	15
665:	9	21	7	7	7	8	2	7
673:	8	9	13	12	9	6	5	3
681:	10	9	10	14	6	10	4	10
689:	8	7	8	10	8	16	15	9
697:	6	8	9	15	10	12	11	5
705:	6	9	6	9	7	10	4	6
713:	14	6	8	12	8	8	6	10
721:	7	3	6	9	14	14	36	14
729:	11	10	7	6	6	4	12	11
737:	9	7	13	8	10	7	8	5
745:	6	4	6	11	7	8	11	9
753:	13	9	9	7	10	7	7	7
761:	7	8	8	13	6	9	10	29
769:	20	7	7	15	5	5	4	6
777:	9	3	7	12	4	6	3	6
785:	5	10	6	7	8	4	10	7
793:	4	11	18	5	7	6	7	12

801:	3	11	11	7	7	8	13	7

Sample Title: SED4

Channel								
809:	2	10	10	9	7	10	5	2
817:	2	9	5	7	5	5	8	3
825:	5	10	6	10	6	5	11	9
833:	5	8	8	9	7	11	4	12
841:	8	2	13	15	9	9	5	7
849:	5	7	9	12	4	11	6	6
857:	4	8	3	10	13	7	6	7
865:	6	5	6	2	7	6	4	7
873:	8	6	4	6	6	14	8	4
881:	6	7	5	5	5	8	12	5
889:	8	8	4	4	10	6	3	9
897:	6	8	6	9	4	6	9	10
905:	3	6	3	6	3	15	51	48
913:	9	5	6	9	7	6	4	3
921:	6	7	5	4	8	8	6	6
929:	8	8	5	6	6	11	14	4
937:	9	8	4	7	6	5	5	5
945:	3	9	6	8	8	7	7	11
953:	3	6	8	8	10	9	6	3
961:	4	8	4	17	10	12	10	26
969:	31	23	6	3	5	7	4	5
977:	7	0	9	3	5	10	9	5
985:	7	7	5	3	6	7	5	6
993:	1	5	5	10	9	7	10	7
1001:	5	7	5	6	6	9	3	3
1009:	5	1	4	7	9	4	8	11
1017:	3	11	10	7	10	3	6	5
1025:	7	3	7	5	9	8	4	6
1033:	6	2	3	6	3	2	3	5
1041:	7	7	5	4	8	6	4	3
1049:	5	6	7	7	10	10	3	5
1057:	7	6	3	8	9	7	5	10
1065:	5	8	6	7	7	7	4	7
1073:	5	6	6	9	6	8	9	7
1081:	3	4	3	6	4	7	3	5
1089:	9	6	6	7	3	10	5	7
1097:	9	8	8	8	7	6	5	7
1105:	4	7	3	3	7	6	7	6
1113:	3	4	8	4	9	7	22	43
1121:	36	10	8	9	2	5	6	5
1129:	9	8	5	4	8	4	4	10
1137:	4	7	4	2	4	7	9	6
1145:	6	5	8	6	10	5	4	7
1153:	8	7	7	11	1	6	6	11
1161:	4	8	9	3	6	7	7	3
1169:	10	5	9	4	12	9	12	7
1177:	8	7	6	6	4	6	9	7
1185:	8	7	7	11	4	11	6	6
1193:	3	7	8	9	7	11	5	10
1201:	4	7	3	5	9	4	10	10
1209:	4	3	3	7	7	7	4	6
1217:	9	5	3	13	6	5	6	6
1225:	4	5	11	8	2	14	7	5

1233:	10	8	4	8	7	20	12	11

Sample Title: SED4

Channel								
1241:	5	4	2	0	4	2	5	5
1249:	6	4	5	5	8	13	5	8
1257:	4	7	3	6	3	3	5	6
1265:	6	5	2	9	1	8	4	3
1273:	2	6	5	2	3	3	3	8
1281:	9	3	7	3	4	7	6	7
1289:	6	7	5	3	6	4	3	6
1297:	8	6	5	5	4	5	4	1
1305:	3	3	7	2	7	2	5	3
1313:	6	4	4	2	2	3	4	6
1321:	2	1	4	6	7	2	5	3
1329:	8	7	5	3	5	6	2	1
1337:	6	1	5	5	1	2	5	3
1345:	7	2	7	3	4	4	2	1
1353:	5	2	0	5	3	3	2	2
1361:	2	5	4	1	0	4	1	3
1369:	1	2	4	2	1	2	4	4
1377:	9	11	7	1	4	4	5	2
1385:	8	4	3	2	3	1	3	3
1393:	1	1	2	1	3	2	3	5
1401:	4	2	1	0	5	2	6	9
1409:	5	6	2	2	4	3	3	3
1417:	4	1	3	3	1	2	1	1
1425:	0	5	4	3	4	2	2	2
1433:	5	3	0	2	0	4	2	2
1441:	3	2	3	3	4	2	3	1
1449:	5	0	0	1	2	1	3	4
1457:	1	5	30	176	246	122	18	4
1465:	0	2	1	0	3	1	2	2
1473:	1	1	0	0	1	2	1	2
1481:	3	1	1	3	1	4	1	4
1489:	3	2	0	3	3	2	1	0
1497:	2	1	2	3	1	0	2	2
1505:	1	2	2	2	10	3	3	1
1513:	3	6	1	0	4	1	4	0
1521:	2	2	0	0	1	2	2	1
1529:	0	1	2	3	4	1	2	2
1537:	3	1	2	1	2	0	1	4
1545:	2	1	1	1	2	3	3	6
1553:	0	1	3	2	1	0	0	1
1561:	2	1	1	2	1	3	2	0
1569:	2	2	1	1	3	1	0	0
1577:	2	1	2	1	2	4	2	4
1585:	2	2	2	5	5	3	1	3
1593:	0	0	1	4	1	1	3	2
1601:	0	1	0	0	3	3	2	3
1609:	0	2	2	0	0	1	2	1
1617:	3	1	2	2	2	2	2	2
1625:	2	0	1	1	0	2	4	1
1633:	1	0	2	2	1	0	0	2
1641:	1	1	2	2	3	1	2	2
1649:	2	1	1	2	2	0	1	1
1657:	2	1	0	2	4	5	3	1

1665:	2	3	0	3	1	3	1	1

Sample Title: SED4

Channel								
1673:	1	0	1	1	0	0	0	0
1681:	3	2	3	0	0	2	3	2
1689:	2	1	1	2	1	1	2	1
1697:	3	0	0	1	2	0	0	1
1705:	4	0	0	1	3	1	3	0
1713:	2	1	1	1	1	4	1	1
1721:	0	1	2	0	2	2	0	5
1729:	4	6	4	1	1	1	0	0
1737:	0	0	0	1	3	1	0	1
1745:	1	1	0	1	0	2	1	3
1753:	2	0	1	0	0	1	0	1
1761:	1	0	9	28	28	7	1	2
1769:	2	1	1	0	2	0	1	0
1777:	3	1	0	0	0	1	1	1
1785:	1	0	3	0	1	2	0	3
1793:	1	4	0	1	0	1	2	0
1801:	2	2	0	0	0	3	2	1
1809:	0	1	1	1	1	4	1	0
1817:	0	1	2	0	0	0	1	2
1825:	2	0	0	0	2	1	2	0
1833:	1	4	0	0	1	4	0	0
1841:	1	1	1	2	1	3	1	4
1849:	4	0	0	1	0	0	2	3
1857:	0	0	3	1	1	0	0	1
1865:	1	0	0	2	0	0	3	3
1873:	1	1	0	2	0	1	1	0
1881:	1	1	0	3	0	1	1	1
1889:	1	0	1	3	0	1	1	4
1897:	2	1	2	1	1	2	2	0
1905:	1	1	0	0	1	2	0	0
1913:	0	0	0	1	0	1	0	0
1921:	1	1	0	1	1	2	1	1
1929:	0	1	0	0	0	1	1	1
1937:	1	1	1	2	0	3	2	2
1945:	2	0	1	1	1	0	1	3
1953:	2	3	0	1	0	1	0	1
1961:	2	0	1	2	2	1	1	2
1969:	1	0	1	3	0	1	0	1
1977:	1	0	0	0	1	1	0	0
1985:	0	1	1	0	0	1	0	0
1993:	0	1	1	2	0	2	0	0
2001:	1	3	0	1	0	1	0	2
2009:	0	1	1	0	2	0	2	0
2017:	0	0	0	0	0	0	2	1
2025:	0	2	1	0	0	0	1	2
2033:	0	1	1	0	0	0	0	0
2041:	2	0	0	0	0	1	1	1
2049:	1	1	2	0	0	0	0	0
2057:	1	1	0	0	0	0	0	3
2065:	1	1	0	2	1	0	0	1
2073:	1	0	0	1	0	1	2	2
2081:	1	0	0	0	0	1	1	3
2089:	1	1	0	0	0	0	1	0

2097:	2	0	0	1	2	2	1	5

Sample Title: SED4

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

2529:	0	0	1	0	1	0	1	0

Sample Title: SED4

Channel								
2537:	0	0	0	0	0	0	0	0
2545:	0	0	0	0	0	0	0	0
2553:	0	0	0	0	0	0	0	0
2561:	0	0	0	1	1	1	1	0
2569:	2	1	0	0	2	0	0	0
2577:	0	0	0	0	1	0	0	0
2585:	0	0	1	0	0	1	0	1
2593:	1	1	1	0	1	0	1	1
2601:	1	0	1	0	0	0	0	0
2609:	0	2	2	7	17	22	16	6
2617:	2	2	0	0	0	0	0	1
2625:	0	1	0	1	0	0	0	0
2633:	0	0	0	1	0	0	0	1
2641:	1	0	0	1	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	1	0	0	0	0	0	0	0
2665:	0	0	0	0	0	0	1	0
2673:	0	0	1	0	1	0	1	0
2681:	0	0	0	0	0	0	0	0
2689:	0	1	0	1	0	0	0	0
2697:	0	1	2	0	0	1	1	0
2705:	0	0	0	1	0	0	0	0
2713:	0	0	0	0	0	0	1	0
2721:	0	0	1	0	0	0	0	0
2729:	0	0	1	0	0	0	0	0
2737:	0	0	1	0	0	0	0	0
2745:	0	0	1	0	0	0	0	0
2753:	0	0	0	0	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	0	0	0	0	0	0	0
2777:	3	0	1	0	0	0	0	0
2785:	1	0	0	0	1	0	0	2
2793:	0	0	0	0	0	1	0	0
2801:	0	0	0	0	0	1	0	0
2809:	0	1	0	1	0	0	0	1
2817:	0	1	0	0	0	0	0	0
2825:	0	0	0	0	0	0	0	0
2833:	1	0	0	0	0	1	0	0
2841:	0	0	0	0	0	0	0	0
2849:	0	0	0	0	0	0	0	1
2857:	0	0	0	0	0	0	1	0
2865:	0	0	0	0	1	0	0	0
2873:	0	0	0	0	0	1	0	1
2881:	0	0	2	0	0	0	0	0
2889:	2	0	1	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	1	0	1	1	1	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	1	0	0	0	0
2929:	0	0	0	0	1	0	0	0
2937:	1	0	1	0	0	0	0	1
2945:	0	1	0	0	1	0	0	0
2953:	1	1	0	0	0	0	0	0

2961:	0	0	0	0	0	0	0	1

Sample Title: SED4

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

3393:	0	0	0	1	0	1	0	1

Sample Title: SED4

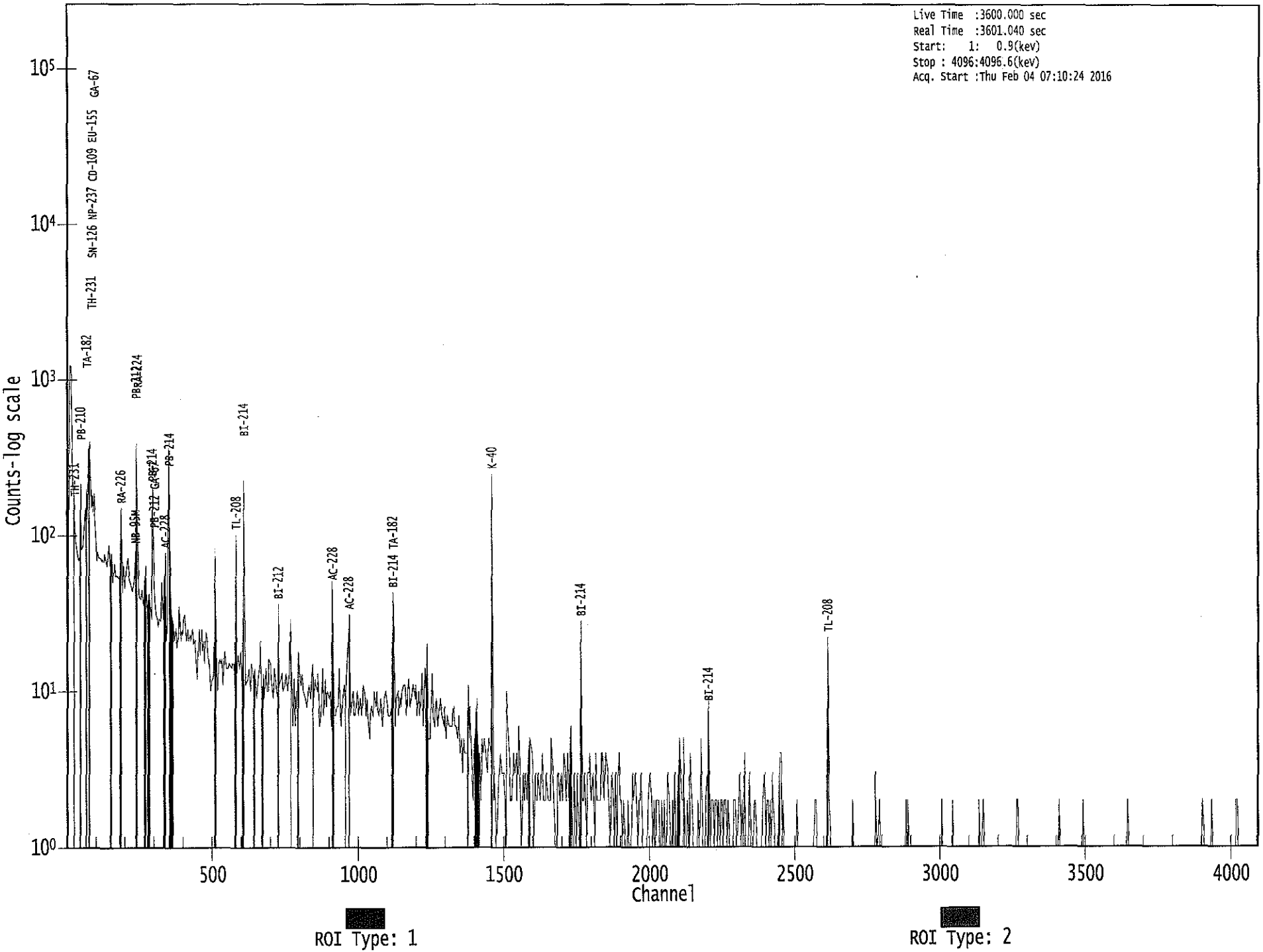
Channel								
3401:	0	0	1	0	1	0	1	0
3409:	2	0	0	0	0	0	0	0
3417:	1	0	0	0	0	0	1	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	1	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	1	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	1	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	1	0	0	0	1
3489:	0	0	0	2	1	1	0	0
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	1	0	0	0	0	0

Sample Title: SED4

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

0000032438.CNF



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

Last Results Report
2/3/16 6:04:07 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000001B.QCK

Detector: GE1
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 2/3/16 5:48:52 AM
Measurement Date: 2/3/16 5:48:55 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE1	2.0500E+000	-1.4718E-001
[SD: 2.2868E+000+/- 1.609]		< : : : >

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
2/3/16 6:26:53 AM

43

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002B.QCK

Detector: GE2
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 2/3/16 6:11:39 AM
Measurement Date: 2/3/16 6:11:41 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE2 [SD: 4.5578E+000+/- 0.275]	4.6856E+000	4.6502E-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
2/3/16 5:39:13 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000001GAF-14C.QCK

Detector: GE1
Geometry: <None>
Certificate: GAF-14
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 2/3/16 5:23:38 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 921.5 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	6.0115E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6159E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1332.49 ke	1.3321E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1836.01 ke	1.8352E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.0816E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	2.0437E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.1127E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-90	2.7686E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.4268E+004	
Boundary Limits: [1.170E-002, 1.754E-002]		< : : : >
Decay corrected activity	6.3726E+003	
Boundary Limits: [4.716E-003, 7.075E-003]		< : : : >

Decay corrected activity 1.0783E+004
Boundary Limits: [7.572E-003, 1.136E-002] < : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity Boundary Limits: [1.626E-002, 2.440E-002]	1.8502E+004	< : : : >

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
2/3/16 5:39:23 AM

C
113

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002GAS-1401C.QC

Detector: GE2
Geometry: <None>
Certificate: GAS-1401
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 2/3/16 5:23:46 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 924.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54kev	6.0000E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 kev	6.6156E+002	
Boundary Limits: [6.600E+002, 6.640E+002]		< : : : >
Peak centroid 1332.49 ke	1.3323E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.1 kev	1.8357E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	1.3614E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	2.0737E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.1250E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.7477E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.5609E+005	
Boundary Limits: [1.224E-001, 1.836E-001]		< : : : >
Decay corrected activity	6.4631E+004	
Boundary Limits: [4.971E-002, 7.457E-002]		< : : : >
Decay corrected activity	1.0539E+005	

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

Decay corrected activity 2.1882E+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)

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

Last Results Report
2/4/16 5:34:02 AM

214

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000001GAF-14C.QCK

Detector: GE1
Geometry: <None>
Certificate: GAF-14
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 2/4/16 5:18:27 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 921.5 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	6.0134E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6154E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1332.49 ke	1.3319E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1836.01 ke	1.8351E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.0843E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	2.1245E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.1496E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-90	2.0130E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.4283E+004	
Boundary Limits: [1.170E-002, 1.754E-002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		

Decay corrected activity 6.1355E+003
Boundary Limits: [4.716E-003, 7.075E-003] < : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	1.0446E+004	
Boundary Limits: [7.572E-003, 1.136E-002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	1.9705E+004	
Boundary Limits: [1.626E-002, 2.440E-002]		< : : : >

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

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

Last Results Report
2/4/16 5:34:12 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002GAS-1401C.QC

Detector: GE2
Geometry: <None>
Certificate: GAS-1401
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 2/4/16 5:18:35 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 924.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54kev	6.0000E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 kev	6.6164E+002	
Boundary Limits: [6.600E+002, 6.640E+002]		< : : : >
Peak centroid 1332.49 ke	1.3325E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.1 kev	1.8359E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	1.3252E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	1.9687E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.3500E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.6539E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.5622E+005	
Boundary Limits: [1.224E-001, 1.836E-001]		< : : : >
Decay corrected activity	6.4517E+004	
Boundary Limits: [4.971E-002, 7.457E-002]		< : : : >
Decay corrected activity	1.0505E+005	

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

Decay corrected activity 2.2496E+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)

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

Last Results Report
2/4/16 6:03:22 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000001B.QCK

Detector: GE1
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 2/4/16 5:48:08 AM
Measurement Date: 2/4/16 5:48:10 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE1 [SD: 2.2864E+000+/- 1.608]	2.0767E+000	-1.3046E-001 < : : : >

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

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

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

Last Results Report
2/4/16 6:03:30 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002B.QCK

Detector: GE2
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 2/4/16 5:48:15 AM
Measurement Date: 2/4/16 5:48:17 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE2 [SD: 4.5580E+000+/- 0.275]	4.3144E+000	-8.8708E-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)