WESTON SOLUTIONS, INC.

PO# 0094759

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #17-07093-OR

September 27, 2017

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

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Eberline Services – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Services Work Order # 17-07093

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

Date for Partial	Initials	Date	Initials	Checklist Items
		7-18-17	JEM	Sample Log-In
		8-25-17	NJL	Data Compilation
		8/30/17	N	First Technical Data Review
		9/1/17	[illegible]	Second Technical Data Review
		9/13/17	[illegible]	Data Entry/Electronic Deliverable
		9/13/17	[illegible]	Case Narrative
		9/27/17	KBS	Electronic Deliverable Proof
		9/27/17	[illegible]	Samples Analyzed within Holding Time Yes? [X] No? [ ]
		9/27/17	[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: [illegible] 9/27/17

Laboratory Manager Date

Copy No. _____

SECTION I

CHAIN OF CUSTODY

USEPA
DateShipped: 7/17/2017
CarrierName: FedEx
AirbillNo:

CHAIN OF CUSTODY RECORD

Case #: 445
Contact Name: Patrick Buster
Contact Phone: 903-348-3917

17-07093
REC'D JUL 18 2017

No: 2-071417-134807-0007

Cooler #:
Lab: Eberline Analytical
Lab Phone: 865-481-0683

Lab #	Sample #	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Lab QC	Sample_Remarks
	HTC-A09-S001-1824-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	12:44	1	16 oz Poly Jar	N	Weight N/A
	HTC-A09-S001-2430-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	12:42	1	16 oz Poly Jar	N	Weight N/A
	HTC-A09-S001-3036-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	12:39	1	16 oz Poly Jar	N	Weight N/A
4	HTC-A09-S001-3642-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	12:37	1	16 oz Poly Jar	N	Weight N/A
5	HTC-A09-S001-4248-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	12:35	1	16 oz Poly Jar	N	Weight N/A
6	HTC-A09-S002-0006-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	09:48	1	16 oz Poly Jar	N	Weight N/A
7	HTC-A09-S002-0612-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	09:46	1	16 oz Poly Jar	N	Weight N/A
8	HTC-A09-S002-1218-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	09:44	1	16 oz Poly Jar	N	Weight N/A
9	HTC-A09-S002-1824-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	09:42	1	16 oz Poly Jar	N	Weight N/A
10	HTC-A09-S002-2430-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	09:40	1	16 oz Poly Jar	N	Weight N/A

Chad Conway

Special Instructions: Gamma Spec(EPA 901.0) analysis in jar "as is" for Ra-226 using 186keV peak for samples. From U decay chain "as is": Th-234, Pa-234 or Pa-234m, Pb-214, Bi-214. From the Th decay chain "as is": Ra-228 and/or Ac-228, Ra-224, Pb-212, Bi-212, Tl-208. For Gamma Spec (homogenized) after 21 day ingrowth: Ra-226 using Bi-214 and/or Pb-214. From U decay chain: Th-234, Pa-234 or Pa-234m. From Th decay chain: Ra-228 and/or Ac-228, Ra-224, Pb-212, Bi-212, Tl-208. Other radionuclides: Cs-137, K-40. Alpha Spec: Iso U (EPA 908.0 Modified): U-233/234, U-235/236, U-238. Iso Th (EPA 907.0 Modified): Th-230, 232, 228. No rocks should be removed, all samples to be pulverized.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
all Samples all Analysis	Chad Conway-Weston	7-17-17/1600	James E Bailey	0930 7-18-17	

0005

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	17-07093
		Lab Deadline	8/10/2017
		Analysis	UUISO - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
Report on dry weight basis.	04	46	L1.5
	05	47	L1.5
	06	113	L1.5
	07	100	L1.5
	08	52	L1.5
	09	39	L1.5
	10	43	L1.5

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1230	Key Saj	8-3-17
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0845	Key Saj	8-4-17
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1000	[illegible]	8-15-17
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8/17/17 0955
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8-17-17 0925
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8-21-17 0855
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8/21 0855
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	8/21/17 1745
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

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EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	17-07093
		Lab Deadline	8/10/2017
		Analysis	ThISO - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
Report on dry weight basis.	04	46	L1.5
	05	47	L1.5
	06	113	L1.5
	07	100	L1.5
	08	52	L1.5
	09	39	L1.5
	10	43	L1.5

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1230	Key Sai	8-3-17
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0845	Key Sai	8-3-17
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	TWW	8-15-17
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		8/17/17 0935
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		8-17-17 0925
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		8-22-17 0844
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		8/22 1024
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	8/22/17 1546
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

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EBERLINE Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	17-07093
		Lab Deadline	See Comments
		Analysis	Gamma - Level 4
		Sample Matrix	SO

Comments

7/20/17 KBD

Re-Analysis: 221 day ingrowth: Report Ac228, Bi212, Cs137, K40, Pa234m, Pb212, Ra224, Ra226 from Bi214/Pb214, Ra228 from Ac228, Tl208, Th234 & positives. Report on dry weight basis.

~~Original Lab Deadline: 08/15/17~~ EJT 07/19/17

~~Rerun Lab Deadline: 08/15/17 Quick Count Report Ac228, Bi212/214, Cs137, K40, Pa234m, Pb212/214, Ra224, Ra226 from 186 keV peak, Ra228 from Ac228, Tl208, Th234 & positives. Report on "As-Is" basis.~~

Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
04	46	L1.5
05	47	L1.5
06	113	L1.5
07	100	L1.5
08	52	L1.5
09	39	L1.5
10	43	L1.5

	Location (circle one)					Technician Initials	
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1230	Key Seij	8-3-17
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0845	Key Seij	8-4-17
Received by	Sample Storage	Rough Prep	Prep	Separations	~~Count Room~~ 0845	CBA	
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB 8/25/17	1603
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

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SECTION II

SAMPLE ACKNOWLEDGEMENT

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
Weston Solutions, Inc.	0094759	Environmental	07/18/2017	28	17-07093
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
94759	Case #445	H	08/10/2017	08/14/2017	08/15/2017

Internal ID	Client ID	Sample Date	Matrix	Storage	Gamma	ThISO	UUISO																				Ttl
01	LCS	07/19/17	SO	L1.5	X	X	X																				3
02	BLANK	07/19/17	SO	L1.5	X	X	X																				3
03	DUP	07/19/17	SO	L1.5	X	X	X																				3
04	HTC-A09-S001-3642-01	05/16/17 12:37	SO	L1.5	X	X	X																				3
05	HTC-A09-S001-4248-01	05/16/17 12:35	SO	L1.5	X	X	X																				3
06	HTC-A09-S002-0006-01	05/16/17 09:48	SO	L1.5	X	X	X																				3
07	HTC-A09-S002-0612-01	05/16/17 09:46	SO	L1.5	X	X	X																				3
08	HTC-A09-S002-1218-01	05/16/17 09:44	SO	L1.5	X	X	X																				3
09	HTC-A09-S002-1824-01	05/16/17 09:42	SO	L1.5	X	X	X																				3
10	HTC-A09-S002-2430-01	05/16/17 09:40	SO	L1.5	X	X	X																				3
																											0
																											0
																											0
																											0
																											0
																											0
																											0
																											0
																											0
																											0
				Totals Per Analysis (non QA samples)	7	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

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

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

Invoice	
	Accounts Payable
	Weston Solutions, Inc.
	1090 King Georges Post Road Suite 201
	Edison, NJ 08837
Voice	732-585-4425
Fax	
Contact	Smita Sumbaly
Voice	732-585-4410
Fax	732-225-7037

Report Data	
	Smita Sumbaly
	Weston Solutions, Inc.
	1090 King Georges Post Rd Suite 201
	Edison, NJ 08837
Voice	732-585-4410
Fax	732-225-7037

0010

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Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 17-07093

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: _____ DATE: 7-18-17

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-42690

September 27, 2017

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Road, Suite 201
Edison, NJ 08837

CASE NARRATIVE
Work Order # 17-07093-OR

SAMPLE RECEIPT

This work order contains seven soil samples received 07/18/2017. These samples were analyzed for Isotopic Uranium, Isotopic Thorium and by Gamma Spectroscopy.

CLIENT ID	LAB ID
HTC-A09-S001-3642-01	17-07093-04
HTC-A09-S001-4248-01	17-07093-05
HTC-A09-S002-0006-01	17-07093-06
HTC-A09-S002-0612-01	17-07093-07
HTC-A09-S002-1218-01	17-07093-08
HTC-A09-S002-1824-01	17-07093-09
HTC-A09-S002-2430-01	17-07093-10

ANALYTICAL METHODS

Isotopic Uranium was analyzed using EPA Method 908.0 Modified. Isotopic Thorium was analyzed using EPA Method 907.0 Modified. Gamma Spectroscopy was performed using EPA Method 901.1 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 determinations. The Uranium-233/234, Uranium-235/236 and Uranium-238 method blank demonstrated acceptable results. Chemical recovery was acceptable for all samples. Results for the Uranium-233/234 and Uranium-238 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Uranium-235/236 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Uranium-234 and Uranium-238 laboratory control sample demonstrated an acceptable percent recovery.

ISOTOPIC THORIUM

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-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 determinations. The Thorium-228, Thorium-230 and Thorium-232 method blank demonstrated acceptable results. Chemical recovery was acceptable for all samples. Results for the Thorium-228, 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.

Initially samples were counted on an "as received basis" and preliminary data only was emailed. After the initial count, samples were dried, pulverized and sealed for Radon-222 ingrowth. Samples demonstrated acceptable results for all gamma emitting radionuclides as reported. Results for the method blank demonstrated acceptable results for all gamma emitting radionuclides as reported. Results for the Radium-226, Radium-228 and Potassium-40 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: 9/27/2017

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:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG:	**17-07093**
Purchase Order:	0094759
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
		21-day INGROWTH											
17-07093-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Cobalt-60	EPA 901.1 Modified	1.35E+02	5.27E+00			pCi/g
17-07093-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	8.44E+01	3.38E+00			pCi/g
17-07093-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Cobalt-60	EPA 901.1 Modified	1.25E+02	7.64E+00	9.99E+00	7.99E-01	pCi/g
17-07093-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	7.98E+01	7.23E+00	8.31E+00	9.32E-01	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	-2.03E-02	6.68E-02	6.68E-02	1.01E-01	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Bismuth-212	EPA 901.1 Modified	-9.28E-02	1.52E-01	1.52E-01	1.88E-01	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	4.01E-02	4.07E-02	4.08E-02	7.29E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	-5.36E-03	1.76E-02	1.76E-02	2.43E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	1.63E-01	1.37E-01	1.37E-01	3.25E-01	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	1.12E+00	1.70E+00	1.70E+00	3.27E+00	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	1.51E-02	2.52E-02	2.52E-02	4.48E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	2.16E-02	3.45E-02	3.45E-02	5.89E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	6.46E-01	4.03E-01	4.04E-01	6.34E-01	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	4.01E-02	4.07E-02	4.08E-02	7.29E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	-2.03E-02	6.68E-02	6.68E-02	1.01E-01	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	3.86E-01	4.53E-01	4.54E-01	7.58E-01	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	3.05E-02	4.53E-02	4.54E-02	8.27E-02	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	1.39E+00	1.98E-01	2.11E-01	3.18E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Bismuth-212	EPA 901.1 Modified	7.88E-01	4.27E-01	4.29E-01	7.34E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	1.02E+00	1.61E-01	1.70E-01	2.35E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	-4.05E-02	4.90E-02	4.91E-02	6.74E-02	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	2.48E+01	2.66E+00	2.95E+00	1.31E+00	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	7.37E+00	6.14E+00	6.15E+00	1.00E+01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	1.34E+00	1.47E-01	1.63E-01	2.06E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	1.02E+00	1.61E-01	1.69E-01	2.49E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	3.53E+00	1.25E+00	1.26E+00	2.33E+00	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	1.02E+00	1.61E-01	1.70E-01	2.35E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	1.39E+00	1.98E-01	2.11E-01	3.18E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	1.36E+00	1.46E+00	1.46E+00	2.44E+00	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	1.14E+00	2.21E-01	2.29E-01	3.75E-01	pCi/g

0017

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

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:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG: **17-07093**
Purchase Order: 0094759
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	1.22E+00	1.75E-01	1.86E-01	3.40E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Bismuth-212	EPA 901.1 Modified	1.06E+00	5.43E-01	5.46E-01	8.48E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	1.03E+00	1.45E-01	1.54E-01	2.05E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	-3.52E-02	5.28E-02	5.28E-02	7.36E-02	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	2.60E+01	2.69E+00	3.00E+00	9.61E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	1.83E+00	5.44E+00	5.44E+00	8.53E+00	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	1.39E+00	1.50E-01	1.66E-01	2.52E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	1.14E+00	1.23E-01	1.36E-01	4.33E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	4.63E+00	1.42E+00	1.44E+00	2.90E+00	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	1.03E+00	1.45E-01	1.54E-01	2.05E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	1.22E+00	1.75E-01	1.86E-01	3.40E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	1.95E+00	1.15E+00	1.16E+00	1.56E+00	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	1.18E+00	1.85E-01	1.95E-01	1.90E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	1.06E+00	1.72E-01	1.80E-01	2.21E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Bismuth-212	EPA 901.1 Modified	5.98E-01	3.95E-01	3.96E-01	6.90E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	9.17E-01	1.40E-01	1.48E-01	1.93E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	3.36E-02	4.44E-02	4.45E-02	7.31E-02	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	1.94E+01	2.28E+00	2.49E+00	9.51E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	-6.16E-01	4.30E+00	4.30E+00	6.52E+00	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	1.06E+00	1.22E-01	1.34E-01	1.92E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	1.03E+00	1.18E-01	1.29E-01	1.70E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	3.21E+00	1.15E+00	1.17E+00	2.19E+00	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	9.17E-01	1.40E-01	1.48E-01	1.93E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	1.06E+00	1.72E-01	1.80E-01	2.21E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	1.70E+00	7.59E-01	7.64E-01	1.23E+00	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	7.99E-01	1.39E-01	1.45E-01	1.50E-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

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:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG:	**17-07093**
Purchase Order:	0094759
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	5.16E-01	5.82E-01	5.82E-01	8.71E-01	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Bismuth-212	EPA 901.1 Modified	6.61E-01	9.80E-01	9.81E-01	1.63E+00	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	4.71E+01	2.30E+00	3.34E+00	7.55E-01	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	-2.54E-01	1.82E-01	1.82E-01	2.41E-01	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	2.73E+00	1.83E+00	1.83E+00	2.66E+00	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	4.59E+01	1.72E+01	1.74E+01	2.68E+01	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	-3.40E-02	4.17E-01	4.17E-01	5.90E-01	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	4.88E+01	3.04E+00	3.94E+00	8.97E-01	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	8.67E+01	8.26E+00	9.39E+00	7.42E+00	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	4.71E+01	2.30E+00	3.34E+00	7.55E-01	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	5.16E-01	5.82E-01	5.82E-01	8.71E-01	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	3.08E+01	4.27E+00	4.55E+00	5.87E+00	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	9.07E-01	4.58E-01	4.60E-01	2.87E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	3.78E-01	6.87E-01	6.87E-01	9.61E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Bismuth-212	EPA 901.1 Modified	7.29E-01	1.11E+00	1.11E+00	1.88E+00	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	2.63E+01	1.65E+00	2.13E+00	6.65E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	-4.41E-02	5.66E-02	5.67E-02	2.60E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	7.73E+00	2.87E+00	2.90E+00	4.43E+00	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	2.93E+01	1.86E+01	1.86E+01	3.00E+01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	-4.30E-02	1.29E-01	1.29E-01	5.32E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	2.55E+01	1.62E+00	2.08E+00	8.64E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	4.99E+01	5.53E+00	6.10E+00	6.46E+00	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	2.63E+01	1.65E+00	2.13E+00	6.65E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	3.78E-01	6.87E-01	6.87E-01	9.61E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	2.08E+01	3.87E+00	4.01E+00	5.74E+00	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	4.78E-01	2.14E-01	2.15E-01	2.73E-01	pCi/g

0019

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

Eberline Analytical
Final Report of Analysis

Report To:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG:	**17-07093**
Purchase Order:	0094759
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	6.70E-01	1.70E-01	1.74E-01	3.12E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Bismuth-212	EPA 901.1 Modified	3.10E-01	3.28E-01	3.28E-01	5.43E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	1.51E+00	1.75E-01	1.91E-01	1.97E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	3.12E-02	3.04E-02	3.05E-02	6.22E-02	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	1.31E+01	1.61E+00	1.75E+00	8.39E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	1.28E+00	4.43E+00	4.44E+00	7.01E+00	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	6.74E-01	9.26E-02	9.88E-02	2.12E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	1.63E+00	1.56E-01	1.77E-01	1.74E-01	**pCi/g**
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	5.74E+00	1.44E+00	1.47E+00	2.02E+00	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	1.51E+00	1.75E-01	1.91E-01	1.97E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	6.70E-01	1.70E-01	1.74E-01	3.12E-01	**pCi/g**
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	8.76E-01	7.55E-01	7.57E-01	1.16E+00	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	6.62E-01	1.16E-01	1.21E-01	8.82E-02	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	8.63E-01	2.01E-01	2.06E-01	4.07E-01	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	**7/18/2017**	**8/25/2017**	17-07093	Bismuth-212	EPA 901.1 Modified	3.41E-01	4.11E-01	4.11E-01	6.87E-01	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	8.81E-01	1.46E-01	1.53E-01	1.95E-01	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	3.21E-02	5.20E-02	5.20E-02	8.15E-02	**pCi/g**
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	1.31E+01	1.63E+00	1.76E+00	8.19E-01	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	-2.37E+00	5.46E+00	5.47E+00	7.48E+00	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	8.10E-01	1.18E-01	1.25E-01	2.04E-01	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	9.12E-01	1.48E-01	1.55E-01	2.21E-01	**pCi/g**
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	2.92E+00	1.11E+00	1.12E+00	2.30E+00	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	8.81E-01	1.46E-01	1.53E-01	1.95E-01	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	8.63E-01	2.01E-01	2.06E-01	4.07E-01	**pCi/g**
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	7.71E-01	1.04E+00	1.04E+00	1.37E+00	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	6.20E-01	1.33E-01	1.36E-01	8.66E-02	pCi/g

0020

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

Eberline Analytical
Final Report of Analysis

Report To:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG:	**17-07093**
Purchase Order:	0094759
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Actinium-228	EPA 901.1 Modified	7.43E-01	2.59E-01	2.61E-01	4.77E-01	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Bismuth-212	EPA 901.1 Modified	1.45E-01	1.90E-01	1.90E-01	8.26E-01	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Bismuth-214	EPA 901.1 Modified	9.02E-01	1.65E-01	1.72E-01	2.16E-01	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Cesium-137	EPA 901.1 Modified	8.21E-02	6.56E-02	6.58E-02	1.06E-01	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Potassium-40	EPA 901.1 Modified	1.52E+01	2.06E+00	2.20E+00	1.09E+00	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Protactinium-234m	EPA 901.1 Modified	-1.10E+00	6.89E+00	6.89E+00	9.61E+00	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Lead-212	EPA 901.1 Modified	8.86E-01	1.74E-01	1.80E-01	2.39E-01	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Lead-214	EPA 901.1 Modified	7.47E-01	1.40E-01	1.45E-01	2.04E-01	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Radium-224	EPA 901.1 Modified	7.57E+00	1.40E+00	1.46E+00	2.26E+00	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Radium-226	EPA 901.1 Modified	9.02E-01	1.65E-01	1.72E-01	2.16E-01	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Radium-228	EPA 901.1 Modified	7.43E-01	2.59E-01	2.61E-01	4.77E-01	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Thorium-234	EPA 901.1 Modified	-8.42E-02	1.05E+00	1.05E+00	1.51E+00	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/25/2017	17-07093	Thallium-208	EPA 901.1 Modified	7.66E-01	2.04E-01	2.08E-01	5.46E-02	pCi/g
17-07093-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	4.76E+00	1.71E-01			pCi/g
17-07093-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	5.68E+00	9.07E-01	1.05E+00	6.88E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	-2.37E-02	3.61E-02	3.62E-02	1.28E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	1.35E+00	4.08E-01	4.27E-01	1.29E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	1.16E+00	3.29E-01	3.47E-01	1.23E-01	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	1.04E+00	2.84E-01	3.00E-01	7.04E-02	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	6.50E-01	2.84E-01	2.91E-01	1.75E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	4.49E-01	2.23E-01	2.27E-01	1.63E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	9.91E-01	3.14E-01	3.28E-01	8.36E-02	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	8.39E-01	2.61E-01	2.73E-01	9.28E-02	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/22/2017	17-07093	Thorium-228	EPA 907.0 Modified	7.30E-01	2.53E-01	2.63E-01	9.50E-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

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:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG:	**17-07093**
Purchase Order:	0094759
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-07093-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	5.45E+00	1.47E-01			pCi/g
17-07093-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	6.44E+00	1.01E+00	1.28E+00	8.64E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	4.30E-02	6.19E-02	6.22E-02	1.01E-01	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	1.14E+00	3.50E-01	3.77E-01	8.53E-02	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	9.91E-01	2.85E-01	3.10E-01	8.79E-02	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	1.08E+00	2.82E-01	3.12E-01	5.09E-02	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	4.27E+01	8.81E+00	1.03E+01	1.48E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	2.45E+01	5.01E+00	5.86E+00	1.43E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	1.81E+00	4.64E-01	5.15E-01	7.60E-02	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	2.58E+00	5.64E-01	6.48E-01	6.39E-02	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/22/2017	17-07093	Thorium-230	EPA 907.0 Modified	7.14E-01	2.40E-01	2.56E-01	7.31E-02	pCi/g
17-07093-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	4.76E+00	1.71E-01			pCi/g
17-07093-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	5.67E+00	9.06E-01	1.03E+00	7.55E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	1.76E-02	4.39E-02	4.40E-02	9.14E-02	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	1.14E+00	3.52E-01	3.66E-01	1.00E-01	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	1.13E+00	3.10E-01	3.26E-01	8.35E-02	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	8.50E-01	2.40E-01	2.51E-01	5.08E-02	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	5.31E-01	2.42E-01	2.46E-01	1.48E-01	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	5.95E-01	2.49E-01	2.54E-01	1.38E-01	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	1.03E+00	3.11E-01	3.24E-01	6.62E-02	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	7.34E-01	2.31E-01	2.40E-01	8.41E-02	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/22/2017	17-07093	Thorium-232	EPA 907.0 Modified	8.29E-01	2.65E-01	2.75E-01	8.61E-02	pCi/g

0022

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

Eberline Analytical
Final Report of Analysis

Report To:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG: **17-07093**
Purchase Order: 0094759
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-07093-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	7.67E+00	2.76E-01			pCi/g
17-07093-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	5.98E+00	8.59E-01	9.59E-01	1.02E-01	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	6.64E-02	6.08E-02	6.10E-02	5.74E-02	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	8.12E-01	2.10E-01	2.18E-01	5.57E-02	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	8.38E-01	2.12E-01	2.20E-01	6.06E-02	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	9.83E-01	2.43E-01	2.53E-01	7.08E-02	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	3.87E+01	4.54E+00	5.32E+00	6.70E-02	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	2.59E+01	3.08E+00	3.59E+00	7.52E-02	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	1.70E+00	3.44E-01	3.65E-01	8.22E-02	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	8.90E-01	2.13E-01	2.23E-01	5.15E-02	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/21/2017	17-07093	Uranium-233/234	EPA 908.0 Modified	1.61E+00	3.00E-01	3.22E-01	6.62E-02	pCi/g
17-07093-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	4.69E-01	1.86E-01	1.89E-01	9.69E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	1.12E-02	3.42E-02	3.42E-02	8.11E-02	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	1.44E-01	9.54E-02	9.60E-02	9.06E-02	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	2.61E-02	3.99E-02	3.99E-02	5.95E-02	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	1.81E-01	1.07E-01	1.08E-01	7.40E-02	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	2.78E+00	5.30E-01	5.66E-01	7.21E-02	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	1.92E+00	4.08E-01	4.30E-01	6.86E-02	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	6.95E-02	7.18E-02	7.19E-02	9.08E-02	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	7.52E-02	6.45E-02	6.48E-02	6.35E-02	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/21/2017	17-07093	Uranium-235/236	EPA 908.0 Modified	1.34E-01	8.57E-02	8.62E-02	7.31E-02	pCi/g
17-07093-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	7.43E+00	2.68E-01			pCi/g
17-07093-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	6.38E+00	9.03E-01	1.01E+00	8.32E-02	pCi/g
17-07093-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	2.50E-02	3.83E-02	3.83E-02	5.71E-02	pCi/g
17-07093-03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	9.96E-01	2.36E-01	2.46E-01	4.84E-02	pCi/g
17-07093-04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	8.23E-01	2.10E-01	2.18E-01	6.04E-02	pCi/g
17-07093-05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	8.43E-01	2.22E-01	2.30E-01	6.56E-02	pCi/g
17-07093-06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	3.86E+01	4.54E+00	5.32E+00	8.37E-02	pCi/g
17-07093-07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	2.51E+01	2.99E+00	3.48E+00	9.10E-02	pCi/g
17-07093-08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	1.86E+00	3.64E-01	3.88E-01	8.56E-02	pCi/g
17-07093-09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	6.32E-01	1.75E-01	1.81E-01	6.43E-02	pCi/g
17-07093-10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	7/18/2017	8/21/2017	17-07093	Uranium-238	EPA 908.0 Modified	1.21E+00	2.51E-01	2.65E-01	5.00E-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

0023

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 LA

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: 7/12/2017 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: June 28, 2018

Verified & Approved By _____ Date: 7/12/2017 0:00

QC Approval _____ Date: 7/25/17

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 7/12/2017 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: June 28, 2018

Verified & Approved By _____ Date: 7/12/2017 0:00

QC Approval _____ Date: 7/25/17

RECORD COPY

Tracer Solution for Environmental Analysis & Disequilibrium Studies

Product Description & Measurement Certificate

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

Accuracy

Method of measurement (see reverse of this certificate)
Random uncertainty is: ± 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: 11/7/2016 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 7, 2017

Verified & Approved By _____ Date: 11/7/2016 0:00

QC Approval _____ Date: 11/10/16

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 11/7/2016 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 7, 2017

Verified & Approved By _____ Date: 11/7/2016 0:00

QC Approval _____ Date: 11/10/16

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 — 9-Jan-02 Date Signed — 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: 8/16/2017 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 11, 2018

Verified & Approved By _____ Date: 8/16/2017 0:00

QC Approval _____ Date: 8/16/17

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 8/16/2017 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

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

NOTES:

Expiration Date: August 11, 2018

Verified & Approved By _____ Date: 8/16/2017 0:00

QC Approval _____ Date: 8/16/17

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.,
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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: 2/28/2017 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 1, 2018

Recertified By _____ Date: 2/28/2017 0:00

QC Approval _____ Date: 3/1/17

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** 2/28/2017 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
Parent Solution Conc. 2.30E+03 dpm/ml

Reference Date 11/1/1991 0:00

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

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

NOTES:

Expiration Date: February 1, 2018

Recertified By _____ Date: 2/28/2017 0:00

QC Approval _____ Date: 3/1/17

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 — 9-Jan-02 Date Signed — 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: 8/16/2017 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 11, 2018

Verified & Approved By _____ Date: 8/16/2017 0:00

QC Approval _____ Date: 8/16/17

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

MP-009
Solution Reference # IPL 867-54

Date 8/16/2017 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

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

NOTES:

Expiration Date: August 11, 2018

Verified & Approved By _____ Date: 8/16/2017 0:00

QC Approval _____ Date: 8/16/17

Eckert & Ziegler
Analytics

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

CERTIFICATE OF CALIBRATION

Standard Reference Source

GAS-1602

SRS Number: 104852
Source Description: Sand in 16 Ounce PP Omega Jar Filled to Capacity
Product Code: 8401-EG-SAN
Customer: Eberline Analytical Corporation
P.O. Number: OR-1610009, Item 4

This standard radionuclide source was prepared from an aliquot measured gravimetrically from a master radionuclide solution calibrated with a germanium gamma-ray spectrometer system. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using germanium gamma-ray spectrometry. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology (NIST) through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Reference Date: 01-October-2016 12:00 PM EST

MGS Mixture

Isotope	Gamma-Ray Energy, keV	Half-Life, d	Activity, Bq	Flux, s^{-1}	Uncertainty u_A, %	Uncertainty u_B, %	Uncertainty U, %*	Calibration Method**
Am-241	59.5	1.580E+05	5.500E+03	1.976E+03	0.1	1.8	3.6	4π LS
Cd-109	88.0	4.614E+02	7.668E+04	2.837E+03	0.5	2.0	4.1	HPGe
Co-57	122.1	2.717E+02	2.240E+03	1.917E+03	0.4	1.7	3.4	HPGe
Ce-139	165.9	1.376E+02	2.655E+03	2.124E+03	0.4	1.7	3.6	HPGe
Hg-203	279.2	4.669E+01	5.063E+03	4.917E+03	0.3	1.7	3.5	HPGe
Sn-113	391.7	1.151E+02	4.528E+03	2.942E+03	0.4	1.9	3.9	HPGe
Cs-137	661.7	1.099E+04	9.249E+03	11.914E+03	0.7	1.9	4.1	HPGe
Y-88	898.0	1.066E+02	7.415E+03	6.948E+03	0.7	1.7	3.7	HPGe
Y-88	1836.1			7.356E+03	0.7	1.7	3.7	
Co-60	1173.2	1.925E+03	3.562E+03	3.557E+03	0.7	1.8	3.9	HPGe
Co-60	1332.5			3.561E+03	0.7	1.8	3.9	

Mixed Gamma (MGS) master solution is EZA's eight isotope mixture which is calibrated quarterly and consists of Cd-109, Co-57, Ce-139, Hg-203, Sn-113, Cs-137, Y-88, and Co-60. ***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results." ****Calibration Methods:** 4π LS - 4π Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber.

(Certificate continued on reverse side)

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07093	UUISO	1	pCi	g	Weston Solutions, Inc.

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
U-234		77.92%	16.04%	100.00%	3.60%	7.67E+00	2.76E-01	5.98E+00	9.59E-01	U-8a	3.20E+01	3.60E+00	5.32E-01
U-238		85.81%	15.85%	100.00%	3.60%	7.43E+00	2.68E-01	6.38E+00	1.01E+00	U-8a	3.10E+01	3.60E+00	5.32E-01

Matrix Spike

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

Replicate Sample

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU
U-234	0.16	3.12	8.38E-01	2.20E-01	8.12E-01	2.18E-01
U-238	1.03	19.08	8.23E-01	2.18E-01	9.96E-01	2.46E-01
U-235	2.21	138.47	2.61E-02	3.99E-02	1.44E-01	9.60E-02

QC Summary

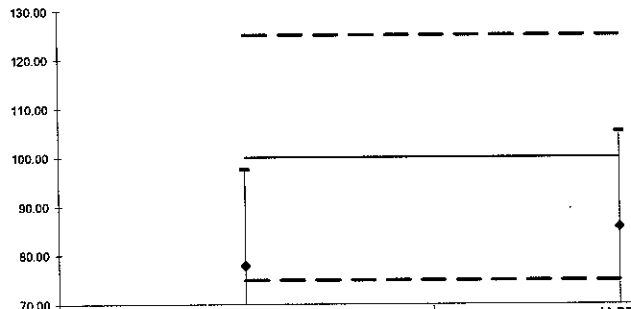
LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
0.78	OK				OK	OK
0.86	OK				OK	OK
	OK				NA	OK

0042

Version

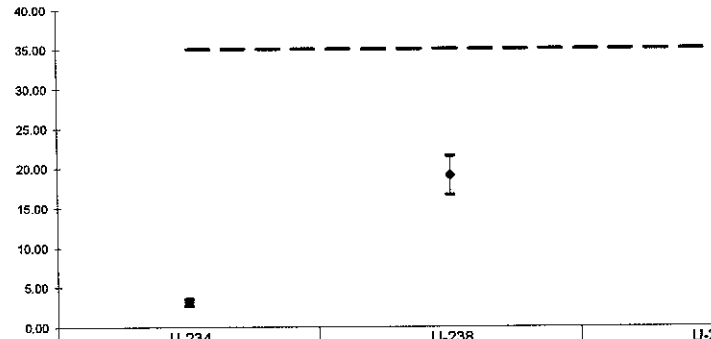
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07093	UUISO	1	pCi	g	Weston Solutions, Inc.

LCS % Recovery



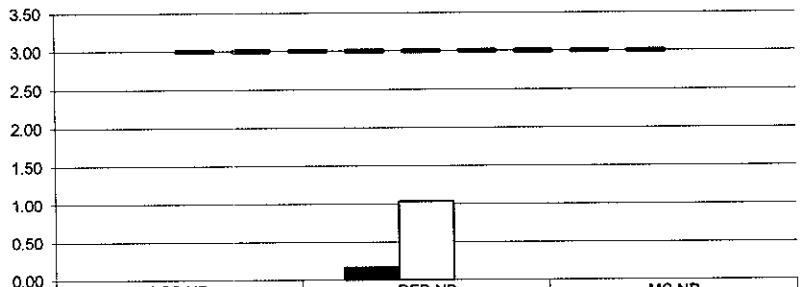
	U-234	U-238
Lower Error	58.27	66.36
Upper Error	97.56	105.26
%R	77.92	85.81
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	U-234	U-238	U-235
Lower Error	3.54	21.52	193.95
Upper Error	2.71	16.65	82.98
RPD	3.12	19.08	138.47
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
U-234	0.00	0.16	0.00
U-238	0.00	1.03	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike

0043

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07093	ThISO	1	pCi	g	Weston Solutions, Inc.

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
TH-228		119.38%	18.53%	100.00%	3.60%	4.76E+00	1.71E-01	5.68E+00	1.05E+00	Th-8b	1.04E+02	3.60E+00	1.02E-01
TH-230		118.08%	19.91%	100.00%	2.70%	5.45E+00	1.47E-01	6.44E+00	1.28E+00	Th-1b	2.35E+01	2.70E+00	5.15E-01
TH-232		119.23%	18.24%	100.00%	3.60%	4.76E+00	1.71E-01	5.67E+00	1.03E+00	Th-8b	1.04E+02	3.60E+00	1.02E-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	0.66	14.83	1.16E+00	3.47E-01	1.35E+00	4.27E-01
TH-230	0.58	13.61	9.91E-01	3.10E-01	1.14E+00	3.77E-01
TH-232	0.07	1.46	1.13E+00	3.26E-01	1.14E+00	3.66E-01

QC Summary

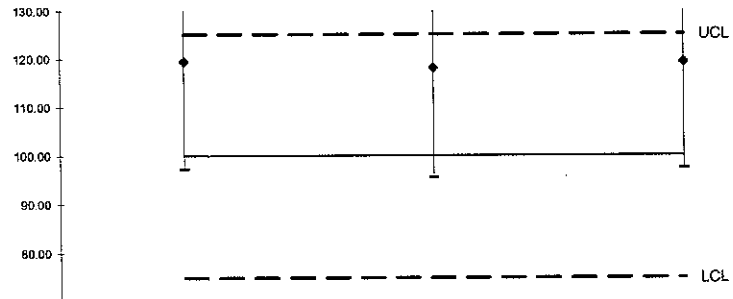
LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
1.19	OK				OK	OK
1.18	OK				OK	OK
1.19	OK				OK	OK

0044

Version

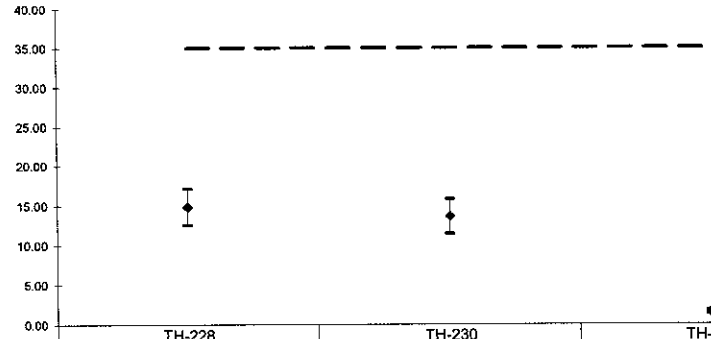
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07093	ThISO	1	pCi	g	Weston Solutions, Inc.

LCS % Recovery



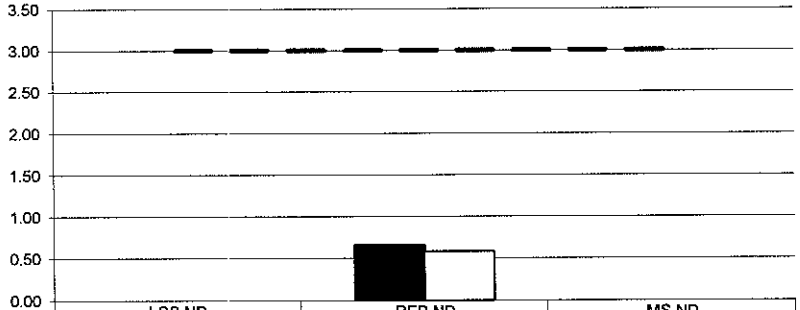
	TH-228	TH-230	TH-232
Lower Error	97.25	95.47	97.39
Upper Error	141.52	140.69	141.07
%R	119.38	118.08	119.23
LCL	75	75	75
Mean	100	100	100
UCL	125	125	125

Replicate Sample RPD



	TH-228	TH-230	TH-232
Lower Error	17.11	15.81	1.68
Upper Error	12.55	11.41	1.24
RPD	14.83	13.61	1.46
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
TH-228	0.00	0.66	0.00
TH-230	0.00	0.58	0.00
UCL	3	3	3

No Matrix Spike

0045

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07093	Gamma	2	pCi	g	Weston Solutions, Inc.

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
CO-60		92.70%	7.96%	100.00%	3.89%	1.35E+02	5.27E+00	1.25E+02	9.99E+00	GAS-1402	1.35E+02	5.27E+00	7.36E+02
CS-137		94.59%	10.41%	100.00%	4.01%	8.44E+01	3.38E+00	7.98E+01	8.31E+00	GAS-1402	8.44E+01	3.38E+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)

Duplicate Results

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Duplicate Result	Duplicate CSU
K-40	0.56	4.74	2.60E+01	3.00E+00	2.48E+01	2.95E+00
RA-226	0.03	0.31	1.03E+00	1.54E-01	1.02E+00	1.70E-01
RA-228	1.21	13.37	1.22E+00	1.86E-01	1.39E+00	2.11E-01

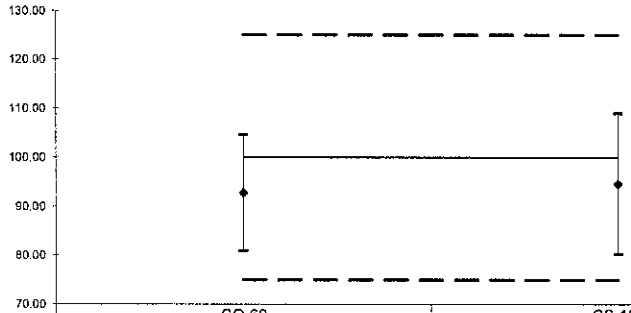
QC Summary

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

0046

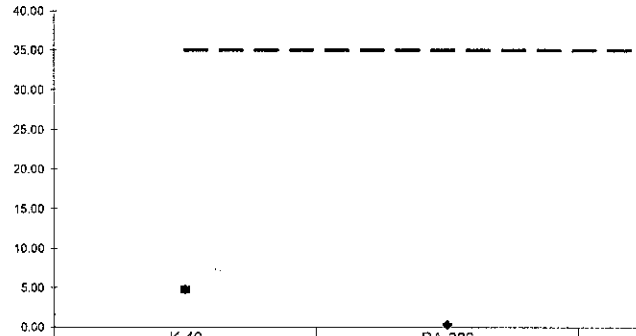
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07093	Gamma	2	pCi	g	Weston Solutions, Inc.

LCS % Recovery



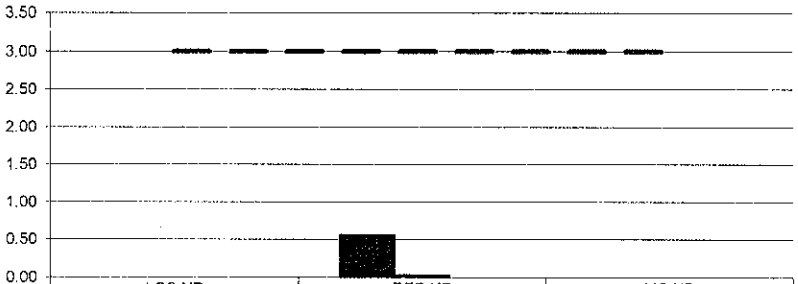
	CO-60	CS-137
Lower Error	80.84	80.17
Upper Error	104.55	109.00
%R	92.70	94.59
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	K-40	RA-226	RA-228
Lower Error	5.02	0.33	14.39
Upper Error	4.46	0.29	12.35
RPD	4.74	0.31	13.37
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
CO-60	0.00	0.56	0.00
CS-137	0.00	0.03	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike

0047

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	17-07093
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	08/16/17 05:27	PREP	JHARVEY	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS

J Harvey
8/16/17

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	17-07093
Analysis Code	UUISO
Run Number	1

#	Date	Dept	User	Notes
1	08/16/17 05:27	PREP	JHARVEY	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	08/18/17 17:38	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.

8/18/17

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	17-07093
Analysis Code	UUISO
Run Number	1

#	Date	Dept	User	Notes
1	08/16/17 05:27	PREP	JHARVEY	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	08/18/17 17:38	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	08/21/17 05:21	CHEM	TSMITH	Followed steps 12.1.7 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Uranium)

8-21-17
JMN

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
17-07093	
Analysis Code	Run
UUISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
019093P	Hydrofluoric Acid	Reagent Grade	JHARVEY	8/16/2017
018971P	Nitric Acid	Reagent Grade	JHARVEY	8/16/2017
019133P	Perchloric Acid	Reagent Grade	JHARVEY	8/16/2017
018550P	Sulfuric Acid	Reagent Grade	JHARVEY	8/16/2017
017344P	Anion Exchange Resin	Reagent Grade	JDEMELAS	8/18/2017
019185S	HCl - HF	6.5N - 0.04N	JDEMELAS	8/18/2017
019193S	HCl - NH4I	8N - 0.1M	JDEMELAS	8/18/2017
019134D01	Hydrochloric Acid	0.5N	JDEMELAS	8/18/2017
019168S	Hydrochloric Acid	6.5N	JDEMELAS	8/18/2017
019192S	Hydrochloric Acid	8N	JDEMELAS	8/18/2017
019183P	Hydrochloric Acid	Reagent Grade	JDEMELAS	8/18/2017
019187S	Carbon substrate	Solution	TSMITH	8/21/2017
019063P	Ethyl Alcohol	1	TSMITH	8/21/2017
019093P	Hydrofluoric Acid	Reagent Grade	TSMITH	8/21/2017
018890S	Neodymium Carrier	1 mg/ml	TSMITH	8/21/2017
019038P	Titanous Chloride	Reagent Grade	TSMITH	8/21/2017

Alpha #3

Date	Sample #	Client	Load Time	CT Time	Analyzed	Tech
8/19/17	Daily Pulsers	Lab	0943	10 mins	NA	KB
8/19/17	1707085A(14-20)	Weston	1000	2h50	UU	KB
8/19/17	1707086A(1-17)	Weston	1002	2h50	UU	KB
8/19/17	1707086A(18-20)	Weston	1302	2h50	UU	KB
8/21	Daily Pulser	LAB	0521	"	NA	—
8/21	1708040A(3-6)	ESLLC	0830	2h5	Pu 750	C
8/21	1708077A(1-5)	Smoky Mount	0830	2h5	Pu 750	C
8/21	1708077A(1-4)	Smoky Mount	0832	2h5	Pu 242	C
8/21	1708077A(1-4)	Smoky Mount	0832	2h5	UU 750	C
8/21	1708070A(1-4)	UCON	0834	2h5	UU 750	C
8/21	1707161A(1-3)	USA	0835	2h5	UU 750	C
8/21/17	1708081A(2-4)	USA	1131	2h50	Rab	KB
8/21/17	1707086A(1-20)	Weston	1133	2h50	Th	KB
8/21/17	1707093A(1)	Weston	1134	2h50	UU	KB
8/21/17	1707093A(2-10)	Weston	1443	2h50	UU	KB
8/21/17	1708082A(1-6)	USA	1444	2h50	Rab	KB

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	17-07093
Analysis Code	ThISO
Run Number	1

#	Date	Dept	User	Notes
1	08/16/17 05:27	PREP	JHARVEY	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS

JHarvey
8/16/17

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
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Internal Work Order	17-07093
Analysis Code	ThISO
Run Number	1

#	Date	Dept	User	Notes
1	08/16/17 05:27	PREP	JHARVEY	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	08/21/17 17:22	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.

8/21/17

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	17-07093
Analysis Code	ThISO
Run Number	1

#	Date	Dept	User	Notes
1	08/16/17 05:27	PREP	JHARVEY	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	08/21/17 17:22	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	08/22/17 05:31	CHEM	TSMITH	Followed steps 12.2.5 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Thorium)

8-22-17
JM

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
17-07093	
Analysis Code	Run
ThISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
019093P	Hydrofluoric Acid	Reagent Grade	JHARVEY	8/16/2017
018971P	Nitric Acid	Reagent Grade	JHARVEY	8/16/2017
019133P	Perchloric Acid	Reagent Grade	JHARVEY	8/16/2017
018550P	Sulfuric Acid	Reagent Grade	JHARVEY	8/16/2017
017344P	Anion Exchange Resin	Reagent Grade	JDEMELAS	8/21/2017
019192S	Hydrochloric Acid	8N	JDEMELAS	8/21/2017
019183P	Hydrochloric Acid	Reagent Grade	JDEMELAS	8/21/2017
019191S	Nitric Acid	8N	JDEMELAS	8/21/2017
019074P	Nitric Acid	Reagent Grade	JDEMELAS	8/21/2017
019187S	Carbon substrate	Solution	TSMITH	8/22/2017
019106S	Cerrium Carrier	0.1mg/ml	TSMITH	8/22/2017
019063P	Ethyl Alcohol	1	TSMITH	8/22/2017
019093P	Hydrofluoric Acid	Reagent Grade	TSMITH	8/22/2017

Alpha #3

Date	Sample #	Client	Load Time	CT Time	Analyst	Tech
8/19/17	Daily Pulsers	Lab	0943	10 mins	NA	KB
8/19/17	1707085A(14-20)	Weston	1000	2hr50	UU	KB
8/19/17	1707086A(1-17)	Weston	1002	2hr50	UU	KB
8/19/17	1707086A(18-20)	Weston	1302	2hr50	UU	KB
8/21	Daily Pulse	LAB	0521	1	NA	—
8/21	1708040A(3-6)	ESLLC	0830	2h5	Pu 250	C
8/21	1708077A(1-5)	Smoky Mount	0830	2h5	Pu 250	—
8/21	1708077A(1-4)	Smoky Mount	0832	2h5	Pu 242	C
8/21	1708077A(1-4)	Smoky Mount	0832	2h5	UU 250	C
8/21	1708070A(1-4)	UCon	0834	2h5	UU 250	C
8/21	1707161A(1-3)	USA	0835	2h5	UU 250	C
8/21/17	1708081A(2-4)	USA	1131	2hr50	Rab	KB
8/21/17	1707086A(1-20)	Weston	1133	2hr50	Th	KB
8/21/17	1707093A(1)	Weston	1134	2hr50	UU	KB
8/21/17	1707093A(2-10)	Weston	1443	2hr50	UU	KB
8/21/17	1708082A(1-6)	USA	1444	2hr50	Rab	KB
8/22	Daily Pulse	LAB	0512	1	NA	C
8/22	1708082A(1-6)	USA	0914	2h5	Th 250	C
8/22	1707087A(1-13)	Weston	0914	2h5	UU 250	—
8/22	1708040A(1-5)	Zion	0915	2h5	NP 237	—
8/22/17	1708040A(1-5)	ESLLC	1215	2hr50	Am 243	KB
8/22/17	1707093A(1-10)	Weston	1216	2hr50	Th	KB
8/22/17	1707087A(14-20)	Weston	1217	2hr50	UU	KB

GAMMA NOTES

GE 1

DATE	SAmple #	Client	Load Time	CT Time	Analysis	Tech
8/23/17	1707090-15	Weston	1541	1hr	✓	KB
8/23/17	1707090-17	Weston	1642	1hr	✓	KB
8/23/17	1707135-08	ERA	1745	8hrs	✓	KB
8/24	GAF16	LAB	0516	15	✓	C
8/24	DailyR	LAB	0538	15	✓	
8/24	1707090-19	Weston	0555	1hr	✓	—
8/24	1708003-06	Weston	0702	1hr	✓	
8/24	1708003-09	Weston	0805	1hr	✓	—
8/24	1708086-01	IndtEnviro	0907	15	Ben	C
8/24	1708086-03	IndtEnviro	0924	15	Ben	
8/24	1707091-~~08~~ 10	Weston	0940	1hr	✓	—
8/24	1707091-11	Weston	1041	1hr	✓	—
8/24	1708010-01	Access	1142	15	Ben	C
8/24	1708010-03	Access	1158	15	Ben	C
8/24/17	1707091-16	Weston	1214	1hr	✓	KB
8/24/17	1707091-19	Weston	1315	1hr	✓	KB
8/24	1707092-03	Weston	1414	1hr	✓	C
8/24/17	1707092-04	Weston	1517	1hr	✓	KB
8/24/17	1707092-11	Weston	1619	1hr	✓	KB
8/24/17	1707092-17	Weston	1719	1hr	✓	KB
8/24/17	1708079-03	James R Reed	1820	4hrs	✓	KB
8/25	GAF16	LAB	0520	15	✓	C
8/25	DailyR	LAB	0535	15	✓	
8/25	1707093-03	Weston	~~0655~~ 0755	1hr	✓	C
8/25	1707093-04	Weston	0653	1hr	✓	C
8/25	1707093-02	Weston	0858	1hr	✓	—

GE2

DATE	SAmple #	Client	Load Time	CT. Time	Analysis	Tech
8/24/17	1708099-05	ESLLC Zim	1821	2hr	✓	KB
8/25	~~GH~~ 1601	LAB	0520	15	✓	[illegible]
8/25	[illegible]	LAB	0579	15	✓	[illegible]
8/25	1707093-05	Weston	0653	[illegible]	✓	[illegible]
8/25	1707093-08	Weston	0756	[illegible]	✓	[illegible]
8/25	1707093-01	Weston	0858	3hr	✓	[illegible]

GE 3

DATE	SAMPLE #	Client	LoadTime	CT.Time	Analysis	Tech
8/24/17	1708099-03	ESLLC Zion	1821	2hr	γ	KB
8/25	~~[illegible]~~	LAB	0520	15	γ	[illegible]
8/25	[illegible]	LAB	0538	15	[illegible]	
8/25	1707093-06	Weston	0653	2h	γ	[illegible]
8/25	1707093-09	Weston	0756	2h	γ	[illegible]

GE 4

DATE	SAMPLE #	Client	Load Time	CT Time	Analysis	Tech
8/24/17	1707091-01	Weston	1259	30mins	✓	KB
8/24/17	1707091-02	Weston	1329	1hr	✓	KB
8/24/17	1707092-02	Weston	1330	1hr	✓	KB
8/24/17	1707092-01	Weston	1431	30mins	✓	KB
8/24/17	1707092-07	Weston	1504	1hr	✓	KB
8/24/17	1707092-10	Weston	1607	1hr	✓	KB
8/24/17	1707092-16	Weston	1707	1hr	✓	KB
8/24/17	1707092-20	Weston	1808	1hr	✓	KB
8/25	GAW16	LAB	0520	15	✓	C
8/25	MW4R	LAB	0535	15	✓	
8/25	1707093-07	Weston	0653	1hr	✓	C
8/25	1707093-10	Weston	0716	1hr	✓	

SECTION VIII

ANALYTICAL DATA (ISOTOPIC URANIUM)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

17-07093
UUISO
Run 1

Work Order	17-07093
Analysis Code	UUISO
Run	1
Date Received	7/18/2017
Lab Deadline	8/10/2017
Client	Weston Solutions, Inc.
Project	94759
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EPA 908.0 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	U-232
Radiometric Sol#	U-10a
Tracer Act (dpm/g)	18.32
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		07/19/17 00:00	1.0000E+00
02	MBL	BLANK		07/19/17 00:00	1.0000E+00
03	DUP	HTC-A09-S001-3642-01	46	05/16/17 12:37	1.1192E+00
04	DO	HTC-A09-S001-3642-01	46	05/16/17 12:37	1.0658E+00
05	TRG	HTC-A09-S001-4248-01	47	05/16/17 12:35	1.0857E+00
06	TRG	HTC-A09-S002-0006-01	113	05/16/17 09:48	1.0506E+00
07	TRG	HTC-A09-S002-0612-01	100	05/16/17 09:46	1.0717E+00
08	TRG	HTC-A09-S002-1218-01	52	05/16/17 09:44	1.0028E+00
09	TRG	HTC-A09-S002-1824-01	39	05/16/17 09:42	1.1465E+00
10	TRG	HTC-A09-S002-2430-01	43	05/16/17 09:40	1.0215E+00

0067

* 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.

17-07093
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	0.6796	12.5		0.00								
02	MBL	0.6667	12.2		0.00								
03	DUP	0.6652	12.2		0.00								
04	DO	0.6651	12.2		0.00								
05	TRG	0.6646	12.2		0.00								
06	TRG	0.6644	12.2		0.00								
07	TRG	0.6639	12.2		0.00								
08	TRG	0.6584	12.1		0.00								
09	TRG	0.6634	12.2		0.00								
10	TRG	0.6633	12.2		0.00								

8900

* 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.

17-07093
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			08/15/17 11:44	JPACHELLA				
02	MBL			08/15/17 11:44	JPACHELLA				
03	DUP			08/15/17 11:44	JPACHELLA				
04	DO	08/04/17 07:24	KSALLINGS	08/15/17 11:44	JPACHELLA				
05	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:44	JPACHELLA				
06	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:44	JPACHELLA				
07	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:44	JPACHELLA				
08	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:44	JPACHELLA				
09	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:44	JPACHELLA				
10	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:44	JPACHELLA				

6900

* 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 Analytical
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.
0070

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	5.98E+00	8.59E-01	1.02E-01	7.67E+00	77.92	OK		OK	
02	U-234	MBL	BLANK	pCi/g	6.64E-02	6.08E-02	5.74E-02					OK	OK
03	U-234	DUP	HTC-A09-S001-3642-01	pCi/g	8.12E-01	2.10E-01	5.57E-02				OK	OK	
04	U-234	DO	HTC-A09-S001-3642-01	pCi/g	8.38E-01	2.12E-01	6.06E-02					OK	
05	U-234	TRG	HTC-A09-S001-4248-01	pCi/g	9.83E-01	2.43E-01	7.08E-02					OK	
06	U-234	TRG	HTC-A09-S002-0006-01	pCi/g	3.87E+01	4.54E+00	6.70E-02					OK	
07	U-234	TRG	HTC-A09-S002-0612-01	pCi/g	2.59E+01	3.08E+00	7.52E-02					OK	
08	U-234	TRG	HTC-A09-S002-1218-01	pCi/g	1.70E+00	3.44E-01	8.22E-02					OK	
09	U-234	TRG	HTC-A09-S002-1824-01	pCi/g	8.90E-01	2.13E-01	5.15E-02					OK	
10	U-234	TRG	HTC-A09-S002-2430-01	pCi/g	1.61E+00	3.00E-01	6.62E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

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	07/19/17 00:00	1.00E+00	129.08	0.00	0.00			
02	U-234	MBL	07/19/17 00:00	1.00E+00	114.90	0.00	0.00			
03	U-234	DUP	05/16/17 12:37	1.12E+00	117.74	0.00	0.00			
04	U-234	DO	05/16/17 12:37	1.07E+00	136.43	0.00	0.00			
05	U-234	TRG	05/16/17 12:35	1.09E+00	106.84	0.00	0.00			
06	U-234	TRG	05/16/17 09:48	1.05E+00	113.62	0.00	0.00			
07	U-234	TRG	05/16/17 09:46	1.07E+00	120.42	0.00	0.00			
08	U-234	TRG	05/16/17 09:44	1.00E+00	109.56	0.00	0.00			
09	U-234	TRG	05/16/17 09:42	1.15E+00	118.62	0.00	0.00			
10	U-234	TRG	05/16/17 09:40	1.02E+00	132.03	0.00	0.00			

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff	A to B, Cor
01	U-234	LCS	08/21/17 11:33		A_Spec	Alpha_060	170	4.29 E+02	1.00 E-02	14.8	
02	U-234	MBL	08/21/17 14:42		A_Spec	Alpha_033	170	4.83 E+00	1.00 E-03	16.8	
03	U-234	DUP	08/21/17 14:42		A_Spec	Alpha_034	170	6.97 E+01	2.00 E-03	17.3	
04	U-234	DO	08/21/17 14:42		A_Spec	Alpha_035	170	7.25 E+01	3.00 E-03	15.8	
05	U-234	TRG	08/21/17 14:42		A_Spec	Alpha_036	170	7.83 E+01	4.00 E-03	18.2	
06	U-234	TRG	08/21/17 14:42		A_Spec	Alpha_037	170	2.76 E+03	2.00 E-03	15.9	
07	U-234	TRG	08/21/17 14:42		A_Spec	Alpha_038	170	1.94 E+03	4.00 E-03	15.4	
08	U-234	TRG	08/21/17 14:42		A_Spec	Alpha_039	170	1.30 E+02	6.00 E-03	18.5	
09	U-234	TRG	08/21/17 14:42		A_Spec	Alpha_040	170	8.27 E+01	2.00 E-03	18.1	
10	U-234	TRG	08/21/17 14:42		A_Spec	Alpha_043	170	1.53 E+02	6.00 E-03	18.7	

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-238	LCS	LCS	pCi/g	6.38E+00	9.03E-01	8.32E-02	7.43E+00	85.81	OK		OK	
02	U-238	MBL	BLANK	pCi/g	2.50E-02	3.83E-02	5.71E-02					OK	OK
03	U-238	DUP	HTC-A09-S001-3642-01	pCi/g	9.96E-01	2.36E-01	4.84E-02				OK	OK	
04	U-238	DO	HTC-A09-S001-3642-01	pCi/g	8.23E-01	2.10E-01	6.04E-02					OK	
05	U-238	TRG	HTC-A09-S001-4248-01	pCi/g	8.43E-01	2.22E-01	6.56E-02					OK	
06	U-238	TRG	HTC-A09-S002-0006-01	pCi/g	3.86E+01	4.54E+00	8.37E-02					OK	
07	U-238	TRG	HTC-A09-S002-0612-01	pCi/g	2.51E+01	2.99E+00	9.10E-02					OK	
08	U-238	TRG	HTC-A09-S002-1218-01	pCi/g	1.86E+00	3.64E-01	8.56E-02					OK	
09	U-238	TRG	HTC-A09-S002-1824-01	pCi/g	6.32E-01	1.75E-01	6.43E-02					OK	
10	U-238	TRG	HTC-A09-S002-2430-01	pCi/g	1.21E+00	2.51E-01	5.00E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 17-07093-UUISO-1

Client: Weston Solutions, Inc.
Eberline Analytical Work Order: 17-07093
Analysis Code: UUISO
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	U-238	LCS	07/19/17 00:00	1.00E+00	129.08	0.00	0.00			
02	U-238	MBL	07/19/17 00:00	1.00E+00	114.90	0.00	0.00			
03	U-238	DUP	05/16/17 12:37	1.12E+00	117.74	0.00	0.00			
04	U-238	DO	05/16/17 12:37	1.07E+00	136.43	0.00	0.00			
05	U-238	TRG	05/16/17 12:35	1.09E+00	106.84	0.00	0.00			
06	U-238	TRG	05/16/17 09:48	1.05E+00	113.62	0.00	0.00			
07	U-238	TRG	05/16/17 09:46	1.07E+00	120.42	0.00	0.00			
08	U-238	TRG	05/16/17 09:44	1.00E+00	109.56	0.00	0.00			
09	U-238	TRG	05/16/17 09:42	1.15E+00	118.62	0.00	0.00			
10	U-238	TRG	05/16/17 09:40	1.02E+00	132.03	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 17-07093-UUISO-1

Run	Analysis Code	Eberline Analytical Work Order	Client
1	UUISO	17-07093	Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff	A to B, Cor
01	U-238	LCS	08/21/17 11:33		A_Spec	Alpha_060	170	4.60 E+02	0.00 E+00	14.8	
02	U-238	MBL	08/21/17 14:42		A_Spec	Alpha_033	170	1.83 E+00	1.00 E-03	16.8	
03	U-238	DUP	08/21/17 14:42		A_Spec	Alpha_034	170	8.58 E+01	1.00 E-03	17.3	
04	U-238	DO	08/21/17 14:42		A_Spec	Alpha_035	170	7.15 E+01	3.00 E-03	15.8	
05	U-238	TRG	08/21/17 14:42		A_Spec	Alpha_036	170	6.75 E+01	3.00 E-03	18.2	
06	U-238	TRG	08/21/17 14:42		A_Spec	Alpha_037	170	2.77 E+03	0.00 E+00	15.9	
07	U-238	TRG	08/21/17 14:42		A_Spec	Alpha_038	170	1.89 E+03	8.00 E-03	15.4	
08	U-238	TRG	08/21/17 14:42		A_Spec	Alpha_039	170	1.43 E+02	7.00 E-03	18.5	
09	U-238	TRG	08/21/17 14:42		A_Spec	Alpha_040	170	5.90 E+01	0.00 E+00	18.1	
10	U-238	TRG	08/21/17 14:42		A_Spec	Alpha_043	170	1.16 E+02	2.00 E-03	18.7	

Eberline Analytical
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-235	LCS	LCS	pCi/g	4.69E-01	1.86E-01	9.69E-02					OK	
02	U-235	MBL	BLANK	pCi/g	1.12E-02	3.42E-02	8.11E-02					OK	OK
03	U-235	DUP	HTC-A09-S001-3642-01	pCi/g	1.44E-01	9.54E-02	9.06E-02				NA	OK	
04	U-235	DO	HTC-A09-S001-3642-01	pCi/g	2.61E-02	3.99E-02	5.95E-02					OK	
05	U-235	TRG	HTC-A09-S001-4248-01	pCi/g	1.81E-01	1.07E-01	7.40E-02					OK	
06	U-235	TRG	HTC-A09-S002-0006-01	pCi/g	2.78E+00	5.30E-01	7.21E-02					OK	
07	U-235	TRG	HTC-A09-S002-0612-01	pCi/g	1.92E+00	4.08E-01	6.86E-02					OK	
08	U-235	TRG	HTC-A09-S002-1218-01	pCi/g	6.95E-02	7.18E-02	9.08E-02					OK	
09	U-235	TRG	HTC-A09-S002-1824-01	pCi/g	7.52E-02	6.45E-02	6.35E-02					OK	
10	U-235	TRG	HTC-A09-S002-2430-01	pCi/g	1.34E-01	8.57E-02	7.31E-02					OK	

9200

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-UUISO-1

Client: Weston Solutions, Inc.
Eberline Analytical Work Order: 17-07093
Analysis Code: UUISO
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	U-235	LCS	07/19/17 00:00	1.00E+00	129.08	0.00	0.00			
02	U-235	MBL	07/19/17 00:00	1.00E+00	114.90	0.00	0.00			
03	U-235	DUP	05/16/17 12:37	1.12E+00	117.74	0.00	0.00			
04	U-235	DO	05/16/17 12:37	1.07E+00	136.43	0.00	0.00			
05	U-235	TRG	05/16/17 12:35	1.09E+00	106.84	0.00	0.00			
06	U-235	TRG	05/16/17 09:48	1.05E+00	113.62	0.00	0.00			
07	U-235	TRG	05/16/17 09:46	1.07E+00	120.42	0.00	0.00			
08	U-235	TRG	05/16/17 09:44	1.00E+00	109.56	0.00	0.00			
09	U-235	TRG	05/16/17 09:42	1.15E+00	118.62	0.00	0.00			
10	U-235	TRG	05/16/17 09:40	1.02E+00	132.03	0.00	0.00			

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff	A to B, Cor
01	U-235	LCS	08/21/17 11:33		A_Spec	Alpha_060	170	2.73 E+01	4.00 E-03	14.8	
02	U-235	MBL	08/21/17 14:42		A_Spec	Alpha_033	170	6.60 E-01	2.00 E-03	16.8	
03	U-235	DUP	08/21/17 14:42		A_Spec	Alpha_034	170	9.98 E+00	6.00 E-03	17.3	
04	U-235	DO	08/21/17 14:42		A_Spec	Alpha_035	170	1.83 E+00	1.00 E-03	15.8	
05	U-235	TRG	08/21/17 14:42		A_Spec	Alpha_036	170	1.17 E+01	2.00 E-03	18.2	
06	U-235	TRG	08/21/17 14:42		A_Spec	Alpha_037	170	1.61 E+02	1.00 E-03	15.9	
07	U-235	TRG	08/21/17 14:42		A_Spec	Alpha_038	170	1.17 E+02	1.00 E-03	15.4	
08	U-235	TRG	08/21/17 14:42		A_Spec	Alpha_039	170	4.32 E+00	4.00 E-03	18.5	
09	U-235	TRG	08/21/17 14:42		A_Spec	Alpha_040	170	5.66 E+00	2.00 E-03	18.1	
10	U-235	TRG	08/21/17 14:42		A_Spec	Alpha_043	170	1.03 E+01	4.00 E-03	18.7	

Count Room Report
Client: Weston Solutions, Inc.

17-07093-UUISO-1 (pCi/g) in SO
Tracer ID: U-10a

#60

#33-47

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	07/19/17 00:00	1.0000	0.6796	12.4503		0.00		
02	MBL	BLANK	07/19/17 00:00	1.0000	0.6667	12.2139		0.00		
03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	1.1192	0.6652	12.1865		0.00		
04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	1.0658	0.6651	12.1846		0.00		
05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	1.0857	0.6646	12.1755		0.00		
06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	1.0506	0.6644	12.1718		0.00		
07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	1.0717	0.6639	12.1626		0.00		
08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	1.0028	0.6584	12.0619		0.00		
09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	1.1465	0.6634	12.1535		0.00		
10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	1.0215	0.6633	12.1517		0.00		

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Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 8/15/2017 11:44 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
17-07093	1	UUISO	8/15/2017 11:38	JPACHELLA	JPA	

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	8/15/2017	0.550	0.5324				7.67	0.276	0.00	0.000	0.00	0.000	0.00	0.000
U-238	U-8a	31.000	8/15/2017	0.550	0.5324				7.43	0.268	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	18.320	8/15/2017	0.6796	0.6600
02	U-232	U-10a	18.320	8/15/2017	0.6667	0.6600
03	U-232	U-10a	18.320	8/15/2017	0.6652	0.6600
04	U-232	U-10a	18.320	8/15/2017	0.6651	0.6600
05	U-232	U-10a	18.320	8/15/2017	0.6646	0.6600
06	U-232	U-10a	18.320	8/15/2017	0.6644	0.6600
07	U-232	U-10a	18.320	8/15/2017	0.6639	0.6600
08	U-232	U-10a	18.320	8/15/2017	0.6584	0.6600
09	U-232	U-10a	18.320	8/15/2017	0.6634	0.6600
10	U-232	U-10a	18.320	8/15/2017	0.6633	0.6600

Balance Printer Tapes

Tracer	LCS

Matrix Spike

0080

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
17-07093	1	UUISO	grams	8/10/2017	JPACHELLA

Lab Fraction	Weston Solutions, Inc. 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	HTC-A09-S001-3642-01	DUP					1.1192E+00	1.1192E+00				
04	HTC-A09-S001-3642-01	DO					1.0658E+00	1.0658E+00				
05	HTC-A09-S001-4248-01	TRG					1.0857E+00	1.0857E+00				
06	HTC-A09-S002-0006-01	TRG					1.0506E+00	1.0506E+00				
07	HTC-A09-S002-0612-01	TRG					1.0717E+00	1.0717E+00				
08	HTC-A09-S002-1218-01	TRG					1.0028E+00	1.0028E+00				
09	HTC-A09-S002-1824-01	TRG					1.1465E+00	1.1465E+00				
10	HTC-A09-S002-2430-01	TRG					1.0215E+00	1.0215E+00				

Comments	

0081

Technician: JPachella Date: 8/15/17

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
17-07093	8/10/2017	8/3/2017	8/4/2017	8/5/2017	KSALLINGS

Bico Pulverizer: 000302 [✓] Jaw Crusher 68275 [ ]

Eberline	Weston Solutions, Inc.	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	HTC-A09-S001-3642-01	14.3500	930.5800	773.7000	916.2300	759.3500	17.12%	82.88%	0.0000	0.0000	
05	HTC-A09-S001-4248-01	14.4700	939.6800	777.9200	925.2100	763.4500	17.48%	82.52%	0.0000	0.0000	
06	HTC-A09-S002-0006-01	14.5100	955.7400	916.1000	941.2300	901.5900	4.21%	95.79%	0.0000	0.0000	
07	HTC-A09-S002-0612-01	14.5000	944.1200	842.9800	929.6200	828.4800	10.88%	89.12%	0.0000	0.0000	
08	HTC-A09-S002-1218-01	14.4800	994.6400	877.3400	980.1600	862.8600	11.97%	88.03%	0.0000	0.0000	
09	HTC-A09-S002-1824-01	14.5500	1052.3200	946.2200	1037.7700	931.6700	10.22%	89.78%	0.0000	0.0000	
10	HTC-A09-S002-2430-01	14.6600	1130.8400	978.3800	1116.1800	963.7200	13.66%	86.34%	0.0000	0.0000	

OVENS Fisher Isotemp SN 00579 [✓] VWR SN 000588 [ ]

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

0082

Technician: Kerry Sai

Date: **Analysis: Rough Prep Logbook**

Analysis: UUISO Page No. 10187

YB 8/21/17

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_060
Chamber Serial Number: 10006125B
Detector Serial Number: 60
Env. Background: System Bkgd 194231
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 8/21/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 11:33:33 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.680 mL
Effective Efficiency: 0.1906 +/- 0.0105
Counting Efficiency: 0.1477 +/- 0.0026 on 11/18/2016 3:34:04 PM
Chem. Recovery Factor: 1.2908 +/- 0.0745

Control Certificate Name: NatU_U-8A
Chem. Recov. of Control: U-238 0.754931 +/- 0.059018
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	400.32	9.81	0.68	0.00E+000	5.1
U-234		4.733	429.30	9.48	1.70	0.00E+000	34.6
U-235		4.389	27.32	38.04	0.68	0.00E+000	3.0
U-238		4.159	460.00	9.15	0.00	0.00E+000	21.4

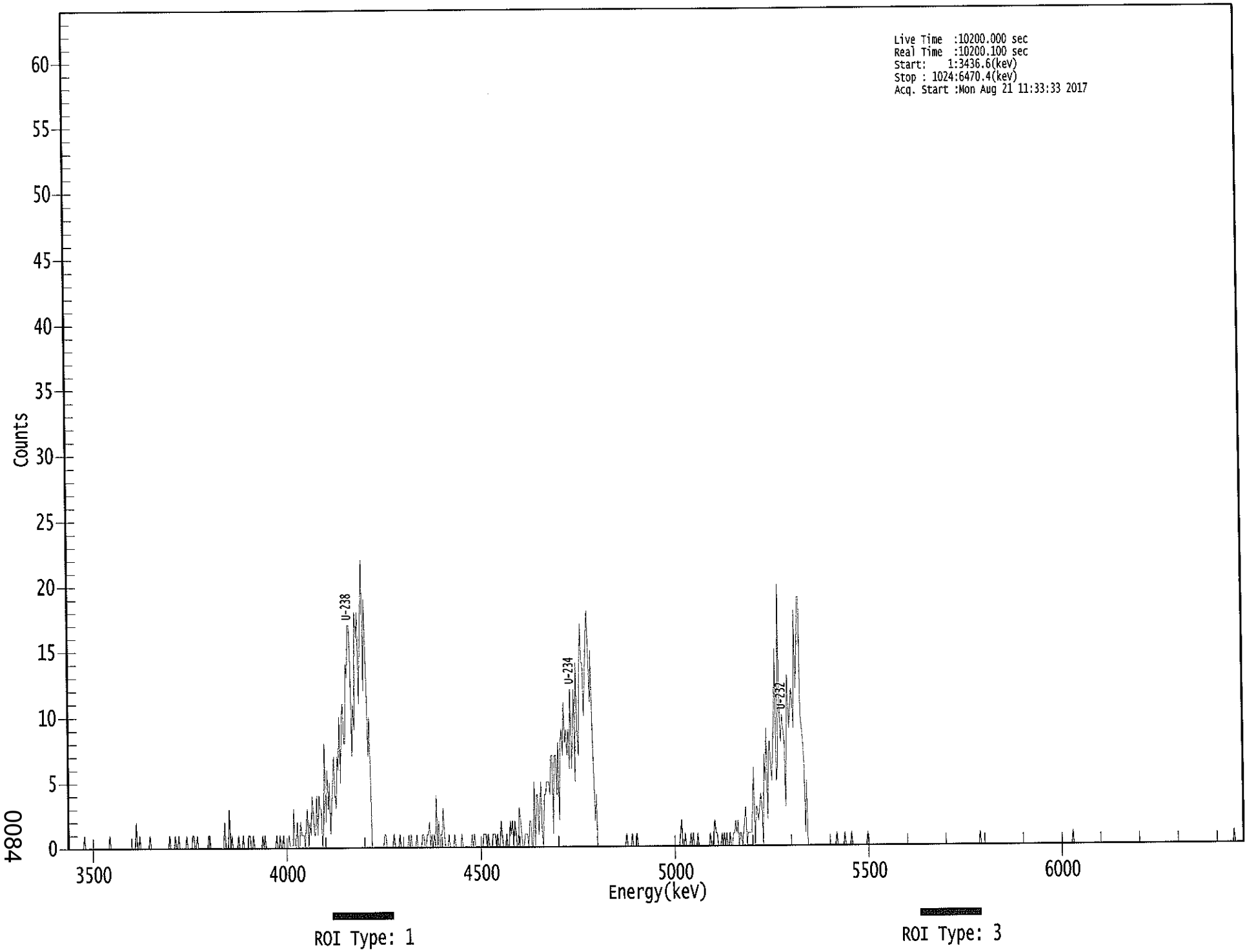
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	5.58E+000 +/- 6.02E-001	7.86E-002 +/- 8.48E-003
U-234	0.994	4761.50*	5.98E+000 +/- 8.59E-001	1.02E-001 +/- 1.10E-002
U-235	1.000	4385.50*	4.69E-001 +/- 1.86E-001	9.69E-002 +/- 1.05E-002
U-238	0.995	4184.40*	6.38E+000 +/- 9.03E-001	8.32E-002 +/- 8.98E-003

AG 8/22/17

0000192142.CNF



0084

****
***** 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	0	0	0
9:	0	0	0	0	0	0	1	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:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	2	0	0	1	0
65:	0	0	0	0	0	0	0	1
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	1	0	0	0	0	1	0	0
97:	1	0	0	0	0	0	0	1
105:	0	0	0	0	1	1	0	0
113:	1	0	0	0	0	0	0	0
121:	0	0	1	1	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	2	0	0	0	3	0	1	0
145:	0	0	0	0	1	0	0	0
153:	1	0	0	0	0	1	1	0
161:	0	1	0	0	0	0	0	0
169:	0	1	0	1	0	0	0	0
177:	0	0	0	0	0	1	0	0
185:	1	0	0	1	0	0	0	0
193:	1	0	0	0	3	0	0	2
201:	0	0	2	1	1	1	0	2
209:	3	0	2	1	4	3	1	1
217:	4	1	4	3	3	0	2	8
225:	2	6	3	5	1	3	5	7
233:	4	3	7	6	10	5	10	11
241:	8	8	14	13	17	17	14	7
249:	11	9	18	16	18	11	15	19
257:	22	12	19	15	12	7	10	5
265:	0	0	0	0	0	0	0	0
273:	0	0	0	1	1	0	0	0
281:	0	0	0	1	0	0	0	0
289:	1	0	0	0	0	0	0	0
297:	1	0	1	0	0	0	0	1
305:	0	0	0	0	1	1	0	0
313:	1	1	2	0	1	0	1	0
321:	4	0	2	0	1	1	3	1
329:	0	0	0	1	0	0	0	0
337:	1	0	0	0	0	0	1	0
345:	0	0	0	0	0	0	0	1
353:	0	1	0	0	0	0	0	0
361:	0	1	1	1	0	1	0	0

369:	0	1	1	1	0	1	0	0

Sample Title: 01

Channel								
377:	2	1	0	0	0	1	0	0
385:	2	1	2	0	2	1	0	0
393:	3	2	1	0	0	1	1	1
401:	0	2	2	0	0	5	0	4
409:	4	1	3	5	1	0	4	4
417:	5	5	5	4	7	7	1	7
425:	7	4	8	2	8	9	7	11
433:	8	9	7	9	6	12	6	9
441:	12	5	14	9	7	13	17	14
449:	14	10	13	16	18	15	11	15
457:	9	6	2	4	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	1	0	0
489:	0	0	1	0	0	0	1	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	1	2	0	0
537:	1	0	0	0	0	1	0	1
545:	0	0	0	1	0	0	0	0
553:	0	0	0	0	0	0	1	0
561:	0	1	2	1	1	0	0	0
569:	1	0	1	0	1	0	0	1
577:	0	0	1	1	2	1	2	0
585:	1	1	0	1	2	3	0	1
593:	1	1	1	3	6	0	3	3
601:	2	3	4	3	0	7	5	9
609:	2	7	8	6	5	8	10	15
617:	5	6	20	10	8	10	9	8
625:	3	9	13	9	10	12	11	9
633:	18	12	14	19	19	10	9	8
641:	6	1	5	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	1	0	0	0
673:	0	0	0	1	0	0	0	0
681:	0	1	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	1
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	1	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 01

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	1	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	1	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KD 8/21/17

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_033
Chamber Serial Number: 04026479A
Detector Serial Number: 91132
Env. Background: System Bkgd 194207
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 8/21/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 2:42:11 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.667 mL
Effective Efficiency: 0.1932 +/- 0.0107
Counting Efficiency: 0.1681 +/- 0.0029 on 11/18/2016 10:08:33 AM
Chem. Recovery Factor: 1.1490 +/- 0.0664

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	5.281	398.00	9.84	0.00	0.00E+000	6.8
U-234		4.754	4.83	91.00	0.17	0.00E+000	3.0
U-235		4.382	0.66	305.43	0.34	0.00E+000	3.0
U-238		4.184	1.83	152.56	0.17	0.00E+000	3.0

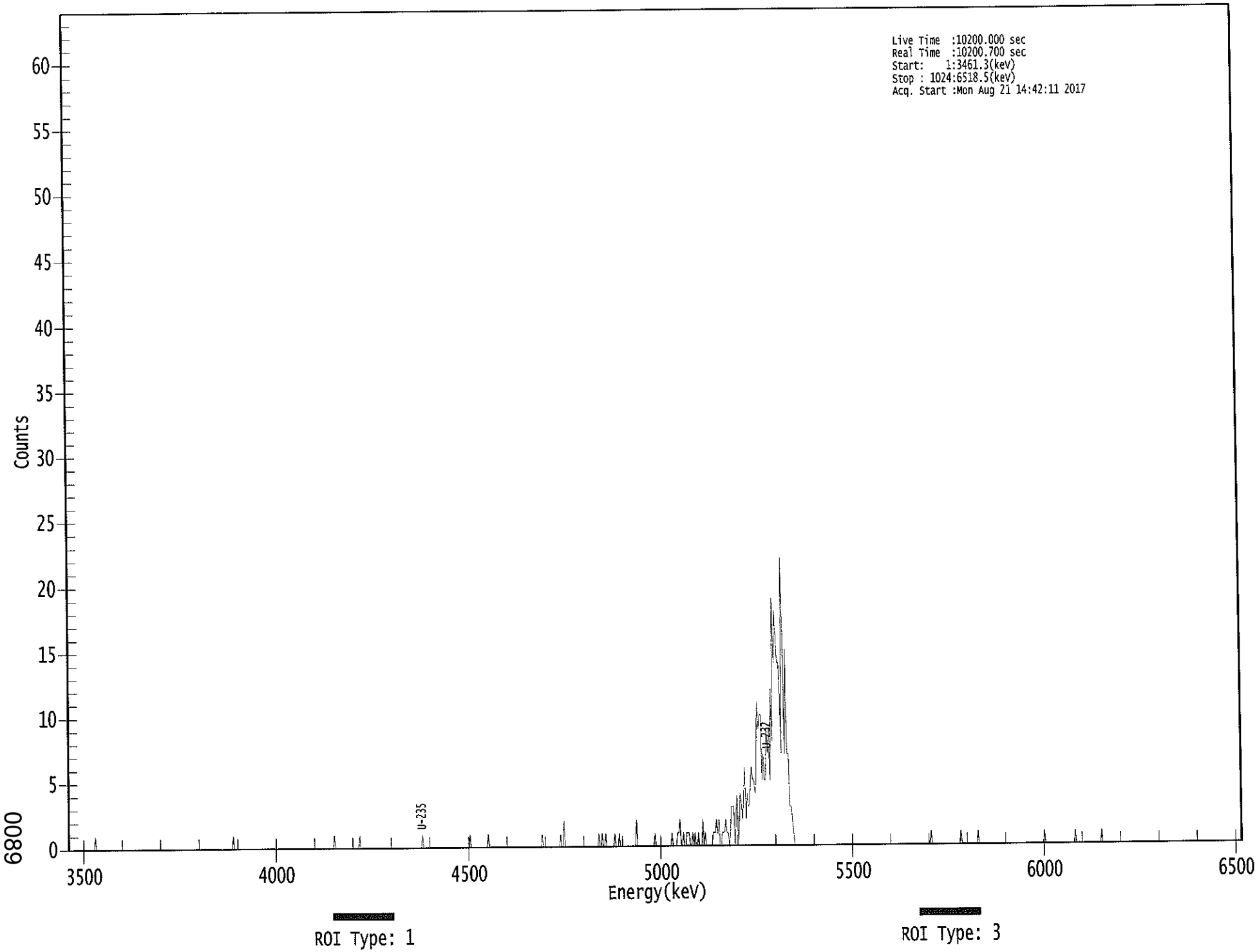
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.997	5302.50*	5.47E+000 +/- 5.92E-001	8.24E-002 +/- 8.92E-003
U-234	1.000	4761.50*	6.64E-002 +/- 6.08E-002	5.74E-002 +/- 6.21E-003
U-235	1.000	4385.50*	1.12E-002 +/- 3.42E-002	8.11E-002 +/- 8.77E-003
U-238	1.000	4184.40*	2.50E-002 +/- 3.83E-002	5.71E-002 +/- 6.18E-003

AG 8/22/17

0000192155.CNF



6800

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

Sample Title: 02

Elapsed Live time: 10200
Elapsed Real Time: 10201

Channel								
1:	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	1
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	1
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	1
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	1	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	1	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	1	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	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	0	0	1	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	1	0	0	2
433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	1	0	0
465:	1	0	0	1	0	0	0	0
473:	0	0	0	1	0	0	0	1
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	2	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	1	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	0	1	0	0
529:	0	0	1	1	2	0	0	1
537:	0	0	1	1	1	0	0	1
545:	0	1	0	0	1	0	0	0
553:	2	0	1	0	0	0	0	0
561:	0	1	1	1	2	1	2	0
569:	0	1	1	1	2	1	1	0
577:	1	3	3	3	0	2	4	0
585:	2	4	3	2	4	6	2	4
593:	3	3	5	6	5	5	4	5
601:	11	9	10	10	5	7	5	5
609:	9	7	9	5	12	8	19	14
617:	18	16	14	14	12	7	22	16
625:	7	15	7	7	3	3	2	1
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	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	1	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	1	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	1	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	1	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	1	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KP 8/21/17

Sample Description: HTC-A09-S001-3642-01-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_034
Chamber Serial Number: 04026479B
Detector Serial Number: 91136
Env. Background: System Bkgd 194208
Reagent Blank: <not performed>

Sample Size: 1.119E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 2:42:13 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.665 mL
Effective Efficiency: 0.2035 +/- 0.0110
Counting Efficiency: 0.1728 +/- 0.0029 on 11/18/2016 10:08:58 AM
Chem. Recovery Factor: 1.1774 +/- 0.0668

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	5.266	418.32	9.59	0.68	0.00E+000	16.9
U-234		4.733	69.66	23.55	0.34	0.00E+000	6.5
U-235		4.415	9.98	65.65	1.02	0.00E+000	3.0
U-238		4.137	85.83	21.18	0.17	0.00E+000	4.0

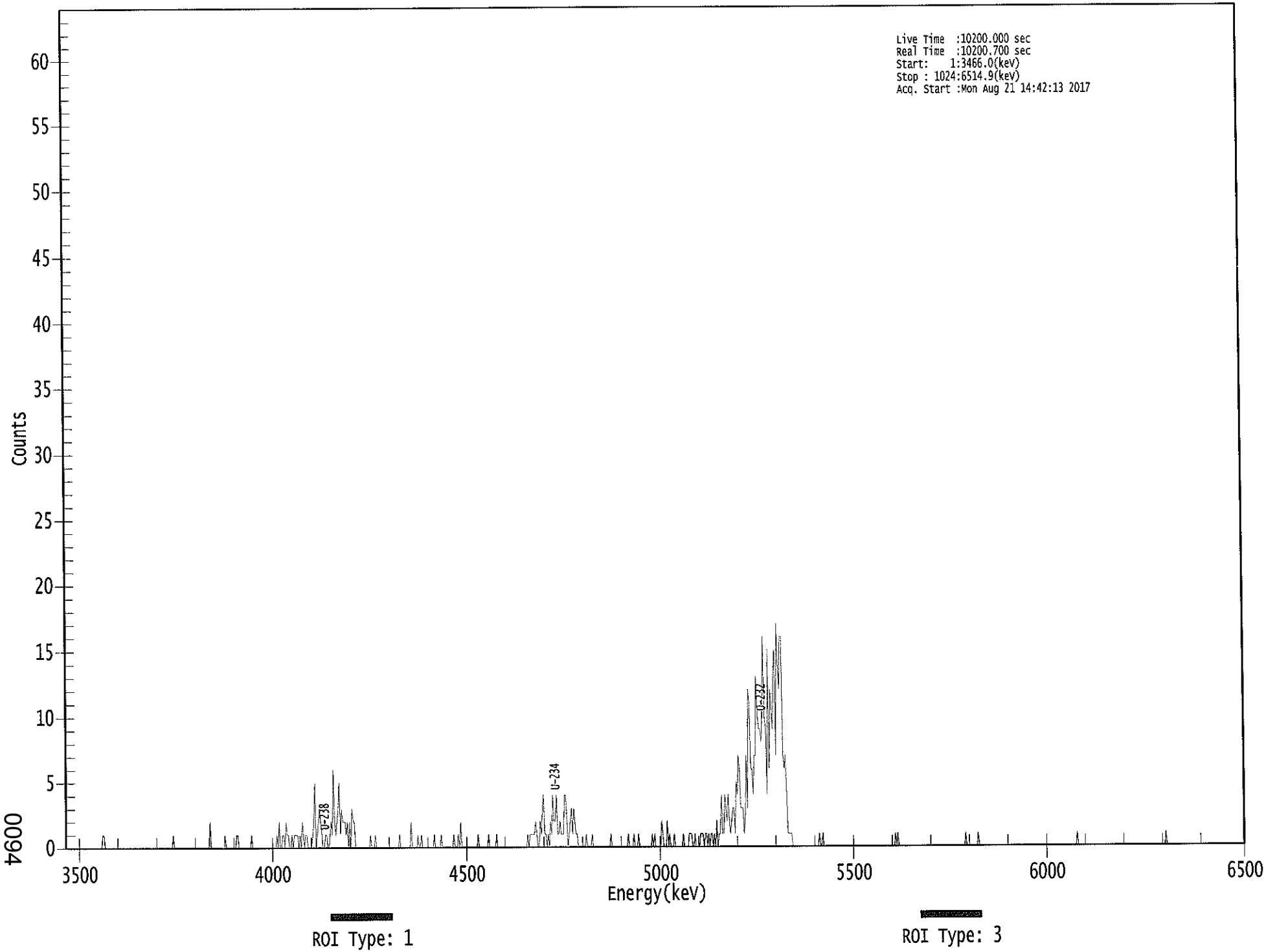
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.991	5302.50*	4.89E+000 +/- 5.18E-001	6.59E-002 +/- 6.99E-003
U-234	0.994	4761.50*	8.12E-001 +/- 2.10E-001	5.57E-002 +/- 5.91E-003
U-235	0.994	4385.50*	1.44E-001 +/- 9.54E-002	9.06E-002 +/- 9.60E-003
U-238	0.984	4184.40*	9.96E-001 +/- 2.36E-001	4.84E-002 +/- 5.14E-003

AG 8/22/17

0000192156.CNF



0094

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

Sample Title: 03

Elapsed Live time: 10200
Elapsed Real Time: 10201

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

369:	0	0	0	0	0	1	0	0

Sample Title: 03

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:	1	0	1	1	1	1	1	2
409:	1	0	0	2	1	3	4	1
417:	1	0	1	0	2	1	4	2
425:	2	4	1	1	2	1	1	1
433:	4	4	2	0	1	2	3	1
441:	3	2	1	1	0	0	0	0
449:	0	0	0	1	0	0	0	0
457:	1	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	1	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	1
489:	0	0	0	0	1	0	0	0
497:	1	0	0	0	0	0	0	0
505:	0	0	0	0	1	0	1	0
513:	0	0	0	0	2	1	0	0
521:	0	2	0	1	0	0	0	1
529:	0	0	0	0	0	0	0	1
537:	0	0	0	0	1	1	1	0
545:	0	1	0	0	0	0	1	1
553:	1	0	1	1	0	1	0	1
561:	1	0	1	0	2	0	1	1
569:	4	1	1	4	3	2	4	2
577:	1	2	3	3	1	5	4	7
585:	6	3	3	3	1	2	7	3
593:	12	11	6	6	4	7	7	13
601:	10	9	9	8	10	16	10	9
609:	4	15	6	12	11	9	13	15
617:	7	17	14	12	16	16	7	6
625:	7	4	1	1	1	1	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	1	0	0
657:	1	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	1
721:	0	1	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	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	1	0	0	0
785:	0	0	0	0	0	0	0	1
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 03

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	1	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	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	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:	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 8/21/17

Apex-Alpha™

Sample Description: HTC-A09-S001-3642-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_035
Chamber Serial Number: 04026477A
Detector Serial Number: 58771
Env. Background: System Bkgd 194209
Reagent Blank: <not performed>

Sample Size: 1.066E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 2:42:14 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.665 mL
Effective Efficiency: 0.2155 +/- 0.0114
Counting Efficiency: 0.1580 +/- 0.0027 on 11/18/2016 10:08:56 AM
Chem. Recovery Factor: 1.3643 +/- 0.0758

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.280	443.00	9.32	0.00	0.00E+000	35.6
U-234		4.728	72.49	23.12	0.51	0.00E+000	8.2
U-235		4.427	1.83	152.56	0.17	0.00E+000	3.0
U-238		4.160	71.49	23.28	0.51	0.00E+000	6.6

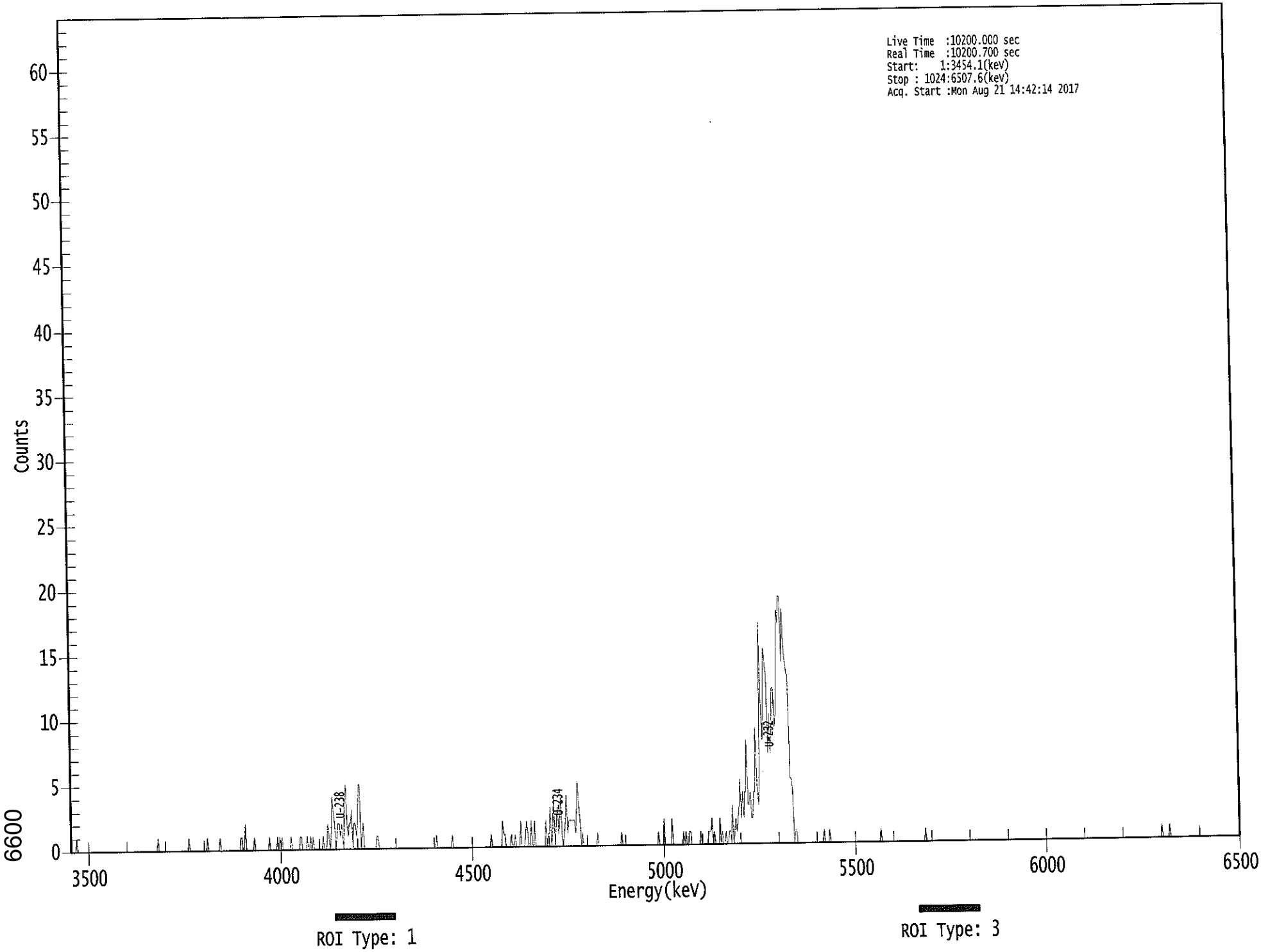
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.997	5302.50*	5.13E+000 +/- 5.32E-001	6.95E-002 +/- 7.20E-003
U-234	0.992	4761.50*	8.38E-001 +/- 2.12E-001	6.06E-002 +/- 6.28E-003
U-235	0.988	4385.50*	2.61E-002 +/- 3.99E-002	5.95E-002 +/- 6.16E-003
U-238	0.996	4184.40*	8.23E-001 +/- 2.10E-001	6.04E-002 +/- 6.25E-003

AG 8/22/17

0000192151.CNF



6600

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

Sample Title: 04

Elapsed Live time: 10200
Elapsed Real Time: 10201

Channel								
1:	0	0	0	0	0	1	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	1	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	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	1
121:	0	0	0	0	0	0	0	0
129:	0	0	1	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	1	1	0	0
153:	2	0	0	0	0	0	0	0
161:	1	0	0	0	0	0	0	0
169:	0	0	0	0	0	1	0	0
177:	0	0	0	0	1	0	1	0
185:	1	0	0	0	0	0	0	0
193:	1	0	0	0	0	0	0	0
201:	1	1	0	0	0	0	1	0
209:	0	1	0	1	0	0	0	0
217:	0	0	0	0	1	0	0	0
225:	2	1	0	1	4	3	2	0
233:	1	2	2	1	2	1	0	4
241:	5	2	1	2	2	3	0	2
249:	2	1	2	5	5	0	1	2
257:	0	0	0	0	0	0	0	0
265:	0	0	0	1	1	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	1
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	1	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	1

369:	0	0	0	0	0	0	0	0

Sample Title: 04

Channel								
377:	0	2	1	1	0	0	0	0
385:	0	1	0	0	1	0	0	0
393:	0	2	0	0	0	1	2	1
401:	0	0	2	0	0	2	0	0
409:	0	0	0	0	0	0	0	2
417:	0	1	1	3	0	1	4	0
425:	2	3	1	2	4	1	0	1
433:	2	4	1	2	2	2	2	2
441:	2	1	3	5	3	2	0	1
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	1	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	1	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	1	0	0	0	0	2	0
521:	0	0	0	0	0	2	0	0
529:	0	0	0	0	0	0	0	1
537:	0	1	0	0	1	1	0	0
545:	0	0	0	0	0	0	1	0
553:	0	0	0	0	0	1	1	1
561:	2	0	1	0	0	0	0	2
569:	0	1	0	0	1	0	0	1
577:	1	0	3	0	1	2	1	2
585:	3	5	2	4	2	4	4	8
593:	3	3	4	2	2	4	4	9
601:	4	3	6	17	11	8	11	15
609:	14	13	7	10	7	8	12	12
617:	9	10	14	18	17	19	19	14
625:	18	15	14	13	13	5	5	4
633:	0	1	1	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	1	0	0	0	0	1
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	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	1	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	1	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	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	1	0	0	0	0	0
961:	0	1	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	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

JCB 8/21/17

Apex-Alpha™

Sample Description: HTC-A09-S001-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_036
Chamber Serial Number: 04026477B
Detector Serial Number: 84167
Env. Background: System Bkgd 194210
Reagent Blank: <not performed>

Sample Size: 1.086E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 2:42:16 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.665 mL
Effective Efficiency: 0.1948 +/- 0.0107
Counting Efficiency: 0.1824 +/- 0.0031 on 11/18/2016 10:08:54 AM
Chem. Recovery Factor: 1.0684 +/- 0.0616

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	5.275	400.15	9.81	0.85	0.00E+000	5.2
U-234		4.723	78.32	22.26	0.68	0.00E+000	3.7
U-235		4.414	11.66	58.37	0.34	0.00E+000	3.0
U-238		4.149	67.49	23.96	0.51	0.00E+000	4.5

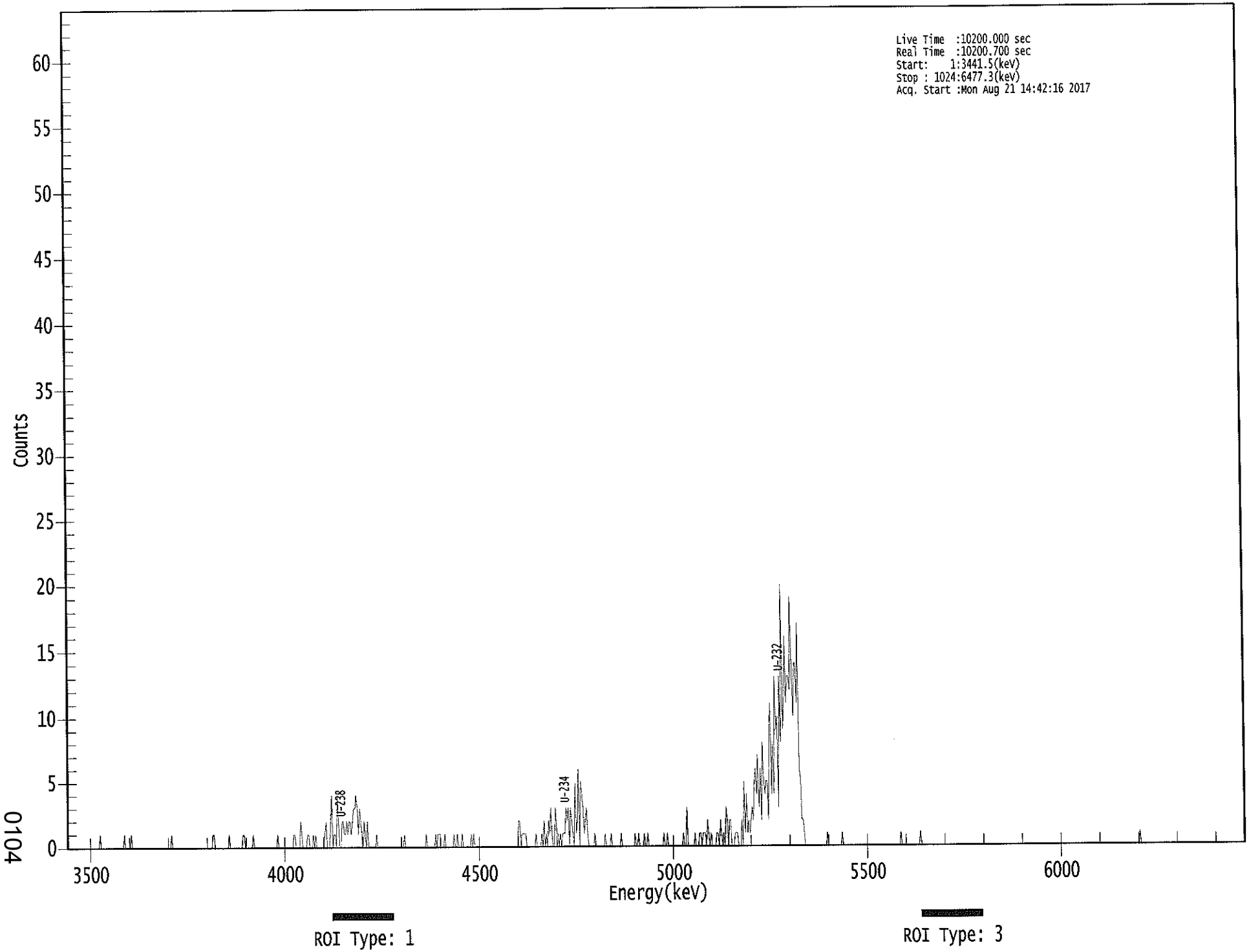
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.995	5302.50*	5.04E+000 +/- 5.44E-001	7.53E-002 +/- 8.14E-003
U-234	0.990	4761.50*	9.83E-001 +/- 2.43E-001	7.08E-002 +/- 7.64E-003
U-235	0.994	4385.50*	1.81E-001 +/- 1.07E-001	7.40E-002 +/- 7.99E-003
U-238	0.991	4184.40*	8.43E-001 +/- 2.22E-001	6.56E-002 +/- 7.08E-003

AG 8/22/17

0000192152.CNF



0104

****
***** 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: 10201

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

369:	0	0	0	0	0	0	0	0

Sample Title: 05

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	2
393:	2	0	1	1	1	1	0	0
401:	0	0	0	0	0	0	1	0
409:	0	0	0	1	0	2	0	1
417:	0	2	1	3	1	0	0	3
425:	1	1	0	1	0	1	1	1
433:	3	2	3	0	3	2	1	0
441:	5	1	2	6	0	5	4	3
449:	1	2	3	1	0	0	0	0
457:	0	1	0	0	0	0	0	0
465:	0	0	1	0	0	0	0	1
473:	0	0	0	0	0	0	0	0
481:	1	0	0	0	0	0	0	0
489:	0	0	0	0	1	0	0	1
497:	0	0	0	0	1	0	0	1
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	1	0	0
521:	1	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	1	0
537:	0	3	0	0	0	0	0	0
545:	1	0	0	0	1	1	0	1
553:	1	1	0	2	1	0	1	0
561:	0	0	0	1	1	0	2	1
569:	0	1	0	3	2	0	2	2
577:	0	0	0	1	1	1	0	0
585:	0	2	0	5	1	4	1	2
593:	1	2	3	2	5	6	4	7
601:	3	6	2	8	5	4	5	5
609:	2	9	11	4	8	4	13	9
617:	10	3	13	8	20	9	11	16
625:	11	13	13	12	19	13	10	14
633:	14	11	17	6	5	2	2	1
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	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:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	1	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	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	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:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	1	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	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™

108
8/21/17

Sample Description: HTC-A09-S002-0006-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_037
Chamber Serial Number: 04026478A
Detector Serial Number: 91133
Env. Background: System Bkgd 194211
Reagent Blank: <not performed>

Sample Size: 1.051E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 2:42:19 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.664 mL
Effective Efficiency: 0.1804 +/- 0.0103
Counting Efficiency: 0.1587 +/- 0.0027 on 11/18/2016 10:08:53 AM
Chem. Recovery Factor: 1.1362 +/- 0.0675

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	5.289	370.32	10.20	0.68	0.00E+000	6.4
U-234		4.738	2758.66	3.73	0.34	0.00E+000	76.4
U-235		4.401	160.83	15.46	0.17	0.00E+000	14.2
U-238		4.159	2770.00	3.72	0.00	0.00E+000	95.3

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.999	5302.50*	5.20E+000 +/- 5.80E-001	7.92E-002 +/- 8.84E-003
U-234	0.996	4761.50*	3.87E+001 +/- 4.54E+000	6.70E-002 +/- 7.47E-003
U-235	0.998	4385.50*	2.78E+000 +/- 5.30E-001	7.21E-002 +/- 8.04E-003
U-238	0.996	4184.40*	3.86E+001 +/- 4.54E+000	8.37E-002 +/- 9.33E-003

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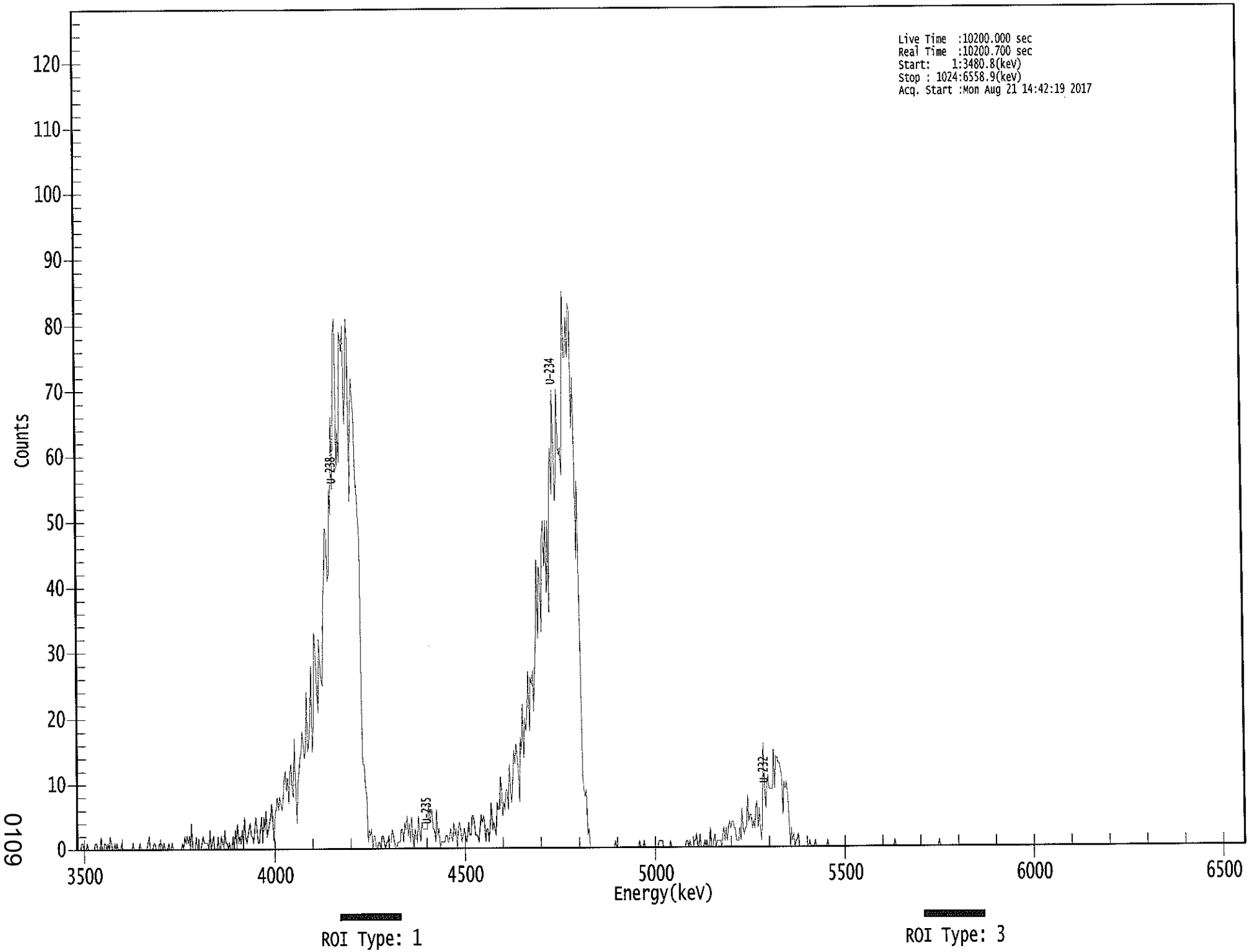
8/22/17

0000192153.CNF



0109

****
***** 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: 10201

Channel								
1:	0	0	0	0	1	1	0	0
9:	0	1	0	0	0	0	0	0
17:	1	1	0	0	0	2	0	0
25:	1	1	0	1	0	2	1	0
33:	0	1	0	1	0	0	0	1
41:	0	0	0	0	0	0	0	0
49:	0	1	0	0	0	0	0	1
57:	0	0	0	0	0	0	1	2
65:	0	0	0	1	1	0	0	0
73:	1	1	1	0	1	0	0	0
81:	1	0	0	1	0	0	0	0
89:	0	0	0	0	1	0	2	1
97:	2	1	2	0	4	0	0	0
105:	2	0	0	0	0	1	2	1
113:	1	1	1	0	3	0	1	2
121:	0	0	0	2	0	0	2	1
129:	0	3	1	1	0	1	0	0
137:	2	0	3	1	4	1	2	1
145:	3	0	5	2	1	2	3	4
153:	2	2	1	3	5	3	1	1
161:	3	5	1	5	3	6	2	3
169:	4	5	7	4	1	6	6	8
177:	6	8	7	6	8	11	12	9
185:	11	7	12	13	9	8	17	10
193:	4	10	12	14	15	18	16	14
201:	15	24	15	17	20	28	15	19
209:	33	30	25	21	32	28	26	25
217:	38	42	49	48	41	42	55	51
225:	66	55	69	79	81	58	64	59
233:	79	78	76	80	65	69	81	78
241:	53	66	72	69	66	57	54	51
249:	47	24	13	13	10	8	1	3
257:	2	3	0	2	2	0	0	1
265:	1	0	2	2	1	0	1	1
273:	2	1	1	3	2	1	0	0
281:	1	1	1	3	3	1	4	3
289:	5	2	4	1	5	2	0	3
297:	2	1	5	3	1	4	3	3
305:	3	3	3	7	4	5	6	3
313:	3	1	6	2	3	0	1	1
321:	1	1	2	2	1	1	3	2
329:	1	4	2	3	0	3	4	3
337:	1	2	3	2	1	2	4	2
345:	2	5	5	4	2	2	2	1
353:	3	5	4	5	4	1	3	3
361:	1	4	7	3	4	3	2	7

369:	6	6	11	9	5	7	6	9

Sample Title: 06

Channel								
377:	9	6	13	9	7	10	15	13
385:	16	14	12	7	17	15	22	14
393:	20	18	21	27	18	26	25	27
401:	21	28	31	44	32	43	41	33
409:	47	50	43	50	39	50	36	57
417:	61	54	70	61	53	57	70	61
425:	60	61	57	71	85	75	75	81
433:	75	83	82	64	72	63	44	56
441:	37	27	11	9	8	9	2	3
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	1	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	1	0	0	0	1
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	1	1	1	1
513:	0	0	0	0	0	0	1	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	1	1	0	1
537:	0	0	0	1	1	2	0	0
545:	2	0	0	0	1	0	1	0
553:	0	3	0	0	1	2	0	1
561:	1	1	1	0	2	3	1	3
569:	1	3	4	3	4	4	3	3
577:	1	1	1	3	1	6	3	2
585:	3	3	8	4	5	5	3	4
593:	3	6	7	3	6	3	1	6
601:	16	9	6	10	11	9	9	9
609:	9	15	9	14	14	13	13	12
617:	11	5	10	9	10	8	5	0
625:	3	1	2	0	1	1	2	0
633:	0	0	0	0	0	0	0	0
641:	1	0	0	0	0	1	0	0
649:	0	0	0	0	0	0	0	0
657:	1	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	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	1	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	1	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	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 8/21/17

Apex-Alpha™

Sample Description: HTC-A09-S002-0612-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 07
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_038
Chamber Serial Number: 04026478B
Detector Serial Number: 91134
Env. Background: System Bkgd 194212
Reagent Blank: <not performed>

Sample Size: 1.072E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 2:42:22 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.664 mL
Effective Efficiency: 0.1859 +/- 0.0104
Counting Efficiency: 0.1543 +/- 0.0027 on 11/18/2016 10:08:51 AM
Chem. Recovery Factor: 1.2042 +/- 0.0708

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.264	381.32	10.05	0.68	0.00E+000	8.4
U-234		4.720	1942.32	4.45	0.68	0.00E+000	84.4
U-235		4.389	116.83	18.15	0.17	0.00E+000	3.6
U-238		4.146	1890.64	4.51	1.36	0.00E+000	85.9

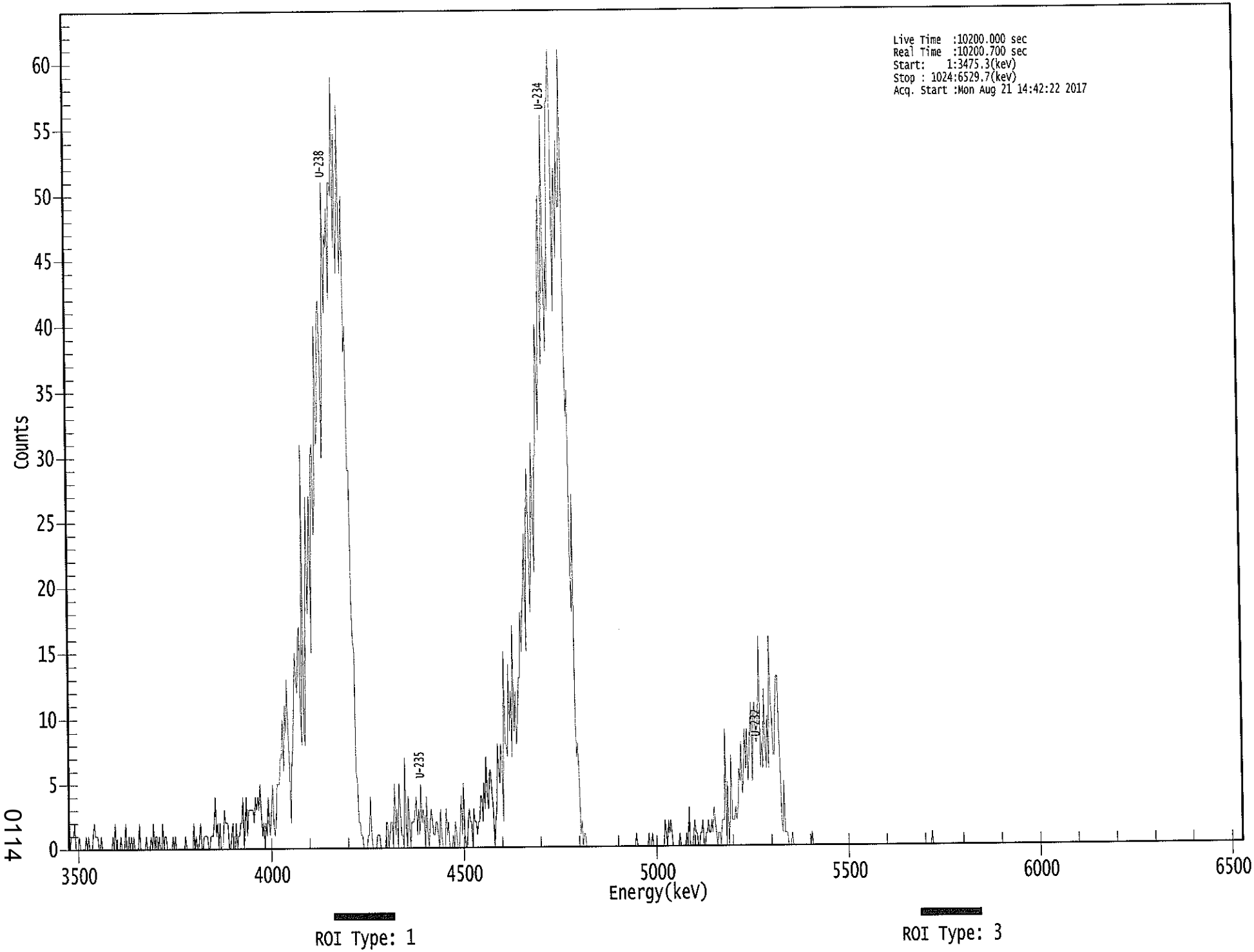
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.989	5302.50*	5.10E+000 +/- 5.61E-001	7.54E-002 +/- 8.30E-003
U-234	0.988	4761.50*	2.59E+001 +/- 3.08E+000	7.52E-002 +/- 8.28E-003
U-235	1.000	4385.50*	1.92E+000 +/- 4.08E-001	6.86E-002 +/- 7.56E-003
U-238	0.989	4184.40*	2.51E+001 +/- 2.99E+000	9.10E-002 +/- 1.00E-002

AG 8/22/17

0000192154.CNF



0114

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

Sample Title: 07

Elapsed Live time: 10200
Elapsed Real Time: 10201

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

369:	4	3	0	2	3	8	6	5

Sample Title: 07

Channel								
377:	8	7	2	15	8	8	7	14
385:	9	12	7	17	9	12	8	10
393:	13	13	18	15	18	20	24	15
401:	25	29	25	18	21	31	26	21
409:	30	30	40	36	32	46	50	37
417:	43	56	44	38	45	41	57	57
425:	61	56	41	49	52	45	54	49
433:	49	61	52	38	33	35	21	18
441:	27	10	7	8	5	1	2	0
449:	1	1	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	1	0	0
497:	0	0	0	0	0	0	0	0
505:	1	0	0	1	0	0	0	0
513:	0	0	0	0	0	0	2	1
521:	0	2	1	2	1	0	0	0
529:	0	0	0	1	0	0	0	0
537:	0	1	0	3	0	0	0	1
545:	2	1	1	0	0	1	1	2
553:	0	0	1	1	2	1	1	2
561:	1	3	2	1	0	1	1	0
569:	2	2	2	9	0	5	0	2
577:	7	2	2	2	3	2	3	6
585:	5	8	4	5	9	6	9	5
593:	7	9	11	5	10	11	8	8
601:	11	16	6	8	6	12	8	6
609:	10	6	16	11	10	7	7	11
617:	13	13	9	6	2	1	5	1
625:	1	1	0	0	0	1	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	1	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	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	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: 07

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	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™

VB 8/24/17

Sample Description: HTC-A09-S002-1218-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 08
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_039
Chamber Serial Number: 06027396A
Detector Serial Number: 83109
Env. Background: System Bkgd 194213
Reagent Blank: <not performed>

Sample Size: 1.003E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 2:42:24 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.658 mL
Effective Efficiency: 0.2029 +/- 0.0111
Counting Efficiency: 0.1852 +/- 0.0031 on 11/18/2016 10:08:50 AM
Chem. Recovery Factor: 1.0956 +/- 0.0625

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	5.262	412.79	9.68	2.21	0.00E+000	40.7
U-234		4.727	129.98	17.27	1.02	0.00E+000	8.4
U-235		4.406	4.32	102.62	0.68	0.00E+000	3.0
U-238		4.138	142.81	16.48	1.19	0.00E+000	7.2

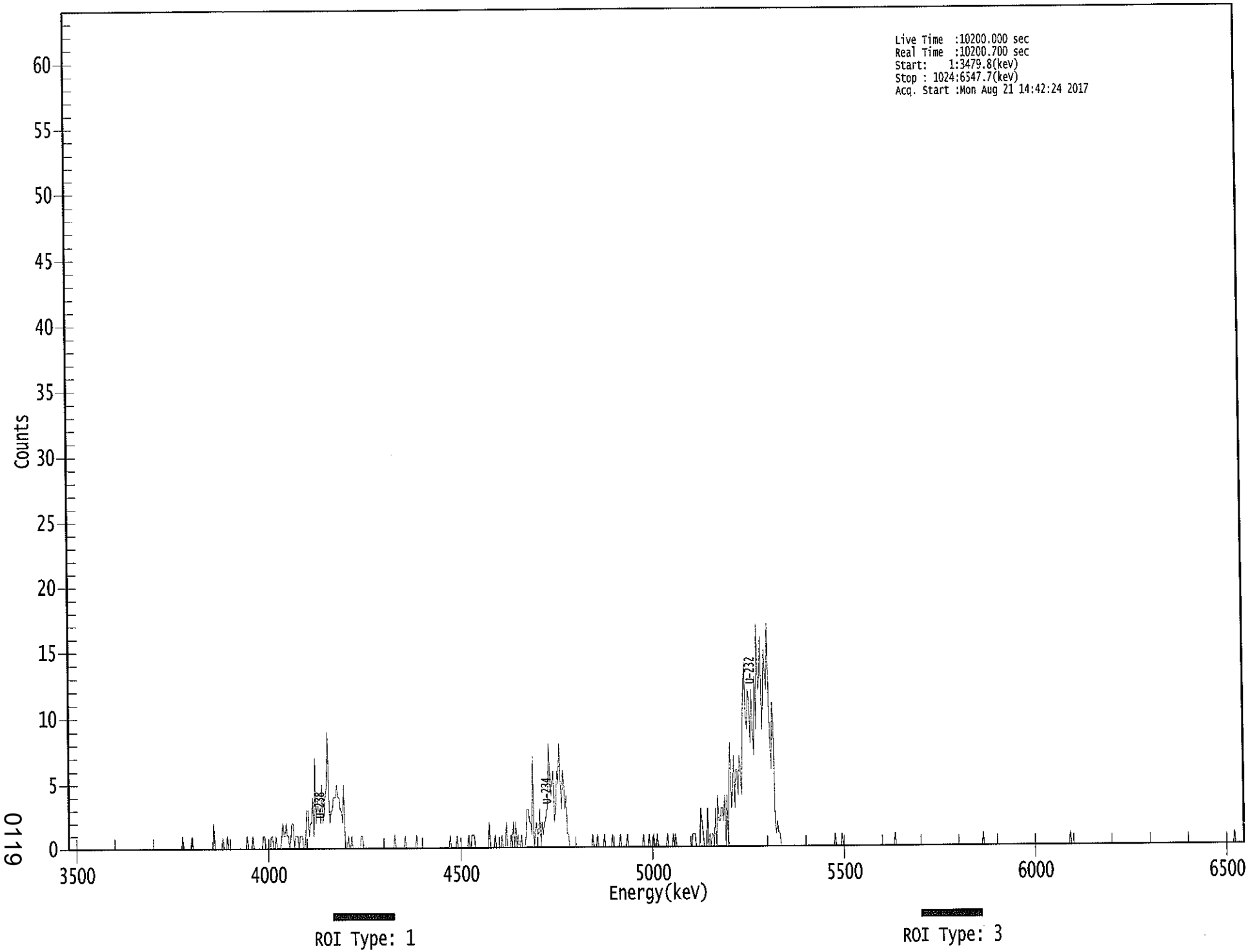
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.989	5302.50*	5.40E+000 +/- 5.77E-001	1.05E-001 +/- 1.12E-002
U-234	0.991	4761.50*	1.70E+000 +/- 3.44E-001	8.22E-002 +/- 8.78E-003
U-235	0.997	4385.50*	6.95E-002 +/- 7.18E-002	9.08E-002 +/- 9.70E-003
U-238	0.985	4184.40*	1.86E+000 +/- 3.64E-001	8.56E-002 +/- 9.14E-003

AG 8/22/17

0000192157.CNF



0119

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

Sample Title: 08

Elapsed Live time: 10200
Elapsed Real Time: 10201

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

369:	0	0	1	0	0	0	0	0

Sample Title: 08

Channel								
377:	1	0	0	0	2	0	0	0
385:	1	0	2	0	2	0	1	0
393:	0	1	0	0	0	1	3	3
401:	2	2	1	7	0	1	2	1
409:	1	3	0	2	1	2	2	3
417:	3	8	6	4	5	6	2	3
425:	6	5	8	5	3	6	5	3
433:	4	1	1	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	1
457:	0	0	0	1	0	0	0	0
465:	0	1	0	0	0	0	0	0
473:	1	0	0	0	0	0	0	1
481:	0	0	0	0	0	1	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	1	0	0	0	0
505:	1	0	0	0	1	0	0	1
513:	0	0	0	0	0	0	0	0
521:	1	0	0	0	0	1	0	1
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	1	1
545:	1	0	0	0	0	3	2	1
553:	0	0	0	3	0	1	0	1
561:	1	0	3	0	4	2	2	3
569:	3	2	4	0	4	0	5	8
577:	3	4	7	3	6	6	4	7
585:	6	4	9	12	14	10	9	12
593:	11	8	12	9	7	13	9	17
601:	12	13	16	9	11	15	13	12
609:	17	11	8	6	11	9	2	1
617:	2	1	1	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	1	0	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:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	1	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	1	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 08

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	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	1
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	1	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KG 8/21/17

Sample Description: HTC-A09-S002-1824-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification: 1707093A-UU
Sample Identification: 09
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_040
Chamber Serial Number: 06027396B
Detector Serial Number: 91135
Env. Background: System Bkgd 194214
Reagent Blank: <not performed>

Sample Size: 1.146E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:22:59 AM
Acquisition Date/Time: 8/21/2017 2:42:27 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.663 mL
Effective Efficiency: 0.2151 +/- 0.0114
Counting Efficiency: 0.1813 +/- 0.0031 on 11/18/2016 10:08:48 AM
Chem. Recovery Factor: 1.1862 +/- 0.0659

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	5.275	440.98	9.35	1.02	0.00E+000	23.4
U-234		4.735	82.66	21.61	0.34	0.00E+000	9.0
U-235		4.414	5.66	85.23	0.34	0.00E+000	3.0
U-238		4.154	59.00	25.73	0.00	0.00E+000	4.5

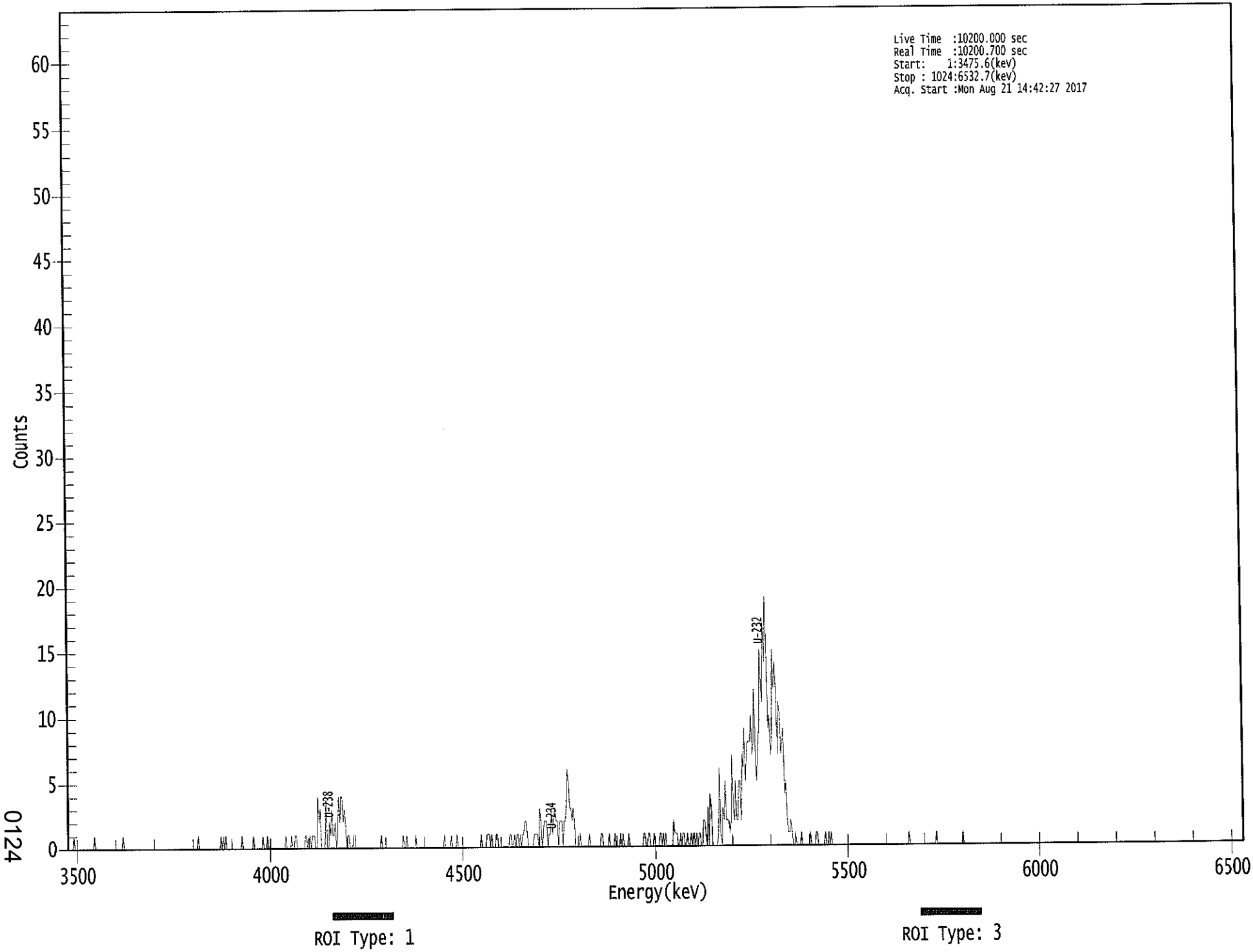
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.994	5302.50*	4.76E+000 +/- 4.94E-001	6.80E-002 +/- 7.06E-003
U-234	0.995	4761.50*	8.90E-001 +/- 2.13E-001	5.15E-002 +/- 5.34E-003
U-235	0.994	4385.50*	7.52E-002 +/- 6.45E-002	6.35E-002 +/- 6.59E-003
U-238	0.994	4184.40*	6.32E-001 +/- 1.75E-001	6.43E-002 +/- 6.67E-003

AG 8/22/17

0000192158.CNF



0124

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

Sample Title: 09

Elapsed Live time: 10200
Elapsed Real Time: 10201

Channel								
1:	0	0	0	0	0	1	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	1
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:	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	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	1	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	1	0	1
137:	0	1	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	1
153:	0	0	0	0	0	0	0	0
161:	0	1	0	0	0	0	0	0
169:	0	1	0	0	0	1	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	1	0	0
193:	0	0	1	0	0	1	1	0
201:	0	0	0	0	0	0	1	1
209:	0	0	1	0	1	1	1	0
217:	0	4	2	3	0	0	0	0
225:	4	0	0	2	1	3	1	1
233:	2	0	1	4	2	4	4	2
241:	3	2	0	1	1	0	0	0
249:	1	1	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:	1	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	1	0	0	1	0
297:	0	0	0	0	0	0	1	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	1
329:	0	0	0	0	0	1	0	0
337:	0	0	1	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	1
361:	0	0	0	0	1	1	1	0

369:	1	0	0	0	1	1	0	0

Sample Title: 09

Channel								
377:	0	0	0	0	0	0	0	0
385:	1	1	0	0	1	0	1	1
393:	0	1	0	1	1	2	2	1
401:	0	0	0	0	0	1	1	1
409:	1	0	3	2	0	1	2	2
417:	2	0	1	1	3	1	2	3
425:	2	2	0	2	2	2	0	2
433:	2	3	6	5	3	3	2	3
441:	2	0	0	0	0	1	0	0
449:	0	0	0	0	0	1	0	0
457:	0	0	0	0	0	0	0	1
465:	1	0	0	0	0	0	1	0
473:	0	0	0	1	0	0	0	0
481:	1	0	1	0	0	0	0	1
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	1	1	0	0
505:	1	1	0	0	0	1	0	0
513:	0	0	1	1	0	1	0	1
521:	0	0	0	0	0	0	2	1
529:	1	1	0	0	1	0	1	1
537:	0	0	1	0	0	1	0	1
545:	1	0	1	0	1	1	0	0
553:	2	2	1	0	3	0	4	3
561:	0	0	0	0	0	1	6	1
569:	0	3	2	5	2	2	2	1
577:	2	7	3	2	5	2	2	5
585:	5	2	7	6	9	5	7	8
593:	8	8	10	7	8	12	6	5
601:	8	9	15	12	11	17	14	19
609:	15	9	10	7	8	15	12	14
617:	12	7	11	10	7	8	9	4
625:	5	2	1	1	2	1	0	0
633:	1	0	0	0	0	1	0	0
641:	0	0	0	0	0	1	0	0
649:	0	0	1	1	0	0	0	0
657:	0	0	1	0	0	1	0	1
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	1	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	1	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	1	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	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

KD
8/21/17

Apex-Alpha™

Sample Description:	HTC-A09-S002-2430-01
Spectrum File:	\\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001921
Batch Identification:	1707093A-UU
Sample Identification:	10
Sample Geometry:	Shelf 2
Procedure Description:	U iso
Detector Name:	Alpha_043
Chamber Serial Number:	04026481A
Detector Serial Number:	91088
Env. Background:	System Bkgd 194215
Reagent Blank:	<not performed>
Sample Size:	1.021E+000 +/- 0.000E+000 gram
Sample Date/Time:	5/16/2017 6:22:59 AM
Acquisition Date/Time:	8/21/2017 2:42:30 PM
Acquisition Live Time:	170.0 minutes
Acquisition Real Time:	170.0 minutes
Tracer Certificate:	U232_UU-10A
Tracer Quantity:	0.663 mL
Effective Efficiency:	0.2475 +/- 0.0124
Counting Efficiency:	0.1874 +/- 0.0032 on 11/18/2016 10:08:43 AM
Chem. Recovery Factor:	1.3203 +/- 0.0698
Peak Match Tolerance:	0.150 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.272	507.30	8.72	1.70	0.00E+000	5.2
U-234		4.722	152.98	15.91	1.02	0.00E+000	3.5
U-235		4.393	10.32	63.32	0.68	0.00E+000	3.0
U-238		4.144	115.66	18.26	0.34	0.00E+000	3.9

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.993	5302.50*	5.34E+000 +/- 5.24E-001	7.74E-002 +/- 7.59E-003
U-234	0.989	4761.50*	1.61E+000 +/- 3.00E-001	6.62E-002 +/- 6.50E-003
U-235	1.000	4385.50*	1.34E-001 +/- 8.57E-002	7.31E-002 +/- 7.17E-003
U-238	0.989	4184.40*	1.21E+000 +/- 2.51E-001	5.00E-002 +/- 4.91E-003

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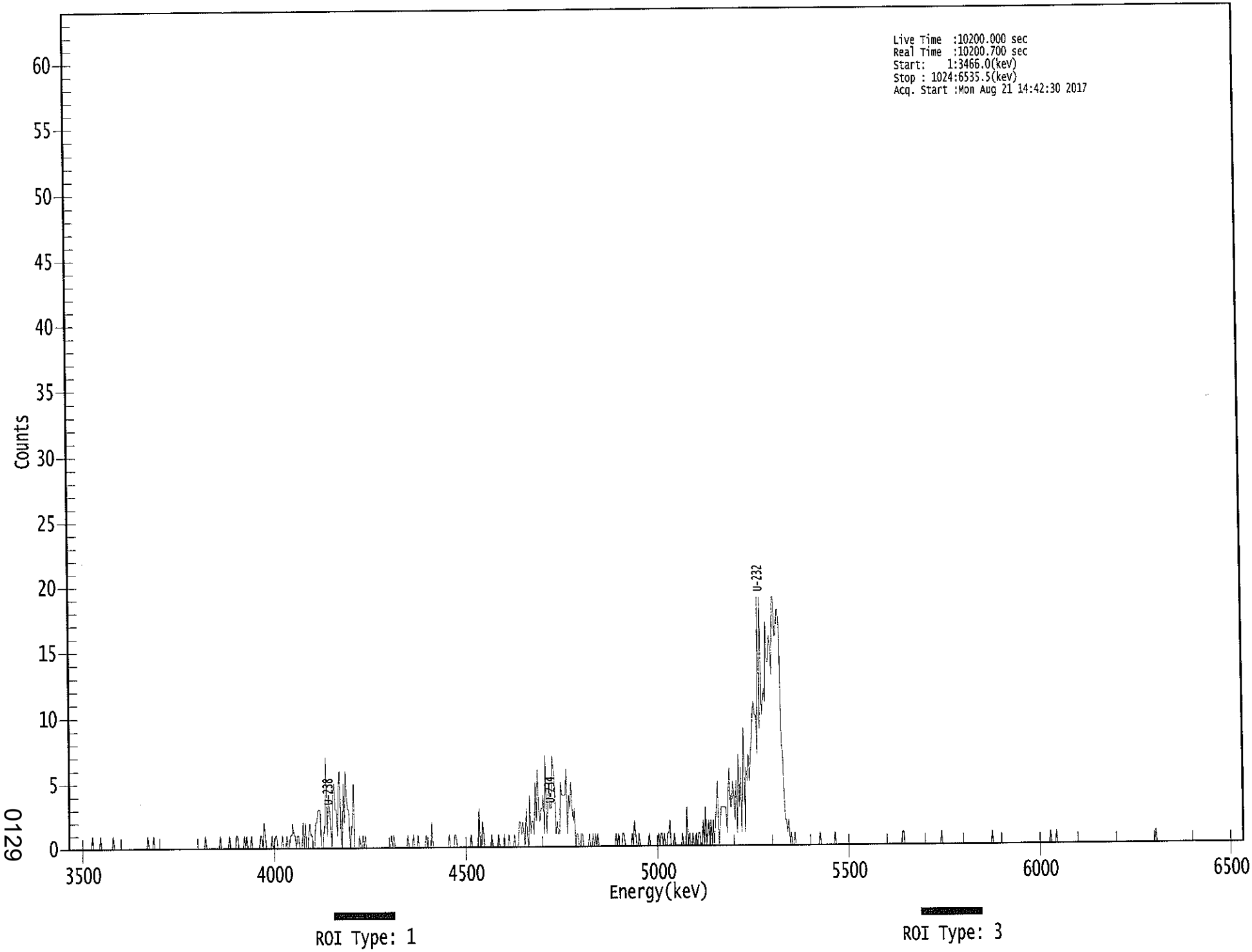
8/22/17

0000192159.CNF



0129

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

Sample Title: 10

Elapsed Live time: 10200
Elapsed Real Time: 10201

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

369:	0	0	0	0	0	1	0	0

Sample Title: 10

Channel								
377:	0	0	1	0	0	0	1	0
385:	0	0	0	1	0	0	0	2
393:	2	1	2	1	0	3	1	0
401:	4	1	2	2	1	5	2	6
409:	3	2	3	3	4	1	7	1
417:	3	5	3	3	7	6	5	1
425:	2	1	1	5	4	4	4	4
433:	6	1	4	3	5	3	2	3
441:	0	1	1	0	0	1	1	0
449:	0	0	0	0	1	0	0	1
457:	0	1	0	1	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	1	0	1	0	0
481:	0	1	1	0	0	0	0	0
489:	0	1	0	2	1	0	0	1
497:	0	0	0	0	0	0	0	0
505:	1	0	0	0	0	0	0	0
513:	1	0	1	1	0	1	0	0
521:	1	1	2	0	0	0	1	0
529:	0	0	0	0	0	1	0	0
537:	0	3	0	1	0	0	1	0
545:	0	1	0	1	1	0	0	2
553:	0	3	0	1	2	0	2	0
561:	2	0	2	3	5	0	2	3
569:	3	3	3	3	1	4	6	3
577:	3	5	4	2	5	1	7	3
585:	6	1	5	9	1	6	5	7
593:	5	7	8	10	11	10	10	7
601:	19	9	19	10	11	12	11	17
609:	14	14	16	15	13	19	19	16
617:	16	18	18	16	8	7	4	2
625:	2	1	2	0	1	0	0	1
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	1	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	1	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	1	1	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	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	1	0	0	0	0

Sample Title: 10

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	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	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	1	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

8/21/2017 5:47:34 AM

Apex-Alpha™

QA SUMMARY REPORT

Review Of QA Results - Pulser Check

Date : 8/21/2017
Time : 5:47:34 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Passed	8/21/2017 5:21:49 AM
Alpha_004	21f	ALL	Passed	8/21/2017 5:21:49 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	8/21/2017 5:21:50 AM
Alpha_011	21f	ALL	Passed	8/21/2017 5:21:51 AM
Alpha_012	21f	ALL	Passed	8/21/2017 5:21:52 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Passed	8/21/2017 5:21:53 AM
Alpha_015	21f	Peak FWHM	Action	8/18/2017 4:58:23 AM
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:21:54 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:21:56 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:21:57 AM
Alpha_036	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:21:59 AM
Alpha_037	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:00 AM
Alpha_038	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:02 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:04 AM
Alpha_040	Alpha Analyst100DC	Peak FWHM	Action	8/21/2017 5:22:05 AM
Alpha_041	Alpha Analyst100DC	ALL	Not Done	
Alpha_042	Alpha Analyst100DC	ALL	Not Done	
Alpha_043	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:07 AM
Alpha_044	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:08 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:10 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:12 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:14 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:15 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:17 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:19 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	8/18/2017 4:59:01 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:20 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:22 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:24 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	8/18/2017 4:59:12 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:26 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:28 AM
Alpha_058	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:30 AM

Review of QA Results - Pulser Check

8/21/2017 5:47:34 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:32 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	8/21/2017 5:22:34 AM

APPROVED BY: _____

APPROVAL DATE: 8/21/17

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

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

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

* = key line

TOTALS: 4 Nuclides 4 Energy Lines

SECTION IX

ANALYTICAL DATA (ISOTOPIC THORIUM)

Eberline Analytical
Oak Ridge Laboratory
Analysis Sheet

17-07093
ThISO
Run 1

Work Order	17-07093
Analysis Code	ThISO
Run	1
Date Received	7/18/2017
Lab Deadline	8/10/2017
Client	Weston Solutions, Inc.
Project	94759
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EPA 907.0 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		07/19/17 00:00	1.0000E+00
02	MBL	BLANK		07/19/17 00:00	1.0000E+00
03	DUP	HTC-A09-S001-3642-01	46	05/16/17 12:37	1.0118E+00
04	DO	HTC-A09-S001-3642-01	46	05/16/17 12:37	1.0060E+00
05	TRG	HTC-A09-S001-4248-01	47	05/16/17 12:35	1.0127E+00
06	TRG	HTC-A09-S002-0006-01	113	05/16/17 09:48	1.0046E+00
07	TRG	HTC-A09-S002-0612-01	100	05/16/17 09:46	1.0141E+00
08	TRG	HTC-A09-S002-1218-01	52	05/16/17 09:44	1.0546E+00
09	TRG	HTC-A09-S002-1824-01	39	05/16/17 09:42	1.0757E+00
10	TRG	HTC-A09-S002-2430-01	43	05/16/17 09:40	1.0319E+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.

17-07093
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	0.4549	10.2		0.00								
02	MBL	0.2254	5.1		0.00								
03	DUP	0.2252	5.1		0.00								
04	DO	0.2253	5.1		0.00								
05	TRG	0.2249	5.1		0.00								
06	TRG	0.2249	5.1		0.00								
07	TRG	0.2250	5.1		0.00								
08	TRG	0.2251	5.1		0.00								
09	TRG	0.2259	5.1		0.00								
10	TRG	0.2253	5.1		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.

17-07093
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			08/15/17 11:51	JPACHELLA				
02	MBL			08/15/17 11:51	JPACHELLA				
03	DUP			08/15/17 11:51	JPACHELLA				
04	DO	08/04/17 07:24	KSALLINGS	08/15/17 11:51	JPACHELLA				
05	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:51	JPACHELLA				
06	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:51	JPACHELLA				
07	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:51	JPACHELLA				
08	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:51	JPACHELLA				
09	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:51	JPACHELLA				
10	TRG	08/04/17 07:24	KSALLINGS	08/15/17 11:51	JPACHELLA				

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

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	TH-228	LCS	LCS	pCi/g	5.68E+00	9.07E-01	6.88E-02	4.76E+00	119.38	OK		OK	
02	TH-228	MBL	BLANK	pCi/g	-2.37E-02	3.61E-02	1.28E-01					OK	OK
03	TH-228	DUP	HTC-A09-S001-3642-01	pCi/g	1.35E+00	4.08E-01	1.29E-01				OK	OK	
04	TH-228	DO	HTC-A09-S001-3642-01	pCi/g	1.16E+00	3.29E-01	1.23E-01					OK	
05	TH-228	TRG	HTC-A09-S001-4248-01	pCi/g	1.04E+00	2.84E-01	7.04E-02					OK	
06	TH-228	TRG	HTC-A09-S002-0006-01	pCi/g	6.50E-01	2.84E-01	1.75E-01					OK	
07	TH-228	TRG	HTC-A09-S002-0612-01	pCi/g	4.49E-01	2.23E-01	1.63E-01					OK	
08	TH-228	TRG	HTC-A09-S002-1218-01	pCi/g	9.91E-01	3.14E-01	8.36E-02					OK	
09	TH-228	TRG	HTC-A09-S002-1824-01	pCi/g	8.39E-01	2.61E-01	9.28E-02					OK	
10	TH-228	TRG	HTC-A09-S002-2430-01	pCi/g	7.30E-01	2.53E-01	9.50E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-ThISO-1

Run	Analysis Code	Eberline Analytical Work Order	Client
1	ThISO	17-07093	Weston Solutions, Inc.

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	07/19/17 00:00	1.00E+00	119.38	0.00	0.00			
02	TH-228	MBL	07/19/17 00:00	1.00E+00	93.68	0.00	0.00			
03	TH-228	DUP	05/16/17 12:37	1.01E+00	81.13	0.00	0.00			
04	TH-228	DO	05/16/17 12:37	1.01E+00	100.87	0.00	0.00			
05	TH-228	TRG	05/16/17 12:35	1.01E+00	119.98	0.00	0.00			
06	TH-228	TRG	05/16/17 09:48	1.00E+00	72.45	0.00	0.00			
07	TH-228	TRG	05/16/17 09:46	1.01E+00	75.97	0.00	0.00			
08	TH-228	TRG	05/16/17 09:44	1.05E+00	97.63	0.00	0.00			
09	TH-228	TRG	05/16/17 09:42	1.08E+00	112.98	0.00	0.00			
10	TH-228	TRG	05/16/17 09:40	1.03E+00	112.99	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 17-07093-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-228	LCS	08/22/17 12:15		A_Spec	Alpha_038	170	3.95 E+02	2.00 E-03	15.4
02	TH-228	MBL	08/22/17 12:16		A_Spec	Alpha_039	170	-1.55 E+00	1.50 E-02	18.5
03	TH-228	DUP	08/22/17 12:16		A_Spec	Alpha_040	170	6.88 E+01	7.00 E-03	18.1
04	TH-228	DO	08/22/17 12:16		A_Spec	Alpha_043	170	7.58 E+01	1.30 E-02	18.7
05	TH-228	TRG	08/22/17 12:16		A_Spec	Alpha_044	170	7.75 E+01	3.00 E-03	17.9
06	TH-228	TRG	08/22/17 12:16		A_Spec	Alpha_045	170	2.73 E+01	1.00 E-02	16.9
07	TH-228	TRG	08/22/17 12:16		A_Spec	Alpha_046	170	2.03 E+01	1.00 E-02	17.1
08	TH-228	TRG	08/22/17 12:16		A_Spec	Alpha_047	170	5.67 E+01	2.00 E-03	16.2
09	TH-228	TRG	08/22/17 12:16		A_Spec	Alpha_048	170	5.70 E+01	6.00 E-03	16.3
10	TH-228	TRG	08/22/17 12:16		A_Spec	Alpha_049	170	4.33 E+01	4.00 E-03	14.9

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	TH-230	LCS	LCS	pCi/g	6.44E+00	1.01E+00	8.64E-02	5.45E+00	118.08	OK		OK	
02	TH-230	MBL	BLANK	pCi/g	4.30E-02	6.19E-02	1.01E-01					OK	OK
03	TH-230	DUP	HTC-A09-S001-3642-01	pCi/g	1.14E+00	3.50E-01	8.53E-02				OK	OK	
04	TH-230	DO	HTC-A09-S001-3642-01	pCi/g	9.91E-01	2.85E-01	8.79E-02					OK	
05	TH-230	TRG	HTC-A09-S001-4248-01	pCi/g	1.08E+00	2.82E-01	5.09E-02					OK	
06	TH-230	TRG	HTC-A09-S002-0006-01	pCi/g	4.27E+01	8.81E+00	1.48E-01					OK	
07	TH-230	TRG	HTC-A09-S002-0612-01	pCi/g	2.45E+01	5.01E+00	1.43E-01					OK	
08	TH-230	TRG	HTC-A09-S002-1218-01	pCi/g	1.81E+00	4.64E-01	7.60E-02					OK	
09	TH-230	TRG	HTC-A09-S002-1824-01	pCi/g	2.58E+00	5.64E-01	6.39E-02					OK	
10	TH-230	TRG	HTC-A09-S002-2430-01	pCi/g	7.14E-01	2.40E-01	7.31E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 17-07093-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

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	07/19/17 00:00	1.00E+00	119.38	0.00	0.00			
02	TH-230	MBL	07/19/17 00:00	1.00E+00	93.68	0.00	0.00			
03	TH-230	DUP	05/16/17 12:37	1.01E+00	81.13	0.00	0.00			
04	TH-230	DO	05/16/17 12:37	1.01E+00	100.87	0.00	0.00			
05	TH-230	TRG	05/16/17 12:35	1.01E+00	119.98	0.00	0.00			
06	TH-230	TRG	05/16/17 09:48	1.00E+00	72.45	0.00	0.00			
07	TH-230	TRG	05/16/17 09:46	1.01E+00	75.97	0.00	0.00			
08	TH-230	TRG	05/16/17 09:44	1.05E+00	97.63	0.00	0.00			
09	TH-230	TRG	05/16/17 09:42	1.08E+00	112.98	0.00	0.00			
10	TH-230	TRG	05/16/17 09:40	1.03E+00	112.99	0.00	0.00			

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-230	LCS	08/22/17 12:15		A_Spec	Alpha_038	170	4.47 E+02	0.00 E+00	15.4
02	TH-230	MBL	08/22/17 12:16		A_Spec	Alpha_039	170	2.81 E+00	7.00 E-03	18.5
03	TH-230	DUP	08/22/17 12:16		A_Spec	Alpha_040	170	6.37 E+01	2.00 E-03	18.1
04	TH-230	DO	08/22/17 12:16		A_Spec	Alpha_043	170	7.10 E+01	6.00 E-03	18.7
05	TH-230	TRG	08/22/17 12:16		A_Spec	Alpha_044	170	8.88 E+01	1.00 E-03	17.9
06	TH-230	TRG	08/22/17 12:16		A_Spec	Alpha_045	170	1.98 E+03	8.00 E-03	16.9
07	TH-230	TRG	08/22/17 12:16		A_Spec	Alpha_046	170	1.22 E+03	9.00 E-03	17.1
08	TH-230	TRG	08/22/17 12:16		A_Spec	Alpha_047	170	1.14 E+02	2.00 E-03	16.2
09	TH-230	TRG	08/22/17 12:16		A_Spec	Alpha_048	170	1.93 E+02	2.00 E-03	16.3
10	TH-230	TRG	08/22/17 12:16		A_Spec	Alpha_049	170	4.67 E+01	2.00 E-03	14.9

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-ThISO-1

Client: Weston Solutions, Inc.
Eberline Analytical Work Order: 17-07093
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-232	LCS	LCS	pCi/g	5.67E+00	9.06E-01	7.55E-02	4.76E+00	119.23	OK		OK	
02	TH-232	MBL	BLANK	pCi/g	1.76E-02	4.39E-02	9.14E-02					OK	OK
03	TH-232	DUP	HTC-A09-S001-3642-01	pCi/g	1.14E+00	3.52E-01	1.00E-01				OK	OK	
04	TH-232	DO	HTC-A09-S001-3642-01	pCi/g	1.13E+00	3.10E-01	8.35E-02					OK	
05	TH-232	TRG	HTC-A09-S001-4248-01	pCi/g	8.50E-01	2.40E-01	5.08E-02					OK	
06	TH-232	TRG	HTC-A09-S002-0006-01	pCi/g	5.31E-01	2.42E-01	1.48E-01					OK	
07	TH-232	TRG	HTC-A09-S002-0612-01	pCi/g	5.95E-01	2.49E-01	1.38E-01					OK	
08	TH-232	TRG	HTC-A09-S002-1218-01	pCi/g	1.03E+00	3.11E-01	6.62E-02					OK	
09	TH-232	TRG	HTC-A09-S002-1824-01	pCi/g	7.34E-01	2.31E-01	8.41E-02					OK	
10	TH-232	TRG	HTC-A09-S002-2430-01	pCi/g	8.29E-01	2.65E-01	8.61E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-ThISO-1

Client	Eberline Analytical Work Order	Analysis Code	Run
Weston Solutions, Inc.	17-07093	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	07/19/17 00:00	1.00E+00	119.38	0.00	0.00			
02	TH-232	MBL	07/19/17 00:00	1.00E+00	93.68	0.00	0.00			
03	TH-232	DUP	05/16/17 12:37	1.01E+00	81.13	0.00	0.00			
04	TH-232	DO	05/16/17 12:37	1.01E+00	100.87	0.00	0.00			
05	TH-232	TRG	05/16/17 12:35	1.01E+00	119.98	0.00	0.00			
06	TH-232	TRG	05/16/17 09:48	1.00E+00	72.45	0.00	0.00			
07	TH-232	TRG	05/16/17 09:46	1.01E+00	75.97	0.00	0.00			
08	TH-232	TRG	05/16/17 09:44	1.05E+00	97.63	0.00	0.00			
09	TH-232	TRG	05/16/17 09:42	1.08E+00	112.98	0.00	0.00			
10	TH-232	TRG	05/16/17 09:40	1.03E+00	112.99	0.00	0.00			

Preliminary Data Report & Analytical Calculations
Work Order: 17-07093-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07093
Client: Weston Solutions, Inc.

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-232	LCS	08/22/17 12:15		A_Spec	Alpha_038	170	3.94 E+02	3.00 E-03	15.4
02	TH-232	MBL	08/22/17 12:16		A_Spec	Alpha_039	170	1.15 E+00	5.00 E-03	18.5
03	TH-232	DUP	08/22/17 12:16		A_Spec	Alpha_040	170	6.43 E+01	4.00 E-03	18.1
04	TH-232	DO	08/22/17 12:16		A_Spec	Alpha_043	170	8.10 E+01	0.00 E+00	18.7
05	TH-232	TRG	08/22/17 12:16		A_Spec	Alpha_044	170	6.98 E+01	1.00 E-03	17.9
06	TH-232	TRG	08/22/17 12:16		A_Spec	Alpha_045	170	2.46 E+01	8.00 E-03	16.9
07	TH-232	TRG	08/22/17 12:16		A_Spec	Alpha_046	170	2.96 E+01	8.00 E-03	17.1
08	TH-232	TRG	08/22/17 12:16		A_Spec	Alpha_047	170	6.48 E+01	1.00 E-03	16.2
09	TH-232	TRG	08/22/17 12:16		A_Spec	Alpha_048	170	5.50 E+01	6.00 E-03	16.3
10	TH-232	TRG	08/22/17 12:16		A_Spec	Alpha_049	170	5.43 E+01	4.00 E-03	14.9

Count Room Report
Client: Weston Solutions, Inc.

17-07093-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	07/19/17 00:00	1.0000	0.4549	10.2171		0.00		
02	MBL	BLANK	07/19/17 00:00	1.0000	0.2254	5.0625		0.00		
03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	1.0118	0.2252	5.0580		0.00		
04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	1.0060	0.2253	5.0602		0.00		
05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	1.0127	0.2249	5.0513		0.00		
06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	1.0046	0.2249	5.0513		0.00		
07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	1.0141	0.2250	5.0535		0.00		
08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	1.0546	0.2251	5.0557		0.00		
09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	1.0757	0.2259	5.0737		0.00		
10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	1.0319	0.2253	5.0602		0.00		

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 8/15/2017 11:51 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
17-07093	1	ThISO	8/15/2017 11:45	JPACHELLA	JPM	

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	8/15/2017	**0.100**	**0.1020**				4.76	0.171	0.00	0.000	0.00	0.000	0.00	0.000
Th-230	Th-1b	23.520	8/15/2017	**0.500**	**0.5148**				5.45	0.147	0.00	0.000	0.00	0.000	0.00	0.000
Th-232	Th-8b	103.560	8/15/2017	**0.100**	**0.1020**				4.76	0.171	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	8/15/2017	**0.4549**	**0.2200**
02	**Th-229**	Th-18a	22.460	8/15/2017	**0.2254**	**0.2200**
03	**Th-229**	Th-18a	22.460	8/15/2017	**0.2252**	**0.2200**
04	**Th-229**	Th-18a	22.460	8/15/2017	**0.2253**	**0.2200**
05	**Th-229**	Th-18a	22.460	8/15/2017	**0.2249**	**0.2200**
06	**Th-229**	Th-18a	22.460	8/15/2017	**0.2249**	**0.2200**
07	**Th-229**	Th-18a	22.460	8/15/2017	**0.2250**	**0.2200**
08	**Th-229**	Th-18a	22.460	8/15/2017	**0.2251**	**0.2200**
09	**Th-229**	Th-18a	22.460	8/15/2017	**0.2259**	**0.2200**
10	**Th-229**	Th-18a	22.460	8/15/2017	**0.2253**	**0.2200**

Balance Printer Tapes

Tracer	LCS

Matrix Spike

0150

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
17-07093	1	ThISO	grams	8/10/2017	JPACHELLA

Lab Fraction	Weston Solutions, Inc. 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	HTC-A09-S001-3642-01	DUP					1.0118E+00	1.0118E+00				
04	HTC-A09-S001-3642-01	DO					1.0060E+00	1.0060E+00				
05	HTC-A09-S001-4248-01	TRG					1.0127E+00	1.0127E+00				
06	HTC-A09-S002-0006-01	TRG					1.0046E+00	1.0046E+00				
07	HTC-A09-S002-0612-01	TRG					1.0141E+00	1.0141E+00				
08	HTC-A09-S002-1218-01	TRG					1.0546E+00	1.0546E+00				
09	HTC-A09-S002-1824-01	TRG					1.0757E+00	1.0757E+00				
10	HTC-A09-S002-2430-01	TRG					1.0319E+00	1.0319E+00				

Comments	

0151

Technician: JPachella Date: 8/15/17

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
17-07093	8/10/2017	8/3/2017	8/4/2017	8/5/2017	KSALLINGS

Bico Pulverizer: 000302 [✓] Jaw Crusher 68275 [ ]

Eberline	Weston Solutions, Inc.	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	HTC-A09-S001-3642-01	14.3500	930.5800	773.7000	916.2300	759.3500	17.12%	82.88%	0.0000	0.0000	
05	HTC-A09-S001-4248-01	14.4700	939.6800	777.9200	925.2100	763.4500	17.48%	82.52%	0.0000	0.0000	
06	HTC-A09-S002-0006-01	14.5100	955.7400	916.1000	941.2300	901.5900	4.21%	95.79%	0.0000	0.0000	
07	HTC-A09-S002-0612-01	14.5000	944.1200	842.9800	929.6200	828.4800	10.88%	89.12%	0.0000	0.0000	
08	HTC-A09-S002-1218-01	14.4800	994.6400	877.3400	980.1600	862.8600	11.97%	88.03%	0.0000	0.0000	
09	HTC-A09-S002-1824-01	14.5500	1052.3200	946.2200	1037.7700	931.6700	10.22%	89.78%	0.0000	0.0000	
10	HTC-A09-S002-2430-01	14.6600	1130.8400	978.3800	1116.1800	963.7200	13.66%	86.34%	0.0000	0.0000	

OVENS Fisher Isotemp SN 00579 [✓] VWR SN 000588 [ ]

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

0152

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

Analysis: ThISO Page No. 10187

Apex-Alpha™

KP 8/22/17

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_038
Chamber Serial Number: 04026478B
Detector Serial Number: 91134
Env. Background: System Bkgd 194212
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 8/22/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:15:58 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.455 mL
Effective Efficiency: 0.1842 +/- 0.0118
Counting Efficiency: 0.1543 +/- 0.0027 on 11/18/2016 10:08:51 AM
Chem. Recovery Factor: 1.1938 +/- 0.0791

Control Certificate Name: NatTh_Th-8
Chem. Recov. of Control: TH-232 1.192317 +/- 0.103509
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		5.880	16.49	49.13	0.51	0.00E+000	4.5
TH-228		5.387	394.66	9.87	0.34	0.00E+000	22.5
TH-229	T	4.865	319.98	10.98	1.02	0.00E+000	7.0
TH-230		4.635	447.00	9.28	0.00	0.00E+000	18.0
TH-232		3.970	394.49	9.88	0.51	0.00E+000	7.5

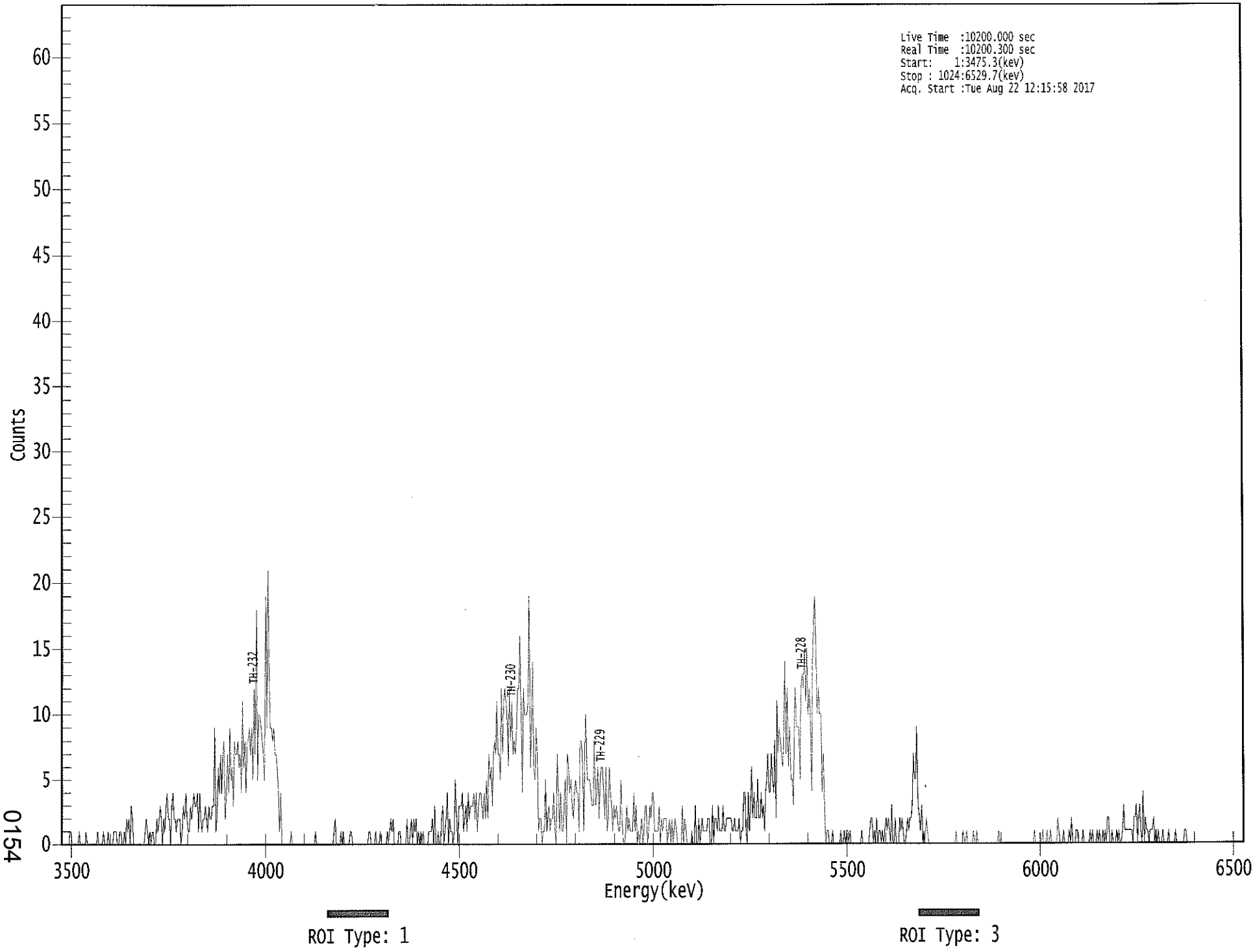
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.995	5850.00*	2.43E-001 +/- 1.23E-001	7.74E-002 +/- 9.71E-003
TH-228	0.999	5400.00*	5.68E+000 +/- 9.07E-001	6.88E-002 +/- 8.63E-003
TH-229	1.000	4872.00*	4.62E+000 +/- 5.80E-001	9.10E-002 +/- 1.14E-002
TH-230	0.993	4672.00*	6.44E+000 +/- 1.01E+000	8.64E-002 +/- 1.08E-002
TH-232	0.996	3997.00*	5.67E+000 +/- 9.06E-001	7.55E-002 +/- 9.47E-003

AG
8/23/17

0000192269.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	0	0	0	1
9:	1	0	0	0	0	0	0	1
17:	0	0	0	0	0	1	0	0
25:	0	0	0	0	0	0	0	1
33:	0	0	0	0	1	0	0	0
41:	1	0	0	0	0	1	1	1
49:	0	0	1	1	0	0	1	0
57:	2	1	2	0	3	2	0	0
65:	0	0	0	0	0	0	0	0
73:	1	2	1	0	1	0	1	1
81:	0	0	2	1	2	3	2	0
89:	2	1	3	4	2	2	0	3
97:	4	2	2	1	2	2	2	0
105:	1	3	2	4	2	1	1	3
113:	2	3	4	3	3	4	1	4
121:	2	1	2	2	3	2	1	3
129:	2	2	3	3	9	1	2	6
137:	4	7	4	7	8	2	4	7
145:	4	9	5	6	3	8	7	7
153:	8	6	7	4	11	6	8	4
161:	8	8	9	7	9	5	12	7
169:	18	5	10	10	9	8	7	5
177:	19	9	21	13	9	9	8	9
185:	7	7	6	4	1	4	0	0
193:	0	0	0	0	0	0	1	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	1	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	1	2	0	0	0
241:	0	1	0	1	0	0	0	0
249:	0	1	1	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	1	1	0	0	0	0	1
273:	0	0	0	1	0	0	0	0
281:	0	1	0	1	2	1	2	0
289:	0	0	0	1	1	0	0	0
297:	0	0	2	0	0	1	2	0
305:	2	1	2	0	1	0	1	0
313:	1	0	0	0	0	1	1	1
321:	2	0	3	0	0	1	0	0
329:	2	3	0	1	2	4	0	2
337:	1	1	0	1	5	2	0	3
345:	3	3	4	1	2	3	1	4
353:	2	3	3	3	4	2	4	1
361:	3	4	4	3	2	4	2	5

369:	2	7	5	6	3	7	8	7

Sample Title: 01

Channel								
377:	11	7	7	5	12	7	11	12
385:	11	10	6	12	8	11	7	8
393:	7	9	12	12	16	10	4	12
401:	10	10	10	11	19	6	9	14
409:	6	5	9	7	1	2	2	0
417:	1	1	5	1	2	3	1	2
425:	2	4	1	0	7	4	1	4
433:	1	1	3	5	0	7	6	4
441:	5	3	2	4	5	4	4	1
449:	8	8	7	1	7	10	5	5
457:	5	4	3	3	8	3	4	6
465:	2	5	6	6	4	2	6	1
473:	2	6	4	3	1	3	2	3
481:	2	1	1	5	2	0	0	1
489:	3	1	2	1	1	1	4	1
497:	3	0	1	0	1	2	0	1
505:	3	3	0	1	3	2	4	4
513:	1	1	1	1	3	0	2	1
521:	2	2	2	0	1	2	0	2
529:	0	1	2	1	0	0	0	0
537:	3	0	2	1	0	0	0	0
545:	1	0	0	3	0	0	2	0
553:	1	2	1	1	1	1	2	2
561:	0	0	3	0	2	2	1	3
569:	1	1	1	3	1	1	2	2
577:	2	2	2	1	1	2	1	1
585:	1	2	0	1	1	4	4	1
593:	0	4	1	3	6	2	4	2
601:	2	5	2	2	4	2	3	1
609:	4	5	7	4	4	7	5	4
617:	8	2	11	7	9	8	7	6
625:	8	14	7	12	6	9	5	5
633:	3	9	12	9	9	9	5	12
641:	13	12	15	11	15	10	12	10
649:	4	14	17	19	15	10	12	10
657:	10	4	7	3	0	1	1	0
665:	0	0	1	0	0	0	0	0
673:	0	1	0	0	1	0	1	1
681:	0	1	0	0	0	0	0	0
689:	0	0	0	1	0	0	0	0
697:	0	0	1	2	2	0	1	0
705:	2	0	1	1	0	1	0	1
713:	2	1	2	1	0	3	0	0
721:	2	0	0	0	2	1	2	1
729:	0	0	1	2	1	2	2	3
737:	7	5	5	9	3	2	1	3
745:	0	1	0	2	1	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	1	0	0
777:	0	0	0	1	0	0	1	0
785:	0	0	0	0	1	0	0	1
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	1	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	1	0	0	0	0	0	0
849:	1	0	0	0	1	0	0	1
857:	0	0	0	0	0	2	1	0
865:	0	0	1	0	0	0	0	1
873:	0	2	0	0	0	1	1	0
881:	0	0	0	1	0	0	0	0
889:	0	1	0	1	0	0	0	1
897:	0	1	0	0	1	0	1	0
905:	2	2	0	0	1	0	0	0
913:	1	0	1	0	0	1	3	1
921:	1	1	1	1	1	1	0	2
929:	2	3	0	2	3	1	0	4
937:	0	2	1	1	0	1	1	1
945:	2	0	1	0	1	0	0	0
953:	1	0	0	0	0	1	0	0
961:	0	0	0	1	0	0	0	0
969:	0	0	0	1	1	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 8/22/17

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_039
Chamber Serial Number: 06027396A
Detector Serial Number: 83109
Env. Background: System Bkgd 194213
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 8/22/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:00 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.225 mL
Effective Efficiency: 0.1735 +/- 0.0153
Counting Efficiency: 0.1852 +/- 0.0031 on 11/18/2016 10:08:50 AM
Chem. Recovery Factor: 0.9368 +/- 0.0842

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		5.785	2.32	149.12	0.68	0.00E+000	3.0
TH-228		5.228	-1.55	151.40	2.55	0.00E+000	3.0
TH-229	T	4.873	149.28	16.21	2.72	0.00E+000	10.7
TH-230		4.619	2.81	142.99	1.19	0.00E+000	3.0
TH-232		3.987	1.15	249.59	0.85	0.00E+000	3.0

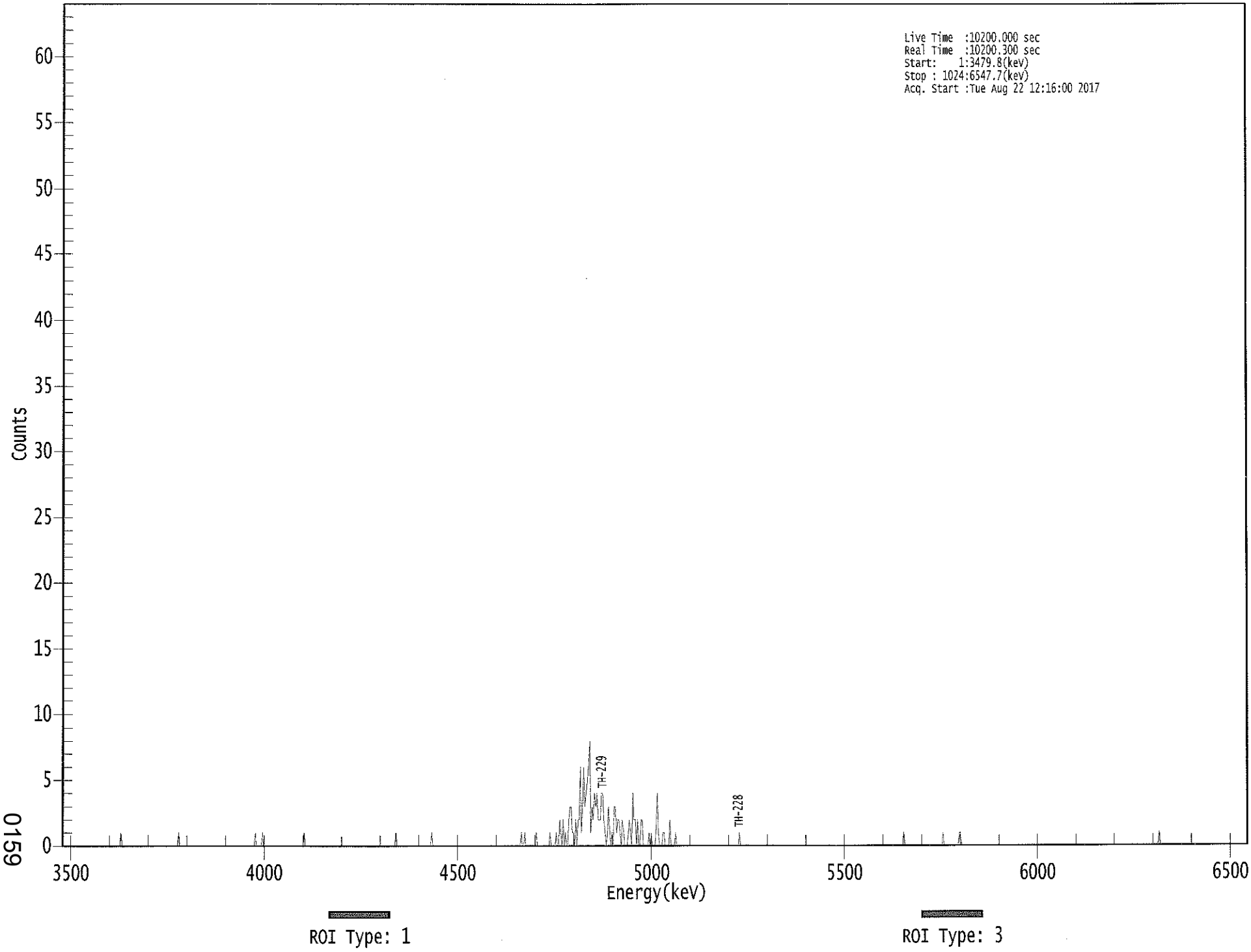
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.978	5850.00*	3.63E-002 +/- 5.46E-002	8.84E-002 +/- 1.53E-002
TH-228	0.857	5400.00*	-2.37E-002 +/- 3.61E-002	1.28E-001 +/- 2.22E-002
TH-229	1.000	4872.00*	2.29E+000 +/- 3.97E-001	1.32E-001 +/- 2.28E-002
TH-230	0.985	4672.00*	4.30E-002 +/- 6.19E-002	1.01E-001 +/- 1.75E-002
TH-232	0.999	3997.00*	1.76E-002 +/- 4.39E-002	9.14E-002 +/- 1.58E-002

AG 8/23/17

0000192248.CNF



0159

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

369:	0	0	0	0	0	0	0	0

Sample Title: 02

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

801:	0	0	0	0	0	0	0	0

Sample Title: 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	1	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 8/22/17

Apex-Alpha™

Sample Description: HTC-A09-S001-3642-01-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_040
Chamber Serial Number: 06027396B
Detector Serial Number: 91135
Env. Background: System Bkgd 194214
Reagent Blank: <not performed>

Sample Size: 1.012E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:02 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.225 mL
Effective Efficiency: 0.1471 +/- 0.0139
Counting Efficiency: 0.1813 +/- 0.0031 on 11/18/2016 10:08:48 AM
Chem. Recovery Factor: 0.8113 +/- 0.0778

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		5.824	6.32	82.73	0.68	0.00E+000	3.0
TH-228		5.389	68.81	23.87	1.19	0.00E+000	5.2
TH-229	T	4.887	126.49	17.47	0.51	0.00E+000	5.0
TH-230		4.639	63.66	24.64	0.34	0.00E+000	3.7
TH-232		3.976	64.32	24.59	0.68	0.00E+000	11.2

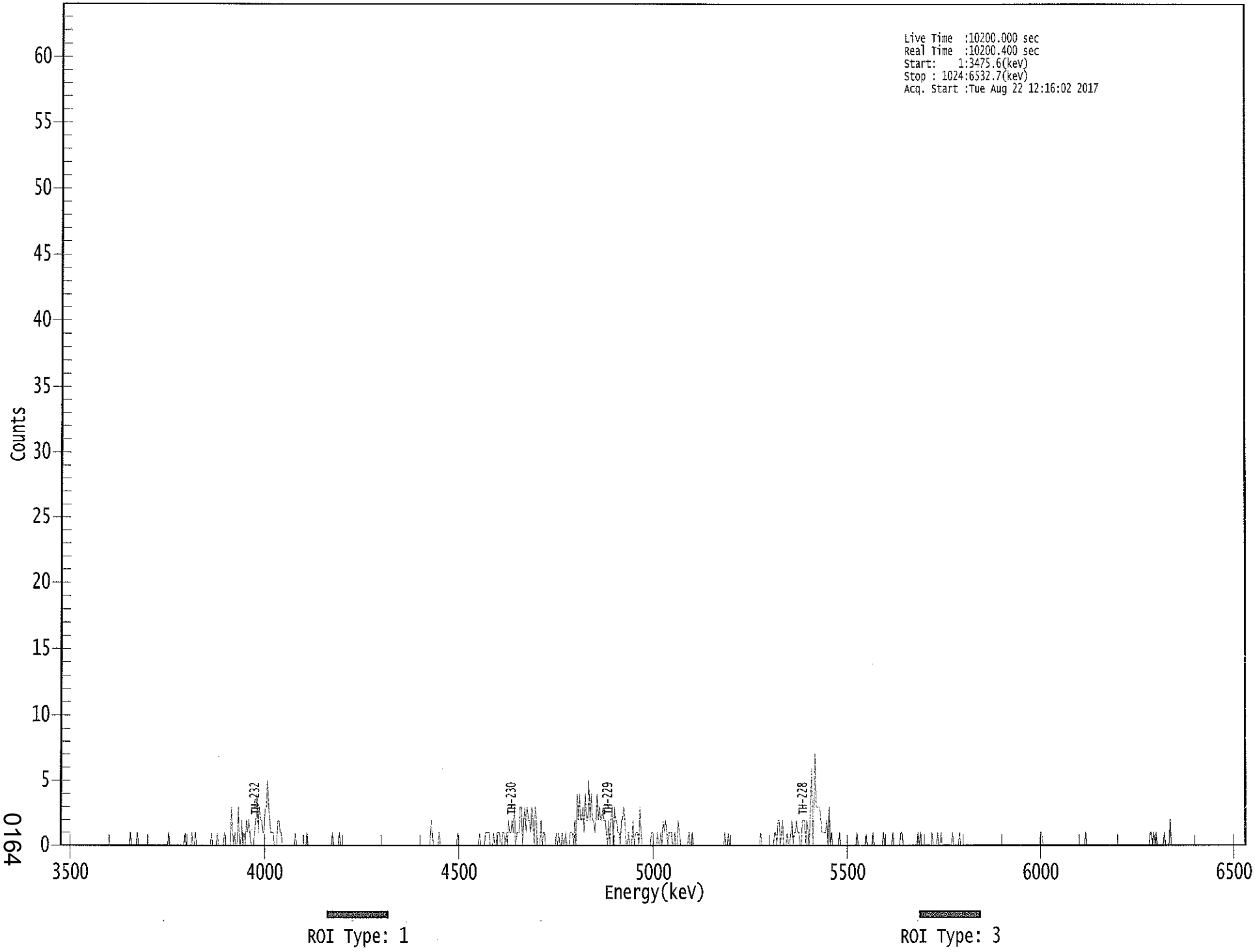
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.996	5850.00*	1.16E-001 +/- 9.86E-002	1.04E-001 +/- 1.92E-002
TH-228	0.999	5400.00*	1.35E+000 +/- 4.08E-001	1.29E-001 +/- 2.39E-002
TH-229	0.999	4872.00*	2.26E+000 +/- 4.18E-001	9.39E-002 +/- 1.74E-002
TH-230	0.994	4672.00*	1.14E+000 +/- 3.50E-001	8.53E-002 +/- 1.58E-002
TH-232	0.998	3997.00*	1.14E+000 +/- 3.52E-001	1.00E-001 +/- 1.86E-002

AG 8/23/17

0000192249.CNF



0164

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

Sample Title: 03

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	1	1	0	0	0	1	0	0

Sample Title: 03

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

801:	0	0	0	0	0	0	0	0

Sample Title: 03

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	1	1	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	1	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	1	1	0	1
945:	0	1	0	0	0	0	0	0
953:	1	0	0	0	0	2	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 8/22/17

Sample Description: HTC-A09-S001-3642-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_043
Chamber Serial Number: 04026481A
Detector Serial Number: 91088
Env. Background: System Bkgd 194215
Reagent Blank: <not performed>

Sample Size: 1.006E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:05 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.225 mL
Effective Efficiency: 0.1891 +/- 0.0160
Counting Efficiency: 0.1874 +/- 0.0032 on 11/18/2016 10:08:43 AM
Chem. Recovery Factor: 1.0087 +/- 0.0871

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		5.873	6.81	82.43	1.19	0.00E+000	3.0
TH-228		5.393	75.79	22.89	2.21	0.00E+000	6.4
TH-229	T	4.891	162.64	15.44	1.36	0.00E+000	6.4
TH-230		4.639	70.98	23.46	1.02	0.00E+000	4.1
TH-232		3.975	81.00	21.91	0.00	0.00E+000	7.4

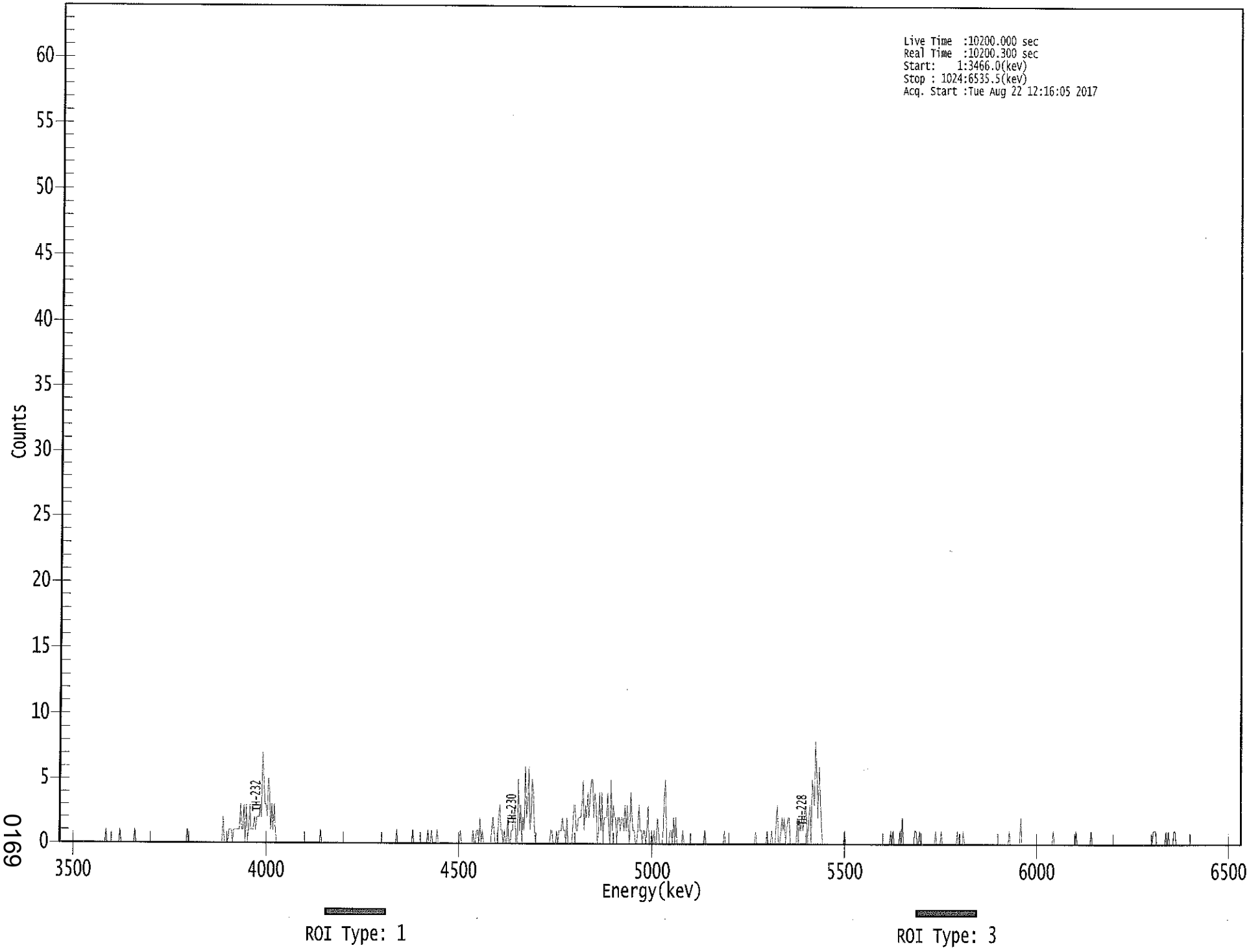
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.997	5850.00*	9.81E-002 +/- 8.25E-002	9.49E-002 +/- 1.58E-002
TH-228	1.000	5400.00*	1.16E+000 +/- 3.29E-001	1.23E-001 +/- 2.04E-002
TH-229	0.998	4872.00*	2.28E+000 +/- 3.78E-001	9.60E-002 +/- 1.59E-002
TH-230	0.994	4672.00*	9.91E-001 +/- 2.85E-001	8.79E-002 +/- 1.46E-002
TH-232	0.997	3997.00*	1.13E+000 +/- 3.10E-001	8.35E-002 +/- 1.39E-002

AG 8/23/17

0000192255.CNF



0169

****
***** 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:	1	0	0	0	0	0	0	0
49:	0	0	0	0	1	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	1	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	1	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	2	0	0
145:	0	0	1	1	1	0	1	1
153:	1	1	1	1	3	1	1	3
161:	0	3	0	1	3	1	1	1
169:	2	1	2	2	2	3	2	7
177:	5	3	3	2	5	4	1	3
185:	1	3	1	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	1	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	1	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	1	0	0	0	0	0	0
313:	0	0	0	0	0	0	1	0
321:	0	1	0	0	0	0	1	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	1	0	0	0	0	0
353:	0	0	0	0	0	1	0	0
361:	1	1	0	2	0	1	0	0

369:	0	0	0	0	0	1	2	1

Sample Title: 04

Channel								
377:	0	0	0	2	3	1	1	0
385:	1	0	0	2	0	0	1	1
393:	2	3	0	0	5	1	3	0
401:	2	1	6	2	3	6	1	2
409:	5	4	1	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	1	1	0	0	0	1	0	1
433:	1	1	2	1	1	0	2	0
441:	0	0	0	1	3	3	1	1
449:	2	2	2	3	5	1	3	2
457:	4	2	4	5	5	2	4	3
465:	0	1	4	1	4	0	2	2
473:	2	4	1	0	5	1	3	2
481:	2	0	2	2	1	2	2	1
489:	3	1	3	1	0	4	2	1
497:	1	0	0	1	3	1	1	0
505:	1	1	0	1	3	0	0	1
513:	0	1	0	0	2	1	0	0
521:	0	1	4	5	0	0	0	1
529:	1	0	2	0	2	0	0	0
537:	0	0	1	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	1	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	1	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	1	0	0	0	0	0	0
609:	0	0	0	1	0	0	0	1
617:	0	0	0	2	3	0	0	1
625:	2	1	2	0	1	2	2	0
633:	0	0	0	0	0	2	0	2
641:	1	2	1	2	3	2	0	2
649:	3	0	5	4	3	8	5	2
657:	6	4	1	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	1	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	1	0
721:	1	0	0	0	0	0	1	0
729:	2	0	0	0	0	0	0	0
737:	0	0	0	1	1	0	0	1
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	1	0	0
761:	0	0	1	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	1	0	0	0	0	1	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	1	0	0
825:	0	0	0	0	0	0	0	2
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	1
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	1	0	0	0
897:	0	0	0	0	0	0	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	1	1	1	0	0	0
953:	0	0	0	0	0	1	0	1
961:	0	0	0	0	1	1	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 8/22/17

Sample Description: HTC-A09-S001-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_044
Chamber Serial Number: 04026481B
Detector Serial Number: 84168
Env. Background: System Bkgd 194216
Reagent Blank: <not performed>

Sample Size: 1.013E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:07 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.225 mL
Effective Efficiency: 0.2151 +/- 0.0172
Counting Efficiency: 0.1793 +/- 0.0030 on 11/18/2016 10:08:42 AM
Chem. Recovery Factor: 1.1998 +/- 0.0980

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		5.803	6.32	82.73	0.68	0.00E+000	3.0
TH-228		5.386	77.49	22.35	0.51	0.00E+000	12.0
TH-229	T	4.890	184.66	14.44	0.34	0.00E+000	14.3
TH-230		4.649	88.83	20.82	0.17	0.00E+000	3.9
TH-232		3.968	69.83	23.49	0.17	0.00E+000	7.0

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.988	5850.00*	7.95E-002 +/- 6.70E-002	7.10E-002 +/- 1.11E-002
TH-228	0.999	5400.00*	1.04E+000 +/- 2.84E-001	7.04E-002 +/- 1.10E-002
TH-229	0.998	4872.00*	2.26E+000 +/- 3.54E-001	5.84E-002 +/- 9.16E-003
TH-230	0.997	4672.00*	1.08E+000 +/- 2.82E-001	5.09E-002 +/- 7.97E-003
TH-232	0.995	3997.00*	8.50E-001 +/- 2.40E-001	5.08E-002 +/- 7.95E-003

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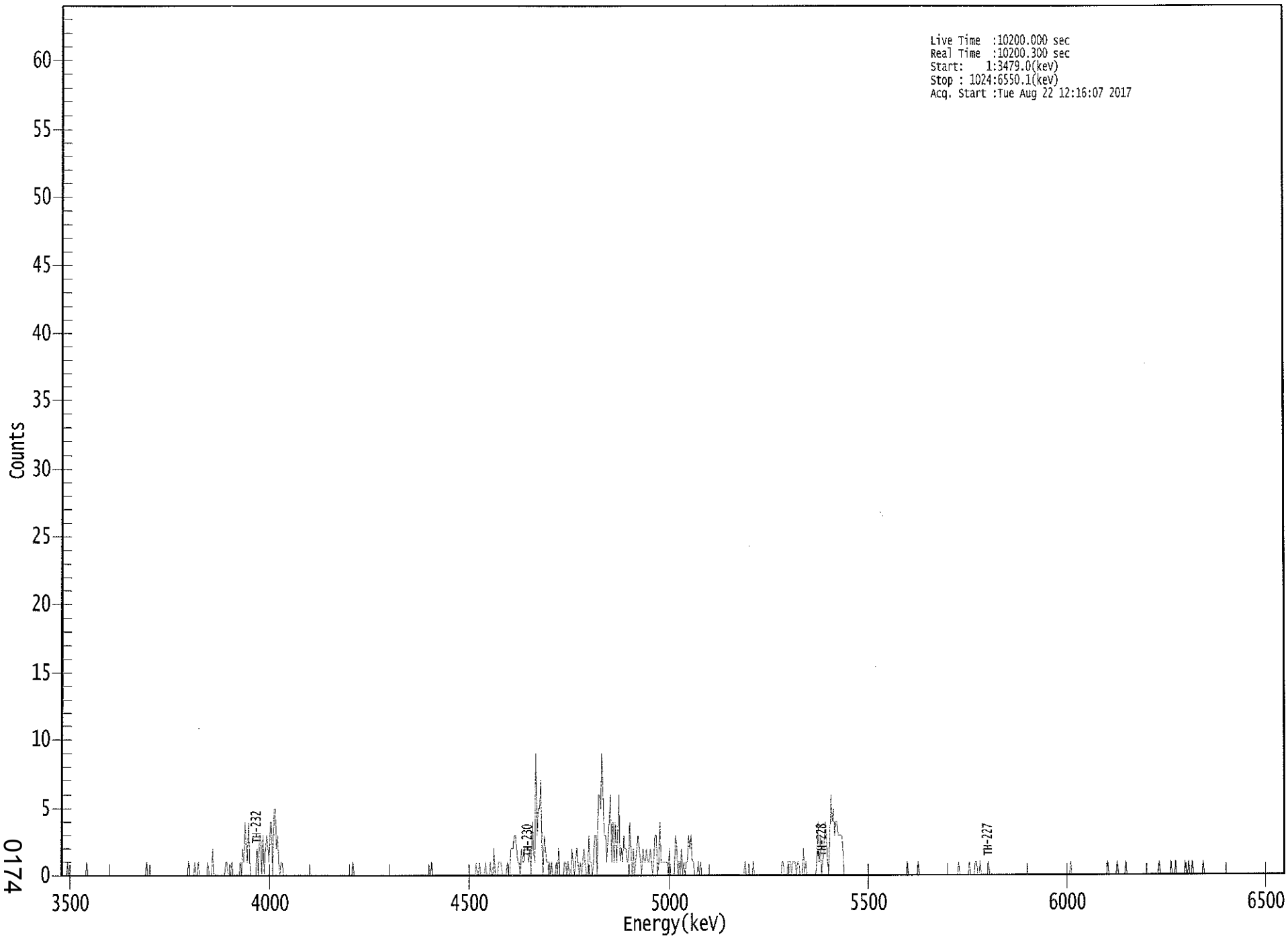
0000192254.CNF



0174

****
***** 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	1	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	1	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	1
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	1	0	0	0	0	1
113:	0	0	1	0	0	0	0	0
121:	0	0	1	0	0	0	2	0
129:	0	0	0	0	0	0	0	0
137:	0	1	1	0	0	0	1	0
145:	0	0	0	0	0	1	0	2
153:	1	4	2	1	4	1	0	0
161:	0	0	0	2	0	3	3	0
169:	3	0	2	3	2	1	4	4
177:	0	5	5	2	3	1	0	1
185:	1	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	1	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	1	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	1	0	0	1	0	0
353:	0	0	1	0	0	0	1	0
361:	0	2	0	0	0	1	1	1

369:	0	0	0	0	1	0	0	2

Sample Title: 05

Channel								
377:	2	2	3	3	2	1	1	0
385:	2	1	1	2	2	2	1	2
393:	0	4	2	1	9	3	5	5
401:	7	2	0	3	2	1	1	1
409:	0	1	0	0	0	1	0	2
417:	0	0	0	0	1	1	0	1
425:	0	0	2	1	0	1	2	1
433:	0	1	0	1	2	1	0	0
441:	3	1	1	0	1	3	3	0
449:	6	6	5	9	6	3	3	1
457:	3	4	6	1	4	1	4	1
465:	3	6	1	2	1	3	2	2
473:	1	1	4	2	0	2	0	1
481:	2	3	2	1	0	2	1	1
489:	2	1	1	2	1	0	1	3
497:	3	0	1	4	1	1	1	1
505:	1	1	0	2	0	0	0	0
513:	3	2	0	1	0	2	0	1
521:	0	1	1	3	2	3	1	1
529:	0	0	0	1	0	1	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	1	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	0	0	0	0
601:	0	1	1	0	0	0	1	1
609:	1	0	1	1	1	0	1	1
617:	0	0	0	2	0	1	0	0
625:	0	0	0	0	0	0	1	4
633:	1	3	0	1	2	4	3	1
641:	0	3	6	4	5	3	4	4
649:	3	3	3	3	2	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	1	0	0	0	0	0
713:	0	0	0	1	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	1	0	0
753:	0	0	0	0	0	0	1	0
761:	0	0	0	1	1	0	0	1
769:	0	0	0	0	0	0	1	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 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	1	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	1	0	0	0	0	0
881:	0	0	1	0	0	0	0	0
889:	0	1	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	1	0	0
921:	0	0	0	0	0	0	0	1
929:	0	0	0	1	0	0	0	0
937:	0	0	0	1	0	0	1	0
945:	0	1	0	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:	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

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Apex-Alpha™

Sample Description: HTC-A09-S002-0006-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_045
Chamber Serial Number: 04026482A
Detector Serial Number: 91131
Env. Background: System Bkgd 194217
Reagent Blank: <not performed>

Sample Size: 1.005E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:09 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.225 mL
Effective Efficiency: 0.1223 +/- 0.0126
Counting Efficiency: 0.1688 +/- 0.0029 on 11/18/2016 10:08:40 AM
Chem. Recovery Factor: 0.7245 +/- 0.0755

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		5.900	90.49	20.67	0.51	0.00E+000	9.0
TH-228		5.360	27.30	38.85	1.70	0.00E+000	6.0
TH-229	T	4.869	105.00	19.22	0.00	0.00E+000	4.4
TH-230		4.644	1975.64	4.41	1.36	0.00E+000	39.3
TH-232		3.982	24.64	40.74	1.36	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	0.987	5850.00*	2.02E+000 +/- 5.83E-001	1.17E-001 +/- 2.36E-002
TH-228	0.992	5400.00*	6.50E-001 +/- 2.84E-001	1.75E-001 +/- 3.52E-002
TH-229	1.000	4872.00*	2.28E+000 +/- 4.59E-001	1.30E-001 +/- 2.62E-002
TH-230	0.996	4672.00*	4.27E+001 +/- 8.81E+000	1.48E-001 +/- 2.99E-002
TH-232	0.999	3997.00*	5.31E-001 +/- 2.42E-001	1.48E-001 +/- 2.98E-002

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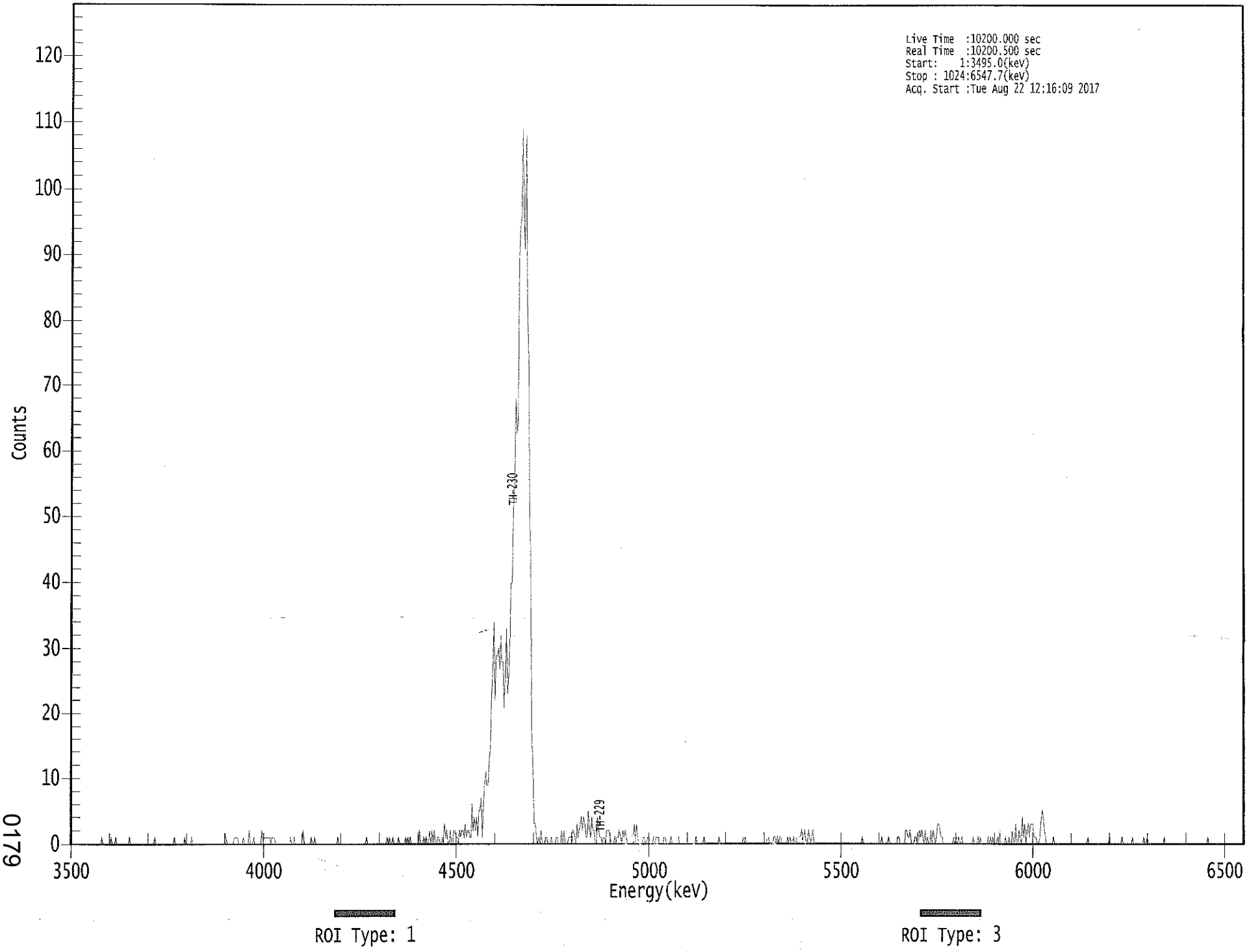
0000192244.CNF



****
***** 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: 10201

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	1	0	0	0	0
33:	0	0	0	1	0	0	0	1
41:	0	0	0	0	0	0	0	0
49:	0	0	0	1	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	1	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	1	0	0	0	0	0
97:	0	0	0	1	0	0	0	0
105:	0	1	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	1	1
137:	0	0	0	0	0	0	1	1
145:	1	1	0	0	0	0	1	0
153:	0	0	0	2	0	0	0	1
161:	0	0	0	0	0	0	2	0
169:	1	1	1	1	1	1	0	1
177:	1	1	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	1
193:	0	0	1	0	0	0	0	0
201:	0	0	2	0	0	0	0	0
209:	0	1	0	0	1	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	1	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	1	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	1	0	1	0	0
281:	1	0	0	0	0	1	0	0
289:	0	0	0	1	0	1	0	1
297:	0	0	0	0	0	0	0	2
305:	0	0	0	1	0	1	0	0
313:	2	0	2	0	2	0	0	1
321:	1	0	0	1	0	3	1	2
329:	0	0	2	0	0	2	2	1
337:	1	0	2	1	2	2	1	3
345:	1	2	2	1	1	6	2	4
353:	2	4	1	5	5	7	1	6
361:	9	11	9	9	13	15	23	27

369:	34	22	29	29	30	27	32	28

Sample Title: 06

Channel								
377:	28	21	26	33	23	26	32	40
385:	40	51	57	68	63	64	89	94
393:	96	109	96	91	108	83	73	48
401:	48	15	14	3	3	1	0	1
409:	0	2	0	0	0	1	1	0
417:	0	0	1	0	0	0	1	1
425:	0	0	0	2	0	2	0	0
433:	0	1	1	1	2	2	1	0
441:	3	1	2	3	4	2	4	3
449:	1	1	5	2	1	4	2	2
457:	0	0	4	2	1	1	0	1
465:	1	0	2	2	2	1	0	0
473:	0	1	0	1	1	2	1	0
481:	2	1	2	1	0	0	0	0
489:	0	0	3	0	3	1	0	0
497:	0	0	1	1	0	0	1	1
505:	0	0	0	1	0	1	1	1
513:	0	0	0	0	1	1	0	0
521:	0	0	1	0	0	0	0	0
529:	0	1	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	1	0	0	0	0	0	0	1
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	1	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	1	0	1	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	1	1
609:	0	0	0	0	1	1	0	1
617:	0	1	1	0	0	0	0	0
625:	1	0	1	0	0	1	0	0
633:	1	1	1	1	2	1	1	2
641:	0	0	2	1	0	1	2	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	1	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	1	0	0	0	0	0
713:	1	0	0	0	0	0	0	0
721:	1	1	0	0	0	0	0	2
729:	2	1	1	2	0	0	0	1
737:	1	0	0	2	1	2	1	0
745:	2	0	1	0	0	2	0	2
753:	1	0	1	3	3	2	1	1
761:	0	0	0	0	0	0	0	0
769:	0	1	0	1	0	1	0	0
777:	1	0	0	0	0	0	0	0
785:	0	0	1	0	0	0	1	0
793:	1	0	0	0	0	0	0	1

801:	0	1	0	1	0	0	0	1

Sample Title: 06

Channel								
809:	0	2	0	0	0	0	1	0
817:	0	1	0	0	2	0	0	3
825:	0	0	2	1	0	4	1	3
833:	0	2	3	1	3	3	3	1
841:	1	1	0	0	1	3	5	4
849:	2	1	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	1	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	1	0	0	0	0	0	0
913:	0	0	0	0	1	0	0	0
921:	0	0	0	0	0	1	0	0
929:	0	0	0	0	0	0	0	1
937:	0	0	1	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	1	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	1
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	1	0

Apex-Alpha™

KB 8/22/17

Sample Description: HTC-A09-S002-0612-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 07
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_046
Chamber Serial Number: 04026482B
Detector Serial Number: 58762
Env. Background: System Bkgd 194218
Reagent Blank: <not performed>

Sample Size: 1.014E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:12 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.225 mL
Effective Efficiency: 0.1302 +/- 0.0130
Counting Efficiency: 0.1713 +/- 0.0029 on 11/18/2016 10:08:38 AM
Chem. Recovery Factor: 0.7597 +/- 0.0771

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		5.888	50.81	27.87	1.19	0.00E+000	4.5
TH-228		5.386	20.30	45.58	1.70	0.00E+000	3.0
TH-229	T	4.878	111.81	18.65	1.19	0.00E+000	10.0
TH-230		4.652	1220.47	5.61	1.53	0.00E+000	35.6
TH-232		3.972	29.64	36.95	1.36	0.00E+000	3.5

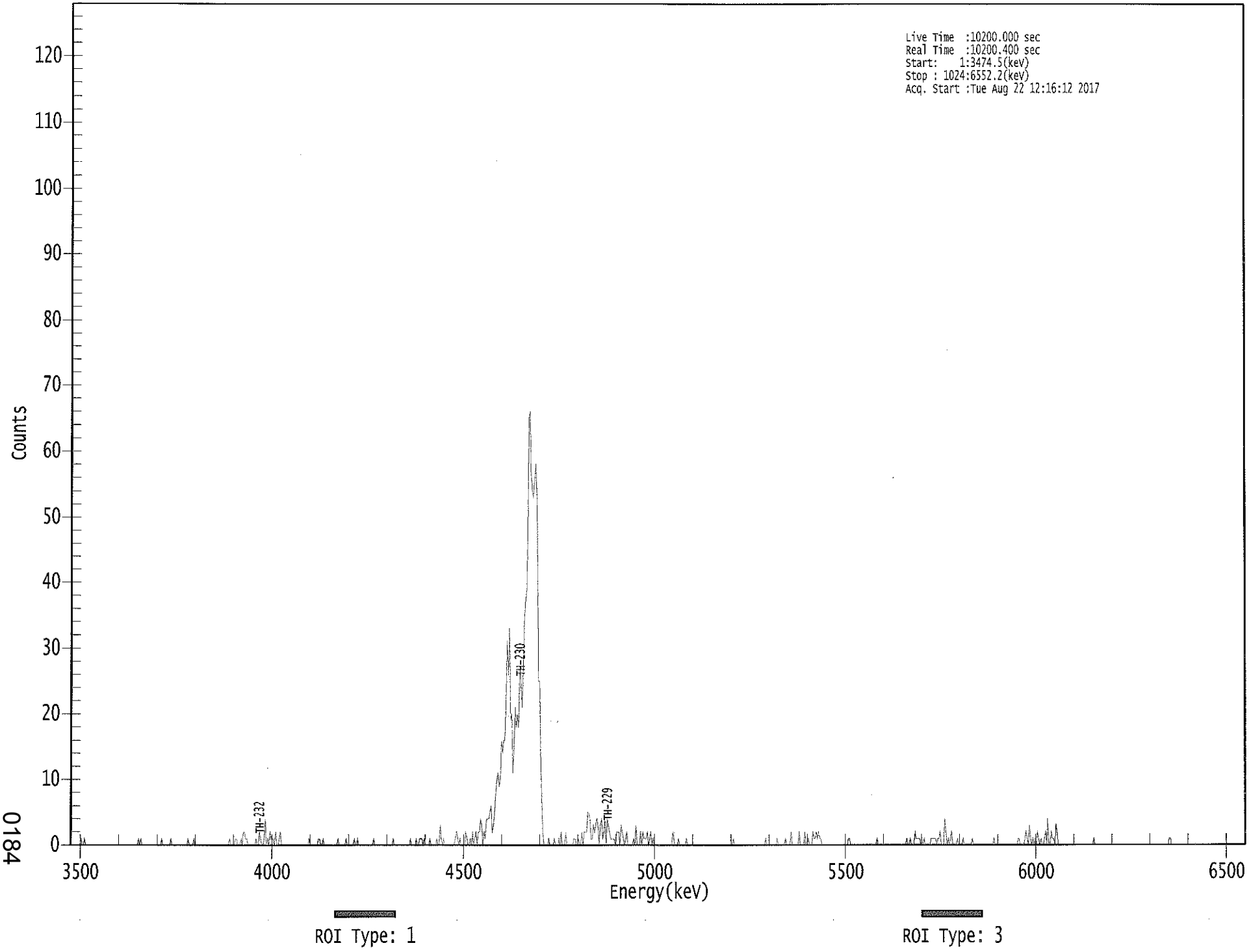
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.992	5850.00*	1.06E+000 +/- 3.60E-001	1.37E-001 +/- 2.68E-002
TH-228	0.999	5400.00*	4.49E-001 +/- 2.23E-001	1.63E-001 +/- 3.19E-002
TH-229	1.000	4872.00*	2.26E+000 +/- 4.42E-001	1.33E-001 +/- 2.61E-002
TH-230	0.998	4672.00*	2.45E+001 +/- 5.01E+000	1.43E-001 +/- 2.80E-002
TH-232	0.997	3997.00*	5.95E-001 +/- 2.49E-001	1.38E-001 +/- 2.70E-002

AG 8/23/17

0000192245.CNF



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

Sample Title: 07

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	1	0	0	1	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	1	0	1	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	1
81:	0	0	0	0	0	0	0	1
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	1	0
105:	0	0	0	1	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	1	0	0	0	0	1
145:	1	0	0	0	1	0	2	2
153:	1	1	0	0	0	0	0	0
161:	0	1	0	0	2	1	0	0
169:	1	4	0	1	0	2	1	1
177:	1	0	2	0	0	1	2	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	1
209:	0	0	0	0	0	0	0	1
217:	1	0	0	1	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	1	0	0	0	0	0	0	1
241:	0	0	0	0	0	0	1	0
249:	0	1	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	1
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	0	0	1
297:	0	0	0	0	1	0	0	1
305:	1	1	0	1	0	0	0	0
313:	1	0	0	0	0	0	1	0
321:	0	3	1	0	1	0	0	0
329:	0	0	0	0	0	0	1	2
337:	1	0	1	0	0	0	0	2
345:	1	0	0	1	0	2	0	1
353:	2	0	2	2	4	3	0	2
361:	1	4	4	4	5	6	2	3

369:	5	8	10	11	9	10	16	14

Sample Title: 07

Channel								
377:	16	16	22	31	26	33	19	20
385:	11	15	21	18	20	18	27	25
393:	21	27	34	37	39	46	65	66
401:	57	54	53	56	58	52	25	25
409:	14	7	2	0	0	0	0	1
417:	0	0	0	0	1	0	0	0
425:	1	0	2	0	0	0	2	0
433:	0	0	0	0	0	1	1	0
441:	0	1	0	0	2	0	2	2
449:	2	5	5	4	1	1	3	2
457:	3	4	3	0	3	4	1	2
465:	4	0	4	3	2	1	1	1
473:	1	0	2	2	2	0	3	2
481:	1	0	1	2	0	0	0	0
489:	0	1	0	3	0	0	0	2
497:	0	2	1	1	1	2	0	1
505:	2	0	1	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	0	0	2	1	0	0	0
529:	1	0	0	0	0	0	0	1
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	1	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	1	0	0	0
609:	0	0	0	0	0	0	1	0
617:	0	0	0	0	0	1	0	0
625:	0	0	2	0	0	0	0	0
633:	0	2	0	0	0	0	2	0
641:	0	1	0	0	0	2	1	1
649:	2	1	2	1	1	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	1	1	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	1	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	1
729:	0	0	1	0	0	0	2	1
737:	1	1	1	0	1	0	1	0
745:	0	0	0	0	1	1	1	1
753:	1	0	1	1	2	0	0	0
761:	4	2	0	1	0	1	2	0
769:	0	0	0	1	0	0	0	0
777:	1	0	0	0	0	0	0	0
785:	1	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	1	0	0	0	0

Sample Title: 07

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	1	1	0	0	0	0	1	2
833:	1	0	3	1	0	1	0	1
841:	0	2	1	0	1	0	0	1
849:	2	0	4	0	0	2	1	1
857:	0	3	2	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	1	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	1	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	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™

YB 8/22/17

Sample Description: HTC-A09-S002-1218-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 08
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_047
Chamber Serial Number: 02030596A
Detector Serial Number: 91086
Env. Background: System Bkgd 194219
Reagent Blank: <not performed>

Sample Size: 1.055E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:14 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.225 mL
Effective Efficiency: 0.1584 +/- 0.0145
Counting Efficiency: 0.1623 +/- 0.0028 on 11/18/2016 10:08:37 AM
Chem. Recovery Factor: 0.9763 +/- 0.0908

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		5.844	4.49	98.45	0.51	0.00E+000	3.0
TH-228		5.382	56.66	26.13	0.34	0.00E+000	9.3
TH-229	T	4.870	136.15	16.86	0.85	0.00E+000	4.3
TH-230		4.635	113.66	18.42	0.34	0.00E+000	7.3
TH-232		3.945	64.83	24.38	0.17	0.00E+000	3.0

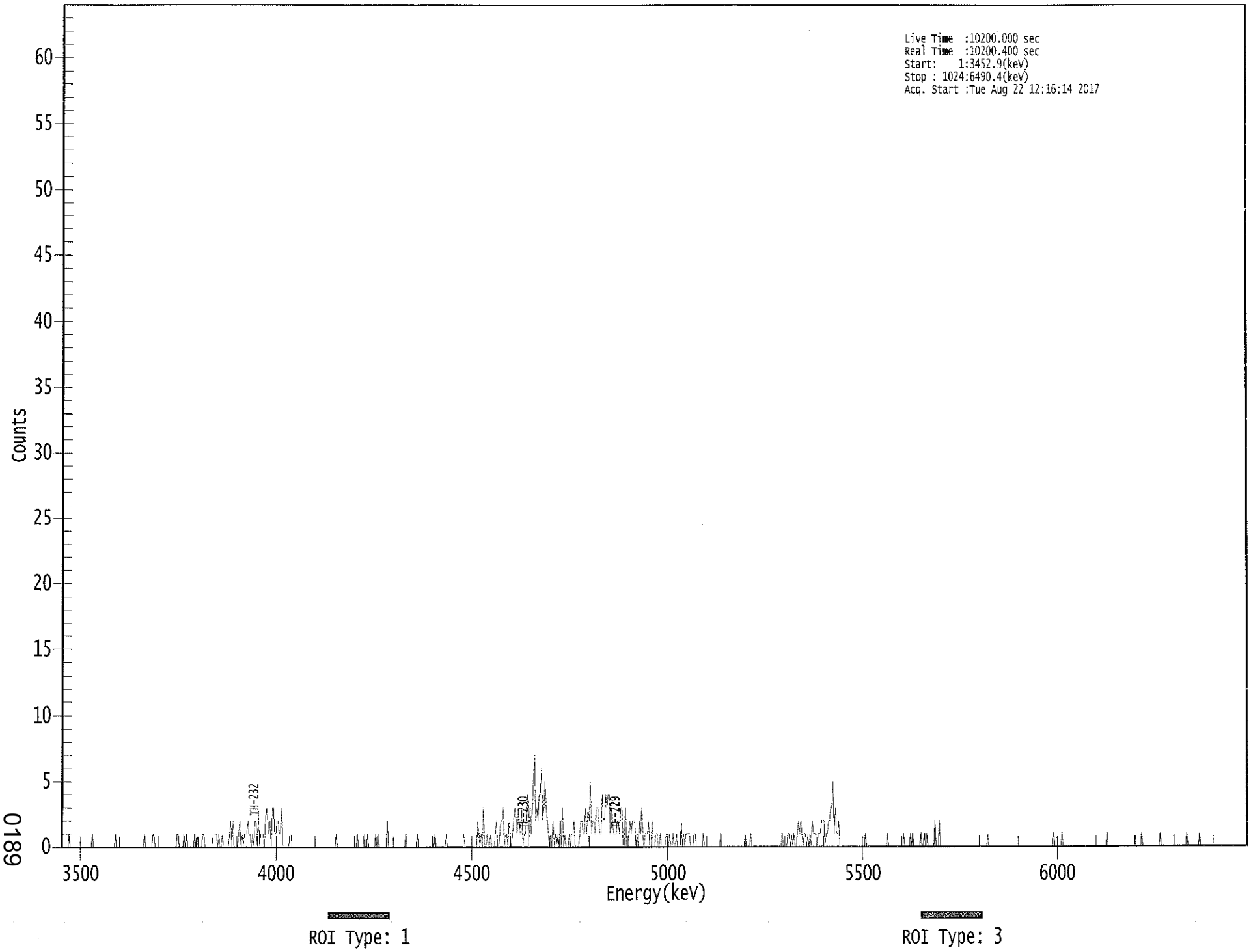
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	1.000	5850.00*	7.37E-002 +/- 7.37E-002	8.61E-002 +/- 1.54E-002
TH-228	0.998	5400.00*	9.91E-001 +/- 3.14E-001	8.36E-002 +/- 1.50E-002
TH-229	1.000	4872.00*	2.17E+000 +/- 3.89E-001	9.54E-002 +/- 1.71E-002
TH-230	0.993	4672.00*	1.81E+000 +/- 4.64E-001	7.60E-002 +/- 1.36E-002
TH-232	0.986	3997.00*	1.03E+000 +/- 3.11E-001	6.62E-002 +/- 1.19E-002

AG 8/23/17

0000192250.CNF



0189

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

Sample Title: 08

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	1	0	0	0	1	2	0

Sample Title: 08

Channel								
377:	0	1	2	2	3	0	1	1
385:	0	2	1	0	1	2	3	2
393:	1	3	1	1	3	0	1	1
401:	3	4	0	3	1	3	5	7
409:	2	3	2	4	4	6	2	3
417:	5	3	2	1	0	1	0	2
425:	0	1	0	1	0	2	0	3
433:	0	1	0	0	0	1	0	1
441:	1	2	0	0	0	0	1	2
449:	2	1	1	3	1	3	2	5
457:	1	2	2	1	3	3	2	1
465:	1	4	2	2	4	3	4	4
473:	1	3	2	1	1	1	2	2
481:	1	3	3	0	0	3	0	0
489:	1	2	1	2	2	2	0	1
497:	0	2	1	3	1	0	1	1
505:	1	2	0	0	2	0	0	1
513:	1	0	0	1	0	0	0	0
521:	1	1	0	1	0	0	1	0
529:	0	1	0	0	0	2	0	1
537:	0	1	1	1	1	0	0	0
545:	1	1	0	0	0	0	0	0
553:	1	0	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	0	0	0	0	0	0	0
585:	0	0	0	0	1	0	0	0
593:	0	1	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	1	0	0	0
625:	0	1	1	0	1	0	1	0
633:	0	1	2	1	2	1	0	1
641:	1	0	1	0	1	0	2	1
649:	1	1	0	1	1	1	2	2
657:	2	0	1	1	2	2	3	3
665:	5	1	3	1	1	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	1	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	1
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	1	0	0
729:	0	0	0	1	0	1	0	0
737:	0	0	0	0	1	0	0	1
745:	0	1	0	0	0	0	0	0
753:	2	0	0	0	2	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: 08

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

KB 8/22/17

Apex-Alpha™

Sample Description: HTC-A09-S002-1824-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 09
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_048
Chamber Serial Number: 02030596B
Detector Serial Number: 83111
Env. Background: System Bkgd 194220
Reagent Blank: <not performed>

Sample Size: 1.076E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:17 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.226 mL
Effective Efficiency: 0.1845 +/- 0.0157
Counting Efficiency: 0.1633 +/- 0.0028 on 11/18/2016 10:08:35 AM
Chem. Recovery Factor: 1.1298 +/- 0.0983

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		5.879	15.49	50.75	0.51	0.00E+000	3.0
TH-228		5.399	56.98	26.24	1.02	0.00E+000	4.0
TH-229	T	4.899	159.15	15.58	0.85	0.00E+000	4.7
TH-230		4.659	192.66	14.14	0.34	0.00E+000	19.3
TH-232		3.988	54.98	26.72	1.02	0.00E+000	8.9

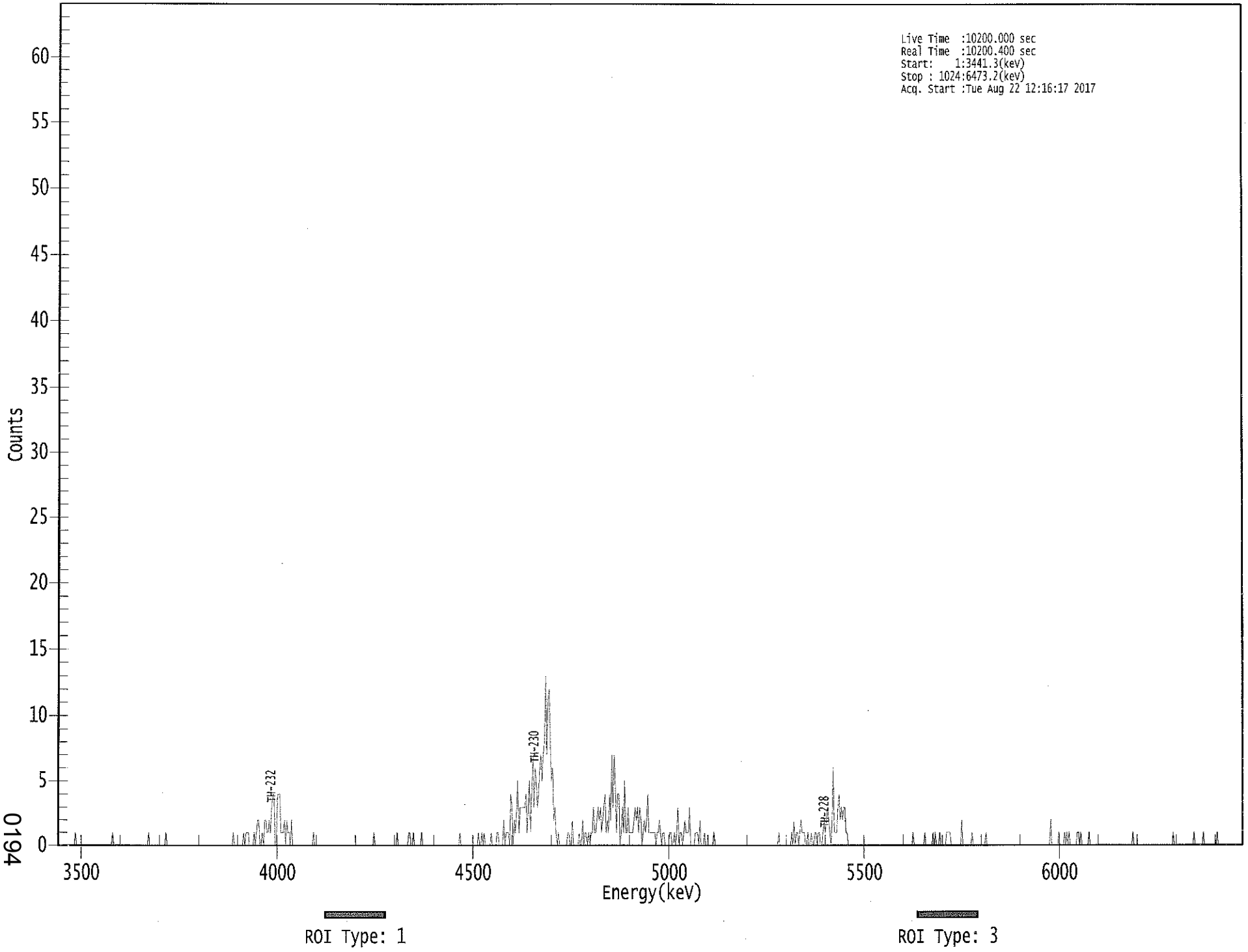
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.996	5850.00*	2.14E-001 +/- 1.14E-001	7.25E-002 +/- 1.21E-002
TH-228	1.000	5400.00*	8.39E-001 +/- 2.61E-001	9.28E-002 +/- 1.55E-002
TH-229	0.996	4872.00*	2.13E+000 +/- 3.57E-001	8.03E-002 +/- 1.34E-002
TH-230	0.999	4672.00*	2.58E+000 +/- 5.64E-001	6.39E-002 +/- 1.07E-002
TH-232	1.000	3997.00*	7.34E-001 +/- 2.31E-001	8.41E-002 +/- 1.41E-002

AG
8/23/17

0000192256.CNF



0194

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

Sample Title: 09

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	0	0	0	0	1	0	0

Sample Title: 09

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

801:	1	0	0	0	0	0	0	0

Sample Title: 09

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	2	0	0	0	0	0	0	1
865:	0	0	0	0	1	0	1	0
873:	1	0	0	0	0	0	0	1
881:	1	0	1	0	0	0	0	0
889:	0	1	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	1
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	1	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	1	0	0	0
985:	0	0	0	0	1	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	1	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KB 8/22/17

Sample Description: HTC-A09-S002-2430-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001922
Batch Identification: 1707093A-TH
Sample Identification: 10
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_049
Chamber Serial Number: 10006121A
Detector Serial Number: 49
Env. Background: System Bkgd 194221
Reagent Blank: <not performed>

Sample Size: 1.032E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/16/2017 6:25:36 AM
Acquisition Date/Time: 8/22/2017 12:16:46 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.225 mL
Effective Efficiency: 0.1682 +/- 0.0149
Counting Efficiency: 0.1488 +/- 0.0026 on 11/18/2016 3:34:20 PM
Chem. Recovery Factor: 1.1299 +/- 0.1023

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		5.816	2.15	161.66	0.85	0.00E+000	3.0
TH-228		5.380	43.32	30.05	0.68	0.00E+000	15.5
TH-229	T	4.882	144.66	16.32	0.34	0.00E+000	5.2
TH-230		4.626	46.66	28.82	0.34	0.00E+000	3.9
TH-232		3.981	54.32	26.79	0.68	0.00E+000	4.0

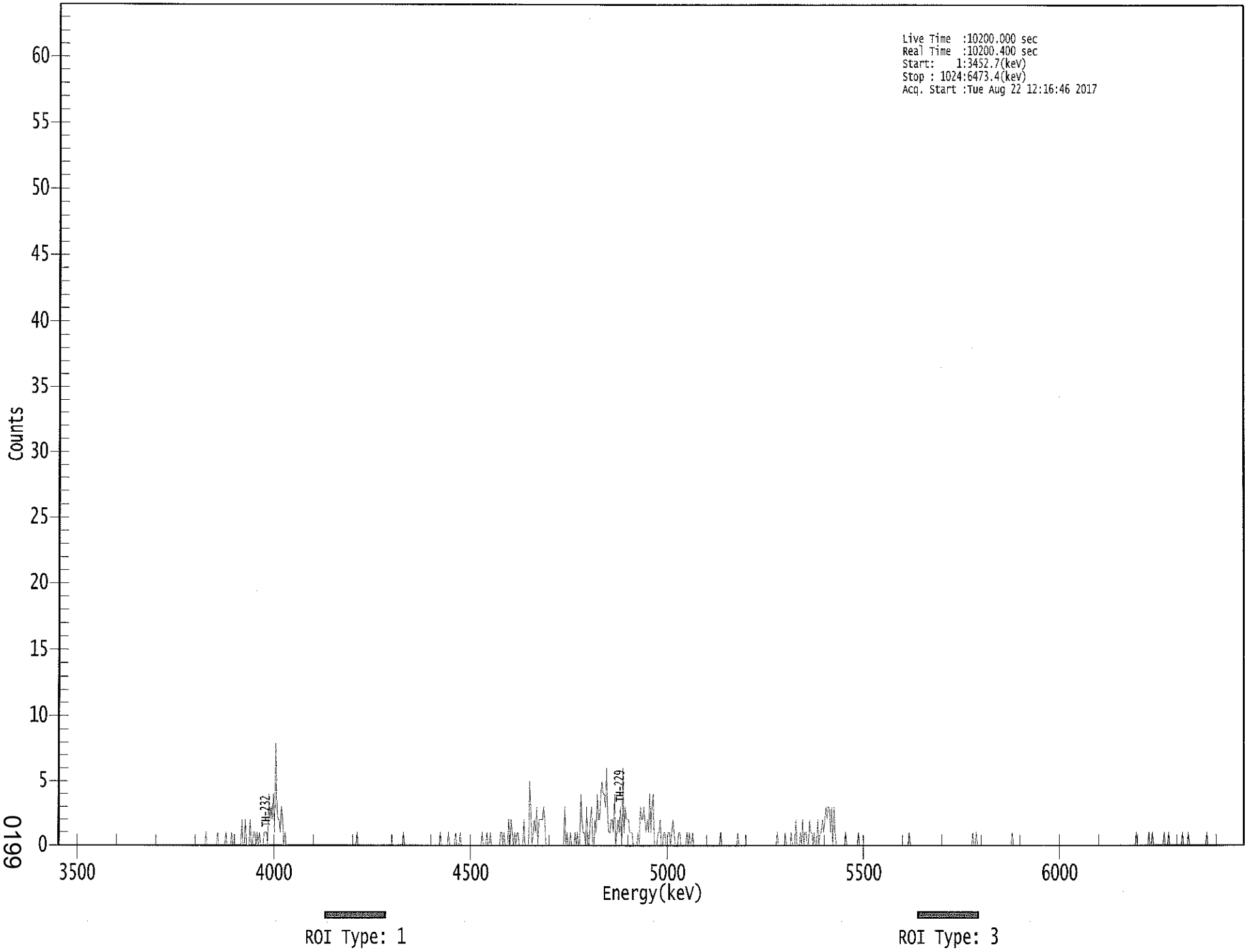
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.994	5850.00*	3.40E-002 +/- 5.52E-002	9.46E-002 +/- 1.65E-002
TH-228	0.998	5400.00*	7.30E-001 +/- 2.53E-001	9.50E-002 +/- 1.65E-002
TH-229	0.999	4872.00*	2.22E+000 +/- 3.86E-001	7.34E-002 +/- 1.28E-002
TH-230	0.989	4672.00*	7.14E-001 +/- 2.40E-001	7.31E-002 +/- 1.27E-002
TH-232	0.999	3997.00*	8.29E-001 +/- 2.65E-001	8.61E-002 +/- 1.50E-002

AG 8/23/17

0000192251.CNF



0199

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

Sample Title: 10

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	1	0	0	1	0	0	0

Sample Title: 10

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

801:	0	0	0	0	0	0	0	0

Sample Title: 10

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	1	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	1	0	0	0	0	0	0
937:	0	0	0	0	1	0	0	1
945:	0	0	0	0	0	0	0	0
953:	0	1	0	0	0	1	0	0
961:	0	0	0	0	0	0	0	0
969:	0	1	0	0	0	0	1	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	1	0
993:	0	0	0	0	0	0	0	0
1001:	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

8/22/2017 5:27:54 AM

Apex-Alpha™

QA SUMMARY REPORT
Review Of QA Results - Pulser Check

Date : 8/22/2017
Time : 5:27:54 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Passed	8/22/2017 5:12:47 AM
Alpha_004	21f	ALL	Passed	8/22/2017 5:12:48 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	8/22/2017 5:12:48 AM
Alpha_011	21f	ALL	Passed	8/22/2017 5:12:49 AM
Alpha_012	21f	ALL	Passed	8/22/2017 5:12:50 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Passed	8/22/2017 5:12:51 AM
Alpha_015	21f	Peak FWHM	Action	8/18/2017 4:58:23 AM
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:12:52 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:12:54 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:12:55 AM
Alpha_036	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:12:57 AM
Alpha_037	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:12:59 AM
Alpha_038	Alpha Analyst100DC	Peak Energy	Action	8/22/2017 5:13:02 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:04 AM
Alpha_040	Alpha Analyst100DC	Peak FWHM	Action	8/22/2017 5:13:07 AM
Alpha_041	Alpha Analyst100DC	ALL	Not Done	
Alpha_042	Alpha Analyst100DC	ALL	Not Done	
Alpha_043	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:09 AM
Alpha_044	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:11 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:14 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:16 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:19 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:21 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:24 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:27 AM
Alpha_051	Alpha Analyst100DC	ALL	Passed	8/18/2017 4:59:01 AM
Alpha_052	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:29 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:32 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:34 AM
Alpha_055	Alpha Analyst100DC	ALL	Passed	8/18/2017 4:59:12 AM
Alpha_056	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:37 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:40 AM
Alpha_058	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:43 AM

Review of QA Results - Pulser Check

8/22/2017 5:27:54 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:46 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	8/22/2017 5:13:49 AM

APPROVED BY: _____

APPROVAL DATE: 8/22/17

```
*********************************************************************
*****          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)

17-07093
Gamma
Run 2

Work Order	17-07093
Analysis Code	Gamma
Run	2
Date Received	7/18/2017
Lab Deadline	8/10/2017
Client	Weston Solutions, Inc.
Project	94759
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EPA 901.1 Modified
Instrument Type	Gamma Spectroscopy
Radiometric Tracer	
Radiometric Sol#	
Tracer Act (dpm/g)	
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		07/19/17 00:00	1.0000E+00
02	MBL	BLANK		07/19/17 00:00	1.0000E+00
03	DUP	HTC-A09-S001-3642-01	46	05/16/17 12:37	6.5700E+02
04	DO	HTC-A09-S001-3642-01	46	05/16/17 12:37	6.5700E+02
05	TRG	HTC-A09-S001-4248-01	47	05/16/17 12:35	6.9109E+02
06	TRG	HTC-A09-S002-0006-01	113	05/16/17 09:48	8.3020E+02
07	TRG	HTC-A09-S002-0612-01	100	05/16/17 09:46	7.4246E+02
08	TRG	HTC-A09-S002-1218-01	52	05/16/17 09:44	7.6636E+02
09	TRG	HTC-A09-S002-1824-01	39	05/16/17 09:42	8.1644E+02
10	TRG	HTC-A09-S002-2430-01	43	05/16/17 09:40	8.1030E+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.

17-07093
Gamma
Run 2

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

* 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.

17-07093
Gamma
Run 2

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	08/04/17 07:24	KSALLINGS						
05	TRG	08/04/17 07:24	KSALLINGS						
06	TRG	08/04/17 07:24	KSALLINGS						
07	TRG	08/04/17 07:24	KSALLINGS						
08	TRG	08/04/17 07:24	KSALLINGS						
09	TRG	08/04/17 07:24	KSALLINGS						
10	TRG	08/04/17 07:24	KSALLINGS						

0209

* 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: 17-07093-Gamma-2

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	1.25E+02	7.64E+00	7.99E-01	1.35E+02	92.70	OK		07/19/17 00:00	1.00E+00	08/25/17 08:58	YES
01	CS-137	LCS	LCS	pCi/g	7.98E+01	7.23E+00	9.32E-01	8.44E+01	94.59	OK		07/19/17 00:00	1.00E+00	08/25/17 08:58	YES
02	AC-228	MBL	BLANK	pCi/g	-2.03E-02	6.68E-02	1.01E-01					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	BI-212	MBL	BLANK	pCi/g	-9.28E-02	1.52E-01	1.88E-01					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	BI-214	MBL	BLANK	pCi/g	4.01E-02	4.07E-02	7.29E-02					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	CS-137	MBL	BLANK	pCi/g	-5.36E-03	1.76E-02	2.43E-02					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	K-40	MBL	BLANK	pCi/g	1.63E-01	1.37E-01	3.25E-01					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	PA-234M	MBL	BLANK	pCi/g	1.12E+00	1.70E+00	3.27E+00					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	PB-212	MBL	BLANK	pCi/g	1.51E-02	2.52E-02	4.48E-02					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	PB-214	MBL	BLANK	pCi/g	2.16E-02	3.45E-02	5.89E-02					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	RA-224	MBL	BLANK	pCi/g	6.46E-01	4.03E-01	6.34E-01					07/19/17 00:00	1.00E+00	08/25/17 08:58	YES
02	RA-226	MBL	BLANK	pCi/g	4.01E-02	4.07E-02	7.29E-02					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	RA-228	MBL	BLANK	pCi/g	-2.03E-02	6.68E-02	1.01E-01					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
02	TH-234	MBL	BLANK	pCi/g	3.86E-01	4.53E-01	7.58E-01					07/19/17 00:00	1.00E+00	08/25/17 08:58	YES
02	TL-208	MBL	BLANK	pCi/g	3.05E-02	4.53E-02	8.27E-02					07/19/17 00:00	1.00E+00	08/25/17 08:58	NO
03	AC-228	DUP	HTC-A09-S001-3642-01	pCi/g	1.39E+00	1.98E-01	3.18E-01					05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	BI-212	DUP	HTC-A09-S001-3642-01	pCi/g	7.88E-01	4.27E-01	7.34E-01					05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	BI-214	DUP	HTC-A09-S001-3642-01	pCi/g	1.02E+00	1.61E-01	2.35E-01					05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	CS-137	DUP	HTC-A09-S001-3642-01	pCi/g	-4.05E-02	4.90E-02	6.74E-02					05/16/17 12:37	6.57E+02	08/25/17 07:55	NO
03	K-40	DUP	HTC-A09-S001-3642-01	pCi/g	2.48E+01	2.66E+00	1.31E+00				OK	05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	PA-234M	DUP	HTC-A09-S001-3642-01	pCi/g	7.37E+00	6.14E+00	1.00E+01					05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	PB-212	DUP	HTC-A09-S001-3642-01	pCi/g	1.34E+00	1.47E-01	2.06E-01					05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	PB-214	DUP	HTC-A09-S001-3642-01	pCi/g	1.02E+00	1.61E-01	2.49E-01					05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	RA-224	DUP	HTC-A09-S001-3642-01	pCi/g	3.53E+00	1.25E+00	2.33E+00					05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	RA-226	DUP	HTC-A09-S001-3642-01	pCi/g	1.02E+00	1.61E-01	2.35E-01				OK	05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	RA-228	DUP	HTC-A09-S001-3642-01	pCi/g	1.39E+00	1.98E-01	3.18E-01				OK	05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	TH-234	DUP	HTC-A09-S001-3642-01	pCi/g	1.36E+00	1.46E+00	2.44E+00					05/16/17 12:37	6.57E+02	08/25/17 07:55	YES
03	TL-208	DUP	HTC-A09-S001-3642-01	pCi/g	1.14E+00	2.21E-01	3.75E-01					05/16/17 12:37	6.57E+02	08/25/17 07:55	NO
04	AC-228	DO	HTC-A09-S001-3642-01	pCi/g	1.22E+00	1.75E-01	3.40E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
04	BI-212	DO	HTC-A09-S001-3642-01	pCi/g	1.06E+00	5.43E-01	8.48E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
04	BI-214	DO	HTC-A09-S001-3642-01	pCi/g	1.03E+00	1.45E-01	2.05E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
04	CS-137	DO	HTC-A09-S001-3642-01	pCi/g	-3.52E-02	5.28E-02	7.36E-02					05/16/17 12:37	6.57E+02	08/25/17 06:52	NO
04	K-40	DO	HTC-A09-S001-3642-01	pCi/g	2.60E+01	2.69E+00	9.61E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
04	PA-234M	DO	HTC-A09-S001-3642-01	pCi/g	1.83E+00	5.44E+00	8.53E+00					05/16/17 12:37	6.57E+02	08/25/17 06:52	NO
04	PB-212	DO	HTC-A09-S001-3642-01	pCi/g	1.39E+00	1.50E-01	2.52E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
04	PB-214	DO	HTC-A09-S001-3642-01	pCi/g	1.14E+00	1.23E-01	4.33E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
04	RA-224	DO	HTC-A09-S001-3642-01	pCi/g	4.63E+00	1.42E+00	2.90E+00					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
04	RA-226	DO	HTC-A09-S001-3642-01	pCi/g	1.03E+00	1.45E-01	2.05E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES

Work Order: 17-07093-Gamma-2

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
04	RA-228	DO	HTC-A09-S001-3642-01	pCi/g	1.22E+00	1.75E-01	3.40E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
04	TH-234	DO	HTC-A09-S001-3642-01	pCi/g	1.95E+00	1.15E+00	1.56E+00					05/16/17 12:37	6.57E+02	08/25/17 06:52	NO
04	TL-208	DO	HTC-A09-S001-3642-01	pCi/g	1.18E+00	1.85E-01	1.90E-01					05/16/17 12:37	6.57E+02	08/25/17 06:52	YES
05	AC-228	TRG	HTC-A09-S001-4248-01	pCi/g	1.06E+00	1.72E-01	2.21E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	BI-212	TRG	HTC-A09-S001-4248-01	pCi/g	5.98E-01	3.95E-01	6.90E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	BI-214	TRG	HTC-A09-S001-4248-01	pCi/g	9.17E-01	1.40E-01	1.93E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	CS-137	TRG	HTC-A09-S001-4248-01	pCi/g	3.36E-02	4.44E-02	7.31E-02					05/16/17 12:35	6.91E+02	08/25/17 06:53	NO
05	K-40	TRG	HTC-A09-S001-4248-01	pCi/g	1.94E+01	2.28E+00	9.51E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	PA-234M	TRG	HTC-A09-S001-4248-01	pCi/g	-6.16E-01	4.30E+00	6.52E+00					05/16/17 12:35	6.91E+02	08/25/17 06:53	NO
05	PB-212	TRG	HTC-A09-S001-4248-01	pCi/g	1.06E+00	1.22E-01	1.92E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	PB-214	TRG	HTC-A09-S001-4248-01	pCi/g	1.03E+00	1.18E-01	1.70E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	RA-224	TRG	HTC-A09-S001-4248-01	pCi/g	3.21E+00	1.15E+00	2.19E+00					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	RA-226	TRG	HTC-A09-S001-4248-01	pCi/g	9.17E-01	1.40E-01	1.93E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	RA-228	TRG	HTC-A09-S001-4248-01	pCi/g	1.06E+00	1.72E-01	2.21E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
05	TH-234	TRG	HTC-A09-S001-4248-01	pCi/g	1.70E+00	7.59E-01	1.23E+00					05/16/17 12:35	6.91E+02	08/25/17 06:53	NO
05	TL-208	TRG	HTC-A09-S001-4248-01	pCi/g	7.99E-01	1.39E-01	1.50E-01					05/16/17 12:35	6.91E+02	08/25/17 06:53	YES
06	AC-228	TRG	HTC-A09-S002-0006-01	pCi/g	5.16E-01	5.82E-01	8.71E-01					05/16/17 09:48	8.30E+02	08/25/17 06:53	NO
06	BI-212	TRG	HTC-A09-S002-0006-01	pCi/g	6.61E-01	9.80E-01	1.63E+00					05/16/17 09:48	8.30E+02	08/25/17 06:53	NO
06	BI-214	TRG	HTC-A09-S002-0006-01	pCi/g	4.71E+01	2.30E+00	7.55E-01					05/16/17 09:48	8.30E+02	08/25/17 06:53	YES
06	CS-137	TRG	HTC-A09-S002-0006-01	pCi/g	-2.54E-01	1.82E-01	2.41E-01					05/16/17 09:48	8.30E+02	08/25/17 06:53	NO
06	K-40	TRG	HTC-A09-S002-0006-01	pCi/g	2.73E+00	1.83E+00	2.66E+00					05/16/17 09:48	8.30E+02	08/25/17 06:53	NO
06	PA-234M	TRG	HTC-A09-S002-0006-01	pCi/g	4.59E+01	1.72E+01	2.68E+01					05/16/17 09:48	8.30E+02	08/25/17 06:53	YES
06	PB-212	TRG	HTC-A09-S002-0006-01	pCi/g	-3.40E-02	4.17E-01	5.90E-01					05/16/17 09:48	8.30E+02	08/25/17 06:53	NO
06	PB-214	TRG	HTC-A09-S002-0006-01	pCi/g	4.88E+01	3.04E+00	8.97E-01					05/16/17 09:48	8.30E+02	08/25/17 06:53	YES
06	RA-224	TRG	HTC-A09-S002-0006-01	pCi/g	8.67E+01	8.26E+00	7.42E+00					05/16/17 09:48	8.30E+02	08/25/17 06:53	NO
06	RA-226	TRG	HTC-A09-S002-0006-01	pCi/g	4.71E+01	2.30E+00	7.55E-01					05/16/17 09:48	8.30E+02	08/25/17 06:53	YES
06	RA-228	TRG	HTC-A09-S002-0006-01	pCi/g	5.16E-01	5.82E-01	8.71E-01					05/16/17 09:48	8.30E+02	08/25/17 06:53	NO
06	TH-234	TRG	HTC-A09-S002-0006-01	pCi/g	3.08E+01	4.27E+00	5.87E+00					05/16/17 09:48	8.30E+02	08/25/17 06:53	YES
06	TL-208	TRG	HTC-A09-S002-0006-01	pCi/g	9.07E-01	4.58E-01	2.87E-01					05/16/17 09:48	8.30E+02	08/25/17 06:53	NO
07	AC-228	TRG	HTC-A09-S002-0612-01	pCi/g	3.78E-01	6.87E-01	9.61E-01					05/16/17 09:46	7.42E+02	08/25/17 06:53	NO
07	BI-212	TRG	HTC-A09-S002-0612-01	pCi/g	7.29E-01	1.11E+00	1.88E+00					05/16/17 09:46	7.42E+02	08/25/17 06:53	NO
07	BI-214	TRG	HTC-A09-S002-0612-01	pCi/g	2.63E+01	1.65E+00	6.65E-01					05/16/17 09:46	7.42E+02	08/25/17 06:53	YES
07	CS-137	TRG	HTC-A09-S002-0612-01	pCi/g	-4.41E-02	5.66E-02	2.60E-01					05/16/17 09:46	7.42E+02	08/25/17 06:53	NO
07	K-40	TRG	HTC-A09-S002-0612-01	pCi/g	7.73E+00	2.87E+00	4.43E+00					05/16/17 09:46	7.42E+02	08/25/17 06:53	YES
07	PA-234M	TRG	HTC-A09-S002-0612-01	pCi/g	2.93E+01	1.86E+01	3.00E+01					05/16/17 09:46	7.42E+02	08/25/17 06:53	YES
07	PB-212	TRG	HTC-A09-S002-0612-01	pCi/g	-4.30E-02	1.29E-01	5.32E-01					05/16/17 09:46	7.42E+02	08/25/17 06:53	NO
07	PB-214	TRG	HTC-A09-S002-0612-01	pCi/g	2.55E+01	1.62E+00	8.64E-01					05/16/17 09:46	7.42E+02	08/25/17 06:53	YES
07	RA-224	TRG	HTC-A09-S002-0612-01	pCi/g	4.99E+01	5.53E+00	6.46E+00					05/16/17 09:46	7.42E+02	08/25/17 06:53	NO

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07	RA-226	TRG	HTC-A09-S002-0612-01	pCi/g	2.63E+01	1.65E+00	6.65E-01					05/16/17 09:46	7.42E+02	08/25/17 06:53	YES
07	RA-228	TRG	HTC-A09-S002-0612-01	pCi/g	3.78E-01	6.87E-01	9.61E-01					05/16/17 09:46	7.42E+02	08/25/17 06:53	NO
07	TH-234	TRG	HTC-A09-S002-0612-01	pCi/g	2.08E+01	3.87E+00	5.74E+00					05/16/17 09:46	7.42E+02	08/25/17 06:53	YES
07	TL-208	TRG	HTC-A09-S002-0612-01	pCi/g	4.78E-01	2.14E-01	2.73E-01					05/16/17 09:46	7.42E+02	08/25/17 06:53	YES
08	AC-228	TRG	HTC-A09-S002-1218-01	pCi/g	6.70E-01	1.70E-01	3.12E-01					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
08	BI-212	TRG	HTC-A09-S002-1218-01	pCi/g	3.10E-01	3.28E-01	5.43E-01					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
08	BI-214	TRG	HTC-A09-S002-1218-01	pCi/g	1.51E+00	1.75E-01	1.97E-01					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
08	CS-137	TRG	HTC-A09-S002-1218-01	pCi/g	3.12E-02	3.04E-02	6.22E-02					05/16/17 09:44	7.66E+02	08/25/17 07:55	NO
08	K-40	TRG	HTC-A09-S002-1218-01	pCi/g	1.31E+01	1.61E+00	8.39E-01					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
08	PA-234M	TRG	HTC-A09-S002-1218-01	pCi/g	1.28E+00	4.43E+00	7.01E+00					05/16/17 09:44	7.66E+02	08/25/17 07:55	NO
08	PB-212	TRG	HTC-A09-S002-1218-01	pCi/g	6.74E-01	9.26E-02	2.12E-01					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
08	PB-214	TRG	HTC-A09-S002-1218-01	pCi/g	1.63E+00	1.56E-01	1.74E-01					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
08	RA-224	TRG	HTC-A09-S002-1218-01	pCi/g	5.74E+00	1.44E+00	2.02E+00					05/16/17 09:44	7.66E+02	08/25/17 07:55	NO
08	RA-226	TRG	HTC-A09-S002-1218-01	pCi/g	1.51E+00	1.75E-01	1.97E-01					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
08	RA-228	TRG	HTC-A09-S002-1218-01	pCi/g	6.70E-01	1.70E-01	3.12E-01					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
08	TH-234	TRG	HTC-A09-S002-1218-01	pCi/g	8.76E-01	7.55E-01	1.16E+00					05/16/17 09:44	7.66E+02	08/25/17 07:55	NO
08	TL-208	TRG	HTC-A09-S002-1218-01	pCi/g	6.62E-01	1.16E-01	8.82E-02					05/16/17 09:44	7.66E+02	08/25/17 07:55	YES
09	AC-228	TRG	HTC-A09-S002-1824-01	pCi/g	8.63E-01	2.01E-01	4.07E-01					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	BI-212	TRG	HTC-A09-S002-1824-01	pCi/g	3.41E-01	4.11E-01	6.87E-01					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	BI-214	TRG	HTC-A09-S002-1824-01	pCi/g	8.81E-01	1.46E-01	1.95E-01					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	CS-137	TRG	HTC-A09-S002-1824-01	pCi/g	3.21E-02	5.20E-02	8.15E-02					05/16/17 09:42	8.16E+02	08/25/17 07:56	NO
09	K-40	TRG	HTC-A09-S002-1824-01	pCi/g	1.31E+01	1.63E+00	8.19E-01					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	PA-234M	TRG	HTC-A09-S002-1824-01	pCi/g	-2.37E+00	5.46E+00	7.48E+00					05/16/17 09:42	8.16E+02	08/25/17 07:56	NO
09	PB-212	TRG	HTC-A09-S002-1824-01	pCi/g	8.10E-01	1.18E-01	2.04E-01					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	PB-214	TRG	HTC-A09-S002-1824-01	pCi/g	9.12E-01	1.48E-01	2.21E-01					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	RA-224	TRG	HTC-A09-S002-1824-01	pCi/g	2.92E+00	1.11E+00	2.30E+00					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	RA-226	TRG	HTC-A09-S002-1824-01	pCi/g	8.81E-01	1.46E-01	1.95E-01					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	RA-228	TRG	HTC-A09-S002-1824-01	pCi/g	8.63E-01	2.01E-01	4.07E-01					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
09	TH-234	TRG	HTC-A09-S002-1824-01	pCi/g	7.71E-01	1.04E+00	1.37E+00					05/16/17 09:42	8.16E+02	08/25/17 07:56	NO
09	TL-208	TRG	HTC-A09-S002-1824-01	pCi/g	6.20E-01	1.33E-01	8.66E-02					05/16/17 09:42	8.16E+02	08/25/17 07:56	YES
10	AC-228	TRG	HTC-A09-S002-2430-01	pCi/g	7.43E-01	2.59E-01	4.77E-01					05/16/17 09:40	8.10E+02	08/25/17 07:56	YES
10	BI-212	TRG	HTC-A09-S002-2430-01	pCi/g	1.45E-01	1.90E-01	8.26E-01					05/16/17 09:40	8.10E+02	08/25/17 07:56	NO
10	BI-214	TRG	HTC-A09-S002-2430-01	pCi/g	9.02E-01	1.65E-01	2.16E-01					05/16/17 09:40	8.10E+02	08/25/17 07:56	YES
10	CS-137	TRG	HTC-A09-S002-2430-01	pCi/g	8.21E-02	6.56E-02	1.06E-01					05/16/17 09:40	8.10E+02	08/25/17 07:56	NO
10	K-40	TRG	HTC-A09-S002-2430-01	pCi/g	1.52E+01	2.06E+00	1.09E+00					05/16/17 09:40	8.10E+02	08/25/17 07:56	YES
10	PA-234M	TRG	HTC-A09-S002-2430-01	pCi/g	-1.10E+00	6.89E+00	9.61E+00					05/16/17 09:40	8.10E+02	08/25/17 07:56	NO
10	PB-212	TRG	HTC-A09-S002-2430-01	pCi/g	8.86E-01	1.74E-01	2.39E-01					05/16/17 09:40	8.10E+02	08/25/17 07:56	YES
10	PB-214	TRG	HTC-A09-S002-2430-01	pCi/g	7.47E-01	1.40E-01	2.04E-01					05/16/17 09:40	8.10E+02	08/25/17 07:56	YES

Work Order: 17-07093-Gamma-2

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
10	RA-224	TRG	HTC-A09-S002-2430-01	pCi/g	7.57E+00	1.40E+00	2.26E+00					05/16/17 09:40	8.10E+02	08/25/17 07:56	NO
10	RA-226	TRG	HTC-A09-S002-2430-01	pCi/g	9.02E-01	1.65E-01	2.16E-01					05/16/17 09:40	8.10E+02	08/25/17 07:56	YES
10	RA-228	TRG	HTC-A09-S002-2430-01	pCi/g	7.43E-01	2.59E-01	4.77E-01					05/16/17 09:40	8.10E+02	08/25/17 07:56	YES
10	TH-234	TRG	HTC-A09-S002-2430-01	pCi/g	-8.42E-02	1.05E+00	1.51E+00					05/16/17 09:40	8.10E+02	08/25/17 07:56	NO
10	TL-208	TRG	HTC-A09-S002-2430-01	pCi/g	7.66E-01	2.04E-01	5.46E-02					05/16/17 09:40	8.10E+02	08/25/17 07:56	YES

Count Room Report
Client: Weston Solutions, Inc.

17-07093-Gamma-2 (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	07/19/17 00:00	1.0000				0.00		
02	MBL	BLANK	07/19/17 00:00	1.0000				0.00		
03	DUP	HTC-A09-S001-3642-01	05/16/17 12:37	657.0000				0.00		
04	DO	HTC-A09-S001-3642-01	05/16/17 12:37	657.0000				0.00		
05	TRG	HTC-A09-S001-4248-01	05/16/17 12:35	691.0900				0.00		
06	TRG	HTC-A09-S002-0006-01	05/16/17 09:48	830.2000				0.00		
07	TRG	HTC-A09-S002-0612-01	05/16/17 09:46	742.4600				0.00		
08	TRG	HTC-A09-S002-1218-01	05/16/17 09:44	766.3600				0.00		
09	TRG	HTC-A09-S002-1824-01	05/16/17 09:42	816.4400				0.00		
10	TRG	HTC-A09-S002-2430-01	05/16/17 09:40	810.3000				0.00		

0214

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
17-07093	2	Gamma	grams	8/10/2017	KSALLINGS

Lab Fraction	Weston Solutions, Inc. 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	HTC-A09-S001-3642-01	DUP					6.5700E+02	6.5700E+02				
04	HTC-A09-S001-3642-01	DO					6.5700E+02	6.5700E+02				
05	HTC-A09-S001-4248-01	TRG					6.9109E+02	6.9109E+02				
06	HTC-A09-S002-0006-01	TRG					8.3020E+02	8.3020E+02				
07	HTC-A09-S002-0612-01	TRG					7.4246E+02	7.4246E+02				
08	HTC-A09-S002-1218-01	TRG					7.6636E+02	7.6636E+02				
09	HTC-A09-S002-1824-01	TRG					8.1644E+02	8.1644E+02				
10	HTC-A09-S002-2430-01	TRG					8.1030E+02	8.1030E+02				

Comments	

0215

Technician: Kenny Sallings Date: 8/4/17

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
17-07093	8/10/2017	8/3/2017	8/4/2017	8/5/2017	KSALLINGS

Bico Pulverizer: 000302 [✓] Jaw Crusher 68275 [ ]

Eberline Fraction	Weston Solutions, Inc. Client ID	Tare (g) Pan Wt	Gross (g) Wet Wt.	Gross (g) Dry Wt.	Net (g) Wet Wt.	Net (g) Dry Wt.	Percent Liquid	Percent Solid	Gamma Dry Wt.	Gamma LEPS Wt.	Special Info
04	HTC-A09-S001-3642-01	14.3500	930.5800	773.7000	916.2300	759.3500	17.12%	82.88%	0.0000	0.0000	
05	HTC-A09-S001-4248-01	14.4700	939.6800	777.9200	925.2100	763.4500	17.48%	82.52%	0.0000	0.0000	
06	HTC-A09-S002-0006-01	14.5100	955.7400	916.1000	941.2300	901.5900	4.21%	95.79%	0.0000	0.0000	
07	HTC-A09-S002-0612-01	14.5000	944.1200	842.9800	929.6200	828.4800	10.88%	89.12%	0.0000	0.0000	
08	HTC-A09-S002-1218-01	14.4800	994.6400	877.3400	980.1600	862.8600	11.97%	88.03%	0.0000	0.0000	
09	HTC-A09-S002-1824-01	14.5500	1052.3200	946.2200	1037.7700	931.6700	10.22%	89.78%	0.0000	0.0000	
10	HTC-A09-S002-2430-01	14.6600	1130.8400	978.3800	1116.1800	963.7200	13.66%	86.34%	0.0000	0.0000	

OVENS Fisher Isotemp SN 00579 [✓] VWR SN 000588 [ ]

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

0216

Technician: Kerry Sallings

Date: **Analysis: Rough Prep Logbook**

Analysis: Gamma Page No. 10187

Eckert & Ziegler
Analytics

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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

8/25

Apex-Gamma

Analysis Report for 1707093-01
GAS-1402

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-01
Sample Description	: GAS-1402
Sample Type	: SOIL
Sample Size	: 7.360E+02 grams
Facility	: Countroom
Sample Taken On	: 10/1/2014 10:46:53AM
Acquisition Started	: 8/25/2017 8:58:36AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1602
Live Time	: 1800.0 seconds
Real Time	: 1816.7 seconds
Dead Time	: 0.92 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 28 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 8/19/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55968

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-01

GAS-1402

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 9:28:58AM
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	49.87	50.21	0.0000	0.00
2	59.47	59.80	0.0000	0.00
3	67.96	68.28	0.0000	0.00
4	77.34	77.65	0.0000	0.00
5	87.94	88.24	0.0000	0.00
6	121.95	122.22	0.0000	0.00
7	136.36	136.60	0.0000	0.00
8	165.52	165.74	0.0000	0.00
9	185.53	185.72	0.0000	0.00
10	201.38	201.55	0.0000	0.00
11	238.68	238.82	0.0000	0.00
12	367.57	367.57	0.0000	0.00
13	429.29	429.23	0.0000	0.00
14	511.05	510.91	0.0000	0.00
15	644.08	643.80	0.0000	0.00
16	661.69	661.39	0.0000	0.00
17	911.02	910.49	0.0000	0.00
18	1111.06	1110.34	0.0000	0.00
19	1173.39	1172.61	0.0000	0.00
20	1285.61	1284.73	0.0000	0.00
21	1332.69	1331.78	0.0000	0.00
22	1438.96	1437.96	0.0000	0.00
23	1547.03	1545.94	0.0000	0.00
24	1551.06	1549.96	0.0000	0.00
25	1575.03	1573.91	0.0000	0.00
26	1765.81	1764.53	0.0000	0.00
27	1835.95	1834.63	0.0000	0.00
28	1915.81	1914.42	0.0000	0.00
29	2141.65	2140.10	0.0000	0.00
30	2231.58	2229.97	0.0000	0.00
31	2317.54	2315.86	0.0000	0.00
32	2505.59	2503.79	0.0000	0.00
33	2614.64	2612.77	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-01

GAS-1402

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 9:28:58AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	49.87	47 -	63	50.21	3.28E+03	284.70	1.47E+04	1.21
m	2	59.47	47 -	63	59.80	6.97E+04	603.42	1.04E+04	1.21
	3	67.96	67 -	70	68.28	2.62E+02	209.48	1.07E+04	5.01
	4	77.34	77 -	80	77.65	1.98E+02	205.40	1.03E+04	2.44
	5	87.94	84 -	91	88.24	2.64E+04	453.55	1.66E+04	1.54
	6	121.95	118 -	126	122.22	4.45E+03	309.87	1.20E+04	1.47
	7	136.36	133 -	140	136.60	6.48E+02	248.32	9.84E+03	1.64
	8	165.52	163 -	168	165.74	3.52E+02	188.18	6.80E+03	1.08
	9	185.53	184 -	188	185.72	1.62E+02	166.00	5.99E+03	1.33
	10	201.38	200 -	203	201.55	1.29E+02	139.66	4.73E+03	1.75
	11	238.68	237 -	241	238.82	2.07E+02	161.13	5.58E+03	2.00
	12	367.57	365 -	370	367.57	1.64E+02	148.57	4.30E+03	3.70
	13	429.29	427 -	431	429.23	1.49E+02	130.55	3.65E+03	1.90
	14	511.05	508 -	514	510.91	2.21E+02	144.48	3.63E+03	1.86
	15	644.08	642 -	647	643.80	1.02E+02	107.60	2.23E+03	1.92
	16	661.69	656 -	666	661.39	2.51E+04	362.74	4.15E+03	2.06
	17	911.02	908 -	913	910.49	1.38E+02	121.28	2.83E+03	3.85
	18	1111.06	1105 -	1115	1110.34	1.57E+02	170.78	3.80E+03	6.60
	19	1173.39	1166 -	1179	1172.61	2.13E+04	331.15	2.70E+03	2.20
	20	1285.61	1282 -	1287	1284.73	3.25E+01	34.32	2.09E+02	3.38
	21	1332.69	1325 -	1338	1331.78	1.91E+04	285.96	5.81E+02	2.41
	22	1438.96	1434 -	1441	1437.96	2.76E+01	26.76	9.47E+01	2.75
M	23	1547.03	1544 -	1552	1545.94	1.57E+01	12.80	4.28E+01	3.15
m	24	1551.06	1544 -	1552	1549.96	1.57E+01	17.20	3.91E+01	2.87
	25	1575.03	1567 -	1580	1573.91	3.82E+01	38.28	1.42E+02	11.28
	26	1765.81	1760 -	1769	1764.53	2.65E+01	24.29	6.69E+01	6.39
	27	1835.95	1829 -	1840	1834.63	5.35E+01	32.86	1.09E+02	2.37
	28	1915.81	1902 -	1926	1914.42	5.45E+01	47.02	1.37E+02	17.78
	29	2141.65	2133 -	2146	2140.10	2.36E+01	28.05	7.67E+01	5.65
	30	2231.58	2227 -	2234	2229.97	1.23E+01	15.62	3.34E+01	2.94
	31	2317.54	2309 -	2322	2315.86	2.58E+01	16.94	1.83E+01	9.59
	32	2505.59	2498 -	2509	2503.79	2.01E+02	30.79	1.78E+01	3.38
	33	2614.64	2608 -	2616	2612.77	3.10E+01	11.14	0.00E+00	2.29

Analysis Report for 1707093-01

GAS-1402

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 : 8/25/2017 9:28:58AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	1	49.87	47 -	63	3.28E+03	284.70	1.47E+04	1.99E+02
m	2	59.47	47 -	63	6.97E+04	603.42	1.04E+04	1.68E+02
	3	67.96	67 -	70	2.62E+02	209.48	1.07E+04	1.70E+02
	4	77.34	77 -	80	1.98E+02	205.40	1.03E+04	1.67E+02
	5	87.94	84 -	91	2.64E+04	453.55	1.66E+04	2.60E+02
	6	121.95	118 -	126	4.45E+03	309.87	1.20E+04	8.70E+01
	7	136.36	133 -	140	6.48E+02	248.32	9.84E+03	2.00E+02
	8	165.52	163 -	168	3.52E+02	188.18	6.80E+03	1.52E+02
	9	185.53	184 -	188	1.62E+02	166.00	5.99E+03	1.35E+02
	10	201.38	200 -	203	1.29E+02	139.66	4.73E+03	1.13E+02
	11	238.68	237 -	241	2.07E+02	161.13	5.58E+03	1.30E+02
	12	367.57	365 -	370	1.64E+02	148.57	4.30E+03	1.20E+02
	13	429.29	427 -	431	1.49E+02	130.55	3.65E+03	1.05E+02
	14	511.05	508 -	514	2.21E+02	144.48	3.63E+03	1.16E+02
	15	644.08	642 -	647	1.02E+02	107.60	2.23E+03	8.69E+01
	16	661.69	656 -	666	2.51E+04	362.74	4.15E+03	1.45E+02
	17	911.02	908 -	913	1.38E+02	121.28	2.83E+03	9.78E+01
	18	1111.06	1105 -	1115	1.57E+02	170.78	3.80E+03	1.39E+02
	19	1173.39	1166 -	1179	2.13E+04	331.15	2.70E+03	1.29E+02
	20	1285.61	1282 -	1287	3.25E+01	34.32	2.09E+02	2.66E+01
	21	1332.69	1325 -	1338	1.91E+04	285.96	5.81E+02	5.97E+01
	22	1438.96	1434 -	1441	2.76E+01	26.76	9.47E+01	2.02E+01
M	23	1547.03	1544 -	1552	1.57E+01	12.80	4.28E+01	1.08E+01
m	24	1551.06	1544 -	1552	1.57E+01	17.20	3.91E+01	1.03E+01
	25	1575.03	1567 -	1580	3.82E+01	38.28	1.42E+02	2.98E+01
	26	1765.81	1760 -	1769	2.65E+01	24.29	6.69E+01	1.81E+01
	27	1835.95	1829 -	1840	5.35E+01	32.86	1.09E+02	2.42E+01
	28	1915.81	1902 -	1926	5.45E+01	47.02	1.37E+02	3.67E+01
	29	2141.65	2133 -	2146	2.36E+01	28.05	7.67E+01	2.16E+01
	30	2231.58	2227 -	2234	1.23E+01	15.62	3.34E+01	1.15E+01
	31	2317.54	2309 -	2322	2.58E+01	16.94	1.83E+01	1.11E+01

Analysis Report for 1707093-01

GAS-1402

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
32	2505.59	2498 -	2509	2.01E+02	30.79	1.78E+01	9.85E+00
33	2614.64	2608 -	2616	3.10E+01	11.14	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 : 8/25/2017 9:28:58AM

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

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	1	49.87	47 -	63	50.21	3.28E+03	284.70	1.47E+04	TE-132
									TH-227
m	2	59.47	47 -	63	59.80	6.97E+04	603.42	1.04E+04	AM-241
	3	67.96	67 -	70	68.28	2.62E+02	209.48	1.07E+04	TI-44
									TA-182
									TH-230
									HF-172
	4	77.34	77 -	80	77.65	1.98E+02	205.40	1.03E+04	TI-44
	5	87.94	84 -	91	88.24	2.64E+04	453.55	1.66E+04	CD-109
									SN-126
									LU-176
	6	121.95	118 -	126	122.22	4.45E+03	309.87	1.20E+04	CO-57
									EU-152
									SE-75
	7	136.36	133 -	140	136.60	6.48E+02	248.32	9.84E+03	CO-57
									SE-75
	8	165.52	163 -	168	165.74	3.52E+02	188.18	6.80E+03	CE-139
	9	185.53	184 -	188	185.72	1.62E+02	166.00	5.99E+03	RA-226
	10	201.38	200 -	203	201.55	1.29E+02	139.66	4.73E+03	LU-176
	11	238.68	237 -	241	238.82	2.07E+02	161.13	5.58E+03	PB-212
	12	367.57	365 -	370	367.57	1.64E+02	148.57	4.30E+03	.....
	13	429.29	427 -	431	429.23	1.49E+02	130.55	3.65E+03	.....
	14	511.05	508 -	514	510.91	2.21E+02	144.48	3.63E+03	.....
	15	644.08	642 -	647	643.80	1.02E+02	107.60	2.23E+03	.....

Analysis Report for 1707093-01

GAS-1402

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	16	661.69	656 -	666	661.39	2.51E+04	362.74	4.15E+03	CS-137
	17	911.02	908 -	913	910.49	1.38E+02	121.28	2.83E+03	AC-228
									TL-204
	18	1111.06	1105 -	1115	1110.34	1.57E+02	170.78	3.80E+03	EU-152
	19	1173.39	1166 -	1179	1172.61	2.13E+04	331.15	2.70E+03	CO-60
	20	1285.61	1282 -	1287	1284.73	3.25E+01	34.32	2.09E+02	.....
	21	1332.69	1325 -	1338	1331.78	1.91E+04	285.96	5.81E+02	CO-60
	22	1438.96	1434 -	1441	1437.96	2.76E+01	26.76	9.47E+01	.....
M	23	1547.03	1544 -	1552	1545.94	1.57E+01	12.80	4.28E+01	.....
m	24	1551.06	1544 -	1552	1549.96	1.57E+01	17.20	3.91E+01	.....
	25	1575.03	1567 -	1580	1573.91	3.82E+01	38.28	1.42E+02	.....
	26	1765.81	1760 -	1769	1764.53	2.65E+01	24.29	6.69E+01	.....
	27	1835.95	1829 -	1840	1834.63	5.35E+01	32.86	1.09E+02	Y-88
	28	1915.81	1902 -	1926	1914.42	5.45E+01	47.02	1.37E+02	.....
	29	2141.65	2133 -	2146	2140.10	2.36E+01	28.05	7.67E+01	.....
	30	2231.58	2227 -	2234	2229.97	1.23E+01	15.62	3.34E+01	.....
	31	2317.54	2309 -	2322	2315.86	2.58E+01	16.94	1.83E+01	.....
	32	2505.59	2498 -	2509	2503.79	2.01E+02	30.79	1.78E+01	.....
	33	2614.64	2608 -	2616	2612.77	3.10E+01	11.14	0.00E+00	TL-208

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

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 8/25/2017 9:28:58AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	49.87	3.28E+03	284.70	1.79E-02	1.67E-03
m	2	59.47	6.97E+04	603.42	2.25E-02	1.67E-03
	3	67.96	2.62E+02	209.48	2.50E-02	1.90E-03
	4	77.34	1.98E+02	205.40	2.64E-02	2.14E-03
	5	87.94	2.64E+04	453.55	2.70E-02	2.42E-03
	6	121.95	4.45E+03	309.87	2.53E-02	1.78E-03
	7	136.36	6.48E+02	248.32	2.42E-02	1.72E-03
	8	165.52	3.52E+02	188.18	2.18E-02	1.62E-03
	9	185.53	1.62E+02	166.00	2.03E-02	1.53E-03
	10	201.38	1.29E+02	139.66	1.93E-02	1.46E-03
	11	238.68	2.07E+02	161.13	1.72E-02	1.30E-03

Analysis Report for 1707093-01

GAS-1402

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	12	367.57	1.64E+02	148.57	1.27E-02	1.00E-03
	13	429.29	1.49E+02	130.55	1.13E-02	9.36E-04
	14	511.05	2.21E+02	144.48	9.87E-03	8.65E-04
	15	644.08	1.02E+02	107.60	8.23E-03	7.49E-04
	16	661.69	2.51E+04	362.74	8.06E-03	7.34E-04
	17	911.02	1.38E+02	121.28	6.21E-03	5.02E-04
	18	1111.06	1.57E+02	170.78	5.28E-03	4.32E-04
	19	1173.39	2.13E+04	331.15	5.05E-03	4.10E-04
	20	1285.61	3.25E+01	34.32	4.70E-03	4.20E-04
	21	1332.69	1.91E+04	285.96	4.57E-03	4.25E-04
	22	1438.96	2.76E+01	26.76	4.31E-03	3.94E-04
M	23	1547.03	1.57E+01	12.80	4.09E-03	3.63E-04
m	24	1551.06	1.57E+01	17.20	4.08E-03	3.62E-04
	25	1575.03	3.82E+01	38.28	4.04E-03	3.55E-04
	26	1765.81	2.65E+01	24.29	3.74E-03	2.99E-04
	27	1835.95	5.35E+01	32.86	3.66E-03	2.79E-04
	28	1915.81	5.45E+01	47.02	3.57E-03	2.79E-04
	29	2141.65	2.36E+01	28.05	3.38E-03	2.79E-04
	30	2231.58	1.23E+01	15.62	3.33E-03	2.79E-04
	31	2317.54	2.58E+01	16.94	3.28E-03	2.79E-04
	32	2505.59	2.01E+02	30.79	3.22E-03	2.79E-04
	33	2614.64	3.10E+01	11.14	3.20E-03	2.79E-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 : 8/25/2017 9:28:58AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055574.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	49.87	3.28E+03	284.70			3.28E+03	2.85E+02
m	2	59.47	6.97E+04	603.42			6.97E+04	6.03E+02
	3	67.96	2.62E+02	209.48			2.62E+02	2.09E+02
	4	77.34	1.98E+02	205.40			1.98E+02	2.05E+02
	5	87.94	2.64E+04	453.55			2.64E+04	4.54E+02
	6	121.95	4.45E+03	309.87			4.45E+03	3.10E+02
	7	136.36	6.48E+02	248.32			6.48E+02	2.48E+02
	8	165.52	3.52E+02	188.18			3.52E+02	1.88E+02

Analysis Report for 1707093-01

GAS-1402

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	9	185.53	1.62E+02	166.00	1.74E+01	3.66E+00	1.45E+02	1.66E+02
	10	201.38	1.29E+02	139.66			1.29E+02	1.40E+02
	11	238.68	2.07E+02	161.13	3.55E+00	3.43E+00	2.04E+02	1.61E+02
	12	367.57	1.64E+02	148.57			1.64E+02	1.49E+02
	13	429.29	1.49E+02	130.55			1.49E+02	1.31E+02
	14	511.05	2.21E+02	144.48	3.54E+01	2.47E+00	1.85E+02	1.45E+02
	15	644.08	1.02E+02	107.60			1.02E+02	1.08E+02
	16	661.69	2.51E+04	362.74	1.52E+00	1.58E+00	2.51E+04	3.63E+02
	17	911.02	1.38E+02	121.28	1.31E+00	1.25E+00	1.37E+02	1.21E+02
	18	1111.06	1.57E+02	170.78			1.57E+02	1.71E+02
	19	1173.39	2.13E+04	331.15	3.26E+00	1.15E+00	2.13E+04	3.31E+02
	20	1285.61	3.25E+01	34.32			3.25E+01	3.43E+01
	21	1332.69	1.91E+04	285.96	0.00E+00	0.00E+00	1.91E+04	2.86E+02
	22	1438.96	2.76E+01	26.76			2.76E+01	2.68E+01
M	23	1547.03	1.57E+01	12.80			1.57E+01	1.28E+01
m	24	1551.06	1.57E+01	17.20			1.57E+01	1.72E+01
	25	1575.03	3.82E+01	38.28			3.82E+01	3.83E+01
	26	1765.81	2.65E+01	24.29	1.67E+00	8.64E-01	2.49E+01	2.43E+01
	27	1835.95	5.35E+01	32.86			5.35E+01	3.29E+01
	28	1915.81	5.45E+01	47.02			5.45E+01	4.70E+01
	29	2141.65	2.36E+01	28.05			2.36E+01	2.81E+01
	30	2231.58	1.23E+01	15.62			1.23E+01	1.56E+01
	31	2317.54	2.58E+01	16.94			2.58E+01	1.69E+01
	32	2505.59	2.01E+02	30.79			2.01E+02	3.08E+01
	33	2614.64	3.10E+01	11.14	2.39E+00	7.58E-01	2.86E+01	1.12E+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 : 8/25/2017 9:28:58AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055574.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	1	49.87	3.28E+03	284.70			3.28E+03	2.85E+02
m	2	59.47	6.97E+04	603.42			6.97E+04	6.03E+02
	3	67.96	2.62E+02	209.48			2.62E+02	2.09E+02

Analysis Report for 1707093-01

GAS-1402

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	4	77.34	1.98E+02	205.40			1.98E+02	2.05E+02
	5	87.94	2.64E+04	453.55			2.64E+04	4.54E+02
	6	121.95	4.45E+03	309.87			4.45E+03	3.10E+02
	7	136.36	6.48E+02	248.32			6.48E+02	2.48E+02
	8	165.52	3.52E+02	188.18			3.52E+02	1.88E+02
	9	185.53	1.62E+02	166.00	1.74E+01	3.66E+00	1.45E+02	1.66E+02
	10	201.38	1.29E+02	139.66			1.29E+02	1.40E+02
	11	238.68	2.07E+02	161.13	3.55E+00	3.43E+00	2.04E+02	1.61E+02
	12	367.57	1.64E+02	148.57			1.64E+02	1.49E+02
	13	429.29	1.49E+02	130.55			1.49E+02	1.31E+02
	14	511.05	2.21E+02	144.48	3.54E+01	2.47E+00	1.85E+02	1.45E+02
	15	644.08	1.02E+02	107.60			1.02E+02	1.08E+02
	16	661.69	2.51E+04	362.74	1.52E+00	1.58E+00	2.51E+04	3.63E+02
	17	911.02	1.38E+02	121.28	1.31E+00	1.25E+00	1.37E+02	1.21E+02
	18	1111.06	1.57E+02	170.78			1.57E+02	1.71E+02
	19	1173.39	2.13E+04	331.15	3.26E+00	1.15E+00	2.13E+04	3.31E+02
	20	1285.61	3.25E+01	34.32			3.25E+01	3.43E+01
	21	1332.69	1.91E+04	285.96	0.00E+00	0.00E+00	1.91E+04	2.86E+02
	22	1438.96	2.76E+01	26.76			2.76E+01	2.68E+01
M	23	1547.03	1.57E+01	12.80			1.57E+01	1.28E+01
m	24	1551.06	1.57E+01	17.20			1.57E+01	1.72E+01
	25	1575.03	3.82E+01	38.28			3.82E+01	3.83E+01
	26	1765.81	2.65E+01	24.29	1.67E+00	8.64E-01	2.49E+01	2.43E+01
	27	1835.95	5.35E+01	32.86			5.35E+01	3.29E+01
	28	1915.81	5.45E+01	47.02			5.45E+01	4.70E+01
	29	2141.65	2.36E+01	28.05			2.36E+01	2.81E+01
	30	2231.58	1.23E+01	15.62			1.23E+01	1.56E+01
	31	2317.54	2.58E+01	16.94			2.58E+01	1.69E+01
	32	2505.59	2.01E+02	30.79			2.01E+02	3.08E+01
	33	2614.64	3.10E+01	11.14	2.39E+00	7.58E-01	2.86E+01	1.12E+01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TI-44	0.922	67.88	*	94.40	2.34E-01	1.88E-01

Analysis Report for 1707093-01

GAS-1402

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TI-44	0.922	78.34	*	96.00	1.64E-01	1.71E-01
CO-57	0.925	122.06	*	85.51	6.30E+01	6.27E+00
		136.48	*	10.60	7.76E+01	3.04E+01
CO-60	0.993	1173.22	*	100.00	1.26E+02	1.04E+01
		1332.49	*	100.00	1.25E+02	1.18E+01
CD-109	0.973	88.03	*	3.72	2.61E+03	2.84E+02
SN-126	0.978	87.57	*	37.00	5.39E+01	4.93E+00
CS-137	1.000	661.65	*	85.12	7.98E+01	7.38E+00
CE-139	0.731	165.85	*	80.35	8.49E+01	4.58E+01
PB-212	0.894	238.63	*	44.60	5.41E-01	4.30E-01
		300.09		3.41		
RA-226	0.928	186.21	*	3.28	4.42E+00	9.56E+00
AM-241	0.999	59.54	*	35.90	1.77E+02	1.32E+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 : 8/25/2017 9:28:58AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	49.87	1.81986E+00	4.35	Tol.	TE-132 TH-227
	10	201.38	7.15957E-02	54.18	Tol.	LU-176
	12	367.57	9.13339E-02	45.19		
	13	429.29	8.28217E-02	43.78		
	14	511.05	1.02860E-01	39.02		
	15	644.08	5.66509E-02	52.76		
	17	911.02	7.61176E-02	44.26	Tol.	TL-204 AC-228
	18	1111.06	8.72266E-02	54.39	Tol.	EU-152
	20	1285.61	1.80535E-02	52.81		
	22	1438.96	1.53556E-02	48.40		
M	23	1547.03	8.69803E-03	40.87		
m	24	1551.06	8.69818E-03	54.92		
	25	1575.03	2.12385E-02	50.06		
	26	1765.81	1.38157E-02	48.87		

Analysis Report for 1707093-01

GAS-1402

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
27	1835.95	2.97222E-02	30.71	Sum	
28	1915.81	3.02687E-02	43.15		
29	2141.65	1.31317E-02	59.34		
30	2231.58	6.83908E-03	63.44		
31	2317.54	1.43492E-02	32.80		
32	2505.59	1.11734E-01	7.65	Sum	
33	2614.64	1.58971E-02	19.50	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
TI-44	0.92	67.88	*	94.40	2.34E-01	1.88E-01
		78.34	*	96.00	1.64E-01	1.71E-01
CO-57	0.92	122.06	*	85.51	6.30E+01	6.27E+00
		136.48	*	10.60	7.76E+01	3.04E+01
CO-60	0.99	1173.22	*	100.00	1.26E+02	1.04E+01
		1332.49	*	100.00	1.25E+02	1.18E+01
CD-109	0.97	88.03	*	3.72	2.61E+03	2.84E+02
SN-126	0.97	87.57	*	37.00	5.39E+01	4.93E+00
CS-137	1.00	661.65	*	85.12	7.98E+01	7.38E+00
CE-139	0.73	165.85	*	80.35	8.49E+01	4.58E+01
PB-212	0.89	238.63	*	44.60	5.41E-01	4.30E-01
		300.09		3.41		
RA-226	0.92	186.21	*	3.28	4.42E+00	9.56E+00
AM-241	0.99	59.54	*	35.90	1.77E+02	1.32E+01

Analysis Report for 1707093-01

GAS-1402

* = 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
	TI-44	0.922	1.96E-01	1.26E-01	
	CO-57	0.925	6.36E+01	6.15E+00	
	CO-60	0.993	1.25E+02	7.79E+00	
?	CD-109	0.973	2.61E+03	2.84E+02	
?	SN-126	0.978	5.39E+01	4.93E+00	
	CS-137	1.000	7.98E+01	7.38E+00	
	CE-139	0.731	8.49E+01	4.58E+01	
	PB-212	0.894	5.41E-01	4.30E-01	
	RA-226	0.928	4.42E+00	9.56E+00	
	AM-241	0.999	1.77E+02	1.32E+01	

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

Errors quoted at 2.000sigma

Analysis Report for 1707093-01

GAS-1402

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 9:28:58AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	1	49.87	1.81986E+00	4.35	Tol.	TE-132
						TH-227
	10	201.38	7.15957E-02	54.18	Tol.	LU-176
	12	367.57	9.13339E-02	45.19		
	13	429.29	8.28217E-02	43.78		
	14	511.05	1.02860E-01	39.02		
	15	644.08	5.66509E-02	52.76		
	17	911.02	7.61176E-02	44.26	Tol.	TL-204
						AC-228
	18	1111.06	8.72266E-02	54.39	Tol.	EU-152
	20	1285.61	1.80535E-02	52.81		
	22	1438.96	1.53556E-02	48.40		
M	23	1547.03	8.69803E-03	40.87		
m	24	1551.06	8.69818E-03	54.92		
	25	1575.03	2.12385E-02	50.06		
	26	1765.81	1.38157E-02	48.87		
	27	1835.95	2.97222E-02	30.71	Sum	
	28	1915.81	3.02687E-02	43.15		
	29	2141.65	1.31317E-02	59.34		
	30	2231.58	6.83908E-03	63.44		
	31	2317.54	1.43492E-02	32.80		
	32	2505.59	1.11734E-01	7.65	Sum	
	33	2614.64	1.58971E-02	19.50	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 1707093-01

GAS-1402

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	1.44E+06	3.47E+06	3.47E+06
+		NA-22	1274.54		99.94	3.25E-01	5.95E-01	5.95E-01
+	@	NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26
	@		2754.09		99.86	1.00E+26		1.00E+26
+		AL-26	1808.65		99.76	6.13E-02	1.97E-01	1.97E-01
+		K-40	1460.81		10.67	-2.19E-01	1.98E+00	1.98E+00
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88	*	94.40	2.34E-01	2.80E-01	3.06E-01
			78.34	*	96.00	1.64E-01		2.80E-01
+		SC-46	889.25		99.98	-6.76E+02	3.68E+03	3.92E+03
			1120.51		99.99	-1.45E+03		3.68E+03
+	@	V-48	983.52		99.98	1.00E+26	1.00E+26	1.00E+26
	@		1312.10		97.50	1.00E+26		1.00E+26
+		CR-51	320.08		9.83	-3.04E+11	1.02E+12	1.02E+12
+		MN-54	834.83		99.97	1.42E+00	5.78E+00	5.78E+00
+		CO-56	846.75		99.96	3.37E+02	5.06E+03	6.36E+03
			1037.75		14.03	-1.39E+04		4.98E+04
			1238.25		67.00	-5.95E+02		5.18E+03
			1771.40		15.51	2.96E+03		1.44E+04
			2598.48		16.90	-2.81E+02		5.06E+03
+		CO-57	122.06	*	85.51	6.30E+01	6.55E+00	6.55E+00
			136.48	*	10.60	7.76E+01		4.82E+01
+		CO-58	810.76		99.40	-3.59E+03	1.67E+04	1.67E+04
+		FE-59	1099.22		56.50	6.28E+06	8.33E+06	1.62E+07
			1291.56		43.20	6.70E+05		8.33E+06
+		CO-60	1173.22	*	100.00	1.26E+02	7.99E-01	1.54E+00
			1332.49	*	100.00	1.25E+02		7.99E-01
+		ZN-65	1115.52		50.75	8.80E-01	2.53E+01	2.53E+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	2.32E+03	1.86E+02	7.39E+02
			136.00		59.20	3.05E+02		1.86E+02
			264.65		59.80	-1.00E+02		2.24E+02
			279.53		25.20	1.15E+02		5.47E+02
			400.65		11.40	2.38E+02		1.43E+03
+		RB-82	776.52		13.00	-6.75E+12	1.13E+13	1.13E+13
+		RB-83	520.41		46.00	-6.84E+02	3.88E+03	3.88E+03
			529.64		30.30	1.55E+01		5.92E+03
			552.65		16.40	8.17E+03		1.09E+04
+		KR-85	513.99		0.43	1.59E+00	1.00E+02	1.00E+02
+		SR-85	513.99		99.27	4.74E+02	3.00E+04	3.00E+04

Analysis Report for 1707093-01

GAS-1402

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		Y-88	898.02		93.40	3.02E+02	2.65E+02	6.81E+02
			1836.01		99.38	3.17E+02		2.65E+02
+		MO-93	263.06		56.72	5.54E-02	2.47E-01	6.24E-01
			684.67		99.68	1.30E-01		5.29E-01
			1477.11		99.08	1.06E-01		2.47E-01
+		NB-93M	16.57		9.43	0.00E+00	1.35E+01	1.35E+01
+		NB-94	702.63		100.00	1.53E-01	4.50E-01	4.50E-01
			871.10		100.00	3.57E-01		6.03E-01
+		NB-95	765.79		99.81	1.36E+08	6.04E+08	6.04E+08
+	@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26
+		ZR-95	724.18		43.70	2.59E+04	8.36E+04	1.01E+05
			756.72		55.30	3.07E+04		8.36E+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	-2.45E+06	5.13E+07	5.13E+07
+		RU-106	621.84		9.80	-8.46E+00	3.18E+01	3.18E+01
+		AG-108M	433.93		89.90	3.45E-02	4.25E-01	4.25E-01
			614.37		90.40	-1.72E-01		4.86E-01
			722.95		90.50	-2.62E-01		5.11E-01
+		CD-109	88.03	*	3.72	2.61E+03	5.17E+01	5.17E+01
+		AG-110M	657.75		93.14	-7.87E-01	1.40E+01	1.51E+01
			677.61		10.53	9.41E+00		7.91E+01
			706.67		16.46	-8.18E+00		5.05E+01
			763.93		21.98	-1.95E+00		4.14E+01
			884.67		71.63	1.39E+00		1.62E+01
			1384.27		23.94	-8.76E-01		1.40E+01
+		CD-113M	263.70		0.02	7.86E+02	1.48E+03	1.48E+03
+		SN-113	255.12		1.93	1.44E+03	3.26E+02	8.99E+03
			391.69		64.90	1.15E+02		3.26E+02
+		TE123M	159.00		84.10	-8.16E+00	1.28E+02	1.28E+02
+		SB-124	602.71		97.87	-2.80E+04	7.24E+04	8.42E+04
			645.85		7.26	1.27E+05		1.21E+06
			722.78		11.10	-7.73E+05		8.06E+05
			1691.02		49.00	8.35E+03		7.24E+04
+		I-125	35.49		6.49	-2.41E+05	1.98E+06	1.98E+06
+		SB-125	176.33		6.89	3.64E+00	2.67E+00	7.39E+00
			427.89		29.33	2.07E+00		2.67E+00
			463.38		10.35	3.57E+00		8.20E+00
			600.56		17.80	8.24E-01		4.88E+00
			635.90		11.32	-2.78E-01		7.86E+00
+	@	SB-126	414.70		83.30	1.00E+26	1.00E+26	1.00E+26
	@		666.33		99.60	1.00E+26		1.00E+26
	@		695.00		99.60	1.00E+26		1.00E+26
	@		720.50		53.80	1.00E+26		1.00E+26
+		SN-126	87.57	*	37.00	5.39E+01	1.07E+00	1.07E+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

Analysis Report for 1707093-01

GAS-1402

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	@	SB-127	783.80		14.70	1.00E+26	1.00E+26	1.00E+26
+		I-129	29.78		57.00	-1.22E+01	1.95E+00	1.95E+00
			33.60		13.20	5.34E+00		6.61E+00
			39.58		7.52	-1.14E+01		6.11E+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	-8.27E-02	6.72E-01	8.18E-01
			302.84		17.80	-3.63E-01		2.07E+00
			356.01		60.00	4.07E-02		6.72E-01
+	@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	@	XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26
+		CS-134	563.23		8.38	5.11E+00	1.13E+00	1.14E+01
			569.32		15.43	-2.16E+00		6.01E+00
			604.70		97.60	-8.88E-01		1.13E+00
			795.84		85.40	7.90E-02		1.63E+00
			801.93		8.73	-1.99E+00		1.57E+01
+		CS-135	268.24		16.00	-4.28E-01	1.84E+00	1.84E+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	7.98E+01	9.32E-01	9.32E-01
+		LA-138	788.74		34.00	-1.45E-01	3.37E-01	1.51E+00
			1435.80		66.00	-4.16E-02		3.37E-01
+		CE-139	165.85	*	80.35	8.49E+01	7.37E+01	7.37E+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	1.07E+09	2.99E+09	2.99E+09
+	@	CE-143	57.36		11.80	1.00E+26	1.00E+26	1.00E+26
	@		293.26		42.00	1.00E+26		1.00E+26

Analysis Report for 1707093-01

GAS-1402

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
@	CE-143	664.55	5.20	1.00E+26	1.00E+26	1.00E+26
+	CE-144	133.54	10.80	-3.65E+01	2.11E+01	2.11E+01
+	PM-144	476.78	42.00	2.92E+00	3.31E+00	7.05E+00
		618.01	98.60	1.45E+00		3.31E+00
		696.49	99.49	1.64E+00		3.40E+00
+	PM-145	36.85	21.70	6.05E+00	1.57E+00	3.01E+00
		37.36	39.70	1.14E+00		1.57E+00
		42.30	15.10	-2.53E+00		3.46E+00
		72.40	2.31	2.19E+00		1.14E+01
+	PM-146	453.90	39.94	1.38E-01	1.42E+00	1.42E+00
		735.90	14.01	-1.79E+00		4.73E+00
		747.13	13.10	1.49E+00		5.23E+00
+ @	ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26
@		531.02	13.10	1.00E+26		1.00E+26
+ @	PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26
+	EU-152	121.78	20.50	1.99E+01	1.62E+00	1.70E+00
		244.69	5.40	-1.38E+00		6.22E+00
		344.27	19.13	-6.04E-01		1.93E+00
		778.89	9.20	-4.20E+00		6.22E+00
		964.01	10.40	2.27E+00		7.85E+00
		1085.78	7.22	4.49E+00		1.05E+01
		1112.02	9.60	4.43E+00		8.07E+00
		1407.95	14.94	1.13E-01		1.62E+00
+	GD-153	97.43	31.30	9.14E-01	1.08E+01	1.08E+01
		103.18	22.20	7.97E+00		1.55E+01
+	EU-154	123.07	40.50	1.04E+01	9.21E-01	9.21E-01
		723.30	19.70	-1.49E+00		2.91E+00
		873.19	11.50	-4.15E-01		6.57E+00
		996.32	10.30	-3.12E+00		7.55E+00
		1004.76	17.90	1.89E+00		4.42E+00
		1274.45	35.50	5.32E-01		9.73E-01
+	EU-155	86.50	30.90	2.52E+01	1.16E+00	2.49E+00
		105.30	20.70	-5.17E-01		1.16E+00
+ @	EU-156	811.77	10.40	1.00E+26	1.00E+26	1.00E+26
@		1153.47	7.20	1.00E+26		1.00E+26
@		1230.71	8.90	1.00E+26		1.00E+26
+	HO-166M	184.41	72.60	1.16E-01	3.62E-01	3.62E-01
		280.45	29.60	7.17E-02		1.01E+00
		410.94	11.10	-2.65E-01		3.27E+00
		711.69	54.10	-2.96E-01		8.26E-01
+	TM-171	66.72	0.14	2.78E+02	5.03E+02	5.03E+02
+	HF-172	67.35	5.31	9.58E+00	4.32E+00	1.38E+01
		125.81	11.30	1.03E+00		4.32E+00
+ @	LU-172	181.53	20.60	1.00E+26	1.00E+26	1.00E+26
@		900.72	29.81	1.00E+26		1.00E+26
@		1093.66	62.50	1.00E+26		1.00E+26
+	LU-173	100.72	5.24	-1.27E+01	6.01E+00	1.32E+01
		272.11	21.20	7.69E-01		6.01E+00
+	HF-175	343.40	84.00	-5.06E+03	1.36E+04	1.36E+04

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GAS-1402

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	LU-176	88.34		13.30	1.41E+02	3.21E-01	4.40E+00
		201.83		86.00	1.36E-01		3.21E-01
		306.78		94.00	-2.99E-01		3.23E-01
+	HF-181	133.02		41.70	-4.16E+06	1.36E+07	1.36E+07
		345.85		17.20	-6.23E+06		6.09E+07
		482.03		82.80	-4.35E+06		1.48E+07
+	TA-182	67.75		41.20	2.57E+02	3.70E+02	3.70E+02
		1121.30		34.90	4.99E+02		1.02E+03
		1189.05		16.23	6.22E+02		1.65E+03
		1221.41		26.98	3.68E+02		7.83E+02
		1231.02		11.44	7.06E+02		1.76E+03
+	IR-192	308.46		29.68	-6.80E+03	1.72E+04	2.10E+04
		468.07		48.10	-1.14E+03		1.72E+04
+	HG-203	279.19		77.30	4.09E+05	2.71E+06	2.71E+06
+	TL-204	374.74		94.11	-2.16E-01	5.96E-01	5.96E-01
		899.15		99.16	2.32E-01		1.12E+00
		911.74		91.10	2.41E-01		1.22E+00
+	BI-207	569.67		97.72	-1.37E-01	3.80E-01	3.80E-01
		1063.62		74.90	2.53E-02		8.98E-01
+	TL-208	583.14		30.22	5.89E-01	5.24E-01	1.23E+00
		860.37		4.48	-4.14E+00		1.30E+01
		2614.66		35.85	-3.56E-02		5.24E-01
+	BI-210M	262.00		45.00	1.76E-01	6.55E-01	6.55E-01
		300.00		23.00	-2.19E-01		1.31E+00
+	PB-210	46.50		4.25	-6.99E+01	1.24E+01	1.24E+01
+	PB-211	404.84		2.90	4.59E+00	1.23E+01	1.23E+01
		831.96		2.90	-2.13E+00		1.87E+01
+	BI-212	727.17		11.80	1.79E+00	3.91E+00	3.91E+00
		1620.62		2.75	3.00E+00		7.31E+00
+	PB-212	238.63	*	44.60	5.41E-01	7.00E-01	7.00E-01
		300.09		3.41	-1.48E+00		8.81E+00
+	BI-214	609.31		46.30	5.99E-01	9.44E-01	9.44E-01
		1120.29		15.10	-1.52E+00		3.84E+00
		1764.49		15.80	5.60E-01		1.32E+00
		2204.22		4.98	-1.70E+00		3.51E+00
+	PB-214	295.21		19.19	3.60E-01	9.04E-01	1.58E+00
		351.92		37.19	5.53E-01		9.04E-01
+	RN-219	401.80		6.50	-1.66E+00	5.47E+00	5.47E+00
+	RA-223	323.87		3.88	-3.40E+00	7.99E+00	7.99E+00
+	RA-224	240.98		3.95	2.98E+00	7.68E+00	7.68E+00
+	@ RA-225	40.00		31.00	1.00E+26	1.00E+26	1.00E+26
+	RA-226	186.21	*	3.28	4.42E+00	8.36E+00	8.36E+00
+	TH-227	50.10		8.40	2.42E+01	2.63E+00	6.85E+00
		236.00		11.50	9.36E-01		2.63E+00
		256.20		6.30	9.78E-01		4.64E+00
+	AC-228	338.32		11.40	1.45E+00	2.36E+00	2.87E+00
		911.07		27.70	4.65E-01		2.36E+00
		969.11		16.60	1.43E+00		3.96E+00

Analysis Report for 1707093-01

GAS-1402

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TH-230	48.44		16.90	5.55E+00	3.38E+00	3.38E+00
		62.85		4.60	-9.60E+01		4.87E+00
		67.67		0.37	4.68E+01		6.75E+01
+	PA-231	283.67		1.60	-1.27E+01	1.32E+01	1.83E+01
		302.67		2.30	-2.32E+00		1.32E+01
+	TH-231	25.64		14.70	0.00E+00	2.12E-01	2.12E-01
		84.21		6.40	-1.41E+01		3.68E+00
+	PA-233	311.98		38.60	3.33E+11	5.26E+11	5.26E+11
+	PA-234	131.20		20.40	1.87E-01	8.40E-01	8.40E-01
		733.99		8.80	-1.00E+00		5.18E+00
		946.00		12.00	-2.78E+00		6.00E+00
+	PA-234M	1001.03		0.92	1.17E+01	6.82E+01	6.82E+01
+	TH-234	63.29		3.80	-4.96E+00	5.95E+00	5.95E+00
+	U-235	143.76		10.50	1.02E-01	2.14E+00	2.14E+00
		163.35		4.70	6.56E+00		5.28E+00
		205.31		4.70	4.67E-01		5.74E+00
+	NP-237	86.50		12.60	4.13E+01	4.07E+00	4.07E+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	1.77E+02	2.79E+00	2.79E+00
+	AM-243	74.67		66.00	-3.39E-01	3.46E-01	3.46E-01
+	CM-243	209.75		3.29	7.67E+00	2.31E+00	9.37E+00
		228.14		10.60	-2.36E+00		3.02E+00
		277.60		14.00	3.97E-01		2.31E+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

Analysis Report for 1707093-01

GAS-1402

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	3.47E+06	3.47E+06	1.44E+06	1.71E+06
	NA-22	1274.54		99.94	5.95E-01	5.95E-01	3.25E-01	2.85E-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	1.97E-01	1.97E-01	6.13E-02	9.12E-02
	K-40	1460.81		10.67	1.98E+00	1.98E+00	-2.19E-01	9.27E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
+	TI-44	67.88	*	94.40	3.06E-01	2.80E-01	2.34E-01	1.52E-01
		78.34	*	96.00	2.80E-01		1.64E-01	1.39E-01
	SC-46	889.25		99.98	3.92E+03	3.68E+03	-6.76E+02	1.93E+03
		1120.51		99.99	3.68E+03		-1.45E+03	1.81E+03
@	V-48	983.52		99.98	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1312.10		97.50	1.00E+26		1.00E+26	1.00E+20
	CR-51	320.08		9.83	1.02E+12	1.02E+12	-3.04E+11	5.03E+11
	MN-54	834.83		99.97	5.78E+00	5.78E+00	1.42E+00	2.85E+00
	CO-56	846.75		99.96	6.36E+03	5.06E+03	3.37E+02	3.13E+03
		1037.75		14.03	4.98E+04		-1.39E+04	2.45E+04
		1238.25		67.00	5.18E+03		-5.95E+02	2.50E+03
		1771.40		15.51	1.44E+04		2.96E+03	6.65E+03
		2598.48		16.90	5.06E+03		-2.81E+02	1.96E+03
+	CO-57	122.06	*	85.51	6.55E+00	6.55E+00	6.30E+01	3.25E+00
		136.48	*	10.60	4.82E+01		7.76E+01	2.39E+01
	CO-58	810.76		99.40	1.67E+04	1.67E+04	-3.59E+03	8.21E+03
	FE-59	1099.22		56.50	1.62E+07	8.33E+06	6.28E+06	7.96E+06
		1291.56		43.20	8.33E+06		6.70E+05	3.98E+06
+	CO-60	1173.22	*	100.00	1.54E+00	7.99E-01	1.26E+02	7.62E-01
		1332.49	*	100.00	7.99E-01		1.25E+02	3.91E-01
	ZN-65	1115.52		50.75	2.53E+01	2.53E+01	8.80E-01	1.24E+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	7.39E+02	1.86E+02	2.32E+03	3.66E+02
		136.00		59.20	1.86E+02		3.05E+02	9.22E+01
		264.65		59.80	2.24E+02		-1.00E+02	1.11E+02
		279.53		25.20	5.47E+02		1.15E+02	2.70E+02
		400.65		11.40	1.43E+03		2.38E+02	7.08E+02
	RB-82	776.52		13.00	1.13E+13	1.13E+13	-6.75E+12	5.56E+12
	RB-83	520.41		46.00	3.88E+03	3.88E+03	-6.84E+02	1.91E+03
		529.64		30.30	5.92E+03		1.55E+01	2.91E+03
		552.65		16.40	1.09E+04		8.17E+03	5.38E+03
	KR-85	513.99		0.43	1.00E+02	1.00E+02	1.59E+00	4.94E+01
	SR-85	513.99		99.27	3.00E+04	3.00E+04	4.74E+02	1.48E+04
	Y-88	898.02		93.40	6.81E+02	2.65E+02	3.02E+02	3.36E+02
		1836.01		99.38	2.65E+02		3.17E+02	1.25E+02
	MO-93	263.06		56.72	6.24E-01	2.47E-01	5.54E-02	3.08E-01
		684.67		99.68	5.29E-01		1.30E-01	2.60E-01
		1477.11		99.08	2.47E-01		1.06E-01	1.15E-01
	NB-93M	16.57		9.43	1.35E+01	1.35E+01	0.00E+00	0.00E+00
	NB-94	702.63		100.00	4.50E-01	4.50E-01	1.53E-01	2.21E-01
		871.10		100.00	6.03E-01		3.57E-01	2.97E-01
	NB-95	765.79		99.81	6.04E+08	6.04E+08	1.36E+08	2.97E+08
@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	ZR-95	724.18		43.70	1.01E+05	8.36E+04	2.59E+04	4.99E+04

Analysis Report for 1707093-01

GAS-1402

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	ZR-95	756.72		55.30	8.36E+04	8.36E+04	3.07E+04	4.11E+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	5.13E+07	5.13E+07	-2.45E+06	2.53E+07
	RU-106	621.84		9.80	3.18E+01	3.18E+01	-8.46E+00	1.56E+01
	AG-108M	433.93		89.90	4.25E-01	4.25E-01	3.45E-02	2.10E-01
		614.37		90.40	4.86E-01		-1.72E-01	2.39E-01
		722.95		90.50	5.11E-01		-2.62E-01	2.51E-01
+	CD-109	88.03	*	3.72	5.17E+01	5.17E+01	2.61E+03	2.57E+01
	AG-110M	657.75		93.14	1.51E+01	1.40E+01	-7.87E-01	7.47E+00
		677.61		10.53	7.91E+01		9.41E+00	3.89E+01
		706.67		16.46	5.05E+01		-8.18E+00	2.49E+01
		763.93		21.98	4.14E+01		-1.95E+00	2.04E+01
		884.67		71.63	1.62E+01		1.39E+00	7.98E+00
		1384.27		23.94	1.40E+01		-8.76E-01	6.53E+00
	CD-113M	263.70		0.02	1.48E+03	1.48E+03	7.86E+02	7.30E+02
	SN-113	255.12		1.93	8.99E+03	3.26E+02	1.44E+03	4.44E+03
		391.69		64.90	3.26E+02		1.15E+02	1.61E+02
	TE123M	159.00		84.10	1.28E+02	1.28E+02	-8.16E+00	6.32E+01
	SB-124	602.71		97.87	8.42E+04	7.24E+04	-2.80E+04	4.15E+04
		645.85		7.26	1.21E+06		1.27E+05	5.94E+05
		722.78		11.10	8.06E+05		-7.73E+05	3.97E+05
		1691.02		49.00	7.24E+04		8.35E+03	3.33E+04
	I-125	35.49		6.49	1.98E+06	1.98E+06	-2.41E+05	9.78E+05
	SB-125	176.33		6.89	7.39E+00	2.67E+00	3.64E+00	3.66E+00
		427.89		29.33	2.67E+00		2.07E+00	1.32E+00
		463.38		10.35	8.20E+00		3.57E+00	4.05E+00
		600.56		17.80	4.88E+00		8.24E-01	2.40E+00
		635.90		11.32	7.86E+00		-2.78E-01	3.87E+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	1.07E+00	1.07E+00	5.39E+01	5.32E-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	1.95E+00	1.95E+00	-1.22E+01	9.63E-01
		33.60		13.20	6.61E+00		5.34E+00	3.27E+00
		39.58		7.52	6.11E+00		-1.14E+01	3.02E+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	8.18E-01	6.72E-01	-8.27E-02	4.05E-01
		302.84		17.80	2.07E+00		-3.63E-01	1.02E+00
		356.01		60.00	6.72E-01		4.07E-02	3.32E-01
@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	CS-134	563.23		8.38	1.14E+01	1.13E+00	5.11E+00	5.62E+00

Analysis Report for 1707093-01

GAS-1402

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	569.32		15.43	6.01E+00	1.13E+00	-2.16E+00	2.95E+00
		604.70		97.60	1.13E+00		-8.88E-01	5.56E-01
		795.84		85.40	1.63E+00		7.90E-02	8.02E-01
		801.93		8.73	1.57E+01		-1.99E+00	7.73E+00
	CS-135	268.24		16.00	1.84E+00	1.84E+00	-4.28E-01	9.10E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
@	CS-136	153.22		7.46	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	9.32E-01	9.32E-01	7.98E+01	4.62E-01
	LA-138	788.74		34.00	1.51E+00	3.37E-01	-1.45E-01	7.42E-01
		1435.80		66.00	3.37E-01		-4.16E-02	1.59E-01
+	CE-139	165.85	*	80.35	7.37E+01	7.37E+01	8.49E+01	3.65E+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	2.99E+09	2.99E+09	1.07E+09	1.48E+09
@	CE-143	57.36		11.80	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		293.26		42.00	1.00E+26		1.00E+26	1.00E+20
@		664.55		5.20	1.00E+26		1.00E+26	1.00E+20
	CE-144	133.54		10.80	2.11E+01	2.11E+01	-3.65E+01	1.04E+01
	PM-144	476.78		42.00	7.05E+00	3.31E+00	2.92E+00	3.48E+00
		618.01		98.60	3.31E+00		1.45E+00	1.63E+00
		696.49		99.49	3.40E+00		1.64E+00	1.67E+00
	PM-145	36.85		21.70	3.01E+00	1.57E+00	6.05E+00	1.49E+00
		37.36		39.70	1.57E+00		1.14E+00	7.74E-01
		42.30		15.10	3.46E+00		-2.53E+00	1.72E+00
		72.40		2.31	1.14E+01		2.19E+00	5.63E+00
	PM-146	453.90		39.94	1.42E+00	1.42E+00	1.38E-01	7.01E-01
		735.90		14.01	4.73E+00		-1.79E+00	2.33E+00
		747.13		13.10	5.23E+00		1.49E+00	2.58E+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	1.70E+00	1.62E+00	1.99E+01	8.46E-01
		244.69		5.40	6.22E+00		-1.38E+00	3.07E+00
		344.27		19.13	1.93E+00		-6.04E-01	9.52E-01
		778.89		9.20	6.22E+00		-4.20E+00	3.06E+00
		964.01		10.40	7.85E+00		2.27E+00	3.87E+00
		1085.78		7.22	1.05E+01		4.49E+00	5.16E+00

Analysis Report for 1707093-01

GAS-1402

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-152	1112.02	9.60	8.07E+00	1.62E+00	4.43E+00	3.97E+00
	1407.95	14.94	1.62E+00		1.13E-01	7.61E-01
GD-153	97.43	31.30	1.08E+01	1.08E+01	9.14E-01	5.35E+00
	103.18	22.20	1.55E+01		7.97E+00	7.65E+00
EU-154	123.07	40.50	9.21E-01	9.21E-01	1.04E+01	4.57E-01
	723.30	19.70	2.91E+00		-1.49E+00	1.43E+00
	873.19	11.50	6.57E+00		-4.15E-01	3.24E+00
	996.32	10.30	7.55E+00		-3.12E+00	3.72E+00
	1004.76	17.90	4.42E+00		1.89E+00	2.18E+00
	1274.45	35.50	9.73E-01		5.32E-01	4.66E-01
EU-155	86.50	30.90	2.49E+00	1.16E+00	2.52E+01	1.24E+00
	105.30	20.70	1.16E+00		-5.17E-01	5.73E-01
@ EU-156	811.77	10.40	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1153.47	7.20	1.00E+26		1.00E+26	1.00E+20
@	1230.71	8.90	1.00E+26		1.00E+26	1.00E+20
HO-166M	184.41	72.60	3.62E-01	3.62E-01	1.16E-01	1.79E-01
	280.45	29.60	1.01E+00		7.17E-02	4.99E-01
	410.94	11.10	3.27E+00		-2.65E-01	1.61E+00
	711.69	54.10	8.26E-01		-2.96E-01	4.06E-01
TM-171	66.72	0.14	5.03E+02	5.03E+02	2.78E+02	2.49E+02
HF-172	67.35	5.31	1.38E+01	4.32E+00	9.58E+00	6.85E+00
	125.81	11.30	4.32E+00		1.03E+00	2.13E+00
@ LU-172	181.53	20.60	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	900.72	29.81	1.00E+26		1.00E+26	1.00E+20
@	1093.66	62.50	1.00E+26		1.00E+26	1.00E+20
LU-173	100.72	5.24	1.32E+01	6.01E+00	-1.27E+01	6.53E+00
	272.11	21.20	6.01E+00		7.69E-01	2.97E+00
HF-175	343.40	84.00	1.36E+04	1.36E+04	-5.06E+03	6.70E+03
LU-176	88.34	13.30	4.40E+00	3.21E-01	1.41E+02	2.19E+00
	201.83	86.00	3.21E-01		1.36E-01	1.59E-01
	306.78	94.00	3.23E-01		-2.99E-01	1.59E-01
HF-181	133.02	41.70	1.36E+07	1.36E+07	-4.16E+06	6.71E+06
	345.85	17.20	6.09E+07		-6.23E+06	3.01E+07
	482.03	82.80	1.48E+07		-4.35E+06	7.31E+06
TA-182	67.75	41.20	3.70E+02	3.70E+02	2.57E+02	1.83E+02
	1121.30	34.90	1.02E+03		4.99E+02	4.99E+02
	1189.05	16.23	1.65E+03		6.22E+02	8.04E+02
	1221.41	26.98	7.83E+02		3.68E+02	3.79E+02
	1231.02	11.44	1.76E+03		7.06E+02	8.50E+02
IR-192	308.46	29.68	2.10E+04	1.72E+04	-6.80E+03	1.04E+04
	468.07	48.10	1.72E+04		-1.14E+03	8.47E+03
HG-203	279.19	77.30	2.71E+06	2.71E+06	4.09E+05	1.34E+06
TL-204	374.74	94.11	5.96E-01	5.96E-01	-2.16E-01	2.94E-01
	899.15	99.16	1.12E+00		2.32E-01	5.55E-01
	911.74	91.10	1.22E+00		2.41E-01	6.03E-01
BI-207	569.67	97.72	3.80E-01	3.80E-01	-1.37E-01	1.87E-01
	1063.62	74.90	8.98E-01		2.53E-02	4.42E-01
TL-208	583.14	30.22	1.23E+00	5.24E-01	5.89E-01	6.05E-01
	860.37	4.48	1.30E+01		-4.14E+00	6.41E+00
	2614.66	35.85	5.24E-01		-3.56E-02	2.38E-01
BI-210M	262.00	45.00	6.55E-01	6.55E-01	1.76E-01	3.24E-01
	300.00	23.00	1.31E+00		-2.19E-01	6.45E-01
PB-210	46.50	4.25	1.24E+01	1.24E+01	-6.99E+01	6.15E+00

Analysis Report for 1707093-01

GAS-1402

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PB-211	404.84		2.90	1.23E+01	1.23E+01	4.59E+00	6.09E+00
		831.96		2.90	1.87E+01		-2.13E+00	9.22E+00
	BI-212	727.17		11.80	3.91E+00	3.91E+00	1.79E+00	1.92E+00
		1620.62		2.75	7.31E+00		3.00E+00	3.40E+00
+	PB-212	238.63	*	44.60	7.00E-01	7.00E-01	5.41E-01	3.46E-01
		300.09		3.41	8.81E+00		-1.48E+00	4.35E+00
	BI-214	609.31		46.30	9.44E-01	9.44E-01	5.99E-01	4.65E-01
		1120.29		15.10	3.84E+00		-1.52E+00	1.89E+00
		1764.49		15.80	1.32E+00		5.60E-01	6.11E-01
		2204.22		4.98	3.51E+00		-1.70E+00	1.59E+00
	PB-214	295.21		19.19	1.58E+00	9.04E-01	3.60E-01	7.82E-01
		351.92		37.19	9.04E-01		5.53E-01	4.46E-01
	RN-219	401.80		6.50	5.47E+00	5.47E+00	-1.66E+00	2.70E+00
	RA-223	323.87		3.88	7.99E+00	7.99E+00	-3.40E+00	3.94E+00
	RA-224	240.98		3.95	7.68E+00	7.68E+00	2.98E+00	3.80E+00
@	RA-225	40.00		31.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
+	RA-226	186.21	*	3.28	8.36E+00	8.36E+00	4.42E+00	4.14E+00
	TH-227	50.10		8.40	6.85E+00	2.63E+00	2.42E+01	3.41E+00
		236.00		11.50	2.63E+00		9.36E-01	1.30E+00
		256.20		6.30	4.64E+00		9.78E-01	2.29E+00
	AC-228	338.32		11.40	2.87E+00	2.36E+00	1.45E+00	1.42E+00
		911.07		27.70	2.36E+00		4.65E-01	1.17E+00
		969.11		16.60	3.96E+00		1.43E+00	1.95E+00
	TH-230	48.44		16.90	3.38E+00	3.38E+00	5.55E+00	1.68E+00
		62.85		4.60	4.87E+00		-9.60E+01	2.41E+00
		67.67		0.37	6.75E+01		4.68E+01	3.35E+01
	PA-231	283.67		1.60	1.83E+01	1.32E+01	-1.27E+01	9.03E+00
		302.67		2.30	1.32E+01		-2.32E+00	6.53E+00
	TH-231	25.64		14.70	2.12E-01	2.12E-01	0.00E+00	0.00E+00
		84.21		6.40	3.68E+00		-1.41E+01	1.82E+00
	PA-233	311.98		38.60	5.26E+11	5.26E+11	3.33E+11	2.60E+11
	PA-234	131.20		20.40	8.40E-01	8.40E-01	1.87E-01	4.15E-01
		733.99		8.80	5.18E+00		-1.00E+00	2.55E+00
		946.00		12.00	6.00E+00		-2.78E+00	2.96E+00
	PA-234M	1001.03		0.92	6.82E+01	6.82E+01	1.17E+01	3.36E+01
	TH-234	63.29		3.80	5.95E+00	5.95E+00	-4.96E+00	2.95E+00
	U-235	143.76		10.50	2.14E+00	2.14E+00	1.02E-01	1.06E+00
		163.35		4.70	5.28E+00		6.56E+00	2.61E+00
		205.31		4.70	5.74E+00		4.67E-01	2.84E+00
	NP-237	86.50		12.60	4.07E+00	4.07E+00	4.13E+01	2.03E+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	2.79E+00	2.79E+00	1.77E+02	1.39E+00
	AM-243	74.67		66.00	3.46E-01	3.46E-01	-3.39E-01	1.71E-01
	CM-243	209.75		3.29	9.37E+00	2.31E+00	7.67E+00	4.64E+00
		228.14		10.60	3.02E+00		-2.36E+00	1.50E+00
		277.60		14.00	2.31E+00		3.97E-01	1.14E+00

Analysis Report for 1707093-01

GAS-1402

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

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

Sample Title: GAS-1402

Elapsed Live time: 1800
Elapsed Real Time: 1817

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	11	565	711	733	1731
33:	1697	960	751	850	1128	895	808	897
41:	1015	1150	1298	1513	1608	1789	2018	2531
49:	3531	4362	3983	3795	3715	3769	3812	4050
57:	4246	4635	16133	58508	5898	1005	999	1050
65:	1103	1251	1418	1406	1409	1385	1298	1294
73:	1379	1314	1316	1247	1392	1413	1275	1280
81:	1268	1325	1322	1395	1497	1488	2133	17442
89:	9302	752	691	774	746	717	667	679
97:	693	651	719	683	635	658	729	694
105:	668	644	637	674	713	684	676	672
113:	688	722	697	717	711	706	753	701
121:	891	3507	1987	645	618	634	628	593
129:	642	615	682	623	616	655	637	822
137:	956	609	661	612	611	625	610	599
145:	621	573	598	629	569	605	556	607
153:	598	568	608	581	606	580	618	537
161:	605	600	535	593	618	882	559	565
169:	567	530	588	591	581	567	571	596
177:	575	593	577	551	571	591	578	606
185:	676	625	631	617	589	644	667	629
193:	660	569	619	598	609	650	626	602
201:	657	662	572	583	572	606	545	571
209:	647	660	612	684	624	638	659	680
217:	703	703	661	677	636	630	683	648
225:	678	642	623	616	586	598	638	620
233:	610	597	626	578	550	643	674	596
241:	534	574	549	505	509	523	526	506
249:	518	496	508	551	534	488	490	508
257:	537	472	459	509	475	504	479	490
265:	492	467	453	492	464	501	482	473
273:	471	391	454	482	489	482	457	463
281:	475	456	436	436	425	409	455	408
289:	460	433	391	446	440	435	452	435
297:	434	418	403	421	423	436	423	426
305:	419	441	426	396	392	473	433	436
313:	455	419	430	416	423	375	448	421
321:	421	404	429	374	406	390	417	383
329:	406	410	424	390	370	387	388	437
337:	409	416	409	423	403	409	385	372
345:	374	392	397	363	383	379	416	455
353:	413	422	396	416	397	383	392	373
361:	397	380	377	350	341	400	392	406

369:	417	356	378	382	383	374	332	373

Sample Title: GAS-1402

Channel								
377:	366	379	400	372	367	390	343	399
385:	383	375	400	386	391	406	393	463
393:	371	403	393	394	369	397	387	402
401:	390	375	384	370	403	378	387	365
409:	399	398	381	384	362	403	424	335
417:	383	379	361	410	386	394	397	375
425:	392	366	378	380	439	429	347	373
433:	370	394	373	402	401	383	380	421
441:	346	400	394	397	426	409	400	391
449:	393	415	394	404	426	388	366	384
457:	378	382	385	348	415	390	432	428
465:	400	417	409	398	416	361	399	393
473:	404	374	382	389	331	356	340	312
481:	316	297	327	329	303	323	323	288
489:	267	311	313	282	295	302	294	310
497:	297	257	277	292	273	309	281	277
505:	258	268	268	255	285	295	367	321
513:	258	256	260	259	280	237	289	258
521:	250	267	257	271	271	248	250	265
529:	246	261	258	262	245	251	234	239
537:	239	250	252	226	231	193	219	262
545:	237	227	219	223	223	259	248	231
553:	228	233	231	190	229	229	215	229
561:	234	234	225	227	255	227	212	202
569:	233	218	214	219	216	205	218	214
577:	209	233	208	214	228	228	270	241
585:	208	238	212	200	205	240	218	199
593:	198	218	194	234	231	182	194	249
601:	200	190	195	200	185	202	224	212
609:	223	241	194	222	191	221	221	209
617:	213	201	218	190	206	178	203	201
625:	192	201	206	184	196	214	190	193
633:	199	180	208	193	205	198	199	222
641:	185	190	237	219	202	194	176	194
649:	206	183	202	208	226	194	215	176
657:	245	237	481	2402	11159	10428	1430	220
665:	215	184	181	167	162	178	171	195
673:	183	193	177	199	179	206	190	165
681:	195	166	183	165	176	209	176	180
689:	168	180	167	168	195	175	169	189
697:	188	170	200	185	166	182	206	167
705:	174	178	165	157	171	186	175	188
713:	166	192	187	204	180	171	194	183
721:	199	164	185	152	167	204	232	164
729:	182	176	168	170	170	165	203	183
737:	166	178	182	195	207	175	177	195
745:	164	172	192	183	197	201	184	180
753:	204	174	191	183	197	186	186	173
761:	183	169	194	169	195	173	203	205
769:	173	195	193	204	188	199	193	192
777:	178	185	159	202	198	225	196	180
785:	196	194	172	224	175	206	213	215
793:	202	191	206	204	210	199	205	190

801:	205	194	199	176	192	193	179	188

Sample Title: GAS-1402

Channel								
809:	218	214	188	201	176	205	207	207
817:	193	219	212	222	221	240	229	202
825:	236	192	209	203	195	210	192	207
833:	210	204	220	200	231	198	208	220
841:	213	189	211	236	221	219	218	215
849:	202	234	220	225	219	266	231	214
857:	214	202	201	246	204	250	234	245
865:	227	192	210	248	222	218	243	236
873:	228	231	226	229	219	240	249	222
881:	232	245	222	220	256	246	228	240
889:	223	234	262	216	266	218	258	254
897:	276	272	275	254	248	250	266	270
905:	254	240	251	231	291	254	264	281
913:	230	233	259	245	253	255	264	259
921:	261	289	257	283	286	292	265	285
929:	310	249	257	249	260	255	266	283
937:	278	290	256	295	270	289	281	303
945:	281	299	290	288	315	326	297	270
953:	275	282	308	252	297	296	272	311
961:	280	286	238	269	232	266	241	247
969:	255	211	190	218	209	199	227	241
977:	200	220	220	202	225	196	200	205
985:	224	212	204	209	212	204	191	233
993:	186	193	202	187	219	186	199	190
1001:	214	193	201	203	191	204	195	191
1009:	180	183	189	187	207	187	216	207
1017:	168	183	191	197	215	186	207	209
1025:	214	193	207	194	190	196	205	202
1033:	183	206	190	187	199	162	202	168
1041:	200	192	200	193	179	177	182	178
1049:	186	186	176	211	175	176	177	189
1057:	174	182	196	177	180	191	183	190
1065:	185	184	181	178	194	184	192	188
1073:	161	192	171	183	176	191	191	171
1081:	176	183	181	187	202	207	191	177
1089:	193	174	165	161	179	176	174	216
1097:	205	173	155	174	187	212	189	176
1105:	174	179	194	190	186	195	199	204
1113:	198	166	173	169	149	146	146	144
1121:	141	130	133	151	118	103	110	121
1129:	112	122	114	129	126	119	111	114
1137:	137	109	114	107	113	106	113	96
1145:	96	116	98	101	89	109	103	111
1153:	113	113	80	105	97	97	101	97
1161:	103	105	108	114	105	128	118	143
1169:	214	556	2034	6466	8927	3347	351	91
1177:	93	75	83	75	67	86	66	74
1185:	79	65	82	76	68	70	66	64
1193:	64	57	48	67	62	53	62	56
1201:	67	52	60	52	48	46	63	57
1209:	58	60	45	44	48	50	46	36
1217:	38	41	41	45	51	39	45	36
1225:	36	38	42	43	30	44	32	38

1233:	37	28	34	38	35	35	38	26

Sample Title: GAS-1402

Channel								
1241:	35	30	35	23	24	26	29	29
1249:	38	22	26	30	32	27	19	33
1257:	20	21	24	22	24	27	32	26
1265:	25	28	23	20	24	18	18	28
1273:	28	27	20	23	28	20	17	19
1281:	20	16	25	26	27	30	13	21
1289:	24	26	20	24	17	17	21	19
1297:	22	16	18	21	18	22	19	27
1305:	21	21	24	23	21	22	29	29
1313:	28	20	24	14	23	20	14	30
1321:	18	25	33	30	26	44	85	133
1329:	383	1520	4830	7583	4147	584	35	10
1337:	19	15	13	8	10	11	8	10
1345:	18	19	10	14	9	11	16	8
1353:	12	9	12	8	8	10	15	14
1361:	13	13	13	10	10	9	14	13
1369:	15	12	10	13	10	12	8	11
1377:	9	10	9	8	9	10	7	11
1385:	9	6	10	7	14	7	9	9
1393:	13	9	8	6	10	10	15	7
1401:	9	8	7	9	7	10	10	9
1409:	11	7	12	11	7	8	9	14
1417:	8	9	7	8	7	11	8	5
1425:	7	15	15	12	7	16	8	5
1433:	11	8	10	8	13	14	14	5
1441:	3	4	6	6	6	4	13	7
1449:	7	10	12	7	12	8	13	11
1457:	11	5	10	14	8	3	9	8
1465:	9	8	7	9	8	5	4	5
1473:	6	5	7	10	12	8	9	10
1481:	9	6	3	8	10	10	6	5
1489:	6	6	10	3	8	5	7	10
1497:	8	5	5	7	5	8	9	4
1505:	7	2	7	9	11	3	11	7
1513:	6	10	7	5	6	7	4	6
1521:	9	11	9	6	6	7	9	5
1529:	5	6	9	6	10	12	8	12
1537:	9	12	5	10	8	8	10	7
1545:	17	4	13	5	15	5	12	1
1553:	5	7	9	8	6	7	8	8
1561:	5	9	6	9	5	9	5	12
1569:	9	13	6	5	8	5	6	8
1577:	9	12	8	3	4	6	8	11
1585:	8	14	5	6	9	8	7	6
1593:	6	10	5	10	10	3	2	5
1601:	8	4	5	6	5	8	3	5
1609:	6	3	7	7	5	5	5	6
1617:	10	5	8	8	5	6	8	5
1625:	5	15	5	4	6	7	5	9
1633:	13	7	7	6	8	8	5	1
1641:	4	8	8	7	6	6	8	4
1649:	8	9	11	9	5	10	3	8
1657:	11	11	6	6	5	3	6	5

1665:	7	10	5	3	4	9	3	7

Sample Title: GAS-1402

Channel								
1673:	8	3	2	3	8	6	3	4
1681:	5	8	7	5	5	2	7	5
1689:	5	9	4	3	4	6	4	3
1697:	4	8	10	3	5	6	9	8
1705:	3	4	9	5	4	4	14	3
1713:	5	4	9	5	3	5	5	5
1721:	5	6	5	5	7	1	7	11
1729:	13	2	6	4	5	5	6	1
1737:	5	7	6	8	6	6	3	8
1745:	2	7	4	11	5	7	10	6
1753:	4	10	7	4	6	6	5	4
1761:	1	11	9	9	7	7	5	7
1769:	0	5	7	6	7	9	7	8
1777:	4	8	7	5	7	8	6	2
1785:	7	4	8	3	7	4	3	6
1793:	5	2	6	8	7	5	12	4
1801:	5	5	5	1	8	3	6	10
1809:	5	5	7	3	4	5	3	5
1817:	5	2	2	7	5	3	4	6
1825:	8	4	7	4	4	7	5	7
1833:	8	20	22	12	7	9	6	1
1841:	9	1	1	7	10	3	6	7
1849:	3	5	3	5	4	3	3	5
1857:	4	5	8	2	9	4	7	2
1865:	6	5	4	3	11	2	3	3
1873:	8	7	5	5	8	2	3	5
1881:	5	2	4	4	7	8	6	3
1889:	4	3	8	4	2	5	8	7
1897:	6	7	4	5	4	2	6	4
1905:	6	10	1	3	3	6	8	5
1913:	5	2	10	2	6	4	5	6
1921:	4	8	6	6	4	1	4	4
1929:	3	7	5	3	4	5	3	3
1937:	2	3	5	4	2	7	6	5
1945:	5	6	7	4	2	3	5	7
1953:	2	5	6	4	7	2	6	4
1961:	3	3	4	3	6	6	0	6
1969:	2	7	3	3	4	5	3	1
1977:	6	2	2	9	4	10	3	4
1985:	3	3	2	2	3	1	4	3
1993:	5	6	6	4	8	7	2	3
2001:	5	2	2	10	4	7	3	6
2009:	1	6	0	3	1	4	3	1
2017:	2	8	4	4	4	5	3	7
2025:	2	2	3	6	6	4	2	5
2033:	1	3	6	7	6	3	7	9
2041:	7	5	4	4	8	6	7	1
2049:	0	4	4	4	3	3	3	7
2057:	3	4	6	2	1	9	4	4
2065:	11	6	4	3	4	5	8	3
2073:	4	6	3	5	1	3	2	3
2081:	6	8	0	2	8	6	2	2
2089:	7	6	3	4	7	2	3	1

2097:	9	5	6	6	2	7	7	5

Sample Title: GAS-1402

Channel								
2105:	3	7	6	2	2	2	2	3
2113:	2	5	2	5	4	1	6	3
2121:	3	6	2	2	3	3	8	5
2129:	7	3	5	3	3	1	4	3
2137:	7	10	3	4	3	9	4	4
2145:	5	2	3	2	5	2	1	5
2153:	2	1	1	5	4	3	2	2
2161:	5	8	6	3	5	3	6	3
2169:	5	5	2	4	3	2	3	2
2177:	3	5	4	7	4	2	1	4
2185:	1	4	3	3	6	4	4	3
2193:	6	6	6	8	3	8	3	5
2201:	3	4	5	3	2	1	5	5
2209:	4	3	2	5	4	2	3	4
2217:	2	3	5	3	3	6	2	5
2225:	3	2	1	4	5	7	5	2
2233:	4	1	4	1	2	7	5	2
2241:	3	5	4	5	4	4	7	5
2249:	1	3	5	6	1	4	2	7
2257:	1	3	2	4	5	4	3	2
2265:	5	1	7	2	8	5	6	10
2273:	5	7	5	2	4	4	4	5
2281:	5	4	4	8	3	3	6	6
2289:	6	5	4	3	3	4	5	2
2297:	6	4	1	4	4	2	3	1
2305:	2	4	2	2	1	3	3	4
2313:	5	1	1	2	4	2	3	4
2321:	2	0	0	2	3	1	1	3
2329:	0	0	1	1	1	0	3	3
2337:	1	3	1	4	1	2	2	4
2345:	5	1	1	3	2	3	1	2
2353:	4	1	0	3	4	1	2	4
2361:	1	2	1	3	2	1	3	3
2369:	3	4	1	0	2	3	1	0
2377:	4	1	0	0	1	2	0	0
2385:	0	0	1	1	2	1	2	1
2393:	0	2	1	1	1	0	0	1
2401:	0	0	0	1	1	0	1	0
2409:	1	5	2	0	1	2	2	1
2417:	1	0	0	0	0	0	2	1
2425:	0	1	0	1	1	0	1	1
2433:	2	1	0	0	0	1	1	3
2441:	1	1	0	0	0	0	1	3
2449:	0	1	0	0	1	1	0	0
2457:	1	2	1	2	0	0	1	1
2465:	0	0	2	0	1	1	0	0
2473:	0	0	1	1	0	1	1	1
2481:	0	1	0	0	0	0	1	2
2489:	0	0	0	1	1	2	1	1
2497:	2	0	1	3	7	29	43	61
2505:	48	15	2	1	0	1	0	0
2513:	0	1	0	0	1	0	0	2
2521:	0	0	0	0	0	0	0	0

2529:	0	0	1	0	1	0	0	0

Sample Title: GAS-1402

Channel								
2537:	0	0	0	0	0	0	0	0
2545:	0	0	0	0	0	0	0	0
2553:	0	0	0	1	2	0	0	0
2561:	0	0	0	0	0	0	0	1
2569:	0	0	0	0	0	0	0	1
2577:	0	0	0	0	0	0	2	0
2585:	0	0	0	0	0	0	0	1
2593:	0	0	0	0	2	1	0	0
2601:	0	0	1	1	0	0	0	0
2609:	1	1	5	4	8	10	2	0
2617:	0	2	0	0	0	0	0	0
2625:	0	0	0	1	0	0	0	0
2633:	0	0	0	0	0	0	0	2
2641:	0	0	1	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	0	0	0	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	1	0	0	0	0	0	0	0
2689:	0	0	0	0	0	0	0	0
2697:	0	0	0	0	1	0	0	0
2705:	1	0	0	0	0	0	1	0
2713:	0	0	0	0	0	0	0	0
2721:	1	0	0	0	0	0	0	0
2729:	0	0	0	0	0	1	0	0
2737:	1	0	1	0	0	0	0	0
2745:	0	0	0	0	0	0	0	1
2753:	0	0	0	0	0	0	1	0
2761:	0	1	0	1	0	0	0	0
2769:	0	0	0	0	0	0	0	0
2777:	1	0	0	0	0	0	1	0
2785:	1	1	2	1	1	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	1	0	0	1	0
2809:	1	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	0	0	1	0	1	0	0	0
2833:	0	1	1	0	0	0	0	0
2841:	0	0	0	0	0	0	0	0
2849:	3	0	0	0	0	0	0	1
2857:	0	0	0	0	0	0	0	0
2865:	0	0	0	1	0	0	0	0
2873:	0	0	0	0	0	0	0	0
2881:	0	0	0	0	0	0	0	0
2889:	0	0	0	0	0	0	0	1
2897:	2	0	0	0	0	0	0	0
2905:	0	0	0	0	0	1	0	0
2913:	0	0	0	0	1	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	0	0	0	0	0	0	1
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	0	0	0

2961:	0	0	0	0	0	0	0	0

Sample Title: GAS-1402

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

3393:	0	0	0	0	1	0	0	0

Sample Title: GAS-1402

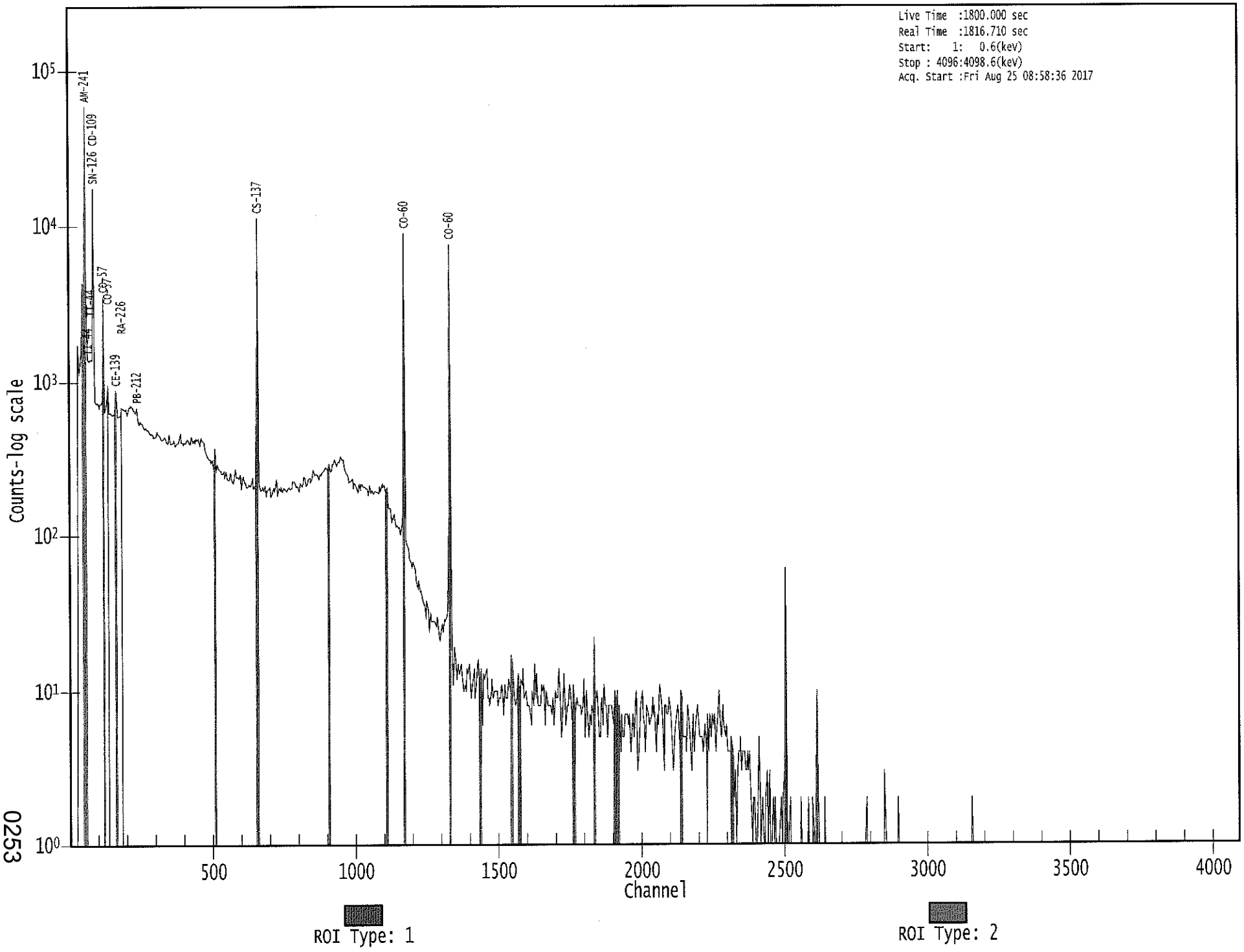
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	1	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	1	0	0	0	0
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: GAS-1402

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	1	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	1	0	1
3897:	0	0	1	0	0	0	0	0
3905:	0	1	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	1	0	0	0	0
3929:	1	0	1	0	0	0	0	0
3937:	1	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:	1	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	1	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	1	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	1	0
4073:	0	0	0	0	1	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	1	1

0000055968.CNF



0253

Apex-Gamma

Analysis Report for 1707093-02

BLANK

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-02
Sample Description	: BLANK
Sample Type	: SOIL
Sample Size	: 7.834E+02 grams
Facility	: Countroom
Sample Taken On	: 8/24/2017 10:47:14AM
Acquisition Started	: 8/25/2017 8:58:30AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3600.4 seconds
Dead Time	: 0.01 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 19 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 1/14/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55967

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-02

BLANK

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 9:58:34AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	63.15	63.76	0.0000	0.00
2	104.38	104.94	0.0000	0.00
3	107.59	108.15	0.0000	0.00
4	240.26	240.69	0.0000	0.00
5	290.97	291.34	0.0000	0.00
6	295.42	295.79	0.0000	0.00
7	320.24	320.58	0.0000	0.00
8	558.28	558.38	0.0000	0.00
9	673.54	673.52	0.0000	0.00
10	694.20	694.16	0.0000	0.00
11	766.56	766.46	0.0000	0.00
12	866.46	866.25	0.0000	0.00
13	880.72	880.49	0.0000	0.00
14	945.13	944.84	0.0000	0.00
15	1171.59	1171.08	0.0000	0.00
16	1233.49	1232.92	0.0000	0.00
17	1691.42	1690.40	0.0000	0.00
18	1728.39	1727.33	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-02

BLANK

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 9:58:34AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	63.15	59 -	68	63.76	1.31E+02	47.30	2.45E+02	1.62
M	2	104.38	103 -	111	104.94	2.73E+01	17.11	5.44E+01	1.69
m	3	107.59	103 -	111	108.15	2.08E+01	23.93	1.19E+02	1.69
	4	240.26	236 -	245	240.69	5.00E+01	31.54	1.10E+02	6.23
M	5	290.97	290 -	301	291.34	1.22E+01	12.48	4.18E+01	2.48
m	6	295.42	290 -	301	295.79	3.02E+01	23.87	7.98E+01	2.48
	7	320.24	317 -	325	320.58	2.53E+01	24.50	7.74E+01	5.18
	8	558.28	556 -	560	558.38	1.10E+01	11.58	2.00E+01	1.81
	9	673.54	671 -	676	673.52	1.00E+01	11.40	1.80E+01	1.60
	10	694.20	690 -	698	694.16	2.00E+01	15.01	2.20E+01	5.56
	11	766.56	762 -	770	766.46	1.14E+01	12.69	1.71E+01	4.40
	12	866.46	863 -	869	866.25	8.00E+00	10.44	1.40E+01	1.66
	13	880.72	873 -	887	880.49	2.11E+01	17.11	1.97E+01	8.66
	14	945.13	940 -	950	944.84	1.57E+01	10.11	4.56E+00	2.72
	15	1171.59	1167 -	1174	1171.08	1.21E+01	12.00	1.57E+01	1.26
	16	1233.49	1228 -	1236	1232.92	5.69E+00	7.23	4.63E+00	3.32
	17	1691.42	1687 -	1692	1690.40	5.00E+00	4.47	0.00E+00	1.70
	18	1728.39	1724 -	1729	1727.33	6.00E+00	4.90	0.00E+00	1.92

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

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 9:58:34AM

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

Analysis Report for 1707093-02

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	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	63.15	59 -	68	1.31E+02	47.30	2.45E+02	3.40E+01
M	2	104.38	103 -	111	2.73E+01	17.11	5.44E+01	1.21E+01
m	3	107.59	103 -	111	2.08E+01	23.93	1.19E+02	1.79E+01
	4	240.26	236 -	245	5.00E+01	31.54	1.10E+02	2.32E+01
M	5	290.97	290 -	301	1.22E+01	12.48	4.18E+01	1.06E+01
m	6	295.42	290 -	301	3.02E+01	23.87	7.98E+01	1.47E+01
	7	320.24	317 -	325	2.53E+01	24.50	7.74E+01	1.84E+01
	8	558.28	556 -	560	1.10E+01	11.58	2.00E+01	7.80E+00
	9	673.54	671 -	676	1.00E+01	11.40	1.80E+01	7.80E+00
	10	694.20	690 -	698	2.00E+01	15.01	2.20E+01	9.90E+00
	11	766.56	762 -	770	1.14E+01	12.69	1.71E+01	8.82E+00
	12	866.46	863 -	869	8.00E+00	10.44	1.40E+01	7.21E+00
	13	880.72	873 -	887	2.11E+01	17.11	1.97E+01	1.19E+01
	14	945.13	940 -	950	1.57E+01	10.11	4.56E+00	5.16E+00
	15	1171.59	1167 -	1174	1.21E+01	12.00	1.57E+01	8.03E+00
	16	1233.49	1228 -	1236	5.69E+00	7.23	4.63E+00	4.46E+00
	17	1691.42	1687 -	1692	5.00E+00	4.47	0.00E+00	0.00E+00
	18	1728.39	1724 -	1729	6.00E+00	4.90	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 : 8/25/2017 9:58:34AM

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	63.15	59 -	68	63.76	1.31E+02	47.30	2.45E+02	TH-234
									TH-230
M	2	104.38	103 -	111	104.94	2.73E+01	17.11	5.44E+01	EU-155
m	3	107.59	103 -	111	108.15	2.08E+01	23.93	1.19E+02	.....
	4	240.26	236 -	245	240.69	5.00E+01	31.54	1.10E+02	RA-224
M	5	290.97	290 -	301	291.34	1.22E+01	12.48	4.18E+01	.....
m	6	295.42	290 -	301	295.79	3.02E+01	23.87	7.98E+01	PB-214

Analysis Report for 1707093-02

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Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
7	320.24	317 -	325	320.58	2.53E+01	24.50	7.74E+01	CR-51
8	558.28	556 -	560	558.38	1.10E+01	11.58	2.00E+01	.....
9	673.54	671 -	676	673.52	1.00E+01	11.40	1.80E+01	.....
10	694.20	690 -	698	694.16	2.00E+01	15.01	2.20E+01	SB-126
11	766.56	762 -	770	766.46	1.14E+01	12.69	1.71E+01	NB-95
12	866.46	863 -	869	866.25	8.00E+00	10.44	1.40E+01	.....
13	880.72	873 -	887	880.49	2.11E+01	17.11	1.97E+01	.....
14	945.13	940 -	950	944.84	1.57E+01	10.11	4.56E+00	PA-234
15	1171.59	1167 -	1174	1171.08	1.21E+01	12.00	1.57E+01	.....
16	1233.49	1228 -	1236	1232.92	5.69E+00	7.23	4.63E+00	.....
17	1691.42	1687 -	1692	1690.40	5.00E+00	4.47	0.00E+00	SB-124
18	1728.39	1724 -	1729	1727.33	6.00E+00	4.90	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 : 8/25/2017 9:58:34AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	63.15	1.31E+02	47.30	2.70E-02	2.26E-03
M	2	104.38	2.73E+01	17.11	2.68E-02	2.26E-03
m	3	107.59	2.08E+01	23.93	2.66E-02	2.21E-03
	4	240.26	5.00E+01	31.54	1.88E-02	1.52E-03
M	5	290.97	1.22E+01	12.48	1.66E-02	1.38E-03
m	6	295.42	3.02E+01	23.87	1.64E-02	1.37E-03
	7	320.24	2.53E+01	24.50	1.55E-02	1.31E-03
	8	558.28	1.10E+01	11.58	1.03E-02	1.04E-03
	9	673.54	1.00E+01	11.40	8.92E-03	9.53E-04
	10	694.20	2.00E+01	15.01	8.72E-03	9.20E-04
	11	766.56	1.14E+01	12.69	8.08E-03	8.05E-04
	12	866.46	8.00E+00	10.44	7.36E-03	6.47E-04
	13	880.72	2.11E+01	17.11	7.27E-03	6.24E-04
	14	945.13	1.57E+01	10.11	6.89E-03	5.78E-04
	15	1171.59	1.21E+01	12.00	5.88E-03	4.92E-04
	16	1233.49	5.69E+00	7.23	5.66E-03	4.77E-04
	17	1691.42	5.00E+00	4.47	4.51E-03	3.71E-04
	18	1728.39	6.00E+00	4.90	4.44E-03	3.63E-04

Analysis Report for 1707093-02

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

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/25/2017 9:58:34AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055573.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	63.15	1.31E+02	47.30	8.94E+01	1.41E+01	4.13E+01	4.94E+01
M	2	104.38	2.73E+01	17.11			2.73E+01	1.71E+01
m	3	107.59	2.08E+01	23.93			2.08E+01	2.39E+01
	4	240.26	5.00E+01	31.54			5.00E+01	3.15E+01
M	5	290.97	1.22E+01	12.48			1.22E+01	1.25E+01
m	6	295.42	3.02E+01	23.87			3.02E+01	2.39E+01
	7	320.24	2.53E+01	24.50			2.53E+01	2.45E+01
	8	558.28	1.10E+01	11.58			1.10E+01	1.16E+01
	9	673.54	1.00E+01	11.40			1.00E+01	1.14E+01
	10	694.20	2.00E+01	15.01			2.00E+01	1.50E+01
	11	766.56	1.14E+01	12.69			1.14E+01	1.27E+01
	12	866.46	8.00E+00	10.44			8.00E+00	1.04E+01
	13	880.72	2.11E+01	17.11			2.11E+01	1.71E+01
	14	945.13	1.57E+01	10.11			1.57E+01	1.01E+01
	15	1171.59	1.21E+01	12.00			1.21E+01	1.20E+01
	16	1233.49	5.69E+00	7.23			5.69E+00	7.23E+00
	17	1691.42	5.00E+00	4.47			5.00E+00	4.47E+00
	18	1728.39	6.00E+00	4.90			6.00E+00	4.90E+00

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

Analysis Report for 1707093-02

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AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 8/25/2017 9:58:34AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055573.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	63.15	1.31E+02	47.30	8.94E+01	1.41E+01	4.13E+01	4.94E+01
M	2	104.38	2.73E+01	17.11			2.73E+01	1.71E+01
m	3	107.59	2.08E+01	23.93			2.08E+01	2.39E+01
	4	240.26	5.00E+01	31.54			5.00E+01	3.15E+01
M	5	290.97	1.22E+01	12.48			1.22E+01	1.25E+01
m	6	295.42	3.02E+01	23.87			3.02E+01	2.39E+01
	7	320.24	2.53E+01	24.50			2.53E+01	2.45E+01
	8	558.28	1.10E+01	11.58			1.10E+01	1.16E+01
	9	673.54	1.00E+01	11.40			1.00E+01	1.14E+01
	10	694.20	2.00E+01	15.01			2.00E+01	1.50E+01
	11	766.56	1.14E+01	12.69			1.14E+01	1.27E+01
	12	866.46	8.00E+00	10.44			8.00E+00	1.04E+01
	13	880.72	2.11E+01	17.11			2.11E+01	1.71E+01
	14	945.13	1.57E+01	10.11			1.57E+01	1.01E+01
	15	1171.59	1.21E+01	12.00			1.21E+01	1.20E+01
	16	1233.49	5.69E+00	7.23			5.69E+00	7.23E+00
	17	1691.42	5.00E+00	4.47			5.00E+00	4.47E+00
	18	1728.39	6.00E+00	4.90			6.00E+00	4.90E+00

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty

Analysis Report for 1707093-02

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Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
CR-51	0.996	320.08	*	9.83	1.63E-01	1.58E-01
NB-95	0.909	765.79	*	99.81	1.39E-02	1.54E-02
RA-224	0.921	240.98	*	3.95	6.46E-01	4.11E-01
TH-234	0.997	63.29	*	3.80	3.86E-01	4.63E-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 : 8/25/2017 9:58:34AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	2	104.38	7.58947E-03	31.31	Tol.	EU-155
m	3	107.59	5.77352E-03	57.57		
M	5	290.97	3.39591E-03	51.04		
m	6	295.42	8.38696E-03	39.53	Tol.	PB-214
	8	558.28	3.05556E-03	52.62		
	9	673.54	2.77778E-03	57.01		
	10	694.20	5.56004E-03	37.49	Tol.	SB-126
	12	866.46	2.22222E-03	65.25		
	13	880.72	5.86918E-03	40.49		
	14	945.13	4.36728E-03	32.16	Tol.	PA-234
	15	1171.59	3.37500E-03	49.38		
	16	1233.49	1.57986E-03	63.55		
	17	1691.42	1.38889E-03	44.72	Tol.	SB-124
	18	1728.39	1.66667E-03	40.82		

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

Analysis Report for 1707093-02

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NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
CR-51	0.99	320.08	*	9.83	1.63E-01	1.58E-01
NB-95	0.90	765.79	*	99.81	1.39E-02	1.54E-02
RA-224	0.92	240.98	*	3.95	6.46E-01	4.11E-01
TH-234	0.99	63.29	*	3.80	3.86E-01	4.63E-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
CR-51	0.996	1.63E-01	1.58E-01	
NB-95	0.909	1.39E-02	1.54E-02	
RA-224	0.921	6.46E-01	4.11E-01	
TH-234	0.997	3.86E-01	4.63E-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 1707093-02

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 9:58:34AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	2	104.38	7.58947E-03	31.31	Tol.	EU-155
m	3	107.59	5.77352E-03	57.57		
M	5	290.97	3.39591E-03	51.04		
m	6	295.42	8.38696E-03	39.53	Tol.	PB-214
	8	558.28	3.05556E-03	52.62		
	9	673.54	2.77778E-03	57.01		
	10	694.20	5.56004E-03	37.49	Tol.	SB-126
	12	866.46	2.22222E-03	65.25		
	13	880.72	5.86918E-03	40.49		
	14	945.13	4.36728E-03	32.16	Tol.	PA-234
	15	1171.59	3.37500E-03	49.38		
	16	1233.49	1.57986E-03	63.55		
	17	1691.42	1.38889E-03	44.72	Tol.	SB-124
	18	1728.39	1.66667E-03	40.82		

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	4.65E-02	2.08E-01	2.08E-01
+	NA-22	1274.54	99.94	-9.03E-03	2.28E-02	2.28E-02
+	NA-24	1368.53	99.99	2.37E-02	6.33E-02	9.08E-02

Analysis Report for 1707093-02

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	NA-24	2754.09		99.86	8.60E-03	6.33E-02	6.33E-02
+	AL-26	1808.65		99.76	-4.84E-03	2.41E-02	2.41E-02
+	K-40	1460.81		10.67	1.63E-01	3.25E-01	3.25E-01
+	AR-41	1293.64		99.16	-5.29E+01	1.16E+02	1.16E+02
+	TI-44	67.88		94.40	-2.28E-03	1.54E-02	1.54E-02
		78.34		96.00	9.91E-05		1.76E-02
+	SC-46	889.25		99.98	-8.03E-03	1.75E-02	1.75E-02
		1120.51		99.99	-9.67E-03		3.10E-02
+	V-48	983.52		99.98	-3.88E-03	2.04E-02	2.60E-02
		1312.10		97.50	-5.05E-03		2.04E-02
+	CR-51	320.08	*	9.83	1.63E-01	2.53E-01	2.53E-01
+	MN-54	834.83		99.97	-5.36E-03	2.30E-02	2.30E-02
+	CO-56	846.75		99.96	-7.66E-04	2.75E-02	2.75E-02
		1037.75		14.03	-4.64E-02		1.79E-01
		1238.25		67.00	6.39E-03		3.60E-02
		1771.40		15.51	-7.71E-02		1.87E-01
		2598.48		16.90	3.44E-02		1.60E-01
+	CO-57	122.06		85.51	3.67E-04	1.96E-02	1.96E-02
		136.48		10.60	-7.29E-03		1.55E-01
+	CO-58	810.76		99.40	2.58E-03	2.09E-02	2.09E-02
+	FE-59	1099.22		56.50	1.40E-02	5.26E-02	5.26E-02
		1291.56		43.20	1.09E-02		6.18E-02
+	CO-60	1173.22		100.00	-5.72E-03	2.69E-02	3.57E-02
		1332.49		100.00	3.33E-03		2.69E-02
+	ZN-65	1115.52		50.75	1.37E-02	5.64E-02	5.64E-02
+	GA-67	93.31		35.70	1.39E-01	8.41E-02	8.41E-02
		208.95		2.24	4.97E-03		9.05E-01
		300.22		16.00	1.25E-02		1.62E-01
+	SE-75	121.11		16.70	-1.77E-02	2.78E-02	9.78E-02
		136.00		59.20	-1.31E-03		2.78E-02
		264.65		59.80	4.79E-03		3.53E-02
		279.53		25.20	-6.36E-02		6.69E-02
		400.65		11.40	-8.76E-02		1.98E-01
+	RB-82	776.52		13.00	4.59E-02	1.90E-01	1.90E-01
+	RB-83	520.41		46.00	3.83E-03	5.19E-02	5.19E-02
		529.64		30.30	-2.43E-02		6.50E-02
		552.65		16.40	5.09E-02		1.39E-01
+	KR-85	513.99		0.43	7.34E+00	9.02E+00	9.02E+00
+	SR-85	513.99		99.27	3.24E-02	3.98E-02	3.98E-02
+	Y-88	898.02		93.40	-4.61E-03	2.46E-02	2.51E-02
		1836.01		99.38	6.84E-03		2.46E-02
+	MO-93	263.06		56.72	7.14E-03	2.10E-02	3.69E-02
		684.67		99.68	8.73E-03		2.39E-02
		1477.11		99.08	-1.27E-02		2.10E-02
+	NB-93M	16.57		9.43	-9.45E-03	2.22E-01	2.22E-01
+	NB-94	702.63		100.00	4.58E-03	2.07E-02	2.78E-02
		871.10		100.00	-1.09E-03		2.07E-02

Analysis Report for 1707093-02

BLANK

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-95	765.79	*	99.81	1.39E-02	2.47E-02	2.47E-02
+	NB-95M	235.69		25.00	-6.56E-03	7.86E-02	7.86E-02
+	ZR-95	724.18		43.70	2.93E-02	3.03E-02	6.82E-02
		756.72		55.30	-2.20E-02		3.03E-02
+	MO-99	181.06		6.20	-5.77E-01	2.23E-01	3.08E-01
		739.58		12.80	-2.01E-01		2.23E-01
		778.00		4.50	1.88E-03		5.64E-01
+	RU-103	497.08		89.00	1.30E-02	2.57E-02	2.57E-02
+	RU-106	621.84		9.80	2.07E-02	2.58E-01	2.58E-01
+	AG-108M	433.93		89.90	-2.56E-03	2.30E-02	2.30E-02
		614.37		90.40	-2.59E-02		2.66E-02
		722.95		90.50	7.87E-03		3.25E-02
+	CD-109	88.03		3.72	-1.35E+00	4.68E-01	4.68E-01
+	AG-110M	657.75		93.14	3.22E-03	2.55E-02	2.55E-02
		677.61		10.53	-4.62E-02		2.00E-01
		706.67		16.46	-2.78E-02		1.67E-01
		763.93		21.98	4.95E-02		1.18E-01
		884.67		71.63	9.87E-03		3.48E-02
		1384.27		23.94	-1.54E-02		9.26E-02
+	CD-113M	263.70		0.02	-6.34E+00	9.05E+01	9.05E+01
+	SN-113	255.12		1.93	-5.98E-02	3.29E-02	9.07E-01
		391.69		64.90	4.24E-03		3.29E-02
+	TE123M	159.00		84.10	2.09E-03	2.07E-02	2.07E-02
+	SB-124	602.71		97.87	6.11E-03	3.04E-02	3.04E-02
		645.85		7.26	9.66E-03		3.25E-01
		722.78		11.10	6.49E-02		2.68E-01
		1691.02		49.00	2.19E-02		5.75E-02
+	I-125	35.49		6.49	2.33E-01	3.04E-01	3.04E-01
+	SB-125	176.33		6.89	-2.70E-02	7.64E-02	2.24E-01
		427.89		29.33	2.53E-02		7.64E-02
		463.38		10.35	7.38E-02		2.27E-01
		600.56		17.80	-8.58E-02		1.49E-01
		635.90		11.32	-1.40E-01		1.77E-01
+	SB-126	414.70		83.30	1.23E-02	2.34E-02	3.02E-02
		666.33		99.60	-4.85E-03		2.34E-02
		695.00		99.60	1.73E-02		3.23E-02
		720.50		53.80	1.63E-02		5.96E-02
+	SN-126	87.57		37.00	-3.43E-02	4.52E-02	4.52E-02
+	SB-127	473.00		25.00	6.53E-03	7.91E-02	1.01E-01
		685.20		35.70	2.89E-02		7.91E-02
		783.80		14.70	-5.41E-04		1.62E-01
+	I-129	29.78		57.00	2.03E-02	4.37E-02	4.37E-02
		33.60		13.20	-4.93E-02		1.49E-01
		39.58		7.52	-1.96E-01		2.23E-01
+	I-131	284.30		6.05	-1.25E-02	2.73E-02	3.56E-01
		364.48		81.20	3.16E-03		2.73E-02
		636.97		7.26	-2.71E-03		3.37E-01
		722.89		1.80	4.29E-01		1.78E+00

Analysis Report for 1707093-02

BLANK

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TE-132	49.72	13.10	-1.92E-01	2.31E-02	1.64E-01
		228.16	88.00	-8.95E-03		2.31E-02
+	BA-133	81.00	33.00	-2.43E-02	3.30E-02	4.84E-02
		302.84	17.80	1.18E-02		1.16E-01
		356.01	60.00	-4.24E-03		3.30E-02
+	I-133	529.87	86.30	-1.80E-02	4.83E-02	4.83E-02
+	XE-133	81.00	38.00	-2.39E-02	4.76E-02	4.76E-02
+	CS-134	563.23	8.38	7.56E-02	3.03E-02	3.11E-01
		569.32	15.43	4.19E-02		1.73E-01
		604.70	97.60	-1.93E-02		3.03E-02
		795.84	85.40	-6.08E-03		3.05E-02
		801.93	8.73	1.31E-01		3.00E-01
+	CS-135	268.24	16.00	4.27E-02	1.30E-01	1.30E-01
+	I-135	1131.51	22.50	6.48E-01	1.08E+00	1.43E+00
		1260.41	28.60	-1.19E-01		1.08E+00
		1678.03	9.54	-8.37E-01		2.57E+00
+	CS-136	153.22	7.46	-4.25E-02	2.47E-02	2.10E-01
		163.89	4.61	1.43E-01		3.83E-01
		176.55	13.56	-1.44E-02		1.20E-01
		273.65	12.66	5.63E-02		1.64E-01
		340.57	48.50	3.88E-02		5.01E-02
		818.50	99.70	-2.30E-03		2.47E-02
		1048.07	79.60	1.59E-02		4.11E-02
		1235.34	19.70	-4.52E-03		1.44E-01
+	CS-137	661.65	85.12	-5.36E-03	2.43E-02	2.43E-02
+	LA-138	788.74	34.00	6.45E-03	3.08E-02	8.57E-02
		1435.80	66.00	-1.43E-03		3.08E-02
+	CE-139	165.85	80.35	1.47E-03	1.99E-02	1.99E-02
+	BA-140	162.64	6.70	5.63E-02	9.70E-02	2.67E-01
		304.84	4.50	2.48E-03		4.73E-01
		423.70	3.20	1.90E-01		7.00E-01
		437.55	2.00	-7.72E-01		1.06E+00
		537.32	25.00	-2.60E-02		9.70E-02
+	LA-140	328.77	20.50	-2.31E-03	3.75E-02	1.10E-01
		487.03	45.50	3.54E-02		5.63E-02
		815.85	23.50	1.69E-02		1.09E-01
		1596.49	95.49	2.02E-02		3.75E-02
+	CE-141	145.44	48.40	1.82E-02	3.79E-02	3.79E-02
+	CE-143	57.36	11.80	4.14E-02	9.69E-02	2.13E-01
		293.26	42.00	5.45E-02		9.69E-02
		664.55	5.20	-2.40E-01		6.62E-01
+	CE-144	133.54	10.80	5.05E-02	1.56E-01	1.56E-01
+	PM-144	476.78	42.00	1.46E-02	2.61E-02	5.11E-02
		618.01	98.60	6.94E-03		2.61E-02
		696.49	99.49	8.74E-03		2.83E-02
+	PM-145	36.85	21.70	-2.38E-02	4.40E-02	8.05E-02
		37.36	39.70	-1.22E-02		4.40E-02
		42.30	15.10	-9.76E-02		1.25E-01
		72.40	2.31	4.13E-01		7.59E-01

Analysis Report for 1707093-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-146	453.90	39.94	-1.66E-02	5.17E-02	5.17E-02
		735.90	14.01	5.06E-02		1.89E-01
		747.13	13.10	1.15E-01		2.43E-01
+	ND-147	91.11	28.90	1.66E-01	9.22E-02	9.22E-02
		531.02	13.10	-6.09E-02		1.63E-01
+	PM-149	285.90	3.10	-1.09E-01	8.97E-01	8.97E-01
+	EU-152	121.78	20.50	-1.43E-02	7.93E-02	7.93E-02
		244.69	5.40	-1.63E-02		2.77E-01
		344.27	19.13	-2.04E-02		1.04E-01
		778.89	9.20	-5.71E-02		2.07E-01
		964.01	10.40	-7.97E-02		2.15E-01
		1085.78	7.22	9.61E-02		3.39E-01
		1112.02	9.60	-7.36E-02		2.31E-01
		1407.95	14.94	-3.39E-02		1.87E-01
+	GD-153	97.43	31.30	6.98E-03	5.28E-02	5.28E-02
		103.18	22.20	-1.36E-02		6.80E-02
+	EU-154	123.07	40.50	7.43E-03	4.24E-02	4.24E-02
		723.30	19.70	3.62E-02		1.50E-01
		873.19	11.50	-9.49E-03		2.14E-01
		996.32	10.30	-2.28E-01		2.23E-01
		1004.76	17.90	1.37E-02		1.47E-01
		1274.45	35.50	-2.54E-02		6.41E-02
+	EU-155	86.50	30.90	8.12E-03	5.67E-02	5.67E-02
		105.30	20.70	6.88E-02		8.24E-02
+	EU-156	811.77	10.40	4.28E-02	2.07E-01	2.07E-01
		1153.47	7.20	-6.43E-02		3.30E-01
		1230.71	8.90	-6.35E-02		2.60E-01
+	HO-166M	184.41	72.60	4.30E-02	3.10E-02	3.10E-02
		280.45	29.60	-5.33E-03		5.97E-02
		410.94	11.10	6.65E-03		2.21E-01
		711.69	54.10	-1.46E-02		4.53E-02
+	TM-171	66.72	0.14	-1.64E+01	1.17E+01	1.17E+01
+	HF-172	67.35	5.31	-4.06E-02	1.52E-01	2.74E-01
		125.81	11.30	5.61E-02		1.52E-01
+	LU-172	181.53	20.60	-1.51E-01	3.86E-02	8.07E-02
		900.72	29.81	-1.54E-02		8.26E-02
		1093.66	62.50	-1.94E-02		3.86E-02
+	LU-173	100.72	5.24	1.03E-02	9.29E-02	2.63E-01
		272.11	21.20	1.77E-02		9.29E-02
+	HF-175	343.40	84.00	-5.06E-03	2.44E-02	2.44E-02
+	LU-176	88.34	13.30	-3.77E-01	1.85E-02	1.31E-01
		201.83	86.00	-8.17E-03		1.85E-02
		306.78	94.00	4.12E-04		2.14E-02
+	HF-181	133.02	41.70	1.32E-02	2.70E-02	4.10E-02
		345.85	17.20	-3.07E-02		1.15E-01
		482.03	82.80	-4.71E-03		2.70E-02
+	TA-182	67.75	41.20	-5.25E-03	3.55E-02	3.55E-02
		1121.30	34.90	6.66E-03		9.15E-02
		1189.05	16.23	2.75E-02		1.62E-01

Analysis Report for 1707093-02

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TA-182	1221.41		26.98	1.53E-02	3.55E-02	9.94E-02
		1231.02		11.44	-4.76E-02		1.95E-01
+	IR-192	308.46		29.68	-2.22E-02	4.81E-02	6.49E-02
		468.07		48.10	-3.16E-03		4.81E-02
+	HG-203	279.19		77.30	-2.09E-02	2.20E-02	2.20E-02
+	TL-204	374.74		94.11	7.71E-03	2.35E-02	2.46E-02
		899.15		99.16	-2.16E-03		2.35E-02
		911.74		91.10	-6.19E-03		3.08E-02
+	BI-207	569.67		97.72	-2.33E-04	2.60E-02	2.60E-02
		1063.62		74.90	5.62E-03		3.68E-02
+	TL-208	583.14		30.22	3.05E-02	8.27E-02	8.27E-02
		860.37		4.48	1.63E-01		5.99E-01
		2614.66		35.85	2.43E-02		1.21E-01
+	BI-210M	262.00		45.00	1.92E-02	4.75E-02	4.75E-02
		300.00		23.00	-7.59E-03		9.21E-02
+	PB-210	46.50		4.25	4.23E-01	5.14E-01	5.14E-01
+	PB-211	404.84		2.90	-8.34E-02	6.14E-01	8.36E-01
		831.96		2.90	-7.18E-01		6.14E-01
+	BI-212	727.17		11.80	-9.28E-02	1.88E-01	1.88E-01
		1620.62		2.75	-2.25E-01		9.01E-01
+	PB-212	238.63		44.60	1.51E-02	4.48E-02	4.48E-02
		300.09		3.41	-5.12E-02		6.21E-01
+	BI-214	609.31		46.30	4.01E-02	7.29E-02	7.29E-02
		1120.29		15.10	-6.35E-02		2.04E-01
		1764.49		15.80	9.78E-02		2.31E-01
		2204.22		4.98	2.17E-01		7.73E-01
+	PB-214	295.21		19.19	3.57E-02	5.89E-02	1.27E-01
		351.92		37.19	2.16E-02		5.89E-02
+	RN-219	401.80		6.50	3.43E-02	3.67E-01	3.67E-01
+	RA-223	323.87		3.88	5.72E-03	5.70E-01	5.70E-01
+	RA-224	240.98	*	3.95	6.46E-01	6.34E-01	6.34E-01
+	RA-225	40.00		31.00	-1.51E-02	5.94E-02	5.94E-02
+	RA-226	186.21		3.28	6.74E-01	6.75E-01	6.75E-01
+	TH-227	50.10		8.40	-1.62E-01	1.43E-01	2.04E-01
		236.00		11.50	-1.19E-02		1.43E-01
		256.20		6.30	-1.17E-01		3.24E-01
+	AC-228	338.32		11.40	7.49E-03	1.01E-01	1.91E-01
		911.07		27.70	-2.03E-02		1.01E-01
		969.11		16.60	1.07E-01		1.82E-01
+	TH-230	48.44		16.90	3.98E-03	1.18E-01	1.18E-01
		62.85		4.60	7.38E-01		5.01E-01
		67.67		0.37	-5.82E-01		3.93E+00
+	PA-231	283.67		1.60	-2.89E-01	9.01E-01	1.22E+00
		302.67		2.30	9.14E-02		9.01E-01
+	TH-231	25.64		14.70	-1.80E+00	2.60E-01	2.60E-01
		84.21		6.40	-7.75E-03		2.63E-01
+	PA-233	311.98		38.60	1.67E-02	5.34E-02	5.34E-02
+	PA-234	131.20		20.40	-7.66E-03	7.91E-02	7.91E-02

Analysis Report for 1707093-02

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PA-234	733.99		8.80	-2.97E-02	7.91E-02	2.78E-01
		946.00		12.00	8.65E-02		2.26E-01
+	PA-234M	1001.03		0.92	1.12E+00	3.27E+00	3.27E+00
+	TH-234	63.29	*	3.80	3.86E-01	7.58E-01	7.58E-01
+	U-235	143.76		10.50	9.40E-02	1.75E-01	1.75E-01
		163.35		4.70	1.33E-01		3.57E-01
		205.31		4.70	2.28E-02		3.56E-01
+	NP-237	86.50		12.60	1.99E-02	1.39E-01	1.39E-01
+	NP-239	106.10		22.70	7.31E-02	9.78E-02	9.78E-02
		228.18		10.70	-7.95E-02		2.05E-01
		277.60		14.10	1.66E-02		1.63E-01
+	AM-241	59.54		35.90	-7.47E-02	4.30E-02	4.30E-02
+	AM-243	74.67		66.00	-7.80E-03	2.66E-02	2.66E-02
+	CM-243	209.75		3.29	1.88E-02	1.24E-01	4.86E-01
		228.14		10.60	-6.08E-02		1.57E-01
		277.60		14.00	1.27E-02		1.24E-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	2.08E-01	2.08E-01	4.65E-02	9.33E-02
NA-22	1274.54	99.94	2.28E-02	2.28E-02	-9.03E-03	9.03E-03
NA-24	1368.53	99.99	9.08E-02	6.33E-02	2.37E-02	3.83E-02
	2754.09	99.86	6.33E-02		8.60E-03	2.00E-02
AL-26	1808.65	99.76	2.41E-02	2.41E-02	-4.84E-03	9.00E-03
K-40	1460.81	10.67	3.25E-01	3.25E-01	1.63E-01	1.38E-01

Analysis Report for 1707093-02

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	AR-41	1293.64		99.16	1.16E+02	1.16E+02	-5.29E+01	4.48E+01
	TI-44	67.88		94.40	1.54E-02	1.54E-02	-2.28E-03	7.20E-03
		78.34		96.00	1.76E-02		9.91E-05	8.32E-03
	SC-46	889.25		99.98	1.75E-02	1.75E-02	-8.03E-03	6.96E-03
		1120.51		99.99	3.10E-02		-9.67E-03	1.33E-02
	V-48	983.52		99.98	2.60E-02	2.04E-02	-3.88E-03	1.10E-02
		1312.10		97.50	2.04E-02		-5.05E-03	7.63E-03
+	CR-51	320.08	*	9.83	2.53E-01	2.53E-01	1.63E-01	1.18E-01
	MN-54	834.83		99.97	2.30E-02	2.30E-02	-5.36E-03	9.79E-03
	CO-56	846.75		99.96	2.75E-02	2.75E-02	-7.66E-04	1.20E-02
		1037.75		14.03	1.79E-01		-4.64E-02	7.48E-02
		1238.25		67.00	3.60E-02		6.39E-03	1.46E-02
		1771.40		15.51	1.87E-01		-7.71E-02	7.43E-02
		2598.48		16.90	1.60E-01		3.44E-02	5.67E-02
	CO-57	122.06		85.51	1.96E-02	1.96E-02	3.67E-04	9.23E-03
		136.48		10.60	1.55E-01		-7.29E-03	7.24E-02
	CO-58	810.76		99.40	2.09E-02	2.09E-02	2.58E-03	8.77E-03
	FE-59	1099.22		56.50	5.26E-02	5.26E-02	1.40E-02	2.25E-02
		1291.56		43.20	6.18E-02		1.09E-02	2.53E-02
	CO-60	1173.22		100.00	3.57E-02	2.69E-02	-5.72E-03	1.57E-02
		1332.49		100.00	2.69E-02		3.33E-03	1.10E-02
	ZN-65	1115.52		50.75	5.64E-02	5.64E-02	1.37E-02	2.40E-02
	GA-67	93.31		35.70	8.41E-02	8.41E-02	1.39E-01	4.04E-02
		208.95		2.24	9.05E-01		4.97E-03	4.18E-01
		300.22		16.00	1.62E-01		1.25E-02	7.49E-02
	SE-75	121.11		16.70	9.78E-02	2.78E-02	-1.77E-02	4.59E-02
		136.00		59.20	2.78E-02		-1.31E-03	1.30E-02
		264.65		59.80	3.53E-02		4.79E-03	1.64E-02
		279.53		25.20	6.69E-02		-6.36E-02	3.04E-02
		400.65		11.40	1.98E-01		-8.76E-02	9.04E-02
	RB-82	776.52		13.00	1.90E-01	1.90E-01	4.59E-02	8.23E-02
	RB-83	520.41		46.00	5.19E-02	5.19E-02	3.83E-03	2.33E-02
		529.64		30.30	6.50E-02		-2.43E-02	2.85E-02
		552.65		16.40	1.39E-01		5.09E-02	6.19E-02
	KR-85	513.99		0.43	9.02E+00	9.02E+00	7.34E+00	4.24E+00
	SR-85	513.99		99.27	3.98E-02	3.98E-02	3.24E-02	1.87E-02
	Y-88	898.02		93.40	2.51E-02	2.46E-02	-4.61E-03	1.06E-02
		1836.01		99.38	2.46E-02		6.84E-03	9.19E-03
	MO-93	263.06		56.72	3.69E-02	2.10E-02	7.14E-03	1.72E-02
		684.67		99.68	2.39E-02		8.73E-03	1.05E-02
		1477.11		99.08	2.10E-02		-1.27E-02	7.85E-03
	NB-93M	16.57		9.43	2.22E-01	2.22E-01	-9.45E-03	9.83E-02
	NB-94	702.63		100.00	2.78E-02	2.07E-02	4.58E-03	1.24E-02
		871.10		100.00	2.07E-02		-1.09E-03	8.60E-03
+	NB-95	765.79	*	99.81	2.47E-02	2.47E-02	1.39E-02	1.07E-02
	NB-95M	235.69		25.00	7.86E-02	7.86E-02	-6.56E-03	3.60E-02
	ZR-95	724.18		43.70	6.82E-02	3.03E-02	2.93E-02	3.05E-02
		756.72		55.30	3.03E-02		-2.20E-02	1.22E-02
	MO-99	181.06		6.20	3.08E-01	2.23E-01	-5.77E-01	1.42E-01
		739.58		12.80	2.23E-01		-2.01E-01	9.60E-02
		778.00		4.50	5.64E-01		1.88E-03	2.36E-01
	RU-103	497.08		89.00	2.57E-02	2.57E-02	1.30E-02	1.15E-02
	RU-106	621.84		9.80	2.58E-01	2.58E-01	2.07E-02	1.15E-01

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AG-108M	433.93	89.90	2.30E-02	2.30E-02	-2.56E-03	1.03E-02
	614.37	90.40	2.66E-02		-2.59E-02	1.18E-02
	722.95	90.50	3.25E-02		7.87E-03	1.46E-02
CD-109	88.03	3.72	4.68E-01	4.68E-01	-1.35E+00	2.21E-01
AG-110M	657.75	93.14	2.55E-02	2.55E-02	3.22E-03	1.12E-02
	677.61	10.53	2.00E-01		-4.62E-02	8.62E-02
	706.67	16.46	1.67E-01		-2.78E-02	7.41E-02
	763.93	21.98	1.18E-01		4.95E-02	5.18E-02
	884.67	71.63	3.48E-02		9.87E-03	1.49E-02
	1384.27	23.94	9.26E-02		-1.54E-02	3.59E-02
CD-113M	263.70	0.02	9.05E+01	9.05E+01	-6.34E+00	4.20E+01
SN-113	255.12	1.93	9.07E-01	3.29E-02	-5.98E-02	4.16E-01
	391.69	64.90	3.29E-02		4.24E-03	1.50E-02
TE123M	159.00	84.10	2.07E-02	2.07E-02	2.09E-03	9.67E-03
SB-124	602.71	97.87	3.04E-02	3.04E-02	6.11E-03	1.38E-02
	645.85	7.26	3.25E-01		9.66E-03	1.43E-01
	722.78	11.10	2.68E-01		6.49E-02	1.20E-01
	1691.02	49.00	5.75E-02		2.19E-02	2.28E-02
I-125	35.49	6.49	3.04E-01	3.04E-01	2.33E-01	1.42E-01
SB-125	176.33	6.89	2.24E-01	7.64E-02	-2.70E-02	1.04E-01
	427.89	29.33	7.64E-02		2.53E-02	3.47E-02
	463.38	10.35	2.27E-01		7.38E-02	1.03E-01
	600.56	17.80	1.49E-01		-8.58E-02	6.69E-02
	635.90	11.32	1.77E-01		-1.40E-01	7.62E-02
SB-126	414.70	83.30	3.02E-02	2.34E-02	1.23E-02	1.38E-02
	666.33	99.60	2.34E-02		-4.85E-03	1.02E-02
	695.00	99.60	3.23E-02		1.73E-02	1.46E-02
	720.50	53.80	5.96E-02		1.63E-02	2.68E-02
SN-126	87.57	37.00	4.52E-02	4.52E-02	-3.43E-02	2.13E-02
SB-127	473.00	25.00	1.01E-01	7.91E-02	6.53E-03	4.52E-02
	685.20	35.70	7.91E-02		2.89E-02	3.47E-02
	783.80	14.70	1.62E-01		-5.41E-04	6.79E-02
I-129	29.78	57.00	4.37E-02	4.37E-02	2.03E-02	2.07E-02
	33.60	13.20	1.49E-01		-4.93E-02	6.99E-02
	39.58	7.52	2.23E-01		-1.96E-01	1.04E-01
I-131	284.30	6.05	3.56E-01	2.73E-02	-1.25E-02	1.64E-01
	364.48	81.20	2.73E-02		3.16E-03	1.24E-02
	636.97	7.26	3.37E-01		-2.71E-03	1.48E-01
	722.89	1.80	1.78E+00		4.29E-01	7.95E-01
TE-132	49.72	13.10	1.64E-01	2.31E-02	-1.92E-01	7.71E-02
	228.16	88.00	2.31E-02		-8.95E-03	1.06E-02
BA-133	81.00	33.00	4.84E-02	3.30E-02	-2.43E-02	2.28E-02
	302.84	17.80	1.16E-01		1.18E-02	5.37E-02
	356.01	60.00	3.30E-02		-4.24E-03	1.50E-02
I-133	529.87	86.30	4.83E-02	4.83E-02	-1.80E-02	2.12E-02
XE-133	81.00	38.00	4.76E-02	4.76E-02	-2.39E-02	2.24E-02
CS-134	563.23	8.38	3.11E-01	3.03E-02	7.56E-02	1.40E-01
	569.32	15.43	1.73E-01		4.19E-02	7.80E-02
	604.70	97.60	3.03E-02		-1.93E-02	1.38E-02
	795.84	85.40	3.05E-02		-6.08E-03	1.33E-02
	801.93	8.73	3.00E-01		1.31E-01	1.31E-01
CS-135	268.24	16.00	1.30E-01	1.30E-01	4.27E-02	6.06E-02
I-135	1131.51	22.50	1.43E+00	1.08E+00	6.48E-01	6.14E-01

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
I-135	1260.41	28.60	1.08E+00	1.08E+00	-1.19E-01	4.53E-01
	1678.03	9.54	2.57E+00		-8.37E-01	9.63E-01
CS-136	153.22	7.46	2.10E-01	2.47E-02	-4.25E-02	9.71E-02
	163.89	4.61	3.83E-01		1.43E-01	1.79E-01
	176.55	13.56	1.20E-01		-1.44E-02	5.54E-02
	273.65	12.66	1.64E-01		5.63E-02	7.57E-02
	340.57	48.50	5.01E-02		3.88E-02	2.32E-02
	818.50	99.70	2.47E-02		-2.30E-03	1.06E-02
	1048.07	79.60	4.11E-02		1.59E-02	1.79E-02
	1235.34	19.70	1.44E-01		-4.52E-03	5.95E-02
CS-137	661.65	85.12	2.43E-02	2.43E-02	-5.36E-03	1.04E-02
LA-138	788.74	34.00	8.57E-02	3.08E-02	6.45E-03	3.80E-02
	1435.80	66.00	3.08E-02		-1.43E-03	1.15E-02
CE-139	165.85	80.35	1.99E-02	1.99E-02	1.47E-03	9.25E-03
BA-140	162.64	6.70	2.67E-01	9.70E-02	5.63E-02	1.25E-01
	304.84	4.50	4.73E-01		2.48E-03	2.18E-01
	423.70	3.20	7.00E-01		1.90E-01	3.16E-01
	437.55	2.00	1.06E+00		-7.72E-01	4.73E-01
	537.32	25.00	9.70E-02		-2.60E-02	4.33E-02
LA-140	328.77	20.50	1.10E-01	3.75E-02	-2.31E-03	5.09E-02
	487.03	45.50	5.63E-02		3.54E-02	2.55E-02
	815.85	23.50	1.09E-01		1.69E-02	4.67E-02
	1596.49	95.49	3.75E-02		2.02E-02	1.57E-02
CE-141	145.44	48.40	3.79E-02	3.79E-02	1.82E-02	1.78E-02
CE-143	57.36	11.80	2.13E-01	9.69E-02	4.14E-02	9.97E-02
	293.26	42.00	9.69E-02		5.45E-02	4.54E-02
	664.55	5.20	6.62E-01		-2.40E-01	2.87E-01
CE-144	133.54	10.80	1.56E-01	1.56E-01	5.05E-02	7.34E-02
PM-144	476.78	42.00	5.11E-02	2.61E-02	1.46E-02	2.29E-02
	618.01	98.60	2.61E-02		6.94E-03	1.16E-02
	696.49	99.49	2.83E-02		8.74E-03	1.26E-02
PM-145	36.85	21.70	8.05E-02	4.40E-02	-2.38E-02	3.75E-02
	37.36	39.70	4.40E-02		-1.22E-02	2.05E-02
	42.30	15.10	1.25E-01		-9.76E-02	5.86E-02
	72.40	2.31	7.59E-01		4.13E-01	3.59E-01
PM-146	453.90	39.94	5.17E-02	5.17E-02	-1.66E-02	2.32E-02
	735.90	14.01	1.89E-01		5.06E-02	8.32E-02
	747.13	13.10	2.43E-01		1.15E-01	1.09E-01
ND-147	91.11	28.90	9.22E-02	9.22E-02	1.66E-01	4.44E-02
	531.02	13.10	1.63E-01		-6.09E-02	7.16E-02
PM-149	285.90	3.10	8.97E-01	8.97E-01	-1.09E-01	4.15E-01
EU-152	121.78	20.50	7.93E-02	7.93E-02	-1.43E-02	3.72E-02
	244.69	5.40	2.77E-01		-1.63E-02	1.26E-01
	344.27	19.13	1.04E-01		-2.04E-02	4.73E-02
	778.89	9.20	2.07E-01		-5.71E-02	8.59E-02
	964.01	10.40	2.15E-01		-7.97E-02	8.93E-02
	1085.78	7.22	3.39E-01		9.61E-02	1.41E-01
	1112.02	9.60	2.31E-01		-7.36E-02	9.32E-02
	1407.95	14.94	1.87E-01		-3.39E-02	7.68E-02
GD-153	97.43	31.30	5.28E-02	5.28E-02	6.98E-03	2.49E-02
	103.18	22.20	6.80E-02		-1.36E-02	3.18E-02
EU-154	123.07	40.50	4.24E-02	4.24E-02	7.43E-03	2.00E-02
	723.30	19.70	1.50E-01		3.62E-02	6.70E-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-154	873.19	11.50	2.14E-01	4.24E-02	-9.49E-03	9.18E-02
	996.32	10.30	2.23E-01		-2.28E-01	9.24E-02
	1004.76	17.90	1.47E-01		1.37E-02	6.27E-02
	1274.45	35.50	6.41E-02		-2.54E-02	2.54E-02
EU-155	86.50	30.90	5.67E-02	5.67E-02	8.12E-03	2.68E-02
	105.30	20.70	8.24E-02		6.88E-02	3.89E-02
EU-156	811.77	10.40	2.07E-01	2.07E-01	4.28E-02	8.68E-02
	1153.47	7.20	3.30E-01		-6.43E-02	1.33E-01
	1230.71	8.90	2.60E-01		-6.35E-02	1.03E-01
HO-166M	184.41	72.60	3.10E-02	3.10E-02	4.30E-02	1.47E-02
	280.45	29.60	5.97E-02		-5.33E-03	2.73E-02
	410.94	11.10	2.21E-01		6.65E-03	1.01E-01
	711.69	54.10	4.53E-02		-1.46E-02	1.99E-02
TM-171	66.72	0.14	1.17E+01	1.17E+01	-1.64E+01	5.53E+00
HF-172	67.35	5.31	2.74E-01	1.52E-01	-4.06E-02	1.28E-01
	125.81	11.30	1.52E-01		5.61E-02	7.17E-02
LU-172	181.53	20.60	8.07E-02	3.86E-02	-1.51E-01	3.72E-02
	900.72	29.81	8.26E-02		-1.54E-02	3.46E-02
	1093.66	62.50	3.86E-02		-1.94E-02	1.56E-02
LU-173	100.72	5.24	2.63E-01	9.29E-02	1.03E-02	1.22E-01
	272.11	21.20	9.29E-02		1.77E-02	4.29E-02
HF-175	343.40	84.00	2.44E-02	2.44E-02	-5.06E-03	1.12E-02
LU-176	88.34	13.30	1.31E-01	1.85E-02	-3.77E-01	6.18E-02
	201.83	86.00	1.85E-02		-8.17E-03	8.55E-03
	306.78	94.00	2.14E-02		4.12E-04	9.83E-03
HF-181	133.02	41.70	4.10E-02	2.70E-02	1.32E-02	1.92E-02
	345.85	17.20	1.15E-01		-3.07E-02	5.21E-02
	482.03	82.80	2.70E-02		-4.71E-03	1.21E-02
TA-182	67.75	41.20	3.55E-02	3.55E-02	-5.25E-03	1.66E-02
	1121.30	34.90	9.15E-02		6.66E-03	3.96E-02
	1189.05	16.23	1.62E-01		2.75E-02	6.72E-02
	1221.41	26.98	9.94E-02		1.53E-02	4.12E-02
	1231.02	11.44	1.95E-01		-4.76E-02	7.73E-02
IR-192	308.46	29.68	6.49E-02	4.81E-02	-2.22E-02	2.97E-02
	468.07	48.10	4.81E-02		-3.16E-03	2.17E-02
HG-203	279.19	77.30	2.20E-02	2.20E-02	-2.09E-02	1.00E-02
TL-204	374.74	94.11	2.46E-02	2.35E-02	7.71E-03	1.13E-02
	899.15	99.16	2.35E-02		-2.16E-03	9.94E-03
	911.74	91.10	3.08E-02		-6.19E-03	1.34E-02
BI-207	569.67	97.72	2.60E-02	2.60E-02	-2.33E-04	1.17E-02
	1063.62	74.90	3.68E-02		5.62E-03	1.56E-02
TL-208	583.14	30.22	8.27E-02	8.27E-02	3.05E-02	3.70E-02
	860.37	4.48	5.99E-01		1.63E-01	2.60E-01
	2614.66	35.85	1.21E-01		2.43E-02	4.98E-02
BI-210M	262.00	45.00	4.75E-02	4.75E-02	1.92E-02	2.21E-02
	300.00	23.00	9.21E-02		-7.59E-03	4.26E-02
PB-210	46.50	4.25	5.14E-01	5.14E-01	4.23E-01	2.44E-01
PB-211	404.84	2.90	8.36E-01	6.14E-01	-8.34E-02	3.84E-01
	831.96	2.90	6.14E-01		-7.18E-01	2.48E-01
BI-212	727.17	11.80	1.88E-01	1.88E-01	-9.28E-02	8.10E-02
	1620.62	2.75	9.01E-01		-2.25E-01	3.49E-01
PB-212	238.63	44.60	4.48E-02	4.48E-02	1.51E-02	2.09E-02
	300.09	3.41	6.21E-01		-5.12E-02	2.87E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BI-214	609.31		46.30	7.29E-02	7.29E-02	4.01E-02	3.35E-02
		1120.29		15.10	2.04E-01		-6.35E-02	8.77E-02
		1764.49		15.80	2.31E-01		9.78E-02	9.68E-02
		2204.22		4.98	7.73E-01		2.17E-01	3.17E-01
	PB-214	295.21		19.19	1.27E-01	5.89E-02	3.57E-02	5.96E-02
		351.92		37.19	5.89E-02		2.16E-02	2.70E-02
	RN-219	401.80		6.50	3.67E-01	3.67E-01	3.43E-02	1.68E-01
	RA-223	323.87		3.88	5.70E-01	5.70E-01	5.72E-03	2.63E-01
+	RA-224	240.98	*	3.95	6.34E-01	6.34E-01	6.46E-01	3.00E-01
	RA-225	40.00		31.00	5.94E-02	5.94E-02	-1.51E-02	2.78E-02
	RA-226	186.21		3.28	6.75E-01	6.75E-01	6.74E-01	3.19E-01
	TH-227	50.10		8.40	2.04E-01	1.43E-01	-1.62E-01	9.58E-02
		236.00		11.50	1.43E-01		-1.19E-02	6.54E-02
		256.20		6.30	3.24E-01		-1.17E-01	1.51E-01
	AC-228	338.32		11.40	1.91E-01	1.01E-01	7.49E-03	8.77E-02
		911.07		27.70	1.01E-01		-2.03E-02	4.40E-02
		969.11		16.60	1.82E-01		1.07E-01	7.94E-02
	TH-230	48.44		16.90	1.18E-01	1.18E-01	3.98E-03	5.59E-02
		62.85		4.60	5.01E-01		7.38E-01	2.40E-01
		67.67		0.37	3.93E+00		-5.82E-01	1.84E+00
	PA-231	283.67		1.60	1.22E+00	9.01E-01	-2.89E-01	5.60E-01
		302.67		2.30	9.01E-01		9.14E-02	4.16E-01
	TH-231	25.64		14.70	2.60E-01	2.60E-01	-1.80E+00	1.25E-01
		84.21		6.40	2.63E-01		-7.75E-03	1.24E-01
	PA-233	311.98		38.60	5.34E-02	5.34E-02	1.67E-02	2.45E-02
	PA-234	131.20		20.40	7.91E-02	7.91E-02	-7.66E-03	3.70E-02
		733.99		8.80	2.78E-01		-2.97E-02	1.21E-01
		946.00		12.00	2.26E-01		8.65E-02	9.72E-02
	PA-234M	1001.03		0.92	3.27E+00	3.27E+00	1.12E+00	1.42E+00
+	TH-234	63.29	*	3.80	7.58E-01	7.58E-01	3.86E-01	3.66E-01
	U-235	143.76		10.50	1.75E-01	1.75E-01	9.40E-02	8.26E-02
		163.35		4.70	3.57E-01		1.33E-01	1.67E-01
		205.31		4.70	3.56E-01		2.28E-02	1.64E-01
	NP-237	86.50		12.60	1.39E-01	1.39E-01	1.99E-02	6.58E-02
	NP-239	106.10		22.70	9.78E-02	9.78E-02	7.31E-02	4.61E-02
		228.18		10.70	2.05E-01		-7.95E-02	9.42E-02
		277.60		14.10	1.63E-01		1.66E-02	7.42E-02
	AM-241	59.54		35.90	4.30E-02	4.30E-02	-7.47E-02	2.02E-02
	AM-243	74.67		66.00	2.66E-02	2.66E-02	-7.80E-03	1.26E-02
	CM-243	209.75		3.29	4.86E-01	1.24E-01	1.88E-02	2.23E-01
		228.14		10.60	1.57E-01		-6.08E-02	7.20E-02
		277.60		14.00	1.24E-01		1.27E-02	5.66E-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

Analysis Report for 1707093-02

BLANK

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

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

Sample Title: BLANK

Elapsed Live time: 3600
Elapsed Real Time: 3600

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	20	21	26	120	480	101
25:	27	19	20	23	27	18	18	14
33:	13	19	12	15	17	14	6	13
41:	17	14	22	19	16	33	43	24
49:	16	16	14	18	20	24	7	15
57:	18	11	14	17	18	15	39	74
65:	32	16	17	11	13	12	17	21
73:	18	19	29	18	21	26	17	17
81:	16	20	14	19	32	12	19	25
89:	16	22	20	33	101	43	14	17
97:	15	20	17	20	7	9	7	15
105:	27	14	12	25	12	13	9	18
113:	9	20	19	18	17	8	18	16
121:	15	13	20	14	21	19	13	19
129:	13	11	13	19	17	13	19	11
137:	13	14	16	14	16	13	15	25
145:	23	14	11	12	11	13	7	9
153:	10	10	15	10	10	18	19	10
161:	11	14	14	17	12	9	11	9
169:	7	12	13	11	10	14	11	11
177:	11	9	9	12	9	8	8	10
185:	17	44	30	8	5	13	10	6
193:	10	15	11	12	14	15	13	12
201:	8	10	7	10	12	11	9	9
209:	9	12	10	5	12	4	8	7
217:	7	7	9	10	12	4	10	10
225:	12	5	13	8	7	8	8	7
233:	19	6	8	7	6	14	15	16
241:	11	16	7	10	3	5	7	6
249:	8	5	10	8	11	11	12	5
257:	8	6	9	8	7	15	11	7
265:	6	6	7	8	10	6	12	9
273:	4	9	8	2	6	3	5	6
281:	7	6	1	10	13	2	7	9
289:	10	5	14	7	7	5	19	16
297:	9	9	6	10	4	4	9	9
305:	8	4	6	5	7	5	6	6
313:	5	7	7	3	5	9	6	8
321:	13	9	9	4	1	8	6	6
329:	10	6	2	8	9	10	3	3
337:	3	8	12	7	5	7	5	7
345:	1	6	7	3	5	7	5	9
353:	11	3	3	5	3	4	5	6
361:	3	4	5	2	3	10	7	4

369:	6	3	3	7	7	6	7	6

Sample Title: BLANK

Channel								
377:	5	6	6	6	4	2	4	4
385:	8	6	2	6	9	6	1	4
393:	6	1	7	4	5	5	7	4
401:	7	7	5	2	10	8	4	7
409:	5	10	3	5	7	6	6	6
417:	6	4	3	1	1	5	5	1
425:	6	4	8	6	3	4	2	3
433:	4	8	1	3	6	5	5	3
441:	2	9	4	8	4	8	5	3
449:	1	5	3	3	5	5	3	4
457:	2	7	5	2	3	3	6	7
465:	5	5	3	2	4	6	5	3
473:	3	3	3	2	3	4	3	7
481:	3	1	4	4	4	5	5	3
489:	3	8	2	1	2	4	4	8
497:	0	3	4	3	3	1	6	3
505:	7	5	7	3	6	19	23	15
513:	15	8	10	6	5	4	4	2
521:	5	3	4	5	1	3	2	4
529:	2	3	4	2	0	3	6	3
537:	4	2	4	2	4	9	2	2
545:	5	7	2	2	0	1	5	3
553:	4	5	2	2	3	8	8	0
561:	4	5	8	3	3	6	3	4
569:	6	7	1	3	3	4	3	9
577:	5	2	3	6	0	4	3	7
585:	4	1	2	2	3	5	5	5
593:	5	2	4	4	4	5	3	5
601:	3	4	3	4	6	9	6	2
609:	11	10	5	2	4	2	4	3
617:	1	5	3	3	5	2	2	5
625:	3	2	4	4	0	1	5	2
633:	2	2	3	0	0	4	2	6
641:	3	3	3	1	2	3	2	4
649:	3	1	3	2	3	3	2	5
657:	1	2	1	3	4	3	0	0
665:	2	1	5	3	4	1	2	3
673:	4	7	3	0	3	1	4	2
681:	0	2	5	2	1	0	3	4
689:	2	1	1	7	8	1	4	3
697:	6	0	2	3	0	6	4	5
705:	4	1	4	4	2	2	4	2
713:	1	4	2	2	4	1	5	3
721:	6	5	3	5	2	1	3	2
729:	0	0	3	3	0	1	5	3
737:	1	7	2	1	0	2	0	6
745:	3	3	3	3	7	3	2	4
753:	2	0	0	0	3	2	0	1
761:	1	2	0	1	4	5	4	1
769:	3	0	1	3	3	4	1	3
777:	0	3	0	1	1	0	0	3
785:	0	1	4	1	4	2	6	3
793:	2	6	1	2	1	2	2	3

801:	1	1	4	3	2	1	0	2

Sample Title: BLANK

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

1233:	2	2	1	0	0	1	1	1

Sample Title: BLANK

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

1665:	0	1	0	1	0	1	1	1

Sample Title: BLANK

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

2097:	0	1	0	1	1	1	0	0

Sample Title: BLANK

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

2529:	0	1	0	0	0	0	0	0

Sample Title: BLANK

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

2961:	0	0	0	0	0	0	1	0

Sample Title: BLANK

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

3393:	0	0	1	0	0	0	0	0

Sample Title: BLANK

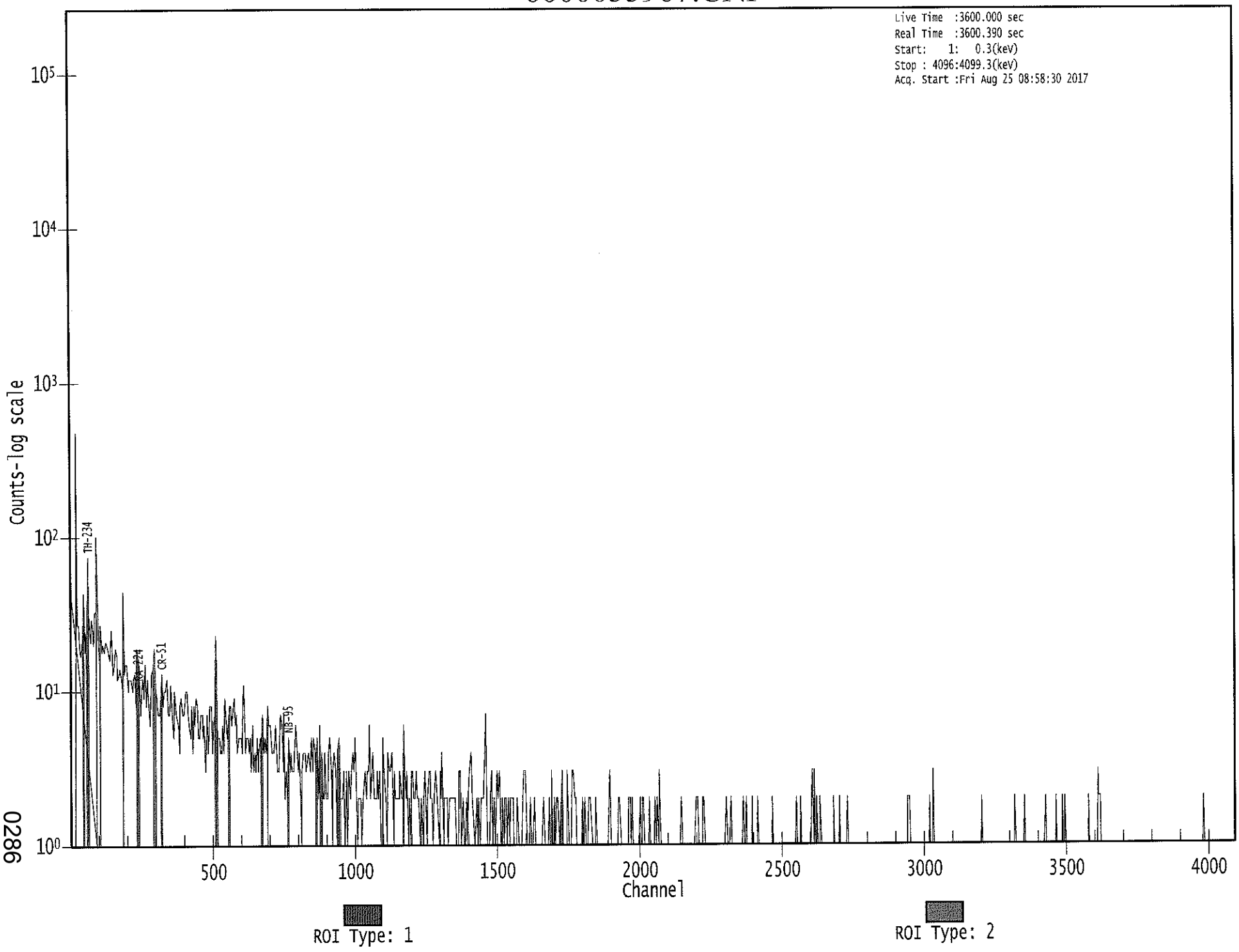
Channel								
3401:	0	1	0	0	0	0	0	0
3409:	1	0	0	0	0	0	1	0
3417:	0	0	0	0	0	1	0	0
3425:	0	0	2	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	1
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	2	0
3465:	0	1	0	0	1	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	2	0	0	0
3489:	0	0	0	0	0	2	0	0
3497:	0	0	1	0	0	0	0	1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

3825:	0	0	0	0	0	0	0	0

Sample Title: BLANK

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

0000055967.CNF



0286

8/25

Apex-Gamma

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-03
Sample Description	: HTC-A09-S001-3642-01
Sample Type	: SOIL
Sample Size	: 6.570E+02 grams
Facility	: Countroom
Sample Taken On	: 5/16/2017 5:23:12AM
Acquisition Started	: 8/25/2017 7:55:31AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.5 seconds
Dead Time	: 0.04 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 18 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 1/14/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55963

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 8:55:36AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	63.63	64.24	0.0000	0.00
2	74.72	75.31	0.0000	0.00
3	77.12	77.71	0.0000	0.00
4	87.74	88.32	0.0000	0.00
5	92.55	93.12	0.0000	0.00
6	129.71	130.25	0.0000	0.00
7	138.14	138.67	0.0000	0.00
8	185.52	186.00	0.0000	0.00
9	197.15	197.61	0.0000	0.00
10	209.15	209.60	0.0000	0.00
11	238.62	239.05	0.0000	0.00
12	241.71	242.13	0.0000	0.00
13	270.32	270.71	0.0000	0.00
14	279.20	279.59	0.0000	0.00
15	295.16	295.52	0.0000	0.00
16	300.03	300.39	0.0000	0.00
17	328.23	328.57	0.0000	0.00
18	337.86	338.18	0.0000	0.00
19	351.78	352.09	0.0000	0.00
20	424.70	424.93	0.0000	0.00
21	462.41	462.61	0.0000	0.00
22	495.59	495.75	0.0000	0.00
23	503.53	503.69	0.0000	0.00
24	510.89	511.04	0.0000	0.00
25	563.03	563.13	0.0000	0.00
26	565.91	566.00	0.0000	0.00
27	583.37	583.45	0.0000	0.00
28	609.34	609.39	0.0000	0.00
29	719.71	719.65	0.0000	0.00
30	727.86	727.79	0.0000	0.00
31	754.31	754.22	0.0000	0.00
32	838.91	838.73	0.0000	0.00
33	862.33	862.13	0.0000	0.00
34	911.86	911.61	0.0000	0.00
35	934.42	934.15	0.0000	0.00
36	965.22	964.92	0.0000	0.00
37	969.48	969.17	0.0000	0.00
38	1001.14	1000.80	0.0000	0.00
39	1120.56	1120.10	0.0000	0.00
40	1235.57	1235.00	0.0000	0.00
41	1241.58	1241.00	0.0000	0.00
42	1273.13	1272.52	0.0000	0.00

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1296.89	1296.26	0.0000	0.00
44	1378.87	1378.15	0.0000	0.00
45	1408.66	1407.92	0.0000	0.00
46	1461.38	1460.58	0.0000	0.00
47	1558.36	1557.47	0.0000	0.00
48	1620.19	1619.23	0.0000	0.00
49	1631.67	1630.71	0.0000	0.00
50	1694.42	1693.39	0.0000	0.00
51	1731.09	1730.03	0.0000	0.00
52	1765.41	1764.32	0.0000	0.00
53	1848.69	1847.52	0.0000	0.00
54	1943.20	1941.93	0.0000	0.00
55	2029.97	2028.63	0.0000	0.00
56	2104.84	2103.42	0.0000	0.00
57	2153.20	2151.73	0.0000	0.00
58	2193.63	2192.13	0.0000	0.00
59	2205.31	2203.79	0.0000	0.00
60	2211.26	2209.74	0.0000	0.00
61	2265.91	2264.33	0.0000	0.00
62	2359.53	2357.87	0.0000	0.00
63	2459.09	2457.33	0.0000	0.00
64	2615.78	2613.87	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 8:55:36AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	63.63	60 -	68	64.24	2.12E+02	132.54	2.58E+03	1.74
M	2	74.72	71 -	81	75.31	4.79E+02	98.24	1.52E+03	1.81
m	3	77.12	71 -	81	77.71	6.21E+02	104.51	1.48E+03	1.82
M	4	87.74	83 -	97	88.32	2.07E+02	81.46	1.23E+03	1.83
m	5	92.55	83 -	97	93.12	3.18E+02	93.75	1.30E+03	1.84
	6	129.71	127 -	133	130.25	9.14E+01	83.61	1.19E+03	3.08
	7	138.14	135 -	142	138.67	9.45E+01	90.51	1.31E+03	2.42
	8	185.52	180 -	190	186.00	2.57E+02	109.17	1.45E+03	2.08
	9	197.15	193 -	203	197.61	8.45E+01	98.09	1.24E+03	3.36
	10	209.15	207 -	212	209.60	7.90E+01	61.65	6.94E+02	2.01
M	11	238.62	235 -	246	239.05	1.02E+03	78.11	4.91E+02	1.82
m	12	241.71	235 -	246	242.13	2.28E+02	80.43	5.00E+02	1.82
	13	270.32	267 -	274	270.71	7.43E+01	64.22	6.33E+02	2.17
	14	279.20	275 -	286	279.59	1.28E+02	82.27	7.70E+02	4.61
	15	295.16	291 -	299	295.52	2.50E+02	78.10	7.87E+02	1.95
	16	300.03	299 -	303	300.39	4.02E+01	43.06	3.72E+02	1.83
	17	328.23	325 -	332	328.57	7.18E+01	56.53	4.78E+02	1.63
	18	337.86	333 -	342	338.18	2.11E+02	70.06	5.82E+02	1.95
	19	351.78	346 -	356	352.09	5.12E+02	83.10	6.45E+02	2.03
	20	424.70	422 -	428	424.93	4.20E+01	37.20	2.22E+02	3.84
	21	462.41	458 -	466	462.61	6.71E+01	48.43	3.20E+02	3.53
	22	495.59	492 -	499	495.75	5.06E+01	36.50	1.89E+02	3.26
M	23	503.53	500 -	527	503.69	3.83E+01	31.71	1.66E+02	2.93
m	24	510.89	500 -	527	511.04	2.18E+02	45.58	1.74E+02	2.93
M	25	563.03	559 -	576	563.13	4.38E+01	39.28	1.99E+02	2.98
m	26	565.91	559 -	576	566.00	2.40E+01	29.24	1.30E+02	1.85
	27	583.37	579 -	588	583.45	2.85E+02	61.61	3.78E+02	2.04
	28	609.34	604 -	614	609.39	3.56E+02	65.68	3.86E+02	2.00
	29	719.71	716 -	723	719.65	4.19E+01	31.30	1.34E+02	3.99
	30	727.86	724 -	733	727.79	6.81E+01	40.58	2.00E+02	1.82
	31	754.31	752 -	757	754.22	2.41E+01	23.47	8.79E+01	3.09
	32	838.91	831 -	844	838.73	5.61E+01	49.92	2.52E+02	6.15
	33	862.33	857 -	867	862.13	6.49E+01	38.12	1.58E+02	1.89
	34	911.86	909 -	918	911.61	2.41E+02	43.90	1.45E+02	2.25
	35	934.42	931 -	938	934.15	2.59E+01	29.19	1.26E+02	1.06
M	36	965.22	958 -	973	964.92	5.43E+01	29.86	1.02E+02	2.22
m	37	969.48	958 -	973	969.17	1.38E+02	34.05	1.08E+02	2.22
	38	1001.14	996 -	1006	1000.80	4.41E+01	33.01	1.24E+02	3.81
	39	1120.56	1114 -	1124	1120.10	9.10E+01	46.68	2.42E+02	1.83
M	40	1235.57	1233 -	1265	1235.00	2.18E+01	16.00	5.87E+01	2.11

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
m	41	1241.58	1233 -	1265	1241.00	2.58E+01	25.63	7.91E+01	2.12
	42	1273.13	1270 -	1275	1272.52	2.01E+01	19.52	5.59E+01	1.80
	43	1296.89	1294 -	1298	1296.26	1.74E+01	15.42	3.71E+01	2.09
	44	1378.87	1375 -	1382	1378.15	1.79E+01	19.70	4.62E+01	1.68
	45	1408.66	1405 -	1411	1407.92	2.16E+01	17.28	3.89E+01	4.87
	46	1461.38	1454 -	1464	1460.58	1.17E+03	76.77	1.45E+02	2.34
	47	1558.36	1551 -	1562	1557.47	1.40E+01	15.75	2.40E+01	2.97
	48	1620.19	1614 -	1622	1619.23	9.00E+00	12.37	1.80E+01	5.60
	49	1631.67	1627 -	1634	1630.71	1.37E+01	14.00	2.26E+01	1.96
	50	1694.42	1689 -	1697	1693.39	1.19E+01	8.73	4.21E+00	3.32
	51	1731.09	1725 -	1736	1730.03	1.56E+01	12.65	1.28E+01	2.86
	52	1765.41	1760 -	1769	1764.32	8.78E+01	21.42	1.65E+01	2.08
	53	1848.69	1844 -	1849	1847.52	8.50E+00	10.44	1.50E+01	1.61
	54	1943.20	1939 -	1944	1941.93	1.06E+01	7.55	2.83E+00	2.30
	55	2029.97	2025 -	2031	2028.63	8.00E+00	5.66	0.00E+00	2.50
	56	2104.84	2099 -	2107	2103.42	2.28E+01	10.97	4.36E+00	4.89
	57	2153.20	2148 -	2156	2151.73	1.05E+01	9.82	7.00E+00	4.69
	58	2193.63	2188 -	2195	2192.13	5.14E+00	6.63	3.71E+00	2.97
M	59	2205.31	2199 -	2213	2203.79	2.34E+01	13.64	1.00E+01	3.18
m	60	2211.26	2199 -	2213	2209.74	6.14E+00	8.72	8.00E+00	3.18
	61	2265.91	2262 -	2266	2264.33	6.00E+00	4.90	0.00E+00	1.00
	62	2359.53	2354 -	2360	2357.87	6.13E+00	6.65	3.75E+00	3.52
	63	2459.09	2454 -	2459	2457.33	6.00E+00	4.90	0.00E+00	1.92
	64	2615.78	2606 -	2620	2613.87	1.24E+02	23.84	7.77E+00	3.11

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 : 8/25/2017 8:55:36AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	63.63	60 -	68	2.12E+02	132.54	2.58E+03	1.06E+02
M	2	74.72	71 -	81	4.79E+02	98.24	1.52E+03	6.41E+01
m	3	77.12	71 -	81	6.21E+02	104.51	1.48E+03	6.32E+01
M	4	87.74	83 -	97	2.07E+02	81.46	1.23E+03	5.76E+01

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
m	5	92.55	83 -	97	3.18E+02	93.75	1.30E+03	5.93E+01
	6	129.71	127 -	133	9.14E+01	83.61	1.19E+03	6.69E+01
	7	138.14	135 -	142	9.45E+01	90.51	1.31E+03	7.27E+01
	8	185.52	180 -	190	2.57E+02	109.17	1.45E+03	8.58E+01
	9	197.15	193 -	203	8.45E+01	98.09	1.24E+03	7.92E+01
	10	209.15	207 -	212	7.90E+01	61.65	6.94E+02	4.85E+01
M	11	238.62	235 -	246	1.02E+03	78.11	4.91E+02	3.64E+01
m	12	241.71	235 -	246	2.28E+02	80.43	5.00E+02	3.68E+01
	13	270.32	267 -	274	7.43E+01	64.22	6.33E+02	5.09E+01
	14	279.20	275 -	286	1.28E+02	82.27	7.70E+02	6.50E+01
	15	295.16	291 -	299	2.50E+02	78.10	7.87E+02	5.87E+01
	16	300.03	299 -	303	4.02E+01	43.06	3.72E+02	3.38E+01
	17	328.23	325 -	332	7.18E+01	56.53	4.78E+02	4.43E+01
	18	337.86	333 -	342	2.11E+02	70.06	5.82E+02	5.24E+01
	19	351.78	346 -	356	5.12E+02	83.10	6.45E+02	5.73E+01
	20	424.70	422 -	428	4.20E+01	37.20	2.22E+02	2.87E+01
	21	462.41	458 -	466	6.71E+01	48.43	3.20E+02	3.75E+01
	22	495.59	492 -	499	5.06E+01	36.50	1.89E+02	2.76E+01
M	23	503.53	500 -	527	3.83E+01	31.71	1.66E+02	2.12E+01
m	24	510.89	500 -	527	2.18E+02	45.58	1.74E+02	2.17E+01
M	25	563.03	559 -	576	4.38E+01	39.28	1.99E+02	2.32E+01
m	26	565.91	559 -	576	2.40E+01	29.24	1.30E+02	1.87E+01
	27	583.37	579 -	588	2.85E+02	61.61	3.78E+02	4.24E+01
	28	609.34	604 -	614	3.56E+02	65.68	3.86E+02	4.42E+01
	29	719.71	716 -	723	4.19E+01	31.30	1.34E+02	2.34E+01
	30	727.86	724 -	733	6.81E+01	40.58	2.00E+02	3.05E+01
	31	754.31	752 -	757	2.41E+01	23.47	8.79E+01	1.75E+01
	32	838.91	831 -	844	5.61E+01	49.92	2.52E+02	3.91E+01
	33	862.33	857 -	867	6.49E+01	38.12	1.58E+02	2.84E+01
	34	911.86	909 -	918	2.41E+02	43.90	1.45E+02	2.55E+01
	35	934.42	931 -	938	2.59E+01	29.19	1.26E+02	2.25E+01
M	36	965.22	958 -	973	5.43E+01	29.86	1.02E+02	1.66E+01
m	37	969.48	958 -	973	1.38E+02	34.05	1.08E+02	1.71E+01
	38	1001.14	996 -	1006	4.41E+01	33.01	1.24E+02	2.48E+01
	39	1120.56	1114 -	1124	9.10E+01	46.68	2.42E+02	3.50E+01
M	40	1235.57	1233 -	1265	2.18E+01	16.00	5.87E+01	1.26E+01
m	41	1241.58	1233 -	1265	2.58E+01	25.63	7.91E+01	1.46E+01
	42	1273.13	1270 -	1275	2.01E+01	19.52	5.59E+01	1.43E+01
	43	1296.89	1294 -	1298	1.74E+01	15.42	3.71E+01	1.07E+01
	44	1378.87	1375 -	1382	1.79E+01	19.70	4.62E+01	1.46E+01
	45	1408.66	1405 -	1411	2.16E+01	17.28	3.89E+01	1.20E+01
	46	1461.38	1454 -	1464	1.17E+03	76.77	1.45E+02	2.88E+01
	47	1558.36	1551 -	1562	1.40E+01	15.75	2.40E+01	1.14E+01
	48	1620.19	1614 -	1622	9.00E+00	12.37	1.80E+01	8.89E+00
	49	1631.67	1627 -	1634	1.37E+01	14.00	2.26E+01	9.77E+00
	50	1694.42	1689 -	1697	1.19E+01	8.73	4.21E+00	4.40E+00
	51	1731.09	1725 -	1736	1.56E+01	12.65	1.28E+01	8.12E+00
	52	1765.41	1760 -	1769	8.78E+01	21.42	1.65E+01	8.54E+00
	53	1848.69	1844 -	1849	8.50E+00	10.44	1.50E+01	7.12E+00
	54	1943.20	1939 -	1944	1.06E+01	7.55	2.83E+00	3.15E+00
	55	2029.97	2025 -	2031	8.00E+00	5.66	0.00E+00	0.00E+00

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	56	2104.84	2099 -	2107	2.28E+01	10.97	4.36E+00	4.42E+00
	57	2153.20	2148 -	2156	1.05E+01	9.82	7.00E+00	6.07E+00
	58	2193.63	2188 -	2195	5.14E+00	6.63	3.71E+00	3.98E+00
M	59	2205.31	2199 -	2213	2.34E+01	13.64	1.00E+01	5.20E+00
m	60	2211.26	2199 -	2213	6.14E+00	8.72	8.00E+00	4.65E+00
	61	2265.91	2262 -	2266	6.00E+00	4.90	0.00E+00	0.00E+00
	62	2359.53	2354 -	2360	6.13E+00	6.65	3.75E+00	3.65E+00
	63	2459.09	2454 -	2459	6.00E+00	4.90	0.00E+00	0.00E+00
	64	2615.78	2606 -	2620	1.24E+02	23.84	7.77E+00	6.97E+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 : 8/25/2017 8:55:36AM

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

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	63.63	60 -	68	64.24	2.12E+02	132.54	2.58E+03	TH-234
									TH-230
M	2	74.72	71 -	81	75.31	4.79E+02	98.24	1.52E+03	AM-243
m	3	77.12	71 -	81	77.71	6.21E+02	104.51	1.48E+03	.....
M	4	87.74	83 -	97	88.32	2.07E+02	81.46	1.23E+03	SN-126
									CD-109
									LU-176
m	5	92.55	83 -	97	93.12	3.18E+02	93.75	1.30E+03	GA-67
	6	129.71	127 -	133	130.25	9.14E+01	83.61	1.19E+03	.....
	7	138.14	135 -	142	138.67	9.45E+01	90.51	1.31E+03	.....
	8	185.52	180 -	190	186.00	2.57E+02	109.17	1.45E+03	RA-226
	9	197.15	193 -	203	197.61	8.45E+01	98.09	1.24E+03	.....
	10	209.15	207 -	212	209.60	7.90E+01	61.65	6.94E+02	GA-67
									CM-243
M	11	238.62	235 -	246	239.05	1.02E+03	78.11	4.91E+02	PB-212
m	12	241.71	235 -	246	242.13	2.28E+02	80.43	5.00E+02	RA-224
	13	270.32	267 -	274	270.71	7.43E+01	64.22	6.33E+02	.....

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	14	279.20	275 -	286	279.59	1.28E+02	82.27	7.70E+02	HG-203
									SE-75
	15	295.16	291 -	299	295.52	2.50E+02	78.10	7.87E+02	PB-214
	16	300.03	299 -	303	300.39	4.02E+01	43.06	3.72E+02	BI-210M
									PB-212
									GA-67
	17	328.23	325 -	332	328.57	7.18E+01	56.53	4.78E+02	LA-140
	18	337.86	333 -	342	338.18	2.11E+02	70.06	5.82E+02	AC-228
	19	351.78	346 -	356	352.09	5.12E+02	83.10	6.45E+02	PB-214
	20	424.70	422 -	428	424.93	4.20E+01	37.20	2.22E+02	BA-140
	21	462.41	458 -	466	462.61	6.71E+01	48.43	3.20E+02	SB-125
	22	495.59	492 -	499	495.75	5.06E+01	36.50	1.89E+02	.....
M	23	503.53	500 -	527	503.69	3.83E+01	31.71	1.66E+02	.....
m	24	510.89	500 -	527	511.04	2.18E+02	45.58	1.74E+02	.....
M	25	563.03	559 -	576	563.13	4.38E+01	39.28	1.99E+02	CS-134
m	26	565.91	559 -	576	566.00	2.40E+01	29.24	1.30E+02	.....
	27	583.37	579 -	588	583.45	2.85E+02	61.61	3.78E+02	TL-208
	28	609.34	604 -	614	609.39	3.56E+02	65.68	3.86E+02	BI-214
	29	719.71	716 -	723	719.65	4.19E+01	31.30	1.34E+02	SB-126
	30	727.86	724 -	733	727.79	6.81E+01	40.58	2.00E+02	BI-212
	31	754.31	752 -	757	754.22	2.41E+01	23.47	8.79E+01	.....
	32	838.91	831 -	844	838.73	5.61E+01	49.92	2.52E+02	.....
	33	862.33	857 -	867	862.13	6.49E+01	38.12	1.58E+02	.....
	34	911.86	909 -	918	911.61	2.41E+02	43.90	1.45E+02	TL-204
									AC-228
	35	934.42	931 -	938	934.15	2.59E+01	29.19	1.26E+02	.....
M	36	965.22	958 -	973	964.92	5.43E+01	29.86	1.02E+02	.....
m	37	969.48	958 -	973	969.17	1.38E+02	34.05	1.08E+02	AC-228
	38	1001.14	996 -	1006	1000.80	4.41E+01	33.01	1.24E+02	PA-234M
	39	1120.56	1114 -	1124	1120.10	9.10E+01	46.68	2.42E+02	SC-46
									BI-214
									TA-182
M	40	1235.57	1233 -	1265	1235.00	2.18E+01	16.00	5.87E+01	CS-136
m	41	1241.58	1233 -	1265	1241.00	2.58E+01	25.63	7.91E+01	.....
	42	1273.13	1270 -	1275	1272.52	2.01E+01	19.52	5.59E+01	.....
	43	1296.89	1294 -	1298	1296.26	1.74E+01	15.42	3.71E+01	.....
	44	1378.87	1375 -	1382	1378.15	1.79E+01	19.70	4.62E+01	.....
	45	1408.66	1405 -	1411	1407.92	2.16E+01	17.28	3.89E+01	EU-152
	46	1461.38	1454 -	1464	1460.58	1.17E+03	76.77	1.45E+02	K-40
	47	1558.36	1551 -	1562	1557.47	1.40E+01	15.75	2.40E+01	.....
	48	1620.19	1614 -	1622	1619.23	9.00E+00	12.37	1.80E+01	BI-212
	49	1631.67	1627 -	1634	1630.71	1.37E+01	14.00	2.26E+01	.....
	50	1694.42	1689 -	1697	1693.39	1.19E+01	8.73	4.21E+00	.....
	51	1731.09	1725 -	1736	1730.03	1.56E+01	12.65	1.28E+01	.....
	52	1765.41	1760 -	1769	1764.32	8.78E+01	21.42	1.65E+01	BI-214
	53	1848.69	1844 -	1849	1847.52	8.50E+00	10.44	1.50E+01	.....
	54	1943.20	1939 -	1944	1941.93	1.06E+01	7.55	2.83E+00	.....
	55	2029.97	2025 -	2031	2028.63	8.00E+00	5.66	0.00E+00	.....
	56	2104.84	2099 -	2107	2103.42	2.28E+01	10.97	4.36E+00	.....
	57	2153.20	2148 -	2156	2151.73	1.05E+01	9.82	7.00E+00	.....
	58	2193.63	2188 -	2195	2192.13	5.14E+00	6.63	3.71E+00	.....
M	59	2205.31	2199 -	2213	2203.79	2.34E+01	13.64	1.00E+01	.....
m	60	2211.26	2199 -	2213	2209.74	6.14E+00	8.72	8.00E+00	.....
	61	2265.91	2262 -	2266	2264.33	6.00E+00	4.90	0.00E+00	.....

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
62	2359.53	2354 -	2360	2357.87	6.13E+00	6.65	3.75E+00	.....
63	2459.09	2454 -	2459	2457.33	6.00E+00	4.90	0.00E+00	.....
64	2615.78	2606 -	2620	2613.87	1.24E+02	23.84	7.77E+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 : 8/25/2017 8:55:36AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	63.63	2.12E+02	132.54	2.70E-02	2.26E-03
M	2	74.72	4.79E+02	98.24	2.75E-02	2.38E-03
m	3	77.12	6.21E+02	104.51	2.75E-02	2.40E-03
M	4	87.74	2.07E+02	81.46	2.74E-02	2.52E-03
m	5	92.55	3.18E+02	93.75	2.73E-02	2.45E-03
	6	129.71	9.14E+01	83.61	2.53E-02	1.93E-03
	7	138.14	9.45E+01	90.51	2.48E-02	1.89E-03
	8	185.52	2.57E+02	109.17	2.17E-02	1.68E-03
	9	197.15	8.45E+01	98.09	2.11E-02	1.65E-03
	10	209.15	7.90E+01	61.65	2.04E-02	1.61E-03
M	11	238.62	1.02E+03	78.11	1.89E-02	1.53E-03
m	12	241.71	2.28E+02	80.43	1.87E-02	1.52E-03
	13	270.32	7.43E+01	64.22	1.74E-02	1.43E-03
	14	279.20	1.28E+02	82.27	1.71E-02	1.41E-03
	15	295.16	2.50E+02	78.10	1.64E-02	1.37E-03
	16	300.03	4.02E+01	43.06	1.63E-02	1.36E-03
	17	328.23	7.18E+01	56.53	1.53E-02	1.29E-03
	18	337.86	2.11E+02	70.06	1.50E-02	1.27E-03
	19	351.78	5.12E+02	83.10	1.45E-02	1.24E-03
	20	424.70	4.20E+01	37.20	1.27E-02	1.12E-03
	21	462.41	6.71E+01	48.43	1.19E-02	1.10E-03
	22	495.59	5.06E+01	36.50	1.13E-02	1.08E-03
M	23	503.53	3.83E+01	31.71	1.11E-02	1.07E-03
m	24	510.89	2.18E+02	45.58	1.10E-02	1.07E-03
M	25	563.03	4.38E+01	39.28	1.02E-02	1.04E-03
m	26	565.91	2.40E+01	29.24	1.02E-02	1.03E-03
	27	583.37	2.85E+02	61.61	9.96E-03	1.02E-03

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	28	609.34	3.56E+02	65.68	9.63E-03	1.01E-03
	29	719.71	4.19E+01	31.30	8.48E-03	8.80E-04
	30	727.86	6.81E+01	40.58	8.41E-03	8.67E-04
	31	754.31	2.41E+01	23.47	8.18E-03	8.25E-04
	32	838.91	5.61E+01	49.92	7.54E-03	6.90E-04
	33	862.33	6.49E+01	38.12	7.39E-03	6.53E-04
	34	911.86	2.41E+02	43.90	7.08E-03	5.91E-04
	35	934.42	2.59E+01	29.19	6.95E-03	5.83E-04
M	36	965.22	5.43E+01	29.86	6.79E-03	5.71E-04
m	37	969.48	1.38E+02	34.05	6.76E-03	5.69E-04
	38	1001.14	4.41E+01	33.01	6.60E-03	5.57E-04
	39	1120.56	9.10E+01	46.68	6.07E-03	5.11E-04
M	40	1235.57	2.18E+01	16.00	5.65E-03	4.77E-04
m	41	1241.58	2.58E+01	25.63	5.63E-03	4.75E-04
	42	1273.13	2.01E+01	19.52	5.53E-03	4.68E-04
	43	1296.89	1.74E+01	15.42	5.46E-03	4.63E-04
	44	1378.87	1.79E+01	19.70	5.22E-03	4.44E-04
	45	1408.66	2.16E+01	17.28	5.14E-03	4.37E-04
	46	1461.38	1.17E+03	76.77	5.00E-03	4.25E-04
	47	1558.36	1.40E+01	15.75	4.78E-03	4.02E-04
	48	1620.19	9.00E+00	12.37	4.65E-03	3.88E-04
	49	1631.67	1.37E+01	14.00	4.63E-03	3.85E-04
	50	1694.42	1.19E+01	8.73	4.50E-03	3.71E-04
	51	1731.09	1.56E+01	12.65	4.43E-03	3.62E-04
	52	1765.41	8.78E+01	21.42	4.37E-03	3.54E-04
	53	1848.69	8.50E+00	10.44	4.23E-03	3.38E-04
	54	1943.20	1.06E+01	7.55	4.09E-03	3.38E-04
	55	2029.97	8.00E+00	5.66	3.96E-03	3.38E-04
	56	2104.84	2.28E+01	10.97	3.86E-03	3.38E-04
	57	2153.20	1.05E+01	9.82	3.80E-03	3.38E-04
	58	2193.63	5.14E+00	6.63	3.75E-03	3.38E-04
M	59	2205.31	2.34E+01	13.64	3.74E-03	3.38E-04
m	60	2211.26	6.14E+00	8.72	3.73E-03	3.38E-04
	61	2265.91	6.00E+00	4.90	3.66E-03	3.38E-04
	62	2359.53	6.13E+00	6.65	3.56E-03	3.38E-04
	63	2459.09	6.00E+00	4.90	3.46E-03	3.38E-04
	64	2615.78	1.24E+02	23.84	3.30E-03	3.38E-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 : 8/25/2017 8:55:36AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055573.CNF

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	63.63	2.12E+02	132.54	8.94E+01	1.41E+01	1.22E+02	1.33E+02
M	2	74.72	4.79E+02	98.24			4.79E+02	9.82E+01
m	3	77.12	6.21E+02	104.51	7.20E+00	1.47E+00	6.14E+02	1.05E+02
M	4	87.74	2.07E+02	81.46			2.07E+02	8.15E+01
m	5	92.55	3.18E+02	93.75	1.38E+02	1.72E+01	1.80E+02	9.53E+01
	6	129.71	9.14E+01	83.61			9.14E+01	8.36E+01
	7	138.14	9.45E+01	90.51			9.45E+01	9.05E+01
	8	185.52	2.57E+02	109.17	5.22E+01	7.59E+00	2.05E+02	1.09E+02
	9	197.15	8.45E+01	98.09			8.45E+01	9.81E+01
	10	209.15	7.90E+01	61.65			7.90E+01	6.17E+01
M	11	238.62	1.02E+03	78.11	2.13E+01	6.33E+00	9.96E+02	7.84E+01
m	12	241.71	2.28E+02	80.43			2.28E+02	8.04E+01
	13	270.32	7.43E+01	64.22	1.23E+00	4.98E+00	7.30E+01	6.44E+01
	14	279.20	1.28E+02	82.27			1.28E+02	8.23E+01
	15	295.16	2.50E+02	78.10			2.50E+02	7.81E+01
	16	300.03	4.02E+01	43.06			4.02E+01	4.31E+01
	17	328.23	7.18E+01	56.53			7.18E+01	5.65E+01
	18	337.86	2.11E+02	70.06			2.11E+02	7.01E+01
	19	351.78	5.12E+02	83.10	5.79E+00	4.49E+00	5.06E+02	8.32E+01
	20	424.70	4.20E+01	37.20			4.20E+01	3.72E+01
	21	462.41	6.71E+01	48.43			6.71E+01	4.84E+01
	22	495.59	5.06E+01	36.50			5.06E+01	3.65E+01
M	23	503.53	3.83E+01	31.71			3.83E+01	3.17E+01
m	24	510.89	2.18E+02	45.58	7.28E+01	5.30E+00	1.45E+02	4.59E+01
M	25	563.03	4.38E+01	39.28			4.38E+01	3.93E+01
m	26	565.91	2.40E+01	29.24			2.40E+01	2.92E+01
	27	583.37	2.85E+02	61.61	2.72E+00	3.05E+00	2.82E+02	6.17E+01
	28	609.34	3.56E+02	65.68	6.35E+00	4.02E+00	3.50E+02	6.58E+01
	29	719.71	4.19E+01	31.30			4.19E+01	3.13E+01
	30	727.86	6.81E+01	40.58			6.81E+01	4.06E+01
	31	754.31	2.41E+01	23.47			2.41E+01	2.35E+01
	32	838.91	5.61E+01	49.92			5.61E+01	4.99E+01
	33	862.33	6.49E+01	38.12			6.49E+01	3.81E+01
	34	911.86	2.41E+02	43.90	5.31E+00	3.00E+00	2.35E+02	4.40E+01
	35	934.42	2.59E+01	29.19			2.59E+01	2.92E+01
M	36	965.22	5.43E+01	29.86			5.43E+01	2.99E+01
m	37	969.48	1.38E+02	34.05			1.38E+02	3.41E+01
	38	1001.14	4.41E+01	33.01	4.92E+00	2.75E+00	3.92E+01	3.31E+01
	39	1120.56	9.10E+01	46.68			9.10E+01	4.67E+01
M	40	1235.57	2.18E+01	16.00			2.18E+01	1.60E+01
m	41	1241.58	2.58E+01	25.63			2.58E+01	2.56E+01
	42	1273.13	2.01E+01	19.52			2.01E+01	1.95E+01
	43	1296.89	1.74E+01	15.42			1.74E+01	1.54E+01
	44	1378.87	1.79E+01	19.70			1.79E+01	1.97E+01
	45	1408.66	2.16E+01	17.28			2.16E+01	1.73E+01
	46	1461.38	1.17E+03	76.77	8.09E+00	2.23E+00	1.16E+03	7.68E+01
	47	1558.36	1.40E+01	15.75			1.40E+01	1.57E+01
	48	1620.19	9.00E+00	12.37			9.00E+00	1.24E+01
	49	1631.67	1.37E+01	14.00			1.37E+01	1.40E+01
	50	1694.42	1.19E+01	8.73			1.19E+01	8.73E+00
	51	1731.09	1.56E+01	12.65			1.56E+01	1.26E+01

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	52	1765.41	8.78E+01	21.42			8.78E+01	2.14E+01
	53	1848.69	8.50E+00	10.44			8.50E+00	1.04E+01
	54	1943.20	1.06E+01	7.55			1.06E+01	7.55E+00
	55	2029.97	8.00E+00	5.66			8.00E+00	5.66E+00
	56	2104.84	2.28E+01	10.97			2.28E+01	1.10E+01
	57	2153.20	1.05E+01	9.82			1.05E+01	9.82E+00
	58	2193.63	5.14E+00	6.63			5.14E+00	6.63E+00
M	59	2205.31	2.34E+01	13.64			2.34E+01	1.36E+01
m	60	2211.26	6.14E+00	8.72			6.14E+00	8.72E+00
	61	2265.91	6.00E+00	4.90			6.00E+00	4.90E+00
	62	2359.53	6.13E+00	6.65			6.13E+00	6.65E+00
	63	2459.09	6.00E+00	4.90			6.00E+00	4.90E+00
	64	2615.78	1.24E+02	23.84	5.63E+00	1.38E+00	1.18E+02	2.39E+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 : 8/25/2017 8:55:36AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055573.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	63.63	2.12E+02	132.54	8.94E+01	1.41E+01	1.22E+02	1.33E+02
M	2	74.72	4.79E+02	98.24			4.79E+02	9.82E+01
m	3	77.12	6.21E+02	104.51	7.20E+00	1.47E+00	6.14E+02	1.05E+02
M	4	87.74	2.07E+02	81.46			2.07E+02	8.15E+01
m	5	92.55	3.18E+02	93.75	1.38E+02	1.72E+01	1.80E+02	9.53E+01
	6	129.71	9.14E+01	83.61			9.14E+01	8.36E+01
	7	138.14	9.45E+01	90.51			9.45E+01	9.05E+01
	8	185.52	2.57E+02	109.17	5.22E+01	7.59E+00	2.05E+02	1.09E+02
	9	197.15	8.45E+01	98.09			8.45E+01	9.81E+01
	10	209.15	7.90E+01	61.65			7.90E+01	6.17E+01
M	11	238.62	1.02E+03	78.11	2.13E+01	6.33E+00	9.96E+02	7.84E+01
m	12	241.71	2.28E+02	80.43			2.28E+02	8.04E+01
	13	270.32	7.43E+01	64.22	1.23E+00	4.98E+00	7.30E+01	6.44E+01
	14	279.20	1.28E+02	82.27			1.28E+02	8.23E+01
	15	295.16	2.50E+02	78.10			2.50E+02	7.81E+01

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	16	300.03	4.02E+01	43.06			4.02E+01	4.31E+01
	17	328.23	7.18E+01	56.53			7.18E+01	5.65E+01
	18	337.86	2.11E+02	70.06			2.11E+02	7.01E+01
	19	351.78	5.12E+02	83.10	5.79E+00	4.49E+00	5.06E+02	8.32E+01
	20	424.70	4.20E+01	37.20			4.20E+01	3.72E+01
	21	462.41	6.71E+01	48.43			6.71E+01	4.84E+01
	22	495.59	5.06E+01	36.50			5.06E+01	3.65E+01
M	23	503.53	3.83E+01	31.71			3.83E+01	3.17E+01
m	24	510.89	2.18E+02	45.58	7.28E+01	5.30E+00	1.45E+02	4.59E+01
M	25	563.03	4.38E+01	39.28			4.38E+01	3.93E+01
m	26	565.91	2.40E+01	29.24			2.40E+01	2.92E+01
	27	583.37	2.85E+02	61.61	2.72E+00	3.05E+00	2.82E+02	6.17E+01
	28	609.34	3.56E+02	65.68	6.35E+00	4.02E+00	3.50E+02	6.58E+01
	29	719.71	4.19E+01	31.30			4.19E+01	3.13E+01
	30	727.86	6.81E+01	40.58			6.81E+01	4.06E+01
	31	754.31	2.41E+01	23.47			2.41E+01	2.35E+01
	32	838.91	5.61E+01	49.92			5.61E+01	4.99E+01
	33	862.33	6.49E+01	38.12			6.49E+01	3.81E+01
	34	911.86	2.41E+02	43.90	5.31E+00	3.00E+00	2.35E+02	4.40E+01
	35	934.42	2.59E+01	29.19			2.59E+01	2.92E+01
M	36	965.22	5.43E+01	29.86			5.43E+01	2.99E+01
m	37	969.48	1.38E+02	34.05			1.38E+02	3.41E+01
	38	1001.14	4.41E+01	33.01	4.92E+00	2.75E+00	3.92E+01	3.31E+01
	39	1120.56	9.10E+01	46.68			9.10E+01	4.67E+01
M	40	1235.57	2.18E+01	16.00			2.18E+01	1.60E+01
m	41	1241.58	2.58E+01	25.63			2.58E+01	2.56E+01
	42	1273.13	2.01E+01	19.52			2.01E+01	1.95E+01
	43	1296.89	1.74E+01	15.42			1.74E+01	1.54E+01
	44	1378.87	1.79E+01	19.70			1.79E+01	1.97E+01
	45	1408.66	2.16E+01	17.28			2.16E+01	1.73E+01
	46	1461.38	1.17E+03	76.77	8.09E+00	2.23E+00	1.16E+03	7.68E+01
	47	1558.36	1.40E+01	15.75			1.40E+01	1.57E+01
	48	1620.19	9.00E+00	12.37			9.00E+00	1.24E+01
	49	1631.67	1.37E+01	14.00			1.37E+01	1.40E+01
	50	1694.42	1.19E+01	8.73			1.19E+01	8.73E+00
	51	1731.09	1.56E+01	12.65			1.56E+01	1.26E+01
	52	1765.41	8.78E+01	21.42			8.78E+01	2.14E+01
	53	1848.69	8.50E+00	10.44			8.50E+00	1.04E+01
	54	1943.20	1.06E+01	7.55			1.06E+01	7.55E+00
	55	2029.97	8.00E+00	5.66			8.00E+00	5.66E+00
	56	2104.84	2.28E+01	10.97			2.28E+01	1.10E+01
	57	2153.20	1.05E+01	9.82			1.05E+01	9.82E+00
	58	2193.63	5.14E+00	6.63			5.14E+00	6.63E+00
M	59	2205.31	2.34E+01	13.64			2.34E+01	1.36E+01
m	60	2211.26	6.14E+00	8.72			6.14E+00	8.72E+00
	61	2265.91	6.00E+00	4.90			6.00E+00	4.90E+00
	62	2359.53	6.13E+00	6.65			6.13E+00	6.65E+00
	63	2459.09	6.00E+00	4.90			6.00E+00	4.90E+00
	64	2615.78	1.24E+02	23.84	5.63E+00	1.38E+00	1.18E+02	2.39E+01

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.950	1460.81	*	10.67	2.48E+01	2.72E+00
CD-109	0.986	88.03	*	3.72	2.70E+00	1.10E+00
SN-126	0.995	87.57	*	37.00	2.34E-01	9.43E-02
HG-203	0.977	279.19	*	77.30	5.00E-01	3.24E-01
BI-212	0.935	727.17	*	11.80	7.85E-01	4.75E-01
		1620.62	*	2.75	8.04E-01	1.11E+00
PB-212	1.000	238.63	*	44.60	1.35E+00	1.53E-01
		300.09	*	3.41	8.30E-01	8.90E-01
BI-214	0.904	609.31	*	46.30	8.96E-01	1.93E-01
		1120.29	*	15.10	1.13E+00	5.90E-01
		1764.49	*	15.80	1.45E+00	3.73E-01
		2204.22		4.98		
PB-214	0.998	295.21	*	19.19	9.07E-01	2.93E-01
		351.92	*	37.19	1.07E+00	1.98E-01
RA-224	0.919	240.98	*	3.95	3.53E+00	1.28E+00
RA-226	0.927	186.21	*	3.28	3.29E+00	6.27E+00
AC-228	0.939	338.32	*	11.40	1.41E+00	4.84E-01
		911.07	*	27.70	1.37E+00	2.81E-01
		969.11	*	16.60	1.41E+00	3.66E-01
PA-234M	0.998	1001.03	*	0.92	7.37E+00	6.26E+00
TH-234	0.981	63.29	*	3.80	1.36E+00	1.49E+00
AM-243	1.000	74.67	*	66.00	3.02E-01	6.72E-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 1707093-03

HTC-A09-S001-3642-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 8:55:36AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	3	77.12	1.70480E-01	8.52		
m	5	92.55	4.99832E-02	26.48		
	6	129.71	2.53949E-02	45.73		
	7	138.14	2.62374E-02	47.91	Sum	
	9	197.15	2.34633E-02	58.07		
	10	209.15	2.19337E-02	39.04	Tol.	CM-243
	13	270.32	2.02832E-02	44.11		
	17	328.23	1.99330E-02	39.39	Tol.	LA-140
	20	424.70	1.16639E-02	44.29	Sum	
	21	462.41	1.86319E-02	36.10	Tol.	SB-125
	22	495.59	1.40431E-02	36.10		
M	23	503.53	1.06402E-02	41.39		
m	24	510.89	4.03993E-02	15.78		
M	25	563.03	1.21776E-02	44.80		
m	26	565.91	6.65927E-03	60.99		
	27	583.37	7.84169E-02	10.93	Tol.	TL-208
	29	719.71	1.16488E-02	37.32	Tol.	SB-126
	31	754.31	6.68709E-03	48.75		
	32	838.91	1.55907E-02	44.47		
	33	862.33	1.80411E-02	29.35		
	35	934.42	7.19569E-03	56.34		
M	36	965.22	1.50970E-02	27.47		
M	40	1235.57	6.05098E-03	36.73	Tol.	CS-136
m	41	1241.58	7.16158E-03	49.71		
	42	1273.13	5.57292E-03	48.65		
	43	1296.89	4.84182E-03	44.23	Sum	
	44	1378.87	4.96612E-03	55.09		
	45	1408.66	5.98916E-03	40.08	Tol.	EU-152
	47	1558.36	3.88889E-03	56.24		
	49	1631.67	3.80000E-03	51.17		
	50	1694.42	3.30357E-03	36.71	Sum	
	51	1731.09	4.33081E-03	40.57		
	53	1848.69	2.36111E-03	61.41	Sum	
	54	1943.20	2.93981E-03	35.67		
	55	2029.97	2.22222E-03	35.36		
	56	2104.84	6.33889E-03	24.03		
	57	2153.20	2.91667E-03	46.78		
	58	2193.63	1.42857E-03	64.49		
M	59	2205.31	6.50588E-03	29.12		
m	60	2211.26	1.70544E-03	71.00		
	61	2265.91	1.66667E-03	40.82		
	62	2359.53	1.70139E-03	54.30		
	63	2459.09	1.66667E-03	40.82		
	64	2615.78	3.29134E-02	10.08		

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.95	1460.81	*	10.67	2.48E+01	2.72E+00
CD-109	0.98	88.03	*	3.72	2.70E+00	1.10E+00
SN-126	0.99	87.57	*	37.00	2.34E-01	9.43E-02
HG-203	0.97	279.19	*	77.30	5.00E-01	3.24E-01
BI-212	0.93	727.17	*	11.80	7.85E-01	4.75E-01
		1620.62	*	2.75	8.04E-01	1.11E+00
PB-212	1.00	238.63	*	44.60	1.35E+00	1.53E-01
		300.09	*	3.41	8.30E-01	8.90E-01
BI-214	0.90	609.31	*	46.30	8.96E-01	1.93E-01
		1120.29	*	15.10	1.13E+00	5.90E-01
		1764.49	*	15.80	1.45E+00	3.73E-01
		2204.22		4.98		
PB-214	0.99	295.21	*	19.19	9.07E-01	2.93E-01
		351.92	*	37.19	1.07E+00	1.98E-01
RA-224	0.91	240.98	*	3.95	3.53E+00	1.28E+00
RA-226	0.92	186.21	*	3.28	3.29E+00	6.27E+00
AC-228	0.93	338.32	*	11.40	1.41E+00	4.84E-01
		911.07	*	27.70	1.37E+00	2.81E-01
		969.11	*	16.60	1.41E+00	3.66E-01
PA-234M	0.99	1001.03	*	0.92	7.37E+00	6.26E+00
TH-234	0.98	63.29	*	3.80	1.36E+00	1.49E+00
AM-243	1.00	74.67	*	66.00	3.02E-01	6.72E-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

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INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.950	2.48E+01	2.72E+00	
?	CD-109	0.986	2.70E+00	1.10E+00	
?	SN-126	0.995	2.34E-01	9.43E-02	
	HG-203	0.977	5.00E-01	3.24E-01	
	BI-212	0.935	7.88E-01	4.36E-01	
	PB-212	1.000	1.34E+00	1.50E-01	
	BI-214	0.904	1.02E+00	1.64E-01	
	PB-214	0.998	1.02E+00	1.64E-01	
	RA-224	0.919	3.53E+00	1.28E+00	
	RA-226	0.927	3.29E+00	6.27E+00	
	AC-228	0.939	1.39E+00	2.02E-01	
	PA-234M	0.998	7.37E+00	6.26E+00	
	TH-234	0.981	1.36E+00	1.49E+00	
	AM-243	1.000	3.02E-01	6.72E-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 1707093-03

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 8:55:36AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	3	77.12	1.70480E-01	8.52		
m	5	92.55	4.99832E-02	26.48		
	6	129.71	2.53949E-02	45.73		
	7	138.14	2.62374E-02	47.91	Sum	
	9	197.15	2.34633E-02	58.07		
	10	209.15	2.19337E-02	39.04	Tol.	CM-243
	13	270.32	2.02832E-02	44.11		
	17	328.23	1.99330E-02	39.39	Tol.	LA-140
	20	424.70	1.16639E-02	44.29	Sum	
	21	462.41	1.86319E-02	36.10	Tol.	SB-125
	22	495.59	1.40431E-02	36.10		
M	23	503.53	1.06402E-02	41.39		
m	24	510.89	4.03993E-02	15.78		
M	25	563.03	1.21776E-02	44.80		
m	26	565.91	6.65927E-03	60.99		
	27	583.37	7.84169E-02	10.93	Tol.	TL-208
	29	719.71	1.16488E-02	37.32	Tol.	SB-126
	31	754.31	6.68709E-03	48.75		
	32	838.91	1.55907E-02	44.47		
	33	862.33	1.80411E-02	29.35		
	35	934.42	7.19569E-03	56.34		
M	36	965.22	1.50970E-02	27.47		
M	40	1235.57	6.05098E-03	36.73	Tol.	CS-136
m	41	1241.58	7.16158E-03	49.71		
	42	1273.13	5.57292E-03	48.65		
	43	1296.89	4.84182E-03	44.23	Sum	
	44	1378.87	4.96612E-03	55.09		
	45	1408.66	5.98916E-03	40.08	Tol.	EU-152
	47	1558.36	3.88889E-03	56.24		
	49	1631.67	3.80000E-03	51.17		
	50	1694.42	3.30357E-03	36.71	Sum	
	51	1731.09	4.33081E-03	40.57		
	53	1848.69	2.36111E-03	61.41	Sum	
	54	1943.20	2.93981E-03	35.67		

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	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	55	2029.97	2.22222E-03	35.36		
	56	2104.84	6.33889E-03	24.03		
	57	2153.20	2.91667E-03	46.78		
	58	2193.63	1.42857E-03	64.49		
M	59	2205.31	6.50588E-03	29.12		
m	60	2211.26	1.70544E-03	71.00		
	61	2265.91	1.66667E-03	40.82		
	62	2359.53	1.70139E-03	54.30		
	63	2459.09	1.66667E-03	40.82		
	64	2615.78	3.29134E-02	10.08		

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	1.44E-02	1.97E+00	1.97E+00
+	NA-22	1274.54		99.94	-5.01E-03	8.01E-02	8.01E-02
+	@ 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	-7.99E-03	4.64E-02	4.64E-02
+	K-40	1460.81	*	10.67	2.48E+01	1.31E+00	1.31E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.04E-02	5.87E-02	5.87E-02
		78.34		96.00	1.40E-01		7.47E-02
+	SC-46	889.25		99.98	6.81E-03	1.48E-01	1.48E-01
		1120.51		99.99	3.76E-01		2.74E-01
+	V-48	983.52		99.98	-1.33E+00	5.58E+00	5.58E+00
		1312.10		97.50	2.80E+00		6.50E+00
+	CR-51	320.08		9.83	-1.07E+00	6.79E+00	6.79E+00
+	MN-54	834.83		99.97	1.38E-02	8.90E-02	8.90E-02
+	CO-56	846.75		99.96	-6.47E-02	1.45E-01	1.45E-01
		1037.75		14.03	-3.20E-01		1.16E+00
		1238.25		67.00	4.75E-01		4.07E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CO-56	1771.40		15.51	-2.40E-02	1.45E-01	8.01E-01
		2598.48		16.90	1.24E-01		5.96E-01
+	CO-57	122.06		85.51	-2.56E-02	6.61E-02	6.61E-02
		136.48		10.60	1.94E-01		5.81E-01
+	CO-58	810.76		99.40	-3.83E-02	1.70E-01	1.70E-01
+	FE-59	1099.22		56.50	2.41E-01	6.17E-01	6.17E-01
		1291.56		43.20	-2.64E-01		7.12E-01
+	CO-60	1173.22		100.00	2.09E-02	6.15E-02	8.73E-02
		1332.49		100.00	1.27E-02		6.15E-02
+	ZN-65	1115.52		50.75	4.10E-04	2.17E-01	2.17E-01
+	GA-67	93.31		35.70	6.65E+08	3.60E+08	3.60E+08
		208.95		2.24	4.43E+09		5.06E+09
		300.22		16.00	-1.61E+09		7.98E+08
+	SE-75	121.11		16.70	-2.90E-01	1.44E-01	4.66E-01
		136.00		59.20	4.81E-02		1.44E-01
		264.65		59.80	-7.02E-02		1.56E-01
		279.53		25.20	3.45E-01		4.20E-01
		400.65		11.40	1.53E-01		8.59E-01
+	RB-82	776.52		13.00	2.23E+00	7.96E+00	7.96E+00
+	RB-83	520.41		46.00	9.79E-02	2.85E-01	2.85E-01
		529.64		30.30	-2.09E-02		3.77E-01
		552.65		16.40	3.42E-01		8.12E-01
+	KR-85	513.99		0.43	1.98E+01	1.87E+01	1.87E+01
+	SR-85	513.99		99.27	2.51E-01	2.37E-01	2.37E-01
+	Y-88	898.02		93.40	-1.86E-02	7.83E-02	1.34E-01
		1836.01		99.38	-4.58E-02		7.83E-02
+	MO-93	263.06		56.72	4.62E-03	4.90E-02	9.60E-02
		684.67		99.68	3.44E-02		6.73E-02
		1477.11		99.08	-4.73E-03		4.90E-02
+	NB-93M	16.57		9.43	-6.91E-02	5.29E-01	5.29E-01
+	NB-94	702.63		100.00	9.72E-03	6.09E-02	6.96E-02
		871.10		100.00	-1.22E-02		6.09E-02
+	NB-95	765.79		99.81	3.70E-01	5.48E-01	5.48E-01
+	NB-95M	235.69		25.00	-4.47E+08	6.45E+07	6.45E+07
+	ZR-95	724.18		43.70	-2.92E-01	3.23E-01	4.73E-01
		756.72		55.30	3.20E-02		3.23E-01
+	MO-99	181.06		6.20	-2.13E+11	5.46E+10	8.70E+10
		739.58		12.80	-6.22E+09		5.46E+10
		778.00		4.50	-5.82E+10		1.65E+11
+	RU-103	497.08		89.00	9.51E-02	3.76E-01	3.76E-01
+	RU-106	621.84		9.80	-3.80E-01	6.74E-01	6.74E-01
+	AG-108M	433.93		89.90	4.91E-03	6.05E-02	6.05E-02
		614.37		90.40	1.94E-02		7.84E-02
		722.95		90.50	-1.49E-01		6.94E-02
+	CD-109	88.03	*	3.72	2.70E+00	3.69E+00	3.69E+00
+	AG-110M	657.75		93.14	-3.18E-02	7.34E-02	7.34E-02
		677.61		10.53	4.67E-02		7.58E-01
		706.67		16.46	-1.77E-01		5.24E-01

Analysis Report for 1707093-03

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AG-110M	763.93		21.98	-4.14E-01	7.34E-02	3.85E-01
		884.67		71.63	6.75E-02		1.21E-01
		1384.27		23.94	4.06E-02		2.73E-01
+	CD-113M	263.70		0.02	-5.72E+01	2.33E+02	2.33E+02
+	SN-113	255.12		1.93	-5.40E-01	1.53E-01	4.23E+00
		391.69		64.90	-5.57E-02		1.53E-01
+	TE123M	159.00		84.10	-4.65E-02	9.53E-02	9.53E-02
+	SB-124	602.71		97.87	-1.58E-03	1.90E-01	1.90E-01
		645.85		7.26	3.29E-01		2.63E+00
		722.78		11.10	-3.88E+00		1.81E+00
		1691.02		49.00	0.00E+00		2.63E-01
+	I-125	35.49		6.49	2.18E+00	2.54E+00	2.54E+00
+	SB-125	176.33		6.89	-5.05E-02	1.97E-01	6.99E-01
		427.89		29.33	-2.74E-02		1.97E-01
		463.38		10.35	6.86E-01		6.78E-01
		600.56		17.80	7.16E-02		3.39E-01
		635.90		11.32	3.86E-01		5.98E-01
+	SB-126	414.70		83.30	2.45E+00	1.78E+01	1.89E+01
		666.33		99.60	7.24E+00		1.87E+01
		695.00		99.60	1.94E+00		1.78E+01
		720.50		53.80	2.99E+01		3.55E+01
+	SN-126	87.57	*	37.00	2.34E-01	3.19E-01	3.19E-01
+	SB-127	473.00		25.00	-2.17E+06	1.49E+07	1.82E+07
		685.20		35.70	7.63E+06		1.49E+07
		783.80		14.70	2.57E+07		3.82E+07
+	I-129	29.78		57.00	4.19E-03	9.86E-02	9.86E-02
		33.60		13.20	-5.28E-02		4.03E-01
		39.58		7.52	-4.30E-01		6.22E-01
+	I-131	284.30		6.05	-4.04E+02	3.70E+02	5.09E+03
		364.48		81.20	-7.22E+01		3.70E+02
		636.97		7.26	3.12E+03		5.35E+03
		722.89		1.80	-4.56E+04		2.13E+04
+	TE-132	49.72		13.10	-9.86E+08	1.13E+08	7.83E+08
		228.16		88.00	1.25E+07		1.13E+08
+	BA-133	81.00		33.00	-5.68E-01	1.29E-01	1.63E-01
		302.84		17.80	-2.02E-02		3.27E-01
		356.01		60.00	1.00E-02		1.29E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	-3.10E+05	8.88E+04	8.88E+04
+	CS-134	563.23		8.38	8.47E-01	7.55E-02	8.67E-01
		569.32		15.43	-1.04E-01		4.16E-01
		604.70		97.60	2.65E-03		7.55E-02
		795.84		85.40	5.61E-02		9.21E-02
		801.93		8.73	-2.93E-01		7.71E-01
+	CS-135	268.24		16.00	2.99E-01	3.67E-01	3.67E-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	-6.86E-02	1.18E+01	1.26E+02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CS-136	163.89	4.61	1.04E+02	1.18E+01	2.08E+02
		176.55	13.56	-4.93E+00		6.82E+01
		273.65	12.66	-4.53E+01		9.38E+01
		340.57	48.50	4.40E+00		3.08E+01
		818.50	99.70	9.23E-01		1.18E+01
		1048.07	79.60	-1.70E+00		1.86E+01
		1235.34	19.70	-5.81E+01		9.84E+01
+	CS-137	661.65	85.12	-4.05E-02	6.74E-02	6.74E-02
+	LA-138	788.74	34.00	-9.67E-02	7.67E-02	1.97E-01
		1435.80	66.00	-2.22E-02		7.67E-02
+	CE-139	165.85	80.35	-2.72E-02	9.31E-02	9.31E-02
+	BA-140	162.64	6.70	6.56E+01	5.85E+01	1.67E+02
		304.84	4.50	3.73E+01		2.79E+02
		423.70	3.20	1.80E+02		4.02E+02
		437.55	2.00	-5.32E+00		6.71E+02
		537.32	25.00	2.01E+01		5.85E+01
+	LA-140	328.77	20.50	4.57E+01	1.50E+01	7.10E+01
		487.03	45.50	5.39E+00		2.75E+01
		815.85	23.50	1.06E+01		6.13E+01
		1596.49	95.49	3.64E+00		1.50E+01
+	CE-141	145.44	48.40	2.79E-01	8.36E-01	8.36E-01
+	@ 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	-5.10E-01	5.29E-01	5.29E-01
+	PM-144	476.78	42.00	1.30E-01	7.43E-02	1.65E-01
		618.01	98.60	1.64E-02		7.43E-02
		696.49	99.49	-1.16E-03		7.51E-02
+	PM-145	36.85	21.70	-7.21E-02	1.23E-01	2.27E-01
		37.36	39.70	-6.27E-02		1.23E-01
		42.30	15.10	-1.64E-01		3.23E-01
		72.40	2.31	-3.20E+00		2.81E+00
+	PM-146	453.90	39.94	6.56E-02	1.45E-01	1.45E-01
		735.90	14.01	-1.43E-02		4.52E-01
		747.13	13.10	2.05E-01		5.21E-01
+	ND-147	91.11	28.90	2.26E+02	1.30E+02	1.30E+02
		531.02	13.10	2.59E+01		2.43E+02
+	PM-149	285.90	3.10	4.81E+12	9.56E+13	9.56E+13
+	EU-152	121.78	20.50	-1.34E-01	2.15E-01	2.15E-01
		244.69	5.40	-6.42E-01		1.01E+00
		344.27	19.13	-4.31E-03		2.88E-01
		778.89	9.20	-9.97E-03		7.00E-01
		964.01	10.40	-1.47E+00		8.34E-01
		1085.78	7.22	4.98E-01		1.08E+00
		1112.02	9.60	1.42E-02		8.76E-01
		1407.95	14.94	5.10E-02		4.96E-01
+	GD-153	97.43	31.30	8.48E-02	2.00E-01	2.00E-01
		103.18	22.20	2.27E-02		2.71E-01
+	EU-154	123.07	40.50	4.31E-02	1.15E-01	1.15E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-154	723.30		19.70	-6.97E-01	1.15E-01	3.25E-01
		873.19		11.50	7.21E-02		5.58E-01
		996.32		10.30	-9.66E-02		5.86E-01
		1004.76		17.90	8.59E-02		4.18E-01
		1274.45		35.50	-1.34E-02		2.14E-01
+	EU-155	86.50		30.90	1.26E-01	2.00E-01	2.00E-01
		105.30		20.70	7.02E-02		2.28E-01
+	EU-156	811.77		10.40	2.58E+01	6.28E+01	6.28E+01
		1153.47		7.20	4.64E+01		1.17E+02
		1230.71		8.90	4.50E+01		9.89E+01
+	HO-166M	184.41		72.60	1.73E-01	8.29E-02	8.29E-02
		280.45		29.60	1.04E-01		1.93E-01
		410.94		11.10	3.55E-01		5.18E-01
		711.69		54.10	3.45E-03		1.10E-01
+	TM-171	66.72		0.14	-5.89E+01	4.38E+01	4.38E+01
+	HF-172	67.35		5.31	-2.05E-01	4.48E-01	1.15E+00
		125.81		11.30	1.73E-01		4.48E-01
+	LU-172	181.53		20.60	-1.93E+04	4.19E+03	7.86E+03
		900.72		29.81	1.14E+03		8.06E+03
		1093.66		62.50	6.03E+02		4.19E+03
+	LU-173	100.72		5.24	-1.45E-01	3.14E-01	9.89E-01
		272.11		21.20	-1.74E-01		3.14E-01
+	HF-175	343.40		84.00	-2.63E-03	1.72E-01	1.72E-01
+	LU-176	88.34		13.30	-9.43E-02	5.32E-02	4.54E-01
		201.83		86.00	-2.43E-02		5.32E-02
		306.78		94.00	1.79E-02		5.48E-02
+	HF-181	133.02		41.70	-5.39E-01	3.25E-01	5.58E-01
		345.85		17.20	-2.48E-02		1.65E+00
		482.03		82.80	-1.43E-01		3.25E-01
+	TA-182	67.75		41.20	-4.39E-02	2.47E-01	2.47E-01
		1121.30		34.90	8.54E-01		6.22E-01
		1189.05		16.23	-1.54E-01		9.49E-01
		1221.41		26.98	1.94E-01		6.32E-01
		1231.02		11.44	6.40E-01		1.41E+00
+	IR-192	308.46		29.68	-9.32E-02	2.97E-01	4.39E-01
		468.07		48.10	1.04E-01		2.97E-01
+	HG-203	279.19	*	77.30	5.00E-01	5.18E-01	5.18E-01
+	TL-204	374.74		94.11	-5.61E-03	5.97E-02	5.97E-02
		899.15		99.16	4.47E-02		7.42E-02
		911.74		91.10	3.84E-01		1.50E-01
+	BI-207	569.67		97.72	-4.80E-02	5.92E-02	5.92E-02
		1063.62		74.90	-1.22E-03		9.85E-02
+	TL-208	583.14		30.22	1.14E+00	3.75E-01	3.75E-01
		860.37		4.48	1.04E+00		1.70E+00
		2614.66		35.85	1.05E+00		5.22E-01
+	BI-210M	262.00		45.00	-2.29E-03	1.19E-01	1.19E-01
		300.00		23.00	-7.58E-01		2.68E-01
+	PB-210	46.50		4.25	4.55E-01	1.21E+00	1.21E+00
+	PB-211	404.84		2.90	8.85E-02	1.93E+00	1.93E+00

Analysis Report for 1707093-03

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PB-211	831.96		2.90	-1.62E-02	1.93E+00	2.04E+00
+	BI-212	727.17	*	11.80	7.85E-01	7.34E-01	7.34E-01
		1620.62	*	2.75	8.04E-01		1.83E+00
+	PB-212	238.63	*	44.60	1.35E+00	2.06E-01	2.06E-01
		300.09	*	3.41	8.30E-01		1.45E+00
+	BI-214	609.31	*	46.30	8.96E-01	2.35E-01	2.35E-01
		1120.29	*	15.10	1.13E+00		9.07E-01
		1764.49	*	15.80	1.45E+00		3.27E-01
		2204.22		4.98	1.21E+00		1.81E+00
+	PB-214	295.21	*	19.19	9.07E-01	2.49E-01	4.35E-01
		351.92	*	37.19	1.07E+00		2.49E-01
+	RN-219	401.80		6.50	4.41E-01	8.58E-01	8.58E-01
+	RA-223	323.87		3.88	1.94E-01	1.43E+00	1.43E+00
+	RA-224	240.98	*	3.95	3.53E+00	2.33E+00	2.33E+00
+	RA-225	40.00		31.00	1.61E+00	1.75E+01	1.75E+01
+	RA-226	186.21	*	3.28	3.29E+00	2.83E+00	2.83E+00
+	TH-227	50.10		8.40	-2.93E-01	5.18E-01	5.53E-01
		236.00		11.50	-3.59E+00		5.18E-01
		256.20		6.30	1.38E-01		8.45E-01
+	AC-228	338.32	*	11.40	1.41E+00	3.18E-01	7.20E-01
		911.07	*	27.70	1.37E+00		3.18E-01
		969.11	*	16.60	1.41E+00		8.01E-01
+	TH-230	48.44		16.90	4.84E-02	2.94E-01	2.94E-01
		62.85		4.60	1.28E+00		1.30E+00
		67.67		0.37	-2.65E+00		1.49E+01
+	PA-231	283.67		1.60	-1.41E+00	2.48E+00	3.23E+00
		302.67		2.30	-1.54E-01		2.48E+00
+	TH-231	25.64		14.70	-2.86E+00	4.75E-01	4.75E-01
		84.21		6.40	-4.72E-01		8.67E-01
+	PA-233	311.98		38.60	-9.50E-01	1.73E+00	1.73E+00
+	PA-234	131.20		20.40	3.00E-02	2.32E-01	2.32E-01
		733.99		8.80	9.02E-02		7.40E-01
		946.00		12.00	-1.31E-01		5.44E-01
+	PA-234M	1001.03	*	0.92	7.37E+00	1.00E+01	1.00E+01
+	TH-234	63.29	*	3.80	1.36E+00	2.44E+00	2.44E+00
+	U-235	143.76		10.50	1.04E-02	4.46E-01	4.46E-01
		163.35		4.70	4.96E-01		9.88E-01
		205.31		4.70	8.40E-02		9.97E-01
+	NP-237	86.50		12.60	2.98E-01	4.71E-01	4.71E-01
+	NP-239	106.10		22.70	8.59E+11	1.72E+12	1.72E+12
		228.18		10.70	3.95E+11		3.58E+12
		277.60		14.10	3.31E+12		3.55E+12
+	AM-241	59.54		35.90	-8.10E-03	1.50E-01	1.50E-01
+	AM-243	74.67	*	66.00	3.02E-01	1.53E-01	1.53E-01
+	CM-243	209.75		3.29	8.60E-01	4.26E-01	1.58E+00
		228.14		10.60	4.76E-02		4.30E-01
		277.60		14.00	3.97E-01		4.26E-01

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	1.97E+00	1.97E+00	1.44E-02	9.38E-01
	NA-22	1274.54		99.94	8.01E-02	8.01E-02	-5.01E-03	3.70E-02
@	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	4.64E-02	4.64E-02	-7.99E-03	1.96E-02
+	K-40	1460.81	*	10.67	1.31E+00	1.31E+00	2.48E+01	6.26E-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	5.87E-02	5.87E-02	-1.04E-02	2.88E-02
		78.34		96.00	7.47E-02		1.40E-01	3.68E-02
	SC-46	889.25		99.98	1.48E-01	1.48E-01	6.81E-03	6.91E-02
		1120.51		99.99	2.74E-01		3.76E-01	1.31E-01
	V-48	983.52		99.98	5.58E+00	5.58E+00	-1.33E+00	2.60E+00
		1312.10		97.50	6.50E+00		2.80E+00	3.01E+00
	CR-51	320.08		9.83	6.79E+00	6.79E+00	-1.07E+00	3.27E+00
	MN-54	834.83		99.97	8.90E-02	8.90E-02	1.38E-02	4.19E-02
	CO-56	846.75		99.96	1.45E-01	1.45E-01	-6.47E-02	6.75E-02
		1037.75		14.03	1.16E+00		-3.20E-01	5.37E-01
		1238.25		67.00	4.07E-01		4.75E-01	1.94E-01
		1771.40		15.51	8.01E-01		-2.40E-02	3.45E-01
		2598.48		16.90	5.96E-01		1.24E-01	2.31E-01
	CO-57	122.06		85.51	6.61E-02	6.61E-02	-2.56E-02	3.22E-02
		136.48		10.60	5.81E-01		1.94E-01	2.83E-01
	CO-58	810.76		99.40	1.70E-01	1.70E-01	-3.83E-02	7.94E-02
	FE-59	1099.22		56.50	6.17E-01	6.17E-01	2.41E-01	2.87E-01
		1291.56		43.20	7.12E-01		-2.64E-01	3.25E-01
	CO-60	1173.22		100.00	8.73E-02	6.15E-02	2.09E-02	4.09E-02
		1332.49		100.00	6.15E-02		1.27E-02	2.78E-02
	ZN-65	1115.52		50.75	2.17E-01	2.17E-01	4.10E-04	1.02E-01
	GA-67	93.31		35.70	3.60E+08	3.60E+08	6.65E+08	1.76E+08

Analysis Report for 1707093-03

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	GA-67	208.95		2.24	5.06E+09	3.60E+08	4.43E+09	2.45E+09
		300.22		16.00	7.98E+08		-1.61E+09	3.86E+08
	SE-75	121.11		16.70	4.66E-01	1.44E-01	-2.90E-01	2.26E-01
		136.00		59.20	1.44E-01		4.81E-02	7.01E-02
		264.65		59.80	1.56E-01		-7.02E-02	7.53E-02
		279.53		25.20	4.20E-01		3.45E-01	2.04E-01
		400.65		11.40	8.59E-01		1.53E-01	4.11E-01
	RB-82	776.52		13.00	7.96E+00	7.96E+00	2.23E+00	3.75E+00
	RB-83	520.41		46.00	2.85E-01	2.85E-01	9.79E-02	1.36E-01
		529.64		30.30	3.77E-01		-2.09E-02	1.78E-01
		552.65		16.40	8.12E-01		3.42E-01	3.86E-01
	KR-85	513.99		0.43	1.87E+01	1.87E+01	1.98E+01	9.04E+00
	SR-85	513.99		99.27	2.37E-01	2.37E-01	2.51E-01	1.14E-01
	Y-88	898.02		93.40	1.34E-01	7.83E-02	-1.86E-02	6.23E-02
		1836.01		99.38	7.83E-02		-4.58E-02	3.21E-02
	MO-93	263.06		56.72	9.60E-02	4.90E-02	4.62E-03	4.64E-02
		684.67		99.68	6.73E-02		3.44E-02	3.19E-02
		1477.11		99.08	4.90E-02		-4.73E-03	2.13E-02
	NB-93M	16.57		9.43	5.29E-01	5.29E-01	-6.91E-02	2.49E-01
	NB-94	702.63		100.00	6.96E-02	6.09E-02	9.72E-03	3.30E-02
		871.10		100.00	6.09E-02		-1.22E-02	2.83E-02
	NB-95	765.79		99.81	5.48E-01	5.48E-01	3.70E-01	2.60E-01
	NB-95M	235.69		25.00	6.45E+07	6.45E+07	-4.47E+08	3.14E+07
	ZR-95	724.18		43.70	4.73E-01	3.23E-01	-2.92E-01	2.24E-01
		756.72		55.30	3.23E-01		3.20E-02	1.51E-01
	MO-99	181.06		6.20	8.70E+10	5.46E+10	-2.13E+11	4.22E+10
		739.58		12.80	5.46E+10		-6.22E+09	2.56E+10
		778.00		4.50	1.65E+11		-5.82E+10	7.76E+10
	RU-103	497.08		89.00	3.76E-01	3.76E-01	9.51E-02	1.79E-01
	RU-106	621.84		9.80	6.74E-01	6.74E-01	-3.80E-01	3.17E-01
	AG-108M	433.93		89.90	6.05E-02	6.05E-02	4.91E-03	2.89E-02
		614.37		90.40	7.84E-02		1.94E-02	3.74E-02
		722.95		90.50	6.94E-02		-1.49E-01	3.27E-02
+	CD-109	88.03	*	3.72	3.69E+00	3.69E+00	2.70E+00	1.83E+00
	AG-110M	657.75		93.14	7.34E-02	7.34E-02	-3.18E-02	3.43E-02
		677.61		10.53	7.58E-01		4.67E-02	3.57E-01
		706.67		16.46	5.24E-01		-1.77E-01	2.47E-01
		763.93		21.98	3.85E-01		-4.14E-01	1.81E-01
		884.67		71.63	1.21E-01		6.75E-02	5.67E-02
		1384.27		23.94	2.73E-01		4.06E-02	1.20E-01
	CD-113M	263.70		0.02	2.33E+02	2.33E+02	-5.72E+01	1.12E+02
	SN-113	255.12		1.93	4.23E+00	1.53E-01	-5.40E-01	2.03E+00
		391.69		64.90	1.53E-01		-5.57E-02	7.34E-02
	TE123M	159.00		84.10	9.53E-02	9.53E-02	-4.65E-02	4.62E-02
	SB-124	602.71		97.87	1.90E-01	1.90E-01	-1.58E-03	8.96E-02
		645.85		7.26	2.63E+00		3.29E-01	1.24E+00
		722.78		11.10	1.81E+00		-3.88E+00	8.52E-01
		1691.02		49.00	2.63E-01		0.00E+00	1.09E-01
	I-125	35.49		6.49	2.54E+00	2.54E+00	2.18E+00	1.23E+00
	SB-125	176.33		6.89	6.99E-01	1.97E-01	-5.05E-02	3.39E-01
		427.89		29.33	1.97E-01		-2.74E-02	9.41E-02
		463.38		10.35	6.78E-01		6.86E-01	3.25E-01
		600.56		17.80	3.39E-01		7.16E-02	1.60E-01

Analysis Report for 1707093-03

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	SB-125	635.90		11.32	5.98E-01	1.97E-01	3.86E-01	2.83E-01
	SB-126	414.70		83.30	1.89E+01	1.78E+01	2.45E+00	9.03E+00
		666.33		99.60	1.87E+01		7.24E+00	8.83E+00
		695.00		99.60	1.78E+01		1.94E+00	8.38E+00
		720.50		53.80	3.55E+01		2.99E+01	1.68E+01
+	SN-126	87.57	*	37.00	3.19E-01	3.19E-01	2.34E-01	1.58E-01
	SB-127	473.00		25.00	1.82E+07	1.49E+07	-2.17E+06	8.66E+06
		685.20		35.70	1.49E+07		7.63E+06	7.06E+06
		783.80		14.70	3.82E+07		2.57E+07	1.80E+07
	I-129	29.78		57.00	9.86E-02	9.86E-02	4.19E-03	4.79E-02
		33.60		13.20	4.03E-01		-5.28E-02	1.96E-01
		39.58		7.52	6.22E-01		-4.30E-01	3.02E-01
	I-131	284.30		6.05	5.09E+03	3.70E+02	-4.04E+02	2.45E+03
		364.48		81.20	3.70E+02		-7.22E+01	1.77E+02
		636.97		7.26	5.35E+03		3.12E+03	2.53E+03
		722.89		1.80	2.13E+04		-4.56E+04	1.00E+04
	TE-132	49.72		13.10	7.83E+08	1.13E+08	-9.86E+08	3.81E+08
		228.16		88.00	1.13E+08		1.25E+07	5.47E+07
	BA-133	81.00		33.00	1.63E-01	1.29E-01	-5.68E-01	7.96E-02
		302.84		17.80	3.27E-01		-2.02E-02	1.58E-01
		356.01		60.00	1.29E-01		1.00E-02	6.28E-02
@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	XE-133	81.00		38.00	8.88E+04	8.88E+04	-3.10E+05	4.35E+04
	CS-134	563.23		8.38	8.67E-01	7.55E-02	8.47E-01	4.14E-01
		569.32		15.43	4.16E-01		-1.04E-01	1.97E-01
		604.70		97.60	7.55E-02		2.65E-03	3.60E-02
		795.84		85.40	9.21E-02		5.61E-02	4.35E-02
		801.93		8.73	7.71E-01		-2.93E-01	3.61E-01
	CS-135	268.24		16.00	3.67E-01	3.67E-01	2.99E-01	1.78E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	1.26E+02	1.18E+01	-6.86E-02	6.13E+01
		163.89		4.61	2.08E+02		1.04E+02	1.01E+02
		176.55		13.56	6.82E+01		-4.93E+00	3.31E+01
		273.65		12.66	9.38E+01		-4.53E+01	4.55E+01
		340.57		48.50	3.08E+01		4.40E+00	1.50E+01
		818.50		99.70	1.18E+01		9.23E-01	5.48E+00
		1048.07		79.60	1.86E+01		-1.70E+00	8.68E+00
		1235.34		19.70	9.84E+01		-5.81E+01	4.63E+01
	CS-137	661.65		85.12	6.74E-02	6.74E-02	-4.05E-02	3.17E-02
	LA-138	788.74		34.00	1.97E-01	7.67E-02	-9.67E-02	9.28E-02
		1435.80		66.00	7.67E-02		-2.22E-02	3.37E-02
	CE-139	165.85		80.35	9.31E-02	9.31E-02	-2.72E-02	4.52E-02
	BA-140	162.64		6.70	1.67E+02	5.85E+01	6.56E+01	8.12E+01
		304.84		4.50	2.79E+02		3.73E+01	1.35E+02
		423.70		3.20	4.02E+02		1.80E+02	1.92E+02
		437.55		2.00	6.71E+02		-5.32E+00	3.21E+02
		537.32		25.00	5.85E+01		2.01E+01	2.79E+01
	LA-140	328.77		20.50	7.10E+01	1.50E+01	4.57E+01	3.43E+01
		487.03		45.50	2.75E+01		5.39E+00	1.30E+01
		815.85		23.50	6.13E+01		1.06E+01	2.86E+01
		1596.49		95.49	1.50E+01		3.64E+00	6.67E+00

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CE-141	145.44	48.40	8.36E-01	8.36E-01	2.79E-01	4.07E-01
@ 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	5.29E-01	5.29E-01	-5.10E-01	2.57E-01
PM-144	476.78	42.00	1.65E-01	7.43E-02	1.30E-01	7.87E-02
	618.01	98.60	7.43E-02		1.64E-02	3.52E-02
	696.49	99.49	7.51E-02		-1.16E-03	3.54E-02
PM-145	36.85	21.70	2.27E-01	1.23E-01	-7.21E-02	1.10E-01
	37.36	39.70	1.23E-01		-6.27E-02	5.97E-02
	42.30	15.10	3.23E-01		-1.64E-01	1.57E-01
	72.40	2.31	2.81E+00		-3.20E+00	1.38E+00
PM-146	453.90	39.94	1.45E-01	1.45E-01	6.56E-02	6.93E-02
	735.90	14.01	4.52E-01		-1.43E-02	2.12E-01
	747.13	13.10	5.21E-01		2.05E-01	2.46E-01
ND-147	91.11	28.90	1.30E+02	1.30E+02	2.26E+02	6.36E+01
	531.02	13.10	2.43E+02		2.59E+01	1.15E+02
PM-149	285.90	3.10	9.56E+13	9.56E+13	4.81E+12	4.61E+13
EU-152	121.78	20.50	2.15E-01	2.15E-01	-1.34E-01	1.04E-01
	244.69	5.40	1.01E+00		-6.42E-01	4.89E-01
	344.27	19.13	2.88E-01		-4.31E-03	1.38E-01
	778.89	9.20	7.00E-01		-9.97E-03	3.28E-01
	964.01	10.40	8.34E-01		-1.47E+00	3.95E-01
	1085.78	7.22	1.08E+00		4.98E-01	5.03E-01
	1112.02	9.60	8.76E-01		1.42E-02	4.11E-01
	1407.95	14.94	4.96E-01		5.10E-02	2.28E-01
GD-153	97.43	31.30	2.00E-01	2.00E-01	8.48E-02	9.74E-02
	103.18	22.20	2.71E-01		2.27E-02	1.32E-01
EU-154	123.07	40.50	1.15E-01	1.15E-01	4.31E-02	5.58E-02
	723.30	19.70	3.25E-01		-6.97E-01	1.53E-01
	873.19	11.50	5.58E-01		7.21E-02	2.60E-01
	996.32	10.30	5.86E-01		-9.66E-02	2.70E-01
	1004.76	17.90	4.18E-01		8.59E-02	1.96E-01
	1274.45	35.50	2.14E-01		-1.34E-02	9.89E-02
EU-155	86.50	30.90	2.00E-01	2.00E-01	1.26E-01	9.79E-02
	105.30	20.70	2.28E-01		7.02E-02	1.11E-01
EU-156	811.77	10.40	6.28E+01	6.28E+01	2.58E+01	2.95E+01
	1153.47	7.20	1.17E+02		4.64E+01	5.50E+01
	1230.71	8.90	9.89E+01		4.50E+01	4.64E+01
HO-166M	184.41	72.60	8.29E-02	8.29E-02	1.73E-01	4.05E-02
	280.45	29.60	1.93E-01		1.04E-01	9.34E-02
	410.94	11.10	5.18E-01		3.55E-01	2.48E-01
	711.69	54.10	1.10E-01		3.45E-03	5.17E-02
TM-171	66.72	0.14	4.38E+01	4.38E+01	-5.89E+01	2.14E+01
HF-172	67.35	5.31	1.15E+00	4.48E-01	-2.05E-01	5.65E-01
	125.81	11.30	4.48E-01		1.73E-01	2.18E-01
LU-172	181.53	20.60	7.86E+03	4.19E+03	-1.93E+04	3.81E+03
	900.72	29.81	8.06E+03		1.14E+03	3.78E+03
	1093.66	62.50	4.19E+03		6.03E+02	1.95E+03
LU-173	100.72	5.24	9.89E-01	3.14E-01	-1.45E-01	4.82E-01
	272.11	21.20	3.14E-01		-1.74E-01	1.52E-01
HF-175	343.40	84.00	1.72E-01	1.72E-01	-2.63E-03	8.25E-02
LU-176	88.34	13.30	4.54E-01	5.32E-02	-9.43E-02	2.23E-01

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	LU-176	201.83		86.00	5.32E-02	5.32E-02	-2.43E-02	2.58E-02
		306.78		94.00	5.48E-02		1.79E-02	2.64E-02
	HF-181	133.02		41.70	5.58E-01	3.25E-01	-5.39E-01	2.71E-01
		345.85		17.20	1.65E+00		-2.48E-02	7.93E-01
		482.03		82.80	3.25E-01		-1.43E-01	1.54E-01
	TA-182	67.75		41.20	2.47E-01	2.47E-01	-4.39E-02	1.21E-01
		1121.30		34.90	6.22E-01		8.54E-01	2.97E-01
		1189.05		16.23	9.49E-01		-1.54E-01	4.44E-01
		1221.41		26.98	6.32E-01		1.94E-01	2.98E-01
		1231.02		11.44	1.41E+00		6.40E-01	6.60E-01
	IR-192	308.46		29.68	4.39E-01	2.97E-01	-9.32E-02	2.11E-01
		468.07		48.10	2.97E-01		1.04E-01	1.42E-01
+	HG-203	279.19	*	77.30	5.18E-01	5.18E-01	5.00E-01	2.54E-01
	TL-204	374.74		94.11	5.97E-02	5.97E-02	-5.61E-03	2.86E-02
		899.15		99.16	7.42E-02		4.47E-02	3.48E-02
		911.74		91.10	1.50E-01		3.84E-01	7.23E-02
	BI-207	569.67		97.72	5.92E-02	5.92E-02	-4.80E-02	2.80E-02
		1063.62		74.90	9.85E-02		-1.22E-03	4.59E-02
	TL-208	583.14		30.22	3.75E-01	3.75E-01	1.14E+00	1.82E-01
		860.37		4.48	1.70E+00		1.04E+00	8.02E-01
		2614.66		35.85	5.22E-01		1.05E+00	2.48E-01
	BI-210M	262.00		45.00	1.19E-01	1.19E-01	-2.29E-03	5.73E-02
		300.00		23.00	2.68E-01		-7.58E-01	1.30E-01
	PB-210	46.50		4.25	1.21E+00	1.21E+00	4.55E-01	5.92E-01
	PB-211	404.84		2.90	1.93E+00	1.93E+00	8.85E-02	9.26E-01
		831.96		2.90	2.04E+00		-1.62E-02	9.51E-01
+	BI-212	727.17	*	11.80	7.34E-01	7.34E-01	7.85E-01	3.51E-01
		1620.62	*	2.75	1.83E+00		8.04E-01	7.95E-01
+	PB-212	238.63	*	44.60	2.06E-01	2.06E-01	1.35E+00	1.01E-01
		300.09	*	3.41	1.45E+00		8.30E-01	6.98E-01
+	BI-214	609.31	*	46.30	2.35E-01	2.35E-01	8.96E-01	1.14E-01
		1120.29	*	15.10	9.07E-01		1.13E+00	4.37E-01
		1764.49	*	15.80	3.27E-01		1.45E+00	1.41E-01
		2204.22		4.98	1.81E+00		1.21E+00	8.21E-01
+	PB-214	295.21	*	19.19	4.35E-01	2.49E-01	9.07E-01	2.13E-01
		351.92	*	37.19	2.49E-01		1.07E+00	1.22E-01
	RN-219	401.80		6.50	8.58E-01	8.58E-01	4.41E-01	4.11E-01
	RA-223	323.87		3.88	1.43E+00	1.43E+00	1.94E-01	6.90E-01
+	RA-224	240.98	*	3.95	2.33E+00	2.33E+00	3.53E+00	1.15E+00
	RA-225	40.00		31.00	1.75E+01	1.75E+01	1.61E+00	8.50E+00
+	RA-226	186.21	*	3.28	2.83E+00	2.83E+00	3.29E+00	1.39E+00
	TH-227	50.10		8.40	5.53E-01	5.18E-01	-2.93E-01	2.69E-01
		236.00		11.50	5.18E-01		-3.59E+00	2.52E-01
		256.20		6.30	8.45E-01		1.38E-01	4.09E-01
+	AC-228	338.32	*	11.40	7.20E-01	3.18E-01	1.41E+00	3.51E-01
		911.07	*	27.70	3.18E-01		1.37E+00	1.51E-01
		969.11	*	16.60	8.01E-01		1.41E+00	3.87E-01
	TH-230	48.44		16.90	2.94E-01	2.94E-01	4.84E-02	1.43E-01
		62.85		4.60	1.30E+00		1.28E+00	6.38E-01
		67.67		0.37	1.49E+01		-2.65E+00	7.32E+00
	PA-231	283.67		1.60	3.23E+00	2.48E+00	-1.41E+00	1.56E+00
		302.67		2.30	2.48E+00		-1.54E-01	1.20E+00
	TH-231	25.64		14.70	4.75E-01	4.75E-01	-2.86E+00	2.31E-01

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TH-231	84.21		6.40	8.67E-01	4.75E-01	-4.72E-01	4.25E-01
	PA-233	311.98		38.60	1.73E+00	1.73E+00	-9.50E-01	8.33E-01
	PA-234	131.20		20.40	2.32E-01	2.32E-01	3.00E-02	1.13E-01
		733.99		8.80	7.40E-01		9.02E-02	3.49E-01
		946.00		12.00	5.44E-01		-1.31E-01	2.53E-01
+	PA-234M	1001.03	*	0.92	1.00E+01	1.00E+01	7.37E+00	4.74E+00
+	TH-234	63.29	*	3.80	2.44E+00	2.44E+00	1.36E+00	1.20E+00
	U-235	143.76		10.50	4.46E-01	4.46E-01	1.04E-02	2.17E-01
		163.35		4.70	9.88E-01		4.96E-01	4.80E-01
		205.31		4.70	9.97E-01		8.40E-02	4.83E-01
	NP-237	86.50		12.60	4.71E-01	4.71E-01	2.98E-01	2.31E-01
	NP-239	106.10		22.70	1.72E+12	1.72E+12	8.59E+11	8.37E+11
		228.18		10.70	3.58E+12		3.95E+11	1.73E+12
		277.60		14.10	3.55E+12		3.31E+12	1.72E+12
	AM-241	59.54		35.90	1.50E-01	1.50E-01	-8.10E-03	7.32E-02
+	AM-243	74.67	*	66.00	1.53E-01	1.53E-01	3.02E-01	7.56E-02
	CM-243	209.75		3.29	1.58E+00	4.26E-01	8.60E-01	7.69E-01
		228.14		10.60	4.30E-01		4.76E-02	2.08E-01
		277.60		14.00	4.26E-01		3.97E-01	2.07E-01

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

Analysis Report for 1707093-03

HTC-A09-S001-3642-01

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

Sample Title: HTC-A09-S001-3642-01

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	87	93	78	152	488	135
25:	84	80	76	83	67	74	67	87
33:	74	83	81	79	94	67	58	81
41:	88	86	85	86	90	108	153	97
49:	87	107	78	97	97	109	89	102
57:	125	128	136	139	143	149	194	236
65:	163	157	156	164	132	161	156	156
73:	145	197	402	332	396	465	195	150
81:	119	166	113	165	173	154	185	236
89:	155	190	168	147	275	237	116	115
97:	90	104	113	118	94	91	79	93
105:	117	109	83	94	107	88	101	99
113:	107	85	77	75	107	81	90	86
121:	82	82	85	84	91	115	76	91
129:	120	120	109	92	80	75	79	92
137:	84	105	109	96	92	91	80	99
145:	86	82	81	85	74	79	93	75
153:	79	77	82	83	71	78	71	61
161:	82	71	89	80	68	77	70	60
169:	75	73	57	75	75	71	53	77
177:	61	70	73	60	69	73	77	66
185:	103	180	155	69	62	69	62	57
193:	54	61	61	77	64	80	65	63
201:	63	60	56	58	64	65	56	66
209:	91	101	66	46	66	66	58	59
217:	60	51	53	55	53	53	77	43
225:	61	47	54	44	38	54	64	46
233:	45	56	41	52	77	202	629	256
241:	137	167	119	59	52	46	55	45
249:	41	57	57	40	38	38	38	50
257:	43	42	42	53	51	37	37	48
265:	30	42	44	40	47	70	59	50
273:	45	36	38	38	65	58	41	54
281:	49	32	37	42	33	26	31	36
289:	36	42	28	39	39	52	155	182
297:	67	40	42	62	54	37	31	39
305:	20	38	33	35	28	30	25	24
313:	30	39	28	37	33	28	33	34
321:	29	35	32	41	28	33	43	66
329:	45	38	34	24	29	35	24	43
337:	45	98	127	48	24	29	34	31
345:	22	29	32	33	28	29	98	269
353:	214	43	30	29	38	32	17	24
361:	27	17	26	21	20	19	32	22

369:	31	15	27	29	26	20	27	21

Sample Title: HTC-A09-S001-3642-01

Channel								
377:	32	24	36	25	29	17	26	21
385:	17	24	30	32	25	26	21	25
393:	28	16	31	30	21	17	26	18
401:	28	25	30	25	24	16	27	29
409:	25	27	27	21	25	27	20	16
417:	23	32	18	19	11	19	18	26
425:	26	25	24	15	18	20	21	21
433:	27	14	25	24	16	22	21	22
441:	25	23	24	20	16	22	20	24
449:	11	14	25	27	24	23	15	16
457:	17	18	22	14	30	30	41	39
465:	21	12	24	19	18	24	19	21
473:	13	24	20	18	19	26	21	14
481:	14	9	29	13	12	15	19	23
489:	13	18	13	9	19	14	22	31
497:	13	24	13	12	13	23	32	19
505:	16	20	11	22	26	57	89	63
513:	23	19	17	21	21	19	18	21
521:	14	18	18	20	11	12	8	5
529:	14	16	15	17	18	20	18	19
537:	15	21	22	19	14	17	13	7
545:	15	15	15	13	13	24	22	15
553:	11	12	19	17	17	12	11	16
561:	15	28	23	25	18	23	9	19
569:	19	18	13	11	19	12	32	10
577:	10	25	15	14	19	43	154	144
585:	35	18	14	18	18	15	17	9
593:	14	17	20	8	15	11	19	14
601:	13	10	19	9	18	17	17	46
609:	163	189	37	19	16	18	24	21
617:	13	10	17	10	10	11	12	16
625:	8	16	21	17	14	21	8	15
633:	11	16	15	17	16	19	16	12
641:	9	12	13	12	11	15	16	14
649:	14	14	15	11	10	11	9	8
657:	8	19	10	7	7	12	15	16
665:	16	20	16	13	13	16	14	12
673:	9	11	15	12	14	19	12	8
681:	10	18	10	18	14	16	17	14
689:	16	11	11	12	13	14	17	9
697:	8	19	10	17	11	26	15	19
705:	13	14	16	16	12	9	16	12
713:	10	10	12	7	9	19	20	18
721:	18	10	8	7	9	18	38	25
729:	17	11	15	15	13	11	11	13
737:	15	12	6	12	8	10	14	13
745:	10	11	16	18	12	13	12	7
753:	18	13	15	10	5	7	8	16
761:	7	13	11	14	15	8	16	25
769:	25	15	10	16	17	10	17	12
777:	12	14	7	9	10	16	12	8
785:	17	16	17	5	15	13	12	10
793:	14	22	24	16	10	8	6	13

801:	6	12	8	13	13	15	16	7

Sample Title: HTC-A09-S001-3642-01

Channel								
809:	13	11	13	10	8	11	12	6
817:	7	9	13	6	6	7	7	11
825:	12	11	10	7	6	10	9	7
833:	9	14	7	18	22	14	16	13
841:	18	15	14	6	11	6	11	11
849:	6	10	13	14	8	6	8	10
857:	6	7	11	18	30	18	10	12
865:	10	12	10	3	11	17	7	11
873:	5	7	6	12	14	5	7	3
881:	7	16	7	8	15	2	15	9
889:	7	9	12	12	8	6	5	12
897:	10	6	12	11	10	17	9	9
905:	13	12	8	6	5	40	104	87
913:	29	7	11	10	14	6	10	6
921:	4	16	9	6	11	11	7	5
929:	13	5	8	9	7	25	10	10
937:	11	9	9	11	11	10	9	9
945:	8	9	11	9	7	13	7	5
953:	10	10	11	7	5	9	7	6
961:	6	9	9	18	33	15	17	30
969:	73	38	13	12	5	11	12	16
977:	9	15	10	7	10	9	13	9
985:	9	9	8	11	9	7	14	4
993:	7	6	4	4	10	8	7	15
1001:	15	8	22	8	5	4	10	7
1009:	9	8	7	7	10	10	8	9
1017:	10	8	10	9	10	5	10	8
1025:	6	8	8	5	10	5	8	14
1033:	8	11	4	13	9	4	9	6
1041:	7	10	14	5	10	15	7	11
1049:	7	7	8	14	6	8	7	7
1057:	3	7	12	12	5	9	13	10
1065:	10	7	6	13	5	10	12	8
1073:	8	11	10	7	6	7	11	11
1081:	6	16	6	14	11	7	9	7
1089:	8	5	11	9	14	9	6	12
1097:	9	10	10	11	4	5	5	7
1105:	14	11	9	8	10	14	7	11
1113:	13	10	15	11	11	8	23	60
1121:	40	15	11	8	13	10	7	15
1129:	10	8	11	8	8	8	6	11
1137:	9	13	7	14	5	13	8	13
1145:	11	14	9	5	8	11	8	17
1153:	11	9	12	9	9	11	12	10
1161:	9	11	16	15	8	6	21	12
1169:	5	9	18	8	11	9	8	13
1177:	5	15	15	9	8	10	11	8
1185:	16	13	7	15	7	13	6	12
1193:	7	15	11	13	12	11	11	11
1201:	13	7	13	8	10	6	15	5
1209:	8	12	17	16	11	14	9	12
1217:	13	16	12	18	5	12	11	13
1225:	10	8	13	11	15	11	11	9

1233:	6	10	17	6	17	24	31	15

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Channel								
1241:	18	9	11	13	14	15	11	8
1249:	11	7	7	6	12	6	8	8
1257:	11	5	10	5	6	11	9	9
1265:	2	8	12	10	8	7	7	15
1273:	10	6	3	3	7	4	10	9
1281:	10	11	11	10	6	15	6	3
1289:	5	8	4	8	6	2	8	11
1297:	13	2	5	8	8	5	9	4
1305:	4	4	6	9	8	4	10	7
1313:	9	8	6	6	7	5	4	8
1321:	3	4	5	4	7	5	5	3
1329:	5	6	6	5	3	3	1	3
1337:	3	4	8	4	6	6	10	6
1345:	7	7	5	6	2	6	4	3
1353:	8	3	9	2	7	3	3	4
1361:	6	2	4	8	2	4	2	6
1369:	2	4	4	5	1	8	3	6
1377:	7	13	7	3	2	0	3	4
1385:	3	3	3	4	3	2	3	2
1393:	0	5	4	4	1	2	2	3
1401:	6	11	5	4	1	9	6	9
1409:	3	10	3	3	2	4	3	4
1417:	3	6	4	4	2	11	1	3
1425:	2	5	6	3	2	5	2	1
1433:	1	1	3	1	5	6	3	4
1441:	3	3	2	0	8	4	2	6
1449:	4	4	0	6	0	4	7	7
1457:	12	15	104	371	473	210	25	11
1465:	16	17	11	2	1	1	0	3
1473:	3	2	2	4	1	0	3	4
1481:	2	4	2	2	1	5	0	3
1489:	1	0	4	1	1	0	2	7
1497:	1	2	2	1	1	3	1	4
1505:	1	0	4	3	3	4	3	5
1513:	3	3	4	6	1	2	1	1
1521:	0	0	2	2	1	1	2	3
1529:	2	2	4	3	1	1	2	1
1537:	1	3	4	3	5	3	2	2
1545:	2	2	3	1	0	1	1	2
1553:	0	1	2	3	4	5	3	2
1561:	1	2	0	4	2	1	1	1
1569:	2	3	1	0	0	1	5	0
1577:	0	4	0	2	3	5	2	3
1585:	2	5	5	6	8	2	3	3
1593:	8	3	3	2	2	2	2	3
1601:	1	2	0	1	1	1	0	1
1609:	1	0	0	3	2	1	1	4
1617:	0	1	3	3	5	0	1	2
1625:	2	2	2	1	3	8	6	2
1633:	3	0	2	3	1	3	1	2
1641:	2	0	4	0	2	1	4	2
1649:	1	2	2	1	1	1	2	2
1657:	0	0	1	3	2	3	3	2

1665:	1	2	0	0	0	3	3	2

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Channel								
1673:	3	2	1	1	2	0	1	4
1681:	2	3	2	3	2	2	0	0
1689:	1	0	0	3	4	3	2	1
1697:	0	0	1	0	2	3	1	2
1705:	1	1	0	3	1	2	0	2
1713:	1	1	1	2	0	0	0	0
1721:	3	1	1	0	0	1	1	1
1729:	4	5	4	1	2	1	2	0
1737:	2	0	1	0	1	2	0	1
1745:	1	0	3	2	1	1	0	3
1753:	2	2	0	0	0	3	0	0
1761:	1	3	12	38	27	8	3	2
1769:	2	1	3	2	0	1	2	1
1777:	0	2	0	2	3	1	1	2
1785:	1	3	0	0	3	2	0	2
1793:	0	4	1	0	1	0	1	1
1801:	1	1	0	2	1	1	3	0
1809:	2	3	0	2	3	0	2	0
1817:	0	2	0	1	1	0	3	0
1825:	1	0	1	2	0	1	3	0
1833:	1	2	1	0	2	1	2	3
1841:	3	0	2	1	1	2	5	7
1849:	0	2	0	1	0	0	3	0
1857:	0	0	0	1	3	0	2	1
1865:	2	0	2	2	1	1	1	1
1873:	2	1	1	1	4	1	2	1
1881:	0	2	0	1	1	1	1	1
1889:	3	1	2	1	0	1	0	0
1897:	2	2	0	0	1	0	1	1
1905:	2	0	1	0	4	1	1	1
1913:	1	0	1	1	0	0	1	1
1921:	2	0	1	1	3	0	0	1
1929:	0	1	2	1	3	0	3	1
1937:	2	1	0	1	3	5	3	0
1945:	0	0	1	0	1	0	1	1
1953:	2	1	1	2	1	2	1	4
1961:	0	1	0	0	1	2	1	2
1969:	2	2	0	2	1	0	2	2
1977:	1	3	1	1	0	1	1	0
1985:	2	1	0	0	2	2	0	0
1993:	0	3	0	1	1	0	3	0
2001:	0	0	2	1	0	0	3	1
2009:	1	1	3	1	0	0	3	0
2017:	1	1	0	1	1	1	1	0
2025:	0	1	0	2	3	2	0	0
2033:	0	3	0	1	0	0	5	1
2041:	1	0	1	1	1	0	3	2
2049:	1	0	0	1	2	0	1	3
2057:	0	0	1	0	1	1	0	2
2065:	1	2	1	1	0	0	0	0
2073:	1	1	1	1	1	0	2	1
2081:	0	3	0	3	3	0	0	1
2089:	1	4	2	1	1	0	4	1

2097:	0	1	0	0	4	5	4	4

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

2529:	0	0	0	0	0	0	0	0

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Channel								
2537:	0	1	0	0	1	0	0	1
2545:	0	0	1	0	0	0	0	0
2553:	1	0	0	0	0	0	1	2
2561:	0	0	0	0	1	0	0	0
2569:	0	0	0	0	1	0	0	0
2577:	1	0	1	1	1	1	1	1
2585:	0	0	1	0	1	1	1	0
2593:	1	0	2	0	0	0	0	0
2601:	1	0	0	0	1	0	1	1
2609:	1	2	5	10	33	35	28	5
2617:	3	2	2	0	0	0	0	2
2625:	0	0	1	0	0	0	0	0
2633:	0	0	1	0	1	0	2	1
2641:	0	2	0	0	2	0	0	0
2649:	0	1	0	1	1	0	0	0
2657:	0	1	0	0	0	0	0	0
2665:	0	1	0	0	0	0	1	0
2673:	0	0	0	0	1	0	0	0
2681:	0	0	0	2	2	0	0	1
2689:	0	0	0	0	0	0	0	1
2697:	0	0	1	0	0	0	0	1
2705:	0	1	0	0	1	0	0	0
2713:	2	1	1	0	0	0	0	1
2721:	0	0	0	1	1	2	0	0
2729:	1	0	0	0	1	0	1	0
2737:	0	1	0	0	0	0	1	0
2745:	1	0	0	0	0	0	0	1
2753:	1	0	0	0	1	0	1	0
2761:	0	0	0	0	0	1	2	0
2769:	0	0	0	1	0	0	0	0
2777:	1	0	1	1	0	0	0	0
2785:	0	2	0	0	0	0	1	1
2793:	0	0	1	1	0	0	0	2
2801:	2	1	0	1	0	0	0	0
2809:	0	0	0	1	0	0	0	0
2817:	0	0	0	0	3	0	0	0
2825:	0	0	1	1	1	0	0	1
2833:	1	0	0	0	0	0	1	0
2841:	0	0	0	1	0	0	1	0
2849:	1	0	0	0	0	0	0	1
2857:	0	0	1	0	0	0	0	0
2865:	0	0	0	1	1	0	0	0
2873:	0	1	0	0	1	0	0	0
2881:	0	0	1	0	0	0	0	1
2889:	0	0	0	1	0	1	0	0
2897:	0	0	0	1	0	0	0	0
2905:	0	0	0	0	1	1	0	0
2913:	0	0	0	0	0	1	0	0
2921:	0	0	0	0	0	0	0	1
2929:	1	1	0	0	0	0	1	0
2937:	0	0	0	1	0	0	0	0
2945:	1	0	1	0	0	0	1	0
2953:	1	1	0	1	1	0	0	0

2961:	1	0	0	0	0	1	0	0

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

3393:	0	0	0	1	0	0	0	0

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

3825:	0	0	0	0	0	0	0	0

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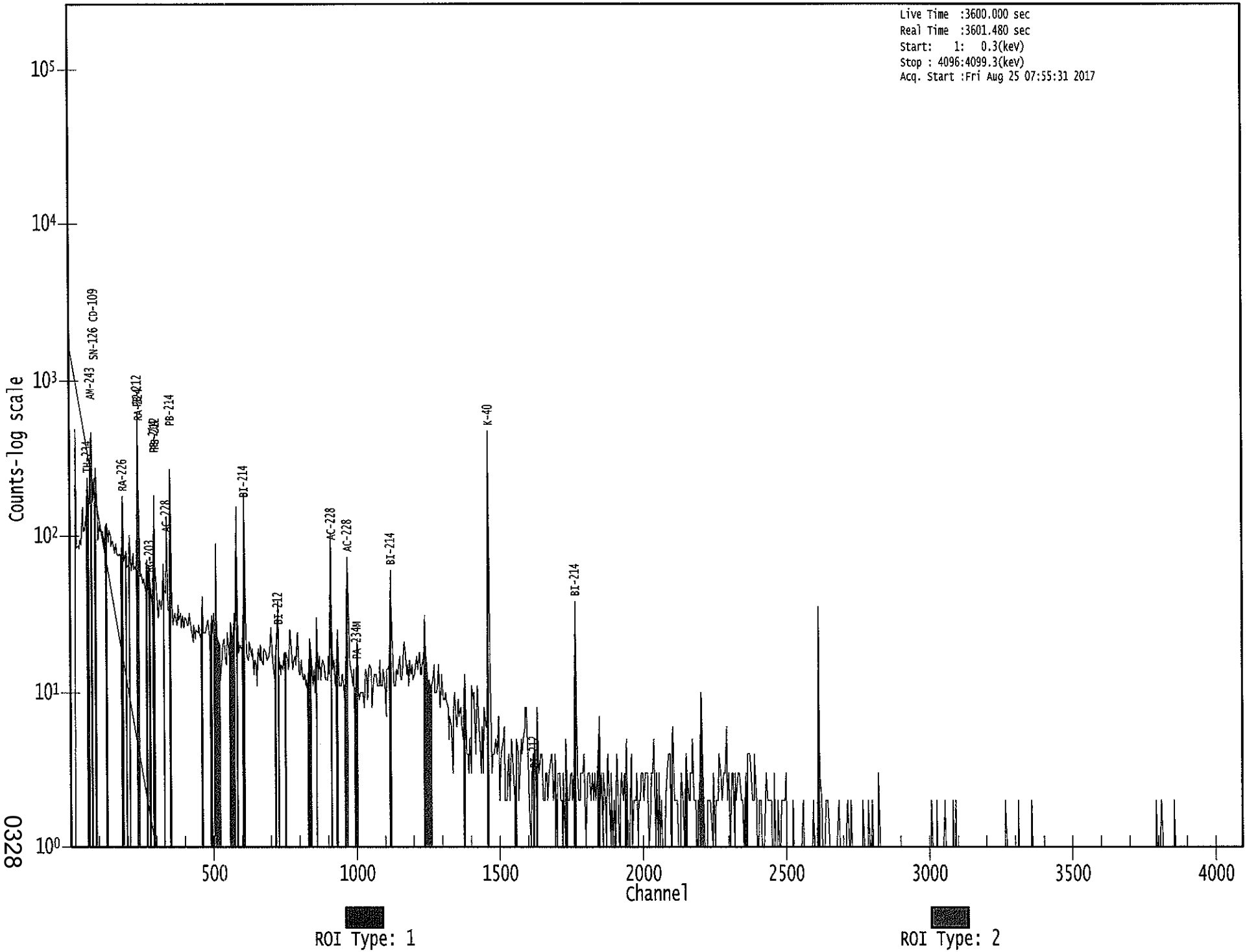
Channel								
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	2	0	0
3857:	1	0	1	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	1	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0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

0000055963.CNF



0328

Apex-Gamma

8/25

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-04
Sample Description	: HTC-A09-S001-3642-01
Sample Type	: SOIL
Sample Size	: 6.570E+02 grams
Facility	: Countroom
Sample Taken On	: 5/16/2017 10:48:49AM
Acquisition Started	: 8/25/2017 6:52:59AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.5 seconds
Dead Time	: 0.04 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 17 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 1/14/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55959

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 7:53:04AM
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	45.89	46.51	0.0000	0.00
2	52.45	53.07	0.0000	0.00
3	74.72	75.31	0.0000	0.00
4	77.19	77.78	0.0000	0.00
5	87.57	88.15	0.0000	0.00
6	92.55	93.12	0.0000	0.00
7	129.11	129.65	0.0000	0.00
8	185.62	186.10	0.0000	0.00
9	238.60	239.03	0.0000	0.00
10	241.66	242.09	0.0000	0.00
11	270.25	270.65	0.0000	0.00
12	276.66	277.05	0.0000	0.00
13	295.23	295.59	0.0000	0.00
14	299.84	300.20	0.0000	0.00
15	327.22	327.56	0.0000	0.00
16	338.46	338.78	0.0000	0.00
17	351.95	352.26	0.0000	0.00
18	418.85	419.09	0.0000	0.00
19	462.96	463.16	0.0000	0.00
20	469.99	470.18	0.0000	0.00
21	473.99	474.18	0.0000	0.00
22	510.81	510.96	0.0000	0.00
23	543.71	543.83	0.0000	0.00
24	583.13	583.21	0.0000	0.00
25	609.48	609.53	0.0000	0.00
26	727.93	727.87	0.0000	0.00
27	751.98	751.89	0.0000	0.00
28	766.62	766.52	0.0000	0.00
29	794.97	794.84	0.0000	0.00
30	911.35	911.10	0.0000	0.00
31	918.99	918.73	0.0000	0.00
32	936.42	936.15	0.0000	0.00
33	965.10	964.80	0.0000	0.00
34	969.37	969.06	0.0000	0.00
35	1070.55	1070.14	0.0000	0.00
36	1120.59	1120.13	0.0000	0.00
37	1184.33	1183.81	0.0000	0.00
38	1239.12	1238.54	0.0000	0.00
39	1378.27	1377.56	0.0000	0.00
40	1461.53	1460.73	0.0000	0.00
41	1465.75	1464.95	0.0000	0.00
42	1496.05	1495.22	0.0000	0.00

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1530.43	1529.57	0.0000	0.00
44	1588.14	1587.22	0.0000	0.00
45	1593.15	1592.22	0.0000	0.00
46	1629.84	1628.88	0.0000	0.00
47	1639.85	1638.88	0.0000	0.00
48	1657.88	1656.89	0.0000	0.00
49	1663.38	1662.39	0.0000	0.00
50	1730.92	1729.87	0.0000	0.00
51	1765.30	1764.21	0.0000	0.00
52	1781.68	1780.57	0.0000	0.00
53	1802.80	1801.67	0.0000	0.00
54	1896.88	1895.66	0.0000	0.00
55	2104.26	2102.84	0.0000	0.00
56	2119.11	2117.68	0.0000	0.00
57	2169.23	2167.75	0.0000	0.00
58	2186.31	2184.81	0.0000	0.00
59	2204.04	2202.52	0.0000	0.00
60	2287.50	2285.90	0.0000	0.00
61	2352.83	2351.17	0.0000	0.00
62	2436.63	2434.90	0.0000	0.00
63	2452.75	2451.00	0.0000	0.00
64	2615.39	2613.48	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 7:53:04AM

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	45.89	44 -	49	46.51	1.11E+02	71.75	9.47E+02	1.36
	2	52.45	51 -	55	53.07	5.95E+01	67.75	9.73E+02	2.63
M	3	74.72	71 -	82	75.31	4.99E+02	99.63	1.47E+03	1.81
m	4	77.19	71 -	82	77.78	6.80E+02	104.85	1.41E+03	1.82
M	5	87.57	82 -	97	88.15	2.92E+02	83.56	1.19E+03	1.67
m	6	92.55	82 -	97	93.12	2.97E+02	82.62	1.08E+03	1.67
	7	129.11	127 -	132	129.65	8.82E+01	73.86	1.02E+03	1.50
	8	185.62	182 -	190	186.10	2.22E+02	94.45	1.24E+03	1.98
M	9	238.60	233 -	247	239.03	1.03E+03	78.75	5.08E+02	1.79
m	10	241.66	233 -	247	242.09	2.99E+02	90.56	6.79E+02	2.19
	11	270.25	267 -	274	270.65	8.78E+01	65.54	6.60E+02	2.20
	12	276.66	275 -	280	277.05	4.90E+01	48.92	4.28E+02	2.53
M	13	295.23	292 -	303	295.59	3.24E+02	52.87	3.48E+02	1.79
m	14	299.84	292 -	303	300.20	1.06E+02	54.82	4.37E+02	2.32
	15	327.22	324 -	332	327.56	6.22E+01	61.66	5.52E+02	3.66
M	16	338.46	334 -	356	338.78	1.86E+02	44.40	3.11E+02	1.72
m	17	351.95	334 -	356	352.26	5.35E+02	57.65	2.47E+02	1.69
	18	418.85	416 -	421	419.09	3.95E+01	37.87	2.51E+02	2.35
M	19	462.96	460 -	477	463.16	5.03E+01	32.91	1.75E+02	1.98
m	20	469.99	460 -	477	470.18	2.30E+01	30.32	1.78E+02	1.98
m	21	473.99	460 -	477	474.18	2.47E+01	31.35	1.79E+02	1.98
	22	510.81	505 -	516	510.96	2.21E+02	62.13	3.72E+02	2.37
	23	543.71	542 -	546	543.83	2.01E+01	22.25	9.18E+01	2.62
	24	583.13	578 -	588	583.21	3.05E+02	62.81	3.64E+02	1.98
	25	609.48	605 -	613	609.53	3.71E+02	60.42	3.33E+02	1.88
	26	727.93	723 -	733	727.87	9.20E+01	47.17	2.48E+02	2.14
	27	751.98	749 -	756	751.89	2.84E+01	31.43	1.49E+02	3.76
	28	766.62	762 -	771	766.52	5.23E+01	40.61	2.07E+02	1.66
	29	794.97	792 -	799	794.84	5.29E+01	33.94	1.58E+02	1.80
	30	911.35	905 -	915	911.10	1.89E+02	43.23	1.48E+02	1.90
	31	918.99	916 -	921	918.73	2.00E+01	22.36	8.40E+01	2.76
	32	936.42	930 -	942	936.15	5.38E+01	44.45	2.04E+02	2.79
M	33	965.10	957 -	975	964.80	4.56E+01	28.85	1.20E+02	2.22
m	34	969.37	957 -	975	969.06	1.42E+02	34.18	1.12E+02	2.22
	35	1070.55	1060 -	1081	1070.14	8.98E+01	60.42	2.54E+02	17.18
	36	1120.59	1116 -	1123	1120.13	9.03E+01	33.94	1.31E+02	2.74
	37	1184.33	1181 -	1188	1183.81	2.35E+01	29.93	1.37E+02	2.51
	38	1239.12	1235 -	1241	1238.54	5.03E+01	28.85	1.13E+02	2.26
	39	1378.27	1373 -	1380	1377.56	2.35E+01	21.82	6.29E+01	2.71
M	40	1461.53	1456 -	1469	1460.73	1.22E+03	71.85	4.12E+01	2.28

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
m	41	1465.75	1456 -	1469	1464.95	6.04E+01	59.66	2.12E+01	3.52
	42	1496.05	1493 -	1498	1495.22	9.38E+00	8.37	7.23E+00	1.60
	43	1530.43	1527 -	1533	1529.57	1.37E+01	8.50	2.53E+00	3.75
M	44	1588.14	1574 -	1600	1587.22	2.43E+01	15.02	2.19E+01	2.45
m	45	1593.15	1574 -	1600	1592.22	1.33E+01	14.05	1.80E+01	2.45
	46	1629.84	1625 -	1634	1628.88	1.36E+01	12.29	1.09E+01	4.89
	47	1639.85	1636 -	1642	1638.88	9.00E+00	7.50	4.00E+00	3.21
M	48	1657.88	1655 -	1666	1656.89	9.63E+00	5.89	5.59E+00	3.61
m	49	1663.38	1655 -	1666	1662.39	1.45E+01	12.20	1.17E+01	3.62
	50	1730.92	1725 -	1736	1729.87	2.26E+01	11.66	4.72E+00	2.26
	51	1765.30	1761 -	1768	1764.21	7.43E+01	18.65	9.47E+00	3.22
	52	1781.68	1776 -	1783	1780.57	7.00E+00	8.72	8.00E+00	2.49
	53	1802.80	1799 -	1804	1801.67	6.00E+00	4.90	0.00E+00	1.92
	54	1896.88	1893 -	1898	1895.66	5.38E+00	7.07	5.25E+00	1.85
	55	2104.26	2098 -	2107	2102.84	1.80E+01	13.23	1.40E+01	1.47
	56	2119.11	2115 -	2120	2117.68	9.73E+00	7.28	2.55E+00	1.13
	57	2169.23	2164 -	2170	2167.75	8.00E+00	5.66	0.00E+00	2.70
	58	2186.31	2181 -	2187	2184.81	8.67E+00	8.51	6.67E+00	1.90
	59	2204.04	2198 -	2207	2202.52	2.00E+01	16.03	2.59E+01	3.35
	60	2287.50	2283 -	2288	2285.90	5.38E+00	7.07	5.25E+00	1.45
	61	2352.83	2346 -	2356	2351.17	1.35E+01	11.68	1.10E+01	1.14
	62	2436.63	2432 -	2437	2434.90	5.00E+00	7.07	6.00E+00	2.71
	63	2452.75	2449 -	2453	2451.00	7.00E+00	5.29	0.00E+00	2.50
	64	2615.39	2608 -	2618	2613.48	1.32E+02	24.67	1.09E+01	2.81

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 : 8/25/2017 7:53:04AM

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	45.89	44 -	49	1.11E+02	71.75	9.47E+02	5.64E+01
	2	52.45	51 -	55	5.95E+01	67.75	9.73E+02	5.42E+01
M	3	74.72	71 -	82	4.99E+02	99.63	1.47E+03	6.31E+01
m	4	77.19	71 -	82	6.80E+02	104.85	1.41E+03	6.17E+01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	5	87.57	82 -	97	2.92E+02	83.56	1.19E+03	5.66E+01
m	6	92.55	82 -	97	2.97E+02	82.62	1.08E+03	5.40E+01
	7	129.11	127 -	132	8.82E+01	73.86	1.02E+03	5.87E+01
	8	185.62	182 -	190	2.22E+02	94.45	1.24E+03	7.37E+01
M	9	238.60	233 -	247	1.03E+03	78.75	5.08E+02	3.70E+01
m	10	241.66	233 -	247	2.99E+02	90.56	6.79E+02	4.28E+01
	11	270.25	267 -	274	8.78E+01	65.54	6.60E+02	5.16E+01
	12	276.66	275 -	280	4.90E+01	48.92	4.28E+02	3.85E+01
M	13	295.23	292 -	303	3.24E+02	52.87	3.48E+02	3.07E+01
m	14	299.84	292 -	303	1.06E+02	54.82	4.37E+02	3.44E+01
	15	327.22	324 -	332	6.22E+01	61.66	5.52E+02	4.90E+01
M	16	338.46	334 -	356	1.86E+02	44.40	3.11E+02	2.90E+01
m	17	351.95	334 -	356	5.35E+02	57.65	2.47E+02	2.58E+01
	18	418.85	416 -	421	3.95E+01	37.87	2.51E+02	2.94E+01
M	19	462.96	460 -	477	5.03E+01	32.91	1.75E+02	2.18E+01
m	20	469.99	460 -	477	2.30E+01	30.32	1.78E+02	2.19E+01
m	21	473.99	460 -	477	2.47E+01	31.35	1.79E+02	2.20E+01
	22	510.81	505 -	516	2.21E+02	62.13	3.72E+02	4.48E+01
	23	543.71	542 -	546	2.01E+01	22.25	9.18E+01	1.67E+01
	24	583.13	578 -	588	3.05E+02	62.81	3.64E+02	4.29E+01
	25	609.48	605 -	613	3.71E+02	60.42	3.33E+02	3.82E+01
	26	727.93	723 -	733	9.20E+01	47.17	2.48E+02	3.54E+01
	27	751.98	749 -	756	2.84E+01	31.43	1.49E+02	2.43E+01
	28	766.62	762 -	771	5.23E+01	40.61	2.07E+02	3.12E+01
	29	794.97	792 -	799	5.29E+01	33.94	1.58E+02	2.52E+01
	30	911.35	905 -	915	1.89E+02	43.23	1.48E+02	2.74E+01
	31	918.99	916 -	921	2.00E+01	22.36	8.40E+01	1.68E+01
	32	936.42	930 -	942	5.38E+01	44.45	2.04E+02	3.45E+01
M	33	965.10	957 -	975	4.56E+01	28.85	1.20E+02	1.80E+01
m	34	969.37	957 -	975	1.42E+02	34.18	1.12E+02	1.74E+01
	35	1070.55	1060 -	1081	8.98E+01	60.42	2.54E+02	4.72E+01
	36	1120.59	1116 -	1123	9.03E+01	33.94	1.31E+02	2.31E+01
	37	1184.33	1181 -	1188	2.35E+01	29.93	1.37E+02	2.33E+01
	38	1239.12	1235 -	1241	5.03E+01	28.85	1.13E+02	2.06E+01
	39	1378.27	1373 -	1380	2.35E+01	21.82	6.29E+01	1.61E+01
M	40	1461.53	1456 -	1469	1.22E+03	71.85	4.12E+01	1.06E+01
m	41	1465.75	1456 -	1469	6.04E+01	59.66	2.12E+01	7.56E+00
	42	1496.05	1493 -	1498	9.38E+00	8.37	7.23E+00	4.68E+00
	43	1530.43	1527 -	1533	1.37E+01	8.50	2.53E+00	3.42E+00
M	44	1588.14	1574 -	1600	2.43E+01	15.02	2.19E+01	7.70E+00
m	45	1593.15	1574 -	1600	1.33E+01	14.05	1.80E+01	6.97E+00
	46	1629.84	1625 -	1634	1.36E+01	12.29	1.09E+01	8.09E+00
	47	1639.85	1636 -	1642	9.00E+00	7.50	4.00E+00	3.70E+00
M	48	1657.88	1655 -	1666	9.63E+00	5.89	5.59E+00	3.89E+00
m	49	1663.38	1655 -	1666	1.45E+01	12.20	1.17E+01	5.61E+00
	50	1730.92	1725 -	1736	2.26E+01	11.66	4.72E+00	5.54E+00
	51	1765.30	1761 -	1768	7.43E+01	18.65	9.47E+00	5.87E+00
	52	1781.68	1776 -	1783	7.00E+00	8.72	8.00E+00	5.70E+00
	53	1802.80	1799 -	1804	6.00E+00	4.90	0.00E+00	0.00E+00
	54	1896.88	1893 -	1898	5.38E+00	7.07	5.25E+00	4.39E+00
	55	2104.26	2098 -	2107	1.80E+01	13.23	1.40E+01	8.35E+00

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
56	2119.11	2115 -	2120	9.73E+00	7.28	2.55E+00	3.09E+00
57	2169.23	2164 -	2170	8.00E+00	5.66	0.00E+00	0.00E+00
58	2186.31	2181 -	2187	8.67E+00	8.51	6.67E+00	5.06E+00
59	2204.04	2198 -	2207	2.00E+01	16.03	2.59E+01	1.09E+01
60	2287.50	2283 -	2288	5.38E+00	7.07	5.25E+00	4.39E+00
61	2352.83	2346 -	2356	1.35E+01	11.68	1.10E+01	7.47E+00
62	2436.63	2432 -	2437	5.00E+00	7.07	6.00E+00	4.50E+00
63	2452.75	2449 -	2453	7.00E+00	5.29	0.00E+00	0.00E+00
64	2615.39	2608 -	2618	1.32E+02	24.67	1.09E+01	7.46E+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 : 8/25/2017 7:53:04AM

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	45.89	44 -	49	46.51	1.11E+02	71.75	9.47E+02	PB-210
	2	52.45	51 -	55	53.07	5.95E+01	67.75	9.73E+02	.....
M	3	74.72	71 -	82	75.31	4.99E+02	99.63	1.47E+03	AM-243
m	4	77.19	71 -	82	77.78	6.80E+02	104.85	1.41E+03	.....
M	5	87.57	82 -	97	88.15	2.92E+02	83.56	1.19E+03	SN-126
									CD-109
									LU-176
m	6	92.55	82 -	97	93.12	2.97E+02	82.62	1.08E+03	GA-67
	7	129.11	127 -	132	129.65	8.82E+01	73.86	1.02E+03	.....
	8	185.62	182 -	190	186.10	2.22E+02	94.45	1.24E+03	RA-226
M	9	238.60	233 -	247	239.03	1.03E+03	78.75	5.08E+02	PB-212
m	10	241.66	233 -	247	242.09	2.99E+02	90.56	6.79E+02	RA-224
	11	270.25	267 -	274	270.65	8.78E+01	65.54	6.60E+02	.....
	12	276.66	275 -	280	277.05	4.90E+01	48.92	4.28E+02	CM-243
									NP-239
M	13	295.23	292 -	303	295.59	3.24E+02	52.87	3.48E+02	PB-214
m	14	299.84	292 -	303	300.20	1.06E+02	54.82	4.37E+02	BI-210M

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									PB-212
									GA-67
	15	327.22	324 -	332	327.56	6.22E+01	61.66	5.52E+02	.....
M	16	338.46	334 -	356	338.78	1.86E+02	44.40	3.11E+02	AC-228
m	17	351.95	334 -	356	352.26	5.35E+02	57.65	2.47E+02	PB-214
	18	418.85	416 -	421	419.09	3.95E+01	37.87	2.51E+02	.....
M	19	462.96	460 -	477	463.16	5.03E+01	32.91	1.75E+02	SB-125
m	20	469.99	460 -	477	470.18	2.30E+01	30.32	1.78E+02	.....
m	21	473.99	460 -	477	474.18	2.47E+01	31.35	1.79E+02	SB-127
	22	510.81	505 -	516	510.96	2.21E+02	62.13	3.72E+02	.....
	23	543.71	542 -	546	543.83	2.01E+01	22.25	9.18E+01	.....
	24	583.13	578 -	588	583.21	3.05E+02	62.81	3.64E+02	TL-208
	25	609.48	605 -	613	609.53	3.71E+02	60.42	3.33E+02	BI-214
	26	727.93	723 -	733	727.87	9.20E+01	47.17	2.48E+02	BI-212
	27	751.98	749 -	756	751.89	2.84E+01	31.43	1.49E+02	.....
	28	766.62	762 -	771	766.52	5.23E+01	40.61	2.07E+02	NB-95
	29	794.97	792 -	799	794.84	5.29E+01	33.94	1.58E+02	CS-134
	30	911.35	905 -	915	911.10	1.89E+02	43.23	1.48E+02	AC-228
									TL-204
	31	918.99	916 -	921	918.73	2.00E+01	22.36	8.40E+01	.....
	32	936.42	930 -	942	936.15	5.38E+01	44.45	2.04E+02	.....
M	33	965.10	957 -	975	964.80	4.56E+01	28.85	1.20E+02	.....
m	34	969.37	957 -	975	969.06	1.42E+02	34.18	1.12E+02	AC-228
	35	1070.55	1060 -	1081	1070.14	8.98E+01	60.42	2.54E+02	.....
	36	1120.59	1116 -	1123	1120.13	9.03E+01	33.94	1.31E+02	SC-46
									BI-214
									TA-182
	37	1184.33	1181 -	1188	1183.81	2.35E+01	29.93	1.37E+02	.....
	38	1239.12	1235 -	1241	1238.54	5.03E+01	28.85	1.13E+02	CO-56
	39	1378.27	1373 -	1380	1377.56	2.35E+01	21.82	6.29E+01	.....
M	40	1461.53	1456 -	1469	1460.73	1.22E+03	71.85	4.12E+01	K-40
m	41	1465.75	1456 -	1469	1464.95	6.04E+01	59.66	2.12E+01	.....
	42	1496.05	1493 -	1498	1495.22	9.38E+00	8.37	7.23E+00	.....
	43	1530.43	1527 -	1533	1529.57	1.37E+01	8.50	2.53E+00	.....
M	44	1588.14	1574 -	1600	1587.22	2.43E+01	15.02	2.19E+01	.....
m	45	1593.15	1574 -	1600	1592.22	1.33E+01	14.05	1.80E+01	.....
	46	1629.84	1625 -	1634	1628.88	1.36E+01	12.29	1.09E+01	.....
	47	1639.85	1636 -	1642	1638.88	9.00E+00	7.50	4.00E+00	.....
M	48	1657.88	1655 -	1666	1656.89	9.63E+00	5.89	5.59E+00	.....
m	49	1663.38	1655 -	1666	1662.39	1.45E+01	12.20	1.17E+01	.....
	50	1730.92	1725 -	1736	1729.87	2.26E+01	11.66	4.72E+00	.....
	51	1765.30	1761 -	1768	1764.21	7.43E+01	18.65	9.47E+00	BI-214
	52	1781.68	1776 -	1783	1780.57	7.00E+00	8.72	8.00E+00	.....
	53	1802.80	1799 -	1804	1801.67	6.00E+00	4.90	0.00E+00	.....
	54	1896.88	1893 -	1898	1895.66	5.38E+00	7.07	5.25E+00	.....
	55	2104.26	2098 -	2107	2102.84	1.80E+01	13.23	1.40E+01	.....
	56	2119.11	2115 -	2120	2117.68	9.73E+00	7.28	2.55E+00	.....
	57	2169.23	2164 -	2170	2167.75	8.00E+00	5.66	0.00E+00	.....
	58	2186.31	2181 -	2187	2184.81	8.67E+00	8.51	6.67E+00	.....
	59	2204.04	2198 -	2207	2202.52	2.00E+01	16.03	2.59E+01	BI-214
	60	2287.50	2283 -	2288	2285.90	5.38E+00	7.07	5.25E+00	.....
	61	2352.83	2346 -	2356	2351.17	1.35E+01	11.68	1.10E+01	.....
	62	2436.63	2432 -	2437	2434.90	5.00E+00	7.07	6.00E+00	.....
	63	2452.75	2449 -	2453	2451.00	7.00E+00	5.29	0.00E+00	.....

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
64	2615.39	2608 -	2618	2613.48	1.32E+02	24.67	1.09E+01	TL-208

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

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 8/25/2017 7:53:04AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	45.89	1.11E+02	71.75	2.45E-02	2.22E-03
	2	52.45	5.95E+01	67.75	2.58E-02	2.22E-03
M	3	74.72	4.99E+02	99.63	2.75E-02	2.38E-03
m	4	77.19	6.80E+02	104.85	2.75E-02	2.41E-03
M	5	87.57	2.92E+02	83.56	2.74E-02	2.52E-03
m	6	92.55	2.97E+02	82.62	2.73E-02	2.45E-03
	7	129.11	8.82E+01	73.86	2.53E-02	1.94E-03
	8	185.62	2.22E+02	94.45	2.17E-02	1.68E-03
M	9	238.60	1.03E+03	78.75	1.89E-02	1.53E-03
m	10	241.66	2.99E+02	90.56	1.87E-02	1.52E-03
	11	270.25	8.78E+01	65.54	1.74E-02	1.43E-03
	12	276.66	4.90E+01	48.92	1.72E-02	1.42E-03
M	13	295.23	3.24E+02	52.87	1.64E-02	1.37E-03
m	14	299.84	1.06E+02	54.82	1.63E-02	1.36E-03
	15	327.22	6.22E+01	61.66	1.53E-02	1.30E-03
M	16	338.46	1.86E+02	44.40	1.50E-02	1.27E-03
m	17	351.95	5.35E+02	57.65	1.45E-02	1.24E-03
	18	418.85	3.95E+01	37.87	1.28E-02	1.13E-03
M	19	462.96	5.03E+01	32.91	1.19E-02	1.10E-03
m	20	469.99	2.30E+01	30.32	1.17E-02	1.09E-03
m	21	473.99	2.47E+01	31.35	1.17E-02	1.09E-03
	22	510.81	2.21E+02	62.13	1.10E-02	1.07E-03
	23	543.71	2.01E+01	22.25	1.05E-02	1.05E-03
	24	583.13	3.05E+02	62.81	9.96E-03	1.02E-03
	25	609.48	3.71E+02	60.42	9.63E-03	1.01E-03
	26	727.93	9.20E+01	47.17	8.40E-03	8.67E-04
	27	751.98	2.84E+01	31.43	8.20E-03	8.28E-04
	28	766.62	5.23E+01	40.61	8.08E-03	8.05E-04
	29	794.97	5.29E+01	33.94	7.86E-03	7.60E-04

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	30	911.35	1.89E+02	43.23	7.08E-03	5.91E-04
	31	918.99	2.00E+01	22.36	7.04E-03	5.88E-04
	32	936.42	5.38E+01	44.45	6.94E-03	5.82E-04
M	33	965.10	4.56E+01	28.85	6.79E-03	5.71E-04
m	34	969.37	1.42E+02	34.18	6.76E-03	5.69E-04
	35	1070.55	8.98E+01	60.42	6.28E-03	5.30E-04
	36	1120.59	9.03E+01	33.94	6.07E-03	5.11E-04
	37	1184.33	2.35E+01	29.93	5.83E-03	4.88E-04
	38	1239.12	5.03E+01	28.85	5.64E-03	4.76E-04
	39	1378.27	2.35E+01	21.82	5.22E-03	4.44E-04
M	40	1461.53	1.22E+03	71.85	5.00E-03	4.25E-04
m	41	1465.75	6.04E+01	59.66	4.99E-03	4.24E-04
	42	1496.05	9.38E+00	8.37	4.92E-03	4.17E-04
	43	1530.43	1.37E+01	8.50	4.84E-03	4.09E-04
M	44	1588.14	2.43E+01	15.02	4.72E-03	3.95E-04
m	45	1593.15	1.33E+01	14.05	4.70E-03	3.94E-04
	46	1629.84	1.36E+01	12.29	4.63E-03	3.86E-04
	47	1639.85	9.00E+00	7.50	4.61E-03	3.83E-04
M	48	1657.88	9.63E+00	5.89	4.57E-03	3.79E-04
m	49	1663.38	1.45E+01	12.20	4.56E-03	3.78E-04
	50	1730.92	2.26E+01	11.66	4.43E-03	3.62E-04
	51	1765.30	7.43E+01	18.65	4.37E-03	3.54E-04
	52	1781.68	7.00E+00	8.72	4.34E-03	3.50E-04
	53	1802.80	6.00E+00	4.90	4.31E-03	3.46E-04
	54	1896.88	5.38E+00	7.07	4.16E-03	3.38E-04
	55	2104.26	1.80E+01	13.23	3.86E-03	3.38E-04
	56	2119.11	9.73E+00	7.28	3.84E-03	3.38E-04
	57	2169.23	8.00E+00	5.66	3.78E-03	3.38E-04
	58	2186.31	8.67E+00	8.51	3.76E-03	3.38E-04
	59	2204.04	2.00E+01	16.03	3.74E-03	3.38E-04
	60	2287.50	5.38E+00	7.07	3.64E-03	3.38E-04
	61	2352.83	1.35E+01	11.68	3.57E-03	3.38E-04
	62	2436.63	5.00E+00	7.07	3.48E-03	3.38E-04
	63	2452.75	7.00E+00	5.29	3.46E-03	3.38E-04
	64	2615.39	1.32E+02	24.67	3.31E-03	3.38E-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 : 8/25/2017 7:53:04AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055573.CNF

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	45.89	1.11E+02	71.75	3.67E+01	8.40E+00	7.46E+01	7.22E+01
	2	52.45	5.95E+01	67.75			5.95E+01	6.78E+01
M	3	74.72	4.99E+02	99.63			4.99E+02	9.96E+01
m	4	77.19	6.80E+02	104.85	7.20E+00	1.47E+00	6.73E+02	1.05E+02
M	5	87.57	2.92E+02	83.56			2.92E+02	8.36E+01
m	6	92.55	2.97E+02	82.62	1.38E+02	1.72E+01	1.59E+02	8.44E+01
	7	129.11	8.82E+01	73.86			8.82E+01	7.39E+01
	8	185.62	2.22E+02	94.45	5.22E+01	7.59E+00	1.70E+02	9.48E+01
M	9	238.60	1.03E+03	78.75	2.13E+01	6.33E+00	1.01E+03	7.90E+01
m	10	241.66	2.99E+02	90.56			2.99E+02	9.06E+01
	11	270.25	8.78E+01	65.54	1.23E+00	4.98E+00	8.66E+01	6.57E+01
	12	276.66	4.90E+01	48.92			4.90E+01	4.89E+01
M	13	295.23	3.24E+02	52.87			3.24E+02	5.29E+01
m	14	299.84	1.06E+02	54.82			1.06E+02	5.48E+01
	15	327.22	6.22E+01	61.66			6.22E+01	6.17E+01
M	16	338.46	1.86E+02	44.40			1.86E+02	4.44E+01
m	17	351.95	5.35E+02	57.65	5.79E+00	4.49E+00	5.29E+02	5.78E+01
	18	418.85	3.95E+01	37.87			3.95E+01	3.79E+01
M	19	462.96	5.03E+01	32.91			5.03E+01	3.29E+01
m	20	469.99	2.30E+01	30.32			2.30E+01	3.03E+01
m	21	473.99	2.47E+01	31.35			2.47E+01	3.14E+01
	22	510.81	2.21E+02	62.13	7.28E+01	5.30E+00	1.48E+02	6.24E+01
	23	543.71	2.01E+01	22.25			2.01E+01	2.23E+01
	24	583.13	3.05E+02	62.81	2.72E+00	3.05E+00	3.02E+02	6.29E+01
	25	609.48	3.71E+02	60.42	6.35E+00	4.02E+00	3.65E+02	6.06E+01
	26	727.93	9.20E+01	47.17			9.20E+01	4.72E+01
	27	751.98	2.84E+01	31.43			2.84E+01	3.14E+01
	28	766.62	5.23E+01	40.61			5.23E+01	4.06E+01
	29	794.97	5.29E+01	33.94			5.29E+01	3.39E+01
	30	911.35	1.89E+02	43.23	5.31E+00	3.00E+00	1.84E+02	4.33E+01
	31	918.99	2.00E+01	22.36			2.00E+01	2.24E+01
	32	936.42	5.38E+01	44.45			5.38E+01	4.45E+01
M	33	965.10	4.56E+01	28.85			4.56E+01	2.88E+01
m	34	969.37	1.42E+02	34.18			1.42E+02	3.42E+01
	35	1070.55	8.98E+01	60.42			8.98E+01	6.04E+01
	36	1120.59	9.03E+01	33.94			9.03E+01	3.39E+01
	37	1184.33	2.35E+01	29.93			2.35E+01	2.99E+01
	38	1239.12	5.03E+01	28.85			5.03E+01	2.88E+01
	39	1378.27	2.35E+01	21.82			2.35E+01	2.18E+01
M	40	1461.53	1.22E+03	71.85	8.09E+00	2.23E+00	1.21E+03	7.19E+01
m	41	1465.75	6.04E+01	59.66			6.04E+01	5.97E+01
	42	1496.05	9.38E+00	8.37			9.38E+00	8.37E+00
	43	1530.43	1.37E+01	8.50			1.37E+01	8.50E+00
M	44	1588.14	2.43E+01	15.02			2.43E+01	1.50E+01
m	45	1593.15	1.33E+01	14.05			1.33E+01	1.41E+01
	46	1629.84	1.36E+01	12.29			1.36E+01	1.23E+01
	47	1639.85	9.00E+00	7.50			9.00E+00	7.50E+00
M	48	1657.88	9.63E+00	5.89			9.63E+00	5.89E+00
m	49	1663.38	1.45E+01	12.20			1.45E+01	1.22E+01
	50	1730.92	2.26E+01	11.66			2.26E+01	1.17E+01
	51	1765.30	7.43E+01	18.65			7.43E+01	1.87E+01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
52	1781.68	7.00E+00	8.72			7.00E+00	8.72E+00
53	1802.80	6.00E+00	4.90			6.00E+00	4.90E+00
54	1896.88	5.38E+00	7.07			5.38E+00	7.07E+00
55	2104.26	1.80E+01	13.23			1.80E+01	1.32E+01
56	2119.11	9.73E+00	7.28			9.73E+00	7.28E+00
57	2169.23	8.00E+00	5.66			8.00E+00	5.66E+00
58	2186.31	8.67E+00	8.51			8.67E+00	8.51E+00
59	2204.04	2.00E+01	16.03			2.00E+01	1.60E+01
60	2287.50	5.38E+00	7.07			5.38E+00	7.07E+00
61	2352.83	1.35E+01	11.68			1.35E+01	1.17E+01
62	2436.63	5.00E+00	7.07			5.00E+00	7.07E+00
63	2452.75	7.00E+00	5.29			7.00E+00	5.29E+00
64	2615.39	1.32E+02	24.67	5.63E+00	1.38E+00	1.26E+02	2.47E+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 : 8/25/2017 7:53:04AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055573.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	45.89	1.11E+02	71.75	3.67E+01	8.40E+00	7.46E+01	7.22E+01
	2	52.45	5.95E+01	67.75			5.95E+01	6.78E+01
M	3	74.72	4.99E+02	99.63			4.99E+02	9.96E+01
m	4	77.19	6.80E+02	104.85	7.20E+00	1.47E+00	6.73E+02	1.05E+02
M	5	87.57	2.92E+02	83.56			2.92E+02	8.36E+01
m	6	92.55	2.97E+02	82.62	1.38E+02	1.72E+01	1.59E+02	8.44E+01
	7	129.11	8.82E+01	73.86			8.82E+01	7.39E+01
	8	185.62	2.22E+02	94.45	5.22E+01	7.59E+00	1.70E+02	9.48E+01
M	9	238.60	1.03E+03	78.75	2.13E+01	6.33E+00	1.01E+03	7.90E+01
m	10	241.66	2.99E+02	90.56			2.99E+02	9.06E+01
	11	270.25	8.78E+01	65.54	1.23E+00	4.98E+00	8.66E+01	6.57E+01
	12	276.66	4.90E+01	48.92			4.90E+01	4.89E+01
M	13	295.23	3.24E+02	52.87			3.24E+02	5.29E+01
m	14	299.84	1.06E+02	54.82			1.06E+02	5.48E+01
	15	327.22	6.22E+01	61.66			6.22E+01	6.17E+01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	16	338.46	1.86E+02	44.40			1.86E+02	4.44E+01
m	17	351.95	5.35E+02	57.65	5.79E+00	4.49E+00	5.29E+02	5.78E+01
	18	418.85	3.95E+01	37.87			3.95E+01	3.79E+01
M	19	462.96	5.03E+01	32.91			5.03E+01	3.29E+01
m	20	469.99	2.30E+01	30.32			2.30E+01	3.03E+01
m	21	473.99	2.47E+01	31.35			2.47E+01	3.14E+01
	22	510.81	2.21E+02	62.13	7.28E+01	5.30E+00	1.48E+02	6.24E+01
	23	543.71	2.01E+01	22.25			2.01E+01	2.23E+01
	24	583.13	3.05E+02	62.81	2.72E+00	3.05E+00	3.02E+02	6.29E+01
	25	609.48	3.71E+02	60.42	6.35E+00	4.02E+00	3.65E+02	6.06E+01
	26	727.93	9.20E+01	47.17			9.20E+01	4.72E+01
	27	751.98	2.84E+01	31.43			2.84E+01	3.14E+01
	28	766.62	5.23E+01	40.61			5.23E+01	4.06E+01
	29	794.97	5.29E+01	33.94			5.29E+01	3.39E+01
	30	911.35	1.89E+02	43.23	5.31E+00	3.00E+00	1.84E+02	4.33E+01
	31	918.99	2.00E+01	22.36			2.00E+01	2.24E+01
	32	936.42	5.38E+01	44.45			5.38E+01	4.45E+01
M	33	965.10	4.56E+01	28.85			4.56E+01	2.88E+01
m	34	969.37	1.42E+02	34.18			1.42E+02	3.42E+01
	35	1070.55	8.98E+01	60.42			8.98E+01	6.04E+01
	36	1120.59	9.03E+01	33.94			9.03E+01	3.39E+01
	37	1184.33	2.35E+01	29.93			2.35E+01	2.99E+01
	38	1239.12	5.03E+01	28.85			5.03E+01	2.88E+01
	39	1378.27	2.35E+01	21.82			2.35E+01	2.18E+01
M	40	1461.53	1.22E+03	71.85	8.09E+00	2.23E+00	1.21E+03	7.19E+01
m	41	1465.75	6.04E+01	59.66			6.04E+01	5.97E+01
	42	1496.05	9.38E+00	8.37			9.38E+00	8.37E+00
	43	1530.43	1.37E+01	8.50			1.37E+01	8.50E+00
M	44	1588.14	2.43E+01	15.02			2.43E+01	1.50E+01
m	45	1593.15	1.33E+01	14.05			1.33E+01	1.41E+01
	46	1629.84	1.36E+01	12.29			1.36E+01	1.23E+01
	47	1639.85	9.00E+00	7.50			9.00E+00	7.50E+00
M	48	1657.88	9.63E+00	5.89			9.63E+00	5.89E+00
m	49	1663.38	1.45E+01	12.20			1.45E+01	1.22E+01
	50	1730.92	2.26E+01	11.66			2.26E+01	1.17E+01
	51	1765.30	7.43E+01	18.65			7.43E+01	1.87E+01
	52	1781.68	7.00E+00	8.72			7.00E+00	8.72E+00
	53	1802.80	6.00E+00	4.90			6.00E+00	4.90E+00
	54	1896.88	5.38E+00	7.07			5.38E+00	7.07E+00
	55	2104.26	1.80E+01	13.23			1.80E+01	1.32E+01
	56	2119.11	9.73E+00	7.28			9.73E+00	7.28E+00
	57	2169.23	8.00E+00	5.66			8.00E+00	5.66E+00
	58	2186.31	8.67E+00	8.51			8.67E+00	8.51E+00
	59	2204.04	2.00E+01	16.03			2.00E+01	1.60E+01
	60	2287.50	5.38E+00	7.07			5.38E+00	7.07E+00
	61	2352.83	1.35E+01	11.68			1.35E+01	1.17E+01
	62	2436.63	5.00E+00	7.07			5.00E+00	7.07E+00
	63	2452.75	7.00E+00	5.29			7.00E+00	5.29E+00
	64	2615.39	1.32E+02	24.67	5.63E+00	1.38E+00	1.26E+02	2.47E+01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.920	1460.81	*	10.67	2.60E+01	2.74E+00
NB-95	0.859	765.79	*	99.81	5.44E-01	4.26E-01
CD-109	0.966	88.03	*	3.72	3.80E+00	1.16E+00
SN-126	1.000	87.57	*	37.00	3.28E-01	9.89E-02
TL-208	0.845	583.14	*	30.22	1.15E+00	2.66E-01
		860.37		4.48		
		2614.66	*	35.85	1.21E+00	2.69E-01
PB-210	0.942	46.50	*	4.25	8.25E-01	8.02E-01
BI-212	0.691	727.17	*	11.80	1.06E+00	5.54E-01
		1620.62		2.75		
PB-212	0.999	238.63	*	44.60	1.37E+00	1.54E-01
		300.09	*	3.41	2.19E+00	1.14E+00
BI-214	0.975	609.31	*	46.30	9.35E-01	1.83E-01
		1120.29	*	15.10	1.13E+00	4.34E-01
		1764.49	*	15.80	1.23E+00	3.24E-01
		2204.22	*	4.98	1.23E+00	9.91E-01
PB-214	1.000	295.21	*	19.19	1.17E+00	2.15E-01
		351.92	*	37.19	1.12E+00	1.55E-01
RA-224	0.928	240.98	*	3.95	4.63E+00	1.45E+00
RA-226	0.945	186.21	*	3.28	2.72E+00	5.20E+00
AC-228	0.990	338.32	*	11.40	1.25E+00	3.16E-01
		911.07	*	27.70	1.07E+00	2.68E-01
		969.11	*	16.60	1.45E+00	3.69E-01
AM-243	1.000	74.67	*	66.00	3.14E-01	6.84E-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 1707093-04

HTC-A09-S001-3642-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 7:53:04AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	52.45	1.65410E-02	56.89		
m	4	77.19	1.86832E-01	7.80		
m	6	92.55	4.41537E-02	26.54	Sum	
	7	129.11	2.44876E-02	41.89		
	11	270.25	2.40526E-02	37.96		
	12	276.66	1.35995E-02	49.96	Tol.	NP-239 CM-243
	15	327.22	1.72756E-02	49.57		
	18	418.85	1.09781E-02	47.91		
M	19	462.96	1.39694E-02	32.72	Tol.	SB-125
m	20	469.99	6.38436E-03	65.95		
m	21	473.99	6.86172E-03	63.46	Tol.	SB-127
	22	510.81	4.12447E-02	21.00		
	23	543.71	5.57870E-03	55.40		
	27	751.98	7.89374E-03	55.30		
	29	794.97	1.47064E-02	32.05	Sum	
	31	918.99	5.55556E-03	55.90		
	32	936.42	1.49519E-02	41.29		
M	33	965.10	1.26626E-02	31.64		
	35	1070.55	2.49469E-02	33.64		
	37	1184.33	6.51570E-03	63.81		
	38	1239.12	1.39759E-02	28.67	Tol.	CO-56
	39	1378.27	6.54040E-03	46.33		
m	41	1465.75	1.67752E-02	49.39		
	42	1496.05	2.60684E-03	44.58		
	43	1530.43	3.81481E-03	30.95		
M	44	1588.14	6.75503E-03	30.88		
m	45	1593.15	3.70034E-03	52.75	D-Esc	
	46	1629.84	3.76462E-03	45.34		
	47	1639.85	2.50000E-03	41.67	Sum	
M	48	1657.88	2.67547E-03	30.60		
m	49	1663.38	4.01713E-03	42.17		
	50	1730.92	6.28889E-03	25.76	Sum	
	52	1781.68	1.94444E-03	62.27		
	53	1802.80	1.66667E-03	40.82		
	54	1896.88	1.49306E-03	65.78		
	55	2104.26	4.99444E-03	36.79	S-Esc	
	56	2119.11	2.70202E-03	37.42		
	57	2169.23	2.22222E-03	35.36		
	58	2186.31	2.40741E-03	49.12		
	60	2287.50	1.49306E-03	65.78		
	61	2352.83	3.75000E-03	43.27		

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
62	2436.63	1.38889E-03	70.71		
63	2452.75	1.94444E-03	37.80		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.92	1460.81	*	10.67	2.60E+01	2.74E+00
NB-95	0.85	765.79	*	99.81	5.44E-01	4.26E-01
CD-109	0.96	88.03	*	3.72	3.80E+00	1.16E+00
SN-126	1.00	87.57	*	37.00	3.28E-01	9.89E-02
TL-208	0.84	583.14	*	30.22	1.15E+00	2.66E-01
		860.37		4.48		
		2614.66	*	35.85	1.21E+00	2.69E-01
PB-210	0.94	46.50	*	4.25	8.25E-01	8.02E-01
BI-212	0.69	727.17	*	11.80	1.06E+00	5.54E-01
		1620.62		2.75		
PB-212	0.99	238.63	*	44.60	1.37E+00	1.54E-01
		300.09	*	3.41	2.19E+00	1.14E+00
BI-214	0.97	609.31	*	46.30	9.35E-01	1.83E-01
		1120.29	*	15.10	1.13E+00	4.34E-01
		1764.49	*	15.80	1.23E+00	3.24E-01
		2204.22	*	4.98	1.23E+00	9.91E-01
PB-214	1.00	295.21	*	19.19	1.17E+00	2.15E-01
		351.92	*	37.19	1.12E+00	1.55E-01
RA-224	0.92	240.98	*	3.95	4.63E+00	1.45E+00
RA-226	0.94	186.21	*	3.28	2.72E+00	5.20E+00
AC-228	0.99	338.32	*	11.40	1.25E+00	3.16E-01
		911.07	*	27.70	1.07E+00	2.68E-01
		969.11	*	16.60	1.45E+00	3.69E-01
AM-243	1.00	74.67	*	66.00	3.14E-01	6.84E-02

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

* = 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	0.920	2.60E+01	2.74E+00	
	NB-95	0.859	5.44E-01	4.26E-01	
?	CD-109	0.966	3.80E+00	1.16E+00	
?	SN-126	1.000	3.28E-01	9.89E-02	
	TL-208	0.845	1.18E+00	1.89E-01	
	PB-210	0.942	8.25E-01	8.02E-01	
	BI-212	0.691	1.06E+00	5.54E-01	
	PB-212	0.999	1.39E+00	1.53E-01	
	BI-214	0.975	1.03E+00	1.48E-01	
	PB-214	1.000	1.14E+00	1.26E-01	
	RA-224	0.928	4.63E+00	1.45E+00	
	RA-226	0.945	2.72E+00	5.20E+00	
	AC-228	0.990	1.22E+00	1.79E-01	
	AM-243	1.000	3.14E-01	6.84E-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 1707093-04

HTC-A09-S001-3642-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 7:53:04AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	52.45	1.65410E-02	56.89		
m	4	77.19	1.86832E-01	7.80		
m	6	92.55	4.41537E-02	26.54	Sum	
	7	129.11	2.44876E-02	41.89		
	11	270.25	2.40526E-02	37.96		
	12	276.66	1.35995E-02	49.96	Tol.	NP-239 CM-243
	15	327.22	1.72756E-02	49.57		
	18	418.85	1.09781E-02	47.91		
M	19	462.96	1.39694E-02	32.72	Tol.	SB-125
m	20	469.99	6.38436E-03	65.95		
m	21	473.99	6.86172E-03	63.46	Tol.	SB-127
	22	510.81	4.12447E-02	21.00		
	23	543.71	5.57870E-03	55.40		
	27	751.98	7.89374E-03	55.30		
	29	794.97	1.47064E-02	32.05	Sum	
	31	918.99	5.55556E-03	55.90		
	32	936.42	1.49519E-02	41.29		
M	33	965.10	1.26626E-02	31.64		
	35	1070.55	2.49469E-02	33.64		
	37	1184.33	6.51570E-03	63.81		
	38	1239.12	1.39759E-02	28.67	Tol.	CO-56
	39	1378.27	6.54040E-03	46.33		
m	41	1465.75	1.67752E-02	49.39		
	42	1496.05	2.60684E-03	44.58		
	43	1530.43	3.81481E-03	30.95		
M	44	1588.14	6.75503E-03	30.88		
m	45	1593.15	3.70034E-03	52.75	D-Esc	
	46	1629.84	3.76462E-03	45.34		
	47	1639.85	2.50000E-03	41.67	Sum	
M	48	1657.88	2.67547E-03	30.60		
m	49	1663.38	4.01713E-03	42.17		
	50	1730.92	6.28889E-03	25.76	Sum	
	52	1781.68	1.94444E-03	62.27		
	53	1802.80	1.66667E-03	40.82		

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
54	1896.88	1.49306E-03	65.78		
55	2104.26	4.99444E-03	36.79	S-Esc	
56	2119.11	2.70202E-03	37.42		
57	2169.23	2.22222E-03	35.36		
58	2186.31	2.40741E-03	49.12		
60	2287.50	1.49306E-03	65.78		
61	2352.83	3.75000E-03	43.27		
62	2436.63	1.38889E-03	70.71		
63	2452.75	1.94444E-03	37.80		

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

NUCLIDE MDA REPORT

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

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		BE-7	477.59		10.42	-7.56E-01	1.86E+00	1.86E+00
+		NA-22	1274.54		99.94	-1.91E-02	7.86E-02	7.86E-02
+	@	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	2.33E-03	4.23E-02	4.23E-02
+		K-40	1460.81	*	10.67	2.60E+01	9.61E-01	9.61E-01
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	-9.42E-03	5.78E-02	5.78E-02
			78.34		96.00	1.56E-01		7.56E-02
+		SC-46	889.25		99.98	-7.39E-02	1.26E-01	1.26E-01
			1120.51		99.99	3.90E-01		2.56E-01
+		V-48	983.52		99.98	1.29E+00	5.66E+00	5.66E+00
			1312.10		97.50	8.20E-01		6.09E+00
+		CR-51	320.08		9.83	-8.49E-01	6.36E+00	6.36E+00
+		MN-54	834.83		99.97	-4.76E-02	8.12E-02	8.12E-02
+		CO-56	846.75		99.96	1.41E-02	1.61E-01	1.61E-01
			1037.75		14.03	2.70E-01		1.17E+00
			1238.25		67.00	1.45E-01		3.73E-01
			1771.40		15.51	1.64E-01		7.44E-01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CO-56	2598.48		16.90	-1.85E-01	1.61E-01	4.59E-01
+	CO-57	122.06		85.51	3.09E-02	6.90E-02	6.90E-02
		136.48		10.60	1.33E-01		5.76E-01
+	CO-58	810.76		99.40	1.38E-02	1.72E-01	1.72E-01
+	FE-59	1099.22		56.50	-4.96E-01	5.65E-01	5.65E-01
		1291.56		43.20	-1.29E-01		8.76E-01
+	CO-60	1173.22		100.00	-1.44E-02	6.87E-02	8.18E-02
		1332.49		100.00	-5.99E-04		6.87E-02
+	ZN-65	1115.52		50.75	3.94E-02	2.28E-01	2.28E-01
+	GA-67	93.31		35.70	6.74E+08	3.49E+08	3.49E+08
		208.95		2.24	1.95E+09		4.58E+09
		300.22		16.00	-1.42E+09		7.69E+08
+	SE-75	121.11		16.70	-1.12E-01	1.43E-01	4.76E-01
		136.00		59.20	3.31E-02		1.43E-01
		264.65		59.80	-3.96E-02		1.55E-01
		279.53		25.20	-2.01E-02		3.79E-01
		400.65		11.40	1.20E-03		8.60E-01
+	RB-82	776.52		13.00	1.05E+00	7.86E+00	7.86E+00
+	RB-83	520.41		46.00	9.85E-02	2.74E-01	2.74E-01
		529.64		30.30	2.57E-01		4.43E-01
		552.65		16.40	3.76E-01		7.88E-01
+	KR-85	513.99		0.43	2.16E+01	1.91E+01	1.91E+01
+	SR-85	513.99		99.27	2.72E-01	2.41E-01	2.41E-01
+	Y-88	898.02		93.40	3.09E-02	1.01E-01	1.38E-01
		1836.01		99.38	1.30E-02		1.01E-01
+	MO-93	263.06		56.72	-2.55E-02	5.68E-02	9.31E-02
		684.67		99.68	1.66E-02		6.20E-02
		1477.11		99.08	1.55E-02		5.68E-02
+	NB-93M	16.57		9.43	-4.59E-01	4.88E-01	4.88E-01
+	NB-94	702.63		100.00	-2.11E-02	6.13E-02	6.13E-02
		871.10		100.00	-5.28E-03		6.53E-02
+	NB-95	765.79	*	99.81	5.44E-01	6.78E-01	6.78E-01
+	NB-95M	235.69		25.00	-4.26E+08	6.27E+07	6.27E+07
+	ZR-95	724.18		43.70	-8.66E-03	3.42E-01	4.94E-01
		756.72		55.30	7.83E-02		3.42E-01
+	MO-99	181.06		6.20	2.05E+10	5.22E+10	8.17E+10
		739.58		12.80	-6.55E+09		5.22E+10
		778.00		4.50	-6.46E+10		1.48E+11
+	RU-103	497.08		89.00	-5.22E-02	3.53E-01	3.53E-01
+	RU-106	621.84		9.80	-3.69E-01	6.47E-01	6.47E-01
+	AG-108M	433.93		89.90	-2.02E-02	6.21E-02	6.21E-02
		614.37		90.40	2.73E-02		7.77E-02
		722.95		90.50	5.99E-03		7.23E-02
+	CD-109	88.03	*	3.72	3.80E+00	3.88E+00	3.88E+00
+	AG-110M	657.75		93.14	7.27E-03	9.00E-02	9.00E-02
		677.61		10.53	-9.61E-03		7.57E-01
		706.67		16.46	-9.56E-02		5.26E-01
		763.93		21.98	-1.29E-01		4.06E-01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		AG-110M	884.67		71.63	5.46E-02	9.00E-02	1.09E-01
			1384.27		23.94	-1.96E-01		3.09E-01
+		CD-113M	263.70		0.02	-4.44E+01	2.27E+02	2.27E+02
+		SN-113	255.12		1.93	-1.19E-01	1.59E-01	4.25E+00
			391.69		64.90	4.13E-02		1.59E-01
+		TE123M	159.00		84.10	-1.96E-02	1.02E-01	1.02E-01
+		SB-124	602.71		97.87	-2.69E-02	2.04E-01	2.04E-01
			645.85		7.26	6.27E-01		2.66E+00
			722.78		11.10	1.56E-01		1.88E+00
			1691.02		49.00	1.10E-02		2.75E-01
+		I-125	35.49		6.49	-1.23E+00	2.39E+00	2.39E+00
+		SB-125	176.33		6.89	-3.74E-01	2.16E-01	6.82E-01
			427.89		29.33	1.16E-01		2.16E-01
			463.38		10.35	5.84E-01		6.10E-01
			600.56		17.80	-1.20E-01		3.64E-01
			635.90		11.32	-1.72E-01		5.46E-01
+		SB-126	414.70		83.30	-2.79E-01	1.78E+01	1.95E+01
			666.33		99.60	1.13E+00		1.81E+01
			695.00		99.60	8.25E+00		1.78E+01
			720.50		53.80	6.95E-01		3.33E+01
+		SN-126	87.57	*	37.00	3.28E-01	3.35E-01	3.35E-01
+		SB-127	473.00		25.00	1.15E+07	1.31E+07	1.74E+07
			685.20		35.70	3.50E+06		1.31E+07
			783.80		14.70	9.77E+06		3.53E+07
+		I-129	29.78		57.00	-4.33E-02	9.39E-02	9.39E-02
			33.60		13.20	-1.09E-01		3.74E-01
			39.58		7.52	6.36E-02		6.23E-01
+		I-131	284.30		6.05	-1.10E+03	3.76E+02	5.06E+03
			364.48		81.20	-2.96E+01		3.76E+02
			636.97		7.26	7.78E+02		4.85E+03
			722.89		1.80	1.80E+03		2.17E+04
+		TE-132	49.72		13.10	-1.21E+09	1.17E+08	7.39E+08
			228.16		88.00	6.90E+07		1.17E+08
+		BA-133	81.00		33.00	-5.73E-01	1.21E-01	1.61E-01
			302.84		17.80	1.12E-01		3.37E-01
			356.01		60.00	2.49E-02		1.21E-01
+	@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+		XE-133	81.00		38.00	-3.02E+05	8.46E+04	8.46E+04
+		CS-134	563.23		8.38	-2.59E-01	7.79E-02	7.56E-01
			569.32		15.43	8.90E-02		4.30E-01
			604.70		97.60	-5.97E-03		7.79E-02
			795.84		85.40	8.85E-02		1.00E-01
			801.93		8.73	-1.27E-02		8.34E-01
+		CS-135	268.24		16.00	4.01E-01	3.78E-01	3.78E-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	-1.10E+01	1.30E+01	1.29E+02
			163.89		4.61	-5.63E+01		2.03E+02

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CS-136	176.55	13.56	-3.60E+01	1.30E+01	6.56E+01
		273.65	12.66	3.13E+01		9.76E+01
		340.57	48.50	5.53E+01		3.02E+01
		818.50	99.70	2.75E+00		1.30E+01
		1048.07	79.60	8.64E-01		1.73E+01
		1235.34	19.70	-3.45E+00		1.00E+02
+	CS-137	661.65	85.12	-3.52E-02	7.36E-02	7.36E-02
+	LA-138	788.74	34.00	-6.38E-03	6.87E-02	1.98E-01
		1435.80	66.00	-5.98E-02		6.87E-02
+	CE-139	165.85	80.35	5.62E-03	9.48E-02	9.48E-02
+	BA-140	162.64	6.70	-2.75E+00	5.47E+01	1.67E+02
		304.84	4.50	4.91E+01		2.63E+02
		423.70	3.20	4.21E+01		4.11E+02
		437.55	2.00	1.22E+02		6.55E+02
		537.32	25.00	3.00E+01		5.47E+01
+	LA-140	328.77	20.50	5.35E+01	1.65E+01	6.97E+01
		487.03	45.50	-1.13E+01		2.74E+01
		815.85	23.50	-2.09E+01		6.21E+01
		1596.49	95.49	7.45E+00		1.65E+01
+	CE-141	145.44	48.40	-2.86E-02	8.25E-01	8.25E-01
+	@ CE-143	57.36	11.80	1.00E+26	1.00E+26	1.00E+26
	@	293.26	42.00	1.00E+26		1.00E+26
	@	664.55	5.20	1.00E+26		1.00E+26
+	CE-144	133.54	10.80	4.86E-02	5.62E-01	5.62E-01
+	PM-144	476.78	42.00	-6.79E-03	7.36E-02	1.57E-01
		618.01	98.60	-7.78E-03		7.36E-02
		696.49	99.49	-1.22E-02		7.42E-02
+	PM-145	36.85	21.70	5.73E-02	1.27E-01	2.28E-01
		37.36	39.70	5.45E-02		1.27E-01
		42.30	15.10	-7.96E-02		3.01E-01
		72.40	2.31	-1.75E+00		2.93E+00
+	PM-146	453.90	39.94	3.08E-03	1.36E-01	1.36E-01
		735.90	14.01	-9.12E-02		4.30E-01
		747.13	13.10	1.57E-02		4.71E-01
+	ND-147	91.11	28.90	1.37E+02	1.29E+02	1.29E+02
		531.02	13.10	5.95E+01		2.64E+02
+	PM-149	285.90	3.10	1.32E+13	9.11E+13	9.11E+13
+	EU-152	121.78	20.50	-5.16E-02	2.19E-01	2.19E-01
		244.69	5.40	-5.37E-01		1.01E+00
		344.27	19.13	2.01E-02		2.95E-01
		778.89	9.20	-1.25E-01		6.83E-01
		964.01	10.40	-2.24E+00		8.34E-01
		1085.78	7.22	5.29E-01		9.93E-01
		1112.02	9.60	3.05E-01		9.01E-01
		1407.95	14.94	2.19E-01		4.56E-01
+	GD-153	97.43	31.30	1.80E-03	1.99E-01	1.99E-01
		103.18	22.20	-5.01E-02		2.71E-01
+	EU-154	123.07	40.50	4.77E-02	1.15E-01	1.15E-01
		723.30	19.70	2.81E-02		3.39E-01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-154	873.19		11.50	1.45E-01	1.15E-01	5.85E-01
		996.32		10.30	-4.23E-01		6.47E-01
		1004.76		17.90	2.40E-01		4.54E-01
		1274.45		35.50	-5.10E-02		2.10E-01
+	EU-155	86.50		30.90	1.94E-01	2.08E-01	2.08E-01
		105.30		20.70	7.65E-02		2.32E-01
+	EU-156	811.77		10.40	-3.65E+01	5.66E+01	5.66E+01
		1153.47		7.20	1.68E+01		1.27E+02
		1230.71		8.90	6.54E+01		1.06E+02
+	HO-166M	184.41		72.60	1.60E-01	8.15E-02	8.15E-02
		280.45		29.60	-1.48E-02		1.74E-01
		410.94		11.10	-2.31E-03		5.23E-01
		711.69		54.10	2.13E-02		1.26E-01
+	TM-171	66.72		0.14	-8.04E+01	4.27E+01	4.27E+01
+	HF-172	67.35		5.31	-1.85E-01	4.44E-01	1.14E+00
		125.81		11.30	1.82E-01		4.44E-01
+	LU-172	181.53		20.60	1.93E+03	3.96E+03	7.69E+03
		900.72		29.81	2.11E+03		7.33E+03
		1093.66		62.50	2.33E+03		3.96E+03
+	LU-173	100.72		5.24	-3.37E-01	3.36E-01	9.85E-01
		272.11		21.20	1.60E-01		3.36E-01
+	HF-175	343.40		84.00	-3.92E-01	1.79E-01	1.79E-01
+	LU-176	88.34		13.30	2.58E-01	5.40E-02	4.79E-01
		201.83		86.00	-8.61E-03		5.48E-02
		306.78		94.00	2.10E-02		5.40E-02
+	HF-181	133.02		41.70	5.11E-02	3.61E-01	5.91E-01
		345.85		17.20	-2.36E+00		1.68E+00
		482.03		82.80	1.20E-01		3.61E-01
+	TA-182	67.75		41.20	-3.97E-02	2.43E-01	2.43E-01
		1121.30		34.90	7.89E-01		5.80E-01
		1189.05		16.23	2.48E-01		8.84E-01
		1221.41		26.98	4.54E-01		6.64E-01
		1231.02		11.44	9.39E-01		1.53E+00
+	IR-192	308.46		29.68	-1.21E-01	2.72E-01	4.20E-01
		468.07		48.10	-3.31E-01		2.72E-01
+	HG-203	279.19		77.30	-1.64E-02	3.09E-01	3.09E-01
+	TL-204	374.74		94.11	3.01E-03	5.73E-02	5.73E-02
		899.15		99.16	-2.78E-02		6.66E-02
		911.74		91.10	3.33E-01		1.38E-01
+	BI-207	569.67		97.72	-8.94E-03	6.07E-02	6.07E-02
		1063.62		74.90	2.80E-02		1.02E-01
+	TL-208	583.14	*	30.22	1.15E+00	1.90E-01	3.37E-01
		860.37		4.48	4.17E-01		1.68E+00
		2614.66	*	35.85	1.21E+00		1.90E-01
+	BI-210M	262.00		45.00	8.40E-03	1.16E-01	1.16E-01
		300.00		23.00	-8.68E-01		2.70E-01
+	PB-210	46.50	*	4.25	8.25E-01	1.31E+00	1.31E+00
+	PB-211	404.84		2.90	-5.75E-01	1.95E+00	1.95E+00
		831.96		2.90	-7.77E-01		2.27E+00

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BI-212	727.17	*	11.80	1.06E+00	8.48E-01	8.48E-01
		1620.62		2.75	1.99E-01		1.62E+00
+	PB-212	238.63	*	44.60	1.37E+00	2.52E-01	2.52E-01
		300.09	*	3.41	2.19E+00		2.62E+00
+	BI-214	609.31	*	46.30	9.35E-01	2.05E-01	2.05E-01
		1120.29	*	15.10	1.13E+00		6.10E-01
		1764.49	*	15.80	1.23E+00		2.39E-01
		2204.22	*	4.98	1.23E+00		1.51E+00
+	PB-214	295.21	*	19.19	1.17E+00	4.33E-01	4.54E-01
		351.92	*	37.19	1.12E+00		4.33E-01
+	RN-219	401.80		6.50	6.58E-02	8.62E-01	8.62E-01
+	RA-223	323.87		3.88	3.74E-02	1.41E+00	1.41E+00
+	RA-224	240.98	*	3.95	4.63E+00	2.90E+00	2.90E+00
+	RA-225	40.00		31.00	-1.04E+00	1.67E+01	1.67E+01
+	RA-226	186.21	*	3.28	2.72E+00	2.45E+00	2.45E+00
+	TH-227	50.10		8.40	-3.22E-01	5.31E-01	5.67E-01
		236.00		11.50	-3.60E+00		5.31E-01
		256.20		6.30	-2.51E-02		8.37E-01
+	AC-228	338.32	*	11.40	1.25E+00	3.40E-01	1.38E+00
		911.07	*	27.70	1.07E+00		3.40E-01
		969.11	*	16.60	1.45E+00		9.75E-01
+	TH-230	48.44		16.90	-8.69E-02	2.87E-01	2.87E-01
		62.85		4.60	1.49E+00		1.28E+00
		67.67		0.37	-2.40E+00		1.47E+01
+	PA-231	283.67		1.60	-9.25E-02	2.56E+00	3.22E+00
		302.67		2.30	8.49E-01		2.56E+00
+	TH-231	25.64		14.70	-3.54E+00	4.52E-01	4.52E-01
		84.21		6.40	-6.56E-01		8.82E-01
+	PA-233	311.98		38.60	1.12E-01	1.69E+00	1.69E+00
+	PA-234	131.20		20.40	-1.80E-02	2.33E-01	2.33E-01
		733.99		8.80	3.67E-02		7.13E-01
		946.00		12.00	-2.58E-01		5.27E-01
+	PA-234M	1001.03		0.92	1.83E+00	8.53E+00	8.53E+00
+	TH-234	63.29		3.80	1.95E+00	1.56E+00	1.56E+00
+	U-235	143.76		10.50	1.28E-01	4.44E-01	4.44E-01
		163.35		4.70	-2.72E-01		9.82E-01
		205.31		4.70	-1.15E+00		9.96E-01
+	NP-237	86.50		12.60	4.58E-01	4.90E-01	4.90E-01
+	NP-239	106.10		22.70	6.69E+11	1.58E+12	1.58E+12
		228.18		10.70	2.13E+12		3.61E+12
		277.60		14.10	1.25E+12		3.06E+12
+	AM-241	59.54		35.90	-1.92E-01	1.43E-01	1.43E-01
+	AM-243	74.67	*	66.00	3.14E-01	1.61E-01	1.61E-01
+	CM-243	209.75		3.29	8.52E-01	3.98E-01	1.53E+00
		228.14		10.60	2.77E-01		4.70E-01
		277.60		14.00	1.62E-01		3.98E-01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	1.86E+00	1.86E+00	-7.56E-01	8.84E-01
	NA-22	1274.54		99.94	7.86E-02	7.86E-02	-1.91E-02	3.63E-02
@	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	4.23E-02	4.23E-02	2.33E-03	1.75E-02
+	K-40	1460.81	*	10.67	9.61E-01	9.61E-01	2.60E+01	4.52E-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	5.78E-02	5.78E-02	-9.42E-03	2.83E-02
		78.34		96.00	7.56E-02		1.56E-01	3.72E-02
	SC-46	889.25		99.98	1.26E-01	1.26E-01	-7.39E-02	5.81E-02
		1120.51		99.99	2.56E-01		3.90E-01	1.22E-01
	V-48	983.52		99.98	5.66E+00	5.66E+00	1.29E+00	2.65E+00
		1312.10		97.50	6.09E+00		8.20E-01	2.81E+00
	CR-51	320.08		9.83	6.36E+00	6.36E+00	-8.49E-01	3.05E+00
	MN-54	834.83		99.97	8.12E-02	8.12E-02	-4.76E-02	3.80E-02
	CO-56	846.75		99.96	1.61E-01	1.61E-01	1.41E-02	7.57E-02
		1037.75		14.03	1.17E+00		2.70E-01	5.45E-01
		1238.25		67.00	3.73E-01		1.45E-01	1.77E-01
		1771.40		15.51	7.44E-01		1.64E-01	3.17E-01
		2598.48		16.90	4.59E-01		-1.85E-01	1.63E-01
	CO-57	122.06		85.51	6.90E-02	6.90E-02	3.09E-02	3.36E-02
		136.48		10.60	5.76E-01		1.33E-01	2.81E-01
	CO-58	810.76		99.40	1.72E-01	1.72E-01	1.38E-02	8.08E-02
	FE-59	1099.22		56.50	5.65E-01	5.65E-01	-4.96E-01	2.61E-01
		1291.56		43.20	8.76E-01		-1.29E-01	4.07E-01
	CO-60	1173.22		100.00	8.18E-02	6.87E-02	-1.44E-02	3.81E-02
		1332.49		100.00	6.87E-02		-5.99E-04	3.13E-02
	ZN-65	1115.52		50.75	2.28E-01	2.28E-01	3.94E-02	1.07E-01
	GA-67	93.31		35.70	3.49E+08	3.49E+08	6.74E+08	1.71E+08

Analysis Report for 1707093-04

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	GA-67	208.95		2.24	4.58E+09	3.49E+08	1.95E+09	2.22E+09
		300.22		16.00	7.69E+08		-1.42E+09	3.73E+08
	SE-75	121.11		16.70	4.76E-01	1.43E-01	-1.12E-01	2.31E-01
		136.00		59.20	1.43E-01		3.31E-02	6.95E-02
		264.65		59.80	1.55E-01		-3.96E-02	7.48E-02
		279.53		25.20	3.79E-01		-2.01E-02	1.83E-01
		400.65		11.40	8.60E-01		1.20E-03	4.12E-01
	RB-82	776.52		13.00	7.86E+00	7.86E+00	1.05E+00	3.70E+00
	RB-83	520.41		46.00	2.74E-01	2.74E-01	9.85E-02	1.30E-01
		529.64		30.30	4.43E-01		2.57E-01	2.11E-01
		552.65		16.40	7.88E-01		3.76E-01	3.73E-01
	KR-85	513.99		0.43	1.91E+01	1.91E+01	2.16E+01	9.20E+00
	SR-85	513.99		99.27	2.41E-01	2.41E-01	2.72E-01	1.16E-01
	Y-88	898.02		93.40	1.38E-01	1.01E-01	3.09E-02	6.45E-02
		1836.01		99.38	1.01E-01		1.30E-02	4.37E-02
	MO-93	263.06		56.72	9.31E-02	5.68E-02	-2.55E-02	4.50E-02
		684.67		99.68	6.20E-02		1.66E-02	2.92E-02
		1477.11		99.08	5.68E-02		1.55E-02	2.52E-02
	NB-93M	16.57		9.43	4.88E-01	4.88E-01	-4.59E-01	2.28E-01
	NB-94	702.63		100.00	6.13E-02	6.13E-02	-2.11E-02	2.89E-02
		871.10		100.00	6.53E-02		-5.28E-03	3.06E-02
+	NB-95	765.79	*	99.81	6.78E-01	6.78E-01	5.44E-01	3.25E-01
	NB-95M	235.69		25.00	6.27E+07	6.27E+07	-4.26E+08	3.05E+07
	ZR-95	724.18		43.70	4.94E-01	3.42E-01	-8.66E-03	2.34E-01
		756.72		55.30	3.42E-01		7.83E-02	1.61E-01
	MO-99	181.06		6.20	8.17E+10	5.22E+10	2.05E+10	3.96E+10
		739.58		12.80	5.22E+10		-6.55E+09	2.45E+10
		778.00		4.50	1.48E+11		-6.46E+10	6.93E+10
	RU-103	497.08		89.00	3.53E-01	3.53E-01	-5.22E-02	1.67E-01
	RU-106	621.84		9.80	6.47E-01	6.47E-01	-3.69E-01	3.03E-01
	AG-108M	433.93		89.90	6.21E-02	6.21E-02	-2.02E-02	2.97E-02
		614.37		90.40	7.77E-02		2.73E-02	3.70E-02
		722.95		90.50	7.23E-02		5.99E-03	3.41E-02
+	CD-109	88.03	*	3.72	3.88E+00	3.88E+00	3.80E+00	1.92E+00
	AG-110M	657.75		93.14	9.00E-02	9.00E-02	7.27E-03	4.26E-02
		677.61		10.53	7.57E-01		-9.61E-03	3.57E-01
		706.67		16.46	5.26E-01		-9.56E-02	2.48E-01
		763.93		21.98	4.06E-01		-1.29E-01	1.91E-01
		884.67		71.63	1.09E-01		5.46E-02	5.07E-02
		1384.27		23.94	3.09E-01		-1.96E-01	1.38E-01
	CD-113M	263.70		0.02	2.27E+02	2.27E+02	-4.44E+01	1.10E+02
	SN-113	255.12		1.93	4.25E+00	1.59E-01	-1.19E-01	2.04E+00
		391.69		64.90	1.59E-01		4.13E-02	7.62E-02
	TE123M	159.00		84.10	1.02E-01	1.02E-01	-1.96E-02	4.96E-02
	SB-124	602.71		97.87	2.04E-01	2.04E-01	-2.69E-02	9.70E-02
		645.85		7.26	2.66E+00		6.27E-01	1.26E+00
		722.78		11.10	1.88E+00		1.56E-01	8.87E-01
		1691.02		49.00	2.75E-01		1.10E-02	1.15E-01
	I-125	35.49		6.49	2.39E+00	2.39E+00	-1.23E+00	1.16E+00
	SB-125	176.33		6.89	6.82E-01	2.16E-01	-3.74E-01	3.30E-01
		427.89		29.33	2.16E-01		1.16E-01	1.03E-01
		463.38		10.35	6.10E-01		5.84E-01	2.91E-01
		600.56		17.80	3.64E-01		-1.20E-01	1.72E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	SB-125	635.90		11.32	5.46E-01	2.16E-01	-1.72E-01	2.57E-01
	SB-126	414.70		83.30	1.95E+01	1.78E+01	-2.79E-01	9.32E+00
		666.33		99.60	1.81E+01		1.13E+00	8.58E+00
		695.00		99.60	1.78E+01		8.25E+00	8.39E+00
		720.50		53.80	3.33E+01		6.95E-01	1.57E+01
+	SN-126	87.57	*	37.00	3.35E-01	3.35E-01	3.28E-01	1.66E-01
	SB-127	473.00		25.00	1.74E+07	1.31E+07	1.15E+07	8.28E+06
		685.20		35.70	1.31E+07		3.50E+06	6.17E+06
		783.80		14.70	3.53E+07		9.77E+06	1.66E+07
	I-129	29.78		57.00	9.39E-02	9.39E-02	-4.33E-02	4.55E-02
		33.60		13.20	3.74E-01		-1.09E-01	1.81E-01
		39.58		7.52	6.23E-01		6.36E-02	3.03E-01
	I-131	284.30		6.05	5.06E+03	3.76E+02	-1.10E+03	2.44E+03
		364.48		81.20	3.76E+02		-2.96E+01	1.80E+02
		636.97		7.26	4.85E+03		7.78E+02	2.29E+03
		722.89		1.80	2.17E+04		1.80E+03	1.02E+04
	TE-132	49.72		13.10	7.39E+08	1.17E+08	-1.21E+09	3.60E+08
		228.16		88.00	1.17E+08		6.90E+07	5.66E+07
	BA-133	81.00		33.00	1.61E-01	1.21E-01	-5.73E-01	7.86E-02
		302.84		17.80	3.37E-01		1.12E-01	1.63E-01
		356.01		60.00	1.21E-01		2.49E-02	5.86E-02
@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	XE-133	81.00		38.00	8.46E+04	8.46E+04	-3.02E+05	4.14E+04
	CS-134	563.23		8.38	7.56E-01	7.79E-02	-2.59E-01	3.58E-01
		569.32		15.43	4.30E-01		8.90E-02	2.04E-01
		604.70		97.60	7.79E-02		-5.97E-03	3.71E-02
		795.84		85.40	1.00E-01		8.85E-02	4.75E-02
		801.93		8.73	8.34E-01		-1.27E-02	3.92E-01
	CS-135	268.24		16.00	3.78E-01	3.78E-01	4.01E-01	1.84E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	1.29E+02	1.30E+01	-1.10E+01	6.28E+01
		163.89		4.61	2.03E+02		-5.63E+01	9.87E+01
		176.55		13.56	6.56E+01		-3.60E+01	3.18E+01
		273.65		12.66	9.76E+01		3.13E+01	4.74E+01
		340.57		48.50	3.02E+01		5.53E+01	1.47E+01
		818.50		99.70	1.30E+01		2.75E+00	6.09E+00
		1048.07		79.60	1.73E+01		8.64E-01	8.01E+00
		1235.34		19.70	1.00E+02		-3.45E+00	4.72E+01
	CS-137	661.65		85.12	7.36E-02	7.36E-02	-3.52E-02	3.48E-02
	LA-138	788.74		34.00	1.98E-01	6.87E-02	-6.38E-03	9.33E-02
		1435.80		66.00	6.87E-02		-5.98E-02	2.97E-02
	CE-139	165.85		80.35	9.48E-02	9.48E-02	5.62E-03	4.60E-02
	BA-140	162.64		6.70	1.67E+02	5.47E+01	-2.75E+00	8.11E+01
		304.84		4.50	2.63E+02		4.91E+01	1.27E+02
		423.70		3.20	4.11E+02		4.21E+01	1.96E+02
		437.55		2.00	6.55E+02		1.22E+02	3.13E+02
		537.32		25.00	5.47E+01		3.00E+01	2.60E+01
	LA-140	328.77		20.50	6.97E+01	1.65E+01	5.35E+01	3.37E+01
		487.03		45.50	2.74E+01		-1.13E+01	1.30E+01
		815.85		23.50	6.21E+01		-2.09E+01	2.91E+01
		1596.49		95.49	1.65E+01		7.45E+00	7.42E+00

Analysis Report for 1707093-04

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CE-141	145.44	48.40	8.25E-01	8.25E-01	-2.86E-02	4.01E-01
@ 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	5.62E-01	5.62E-01	4.86E-02	2.73E-01
PM-144	476.78	42.00	1.57E-01	7.36E-02	-6.79E-03	7.47E-02
	618.01	98.60	7.36E-02		-7.78E-03	3.48E-02
	696.49	99.49	7.42E-02		-1.22E-02	3.50E-02
PM-145	36.85	21.70	2.28E-01	1.27E-01	5.73E-02	1.11E-01
	37.36	39.70	1.27E-01		5.45E-02	6.16E-02
	42.30	15.10	3.01E-01		-7.96E-02	1.46E-01
	72.40	2.31	2.93E+00		-1.75E+00	1.44E+00
PM-146	453.90	39.94	1.36E-01	1.36E-01	3.08E-03	6.47E-02
	735.90	14.01	4.30E-01		-9.12E-02	2.01E-01
	747.13	13.10	4.71E-01		1.57E-02	2.21E-01
ND-147	91.11	28.90	1.29E+02	1.29E+02	1.37E+02	6.32E+01
	531.02	13.10	2.64E+02		5.95E+01	1.25E+02
PM-149	285.90	3.10	9.11E+13	9.11E+13	1.32E+13	4.40E+13
EU-152	121.78	20.50	2.19E-01	2.19E-01	-5.16E-02	1.07E-01
	244.69	5.40	1.01E+00		-5.37E-01	4.90E-01
	344.27	19.13	2.95E-01		2.01E-02	1.42E-01
	778.89	9.20	6.83E-01		-1.25E-01	3.20E-01
	964.01	10.40	8.34E-01		-2.24E+00	3.95E-01
	1085.78	7.22	9.93E-01		5.29E-01	4.61E-01
	1112.02	9.60	9.01E-01		3.05E-01	4.24E-01
	1407.95	14.94	4.56E-01		2.19E-01	2.08E-01
GD-153	97.43	31.30	1.99E-01	1.99E-01	1.80E-03	9.70E-02
	103.18	22.20	2.71E-01		-5.01E-02	1.32E-01
EU-154	123.07	40.50	1.15E-01	1.15E-01	4.77E-02	5.62E-02
	723.30	19.70	3.39E-01		2.81E-02	1.60E-01
	873.19	11.50	5.85E-01		1.45E-01	2.74E-01
	996.32	10.30	6.47E-01		-4.23E-01	3.01E-01
	1004.76	17.90	4.54E-01		2.40E-01	2.14E-01
	1274.45	35.50	2.10E-01		-5.10E-02	9.70E-02
EU-155	86.50	30.90	2.08E-01	2.08E-01	1.94E-01	1.02E-01
	105.30	20.70	2.32E-01		7.65E-02	1.13E-01
EU-156	811.77	10.40	5.66E+01	5.66E+01	-3.65E+01	2.64E+01
	1153.47	7.20	1.27E+02		1.68E+01	5.97E+01
	1230.71	8.90	1.06E+02		6.54E+01	5.01E+01
HO-166M	184.41	72.60	8.15E-02	8.15E-02	1.60E-01	3.98E-02
	280.45	29.60	1.74E-01		-1.48E-02	8.38E-02
	410.94	11.10	5.23E-01		-2.31E-03	2.51E-01
	711.69	54.10	1.26E-01		2.13E-02	5.97E-02
TM-171	66.72	0.14	4.27E+01	4.27E+01	-8.04E+01	2.09E+01
HF-172	67.35	5.31	1.14E+00	4.44E-01	-1.85E-01	5.56E-01
	125.81	11.30	4.44E-01		1.82E-01	2.16E-01
LU-172	181.53	20.60	7.69E+03	3.96E+03	1.93E+03	3.73E+03
	900.72	29.81	7.33E+03		2.11E+03	3.42E+03
	1093.66	62.50	3.96E+03		2.33E+03	1.84E+03
LU-173	100.72	5.24	9.85E-01	3.36E-01	-3.37E-01	4.80E-01
	272.11	21.20	3.36E-01		1.60E-01	1.63E-01
HF-175	343.40	84.00	1.79E-01	1.79E-01	-3.92E-01	8.59E-02
LU-176	88.34	13.30	4.79E-01	5.40E-02	2.58E-01	2.35E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	LU-176	201.83		86.00	5.48E-02	5.40E-02	-8.61E-03	2.65E-02
		306.78		94.00	5.40E-02		2.10E-02	2.60E-02
	HF-181	133.02		41.70	5.91E-01	3.61E-01	5.11E-02	2.88E-01
		345.85		17.20	1.68E+00		-2.36E+00	8.08E-01
		482.03		82.80	3.61E-01		1.20E-01	1.72E-01
	TA-182	67.75		41.20	2.43E-01	2.43E-01	-3.97E-02	1.19E-01
		1121.30		34.90	5.80E-01		7.89E-01	2.76E-01
		1189.05		16.23	8.84E-01		2.48E-01	4.12E-01
		1221.41		26.98	6.64E-01		4.54E-01	3.14E-01
		1231.02		11.44	1.53E+00		9.39E-01	7.21E-01
	IR-192	308.46		29.68	4.20E-01	2.72E-01	-1.21E-01	2.02E-01
		468.07		48.10	2.72E-01		-3.31E-01	1.29E-01
	HG-203	279.19		77.30	3.09E-01	3.09E-01	-1.64E-02	1.49E-01
	TL-204	374.74		94.11	5.73E-02	5.73E-02	3.01E-03	2.74E-02
		899.15		99.16	6.66E-02		-2.78E-02	3.10E-02
		911.74		91.10	1.38E-01		3.33E-01	6.66E-02
	BI-207	569.67		97.72	6.07E-02	6.07E-02	-8.94E-03	2.88E-02
		1063.62		74.90	1.02E-01		2.80E-02	4.77E-02
+	TL-208	583.14	*	30.22	3.37E-01	1.90E-01	1.15E+00	1.64E-01
		860.37		4.48	1.68E+00		4.17E-01	7.94E-01
		2614.66	*	35.85	1.90E-01		1.21E+00	8.20E-02
	BI-210M	262.00		45.00	1.16E-01	1.16E-01	8.40E-03	5.60E-02
		300.00		23.00	2.70E-01		-8.68E-01	1.31E-01
+	PB-210	46.50	*	4.25	1.31E+00	1.31E+00	8.25E-01	6.38E-01
	PB-211	404.84		2.90	1.95E+00	1.95E+00	-5.75E-01	9.37E-01
		831.96		2.90	2.27E+00		-7.77E-01	1.07E+00
+	BI-212	727.17	*	11.80	8.48E-01	8.48E-01	1.06E+00	4.08E-01
		1620.62		2.75	1.62E+00		1.99E-01	6.90E-01
+	PB-212	238.63	*	44.60	2.52E-01	2.52E-01	1.37E+00	1.24E-01
		300.09	*	3.41	2.62E+00		2.19E+00	1.28E+00
+	BI-214	609.31	*	46.30	2.05E-01	2.05E-01	9.35E-01	9.90E-02
		1120.29	*	15.10	6.10E-01		1.13E+00	2.88E-01
		1764.49	*	15.80	2.39E-01		1.23E+00	9.71E-02
		2204.22	*	4.98	1.51E+00		1.23E+00	6.72E-01
+	PB-214	295.21	*	19.19	4.54E-01	4.33E-01	1.17E+00	2.22E-01
		351.92	*	37.19	4.33E-01		1.12E+00	2.13E-01
	RN-219	401.80		6.50	8.62E-01	8.62E-01	6.58E-02	4.13E-01
	RA-223	323.87		3.88	1.41E+00	1.41E+00	3.74E-02	6.78E-01
+	RA-224	240.98	*	3.95	2.90E+00	2.90E+00	4.63E+00	1.43E+00
	RA-225	40.00		31.00	1.67E+01	1.67E+01	-1.04E+00	8.12E+00
+	RA-226	186.21	*	3.28	2.45E+00	2.45E+00	2.72E+00	1.20E+00
	TH-227	50.10		8.40	5.67E-01	5.31E-01	-3.22E-01	2.76E-01
		236.00		11.50	5.31E-01		-3.60E+00	2.58E-01
		256.20		6.30	8.37E-01		-2.51E-02	4.05E-01
+	AC-228	338.32	*	11.40	1.38E+00	3.40E-01	1.25E+00	6.79E-01
		911.07	*	27.70	3.40E-01		1.07E+00	1.62E-01
		969.11	*	16.60	9.75E-01		1.45E+00	4.74E-01
	TH-230	48.44		16.90	2.87E-01	2.87E-01	-8.69E-02	1.40E-01
		62.85		4.60	1.28E+00		1.49E+00	6.26E-01
		67.67		0.37	1.47E+01		-2.40E+00	7.20E+00
	PA-231	283.67		1.60	3.22E+00	2.56E+00	-9.25E-02	1.55E+00
		302.67		2.30	2.56E+00		8.49E-01	1.24E+00
	TH-231	25.64		14.70	4.52E-01	4.52E-01	-3.54E+00	2.20E-01

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TH-231	84.21		6.40	8.82E-01	4.52E-01	-6.56E-01	4.32E-01
	PA-233	311.98		38.60	1.69E+00	1.69E+00	1.12E-01	8.13E-01
	PA-234	131.20		20.40	2.33E-01	2.33E-01	-1.80E-02	1.14E-01
		733.99		8.80	7.13E-01		3.67E-02	3.35E-01
		946.00		12.00	5.27E-01		-2.58E-01	2.45E-01
	PA-234M	1001.03		0.92	8.53E+00	8.53E+00	1.83E+00	4.01E+00
	TH-234	63.29		3.80	1.56E+00	1.56E+00	1.95E+00	7.66E-01
	U-235	143.76		10.50	4.44E-01	4.44E-01	1.28E-01	2.16E-01
		163.35		4.70	9.82E-01		-2.72E-01	4.77E-01
		205.31		4.70	9.96E-01		-1.15E+00	4.82E-01
	NP-237	86.50		12.60	4.90E-01	4.90E-01	4.58E-01	2.41E-01
	NP-239	106.10		22.70	1.58E+12	1.58E+12	6.69E+11	7.71E+11
		228.18		10.70	3.61E+12		2.13E+12	1.75E+12
		277.60		14.10	3.06E+12		1.25E+12	1.48E+12
	AM-241	59.54		35.90	1.43E-01	1.43E-01	-1.92E-01	7.00E-02
+	AM-243	74.67	*	66.00	1.61E-01	1.61E-01	3.14E-01	7.98E-02
	CM-243	209.75		3.29	1.53E+00	3.98E-01	8.52E-01	7.41E-01
		228.14		10.60	4.70E-01		2.77E-01	2.28E-01
		277.60		14.00	3.98E-01		1.62E-01	1.92E-01

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

Analysis Report for 1707093-04

HTC-A09-S001-3642-01

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

Sample Title: HTC-A09-S001-3642-01

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:	2	1	71	107	71	168	522	128
25:	77	67	71	72	86	58	58	68
33:	80	57	63	77	85	77	82	83
41:	79	61	68	75	94	99	142	92
49:	83	86	95	110	116	124	101	103
57:	126	107	136	123	129	140	183	258
65:	143	150	147	162	132	154	160	164
73:	176	224	425	345	410	494	173	143
81:	137	126	137	151	167	146	217	291
89:	158	207	165	144	278	245	148	126
97:	100	102	107	102	103	94	86	98
105:	119	93	111	92	92	106	79	92
113:	107	98	99	87	95	73	74	91
121:	92	91	85	80	115	94	74	85
129:	141	114	90	95	77	107	108	87
137:	98	87	82	89	81	75	88	101
145:	83	86	83	73	68	109	91	88
153:	75	97	84	83	78	79	77	109
161:	86	69	84	101	61	65	80	62
169:	73	68	69	62	69	76	66	56
177:	66	60	69	81	65	57	65	81
185:	91	172	152	76	73	76	76	74
193:	69	65	70	65	54	63	69	55
201:	61	75	70	57	74	59	63	55
209:	70	103	58	58	60	55	45	66
217:	45	48	43	53	56	59	52	65
225:	50	47	84	57	68	44	52	61
233:	44	44	62	61	65	218	643	251
241:	133	178	128	56	49	52	47	48
249:	35	35	41	49	38	46	44	41
257:	35	48	43	43	45	41	36	40
265:	36	39	38	45	45	67	81	60
273:	44	38	49	47	51	51	37	28
281:	34	32	39	31	46	29	38	30
289:	47	37	38	37	36	51	157	186
297:	58	38	49	73	65	33	22	38
305:	36	32	19	32	29	30	31	22
313:	25	27	33	29	29	26	20	36
321:	35	24	28	26	31	44	45	51
329:	53	30	31	27	40	26	40	26
337:	39	86	131	39	31	30	33	35
345:	29	30	31	34	27	29	84	315
353:	184	47	23	18	26	25	28	20
361:	20	26	23	18	25	22	29	27

369:	30	28	22	24	27	24	20	24

Sample Title: HTC-A09-S001-3642-01

Channel								
377:	22	23	25	18	21	25	26	27
385:	29	17	26	33	28	28	26	19
393:	28	27	30	20	20	19	30	20
401:	29	24	29	19	27	28	29	24
409:	32	31	23	26	17	32	26	24
417:	25	30	34	35	17	19	23	25
425:	25	24	28	19	22	30	32	16
433:	20	22	24	21	21	22	27	23
441:	14	13	26	18	20	26	16	23
449:	13	18	18	18	24	15	17	18
457:	18	23	17	12	18	19	38	34
465:	17	16	16	14	14	27	10	16
473:	19	28	19	21	9	21	14	16
481:	18	20	34	18	21	11	28	14
489:	11	13	15	15	12	13	17	6
497:	16	23	19	20	28	14	16	19
505:	13	22	14	22	38	52	92	64
513:	39	19	18	14	16	22	15	18
521:	15	12	18	18	16	11	17	17
529:	20	20	22	17	18	15	14	23
537:	20	16	15	17	8	11	16	18
545:	15	6	12	8	16	20	14	16
553:	15	17	14	17	14	12	13	15
561:	9	17	22	12	12	24	24	23
569:	10	13	11	15	18	17	17	10
577:	21	10	21	26	24	41	152	124
585:	31	19	19	20	15	11	14	10
593:	12	16	14	15	19	16	14	18
601:	13	16	17	16	20	18	17	41
609:	161	214	39	15	13	25	23	16
617:	14	18	11	10	11	15	12	8
625:	10	14	13	12	12	11	16	12
633:	16	11	10	16	9	8	21	20
641:	12	10	11	12	14	18	13	13
649:	17	8	19	18	20	19	15	11
657:	20	13	16	14	16	15	6	15
665:	18	22	15	15	15	16	12	9
673:	13	7	7	17	10	12	17	10
681:	17	14	17	12	14	10	14	9
689:	11	8	14	17	19	14	9	11
697:	11	14	10	10	15	14	11	15
705:	9	14	17	17	14	14	18	18
713:	12	12	20	9	15	11	13	16
721:	15	9	13	11	18	14	39	41
729:	20	18	18	14	10	13	8	13
737:	10	10	9	12	12	16	12	16
745:	12	13	10	5	6	13	13	18
753:	17	13	13	10	15	16	9	8
761:	6	11	12	13	18	14	20	30
769:	16	12	10	14	13	24	9	10
777:	10	12	10	13	10	11	7	10
785:	13	24	15	14	7	11	5	13
793:	14	18	32	21	10	13	11	10

801:	12	9	16	17	9	14	11	14

Sample Title: HTC-A09-S001-3642-01

Channel								
809:	12	7	13	15	8	7	2	16
817:	10	16	11	10	10	13	9	8
825:	12	4	14	9	12	11	16	11
833:	7	8	13	9	20	7	14	16
841:	11	8	10	12	14	7	13	6
849:	16	9	12	11	9	9	9	15
857:	12	10	8	17	28	16	7	14
865:	11	18	7	6	11	9	9	13
873:	15	8	7	11	6	12	5	5
881:	10	12	8	9	4	10	3	6
889:	5	11	3	9	11	13	13	6
897:	11	13	9	9	10	4	9	11
905:	2	12	7	10	10	30	95	61
913:	20	10	6	8	10	12	12	15
921:	5	9	3	9	7	13	9	10
929:	10	9	7	7	19	22	21	9
937:	6	10	14	13	12	7	6	9
945:	12	10	5	8	8	14	10	8
953:	7	13	8	11	7	10	14	9
961:	12	5	17	18	30	15	10	35
969:	75	32	13	11	12	11	5	10
977:	9	7	13	8	8	9	15	8
985:	11	11	7	8	9	10	8	7
993:	5	10	8	8	10	9	7	10
1001:	20	14	15	9	8	16	4	10
1009:	8	10	4	5	5	9	3	6
1017:	10	8	7	8	14	11	13	6
1025:	8	12	11	7	7	5	8	8
1033:	9	10	7	9	9	8	6	9
1041:	5	7	8	10	6	10	9	8
1049:	7	8	9	6	8	12	5	8
1057:	11	11	6	4	8	9	17	17
1065:	9	7	9	8	14	10	10	10
1073:	7	5	6	7	15	16	18	7
1081:	4	9	9	9	7	12	7	6
1089:	4	7	5	7	15	14	8	6
1097:	5	7	10	6	7	10	14	11
1105:	6	4	11	6	11	10	12	18
1113:	15	10	9	9	13	14	23	37
1121:	35	19	6	9	6	10	11	9
1129:	11	11	19	11	12	15	8	12
1137:	10	10	9	14	11	11	9	6
1145:	11	7	8	10	8	11	11	14
1153:	16	18	13	10	20	10	11	7
1161:	11	10	15	13	6	12	9	6
1169:	12	13	9	6	11	5	11	11
1177:	14	9	9	7	5	11	14	20
1185:	16	11	7	8	13	8	9	7
1193:	3	9	9	13	10	11	9	7
1201:	10	8	11	13	13	11	12	18
1209:	11	8	8	13	15	14	15	11
1217:	10	14	13	16	8	14	14	18
1225:	9	7	14	12	12	14	16	11

1233:	12	9	10	9	13	31	23	17

Sample Title: HTC-A09-S001-3642-01

Channel								
1241:	4	10	18	10	6	15	9	9
1249:	3	7	9	10	6	11	3	4
1257:	4	6	9	13	8	10	9	7
1265:	5	6	7	4	9	11	11	4
1273:	7	8	7	2	10	7	7	7
1281:	9	4	14	6	7	7	12	7
1289:	10	8	7	8	6	11	8	9
1297:	11	8	3	7	6	5	9	3
1305:	5	9	7	6	10	5	6	8
1313:	3	11	3	7	8	5	4	5
1321:	7	6	2	6	1	11	5	10
1329:	9	7	3	4	3	5	6	3
1337:	5	7	6	4	7	6	5	5
1345:	2	2	3	2	3	5	4	4
1353:	5	6	8	3	2	9	6	2
1361:	2	4	2	1	4	5	3	3
1369:	4	5	4	4	7	3	3	6
1377:	11	13	10	2	3	3	3	2
1385:	6	2	5	7	4	8	4	3
1393:	2	8	2	2	3	1	0	0
1401:	5	2	5	4	3	5	7	12
1409:	1	3	3	2	2	2	3	3
1417:	2	0	2	1	4	6	3	8
1425:	2	3	7	2	4	7	2	2
1433:	4	1	4	2	1	0	4	5
1441:	2	4	2	0	2	3	2	10
1449:	3	1	4	5	3	8	7	2
1457:	6	15	105	364	516	206	45	16
1465:	18	22	4	6	1	1	2	4
1473:	3	4	3	4	3	3	1	2
1481:	1	4	3	5	0	1	2	3
1489:	2	0	2	0	0	2	6	3
1497:	2	0	2	0	3	10	1	5
1505:	1	2	4	6	3	2	5	4
1513:	2	3	1	2	3	3	1	1
1521:	3	5	3	1	1	1	0	5
1529:	2	4	3	1	0	0	2	1
1537:	1	2	1	2	2	3	0	3
1545:	1	2	1	3	2	1	1	1
1553:	2	2	3	2	1	1	2	4
1561:	2	3	1	1	2	2	1	4
1569:	2	1	0	5	1	3	0	2
1577:	1	2	4	5	2	2	1	4
1585:	1	3	12	11	3	4	2	7
1593:	5	7	3	5	2	3	3	0
1601:	2	0	0	0	2	3	0	3
1609:	0	2	2	1	1	1	1	1
1617:	1	0	0	4	4	2	0	3
1625:	0	5	1	4	1	5	1	1
1633:	1	0	0	0	3	0	4	2
1641:	2	0	1	1	1	1	1	1
1649:	1	2	1	4	0	2	0	5
1657:	2	4	1	2	2	7	1	2

1665:	3	0	1	2	0	1	1	1

Sample Title: HTC-A09-S001-3642-01

Channel								
1673:	2	1	2	3	1	0	2	4
1681:	1	2	3	3	2	2	1	1
1689:	1	0	5	0	1	0	1	0
1697:	3	3	2	0	3	1	2	2
1705:	0	2	1	0	1	0	2	1
1713:	2	0	1	2	0	1	3	2
1721:	0	3	0	1	0	1	1	4
1729:	8	5	2	1	1	1	1	0
1737:	0	1	3	0	1	2	0	1
1745:	2	1	2	0	0	0	0	2
1753:	1	1	0	1	1	1	1	0
1761:	0	2	21	24	20	10	2	0
1769:	2	5	0	0	2	0	2	0
1777:	1	2	1	2	2	3	0	0
1785:	0	1	1	0	1	0	1	0
1793:	1	3	0	2	0	0	0	0
1801:	3	2	1	0	0	1	3	0
1809:	2	0	2	0	3	1	1	0
1817:	0	1	0	0	1	1	2	2
1825:	0	0	0	0	2	2	1	0
1833:	4	1	1	2	3	2	1	2
1841:	0	1	2	0	2	3	5	3
1849:	1	0	2	0	2	2	1	3
1857:	3	0	2	2	1	1	0	2
1865:	2	2	1	1	1	1	0	0
1873:	1	1	2	0	0	1	1	0
1881:	1	2	0	3	4	0	2	3
1889:	1	1	0	2	0	0	4	3
1897:	1	0	0	1	1	0	2	1
1905:	2	2	1	0	3	2	0	1
1913:	0	0	2	0	0	1	1	1
1921:	0	0	0	2	1	1	0	0
1929:	1	0	1	2	1	1	1	2
1937:	2	2	3	1	1	1	1	0
1945:	2	4	0	1	0	0	1	1
1953:	2	0	3	0	0	1	2	1
1961:	1	1	1	1	1	0	1	0
1969:	1	1	0	0	0	1	0	0
1977:	2	0	2	2	1	0	1	0
1985:	1	2	2	1	2	1	1	0
1993:	2	2	0	1	2	1	0	0
2001:	3	0	2	2	2	0	2	0
2009:	1	0	1	2	0	1	0	1
2017:	1	3	1	0	1	4	1	1
2025:	0	4	2	0	4	1	1	1
2033:	0	2	3	2	1	1	4	1
2041:	1	2	3	1	2	2	0	0
2049:	1	1	1	1	3	1	1	1
2057:	0	1	0	0	1	1	1	1
2065:	1	1	1	1	2	0	1	0
2073:	0	1	1	1	0	2	2	2
2081:	0	1	3	1	0	0	1	1
2089:	0	0	0	1	1	2	0	1

2097:	0	0	1	1	1	2	10	5

Sample Title: HTC-A09-S001-3642-01

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

2529:	0	1	1	0	0	1	0	0

Sample Title: HTC-A09-S001-3642-01

Channel								
2537:	1	0	0	1	0	0	0	0
2545:	0	0	0	0	0	0	2	1
2553:	0	1	0	1	1	1	0	0
2561:	1	0	0	1	0	0	1	2
2569:	1	1	0	0	0	1	0	1
2577:	0	1	0	1	1	0	1	1
2585:	0	2	1	2	0	1	1	0
2593:	0	0	0	0	0	1	0	0
2601:	1	0	2	0	0	0	0	0
2609:	1	1	5	21	38	42	19	9
2617:	1	0	2	3	1	0	2	0
2625:	0	0	0	0	1	1	1	0
2633:	0	0	1	0	0	1	0	0
2641:	1	0	1	0	0	0	0	0
2649:	0	1	0	1	1	0	1	0
2657:	0	0	0	0	0	0	0	0
2665:	0	0	0	0	1	0	0	1
2673:	0	0	0	0	0	0	1	0
2681:	0	0	0	1	2	0	1	0
2689:	0	0	0	0	0	0	1	1
2697:	0	0	0	0	0	0	1	1
2705:	0	0	0	0	0	0	1	0
2713:	0	0	1	0	0	0	0	1
2721:	1	1	1	0	1	0	1	0
2729:	0	0	0	0	0	0	0	0
2737:	0	1	0	0	0	0	0	0
2745:	0	0	0	0	1	1	0	0
2753:	0	1	1	0	1	0	0	0
2761:	0	0	0	0	0	0	1	1
2769:	0	0	0	1	0	0	1	1
2777:	0	0	0	1	0	0	0	1
2785:	0	0	1	0	1	0	3	1
2793:	0	0	1	0	0	0	0	0
2801:	0	1	0	1	0	0	0	1
2809:	0	1	0	1	0	0	0	0
2817:	0	0	2	0	0	1	0	0
2825:	0	0	1	0	0	1	0	2
2833:	0	0	0	0	0	0	1	0
2841:	1	0	0	2	0	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	1	1	1	1	0	0
2865:	1	0	0	0	0	0	0	0
2873:	0	0	0	0	0	0	1	1
2881:	0	0	0	0	0	0	0	0
2889:	0	1	0	1	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	1	0	0	0	0
2929:	2	0	0	0	0	0	2	0
2937:	1	0	0	0	0	0	0	1
2945:	0	0	0	0	0	0	0	0
2953:	0	1	0	0	0	0	0	1

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S001-3642-01

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

3393:	0	0	2	1	0	0	1	0

Sample Title: HTC-A09-S001-3642-01

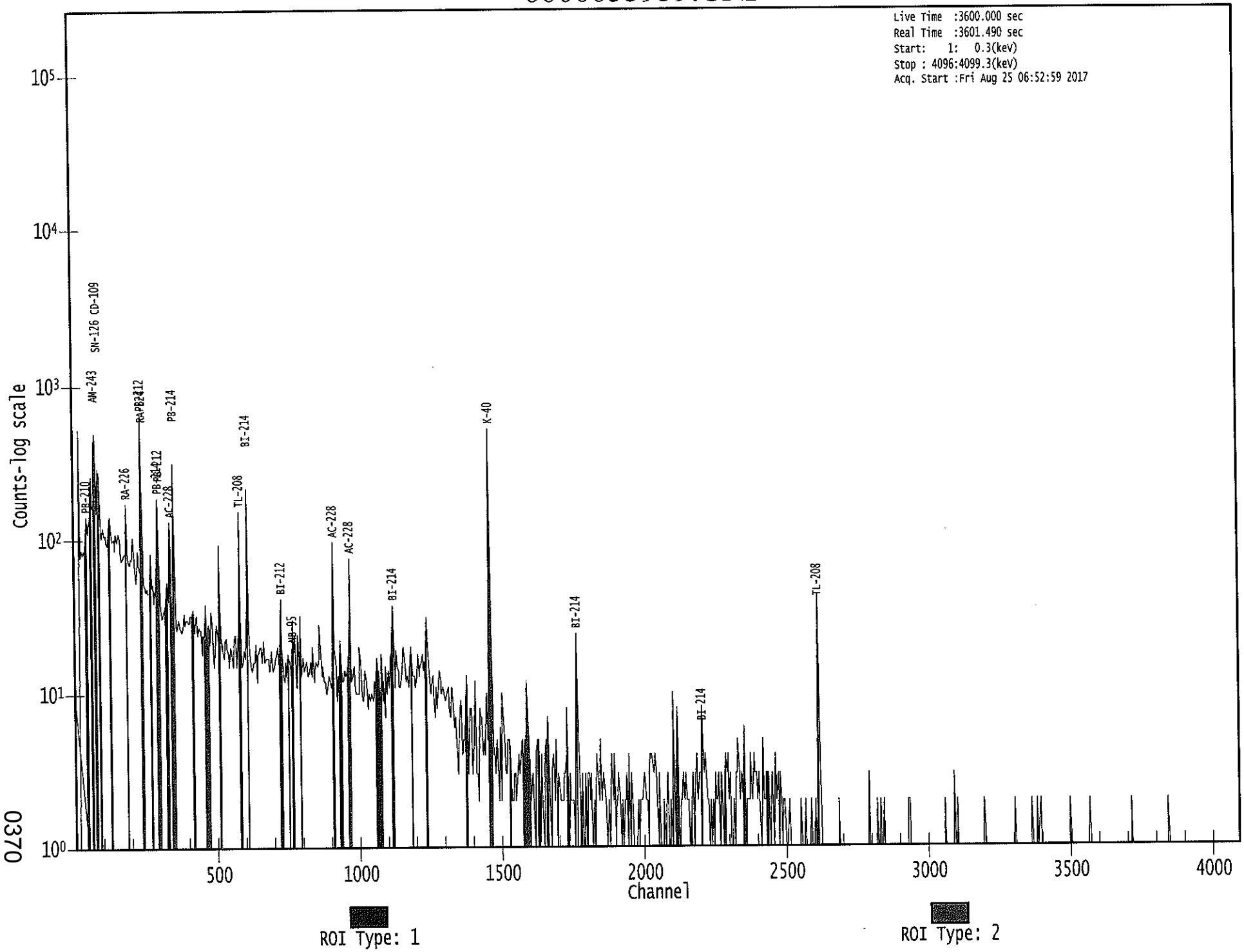
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	1	0	0	0	0	0	0
3417:	0	0	0	0	1	0	0	1
3425:	0	0	0	0	0	1	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	1	0	0
3473:	0	1	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	1	0	0	0	0	0	0	0
3497:	2	0	0	0	0	1	1	1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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S001-3642-01

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

0000055959.CNF



0370

Apex-Gamma

Analysis Report for 1707093-05
HTC-A09-S001-4248-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-05
Sample Description	: HTC-A09-S001-4248-01
Sample Type	: SOIL
Sample Size	: 6.911E+02 grams
Facility	: Countroom
Sample Taken On	: 5/16/2017 5:23:51AM
Acquisition Started	: 8/25/2017 6:53:10AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.2 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 8/19/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55960

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 7:53:41AM
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	75.99	76.30	0.0000	0.00
2	87.88	88.18	0.0000	0.00
3	92.67	92.96	0.0000	0.00
4	98.83	99.12	0.0000	0.00
5	129.11	129.36	0.0000	0.00
6	186.07	186.27	0.0000	0.00
7	238.65	238.78	0.0000	0.00
8	241.89	242.03	0.0000	0.00
9	269.81	269.91	0.0000	0.00
10	277.83	277.93	0.0000	0.00
11	295.13	295.21	0.0000	0.00
12	299.83	299.90	0.0000	0.00
13	338.10	338.13	0.0000	0.00
14	351.87	351.89	0.0000	0.00
15	462.59	462.50	0.0000	0.00
16	486.29	486.17	0.0000	0.00
17	511.45	511.30	0.0000	0.00
18	520.12	519.96	0.0000	0.00
19	523.16	523.00	0.0000	0.00
20	583.26	583.05	0.0000	0.00
21	609.36	609.11	0.0000	0.00
22	682.78	682.46	0.0000	0.00
23	716.41	716.06	0.0000	0.00
24	727.45	727.08	0.0000	0.00
25	770.37	769.97	0.0000	0.00
26	779.81	779.40	0.0000	0.00
27	786.32	785.90	0.0000	0.00
28	883.70	883.19	0.0000	0.00
29	911.36	910.82	0.0000	0.00
30	963.81	963.23	0.0000	0.00
31	968.82	968.22	0.0000	0.00
32	1119.95	1119.22	0.0000	0.00
33	1407.42	1406.44	0.0000	0.00
34	1461.08	1460.05	0.0000	0.00
35	1511.97	1510.90	0.0000	0.00
36	1556.00	1554.90	0.0000	0.00
37	1574.17	1573.06	0.0000	0.00
38	1588.15	1587.02	0.0000	0.00
39	1594.19	1593.06	0.0000	0.00
40	1611.88	1610.73	0.0000	0.00
41	1620.73	1619.57	0.0000	0.00
42	1648.18	1647.00	0.0000	0.00

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1723.87	1722.63	0.0000	0.00
44	1730.28	1729.04	0.0000	0.00
45	1741.91	1740.66	0.0000	0.00
46	1765.29	1764.01	0.0000	0.00
47	2112.53	2111.00	0.0000	0.00
48	2154.48	2152.92	0.0000	0.00
49	2204.18	2202.58	0.0000	0.00
50	2347.36	2345.67	0.0000	0.00
51	2367.08	2365.38	0.0000	0.00
52	2614.94	2613.08	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 7:53:41AM

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	75.99	72 -	80	76.30	9.36E+02	126.29	1.88E+03	3.99
M	2	87.88	83 -	96	88.18	1.32E+02	61.84	7.53E+02	1.21
m	3	92.67	83 -	96	92.96	1.75E+02	62.19	6.82E+02	1.21
	4	98.83	97 -	101	99.12	5.95E+01	61.06	7.73E+02	2.95
	5	129.11	126 -	132	129.36	6.24E+01	75.54	9.95E+02	1.21
	6	186.07	183 -	190	186.27	1.39E+02	77.07	9.01E+02	1.81
M	7	238.65	234 -	245	238.78	7.51E+02	68.74	3.98E+02	1.57
m	8	241.89	234 -	245	242.03	1.99E+02	71.53	4.53E+02	1.96
	9	269.81	267 -	272	269.91	6.59E+01	43.50	3.28E+02	1.83
	10	277.83	275 -	282	277.93	5.23E+01	52.88	4.29E+02	2.27
M	11	295.13	293 -	304	295.21	2.87E+02	44.59	2.23E+02	1.47
m	12	299.83	293 -	304	299.90	6.82E+01	43.50	3.11E+02	1.90
	13	338.10	333 -	342	338.13	1.71E+02	60.75	4.28E+02	2.12
	14	351.87	348 -	355	351.89	4.51E+02	60.99	3.18E+02	1.34
	15	462.59	457 -	466	462.50	5.02E+01	47.22	2.90E+02	1.49
	16	486.29	484 -	489	486.17	2.42E+01	28.34	1.42E+02	1.11
	17	511.45	506 -	517	511.30	2.08E+02	53.67	2.51E+02	2.30
M	18	520.12	518 -	526	519.96	1.71E+01	18.97	6.91E+01	2.55
m	19	523.16	518 -	526	523.00	1.70E+01	22.86	8.86E+01	1.59
	20	583.26	579 -	587	583.05	2.11E+02	46.51	2.05E+02	1.77
	21	609.36	603 -	613	609.11	3.10E+02	53.80	2.22E+02	2.00
	22	682.78	679 -	685	682.46	2.31E+01	27.21	1.16E+02	2.83
	23	716.41	713 -	720	716.06	2.40E+01	26.00	9.79E+01	3.08
	24	727.45	723 -	731	727.08	4.62E+01	35.11	1.60E+02	1.86
	25	770.37	765 -	775	769.97	5.79E+01	40.53	1.76E+02	2.04
	26	779.81	777 -	782	779.40	2.62E+01	20.52	6.35E+01	3.00
	27	786.32	783 -	790	785.90	3.06E+01	27.42	1.07E+02	1.71
	28	883.70	880 -	886	883.19	2.63E+01	18.19	3.94E+01	1.13
	29	911.36	907 -	913	910.82	1.65E+02	32.07	6.72E+01	2.16
M	30	963.81	959 -	972	963.23	4.14E+01	27.06	8.80E+01	3.24
m	31	968.82	959 -	972	968.22	9.18E+01	34.55	9.90E+01	3.02
	32	1119.95	1113 -	1125	1119.22	1.05E+02	40.42	1.43E+02	2.36
	33	1407.42	1403 -	1410	1406.44	2.18E+01	13.42	1.45E+01	1.94
	34	1461.08	1454 -	1465	1460.05	8.17E+02	61.22	5.95E+01	2.54
	35	1511.97	1505 -	1517	1510.90	1.88E+01	17.12	2.44E+01	8.24
	36	1556.00	1549 -	1561	1554.90	1.36E+01	12.67	1.08E+01	1.12
	37	1574.17	1571 -	1576	1573.06	7.00E+00	7.35	4.00E+00	2.48
	38	1588.15	1581 -	1590	1587.02	2.57E+01	18.63	3.45E+01	2.07
	39	1594.19	1591 -	1596	1593.06	1.61E+01	11.53	1.17E+01	3.56
	40	1611.88	1608 -	1614	1610.73	1.25E+01	9.41	7.00E+00	1.35

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1620.73	1617 -	1622	1619.57	7.57E+00	10.49	1.29E+01	1.14
42	1648.18	1644 -	1649	1647.00	7.00E+00	5.29	0.00E+00	3.00
43	1723.87	1719 -	1725	1722.63	5.36E+00	6.34	3.29E+00	3.30
44	1730.28	1726 -	1731	1729.04	1.20E+01	8.83	6.00E+00	2.60
45	1741.91	1737 -	1743	1740.66	7.73E+00	8.28	6.55E+00	2.32
46	1765.29	1758 -	1772	1764.01	6.42E+01	19.81	1.17E+01	3.47
47	2112.53	2108 -	2113	2111.00	6.00E+00	7.35	6.00E+00	2.71
48	2154.48	2147 -	2158	2152.92	1.30E+01	7.21	0.00E+00	1.16
49	2204.18	2197 -	2209	2202.58	2.14E+01	11.93	7.12E+00	3.63
50	2347.36	2341 -	2350	2345.67	1.20E+01	6.93	0.00E+00	6.66
51	2367.08	2362 -	2368	2365.38	8.00E+00	5.66	0.00E+00	1.33
52	2614.94	2608 -	2618	2613.08	8.61E+01	19.65	5.88E+00	3.78

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 : 8/25/2017 7:53:41AM

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	75.99	72 -	80	9.36E+02	126.29	1.88E+03	9.08E+01
M	2	87.88	83 -	96	1.32E+02	61.84	7.53E+02	4.51E+01
m	3	92.67	83 -	96	1.75E+02	62.19	6.82E+02	4.29E+01
	4	98.83	97 -	101	5.95E+01	61.06	7.73E+02	4.86E+01
	5	129.11	126 -	132	6.24E+01	75.54	9.95E+02	6.07E+01
	6	186.07	183 -	190	1.39E+02	77.07	9.01E+02	6.03E+01
M	7	238.65	234 -	245	7.51E+02	68.74	3.98E+02	3.28E+01
m	8	241.89	234 -	245	1.99E+02	71.53	4.53E+02	3.50E+01
	9	269.81	267 -	272	6.59E+01	43.50	3.28E+02	3.32E+01
	10	277.83	275 -	282	5.23E+01	52.88	4.29E+02	4.18E+01
M	11	295.13	293 -	304	2.87E+02	44.59	2.23E+02	2.45E+01
m	12	299.83	293 -	304	6.82E+01	43.50	3.11E+02	2.90E+01
	13	338.10	333 -	342	1.71E+02	60.75	4.28E+02	4.51E+01
	14	351.87	348 -	355	4.51E+02	60.99	3.18E+02	3.60E+01
	15	462.59	457 -	466	5.02E+01	47.22	2.90E+02	3.70E+01
	16	486.29	484 -	489	2.42E+01	28.34	1.42E+02	2.18E+01

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	17	511.45	506 -	517	2.08E+02	53.67	2.51E+02	3.72E+01
M	18	520.12	518 -	526	1.71E+01	18.97	6.91E+01	1.37E+01
m	19	523.16	518 -	526	1.70E+01	22.86	8.86E+01	1.55E+01
	20	583.26	579 -	587	2.11E+02	46.51	2.05E+02	2.99E+01
	21	609.36	603 -	613	3.10E+02	53.80	2.22E+02	3.34E+01
	22	682.78	679 -	685	2.31E+01	27.21	1.16E+02	2.09E+01
	23	716.41	713 -	720	2.40E+01	26.00	9.79E+01	1.98E+01
	24	727.45	723 -	731	4.62E+01	35.11	1.60E+02	2.66E+01
	25	770.37	765 -	775	5.79E+01	40.53	1.76E+02	3.09E+01
	26	779.81	777 -	782	2.62E+01	20.52	6.35E+01	1.46E+01
	27	786.32	783 -	790	3.06E+01	27.42	1.07E+02	2.06E+01
	28	883.70	880 -	886	2.63E+01	18.19	3.94E+01	1.24E+01
	29	911.36	907 -	913	1.65E+02	32.07	6.72E+01	1.57E+01
M	30	963.81	959 -	972	4.14E+01	27.06	8.80E+01	1.54E+01
m	31	968.82	959 -	972	9.18E+01	34.55	9.90E+01	1.64E+01
	32	1119.95	1113 -	1125	1.05E+02	40.42	1.43E+02	2.87E+01
	33	1407.42	1403 -	1410	2.18E+01	13.42	1.45E+01	7.93E+00
	34	1461.08	1454 -	1465	8.17E+02	61.22	5.95E+01	1.80E+01
	35	1511.97	1505 -	1517	1.88E+01	17.12	2.44E+01	1.21E+01
	36	1556.00	1549 -	1561	1.36E+01	12.67	1.08E+01	8.47E+00
	37	1574.17	1571 -	1576	7.00E+00	7.35	4.00E+00	4.19E+00
	38	1588.15	1581 -	1590	2.57E+01	18.63	3.45E+01	1.28E+01
	39	1594.19	1591 -	1596	1.61E+01	11.53	1.17E+01	6.80E+00
	40	1611.88	1608 -	1614	1.25E+01	9.41	7.00E+00	5.10E+00
	41	1620.73	1617 -	1622	7.57E+00	10.49	1.29E+01	7.34E+00
	42	1648.18	1644 -	1649	7.00E+00	5.29	0.00E+00	0.00E+00
	43	1723.87	1719 -	1725	5.36E+00	6.34	3.29E+00	3.57E+00
	44	1730.28	1726 -	1731	1.20E+01	8.83	6.00E+00	4.50E+00
	45	1741.91	1737 -	1743	7.73E+00	8.28	6.55E+00	5.04E+00
	46	1765.29	1758 -	1772	6.42E+01	19.81	1.17E+01	9.58E+00
	47	2112.53	2108 -	2113	6.00E+00	7.35	6.00E+00	4.50E+00
	48	2154.48	2147 -	2158	1.30E+01	7.21	0.00E+00	0.00E+00
	49	2204.18	2197 -	2209	2.14E+01	11.93	7.12E+00	6.18E+00
	50	2347.36	2341 -	2350	1.20E+01	6.93	0.00E+00	0.00E+00
	51	2367.08	2362 -	2368	8.00E+00	5.66	0.00E+00	0.00E+00
	52	2614.94	2608 -	2618	8.61E+01	19.65	5.88E+00	5.33E+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 1707093-05

HTC-A09-S001-4248-01

PEAK WITH NID REPORT

Peak Analysis Performed on : 8/25/2017 7:53:41AM

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	75.99	72 -	80	76.30	9.36E+02	126.29	1.88E+03	.....
M	2	87.88	83 -	96	88.18	1.32E+02	61.84	7.53E+02	CD-109
									SN-126
									LU-176
m	3	92.67	83 -	96	92.96	1.75E+02	62.19	6.82E+02	GA-67
	4	98.83	97 -	101	99.12	5.95E+01	61.06	7.73E+02	.....
	5	129.11	126 -	132	129.36	6.24E+01	75.54	9.95E+02	.....
	6	186.07	183 -	190	186.27	1.39E+02	77.07	9.01E+02	RA-226
M	7	238.65	234 -	245	238.78	7.51E+02	68.74	3.98E+02	PB-212
m	8	241.89	234 -	245	242.03	1.99E+02	71.53	4.53E+02	RA-224
	9	269.81	267 -	272	269.91	6.59E+01	43.50	3.28E+02	.....
	10	277.83	275 -	282	277.93	5.23E+01	52.88	4.29E+02	CM-243
									NP-239
M	11	295.13	293 -	304	295.21	2.87E+02	44.59	2.23E+02	PB-214
m	12	299.83	293 -	304	299.90	6.82E+01	43.50	3.11E+02	BI-210M
									PB-212
									GA-67
	13	338.10	333 -	342	338.13	1.71E+02	60.75	4.28E+02	AC-228
	14	351.87	348 -	355	351.89	4.51E+02	60.99	3.18E+02	PB-214
	15	462.59	457 -	466	462.50	5.02E+01	47.22	2.90E+02	SB-125
	16	486.29	484 -	489	486.17	2.42E+01	28.34	1.42E+02	LA-140
	17	511.45	506 -	517	511.30	2.08E+02	53.67	2.51E+02	.....
M	18	520.12	518 -	526	519.96	1.71E+01	18.97	6.91E+01	RB-83
m	19	523.16	518 -	526	523.00	1.70E+01	22.86	8.86E+01	.....
	20	583.26	579 -	587	583.05	2.11E+02	46.51	2.05E+02	TL-208
	21	609.36	603 -	613	609.11	3.10E+02	53.80	2.22E+02	BI-214
	22	682.78	679 -	685	682.46	2.31E+01	27.21	1.16E+02	.....
	23	716.41	713 -	720	716.06	2.40E+01	26.00	9.79E+01	.....
	24	727.45	723 -	731	727.08	4.62E+01	35.11	1.60E+02	BI-212
	25	770.37	765 -	775	769.97	5.79E+01	40.53	1.76E+02	.....
	26	779.81	777 -	782	779.40	2.62E+01	20.52	6.35E+01	EU-152
	27	786.32	783 -	790	785.90	3.06E+01	27.42	1.07E+02	.....
	28	883.70	880 -	886	883.19	2.63E+01	18.19	3.94E+01	AG-110M
	29	911.36	907 -	913	910.82	1.65E+02	32.07	6.72E+01	AC-228
									TL-204
M	30	963.81	959 -	972	963.23	4.14E+01	27.06	8.80E+01	EU-152
m	31	968.82	959 -	972	968.22	9.18E+01	34.55	9.90E+01	AC-228
	32	1119.95	1113 -	1125	1119.22	1.05E+02	40.42	1.43E+02	BI-214
									SC-46
	33	1407.42	1403 -	1410	1406.44	2.18E+01	13.42	1.45E+01	EU-152
	34	1461.08	1454 -	1465	1460.05	8.17E+02	61.22	5.95E+01	K-40

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
35	1511.97	1505 -	1517	1510.90	1.88E+01	17.12	2.44E+01	.....
36	1556.00	1549 -	1561	1554.90	1.36E+01	12.67	1.08E+01	.....
37	1574.17	1571 -	1576	1573.06	7.00E+00	7.35	4.00E+00	.....
38	1588.15	1581 -	1590	1587.02	2.57E+01	18.63	3.45E+01	.....
39	1594.19	1591 -	1596	1593.06	1.61E+01	11.53	1.17E+01	.....
40	1611.88	1608 -	1614	1610.73	1.25E+01	9.41	7.00E+00	.....
41	1620.73	1617 -	1622	1619.57	7.57E+00	10.49	1.29E+01	BI-212
42	1648.18	1644 -	1649	1647.00	7.00E+00	5.29	0.00E+00	.....
43	1723.87	1719 -	1725	1722.63	5.36E+00	6.34	3.29E+00	.....
44	1730.28	1726 -	1731	1729.04	1.20E+01	8.83	6.00E+00	.....
45	1741.91	1737 -	1743	1740.66	7.73E+00	8.28	6.55E+00	.....
46	1765.29	1758 -	1772	1764.01	6.42E+01	19.81	1.17E+01	BI-214
47	2112.53	2108 -	2113	2111.00	6.00E+00	7.35	6.00E+00	.....
48	2154.48	2147 -	2158	2152.92	1.30E+01	7.21	0.00E+00	.....
49	2204.18	2197 -	2209	2202.58	2.14E+01	11.93	7.12E+00	BI-214
50	2347.36	2341 -	2350	2345.67	1.20E+01	6.93	0.00E+00	.....
51	2367.08	2362 -	2368	2365.38	8.00E+00	5.66	0.00E+00	.....
52	2614.94	2608 -	2618	2613.08	8.61E+01	19.65	5.88E+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 : 8/25/2017 7:53:41AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	75.99	9.36E+02	126.29	2.63E-02	2.11E-03
M	2	87.88	1.32E+02	61.84	2.70E-02	2.42E-03
m	3	92.67	1.75E+02	62.19	2.70E-02	2.34E-03
	4	98.83	5.95E+01	61.06	2.68E-02	2.22E-03
	5	129.11	6.24E+01	75.54	2.48E-02	1.75E-03
	6	186.07	1.39E+02	77.07	2.03E-02	1.53E-03
M	7	238.65	7.51E+02	68.74	1.72E-02	1.30E-03
m	8	241.89	1.99E+02	71.53	1.71E-02	1.28E-03
	9	269.81	6.59E+01	43.50	1.58E-02	1.16E-03
	10	277.83	5.23E+01	52.88	1.55E-02	1.12E-03
M	11	295.13	2.87E+02	44.59	1.48E-02	1.10E-03
m	12	299.83	6.82E+01	43.50	1.47E-02	1.09E-03

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	13	338.10	1.71E+02	60.75	1.35E-02	1.04E-03
	14	351.87	4.51E+02	60.99	1.31E-02	1.02E-03
	15	462.59	5.02E+01	47.22	1.07E-02	9.07E-04
	16	486.29	2.42E+01	28.34	1.03E-02	8.86E-04
	17	511.45	2.08E+02	53.67	9.86E-03	8.65E-04
M	18	520.12	1.71E+01	18.97	9.74E-03	8.57E-04
m	19	523.16	1.70E+01	22.86	9.69E-03	8.54E-04
	20	583.26	2.11E+02	46.51	8.90E-03	8.02E-04
	21	609.36	3.10E+02	53.80	8.60E-03	7.80E-04
	22	682.78	2.31E+01	27.21	7.86E-03	7.14E-04
	23	716.41	2.40E+01	26.00	7.56E-03	6.81E-04
	24	727.45	4.62E+01	35.11	7.46E-03	6.71E-04
	25	770.37	5.79E+01	40.53	7.12E-03	6.29E-04
	26	779.81	2.62E+01	20.52	7.05E-03	6.20E-04
	27	786.32	3.06E+01	27.42	7.01E-03	6.14E-04
	28	883.70	2.63E+01	18.19	6.37E-03	5.20E-04
	29	911.36	1.65E+02	32.07	6.21E-03	5.02E-04
M	30	963.81	4.14E+01	27.06	5.93E-03	4.83E-04
m	31	968.82	9.18E+01	34.55	5.90E-03	4.81E-04
	32	1119.95	1.05E+02	40.42	5.25E-03	4.29E-04
	33	1407.42	2.18E+01	13.42	4.38E-03	4.03E-04
	34	1461.08	8.17E+02	61.22	4.26E-03	3.88E-04
	35	1511.97	1.88E+01	17.12	4.16E-03	3.73E-04
	36	1556.00	1.36E+01	12.67	4.07E-03	3.60E-04
	37	1574.17	7.00E+00	7.35	4.04E-03	3.55E-04
	38	1588.15	2.57E+01	18.63	4.02E-03	3.51E-04
	39	1594.19	1.61E+01	11.53	4.00E-03	3.49E-04
	40	1611.88	1.25E+01	9.41	3.97E-03	3.44E-04
	41	1620.73	7.57E+00	10.49	3.96E-03	3.41E-04
	42	1648.18	7.00E+00	5.29	3.92E-03	3.33E-04
	43	1723.87	5.36E+00	6.34	3.80E-03	3.12E-04
	44	1730.28	1.20E+01	8.83	3.79E-03	3.10E-04
	45	1741.91	7.73E+00	8.28	3.78E-03	3.06E-04
	46	1765.29	6.42E+01	19.81	3.75E-03	3.00E-04
	47	2112.53	6.00E+00	7.35	3.40E-03	2.79E-04
	48	2154.48	1.30E+01	7.21	3.37E-03	2.79E-04
	49	2204.18	2.14E+01	11.93	3.34E-03	2.79E-04
	50	2347.36	1.20E+01	6.93	3.27E-03	2.79E-04
	51	2367.08	8.00E+00	5.66	3.26E-03	2.79E-04
	52	2614.94	8.61E+01	19.65	3.20E-03	2.79E-04

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

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/25/2017 7:53:41AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055574.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	75.99	9.36E+02	126.29			9.36E+02	1.26E+02
M	2	87.88	1.32E+02	61.84			1.32E+02	6.18E+01
m	3	92.67	1.75E+02	62.19	4.88E+01	1.30E+00	1.27E+02	6.22E+01
	4	98.83	5.95E+01	61.06			5.95E+01	6.11E+01
	5	129.11	6.24E+01	75.54			6.24E+01	7.55E+01
	6	186.07	1.39E+02	77.07	3.48E+01	7.32E+00	1.04E+02	7.74E+01
M	7	238.65	7.51E+02	68.74	7.09E+00	6.85E+00	7.44E+02	6.91E+01
m	8	241.89	1.99E+02	71.53			1.99E+02	7.15E+01
	9	269.81	6.59E+01	43.50			6.59E+01	4.35E+01
	10	277.83	5.23E+01	52.88			5.23E+01	5.29E+01
M	11	295.13	2.87E+02	44.59			2.87E+02	4.46E+01
m	12	299.83	6.82E+01	43.50			6.82E+01	4.35E+01
	13	338.10	1.71E+02	60.75			1.71E+02	6.07E+01
	14	351.87	4.51E+02	60.99	1.04E+01	5.08E+00	4.40E+02	6.12E+01
	15	462.59	5.02E+01	47.22			5.02E+01	4.72E+01
	16	486.29	2.42E+01	28.34			2.42E+01	2.83E+01
	17	511.45	2.08E+02	53.67	7.08E+01	4.94E+00	1.37E+02	5.39E+01
M	18	520.12	1.71E+01	18.97			1.71E+01	1.90E+01
m	19	523.16	1.70E+01	22.86			1.70E+01	2.29E+01
	20	583.26	2.11E+02	46.51	5.65E+00	3.57E+00	2.05E+02	4.66E+01
	21	609.36	3.10E+02	53.80	1.07E+01	3.96E+00	2.99E+02	5.39E+01
	22	682.78	2.31E+01	27.21			2.31E+01	2.72E+01
	23	716.41	2.40E+01	26.00			2.40E+01	2.60E+01
	24	727.45	4.62E+01	35.11			4.62E+01	3.51E+01
	25	770.37	5.79E+01	40.53			5.79E+01	4.05E+01
	26	779.81	2.62E+01	20.52			2.62E+01	2.05E+01
	27	786.32	3.06E+01	27.42			3.06E+01	2.74E+01
	28	883.70	2.63E+01	18.19			2.63E+01	1.82E+01
	29	911.36	1.65E+02	32.07	2.63E+00	2.49E+00	1.63E+02	3.22E+01
M	30	963.81	4.14E+01	27.06			4.14E+01	2.71E+01
m	31	968.82	9.18E+01	34.55			9.18E+01	3.45E+01
	32	1119.95	1.05E+02	40.42	2.45E+00	2.38E+00	1.02E+02	4.05E+01
	33	1407.42	2.18E+01	13.42			2.18E+01	1.34E+01
	34	1461.08	8.17E+02	61.22	5.90E+00	2.63E+00	8.11E+02	6.13E+01
	35	1511.97	1.88E+01	17.12			1.88E+01	1.71E+01
	36	1556.00	1.36E+01	12.67			1.36E+01	1.27E+01
	37	1574.17	7.00E+00	7.35			7.00E+00	7.35E+00
	38	1588.15	2.57E+01	18.63			2.57E+01	1.86E+01
	39	1594.19	1.61E+01	11.53			1.61E+01	1.15E+01
	40	1611.88	1.25E+01	9.41			1.25E+01	9.41E+00
	41	1620.73	7.57E+00	10.49			7.57E+00	1.05E+01
	42	1648.18	7.00E+00	5.29			7.00E+00	5.29E+00
	43	1723.87	5.36E+00	6.34			5.36E+00	6.34E+00
	44	1730.28	1.20E+01	8.83			1.20E+01	8.83E+00

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
45	1741.91	7.73E+00	8.28			7.73E+00	8.28E+00
46	1765.29	6.42E+01	19.81	3.33E+00	1.73E+00	6.08E+01	1.99E+01
47	2112.53	6.00E+00	7.35			6.00E+00	7.35E+00
48	2154.48	1.30E+01	7.21			1.30E+01	7.21E+00
49	2204.18	2.14E+01	11.93			2.14E+01	1.19E+01
50	2347.36	1.20E+01	6.93			1.20E+01	6.93E+00
51	2367.08	8.00E+00	5.66			8.00E+00	5.66E+00
52	2614.94	8.61E+01	19.65	4.77E+00	1.52E+00	8.13E+01	1.97E+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 : 8/25/2017 7:53:41AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055574.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	75.99	9.36E+02	126.29			9.36E+02	1.26E+02
M	2	87.88	1.32E+02	61.84			1.32E+02	6.18E+01
m	3	92.67	1.75E+02	62.19	4.88E+01	1.30E+00	1.27E+02	6.22E+01
	4	98.83	5.95E+01	61.06			5.95E+01	6.11E+01
	5	129.11	6.24E+01	75.54			6.24E+01	7.55E+01
	6	186.07	1.39E+02	77.07	3.48E+01	7.32E+00	1.04E+02	7.74E+01
M	7	238.65	7.51E+02	68.74	7.09E+00	6.85E+00	7.44E+02	6.91E+01
m	8	241.89	1.99E+02	71.53			1.99E+02	7.15E+01
	9	269.81	6.59E+01	43.50			6.59E+01	4.35E+01
	10	277.83	5.23E+01	52.88			5.23E+01	5.29E+01
M	11	295.13	2.87E+02	44.59			2.87E+02	4.46E+01
m	12	299.83	6.82E+01	43.50			6.82E+01	4.35E+01
	13	338.10	1.71E+02	60.75			1.71E+02	6.07E+01
	14	351.87	4.51E+02	60.99	1.04E+01	5.08E+00	4.40E+02	6.12E+01
	15	462.59	5.02E+01	47.22			5.02E+01	4.72E+01
	16	486.29	2.42E+01	28.34			2.42E+01	2.83E+01
	17	511.45	2.08E+02	53.67	7.08E+01	4.94E+00	1.37E+02	5.39E+01
M	18	520.12	1.71E+01	18.97			1.71E+01	1.90E+01
m	19	523.16	1.70E+01	22.86			1.70E+01	2.29E+01
	20	583.26	2.11E+02	46.51	5.65E+00	3.57E+00	2.05E+02	4.66E+01

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	21	609.36	3.10E+02	53.80	1.07E+01	3.96E+00	2.99E+02	5.39E+01
	22	682.78	2.31E+01	27.21			2.31E+01	2.72E+01
	23	716.41	2.40E+01	26.00			2.40E+01	2.60E+01
	24	727.45	4.62E+01	35.11			4.62E+01	3.51E+01
	25	770.37	5.79E+01	40.53			5.79E+01	4.05E+01
	26	779.81	2.62E+01	20.52			2.62E+01	2.05E+01
	27	786.32	3.06E+01	27.42			3.06E+01	2.74E+01
	28	883.70	2.63E+01	18.19			2.63E+01	1.82E+01
	29	911.36	1.65E+02	32.07	2.63E+00	2.49E+00	1.63E+02	3.22E+01
M	30	963.81	4.14E+01	27.06			4.14E+01	2.71E+01
m	31	968.82	9.18E+01	34.55			9.18E+01	3.45E+01
	32	1119.95	1.05E+02	40.42	2.45E+00	2.38E+00	1.02E+02	4.05E+01
	33	1407.42	2.18E+01	13.42			2.18E+01	1.34E+01
	34	1461.08	8.17E+02	61.22	5.90E+00	2.63E+00	8.11E+02	6.13E+01
	35	1511.97	1.88E+01	17.12			1.88E+01	1.71E+01
	36	1556.00	1.36E+01	12.67			1.36E+01	1.27E+01
	37	1574.17	7.00E+00	7.35			7.00E+00	7.35E+00
	38	1588.15	2.57E+01	18.63			2.57E+01	1.86E+01
	39	1594.19	1.61E+01	11.53			1.61E+01	1.15E+01
	40	1611.88	1.25E+01	9.41			1.25E+01	9.41E+00
	41	1620.73	7.57E+00	10.49			7.57E+00	1.05E+01
	42	1648.18	7.00E+00	5.29			7.00E+00	5.29E+00
	43	1723.87	5.36E+00	6.34			5.36E+00	6.34E+00
	44	1730.28	1.20E+01	8.83			1.20E+01	8.83E+00
	45	1741.91	7.73E+00	8.28			7.73E+00	8.28E+00
	46	1765.29	6.42E+01	19.81	3.33E+00	1.73E+00	6.08E+01	1.99E+01
	47	2112.53	6.00E+00	7.35			6.00E+00	7.35E+00
	48	2154.48	1.30E+01	7.21			1.30E+01	7.21E+00
	49	2204.18	2.14E+01	11.93			2.14E+01	1.19E+01
	50	2347.36	1.20E+01	6.93			1.20E+01	6.93E+00
	51	2367.08	8.00E+00	5.66			8.00E+00	5.66E+00
	52	2614.94	8.61E+01	19.65	4.77E+00	1.52E+00	8.13E+01	1.97E+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 1707093-05

HTC-A09-S001-4248-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.988	1460.81	*	10.67	1.94E+01	2.33E+00
CD-109	0.996	88.03	*	3.72	1.66E+00	7.98E-01
SN-126	0.985	87.57	*	37.00	1.43E-01	6.85E-02
TL-208	0.882	583.14	*	30.22	8.28E-01	2.03E-01
		860.37		4.48		
		2614.66	*	35.85	7.71E-01	1.99E-01
BI-212	0.990	727.17	*	11.80	5.70E-01	4.36E-01
		1620.62	*	2.75	7.55E-01	1.05E+00
PB-212	0.999	238.63	*	44.60	1.05E+00	1.26E-01
		300.09	*	3.41	1.48E+00	9.50E-01
BI-214	0.978	609.31	*	46.30	8.17E-01	1.65E-01
		1120.29	*	15.10	1.40E+00	5.67E-01
		1764.49	*	15.80	1.12E+00	3.76E-01
		2204.22	*	4.98	1.40E+00	7.88E-01
PB-214	0.999	295.21	*	19.19	1.10E+00	1.88E-01
		351.92	*	37.19	9.85E-01	1.57E-01
RA-224	0.876	240.98	*	3.95	3.21E+00	1.18E+00
RA-226	0.997	186.21	*	3.28	1.69E+00	3.35E+00
AC-228	0.988	338.32	*	11.40	1.21E+00	4.40E-01
		911.07	*	27.70	1.03E+00	2.20E-01
		969.11	*	16.60	1.02E+00	3.92E-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 : 8/25/2017 7:53:41AM
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	75.99	2.59982E-01	6.75		
m	3	92.67	3.51600E-02	24.57	Tol.	GA-67
	4	98.83	1.65334E-02	51.29	D-Esc	
	5	129.11	1.73286E-02	60.55		
	9	269.81	1.83019E-02	33.01		
	10	277.83	1.45370E-02	50.52	Tol.	NP-239 CM-243
	15	462.59	1.39345E-02	47.07	Tol.	SB-125

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	16	486.29	6.72953E-03	58.48	Sum	
	17	511.45	3.80197E-02	19.69		
M	18	520.12	4.76045E-03	55.36		
m	19	523.16	4.72487E-03	67.21		
	22	682.78	6.40947E-03	58.97		
	23	716.41	6.67808E-03	54.07		
	25	770.37	1.60835E-02	35.00		
	26	779.81	7.28927E-03	39.10	Tol.	EU-152
	27	786.32	8.51190E-03	44.75		
	28	883.70	7.30676E-03	34.58	Sum	
M	30	963.81	1.15019E-02	32.67	Tol.	EU-152
	33	1407.42	6.04406E-03	30.83	Tol.	EU-152
	35	1511.97	5.22850E-03	45.47		
	36	1556.00	3.77193E-03	46.65		
	37	1574.17	1.94444E-03	52.49		
	38	1588.15	7.14793E-03	36.20		
	39	1594.19	4.48232E-03	35.73		
	40	1611.88	3.47222E-03	37.63		
	42	1648.18	1.94444E-03	37.80		
	43	1723.87	1.48810E-03	59.21		
	44	1730.28	3.33333E-03	36.80	Sum	
	45	1741.91	2.14646E-03	53.55		
	47	2112.53	1.66667E-03	61.24		
	48	2154.48	3.61111E-03	27.74		
	50	2347.36	3.33333E-03	28.87	Sum	
	51	2367.08	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

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.98	1460.81	*	10.67	1.94E+01	2.33E+00
CD-109	0.99	88.03	*	3.72	1.66E+00	7.98E-01

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
SN-126	0.98	87.57	*	37.00	1.43E-01	6.85E-02
TL-208	0.88	583.14	*	30.22	8.28E-01	2.03E-01
		860.37		4.48		
		2614.66	*	35.85	7.71E-01	1.99E-01
BI-212	0.99	727.17	*	11.80	5.70E-01	4.36E-01
		1620.62	*	2.75	7.55E-01	1.05E+00
PB-212	0.99	238.63	*	44.60	1.05E+00	1.26E-01
		300.09	*	3.41	1.48E+00	9.50E-01
BI-214	0.97	609.31	*	46.30	8.17E-01	1.65E-01
		1120.29	*	15.10	1.40E+00	5.67E-01
		1764.49	*	15.80	1.12E+00	3.76E-01
		2204.22	*	4.98	1.40E+00	7.88E-01
PB-214	0.99	295.21	*	19.19	1.10E+00	1.88E-01
		351.92	*	37.19	9.85E-01	1.57E-01
RA-224	0.87	240.98	*	3.95	3.21E+00	1.18E+00
RA-226	0.99	186.21	*	3.28	1.69E+00	3.35E+00
AC-228	0.98	338.32	*	11.40	1.21E+00	4.40E-01
		911.07	*	27.70	1.03E+00	2.20E-01
		969.11	*	16.60	1.02E+00	3.92E-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	0.988	1.94E+01	2.33E+00	
?	CD-109	0.996	1.66E+00	7.98E-01	
?	SN-126	0.985	1.43E-01	6.85E-02	
	TL-208	0.882	7.99E-01	1.42E-01	
	BI-212	0.990	5.98E-01	4.03E-01	
	PB-212	0.999	1.06E+00	1.25E-01	
	BI-214	0.978	9.17E-01	1.43E-01	
	PB-214	0.999	1.03E+00	1.21E-01	

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
RA-224	0.876	3.21E+00	1.18E+00	
RA-226	0.997	1.69E+00	3.35E+00	
AC-228	0.988	1.06E+00	1.76E-01	

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

Errors quoted at 2.000sigma

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 7:53:41AM
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	75.99	2.59982E-01	6.75		
m	3	92.67	3.51600E-02	24.57	Tol.	GA-67
	4	98.83	1.65334E-02	51.29	D-Esc	
	5	129.11	1.73286E-02	60.55		
	9	269.81	1.83019E-02	33.01		
	10	277.83	1.45370E-02	50.52	Tol.	NP-239 CM-243
	15	462.59	1.39345E-02	47.07	Tol.	SB-125
	16	486.29	6.72953E-03	58.48	Sum	
	17	511.45	3.80197E-02	19.69		
M	18	520.12	4.76045E-03	55.36		
m	19	523.16	4.72487E-03	67.21		
	22	682.78	6.40947E-03	58.97		
	23	716.41	6.67808E-03	54.07		
	25	770.37	1.60835E-02	35.00		
	26	779.81	7.28927E-03	39.10	Tol.	EU-152
	27	786.32	8.51190E-03	44.75		
	28	883.70	7.30676E-03	34.58	Sum	
M	30	963.81	1.15019E-02	32.67	Tol.	EU-152
	33	1407.42	6.04406E-03	30.83	Tol.	EU-152
	35	1511.97	5.22850E-03	45.47		
	36	1556.00	3.77193E-03	46.65		
	37	1574.17	1.94444E-03	52.49		
	38	1588.15	7.14793E-03	36.20		
	39	1594.19	4.48232E-03	35.73		
	40	1611.88	3.47222E-03	37.63		
	42	1648.18	1.94444E-03	37.80		
	43	1723.87	1.48810E-03	59.21		
	44	1730.28	3.33333E-03	36.80	Sum	
	45	1741.91	2.14646E-03	53.55		
	47	2112.53	1.66667E-03	61.24		
	48	2154.48	3.61111E-03	27.74		
	50	2347.36	3.33333E-03	28.87	Sum	
	51	2367.08	2.22222E-03	35.36		

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

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	-1.02E+00	1.54E+00	1.54E+00
+		NA-22	1274.54		99.94	2.23E-02	8.30E-02	8.30E-02
+	@	NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26
	@		2754.09		99.86	1.00E+26		1.00E+26
+		AL-26	1808.65		99.76	1.01E-02	4.68E-02	4.68E-02
+		K-40	1460.81	*	10.67	1.94E+01	9.51E-01	9.51E-01
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	-1.45E-02	4.20E-02	4.20E-02
			78.34		96.00	3.03E-02		4.83E-02
+		SC-46	889.25		99.98	2.15E-02	1.37E-01	1.37E-01
			1120.51		99.99	3.70E-01		2.68E-01
+		V-48	983.52		99.98	1.53E+00	5.08E+00	5.08E+00
			1312.10		97.50	-3.43E+00		5.54E+00
+		CR-51	320.08		9.83	-2.39E-01	5.62E+00	5.62E+00
+		MN-54	834.83		99.97	3.61E-02	8.82E-02	8.82E-02
+		CO-56	846.75		99.96	3.81E-02	1.49E-01	1.49E-01
			1037.75		14.03	-6.75E-02		1.03E+00
			1238.25		67.00	1.84E-01		3.59E-01
			1771.40		15.51	1.52E-02		8.59E-01
			2598.48		16.90	4.89E-02		3.60E-01
+		CO-57	122.06		85.51	-1.04E-02	4.45E-02	4.45E-02
			136.48		10.60	7.73E-02		5.01E-01
+		CO-58	810.76		99.40	9.33E-03	1.57E-01	1.57E-01
+		FE-59	1099.22		56.50	-2.41E-01	6.06E-01	6.06E-01
			1291.56		43.20	-3.41E-01		7.70E-01
+		CO-60	1173.22		100.00	-3.01E-02	6.74E-02	7.64E-02
			1332.49		100.00	-2.30E-02		6.74E-02
+		ZN-65	1115.52		50.75	-5.20E-01	1.93E-01	1.93E-01
+		GA-67	93.31		35.70	5.24E+08	2.51E+08	2.51E+08
			208.95		2.24	2.53E+09		4.59E+09
			300.22		16.00	5.84E+08		6.86E+08
+		SE-75	121.11		16.70	8.83E-02	1.22E-01	3.27E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00		59.20	1.46E-02	1.22E-01	1.25E-01
		264.65		59.80	1.87E-02		1.22E-01
		279.53		25.20	-8.70E-02		3.12E-01
		400.65		11.40	1.26E-01		7.36E-01
+	RB-82	776.52		13.00	-1.86E+00	7.32E+00	7.32E+00
+	RB-83	520.41		46.00	2.39E-02	2.28E-01	2.28E-01
		529.64		30.30	-2.61E-02		3.03E-01
		552.65		16.40	3.80E-01		6.74E-01
+	KR-85	513.99		0.43	-6.10E+00	1.36E+01	1.36E+01
+	SR-85	513.99		99.27	-7.71E-02	1.73E-01	1.73E-01
+	Y-88	898.02		93.40	-6.09E-02	9.15E-02	1.27E-01
		1836.01		99.38	6.25E-03		9.15E-02
+	MO-93	263.06		56.72	4.07E-02	3.96E-02	7.47E-02
		684.67		99.68	-7.43E-03		6.31E-02
		1477.11		99.08	-5.28E-03		3.96E-02
+	NB-93M	16.57		9.43	0.00E+00	6.35E+00	6.35E+00
+	NB-94	702.63		100.00	-2.23E-03	5.66E-02	5.69E-02
		871.10		100.00	1.93E-02		5.66E-02
+	NB-95	765.79		99.81	7.43E-02	5.36E-01	5.36E-01
+	NB-95M	235.69		25.00	-4.63E+08	6.54E+07	6.54E+07
+	ZR-95	724.18		43.70	5.83E-03	3.19E-01	4.81E-01
		756.72		55.30	3.05E-02		3.19E-01
+	MO-99	181.06		6.20	1.81E+10	5.71E+10	8.11E+10
		739.58		12.80	2.94E+10		5.71E+10
		778.00		4.50	-2.60E+10		1.54E+11
+	RU-103	497.08		89.00	2.25E-02	2.74E-01	2.74E-01
+	RU-106	621.84		9.80	-1.05E-01	6.81E-01	6.81E-01
+	AG-108M	433.93		89.90	-3.39E-03	4.88E-02	4.88E-02
		614.37		90.40	3.79E-04		5.86E-02
		722.95		90.50	9.43E-04		6.63E-02
+	CD-109	88.03	*	3.72	1.66E+00	2.92E+00	2.92E+00
+	AG-110M	657.75		93.14	-4.38E-02	8.30E-02	8.30E-02
		677.61		10.53	-7.36E-02		7.29E-01
		706.67		16.46	1.14E-02		4.56E-01
		763.93		21.98	1.42E-01		3.97E-01
		884.67		71.63	-2.84E-02		1.06E-01
		1384.27		23.94	-9.01E-02		3.11E-01
+	CD-113M	263.70		0.02	-1.15E+01	1.77E+02	1.77E+02
+	SN-113	255.12		1.93	-1.93E+00	1.34E-01	3.87E+00
		391.69		64.90	4.88E-02		1.34E-01
+	TE123M	159.00		84.10	-5.40E-02	8.62E-02	8.62E-02
+	SB-124	602.71		97.87	-3.69E-02	1.94E-01	1.94E-01
		645.85		7.26	-7.05E-01		2.49E+00
		722.78		11.10	2.46E-02		1.63E+00
		1691.02		49.00	-3.69E-02		3.21E-01
+	I-125	35.49		6.49	-3.58E+01	5.45E+00	5.45E+00
+	SB-125	176.33		6.89	-2.10E-01	1.64E-01	6.52E-01
		427.89		29.33	1.41E-02		1.64E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-125	463.38		10.35	5.29E-01	1.64E-01	5.68E-01
		600.56		17.80	1.26E-01		3.80E-01
		635.90		11.32	-1.42E-01		5.15E-01
+	SB-126	414.70		83.30	-5.33E+00	1.40E+01	1.40E+01
		666.33		99.60	-6.76E+00		1.65E+01
		695.00		99.60	6.74E+00		1.81E+01
		720.50		53.80	4.49E-01		3.03E+01
+	SN-126	87.57	*	37.00	1.43E-01	2.53E-01	2.53E-01
+	SB-127	473.00		25.00	7.57E+05	1.37E+07	1.46E+07
		685.20		35.70	-1.24E+06		1.37E+07
		783.80		14.70	-1.60E+06		3.67E+07
+	I-129	29.78		57.00	4.35E-01	4.12E-01	4.12E-01
		33.60		13.20	9.41E+00		1.93E+00
		39.58		7.52	8.19E-01		1.12E+00
+	I-131	284.30		6.05	7.83E+01	3.17E+02	4.01E+03
		364.48		81.20	-1.19E+02		3.17E+02
		636.97		7.26	-2.06E+03		4.63E+03
		722.89		1.80	2.88E+02		2.03E+04
+	TE-132	49.72		13.10	-1.03E+08	1.10E+08	7.43E+08
		228.16		88.00	4.93E+07		1.10E+08
+	BA-133	81.00		33.00	3.51E-02	7.27E-02	1.08E-01
		302.84		17.80	-2.77E-01		2.55E-01
		356.01		60.00	6.37E-04		7.27E-02
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	1.91E+04	5.87E+04	5.87E+04
+	CS-134	563.23		8.38	8.13E-02	6.82E-02	6.25E-01
		569.32		15.43	-4.30E-02		3.40E-01
		604.70		97.60	-5.03E-03		6.82E-02
		795.84		85.40	3.69E-02		9.38E-02
		801.93		8.73	2.61E-01		8.08E-01
+	CS-135	268.24		16.00	-2.38E-01	2.68E-01	2.68E-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	-5.60E+01	1.27E+01	1.16E+02
		163.89		4.61	8.94E+01		1.92E+02
		176.55		13.56	-2.04E+01		6.35E+01
		273.65		12.66	2.81E+01		6.71E+01
		340.57		48.50	-6.36E+00		2.24E+01
		818.50		99.70	-6.36E+00		1.27E+01
		1048.07		79.60	2.74E+00		1.85E+01
		1235.34		19.70	-1.33E+01		9.91E+01
+	CS-137	661.65		85.12	3.36E-02	7.31E-02	7.31E-02
+	LA-138	788.74		34.00	7.98E-02	9.90E-02	2.00E-01
		1435.80		66.00	2.60E-02		9.90E-02
+	CE-139	165.85		80.35	3.46E-02	8.73E-02	8.73E-02
+	BA-140	162.64		6.70	1.29E+02	4.34E+01	1.55E+02
		304.84		4.50	3.59E+01		2.30E+02
		423.70		3.20	1.43E+01		3.15E+02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BA-140	437.55	2.00	-1.29E+02	4.34E+01	5.31E+02
		537.32	25.00	1.20E+01		4.34E+01
+	LA-140	328.77	20.50	9.05E+00	1.74E+01	5.57E+01
		487.03	45.50	1.18E+01		2.57E+01
		815.85	23.50	-1.83E+00		6.16E+01
		1596.49	95.49	-1.70E+00		1.74E+01
+	CE-141	145.44	48.40	8.50E-01	7.61E-01	7.61E-01
+	@ 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	1.21E-01	3.85E-01	3.85E-01
+	PM-144	476.78	42.00	-8.30E-02	6.76E-02	1.25E-01
		618.01	98.60	2.19E-02		6.76E-02
		696.49	99.49	4.69E-02		7.90E-02
+	PM-145	36.85	21.70	-6.19E-02	2.45E-01	4.55E-01
		37.36	39.70	-3.99E-02		2.45E-01
		42.30	15.10	-9.58E-02		4.03E-01
		72.40	2.31	-7.55E+00		1.75E+00
+	PM-146	453.90	39.94	-1.13E-02	1.12E-01	1.12E-01
		735.90	14.01	9.98E-02		4.73E-01
		747.13	13.10	2.77E-01		5.15E-01
+	ND-147	91.11	28.90	-1.53E+02	7.66E+01	7.66E+01
		531.02	13.10	-4.88E+01		1.80E+02
+	PM-149	285.90	3.10	-2.50E+13	7.61E+13	7.61E+13
+	EU-152	121.78	20.50	-3.38E-02	1.45E-01	1.45E-01
		244.69	5.40	1.10E-01		8.41E-01
		344.27	19.13	8.21E-02		2.22E-01
		778.89	9.20	-1.12E-01		6.62E-01
		964.01	10.40	-4.75E-01		8.37E-01
		1085.78	7.22	5.67E-02		9.52E-01
		1112.02	9.60	4.94E-02		7.75E-01
		1407.95	14.94	1.79E-01		4.67E-01
+	GD-153	97.43	31.30	-4.37E-02	1.35E-01	1.35E-01
		103.18	22.20	-1.10E-01		1.77E-01
+	EU-154	123.07	40.50	2.12E-03	7.49E-02	7.49E-02
		723.30	19.70	4.42E-03		3.11E-01
		873.19	11.50	-9.57E-03		4.82E-01
		996.32	10.30	-1.79E-01		5.86E-01
		1004.76	17.90	-1.51E-01		3.48E-01
		1274.45	35.50	5.95E-02		2.22E-01
+	EU-155	86.50	30.90	2.53E-01	1.44E-01	1.44E-01
		105.30	20.70	-1.21E-02		1.56E-01
+	EU-156	811.77	10.40	-2.41E+01	5.49E+01	5.49E+01
		1153.47	7.20	4.15E+01		1.16E+02
		1230.71	8.90	-3.72E+00		1.02E+02
+	HO-166M	184.41	72.60	9.95E-02	7.22E-02	7.22E-02
		280.45	29.60	-6.66E-02		1.40E-01
		410.94	11.10	1.30E-01		4.31E-01
		711.69	54.10	2.47E-02		9.92E-02

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TM-171	66.72		0.14	-2.29E+01	3.03E+01	3.03E+01
+	HF-172	67.35		5.31	-2.85E-01	2.93E-01	8.29E-01
		125.81		11.30	-7.70E-02		2.93E-01
+	LU-172	181.53		20.60	1.17E+03	4.14E+03	7.32E+03
		900.72		29.81	1.73E+03		7.78E+03
		1093.66		62.50	3.27E+02		4.14E+03
+	LU-173	100.72		5.24	2.57E-01	2.60E-01	6.88E-01
		272.11		21.20	9.38E-02		2.60E-01
+	HF-175	343.40		84.00	2.64E-02	1.37E-01	1.37E-01
+	LU-176	88.34		13.30	1.45E-01	4.56E-02	3.06E-01
		201.83		86.00	3.10E-03		5.16E-02
		306.78		94.00	1.85E-02		4.56E-02
+	HF-181	133.02		41.70	-4.83E-03	2.92E-01	3.97E-01
		345.85		17.20	-6.13E-02		1.31E+00
		482.03		82.80	3.79E-02		2.92E-01
+	TA-182	67.75		41.20	-6.10E-02	1.77E-01	1.77E-01
		1121.30		34.90	8.45E-01		6.15E-01
		1189.05		16.23	-5.80E-02		8.96E-01
		1221.41		26.98	1.61E-01		6.57E-01
		1231.02		11.44	-5.29E-02		1.46E+00
+	IR-192	308.46		29.68	-1.97E-01	2.58E-01	3.66E-01
		468.07		48.10	8.17E-02		2.58E-01
+	HG-203	279.19		77.30	2.56E-01	2.74E-01	2.74E-01
+	TL-204	374.74		94.11	-2.68E-02	5.12E-02	5.12E-02
		899.15		99.16	2.13E-02		7.06E-02
		911.74		91.10	2.80E-01		1.38E-01
+	BI-207	569.67		97.72	-6.23E-03	4.92E-02	4.92E-02
		1063.62		74.90	4.97E-02		1.04E-01
+	TL-208	583.14	*	30.22	8.28E-01	1.50E-01	2.55E-01
		860.37		4.48	4.31E-01		1.51E+00
		2614.66	*	35.85	7.71E-01		1.50E-01
+	BI-210M	262.00		45.00	2.23E-02	9.39E-02	9.39E-02
		300.00		23.00	1.89E-01		2.23E-01
+	PB-210	46.50		4.25	1.16E+00	1.35E+00	1.35E+00
+	PB-211	404.84		2.90	-2.31E-01	1.61E+00	1.61E+00
		831.96		2.90	-8.11E-01		2.14E+00
+	BI-212	727.17	*	11.80	5.70E-01	6.90E-01	6.90E-01
		1620.62	*	2.75	7.55E-01		1.74E+00
+	PB-212	238.63	*	44.60	1.05E+00	1.92E-01	1.92E-01
		300.09	*	3.41	1.48E+00		2.46E+00
+	BI-214	609.31	*	46.30	8.17E-01	1.93E-01	1.93E-01
		1120.29	*	15.10	1.40E+00		8.29E-01
		1764.49	*	15.80	1.12E+00		4.22E-01
		2204.22	*	4.98	1.40E+00		9.84E-01
+	PB-214	295.21	*	19.19	1.10E+00	1.70E-01	4.23E-01
		351.92	*	37.19	9.85E-01		1.70E-01
+	RN-219	401.80		6.50	1.41E-01	7.39E-01	7.39E-01
+	RA-223	323.87		3.88	-2.64E-01	1.16E+00	1.16E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	RA-224	240.98	*	3.95	3.21E+00	2.19E+00	2.19E+00
+	RA-225	40.00		31.00	2.20E+01	3.00E+01	3.00E+01
+	RA-226	186.21	*	3.28	1.69E+00	2.05E+00	2.05E+00
+	TH-227	50.10		8.40	-7.27E-02	5.25E-01	5.25E-01
		236.00		11.50	-3.75E+00		5.30E-01
		256.20		6.30	1.85E-02		6.49E-01
+	AC-228	338.32	*	11.40	1.21E+00	2.21E-01	6.58E-01
		911.07	*	27.70	1.03E+00		2.21E-01
		969.11	*	16.60	1.02E+00		6.81E-01
+	TH-230	48.44		16.90	-1.58E-01	2.77E-01	2.77E-01
		62.85		4.60	7.83E-01		9.98E-01
		67.67		0.37	-3.69E+00		1.07E+01
+	PA-231	283.67		1.60	4.85E-02	1.93E+00	2.49E+00
		302.67		2.30	-2.10E+00		1.93E+00
+	TH-231	25.64		14.70	0.00E+00	1.13E-01	1.13E-01
		84.21		6.40	-6.90E-01		5.76E-01
+	PA-233	311.98		38.60	7.18E-01	1.48E+00	1.48E+00
+	PA-234	131.20		20.40	-9.02E-02	1.60E-01	1.60E-01
		733.99		8.80	-8.55E-02		6.75E-01
		946.00		12.00	-5.80E-02		5.30E-01
+	PA-234M	1001.03		0.92	-6.16E-01	6.52E+00	6.52E+00
+	TH-234	63.29		3.80	1.70E+00	1.23E+00	1.23E+00
+	U-235	143.76		10.50	1.44E-01	3.92E-01	3.92E-01
		163.35		4.70	4.26E-01		9.15E-01
		205.31		4.70	-2.49E-03		9.30E-01
+	NP-237	86.50		12.60	5.96E-01	3.40E-01	3.40E-01
+	NP-239	106.10		22.70	-8.86E+10	1.14E+12	1.14E+12
		228.18		10.70	1.55E+12		3.46E+12
		277.60		14.10	2.28E+12		2.79E+12
+	AM-241	59.54		35.90	2.71E-02	1.15E-01	1.15E-01
+	AM-243	74.67		66.00	-1.16E-01	7.92E-02	7.92E-02
+	CM-243	209.75		3.29	4.82E-01	3.39E-01	1.45E+00
		228.14		10.60	1.89E-01		4.22E-01
		277.60		14.00	2.77E-01		3.39E-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 1707093-05

HTC-A09-S001-4248-01

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	1.54E+00	1.54E+00	-1.02E+00	7.19E-01
	NA-22	1274.54		99.94	8.30E-02	8.30E-02	2.23E-02	3.82E-02
@	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	4.68E-02	4.68E-02	1.01E-02	1.94E-02
+	K-40	1460.81	*	10.67	9.51E-01	9.51E-01	1.94E+01	4.43E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	4.20E-02	4.20E-02	-1.45E-02	2.04E-02
		78.34		96.00	4.83E-02		3.03E-02	2.36E-02
	SC-46	889.25		99.98	1.37E-01	1.37E-01	2.15E-02	6.31E-02
		1120.51		99.99	2.68E-01		3.70E-01	1.28E-01
	V-48	983.52		99.98	5.08E+00	5.08E+00	1.53E+00	2.34E+00
		1312.10		97.50	5.54E+00		-3.43E+00	2.51E+00
	CR-51	320.08		9.83	5.62E+00	5.62E+00	-2.39E-01	2.68E+00
	MN-54	834.83		99.97	8.82E-02	8.82E-02	3.61E-02	4.13E-02
	CO-56	846.75		99.96	1.49E-01	1.49E-01	3.81E-02	6.92E-02
		1037.75		14.03	1.03E+00		-6.75E-02	4.71E-01
		1238.25		67.00	3.59E-01		1.84E-01	1.69E-01
		1771.40		15.51	8.59E-01		1.52E-02	3.68E-01
		2598.48		16.90	3.60E-01		4.89E-02	1.14E-01
	CO-57	122.06		85.51	4.45E-02	4.45E-02	-1.04E-02	2.14E-02
		136.48		10.60	5.01E-01		7.73E-02	2.43E-01
	CO-58	810.76		99.40	1.57E-01	1.57E-01	9.33E-03	7.29E-02
	FE-59	1099.22		56.50	6.06E-01	6.06E-01	-2.41E-01	2.80E-01
		1291.56		43.20	7.70E-01		-3.41E-01	3.50E-01
	CO-60	1173.22		100.00	7.64E-02	6.74E-02	-3.01E-02	3.52E-02
		1332.49		100.00	6.74E-02		-2.30E-02	3.03E-02
	ZN-65	1115.52		50.75	1.93E-01	1.93E-01	-5.20E-01	8.91E-02
	GA-67	93.31		35.70	2.51E+08	2.51E+08	5.24E+08	1.22E+08
		208.95		2.24	4.59E+09		2.53E+09	2.22E+09
		300.22		16.00	6.86E+08		5.84E+08	3.30E+08
	SE-75	121.11		16.70	3.27E-01	1.22E-01	8.83E-02	1.57E-01
		136.00		59.20	1.25E-01		1.46E-02	6.06E-02
		264.65		59.80	1.22E-01		1.87E-02	5.85E-02
		279.53		25.20	3.12E-01		-8.70E-02	1.49E-01
		400.65		11.40	7.36E-01		1.26E-01	3.48E-01
	RB-82	776.52		13.00	7.32E+00	7.32E+00	-1.86E+00	3.41E+00
	RB-83	520.41		46.00	2.28E-01	2.28E-01	2.39E-02	1.06E-01
		529.64		30.30	3.03E-01		-2.61E-02	1.40E-01
		552.65		16.40	6.74E-01		3.80E-01	3.15E-01
	KR-85	513.99		0.43	1.36E+01	1.36E+01	-6.10E+00	6.47E+00
	SR-85	513.99		99.27	1.73E-01	1.73E-01	-7.71E-02	8.19E-02

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	Y-88	898.02		93.40	1.27E-01	9.15E-02	-6.09E-02	5.87E-02
		1836.01		99.38	9.15E-02		6.25E-03	3.79E-02
	MO-93	263.06		56.72	7.47E-02	3.96E-02	4.07E-02	3.57E-02
		684.67		99.68	6.31E-02		-7.43E-03	2.96E-02
		1477.11		99.08	3.96E-02		-5.28E-03	1.62E-02
	NB-93M	16.57		9.43	6.35E+00	6.35E+00	0.00E+00	0.00E+00
	NB-94	702.63		100.00	5.69E-02	5.66E-02	-2.23E-03	2.65E-02
		871.10		100.00	5.66E-02		1.93E-02	2.60E-02
	NB-95	765.79		99.81	5.36E-01	5.36E-01	7.43E-02	2.53E-01
	NB-95M	235.69		25.00	6.54E+07	6.54E+07	-4.63E+08	3.18E+07
	ZR-95	724.18		43.70	4.81E-01	3.19E-01	5.83E-03	2.27E-01
		756.72		55.30	3.19E-01		3.05E-02	1.49E-01
	MO-99	181.06		6.20	8.11E+10	5.71E+10	1.81E+10	3.92E+10
		739.58		12.80	5.71E+10		2.94E+10	2.68E+10
		778.00		4.50	1.54E+11		-2.60E+10	7.15E+10
	RU-103	497.08		89.00	2.74E-01	2.74E-01	2.25E-02	1.27E-01
	RU-106	621.84		9.80	6.81E-01	6.81E-01	-1.05E-01	3.19E-01
	AG-108M	433.93		89.90	4.88E-02	4.88E-02	-3.39E-03	2.29E-02
		614.37		90.40	5.86E-02		3.79E-04	2.74E-02
		722.95		90.50	6.63E-02		9.43E-04	3.10E-02
+	CD-109	88.03	*	3.72	2.92E+00	2.92E+00	1.66E+00	1.44E+00
	AG-110M	657.75		93.14	8.30E-02	8.30E-02	-4.38E-02	3.89E-02
		677.61		10.53	7.29E-01		-7.36E-02	3.41E-01
		706.67		16.46	4.56E-01		1.14E-02	2.13E-01
		763.93		21.98	3.97E-01		1.42E-01	1.86E-01
		884.67		71.63	1.06E-01		-2.84E-02	4.87E-02
		1384.27		23.94	3.11E-01		-9.01E-02	1.37E-01
	CD-113M	263.70		0.02	1.77E+02	1.77E+02	-1.15E+01	8.43E+01
	SN-113	255.12		1.93	3.87E+00	1.34E-01	-1.93E+00	1.85E+00
		391.69		64.90	1.34E-01		4.88E-02	6.36E-02
	TE123M	159.00		84.10	8.62E-02	8.62E-02	-5.40E-02	4.17E-02
	SB-124	602.71		97.87	1.94E-01	1.94E-01	-3.69E-02	9.14E-02
		645.85		7.26	2.49E+00		-7.05E-01	1.17E+00
		722.78		11.10	1.63E+00		2.46E-02	7.59E-01
		1691.02		49.00	3.21E-01		-3.69E-02	1.36E-01
	I-125	35.49		6.49	5.45E+00	5.45E+00	-3.58E+01	2.63E+00
	SB-125	176.33		6.89	6.52E-01	1.64E-01	-2.10E-01	3.15E-01
		427.89		29.33	1.64E-01		1.41E-02	7.71E-02
		463.38		10.35	5.68E-01		5.29E-01	2.69E-01
		600.56		17.80	3.80E-01		1.26E-01	1.80E-01
		635.90		11.32	5.15E-01		-1.42E-01	2.41E-01
	SB-126	414.70		83.30	1.40E+01	1.40E+01	-5.33E+00	6.59E+00
		666.33		99.60	1.65E+01		-6.76E+00	7.75E+00
		695.00		99.60	1.81E+01		6.74E+00	8.49E+00
		720.50		53.80	3.03E+01		4.49E-01	1.41E+01
+	SN-126	87.57	*	37.00	2.53E-01	2.53E-01	1.43E-01	1.25E-01
	SB-127	473.00		25.00	1.46E+07	1.37E+07	7.57E+05	6.87E+06
		685.20		35.70	1.37E+07		-1.24E+06	6.43E+06
		783.80		14.70	3.67E+07		-1.60E+06	1.72E+07
	I-129	29.78		57.00	4.12E-01	4.12E-01	4.35E-01	1.99E-01
		33.60		13.20	1.93E+00		9.41E+00	9.49E-01
		39.58		7.52	1.12E+00		8.19E-01	5.41E-01
	I-131	284.30		6.05	4.01E+03	3.17E+02	7.83E+01	1.91E+03

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
I-131	364.48	81.20	3.17E+02	3.17E+02	-1.19E+02	1.50E+02
	636.97	7.26	4.63E+03		-2.06E+03	2.17E+03
	722.89	1.80	2.03E+04		2.88E+02	9.47E+03
TE-132	49.72	13.10	7.43E+08	1.10E+08	-1.03E+08	3.58E+08
	228.16	88.00	1.10E+08		4.93E+07	5.30E+07
BA-133	81.00	33.00	1.08E-01	7.27E-02	3.51E-02	5.24E-02
	302.84	17.80	2.55E-01		-2.77E-01	1.22E-01
	356.01	60.00	7.27E-02		6.37E-04	3.44E-02
@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
XE-133	81.00	38.00	5.87E+04	5.87E+04	1.91E+04	2.84E+04
CS-134	563.23	8.38	6.25E-01	6.82E-02	8.13E-02	2.92E-01
	569.32	15.43	3.40E-01		-4.30E-02	1.58E-01
	604.70	97.60	6.82E-02		-5.03E-03	3.22E-02
	795.84	85.40	9.38E-02		3.69E-02	4.42E-02
	801.93	8.73	8.08E-01		2.61E-01	3.77E-01
CS-135	268.24	16.00	2.68E-01	2.68E-01	-2.38E-01	1.28E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	1.16E+02	1.27E+01	-5.60E+01	5.62E+01
	163.89	4.61	1.92E+02		8.94E+01	9.29E+01
	176.55	13.56	6.35E+01		-2.04E+01	3.07E+01
	273.65	12.66	6.71E+01		2.81E+01	3.20E+01
	340.57	48.50	2.24E+01		-6.36E+00	1.07E+01
	818.50	99.70	1.27E+01		-6.36E+00	5.89E+00
	1048.07	79.60	1.85E+01		2.74E+00	8.57E+00
	1235.34	19.70	9.91E+01		-1.33E+01	4.64E+01
CS-137	661.65	85.12	7.31E-02	7.31E-02	3.36E-02	3.44E-02
LA-138	788.74	34.00	2.00E-01	9.90E-02	7.98E-02	9.39E-02
	1435.80	66.00	9.90E-02		2.60E-02	4.43E-02
CE-139	165.85	80.35	8.73E-02	8.73E-02	3.46E-02	4.22E-02
BA-140	162.64	6.70	1.55E+02	4.34E+01	1.29E+02	7.49E+01
	304.84	4.50	2.30E+02		3.59E+01	1.10E+02
	423.70	3.20	3.15E+02		1.43E+01	1.48E+02
	437.55	2.00	5.31E+02		-1.29E+02	2.50E+02
	537.32	25.00	4.34E+01		1.20E+01	2.02E+01
LA-140	328.77	20.50	5.57E+01	1.74E+01	9.05E+00	2.66E+01
	487.03	45.50	2.57E+01		1.18E+01	1.21E+01
	815.85	23.50	6.16E+01		-1.83E+00	2.86E+01
	1596.49	95.49	1.74E+01		-1.70E+00	7.76E+00
CE-141	145.44	48.40	7.61E-01	7.61E-01	8.50E-01	3.69E-01
@ CE-143	57.36	11.80	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	293.26	42.00	1.00E+26		1.00E+26	1.00E+20
@	664.55	5.20	1.00E+26		1.00E+26	1.00E+20
CE-144	133.54	10.80	3.85E-01	3.85E-01	1.21E-01	1.85E-01
PM-144	476.78	42.00	1.25E-01	6.76E-02	-8.30E-02	5.82E-02
	618.01	98.60	6.76E-02		2.19E-02	3.17E-02
	696.49	99.49	7.90E-02		4.69E-02	3.72E-02
PM-145	36.85	21.70	4.55E-01	2.45E-01	-6.19E-02	2.20E-01
	37.36	39.70	2.45E-01		-3.99E-02	1.18E-01
	42.30	15.10	4.03E-01		-9.58E-02	1.94E-01
	72.40	2.31	1.75E+00		-7.55E+00	8.48E-01
PM-146	453.90	39.94	1.12E-01	1.12E-01	-1.13E-02	5.25E-02

Analysis Report for 1707093-05

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
PM-146	735.90	14.01	4.73E-01	1.12E-01	9.98E-02	2.22E-01
	747.13	13.10	5.15E-01		2.77E-01	2.41E-01
ND-147	91.11	28.90	7.66E+01	7.66E+01	-1.53E+02	3.72E+01
	531.02	13.10	1.80E+02		-4.88E+01	8.32E+01
PM-149	285.90	3.10	7.61E+13	7.61E+13	-2.50E+13	3.63E+13
EU-152	121.78	20.50	1.45E-01	1.45E-01	-3.38E-02	6.97E-02
	244.69	5.40	8.41E-01		1.10E-01	4.04E-01
	344.27	19.13	2.22E-01		8.21E-02	1.05E-01
	778.89	9.20	6.62E-01		-1.12E-01	3.08E-01
	964.01	10.40	8.37E-01		-4.75E-01	3.94E-01
	1085.78	7.22	9.52E-01		5.67E-02	4.38E-01
	1112.02	9.60	7.75E-01		4.94E-02	3.58E-01
	1407.95	14.94	4.67E-01		1.79E-01	2.11E-01
GD-153	97.43	31.30	1.35E-01	1.35E-01	-4.37E-02	6.50E-02
	103.18	22.20	1.77E-01		-1.10E-01	8.52E-02
EU-154	123.07	40.50	7.49E-02	7.49E-02	2.12E-03	3.60E-02
	723.30	19.70	3.11E-01		4.42E-03	1.45E-01
	873.19	11.50	4.82E-01		-9.57E-03	2.21E-01
	996.32	10.30	5.86E-01		-1.79E-01	2.68E-01
	1004.76	17.90	3.48E-01		-1.51E-01	1.59E-01
	1274.45	35.50	2.22E-01		5.95E-02	1.02E-01
EU-155	86.50	30.90	1.44E-01	1.44E-01	2.53E-01	7.03E-02
	105.30	20.70	1.56E-01		-1.21E-02	7.53E-02
EU-156	811.77	10.40	5.49E+01	5.49E+01	-2.41E+01	2.54E+01
	1153.47	7.20	1.16E+02		4.15E+01	5.39E+01
	1230.71	8.90	1.02E+02		-3.72E+00	4.78E+01
HO-166M	184.41	72.60	7.22E-02	7.22E-02	9.95E-02	3.51E-02
	280.45	29.60	1.40E-01		-6.66E-02	6.70E-02
	410.94	11.10	4.31E-01		1.30E-01	2.04E-01
	711.69	54.10	9.92E-02		2.47E-02	4.60E-02
TM-171	66.72	0.14	3.03E+01	3.03E+01	-2.29E+01	1.47E+01
HF-172	67.35	5.31	8.29E-01	2.93E-01	-2.85E-01	4.02E-01
	125.81	11.30	2.93E-01		-7.70E-02	1.41E-01
LU-172	181.53	20.60	7.32E+03	4.14E+03	1.17E+03	3.54E+03
	900.72	29.81	7.78E+03		1.73E+03	3.62E+03
	1093.66	62.50	4.14E+03		3.27E+02	1.92E+03
LU-173	100.72	5.24	6.88E-01	2.60E-01	2.57E-01	3.32E-01
	272.11	21.20	2.60E-01		9.38E-02	1.25E-01
HF-175	343.40	84.00	1.37E-01	1.37E-01	2.64E-02	6.51E-02
LU-176	88.34	13.30	3.06E-01	4.56E-02	1.45E-01	1.49E-01
	201.83	86.00	5.16E-02		3.10E-03	2.49E-02
	306.78	94.00	4.56E-02		1.85E-02	2.17E-02
HF-181	133.02	41.70	3.97E-01	2.92E-01	-4.83E-03	1.91E-01
	345.85	17.20	1.31E+00		-6.13E-02	6.19E-01
	482.03	82.80	2.92E-01		3.79E-02	1.37E-01
TA-182	67.75	41.20	1.77E-01	1.77E-01	-6.10E-02	8.59E-02
	1121.30	34.90	6.15E-01		8.45E-01	2.93E-01
	1189.05	16.23	8.96E-01		-5.80E-02	4.14E-01
	1221.41	26.98	6.57E-01		1.61E-01	3.08E-01
	1231.02	11.44	1.46E+00		-5.29E-02	6.81E-01
IR-192	308.46	29.68	3.66E-01	2.58E-01	-1.97E-01	1.74E-01
	468.07	48.10	2.58E-01		8.17E-02	1.22E-01
HG-203	279.19	77.30	2.74E-01	2.74E-01	2.56E-01	1.31E-01

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TL-204	374.74		94.11	5.12E-02	5.12E-02	-2.68E-02	2.43E-02
		899.15		99.16	7.06E-02		2.13E-02	3.28E-02
		911.74		91.10	1.38E-01		2.80E-01	6.63E-02
	BI-207	569.67		97.72	4.92E-02	4.92E-02	-6.23E-03	2.29E-02
		1063.62		74.90	1.04E-01		4.97E-02	4.85E-02
+	TL-208	583.14	*	30.22	2.55E-01	1.50E-01	8.28E-01	1.22E-01
		860.37		4.48	1.51E+00		4.31E-01	7.04E-01
		2614.66	*	35.85	1.50E-01		7.71E-01	6.21E-02
	BI-210M	262.00		45.00	9.39E-02	9.39E-02	2.23E-02	4.49E-02
		300.00		23.00	2.23E-01		1.89E-01	1.07E-01
	PB-210	46.50		4.25	1.35E+00	1.35E+00	1.16E+00	6.53E-01
	PB-211	404.84		2.90	1.61E+00	1.61E+00	-2.31E-01	7.62E-01
		831.96		2.90	2.14E+00		-8.11E-01	9.92E-01
+	BI-212	727.17	*	11.80	6.90E-01	6.90E-01	5.70E-01	3.28E-01
		1620.62	*	2.75	1.74E+00		7.55E-01	7.33E-01
+	PB-212	238.63	*	44.60	1.92E-01	1.92E-01	1.05E+00	9.39E-02
		300.09	*	3.41	2.46E+00		1.48E+00	1.20E+00
+	BI-214	609.31	*	46.30	1.93E-01	1.93E-01	8.17E-01	9.29E-02
		1120.29	*	15.10	8.29E-01		1.40E+00	3.96E-01
		1764.49	*	15.80	4.22E-01		1.12E+00	1.86E-01
		2204.22	*	4.98	9.84E-01		1.40E+00	4.04E-01
+	PB-214	295.21	*	19.19	4.23E-01	1.70E-01	1.10E+00	2.06E-01
		351.92	*	37.19	1.70E-01		9.85E-01	8.19E-02
	RN-219	401.80		6.50	7.39E-01	7.39E-01	1.41E-01	3.50E-01
	RA-223	323.87		3.88	1.16E+00	1.16E+00	-2.64E-01	5.53E-01
+	RA-224	240.98	*	3.95	2.19E+00	2.19E+00	3.21E+00	1.07E+00
	RA-225	40.00		31.00	3.00E+01	3.00E+01	2.20E+01	1.45E+01
+	RA-226	186.21	*	3.28	2.05E+00	2.05E+00	1.69E+00	1.00E+00
	TH-227	50.10		8.40	5.25E-01	5.25E-01	-7.27E-02	2.53E-01
		236.00		11.50	5.30E-01		-3.75E+00	2.57E-01
		256.20		6.30	6.49E-01		1.85E-02	3.10E-01
+	AC-228	338.32	*	11.40	6.58E-01	2.21E-01	1.21E+00	3.19E-01
		911.07	*	27.70	2.21E-01		1.03E+00	1.02E-01
		969.11	*	16.60	6.81E-01		1.02E+00	3.26E-01
	TH-230	48.44		16.90	2.77E-01	2.77E-01	-1.58E-01	1.33E-01
		62.85		4.60	9.98E-01		7.83E-01	4.85E-01
		67.67		0.37	1.07E+01		-3.69E+00	5.19E+00
	PA-231	283.67		1.60	2.49E+00	1.93E+00	4.85E-02	1.18E+00
		302.67		2.30	1.93E+00		-2.10E+00	9.23E-01
	TH-231	25.64		14.70	1.13E-01	1.13E-01	0.00E+00	0.00E+00
		84.21		6.40	5.76E-01		-6.90E-01	2.79E-01
	PA-233	311.98		38.60	1.48E+00	1.48E+00	7.18E-01	7.06E-01
	PA-234	131.20		20.40	1.60E-01	1.60E-01	-9.02E-02	7.69E-02
		733.99		8.80	6.75E-01		-8.55E-02	3.15E-01
		946.00		12.00	5.30E-01		-5.80E-02	2.45E-01
	PA-234M	1001.03		0.92	6.52E+00	6.52E+00	-6.16E-01	2.98E+00
	TH-234	63.29		3.80	1.23E+00	1.23E+00	1.70E+00	5.99E-01
	U-235	143.76		10.50	3.92E-01	3.92E-01	1.44E-01	1.90E-01
		163.35		4.70	9.15E-01		4.26E-01	4.43E-01
		205.31		4.70	9.30E-01		-2.49E-03	4.49E-01
	NP-237	86.50		12.60	3.40E-01	3.40E-01	5.96E-01	1.66E-01
	NP-239	106.10		22.70	1.14E+12	1.14E+12	-8.86E+10	5.51E+11
		228.18		10.70	3.46E+12		1.55E+12	1.67E+12

Analysis Report for 1707093-05

HTC-A09-S001-4248-01

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
NP-239	277.60	14.10	2.79E+12	1.14E+12	2.28E+12	1.34E+12
AM-241	59.54	35.90	1.15E-01	1.15E-01	2.71E-02	5.55E-02
AM-243	74.67	66.00	7.92E-02	7.92E-02	-1.16E-01	3.88E-02
CM-243	209.75	3.29	1.45E+00	3.39E-01	4.82E-01	7.02E-01
	228.14	10.60	4.22E-01		1.89E-01	2.03E-01
	277.60	14.00	3.39E-01		2.77E-01	1.63E-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: HTC-A09-S001-4248-01

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	51	111	141	126
33:	329	592	90	81	99	91	96	109
41:	102	77	65	77	67	92	138	67
49:	79	86	65	86	86	83	88	103
57:	79	92	105	100	111	102	156	179
65:	125	108	118	105	136	142	107	96
73:	144	152	366	182	375	351	112	98
81:	116	108	98	128	120	114	185	198
89:	93	157	111	110	227	153	91	77
97:	83	99	80	105	79	72	74	76
105:	94	77	76	88	89	83	73	95
113:	70	68	74	71	53	61	69	80
121:	65	71	64	68	68	68	66	76
129:	117	82	84	67	80	70	78	69
137:	74	75	65	69	66	72	48	78
145:	88	59	60	82	56	84	63	71
153:	62	72	71	71	61	56	74	43
161:	63	69	62	74	65	58	54	58
169:	51	50	54	70	42	63	56	55
177:	59	55	58	61	70	52	56	53
185:	71	137	107	63	49	53	63	58
193:	47	47	51	61	52	56	50	41
201:	73	61	47	45	54	44	63	43
209:	76	69	48	55	46	51	46	47
217:	53	51	42	52	38	45	47	42
225:	46	48	44	46	46	42	34	48
233:	43	40	36	41	55	242	492	106
241:	87	141	65	35	35	39	34	31
249:	38	42	28	44	33	25	29	43
257:	30	34	31	36	31	25	36	39
265:	30	18	30	33	31	54	58	24
273:	36	34	22	34	47	49	33	30
281:	31	21	31	26	19	34	31	29
289:	32	37	28	30	28	47	201	113
297:	26	34	38	63	40	29	31	25
305:	25	32	27	25	27	21	30	32
313:	28	21	17	28	25	32	21	31
321:	31	20	29	36	28	26	30	51
329:	28	23	21	30	17	35	29	18
337:	38	91	84	32	26	15	24	23
345:	24	23	21	23	13	24	122	321
353:	66	20	21	15	22	30	23	15
361:	15	27	21	15	20	18	29	25

369:	20	17	20	23	25	26	17	25

Sample Title: HTC-A09-S001-4248-01

Channel								
377:	22	32	19	18	18	22	26	16
385:	14	24	16	20	21	21	32	19
393:	17	26	18	19	19	17	16	23
401:	20	27	22	22	24	21	17	20
409:	26	28	16	25	14	18	14	21
417:	11	15	18	22	13	19	14	15
425:	10	21	17	20	19	12	21	13
433:	25	19	13	13	15	21	22	19
441:	19	12	19	13	10	16	18	17
449:	19	16	17	21	15	12	10	17
457:	13	18	10	18	17	26	43	21
465:	13	16	12	18	28	16	19	11
473:	17	17	15	10	12	16	16	15
481:	27	14	15	8	25	16	18	18
489:	10	14	14	13	10	9	11	11
497:	12	12	12	7	17	15	13	12
505:	13	13	15	11	32	60	79	37
513:	26	17	19	16	8	9	17	11
521:	18	15	19	9	15	6	12	12
529:	7	14	6	11	11	11	12	12
537:	13	13	13	8	12	8	9	9
545:	15	18	10	14	8	16	13	11
553:	21	10	11	6	5	10	9	12
561:	9	17	13	11	15	12	14	14
569:	15	7	14	12	16	10	13	14
577:	11	8	12	11	13	50	122	67
585:	10	15	13	12	9	8	13	6
593:	14	12	15	7	16	23	14	16
601:	11	14	12	16	9	12	22	59
609:	155	105	17	8	6	8	8	14
617:	9	12	11	15	6	13	7	12
625:	11	13	12	12	16	13	8	12
633:	9	11	8	5	13	16	8	11
641:	15	15	13	13	13	3	10	13
649:	9	10	11	15	13	12	13	7
657:	11	13	5	16	17	12	5	18
665:	11	8	12	11	9	11	13	13
673:	14	14	11	11	4	12	8	12
681:	11	16	16	13	5	9	11	9
689:	19	5	11	9	16	14	11	11
697:	10	12	13	8	7	11	9	9
705:	8	7	10	9	12	4	14	5
713:	5	7	13	12	14	7	8	7
721:	7	10	10	7	12	16	35	25
729:	8	7	6	10	15	7	12	9
737:	7	12	15	13	9	10	5	7
745:	13	13	13	10	10	12	6	10
753:	13	11	6	9	12	8	3	6
761:	11	7	11	15	11	7	15	28
769:	27	9	9	8	14	13	5	4
777:	6	11	11	15	9	6	5	11
785:	19	12	10	13	9	5	10	9
793:	9	25	14	8	13	11	13	11

801:	10	6	9	7	3	9	14	5

Sample Title: HTC-A09-S001-4248-01

Channel								
809:	8	8	6	4	8	11	5	10
817:	8	11	9	10	6	13	12	10
825:	16	8	4	6	5	10	12	7
833:	12	6	15	13	11	12	6	10
841:	7	6	10	14	7	11	4	4
849:	5	7	6	11	13	5	10	5
857:	9	4	9	18	10	5	11	7
865:	9	6	6	4	7	5	6	9
873:	7	6	2	5	7	5	3	5
881:	6	4	17	5	8	1	3	12
889:	7	9	8	7	8	9	4	7
897:	10	10	6	4	8	14	7	7
905:	10	8	5	6	13	56	81	37
913:	1	5	11	9	9	4	6	5
921:	11	6	6	4	6	9	3	9
929:	10	12	6	9	9	18	7	9
937:	9	6	8	6	5	9	2	11
945:	6	10	6	5	7	11	11	5
953:	5	6	9	3	6	6	5	6
961:	4	13	9	27	20	11	20	38
969:	47	11	7	6	5	11	7	4
977:	7	6	8	5	9	6	7	6
985:	6	6	4	3	5	6	7	6
993:	6	5	7	5	5	8	2	5
1001:	9	5	5	11	1	7	2	11
1009:	9	3	7	6	5	4	6	7
1017:	5	9	7	9	8	8	6	9
1025:	2	9	9	6	3	5	9	6
1033:	6	2	7	9	3	5	6	4
1041:	6	4	9	8	6	8	7	14
1049:	8	2	8	6	6	9	6	8
1057:	8	7	8	9	8	9	8	12
1065:	8	7	5	5	6	1	11	7
1073:	8	7	7	6	11	6	9	2
1081:	10	6	5	4	9	7	4	9
1089:	7	5	9	10	6	6	10	7
1097:	11	2	4	9	6	9	9	10
1105:	11	6	10	11	9	8	6	3
1113:	4	9	7	8	9	10	35	36
1121:	19	15	8	9	7	8	6	7
1129:	10	2	9	12	7	10	11	3
1137:	8	6	4	5	6	5	12	9
1145:	5	15	9	7	8	6	9	5
1153:	9	11	12	9	5	7	11	10
1161:	7	8	11	5	5	13	7	10
1169:	4	7	9	10	4	7	5	10
1177:	7	6	7	6	8	5	4	8
1185:	8	7	4	13	11	2	7	9
1193:	9	9	10	3	10	4	7	6
1201:	6	8	5	10	10	8	5	7
1209:	7	7	6	9	5	6	10	10
1217:	11	10	12	12	10	12	11	9
1225:	10	7	9	8	10	9	15	6

1233:	9	10	11	9	12	16	15	6

Sample Title: HTC-A09-S001-4248-01

Channel								
1241:	8	9	5	8	7	9	13	5
1249:	14	6	5	11	6	5	4	10
1257:	2	8	5	5	8	7	6	10
1265:	10	9	6	6	9	5	6	4
1273:	8	10	5	4	7	2	5	8
1281:	9	5	6	8	3	10	3	1
1289:	6	5	2	7	5	8	8	6
1297:	3	4	6	3	4	6	6	3
1305:	7	9	6	6	2	4	2	6
1313:	7	4	6	7	3	5	5	5
1321:	4	8	7	3	4	6	4	6
1329:	6	4	7	3	3	4	1	4
1337:	7	3	1	7	3	5	4	1
1345:	6	3	2	3	6	1	4	3
1353:	6	2	3	2	4	4	4	4
1361:	6	3	3	1	10	4	2	6
1369:	4	0	3	6	1	6	0	9
1377:	10	5	4	2	3	2	3	5
1385:	1	3	0	6	1	4	4	3
1393:	0	3	2	2	3	3	2	4
1401:	5	1	2	3	4	6	9	2
1409:	2	1	0	2	1	2	3	5
1417:	2	2	4	4	3	1	4	1
1425:	4	1	3	5	1	2	4	1
1433:	1	5	0	3	5	3	3	2
1441:	3	3	2	2	2	2	3	3
1449:	0	8	2	7	7	3	6	7
1457:	21	54	161	298	240	51	2	4
1465:	0	0	2	1	1	1	1	1
1473:	1	2	0	0	1	1	0	1
1481:	1	1	1	4	1	1	0	2
1489:	2	3	0	1	6	2	2	5
1497:	3	1	1	2	6	1	2	3
1505:	0	1	3	5	6	3	2	2
1513:	1	1	5	2	0	1	2	2
1521:	1	0	4	1	1	0	2	0
1529:	0	2	3	1	0	3	1	4
1537:	5	3	2	0	2	2	5	1
1545:	4	1	1	0	2	1	0	0
1553:	6	2	2	1	1	1	1	2
1561:	0	0	3	1	2	0	0	0
1569:	1	2	0	4	2	2	1	0
1577:	0	2	2	2	1	2	2	3
1585:	3	4	13	10	5	0	4	7
1593:	1	7	3	0	1	1	0	2
1601:	1	0	0	0	2	5	0	1
1609:	2	3	7	1	2	0	1	5
1617:	1	2	7	2	2	0	0	3
1625:	2	1	3	1	1	1	1	3
1633:	0	1	2	2	1	2	5	1
1641:	1	2	0	0	0	3	1	3
1649:	0	0	0	2	1	2	4	0
1657:	3	2	2	3	3	0	0	2

1665:	0	1	2	3	0	0	1	1

Sample Title: HTC-A09-S001-4248-01

Channel								
1673:	1	1	1	0	0	1	0	1
1681:	0	0	3	0	0	1	1	2
1689:	0	0	2	0	2	2	1	4
1697:	0	1	2	2	2	0	1	2
1705:	0	3	0	1	0	1	1	0
1713:	1	1	1	1	1	0	0	0
1721:	1	2	2	2	0	1	0	4
1729:	4	6	0	1	0	0	0	0
1737:	0	1	1	2	3	4	0	2
1745:	0	1	1	1	0	1	1	2
1753:	0	1	0	2	2	0	3	3
1761:	2	10	13	17	12	2	1	3
1769:	1	2	1	0	0	2	1	0
1777:	1	2	0	1	1	0	1	2
1785:	1	0	1	1	2	2	2	1
1793:	1	1	0	2	2	2	1	1
1801:	0	1	0	1	1	0	1	2
1809:	1	1	1	1	0	0	0	3
1817:	0	1	2	1	0	0	2	0
1825:	3	2	0	0	1	2	1	2
1833:	2	1	0	1	0	0	1	0
1841:	1	1	1	1	2	2	2	1
1849:	4	0	1	1	0	0	0	0
1857:	3	0	1	0	2	2	0	1
1865:	3	3	1	0	2	0	2	0
1873:	1	2	0	3	1	1	1	1
1881:	0	0	0	1	0	0	1	0
1889:	0	1	1	3	1	2	1	2
1897:	1	3	2	0	0	1	1	1
1905:	1	0	1	0	1	0	0	0
1913:	1	3	1	2	0	2	1	1
1921:	1	2	0	3	1	0	1	0
1929:	0	0	3	0	0	0	0	3
1937:	1	0	2	1	0	0	1	0
1945:	0	1	1	0	1	2	2	1
1953:	0	1	2	1	0	1	0	4
1961:	0	0	0	1	2	0	1	0
1969:	4	0	0	1	1	0	1	2
1977:	0	0	0	1	4	1	2	0
1985:	0	0	1	1	0	0	1	0
1993:	0	2	0	1	1	0	0	1
2001:	2	0	1	0	0	1	0	1
2009:	0	2	0	0	0	1	1	0
2017:	2	0	0	1	0	1	0	2
2025:	1	1	1	2	0	1	1	1
2033:	1	0	1	0	0	0	2	0
2041:	0	0	0	0	4	1	0	0
2049:	2	0	0	0	0	2	0	0
2057:	3	3	0	0	1	0	2	0
2065:	1	1	0	2	1	1	1	0
2073:	1	0	0	1	3	0	0	2
2081:	0	0	2	2	2	0	0	0
2089:	0	1	1	0	0	0	2	2

2097:	1	1	2	2	3	2	3	4

Sample Title: HTC-A09-S001-4248-01

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

2529:	0	0	0	1	0	2	0	1

Sample Title: HTC-A09-S001-4248-01

Channel								
2537:	1	2	0	0	0	0	0	0
2545:	1	0	0	0	0	0	0	1
2553:	0	0	0	0	0	0	0	0
2561:	0	0	0	0	0	0	0	0
2569:	0	1	0	0	0	0	0	1
2577:	0	0	0	0	2	1	0	1
2585:	0	0	1	0	0	0	0	1
2593:	0	0	0	0	0	0	0	0
2601:	0	0	0	0	0	0	0	0
2609:	1	4	9	17	17	24	14	2
2617:	1	0	1	1	0	1	1	0
2625:	0	1	0	0	0	0	1	1
2633:	0	0	0	1	1	0	0	0
2641:	0	1	0	0	0	0	0	0
2649:	0	0	0	0	1	1	0	0
2657:	1	0	0	1	0	0	0	0
2665:	0	0	0	1	0	0	1	0
2673:	0	0	0	0	0	0	0	0
2681:	1	0	0	0	1	0	0	0
2689:	0	0	0	0	1	0	1	0
2697:	0	0	1	2	0	0	0	0
2705:	0	0	0	1	1	2	1	0
2713:	0	0	0	0	0	0	0	0
2721:	0	1	0	0	0	1	0	0
2729:	0	0	0	1	0	0	0	0
2737:	0	0	1	0	0	0	0	0
2745:	0	0	0	1	0	0	0	0
2753:	0	1	2	0	0	0	1	0
2761:	0	0	1	0	0	1	1	0
2769:	0	1	0	0	0	0	0	1
2777:	1	0	0	0	1	2	0	0
2785:	0	0	0	0	1	0	2	0
2793:	0	0	1	0	0	1	2	0
2801:	0	0	0	0	0	1	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	1
2825:	1	0	0	0	0	1	2	0
2833:	0	0	0	1	1	0	0	1
2841:	0	0	0	0	0	0	0	0
2849:	1	0	1	0	0	0	0	0
2857:	0	0	1	0	0	0	0	1
2865:	0	0	2	0	0	0	0	0
2873:	0	0	0	0	1	0	0	0
2881:	1	0	0	0	0	0	0	0
2889:	0	1	0	0	1	0	0	0
2897:	0	0	1	1	0	0	0	0
2905:	0	1	0	1	0	0	0	0
2913:	0	0	0	0	0	0	2	1
2921:	0	0	1	0	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	1	0	0	0	0	0	0
2945:	0	0	0	0	0	1	0	0
2953:	0	0	0	0	0	0	0	0

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S001-4248-01

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

3393:	0	0	0	1	0	0	0	0

Sample Title: HTC-A09-S001-4248-01

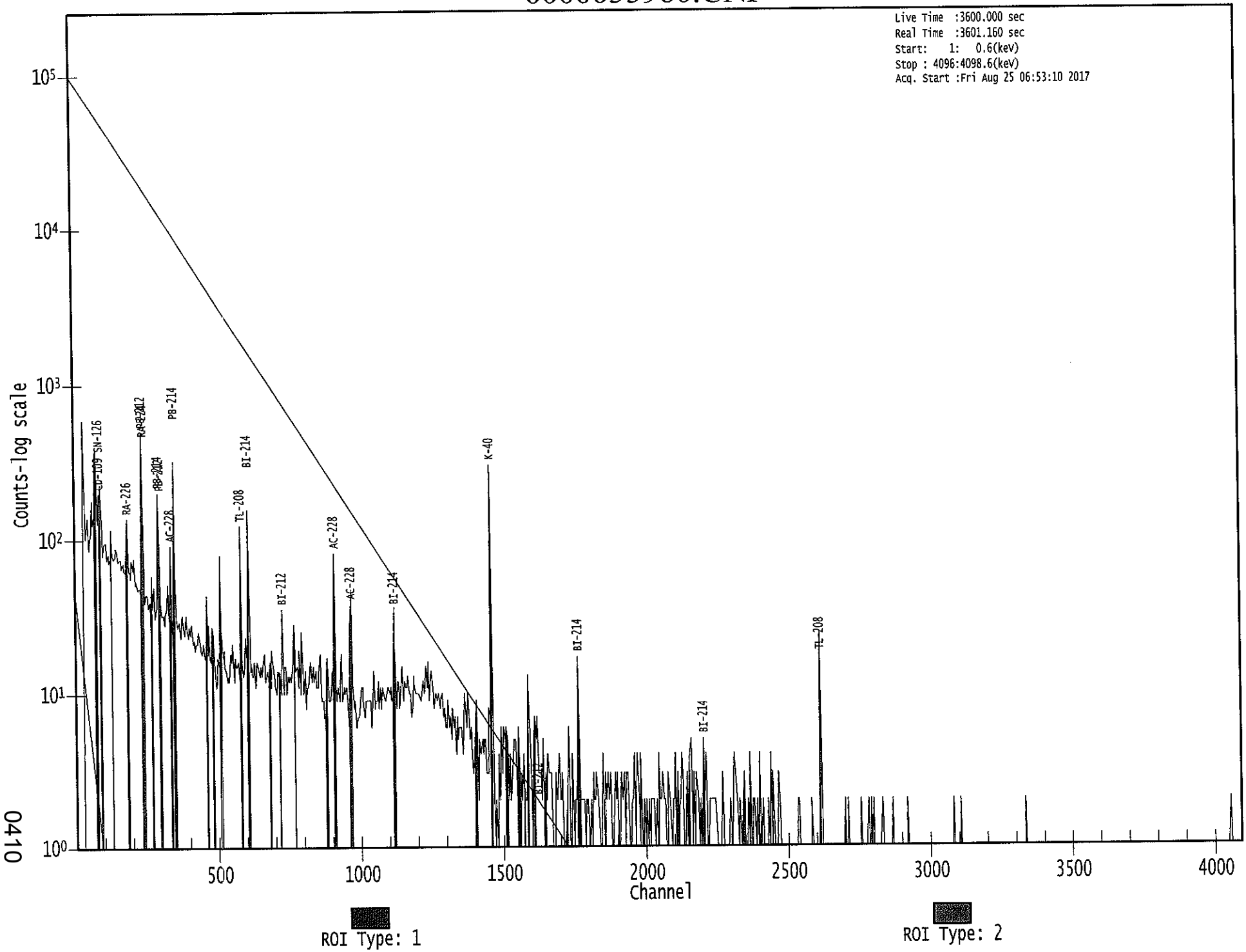
Channel								
3401:	1	0	1	1	0	0	0	1
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	1
3425:	1	0	0	0	0	0	0	0
3433:	0	1	0	0	0	0	0	0
3441:	0	0	0	0	0	1	1	1
3449:	0	0	0	0	0	0	0	0
3457:	1	0	0	0	0	1	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	1	0
3497:	1	0	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S001-4248-01

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

0000055960.CNF



0410

Apex-Gamma

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-06
Sample Description	: HTC-A09-S002-0006-01
Sample Type	: SOIL
Sample Size	: 8.302E+02 grams
Facility	: Countroom
Sample Taken On	: 5/16/2017 10:49:46AM
Acquisition Started	: 8/25/2017 6:53:16AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3633.9 seconds
Dead Time	: 0.93 %
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	: 1/14/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55961

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 7:54:52AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	16.17	16.49	0.0000	0.00
2	26.06	26.38	0.0000	0.00
3	46.53	46.84	0.0000	0.00
4	53.26	53.57	0.0000	0.00
5	63.31	63.62	0.0000	0.00
6	76.36	76.66	0.0000	0.00
7	83.87	84.17	0.0000	0.00
8	87.52	87.82	0.0000	0.00
9	92.68	92.97	0.0000	0.00
10	112.00	112.29	0.0000	0.00
11	143.98	144.26	0.0000	0.00
12	154.18	154.45	0.0000	0.00
13	163.79	164.06	0.0000	0.00
14	186.15	186.42	0.0000	0.00
15	205.44	205.70	0.0000	0.00
16	237.02	237.27	0.0000	0.00
17	242.13	242.38	0.0000	0.00
18	257.85	258.09	0.0000	0.00
19	270.14	270.38	0.0000	0.00
20	295.36	295.59	0.0000	0.00
21	313.94	314.16	0.0000	0.00
22	352.05	352.26	0.0000	0.00
23	388.48	388.68	0.0000	0.00
24	405.99	406.18	0.0000	0.00
25	480.70	480.87	0.0000	0.00
26	487.20	487.36	0.0000	0.00
27	511.33	511.49	0.0000	0.00
28	581.28	581.41	0.0000	0.00
29	609.44	609.57	0.0000	0.00
30	654.54	654.65	0.0000	0.00
31	665.32	665.43	0.0000	0.00
32	702.74	702.83	0.0000	0.00
33	719.38	719.46	0.0000	0.00
34	732.92	733.00	0.0000	0.00
35	742.55	742.63	0.0000	0.00
36	768.23	768.30	0.0000	0.00
37	786.06	786.13	0.0000	0.00
38	806.22	806.28	0.0000	0.00
39	839.70	839.74	0.0000	0.00
40	934.31	934.32	0.0000	0.00
41	964.26	964.27	0.0000	0.00
42	1000.81	1000.80	0.0000	0.00

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1051.89	1051.86	0.0000	0.00
44	1069.95	1069.92	0.0000	0.00
45	1120.44	1120.39	0.0000	0.00
46	1155.50	1155.43	0.0000	0.00
47	1208.13	1208.05	0.0000	0.00
48	1238.30	1238.21	0.0000	0.00
49	1281.44	1281.33	0.0000	0.00
50	1377.82	1377.69	0.0000	0.00
51	1385.98	1385.84	0.0000	0.00
52	1401.57	1401.43	0.0000	0.00
53	1408.05	1407.90	0.0000	0.00
54	1509.10	1508.92	0.0000	0.00
55	1540.05	1539.85	0.0000	0.00
56	1583.54	1583.34	0.0000	0.00
57	1613.74	1613.52	0.0000	0.00
58	1661.44	1661.20	0.0000	0.00
59	1666.93	1666.70	0.0000	0.00
60	1692.82	1692.57	0.0000	0.00
61	1729.85	1729.59	0.0000	0.00
62	1764.60	1764.33	0.0000	0.00
63	1838.74	1838.45	0.0000	0.00
64	1847.73	1847.43	0.0000	0.00
65	1876.68	1876.37	0.0000	0.00
66	1889.76	1889.45	0.0000	0.00
67	2118.56	2118.17	0.0000	0.00
68	2204.30	2203.88	0.0000	0.00
69	2246.53	2246.09	0.0000	0.00
70	2293.28	2292.83	0.0000	0.00
71	2310.90	2310.44	0.0000	0.00
72	2413.59	2413.10	0.0000	0.00
73	2448.06	2447.56	0.0000	0.00
74	2614.68	2614.13	0.0000	0.00
75	2695.77	2695.19	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 7:54:52AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	16.17	14 -	19	16.49	3.41E+02	278.25	1.51E+04	1.61
	2	26.06	24 -	29	26.38	2.36E+02	255.10	1.28E+04	1.48
	3	46.53	45 -	49	46.84	1.61E+03	255.62	1.32E+04	1.98
	4	53.26	51 -	56	53.57	7.04E+02	305.83	1.82E+04	1.89
	5	63.31	61 -	66	63.62	3.20E+03	381.54	2.67E+04	1.97
	6	76.36	71 -	82	76.66	2.02E+04	737.92	5.79E+04	3.89
M	7	83.87	83 -	97	84.17	1.25E+03	172.37	9.35E+03	1.84
m	8	87.52	83 -	97	87.82	4.64E+03	475.52	3.44E+04	2.71
m	9	92.68	83 -	97	92.97	7.18E+03	476.31	3.05E+04	2.72
	10	112.00	110 -	115	112.29	5.13E+02	313.94	1.93E+04	3.78
	11	143.98	142 -	147	144.26	7.57E+02	314.14	1.91E+04	2.03
	12	154.18	153 -	157	154.45	2.83E+02	268.49	1.57E+04	1.83
	13	163.79	163 -	167	164.06	3.35E+02	252.34	1.38E+04	1.45
	14	186.15	182 -	191	186.42	7.03E+03	451.28	2.50E+04	2.20
	15	205.44	203 -	208	205.70	3.77E+02	252.43	1.23E+04	5.56
M	16	237.02	233 -	247	237.27	9.54E+02	281.63	1.29E+04	4.00
m	17	242.13	233 -	247	242.38	6.60E+03	270.94	9.19E+03	2.00
	18	257.85	254 -	262	258.09	7.08E+02	286.40	1.22E+04	2.01
	19	270.14	266 -	273	270.38	7.33E+02	257.37	1.06E+04	2.99
	20	295.36	292 -	299	295.59	1.38E+04	332.68	9.26E+03	2.20
	21	313.94	312 -	317	314.16	1.57E+02	166.59	5.43E+03	2.96
	22	352.05	347 -	357	352.26	2.35E+04	399.94	8.78E+03	2.16
	23	388.48	385 -	393	388.68	3.22E+02	205.16	6.29E+03	4.13
	24	405.99	404 -	409	406.18	1.28E+02	147.96	4.25E+03	1.77
	25	480.70	478 -	484	480.87	1.71E+02	129.62	2.92E+03	2.69
	26	487.20	485 -	493	487.36	1.88E+02	156.46	3.65E+03	2.43
	27	511.33	507 -	516	511.49	3.19E+02	162.92	3.60E+03	2.46
	28	581.28	577 -	585	581.41	1.54E+02	139.13	2.88E+03	4.36
	29	609.44	603 -	614	609.57	1.61E+04	301.87	3.37E+03	2.29
	30	654.54	652 -	657	654.65	9.51E+01	78.53	1.15E+03	2.98
	31	665.32	660 -	670	665.43	4.02E+02	141.16	2.44E+03	2.08
	32	702.74	699 -	706	702.83	1.34E+02	105.87	1.78E+03	1.76
	33	719.38	716 -	723	719.46	1.28E+02	99.16	1.56E+03	2.77
	34	732.92	730 -	736	733.00	8.07E+01	87.86	1.34E+03	3.02
	35	742.55	739 -	746	742.63	1.46E+02	97.84	1.49E+03	2.50
	36	768.23	762 -	772	768.30	1.57E+03	149.96	2.16E+03	2.40
	37	786.06	782 -	790	786.13	3.35E+02	114.00	1.80E+03	2.25
	38	806.22	800 -	811	806.28	4.11E+02	142.94	2.34E+03	2.32
	39	839.70	837 -	843	839.74	1.48E+02	90.26	1.37E+03	1.95
	40	934.31	930 -	939	934.32	7.67E+02	121.06	1.64E+03	2.39

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	964.26	961 -	968	964.27	8.26E+01	93.47	1.40E+03	2.75
	42	1000.81	997 -	1003	1000.80	2.12E+02	79.13	9.86E+02	2.73
	43	1051.89	1048 -	1055	1051.86	9.64E+01	79.67	9.97E+02	1.98
	44	1069.95	1066 -	1073	1069.92	1.02E+02	76.24	9.03E+02	1.81
	45	1120.44	1115 -	1126	1120.39	3.30E+03	154.78	1.33E+03	2.45
	46	1155.50	1150 -	1161	1155.43	4.23E+02	109.76	1.29E+03	2.29
	47	1208.13	1204 -	1212	1208.05	1.24E+02	77.64	8.42E+02	2.73
	48	1238.30	1233 -	1244	1238.21	1.24E+03	114.28	1.01E+03	2.42
	49	1281.44	1276 -	1286	1281.33	3.47E+02	93.55	9.74E+02	2.73
M	50	1377.82	1373 -	1390	1377.69	7.99E+02	83.47	6.34E+02	2.53
m	51	1385.98	1373 -	1390	1385.84	1.89E+02	73.29	7.05E+02	3.08
M	52	1401.57	1396 -	1413	1401.43	2.42E+02	62.99	5.62E+02	2.42
m	53	1408.05	1396 -	1413	1407.90	4.33E+02	69.08	5.53E+02	2.38
	54	1509.10	1502 -	1514	1508.92	4.16E+02	103.02	1.05E+03	2.98
	55	1540.05	1532 -	1547	1539.85	2.20E+02	108.66	1.08E+03	8.67
	56	1583.54	1579 -	1587	1583.34	9.25E+01	66.08	6.11E+02	2.53
	57	1613.74	1610 -	1617	1613.52	5.38E+01	47.50	3.40E+02	5.25
M	58	1661.44	1656 -	1671	1661.20	1.84E+02	52.22	2.83E+02	3.21
m	59	1666.93	1656 -	1671	1666.70	4.17E+01	35.97	1.78E+02	2.26
	60	1692.82	1689 -	1698	1692.57	8.01E+01	45.13	2.46E+02	3.70
	61	1729.85	1723 -	1736	1729.59	5.46E+02	69.44	2.91E+02	2.61
	62	1764.60	1757 -	1771	1764.33	2.43E+03	111.43	2.85E+02	2.80
	63	1838.74	1833 -	1842	1838.45	5.23E+01	41.36	2.13E+02	1.98
	64	1847.73	1843 -	1853	1847.43	3.65E+02	51.02	1.48E+02	3.46
	65	1876.68	1871 -	1885	1876.37	4.43E+01	54.72	2.83E+02	12.53
	66	1889.76	1886 -	1893	1889.45	3.87E+01	32.37	1.51E+02	3.64
	67	2118.56	2113 -	2126	2118.17	1.54E+02	41.83	1.26E+02	3.23
	68	2204.30	2199 -	2213	2203.88	6.47E+02	54.42	4.50E+01	3.50
	69	2246.53	2241 -	2251	2246.09	1.84E+01	12.35	9.22E+00	6.19
	70	2293.28	2288 -	2298	2292.83	4.51E+01	17.51	1.78E+01	2.42
	71	2310.90	2307 -	2313	2310.44	9.00E+00	6.00	0.00E+00	3.50
	72	2413.59	2409 -	2416	2413.10	1.00E+01	6.32	0.00E+00	3.98
	73	2448.06	2443 -	2456	2447.56	2.19E+02	30.55	4.55E+00	3.19
	74	2614.68	2609 -	2618	2614.13	2.40E+01	9.80	0.00E+00	1.47
	75	2695.77	2691 -	2699	2695.19	6.72E+00	7.50	4.56E+00	2.62

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 : 8/25/2017 7:54:52AM

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

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	16.17	14 -	19	3.41E+02	278.25	1.51E+04	2.27E+02
	2	26.06	24 -	29	2.36E+02	255.10	1.28E+04	2.08E+02
	3	46.53	45 -	49	1.61E+03	255.62	1.32E+04	1.99E+02
	4	53.26	51 -	56	7.04E+02	305.83	1.82E+04	2.48E+02
	5	63.31	61 -	66	3.20E+03	381.54	2.67E+04	3.00E+02
	6	76.36	71 -	82	2.02E+04	737.92	5.79E+04	5.60E+02
M	7	83.87	83 -	97	1.25E+03	172.37	9.35E+03	1.59E+02
m	8	87.52	83 -	97	4.64E+03	475.52	3.44E+04	3.05E+02
m	9	92.68	83 -	97	7.18E+03	476.31	3.05E+04	2.87E+02
	10	112.00	110 -	115	5.13E+02	313.94	1.93E+04	2.55E+02
	11	143.98	142 -	147	7.57E+02	314.14	1.91E+04	2.54E+02
	12	154.18	153 -	157	2.83E+02	268.49	1.57E+04	2.19E+02
	13	163.79	163 -	167	3.35E+02	252.34	1.38E+04	2.05E+02
	14	186.15	182 -	191	7.03E+03	451.28	2.50E+04	3.44E+02
	15	205.44	203 -	208	3.77E+02	252.43	1.23E+04	2.05E+02
M	16	237.02	233 -	247	9.54E+02	281.63	1.29E+04	1.87E+02
m	17	242.13	233 -	247	6.60E+03	270.94	9.19E+03	1.58E+02
	18	257.85	254 -	262	7.08E+02	286.40	1.22E+04	2.31E+02
	19	270.14	266 -	273	7.33E+02	257.37	1.06E+04	2.07E+02
	20	295.36	292 -	299	1.38E+04	332.68	9.26E+03	1.94E+02
	21	313.94	312 -	317	1.57E+02	166.59	5.43E+03	1.35E+02
	22	352.05	347 -	357	2.35E+04	399.94	8.78E+03	2.11E+02
	23	388.48	385 -	393	3.22E+02	205.16	6.29E+03	1.66E+02
	24	405.99	404 -	409	1.28E+02	147.96	4.25E+03	1.20E+02
	25	480.70	478 -	484	1.71E+02	129.62	2.92E+03	1.04E+02
	26	487.20	485 -	493	1.88E+02	156.46	3.65E+03	1.27E+02
	27	511.33	507 -	516	3.19E+02	162.92	3.60E+03	1.31E+02
	28	581.28	577 -	585	1.54E+02	139.13	2.88E+03	1.13E+02
	29	609.44	603 -	614	1.61E+04	301.87	3.37E+03	1.35E+02
	30	654.54	652 -	657	9.51E+01	78.53	1.15E+03	6.25E+01
	31	665.32	660 -	670	4.02E+02	141.16	2.44E+03	1.11E+02
	32	702.74	699 -	706	1.34E+02	105.87	1.78E+03	8.49E+01
	33	719.38	716 -	723	1.28E+02	99.16	1.56E+03	7.94E+01
	34	732.92	730 -	736	8.07E+01	87.86	1.34E+03	7.07E+01
	35	742.55	739 -	746	1.46E+02	97.84	1.49E+03	7.79E+01
	36	768.23	762 -	772	1.57E+03	149.96	2.16E+03	1.05E+02
	37	786.06	782 -	790	3.35E+02	114.00	1.80E+03	8.87E+01
	38	806.22	800 -	811	4.11E+02	142.94	2.34E+03	1.13E+02
	39	839.70	837 -	843	1.48E+02	90.26	1.37E+03	7.14E+01
	40	934.31	930 -	939	7.67E+02	121.06	1.64E+03	8.85E+01
	41	964.26	961 -	968	8.26E+01	93.47	1.40E+03	7.54E+01
	42	1000.81	997 -	1003	2.12E+02	79.13	9.86E+02	6.05E+01
	43	1051.89	1048 -	1055	9.64E+01	79.67	9.97E+02	6.35E+01
	44	1069.95	1066 -	1073	1.02E+02	76.24	9.03E+02	6.04E+01
	45	1120.44	1115 -	1126	3.30E+03	154.78	1.33E+03	8.53E+01
	46	1155.50	1150 -	1161	4.23E+02	109.76	1.29E+03	8.37E+01
	47	1208.13	1204 -	1212	1.24E+02	77.64	8.42E+02	6.11E+01
	48	1238.30	1233 -	1244	1.24E+03	114.28	1.01E+03	7.40E+01

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	49	1281.44	1276 -	1286	3.47E+02	93.55	9.74E+02	7.05E+01
M	50	1377.82	1373 -	1390	7.99E+02	83.47	6.34E+02	4.14E+01
m	51	1385.98	1373 -	1390	1.89E+02	73.29	7.05E+02	4.37E+01
M	52	1401.57	1396 -	1413	2.42E+02	62.99	5.62E+02	3.90E+01
m	53	1408.05	1396 -	1413	4.33E+02	69.08	5.53E+02	3.87E+01
	54	1509.10	1502 -	1514	4.16E+02	103.02	1.05E+03	7.78E+01
	55	1540.05	1532 -	1547	2.20E+02	108.66	1.08E+03	8.59E+01
	56	1583.54	1579 -	1587	9.25E+01	66.08	6.11E+02	5.20E+01
	57	1613.74	1610 -	1617	5.38E+01	47.50	3.40E+02	3.71E+01
M	58	1661.44	1656 -	1671	1.84E+02	52.22	2.83E+02	2.76E+01
m	59	1666.93	1656 -	1671	4.17E+01	35.97	1.78E+02	2.19E+01
	60	1692.82	1689 -	1698	8.01E+01	45.13	2.46E+02	3.41E+01
	61	1729.85	1723 -	1736	5.46E+02	69.44	2.91E+02	4.22E+01
	62	1764.60	1757 -	1771	2.43E+03	111.43	2.85E+02	4.28E+01
	63	1838.74	1833 -	1842	5.23E+01	41.36	2.13E+02	3.19E+01
	64	1847.73	1843 -	1853	3.65E+02	51.02	1.48E+02	2.78E+01
	65	1876.68	1871 -	1885	4.43E+01	54.72	2.83E+02	4.36E+01
	66	1889.76	1886 -	1893	3.87E+01	32.37	1.51E+02	2.46E+01
	67	2118.56	2113 -	2126	1.54E+02	41.83	1.26E+02	2.77E+01
	68	2204.30	2199 -	2213	6.47E+02	54.42	4.50E+01	1.58E+01
	69	2246.53	2241 -	2251	1.84E+01	12.35	9.22E+00	7.30E+00
	70	2293.28	2288 -	2298	4.51E+01	17.51	1.78E+01	9.24E+00
	71	2310.90	2307 -	2313	9.00E+00	6.00	0.00E+00	0.00E+00
	72	2413.59	2409 -	2416	1.00E+01	6.32	0.00E+00	0.00E+00
	73	2448.06	2443 -	2456	2.19E+02	30.55	4.55E+00	6.27E+00
	74	2614.68	2609 -	2618	2.40E+01	9.80	0.00E+00	0.00E+00
	75	2695.77	2691 -	2699	6.72E+00	7.50	4.56E+00	4.45E+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 : 8/25/2017 7:54:52AM

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

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

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	16.17	14 -	19	16.49	3.41E+02	278.25	1.51E+04	NB-93M
	2	26.06	24 -	29	26.38	2.36E+02	255.10	1.28E+04	TH-231
	3	46.53	45 -	49	46.84	1.61E+03	255.62	1.32E+04	PB-210
	4	53.26	51 -	56	53.57	7.04E+02	305.83	1.82E+04	.....
	5	63.31	61 -	66	63.62	3.20E+03	381.54	2.67E+04	TH-234
									TH-230
	6	76.36	71 -	82	76.66	2.02E+04	737.92	5.79E+04	.....
M	7	83.87	83 -	97	84.17	1.25E+03	172.37	9.35E+03	TH-231
m	8	87.52	83 -	97	87.82	4.64E+03	475.52	3.44E+04	SN-126
									CD-109
									LU-176
m	9	92.68	83 -	97	92.97	7.18E+03	476.31	3.05E+04	GA-67
	10	112.00	110 -	115	112.29	5.13E+02	313.94	1.93E+04	.....
	11	143.98	142 -	147	144.26	7.57E+02	314.14	1.91E+04	U-235
	12	154.18	153 -	157	154.45	2.83E+02	268.49	1.57E+04	CS-136
	13	163.79	163 -	167	164.06	3.35E+02	252.34	1.38E+04	CS-136
									U-235
	14	186.15	182 -	191	186.42	7.03E+03	451.28	2.50E+04	RA-226
	15	205.44	203 -	208	205.70	3.77E+02	252.43	1.23E+04	U-235
M	16	237.02	233 -	247	237.27	9.54E+02	281.63	1.29E+04	.....
m	17	242.13	233 -	247	242.38	6.60E+03	270.94	9.19E+03	.....
	18	257.85	254 -	262	258.09	7.08E+02	286.40	1.22E+04	.....
	19	270.14	266 -	273	270.38	7.33E+02	257.37	1.06E+04	.....
	20	295.36	292 -	299	295.59	1.38E+04	332.68	9.26E+03	PB-214
	21	313.94	312 -	317	314.16	1.57E+02	166.59	5.43E+03	.....
	22	352.05	347 -	357	352.26	2.35E+04	399.94	8.78E+03	PB-214
	23	388.48	385 -	393	388.68	3.22E+02	205.16	6.29E+03	.....
	24	405.99	404 -	409	406.18	1.28E+02	147.96	4.25E+03	.....
	25	480.70	478 -	484	480.87	1.71E+02	129.62	2.92E+03	.....
	26	487.20	485 -	493	487.36	1.88E+02	156.46	3.65E+03	LA-140
	27	511.33	507 -	516	511.49	3.19E+02	162.92	3.60E+03	.....
	28	581.28	577 -	585	581.41	1.54E+02	139.13	2.88E+03	.....
	29	609.44	603 -	614	609.57	1.61E+04	301.87	3.37E+03	BI-214
	30	654.54	652 -	657	654.65	9.51E+01	78.53	1.15E+03	.....
	31	665.32	660 -	670	665.43	4.02E+02	141.16	2.44E+03	CE-143
	32	702.74	699 -	706	702.83	1.34E+02	105.87	1.78E+03	NB-94
	33	719.38	716 -	723	719.46	1.28E+02	99.16	1.56E+03	.....
	34	732.92	730 -	736	733.00	8.07E+01	87.86	1.34E+03	.....
	35	742.55	739 -	746	742.63	1.46E+02	97.84	1.49E+03	.....
	36	768.23	762 -	772	768.30	1.57E+03	149.96	2.16E+03	.....
	37	786.06	782 -	790	786.13	3.35E+02	114.00	1.80E+03	.....
	38	806.22	800 -	811	806.28	4.11E+02	142.94	2.34E+03	.....
	39	839.70	837 -	843	839.74	1.48E+02	90.26	1.37E+03	.....
	40	934.31	930 -	939	934.32	7.67E+02	121.06	1.64E+03	.....
	41	964.26	961 -	968	964.27	8.26E+01	93.47	1.40E+03	EU-152
	42	1000.81	997 -	1003	1000.80	2.12E+02	79.13	9.86E+02	PA-234M
	43	1051.89	1048 -	1055	1051.86	9.64E+01	79.67	9.97E+02	.....
	44	1069.95	1066 -	1073	1069.92	1.02E+02	76.24	9.03E+02	.....
	45	1120.44	1115 -	1126	1120.39	3.30E+03	154.78	1.33E+03	SC-46
									BI-214
									TA-182
	46	1155.50	1150 -	1161	1155.43	4.23E+02	109.76	1.29E+03	.....
	47	1208.13	1204 -	1212	1208.05	1.24E+02	77.64	8.42E+02	.....
	48	1238.30	1233 -	1244	1238.21	1.24E+03	114.28	1.01E+03	CO-56

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	49	1281.44	1276 -	1286	1281.33	3.47E+02	93.55	9.74E+02	.....
M	50	1377.82	1373 -	1390	1377.69	7.99E+02	83.47	6.34E+02	.....
m	51	1385.98	1373 -	1390	1385.84	1.89E+02	73.29	7.05E+02	.....
M	52	1401.57	1396 -	1413	1401.43	2.42E+02	62.99	5.62E+02	.....
m	53	1408.05	1396 -	1413	1407.90	4.33E+02	69.08	5.53E+02	EU-152
	54	1509.10	1502 -	1514	1508.92	4.16E+02	103.02	1.05E+03	.....
	55	1540.05	1532 -	1547	1539.85	2.20E+02	108.66	1.08E+03	.....
	56	1583.54	1579 -	1587	1583.34	9.25E+01	66.08	6.11E+02	.....
	57	1613.74	1610 -	1617	1613.52	5.38E+01	47.50	3.40E+02	.....
M	58	1661.44	1656 -	1671	1661.20	1.84E+02	52.22	2.83E+02	.....
m	59	1666.93	1656 -	1671	1666.70	4.17E+01	35.97	1.78E+02	.....
	60	1692.82	1689 -	1698	1692.57	8.01E+01	45.13	2.46E+02	.....
	61	1729.85	1723 -	1736	1729.59	5.46E+02	69.44	2.91E+02	.....
	62	1764.60	1757 -	1771	1764.33	2.43E+03	111.43	2.85E+02	BI-214
	63	1838.74	1833 -	1842	1838.45	5.23E+01	41.36	2.13E+02	.....
	64	1847.73	1843 -	1853	1847.43	3.65E+02	51.02	1.48E+02	.....
	65	1876.68	1871 -	1885	1876.37	4.43E+01	54.72	2.83E+02	.....
	66	1889.76	1886 -	1893	1889.45	3.87E+01	32.37	1.51E+02	.....
	67	2118.56	2113 -	2126	2118.17	1.54E+02	41.83	1.26E+02	.....
	68	2204.30	2199 -	2213	2203.88	6.47E+02	54.42	4.50E+01	BI-214
	69	2246.53	2241 -	2251	2246.09	1.84E+01	12.35	9.22E+00	.....
	70	2293.28	2288 -	2298	2292.83	4.51E+01	17.51	1.78E+01	.....
	71	2310.90	2307 -	2313	2310.44	9.00E+00	6.00	0.00E+00	.....
	72	2413.59	2409 -	2416	2413.10	1.00E+01	6.32	0.00E+00	.....
	73	2448.06	2443 -	2456	2447.56	2.19E+02	30.55	4.55E+00	.....
	74	2614.68	2609 -	2618	2614.13	2.40E+01	9.80	0.00E+00	TL-208
	75	2695.77	2691 -	2699	2695.19	6.72E+00	7.50	4.56E+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 : 8/25/2017 7:54:52AM

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
1	16.17	3.41E+02	278.25	1.64E-04	1.73E-03
2	26.06	2.36E+02	255.10	3.20E-03	1.73E-03
3	46.53	1.61E+03	255.62	1.73E-02	1.73E-03

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	4	53.26	7.04E+02	305.83	2.08E-02	1.73E-03
	5	63.31	3.20E+03	381.54	2.44E-02	1.80E-03
	6	76.36	2.02E+04	737.92	2.67E-02	2.04E-03
M	7	83.87	1.25E+03	172.37	2.71E-02	2.18E-03
m	8	87.52	4.64E+03	475.52	2.72E-02	2.25E-03
m	9	92.68	7.18E+03	476.31	2.71E-02	2.24E-03
	10	112.00	5.13E+02	313.94	2.60E-02	2.16E-03
	11	143.98	7.57E+02	314.14	2.32E-02	1.87E-03
	12	154.18	2.83E+02	268.49	2.23E-02	1.76E-03
	13	163.79	3.35E+02	252.34	2.14E-02	1.65E-03
	14	186.15	7.03E+03	451.28	1.96E-02	1.55E-03
	15	205.44	3.77E+02	252.43	1.82E-02	1.47E-03
M	16	237.02	9.54E+02	281.63	1.62E-02	1.35E-03
m	17	242.13	6.60E+03	270.94	1.59E-02	1.33E-03
	18	257.85	7.08E+02	286.40	1.51E-02	1.26E-03
	19	270.14	7.33E+02	257.37	1.45E-02	1.21E-03
	20	295.36	1.38E+04	332.68	1.35E-02	1.15E-03
	21	313.94	1.57E+02	166.59	1.28E-02	1.11E-03
	22	352.05	2.35E+04	399.94	1.15E-02	1.03E-03
	23	388.48	3.22E+02	205.16	1.06E-02	9.59E-04
	24	405.99	1.28E+02	147.96	1.02E-02	9.34E-04
	25	480.70	1.71E+02	129.62	8.72E-03	8.34E-04
	26	487.20	1.88E+02	156.46	8.62E-03	8.26E-04
	27	511.33	3.19E+02	162.92	8.25E-03	7.94E-04
	28	581.28	1.54E+02	139.13	7.35E-03	7.01E-04
	29	609.44	1.61E+04	301.87	7.04E-03	6.64E-04
	30	654.54	9.51E+01	78.53	6.60E-03	6.04E-04
	31	665.32	4.02E+02	141.16	6.51E-03	5.91E-04
	32	702.74	1.34E+02	105.87	6.20E-03	5.58E-04
	33	719.38	1.28E+02	99.16	6.07E-03	5.44E-04
	34	732.92	8.07E+01	87.86	5.97E-03	5.32E-04
	35	742.55	1.46E+02	97.84	5.90E-03	5.23E-04
	36	768.23	1.57E+03	149.96	5.72E-03	5.01E-04
	37	786.06	3.35E+02	114.00	5.61E-03	4.85E-04
	38	806.22	4.11E+02	142.94	5.48E-03	4.67E-04
	39	839.70	1.48E+02	90.26	5.29E-03	4.38E-04
	40	934.31	7.67E+02	121.06	4.81E-03	3.80E-04
	41	964.26	8.26E+01	93.47	4.68E-03	3.75E-04
	42	1000.81	2.12E+02	79.13	4.54E-03	3.69E-04
	43	1051.89	9.64E+01	79.67	4.35E-03	3.61E-04
	44	1069.95	1.02E+02	76.24	4.28E-03	3.58E-04
	45	1120.44	3.30E+03	154.78	4.12E-03	3.50E-04
	46	1155.50	4.23E+02	109.76	4.01E-03	3.44E-04
	47	1208.13	1.24E+02	77.64	3.86E-03	3.31E-04
	48	1238.30	1.24E+03	114.28	3.79E-03	3.22E-04
	49	1281.44	3.47E+02	93.55	3.68E-03	3.10E-04
M	50	1377.82	7.99E+02	83.47	3.47E-03	2.88E-04
m	51	1385.98	1.89E+02	73.29	3.45E-03	2.87E-04
M	52	1401.57	2.42E+02	62.99	3.42E-03	2.85E-04
m	53	1408.05	4.33E+02	69.08	3.41E-03	2.84E-04
	54	1509.10	4.16E+02	103.02	3.23E-03	2.67E-04
	55	1540.05	2.20E+02	108.66	3.17E-03	2.62E-04
	56	1583.54	9.25E+01	66.08	3.11E-03	2.55E-04

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	57	1613.74	5.38E+01	47.50	3.06E-03	2.51E-04
M	58	1661.44	1.84E+02	52.22	3.00E-03	2.43E-04
m	59	1666.93	4.17E+01	35.97	2.99E-03	2.42E-04
	60	1692.82	8.01E+01	45.13	2.95E-03	2.38E-04
	61	1729.85	5.46E+02	69.44	2.91E-03	2.32E-04
	62	1764.60	2.43E+03	111.43	2.87E-03	2.26E-04
	63	1838.74	5.23E+01	41.36	2.78E-03	2.15E-04
	64	1847.73	3.65E+02	51.02	2.77E-03	2.15E-04
	65	1876.68	4.43E+01	54.72	2.74E-03	2.15E-04
	66	1889.76	3.87E+01	32.37	2.73E-03	2.15E-04
	67	2118.56	1.54E+02	41.83	2.53E-03	2.15E-04
	68	2204.30	6.47E+02	54.42	2.46E-03	2.15E-04
	69	2246.53	1.84E+01	12.35	2.44E-03	2.15E-04
	70	2293.28	4.51E+01	17.51	2.41E-03	2.15E-04
	71	2310.90	9.00E+00	6.00	2.39E-03	2.15E-04
	72	2413.59	1.00E+01	6.32	2.34E-03	2.15E-04
	73	2448.06	2.19E+02	30.55	2.32E-03	2.15E-04
	74	2614.68	2.40E+01	9.80	2.24E-03	2.15E-04
	75	2695.77	6.72E+00	7.50	2.21E-03	2.15E-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 : 8/25/2017 7:54:52AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055575.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	16.17	3.41E+02	278.25			3.41E+02	2.78E+02
	2	26.06	2.36E+02	255.10			2.36E+02	2.55E+02
	3	46.53	1.61E+03	255.62	4.47E+01	1.09E+01	1.57E+03	2.56E+02
	4	53.26	7.04E+02	305.83			7.04E+02	3.06E+02
	5	63.31	3.20E+03	381.54	4.12E+01	5.67E+00	3.16E+03	3.82E+02
	6	76.36	2.02E+04	737.92			2.02E+04	7.38E+02
M	7	83.87	1.25E+03	172.37	5.71E+00	6.69E+00	1.24E+03	1.73E+02
m	8	87.52	4.64E+03	475.52			4.64E+03	4.76E+02
m	9	92.68	7.18E+03	476.31	7.98E+01	7.31E+00	7.10E+03	4.76E+02
	10	112.00	5.13E+02	313.94			5.13E+02	3.14E+02
	11	143.98	7.57E+02	314.14			7.57E+02	3.14E+02

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	12	154.18	2.83E+02	268.49			2.83E+02	2.68E+02
	13	163.79	3.35E+02	252.34			3.35E+02	2.52E+02
	14	186.15	7.03E+03	451.28	3.06E+01	5.82E+00	7.00E+03	4.51E+02
	15	205.44	3.77E+02	252.43			3.77E+02	2.52E+02
M	16	237.02	9.54E+02	281.63			9.54E+02	2.82E+02
m	17	242.13	6.60E+03	270.94			6.60E+03	2.71E+02
	18	257.85	7.08E+02	286.40			7.08E+02	2.86E+02
	19	270.14	7.33E+02	257.37			7.33E+02	2.57E+02
	20	295.36	1.38E+04	332.68			1.38E+04	3.33E+02
	21	313.94	1.57E+02	166.59			1.57E+02	1.67E+02
	22	352.05	2.35E+04	399.94	6.53E+00	4.43E+00	2.35E+04	4.00E+02
	23	388.48	3.22E+02	205.16			3.22E+02	2.05E+02
	24	405.99	1.28E+02	147.96			1.28E+02	1.48E+02
	25	480.70	1.71E+02	129.62			1.71E+02	1.30E+02
	26	487.20	1.88E+02	156.46			1.88E+02	1.56E+02
	27	511.33	3.19E+02	162.92	5.21E+01	4.74E+00	2.67E+02	1.63E+02
	28	581.28	1.54E+02	139.13			1.54E+02	1.39E+02
	29	609.44	1.61E+04	301.87	3.25E+00	2.97E+00	1.61E+04	3.02E+02
	30	654.54	9.51E+01	78.53			9.51E+01	7.85E+01
	31	665.32	4.02E+02	141.16			4.02E+02	1.41E+02
	32	702.74	1.34E+02	105.87			1.34E+02	1.06E+02
	33	719.38	1.28E+02	99.16			1.28E+02	9.92E+01
	34	732.92	8.07E+01	87.86			8.07E+01	8.79E+01
	35	742.55	1.46E+02	97.84			1.46E+02	9.78E+01
	36	768.23	1.57E+03	149.96			1.57E+03	1.50E+02
	37	786.06	3.35E+02	114.00			3.35E+02	1.14E+02
	38	806.22	4.11E+02	142.94			4.11E+02	1.43E+02
	39	839.70	1.48E+02	90.26			1.48E+02	9.03E+01
	40	934.31	7.67E+02	121.06			7.67E+02	1.21E+02
	41	964.26	8.26E+01	93.47			8.26E+01	9.35E+01
	42	1000.81	2.12E+02	79.13			2.12E+02	7.91E+01
	43	1051.89	9.64E+01	79.67			9.64E+01	7.97E+01
	44	1069.95	1.02E+02	76.24			1.02E+02	7.62E+01
	45	1120.44	3.30E+03	154.78			3.30E+03	1.55E+02
	46	1155.50	4.23E+02	109.76			4.23E+02	1.10E+02
	47	1208.13	1.24E+02	77.64			1.24E+02	7.76E+01
	48	1238.30	1.24E+03	114.28			1.24E+03	1.14E+02
	49	1281.44	3.47E+02	93.55			3.47E+02	9.35E+01
M	50	1377.82	7.99E+02	83.47			7.99E+02	8.35E+01
m	51	1385.98	1.89E+02	73.29			1.89E+02	7.33E+01
M	52	1401.57	2.42E+02	62.99			2.42E+02	6.30E+01
m	53	1408.05	4.33E+02	69.08			4.33E+02	6.91E+01
	54	1509.10	4.16E+02	103.02			4.16E+02	1.03E+02
	55	1540.05	2.20E+02	108.66			2.20E+02	1.09E+02
	56	1583.54	9.25E+01	66.08			9.25E+01	6.61E+01
	57	1613.74	5.38E+01	47.50			5.38E+01	4.75E+01
M	58	1661.44	1.84E+02	52.22			1.84E+02	5.22E+01
m	59	1666.93	4.17E+01	35.97			4.17E+01	3.60E+01
	60	1692.82	8.01E+01	45.13			8.01E+01	4.51E+01
	61	1729.85	5.46E+02	69.44			5.46E+02	6.94E+01
	62	1764.60	2.43E+03	111.43			2.43E+03	1.11E+02
	63	1838.74	5.23E+01	41.36			5.23E+01	4.14E+01
	64	1847.73	3.65E+02	51.02			3.65E+02	5.10E+01
	65	1876.68	4.43E+01	54.72			4.43E+01	5.47E+01

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
66	1889.76	3.87E+01	32.37			3.87E+01	3.24E+01
67	2118.56	1.54E+02	41.83			1.54E+02	4.18E+01
68	2204.30	6.47E+02	54.42			6.47E+02	5.44E+01
69	2246.53	1.84E+01	12.35			1.84E+01	1.23E+01
70	2293.28	4.51E+01	17.51			4.51E+01	1.75E+01
71	2310.90	9.00E+00	6.00			9.00E+00	6.00E+00
72	2413.59	1.00E+01	6.32			1.00E+01	6.32E+00
73	2448.06	2.19E+02	30.55			2.19E+02	3.05E+01
74	2614.68	2.40E+01	9.80	1.86E+00	1.12E+00	2.21E+01	9.86E+00
75	2695.77	6.72E+00	7.50			6.72E+00	7.50E+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 : 8/25/2017 7:54:52AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055575.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	16.17	3.41E+02	278.25			3.41E+02	2.78E+02
	2	26.06	2.36E+02	255.10			2.36E+02	2.55E+02
	3	46.53	1.61E+03	255.62	4.47E+01	1.09E+01	1.57E+03	2.56E+02
	4	53.26	7.04E+02	305.83			7.04E+02	3.06E+02
	5	63.31	3.20E+03	381.54	4.12E+01	5.67E+00	3.16E+03	3.82E+02
	6	76.36	2.02E+04	737.92			2.02E+04	7.38E+02
M	7	83.87	1.25E+03	172.37	5.71E+00	6.69E+00	1.24E+03	1.73E+02
m	8	87.52	4.64E+03	475.52			4.64E+03	4.76E+02
m	9	92.68	7.18E+03	476.31	7.98E+01	7.31E+00	7.10E+03	4.76E+02
	10	112.00	5.13E+02	313.94			5.13E+02	3.14E+02
	11	143.98	7.57E+02	314.14			7.57E+02	3.14E+02
	12	154.18	2.83E+02	268.49			2.83E+02	2.68E+02
	13	163.79	3.35E+02	252.34			3.35E+02	2.52E+02
	14	186.15	7.03E+03	451.28	3.06E+01	5.82E+00	7.00E+03	4.51E+02
	15	205.44	3.77E+02	252.43			3.77E+02	2.52E+02
M	16	237.02	9.54E+02	281.63			9.54E+02	2.82E+02
m	17	242.13	6.60E+03	270.94			6.60E+03	2.71E+02
	18	257.85	7.08E+02	286.40			7.08E+02	2.86E+02

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	19	270.14	7.33E+02	257.37			7.33E+02	2.57E+02
	20	295.36	1.38E+04	332.68			1.38E+04	3.33E+02
	21	313.94	1.57E+02	166.59			1.57E+02	1.67E+02
	22	352.05	2.35E+04	399.94	6.53E+00	4.43E+00	2.35E+04	4.00E+02
	23	388.48	3.22E+02	205.16			3.22E+02	2.05E+02
	24	405.99	1.28E+02	147.96			1.28E+02	1.48E+02
	25	480.70	1.71E+02	129.62			1.71E+02	1.30E+02
	26	487.20	1.88E+02	156.46			1.88E+02	1.56E+02
	27	511.33	3.19E+02	162.92	5.21E+01	4.74E+00	2.67E+02	1.63E+02
	28	581.28	1.54E+02	139.13			1.54E+02	1.39E+02
	29	609.44	1.61E+04	301.87	3.25E+00	2.97E+00	1.61E+04	3.02E+02
	30	654.54	9.51E+01	78.53			9.51E+01	7.85E+01
	31	665.32	4.02E+02	141.16			4.02E+02	1.41E+02
	32	702.74	1.34E+02	105.87			1.34E+02	1.06E+02
	33	719.38	1.28E+02	99.16			1.28E+02	9.92E+01
	34	732.92	8.07E+01	87.86			8.07E+01	8.79E+01
	35	742.55	1.46E+02	97.84			1.46E+02	9.78E+01
	36	768.23	1.57E+03	149.96			1.57E+03	1.50E+02
	37	786.06	3.35E+02	114.00			3.35E+02	1.14E+02
	38	806.22	4.11E+02	142.94			4.11E+02	1.43E+02
	39	839.70	1.48E+02	90.26			1.48E+02	9.03E+01
	40	934.31	7.67E+02	121.06			7.67E+02	1.21E+02
	41	964.26	8.26E+01	93.47			8.26E+01	9.35E+01
	42	1000.81	2.12E+02	79.13			2.12E+02	7.91E+01
	43	1051.89	9.64E+01	79.67			9.64E+01	7.97E+01
	44	1069.95	1.02E+02	76.24			1.02E+02	7.62E+01
	45	1120.44	3.30E+03	154.78			3.30E+03	1.55E+02
	46	1155.50	4.23E+02	109.76			4.23E+02	1.10E+02
	47	1208.13	1.24E+02	77.64			1.24E+02	7.76E+01
	48	1238.30	1.24E+03	114.28			1.24E+03	1.14E+02
	49	1281.44	3.47E+02	93.55			3.47E+02	9.35E+01
M	50	1377.82	7.99E+02	83.47			7.99E+02	8.35E+01
m	51	1385.98	1.89E+02	73.29			1.89E+02	7.33E+01
M	52	1401.57	2.42E+02	62.99			2.42E+02	6.30E+01
m	53	1408.05	4.33E+02	69.08			4.33E+02	6.91E+01
	54	1509.10	4.16E+02	103.02			4.16E+02	1.03E+02
	55	1540.05	2.20E+02	108.66			2.20E+02	1.09E+02
	56	1583.54	9.25E+01	66.08			9.25E+01	6.61E+01
	57	1613.74	5.38E+01	47.50			5.38E+01	4.75E+01
M	58	1661.44	1.84E+02	52.22			1.84E+02	5.22E+01
m	59	1666.93	4.17E+01	35.97			4.17E+01	3.60E+01
	60	1692.82	8.01E+01	45.13			8.01E+01	4.51E+01
	61	1729.85	5.46E+02	69.44			5.46E+02	6.94E+01
	62	1764.60	2.43E+03	111.43			2.43E+03	1.11E+02
	63	1838.74	5.23E+01	41.36			5.23E+01	4.14E+01
	64	1847.73	3.65E+02	51.02			3.65E+02	5.10E+01
	65	1876.68	4.43E+01	54.72			4.43E+01	5.47E+01
	66	1889.76	3.87E+01	32.37			3.87E+01	3.24E+01
	67	2118.56	1.54E+02	41.83			1.54E+02	4.18E+01
	68	2204.30	6.47E+02	54.42			6.47E+02	5.44E+01
	69	2246.53	1.84E+01	12.35			1.84E+01	1.23E+01
	70	2293.28	4.51E+01	17.51			4.51E+01	1.75E+01
	71	2310.90	9.00E+00	6.00			9.00E+00	6.00E+00
	72	2413.59	1.00E+01	6.32			1.00E+01	6.32E+00

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
73	2448.06	2.19E+02	30.55			2.19E+02	3.05E+01
74	2614.68	2.40E+01	9.80	1.86E+00	1.12E+00	2.21E+01	9.86E+00
75	2695.77	6.72E+00	7.50			6.72E+00	7.50E+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
NB-93M	0.974	16.57	*	9.43	2.03E+02	2.14E+03
CD-109	0.959	88.03	*	3.72	4.83E+01	6.98E+00
SN-126	1.000	87.57	*	37.00	4.18E+00	5.51E-01
PB-210	1.000	46.50	*	4.25	1.95E+01	3.73E+00
BI-214	0.997	609.31	*	46.30	4.46E+01	4.29E+00
		1120.29	*	15.10	4.80E+01	4.65E+00
		1764.49	*	15.80	4.85E+01	4.43E+00
		2204.22	*	4.98	4.77E+01	5.78E+00
PB-214	0.997	295.21	*	19.19	4.83E+01	4.27E+00
		351.92	*	37.19	4.94E+01	4.50E+00
RA-226	0.999	186.21	*	3.28	9.86E+01	1.81E+02
TH-231	0.975	25.64	*	14.70	4.54E+00	5.49E+00
		84.21	*	6.40	6.49E+00	1.04E+00
PA-234M	0.992	1001.03	*	0.92	4.59E+01	1.76E+01
TH-234	1.000	63.29	*	3.80	3.08E+01	4.35E+00
U-235	0.988	143.76	*	10.50	2.81E+00	1.26E+00
		163.35	*	4.70	3.01E+00	2.34E+00
		205.31	*	4.70	3.99E+00	2.77E+00

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

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 7:54:52AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	4	53.26	1.95554E-01	21.72		
	6	76.36	5.62448E+00	1.82		
m	9	92.68	1.97176E+00	3.36	Sum	
	10	112.00	1.42616E-01	30.57		
	12	154.18	7.86652E-02	47.40	Tol.	CS-136
M	16	237.02	2.64950E-01	14.76		
m	17	242.13	1.83386E+00	2.05		
	18	257.85	1.96603E-01	20.23		
	19	270.14	2.03582E-01	17.56	Sum	
	21	313.94	4.37439E-02	52.89		
	23	388.48	8.95474E-02	31.82		
	24	405.99	3.56860E-02	57.59		
	25	480.70	4.75855E-02	37.83	Sum	
	26	487.20	5.22709E-02	41.57	Tol.	LA-140
	27	511.33	7.40524E-02	30.57		
	28	581.28	4.27969E-02	45.15		
	30	654.54	2.64057E-02	41.31		
	31	665.32	1.11722E-01	17.55		
	32	702.74	3.72697E-02	39.45	Tol.	NB-94
	33	719.38	3.55077E-02	38.79		
	34	732.92	2.24140E-02	54.45		
	35	742.55	4.06361E-02	33.44	D-Esc	
	36	768.23	4.36440E-01	4.77		
	37	786.06	9.30896E-02	17.01		
	38	806.22	1.14073E-01	17.40		
	39	839.70	4.12010E-02	30.43		
	40	934.31	2.13113E-01	7.89		
	41	964.26	2.29411E-02	56.59	Tol.	EU-152
	43	1051.89	2.67712E-02	41.33		
	44	1069.95	2.82120E-02	37.53		
	46	1155.50	1.17461E-01	12.98		
	47	1208.13	3.43795E-02	31.36	Sum	
	48	1238.30	3.44532E-01	4.61	Tol.	CO-56
	49	1281.44	9.63609E-02	13.48		
M	50	1377.82	2.21973E-01	5.22		
m	51	1385.98	5.23950E-02	19.43		
M	52	1401.57	6.72661E-02	13.01		
m	53	1408.05	1.20178E-01	7.98	Tol.	EU-152
	54	1509.10	1.15454E-01	12.39		
	55	1540.05	6.10788E-02	24.71		
	56	1583.54	2.57063E-02	35.70		
	57	1613.74	1.49374E-02	44.16		

Analysis Report for 1707093-06

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	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
M	58	1661.44	5.10478E-02	14.21		
m	59	1666.93	1.15909E-02	43.10		
	60	1692.82	2.22496E-02	28.17	S-Esc	
	61	1729.85	1.51542E-01	6.36	Sum	
	63	1838.74	1.45178E-02	39.57		
	64	1847.73	1.01424E-01	6.99	Sum	
	65	1876.68	1.23148E-02	61.71		
	66	1889.76	1.07444E-02	41.85		
	67	2118.56	4.27778E-02	13.58		
	69	2246.53	5.10870E-03	33.57		
	70	2293.28	1.25231E-02	19.42		
	71	2310.90	2.50000E-03	33.33		
	72	2413.59	2.77778E-03	31.62		
	73	2448.06	6.07573E-02	6.98		
	74	2614.68	6.15054E-03	22.27	Tol.	TL-208
	75	2695.77	1.86728E-03	55.79		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
NB-93M	0.97	16.57	*	9.43	2.03E+02	2.14E+03
CD-109	0.95	88.03	*	3.72	4.83E+01	6.98E+00
SN-126	1.00	87.57	*	37.00	4.18E+00	5.51E-01
PB-210	1.00	46.50	*	4.25	1.95E+01	3.73E+00
BI-214	0.99	609.31	*	46.30	4.46E+01	4.29E+00
		1120.29	*	15.10	4.80E+01	4.65E+00
		1764.49	*	15.80	4.85E+01	4.43E+00
		2204.22	*	4.98	4.77E+01	5.78E+00
PB-214	0.99	295.21	*	19.19	4.83E+01	4.27E+00
		351.92	*	37.19	4.94E+01	4.50E+00
RA-226	0.99	186.21	*	3.28	9.86E+01	1.81E+02
TH-231	0.97	25.64	*	14.70	4.54E+00	5.49E+00

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TH-231	0.97	84.21	*	6.40	6.49E+00	1.04E+00
PA-234M	0.99	1001.03	*	0.92	4.59E+01	1.76E+01
TH-234	1.00	63.29	*	3.80	3.08E+01	4.35E+00
U-235	0.98	143.76	*	10.50	2.81E+00	1.26E+00
		163.35	*	4.70	3.01E+00	2.34E+00
		205.31	*	4.70	3.99E+00	2.77E+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
	NB-93M	0.974	2.03E+02	2.14E+03	
?	CD-109	0.959	4.83E+01	6.98E+00	
?	SN-126	1.000	4.18E+00	5.51E-01	
	PB-210	1.000	1.95E+01	3.73E+00	
	BI-214	0.997	4.71E+01	2.35E+00	
	PB-214	0.997	4.88E+01	3.10E+00	
	RA-226	0.999	9.86E+01	1.81E+02	
	TH-231	0.975	6.43E+00	1.02E+00	
	PA-234M	0.992	4.59E+01	1.76E+01	
	TH-234	1.000	3.08E+01	4.35E+00	
	U-235	0.988	3.01E+00	1.03E+00	

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

Errors quoted at 2.000sigma

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 7:54:52AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	4	53.26	1.95554E-01	21.72		
	6	76.36	5.62448E+00	1.82		
m	9	92.68	1.97176E+00	3.36	Sum	
	10	112.00	1.42616E-01	30.57		
	12	154.18	7.86652E-02	47.40	Tol.	CS-136
M	16	237.02	2.64950E-01	14.76		
m	17	242.13	1.83386E+00	2.05		
	18	257.85	1.96603E-01	20.23		
	19	270.14	2.03582E-01	17.56	Sum	
	21	313.94	4.37439E-02	52.89		
	23	388.48	8.95474E-02	31.82		
	24	405.99	3.56860E-02	57.59		
	25	480.70	4.75855E-02	37.83	Sum	
	26	487.20	5.22709E-02	41.57	Tol.	LA-140
	27	511.33	7.40524E-02	30.57		
	28	581.28	4.27969E-02	45.15		
	30	654.54	2.64057E-02	41.31		
	31	665.32	1.11722E-01	17.55		
	32	702.74	3.72697E-02	39.45	Tol.	NB-94
	33	719.38	3.55077E-02	38.79		
	34	732.92	2.24140E-02	54.45		
	35	742.55	4.06361E-02	33.44	D-Esc	
	36	768.23	4.36440E-01	4.77		
	37	786.06	9.30896E-02	17.01		
	38	806.22	1.14073E-01	17.40		
	39	839.70	4.12010E-02	30.43		
	40	934.31	2.13113E-01	7.89		
	41	964.26	2.29411E-02	56.59	Tol.	EU-152
	43	1051.89	2.67712E-02	41.33		
	44	1069.95	2.82120E-02	37.53		
	46	1155.50	1.17461E-01	12.98		
	47	1208.13	3.43795E-02	31.36	Sum	
	48	1238.30	3.44532E-01	4.61	Tol.	CO-56
	49	1281.44	9.63609E-02	13.48		
M	50	1377.82	2.21973E-01	5.22		

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	51	1385.98	5.23950E-02	19.43		
M	52	1401.57	6.72661E-02	13.01		
m	53	1408.05	1.20178E-01	7.98	Tol.	EU-152
	54	1509.10	1.15454E-01	12.39		
	55	1540.05	6.10788E-02	24.71		
	56	1583.54	2.57063E-02	35.70		
	57	1613.74	1.49374E-02	44.16		
M	58	1661.44	5.10478E-02	14.21		
m	59	1666.93	1.15909E-02	43.10		
	60	1692.82	2.22496E-02	28.17	S-Esc	
	61	1729.85	1.51542E-01	6.36	Sum	
	63	1838.74	1.45178E-02	39.57		
	64	1847.73	1.01424E-01	6.99	Sum	
	65	1876.68	1.23148E-02	61.71		
	66	1889.76	1.07444E-02	41.85		
	67	2118.56	4.27778E-02	13.58		
	69	2246.53	5.10870E-03	33.57		
	70	2293.28	1.25231E-02	19.42		
	71	2310.90	2.50000E-03	33.33		
	72	2413.59	2.77778E-03	31.62		
	73	2448.06	6.07573E-02	6.98		
	74	2614.68	6.15054E-03	22.27	Tol.	TL-208
	75	2695.77	1.86728E-03	55.79		

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	2.53E-01	7.03E+00	7.03E+00
+	NA-22	1274.54	99.94	1.02E-01	2.37E-01	2.37E-01
+	@ NA-24	1368.53	99.99	1.00E+26	1.00E+26	1.00E+26
	@	2754.09	99.86	0.00E+00		1.00E+26

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	AL-26	1808.65		99.76	3.74E-02	1.59E-01	1.59E-01
+	K-40	1460.81		10.67	2.73E+00	2.66E+00	2.66E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	7.30E-02	1.94E-01	1.94E-01
		78.34		96.00	2.61E+00		2.55E-01
+	SC-46	889.25		99.98	-8.05E-03	5.24E-01	5.24E-01
		1120.51		99.99	1.62E+01		1.44E+00
+	V-48	983.52		99.98	-3.40E+00	1.66E+01	1.73E+01
		1312.10		97.50	-4.32E+00		1.66E+01
+	CR-51	320.08		9.83	-1.42E+01	2.46E+01	2.46E+01
+	MN-54	834.83		99.97	6.07E-02	2.78E-01	2.78E-01
+	CO-56	846.75		99.96	1.88E-01	5.33E-01	5.33E-01
		1037.75		14.03	2.21E+00		3.86E+00
		1238.25		67.00	1.05E+01		1.60E+00
		1771.40		15.51	4.46E-01		3.02E+00
		2598.48		16.90	-4.44E-01		6.23E-01
+	CO-57	122.06		85.51	6.22E-02	2.28E-01	2.28E-01
		136.48		10.60	-2.96E-01		1.94E+00
+	CO-58	810.76		99.40	-2.26E-01	5.58E-01	5.58E-01
+	FE-59	1099.22		56.50	-5.09E-01	1.84E+00	1.84E+00
		1291.56		43.20	1.36E+00		2.39E+00
+	CO-60	1173.22		100.00	4.47E-02	2.14E-01	2.27E-01
		1332.49		100.00	-1.41E-01		2.14E-01
+	ZN-65	1115.52		50.75	1.12E-01	6.36E-01	6.36E-01
+	GA-67	93.31		35.70	1.08E+10	1.12E+09	1.12E+09
		208.95		2.24	-5.42E+09		1.81E+10
		300.22		16.00	8.45E+08		3.11E+09
+	SE-75	121.11		16.70	3.57E-01	4.78E-01	1.62E+00
		136.00		59.20	-1.73E-01		4.78E-01
		264.65		59.80	1.30E-02		5.83E-01
		279.53		25.20	-1.07E+00		1.40E+00
		400.65		11.40	-1.07E-01		3.29E+00
+	RB-82	776.52		13.00	1.69E+00	2.37E+01	2.37E+01
+	RB-83	520.41		46.00	-2.95E-01	8.93E-01	8.93E-01
		529.64		30.30	-7.70E-01		1.39E+00
		552.65		16.40	-8.45E-01		2.58E+00
+	KR-85	513.99		0.43	4.46E+01	4.70E+01	4.70E+01
+	SR-85	513.99		99.27	5.63E-01	5.93E-01	5.93E-01
+	Y-88	898.02		93.40	-6.18E-02	3.69E-01	4.74E-01
		1836.01		99.38	1.10E-01		3.69E-01
+	MO-93	263.06		56.72	7.73E-03	1.89E-01	3.54E-01
		684.67		99.68	-1.15E-02		1.89E-01
		1477.11		99.08	-1.81E-02		2.77E-01
+	NB-93M	16.57	*	9.43	2.03E+02	2.71E+02	2.71E+02
+	NB-94	702.63		100.00	1.85E-01	2.08E-01	2.08E-01
		871.10		100.00	1.96E-02		2.23E-01
+	NB-95	765.79		99.81	1.28E+01	2.48E+00	2.48E+00

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-95M	235.69		25.00	-6.21E+08	2.15E+08	2.15E+08
+	ZR-95	724.18		43.70	3.55E-01	1.03E+00	1.32E+00
		756.72		55.30	-2.32E-01		1.03E+00
+	MO-99	181.06		6.20	8.60E+10	1.72E+11	3.00E+11
		739.58		12.80	1.09E+10		1.72E+11
		778.00		4.50	-8.77E+10		4.80E+11
+	RU-103	497.08		89.00	-5.43E-01	1.21E+00	1.21E+00
+	RU-106	621.84		9.80	3.30E-02	2.16E+00	2.16E+00
+	AG-108M	433.93		89.90	-5.62E-02	2.17E-01	2.17E-01
		614.37		90.40	6.13E-02		3.79E-01
		722.95		90.50	3.59E-02		2.19E-01
+	CD-109	88.03	*	3.72	4.83E+01	1.25E+01	1.25E+01
+	AG-110M	657.75		93.14	-9.03E-06	2.55E-01	2.55E-01
		677.61		10.53	3.55E-01		2.36E+00
		706.67		16.46	3.35E-02		1.60E+00
		763.93		21.98	-1.32E+01		1.41E+00
		884.67		71.63	8.28E-02		4.28E-01
		1384.27		23.94	-2.33E+00		1.46E+00
+	CD-113M	263.70		0.02	1.90E+01	8.52E+02	8.52E+02
+	SN-113	255.12		1.93	-1.40E+00	5.89E-01	1.89E+01
		391.69		64.90	4.08E-02		5.89E-01
+	TE123M	159.00		84.10	2.12E-01	3.63E-01	3.63E-01
+	SB-124	602.71		97.87	-1.12E-01	6.46E-01	6.46E-01
		645.85		7.26	7.45E-01		7.79E+00
		722.78		11.10	9.33E-01		5.69E+00
		1691.02		49.00	-2.20E-02		1.35E+00
+	I-125	35.49		6.49	-9.73E-01	1.58E+01	1.58E+01
+	SB-125	176.33		6.89	-9.84E-02	7.67E-01	2.63E+00
		427.89		29.33	5.53E-01		7.67E-01
		463.38		10.35	4.13E-01		2.02E+00
		600.56		17.80	-4.94E-02		1.18E+00
		635.90		11.32	-6.88E-01		1.69E+00
+	SB-126	414.70		83.30	2.72E+01	5.38E+01	7.16E+01
		666.33		99.60	1.46E+02		6.38E+01
		695.00		99.60	-1.82E+01		5.38E+01
		720.50		53.80	6.69E+01		1.05E+02
+	SN-126	87.57	*	37.00	4.18E+00	1.08E+00	1.08E+00
+	SB-127	473.00		25.00	2.88E+07	4.00E+07	6.04E+07
		685.20		35.70	-2.43E+06		4.00E+07
		783.80		14.70	2.60E+08		1.27E+08
+	I-129	29.78		57.00	-1.07E-01	9.90E-01	9.90E-01
		33.60		13.20	-1.96E+00		2.83E+00
		39.58		7.52	-1.50E+00		3.33E+00
+	I-131	284.30		6.05	1.14E+04	1.37E+03	1.96E+04
		364.48		81.20	1.73E+02		1.37E+03
		636.97		7.26	-7.02E+03		1.46E+04
		722.89		1.80	1.08E+04		6.57E+04
+	TE-132	49.72		13.10	-1.68E+10	4.71E+08	3.03E+09

Analysis Report for 1707093-06

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		Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		TE-132	228.16	88.00	3.01E+08	4.71E+08	4.71E+08
+		BA-133	81.00	33.00	-9.56E+00	5.64E-01	5.64E-01
			302.84	17.80	5.42E-01		1.14E+00
			356.01	60.00	1.17E-01		6.82E-01
+	@	I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+		XE-133	81.00	38.00	-5.03E+06	2.97E+05	2.97E+05
+		CS-134	563.23	8.38	-6.26E-01	2.64E-01	2.55E+00
			569.32	15.43	-5.07E-02		1.43E+00
			604.70	97.60	-1.67E+01		3.58E-01
			795.84	85.40	-3.54E-02		2.64E-01
			801.93	8.73	-8.98E+00		2.76E+00
+		CS-135	268.24	16.00	7.13E-01	1.30E+00	1.30E+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	-1.17E+02	4.42E+01	4.67E+02
			163.89	4.61	4.86E+02		7.42E+02
			176.55	13.56	-9.47E+00		2.53E+02
			273.65	12.66	2.97E+01		3.38E+02
			340.57	48.50	3.73E+00		8.37E+01
			818.50	99.70	-6.94E+00		4.42E+01
			1048.07	79.60	5.45E+00		5.44E+01
			1235.34	19.70	6.07E+02		3.81E+02
+		CS-137	661.65	85.12	-2.54E-01	2.41E-01	2.41E-01
+		LA-138	788.74	34.00	-1.23E-02	3.24E-01	7.05E-01
			1435.80	66.00	-1.62E-01		3.24E-01
+		CE-139	165.85	80.35	8.57E-02	3.48E-01	3.48E-01
+		BA-140	162.64	6.70	-3.49E+02	1.82E+02	5.96E+02
			304.84	4.50	-5.79E+02		1.02E+03
			423.70	3.20	2.65E+01		1.58E+03
			437.55	2.00	1.11E+03		2.29E+03
			537.32	25.00	1.27E+01		1.82E+02
+		LA-140	328.77	20.50	-2.01E+02	6.54E+01	2.28E+02
			487.03	45.50	8.04E+01		1.04E+02
			815.85	23.50	-1.95E+01		2.12E+02
			1596.49	95.49	7.07E+01		6.54E+01
+		CE-141	145.44	48.40	3.36E+00	3.02E+00	3.02E+00
+	@	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	7.45E-01	1.86E+00	1.86E+00
+		PM-144	476.78	42.00	2.23E-02	2.19E-01	5.61E-01
			618.01	98.60	2.16E-02		2.19E-01
			696.49	99.49	-1.07E-02		2.38E-01
+		PM-145	36.85	21.70	-2.22E-01	7.19E-01	1.36E+00
			37.36	39.70	1.41E-02		7.19E-01
			42.30	15.10	4.73E-02		1.50E+00
			72.40	2.31	-9.00E+01		9.25E+00
+		PM-146	453.90	39.94	4.00E-01	5.16E-01	5.16E-01

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-146	735.90	14.01	9.46E-02	5.16E-01	1.43E+00
		747.13	13.10	-1.62E-01		1.53E+00
+	ND-147	91.11	28.90	-8.08E+00	3.99E+02	3.99E+02
		531.02	13.10	-3.17E+02		8.38E+02
+	PM-149	285.90	3.10	1.30E+14	3.43E+14	3.43E+14
+	EU-152	121.78	20.50	2.03E-01	7.46E-01	7.46E-01
		244.69	5.40	5.19E+01		5.25E+00
		344.27	19.13	-9.32E-02		1.06E+00
		778.89	9.20	-5.45E-01		2.17E+00
		964.01	10.40	1.61E+00		2.37E+00
		1085.78	7.22	-7.01E-01		2.98E+00
		1112.02	9.60	4.18E-02		2.32E+00
		1407.95	14.94	6.74E+00		2.28E+00
+	GD-153	97.43	31.30	4.07E-01	6.27E-01	6.27E-01
		103.18	22.20	-7.51E-01		8.50E-01
+	EU-154	123.07	40.50	1.78E-01	3.83E-01	3.83E-01
		723.30	19.70	1.68E-01		1.03E+00
		873.19	11.50	-6.10E-01		1.98E+00
		996.32	10.30	-8.10E-01		2.11E+00
		1004.76	17.90	-3.03E-01		1.34E+00
		1274.45	35.50	2.74E-01		6.33E-01
+	EU-155	86.50	30.90	2.23E+00	6.48E-01	6.48E-01
		105.30	20.70	1.15E-03		7.17E-01
+	EU-156	811.77	10.40	1.78E+01	1.98E+02	1.98E+02
		1153.47	7.20	8.23E+02		4.04E+02
		1230.71	8.90	9.09E+01		2.37E+02
+	HO-166M	184.41	72.60	3.58E+00	3.34E-01	3.34E-01
		280.45	29.60	-1.31E-01		6.63E-01
		410.94	11.10	2.88E-01		1.88E+00
		711.69	54.10	9.45E-02		3.61E-01
+	TM-171	66.72	0.14	9.88E+01	1.47E+02	1.47E+02
+	HF-172	67.35	5.31	1.44E+00	1.49E+00	3.83E+00
		125.81	11.30	-1.14E-01		1.49E+00
+	LU-172	181.53	20.60	8.72E+03	1.23E+04	2.84E+04
		900.72	29.81	-6.29E+03		2.65E+04
		1093.66	62.50	9.02E+03		1.23E+04
+	LU-173	100.72	5.24	2.69E-01	1.18E+00	3.14E+00
		272.11	21.20	2.77E-01		1.18E+00
+	HF-175	343.40	84.00	-5.67E-02	6.45E-01	6.45E-01
+	LU-176	88.34	13.30	-6.23E+00	2.01E-01	1.45E+00
		201.83	86.00	-1.90E-02		2.01E-01
		306.78	94.00	1.98E-02		2.03E-01
+	HF-181	133.02	41.70	6.40E-01	1.25E+00	1.96E+00
		345.85	17.20	3.87E-01		6.10E+00
		482.03	82.80	-3.53E-01		1.25E+00
+	TA-182	67.75	41.20	3.08E-01	8.18E-01	8.18E-01
		1121.30	34.90	3.75E+01		3.29E+00
		1189.05	16.23	-1.74E+00		2.34E+00
		1221.41	26.98	2.53E-01		1.40E+00

Analysis Report for 1707093-06

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TA-182	1231.02		11.44	1.31E+00	8.18E-01	3.41E+00
+	IR-192	308.46		29.68	-6.63E-01	1.05E+00	1.63E+00
		468.07		48.10	2.39E-01		1.05E+00
+	HG-203	279.19		77.30	-8.64E-01	1.15E+00	1.15E+00
+	TL-204	374.74		94.11	3.89E-03	2.13E-01	2.13E-01
		899.15		99.16	-4.47E-02		2.44E-01
		911.74		91.10	1.60E-01		2.75E-01
+	BI-207	569.67		97.72	9.04E-02	2.08E-01	2.08E-01
		1063.62		74.90	-3.30E-02		2.82E-01
+	TL-208	583.14		30.22	9.07E-01	2.87E-01	6.88E-01
		860.37		4.48	3.13E+00		4.98E+00
		2614.66		35.85	2.37E-01		2.87E-01
+	BI-210M	262.00		45.00	9.54E-03	4.48E-01	4.48E-01
		300.00		23.00	2.87E-01		1.06E+00
+	PB-210	46.50	*	4.25	1.95E+01	5.01E+00	5.01E+00
+	PB-211	404.84		2.90	7.58E-01	7.48E+00	7.48E+00
		831.96		2.90	2.19E+00		7.68E+00
+	BI-212	727.17		11.80	6.61E-01	1.63E+00	1.63E+00
		1620.62		2.75	2.56E+00		7.84E+00
+	PB-212	238.63		44.60	-3.40E-02	5.90E-01	5.90E-01
		300.09		3.41	1.94E+00		7.14E+00
+	BI-214	609.31	*	46.30	4.46E+01	7.55E-01	7.55E-01
		1120.29	*	15.10	4.80E+01		2.52E+00
		1764.49	*	15.80	4.85E+01		1.76E+00
		2204.22	*	4.98	4.77E+01		2.54E+00
+	PB-214	295.21	*	19.19	4.83E+01	8.97E-01	1.37E+00
		351.92	*	37.19	4.94E+01		8.97E-01
+	RN-219	401.80		6.50	2.54E-01	3.25E+00	3.25E+00
+	RA-223	323.87		3.88	4.21E+00	5.16E+00	5.16E+00
+	RA-224	240.98		3.95	8.67E+01	7.42E+00	7.42E+00
+	RA-225	40.00		31.00	-4.00E+01	8.87E+01	8.87E+01
+	RA-226	186.21	*	3.28	9.86E+01	9.75E+00	9.75E+00
+	TH-227	50.10		8.40	-1.25E+01	1.82E+00	2.25E+00
		236.00		11.50	-5.26E+00		1.82E+00
		256.20		6.30	2.47E+00		3.23E+00
+	AC-228	338.32		11.40	2.80E-01	8.71E-01	1.76E+00
		911.07		27.70	5.16E-01		8.71E-01
		969.11		16.60	-1.64E-02		1.35E+00
+	TH-230	48.44		16.90	-5.45E-01	1.22E+00	1.22E+00
		62.85		4.60	2.62E+01		4.51E+00
		67.67		0.37	1.86E+01		4.95E+01
+	PA-231	283.67		1.60	-2.76E+00	8.66E+00	1.23E+01
		302.67		2.30	4.12E+00		8.66E+00
+	TH-231	25.64	*	14.70	4.54E+00	5.97E+00	8.07E+00
		84.21	*	6.40	6.49E+00		5.97E+00
+	PA-233	311.98		38.60	-8.29E-01	6.60E+00	6.60E+00
+	PA-234	131.20		20.40	-3.61E-01	7.58E-01	7.58E-01
		733.99		8.80	1.08E+00		2.24E+00

Analysis Report for 1707093-06

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PA-234	946.00		12.00	1.43E+00	7.58E-01	1.88E+00
+	PA-234M	1001.03	*	0.92	4.59E+01	2.68E+01	2.68E+01
+	TH-234	63.29	*	3.80	3.08E+01	5.87E+00	5.87E+00
+	U-235	143.76	*	10.50	2.81E+00	1.90E+00	1.90E+00
		163.35	*	4.70	3.01E+00		3.71E+00
		205.31	*	4.70	3.99E+00		4.37E+00
+	NP-237	86.50		12.60	5.26E+00	1.53E+00	1.53E+00
+	NP-239	106.10		22.70	7.88E+09	4.91E+12	4.91E+12
		228.18		10.70	9.29E+12		1.45E+13
		277.60		14.10	1.85E+11		1.10E+13
+	AM-241	59.54		35.90	-2.00E-02	5.12E-01	5.12E-01
+	AM-243	74.67		66.00	2.88E+00	3.87E-01	3.87E-01
+	CM-243	209.75		3.29	-3.40E+00	1.43E+00	6.03E+00
		228.14		10.60	1.21E+00		1.89E+00
		277.60		14.00	2.40E-02		1.43E+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	7.03E+00	7.03E+00	2.53E-01	3.46E+00
	NA-22	1274.54	99.94	2.37E-01	2.37E-01	1.02E-01	1.15E-01
@	NA-24	1368.53	99.99	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		2754.09	99.86	1.00E+26		0.00E+00	1.00E+20
	AL-26	1808.65	99.76	1.59E-01	1.59E-01	3.74E-02	7.49E-02
	K-40	1460.81	10.67	2.66E+00	2.66E+00	2.73E+00	1.29E+00
@	AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20

Analysis Report for 1707093-06

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TI-44	67.88		94.40	1.94E-01	1.94E-01	7.30E-02	9.66E-02
		78.34		96.00	2.55E-01		2.61E+00	1.27E-01
	SC-46	889.25		99.98	5.24E-01	5.24E-01	-8.05E-03	2.56E-01
		1120.51		99.99	1.44E+00		1.62E+01	7.12E-01
	V-48	983.52		99.98	1.73E+01	1.66E+01	-3.40E+00	8.45E+00
		1312.10		97.50	1.66E+01		-4.32E+00	8.04E+00
	CR-51	320.08		9.83	2.46E+01	2.46E+01	-1.42E+01	1.22E+01
	MN-54	834.83		99.97	2.78E-01	2.78E-01	6.07E-02	1.36E-01
	CO-56	846.75		99.96	5.33E-01	5.33E-01	1.88E-01	2.61E-01
		1037.75		14.03	3.86E+00		2.21E+00	1.88E+00
		1238.25		67.00	1.60E+00		1.05E+01	7.87E-01
		1771.40		15.51	3.02E+00		4.46E-01	1.44E+00
		2598.48		16.90	6.23E-01		-4.44E-01	2.33E-01
	CO-57	122.06		85.51	2.28E-01	2.28E-01	6.22E-02	1.14E-01
		136.48		10.60	1.94E+00		-2.96E-01	9.61E-01
	CO-58	810.76		99.40	5.58E-01	5.58E-01	-2.26E-01	2.73E-01
	FE-59	1099.22		56.50	1.84E+00	1.84E+00	-5.09E-01	8.94E-01
		1291.56		43.20	2.39E+00		1.36E+00	1.16E+00
	CO-60	1173.22		100.00	2.27E-01	2.14E-01	4.47E-02	1.10E-01
		1332.49		100.00	2.14E-01		-1.41E-01	1.03E-01
	ZN-65	1115.52		50.75	6.36E-01	6.36E-01	1.12E-01	3.10E-01
	GA-67	93.31		35.70	1.12E+09	1.12E+09	1.08E+10	5.58E+08
		208.95		2.24	1.81E+10		-5.42E+09	9.00E+09
		300.22		16.00	3.11E+09		8.45E+08	1.54E+09
	SE-75	121.11		16.70	1.62E+00	4.78E-01	3.57E-01	8.05E-01
		136.00		59.20	4.78E-01		-1.73E-01	2.37E-01
		264.65		59.80	5.83E-01		1.30E-02	2.89E-01
		279.53		25.20	1.40E+00		-1.07E+00	6.91E-01
		400.65		11.40	3.29E+00		-1.07E-01	1.63E+00
	RB-82	776.52		13.00	2.37E+01	2.37E+01	1.69E+00	1.16E+01
	RB-83	520.41		46.00	8.93E-01	8.93E-01	-2.95E-01	4.39E-01
		529.64		30.30	1.39E+00		-7.70E-01	6.84E-01
		552.65		16.40	2.58E+00		-8.45E-01	1.27E+00
	KR-85	513.99		0.43	4.70E+01	4.70E+01	4.46E+01	2.31E+01
	SR-85	513.99		99.27	5.93E-01	5.93E-01	5.63E-01	2.92E-01
	Y-88	898.02		93.40	4.74E-01	3.69E-01	-6.18E-02	2.32E-01
		1836.01		99.38	3.69E-01		1.10E-01	1.76E-01
	MO-93	263.06		56.72	3.54E-01	1.89E-01	7.73E-03	1.75E-01
		684.67		99.68	1.89E-01		-1.15E-02	9.27E-02
		1477.11		99.08	2.77E-01		-1.81E-02	1.35E-01
+	NB-93M	16.57	*	9.43	2.71E+02	2.71E+02	2.03E+02	1.35E+02
	NB-94	702.63		100.00	2.08E-01	2.08E-01	1.85E-01	1.02E-01
		871.10		100.00	2.23E-01		1.96E-02	1.09E-01
	NB-95	765.79		99.81	2.48E+00	2.48E+00	1.28E+01	1.22E+00
	NB-95M	235.69		25.00	2.15E+08	2.15E+08	-6.21E+08	1.07E+08
	ZR-95	724.18		43.70	1.32E+00	1.03E+00	3.55E-01	6.45E-01
		756.72		55.30	1.03E+00		-2.32E-01	5.03E-01
	MO-99	181.06		6.20	3.00E+11	1.72E+11	8.60E+10	1.49E+11
		739.58		12.80	1.72E+11		1.09E+10	8.44E+10
		778.00		4.50	4.80E+11		-8.77E+10	2.35E+11
	RU-103	497.08		89.00	1.21E+00	1.21E+00	-5.43E-01	5.96E-01
	RU-106	621.84		9.80	2.16E+00	2.16E+00	3.30E-02	1.06E+00
	AG-108M	433.93		89.90	2.17E-01	2.17E-01	-5.62E-02	1.07E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	AG-108M	614.37		90.40	3.79E-01	2.17E-01	6.13E-02	1.88E-01
		722.95		90.50	2.19E-01		3.59E-02	1.07E-01
+	CD-109	88.03	*	3.72	1.25E+01	1.25E+01	4.83E+01	6.24E+00
	AG-110M	657.75		93.14	2.55E-01	2.55E-01	-9.03E-06	1.25E-01
		677.61		10.53	2.36E+00		3.55E-01	1.16E+00
		706.67		16.46	1.60E+00		3.35E-02	7.84E-01
		763.93		21.98	1.41E+00		-1.32E+01	6.90E-01
		884.67		71.63	4.28E-01		8.28E-02	2.09E-01
		1384.27		23.94	1.46E+00		-2.33E+00	7.12E-01
	CD-113M	263.70		0.02	8.52E+02	8.52E+02	1.90E+01	4.23E+02
	SN-113	255.12		1.93	1.89E+01	5.89E-01	-1.40E+00	9.39E+00
		391.69		64.90	5.89E-01		4.08E-02	2.91E-01
	TE123M	159.00		84.10	3.63E-01	3.63E-01	2.12E-01	1.80E-01
	SB-124	602.71		97.87	6.46E-01	6.46E-01	-1.12E-01	3.18E-01
		645.85		7.26	7.79E+00		7.45E-01	3.82E+00
		722.78		11.10	5.69E+00		9.33E-01	2.79E+00
		1691.02		49.00	1.35E+00		-2.20E-02	6.48E-01
	I-125	35.49		6.49	1.58E+01	1.58E+01	-9.73E-01	7.85E+00
	SB-125	176.33		6.89	2.63E+00	7.67E-01	-9.84E-02	1.31E+00
		427.89		29.33	7.67E-01		5.53E-01	3.79E-01
		463.38		10.35	2.02E+00		4.13E-01	9.95E-01
		600.56		17.80	1.18E+00		-4.94E-02	5.78E-01
		635.90		11.32	1.69E+00		-6.88E-01	8.27E-01
	SB-126	414.70		83.30	7.16E+01	5.38E+01	2.72E+01	3.54E+01
		666.33		99.60	6.38E+01		1.46E+02	3.14E+01
		695.00		99.60	5.38E+01		-1.82E+01	2.63E+01
		720.50		53.80	1.05E+02		6.69E+01	5.16E+01
+	SN-126	87.57	*	37.00	1.08E+00	1.08E+00	4.18E+00	5.40E-01
	SB-127	473.00		25.00	6.04E+07	4.00E+07	2.88E+07	2.98E+07
		685.20		35.70	4.00E+07		-2.43E+06	1.96E+07
		783.80		14.70	1.27E+08		2.60E+08	6.23E+07
	I-129	29.78		57.00	9.90E-01	9.90E-01	-1.07E-01	4.91E-01
		33.60		13.20	2.83E+00		-1.96E+00	1.40E+00
		39.58		7.52	3.33E+00		-1.50E+00	1.65E+00
	I-131	284.30		6.05	1.96E+04	1.37E+03	1.14E+04	9.71E+03
		364.48		81.20	1.37E+03		1.73E+02	6.77E+02
		636.97		7.26	1.46E+04		-7.02E+03	7.16E+03
		722.89		1.80	6.57E+04		1.08E+04	3.22E+04
	TE-132	49.72		13.10	3.03E+09	4.71E+08	-1.68E+10	1.50E+09
		228.16		88.00	4.71E+08		3.01E+08	2.34E+08
	BA-133	81.00		33.00	5.64E-01	5.64E-01	-9.56E+00	2.80E-01
		302.84		17.80	1.14E+00		5.42E-01	5.65E-01
		356.01		60.00	6.82E-01		1.17E-01	3.39E-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	2.97E+05	2.97E+05	-5.03E+06	1.48E+05
	CS-134	563.23		8.38	2.55E+00	2.64E-01	-6.26E-01	1.25E+00
		569.32		15.43	1.43E+00		-5.07E-02	7.01E-01
		604.70		97.60	3.58E-01		-1.67E+01	1.77E-01
		795.84		85.40	2.64E-01		-3.54E-02	1.29E-01
		801.93		8.73	2.76E+00		-8.98E+00	1.35E+00
	CS-135	268.24		16.00	1.30E+00	1.30E+00	7.13E-01	6.45E-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

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@ I-135	1678.03	9.54	1.00E+26	1.00E+26	1.00E+26	1.00E+20
CS-136	153.22	7.46	4.67E+02	4.42E+01	-1.17E+02	2.32E+02
	163.89	4.61	7.42E+02		4.86E+02	3.69E+02
	176.55	13.56	2.53E+02		-9.47E+00	1.26E+02
	273.65	12.66	3.38E+02		2.97E+01	1.68E+02
	340.57	48.50	8.37E+01		3.73E+00	4.14E+01
	818.50	99.70	4.42E+01		-6.94E+00	2.16E+01
	1048.07	79.60	5.44E+01		5.45E+00	2.65E+01
	1235.34	19.70	3.81E+02		6.07E+02	1.87E+02
CS-137	661.65	85.12	2.41E-01	2.41E-01	-2.54E-01	1.18E-01
LA-138	788.74	34.00	7.05E-01	3.24E-01	-1.23E-02	3.46E-01
	1435.80	66.00	3.24E-01		-1.62E-01	1.57E-01
CE-139	165.85	80.35	3.48E-01	3.48E-01	8.57E-02	1.73E-01
BA-140	162.64	6.70	5.96E+02	1.82E+02	-3.49E+02	2.96E+02
	304.84	4.50	1.02E+03		-5.79E+02	5.03E+02
	423.70	3.20	1.58E+03		2.65E+01	7.83E+02
	437.55	2.00	2.29E+03		1.11E+03	1.13E+03
	537.32	25.00	1.82E+02		1.27E+01	8.97E+01
LA-140	328.77	20.50	2.28E+02	6.54E+01	-2.01E+02	1.13E+02
	487.03	45.50	1.04E+02		8.04E+01	5.11E+01
	815.85	23.50	2.12E+02		-1.95E+01	1.04E+02
	1596.49	95.49	6.54E+01		7.07E+01	3.17E+01
CE-141	145.44	48.40	3.02E+00	3.02E+00	3.36E+00	1.50E+00
@ 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	1.86E+00	1.86E+00	7.45E-01	9.22E-01
PM-144	476.78	42.00	5.61E-01	2.19E-01	2.23E-02	2.77E-01
	618.01	98.60	2.19E-01		2.16E-02	1.07E-01
	696.49	99.49	2.38E-01		-1.07E-02	1.16E-01
PM-145	36.85	21.70	1.36E+00	7.19E-01	-2.22E-01	6.73E-01
	37.36	39.70	7.19E-01		1.41E-02	3.57E-01
	42.30	15.10	1.50E+00		4.73E-02	7.44E-01
	72.40	2.31	9.25E+00		-9.00E+01	4.60E+00
PM-146	453.90	39.94	5.16E-01	5.16E-01	4.00E-01	2.55E-01
	735.90	14.01	1.43E+00		9.46E-02	6.99E-01
	747.13	13.10	1.53E+00		-1.62E-01	7.47E-01
ND-147	91.11	28.90	3.99E+02	3.99E+02	-8.08E+00	1.99E+02
	531.02	13.10	8.38E+02		-3.17E+02	4.12E+02
PM-149	285.90	3.10	3.43E+14	3.43E+14	1.30E+14	1.70E+14
EU-152	121.78	20.50	7.46E-01	7.46E-01	2.03E-01	3.71E-01
	244.69	5.40	5.25E+00		5.19E+01	2.61E+00
	344.27	19.13	1.06E+00		-9.32E-02	5.25E-01
	778.89	9.20	2.17E+00		-5.45E-01	1.06E+00
	964.01	10.40	2.37E+00		1.61E+00	1.16E+00
	1085.78	7.22	2.98E+00		-7.01E-01	1.45E+00
	1112.02	9.60	2.32E+00		4.18E-02	1.13E+00
	1407.95	14.94	2.28E+00		6.74E+00	1.11E+00
GD-153	97.43	31.30	6.27E-01	6.27E-01	4.07E-01	3.11E-01
	103.18	22.20	8.50E-01		-7.51E-01	4.22E-01
EU-154	123.07	40.50	3.83E-01	3.83E-01	1.78E-01	1.90E-01
	723.30	19.70	1.03E+00		1.68E-01	5.03E-01
	873.19	11.50	1.98E+00		-6.10E-01	9.70E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-154	996.32		10.30	2.11E+00	3.83E-01	-8.10E-01	1.03E+00
		1004.76		17.90	1.34E+00		-3.03E-01	6.56E-01
		1274.45		35.50	6.33E-01		2.74E-01	3.07E-01
	EU-155	86.50		30.90	6.48E-01	6.48E-01	2.23E+00	3.23E-01
		105.30		20.70	7.17E-01		1.15E-03	3.56E-01
	EU-156	811.77		10.40	1.98E+02	1.98E+02	1.78E+01	9.68E+01
		1153.47		7.20	4.04E+02		8.23E+02	1.98E+02
		1230.71		8.90	2.37E+02		9.09E+01	1.15E+02
	HO-166M	184.41		72.60	3.34E-01	3.34E-01	3.58E+00	1.66E-01
		280.45		29.60	6.63E-01		-1.31E-01	3.29E-01
		410.94		11.10	1.88E+00		2.88E-01	9.31E-01
		711.69		54.10	3.61E-01		9.45E-02	1.77E-01
	TM-171	66.72		0.14	1.47E+02	1.47E+02	9.88E+01	7.30E+01
	HF-172	67.35		5.31	3.83E+00	1.49E+00	1.44E+00	1.90E+00
		125.81		11.30	1.49E+00		-1.14E-01	7.39E-01
	LU-172	181.53		20.60	2.84E+04	1.23E+04	8.72E+03	1.41E+04
		900.72		29.81	2.65E+04		-6.29E+03	1.30E+04
		1093.66		62.50	1.23E+04		9.02E+03	5.97E+03
	LU-173	100.72		5.24	3.14E+00	1.18E+00	2.69E-01	1.56E+00
		272.11		21.20	1.18E+00		2.77E-01	5.84E-01
	HF-175	343.40		84.00	6.45E-01	6.45E-01	-5.67E-02	3.19E-01
	LU-176	88.34		13.30	1.45E+00	2.01E-01	-6.23E+00	7.21E-01
		201.83		86.00	2.01E-01		-1.90E-02	9.99E-02
		306.78		94.00	2.03E-01		1.98E-02	1.01E-01
	HF-181	133.02		41.70	1.96E+00	1.25E+00	6.40E-01	9.71E-01
		345.85		17.20	6.10E+00		3.87E-01	3.02E+00
		482.03		82.80	1.25E+00		-3.53E-01	6.15E-01
	TA-182	67.75		41.20	8.18E-01	8.18E-01	3.08E-01	4.07E-01
		1121.30		34.90	3.29E+00		3.75E+01	1.63E+00
		1189.05		16.23	2.34E+00		-1.74E+00	1.13E+00
		1221.41		26.98	1.40E+00		2.53E-01	6.78E-01
		1231.02		11.44	3.41E+00		1.31E+00	1.65E+00
	IR-192	308.46		29.68	1.63E+00	1.05E+00	-6.63E-01	8.08E-01
		468.07		48.10	1.05E+00		2.39E-01	5.16E-01
	HG-203	279.19		77.30	1.15E+00	1.15E+00	-8.64E-01	5.68E-01
	TL-204	374.74		94.11	2.13E-01	2.13E-01	3.89E-03	1.05E-01
		899.15		99.16	2.44E-01		-4.47E-02	1.20E-01
		911.74		91.10	2.75E-01		1.60E-01	1.35E-01
	BI-207	569.67		97.72	2.08E-01	2.08E-01	9.04E-02	1.03E-01
		1063.62		74.90	2.82E-01		-3.30E-02	1.37E-01
	TL-208	583.14		30.22	6.88E-01	2.87E-01	9.07E-01	3.38E-01
		860.37		4.48	4.98E+00		3.13E+00	2.44E+00
		2614.66		35.85	2.87E-01		2.37E-01	1.28E-01
	BI-210M	262.00		45.00	4.48E-01	4.48E-01	9.54E-03	2.22E-01
		300.00		23.00	1.06E+00		2.87E-01	5.25E-01
+	PB-210	46.50	*	4.25	5.01E+00	5.01E+00	1.95E+01	2.49E+00
	PB-211	404.84		2.90	7.48E+00	7.48E+00	7.58E-01	3.70E+00
		831.96		2.90	7.68E+00		2.19E+00	3.76E+00
	BI-212	727.17		11.80	1.63E+00	1.63E+00	6.61E-01	7.99E-01
		1620.62		2.75	7.84E+00		2.56E+00	3.78E+00
	PB-212	238.63		44.60	5.90E-01	5.90E-01	-3.40E-02	2.93E-01
		300.09		3.41	7.14E+00		1.94E+00	3.54E+00
+	BI-214	609.31	*	46.30	7.55E-01	7.55E-01	4.46E+01	3.74E-01

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BI-214	1120.29	*	15.10	2.52E+00	7.55E-01	4.80E+01	1.24E+00
		1764.49	*	15.80	1.76E+00		4.85E+01	8.55E-01
		2204.22	*	4.98	2.54E+00		4.77E+01	1.17E+00
+	PB-214	295.21	*	19.19	1.37E+00	8.97E-01	4.83E+01	6.78E-01
		351.92	*	37.19	8.97E-01		4.94E+01	4.46E-01
	RN-219	401.80		6.50	3.25E+00	3.25E+00	2.54E-01	1.61E+00
	RA-223	323.87		3.88	5.16E+00	5.16E+00	4.21E+00	2.56E+00
	RA-224	240.98		3.95	7.42E+00	7.42E+00	8.67E+01	3.69E+00
	RA-225	40.00		31.00	8.87E+01	8.87E+01	-4.00E+01	4.40E+01
+	RA-226	186.21	*	3.28	9.75E+00	9.75E+00	9.86E+01	4.85E+00
	TH-227	50.10		8.40	2.25E+00	1.82E+00	-1.25E+01	1.12E+00
		236.00		11.50	1.82E+00		-5.26E+00	9.05E-01
		256.20		6.30	3.23E+00		2.47E+00	1.60E+00
	AC-228	338.32		11.40	1.76E+00	8.71E-01	2.80E-01	8.69E-01
		911.07		27.70	8.71E-01		5.16E-01	4.27E-01
		969.11		16.60	1.35E+00		-1.64E-02	6.58E-01
	TH-230	48.44		16.90	1.22E+00	1.22E+00	-5.45E-01	6.07E-01
		62.85		4.60	4.51E+00		2.62E+01	2.25E+00
		67.67		0.37	4.95E+01		1.86E+01	2.46E+01
	PA-231	283.67		1.60	1.23E+01	8.66E+00	-2.76E+00	6.10E+00
		302.67		2.30	8.66E+00		4.12E+00	4.29E+00
+	TH-231	25.64	*	14.70	8.07E+00	5.97E+00	4.54E+00	4.01E+00
		84.21	*	6.40	5.97E+00		6.49E+00	2.98E+00
	PA-233	311.98		38.60	6.60E+00	6.60E+00	-8.29E-01	3.27E+00
	PA-234	131.20		20.40	7.58E-01	7.58E-01	-3.61E-01	3.77E-01
		733.99		8.80	2.24E+00		1.08E+00	1.10E+00
		946.00		12.00	1.88E+00		1.43E+00	9.17E-01
+	PA-234M	1001.03	*	0.92	2.68E+01	2.68E+01	4.59E+01	1.31E+01
+	TH-234	63.29	*	3.80	5.87E+00	5.87E+00	3.08E+01	2.92E+00
+	U-235	143.76	*	10.50	1.90E+00	1.90E+00	2.81E+00	9.45E-01
		163.35	*	4.70	3.71E+00		3.01E+00	1.85E+00
		205.31	*	4.70	4.37E+00		3.99E+00	2.17E+00
	NP-237	86.50		12.60	1.53E+00	1.53E+00	5.26E+00	7.61E-01
	NP-239	106.10		22.70	4.91E+12	4.91E+12	7.88E+09	2.44E+12
		228.18		10.70	1.45E+13		9.29E+12	7.21E+12
		277.60		14.10	1.10E+13		1.85E+11	5.47E+12
	AM-241	59.54		35.90	5.12E-01	5.12E-01	-2.00E-02	2.54E-01
	AM-243	74.67		66.00	3.87E-01	3.87E-01	2.88E+00	1.93E-01
	CM-243	209.75		3.29	6.03E+00	1.43E+00	-3.40E+00	2.99E+00
		228.14		10.60	1.89E+00		1.21E+00	9.39E-01
		277.60		14.00	1.43E+00		2.40E-02	7.11E-01

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

Analysis Report for 1707093-06

HTC-A09-S002-0006-01

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: HTC-A09-S002-0006-01

Elapsed Live time: 3600
Elapsed Real Time: 3634

Channel								
1:	0	0	0	0	0	0	0	0
9:	182	1359	1322	1297	1380	1325	1357	1431
17:	1307	1237	1237	1152	1126	1057	1097	1069
25:	1126	1192	1089	1082	1083	1030	1087	1057
33:	1064	1043	1053	1016	1098	1089	1064	1097
41:	1084	1214	1171	1216	1213	1833	2160	1651
49:	1345	1431	1428	1533	1770	1914	1612	1560
57:	1610	1796	1916	2079	2112	2319	3404	3816
65:	2591	2294	2340	2555	2526	2390	2471	2534
73:	2656	3678	5842	5650	7809	7362	3635	2563
81:	2586	2422	2375	2995	2723	2560	3473	3842
89:	2709	2736	2561	3414	4752	3458	2302	1854
97:	1684	1752	1788	1662	1569	1583	1598	1550
105:	1607	1627	1589	1616	1591	1614	1755	1765
113:	1691	1727	1615	1612	1619	1623	1624	1572
121:	1687	1633	1601	1575	1613	1525	1620	1617
129:	1599	1566	1588	1594	1583	1616	1645	1567
137:	1582	1540	1655	1627	1609	1602	1717	1966
145:	1850	1619	1562	1607	1621	1585	1619	1590
153:	1615	1736	1668	1596	1538	1573	1625	1487
161:	1465	1380	1472	1598	1445	1374	1349	1355
169:	1371	1412	1349	1386	1289	1341	1341	1337
177:	1295	1353	1286	1332	1332	1270	1247	1356
185:	2133	4172	3838	1803	1279	1229	1206	1213
193:	1165	1231	1234	1205	1186	1192	1181	1133
201:	1152	1122	1102	1152	1110	1103	1059	1026
209:	918	1023	975	981	932	1028	948	957
217:	922	892	945	934	879	905	847	907
225:	889	845	890	864	910	891	901	811
233:	850	814	915	1029	1017	940	918	934
241:	1585	3622	3115	1197	767	738	731	711
249:	731	742	676	706	694	682	745	788
257:	764	751	900	831	668	663	670	669
265:	619	650	636	696	758	896	895	827
273:	662	704	727	679	623	638	636	556
281:	596	598	608	603	589	583	609	643
289:	590	574	585	556	657	1756	5595	6326
297:	2322	674	535	636	581	544	523	528
305:	502	506	470	474	484	463	441	462
313:	488	508	488	476	448	457	464	449
321:	516	479	472	556	495	455	455	455
329:	462	477	480	464	490	463	466	455
337:	444	430	489	454	429	465	441	424
345:	443	443	422	429	489	880	4093	10534
353:	8012	1792	470	384	352	387	382	335
361:	329	368	347	353	341	330	345	310

369:	323	361	330	335	343	323	344	340

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Channel								
377:	353	349	339	334	347	331	367	339
385:	344	348	426	419	424	409	388	358
393:	350	361	341	374	304	355	353	317
401:	381	388	388	372	397	419	370	360
409:	333	339	339	374	357	332	321	354
417:	369	361	327	354	370	345	348	355
425:	349	343	312	376	322	278	301	275
433:	262	278	258	285	247	244	287	250
441:	293	258	219	264	276	258	261	245
449:	255	210	256	259	254	269	282	280
457:	240	254	239	249	242	301	256	215
465:	242	239	203	225	239	260	269	205
473:	258	218	228	218	231	204	228	274
481:	272	241	220	192	212	232	285	272
489:	233	195	195	195	195	212	176	217
497:	186	196	145	171	210	187	178	185
505:	190	192	186	182	206	233	289	257
513:	211	196	184	173	172	154	181	181
521:	175	145	196	167	175	193	182	165
529:	161	165	176	193	182	194	188	180
537:	190	170	156	185	182	163	178	196
545:	180	144	177	172	177	164	166	167
553:	172	154	159	163	138	199	155	174
561:	163	171	172	172	167	166	183	164
569:	186	171	172	190	190	175	167	167
577:	159	137	181	216	201	161	192	183
585:	164	151	138	148	135	154	136	174
593:	140	171	139	158	135	144	168	137
601:	143	158	151	158	161	174	313	1699
609:	5911	6423	2211	321	137	110	138	128
617:	127	112	115	121	93	106	120	118
625:	118	107	108	110	93	109	129	146
633:	121	107	93	118	115	106	132	112
641:	104	118	109	114	104	116	115	111
649:	90	110	97	105	117	122	103	137
657:	87	98	118	102	111	130	124	136
665:	245	290	164	116	106	100	124	112
673:	113	105	122	115	103	115	117	93
681:	118	113	105	123	112	97	92	107
689:	100	120	103	99	109	110	109	113
697:	119	112	115	126	113	128	174	145
705:	109	112	106	114	114	117	105	121
713:	116	112	91	99	107	107	138	145
721:	130	93	87	111	105	103	106	101
729:	103	96	105	123	119	109	107	92
737:	94	97	97	80	119	157	136	119
745:	103	82	99	100	113	78	108	103
753:	104	103	102	100	89	86	89	93
761:	97	93	101	113	114	176	289	620
769:	642	281	127	94	109	106	109	95
777:	95	99	93	98	92	99	92	103
785:	165	249	213	113	100	100	107	95
793:	92	114	76	110	108	96	104	108

801:	99	112	121	100	149	241	232	131

Sample Title: HTC-A09-S002-0006-01

Channel								
809:	97	90	100	80	101	88	128	97
817:	98	101	96	107	118	130	123	99
825:	95	118	111	104	120	92	113	111
833:	111	95	122	108	94	115	147	169
841:	110	94	104	87	115	97	122	98
849:	103	94	94	93	78	91	88	86
857:	112	102	85	104	99	110	109	92
865:	98	102	94	103	103	93	101	83
873:	121	103	114	87	102	114	95	116
881:	94	122	135	95	107	94	98	90
889:	109	92	115	109	102	101	99	93
897:	112	99	105	119	83	100	111	106
905:	114	109	100	126	104	102	126	114
913:	96	96	105	82	83	106	94	105
921:	68	99	90	92	81	92	100	99
929:	98	81	81	120	231	377	297	131
937:	104	82	85	68	76	82	100	81
945:	84	94	87	82	93	80	67	82
953:	81	83	78	61	76	74	80	93
961:	79	76	114	124	123	92	93	83
969:	95	80	76	68	77	75	63	78
977:	70	74	79	75	73	75	80	69
985:	79	91	72	79	86	62	80	83
993:	53	75	80	66	69	85	75	118
1001:	143	142	73	73	84	79	71	87
1009:	67	69	71	79	61	76	63	67
1017:	73	70	65	66	69	75	76	79
1025:	67	75	74	61	72	77	70	76
1033:	78	62	69	75	72	86	69	74
1041:	71	74	48	69	71	62	59	58
1049:	65	63	86	106	82	71	64	67
1057:	67	70	61	82	51	83	57	70
1065:	53	56	66	66	68	78	97	68
1073:	54	62	53	49	73	60	52	63
1081:	81	63	54	58	67	68	65	65
1089:	54	54	65	71	71	67	73	64
1097:	70	61	60	56	69	60	56	73
1105:	74	54	66	65	63	59	60	67
1113:	69	70	56	71	72	134	584	1269
1121:	1104	393	101	70	60	50	49	40
1129:	63	76	64	60	73	78	63	75
1137:	68	68	54	63	56	64	56	53
1145:	65	66	61	64	62	51	59	64
1153:	75	111	207	176	91	60	57	67
1161:	50	53	48	60	57	57	62	54
1169:	63	39	51	64	58	67	60	61
1177:	42	60	56	55	89	65	63	53
1185:	66	61	52	48	45	47	39	54
1193:	66	51	42	44	41	48	51	49
1201:	52	49	57	48	57	58	77	89
1209:	69	61	48	38	47	54	51	48
1217:	50	41	52	53	47	31	46	57
1225:	42	40	51	56	55	53	45	48

1233:	41	47	64	97	270	506	376	152

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Channel								
1241:	59	51	39	42	38	55	43	46
1249:	43	44	46	44	56	62	56	46
1257:	47	48	51	45	43	48	47	47
1265:	50	48	42	48	36	38	57	48
1273:	57	42	52	48	47	53	68	114
1281:	156	143	55	52	54	44	35	51
1289:	51	50	41	45	45	45	34	46
1297:	51	45	51	43	34	53	52	41
1305:	42	45	47	37	44	43	31	50
1313:	39	35	43	46	44	49	44	47
1321:	48	33	41	44	37	37	42	49
1329:	39	40	49	42	37	40	38	57
1337:	44	41	45	41	38	47	38	34
1345:	36	46	46	39	43	33	37	33
1353:	42	39	48	41	37	55	41	44
1361:	40	41	44	47	51	37	39	31
1369:	44	51	46	38	42	41	47	133
1377:	277	323	188	60	41	35	45	68
1385:	82	101	76	48	47	39	39	37
1393:	39	38	40	41	41	37	37	70
1401:	134	119	60	48	38	67	159	216
1409:	120	58	48	49	36	42	55	52
1417:	38	38	39	33	45	40	47	51
1425:	44	51	34	46	30	26	47	45
1433:	40	40	42	35	44	41	30	45
1441:	42	44	46	42	43	39	38	52
1449:	40	45	33	44	46	51	43	42
1457:	45	62	51	60	57	58	55	42
1465:	41	44	34	47	43	43	45	40
1473:	46	61	49	43	50	44	43	49
1481:	33	49	52	47	40	47	44	46
1489:	45	52	51	36	38	40	46	38
1497:	38	48	45	41	44	32	46	38
1505:	57	53	53	135	163	145	71	51
1513:	58	40	46	42	43	35	44	49
1521:	54	33	44	47	48	49	48	50
1529:	49	47	47	33	49	46	45	58
1537:	46	64	68	46	42	46	55	52
1545:	41	42	27	30	39	33	23	22
1553:	41	33	37	29	34	39	31	31
1561:	37	23	40	40	29	30	22	34
1569:	37	26	32	24	30	31	17	35
1577:	30	42	33	28	39	53	71	69
1585:	41	32	32	30	31	26	28	38
1593:	44	39	39	37	39	35	41	41
1601:	30	29	30	32	22	40	23	30
1609:	23	19	32	22	37	37	24	31
1617:	22	21	25	26	25	25	27	25
1625:	14	21	18	33	22	23	30	16
1633:	25	24	19	21	27	26	32	23
1641:	15	20	30	26	25	20	22	22
1649:	16	19	19	15	23	20	18	13
1657:	22	28	27	51	69	63	32	16

1665:	17	28	22	27	13	18	15	9

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Channel								
1673:	21	21	17	18	13	21	14	18
1681:	24	18	23	19	23	16	19	15
1689:	9	25	18	35	36	20	18	14
1697:	16	12	13	17	19	12	13	10
1705:	9	16	16	10	14	15	15	13
1713:	11	16	14	21	12	13	16	18
1721:	15	11	13	17	11	14	22	94
1729:	179	180	69	38	15	16	12	11
1737:	7	13	15	13	12	12	16	14
1745:	13	22	8	14	14	10	26	11
1753:	10	14	13	11	9	15	17	15
1761:	23	112	428	781	756	301	66	16
1769:	14	10	7	11	12	9	11	9
1777:	8	7	3	10	9	12	11	10
1785:	15	10	6	7	11	10	8	11
1793:	7	10	9	8	7	16	13	8
1801:	13	11	7	15	6	11	19	4
1809:	7	11	11	16	9	12	16	13
1817:	14	19	8	11	10	10	13	12
1825:	10	5	11	10	8	18	12	11
1833:	15	4	10	14	18	34	25	13
1841:	15	11	6	11	29	76	105	110
1849:	68	10	9	10	5	6	12	12
1857:	9	9	11	9	10	6	10	12
1865:	15	8	7	17	19	14	11	21
1873:	19	16	24	14	12	7	7	11
1881:	5	9	7	19	4	11	5	19
1889:	15	21	25	10	8	14	9	16
1897:	15	8	8	6	12	7	10	14
1905:	9	8	7	15	12	11	13	12
1913:	15	9	9	11	12	13	10	7
1921:	12	10	8	15	5	9	11	15
1929:	8	6	14	11	14	16	19	10
1937:	21	16	15	10	5	10	8	7
1945:	12	5	9	8	13	6	10	9
1953:	10	10	6	13	9	11	14	11
1961:	14	12	9	7	9	7	6	10
1969:	6	14	9	8	12	9	14	12
1977:	9	7	8	8	8	6	6	12
1985:	6	6	5	10	10	5	7	8
1993:	8	5	7	6	6	10	10	6
2001:	6	6	11	5	4	6	5	6
2009:	11	9	7	8	3	11	12	8
2017:	8	8	5	10	8	8	6	5
2025:	7	11	11	9	6	7	6	11
2033:	5	4	10	4	7	6	6	3
2041:	7	7	8	6	4	5	5	6
2049:	6	5	5	10	9	1	9	6
2057:	3	3	4	6	6	6	8	6
2065:	6	5	4	6	7	5	8	8
2073:	5	4	11	4	5	6	4	4
2081:	2	3	4	4	2	5	5	6
2089:	2	7	3	0	6	4	5	4

2097:	9	3	9	3	3	3	4	3

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Channel								
2105:	4	5	5	7	8	7	3	6
2113:	3	4	7	13	41	51	52	25
2121:	4	2	4	3	4	4	5	6
2129:	5	4	8	3	6	2	2	1
2137:	0	2	3	4	5	4	6	2
2145:	5	4	3	7	3	7	2	1
2153:	3	8	3	3	3	1	4	3
2161:	2	2	6	3	1	3	2	2
2169:	9	7	3	0	5	3	3	2
2177:	1	6	3	7	4	1	6	6
2185:	4	2	4	4	1	5	2	4
2193:	9	1	1	6	5	1	0	7
2201:	12	83	160	181	144	58	11	3
2209:	3	1	3	3	1	3	0	2
2217:	1	2	3	3	2	2	3	0
2225:	1	1	1	5	0	2	1	1
2233:	3	3	3	1	4	3	4	1
2241:	1	3	4	2	1	0	5	3
2249:	2	2	0	0	2	1	0	2
2257:	2	1	3	4	4	1	3	1
2265:	0	2	3	1	2	3	3	3
2273:	1	3	2	2	2	1	2	0
2281:	1	1	2	2	0	2	0	0
2289:	2	4	2	8	16	15	2	4
2297:	1	0	3	0	2	0	3	0
2305:	2	0	0	0	2	3	2	2
2313:	0	0	5	1	1	2	0	3
2321:	0	0	0	2	1	1	1	1
2329:	1	2	1	3	2	1	2	1
2337:	2	4	1	0	1	1	2	3
2345:	1	1	1	2	2	2	0	0
2353:	1	0	3	0	1	2	1	0
2361:	2	1	1	0	1	0	1	0
2369:	0	2	2	1	1	1	0	2
2377:	1	0	1	2	1	0	2	0
2385:	2	0	0	1	1	1	1	1
2393:	1	0	0	1	1	1	0	2
2401:	1	1	1	1	0	0	0	0
2409:	0	0	1	3	2	2	2	0
2417:	0	0	0	1	1	1	1	0
2425:	1	0	0	2	1	3	1	0
2433:	1	0	0	1	2	1	1	0
2441:	0	1	0	7	3	39	64	61
2449:	34	5	3	2	1	1	1	0
2457:	0	0	0	1	1	0	0	0
2465:	1	1	0	0	0	3	0	1
2473:	1	0	2	0	0	1	0	2
2481:	1	1	2	2	0	1	0	1
2489:	0	1	0	2	2	1	0	1
2497:	0	0	0	0	1	0	0	0
2505:	0	0	0	4	2	0	1	2
2513:	0	1	1	0	0	0	2	1
2521:	0	0	1	0	0	1	0	0

2529:	2	0	0	0	0	0	0	1

Sample Title: HTC-A09-S002-0006-01

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

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S002-0006-01

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

3393:	0	0	0	0	0	0	1	0

Sample Title: HTC-A09-S002-0006-01

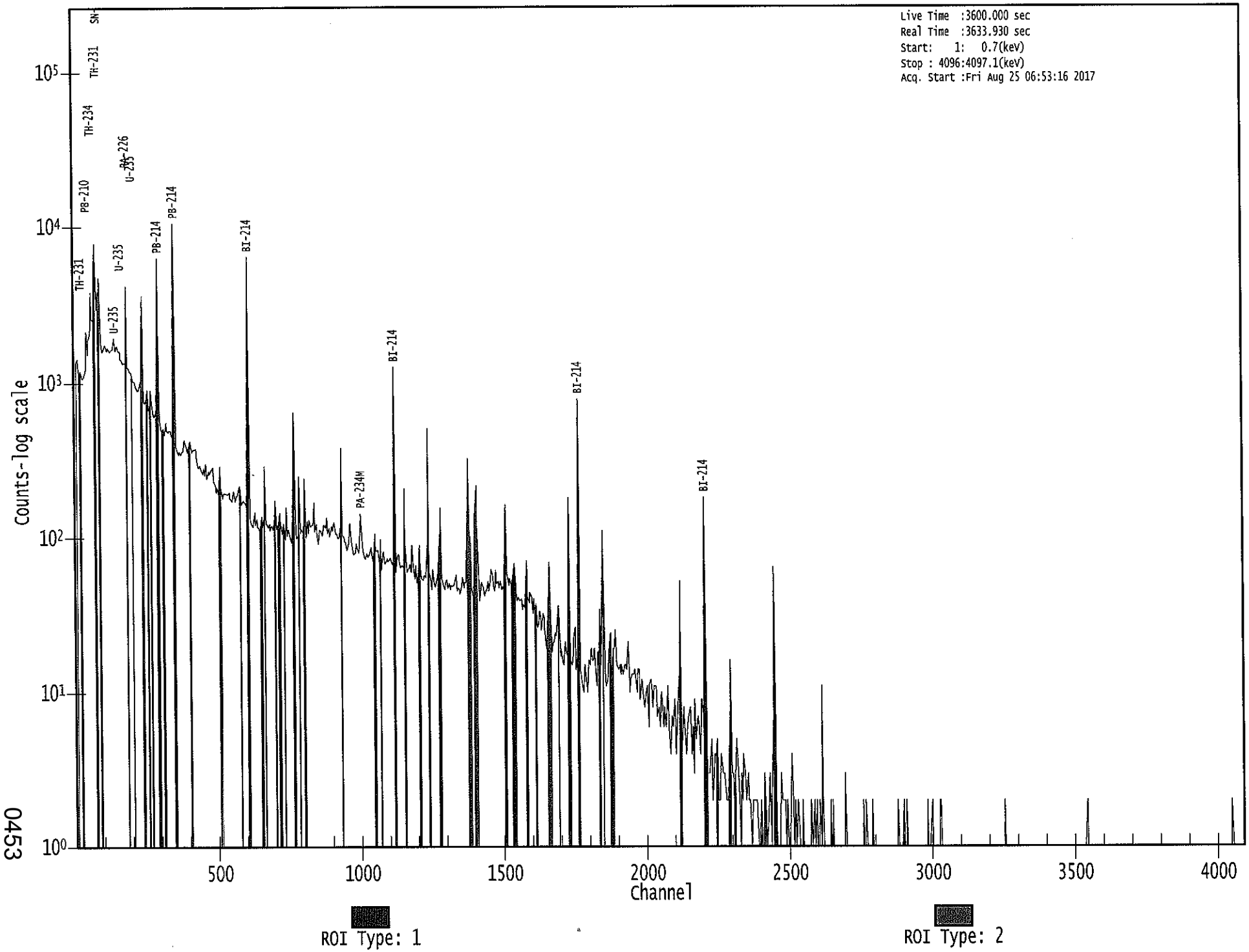
Channel								
3401:	0	0	0	0	0	0	0	1
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	1
3425:	0	0	1	0	0	1	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	1	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	1	0	0
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S002-0006-01

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

0000055961.CNF



0453

Apex-Gamma

c
8/25

Analysis Report for 1707093-07
HTC-A09-S002-0612-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-07
Sample Description	: HTC-A09-S002-0612-01
Sample Type	: SOIL
Sample Size	: 7.425E+02 grams
Facility	: Countroom
Sample Taken On	: 5/16/2017 10:50:13AM
Acquisition Started	: 8/25/2017 6:53:23AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3610.9 seconds
Dead Time	: 0.30 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 15 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 1/14/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55962

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 7:54:15AM
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	46.43	45.47	0.0000	0.00
2	53.24	52.29	0.0000	0.00
3	63.18	62.23	0.0000	0.00
4	76.23	75.28	0.0000	0.00
5	83.84	82.90	0.0000	0.00
6	87.47	86.53	0.0000	0.00
7	92.59	91.65	0.0000	0.00
8	143.86	142.94	0.0000	0.00
9	153.78	152.86	0.0000	0.00
10	163.76	162.85	0.0000	0.00
11	182.12	181.21	0.0000	0.00
12	186.07	185.16	0.0000	0.00
13	211.03	210.13	0.0000	0.00
14	242.08	241.19	0.0000	0.00
15	257.45	256.57	0.0000	0.00
16	295.26	294.39	0.0000	0.00
17	338.34	337.48	0.0000	0.00
18	351.94	351.09	0.0000	0.00
19	386.11	385.27	0.0000	0.00
20	389.26	388.42	0.0000	0.00
21	510.34	509.54	0.0000	0.00
22	542.62	541.84	0.0000	0.00
23	582.73	581.96	0.0000	0.00
24	609.32	608.56	0.0000	0.00
25	665.13	664.39	0.0000	0.00
26	702.71	701.98	0.0000	0.00
27	719.92	719.20	0.0000	0.00
28	753.26	752.56	0.0000	0.00
29	768.41	767.72	0.0000	0.00
30	786.03	785.34	0.0000	0.00
31	805.68	805.00	0.0000	0.00
32	832.19	831.52	0.0000	0.00
33	840.32	839.65	0.0000	0.00
34	933.49	932.86	0.0000	0.00
35	968.47	967.86	0.0000	0.00
36	1000.91	1000.31	0.0000	0.00
37	1102.69	1102.14	0.0000	0.00
38	1120.20	1119.66	0.0000	0.00
39	1155.52	1155.00	0.0000	0.00
40	1227.48	1226.99	0.0000	0.00
41	1238.08	1237.59	0.0000	0.00
42	1281.82	1281.35	0.0000	0.00

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1303.63	1303.17	0.0000	0.00
44	1377.51	1377.10	0.0000	0.00
45	1384.72	1384.31	0.0000	0.00
46	1401.40	1400.99	0.0000	0.00
47	1407.76	1407.36	0.0000	0.00
48	1461.02	1460.65	0.0000	0.00
49	1509.95	1509.59	0.0000	0.00
50	1538.07	1537.74	0.0000	0.00
51	1543.09	1542.75	0.0000	0.00
52	1583.12	1582.81	0.0000	0.00
53	1599.98	1599.67	0.0000	0.00
54	1625.18	1624.89	0.0000	0.00
55	1661.11	1660.84	0.0000	0.00
56	1681.54	1681.28	0.0000	0.00
57	1729.37	1729.14	0.0000	0.00
58	1764.37	1764.15	0.0000	0.00
59	1847.47	1847.30	0.0000	0.00
60	1858.41	1858.25	0.0000	0.00
61	1996.09	1996.01	0.0000	0.00
62	2118.47	2118.46	0.0000	0.00
63	2203.96	2204.01	0.0000	0.00
64	2292.71	2292.81	0.0000	0.00
65	2447.45	2447.65	0.0000	0.00
66	2614.68	2615.00	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 7:54:15AM

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	46.43	43 -	48	45.47	8.86E+02	203.85	7.67E+03	2.16
	2	53.24	50 -	55	52.29	2.09E+02	214.76	9.09E+03	1.67
	3	63.18	59 -	65	62.23	1.74E+03	292.03	1.43E+04	2.26
	4	76.23	69 -	80	75.28	9.60E+03	501.43	2.66E+04	3.89
M	5	83.84	81 -	96	82.90	3.85E+02	180.58	8.24E+03	1.34
m	6	87.47	81 -	96	86.53	2.23E+03	345.18	1.71E+04	2.92
m	7	92.59	81 -	96	91.65	3.27E+03	313.66	1.30E+04	2.72
	8	143.86	140 -	146	142.94	1.99E+02	233.26	9.75E+03	1.75
	9	153.78	150 -	156	152.86	2.31E+02	228.80	9.31E+03	3.21
	10	163.76	161 -	166	162.85	1.74E+02	188.05	6.87E+03	2.90
M	11	182.12	180 -	189	181.21	1.27E+02	80.96	2.14E+03	1.87
m	12	186.07	180 -	189	185.16	3.03E+03	227.92	7.13E+03	2.29
	13	211.03	208 -	213	210.13	1.54E+02	156.57	4.76E+03	1.09
m	14	242.08	237 -	247	241.19	2.51E+03	178.97	4.37E+03	2.06
	15	257.45	252 -	260	256.57	2.66E+02	184.34	5.06E+03	4.96
	16	295.26	290 -	298	294.39	5.30E+03	216.12	3.92E+03	2.32
	17	338.34	335 -	340	337.48	1.59E+02	103.19	2.00E+03	3.28
	18	351.94	345 -	356	351.09	8.72E+03	256.90	3.88E+03	2.27
M	19	386.11	383 -	391	385.27	7.76E+01	81.03	1.42E+03	2.18
m	20	389.26	383 -	391	388.42	1.10E+02	82.64	1.41E+03	1.79
	21	510.34	505 -	514	509.54	1.37E+02	105.13	1.50E+03	3.57
	22	542.62	540 -	544	541.84	6.15E+01	58.05	6.87E+02	2.86
	23	582.73	578 -	585	581.96	9.48E+01	79.47	9.92E+02	5.28
	24	609.32	603 -	613	608.56	5.92E+03	181.36	1.23E+03	2.44
	25	665.13	659 -	668	664.39	1.73E+02	79.76	8.10E+02	2.85
	26	702.71	699 -	706	701.98	6.19E+01	69.05	7.56E+02	1.59
	27	719.92	716 -	723	719.20	6.67E+01	65.12	6.67E+02	1.78
	28	753.26	749 -	756	752.56	8.22E+01	61.71	5.80E+02	3.33
	29	768.41	762 -	774	767.72	5.80E+02	104.11	1.01E+03	2.57
	30	786.03	781 -	789	785.34	1.28E+02	72.28	7.26E+02	3.20
	31	805.68	801 -	808	805.00	1.11E+02	65.08	6.31E+02	2.25
	32	832.19	828 -	836	831.52	8.43E+01	68.65	6.79E+02	1.59
	33	840.32	836 -	844	839.65	7.53E+01	67.98	6.41E+02	2.52
	34	933.49	926 -	939	932.86	3.05E+02	99.91	9.77E+02	2.51
	35	968.47	966 -	971	967.86	3.99E+01	45.53	3.76E+02	1.80
	36	1000.91	996 -	1003	1000.31	8.87E+01	56.85	4.79E+02	3.58
	37	1102.69	1099 -	1106	1102.14	4.67E+01	48.08	3.59E+02	4.97
	38	1120.20	1114 -	1127	1119.66	1.13E+03	105.41	7.39E+02	2.68
	39	1155.52	1149 -	1160	1155.00	1.08E+02	72.86	6.02E+02	2.27
	40	1227.48	1225 -	1230	1226.99	3.25E+01	32.26	1.81E+02	2.73

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1238.08	1231 -	1244	1237.59	4.81E+02	72.95	3.76E+02	2.72
	42	1281.82	1276 -	1287	1281.35	1.05E+02	62.16	4.25E+02	2.64
	43	1303.63	1301 -	1306	1303.17	2.57E+01	31.48	1.79E+02	2.83
M	44	1377.51	1371 -	1390	1377.10	2.68E+02	53.09	2.80E+02	2.94
m	45	1384.72	1371 -	1390	1384.31	8.87E+01	50.36	2.72E+02	3.44
M	46	1401.40	1395 -	1418	1400.99	1.10E+02	57.25	3.43E+02	3.79
m	47	1407.76	1395 -	1418	1407.36	1.35E+02	47.62	2.90E+02	2.76
	48	1461.02	1455 -	1469	1460.65	1.95E+02	71.72	4.67E+02	3.14
	49	1509.95	1504 -	1516	1509.59	1.33E+02	64.47	4.18E+02	2.89
M	50	1538.07	1533 -	1546	1537.74	3.60E+01	41.20	2.57E+02	2.89
m	51	1543.09	1533 -	1546	1542.75	5.17E+01	42.54	2.28E+02	2.89
	52	1583.12	1580 -	1585	1582.81	3.33E+01	29.85	1.49E+02	2.97
	53	1599.98	1597 -	1603	1599.67	2.84E+01	29.97	1.41E+02	2.86
	54	1625.18	1618 -	1632	1624.89	4.03E+01	47.91	2.23E+02	9.16
	55	1661.11	1656 -	1668	1660.84	8.26E+01	40.05	1.51E+02	3.00
	56	1681.54	1675 -	1686	1681.28	2.94E+01	32.80	1.19E+02	8.83
	57	1729.37	1724 -	1736	1729.14	1.76E+02	41.89	1.25E+02	3.22
	58	1764.37	1758 -	1769	1764.15	9.06E+02	65.91	9.05E+01	2.96
	59	1847.47	1839 -	1853	1847.30	1.41E+02	40.39	1.13E+02	2.86
	60	1858.41	1854 -	1864	1858.25	2.73E+01	19.89	3.74E+01	4.95
	61	1996.09	1993 -	2000	1996.01	1.65E+01	13.56	1.91E+01	2.91
	62	2118.47	2112 -	2126	2118.46	6.93E+01	22.11	2.15E+01	3.17
	63	2203.96	2198 -	2208	2204.01	2.13E+02	34.38	4.48E+01	3.40
	64	2292.71	2288 -	2296	2292.81	1.60E+01	10.98	8.10E+00	2.86
	65	2447.45	2443 -	2451	2447.65	6.30E+01	15.87	0.00E+00	4.28
	66	2614.68	2610 -	2619	2615.00	2.06E+01	10.82	4.87E+00	3.53

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 : 8/25/2017 7:54:15AM

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	46.43	43 -	48	8.86E+02	203.85	7.67E+03	1.60E+02
2	53.24	50 -	55	2.09E+02	214.76	9.09E+03	1.75E+02

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	3	63.18	59 -	65	1.74E+03	292.03	1.43E+04	2.30E+02
	4	76.23	69 -	80	9.60E+03	501.43	2.66E+04	3.79E+02
M	5	83.84	81 -	96	3.85E+02	180.58	8.24E+03	1.49E+02
m	6	87.47	81 -	96	2.23E+03	345.18	1.71E+04	2.15E+02
m	7	92.59	81 -	96	3.27E+03	313.66	1.30E+04	1.88E+02
	8	143.86	140 -	146	1.99E+02	233.26	9.75E+03	1.90E+02
	9	153.78	150 -	156	2.31E+02	228.80	9.31E+03	1.86E+02
	10	163.76	161 -	166	1.74E+02	188.05	6.87E+03	1.53E+02
M	11	182.12	180 -	189	1.27E+02	80.96	2.14E+03	7.60E+01
m	12	186.07	180 -	189	3.03E+03	227.92	7.13E+03	1.39E+02
	13	211.03	208 -	213	1.54E+02	156.57	4.76E+03	1.27E+02
m	14	242.08	237 -	247	2.51E+03	178.97	4.37E+03	1.09E+02
	15	257.45	252 -	260	2.66E+02	184.34	5.06E+03	1.49E+02
	16	295.26	290 -	298	5.30E+03	216.12	3.92E+03	1.31E+02
	17	338.34	335 -	340	1.59E+02	103.19	2.00E+03	8.22E+01
	18	351.94	345 -	356	8.72E+03	256.90	3.88E+03	1.45E+02
M	19	386.11	383 -	391	7.76E+01	81.03	1.42E+03	6.20E+01
m	20	389.26	383 -	391	1.10E+02	82.64	1.41E+03	6.17E+01
	21	510.34	505 -	514	1.37E+02	105.13	1.50E+03	8.42E+01
	22	542.62	540 -	544	6.15E+01	58.05	6.87E+02	4.59E+01
	23	582.73	578 -	585	9.48E+01	79.47	9.92E+02	3.62E+01
	24	609.32	603 -	613	5.92E+03	181.36	1.23E+03	7.88E+01
	25	665.13	659 -	668	1.73E+02	79.76	8.10E+02	2.55E+01
	26	702.71	699 -	706	6.19E+01	69.05	7.56E+02	5.53E+01
	27	719.92	716 -	723	6.67E+01	65.12	6.67E+02	5.18E+01
	28	753.26	749 -	756	8.22E+01	61.71	5.80E+02	4.85E+01
	29	768.41	762 -	774	5.80E+02	104.11	1.01E+03	7.59E+01
	30	786.03	781 -	789	1.28E+02	72.28	7.26E+02	5.64E+01
	31	805.68	801 -	808	1.11E+02	65.08	6.31E+02	5.06E+01
	32	832.19	828 -	836	8.43E+01	68.65	6.79E+02	5.44E+01
	33	840.32	836 -	844	7.53E+01	67.98	6.41E+02	5.40E+01
	34	933.49	926 -	939	3.05E+02	99.91	9.77E+02	7.70E+01
	35	968.47	966 -	971	3.99E+01	45.53	3.76E+02	3.60E+01
	36	1000.91	996 -	1003	8.87E+01	56.85	4.79E+02	4.41E+01
	37	1102.69	1099 -	1106	4.67E+01	48.08	3.59E+02	3.79E+01
	38	1120.20	1114 -	1127	1.13E+03	105.41	7.39E+02	6.67E+01
	39	1155.52	1149 -	1160	1.08E+02	72.86	6.02E+02	5.74E+01
	40	1227.48	1225 -	1230	3.25E+01	32.26	1.81E+02	2.48E+01
	41	1238.08	1231 -	1244	4.81E+02	72.95	3.76E+02	4.79E+01
	42	1281.82	1276 -	1287	1.05E+02	62.16	4.25E+02	4.82E+01
	43	1303.63	1301 -	1306	2.57E+01	31.48	1.79E+02	2.45E+01
M	44	1377.51	1371 -	1390	2.68E+02	53.09	2.80E+02	2.75E+01
m	45	1384.72	1371 -	1390	8.87E+01	50.36	2.72E+02	2.71E+01
M	46	1401.40	1395 -	1418	1.10E+02	57.25	3.43E+02	3.05E+01
m	47	1407.76	1395 -	1418	1.35E+02	47.62	2.90E+02	2.80E+01
	48	1461.02	1455 -	1469	1.95E+02	71.72	4.67E+02	5.43E+01
	49	1509.95	1504 -	1516	1.33E+02	64.47	4.18E+02	4.95E+01
M	50	1538.07	1533 -	1546	3.60E+01	41.20	2.57E+02	2.64E+01
m	51	1543.09	1533 -	1546	5.17E+01	42.54	2.28E+02	2.48E+01
	52	1583.12	1580 -	1585	3.33E+01	29.85	1.49E+02	2.26E+01
	53	1599.98	1597 -	1603	2.84E+01	29.97	1.41E+02	2.30E+01

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
54	1625.18	1618 -	1632	4.03E+01	47.91	2.23E+02	3.80E+01
55	1661.11	1656 -	1668	8.26E+01	40.05	1.51E+02	2.93E+01
56	1681.54	1675 -	1686	2.94E+01	32.80	1.19E+02	2.54E+01
57	1729.37	1724 -	1736	1.76E+02	41.89	1.25E+02	2.67E+01
58	1764.37	1758 -	1769	9.06E+02	65.91	9.05E+01	2.21E+01
59	1847.47	1839 -	1853	1.41E+02	40.39	1.13E+02	2.69E+01
60	1858.41	1854 -	1864	2.73E+01	19.89	3.74E+01	1.39E+01
61	1996.09	1993 -	2000	1.65E+01	13.56	1.91E+01	8.94E+00
62	2118.47	2112 -	2126	6.93E+01	22.11	2.15E+01	1.20E+01
63	2203.96	2198 -	2208	2.13E+02	34.38	4.48E+01	1.50E+01
64	2292.71	2288 -	2296	1.60E+01	10.98	8.10E+00	6.19E+00
65	2447.45	2443 -	2451	6.30E+01	15.87	0.00E+00	0.00E+00
66	2614.68	2610 -	2619	2.06E+01	10.82	4.87E+00	4.84E+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 : 8/25/2017 7:54:15AM

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	46.43	43 -	48	45.47	8.86E+02	203.85	7.67E+03	PB-210
	2	53.24	50 -	55	52.29	2.09E+02	214.76	9.09E+03	.....
	3	63.18	59 -	65	62.23	1.74E+03	292.03	1.43E+04	TH-234
									TH-230
	4	76.23	69 -	80	75.28	9.60E+03	501.43	2.66E+04	.....
M	5	83.84	81 -	96	82.90	3.85E+02	180.58	8.24E+03	TH-231
m	6	87.47	81 -	96	86.53	2.23E+03	345.18	1.71E+04	SN-126
									CD-109
									LU-176
									NP-237
									EU-155
m	7	92.59	81 -	96	91.65	3.27E+03	313.66	1.30E+04	GA-67

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	8	143.86	140 -	146	142.94	1.99E+02	233.26	9.75E+03	U-235
	9	153.78	150 -	156	152.86	2.31E+02	228.80	9.31E+03	CS-136
	10	163.76	161 -	166	162.85	1.74E+02	188.05	6.87E+03	CS-136 U-235
M	11	182.12	180 -	189	181.21	1.27E+02	80.96	2.14E+03	LU-172
m	12	186.07	180 -	189	185.16	3.03E+03	227.92	7.13E+03	RA-226
	13	211.03	208 -	213	210.13	1.54E+02	156.57	4.76E+03	.....
m	14	242.08	237 -	247	241.19	2.51E+03	178.97	4.37E+03	.....
	15	257.45	252 -	260	256.57	2.66E+02	184.34	5.06E+03	.....
	16	295.26	290 -	298	294.39	5.30E+03	216.12	3.92E+03	PB-214
	17	338.34	335 -	340	337.48	1.59E+02	103.19	2.00E+03	AC-228
	18	351.94	345 -	356	351.09	8.72E+03	256.90	3.88E+03	PB-214
M	19	386.11	383 -	391	385.27	7.76E+01	81.03	1.42E+03	.....
m	20	389.26	383 -	391	388.42	1.10E+02	82.64	1.41E+03	.....
	21	510.34	505 -	514	509.54	1.37E+02	105.13	1.50E+03	.....
	22	542.62	540 -	544	541.84	6.15E+01	58.05	6.87E+02	.....
	23	582.73	578 -	585	581.96	9.48E+01	79.47	9.92E+02	TL-208
	24	609.32	603 -	613	608.56	5.92E+03	181.36	1.23E+03	BI-214
	25	665.13	659 -	668	664.39	1.73E+02	79.76	8.10E+02	CE-143
	26	702.71	699 -	706	701.98	6.19E+01	69.05	7.56E+02	NB-94
	27	719.92	716 -	723	719.20	6.67E+01	65.12	6.67E+02	SB-126
	28	753.26	749 -	756	752.56	8.22E+01	61.71	5.80E+02	.....
	29	768.41	762 -	774	767.72	5.80E+02	104.11	1.01E+03	.....
	30	786.03	781 -	789	785.34	1.28E+02	72.28	7.26E+02	.....
	31	805.68	801 -	808	805.00	1.11E+02	65.08	6.31E+02	.....
	32	832.19	828 -	836	831.52	8.43E+01	68.65	6.79E+02	PB-211
	33	840.32	836 -	844	839.65	7.53E+01	67.98	6.41E+02	.....
	34	933.49	926 -	939	932.86	3.05E+02	99.91	9.77E+02	.....
	35	968.47	966 -	971	967.86	3.99E+01	45.53	3.76E+02	AC-228
	36	1000.91	996 -	1003	1000.31	8.87E+01	56.85	4.79E+02	PA-234M
	37	1102.69	1099 -	1106	1102.14	4.67E+01	48.08	3.59E+02	.....
	38	1120.20	1114 -	1127	1119.66	1.13E+03	105.41	7.39E+02	BI-214 SC-46
	39	1155.52	1149 -	1160	1155.00	1.08E+02	72.86	6.02E+02	.....
	40	1227.48	1225 -	1230	1226.99	3.25E+01	32.26	1.81E+02	.....
	41	1238.08	1231 -	1244	1237.59	4.81E+02	72.95	3.76E+02	CO-56
	42	1281.82	1276 -	1287	1281.35	1.05E+02	62.16	4.25E+02	.....
	43	1303.63	1301 -	1306	1303.17	2.57E+01	31.48	1.79E+02	.....
M	44	1377.51	1371 -	1390	1377.10	2.68E+02	53.09	2.80E+02	.....
m	45	1384.72	1371 -	1390	1384.31	8.87E+01	50.36	2.72E+02	AG-110M
M	46	1401.40	1395 -	1418	1400.99	1.10E+02	57.25	3.43E+02	.....
m	47	1407.76	1395 -	1418	1407.36	1.35E+02	47.62	2.90E+02	EU-152
	48	1461.02	1455 -	1469	1460.65	1.95E+02	71.72	4.67E+02	K-40
	49	1509.95	1504 -	1516	1509.59	1.33E+02	64.47	4.18E+02	.....
M	50	1538.07	1533 -	1546	1537.74	3.60E+01	41.20	2.57E+02	.....
m	51	1543.09	1533 -	1546	1542.75	5.17E+01	42.54	2.28E+02	.....
	52	1583.12	1580 -	1585	1582.81	3.33E+01	29.85	1.49E+02	.....
	53	1599.98	1597 -	1603	1599.67	2.84E+01	29.97	1.41E+02	.....
	54	1625.18	1618 -	1632	1624.89	4.03E+01	47.91	2.23E+02	.....
	55	1661.11	1656 -	1668	1660.84	8.26E+01	40.05	1.51E+02	.....
	56	1681.54	1675 -	1686	1681.28	2.94E+01	32.80	1.19E+02	.....
	57	1729.37	1724 -	1736	1729.14	1.76E+02	41.89	1.25E+02	.....
	58	1764.37	1758 -	1769	1764.15	9.06E+02	65.91	9.05E+01	BI-214
	59	1847.47	1839 -	1853	1847.30	1.41E+02	40.39	1.13E+02	.....

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
60	1858.41	1854 -	1864	1858.25	2.73E+01	19.89	3.74E+01	.....
61	1996.09	1993 -	2000	1996.01	1.65E+01	13.56	1.91E+01	.....
62	2118.47	2112 -	2126	2118.46	6.93E+01	22.11	2.15E+01	.....
63	2203.96	2198 -	2208	2204.01	2.13E+02	34.38	4.48E+01	BI-214
64	2292.71	2288 -	2296	2292.81	1.60E+01	10.98	8.10E+00	.....
65	2447.45	2443 -	2451	2447.65	6.30E+01	15.87	0.00E+00	.....
66	2614.68	2610 -	2619	2615.00	2.06E+01	10.82	4.87E+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 : 8/25/2017 7:54:15AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.43	8.86E+02	203.85	1.64E-02	1.56E-03
	2	53.24	2.09E+02	214.76	1.89E-02	1.56E-03
	3	63.18	1.74E+03	292.03	2.15E-02	1.64E-03
	4	76.23	9.60E+03	501.43	2.32E-02	1.91E-03
M	5	83.84	3.85E+02	180.58	2.36E-02	2.08E-03
m	6	87.47	2.23E+03	345.18	2.37E-02	2.15E-03
m	7	92.59	3.27E+03	313.66	2.37E-02	2.10E-03
	8	143.86	1.99E+02	233.26	2.03E-02	1.57E-03
	9	153.78	2.31E+02	228.80	1.95E-02	1.54E-03
	10	163.76	1.74E+02	188.05	1.87E-02	1.50E-03
M	11	182.12	1.27E+02	80.96	1.72E-02	1.42E-03
m	12	186.07	3.03E+03	227.92	1.69E-02	1.40E-03
	13	211.03	1.54E+02	156.57	1.52E-02	1.28E-03
m	14	242.08	2.51E+03	178.97	1.34E-02	1.13E-03
	15	257.45	2.66E+02	184.34	1.26E-02	1.05E-03
	16	295.26	5.30E+03	216.12	1.10E-02	9.13E-04
	17	338.34	1.59E+02	103.19	9.60E-03	8.23E-04
	18	351.94	8.72E+03	256.90	9.22E-03	7.94E-04
M	19	386.11	7.76E+01	81.03	8.37E-03	7.22E-04
m	20	389.26	1.10E+02	82.64	8.30E-03	7.16E-04
	21	510.34	1.37E+02	105.13	6.29E-03	6.61E-04
	22	542.62	6.15E+01	58.05	5.91E-03	6.48E-04
	23	582.73	9.48E+01	79.47	5.51E-03	6.31E-04

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	24	609.32	5.92E+03	181.36	5.27E-03	6.20E-04
	25	665.13	1.73E+02	79.76	4.84E-03	5.94E-04
	26	702.71	6.19E+01	69.05	4.60E-03	5.47E-04
	27	719.92	6.67E+01	65.12	4.49E-03	5.26E-04
	28	753.26	8.22E+01	61.71	4.31E-03	4.84E-04
	29	768.41	5.80E+02	104.11	4.23E-03	4.65E-04
	30	786.03	1.28E+02	72.28	4.14E-03	4.43E-04
	31	805.68	1.11E+02	65.08	4.05E-03	4.18E-04
	32	832.19	8.43E+01	68.65	3.93E-03	3.85E-04
	33	840.32	7.53E+01	67.98	3.89E-03	3.74E-04
	34	933.49	3.05E+02	99.91	3.54E-03	2.94E-04
	35	968.47	3.99E+01	45.53	3.43E-03	2.85E-04
	36	1000.91	8.87E+01	56.85	3.33E-03	2.78E-04
	37	1102.69	4.67E+01	48.08	3.06E-03	2.54E-04
	38	1120.20	1.13E+03	105.41	3.01E-03	2.50E-04
	39	1155.52	1.08E+02	72.86	2.93E-03	2.42E-04
	40	1227.48	3.25E+01	32.26	2.78E-03	2.34E-04
	41	1238.08	4.81E+02	72.95	2.76E-03	2.33E-04
	42	1281.82	1.05E+02	62.16	2.68E-03	2.30E-04
	43	1303.63	2.57E+01	31.48	2.64E-03	2.29E-04
M	44	1377.51	2.68E+02	53.09	2.51E-03	2.20E-04
m	45	1384.72	8.87E+01	50.36	2.50E-03	2.19E-04
M	46	1401.40	1.10E+02	57.25	2.48E-03	2.17E-04
m	47	1407.76	1.35E+02	47.62	2.47E-03	2.16E-04
	48	1461.02	1.95E+02	71.72	2.38E-03	2.08E-04
	49	1509.95	1.33E+02	64.47	2.31E-03	2.00E-04
M	50	1538.07	3.60E+01	41.20	2.28E-03	1.96E-04
m	51	1543.09	5.17E+01	42.54	2.27E-03	1.95E-04
	52	1583.12	3.33E+01	29.85	2.22E-03	1.89E-04
	53	1599.98	2.84E+01	29.97	2.19E-03	1.87E-04
	54	1625.18	4.03E+01	47.91	2.16E-03	1.83E-04
	55	1661.11	8.26E+01	40.05	2.12E-03	1.78E-04
	56	1681.54	2.94E+01	32.80	2.09E-03	1.74E-04
	57	1729.37	1.76E+02	41.89	2.04E-03	1.67E-04
	58	1764.37	9.06E+02	65.91	2.00E-03	1.62E-04
	59	1847.47	1.41E+02	40.39	1.91E-03	1.51E-04
	60	1858.41	2.73E+01	19.89	1.90E-03	1.51E-04
	61	1996.09	1.65E+01	13.56	1.76E-03	1.51E-04
	62	2118.47	6.93E+01	22.11	1.65E-03	1.51E-04
	63	2203.96	2.13E+02	34.38	1.58E-03	1.51E-04
	64	2292.71	1.60E+01	10.98	1.51E-03	1.51E-04
	65	2447.45	6.30E+01	15.87	1.39E-03	1.51E-04
	66	2614.68	2.06E+01	10.82	1.28E-03	1.51E-04

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

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/25/2017 7:54:15AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055576.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	46.43	8.86E+02	203.85	2.81E+01	8.29E+00	8.58E+02	2.04E+02
	2	53.24	2.09E+02	214.76			2.09E+02	2.15E+02
	3	63.18	1.74E+03	292.03	5.67E+01	8.57E+00	1.68E+03	2.92E+02
	4	76.23	9.60E+03	501.43			9.60E+03	5.01E+02
M	5	83.84	3.85E+02	180.58			3.85E+02	1.81E+02
m	6	87.47	2.23E+03	345.18			2.23E+03	3.45E+02
m	7	92.59	3.27E+03	313.66	5.99E+01	8.61E+00	3.21E+03	3.14E+02
	8	143.86	1.99E+02	233.26			1.99E+02	2.33E+02
	9	153.78	2.31E+02	228.80			2.31E+02	2.29E+02
	10	163.76	1.74E+02	188.05			1.74E+02	1.88E+02
M	11	182.12	1.27E+02	80.96			1.27E+02	8.10E+01
m	12	186.07	3.03E+03	227.92	2.43E+01	7.50E+00	3.01E+03	2.28E+02
	13	211.03	1.54E+02	156.57			1.54E+02	1.57E+02
m	14	242.08	2.51E+03	178.97			2.51E+03	1.79E+02
	15	257.45	2.66E+02	184.34			2.66E+02	1.84E+02
	16	295.26	5.30E+03	216.12			5.30E+03	2.16E+02
	17	338.34	1.59E+02	103.19			1.59E+02	1.03E+02
	18	351.94	8.72E+03	256.90			8.72E+03	2.57E+02
M	19	386.11	7.76E+01	81.03			7.76E+01	8.10E+01
m	20	389.26	1.10E+02	82.64			1.10E+02	8.26E+01
	21	510.34	1.37E+02	105.13	4.55E+01	4.99E+00	9.14E+01	1.05E+02
	22	542.62	6.15E+01	58.05			6.15E+01	5.81E+01
	23	582.73	9.48E+01	79.47			9.48E+01	7.95E+01
	24	609.32	5.92E+03	181.36			5.92E+03	1.81E+02
	25	665.13	1.73E+02	79.76			1.73E+02	7.98E+01
	26	702.71	6.19E+01	69.05			6.19E+01	6.91E+01
	27	719.92	6.67E+01	65.12			6.67E+01	6.51E+01
	28	753.26	8.22E+01	61.71			8.22E+01	6.17E+01
	29	768.41	5.80E+02	104.11			5.80E+02	1.04E+02
	30	786.03	1.28E+02	72.28			1.28E+02	7.23E+01
	31	805.68	1.11E+02	65.08			1.11E+02	6.51E+01
	32	832.19	8.43E+01	68.65			8.43E+01	6.87E+01
	33	840.32	7.53E+01	67.98			7.53E+01	6.80E+01
	34	933.49	3.05E+02	99.91			3.05E+02	9.99E+01
	35	968.47	3.99E+01	45.53			3.99E+01	4.55E+01
	36	1000.91	8.87E+01	56.85			8.87E+01	5.69E+01
	37	1102.69	4.67E+01	48.08			4.67E+01	4.81E+01
	38	1120.20	1.13E+03	105.41			1.13E+03	1.05E+02
	39	1155.52	1.08E+02	72.86			1.08E+02	7.29E+01
	40	1227.48	3.25E+01	32.26			3.25E+01	3.23E+01
	41	1238.08	4.81E+02	72.95			4.81E+02	7.30E+01
	42	1281.82	1.05E+02	62.16			1.05E+02	6.22E+01
	43	1303.63	2.57E+01	31.48			2.57E+01	3.15E+01
M	44	1377.51	2.68E+02	53.09			2.68E+02	5.31E+01

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	45	1384.72	8.87E+01	50.36			8.87E+01	5.04E+01
M	46	1401.40	1.10E+02	57.25			1.10E+02	5.72E+01
m	47	1407.76	1.35E+02	47.62			1.35E+02	4.76E+01
	48	1461.02	1.95E+02	71.72			1.95E+02	7.17E+01
	49	1509.95	1.33E+02	64.47			1.33E+02	6.45E+01
M	50	1538.07	3.60E+01	41.20			3.60E+01	4.12E+01
m	51	1543.09	5.17E+01	42.54			5.17E+01	4.25E+01
	52	1583.12	3.33E+01	29.85			3.33E+01	2.98E+01
	53	1599.98	2.84E+01	29.97			2.84E+01	3.00E+01
	54	1625.18	4.03E+01	47.91			4.03E+01	4.79E+01
	55	1661.11	8.26E+01	40.05			8.26E+01	4.00E+01
	56	1681.54	2.94E+01	32.80			2.94E+01	3.28E+01
	57	1729.37	1.76E+02	41.89			1.76E+02	4.19E+01
	58	1764.37	9.06E+02	65.91			9.06E+02	6.59E+01
	59	1847.47	1.41E+02	40.39			1.41E+02	4.04E+01
	60	1858.41	2.73E+01	19.89			2.73E+01	1.99E+01
	61	1996.09	1.65E+01	13.56			1.65E+01	1.36E+01
	62	2118.47	6.93E+01	22.11			6.93E+01	2.21E+01
	63	2203.96	2.13E+02	34.38			2.13E+02	3.44E+01
	64	2292.71	1.60E+01	10.98			1.60E+01	1.10E+01
	65	2447.45	6.30E+01	15.87			6.30E+01	1.59E+01
	66	2614.68	2.06E+01	10.82			2.06E+01	1.08E+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 : 8/25/2017 7:54:15AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055576.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	46.43	8.86E+02	203.85	2.81E+01	8.29E+00	8.58E+02	2.04E+02
	2	53.24	2.09E+02	214.76			2.09E+02	2.15E+02
	3	63.18	1.74E+03	292.03	5.67E+01	8.57E+00	1.68E+03	2.92E+02
	4	76.23	9.60E+03	501.43			9.60E+03	5.01E+02
M	5	83.84	3.85E+02	180.58			3.85E+02	1.81E+02
m	6	87.47	2.23E+03	345.18			2.23E+03	3.45E+02

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
m	7	92.59	3.27E+03	313.66	5.99E+01	8.61E+00	3.21E+03	3.14E+02
	8	143.86	1.99E+02	233.26			1.99E+02	2.33E+02
	9	153.78	2.31E+02	228.80			2.31E+02	2.29E+02
	10	163.76	1.74E+02	188.05			1.74E+02	1.88E+02
M	11	182.12	1.27E+02	80.96			1.27E+02	8.10E+01
m	12	186.07	3.03E+03	227.92	2.43E+01	7.50E+00	3.01E+03	2.28E+02
	13	211.03	1.54E+02	156.57			1.54E+02	1.57E+02
m	14	242.08	2.51E+03	178.97			2.51E+03	1.79E+02
	15	257.45	2.66E+02	184.34			2.66E+02	1.84E+02
	16	295.26	5.30E+03	216.12			5.30E+03	2.16E+02
	17	338.34	1.59E+02	103.19			1.59E+02	1.03E+02
	18	351.94	8.72E+03	256.90			8.72E+03	2.57E+02
M	19	386.11	7.76E+01	81.03			7.76E+01	8.10E+01
m	20	389.26	1.10E+02	82.64			1.10E+02	8.26E+01
	21	510.34	1.37E+02	105.13	4.55E+01	4.99E+00	9.14E+01	1.05E+02
	22	542.62	6.15E+01	58.05			6.15E+01	5.81E+01
	23	582.73	9.48E+01	79.47			9.48E+01	7.95E+01
	24	609.32	5.92E+03	181.36			5.92E+03	1.81E+02
	25	665.13	1.73E+02	79.76			1.73E+02	7.98E+01
	26	702.71	6.19E+01	69.05			6.19E+01	6.91E+01
	27	719.92	6.67E+01	65.12			6.67E+01	6.51E+01
	28	753.26	8.22E+01	61.71			8.22E+01	6.17E+01
	29	768.41	5.80E+02	104.11			5.80E+02	1.04E+02
	30	786.03	1.28E+02	72.28			1.28E+02	7.23E+01
	31	805.68	1.11E+02	65.08			1.11E+02	6.51E+01
	32	832.19	8.43E+01	68.65			8.43E+01	6.87E+01
	33	840.32	7.53E+01	67.98			7.53E+01	6.80E+01
	34	933.49	3.05E+02	99.91			3.05E+02	9.99E+01
	35	968.47	3.99E+01	45.53			3.99E+01	4.55E+01
	36	1000.91	8.87E+01	56.85			8.87E+01	5.69E+01
	37	1102.69	4.67E+01	48.08			4.67E+01	4.81E+01
	38	1120.20	1.13E+03	105.41			1.13E+03	1.05E+02
	39	1155.52	1.08E+02	72.86			1.08E+02	7.29E+01
	40	1227.48	3.25E+01	32.26			3.25E+01	3.23E+01
	41	1238.08	4.81E+02	72.95			4.81E+02	7.30E+01
	42	1281.82	1.05E+02	62.16			1.05E+02	6.22E+01
	43	1303.63	2.57E+01	31.48			2.57E+01	3.15E+01
M	44	1377.51	2.68E+02	53.09			2.68E+02	5.31E+01
m	45	1384.72	8.87E+01	50.36			8.87E+01	5.04E+01
M	46	1401.40	1.10E+02	57.25			1.10E+02	5.72E+01
m	47	1407.76	1.35E+02	47.62			1.35E+02	4.76E+01
	48	1461.02	1.95E+02	71.72			1.95E+02	7.17E+01
	49	1509.95	1.33E+02	64.47			1.33E+02	6.45E+01
M	50	1538.07	3.60E+01	41.20			3.60E+01	4.12E+01
m	51	1543.09	5.17E+01	42.54			5.17E+01	4.25E+01
	52	1583.12	3.33E+01	29.85			3.33E+01	2.98E+01
	53	1599.98	2.84E+01	29.97			2.84E+01	3.00E+01
	54	1625.18	4.03E+01	47.91			4.03E+01	4.79E+01
	55	1661.11	8.26E+01	40.05			8.26E+01	4.00E+01
	56	1681.54	2.94E+01	32.80			2.94E+01	3.28E+01
	57	1729.37	1.76E+02	41.89			1.76E+02	4.19E+01
	58	1764.37	9.06E+02	65.91			9.06E+02	6.59E+01
	59	1847.47	1.41E+02	40.39			1.41E+02	4.04E+01
	60	1858.41	2.73E+01	19.89			2.73E+01	1.99E+01

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
61	1996.09	1.65E+01	13.56			1.65E+01	1.36E+01
62	2118.47	6.93E+01	22.11			6.93E+01	2.21E+01
63	2203.96	2.13E+02	34.38			2.13E+02	3.44E+01
64	2292.71	1.60E+01	10.98			1.60E+01	1.10E+01
65	2447.45	6.30E+01	15.87			6.30E+01	1.59E+01
66	2614.68	2.06E+01	10.82			2.06E+01	1.08E+01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.993	1460.81	*	10.67	7.73E+00	2.93E+00
CD-109	0.950	88.03	*	3.72	2.98E+01	5.63E+00
SN-126	0.998	87.57	*	37.00	2.58E+00	4.62E-01
TL-208	0.872	583.14	*	30.22	5.76E-01	4.87E-01
		860.37		4.48		
		2614.66	*	35.85	4.53E-01	2.44E-01
PB-210	0.999	46.50	*	4.25	1.25E+01	3.21E+00
BI-214	0.999	609.31	*	46.30	2.45E+01	2.98E+00
		1120.29	*	15.10	2.52E+01	3.14E+00
		1764.49	*	15.80	2.90E+01	3.16E+00
		2204.22	*	4.98	2.73E+01	5.13E+00
PB-214	1.000	295.21	*	19.19	2.53E+01	2.34E+00
		351.92	*	37.19	2.57E+01	2.34E+00
RA-226	0.997	186.21	*	3.28	5.48E+01	1.00E+02
PA-234M	0.998	1001.03	*	0.92	2.93E+01	1.89E+01
TH-234	0.998	63.29	*	3.80	2.08E+01	3.94E+00
U-235	0.648	143.76	*	10.50	9.46E-01	1.12E+00
		163.35	*	4.70	2.01E+00	2.20E+00
		205.31		4.70		
NP-237	0.861	86.50	*	12.60	7.57E+00	1.36E+00

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

* = 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 : 8/25/2017 7:54:15AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.24	5.81300E-02	51.31		
	4	76.23	2.66780E+00	2.61		
M	5	83.84	1.06981E-01	23.44	Tol.	TH-231
m	7	92.59	8.92362E-01	4.88	Sum	
	9	153.78	6.42375E-02	49.47	Tol.	CS-136
M	11	182.12	3.53560E-02	31.80	Tol.	LU-172
	13	211.03	4.28949E-02	50.70	Sum	
m	14	242.08	6.96542E-01	3.57		
	15	257.45	7.38290E-02	34.68		
	17	338.34	4.41978E-02	32.43	Tol.	AC-228
M	19	386.11	2.15568E-02	52.21		
m	20	389.26	3.04930E-02	37.64		
	21	510.34	2.54019E-02	57.55		
	22	542.62	1.70922E-02	47.17		
	25	665.13	4.79936E-02	23.08	Tol.	CE-143
	26	702.71	1.72045E-02	55.74	Tol.	NB-94
	27	719.92	1.85382E-02	48.78	Tol.	SB-126
	28	753.26	2.28468E-02	37.51	Sum	
	29	768.41	1.61055E-01	8.98	Sum	
	30	786.03	3.56217E-02	28.18		
	31	805.68	3.09556E-02	29.20		
	32	832.19	2.34146E-02	40.72	Tol.	PB-211
	33	840.32	2.09147E-02	45.14		
	34	933.49	8.46203E-02	16.40		
	35	968.47	1.10727E-02	57.11	Tol.	AC-228
	37	1102.69	1.29621E-02	51.52		
	39	1155.52	3.00102E-02	33.72		
	40	1227.48	9.03455E-03	49.60		
	41	1238.08	1.33625E-01	7.58		
	42	1281.82	2.93029E-02	29.46		
	43	1303.63	7.12560E-03	61.36		
M	44	1377.51	7.44617E-02	9.90		
m	45	1384.72	2.46389E-02	28.39		
M	46	1401.40	3.04552E-02	26.11		

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	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	47	1407.76	3.76321E-02	17.58	Tol.	EU-152
	49	1509.95	3.69615E-02	24.23		
M	50	1538.07	1.00017E-02	57.21		
m	51	1543.09	1.43530E-02	41.16		
	52	1583.12	9.24511E-03	44.84	Sum	
	53	1599.98	7.87879E-03	52.83		
	54	1625.18	1.11842E-02	59.50	Sum	
	55	1661.11	2.29527E-02	24.23		
	56	1681.54	8.17416E-03	55.74		
	57	1729.37	4.88101E-02	11.92	Sum	
	59	1847.47	3.90306E-02	14.37		
	60	1858.41	7.58756E-03	36.41		
	61	1996.09	4.57265E-03	41.20		
	62	2118.47	1.92413E-02	15.96		
	64	2292.71	4.43056E-03	34.41		
	65	2447.45	1.75000E-02	12.60		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	7.73E+00	2.93E+00
CD-109	0.95	88.03	*	3.72	2.98E+01	5.63E+00
SN-126	0.99	87.57	*	37.00	2.58E+00	4.62E-01
TL-208	0.87	583.14	*	30.22	5.76E-01	4.87E-01
		860.37		4.48		
		2614.66	*	35.85	4.53E-01	2.44E-01
PB-210	0.99	46.50	*	4.25	1.25E+01	3.21E+00
BI-214	0.99	609.31	*	46.30	2.45E+01	2.98E+00
		1120.29	*	15.10	2.52E+01	3.14E+00
		1764.49	*	15.80	2.90E+01	3.16E+00
		2204.22	*	4.98	2.73E+01	5.13E+00
PB-214	1.00	295.21	*	19.19	2.53E+01	2.34E+00

Analysis Report for 1707093-07

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Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
PB-214	1.00	351.92	*	37.19	2.57E+01	2.34E+00
RA-226	0.99	186.21	*	3.28	5.48E+01	1.00E+02
PA-234M	0.99	1001.03	*	0.92	2.93E+01	1.89E+01
TH-234	0.99	63.29	*	3.80	2.08E+01	3.94E+00
U-235	0.64	143.76	*	10.50	9.46E-01	1.12E+00
		163.35	*	4.70	2.01E+00	2.20E+00
		205.31		4.70		
NP-237	0.86	86.50	*	12.60	7.57E+00	1.36E+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
	K-40	0.993	7.73E+00	2.93E+00	
?	CD-109	0.950	2.98E+01	5.63E+00	
?	SN-126	0.998	2.58E+00	4.62E-01	
	TL-208	0.872	4.78E-01	2.18E-01	
	PB-210	0.999	1.25E+01	3.21E+00	
	BI-214	0.999	2.63E+01	1.69E+00	
	PB-214	1.000	2.55E+01	1.65E+00	
	RA-226	0.997	5.48E+01	1.00E+02	
	PA-234M	0.998	2.93E+01	1.89E+01	
	TH-234	0.998	2.08E+01	3.94E+00	
	U-235	0.648	1.16E+00	9.97E-01	
?	NP-237	0.861	7.57E+00	1.36E+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 1707093-07

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 7:54:15AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.24	5.81300E-02	51.31		
	4	76.23	2.66780E+00	2.61		
M	5	83.84	1.06981E-01	23.44	Tol.	TH-231
m	7	92.59	8.92362E-01	4.88	Sum	
	9	153.78	6.42375E-02	49.47	Tol.	CS-136
M	11	182.12	3.53560E-02	31.80	Tol.	LU-172
	13	211.03	4.28949E-02	50.70	Sum	
m	14	242.08	6.96542E-01	3.57		
	15	257.45	7.38290E-02	34.68		
	17	338.34	4.41978E-02	32.43	Tol.	AC-228
M	19	386.11	2.15568E-02	52.21		
m	20	389.26	3.04930E-02	37.64		
	21	510.34	2.54019E-02	57.55		
	22	542.62	1.70922E-02	47.17		
	25	665.13	4.79936E-02	23.08	Tol.	CE-143
	26	702.71	1.72045E-02	55.74	Tol.	NB-94
	27	719.92	1.85382E-02	48.78	Tol.	SB-126
	28	753.26	2.28468E-02	37.51	Sum	
	29	768.41	1.61055E-01	8.98	Sum	
	30	786.03	3.56217E-02	28.18		
	31	805.68	3.09556E-02	29.20		
	32	832.19	2.34146E-02	40.72	Tol.	PB-211
	33	840.32	2.09147E-02	45.14		
	34	933.49	8.46203E-02	16.40		
	35	968.47	1.10727E-02	57.11	Tol.	AC-228
	37	1102.69	1.29621E-02	51.52		
	39	1155.52	3.00102E-02	33.72		
	40	1227.48	9.03455E-03	49.60		
	41	1238.08	1.33625E-01	7.58		
	42	1281.82	2.93029E-02	29.46		
	43	1303.63	7.12560E-03	61.36		
M	44	1377.51	7.44617E-02	9.90		
m	45	1384.72	2.46389E-02	28.39		
M	46	1401.40	3.04552E-02	26.11		
m	47	1407.76	3.76321E-02	17.58	Tol.	EU-152

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	49	1509.95	3.69615E-02	24.23		
M	50	1538.07	1.00017E-02	57.21		
m	51	1543.09	1.43530E-02	41.16		
	52	1583.12	9.24511E-03	44.84	Sum	
	53	1599.98	7.87879E-03	52.83		
	54	1625.18	1.11842E-02	59.50	Sum	
	55	1661.11	2.29527E-02	24.23		
	56	1681.54	8.17416E-03	55.74		
	57	1729.37	4.88101E-02	11.92	Sum	
	59	1847.47	3.90306E-02	14.37		
	60	1858.41	7.58756E-03	36.41		
	61	1996.09	4.57265E-03	41.20		
	62	2118.47	1.92413E-02	15.96		
	64	2292.71	4.43056E-03	34.41		
	65	2447.45	1.75000E-02	12.60		

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	4.03E+00	6.73E+00	6.73E+00
+	NA-22	1274.54		99.94	-1.06E-02	2.53E-01	2.53E-01
+	@ NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26
	@	2754.09		99.86	1.00E+26		1.00E+26
+	AL-26	1808.65		99.76	-1.13E-02	1.69E-01	1.69E-01
+	K-40	1460.81	*	10.67	7.73E+00	4.43E+00	4.43E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	2.55E-02	2.02E-01	2.02E-01
		78.34		96.00	3.11E+00		2.66E-01
+	SC-46	889.25		99.98	-1.26E-01	5.88E-01	5.88E-01
		1120.51		99.99	9.00E+00		1.36E+00
+	V-48	983.52		99.98	1.07E+01	1.96E+01	2.05E+01
		1312.10		97.50	2.61E-01		1.96E+01

Analysis Report for 1707093-07

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CR-51	320.08	9.83	-2.06E+01	2.16E+01	2.16E+01
+	MN-54	834.83	99.97	1.47E-03	3.25E-01	3.25E-01
+	CO-56	846.75	99.96	-1.27E-02	5.41E-01	5.41E-01
		1037.75	14.03	-3.84E+00		3.89E+00
		1238.25	67.00	5.69E+00		1.53E+00
		1771.40	15.51	-7.49E-01		2.96E+00
		2598.48	16.90	9.39E-02		1.05E+00
+	CO-57	122.06	85.51	5.16E-02	2.21E-01	2.21E-01
		136.48	10.60	1.04E-01		1.90E+00
+	CO-58	810.76	99.40	2.03E-01	6.67E-01	6.67E-01
+	FE-59	1099.22	56.50	5.68E-01	2.11E+00	2.11E+00
		1291.56	43.20	-1.01E+00		2.54E+00
+	CO-60	1173.22	100.00	3.41E-02	2.37E-01	2.61E-01
		1332.49	100.00	-6.14E-02		2.37E-01
+	ZN-65	1115.52	50.75	8.70E-02	1.12E+00	1.12E+00
+	GA-67	93.31	35.70	5.20E+09	1.09E+09	1.09E+09
		208.95	2.24	-3.90E+09		1.55E+10
		300.22	16.00	5.34E+08		2.54E+09
+	SE-75	121.11	16.70	-6.87E-02	4.67E-01	1.56E+00
		136.00	59.20	-1.53E-01		4.67E-01
		264.65	59.80	-7.73E-01		5.01E-01
		279.53	25.20	-1.34E+00		1.22E+00
		400.65	11.40	6.50E-01		3.11E+00
+	RB-82	776.52	13.00	-1.12E+01	2.61E+01	2.61E+01
+	RB-83	520.41	46.00	-1.89E-01	8.67E-01	8.67E-01
		529.64	30.30	-1.12E-01		1.36E+00
		552.65	16.40	-1.42E-01		2.50E+00
+	KR-85	513.99	0.43	6.88E+00	4.48E+01	4.48E+01
+	SR-85	513.99	99.27	8.69E-02	5.65E-01	5.65E-01
+	Y-88	898.02	93.40	-3.22E-01	3.53E-01	5.18E-01
		1836.01	99.38	8.73E-02		3.53E-01
+	MO-93	263.06	56.72	-1.06E-01	2.12E-01	3.00E-01
		684.67	99.68	7.62E-02		2.12E-01
		1477.11	99.08	7.87E-02		2.81E-01
+	NB-93M	16.57	9.43	7.48E+01	1.71E+01	1.71E+01
+	NB-94	702.63	100.00	1.23E-01	2.32E-01	2.32E-01
		871.10	100.00	-1.10E-01		2.46E-01
+	NB-95	765.79	99.81	7.67E+00	2.46E+00	2.46E+00
+	NB-95M	235.69	25.00	-1.05E+08	1.94E+08	1.94E+08
+	ZR-95	724.18	43.70	3.69E-01	1.23E+00	1.60E+00
		756.72	55.30	2.69E-01		1.23E+00
+	MO-99	181.06	6.20	-2.47E+10	1.95E+11	3.04E+11
		739.58	12.80	1.10E+11		1.95E+11
		778.00	4.50	-2.29E+11		5.24E+11
+	RU-103	497.08	89.00	5.20E-01	1.20E+00	1.20E+00
+	RU-106	621.84	9.80	3.12E-01	2.10E+00	2.10E+00
+	AG-108M	433.93	89.90	1.83E-01	2.11E-01	2.11E-01

Analysis Report for 1707093-07

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AG-108M	614.37		90.40	1.66E-02	2.11E-01	2.25E-01
		722.95		90.50	1.60E-02		2.58E-01
+	CD-109	88.03	*	3.72	2.98E+01	1.13E+01	1.13E+01
+	AG-110M	657.75		93.14	-6.59E-02	2.78E-01	2.78E-01
		677.61		10.53	-4.16E-01		2.56E+00
		706.67		16.46	-4.14E-01		1.84E+00
		763.93		21.98	3.11E-01		1.70E+00
		884.67		71.63	-2.32E-01		4.65E-01
		1384.27		23.94	-4.15E+00		1.59E+00
+	CD-113M	263.70		0.02	-6.80E+02	7.29E+02	7.29E+02
+	SN-113	255.12		1.93	-3.13E+00	5.35E-01	1.65E+01
		391.69		64.90	-1.91E-02		5.35E-01
+	TE123M	159.00		84.10	-2.57E-02	3.56E-01	3.56E-01
+	SB-124	602.71		97.87	-1.60E-01	6.24E-01	6.24E-01
		645.85		7.26	-5.50E+00		7.59E+00
		722.78		11.10	4.15E-01		6.72E+00
		1691.02		49.00	1.68E-01		1.30E+00
+	I-125	35.49		6.49	-4.67E+00	1.26E+01	1.26E+01
+	SB-125	176.33		6.89	6.35E-01	7.12E-01	2.61E+00
		427.89		29.33	-6.44E-02		7.12E-01
		463.38		10.35	7.40E-01		1.98E+00
		600.56		17.80	-2.55E-02		1.18E+00
		635.90		11.32	-2.96E-01		1.65E+00
+	SB-126	414.70		83.30	-4.06E+01	6.07E+01	6.43E+01
		666.33		99.60	-1.96E+00		6.47E+01
		695.00		99.60	-4.25E+00		6.07E+01
		720.50		53.80	3.96E+01		1.19E+02
+	SN-126	87.57	*	37.00	2.58E+00	9.81E-01	9.81E-01
+	SB-127	473.00		25.00	9.84E+06	4.48E+07	5.75E+07
		685.20		35.70	1.61E+07		4.48E+07
		783.80		14.70	-3.71E+06		1.34E+08
+	I-129	29.78		57.00	1.66E-01	6.39E-01	6.39E-01
		33.60		13.20	1.72E-01		2.15E+00
		39.58		7.52	-2.39E+00		2.93E+00
+	I-131	284.30		6.05	2.69E+03	1.22E+03	1.74E+04
		364.48		81.20	-3.82E+02		1.22E+03
		636.97		7.26	-6.57E+03		1.44E+04
		722.89		1.80	4.79E+03		7.75E+04
+	TE-132	49.72		13.10	-1.86E+09	3.97E+08	3.18E+09
		228.16		88.00	-4.45E+07		3.97E+08
+	BA-133	81.00		33.00	-4.91E+00	5.44E-01	6.18E-01
		302.84		17.80	6.84E-02		9.91E-01
		356.01		60.00	-4.15E-02		5.44E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	-2.59E+06	3.26E+05	3.26E+05
+	CS-134	563.23		8.38	-4.74E-01	3.02E-01	2.36E+00
		569.32		15.43	-7.89E-02		1.27E+00
		604.70		97.60	-2.30E-02		3.54E-01
		795.84		85.40	9.51E-02		3.02E-01

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

		Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		CS-134	801.93	8.73	-5.84E-01	3.02E-01	3.08E+00
+		CS-135	268.24	16.00	3.78E-01	1.10E+00	1.10E+00
+	@	I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@		1260.41	28.60	1.00E+26		1.00E+26
	@		1678.03	9.54	1.00E+26		1.00E+26
+		CS-136	153.22	7.46	3.81E+02	4.60E+01	4.65E+02
			163.89	4.61	3.39E+02		7.29E+02
			176.55	13.56	3.86E+01		2.52E+02
			273.65	12.66	4.35E+01		2.89E+02
			340.57	48.50	3.45E+00		7.71E+01
			818.50	99.70	-1.77E+01		4.60E+01
			1048.07	79.60	-1.80E+01		6.30E+01
			1235.34	19.70	1.50E+03		4.29E+02
+		CS-137	661.65	85.12	-4.41E-02	2.60E-01	2.60E-01
+		LA-138	788.74	34.00	-1.24E-01	3.69E-01	7.81E-01
			1435.80	66.00	-1.83E-01		3.69E-01
+		CE-139	165.85	80.35	-4.52E-02	3.39E-01	3.39E-01
+		BA-140	162.64	6.70	-1.14E+02	1.72E+02	5.88E+02
			304.84	4.50	1.84E+02		9.09E+02
			423.70	3.20	9.22E+01		1.48E+03
			437.55	2.00	8.96E+01		2.16E+03
			537.32	25.00	-8.41E+01		1.72E+02
+		LA-140	328.77	20.50	-2.68E+01	6.51E+01	2.07E+02
			487.03	45.50	4.12E+01		9.68E+01
			815.85	23.50	-7.30E+01		2.29E+02
			1596.49	95.49	4.41E+00		6.51E+01
+		CE-141	145.44	48.40	3.74E-01	2.99E+00	2.99E+00
+	@	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	-1.41E-01	1.81E+00	1.81E+00
+		PM-144	476.78	42.00	7.97E-02	2.16E-01	5.41E-01
			618.01	98.60	3.16E-02		2.16E-01
			696.49	99.49	-1.49E-02		2.65E-01
+		PM-145	36.85	21.70	-9.72E-01	6.00E-01	1.12E+00
			37.36	39.70	-5.19E-01		6.00E-01
			42.30	15.10	-3.27E-01		1.39E+00
			72.40	2.31	-8.54E+01		9.45E+00
+		PM-146	453.90	39.94	2.23E-01	4.91E-01	4.91E-01
			735.90	14.01	-4.01E-01		1.62E+00
			747.13	13.10	6.10E-01		1.73E+00
+		ND-147	91.11	28.90	1.97E+03	4.04E+02	4.04E+02
			531.02	13.10	3.53E+02		8.23E+02
+		PM-149	285.90	3.10	1.68E+14	3.04E+14	3.04E+14
+		EU-152	121.78	20.50	1.69E-01	7.22E-01	7.22E-01
			244.69	5.40	2.15E+01		4.32E+00
			344.27	19.13	2.37E-01		9.68E-01
			778.89	9.20	-1.05E+00		2.38E+00
			964.01	10.40	7.04E-01		2.66E+00

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-152	1085.78		7.22	4.58E-01	7.22E-01	3.42E+00
		1112.02		9.60	1.84E-01		2.61E+00
		1407.95		14.94	1.85E+00		2.28E+00
+	GD-153	97.43		31.30	1.71E-01	6.57E-01	6.57E-01
		103.18		22.20	-4.59E-01		8.48E-01
+	EU-154	123.07		40.50	-4.32E-02	3.69E-01	3.69E-01
		723.30		19.70	2.81E-01		1.21E+00
		873.19		11.50	-1.49E+00		2.25E+00
		996.32		10.30	1.34E-01		2.62E+00
		1004.76		17.90	-5.20E-01		1.53E+00
		1274.45		35.50	-2.83E-02		6.75E-01
+	EU-155	86.50		30.90	3.03E-01	6.47E-01	6.47E-01
		105.30		20.70	-7.75E-01		7.07E-01
+	EU-156	811.77		10.40	5.19E+01	2.24E+02	2.24E+02
		1153.47		7.20	4.81E+02		4.19E+02
		1230.71		8.90	-1.41E+03		2.66E+02
+	HO-166M	184.41		72.60	2.54E+00	3.15E-01	3.15E-01
		280.45		29.60	7.74E-02		5.90E-01
		410.94		11.10	1.05E-01		1.73E+00
		711.69		54.10	9.86E-02		4.04E-01
+	TM-171	66.72		0.14	1.91E+01	1.56E+02	1.56E+02
+	HF-172	67.35		5.31	5.02E-01	1.46E+00	4.10E+00
		125.81		11.30	-3.08E-01		1.46E+00
+	LU-172	181.53		20.60	8.86E+02	1.32E+04	3.07E+04
		900.72		29.81	-3.57E+03		2.90E+04
		1093.66		62.50	6.83E+03		1.32E+04
+	LU-173	100.72		5.24	6.70E-01	1.01E+00	3.12E+00
		272.11		21.20	1.73E+00		1.01E+00
+	HF-175	343.40		84.00	1.44E-01	5.88E-01	5.88E-01
+	LU-176	88.34		13.30	-6.26E+00	1.82E-01	1.43E+00
		201.83		86.00	6.46E-02		2.00E-01
		306.78		94.00	-2.87E-03		1.82E-01
+	HF-181	133.02		41.70	4.10E-01	1.19E+00	1.91E+00
		345.85		17.20	2.18E+00		5.69E+00
		482.03		82.80	4.76E-02		1.19E+00
+	TA-182	67.75		41.20	1.07E-01	8.49E-01	8.49E-01
		1121.30		34.90	2.03E+01		3.11E+00
		1189.05		16.23	-7.08E-01		2.84E+00
		1221.41		26.98	-2.08E-01		1.66E+00
		1231.02		11.44	-3.09E+01		3.85E+00
+	IR-192	308.46		29.68	-7.75E-02	1.00E+00	1.48E+00
		468.07		48.10	-1.06E-01		1.00E+00
+	HG-203	279.19		77.30	-7.49E-01	1.00E+00	1.00E+00
+	TL-204	374.74		94.11	1.75E-01	1.97E-01	1.97E-01
		899.15		99.16	-4.72E-02		2.69E-01
		911.74		91.10	2.72E-01		3.08E-01
+	BI-207	569.67		97.72	-1.14E-02	1.84E-01	1.84E-01
		1063.62		74.90	-1.89E-01		3.20E-01
+	TL-208	583.14	*	30.22	5.76E-01	2.73E-01	7.86E-01

Analysis Report for 1707093-07

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TL-208	860.37		4.48	3.31E+00	2.73E-01	5.57E+00
		2614.66	*	35.85	4.53E-01		2.73E-01
+	BI-210M	262.00		45.00	-9.88E-03	3.79E-01	3.79E-01
		300.00		23.00	1.82E-01		8.65E-01
+	PB-210	46.50	*	4.25	1.25E+01	4.74E+00	4.74E+00
+	PB-211	404.84		2.90	2.91E+00	6.91E+00	6.91E+00
		831.96		2.90	-8.44E-02		8.53E+00
+	BI-212	727.17		11.80	7.29E-01	1.88E+00	1.88E+00
		1620.62		2.75	-6.93E-01		7.90E+00
+	PB-212	238.63		44.60	-4.30E-02	5.32E-01	5.32E-01
		300.09		3.41	1.23E+00		5.84E+00
+	BI-214	609.31	*	46.30	2.45E+01	6.65E-01	6.65E-01
		1120.29	*	15.10	2.52E+01		3.02E+00
		1764.49	*	15.80	2.90E+01		1.50E+00
		2204.22	*	4.98	2.73E+01		4.19E+00
+	PB-214	295.21	*	19.19	2.53E+01	8.64E-01	1.27E+00
		351.92	*	37.19	2.57E+01		8.64E-01
+	RN-219	401.80		6.50	1.93E+00	3.07E+00	3.07E+00
+	RA-223	323.87		3.88	-6.64E-01	4.49E+00	4.49E+00
+	RA-224	240.98		3.95	4.99E+01	6.46E+00	6.46E+00
+	RA-225	40.00		31.00	-6.42E+01	7.88E+01	7.88E+01
+	RA-226	186.21	*	3.28	5.48E+01	7.74E+00	7.74E+00
+	TH-227	50.10		8.40	-1.38E+00	1.65E+00	2.37E+00
		236.00		11.50	-8.91E-01		1.65E+00
		256.20		6.30	2.90E+00		2.81E+00
+	AC-228	338.32		11.40	-7.27E-02	9.61E-01	1.59E+00
		911.07		27.70	3.78E-01		9.61E-01
		969.11		16.60	-3.38E-01		1.59E+00
+	TH-230	48.44		16.90	1.82E+00	1.22E+00	1.22E+00
		62.85		4.60	1.71E+01		4.53E+00
		67.67		0.37	6.50E+00		5.14E+01
+	PA-231	283.67		1.60	1.70E+00	7.53E+00	1.10E+01
		302.67		2.30	5.19E-01		7.53E+00
+	TH-231	25.64		14.70	-9.68E-02	2.90E+00	3.52E+00
		84.21		6.40	-5.44E+00		2.90E+00
+	PA-233	311.98		38.60	-8.41E-01	5.92E+00	5.92E+00
+	PA-234	131.20		20.40	-1.43E-01	7.41E-01	7.41E-01
		733.99		8.80	1.56E-01		2.52E+00
		946.00		12.00	5.14E-01		2.16E+00
+	PA-234M	1001.03	*	0.92	2.93E+01	3.00E+01	3.00E+01
+	TH-234	63.29	*	3.80	2.08E+01	5.74E+00	5.74E+00
+	U-235	143.76	*	10.50	9.46E-01	1.82E+00	1.82E+00
		163.35	*	4.70	2.01E+00		3.56E+00
		205.31		4.70	-2.60E-01		3.65E+00
+	NP-237	86.50	*	12.60	7.57E+00	2.88E+00	2.88E+00
+	NP-239	106.10		22.70	-3.80E+12	4.87E+12	4.87E+12
		228.18		10.70	-1.37E+12		1.23E+13
		277.60		14.10	-1.00E+12		9.68E+12

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	AM-241	59.54	35.90	-1.95E-01	5.54E-01	5.54E-01
+	AM-243	74.67	66.00	5.45E+00	4.02E-01	4.02E-01
+	CM-243	209.75	3.29	-9.26E-01	1.26E+00	5.21E+00
		228.14	10.60	-1.79E-01		1.60E+00
		277.60	14.00	-1.30E-01		1.26E+00

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	6.73E+00	6.73E+00	4.03E+00	3.29E+00
	NA-22	1274.54		99.94	2.53E-01	2.53E-01	-1.06E-02	1.21E-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	1.69E-01	1.69E-01	-1.13E-02	7.74E-02
+	K-40	1460.81	*	10.67	4.43E+00	4.43E+00	7.73E+00	2.16E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	2.02E-01	2.02E-01	2.55E-02	1.00E-01
		78.34		96.00	2.66E-01		3.11E+00	1.32E-01
	SC-46	889.25		99.98	5.88E-01	5.88E-01	-1.26E-01	2.85E-01
		1120.51		99.99	1.36E+00		9.00E+00	6.69E-01
	V-48	983.52		99.98	2.05E+01	1.96E+01	1.07E+01	9.95E+00
		1312.10		97.50	1.96E+01		2.61E-01	9.38E+00
	CR-51	320.08		9.83	2.16E+01	2.16E+01	-2.06E+01	1.06E+01
	MN-54	834.83		99.97	3.25E-01	3.25E-01	1.47E-03	1.58E-01
	CO-56	846.75		99.96	5.41E-01	5.41E-01	-1.27E-02	2.62E-01
		1037.75		14.03	3.89E+00		-3.84E+00	1.87E+00
		1238.25		67.00	1.53E+00		5.69E+00	7.45E-01

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CO-56	1771.40		15.51	2.96E+00	5.41E-01	-7.49E-01	1.37E+00
		2598.48		16.90	1.05E+00		9.39E-02	3.71E-01
	CO-57	122.06		85.51	2.21E-01	2.21E-01	5.16E-02	1.10E-01
		136.48		10.60	1.90E+00		1.04E-01	9.43E-01
	CO-58	810.76		99.40	6.67E-01	6.67E-01	2.03E-01	3.24E-01
	FE-59	1099.22		56.50	2.11E+00	2.11E+00	5.68E-01	1.02E+00
		1291.56		43.20	2.54E+00		-1.01E+00	1.21E+00
	CO-60	1173.22		100.00	2.61E-01	2.37E-01	3.41E-02	1.26E-01
		1332.49		100.00	2.37E-01		-6.14E-02	1.13E-01
	ZN-65	1115.52		50.75	1.12E+00	1.12E+00	8.70E-02	5.48E-01
	GA-67	93.31		35.70	1.09E+09	1.09E+09	5.20E+09	5.39E+08
		208.95		2.24	1.55E+10		-3.90E+09	7.68E+09
		300.22		16.00	2.54E+09		5.34E+08	1.26E+09
	SE-75	121.11		16.70	1.56E+00	4.67E-01	-6.87E-02	7.75E-01
		136.00		59.20	4.67E-01		-1.53E-01	2.32E-01
		264.65		59.80	5.01E-01		-7.73E-01	2.47E-01
		279.53		25.20	1.22E+00		-1.34E+00	6.02E-01
		400.65		11.40	3.11E+00		6.50E-01	1.53E+00
	RB-82	776.52		13.00	2.61E+01	2.61E+01	-1.12E+01	1.27E+01
	RB-83	520.41		46.00	8.67E-01	8.67E-01	-1.89E-01	4.23E-01
		529.64		30.30	1.36E+00		-1.12E-01	6.64E-01
		552.65		16.40	2.50E+00		-1.42E-01	1.22E+00
	KR-85	513.99		0.43	4.48E+01	4.48E+01	6.88E+00	2.19E+01
	SR-85	513.99		99.27	5.65E-01	5.65E-01	8.69E-02	2.76E-01
	Y-88	898.02		93.40	5.18E-01	3.53E-01	-3.22E-01	2.51E-01
		1836.01		99.38	3.53E-01		8.73E-02	1.63E-01
	MO-93	263.06		56.72	3.00E-01	2.12E-01	-1.06E-01	1.48E-01
		684.67		99.68	2.12E-01		7.62E-02	1.03E-01
		1477.11		99.08	2.81E-01		7.87E-02	1.35E-01
	NB-93M	16.57		9.43	1.71E+01	1.71E+01	7.48E+01	8.45E+00
	NB-94	702.63		100.00	2.32E-01	2.32E-01	1.23E-01	1.13E-01
		871.10		100.00	2.46E-01		-1.10E-01	1.19E-01
	NB-95	765.79		99.81	2.46E+00	2.46E+00	7.67E+00	1.20E+00
	NB-95M	235.69		25.00	1.94E+08	1.94E+08	-1.05E+08	9.62E+07
	ZR-95	724.18		43.70	1.60E+00	1.23E+00	3.69E-01	7.77E-01
		756.72		55.30	1.23E+00		2.69E-01	5.99E-01
	MO-99	181.06		6.20	3.04E+11	1.95E+11	-2.47E+10	1.51E+11
		739.58		12.80	1.95E+11		1.10E+11	9.46E+10
		778.00		4.50	5.24E+11		-2.29E+11	2.54E+11
	RU-103	497.08		89.00	1.20E+00	1.20E+00	5.20E-01	5.85E-01
	RU-106	621.84		9.80	2.10E+00	2.10E+00	3.12E-01	1.02E+00
	AG-108M	433.93		89.90	2.11E-01	2.11E-01	1.83E-01	1.03E-01
		614.37		90.40	2.25E-01		1.66E-02	1.09E-01
		722.95		90.50	2.58E-01		1.60E-02	1.26E-01
+	CD-109	88.03	*	3.72	1.13E+01	1.13E+01	2.98E+01	5.65E+00
	AG-110M	657.75		93.14	2.78E-01	2.78E-01	-6.59E-02	1.35E-01
		677.61		10.53	2.56E+00		-4.16E-01	1.24E+00
		706.67		16.46	1.84E+00		-4.14E-01	8.95E-01
		763.93		21.98	1.70E+00		3.11E-01	8.31E-01
		884.67		71.63	4.65E-01		-2.32E-01	2.26E-01
		1384.27		23.94	1.59E+00		-4.15E+00	7.67E-01
	CD-113M	263.70		0.02	7.29E+02	7.29E+02	-6.80E+02	3.60E+02
	SN-113	255.12		1.93	1.65E+01	5.35E-01	-3.13E+00	8.15E+00

Analysis Report for 1707093-07

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	SN-113	391.69		64.90	5.35E-01	5.35E-01	-1.91E-02	2.63E-01
	TE123M	159.00		84.10	3.56E-01	3.56E-01	-2.57E-02	1.76E-01
	SB-124	602.71		97.87	6.24E-01	6.24E-01	-1.60E-01	3.04E-01
		645.85		7.26	7.59E+00		-5.50E+00	3.67E+00
		722.78		11.10	6.72E+00		4.15E-01	3.27E+00
		1691.02		49.00	1.30E+00		1.68E-01	6.07E-01
	I-125	35.49		6.49	1.26E+01	1.26E+01	-4.67E+00	6.26E+00
	SB-125	176.33		6.89	2.61E+00	7.12E-01	6.35E-01	1.29E+00
		427.89		29.33	7.12E-01		-6.44E-02	3.49E-01
		463.38		10.35	1.98E+00		7.40E-01	9.72E-01
		600.56		17.80	1.18E+00		-2.55E-02	5.75E-01
		635.90		11.32	1.65E+00		-2.96E-01	8.00E-01
	SB-126	414.70		83.30	6.43E+01	6.07E+01	-4.06E+01	3.16E+01
		666.33		99.60	6.47E+01		-1.96E+00	3.15E+01
		695.00		99.60	6.07E+01		-4.25E+00	2.95E+01
		720.50		53.80	1.19E+02		3.96E+01	5.79E+01
+	SN-126	87.57	*	37.00	9.81E-01	9.81E-01	2.58E+00	4.89E-01
	SB-127	473.00		25.00	5.75E+07	4.48E+07	9.84E+06	2.81E+07
		685.20		35.70	4.48E+07		1.61E+07	2.18E+07
		783.80		14.70	1.34E+08		-3.71E+06	6.51E+07
	I-129	29.78		57.00	6.39E-01	6.39E-01	1.66E-01	3.16E-01
		33.60		13.20	2.15E+00		1.72E-01	1.06E+00
		39.58		7.52	2.93E+00		-2.39E+00	1.45E+00
	I-131	284.30		6.05	1.74E+04	1.22E+03	2.69E+03	8.58E+03
		364.48		81.20	1.22E+03		-3.82E+02	5.99E+02
		636.97		7.26	1.44E+04		-6.57E+03	6.98E+03
		722.89		1.80	7.75E+04		4.79E+03	3.77E+04
	TE-132	49.72		13.10	3.18E+09	3.97E+08	-1.86E+09	1.58E+09
		228.16		88.00	3.97E+08		-4.45E+07	1.96E+08
	BA-133	81.00		33.00	6.18E-01	5.44E-01	-4.91E+00	3.07E-01
		302.84		17.80	9.91E-01		6.84E-02	4.88E-01
		356.01		60.00	5.44E-01		-4.15E-02	2.69E-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	3.26E+05	3.26E+05	-2.59E+06	1.62E+05
	CS-134	563.23		8.38	2.36E+00	3.02E-01	-4.74E-01	1.15E+00
		569.32		15.43	1.27E+00		-7.89E-02	6.17E-01
		604.70		97.60	3.54E-01		-2.30E-02	1.74E-01
		795.84		85.40	3.02E-01		9.51E-02	1.47E-01
		801.93		8.73	3.08E+00		-5.84E-01	1.50E+00
	CS-135	268.24		16.00	1.10E+00	1.10E+00	3.78E-01	5.45E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	4.65E+02	4.60E+01	3.81E+02	2.31E+02
		163.89		4.61	7.29E+02		3.39E+02	3.61E+02
		176.55		13.56	2.52E+02		3.86E+01	1.25E+02
		273.65		12.66	2.89E+02		4.35E+01	1.42E+02
		340.57		48.50	7.71E+01		3.45E+00	3.79E+01
		818.50		99.70	4.60E+01		-1.77E+01	2.23E+01
		1048.07		79.60	6.30E+01		-1.80E+01	3.04E+01
		1235.34		19.70	4.29E+02		1.50E+03	2.09E+02
	CS-137	661.65		85.12	2.60E-01	2.60E-01	-4.41E-02	1.27E-01
	LA-138	788.74		34.00	7.81E-01	3.69E-01	-1.24E-01	3.81E-01

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
LA-138	1435.80	66.00	3.69E-01	3.69E-01	-1.83E-01	1.76E-01
CE-139	165.85	80.35	3.39E-01	3.39E-01	-4.52E-02	1.68E-01
BA-140	162.64	6.70	5.88E+02	1.72E+02	-1.14E+02	2.91E+02
	304.84	4.50	9.09E+02		1.84E+02	4.48E+02
	423.70	3.20	1.48E+03		9.22E+01	7.27E+02
	437.55	2.00	2.16E+03		8.96E+01	1.06E+03
	537.32	25.00	1.72E+02		-8.41E+01	8.37E+01
LA-140	328.77	20.50	2.07E+02	6.51E+01	-2.68E+01	1.02E+02
	487.03	45.50	9.68E+01		4.12E+01	4.73E+01
	815.85	23.50	2.29E+02		-7.30E+01	1.11E+02
	1596.49	95.49	6.51E+01		4.41E+00	3.10E+01
CE-141	145.44	48.40	2.99E+00	2.99E+00	3.74E-01	1.48E+00
@ 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	1.81E+00	1.81E+00	-1.41E-01	8.96E-01
PM-144	476.78	42.00	5.41E-01	2.16E-01	7.97E-02	2.64E-01
	618.01	98.60	2.16E-01		3.16E-02	1.05E-01
	696.49	99.49	2.65E-01		-1.49E-02	1.29E-01
PM-145	36.85	21.70	1.12E+00	6.00E-01	-9.72E-01	5.56E-01
	37.36	39.70	6.00E-01		-5.19E-01	2.97E-01
	42.30	15.10	1.39E+00		-3.27E-01	6.87E-01
	72.40	2.31	9.45E+00		-8.54E+01	4.70E+00
PM-146	453.90	39.94	4.91E-01	4.91E-01	2.23E-01	2.41E-01
	735.90	14.01	1.62E+00		-4.01E-01	7.89E-01
	747.13	13.10	1.73E+00		6.10E-01	8.41E-01
ND-147	91.11	28.90	4.04E+02	4.04E+02	1.97E+03	2.01E+02
	531.02	13.10	8.23E+02		3.53E+02	4.01E+02
PM-149	285.90	3.10	3.04E+14	3.04E+14	1.68E+14	1.50E+14
EU-152	121.78	20.50	7.22E-01	7.22E-01	1.69E-01	3.58E-01
	244.69	5.40	4.32E+00		2.15E+01	2.14E+00
	344.27	19.13	9.68E-01		2.37E-01	4.76E-01
	778.89	9.20	2.38E+00		-1.05E+00	1.15E+00
	964.01	10.40	2.66E+00		7.04E-01	1.29E+00
	1085.78	7.22	3.42E+00		4.58E-01	1.65E+00
	1112.02	9.60	2.61E+00		1.84E-01	1.26E+00
	1407.95	14.94	2.28E+00		1.85E+00	1.10E+00
GD-153	97.43	31.30	6.57E-01	6.57E-01	1.71E-01	3.26E-01
	103.18	22.20	8.48E-01		-4.59E-01	4.20E-01
EU-154	123.07	40.50	3.69E-01	3.69E-01	-4.32E-02	1.83E-01
	723.30	19.70	1.21E+00		2.81E-01	5.90E-01
	873.19	11.50	2.25E+00		-1.49E+00	1.09E+00
	996.32	10.30	2.62E+00		1.34E-01	1.27E+00
	1004.76	17.90	1.53E+00		-5.20E-01	7.41E-01
	1274.45	35.50	6.75E-01		-2.83E-02	3.23E-01
EU-155	86.50	30.90	6.47E-01	6.47E-01	3.03E-01	3.21E-01
	105.30	20.70	7.07E-01		-7.75E-01	3.50E-01
EU-156	811.77	10.40	2.24E+02	2.24E+02	5.19E+01	1.09E+02
	1153.47	7.20	4.19E+02		4.81E+02	2.03E+02
	1230.71	8.90	2.66E+02		-1.41E+03	1.27E+02
HO-166M	184.41	72.60	3.15E-01	3.15E-01	2.54E+00	1.56E-01
	280.45	29.60	5.90E-01		7.74E-02	2.91E-01
	410.94	11.10	1.73E+00		1.05E-01	8.47E-01

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	HO-166M	711.69		54.10	4.04E-01	3.15E-01	9.86E-02	1.96E-01
	TM-171	66.72		0.14	1.56E+02	1.56E+02	1.91E+01	7.74E+01
	HF-172	67.35		5.31	4.10E+00	1.46E+00	5.02E-01	2.04E+00
		125.81		11.30	1.46E+00		-3.08E-01	7.21E-01
	LU-172	181.53		20.60	3.07E+04	1.32E+04	8.86E+02	1.52E+04
		900.72		29.81	2.90E+04		-3.57E+03	1.41E+04
		1093.66		62.50	1.32E+04		6.83E+03	6.37E+03
	LU-173	100.72		5.24	3.12E+00	1.01E+00	6.70E-01	1.55E+00
		272.11		21.20	1.01E+00		1.73E+00	4.98E-01
	HF-175	343.40		84.00	5.88E-01	5.88E-01	1.44E-01	2.90E-01
	LU-176	88.34		13.30	1.43E+00	1.82E-01	-6.26E+00	7.12E-01
		201.83		86.00	2.00E-01		6.46E-02	9.91E-02
		306.78		94.00	1.82E-01		-2.87E-03	8.96E-02
	HF-181	133.02		41.70	1.91E+00	1.19E+00	4.10E-01	9.47E-01
		345.85		17.20	5.69E+00		2.18E+00	2.80E+00
		482.03		82.80	1.19E+00		4.76E-02	5.80E-01
	TA-182	67.75		41.20	8.49E-01	8.49E-01	1.07E-01	4.22E-01
		1121.30		34.90	3.11E+00		2.03E+01	1.53E+00
		1189.05		16.23	2.84E+00		-7.08E-01	1.37E+00
		1221.41		26.98	1.66E+00		-2.08E-01	7.98E-01
		1231.02		11.44	3.85E+00		-3.09E+01	1.85E+00
	IR-192	308.46		29.68	1.48E+00	1.00E+00	-7.75E-02	7.26E-01
		468.07		48.10	1.00E+00		-1.06E-01	4.92E-01
	HG-203	279.19		77.30	1.00E+00	1.00E+00	-7.49E-01	4.96E-01
	TL-204	374.74		94.11	1.97E-01	1.97E-01	1.75E-01	9.65E-02
		899.15		99.16	2.69E-01		-4.72E-02	1.31E-01
		911.74		91.10	3.08E-01		2.72E-01	1.50E-01
	BI-207	569.67		97.72	1.84E-01	1.84E-01	-1.14E-02	8.93E-02
		1063.62		74.90	3.20E-01		-1.89E-01	1.54E-01
+	TL-208	583.14	*	30.22	7.86E-01	2.73E-01	5.76E-01	3.85E-01
		860.37		4.48	5.57E+00		3.31E+00	2.71E+00
		2614.66	*	35.85	2.73E-01		4.53E-01	1.07E-01
	BI-210M	262.00		45.00	3.79E-01	3.79E-01	-9.88E-03	1.87E-01
		300.00		23.00	8.65E-01		1.82E-01	4.27E-01
+	PB-210	46.50	*	4.25	4.74E+00	4.74E+00	1.25E+01	2.35E+00
	PB-211	404.84		2.90	6.91E+00	6.91E+00	2.91E+00	3.40E+00
		831.96		2.90	8.53E+00		-8.44E-02	4.14E+00
	BI-212	727.17		11.80	1.88E+00	1.88E+00	7.29E-01	9.12E-01
		1620.62		2.75	7.90E+00		-6.93E-01	3.72E+00
	PB-212	238.63		44.60	5.32E-01	5.32E-01	-4.30E-02	2.64E-01
		300.09		3.41	5.84E+00		1.23E+00	2.88E+00
+	BI-214	609.31	*	46.30	6.65E-01	6.65E-01	2.45E+01	3.27E-01
		1120.29	*	15.10	3.02E+00		2.52E+01	1.48E+00
		1764.49	*	15.80	1.50E+00		2.90E+01	7.07E-01
		2204.22	*	4.98	4.19E+00		2.73E+01	1.92E+00
+	PB-214	295.21	*	19.19	1.27E+00	8.64E-01	2.53E+01	6.28E-01
		351.92	*	37.19	8.64E-01		2.57E+01	4.28E-01
	RN-219	401.80		6.50	3.07E+00	3.07E+00	1.93E+00	1.51E+00
	RA-223	323.87		3.88	4.49E+00	4.49E+00	-6.64E-01	2.21E+00
	RA-224	240.98		3.95	6.46E+00	6.46E+00	4.99E+01	3.20E+00
	RA-225	40.00		31.00	7.88E+01	7.88E+01	-6.42E+01	3.90E+01
+	RA-226	186.21	*	3.28	7.74E+00	7.74E+00	5.48E+01	3.84E+00
	TH-227	50.10		8.40	2.37E+00	1.65E+00	-1.38E+00	1.17E+00

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

	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	1.65E+00	1.65E+00	-8.91E-01	8.14E-01
		256.20		6.30	2.81E+00		2.90E+00	1.39E+00
	AC-228	338.32		11.40	1.59E+00	9.61E-01	-7.27E-02	7.80E-01
		911.07		27.70	9.61E-01		3.78E-01	4.67E-01
		969.11		16.60	1.59E+00		-3.38E-01	7.70E-01
	TH-230	48.44		16.90	1.22E+00	1.22E+00	1.82E+00	6.06E-01
		62.85		4.60	4.53E+00		1.71E+01	2.25E+00
		67.67		0.37	5.14E+01		6.50E+00	2.55E+01
	PA-231	283.67		1.60	1.10E+01	7.53E+00	1.70E+00	5.42E+00
		302.67		2.30	7.53E+00		5.19E-01	3.71E+00
	TH-231	25.64		14.70	3.52E+00	2.90E+00	-9.68E-02	1.74E+00
		84.21		6.40	2.90E+00		-5.44E+00	1.44E+00
	PA-233	311.98		38.60	5.92E+00	5.92E+00	-8.41E-01	2.91E+00
	PA-234	131.20		20.40	7.41E-01	7.41E-01	-1.43E-01	3.67E-01
		733.99		8.80	2.52E+00		1.56E-01	1.22E+00
		946.00		12.00	2.16E+00		5.14E-01	1.05E+00
+	PA-234M	1001.03	*	0.92	3.00E+01	3.00E+01	2.93E+01	1.46E+01
+	TH-234	63.29	*	3.80	5.74E+00	5.74E+00	2.08E+01	2.85E+00
+	U-235	143.76	*	10.50	1.82E+00	1.82E+00	9.46E-01	9.03E-01
		163.35	*	4.70	3.56E+00		2.01E+00	1.77E+00
		205.31		4.70	3.65E+00		-2.60E-01	1.80E+00
+	NP-237	86.50	*	12.60	2.88E+00	2.88E+00	7.57E+00	1.44E+00
	NP-239	106.10		22.70	4.87E+12	4.87E+12	-3.80E+12	2.42E+12
		228.18		10.70	1.23E+13		-1.37E+12	6.06E+12
		277.60		14.10	9.68E+12		-1.00E+12	4.78E+12
	AM-241	59.54		35.90	5.54E-01	5.54E-01	-1.95E-01	2.75E-01
	AM-243	74.67		66.00	4.02E-01	4.02E-01	5.45E+00	2.00E-01
	CM-243	209.75		3.29	5.21E+00	1.26E+00	-9.26E-01	2.58E+00
		228.14		10.60	1.60E+00		-1.79E-01	7.89E-01
		277.60		14.00	1.26E+00		-1.30E-01	6.21E-01

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

Analysis Report for 1707093-07

HTC-A09-S002-0612-01

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: HTC-A09-S002-0612-01

Elapsed Live time: 3600
Elapsed Real Time: 3611

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	149	589
17:	644	558	552	544	545	501	519	522
25:	496	525	543	490	491	494	526	521
33:	495	500	507	507	474	554	540	526
41:	600	562	556	694	1011	1049	759	654
49:	746	708	761	927	866	761	730	828
57:	833	902	959	1009	1278	1749	1670	1178
65:	1056	1139	1192	1137	1145	1153	1187	1385
73:	2150	2774	2987	3642	2719	1452	1182	1132
81:	1025	1066	1340	1108	1271	1652	1570	1164
89:	1143	1182	1764	1933	1305	915	737	704
97:	752	751	691	724	657	691	677	668
105:	689	679	681	712	775	715	744	767
113:	714	718	708	664	659	650	615	659
121:	672	661	708	665	624	661	678	656
129:	701	661	653	658	629	717	667	660
137:	648	669	727	664	703	767	856	763
145:	662	659	735	685	710	686	707	747
153:	732	720	662	632	650	673	611	630
161:	619	674	612	622	557	525	551	540
169:	597	550	560	522	549	564	557	579
177:	537	587	545	534	591	552	640	1133
185:	1771	1343	716	538	463	513	510	512
193:	483	516	544	483	501	483	470	463
201:	461	479	456	472	439	422	426	406
209:	482	414	431	418	382	384	424	371
217:	349	396	346	376	355	374	385	369
225:	370	370	366	359	339	335	361	338
233:	376	389	479	424	476	503	435	855
241:	1451	1076	445	283	317	299	268	273
249:	304	290	282	290	275	327	306	333
257:	346	349	308	261	293	237	285	245
265:	252	260	284	315	343	323	287	300
273:	317	301	274	223	266	243	283	266
281:	241	236	273	283	235	258	257	229
289:	229	222	226	305	972	2287	2086	724
297:	233	202	220	233	234	209	183	237
305:	205	206	222	201	189	195	196	201
313:	196	224	190	202	193	183	186	194
321:	177	179	221	207	185	177	206	200
329:	202	205	198	177	199	159	179	196
337:	202	221	203	158	172	209	188	202
345:	179	188	186	214	524	2058	3820	2401
353:	648	167	145	129	139	145	167	150
361:	135	145	141	129	117	150	130	143

369:	116	144	154	158	135	136	139	139

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Channel								
377:	144	134	107	166	135	145	141	115
385:	176	177	148	189	157	152	137	143
393:	145	141	161	129	142	150	152	157
401:	173	158	176	159	162	148	139	153
409:	140	140	138	137	138	126	130	157
417:	133	143	173	138	157	147	158	136
425:	144	132	150	115	111	149	127	120
433:	115	111	119	117	98	102	114	119
441:	95	116	99	106	107	105	110	118
449:	91	114	99	102	103	130	121	113
457:	104	100	101	119	117	112	111	113
465:	96	99	89	119	107	98	102	98
473:	90	103	99	98	84	99	116	105
481:	80	93	101	91	89	114	95	75
489:	86	86	84	85	92	88	85	80
497:	88	78	75	68	74	95	74	73
505:	75	85	82	99	94	114	100	82
513:	87	70	82	78	68	69	66	75
521:	77	90	68	78	70	73	76	72
529:	83	77	87	63	80	79	59	57
537:	82	76	75	76	97	83	87	62
545:	67	79	67	84	68	69	71	75
553:	55	87	53	61	68	75	55	59
561:	73	56	67	79	62	63	65	68
569:	65	56	56	59	52	62	64	70
577:	59	59	77	63	72	94	80	86
585:	60	69	60	73	65	78	65	46
593:	65	70	72	54	67	77	72	58
601:	70	57	71	69	47	144	767	2072
609:	2207	886	173	55	45	50	61	49
617:	49	53	48	45	56	40	39	46
625:	43	41	58	42	37	36	56	41
633:	50	48	45	48	51	47	43	61
641:	52	33	46	37	45	59	45	48
649:	51	51	38	51	48	45	42	47
657:	38	39	41	56	36	43	49	94
665:	96	78	49	36	46	38	42	46
673:	49	50	49	39	44	43	44	39
681:	44	51	45	52	34	56	38	50
689:	42	38	55	47	54	42	46	55
697:	43	47	43	57	53	77	62	46
705:	53	49	49	45	45	43	55	48
713:	49	41	45	30	47	55	59	77
721:	50	40	42	48	42	55	55	43
729:	49	41	48	38	49	47	46	41
737:	48	30	52	42	55	64	51	44
745:	27	48	38	43	30	40	60	55
753:	63	47	48	29	43	38	44	44
761:	40	32	34	48	50	114	217	222
769:	113	58	51	48	45	51	31	43
777:	35	35	29	43	36	41	26	81
785:	84	83	59	47	34	48	39	40
793:	41	62	37	49	37	40	49	36

801:	44	49	44	54	72	82	51	31

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Channel								
809:	47	45	39	43	48	36	36	36
817:	39	41	34	37	42	45	37	42
825:	48	47	26	38	40	60	48	48
833:	49	47	47	47	38	59	63	51
841:	37	35	40	26	30	32	42	38
849:	31	40	42	34	37	40	44	50
857:	37	48	36	50	35	40	46	44
865:	39	26	47	46	41	52	40	42
873:	36	35	51	45	44	55	50	45
881:	43	42	35	49	39	41	39	40
889:	48	36	49	54	34	44	49	41
897:	40	42	40	33	38	43	42	49
905:	42	35	35	50	41	49	54	44
913:	49	39	37	33	31	45	30	33
921:	47	38	43	35	29	30	41	34
929:	38	44	42	80	140	123	73	35
937:	41	37	35	45	38	35	41	48
945:	42	40	33	36	38	31	37	32
953:	35	25	45	27	40	31	41	30
961:	33	43	59	49	39	33	49	53
969:	33	33	27	30	31	36	34	31
977:	37	23	33	32	28	38	38	43
985:	33	37	40	32	31	30	31	31
993:	28	33	32	30	29	39	48	60
1001:	47	53	22	36	31	22	35	29
1009:	32	40	34	37	40	17	39	32
1017:	25	42	33	21	35	35	20	23
1025:	35	29	24	36	26	28	36	30
1033:	23	26	22	24	18	22	24	30
1041:	30	35	28	28	16	34	35	27
1049:	30	25	40	33	29	28	17	38
1057:	24	21	31	24	37	24	22	25
1065:	29	22	23	32	43	29	25	28
1073:	23	24	24	25	27	27	28	24
1081:	27	27	31	22	21	28	29	29
1089:	25	26	24	21	23	23	29	33
1097:	31	18	13	32	24	35	29	38
1105:	30	25	32	25	23	29	38	15
1113:	29	18	26	26	59	161	349	431
1121:	241	66	34	19	18	25	31	26
1129:	18	23	18	28	35	26	31	29
1137:	28	28	31	28	22	22	25	19
1145:	22	19	27	36	25	24	28	21
1153:	40	61	72	41	23	25	27	22
1161:	19	19	31	23	25	26	28	25
1169:	26	34	25	26	25	16	24	18
1177:	28	18	22	25	34	27	27	29
1185:	24	26	20	23	25	16	28	26
1193:	27	27	19	27	22	17	21	17
1201:	26	24	24	17	12	27	22	34
1209:	20	24	26	31	25	26	21	21
1217:	18	33	19	22	21	21	27	15
1225:	17	26	27	23	14	16	13	24

1233:	20	17	29	70	157	156	87	27

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Channel								
1241:	19	20	22	8	17	20	19	23
1249:	16	25	18	26	12	26	19	20
1257:	17	22	11	26	22	25	23	25
1265:	14	23	17	27	14	14	17	22
1273:	21	16	20	21	16	18	23	52
1281:	54	39	15	26	18	18	18	13
1289:	20	22	13	18	12	19	18	24
1297:	23	17	18	14	14	23	24	24
1305:	13	17	14	27	22	12	12	14
1313:	23	20	21	13	29	13	20	27
1321:	18	16	19	12	14	17	18	13
1329:	20	19	20	14	16	12	20	10
1337:	27	16	13	12	18	11	16	14
1345:	7	16	21	18	16	20	19	14
1353:	18	14	25	17	16	18	22	17
1361:	12	23	13	14	13	14	17	16
1369:	20	20	15	27	13	20	41	61
1377:	104	87	41	15	19	23	26	44
1385:	29	27	18	17	29	10	15	16
1393:	20	10	18	14	19	24	23	26
1401:	51	35	32	17	31	29	69	57
1409:	31	21	16	18	18	13	13	17
1417:	17	12	30	14	15	22	15	17
1425:	24	15	19	21	18	14	18	14
1433:	18	11	13	11	20	22	16	21
1441:	13	27	20	25	18	15	25	11
1449:	21	12	35	19	17	14	11	19
1457:	13	29	46	66	64	37	28	17
1465:	22	16	16	26	18	18	20	16
1473:	18	19	24	22	21	15	22	17
1481:	15	16	12	22	20	21	16	25
1489:	17	21	14	19	24	25	10	17
1497:	17	18	18	14	18	19	22	17
1505:	16	19	34	46	58	42	21	19
1513:	15	25	20	10	17	12	20	19
1521:	17	13	21	17	18	18	18	17
1529:	16	13	17	22	9	10	18	13
1537:	20	27	20	14	20	19	31	26
1545:	9	13	10	16	20	19	13	11
1553:	17	13	15	12	14	10	12	17
1561:	18	13	18	10	15	9	7	14
1569:	16	13	9	12	11	6	10	12
1577:	18	20	14	15	15	23	23	21
1585:	11	11	15	17	11	12	11	16
1593:	14	15	17	10	12	15	18	20
1601:	15	12	7	12	13	11	17	11
1609:	11	10	7	10	11	7	19	11
1617:	8	8	10	16	13	10	5	8
1625:	9	14	9	17	9	11	9	4
1633:	10	10	5	10	12	8	8	11
1641:	9	12	8	12	7	2	9	13
1649:	5	13	10	5	6	10	7	4
1657:	9	13	19	27	28	14	14	4

1665:	2	9	11	4	8	6	7	8

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Channel								
1673:	7	6	5	11	7	6	7	5
1681:	6	9	9	14	7	3	6	5
1689:	5	10	8	8	10	10	6	6
1697:	4	8	8	7	3	8	2	7
1705:	1	7	7	4	4	6	2	6
1713:	7	4	9	2	7	7	7	8
1721:	9	4	6	3	8	10	14	45
1729:	50	52	22	12	5	6	6	5
1737:	5	4	7	4	4	4	3	0
1745:	4	6	9	2	8	9	9	5
1753:	8	5	5	7	8	2	8	8
1761:	15	73	180	289	246	100	23	5
1769:	2	3	8	5	6	2	1	4
1777:	4	3	2	3	1	5	5	6
1785:	3	6	4	5	5	5	6	4
1793:	4	4	1	3	4	2	6	5
1801:	2	9	4	3	11	4	5	3
1809:	2	5	5	3	4	5	5	4
1817:	3	2	1	5	4	4	4	4
1825:	1	0	5	4	2	2	2	6
1833:	1	5	7	3	8	6	5	6
1841:	6	2	7	6	12	32	49	34
1849:	20	7	6	4	1	3	3	7
1857:	3	9	5	7	4	2	2	1
1865:	2	6	5	6	3	2	8	4
1873:	9	7	6	8	4	8	7	3
1881:	7	4	3	10	6	8	9	4
1889:	5	10	4	3	3	5	5	2
1897:	2	8	4	2	2	3	4	3
1905:	3	8	7	2	8	2	9	2
1913:	4	5	3	8	4	4	1	3
1921:	6	4	8	5	1	3	2	1
1929:	7	3	5	2	4	3	7	5
1937:	6	7	7	2	10	6	1	5
1945:	3	6	4	2	5	2	8	4
1953:	1	8	3	3	3	3	2	4
1961:	4	1	2	3	5	4	5	5
1969:	3	4	6	3	3	4	3	3
1977:	2	2	5	3	2	2	3	5
1985:	3	6	3	6	5	4	3	0
1993:	3	2	5	6	4	3	2	1
2001:	1	1	5	4	1	2	2	4
2009:	7	4	5	7	2	3	8	5
2017:	1	0	5	2	5	3	0	1
2025:	0	3	2	2	2	4	0	1
2033:	1	1	2	6	3	2	3	3
2041:	2	5	5	3	6	3	5	2
2049:	3	5	0	3	0	4	1	3
2057:	3	3	0	1	4	3	2	2
2065:	7	1	0	3	2	2	2	3
2073:	2	2	2	6	4	3	2	1
2081:	2	1	1	3	2	3	2	3
2089:	3	5	3	2	2	4	2	3

2097:	2	2	1	3	3	3	5	4

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Channel								
2105:	1	2	2	0	0	3	2	0
2113:	4	4	2	4	8	17	18	13
2121:	3	1	2	1	2	1	0	1
2129:	2	2	2	1	2	1	1	1
2137:	1	0	3	4	0	4	1	1
2145:	1	0	3	3	1	1	1	3
2153:	3	0	2	3	2	3	1	2
2161:	0	3	3	2	1	1	0	1
2169:	1	1	1	1	1	2	2	4
2177:	2	1	0	3	1	0	3	1
2185:	3	0	2	1	2	3	2	3
2193:	3	1	4	1	4	1	2	3
2201:	8	20	54	62	57	24	4	0
2209:	3	0	4	2	1	3	3	2
2217:	1	2	1	2	2	0	1	1
2225:	2	1	3	3	2	1	2	0
2233:	2	1	1	0	3	3	0	1
2241:	0	0	2	0	2	0	1	0
2249:	1	1	0	0	1	1	1	1
2257:	2	0	2	2	0	0	1	1
2265:	2	1	0	2	1	0	0	2
2273:	1	2	2	0	2	0	0	2
2281:	2	0	2	0	1	0	0	0
2289:	0	1	1	5	5	7	1	0
2297:	2	1	1	0	0	0	2	1
2305:	1	2	4	2	1	1	1	2
2313:	0	1	0	0	3	0	3	1
2321:	1	1	2	0	1	0	0	1
2329:	0	1	1	0	1	0	1	3
2337:	0	0	1	2	2	0	0	0
2345:	0	0	1	0	2	0	1	2
2353:	1	2	0	0	2	0	4	0
2361:	1	0	1	1	0	0	1	4
2369:	1	1	2	1	0	2	0	0
2377:	0	1	0	1	1	0	0	1
2385:	1	0	1	0	1	1	1	0
2393:	0	1	1	0	2	1	1	1
2401:	0	2	0	0	1	0	1	0
2409:	1	1	0	0	0	0	0	0
2417:	0	0	1	2	2	1	0	0
2425:	0	0	0	0	2	2	3	1
2433:	1	0	2	0	0	0	0	0
2441:	0	0	0	0	4	11	15	12
2449:	15	6	0	0	0	2	0	0
2457:	0	0	0	1	0	0	0	0
2465:	1	0	0	1	0	1	0	1
2473:	0	0	0	0	2	0	0	1
2481:	0	0	1	1	0	0	0	1
2489:	0	0	0	0	0	0	0	1
2497:	0	1	0	3	1	0	0	2
2505:	1	0	0	0	2	0	0	1
2513:	0	1	0	2	0	1	0	1
2521:	0	1	0	0	0	0	0	1

2529:	0	0	0	0	2	0	0	0

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

2961:	0	1	0	1	0	1	0	0

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

3393:	0	0	0	0	1	0	0	0

Sample Title: HTC-A09-S002-0612-01

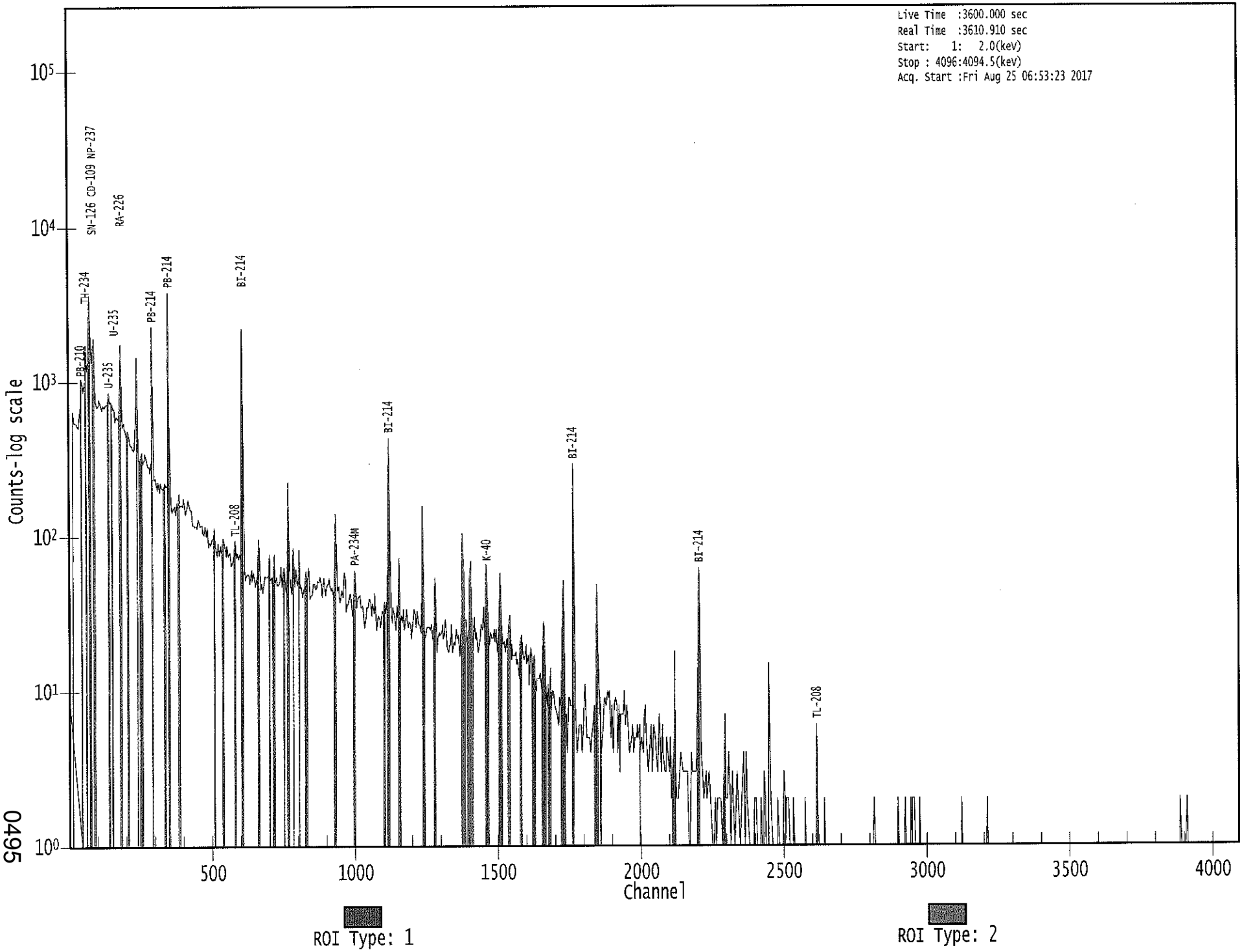
Channel								
3401:	0	0	0	0	0	1	0	0
3409:	0	0	0	1	0	0	0	0
3417:	0	0	0	0	0	1	0	0
3425:	0	0	0	0	0	0	0	1
3433:	0	0	0	0	0	0	0	1
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	1	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	1	0	0	0	0	0
3473:	0	0	1	1	0	0	1	1
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	1	0
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	0	0	0	1	0	0

Sample Title: HTC-A09-S002-0612-01

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	1	1	0
3849:	0	0	0	0	0	0	1	0
3857:	0	0	0	0	0	0	0	1
3865:	0	0	0	0	0	1	0	0
3873:	0	0	1	0	0	0	0	0
3881:	0	0	0	0	0	2	0	0
3889:	0	0	1	0	0	0	0	0
3897:	1	0	0	0	0	0	0	0
3905:	1	0	0	0	0	0	2	0
3913:	0	0	0	0	0	0	0	1
3921:	1	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	1	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	1	0	0	0	0
3985:	0	1	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	1	0	0	0
4017:	1	0	0	0	0	0	0	0
4025:	0	0	0	0	0	1	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	1	0	0	0	0	0	1
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	1	0	0	0	0	0	0
4089:	0	1	0	0	0	0	0	0

0000055962.CNF



0495

Apex-Gamma

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Analysis Report for 1707093-08

HTC-A09-S002-1218-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-08
Sample Description	: HTC-A09-S002-1218-01
Sample Type	: SOIL
Sample Size	: 7.664E+02 grams
Facility	: Countroom
Sample Taken On	: 5/16/2017 10:50:42AM
Acquisition Started	: 8/25/2017 7:55:57AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.3 seconds
Dead Time	: 0.04 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 8/19/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55964

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 8:56:12AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	40.77	41.12	0.0000	0.00
2	46.51	46.86	0.0000	0.00
3	76.30	76.62	0.0000	0.00
4	87.75	88.05	0.0000	0.00
5	93.18	93.48	0.0000	0.00
6	113.65	113.92	0.0000	0.00
7	135.06	135.31	0.0000	0.00
8	155.15	155.37	0.0000	0.00
9	185.89	186.09	0.0000	0.00
10	209.67	209.84	0.0000	0.00
11	238.85	238.98	0.0000	0.00
12	241.99	242.12	0.0000	0.00
13	295.18	295.26	0.0000	0.00
14	327.76	327.80	0.0000	0.00
15	338.44	338.47	0.0000	0.00
16	351.89	351.91	0.0000	0.00
17	380.75	380.73	0.0000	0.00
18	387.38	387.37	0.0000	0.00
19	401.03	400.99	0.0000	0.00
20	410.22	410.18	0.0000	0.00
21	462.66	462.57	0.0000	0.00
22	510.97	510.83	0.0000	0.00
23	514.01	513.86	0.0000	0.00
24	520.14	519.99	0.0000	0.00
25	583.18	582.96	0.0000	0.00
26	609.43	609.19	0.0000	0.00
27	650.48	650.19	0.0000	0.00
28	670.49	670.19	0.0000	0.00
29	727.50	727.14	0.0000	0.00
30	768.32	767.92	0.0000	0.00
31	793.36	792.94	0.0000	0.00
32	860.18	859.69	0.0000	0.00
33	878.94	878.43	0.0000	0.00
34	911.41	910.87	0.0000	0.00
35	934.01	933.46	0.0000	0.00
36	968.16	967.57	0.0000	0.00
37	1048.40	1047.74	0.0000	0.00
38	1081.95	1081.25	0.0000	0.00
39	1120.52	1119.79	0.0000	0.00
40	1228.11	1227.28	0.0000	0.00
41	1238.63	1237.80	0.0000	0.00
42	1249.23	1248.39	0.0000	0.00

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1377.89	1376.93	0.0000	0.00
44	1428.32	1427.32	0.0000	0.00
45	1461.12	1460.10	0.0000	0.00
46	1465.72	1464.69	0.0000	0.00
47	1623.82	1622.66	0.0000	0.00
48	1642.81	1641.63	0.0000	0.00
49	1661.03	1659.84	0.0000	0.00
50	1668.09	1666.90	0.0000	0.00
51	1730.19	1728.95	0.0000	0.00
52	1765.04	1763.77	0.0000	0.00
53	1836.33	1835.00	0.0000	0.00
54	1848.95	1847.61	0.0000	0.00
55	1875.52	1874.16	0.0000	0.00
56	1928.93	1927.53	0.0000	0.00
57	1952.75	1951.33	0.0000	0.00
58	2119.17	2117.64	0.0000	0.00
59	2204.51	2202.92	0.0000	0.00
60	2448.56	2446.79	0.0000	0.00
61	2614.76	2612.89	0.0000	0.00
62	3697.83	3695.40	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 8:56:12AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	40.77	39 -	43	41.12	7.47E+01	63.65	8.05E+02	2.79
	2	46.51	44 -	50	46.86	1.45E+02	81.40	1.11E+03	1.22
	3	76.30	74 -	79	76.62	9.53E+02	109.84	1.62E+03	3.83
	4	87.75	86 -	91	88.05	2.11E+02	94.03	1.60E+03	1.74
	5	93.18	91 -	96	93.48	1.99E+02	89.47	1.39E+03	1.30
	6	113.65	112 -	116	113.92	6.68E+01	60.77	7.56E+02	2.72
	7	135.06	133 -	137	135.31	5.50E+01	61.65	7.78E+02	1.65
	8	155.15	153 -	158	155.37	7.52E+01	66.34	8.22E+02	3.26
	9	185.89	182 -	190	186.09	3.00E+02	94.99	1.21E+03	1.41
	10	209.67	207 -	214	209.84	8.45E+01	74.83	8.71E+02	2.28
M	11	238.85	235 -	248	238.98	5.35E+02	62.13	3.84E+02	1.32
m	12	241.99	235 -	248	242.12	1.62E+02	49.40	3.36E+02	1.33
	13	295.18	292 -	298	295.26	4.28E+02	65.25	4.65E+02	1.77
	14	327.76	325 -	331	327.80	5.00E+01	48.12	3.90E+02	1.34
	15	338.44	335 -	342	338.47	1.14E+02	55.64	4.33E+02	1.95
	16	351.89	348 -	356	351.91	8.76E+02	77.57	3.87E+02	1.40
	17	380.75	378 -	383	380.73	3.32E+01	33.76	1.98E+02	1.71
	18	387.38	384 -	391	387.37	4.90E+01	42.57	2.72E+02	3.17
	19	401.03	399 -	403	400.99	3.65E+01	30.22	1.71E+02	2.10
	20	410.22	407 -	413	410.18	4.35E+01	40.79	2.67E+02	4.86
	21	462.66	458 -	466	462.57	7.52E+01	42.01	2.26E+02	1.75
M	22	510.97	506 -	522	510.83	1.26E+02	35.06	1.26E+02	2.09
m	23	514.01	506 -	522	513.86	1.99E+01	32.88	1.18E+02	2.10
m	24	520.14	506 -	522	519.99	1.77E+01	25.63	1.10E+02	2.11
	25	583.18	579 -	587	582.96	2.10E+02	47.07	2.13E+02	1.48
	26	609.43	603 -	614	609.19	6.20E+02	68.12	2.70E+02	1.82
	27	650.48	648 -	653	650.19	1.68E+01	21.70	8.05E+01	2.09
	28	670.49	663 -	679	670.19	7.58E+01	52.03	2.26E+02	13.48
	29	727.50	724 -	730	727.14	2.79E+01	29.97	1.42E+02	1.28
	30	768.32	765 -	771	767.92	6.91E+01	30.60	1.22E+02	1.31
	31	793.36	789 -	799	792.94	3.23E+01	36.57	1.65E+02	5.67
	32	860.18	855 -	864	859.69	3.76E+01	33.65	1.41E+02	2.71
	33	878.94	875 -	883	878.43	2.10E+01	26.48	9.61E+01	2.04
	34	911.41	907 -	916	910.87	1.23E+02	38.42	1.42E+02	2.15
	35	934.01	929 -	936	933.46	4.22E+01	26.38	8.77E+01	2.16
	36	968.16	963 -	973	967.57	5.45E+01	40.83	1.95E+02	1.88
	37	1048.40	1038 -	1057	1047.74	4.74E+01	48.41	1.77E+02	11.69
	38	1081.95	1079 -	1083	1081.25	1.18E+01	15.31	4.03E+01	1.71
	39	1120.52	1115 -	1125	1119.79	9.99E+01	43.46	2.00E+02	2.06
	40	1228.11	1225 -	1232	1227.28	1.92E+01	23.83	8.56E+01	1.84

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1238.63	1232 -	1243	1237.80	4.28E+01	40.74	1.86E+02	2.12
	42	1249.23	1245 -	1252	1248.39	2.83E+01	24.82	8.34E+01	3.57
	43	1377.89	1373 -	1381	1376.93	3.46E+01	19.24	3.47E+01	2.45
	44	1428.32	1424 -	1430	1427.32	1.50E+01	10.81	1.01E+01	3.13
M	45	1461.12	1453 -	1466	1460.10	6.15E+02	51.03	3.18E+01	2.68
m	46	1465.72	1453 -	1466	1464.69	8.81E+00	8.25	4.11E+00	2.60
	47	1623.82	1617 -	1626	1622.66	2.17E+01	12.57	1.05E+01	5.43
	48	1642.81	1638 -	1644	1641.63	8.50E+00	8.51	7.00E+00	2.79
	49	1661.03	1655 -	1664	1659.84	1.90E+01	14.70	2.00E+01	3.03
	50	1668.09	1665 -	1669	1666.90	5.56E+00	7.40	6.89E+00	2.65
	51	1730.19	1724 -	1732	1728.95	2.73E+01	15.00	1.73E+01	2.11
	52	1765.04	1758 -	1767	1763.77	1.02E+02	24.27	2.72E+01	1.96
	53	1836.33	1831 -	1837	1835.00	5.00E+00	4.47	0.00E+00	2.98
	54	1848.95	1844 -	1852	1847.61	1.72E+01	12.20	9.68E+00	2.10
	55	1875.52	1871 -	1876	1874.16	1.05E+01	7.55	3.00E+00	2.00
	56	1928.93	1925 -	1930	1927.53	6.31E+00	6.40	3.38E+00	1.59
	57	1952.75	1947 -	1954	1951.33	9.00E+00	6.00	0.00E+00	1.66
	58	2119.17	2113 -	2121	2117.64	8.77E+00	9.62	8.46E+00	3.13
	59	2204.51	2197 -	2206	2202.92	3.33E+01	15.46	1.55E+01	2.62
	60	2448.56	2443 -	2450	2446.79	1.05E+01	9.38	7.00E+00	3.74
	61	2614.76	2608 -	2617	2612.89	7.40E+01	17.20	0.00E+00	2.47
	62	3697.83	3692 -	3697	3695.40	5.00E+00	4.47	0.00E+00	1.24

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

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 8:56:12AM

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

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
1	40.77	39 -	43	7.47E+01	63.65	8.05E+02	5.04E+01
2	46.51	44 -	50	1.45E+02	81.40	1.11E+03	6.39E+01
3	76.30	74 -	79	9.53E+02	109.84	1.62E+03	7.47E+01
4	87.75	86 -	91	2.11E+02	94.03	1.60E+03	7.35E+01
5	93.18	91 -	96	1.99E+02	89.47	1.39E+03	6.98E+01
6	113.65	112 -	116	6.68E+01	60.77	7.56E+02	4.81E+01

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	7	135.06	133 -	137	5.50E+01	61.65	7.78E+02	4.92E+01
	8	155.15	153 -	158	7.52E+01	66.34	8.22E+02	5.26E+01
	9	185.89	182 -	190	3.00E+02	94.99	1.21E+03	7.27E+01
	10	209.67	207 -	214	8.45E+01	74.83	8.71E+02	5.96E+01
M	11	238.85	235 -	248	5.35E+02	62.13	3.84E+02	3.22E+01
m	12	241.99	235 -	248	1.62E+02	49.40	3.36E+02	3.01E+01
	13	295.18	292 -	298	4.28E+02	65.25	4.65E+02	4.15E+01
	14	327.76	325 -	331	5.00E+01	48.12	3.90E+02	3.78E+01
	15	338.44	335 -	342	1.14E+02	55.64	4.33E+02	4.22E+01
	16	351.89	348 -	356	8.76E+02	77.57	3.87E+02	4.12E+01
	17	380.75	378 -	383	3.32E+01	33.76	1.98E+02	2.61E+01
	18	387.38	384 -	391	4.90E+01	42.57	2.72E+02	3.30E+01
	19	401.03	399 -	403	3.65E+01	30.22	1.71E+02	2.28E+01
	20	410.22	407 -	413	4.35E+01	40.79	2.67E+02	3.17E+01
	21	462.66	458 -	466	7.52E+01	42.01	2.26E+02	3.14E+01
M	22	510.97	506 -	522	1.26E+02	35.06	1.26E+02	1.85E+01
m	23	514.01	506 -	522	1.99E+01	32.88	1.18E+02	1.78E+01
m	24	520.14	506 -	522	1.77E+01	25.63	1.10E+02	1.73E+01
	25	583.18	579 -	587	2.10E+02	47.07	2.13E+02	3.05E+01
	26	609.43	603 -	614	6.20E+02	68.12	2.70E+02	3.82E+01
	27	650.48	648 -	653	1.68E+01	21.70	8.05E+01	1.65E+01
	28	670.49	663 -	679	7.58E+01	52.03	2.26E+02	4.03E+01
	29	727.50	724 -	730	2.79E+01	29.97	1.42E+02	2.31E+01
	30	768.32	765 -	771	6.91E+01	30.60	1.22E+02	2.11E+01
	31	793.36	789 -	799	3.23E+01	36.57	1.65E+02	2.86E+01
	32	860.18	855 -	864	3.76E+01	33.65	1.41E+02	2.58E+01
	33	878.94	875 -	883	2.10E+01	26.48	9.61E+01	2.04E+01
	34	911.41	907 -	916	1.23E+02	38.42	1.42E+02	2.58E+01
	35	934.01	929 -	936	4.22E+01	26.38	8.77E+01	1.89E+01
	36	968.16	963 -	973	5.45E+01	40.83	1.95E+02	3.13E+01
	37	1048.40	1038 -	1057	4.74E+01	48.41	1.77E+02	3.82E+01
	38	1081.95	1079 -	1083	1.18E+01	15.31	4.03E+01	1.12E+01
	39	1120.52	1115 -	1125	9.99E+01	43.46	2.00E+02	3.17E+01
	40	1228.11	1225 -	1232	1.92E+01	23.83	8.56E+01	1.82E+01
	41	1238.63	1232 -	1243	4.28E+01	40.74	1.86E+02	3.17E+01
	42	1249.23	1245 -	1252	2.83E+01	24.82	8.34E+01	1.84E+01
	43	1377.89	1373 -	1381	3.46E+01	19.24	3.47E+01	1.25E+01
	44	1428.32	1424 -	1430	1.50E+01	10.81	1.01E+01	6.20E+00
M	45	1461.12	1453 -	1466	6.15E+02	51.03	3.18E+01	9.27E+00
m	46	1465.72	1453 -	1466	8.81E+00	8.25	4.11E+00	3.33E+00
	47	1623.82	1617 -	1626	2.17E+01	12.57	1.05E+01	6.93E+00
	48	1642.81	1638 -	1644	8.50E+00	8.51	7.00E+00	5.10E+00
	49	1661.03	1655 -	1664	1.90E+01	14.70	2.00E+01	9.73E+00
	50	1668.09	1665 -	1669	5.56E+00	7.40	6.89E+00	4.69E+00
	51	1730.19	1724 -	1732	2.73E+01	15.00	1.73E+01	8.84E+00
	52	1765.04	1758 -	1767	1.02E+02	24.27	2.72E+01	1.10E+01
	53	1836.33	1831 -	1837	5.00E+00	4.47	0.00E+00	0.00E+00
	54	1848.95	1844 -	1852	1.72E+01	12.20	9.68E+00	7.36E+00
	55	1875.52	1871 -	1876	1.05E+01	7.55	3.00E+00	3.18E+00
	56	1928.93	1925 -	1930	6.31E+00	6.40	3.38E+00	3.26E+00
	57	1952.75	1947 -	1954	9.00E+00	6.00	0.00E+00	0.00E+00

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
58	2119.17	2113 -	2121	8.77E+00	9.62	8.46E+00	6.23E+00
59	2204.51	2197 -	2206	3.33E+01	15.46	1.55E+01	8.46E+00
60	2448.56	2443 -	2450	1.05E+01	9.38	7.00E+00	5.58E+00
61	2614.76	2608 -	2617	7.40E+01	17.20	0.00E+00	0.00E+00
62	3697.83	3692 -	3697	5.00E+00	4.47	0.00E+00	0.00E+00

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

PEAK WITH NID REPORT

Peak Analysis Performed on : 8/25/2017 8:56:12AM

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

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	40.77	39 -	43	41.12	7.47E+01	63.65	8.05E+02	RA-225
	2	46.51	44 -	50	46.86	1.45E+02	81.40	1.11E+03	PB-210
	3	76.30	74 -	79	76.62	9.53E+02	109.84	1.62E+03	.....
	4	87.75	86 -	91	88.05	2.11E+02	94.03	1.60E+03	SN-126
									CD-109
									LU-176
	5	93.18	91 -	96	93.48	1.99E+02	89.47	1.39E+03	GA-67
	6	113.65	112 -	116	113.92	6.68E+01	60.77	7.56E+02	.....
	7	135.06	133 -	137	135.31	5.50E+01	61.65	7.78E+02	SE-75
	8	155.15	153 -	158	155.37	7.52E+01	66.34	8.22E+02	.....
	9	185.89	182 -	190	186.09	3.00E+02	94.99	1.21E+03	RA-226
	10	209.67	207 -	214	209.84	8.45E+01	74.83	8.71E+02	CM-243
									GA-67
M	11	238.85	235 -	248	238.98	5.35E+02	62.13	3.84E+02	PB-212
m	12	241.99	235 -	248	242.12	1.62E+02	49.40	3.36E+02	.....
	13	295.18	292 -	298	295.26	4.28E+02	65.25	4.65E+02	PB-214
	14	327.76	325 -	331	327.80	5.00E+01	48.12	3.90E+02	.....
	15	338.44	335 -	342	338.47	1.14E+02	55.64	4.33E+02	AC-228
	16	351.89	348 -	356	351.91	8.76E+02	77.57	3.87E+02	PB-214
	17	380.75	378 -	383	380.73	3.32E+01	33.76	1.98E+02	.....
	18	387.38	384 -	391	387.37	4.90E+01	42.57	2.72E+02	.....

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	19	401.03	399 -	403	400.99	3.65E+01	30.22	1.71E+02	SE-75 RN-219
	20	410.22	407 -	413	410.18	4.35E+01	40.79	2.67E+02	HO-166M
	21	462.66	458 -	466	462.57	7.52E+01	42.01	2.26E+02	SB-125
M	22	510.97	506 -	522	510.83	1.26E+02	35.06	1.26E+02	.....
m	23	514.01	506 -	522	513.86	1.99E+01	32.88	1.18E+02	KR-85 SR-85
m	24	520.14	506 -	522	519.99	1.77E+01	25.63	1.10E+02	RB-83
	25	583.18	579 -	587	582.96	2.10E+02	47.07	2.13E+02	TL-208
	26	609.43	603 -	614	609.19	6.20E+02	68.12	2.70E+02	BI-214
	27	650.48	648 -	653	650.19	1.68E+01	21.70	8.05E+01	.....
	28	670.49	663 -	679	670.19	7.58E+01	52.03	2.26E+02	.....
	29	727.50	724 -	730	727.14	2.79E+01	29.97	1.42E+02	BI-212
	30	768.32	765 -	771	767.92	6.91E+01	30.60	1.22E+02	.....
	31	793.36	789 -	799	792.94	3.23E+01	36.57	1.65E+02	.....
	32	860.18	855 -	864	859.69	3.76E+01	33.65	1.41E+02	TL-208
	33	878.94	875 -	883	878.43	2.10E+01	26.48	9.61E+01	.....
	34	911.41	907 -	916	910.87	1.23E+02	38.42	1.42E+02	TL-204 AC-228
	35	934.01	929 -	936	933.46	4.22E+01	26.38	8.77E+01	.....
	36	968.16	963 -	973	967.57	5.45E+01	40.83	1.95E+02	AC-228
	37	1048.40	1038 -	1057	1047.74	4.74E+01	48.41	1.77E+02	CS-136
	38	1081.95	1079 -	1083	1081.25	1.18E+01	15.31	4.03E+01	.....
	39	1120.52	1115 -	1125	1119.79	9.99E+01	43.46	2.00E+02	SC-46 BI-214 TA-182
	40	1228.11	1225 -	1232	1227.28	1.92E+01	23.83	8.56E+01	.....
	41	1238.63	1232 -	1243	1237.80	4.28E+01	40.74	1.86E+02	CO-56
	42	1249.23	1245 -	1252	1248.39	2.83E+01	24.82	8.34E+01	.....
	43	1377.89	1373 -	1381	1376.93	3.46E+01	19.24	3.47E+01	.....
	44	1428.32	1424 -	1430	1427.32	1.50E+01	10.81	1.01E+01	.....
M	45	1461.12	1453 -	1466	1460.10	6.15E+02	51.03	3.18E+01	K-40
m	46	1465.72	1453 -	1466	1464.69	8.81E+00	8.25	4.11E+00	.....
	47	1623.82	1617 -	1626	1622.66	2.17E+01	12.57	1.05E+01	.....
	48	1642.81	1638 -	1644	1641.63	8.50E+00	8.51	7.00E+00	.....
	49	1661.03	1655 -	1664	1659.84	1.90E+01	14.70	2.00E+01	.....
	50	1668.09	1665 -	1669	1666.90	5.56E+00	7.40	6.89E+00	.....
	51	1730.19	1724 -	1732	1728.95	2.73E+01	15.00	1.73E+01	.....
	52	1765.04	1758 -	1767	1763.77	1.02E+02	24.27	2.72E+01	BI-214
	53	1836.33	1831 -	1837	1835.00	5.00E+00	4.47	0.00E+00	Y-88
	54	1848.95	1844 -	1852	1847.61	1.72E+01	12.20	9.68E+00	.....
	55	1875.52	1871 -	1876	1874.16	1.05E+01	7.55	3.00E+00	.....
	56	1928.93	1925 -	1930	1927.53	6.31E+00	6.40	3.38E+00	.....
	57	1952.75	1947 -	1954	1951.33	9.00E+00	6.00	0.00E+00	.....
	58	2119.17	2113 -	2121	2117.64	8.77E+00	9.62	8.46E+00	.....
	59	2204.51	2197 -	2206	2202.92	3.33E+01	15.46	1.55E+01	BI-214
	60	2448.56	2443 -	2450	2446.79	1.05E+01	9.38	7.00E+00	.....
	61	2614.76	2608 -	2617	2612.89	7.40E+01	17.20	0.00E+00	TL-208
	62	3697.83	3692 -	3697	3695.40	5.00E+00	4.47	0.00E+00	.....

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

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 : 8/25/2017 8:56:12AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	40.77	7.47E+01	63.65	1.18E-02	1.67E-03
	2	46.51	1.45E+02	81.40	1.58E-02	1.67E-03
	3	76.30	9.53E+02	109.84	2.63E-02	2.12E-03
	4	87.75	2.11E+02	94.03	2.70E-02	2.42E-03
	5	93.18	1.99E+02	89.47	2.70E-02	2.33E-03
	6	113.65	6.68E+01	60.77	2.60E-02	1.94E-03
	7	135.06	5.50E+01	61.65	2.43E-02	1.73E-03
	8	155.15	7.52E+01	66.34	2.26E-02	1.66E-03
	9	185.89	3.00E+02	94.99	2.03E-02	1.53E-03
	10	209.67	8.45E+01	74.83	1.88E-02	1.43E-03
M	11	238.85	5.35E+02	62.13	1.72E-02	1.30E-03
m	12	241.99	1.62E+02	49.40	1.71E-02	1.28E-03
	13	295.18	4.28E+02	65.25	1.48E-02	1.10E-03
	14	327.76	5.00E+01	48.12	1.38E-02	1.05E-03
	15	338.44	1.14E+02	55.64	1.34E-02	1.04E-03
	16	351.89	8.76E+02	77.57	1.31E-02	1.02E-03
	17	380.75	3.32E+01	33.76	1.23E-02	9.83E-04
	18	387.38	4.90E+01	42.57	1.22E-02	9.74E-04
	19	401.03	3.65E+01	30.22	1.19E-02	9.61E-04
	20	410.22	4.35E+01	40.79	1.17E-02	9.53E-04
	21	462.66	7.52E+01	42.01	1.07E-02	9.07E-04
M	22	510.97	1.26E+02	35.06	9.87E-03	8.65E-04
m	23	514.01	1.99E+01	32.88	9.83E-03	8.62E-04
m	24	520.14	1.77E+01	25.63	9.74E-03	8.57E-04
	25	583.18	2.10E+02	47.07	8.90E-03	8.02E-04
	26	609.43	6.20E+02	68.12	8.60E-03	7.79E-04
	27	650.48	1.68E+01	21.70	8.17E-03	7.44E-04
	28	670.49	7.58E+01	52.03	7.97E-03	7.26E-04
	29	727.50	2.79E+01	29.97	7.46E-03	6.71E-04
	30	768.32	6.91E+01	30.60	7.14E-03	6.31E-04
	31	793.36	3.23E+01	36.57	6.96E-03	6.07E-04
	32	860.18	3.76E+01	33.65	6.51E-03	5.43E-04
	33	878.94	2.10E+01	26.48	6.40E-03	5.25E-04
	34	911.41	1.23E+02	38.42	6.21E-03	5.01E-04

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	35	934.01	4.22E+01	26.38	6.09E-03	4.94E-04
	36	968.16	5.45E+01	40.83	5.91E-03	4.82E-04
	37	1048.40	4.74E+01	48.41	5.54E-03	4.54E-04
	38	1081.95	1.18E+01	15.31	5.39E-03	4.42E-04
	39	1120.52	9.99E+01	43.46	5.24E-03	4.29E-04
	40	1228.11	1.92E+01	23.83	4.87E-03	4.15E-04
	41	1238.63	4.28E+01	40.74	4.84E-03	4.16E-04
	42	1249.23	2.83E+01	24.82	4.81E-03	4.17E-04
	43	1377.89	3.46E+01	19.24	4.45E-03	4.12E-04
	44	1428.32	1.50E+01	10.81	4.33E-03	3.97E-04
M	45	1461.12	6.15E+02	51.03	4.26E-03	3.88E-04
m	46	1465.72	8.81E+00	8.25	4.25E-03	3.86E-04
	47	1623.82	2.17E+01	12.57	3.95E-03	3.41E-04
	48	1642.81	8.50E+00	8.51	3.92E-03	3.35E-04
	49	1661.03	1.90E+01	14.70	3.89E-03	3.30E-04
	50	1668.09	5.56E+00	7.40	3.88E-03	3.28E-04
	51	1730.19	2.73E+01	15.00	3.79E-03	3.10E-04
	52	1765.04	1.02E+02	24.27	3.75E-03	3.00E-04
	53	1836.33	5.00E+00	4.47	3.66E-03	2.79E-04
	54	1848.95	1.72E+01	12.20	3.64E-03	2.79E-04
	55	1875.52	1.05E+01	7.55	3.61E-03	2.79E-04
	56	1928.93	6.31E+00	6.40	3.56E-03	2.79E-04
	57	1952.75	9.00E+00	6.00	3.53E-03	2.79E-04
	58	2119.17	8.77E+00	9.62	3.40E-03	2.79E-04
	59	2204.51	3.33E+01	15.46	3.34E-03	2.79E-04
	60	2448.56	1.05E+01	9.38	3.23E-03	2.79E-04
	61	2614.76	7.40E+01	17.20	3.20E-03	2.79E-04
	62	3697.83	5.00E+00	4.47	3.53E-03	2.79E-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 : 8/25/2017 8:56:12AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055574.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	40.77	7.47E+01	63.65			7.47E+01	6.37E+01
2	46.51	1.45E+02	81.40	3.74E+01	5.77E+00	1.08E+02	8.16E+01

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	3	76.30	9.53E+02	109.84			9.53E+02	1.10E+02
	4	87.75	2.11E+02	94.03			2.11E+02	9.40E+01
	5	93.18	1.99E+02	89.47	4.88E+01	1.30E+00	1.50E+02	8.95E+01
	6	113.65	6.68E+01	60.77			6.68E+01	6.08E+01
	7	135.06	5.50E+01	61.65			5.50E+01	6.17E+01
	8	155.15	7.52E+01	66.34			7.52E+01	6.63E+01
	9	185.89	3.00E+02	94.99	3.48E+01	7.32E+00	2.65E+02	9.53E+01
	10	209.67	8.45E+01	74.83			8.45E+01	7.48E+01
M	11	238.85	5.35E+02	62.13	7.09E+00	6.85E+00	5.28E+02	6.25E+01
m	12	241.99	1.62E+02	49.40			1.62E+02	4.94E+01
	13	295.18	4.28E+02	65.25			4.28E+02	6.52E+01
	14	327.76	5.00E+01	48.12			5.00E+01	4.81E+01
	15	338.44	1.14E+02	55.64			1.14E+02	5.56E+01
	16	351.89	8.76E+02	77.57	1.04E+01	5.08E+00	8.65E+02	7.77E+01
	17	380.75	3.32E+01	33.76			3.32E+01	3.38E+01
	18	387.38	4.90E+01	42.57			4.90E+01	4.26E+01
	19	401.03	3.65E+01	30.22			3.65E+01	3.02E+01
	20	410.22	4.35E+01	40.79			4.35E+01	4.08E+01
	21	462.66	7.52E+01	42.01			7.52E+01	4.20E+01
M	22	510.97	1.26E+02	35.06	7.08E+01	4.94E+00	5.53E+01	3.54E+01
m	23	514.01	1.99E+01	32.88			1.99E+01	3.29E+01
m	24	520.14	1.77E+01	25.63			1.77E+01	2.56E+01
	25	583.18	2.10E+02	47.07	5.65E+00	3.57E+00	2.04E+02	4.72E+01
	26	609.43	6.20E+02	68.12	1.07E+01	3.96E+00	6.09E+02	6.82E+01
	27	650.48	1.68E+01	21.70			1.68E+01	2.17E+01
	28	670.49	7.58E+01	52.03			7.58E+01	5.20E+01
	29	727.50	2.79E+01	29.97			2.79E+01	3.00E+01
	30	768.32	6.91E+01	30.60			6.91E+01	3.06E+01
	31	793.36	3.23E+01	36.57			3.23E+01	3.66E+01
	32	860.18	3.76E+01	33.65			3.76E+01	3.36E+01
	33	878.94	2.10E+01	26.48			2.10E+01	2.65E+01
	34	911.41	1.23E+02	38.42	2.63E+00	2.49E+00	1.20E+02	3.85E+01
	35	934.01	4.22E+01	26.38			4.22E+01	2.64E+01
	36	968.16	5.45E+01	40.83			5.45E+01	4.08E+01
	37	1048.40	4.74E+01	48.41			4.74E+01	4.84E+01
	38	1081.95	1.18E+01	15.31			1.18E+01	1.53E+01
	39	1120.52	9.99E+01	43.46	2.45E+00	2.38E+00	9.75E+01	4.35E+01
	40	1228.11	1.92E+01	23.83			1.92E+01	2.38E+01
	41	1238.63	4.28E+01	40.74			4.28E+01	4.07E+01
	42	1249.23	2.83E+01	24.82			2.83E+01	2.48E+01
	43	1377.89	3.46E+01	19.24			3.46E+01	1.92E+01
	44	1428.32	1.50E+01	10.81			1.50E+01	1.08E+01
M	45	1461.12	6.15E+02	51.03	5.90E+00	2.63E+00	6.09E+02	5.11E+01
m	46	1465.72	8.81E+00	8.25			8.81E+00	8.25E+00
	47	1623.82	2.17E+01	12.57			2.17E+01	1.26E+01
	48	1642.81	8.50E+00	8.51	1.16E-01	1.09E+00	8.38E+00	8.58E+00
	49	1661.03	1.90E+01	14.70			1.90E+01	1.47E+01
	50	1668.09	5.56E+00	7.40			5.56E+00	7.40E+00
	51	1730.19	2.73E+01	15.00			2.73E+01	1.50E+01
	52	1765.04	1.02E+02	24.27	3.33E+00	1.73E+00	9.91E+01	2.43E+01
	53	1836.33	5.00E+00	4.47			5.00E+00	4.47E+00
	54	1848.95	1.72E+01	12.20			1.72E+01	1.22E+01
	55	1875.52	1.05E+01	7.55			1.05E+01	7.55E+00
	56	1928.93	6.31E+00	6.40			6.31E+00	6.40E+00

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
57	1952.75	9.00E+00	6.00			9.00E+00	6.00E+00
58	2119.17	8.77E+00	9.62			8.77E+00	9.62E+00
59	2204.51	3.33E+01	15.46			3.33E+01	1.55E+01
60	2448.56	1.05E+01	9.38			1.05E+01	9.38E+00
61	2614.76	7.40E+01	17.20	4.77E+00	1.52E+00	6.92E+01	1.73E+01
62	3697.83	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 : 8/25/2017 8:56:12AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055574.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	40.77	7.47E+01	63.65			7.47E+01	6.37E+01
	2	46.51	1.45E+02	81.40	3.74E+01	5.77E+00	1.08E+02	8.16E+01
	3	76.30	9.53E+02	109.84			9.53E+02	1.10E+02
	4	87.75	2.11E+02	94.03			2.11E+02	9.40E+01
	5	93.18	1.99E+02	89.47	4.88E+01	1.30E+00	1.50E+02	8.95E+01
	6	113.65	6.68E+01	60.77			6.68E+01	6.08E+01
	7	135.06	5.50E+01	61.65			5.50E+01	6.17E+01
	8	155.15	7.52E+01	66.34			7.52E+01	6.63E+01
	9	185.89	3.00E+02	94.99	3.48E+01	7.32E+00	2.65E+02	9.53E+01
	10	209.67	8.45E+01	74.83			8.45E+01	7.48E+01
M	11	238.85	5.35E+02	62.13	7.09E+00	6.85E+00	5.28E+02	6.25E+01
m	12	241.99	1.62E+02	49.40			1.62E+02	4.94E+01
	13	295.18	4.28E+02	65.25			4.28E+02	6.52E+01
	14	327.76	5.00E+01	48.12			5.00E+01	4.81E+01
	15	338.44	1.14E+02	55.64			1.14E+02	5.56E+01
	16	351.89	8.76E+02	77.57	1.04E+01	5.08E+00	8.65E+02	7.77E+01
	17	380.75	3.32E+01	33.76			3.32E+01	3.38E+01
	18	387.38	4.90E+01	42.57			4.90E+01	4.26E+01
	19	401.03	3.65E+01	30.22			3.65E+01	3.02E+01
	20	410.22	4.35E+01	40.79			4.35E+01	4.08E+01
	21	462.66	7.52E+01	42.01			7.52E+01	4.20E+01
M	22	510.97	1.26E+02	35.06	7.08E+01	4.94E+00	5.53E+01	3.54E+01

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
m	23	514.01	1.99E+01	32.88			1.99E+01	3.29E+01
m	24	520.14	1.77E+01	25.63			1.77E+01	2.56E+01
	25	583.18	2.10E+02	47.07	5.65E+00	3.57E+00	2.04E+02	4.72E+01
	26	609.43	6.20E+02	68.12	1.07E+01	3.96E+00	6.09E+02	6.82E+01
	27	650.48	1.68E+01	21.70			1.68E+01	2.17E+01
	28	670.49	7.58E+01	52.03			7.58E+01	5.20E+01
	29	727.50	2.79E+01	29.97			2.79E+01	3.00E+01
	30	768.32	6.91E+01	30.60			6.91E+01	3.06E+01
	31	793.36	3.23E+01	36.57			3.23E+01	3.66E+01
	32	860.18	3.76E+01	33.65			3.76E+01	3.36E+01
	33	878.94	2.10E+01	26.48			2.10E+01	2.65E+01
	34	911.41	1.23E+02	38.42	2.63E+00	2.49E+00	1.20E+02	3.85E+01
	35	934.01	4.22E+01	26.38			4.22E+01	2.64E+01
	36	968.16	5.45E+01	40.83			5.45E+01	4.08E+01
	37	1048.40	4.74E+01	48.41			4.74E+01	4.84E+01
	38	1081.95	1.18E+01	15.31			1.18E+01	1.53E+01
	39	1120.52	9.99E+01	43.46	2.45E+00	2.38E+00	9.75E+01	4.35E+01
	40	1228.11	1.92E+01	23.83			1.92E+01	2.38E+01
	41	1238.63	4.28E+01	40.74			4.28E+01	4.07E+01
	42	1249.23	2.83E+01	24.82			2.83E+01	2.48E+01
	43	1377.89	3.46E+01	19.24			3.46E+01	1.92E+01
	44	1428.32	1.50E+01	10.81			1.50E+01	1.08E+01
M	45	1461.12	6.15E+02	51.03	5.90E+00	2.63E+00	6.09E+02	5.11E+01
m	46	1465.72	8.81E+00	8.25			8.81E+00	8.25E+00
	47	1623.82	2.17E+01	12.57			2.17E+01	1.26E+01
	48	1642.81	8.50E+00	8.51	1.16E-01	1.09E+00	8.38E+00	8.58E+00
	49	1661.03	1.90E+01	14.70			1.90E+01	1.47E+01
	50	1668.09	5.56E+00	7.40			5.56E+00	7.40E+00
	51	1730.19	2.73E+01	15.00			2.73E+01	1.50E+01
	52	1765.04	1.02E+02	24.27	3.33E+00	1.73E+00	9.91E+01	2.43E+01
	53	1836.33	5.00E+00	4.47			5.00E+00	4.47E+00
	54	1848.95	1.72E+01	12.20			1.72E+01	1.22E+01
	55	1875.52	1.05E+01	7.55			1.05E+01	7.55E+00
	56	1928.93	6.31E+00	6.40			6.31E+00	6.40E+00
	57	1952.75	9.00E+00	6.00			9.00E+00	6.00E+00
	58	2119.17	8.77E+00	9.62			8.77E+00	9.62E+00
	59	2204.51	3.33E+01	15.46			3.33E+01	1.55E+01
	60	2448.56	1.05E+01	9.38			1.05E+01	9.38E+00
	61	2614.76	7.40E+01	17.20	4.77E+00	1.52E+00	6.92E+01	1.73E+01
	62	3697.83	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 1707093-08

HTC-A09-S002-1218-01

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	0.984	1460.81	*	10.67	1.31E+01	1.65E+00
KR-85	1.000	513.99	*	0.43	4.67E+00	7.70E+00
SR-85	0.988	513.99	*	99.27	5.89E-02	9.72E-02
CD-109	0.987	88.03	*	3.72	2.39E+00	1.10E+00
SN-126	0.995	87.57	*	37.00	2.07E-01	9.41E-02
TL-208	0.999	583.14	*	30.22	7.42E-01	1.84E-01
		860.37	*	4.48	1.26E+00	1.13E+00
		2614.66	*	35.85	5.92E-01	1.56E-01
PB-210	1.000	46.50	*	4.25	1.59E+00	1.21E+00
BI-212	0.754	727.17	*	11.80	3.10E-01	3.35E-01
		1620.62		2.75		
PB-212	0.888	238.63	*	44.60	6.74E-01	9.45E-02
		300.09		3.41		
BI-214	0.987	609.31	*	46.30	1.50E+00	2.16E-01
		1120.29	*	15.10	1.21E+00	5.48E-01
		1764.49	*	15.80	1.64E+00	4.24E-01
		2204.22	*	4.98	1.96E+00	9.25E-01
PB-214	1.000	295.21	*	19.19	1.47E+00	2.49E-01
		351.92	*	37.19	1.74E+00	2.08E-01
RN-219	0.909	401.80	*	6.50	4.64E-01	3.86E-01
RA-225	0.721	40.00	*	31.00	2.26E+01	1.95E+01
RA-226	0.984	186.21	*	3.28	3.90E+00	7.28E+00
AC-228	0.949	338.32	*	11.40	7.27E-01	3.60E-01
		911.07	*	27.70	6.86E-01	2.26E-01
		969.11	*	16.60	5.44E-01	4.10E-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 1707093-08

HTC-A09-S002-1218-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 8:56:12AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	3	76.30	2.64666E-01	5.76		
	5	93.18	4.16169E-02	29.86	Sum	
	6	113.65	1.85621E-02	45.47		
	7	135.06	1.52828E-02	56.03	Sum	
	8	155.15	2.08756E-02	44.14		
	10	209.67	2.34786E-02	44.27	Tol.	GA-67 CM-243
m	12	241.99	4.51351E-02	15.20		
	14	327.76	1.38895E-02	48.12		
	17	380.75	9.21717E-03	50.88		
	18	387.38	1.36051E-02	43.46		
	20	410.22	1.20739E-02	46.92	Tol.	HO-166M
	21	462.66	2.09013E-02	27.91	Tol.	SB-125
M	22	510.97	1.53585E-02	32.02		
m	24	520.14	4.90691E-03	72.55	Tol.	RB-83
	27	650.48	4.65887E-03	64.70	Sum	
	28	670.49	2.10450E-02	34.34	Sum	
	30	768.32	1.91923E-02	22.15	Sum	
	31	793.36	8.98188E-03	56.55		
	33	878.94	5.82126E-03	63.18	Sum	
	35	934.01	1.17119E-02	31.29		
	37	1048.40	1.31699E-02	51.06	Tol.	CS-136
	38	1081.95	3.28993E-03	64.61		
	40	1228.11	5.32706E-03	62.14		
	41	1238.63	1.18954E-02	47.57	Tol.	CO-56
	42	1249.23	7.85913E-03	43.86	Sum	
	43	1377.89	9.62073E-03	27.77		
	44	1428.32	4.15972E-03	36.08		
m	46	1465.72	2.44702E-03	46.80		
	47	1623.82	6.03910E-03	28.91		
	48	1642.81	2.32901E-03	51.19		
	49	1661.03	5.27778E-03	38.68		
	50	1668.09	1.54321E-03	66.59		
	51	1730.19	7.59259E-03	27.44	Sum	
	53	1836.33	1.38889E-03	44.72	Tol.	Y-88
	54	1848.95	4.76641E-03	35.54	Sum	
	55	1875.52	2.91667E-03	35.95		
	56	1928.93	1.75347E-03	50.72		
	57	1952.75	2.50000E-03	33.33		
	58	2119.17	2.43590E-03	54.84		
	60	2448.56	2.91667E-03	44.67		
	62	3697.83	1.38889E-03	44.72		

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.98	1460.81	*	10.67	1.31E+01	1.65E+00
KR-85	1.00	513.99	*	0.43	4.67E+00	7.70E+00
SR-85	0.98	513.99	*	99.27	5.89E-02	9.72E-02
CD-109	0.98	88.03	*	3.72	2.39E+00	1.10E+00
SN-126	0.99	87.57	*	37.00	2.07E-01	9.41E-02
TL-208	0.99	583.14	*	30.22	7.42E-01	1.84E-01
		860.37	*	4.48	1.26E+00	1.13E+00
		2614.66	*	35.85	5.92E-01	1.56E-01
PB-210	1.00	46.50	*	4.25	1.59E+00	1.21E+00
BI-212	0.75	727.17	*	11.80	3.10E-01	3.35E-01
		1620.62		2.75		
PB-212	0.88	238.63	*	44.60	6.74E-01	9.45E-02
		300.09		3.41		
BI-214	0.98	609.31	*	46.30	1.50E+00	2.16E-01
		1120.29	*	15.10	1.21E+00	5.48E-01
		1764.49	*	15.80	1.64E+00	4.24E-01
		2204.22	*	4.98	1.96E+00	9.25E-01
PB-214	1.00	295.21	*	19.19	1.47E+00	2.49E-01
		351.92	*	37.19	1.74E+00	2.08E-01
RN-219	0.90	401.80	*	6.50	4.64E-01	3.86E-01
RA-225	0.72	40.00	*	31.00	2.26E+01	1.95E+01
RA-226	0.98	186.21	*	3.28	3.90E+00	7.28E+00
AC-228	0.94	338.32	*	11.40	7.27E-01	3.60E-01
		911.07	*	27.70	6.86E-01	2.26E-01
		969.11	*	16.60	5.44E-01	4.10E-01

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

* = 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	0.984	1.31E+01	1.65E+00	
?	KR-85	1.000	4.67E+00	7.70E+00	
?	SR-85	0.988	5.89E-02	9.72E-02	
?	CD-109	0.987	2.39E+00	1.10E+00	
?	SN-126	0.995	2.07E-01	9.41E-02	
	TL-208	0.999	6.62E-01	1.19E-01	
	PB-210	1.000	1.59E+00	1.21E+00	
	BI-212	0.754	3.10E-01	3.35E-01	
	PB-212	0.888	6.74E-01	9.45E-02	
	BI-214	0.987	1.51E+00	1.78E-01	
	PB-214	1.000	1.63E+00	1.60E-01	
	RN-219	0.909	4.64E-01	3.86E-01	
	RA-225	0.721	2.26E+01	1.95E+01	
	RA-226	0.984	3.90E+00	7.28E+00	
	AC-228	0.949	6.70E-01	1.74E-01	

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

Errors quoted at 2.000sigma

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 8:56:12AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	3	76.30	2.64666E-01	5.76		
	5	93.18	4.16169E-02	29.86	Sum	
	6	113.65	1.85621E-02	45.47		
	7	135.06	1.52828E-02	56.03	Sum	
	8	155.15	2.08756E-02	44.14		
	10	209.67	2.34786E-02	44.27	Tol.	GA-67
						CM-243
m	12	241.99	4.51351E-02	15.20		
	14	327.76	1.38895E-02	48.12		
	17	380.75	9.21717E-03	50.88		
	18	387.38	1.36051E-02	43.46		
	20	410.22	1.20739E-02	46.92	Tol.	HO-166M
	21	462.66	2.09013E-02	27.91	Tol.	SB-125
M	22	510.97	1.53585E-02	32.02		
m	24	520.14	4.90691E-03	72.55	Tol.	RB-83
	27	650.48	4.65887E-03	64.70	Sum	
	28	670.49	2.10450E-02	34.34	Sum	
	30	768.32	1.91923E-02	22.15	Sum	
	31	793.36	8.98188E-03	56.55		
	33	878.94	5.82126E-03	63.18	Sum	
	35	934.01	1.17119E-02	31.29		
	37	1048.40	1.31699E-02	51.06	Tol.	CS-136
	38	1081.95	3.28993E-03	64.61		
	40	1228.11	5.32706E-03	62.14		
	41	1238.63	1.18954E-02	47.57	Tol.	CO-56
	42	1249.23	7.85913E-03	43.86	Sum	
	43	1377.89	9.62073E-03	27.77		
	44	1428.32	4.15972E-03	36.08		
m	46	1465.72	2.44702E-03	46.80		
	47	1623.82	6.03910E-03	28.91		
	48	1642.81	2.32901E-03	51.19		
	49	1661.03	5.27778E-03	38.68		
	50	1668.09	1.54321E-03	66.59		
	51	1730.19	7.59259E-03	27.44	Sum	
	53	1836.33	1.38889E-03	44.72	Tol.	Y-88

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
54	1848.95	4.76641E-03	35.54	Sum	
55	1875.52	2.91667E-03	35.95		
56	1928.93	1.75347E-03	50.72		
57	1952.75	2.50000E-03	33.33		
58	2119.17	2.43590E-03	54.84		
60	2448.56	2.91667E-03	44.67		
62	3697.83	1.38889E-03	44.72		

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	5.36E-01	1.58E+00	1.58E+00
+	NA-22	1274.54		99.94	-1.55E-02	7.79E-02	7.79E-02
+	@ NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26
	@	2754.09		99.86	1.00E+26		1.00E+26
+	AL-26	1808.65		99.76	-1.24E-02	3.75E-02	3.75E-02
+	K-40	1460.81	*	10.67	1.31E+01	8.39E-01	8.39E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.13E-02	4.21E-02	4.21E-02
		78.34		96.00	5.59E-02		4.68E-02
+	SC-46	889.25		99.98	1.04E-02	1.37E-01	1.37E-01
		1120.51		99.99	4.83E-01		2.72E-01
+	V-48	983.52		99.98	-2.28E+00	4.17E+00	4.26E+00
		1312.10		97.50	-3.09E+00		4.17E+00
+	CR-51	320.08		9.83	-8.61E-01	5.18E+00	5.18E+00
+	MN-54	834.83		99.97	-1.30E-02	7.65E-02	7.65E-02
+	CO-56	846.75		99.96	-1.94E-02	1.31E-01	1.31E-01
		1037.75		14.03	1.41E-01		9.99E-01
		1238.25		67.00	3.12E-01		3.53E-01
		1771.40		15.51	-6.23E-01		8.00E-01
		2598.48		16.90	-2.28E-01		5.29E-01
+	CO-57	122.06		85.51	-1.01E-02	4.57E-02	4.57E-02
		136.48		10.60	-3.21E-02		4.83E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CO-58	810.76		99.40	8.42E-03	1.37E-01	1.37E-01
+	FE-59	1099.22		56.50	9.24E-02	5.61E-01	5.61E-01
		1291.56		43.20	-2.65E-01		7.29E-01
+	CO-60	1173.22		100.00	2.51E-02	6.45E-02	8.09E-02
		1332.49		100.00	2.39E-02		6.45E-02
+	ZN-65	1115.52		50.75	-1.47E-03	1.88E-01	1.88E-01
+	GA-67	93.31		35.70	4.67E+08	2.31E+08	2.31E+08
		208.95		2.24	4.78E+08		4.29E+09
		300.22		16.00	4.38E+08		5.84E+08
+	SE-75	121.11		16.70	-1.87E-02	1.20E-01	3.10E-01
		136.00		59.20	-1.75E-02		1.20E-01
		264.65		59.80	6.40E-02		1.28E-01
		279.53		25.20	-6.37E-02		3.07E-01
		400.65		11.40	4.80E-01		7.02E-01
+	RB-82	776.52		13.00	-1.28E+00	5.96E+00	5.96E+00
+	RB-83	520.41		46.00	-1.60E-02	1.94E-01	1.94E-01
		529.64		30.30	5.26E-02		3.13E-01
		552.65		16.40	1.95E-01		6.30E-01
+	KR-85	513.99	*	0.43	4.67E+00	2.24E+01	2.24E+01
+	SR-85	513.99	*	99.27	5.89E-02	2.83E-01	2.83E-01
+	Y-88	898.02		93.40	6.50E-02	6.81E-02	1.25E-01
		1836.01		99.38	0.00E+00		6.81E-02
+	MO-93	263.06		56.72	-4.37E-02	5.82E-02	7.33E-02
		684.67		99.68	2.93E-02		5.82E-02
		1477.11		99.08	1.45E-02		6.81E-02
+	NB-93M	16.57		9.43	0.00E+00	5.73E+00	5.73E+00
+	NB-94	702.63		100.00	8.26E-03	5.00E-02	5.66E-02
		871.10		100.00	5.32E-03		5.00E-02
+	NB-95	765.79		99.81	-1.67E-02	5.32E-01	5.32E-01
+	NB-95M	235.69		25.00	-4.33E+08	5.82E+07	5.82E+07
+	ZR-95	724.18		43.70	7.95E-02	3.20E-01	4.33E-01
		756.72		55.30	1.94E-01		3.20E-01
+	MO-99	181.06		6.20	2.95E+10	4.86E+10	7.50E+10
		739.58		12.80	1.25E+10		4.86E+10
		778.00		4.50	-5.58E+10		1.24E+11
+	RU-103	497.08		89.00	-1.02E-01	2.78E-01	2.78E-01
+	RU-106	621.84		9.80	8.87E-02	6.44E-01	6.44E-01
+	AG-108M	433.93		89.90	9.76E-03	4.48E-02	4.48E-02
		614.37		90.40	3.81E-03		6.43E-02
		722.95		90.50	1.84E-02		6.21E-02
+	CD-109	88.03	*	3.72	2.39E+00	1.70E+00	1.70E+00
+	AG-110M	657.75		93.14	4.20E-02	7.80E-02	7.80E-02
		677.61		10.53	-4.13E-01		6.08E-01
		706.67		16.46	-2.38E-01		4.29E-01
		763.93		21.98	-6.25E-02		3.40E-01
		884.67		71.63	2.51E-02		1.09E-01
		1384.27		23.94	1.04E-02		2.87E-01
+	CD-113M	263.70		0.02	-4.17E+01	1.83E+02	1.83E+02

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	SN-113	255.12		1.93	6.21E-01	1.14E-01	3.90E+00
		391.69		64.90	-4.82E-02		1.14E-01
+	TE123M	159.00		84.10	8.12E-03	8.50E-02	8.50E-02
+	SB-124	602.71		97.87	-1.77E-02	1.79E-01	1.79E-01
		645.85		7.26	-1.97E-02		2.14E+00
		722.78		11.10	8.36E-02		1.50E+00
		1691.02		49.00	-7.19E-02		2.77E-01
+	I-125	35.49		6.49	-3.04E+01	5.23E+00	5.23E+00
+	SB-125	176.33		6.89	-2.14E-01	1.57E-01	6.38E-01
		427.89		29.33	1.36E-02		1.57E-01
		463.38		10.35	5.71E-01		5.39E-01
		600.56		17.80	-1.36E-02		3.21E-01
		635.90		11.32	4.09E-02		4.97E-01
+	SB-126	414.70		83.30	-2.39E+00	1.44E+01	1.44E+01
		666.33		99.60	4.56E+00		1.58E+01
		695.00		99.60	8.61E+00		1.59E+01
		720.50		53.80	1.20E+01		2.76E+01
+	SN-126	87.57	*	37.00	2.07E-01	1.47E-01	1.47E-01
+	SB-127	473.00		25.00	-2.61E+06	1.21E+07	1.21E+07
		685.20		35.70	7.21E+06		1.23E+07
		783.80		14.70	1.21E+07		3.04E+07
+	I-129	29.78		57.00	2.30E-01	3.72E-01	3.72E-01
		33.60		13.20	7.28E+00		1.70E+00
		39.58		7.52	-2.42E-01		1.01E+00
+	I-131	284.30		6.05	-3.16E+01	3.14E+02	4.00E+03
		364.48		81.20	1.10E+02		3.14E+02
		636.97		7.26	-9.63E+02		4.19E+03
		722.89		1.80	5.53E+03		1.87E+04
+	TE-132	49.72		13.10	-1.96E+08	1.01E+08	6.94E+08
		228.16		88.00	9.93E+06		1.01E+08
+	BA-133	81.00		33.00	2.14E-02	6.97E-02	1.03E-01
		302.84		17.80	5.73E-02		2.48E-01
		356.01		60.00	8.59E-03		6.97E-02
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	1.13E+04	5.44E+04	5.44E+04
+	CS-134	563.23		8.38	3.19E-01	6.53E-02	6.14E-01
		569.32		15.43	-3.84E-03		2.78E-01
		604.70		97.60	-7.73E-04		6.53E-02
		795.84		85.40	1.55E-02		7.99E-02
		801.93		8.73	1.96E-01		6.81E-01
+	CS-135	268.24		16.00	2.09E-02	2.86E-01	2.86E-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	2.07E+00	1.05E+01	1.10E+02
		163.89		4.61	1.38E+02		1.84E+02
		176.55		13.56	-2.06E+01		6.15E+01
		273.65		12.66	-3.38E+01		7.22E+01
		340.57		48.50	-1.48E+01		1.97E+01

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		Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		CS-136	818.50	99.70	3.85E+00	1.05E+01	1.05E+01
			1048.07	79.60	-4.19E+00		1.62E+01
			1235.34	19.70	5.96E+01		9.66E+01
+		CS-137	661.65	85.12	3.12E-02	6.22E-02	6.22E-02
+		LA-138	788.74	34.00	1.38E-02	7.72E-02	1.70E-01
			1435.80	66.00	7.45E-03		7.72E-02
+		CE-139	165.85	80.35	-9.82E-03	8.47E-02	8.47E-02
+		BA-140	162.64	6.70	8.36E+00	4.21E+01	1.45E+02
			304.84	4.50	-4.00E+01		2.14E+02
			423.70	3.20	1.72E+02		3.26E+02
			437.55	2.00	-8.89E+01		4.90E+02
			537.32	25.00	1.00E+00		4.21E+01
+		LA-140	328.77	20.50	3.12E+01	1.55E+01	5.57E+01
			487.03	45.50	-1.33E+01		1.95E+01
			815.85	23.50	-8.93E+00		4.72E+01
			1596.49	95.49	8.59E+00		1.55E+01
+		CE-141	145.44	48.40	2.72E-01	7.23E-01	7.23E-01
+	@	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	3.65E-02	3.86E-01	3.86E-01
+		PM-144	476.78	42.00	4.35E-02	6.24E-02	1.29E-01
			618.01	98.60	5.67E-03		6.24E-02
			696.49	99.49	7.84E-03		6.80E-02
+		PM-145	36.85	21.70	1.73E-01	2.33E-01	4.48E-01
			37.36	39.70	9.17E-02		2.33E-01
			42.30	15.10	-1.33E-01		3.75E-01
			72.40	2.31	7.16E-01		1.75E+00
+		PM-146	453.90	39.94	2.72E-02	1.04E-01	1.04E-01
			735.90	14.01	6.17E-02		3.94E-01
			747.13	13.10	-1.73E-01		4.04E-01
+		ND-147	91.11	28.90	-1.47E+02	7.44E+01	7.44E+01
			531.02	13.10	-2.76E+01		1.86E+02
+		PM-149	285.90	3.10	-2.16E+13	7.10E+13	7.10E+13
+		EU-152	121.78	20.50	-3.30E-02	1.49E-01	1.49E-01
			244.69	5.40	-1.24E+00		8.57E-01
			344.27	19.13	1.20E-01		2.23E-01
			778.89	9.20	-2.52E-01		5.60E-01
			964.01	10.40	9.30E-02		7.10E-01
			1085.78	7.22	-1.10E-01		7.93E-01
			1112.02	9.60	2.65E-01		6.72E-01
			1407.95	14.94	1.24E-01		4.65E-01
+		GD-153	97.43	31.30	7.95E-03	1.26E-01	1.26E-01
			103.18	22.20	6.90E-02		1.78E-01
+		EU-154	123.07	40.50	4.42E-02	8.05E-02	8.05E-02
			723.30	19.70	8.62E-02		2.91E-01
			873.19	11.50	-3.53E-02		4.30E-01
			996.32	10.30	-9.35E-02		6.37E-01
			1004.76	17.90	1.48E-01		3.41E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-154	1274.45		35.50	-4.15E-02	8.05E-02	2.08E-01
+	EU-155	86.50		30.90	1.98E-01	1.39E-01	1.39E-01
		105.30		20.70	1.12E-02		1.47E-01
+	EU-156	811.77		10.40	-2.67E+00	4.72E+01	4.72E+01
		1153.47		7.20	3.93E+00		9.79E+01
		1230.71		8.90	1.37E+01		8.76E+01
+	HO-166M	184.41		72.60	2.10E-01	7.87E-02	7.87E-02
		280.45		29.60	2.22E-02		1.44E-01
		410.94		11.10	3.12E-01		4.24E-01
		711.69		54.10	8.02E-02		1.04E-01
+	TM-171	66.72		0.14	9.73E+00	3.16E+01	3.16E+01
+	HF-172	67.35		5.31	-2.23E-01	2.96E-01	8.30E-01
		125.81		11.30	-1.87E-01		2.96E-01
+	LU-172	181.53		20.60	1.88E+03	3.56E+03	7.10E+03
		900.72		29.81	-2.37E+03		6.66E+03
		1093.66		62.50	-9.16E+02		3.56E+03
+	LU-173	100.72		5.24	-3.91E-01	2.62E-01	6.38E-01
		272.11		21.20	9.28E-02		2.62E-01
+	HF-175	343.40		84.00	-1.35E-02	1.31E-01	1.31E-01
+	LU-176	88.34		13.30	2.01E-01	4.31E-02	3.04E-01
		201.83		86.00	-8.07E-03		4.94E-02
		306.78		94.00	-3.92E-03		4.31E-02
+	HF-181	133.02		41.70	-3.71E-02	2.94E-01	4.05E-01
		345.85		17.20	2.69E-01		1.26E+00
		482.03		82.80	6.86E-02		2.94E-01
+	TA-182	67.75		41.20	-4.77E-02	1.77E-01	1.77E-01
		1121.30		34.90	1.04E+00		6.22E-01
		1189.05		16.23	2.02E-02		7.85E-01
		1221.41		26.98	1.29E-02		4.73E-01
		1231.02		11.44	1.96E-01		1.26E+00
+	IR-192	308.46		29.68	-7.15E-02	2.00E-01	3.44E-01
		468.07		48.10	1.93E-02		2.00E-01
+	HG-203	279.19		77.30	7.31E-02	2.57E-01	2.57E-01
+	TL-204	374.74		94.11	2.91E-02	4.77E-02	4.77E-02
		899.15		99.16	-4.17E-02		6.00E-02
		911.74		91.10	2.29E-01		1.16E-01
+	BI-207	569.67		97.72	-5.56E-04	4.03E-02	4.03E-02
		1063.62		74.90	-1.94E-02		7.81E-02
+	TL-208	583.14	*	30.22	7.42E-01	8.82E-02	2.35E-01
		860.37	*	4.48	1.26E+00		1.82E+00
		2614.66	*	35.85	5.92E-01		8.82E-02
+	BI-210M	262.00		45.00	-9.34E-03	9.36E-02	9.36E-02
		300.00		23.00	1.48E-01		1.97E-01
+	PB-210	46.50	*	4.25	1.59E+00	1.95E+00	1.95E+00
+	PB-211	404.84		2.90	6.60E-01	1.43E+00	1.43E+00
		831.96		2.90	2.52E-02		2.06E+00
+	BI-212	727.17	*	11.80	3.10E-01	5.43E-01	5.43E-01
		1620.62		2.75	1.80E-01		2.12E+00

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PB-212	238.63	*	44.60	6.74E-01	2.12E-01	2.12E-01
		300.09		3.41	9.98E-01		1.33E+00
+	BI-214	609.31	*	46.30	1.50E+00	1.97E-01	1.97E-01
		1120.29	*	15.10	1.21E+00		8.23E-01
		1764.49	*	15.80	1.64E+00		4.26E-01
		2204.22	*	4.98	1.96E+00		1.16E+00
+	PB-214	295.21	*	19.19	1.47E+00	1.74E-01	2.95E-01
		351.92	*	37.19	1.74E+00		1.74E-01
+	RN-219	401.80	*	6.50	4.64E-01	6.13E-01	6.13E-01
+	RA-223	323.87		3.88	-1.23E-01	9.88E-01	9.88E-01
+	RA-224	240.98		3.95	5.74E+00	2.02E+00	2.02E+00
+	RA-225	40.00	*	31.00	2.26E+01	3.13E+01	3.13E+01
+	RA-226	186.21	*	3.28	3.90E+00	2.20E+00	2.20E+00
+	TH-227	50.10		8.40	-1.44E-01	4.88E-01	5.09E-01
		236.00		11.50	-3.64E+00		4.88E-01
		256.20		6.30	-5.06E-01		6.45E-01
+	AC-228	338.32	*	11.40	7.27E-01	3.12E-01	5.58E-01
		911.07	*	27.70	6.86E-01		3.12E-01
		969.11	*	16.60	5.44E-01		6.52E-01
+	TH-230	48.44		16.90	-3.05E-01	2.73E-01	2.73E-01
		62.85		4.60	8.56E-01		9.64E-01
		67.67		0.37	-2.89E+00		1.07E+01
+	PA-231	283.67		1.60	-1.99E-02	1.88E+00	2.52E+00
		302.67		2.30	4.35E-01		1.88E+00
+	TH-231	25.64		14.70	0.00E+00	1.02E-01	1.02E-01
		84.21		6.40	5.29E-01		5.73E-01
+	PA-233	311.98		38.60	5.93E-01	1.46E+00	1.46E+00
+	PA-234	131.20		20.40	3.33E-02	1.58E-01	1.58E-01
		733.99		8.80	-1.65E-01		5.78E-01
		946.00		12.00	-9.64E-02		4.87E-01
+	PA-234M	1001.03		0.92	1.28E+00	7.01E+00	7.01E+00
+	TH-234	63.29		3.80	8.76E-01	1.16E+00	1.16E+00
+	U-235	143.76		10.50	2.64E-01	3.94E-01	3.94E-01
		163.35		4.70	6.64E-01		8.85E-01
		205.31		4.70	4.23E-01		9.19E-01
+	NP-237	86.50		12.60	4.67E-01	3.28E-01	3.28E-01
+	NP-239	106.10		22.70	7.80E+10	1.02E+12	1.02E+12
		228.18		10.70	3.07E+11		3.12E+12
		277.60		14.10	3.97E+11		2.48E+12
+	AM-241	59.54		35.90	2.96E-02	1.11E-01	1.11E-01
+	AM-243	74.67		66.00	-8.82E-02	7.73E-02	7.73E-02
+	CM-243	209.75		3.29	1.83E+00	3.18E-01	1.47E+00
		228.14		10.60	3.96E-02		4.01E-01
		277.60		14.00	5.09E-02		3.18E-01

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	1.58E+00	1.58E+00	5.36E-01	7.47E-01
	NA-22	1274.54		99.94	7.79E-02	7.79E-02	-1.55E-02	3.59E-02
@	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	3.75E-02	3.75E-02	-1.24E-02	1.52E-02
+	K-40	1460.81	*	10.67	8.39E-01	8.39E-01	1.31E+01	3.91E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	4.21E-02	4.21E-02	-1.13E-02	2.05E-02
		78.34		96.00	4.68E-02		5.59E-02	2.29E-02
	SC-46	889.25		99.98	1.37E-01	1.37E-01	1.04E-02	6.36E-02
		1120.51		99.99	2.72E-01		4.83E-01	1.30E-01
	V-48	983.52		99.98	4.26E+00	4.17E+00	-2.28E+00	1.95E+00
		1312.10		97.50	4.17E+00		-3.09E+00	1.85E+00
	CR-51	320.08		9.83	5.18E+00	5.18E+00	-8.61E-01	2.47E+00
	MN-54	834.83		99.97	7.65E-02	7.65E-02	-1.30E-02	3.57E-02
	CO-56	846.75		99.96	1.31E-01	1.31E-01	-1.94E-02	6.06E-02
		1037.75		14.03	9.99E-01		1.41E-01	4.58E-01
		1238.25		67.00	3.53E-01		3.12E-01	1.66E-01
		1771.40		15.51	8.00E-01		-6.23E-01	3.45E-01
		2598.48		16.90	5.29E-01		-2.28E-01	2.05E-01
	CO-57	122.06		85.51	4.57E-02	4.57E-02	-1.01E-02	2.21E-02
		136.48		10.60	4.83E-01		-3.21E-02	2.35E-01
	CO-58	810.76		99.40	1.37E-01	1.37E-01	8.42E-03	6.31E-02
	FE-59	1099.22		56.50	5.61E-01	5.61E-01	9.24E-02	2.59E-01
		1291.56		43.20	7.29E-01		-2.65E-01	3.33E-01
	CO-60	1173.22		100.00	8.09E-02	6.45E-02	2.51E-02	3.77E-02
		1332.49		100.00	6.45E-02		2.39E-02	2.93E-02
	ZN-65	1115.52		50.75	1.88E-01	1.88E-01	-1.47E-03	8.73E-02
	GA-67	93.31		35.70	2.31E+08	2.31E+08	4.67E+08	1.13E+08

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	GA-67	208.95		2.24	4.29E+09	2.31E+08	4.78E+08	2.08E+09
		300.22		16.00	5.84E+08		4.38E+08	2.80E+08
	SE-75	121.11		16.70	3.10E-01	1.20E-01	-1.87E-02	1.50E-01
		136.00		59.20	1.20E-01		-1.75E-02	5.84E-02
		264.65		59.80	1.28E-01		6.40E-02	6.13E-02
		279.53		25.20	3.07E-01		-6.37E-02	1.47E-01
		400.65		11.40	7.02E-01		4.80E-01	3.33E-01
	RB-82	776.52		13.00	5.96E+00	5.96E+00	-1.28E+00	2.76E+00
	RB-83	520.41		46.00	1.94E-01	1.94E-01	-1.60E-02	9.02E-02
		529.64		30.30	3.13E-01		5.26E-02	1.46E-01
		552.65		16.40	6.30E-01		1.95E-01	2.96E-01
+	KR-85	513.99	*	0.43	2.24E+01	2.24E+01	4.67E+00	1.09E+01
+	SR-85	513.99	*	99.27	2.83E-01	2.83E-01	5.89E-02	1.37E-01
	Y-88	898.02		93.40	1.25E-01	6.81E-02	6.50E-02	5.80E-02
		1836.01		99.38	6.81E-02		0.00E+00	2.70E-02
	MO-93	263.06		56.72	7.33E-02	5.82E-02	-4.37E-02	3.52E-02
		684.67		99.68	5.82E-02		2.93E-02	2.74E-02
		1477.11		99.08	6.81E-02		1.45E-02	3.08E-02
	NB-93M	16.57		9.43	5.73E+00	5.73E+00	0.00E+00	0.00E+00
	NB-94	702.63		100.00	5.66E-02	5.00E-02	8.26E-03	2.66E-02
		871.10		100.00	5.00E-02		5.32E-03	2.29E-02
	NB-95	765.79		99.81	5.32E-01	5.32E-01	-1.67E-02	2.52E-01
	NB-95M	235.69		25.00	5.82E+07	5.82E+07	-4.33E+08	2.83E+07
	ZR-95	724.18		43.70	4.33E-01	3.20E-01	7.95E-02	2.04E-01
		756.72		55.30	3.20E-01		1.94E-01	1.50E-01
	MO-99	181.06		6.20	7.50E+10	4.86E+10	2.95E+10	3.64E+10
		739.58		12.80	4.86E+10		1.25E+10	2.27E+10
		778.00		4.50	1.24E+11		-5.58E+10	5.74E+10
	RU-103	497.08		89.00	2.78E-01	2.78E-01	-1.02E-01	1.30E-01
	RU-106	621.84		9.80	6.44E-01	6.44E-01	8.87E-02	3.03E-01
	AG-108M	433.93		89.90	4.48E-02	4.48E-02	9.76E-03	2.11E-02
		614.37		90.40	6.43E-02		3.81E-03	3.04E-02
		722.95		90.50	6.21E-02		1.84E-02	2.91E-02
+	CD-109	88.03	*	3.72	1.70E+00	1.70E+00	2.39E+00	8.35E-01
	AG-110M	657.75		93.14	7.80E-02	7.80E-02	4.20E-02	3.67E-02
		677.61		10.53	6.08E-01		-4.13E-01	2.83E-01
		706.67		16.46	4.29E-01		-2.38E-01	2.01E-01
		763.93		21.98	3.40E-01		-6.25E-02	1.59E-01
		884.67		71.63	1.09E-01		2.51E-02	5.08E-02
		1384.27		23.94	2.87E-01		1.04E-02	1.27E-01
	CD-113M	263.70		0.02	1.83E+02	1.83E+02	-4.17E+01	8.77E+01
	SN-113	255.12		1.93	3.90E+00	1.14E-01	6.21E-01	1.87E+00
		391.69		64.90	1.14E-01		-4.82E-02	5.37E-02
	TE123M	159.00		84.10	8.50E-02	8.50E-02	8.12E-03	4.12E-02
	SB-124	602.71		97.87	1.79E-01	1.79E-01	-1.77E-02	8.45E-02
		645.85		7.26	2.14E+00		-1.97E-02	1.00E+00
		722.78		11.10	1.50E+00		8.36E-02	7.00E-01
		1691.02		49.00	2.77E-01		-7.19E-02	1.16E-01
	I-125	35.49		6.49	5.23E+00	5.23E+00	-3.04E+01	2.53E+00
	SB-125	176.33		6.89	6.38E-01	1.57E-01	-2.14E-01	3.09E-01
		427.89		29.33	1.57E-01		1.36E-02	7.44E-02
		463.38		10.35	5.39E-01		5.71E-01	2.57E-01
		600.56		17.80	3.21E-01		-1.36E-02	1.51E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	SB-125	635.90		11.32	4.97E-01	1.57E-01	4.09E-02	2.33E-01
	SB-126	414.70		83.30	1.44E+01	1.44E+01	-2.39E+00	6.79E+00
		666.33		99.60	1.58E+01		4.56E+00	7.46E+00
		695.00		99.60	1.59E+01		8.61E+00	7.49E+00
		720.50		53.80	2.76E+01		1.20E+01	1.29E+01
+	SN-126	87.57	*	37.00	1.47E-01	1.47E-01	2.07E-01	7.22E-02
	SB-127	473.00		25.00	1.21E+07	1.21E+07	-2.61E+06	5.64E+06
		685.20		35.70	1.23E+07		7.21E+06	5.79E+06
		783.80		14.70	3.04E+07		1.21E+07	1.42E+07
	I-129	29.78		57.00	3.72E-01	3.72E-01	2.30E-01	1.80E-01
		33.60		13.20	1.70E+00		7.28E+00	8.37E-01
		39.58		7.52	1.01E+00		-2.42E-01	4.88E-01
	I-131	284.30		6.05	4.00E+03	3.14E+02	-3.16E+01	1.91E+03
		364.48		81.20	3.14E+02		1.10E+02	1.49E+02
		636.97		7.26	4.19E+03		-9.63E+02	1.96E+03
		722.89		1.80	1.87E+04		5.53E+03	8.76E+03
	TE-132	49.72		13.10	6.94E+08	1.01E+08	-1.96E+08	3.35E+08
		228.16		88.00	1.01E+08		9.93E+06	4.85E+07
	BA-133	81.00		33.00	1.03E-01	6.97E-02	2.14E-02	4.98E-02
		302.84		17.80	2.48E-01		5.73E-02	1.19E-01
		356.01		60.00	6.97E-02		8.59E-03	3.31E-02
@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	XE-133	81.00		38.00	5.44E+04	5.44E+04	1.13E+04	2.64E+04
	CS-134	563.23		8.38	6.14E-01	6.53E-02	3.19E-01	2.88E-01
		569.32		15.43	2.78E-01		-3.84E-03	1.29E-01
		604.70		97.60	6.53E-02		-7.73E-04	3.09E-02
		795.84		85.40	7.99E-02		1.55E-02	3.75E-02
		801.93		8.73	6.81E-01		1.96E-01	3.16E-01
	CS-135	268.24		16.00	2.86E-01	2.86E-01	2.09E-02	1.38E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	1.10E+02	1.05E+01	2.07E+00	5.35E+01
		163.89		4.61	1.84E+02		1.38E+02	8.92E+01
		176.55		13.56	6.15E+01		-2.06E+01	2.98E+01
		273.65		12.66	7.22E+01		-3.38E+01	3.47E+01
		340.57		48.50	1.97E+01		-1.48E+01	9.44E+00
		818.50		99.70	1.05E+01		3.85E+00	4.84E+00
		1048.07		79.60	1.62E+01		-4.19E+00	7.51E+00
		1235.34		19.70	9.66E+01		5.96E+01	4.55E+01
	CS-137	661.65		85.12	6.22E-02	6.22E-02	3.12E-02	2.92E-02
	LA-138	788.74		34.00	1.70E-01	7.72E-02	1.38E-02	7.97E-02
		1435.80		66.00	7.72E-02		7.45E-03	3.39E-02
	CE-139	165.85		80.35	8.47E-02	8.47E-02	-9.82E-03	4.11E-02
	BA-140	162.64		6.70	1.45E+02	4.21E+01	8.36E+00	7.05E+01
		304.84		4.50	2.14E+02		-4.00E+01	1.02E+02
		423.70		3.20	3.26E+02		1.72E+02	1.54E+02
		437.55		2.00	4.90E+02		-8.89E+01	2.31E+02
		537.32		25.00	4.21E+01		1.00E+00	1.97E+01
	LA-140	328.77		20.50	5.57E+01	1.55E+01	3.12E+01	2.67E+01
		487.03		45.50	1.95E+01		-1.33E+01	9.05E+00
		815.85		23.50	4.72E+01		-8.93E+00	2.16E+01
		1596.49		95.49	1.55E+01		8.59E+00	6.93E+00

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CE-141	145.44	48.40	7.23E-01	7.23E-01	2.72E-01	3.51E-01
@ CE-143	57.36	11.80	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	293.26	42.00	1.00E+26		1.00E+26	1.00E+20
@	664.55	5.20	1.00E+26		1.00E+26	1.00E+20
CE-144	133.54	10.80	3.86E-01	3.86E-01	3.65E-02	1.87E-01
PM-144	476.78	42.00	1.29E-01	6.24E-02	4.35E-02	6.06E-02
	618.01	98.60	6.24E-02		5.67E-03	2.93E-02
	696.49	99.49	6.80E-02		7.84E-03	3.19E-02
PM-145	36.85	21.70	4.48E-01	2.33E-01	1.73E-01	2.17E-01
	37.36	39.70	2.33E-01		9.17E-02	1.13E-01
	42.30	15.10	3.75E-01		-1.33E-01	1.81E-01
	72.40	2.31	1.75E+00		7.16E-01	8.51E-01
PM-146	453.90	39.94	1.04E-01	1.04E-01	2.72E-02	4.86E-02
	735.90	14.01	3.94E-01		6.17E-02	1.84E-01
	747.13	13.10	4.04E-01		-1.73E-01	1.88E-01
ND-147	91.11	28.90	7.44E+01	7.44E+01	-1.47E+02	3.62E+01
	531.02	13.10	1.86E+02		-2.76E+01	8.68E+01
PM-149	285.90	3.10	7.10E+13	7.10E+13	-2.16E+13	3.40E+13
EU-152	121.78	20.50	1.49E-01	1.49E-01	-3.30E-02	7.20E-02
	244.69	5.40	8.57E-01		-1.24E+00	4.14E-01
	344.27	19.13	2.23E-01		1.20E-01	1.06E-01
	778.89	9.20	5.60E-01		-2.52E-01	2.59E-01
	964.01	10.40	7.10E-01		9.30E-02	3.33E-01
	1085.78	7.22	7.93E-01		-1.10E-01	3.62E-01
	1112.02	9.60	6.72E-01		2.65E-01	3.10E-01
	1407.95	14.94	4.65E-01		1.24E-01	2.12E-01
GD-153	97.43	31.30	1.26E-01	1.26E-01	7.95E-03	6.09E-02
	103.18	22.20	1.78E-01		6.90E-02	8.62E-02
EU-154	123.07	40.50	8.05E-02	8.05E-02	4.42E-02	3.89E-02
	723.30	19.70	2.91E-01		8.62E-02	1.37E-01
	873.19	11.50	4.30E-01		-3.53E-02	1.97E-01
	996.32	10.30	6.37E-01		-9.35E-02	2.96E-01
	1004.76	17.90	3.41E-01		1.48E-01	1.57E-01
	1274.45	35.50	2.08E-01		-4.15E-02	9.61E-02
EU-155	86.50	30.90	1.39E-01	1.39E-01	1.98E-01	6.79E-02
	105.30	20.70	1.47E-01		1.12E-02	7.10E-02
EU-156	811.77	10.40	4.72E+01	4.72E+01	-2.67E+00	2.17E+01
	1153.47	7.20	9.79E+01		3.93E+00	4.54E+01
	1230.71	8.90	8.76E+01		1.37E+01	4.07E+01
HO-166M	184.41	72.60	7.87E-02	7.87E-02	2.10E-01	3.84E-02
	280.45	29.60	1.44E-01		2.22E-02	6.91E-02
	410.94	11.10	4.24E-01		3.12E-01	2.02E-01
	711.69	54.10	1.04E-01		8.02E-02	4.90E-02
TM-171	66.72	0.14	3.16E+01	3.16E+01	9.73E+00	1.54E+01
HF-172	67.35	5.31	8.30E-01	2.96E-01	-2.23E-01	4.04E-01
	125.81	11.30	2.96E-01		-1.87E-01	1.43E-01
LU-172	181.53	20.60	7.10E+03	3.56E+03	1.88E+03	3.44E+03
	900.72	29.81	6.66E+03		-2.37E+03	3.09E+03
	1093.66	62.50	3.56E+03		-9.16E+02	1.65E+03
LU-173	100.72	5.24	6.38E-01	2.62E-01	-3.91E-01	3.08E-01
	272.11	21.20	2.62E-01		9.28E-02	1.26E-01
HF-175	343.40	84.00	1.31E-01	1.31E-01	-1.35E-02	6.24E-02
LU-176	88.34	13.30	3.04E-01	4.31E-02	2.01E-01	1.48E-01

Analysis Report for 1707093-08

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	LU-176	201.83		86.00	4.94E-02	4.31E-02	-8.07E-03	2.39E-02
		306.78		94.00	4.31E-02		-3.92E-03	2.06E-02
	HF-181	133.02		41.70	4.05E-01	2.94E-01	-3.71E-02	1.96E-01
		345.85		17.20	1.26E+00		2.69E-01	5.99E-01
		482.03		82.80	2.94E-01		6.86E-02	1.39E-01
	TA-182	67.75		41.20	1.77E-01	1.77E-01	-4.77E-02	8.63E-02
		1121.30		34.90	6.22E-01		1.04E+00	2.98E-01
		1189.05		16.23	7.85E-01		2.02E-02	3.62E-01
		1221.41		26.98	4.73E-01		1.29E-02	2.18E-01
		1231.02		11.44	1.26E+00		1.96E-01	5.85E-01
	IR-192	308.46		29.68	3.44E-01	2.00E-01	-7.15E-02	1.64E-01
		468.07		48.10	2.00E-01		1.93E-02	9.31E-02
	HG-203	279.19		77.30	2.57E-01	2.57E-01	7.31E-02	1.23E-01
	TL-204	374.74		94.11	4.77E-02	4.77E-02	2.91E-02	2.26E-02
		899.15		99.16	6.00E-02		-4.17E-02	2.78E-02
		911.74		91.10	1.16E-01		2.29E-01	5.58E-02
	BI-207	569.67		97.72	4.03E-02	4.03E-02	-5.56E-04	1.86E-02
		1063.62		74.90	7.81E-02		-1.94E-02	3.58E-02
+	TL-208	583.14	*	30.22	2.35E-01	8.82E-02	7.42E-01	1.13E-01
		860.37	*	4.48	1.82E+00		1.26E+00	8.65E-01
		2614.66	*	35.85	8.82E-02		5.92E-01	3.25E-02
	BI-210M	262.00		45.00	9.36E-02	9.36E-02	-9.34E-03	4.50E-02
		300.00		23.00	1.97E-01		1.48E-01	9.45E-02
+	PB-210	46.50	*	4.25	1.95E+00	1.95E+00	1.59E+00	9.53E-01
	PB-211	404.84		2.90	1.43E+00	1.43E+00	6.60E-01	6.77E-01
		831.96		2.90	2.06E+00		2.52E-02	9.61E-01
+	BI-212	727.17	*	11.80	5.43E-01	5.43E-01	3.10E-01	2.57E-01
		1620.62		2.75	2.12E+00		1.80E-01	9.36E-01
+	PB-212	238.63	*	44.60	2.12E-01	2.12E-01	6.74E-01	1.04E-01
		300.09		3.41	1.33E+00		9.98E-01	6.38E-01
+	BI-214	609.31	*	46.30	1.97E-01	1.97E-01	1.50E+00	9.53E-02
		1120.29	*	15.10	8.23E-01		1.21E+00	3.95E-01
		1764.49	*	15.80	4.26E-01		1.64E+00	1.90E-01
		2204.22	*	4.98	1.16E+00		1.96E+00	4.99E-01
+	PB-214	295.21	*	19.19	2.95E-01	1.74E-01	1.47E+00	1.43E-01
		351.92	*	37.19	1.74E-01		1.74E+00	8.43E-02
+	RN-219	401.80	*	6.50	6.13E-01	6.13E-01	4.64E-01	2.89E-01
	RA-223	323.87		3.88	9.88E-01	9.88E-01	-1.23E-01	4.69E-01
	RA-224	240.98		3.95	2.02E+00	2.02E+00	5.74E+00	9.92E-01
+	RA-225	40.00	*	31.00	3.13E+01	3.13E+01	2.26E+01	1.52E+01
+	RA-226	186.21	*	3.28	2.20E+00	2.20E+00	3.90E+00	1.08E+00
	TH-227	50.10		8.40	5.09E-01	4.88E-01	-1.44E-01	2.46E-01
		236.00		11.50	4.88E-01		-3.64E+00	2.37E-01
		256.20		6.30	6.45E-01		-5.06E-01	3.09E-01
+	AC-228	338.32	*	11.40	5.58E-01	3.12E-01	7.27E-01	2.70E-01
		911.07	*	27.70	3.12E-01		6.86E-01	1.48E-01
		969.11	*	16.60	6.52E-01		5.44E-01	3.13E-01
	TH-230	48.44		16.90	2.73E-01	2.73E-01	-3.05E-01	1.32E-01
		62.85		4.60	9.64E-01		8.56E-01	4.70E-01
		67.67		0.37	1.07E+01		-2.89E+00	5.22E+00
	PA-231	283.67		1.60	2.52E+00	1.88E+00	-1.99E-02	1.21E+00
		302.67		2.30	1.88E+00		4.35E-01	9.02E-01
	TH-231	25.64		14.70	1.02E-01	1.02E-01	0.00E+00	0.00E+00

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
TH-231	84.21	6.40	5.73E-01	1.02E-01	5.29E-01	2.79E-01
PA-233	311.98	38.60	1.46E+00	1.46E+00	5.93E-01	6.98E-01
PA-234	131.20	20.40	1.58E-01	1.58E-01	3.33E-02	7.65E-02
	733.99	8.80	5.78E-01		-1.65E-01	2.68E-01
	946.00	12.00	4.87E-01		-9.64E-02	2.25E-01
PA-234M	1001.03	0.92	7.01E+00	7.01E+00	1.28E+00	3.25E+00
TH-234	63.29	3.80	1.16E+00	1.16E+00	8.76E-01	5.65E-01
U-235	143.76	10.50	3.94E-01	3.94E-01	2.64E-01	1.91E-01
	163.35	4.70	8.85E-01		6.64E-01	4.30E-01
	205.31	4.70	9.19E-01		4.23E-01	4.45E-01
NP-237	86.50	12.60	3.28E-01	3.28E-01	4.67E-01	1.60E-01
NP-239	106.10	22.70	1.02E+12	1.02E+12	7.80E+10	4.93E+11
	228.18	10.70	3.12E+12		3.07E+11	1.50E+12
	277.60	14.10	2.48E+12		3.97E+11	1.19E+12
AM-241	59.54	35.90	1.11E-01	1.11E-01	2.96E-02	5.38E-02
AM-243	74.67	66.00	7.73E-02	7.73E-02	-8.82E-02	3.79E-02
CM-243	209.75	3.29	1.47E+00	3.18E-01	1.83E+00	7.13E-01
	228.14	10.60	4.01E-01		3.96E-02	1.93E-01
	277.60	14.00	3.18E-01		5.09E-02	1.53E-01

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

Analysis Report for 1707093-08

HTC-A09-S002-1218-01

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

Sample Title: HTC-A09-S002-1218-01

Elapsed Live time: 3600
Elapsed Real Time: 3601

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	64	92	149	147
33:	305	558	103	100	106	119	94	114
41:	99	104	66	64	82	92	185	104
49:	86	88	94	93	94	110	95	97
57:	108	95	101	109	155	125	174	204
65:	124	147	151	149	146	163	134	165
73:	170	150	425	248	419	414	109	127
81:	111	120	115	178	148	117	218	235
89:	128	182	131	137	255	158	119	92
97:	88	76	119	93	76	102	100	78
105:	86	97	87	93	98	88	84	77
113:	106	94	94	74	71	86	80	62
121:	79	100	83	109	84	94	78	98
129:	94	105	74	104	86	92	107	86
137:	73	61	87	79	88	84	77	108
145:	90	72	63	79	74	83	81	65
153:	69	95	74	102	83	63	76	70
161:	66	70	76	91	67	75	59	68
169:	73	72	78	73	69	64	61	62
177:	83	61	68	79	67	59	72	76
185:	103	243	131	64	86	70	71	68
193:	61	53	75	57	68	64	69	62
201:	46	64	70	60	59	68	49	68
209:	89	80	64	68	52	50	53	42
217:	48	34	53	60	47	51	48	47
225:	70	49	50	54	54	45	35	51
233:	62	60	49	63	44	217	440	80
241:	91	163	92	51	35	41	49	34
249:	41	36	44	34	46	30	46	39
257:	41	41	53	50	39	35	38	44
265:	36	44	45	34	48	65	54	46
273:	41	52	45	37	49	44	40	39
281:	36	38	38	31	27	33	32	45
289:	37	34	30	32	36	67	273	186
297:	38	28	42	43	45	38	30	28
305:	35	26	33	29	27	33	21	34
313:	31	41	27	28	41	30	38	21
321:	21	33	24	15	28	23	37	57
329:	31	39	30	36	34	32	32	30
337:	34	83	74	31	23	23	24	30
345:	27	32	19	24	32	24	205	566
353:	147	27	25	19	24	28	24	32
361:	32	29	22	27	23	27	15	28

369:	22	22	19	24	27	26	18	26

Sample Title: HTC-A09-S002-1218-01

Channel								
377:	26	14	27	21	34	25	11	17
385:	21	21	27	28	31	19	21	18
393:	19	24	31	21	26	14	19	24
401:	34	29	16	19	23	29	16	30
409:	30	31	23	25	22	11	24	29
417:	18	23	26	25	15	20	24	22
425:	23	19	17	24	17	25	17	19
433:	15	18	15	19	14	20	22	21
441:	17	22	12	21	16	15	20	16
449:	14	16	15	13	16	16	16	18
457:	14	10	17	18	17	27	45	26
465:	19	9	17	13	12	14	14	11
473:	12	13	20	13	23	19	17	23
481:	11	24	25	17	14	21	12	7
489:	7	19	13	19	21	17	13	11
497:	18	17	16	13	22	14	12	15
505:	13	10	16	13	23	49	76	37
513:	17	22	13	13	10	11	11	20
521:	13	7	11	17	11	12	15	13
529:	14	14	13	14	12	17	13	16
537:	15	16	15	13	17	16	10	13
545:	10	15	8	19	13	13	18	19
553:	10	17	13	8	12	15	12	12
561:	19	12	20	16	11	10	11	8
569:	12	10	11	10	11	14	15	17
577:	9	14	8	20	19	41	127	56
585:	19	12	14	11	9	18	13	11
593:	10	14	8	14	18	8	10	14
601:	15	13	14	16	15	17	19	105
609:	318	180	31	18	13	9	9	17
617:	9	9	12	12	11	13	8	13
625:	14	13	12	11	17	6	9	17
633:	15	16	12	12	13	8	5	9
641:	11	9	14	10	7	8	9	5
649:	14	12	10	8	8	5	15	10
657:	10	14	11	19	11	7	8	6
665:	21	19	11	10	11	12	11	14
673:	11	11	5	10	9	14	6	6
681:	11	14	12	13	12	8	15	10
689:	12	4	9	11	7	14	9	13
697:	17	10	9	10	12	14	11	9
705:	15	9	7	8	11	15	12	8
713:	10	14	5	5	11	8	4	10
721:	13	9	11	11	6	15	32	15
729:	9	11	8	6	10	7	8	10
737:	10	10	10	8	11	14	13	7
745:	13	4	8	12	5	9	8	9
753:	11	13	10	10	10	13	11	7
761:	6	8	11	7	7	14	16	53
769:	22	7	11	9	12	2	8	10
777:	5	6	9	10	5	7	17	4
785:	15	11	11	4	6	12	10	9
793:	14	16	17	8	10	5	8	11

801:	4	12	12	6	6	8	7	8

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Channel								
809:	12	8	2	6	6	4	9	4
817:	8	4	10	6	9	7	4	10
825:	8	12	7	9	11	7	10	12
833:	11	7	8	11	11	9	16	13
841:	9	8	7	11	7	8	8	5
849:	6	6	10	7	10	8	5	6
857:	13	11	16	15	22	5	10	5
865:	10	3	8	3	11	4	6	6
873:	8	4	5	6	10	13	8	5
881:	9	6	7	5	7	15	10	7
889:	8	10	6	3	10	8	10	6
897:	7	8	9	12	5	5	9	16
905:	6	6	7	10	6	41	66	37
913:	7	6	7	7	8	7	6	10
921:	10	8	8	3	4	5	9	6
929:	6	7	10	7	17	23	13	3
937:	7	9	7	7	4	6	12	2
945:	7	8	8	8	10	11	3	9
953:	7	7	11	6	10	4	4	10
961:	14	9	7	16	15	8	14	32
969:	36	6	4	7	7	12	1	6
977:	11	8	8	7	4	2	8	5
985:	6	7	11	5	7	10	6	7
993:	10	6	12	8	8	8	5	9
1001:	12	11	4	4	6	7	4	3
1009:	4	4	6	7	6	6	8	11
1017:	3	7	8	6	8	9	4	7
1025:	6	6	7	5	8	1	7	7
1033:	7	8	7	5	6	5	4	7
1041:	3	10	11	12	8	4	8	7
1049:	8	4	5	10	8	7	7	4
1057:	4	3	7	3	5	4	8	6
1065:	8	7	7	11	6	10	9	8
1073:	2	4	1	8	2	8	3	6
1081:	12	8	3	3	5	7	6	5
1089:	9	4	5	11	12	10	4	4
1097:	7	12	5	8	11	4	5	7
1105:	8	4	2	7	3	8	8	6
1113:	5	9	7	5	8	19	40	60
1121:	28	7	7	7	12	8	6	8
1129:	5	6	3	9	4	7	8	4
1137:	5	7	3	4	4	12	7	7
1145:	11	6	7	6	8	6	6	6
1153:	4	12	10	10	10	6	6	8
1161:	11	8	12	5	10	5	5	10
1169:	8	7	7	11	10	15	7	7
1177:	8	6	6	9	10	7	7	5
1185:	5	9	7	9	7	6	6	8
1193:	7	12	9	8	6	6	6	7
1201:	11	5	8	2	11	4	10	11
1209:	11	11	9	4	6	6	4	8
1217:	8	6	3	8	11	9	6	4
1225:	1	10	16	9	7	4	9	6

1233:	9	9	9	10	20	25	14	8

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Channel								
1241:	9	6	11	5	6	12	4	13
1249:	16	4	9	6	4	7	10	7
1257:	9	5	5	8	7	4	4	5
1265:	6	10	9	7	5	5	12	6
1273:	7	6	5	7	5	6	13	10
1281:	7	5	5	5	4	10	6	6
1289:	8	6	4	6	5	3	6	7
1297:	5	2	3	3	7	5	4	3
1305:	5	5	10	2	4	3	2	4
1313:	3	3	2	6	5	1	4	5
1321:	3	8	3	3	5	2	6	3
1329:	7	3	4	6	1	6	5	3
1337:	1	5	3	5	4	4	2	6
1345:	2	2	8	1	3	4	2	2
1353:	7	0	1	4	0	5	4	2
1361:	3	4	4	7	3	2	2	1
1369:	4	4	2	4	1	4	5	10
1377:	15	9	5	2	1	2	0	7
1385:	3	5	6	4	1	2	7	0
1393:	4	3	3	2	1	1	2	5
1401:	6	5	5	5	2	2	12	2
1409:	3	2	3	1	2	5	1	3
1417:	4	2	3	1	3	4	1	1
1425:	2	5	2	7	3	0	1	0
1433:	2	3	3	4	3	1	1	3
1441:	1	5	3	0	6	1	3	3
1449:	5	6	4	3	4	6	5	4
1457:	13	48	105	236	166	46	1	5
1465:	2	1	0	3	3	2	3	2
1473:	3	4	2	7	3	4	3	3
1481:	3	3	5	0	2	0	4	3
1489:	4	2	2	0	1	3	6	4
1497:	1	2	1	3	2	4	2	2
1505:	1	2	1	9	9	2	3	1
1513:	1	5	2	3	6	2	3	2
1521:	5	2	5	0	4	0	2	4
1529:	4	1	4	2	0	3	1	0
1537:	2	5	4	1	1	3	1	2
1545:	3	1	3	1	3	2	2	1
1553:	3	0	1	0	0	5	3	4
1561:	1	1	1	0	4	1	3	1
1569:	3	0	2	2	0	1	2	4
1577:	1	0	2	4	2	0	7	0
1585:	2	1	5	4	4	2	3	5
1593:	2	3	4	1	3	2	1	0
1601:	0	5	1	2	1	2	2	2
1609:	1	0	2	2	0	1	1	2
1617:	0	1	2	4	3	3	4	6
1625:	4	0	0	1	3	4	1	2
1633:	1	1	1	0	1	0	1	1
1641:	4	3	3	0	1	1	3	1
1649:	0	0	1	3	3	0	2	1
1657:	3	2	4	5	6	3	1	2

1665:	0	4	2	3	0	1	2	2

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Channel								
1673:	2	0	0	2	2	1	1	0
1681:	0	1	2	3	1	0	1	2
1689:	1	1	1	0	2	1	2	0
1697:	1	1	1	0	2	3	1	1
1705:	1	2	1	0	2	0	2	2
1713:	1	0	0	4	2	6	3	2
1721:	0	2	2	2	1	2	6	4
1729:	10	10	1	0	0	0	0	0
1737:	1	3	1	0	0	1	2	2
1745:	0	0	1	3	1	1	1	3
1753:	3	0	0	0	2	3	3	3
1761:	0	14	23	44	21	5	0	0
1769:	2	3	2	0	0	1	1	0
1777:	0	1	0	1	0	4	2	0
1785:	1	1	0	1	1	1	2	1
1793:	0	2	1	2	0	2	2	2
1801:	2	1	0	0	1	1	0	2
1809:	1	1	0	2	0	0	1	1
1817:	1	1	2	1	1	0	0	0
1825:	0	0	0	0	1	0	0	0
1833:	0	2	1	2	0	0	0	0
1841:	1	3	2	1	2	4	7	4
1849:	1	2	1	0	0	1	0	3
1857:	1	1	1	0	0	1	3	2
1865:	2	1	2	1	1	0	1	0
1873:	2	4	5	0	0	0	0	1
1881:	0	2	0	1	1	2	0	4
1889:	3	1	1	1	1	1	0	1
1897:	1	1	3	1	3	0	2	3
1905:	1	0	1	0	0	0	2	1
1913:	1	0	1	0	0	1	1	1
1921:	1	1	2	0	0	1	2	4
1929:	1	0	1	1	3	3	2	3
1937:	2	0	1	2	2	2	3	1
1945:	0	0	0	0	0	2	4	1
1953:	2	0	0	0	1	1	3	1
1961:	1	0	2	2	0	0	2	2
1969:	3	0	1	1	2	1	0	1
1977:	1	0	0	0	2	1	1	2
1985:	2	2	1	1	1	2	1	0
1993:	1	0	0	0	0	1	1	2
2001:	0	1	1	0	0	2	0	0
2009:	2	3	0	1	1	0	0	1
2017:	0	1	1	0	0	1	1	3
2025:	0	0	0	0	2	0	3	0
2033:	1	3	1	2	2	0	0	1
2041:	0	4	0	0	0	0	0	1
2049:	0	0	0	1	3	1	1	2
2057:	0	0	0	0	1	1	1	1
2065:	1	1	1	3	1	0	2	1
2073:	0	2	1	0	0	2	1	2
2081:	0	1	0	0	1	3	0	1
2089:	0	0	0	0	1	0	2	0

2097:	1	0	0	2	2	5	3	4

Sample Title: HTC-A09-S002-1218-01

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

2529:	2	0	0	1	0	0	2	0

Sample Title: HTC-A09-S002-1218-01

Channel								
2537:	0	0	1	0	0	1	1	0
2545:	0	0	0	1	0	0	0	0
2553:	0	0	0	0	0	0	0	0
2561:	0	0	0	0	0	0	0	0
2569:	1	1	0	0	0	0	0	1
2577:	0	0	0	1	0	0	1	0
2585:	0	1	0	0	0	1	1	1
2593:	0	1	0	0	0	0	0	0
2601:	0	2	2	0	1	0	0	0
2609:	1	7	6	10	23	17	8	2
2617:	0	0	1	0	0	0	1	0
2625:	1	0	0	0	1	0	0	0
2633:	0	0	0	0	0	1	0	1
2641:	0	0	0	0	1	2	2	0
2649:	1	0	0	0	0	0	1	0
2657:	0	0	0	0	0	0	0	0
2665:	0	0	0	0	0	1	0	0
2673:	1	0	0	0	1	0	0	1
2681:	0	1	1	0	0	0	0	0
2689:	0	0	0	0	1	1	0	0
2697:	0	0	1	0	0	0	0	0
2705:	0	0	0	0	1	0	0	0
2713:	0	0	0	0	0	2	0	0
2721:	1	0	0	1	0	0	1	1
2729:	0	0	1	0	0	0	1	2
2737:	0	0	2	0	1	0	1	0
2745:	0	1	0	1	0	0	0	1
2753:	0	0	0	0	0	0	0	0
2761:	0	1	1	0	0	1	0	1
2769:	0	0	0	0	0	0	1	0
2777:	0	0	0	0	0	0	0	0
2785:	0	1	1	0	0	0	0	0
2793:	0	0	0	0	1	1	0	0
2801:	0	1	1	0	1	0	0	0
2809:	1	0	0	0	0	0	0	1
2817:	0	0	0	0	0	0	0	0
2825:	1	0	1	0	1	2	0	0
2833:	1	0	0	0	0	0	0	0
2841:	0	0	1	0	0	0	0	0
2849:	0	1	0	0	0	1	1	1
2857:	0	0	0	0	0	0	1	0
2865:	0	1	0	0	0	0	1	1
2873:	0	0	0	0	2	1	0	0
2881:	0	0	0	0	0	0	0	1
2889:	0	1	0	0	0	1	1	0
2897:	0	0	0	0	0	0	0	0
2905:	0	1	0	0	0	0	0	0
2913:	0	1	0	0	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	0	1	0	0	1	0	2
2945:	0	0	0	0	0	0	0	0
2953:	1	0	0	0	0	0	0	0

2961:	0	0	0	0	0	0	1	0

Sample Title: HTC-A09-S002-1218-01

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

3393:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S002-1218-01

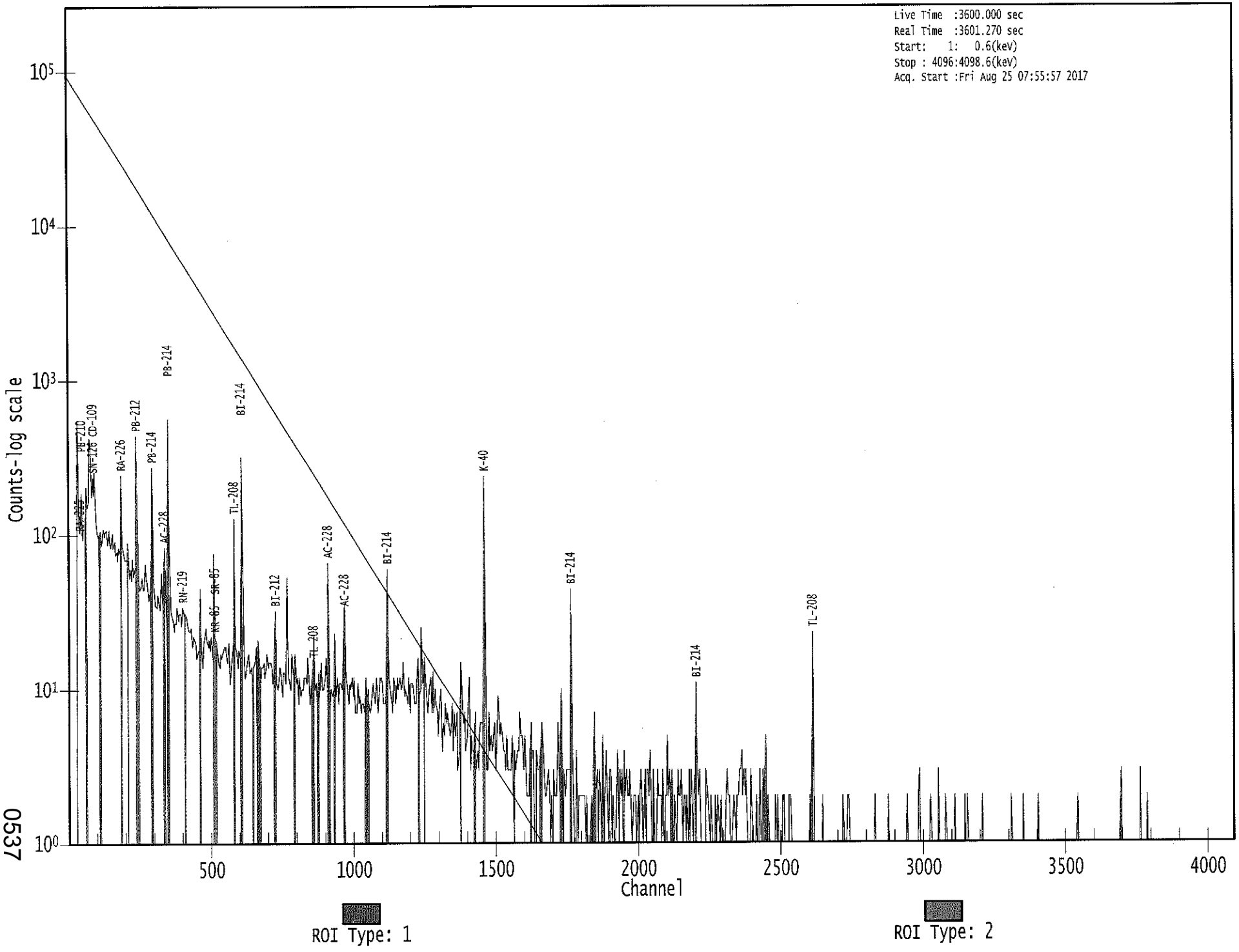
Channel								
3401:	0	0	0	2	0	0	0	0
3409:	0	0	0	0	0	1	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	1	0	1	0	1	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	1	0	0	0	1	1	0	0
3481:	0	0	0	0	0	0	0	1
3489:	0	0	0	0	0	1	0	0
3497:	0	1	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S002-1218-01

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

0000055964.CNF



0537

Apex-Gamma

8/25

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-09
Sample Description	: HTC-A09-S002-1824-01
Sample Type	: SOIL
Sample Size	: 8.164E+02 grams
Facility	: Countroom
Sample Taken On	: 5/16/2017 10:51:13AM
Acquisition Started	: 8/25/2017 7:56:05AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3607.8 seconds
Dead Time	: 0.22 %
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	: 1/14/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55965

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 8:56:48AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	76.59	76.89	0.0000	0.00
2	86.93	87.23	0.0000	0.00
3	93.01	93.31	0.0000	0.00
4	99.85	100.15	0.0000	0.00
5	185.65	185.91	0.0000	0.00
6	238.94	239.19	0.0000	0.00
7	241.77	242.02	0.0000	0.00
8	269.85	270.09	0.0000	0.00
9	295.41	295.63	0.0000	0.00
10	328.06	328.28	0.0000	0.00
11	338.75	338.97	0.0000	0.00
12	352.22	352.43	0.0000	0.00
13	410.08	410.27	0.0000	0.00
14	453.11	453.29	0.0000	0.00
15	463.21	463.38	0.0000	0.00
16	511.72	511.88	0.0000	0.00
17	583.11	583.24	0.0000	0.00
18	609.49	609.61	0.0000	0.00
19	702.70	702.79	0.0000	0.00
20	727.30	727.39	0.0000	0.00
21	769.91	769.98	0.0000	0.00
22	784.89	784.95	0.0000	0.00
23	860.62	860.66	0.0000	0.00
24	898.24	898.27	0.0000	0.00
25	910.80	910.82	0.0000	0.00
26	969.15	969.15	0.0000	0.00
27	1120.88	1120.83	0.0000	0.00
28	1156.69	1156.63	0.0000	0.00
29	1379.46	1379.32	0.0000	0.00
30	1441.07	1440.91	0.0000	0.00
31	1446.76	1446.59	0.0000	0.00
32	1457.16	1457.00	0.0000	0.00
33	1461.07	1460.90	0.0000	0.00
34	1509.44	1509.25	0.0000	0.00
35	1593.91	1593.70	0.0000	0.00
36	1661.37	1661.13	0.0000	0.00
37	1729.17	1728.91	0.0000	0.00
38	1764.07	1763.80	0.0000	0.00
39	1846.83	1846.53	0.0000	0.00
40	1888.30	1887.99	0.0000	0.00
41	2204.17	2203.75	0.0000	0.00
42	2614.61	2614.06	0.0000	0.00

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 8:56:48AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	76.59	73 -	81	76.89	9.91E+02	140.15	2.38E+03	4.01
	2	86.93	83 -	90	87.23	1.13E+02	115.72	2.17E+03	1.91
	3	93.01	90 -	97	93.31	3.03E+02	109.60	1.73E+03	2.38
	4	99.85	98 -	103	100.15	1.01E+02	71.46	9.33E+02	3.23
	5	185.65	180 -	192	185.91	3.02E+02	112.49	1.35E+03	2.35
M	6	238.94	234 -	247	239.19	6.47E+02	77.87	5.67E+02	2.30
m	7	241.77	234 -	247	242.02	2.00E+02	75.55	5.00E+02	2.34
	8	269.85	266 -	274	270.09	6.35E+01	64.38	5.99E+02	4.14
	9	295.41	291 -	300	295.63	2.36E+02	75.66	6.91E+02	2.03
	10	328.06	325 -	331	328.28	4.91E+01	44.94	3.30E+02	3.63
	11	338.75	334 -	343	338.97	1.46E+02	62.71	4.74E+02	2.00
	12	352.22	348 -	357	352.43	4.46E+02	73.79	5.19E+02	2.19
	13	410.08	406 -	414	410.27	3.80E+01	45.52	2.92E+02	3.29
	14	453.11	451 -	456	453.29	2.16E+01	27.80	1.41E+02	1.23
	15	463.21	460 -	468	463.38	4.31E+01	42.87	2.56E+02	1.38
	16	511.72	506 -	518	511.88	1.33E+02	55.39	2.95E+02	2.43
	17	583.11	578 -	588	583.24	1.65E+02	51.01	2.60E+02	2.21
	18	609.49	605 -	614	609.61	3.02E+02	53.12	2.32E+02	2.30
	19	702.70	697 -	708	702.79	3.57E+01	43.27	2.17E+02	1.12
	20	727.30	724 -	731	727.39	2.63E+01	32.25	1.55E+02	1.67
	21	769.91	765 -	774	769.98	3.46E+01	37.26	1.75E+02	1.79
	22	784.89	780 -	788	784.95	2.58E+01	27.30	9.85E+01	1.74
	23	860.62	859 -	864	860.66	1.80E+01	20.35	7.19E+01	1.44
	24	898.24	895 -	902	898.27	1.74E+01	22.27	6.92E+01	3.33
	25	910.80	904 -	916	910.82	1.33E+02	41.73	1.40E+02	2.54
	26	969.15	965 -	973	969.15	6.22E+01	32.48	1.20E+02	2.60
	27	1120.88	1116 -	1127	1120.83	6.90E+01	39.14	1.60E+02	2.67
	28	1156.69	1152 -	1162	1156.63	2.75E+01	30.28	1.01E+02	7.91
	29	1379.46	1372 -	1387	1379.32	3.24E+01	31.69	8.52E+01	3.83
	30	1441.07	1438 -	1443	1440.91	1.05E+01	8.37	5.08E+00	1.60
	31	1446.76	1444 -	1449	1446.59	1.43E+01	8.54	3.38E+00	3.92
M	32	1457.16	1456 -	1466	1457.00	1.22E+01	2.45	4.00E+00	2.34
m	33	1461.07	1456 -	1466	1460.90	5.05E+02	46.97	2.80E+01	2.36
	34	1509.44	1506 -	1512	1509.25	1.01E+01	13.18	2.38E+01	2.38
	35	1593.91	1591 -	1598	1593.70	1.68E+01	12.33	1.04E+01	2.03
	36	1661.37	1659 -	1663	1661.13	9.95E+00	7.09	2.09E+00	1.70
	37	1729.17	1724 -	1732	1728.91	1.90E+01	10.21	4.05E+00	5.38
	38	1764.07	1758 -	1769	1763.80	5.17E+01	22.18	3.47E+01	2.16
	39	1846.83	1842 -	1849	1846.53	1.50E+01	7.75	0.00E+00	2.85
	40	1888.30	1883 -	1890	1887.99	5.90E+00	8.49	8.20E+00	1.59

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	2204.17	2200 -	2206	2203.75	1.24E+01	8.26	3.21E+00	2.86
42	2614.61	2609 -	2619	2614.06	5.20E+01	14.42	0.00E+00	1.94

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 : 8/25/2017 8:56:48AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	76.59	73 -	81	9.91E+02	140.15	2.38E+03	1.03E+02
	2	86.93	83 -	90	1.13E+02	115.72	2.17E+03	9.35E+01
	3	93.01	90 -	97	3.03E+02	109.60	1.73E+03	8.54E+01
	4	99.85	98 -	103	1.01E+02	71.46	9.33E+02	5.64E+01
	5	185.65	180 -	192	3.02E+02	112.49	1.35E+03	8.79E+01
M	6	238.94	234 -	247	6.47E+02	77.87	5.67E+02	3.91E+01
m	7	241.77	234 -	247	2.00E+02	75.55	5.00E+02	3.68E+01
	8	269.85	266 -	274	6.35E+01	64.38	5.99E+02	5.13E+01
	9	295.41	291 -	300	2.36E+02	75.66	6.91E+02	5.68E+01
	10	328.06	325 -	331	4.91E+01	44.94	3.30E+02	3.51E+01
	11	338.75	334 -	343	1.46E+02	62.71	4.74E+02	4.76E+01
	12	352.22	348 -	357	4.46E+02	73.79	5.19E+02	4.97E+01
	13	410.08	406 -	414	3.80E+01	45.52	2.92E+02	3.60E+01
	14	453.11	451 -	456	2.16E+01	27.80	1.41E+02	2.15E+01
	15	463.21	460 -	468	4.31E+01	42.87	2.56E+02	3.36E+01
	16	511.72	506 -	518	1.33E+02	55.39	2.95E+02	4.14E+01
	17	583.11	578 -	588	1.65E+02	51.01	2.60E+02	3.62E+01
	18	609.49	605 -	614	3.02E+02	53.12	2.32E+02	3.30E+01
	19	702.70	697 -	708	3.57E+01	43.27	2.17E+02	3.42E+01
	20	727.30	724 -	731	2.63E+01	32.25	1.55E+02	2.51E+01
	21	769.91	765 -	774	3.46E+01	37.26	1.75E+02	2.91E+01
	22	784.89	780 -	788	2.58E+01	27.30	9.85E+01	2.08E+01
	23	860.62	859 -	864	1.80E+01	20.35	7.19E+01	1.52E+01
	24	898.24	895 -	902	1.74E+01	22.27	6.92E+01	1.70E+01
	25	910.80	904 -	916	1.33E+02	41.73	1.40E+02	2.86E+01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	26	969.15	965 -	973	6.22E+01	32.48	1.20E+02	2.33E+01
	27	1120.88	1116 -	1127	6.90E+01	39.14	1.60E+02	2.91E+01
	28	1156.69	1152 -	1162	2.75E+01	30.28	1.01E+02	2.34E+01
	29	1379.46	1372 -	1387	3.24E+01	31.69	8.52E+01	2.43E+01
	30	1441.07	1438 -	1443	1.05E+01	8.37	5.08E+00	4.36E+00
	31	1446.76	1444 -	1449	1.43E+01	8.54	3.38E+00	3.26E+00
M	32	1457.16	1456 -	1466	1.22E+01	2.45	4.00E+00	3.29E+00
m	33	1461.07	1456 -	1466	5.05E+02	46.97	2.80E+01	8.70E+00
	34	1509.44	1506 -	1512	1.01E+01	13.18	2.38E+01	9.49E+00
	35	1593.91	1591 -	1598	1.68E+01	12.33	1.04E+01	7.57E+00
	36	1661.37	1659 -	1663	9.95E+00	7.09	2.09E+00	2.65E+00
	37	1729.17	1724 -	1732	1.90E+01	10.21	4.05E+00	4.38E+00
	38	1764.07	1758 -	1769	5.17E+01	22.18	3.47E+01	1.39E+01
	39	1846.83	1842 -	1849	1.50E+01	7.75	0.00E+00	0.00E+00
	40	1888.30	1883 -	1890	5.90E+00	8.49	8.20E+00	5.72E+00
	41	2204.17	2200 -	2206	1.24E+01	8.26	3.21E+00	3.55E+00
	42	2614.61	2609 -	2619	5.20E+01	14.42	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 : 8/25/2017 8:56:48AM

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

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	76.59	73 -	81	76.89	9.91E+02	140.15	2.38E+03	.....
	2	86.93	83 -	90	87.23	1.13E+02	115.72	2.17E+03	NP-237
									EU-155
									SN-126
	3	93.01	90 -	97	93.31	3.03E+02	109.60	1.73E+03	GA-67
	4	99.85	98 -	103	100.15	1.01E+02	71.46	9.33E+02	LU-173
	5	185.65	180 -	192	185.91	3.02E+02	112.49	1.35E+03	RA-226
M	6	238.94	234 -	247	239.19	6.47E+02	77.87	5.67E+02	PB-212

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
m	7	241.77	234 -	247	242.02	2.00E+02	75.55	5.00E+02	RA-224
	8	269.85	266 -	274	270.09	6.35E+01	64.38	5.99E+02	.....
	9	295.41	291 -	300	295.63	2.36E+02	75.66	6.91E+02	PB-214
	10	328.06	325 -	331	328.28	4.91E+01	44.94	3.30E+02	LA-140
	11	338.75	334 -	343	338.97	1.46E+02	62.71	4.74E+02	AC-228
	12	352.22	348 -	357	352.43	4.46E+02	73.79	5.19E+02	PB-214
	13	410.08	406 -	414	410.27	3.80E+01	45.52	2.92E+02	HO-166M
	14	453.11	451 -	456	453.29	2.16E+01	27.80	1.41E+02	PM-146
	15	463.21	460 -	468	463.38	4.31E+01	42.87	2.56E+02	SB-125
	16	511.72	506 -	518	511.88	1.33E+02	55.39	2.95E+02	.....
	17	583.11	578 -	588	583.24	1.65E+02	51.01	2.60E+02	TL-208
	18	609.49	605 -	614	609.61	3.02E+02	53.12	2.32E+02	BI-214
	19	702.70	697 -	708	702.79	3.57E+01	43.27	2.17E+02	NB-94
	20	727.30	724 -	731	727.39	2.63E+01	32.25	1.55E+02	BI-212
	21	769.91	765 -	774	769.98	3.46E+01	37.26	1.75E+02	.....
	22	784.89	780 -	788	784.95	2.58E+01	27.30	9.85E+01	.....
	23	860.62	859 -	864	860.66	1.80E+01	20.35	7.19E+01	TL-208
	24	898.24	895 -	902	898.27	1.74E+01	22.27	6.92E+01	Y-88 TL-204
	25	910.80	904 -	916	910.82	1.33E+02	41.73	1.40E+02	AC-228 TL-204
	26	969.15	965 -	973	969.15	6.22E+01	32.48	1.20E+02	AC-228
	27	1120.88	1116 -	1127	1120.83	6.90E+01	39.14	1.60E+02	SC-46 TA-182 BI-214
	28	1156.69	1152 -	1162	1156.63	2.75E+01	30.28	1.01E+02	.....
	29	1379.46	1372 -	1387	1379.32	3.24E+01	31.69	8.52E+01	.....
	30	1441.07	1438 -	1443	1440.91	1.05E+01	8.37	5.08E+00	.....
	31	1446.76	1444 -	1449	1446.59	1.43E+01	8.54	3.38E+00	.....
M	32	1457.16	1456 -	1466	1457.00	1.22E+01	2.45	4.00E+00	.....
m	33	1461.07	1456 -	1466	1460.90	5.05E+02	46.97	2.80E+01	K-40
	34	1509.44	1506 -	1512	1509.25	1.01E+01	13.18	2.38E+01	.....
	35	1593.91	1591 -	1598	1593.70	1.68E+01	12.33	1.04E+01	.....
	36	1661.37	1659 -	1663	1661.13	9.95E+00	7.09	2.09E+00	.....
	37	1729.17	1724 -	1732	1728.91	1.90E+01	10.21	4.05E+00	.....
	38	1764.07	1758 -	1769	1763.80	5.17E+01	22.18	3.47E+01	BI-214
	39	1846.83	1842 -	1849	1846.53	1.50E+01	7.75	0.00E+00	.....
	40	1888.30	1883 -	1890	1887.99	5.90E+00	8.49	8.20E+00	.....
	41	2204.17	2200 -	2206	2203.75	1.24E+01	8.26	3.21E+00	BI-214
	42	2614.61	2609 -	2619	2614.06	5.20E+01	14.42	0.00E+00	TL-208

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

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 8/25/2017 8:56:48AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	76.59	9.91E+02	140.15	2.67E-02	2.05E-03
	2	86.93	1.13E+02	115.72	2.71E-02	2.24E-03
	3	93.01	3.03E+02	109.60	2.71E-02	2.24E-03
	4	99.85	1.01E+02	71.46	2.68E-02	2.21E-03
	5	185.65	3.02E+02	112.49	1.96E-02	1.55E-03
M	6	238.94	6.47E+02	77.87	1.61E-02	1.34E-03
m	7	241.77	2.00E+02	75.55	1.60E-02	1.33E-03
	8	269.85	6.35E+01	64.38	1.46E-02	1.22E-03
	9	295.41	2.36E+02	75.66	1.35E-02	1.15E-03
	10	328.06	4.91E+01	44.94	1.23E-02	1.08E-03
	11	338.75	1.46E+02	62.71	1.19E-02	1.06E-03
	12	352.22	4.46E+02	73.79	1.15E-02	1.03E-03
	13	410.08	3.80E+01	45.52	1.01E-02	9.28E-04
	14	453.11	2.16E+01	27.80	9.20E-03	8.71E-04
	15	463.21	4.31E+01	42.87	9.02E-03	8.58E-04
	16	511.72	1.33E+02	55.39	8.24E-03	7.93E-04
	17	583.11	1.65E+02	51.01	7.33E-03	6.99E-04
	18	609.49	3.02E+02	53.12	7.04E-03	6.64E-04
	19	702.70	3.57E+01	43.27	6.20E-03	5.58E-04
	20	727.30	2.63E+01	32.25	6.01E-03	5.37E-04
	21	769.91	3.46E+01	37.26	5.71E-03	4.99E-04
	22	784.89	2.58E+01	27.30	5.61E-03	4.86E-04
	23	860.62	1.80E+01	20.35	5.17E-03	4.19E-04
	24	898.24	1.74E+01	22.27	4.98E-03	3.86E-04
	25	910.80	1.33E+02	41.73	4.92E-03	3.84E-04
	26	969.15	6.22E+01	32.48	4.66E-03	3.74E-04
	27	1120.88	6.90E+01	39.14	4.12E-03	3.50E-04
	28	1156.69	2.75E+01	30.28	4.01E-03	3.44E-04
	29	1379.46	3.24E+01	31.69	3.46E-03	2.88E-04
	30	1441.07	1.05E+01	8.37	3.35E-03	2.78E-04
	31	1446.76	1.43E+01	8.54	3.33E-03	2.77E-04
M	32	1457.16	1.22E+01	2.45	3.32E-03	2.76E-04
m	33	1461.07	5.05E+02	46.97	3.31E-03	2.75E-04
	34	1509.44	1.01E+01	13.18	3.22E-03	2.67E-04
	35	1593.91	1.68E+01	12.33	3.09E-03	2.54E-04
	36	1661.37	9.95E+00	7.09	3.00E-03	2.43E-04
	37	1729.17	1.90E+01	10.21	2.91E-03	2.32E-04
	38	1764.07	5.17E+01	22.18	2.87E-03	2.27E-04
	39	1846.83	1.50E+01	7.75	2.77E-03	2.15E-04
	40	1888.30	5.90E+00	8.49	2.73E-03	2.15E-04
	41	2204.17	1.24E+01	8.26	2.46E-03	2.15E-04
	42	2614.61	5.20E+01	14.42	2.24E-03	2.15E-04

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

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 : 8/25/2017 8:56:48AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055575.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	76.59	9.91E+02	140.15			9.91E+02	1.40E+02
	2	86.93	1.13E+02	115.72			1.13E+02	1.16E+02
	3	93.01	3.03E+02	109.60	7.98E+01	7.31E+00	2.23E+02	1.10E+02
	4	99.85	1.01E+02	71.46			1.01E+02	7.15E+01
	5	185.65	3.02E+02	112.49	3.06E+01	5.82E+00	2.72E+02	1.13E+02
M	6	238.94	6.47E+02	77.87	1.40E+01	2.71E+00	6.33E+02	7.79E+01
m	7	241.77	2.00E+02	75.55			2.00E+02	7.56E+01
	8	269.85	6.35E+01	64.38			6.35E+01	6.44E+01
	9	295.41	2.36E+02	75.66			2.36E+02	7.57E+01
	10	328.06	4.91E+01	44.94			4.91E+01	4.49E+01
	11	338.75	1.46E+02	62.71			1.46E+02	6.27E+01
	12	352.22	4.46E+02	73.79	6.53E+00	4.43E+00	4.39E+02	7.39E+01
	13	410.08	3.80E+01	45.52			3.80E+01	4.55E+01
	14	453.11	2.16E+01	27.80			2.16E+01	2.78E+01
	15	463.21	4.31E+01	42.87			4.31E+01	4.29E+01
	16	511.72	1.33E+02	55.39	5.21E+01	4.74E+00	8.13E+01	5.56E+01
	17	583.11	1.65E+02	51.01			1.65E+02	5.10E+01
	18	609.49	3.02E+02	53.12	3.25E+00	2.97E+00	2.99E+02	5.32E+01
	19	702.70	3.57E+01	43.27			3.57E+01	4.33E+01
	20	727.30	2.63E+01	32.25			2.63E+01	3.22E+01
	21	769.91	3.46E+01	37.26			3.46E+01	3.73E+01
	22	784.89	2.58E+01	27.30			2.58E+01	2.73E+01
	23	860.62	1.80E+01	20.35			1.80E+01	2.03E+01
	24	898.24	1.74E+01	22.27			1.74E+01	2.23E+01
	25	910.80	1.33E+02	41.73	2.85E+00	2.76E+00	1.30E+02	4.18E+01
	26	969.15	6.22E+01	32.48			6.22E+01	3.25E+01
	27	1120.88	6.90E+01	39.14			6.90E+01	3.91E+01
	28	1156.69	2.75E+01	30.28			2.75E+01	3.03E+01
	29	1379.46	3.24E+01	31.69			3.24E+01	3.17E+01
	30	1441.07	1.05E+01	8.37			1.05E+01	8.37E+00
	31	1446.76	1.43E+01	8.54			1.43E+01	8.54E+00
M	32	1457.16	1.22E+01	2.45			1.22E+01	2.45E+00
m	33	1461.07	5.05E+02	46.97	1.00E+00	1.77E+00	5.04E+02	4.70E+01
	34	1509.44	1.01E+01	13.18			1.01E+01	1.32E+01
	35	1593.91	1.68E+01	12.33			1.68E+01	1.23E+01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
36	1661.37	9.95E+00	7.09			9.95E+00	7.09E+00
37	1729.17	1.90E+01	10.21			1.90E+01	1.02E+01
38	1764.07	5.17E+01	22.18			5.17E+01	2.22E+01
39	1846.83	1.50E+01	7.75			1.50E+01	7.75E+00
40	1888.30	5.90E+00	8.49			5.90E+00	8.49E+00
41	2204.17	1.24E+01	8.26			1.24E+01	8.26E+00
42	2614.61	5.20E+01	14.42	1.86E+00	1.12E+00	5.01E+01	1.45E+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 : 8/25/2017 8:56:48AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055575.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	76.59	9.91E+02	140.15			9.91E+02	1.40E+02
	2	86.93	1.13E+02	115.72			1.13E+02	1.16E+02
	3	93.01	3.03E+02	109.60	7.98E+01	7.31E+00	2.23E+02	1.10E+02
	4	99.85	1.01E+02	71.46			1.01E+02	7.15E+01
	5	185.65	3.02E+02	112.49	3.06E+01	5.82E+00	2.72E+02	1.13E+02
M	6	238.94	6.47E+02	77.87	1.40E+01	2.71E+00	6.33E+02	7.79E+01
m	7	241.77	2.00E+02	75.55			2.00E+02	7.56E+01
	8	269.85	6.35E+01	64.38			6.35E+01	6.44E+01
	9	295.41	2.36E+02	75.66			2.36E+02	7.57E+01
	10	328.06	4.91E+01	44.94			4.91E+01	4.49E+01
	11	338.75	1.46E+02	62.71			1.46E+02	6.27E+01
	12	352.22	4.46E+02	73.79	6.53E+00	4.43E+00	4.39E+02	7.39E+01
	13	410.08	3.80E+01	45.52			3.80E+01	4.55E+01
	14	453.11	2.16E+01	27.80			2.16E+01	2.78E+01
	15	463.21	4.31E+01	42.87			4.31E+01	4.29E+01
	16	511.72	1.33E+02	55.39	5.21E+01	4.74E+00	8.13E+01	5.56E+01
	17	583.11	1.65E+02	51.01			1.65E+02	5.10E+01
	18	609.49	3.02E+02	53.12	3.25E+00	2.97E+00	2.99E+02	5.32E+01
	19	702.70	3.57E+01	43.27			3.57E+01	4.33E+01
	20	727.30	2.63E+01	32.25			2.63E+01	3.22E+01
	21	769.91	3.46E+01	37.26			3.46E+01	3.73E+01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	22	784.89	2.58E+01	27.30			2.58E+01	2.73E+01
	23	860.62	1.80E+01	20.35			1.80E+01	2.03E+01
	24	898.24	1.74E+01	22.27			1.74E+01	2.23E+01
	25	910.80	1.33E+02	41.73	2.85E+00	2.76E+00	1.30E+02	4.18E+01
	26	969.15	6.22E+01	32.48			6.22E+01	3.25E+01
	27	1120.88	6.90E+01	39.14			6.90E+01	3.91E+01
	28	1156.69	2.75E+01	30.28			2.75E+01	3.03E+01
	29	1379.46	3.24E+01	31.69			3.24E+01	3.17E+01
	30	1441.07	1.05E+01	8.37			1.05E+01	8.37E+00
	31	1446.76	1.43E+01	8.54			1.43E+01	8.54E+00
M	32	1457.16	1.22E+01	2.45			1.22E+01	2.45E+00
m	33	1461.07	5.05E+02	46.97	1.00E+00	1.77E+00	5.04E+02	4.70E+01
	34	1509.44	1.01E+01	13.18			1.01E+01	1.32E+01
	35	1593.91	1.68E+01	12.33			1.68E+01	1.23E+01
	36	1661.37	9.95E+00	7.09			9.95E+00	7.09E+00
	37	1729.17	1.90E+01	10.21			1.90E+01	1.02E+01
	38	1764.07	5.17E+01	22.18			5.17E+01	2.22E+01
	39	1846.83	1.50E+01	7.75			1.50E+01	7.75E+00
	40	1888.30	5.90E+00	8.49			5.90E+00	8.49E+00
	41	2204.17	1.24E+01	8.26			1.24E+01	8.26E+00
	42	2614.61	5.20E+01	14.42	1.86E+00	1.12E+00	5.01E+01	1.45E+01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.990	1460.81	*	10.67	1.31E+01	1.66E+00
SN-126	0.937	87.57	*	37.00	1.04E-01	1.06E-01
PM-146	0.379	453.90	*	39.94	5.61E-02	7.22E-02
		735.90		14.01		
		747.13		13.10		
EU-155	0.345	86.50	*	30.90	1.29E-01	1.32E-01
		105.30		20.70		
TL-208	0.999	583.14	*	30.22	6.85E-01	2.22E-01
		860.37	*	4.48	7.15E-01	8.09E-01
		2614.66	*	35.85	5.75E-01	1.75E-01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-212	0.770	727.17	*	11.80	3.41E-01	4.19E-01
		1620.62		2.75		
PB-212	0.882	238.63	*	44.60	8.10E-01	1.20E-01
		300.09		3.41		
BI-214	0.982	609.31	*	46.30	8.42E-01	1.70E-01
		1120.29	*	15.10	1.02E+00	5.86E-01
		1764.49	*	15.80	1.05E+00	4.58E-01
		2204.22	*	4.98	9.29E-01	6.24E-01
PB-214	0.989	295.21	*	19.19	8.39E-01	2.79E-01
		351.92	*	37.19	9.42E-01	1.80E-01
RA-224	0.904	240.98	*	3.95	2.92E+00	1.13E+00
RA-226	0.951	186.21	*	3.28	3.88E+00	7.29E+00
AC-228	0.988	338.32	*	11.40	9.86E-01	4.33E-01
		911.07	*	27.70	8.77E-01	2.90E-01
		969.11	*	16.60	7.38E-01	3.90E-01
NP-237	0.971	86.50	*	12.60	3.05E-01	3.12E-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 : 8/25/2017 8:56:48AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
1	76.59	2.75302E-01	7.07		
3	93.01	6.20320E-02	24.59		
4	99.85	2.81446E-02	35.27	D-Esc	
8	269.85	1.76339E-02	50.71		
10	328.06	1.36501E-02	45.73	Sum	
13	410.08	1.05676E-02	59.83	Tol.	HO-166M
15	463.21	1.19688E-02	49.75		
16	511.72	2.25858E-02	34.18		
19	702.70	9.91127E-03	60.63		
21	769.91	9.61749E-03	53.80		
22	784.89	7.15556E-03	53.00		
24	898.24	4.82906E-03	64.05	Tol.	Y-88 TL-204

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	28	1156.69	7.62821E-03	55.14	Sum	
	29	1379.46	8.99445E-03	48.93		
	30	1441.07	2.90598E-03	39.99		
	31	1446.76	3.97569E-03	29.85		
M	32	1457.16	3.40074E-03	10.00		
	34	1509.44	2.80303E-03	65.31		
	35	1593.91	4.67172E-03	36.65		
	36	1661.37	2.76515E-03	35.61		
	37	1729.17	5.27116E-03	26.90		
	39	1846.83	4.16667E-03	25.82		
	40	1888.30	1.63889E-03	71.91		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	1.31E+01	1.66E+00
SN-126	0.93	87.57	*	37.00	1.04E-01	1.06E-01
PM-146	0.37	453.90	*	39.94	5.61E-02	7.22E-02
		735.90		14.01		
		747.13		13.10		
EU-155	0.34	86.50	*	30.90	1.29E-01	1.32E-01
		105.30		20.70		
TL-208	0.99	583.14	*	30.22	6.85E-01	2.22E-01
		860.37	*	4.48	7.15E-01	8.09E-01
		2614.66	*	35.85	5.75E-01	1.75E-01
BI-212	0.77	727.17	*	11.80	3.41E-01	4.19E-01
		1620.62		2.75		
PB-212	0.88	238.63	*	44.60	8.10E-01	1.20E-01
		300.09		3.41		
BI-214	0.98	609.31	*	46.30	8.42E-01	1.70E-01
		1120.29	*	15.10	1.02E+00	5.86E-01
		1764.49	*	15.80	1.05E+00	4.58E-01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-214	0.98	2204.22	*	4.98	9.29E-01	6.24E-01
PB-214	0.98	295.21	*	19.19	8.39E-01	2.79E-01
		351.92	*	37.19	9.42E-01	1.80E-01
RA-224	0.90	240.98	*	3.95	2.92E+00	1.13E+00
RA-226	0.95	186.21	*	3.28	3.88E+00	7.29E+00
AC-228	0.98	338.32	*	11.40	9.86E-01	4.33E-01
		911.07	*	27.70	8.77E-01	2.90E-01
		969.11	*	16.60	7.38E-01	3.90E-01
NP-237	0.97	86.50	*	12.60	3.05E-01	3.12E-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	0.990	1.31E+01	1.66E+00	
?	SN-126	0.937	1.04E-01	1.06E-01	
	PM-146	0.379	5.61E-02	7.22E-02	
?	EU-155	0.345	1.29E-01	1.32E-01	
	TL-208	0.999	6.20E-01	1.35E-01	
	BI-212	0.770	3.41E-01	4.19E-01	
	PB-212	0.882	8.10E-01	1.20E-01	
	BI-214	0.982	8.81E-01	1.49E-01	
	PB-214	0.989	9.12E-01	1.51E-01	
	RA-224	0.904	2.92E+00	1.13E+00	
	RA-226	0.951	3.88E+00	7.29E+00	
	AC-228	0.988	8.63E-01	2.05E-01	
?	NP-237	0.971	3.05E-01	3.12E-01	

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

? = 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 1707093-09

HTC-A09-S002-1824-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 8:56:48AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	76.59	2.75302E-01	7.07		
	3	93.01	6.20320E-02	24.59		
	4	99.85	2.81446E-02	35.27	D-Esc	
	8	269.85	1.76339E-02	50.71		
	10	328.06	1.36501E-02	45.73	Sum	
	13	410.08	1.05676E-02	59.83	Tol.	HO-166M
	15	463.21	1.19688E-02	49.75		
	16	511.72	2.25858E-02	34.18		
	19	702.70	9.91127E-03	60.63		
	21	769.91	9.61749E-03	53.80		
	22	784.89	7.15556E-03	53.00		
	24	898.24	4.82906E-03	64.05	Tol.	Y-88 TL-204
	28	1156.69	7.62821E-03	55.14	Sum	
	29	1379.46	8.99445E-03	48.93		
	30	1441.07	2.90598E-03	39.99		
	31	1446.76	3.97569E-03	29.85		
M	32	1457.16	3.40074E-03	10.00		
	34	1509.44	2.80303E-03	65.31		
	35	1593.91	4.67172E-03	36.65		
	36	1661.37	2.76515E-03	35.61		
	37	1729.17	5.27116E-03	26.90		
	39	1846.83	4.16667E-03	25.82		
	40	1888.30	1.63889E-03	71.91		

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 1707093-09

HTC-A09-S002-1824-01

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	-3.42E-01	1.80E+00	1.80E+00
+	NA-22	1274.54		99.94	1.90E-02	8.10E-02	8.10E-02
+	@ 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	2.46E-02	6.16E-02	6.16E-02
+	K-40	1460.81	*	10.67	1.31E+01	8.19E-01	8.19E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.01E-02	5.19E-02	5.19E-02
		78.34		96.00	1.20E-01		5.93E-02
+	SC-46	889.25		99.98	-2.65E-02	1.40E-01	1.40E-01
		1120.51		99.99	3.63E-01		2.66E-01
+	V-48	983.52		99.98	-7.29E-01	5.18E+00	5.18E+00
		1312.10		97.50	1.92E+00		5.97E+00
+	CR-51	320.08		9.83	2.72E+00	6.48E+00	6.48E+00
+	MN-54	834.83		99.97	-4.58E-02	7.71E-02	7.71E-02
+	CO-56	846.75		99.96	1.09E-02	1.44E-01	1.44E-01
		1037.75		14.03	1.09E-01		1.14E+00
		1238.25		67.00	2.82E-01		3.97E-01
		1771.40		15.51	2.71E-01		9.82E-01
		2598.48		16.90	2.36E-01		7.07E-01
+	CO-57	122.06		85.51	2.76E-03	5.49E-02	5.49E-02
		136.48		10.60	1.51E-01		4.57E-01
+	CO-58	810.76		99.40	-2.87E-03	1.78E-01	1.78E-01
+	FE-59	1099.22		56.50	-2.06E-01	6.39E-01	6.39E-01
		1291.56		43.20	1.26E-01		8.55E-01
+	CO-60	1173.22		100.00	2.50E-02	7.19E-02	8.57E-02
		1332.49		100.00	4.01E-02		7.19E-02
+	ZN-65	1115.52		50.75	9.51E-03	1.98E-01	1.98E-01
+	GA-67	93.31		35.70	5.44E+08	2.63E+08	2.63E+08
		208.95		2.24	1.86E+09		4.64E+09
		300.22		16.00	4.15E+07		6.89E+08
+	SE-75	121.11		16.70	-9.51E-02	1.15E-01	3.80E-01
		136.00		59.20	7.14E-02		1.15E-01
		264.65		59.80	-1.28E-02		1.42E-01
		279.53		25.20	-5.98E-02		3.54E-01
		400.65		11.40	2.44E-01		8.51E-01
+	RB-82	776.52		13.00	-7.12E-01	6.80E+00	6.80E+00
+	RB-83	520.41		46.00	-1.88E-02	2.54E-01	2.54E-01
		529.64		30.30	-1.15E-01		3.70E-01
		552.65		16.40	-8.72E-02		7.93E-01
+	KR-85	513.99		0.43	1.89E+01	1.70E+01	1.70E+01
+	SR-85	513.99		99.27	2.39E-01	2.15E-01	2.15E-01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	Y-88	898.02		93.40	4.63E-02	1.21E-01	1.34E-01
		1836.01		99.38	2.78E-02		1.21E-01
+	MO-93	263.06		56.72	3.50E-02	5.41E-02	8.61E-02
		684.67		99.68	-3.42E-02		5.41E-02
		1477.11		99.08	9.77E-03		6.62E-02
+	NB-93M	16.57		9.43	4.82E+00	5.20E+01	5.20E+01
+	NB-94	702.63		100.00	1.01E-04	6.15E-02	6.88E-02
		871.10		100.00	-1.40E-02		6.15E-02
+	NB-95	765.79		99.81	-5.02E-02	5.41E-01	5.41E-01
+	NB-95M	235.69		25.00	7.67E+07	7.48E+07	7.48E+07
+	ZR-95	724.18		43.70	1.01E-01	3.68E-01	4.85E-01
		756.72		55.30	1.09E-01		3.68E-01
+	MO-99	181.06		6.20	-1.89E+10	5.37E+10	6.84E+10
		739.58		12.80	3.27E+10		5.37E+10
		778.00		4.50	-1.47E+10		1.48E+11
+	RU-103	497.08		89.00	6.74E-02	3.61E-01	3.61E-01
+	RU-106	621.84		9.80	-3.59E-01	6.55E-01	6.55E-01
+	AG-108M	433.93		89.90	-3.29E-02	5.52E-02	5.52E-02
		614.37		90.40	1.38E-02		8.10E-02
		722.95		90.50	1.46E-02		7.06E-02
+	CD-109	88.03		3.72	7.80E-01	1.42E+00	1.42E+00
+	AG-110M	657.75		93.14	-2.96E-02	8.38E-02	8.38E-02
		677.61		10.53	3.47E-01		7.71E-01
		706.67		16.46	-7.84E-02		5.03E-01
		763.93		21.98	-3.55E-02		3.84E-01
		884.67		71.63	-1.46E-02		1.13E-01
		1384.27		23.94	-2.59E-01		3.46E-01
+	CD-113M	263.70		0.02	-2.19E+01	2.05E+02	2.05E+02
+	SN-113	255.12		1.93	-5.99E-01	1.42E-01	4.44E+00
		391.69		64.90	-7.15E-02		1.42E-01
+	TE123M	159.00		84.10	3.61E-04	8.35E-02	8.35E-02
+	SB-124	602.71		97.87	3.33E-02	1.88E-01	1.88E-01
		645.85		7.26	6.73E-01		2.47E+00
		722.78		11.10	3.79E-01		1.84E+00
		1691.02		49.00	9.74E-02		4.20E-01
+	I-125	35.49		6.49	-3.00E+00	4.48E+00	4.48E+00
+	SB-125	176.33		6.89	3.64E-02	1.81E-01	5.71E-01
		427.89		29.33	-1.67E-03		1.81E-01
		463.38		10.35	4.18E-01		6.08E-01
		600.56		17.80	1.89E-01		3.60E-01
		635.90		11.32	-1.31E-01		4.90E-01
+	SB-126	414.70		83.30	-1.64E+00	1.66E+01	1.66E+01
		666.33		99.60	8.27E+00		1.98E+01
		695.00		99.60	1.04E+00		1.72E+01
		720.50		53.80	-1.03E+01		3.12E+01
+	SN-126	87.57	*	37.00	1.04E-01	1.74E-01	1.74E-01
+	SB-127	473.00		25.00	-6.06E+05	1.15E+07	1.47E+07
		685.20		35.70	-7.27E+06		1.15E+07

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-127	783.80	14.70	2.47E+07	1.15E+07	3.52E+07
+	I-129	29.78	57.00	9.21E-02	2.94E-01	2.94E-01
		33.60	13.20	-6.10E-01		8.13E-01
		39.58	7.52	-2.19E-01		9.64E-01
+	I-131	284.30	6.05	1.52E+03	3.56E+02	4.89E+03
		364.48	81.20	1.51E+02		3.56E+02
		636.97	7.26	-3.64E+02		4.38E+03
		722.89	1.80	4.39E+03		2.13E+04
+	TE-132	49.72	13.10	-3.81E+08	1.16E+08	8.84E+08
		228.16	88.00	6.01E+06		1.16E+08
+	BA-133	81.00	33.00	-4.03E-01	1.25E-01	1.34E-01
		302.84	17.80	8.65E-02		2.82E-01
		356.01	60.00	2.92E-03		1.25E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	-2.14E+05	7.10E+04	7.10E+04
+	CS-134	563.23	8.38	-5.01E-02	7.54E-02	7.46E-01
		569.32	15.43	-1.05E-01		4.09E-01
		604.70	97.60	8.85E-03		7.54E-02
		795.84	85.40	1.99E-02		8.13E-02
		801.93	8.73	-4.91E-01		7.74E-01
+	CS-135	268.24	16.00	9.38E-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	4.29E+01	1.41E+01	1.10E+02
		163.89	4.61	4.30E+01		1.65E+02
		176.55	13.56	3.51E+00		5.51E+01
		273.65	12.66	2.05E+00		8.07E+01
		340.57	48.50	3.27E+01		2.65E+01
		818.50	99.70	2.82E+00		1.41E+01
		1048.07	79.60	5.88E-01		1.69E+01
		1235.34	19.70	6.31E+00		1.05E+02
+	CS-137	661.65	85.12	3.21E-02	8.15E-02	8.15E-02
+	LA-138	788.74	34.00	-2.58E-02	7.23E-02	1.79E-01
		1435.80	66.00	-4.41E-03		7.23E-02
+	CE-139	165.85	80.35	-3.94E-02	7.48E-02	7.48E-02
+	BA-140	162.64	6.70	3.04E+01	5.21E+01	1.33E+02
		304.84	4.50	-2.48E+02		2.43E+02
		423.70	3.20	-1.36E+02		3.73E+02
		437.55	2.00	2.71E+02		6.21E+02
		537.32	25.00	1.98E+01		5.21E+01
+	LA-140	328.77	20.50	3.08E+01	1.85E+01	6.23E+01
		487.03	45.50	3.75E-01		2.85E+01
		815.85	23.50	4.00E+00		6.73E+01
		1596.49	95.49	-7.39E-01		1.85E+01
+	CE-141	145.44	48.40	3.58E-01	7.01E-01	7.01E-01
+	@ 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

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CE-144	133.54		10.80	-1.50E-01	4.32E-01	4.32E-01
+	PM-144	476.78		42.00	1.85E-02	6.54E-02	1.46E-01
		618.01		98.60	-6.12E-03		6.54E-02
		696.49		99.49	4.49E-03		7.52E-02
+	PM-145	36.85		21.70	-1.43E-01	2.15E-01	3.94E-01
		37.36		39.70	1.88E-01		2.15E-01
		42.30		15.10	-3.63E-01		4.28E-01
		72.40		2.31	1.53E-03		2.25E+00
+	PM-146	453.90	*	39.94	5.61E-02	1.19E-01	1.19E-01
		735.90		14.01	-9.44E-02		4.18E-01
		747.13		13.10	-1.69E-01		4.12E-01
+	ND-147	91.11		28.90	-4.90E+01	9.20E+01	9.20E+01
		531.02		13.10	-8.09E+01		2.25E+02
+	PM-149	285.90		3.10	5.81E+13	8.74E+13	8.74E+13
+	EU-152	121.78		20.50	9.01E-03	1.79E-01	1.79E-01
		244.69		5.40	-1.25E+00		1.04E+00
		344.27		19.13	-3.07E-02		2.76E-01
		778.89		9.20	-1.20E-02		6.45E-01
		964.01		10.40	1.96E-01		7.42E-01
		1085.78		7.22	7.82E-02		1.09E+00
		1112.02		9.60	1.14E-01		8.03E-01
		1407.95		14.94	9.16E-02		4.84E-01
+	GD-153	97.43		31.30	-2.39E-01	1.50E-01	1.50E-01
		103.18		22.20	-2.30E-02		2.09E-01
+	EU-154	123.07		40.50	-4.60E-03	9.13E-02	9.13E-02
		723.30		19.70	6.84E-02		3.31E-01
		873.19		11.50	-7.50E-02		5.31E-01
		996.32		10.30	-3.48E-03		6.87E-01
		1004.76		17.90	2.63E-02		4.25E-01
		1274.45		35.50	5.09E-02		2.17E-01
+	EU-155	86.50	*	30.90	1.29E-01	1.78E-01	2.16E-01
		105.30		20.70	2.68E-03		1.78E-01
+	EU-156	811.77		10.40	-3.42E+01	5.93E+01	5.93E+01
		1153.47		7.20	-4.67E-01		1.22E+02
		1230.71		8.90	-3.36E+01		9.84E+01
+	HO-166M	184.41		72.60	7.49E-02	6.66E-02	6.66E-02
		280.45		29.60	-3.01E-02		1.67E-01
		410.94		11.10	1.84E-01		4.94E-01
		711.69		54.10	-8.28E-02		9.97E-02
+	TM-171	66.72		0.14	-2.88E+01	3.90E+01	3.90E+01
+	HF-172	67.35		5.31	-1.99E-01	3.67E-01	1.02E+00
		125.81		11.30	-1.55E-02		3.67E-01
+	LU-172	181.53		20.60	-6.60E+03	4.01E+03	6.59E+03
		900.72		29.81	-2.83E+03		6.73E+03
		1093.66		62.50	-4.78E+02		4.01E+03
+	LU-173	100.72		5.24	3.68E-01	2.83E-01	7.88E-01
		272.11		21.20	9.88E-02		2.83E-01
+	HF-175	343.40		84.00	-1.87E-02	1.68E-01	1.68E-01
+	LU-176	88.34		13.30	-1.59E-01	4.63E-02	3.40E-01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LU-176	201.83		86.00	-3.17E-03	4.63E-02	4.63E-02
		306.78		94.00	1.58E-02		5.16E-02
+	HF-181	133.02		41.70	-3.67E-01	3.23E-01	4.42E-01
		345.85		17.20	-1.76E-01		1.53E+00
		482.03		82.80	4.80E-02		3.23E-01
+	TA-182	67.75		41.20	-4.24E-02	2.19E-01	2.19E-01
		1121.30		34.90	6.63E-01		6.13E-01
		1189.05		16.23	-4.23E-01		9.14E-01
		1221.41		26.98	-1.49E-01		5.45E-01
		1231.02		11.44	-4.83E-01		1.41E+00
+	IR-192	308.46		29.68	-8.17E-02	2.63E-01	4.12E-01
		468.07		48.10	-4.53E-02		2.63E-01
+	HG-203	279.19		77.30	-1.61E-02	2.85E-01	2.85E-01
+	TL-204	374.74		94.11	-3.62E-02	5.12E-02	5.12E-02
		899.15		99.16	3.82E-02		6.91E-02
		911.74		91.10	2.50E-01		1.36E-01
+	BI-207	569.67		97.72	2.16E-02	6.23E-02	6.23E-02
		1063.62		74.90	-2.07E-02		8.90E-02
+	TL-208	583.14	*	30.22	6.85E-01	8.66E-02	3.12E-01
		860.37	*	4.48	7.15E-01		1.31E+00
		2614.66	*	35.85	5.75E-01		8.66E-02
+	BI-210M	262.00		45.00	2.62E-02	1.06E-01	1.06E-01
		300.00		23.00	1.40E-02		2.32E-01
+	PB-210	46.50		4.25	1.20E+00	1.46E+00	1.46E+00
+	PB-211	404.84		2.90	1.90E-01	1.76E+00	1.76E+00
		831.96		2.90	4.13E-02		2.29E+00
+	BI-212	727.17	*	11.80	3.41E-01	6.87E-01	6.87E-01
		1620.62		2.75	1.50E+00		2.52E+00
+	PB-212	238.63	*	44.60	8.10E-01	2.04E-01	2.04E-01
		300.09		3.41	9.45E-02		1.57E+00
+	BI-214	609.31	*	46.30	8.42E-01	1.95E-01	1.95E-01
		1120.29	*	15.10	1.02E+00		9.03E-01
		1764.49	*	15.80	1.05E+00		6.19E-01
		2204.22	*	4.98	9.29E-01		7.36E-01
+	PB-214	295.21	*	19.19	8.39E-01	2.21E-01	4.15E-01
		351.92	*	37.19	9.42E-01		2.21E-01
+	RN-219	401.80		6.50	2.79E-01	8.24E-01	8.24E-01
+	RA-223	323.87		3.88	1.80E-01	1.30E+00	1.30E+00
+	RA-224	240.98	*	3.95	2.92E+00	2.30E+00	2.30E+00
+	RA-225	40.00		31.00	-5.86E+00	2.58E+01	2.58E+01
+	RA-226	186.21	*	3.28	3.88E+00	2.57E+00	2.57E+00
+	TH-227	50.10		8.40	-2.80E-01	6.28E-01	6.50E-01
		236.00		11.50	6.44E-01		6.28E-01
		256.20		6.30	1.15E-01		7.56E-01
+	AC-228	338.32	*	11.40	9.86E-01	4.07E-01	6.61E-01
		911.07	*	27.70	8.77E-01		4.07E-01
		969.11	*	16.60	7.38E-01		5.87E-01
+	TH-230	48.44		16.90	1.18E-01	3.48E-01	3.48E-01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TH-230	62.85		4.60	7.47E-01	3.48E-01	1.13E+00
		67.67		0.37	-2.57E+00		1.32E+01
+	PA-231	283.67		1.60	7.21E-01	2.14E+00	3.08E+00
		302.67		2.30	6.57E-01		2.14E+00
+	TH-231	25.64		14.70	2.44E-01	6.76E-01	2.10E+00
		84.21		6.40	4.44E-02		6.76E-01
+	PA-233	311.98		38.60	-4.19E-01	1.67E+00	1.67E+00
+	PA-234	131.20		20.40	1.20E-02	1.80E-01	1.80E-01
		733.99		8.80	-3.69E-01		6.24E-01
		946.00		12.00	3.72E-02		5.46E-01
+	PA-234M	1001.03		0.92	-2.37E+00	7.48E+00	7.48E+00
+	TH-234	63.29		3.80	7.71E-01	1.37E+00	1.37E+00
+	U-235	143.76		10.50	8.29E-02	3.64E-01	3.64E-01
		163.35		4.70	2.07E-01		7.97E-01
		205.31		4.70	-7.37E-01		1.02E+00
+	NP-237	86.50	*	12.60	3.05E-01	5.10E-01	5.10E-01
+	NP-239	106.10		22.70	1.86E+10	1.23E+12	1.23E+12
		228.18		10.70	1.86E+11		3.60E+12
		277.60		14.10	1.42E+12		2.82E+12
+	AM-241	59.54		35.90	-1.66E-01	1.34E-01	1.34E-01
+	AM-243	74.67		66.00	9.66E-02	9.09E-02	9.09E-02
+	CM-243	209.75		3.29	9.71E-01	3.63E-01	1.55E+00
		228.14		10.60	2.40E-02		4.63E-01
		277.60		14.00	1.82E-01		3.63E-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 1707093-09

HTC-A09-S002-1824-01

	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	1.80E+00	1.80E+00	-3.42E-01	8.49E-01
	NA-22	1274.54		99.94	8.10E-02	8.10E-02	1.90E-02	3.69E-02
@	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	6.16E-02	6.16E-02	2.46E-02	2.64E-02
+	K-40	1460.81	*	10.67	8.19E-01	8.19E-01	1.31E+01	3.74E-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	5.19E-02	5.19E-02	-1.01E-02	2.54E-02
		78.34		96.00	5.93E-02		1.20E-01	2.92E-02
	SC-46	889.25		99.98	1.40E-01	1.40E-01	-2.65E-02	6.43E-02
		1120.51		99.99	2.66E-01		3.63E-01	1.26E-01
	V-48	983.52		99.98	5.18E+00	5.18E+00	-7.29E-01	2.37E+00
		1312.10		97.50	5.97E+00		1.92E+00	2.70E+00
	CR-51	320.08		9.83	6.48E+00	6.48E+00	2.72E+00	3.11E+00
	MN-54	834.83		99.97	7.71E-02	7.71E-02	-4.58E-02	3.56E-02
	CO-56	846.75		99.96	1.44E-01	1.44E-01	1.09E-02	6.65E-02
		1037.75		14.03	1.14E+00		1.09E-01	5.20E-01
		1238.25		67.00	3.97E-01		2.82E-01	1.87E-01
		1771.40		15.51	9.82E-01		2.71E-01	4.23E-01
		2598.48		16.90	7.07E-01		2.36E-01	2.74E-01
	CO-57	122.06		85.51	5.49E-02	5.49E-02	2.76E-03	2.67E-02
		136.48		10.60	4.57E-01		1.51E-01	2.22E-01
	CO-58	810.76		99.40	1.78E-01	1.78E-01	-2.87E-03	8.28E-02
	FE-59	1099.22		56.50	6.39E-01	6.39E-01	-2.06E-01	2.94E-01
		1291.56		43.20	8.55E-01		1.26E-01	3.90E-01
	CO-60	1173.22		100.00	8.57E-02	7.19E-02	2.50E-02	3.96E-02
		1332.49		100.00	7.19E-02		4.01E-02	3.23E-02
	ZN-65	1115.52		50.75	1.98E-01	1.98E-01	9.51E-03	9.11E-02
	GA-67	93.31		35.70	2.63E+08	2.63E+08	5.44E+08	1.29E+08
		208.95		2.24	4.64E+09		1.86E+09	2.26E+09
		300.22		16.00	6.89E+08		4.15E+07	3.32E+08
	SE-75	121.11		16.70	3.80E-01	1.15E-01	-9.51E-02	1.85E-01
		136.00		59.20	1.15E-01		7.14E-02	5.57E-02
		264.65		59.80	1.42E-01		-1.28E-02	6.87E-02
		279.53		25.20	3.54E-01		-5.98E-02	1.71E-01
		400.65		11.40	8.51E-01		2.44E-01	4.06E-01
	RB-82	776.52		13.00	6.80E+00	6.80E+00	-7.12E-01	3.14E+00
	RB-83	520.41		46.00	2.54E-01	2.54E-01	-1.88E-02	1.20E-01
		529.64		30.30	3.70E-01		-1.15E-01	1.73E-01
		552.65		16.40	7.93E-01		-8.72E-02	3.74E-01
	KR-85	513.99		0.43	1.70E+01	1.70E+01	1.89E+01	8.15E+00
	SR-85	513.99		99.27	2.15E-01	2.15E-01	2.39E-01	1.03E-01
	Y-88	898.02		93.40	1.34E-01	1.21E-01	4.63E-02	6.20E-02
		1836.01		99.38	1.21E-01		2.78E-02	5.16E-02
	MO-93	263.06		56.72	8.61E-02	5.41E-02	3.50E-02	4.15E-02
		684.67		99.68	5.41E-02		-3.42E-02	2.51E-02
		1477.11		99.08	6.62E-02		9.77E-03	2.92E-02
	NB-93M	16.57		9.43	5.20E+01	5.20E+01	4.82E+00	2.53E+01
	NB-94	702.63		100.00	6.88E-02	6.15E-02	1.01E-04	3.24E-02
		871.10		100.00	6.15E-02		-1.40E-02	2.83E-02
	NB-95	765.79		99.81	5.41E-01	5.41E-01	-5.02E-02	2.55E-01
	NB-95M	235.69		25.00	7.48E+07	7.48E+07	7.67E+07	3.66E+07
	ZR-95	724.18		43.70	4.85E-01	3.68E-01	1.01E-01	2.28E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	ZR-95	756.72		55.30	3.68E-01	3.68E-01	1.09E-01	1.72E-01
	MO-99	181.06		6.20	6.84E+10	5.37E+10	-1.89E+10	3.31E+10
		739.58		12.80	5.37E+10		3.27E+10	2.51E+10
		778.00		4.50	1.48E+11		-1.47E+10	6.86E+10
	RU-103	497.08		89.00	3.61E-01	3.61E-01	6.74E-02	1.70E-01
	RU-106	621.84		9.80	6.55E-01	6.55E-01	-3.59E-01	3.05E-01
	AG-108M	433.93		89.90	5.52E-02	5.52E-02	-3.29E-02	2.61E-02
		614.37		90.40	8.10E-02		1.38E-02	3.85E-02
		722.95		90.50	7.06E-02		1.46E-02	3.30E-02
	CD-109	88.03		3.72	1.42E+00	1.42E+00	7.80E-01	6.95E-01
	AG-110M	657.75		93.14	8.38E-02	8.38E-02	-2.96E-02	3.92E-02
		677.61		10.53	7.71E-01		3.47E-01	3.61E-01
		706.67		16.46	5.03E-01		-7.84E-02	2.35E-01
		763.93		21.98	3.84E-01		-3.55E-02	1.79E-01
		884.67		71.63	1.13E-01		-1.46E-02	5.19E-02
		1384.27		23.94	3.46E-01		-2.59E-01	1.53E-01
	CD-113M	263.70		0.02	2.05E+02	2.05E+02	-2.19E+01	9.86E+01
	SN-113	255.12		1.93	4.44E+00	1.42E-01	-5.99E-01	2.14E+00
		391.69		64.90	1.42E-01		-7.15E-02	6.78E-02
	TE123M	159.00		84.10	8.35E-02	8.35E-02	3.61E-04	4.05E-02
	SB-124	602.71		97.87	1.88E-01	1.88E-01	3.33E-02	8.84E-02
		645.85		7.26	2.47E+00		6.73E-01	1.15E+00
		722.78		11.10	1.84E+00		3.79E-01	8.59E-01
		1691.02		49.00	4.20E-01		9.74E-02	1.83E-01
	I-125	35.49		6.49	4.48E+00	4.48E+00	-3.00E+00	2.17E+00
	SB-125	176.33		6.89	5.71E-01	1.81E-01	3.64E-02	2.76E-01
		427.89		29.33	1.81E-01		-1.67E-03	8.58E-02
		463.38		10.35	6.08E-01		4.18E-01	2.90E-01
		600.56		17.80	3.60E-01		1.89E-01	1.69E-01
		635.90		11.32	4.90E-01		-1.31E-01	2.28E-01
	SB-126	414.70		83.30	1.66E+01	1.66E+01	-1.64E+00	7.88E+00
		666.33		99.60	1.98E+01		8.27E+00	9.35E+00
		695.00		99.60	1.72E+01		1.04E+00	8.03E+00
		720.50		53.80	3.12E+01		-1.03E+01	1.45E+01
+	SN-126	87.57	*	37.00	1.74E-01	1.74E-01	1.04E-01	8.56E-02
	SB-127	473.00		25.00	1.47E+07	1.15E+07	-6.06E+05	6.91E+06
		685.20		35.70	1.15E+07		-7.27E+06	5.33E+06
		783.80		14.70	3.52E+07		2.47E+07	1.64E+07
	I-129	29.78		57.00	2.94E-01	2.94E-01	9.21E-02	1.43E-01
		33.60		13.20	8.13E-01		-6.10E-01	3.95E-01
		39.58		7.52	9.64E-01		-2.19E-01	4.69E-01
	I-131	284.30		6.05	4.89E+03	3.56E+02	1.52E+03	2.36E+03
		364.48		81.20	3.56E+02		1.51E+02	1.70E+02
		636.97		7.26	4.38E+03		-3.64E+02	2.04E+03
		722.89		1.80	2.13E+04		4.39E+03	9.94E+03
	TE-132	49.72		13.10	8.84E+08	1.16E+08	-3.81E+08	4.31E+08
		228.16		88.00	1.16E+08		6.01E+06	5.64E+07
	BA-133	81.00		33.00	1.34E-01	1.25E-01	-4.03E-01	6.56E-02
		302.84		17.80	2.82E-01		8.65E-02	1.36E-01
		356.01		60.00	1.25E-01		2.92E-03	6.09E-02
	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	XE-133	81.00		38.00	7.10E+04	7.10E+04	-2.14E+05	3.47E+04
	CS-134	563.23		8.38	7.46E-01	7.54E-02	-5.01E-02	3.52E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	569.32		15.43	4.09E-01	7.54E-02	-1.05E-01	1.93E-01
		604.70		97.60	7.54E-02		8.85E-03	3.57E-02
		795.84		85.40	8.13E-02		1.99E-02	3.78E-02
		801.93		8.73	7.74E-01		-4.91E-01	3.59E-01
	CS-135	268.24		16.00	3.20E-01	3.20E-01	9.38E-02	1.55E-01
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
	CS-136	153.22		7.46	1.10E+02	1.41E+01	4.29E+01	5.37E+01
		163.89		4.61	1.65E+02		4.30E+01	8.02E+01
		176.55		13.56	5.51E+01		3.51E+00	2.66E+01
		273.65		12.66	8.07E+01		2.05E+00	3.90E+01
		340.57		48.50	2.65E+01		3.27E+01	1.28E+01
		818.50		99.70	1.41E+01		2.82E+00	6.60E+00
		1048.07		79.60	1.69E+01		5.88E-01	7.73E+00
		1235.34		19.70	1.05E+02		6.31E+00	4.90E+01
	CS-137	661.65		85.12	8.15E-02	8.15E-02	3.21E-02	3.85E-02
	LA-138	788.74		34.00	1.79E-01	7.23E-02	-2.58E-02	8.27E-02
		1435.80		66.00	7.23E-02		-4.41E-03	3.06E-02
	CE-139	165.85		80.35	7.48E-02	7.48E-02	-3.94E-02	3.62E-02
	BA-140	162.64		6.70	1.33E+02	5.21E+01	3.04E+01	6.44E+01
		304.84		4.50	2.43E+02		-2.48E+02	1.17E+02
		423.70		3.20	3.73E+02		-1.36E+02	1.77E+02
		437.55		2.00	6.21E+02		2.71E+02	2.95E+02
		537.32		25.00	5.21E+01		1.98E+01	2.45E+01
	LA-140	328.77		20.50	6.23E+01	1.85E+01	3.08E+01	3.00E+01
		487.03		45.50	2.85E+01		3.75E-01	1.35E+01
		815.85		23.50	6.73E+01		4.00E+00	3.13E+01
		1596.49		95.49	1.85E+01		-7.39E-01	8.25E+00
	CE-141	145.44		48.40	7.01E-01	7.01E-01	3.58E-01	3.41E-01
@	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	4.32E-01	4.32E-01	-1.50E-01	2.10E-01
	PM-144	476.78		42.00	1.46E-01	6.54E-02	1.85E-02	6.89E-02
		618.01		98.60	6.54E-02		-6.12E-03	3.05E-02
		696.49		99.49	7.52E-02		4.49E-03	3.52E-02
	PM-145	36.85		21.70	3.94E-01	2.15E-01	-1.43E-01	1.91E-01
		37.36		39.70	2.15E-01		1.88E-01	1.05E-01
		42.30		15.10	4.28E-01		-3.63E-01	2.08E-01
		72.40		2.31	2.25E+00		1.53E-03	1.10E+00
+	PM-146	453.90	*	39.94	1.19E-01	1.19E-01	5.61E-02	5.58E-02
		735.90		14.01	4.18E-01		-9.44E-02	1.94E-01
		747.13		13.10	4.12E-01		-1.69E-01	1.89E-01
	ND-147	91.11		28.90	9.20E+01	9.20E+01	-4.90E+01	4.51E+01
		531.02		13.10	2.25E+02		-8.09E+01	1.06E+02
	PM-149	285.90		3.10	8.74E+13	8.74E+13	5.81E+13	4.21E+13
	EU-152	121.78		20.50	1.79E-01	1.79E-01	9.01E-03	8.71E-02
		244.69		5.40	1.04E+00		-1.25E+00	5.05E-01
		344.27		19.13	2.76E-01		-3.07E-02	1.32E-01
		778.89		9.20	6.45E-01		-1.20E-02	2.98E-01
		964.01		10.40	7.42E-01		1.96E-01	3.45E-01
		1085.78		7.22	1.09E+00		7.82E-02	5.02E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1112.02		9.60	8.03E-01	1.79E-01	1.14E-01	3.70E-01
		1407.95		14.94	4.84E-01		9.16E-02	2.17E-01
	GD-153	97.43		31.30	1.50E-01	1.50E-01	-2.39E-01	7.31E-02
		103.18		22.20	2.09E-01		-2.30E-02	1.02E-01
	EU-154	123.07		40.50	9.13E-02	9.13E-02	-4.60E-03	4.44E-02
		723.30		19.70	3.31E-01		6.84E-02	1.55E-01
		873.19		11.50	5.31E-01		-7.50E-02	2.44E-01
		996.32		10.30	6.87E-01		-3.48E-03	3.16E-01
		1004.76		17.90	4.25E-01		2.63E-02	1.97E-01
		1274.45		35.50	2.17E-01		5.09E-02	9.86E-02
+	EU-155	86.50	*	30.90	2.16E-01	1.78E-01	1.29E-01	1.07E-01
		105.30		20.70	1.78E-01		2.68E-03	8.65E-02
	EU-156	811.77		10.40	5.93E+01	5.93E+01	-3.42E+01	2.75E+01
		1153.47		7.20	1.22E+02		-4.67E-01	5.68E+01
		1230.71		8.90	9.84E+01		-3.36E+01	4.55E+01
	HO-166M	184.41		72.60	6.66E-02	6.66E-02	7.49E-02	3.24E-02
		280.45		29.60	1.67E-01		-3.01E-02	8.05E-02
		410.94		11.10	4.94E-01		1.84E-01	2.36E-01
		711.69		54.10	9.97E-02		-8.28E-02	4.61E-02
	TM-171	66.72		0.14	3.90E+01	3.90E+01	-2.88E+01	1.91E+01
	HF-172	67.35		5.31	1.02E+00	3.67E-01	-1.99E-01	5.01E-01
		125.81		11.30	3.67E-01		-1.55E-02	1.79E-01
	LU-172	181.53		20.60	6.59E+03	4.01E+03	-6.60E+03	3.19E+03
		900.72		29.81	6.73E+03		-2.83E+03	3.08E+03
		1093.66		62.50	4.01E+03		-4.78E+02	1.84E+03
	LU-173	100.72		5.24	7.88E-01	2.83E-01	3.68E-01	3.84E-01
		272.11		21.20	2.83E-01		9.88E-02	1.37E-01
	HF-175	343.40		84.00	1.68E-01	1.68E-01	-1.87E-02	8.06E-02
	LU-176	88.34		13.30	3.40E-01	4.63E-02	-1.59E-01	1.66E-01
		201.83		86.00	4.63E-02		-3.17E-03	2.24E-02
		306.78		94.00	5.16E-02		1.58E-02	2.48E-02
	HF-181	133.02		41.70	4.42E-01	3.23E-01	-3.67E-01	2.15E-01
		345.85		17.20	1.53E+00		-1.76E-01	7.33E-01
		482.03		82.80	3.23E-01		4.80E-02	1.52E-01
	TA-182	67.75		41.20	2.19E-01	2.19E-01	-4.24E-02	1.07E-01
		1121.30		34.90	6.13E-01		6.63E-01	2.91E-01
		1189.05		16.23	9.14E-01		-4.23E-01	4.21E-01
		1221.41		26.98	5.45E-01		-1.49E-01	2.50E-01
		1231.02		11.44	1.41E+00		-4.83E-01	6.53E-01
	IR-192	308.46		29.68	4.12E-01	2.63E-01	-8.17E-02	1.98E-01
		468.07		48.10	2.63E-01		-4.53E-02	1.24E-01
	HG-203	279.19		77.30	2.85E-01	2.85E-01	-1.61E-02	1.37E-01
	TL-204	374.74		94.11	5.12E-02	5.12E-02	-3.62E-02	2.43E-02
		899.15		99.16	6.91E-02		3.82E-02	3.19E-02
		911.74		91.10	1.36E-01		2.50E-01	6.49E-02
	BI-207	569.67		97.72	6.23E-02	6.23E-02	2.16E-02	2.94E-02
		1063.62		74.90	8.90E-02		-2.07E-02	4.06E-02
+	TL-208	583.14	*	30.22	3.12E-01	8.66E-02	6.85E-01	1.51E-01
		860.37	*	4.48	1.31E+00		7.15E-01	6.03E-01
		2614.66	*	35.85	8.66E-02		5.75E-01	2.78E-02
	BI-210M	262.00		45.00	1.06E-01	1.06E-01	2.62E-02	5.14E-02
		300.00		23.00	2.32E-01		1.40E-02	1.12E-01
	PB-210	46.50		4.25	1.46E+00	1.46E+00	1.20E+00	7.15E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	PB-211	404.84		2.90	1.76E+00	1.76E+00	1.90E-01	8.39E-01
		831.96		2.90	2.29E+00		4.13E-02	1.06E+00
+	BI-212	727.17	*	11.80	6.87E-01	6.87E-01	3.41E-01	3.26E-01
		1620.62		2.75	2.52E+00		1.50E+00	1.11E+00
+	PB-212	238.63	*	44.60	2.04E-01	2.04E-01	8.10E-01	1.00E-01
		300.09		3.41	1.57E+00		9.45E-02	7.56E-01
+	BI-214	609.31	*	46.30	1.95E-01	1.95E-01	8.42E-01	9.39E-02
		1120.29	*	15.10	9.03E-01		1.02E+00	4.31E-01
		1764.49	*	15.80	6.19E-01		1.05E+00	2.82E-01
		2204.22	*	4.98	7.36E-01		9.29E-01	2.66E-01
+	PB-214	295.21	*	19.19	4.15E-01	2.21E-01	8.39E-01	2.02E-01
		351.92	*	37.19	2.21E-01		9.42E-01	1.07E-01
	RN-219	401.80		6.50	8.24E-01	8.24E-01	2.79E-01	3.93E-01
	RA-223	323.87		3.88	1.30E+00	1.30E+00	1.80E-01	6.25E-01
+	RA-224	240.98	*	3.95	2.30E+00	2.30E+00	2.92E+00	1.13E+00
	RA-225	40.00		31.00	2.58E+01	2.58E+01	-5.86E+00	1.25E+01
+	RA-226	186.21	*	3.28	2.57E+00	2.57E+00	3.88E+00	1.27E+00
	TH-227	50.10		8.40	6.50E-01	6.28E-01	-2.80E-01	3.17E-01
		236.00		11.50	6.28E-01		6.44E-01	3.07E-01
		256.20		6.30	7.56E-01		1.15E-01	3.65E-01
+	AC-228	338.32	*	11.40	6.61E-01	4.07E-01	9.86E-01	3.22E-01
		911.07	*	27.70	4.07E-01		8.77E-01	1.94E-01
		969.11	*	16.60	5.87E-01		7.38E-01	2.77E-01
	TH-230	48.44		16.90	3.48E-01	3.48E-01	1.18E-01	1.70E-01
		62.85		4.60	1.13E+00		7.47E-01	5.53E-01
		67.67		0.37	1.32E+01		-2.57E+00	6.47E+00
	PA-231	283.67		1.60	3.08E+00	2.14E+00	7.21E-01	1.49E+00
		302.67		2.30	2.14E+00		6.57E-01	1.03E+00
	TH-231	25.64		14.70	2.10E+00	6.76E-01	2.44E-01	1.02E+00
		84.21		6.40	6.76E-01		4.44E-02	3.31E-01
	PA-233	311.98		38.60	1.67E+00	1.67E+00	-4.19E-01	8.04E-01
	PA-234	131.20		20.40	1.80E-01	1.80E-01	1.20E-02	8.75E-02
		733.99		8.80	6.24E-01		-3.69E-01	2.88E-01
		946.00		12.00	5.46E-01		3.72E-02	2.51E-01
	PA-234M	1001.03		0.92	7.48E+00	7.48E+00	-2.37E+00	3.44E+00
	TH-234	63.29		3.80	1.37E+00	1.37E+00	7.71E-01	6.71E-01
	U-235	143.76		10.50	3.64E-01	3.64E-01	8.29E-02	1.77E-01
		163.35		4.70	7.97E-01		2.07E-01	3.86E-01
		205.31		4.70	1.02E+00		-7.37E-01	4.94E-01
+	NP-237	86.50	*	12.60	5.10E-01	5.10E-01	3.05E-01	2.52E-01
	NP-239	106.10		22.70	1.23E+12	1.23E+12	1.86E+10	6.01E+11
		228.18		10.70	3.60E+12		1.86E+11	1.75E+12
		277.60		14.10	2.82E+12		1.42E+12	1.36E+12
	AM-241	59.54		35.90	1.34E-01	1.34E-01	-1.66E-01	6.56E-02
	AM-243	74.67		66.00	9.09E-02	9.09E-02	9.66E-02	4.47E-02
	CM-243	209.75		3.29	1.55E+00	3.63E-01	9.71E-01	7.53E-01
		228.14		10.60	4.63E-01		2.40E-02	2.25E-01
		277.60		14.00	3.63E-01		1.82E-01	1.75E-01

Analysis Report for 1707093-09

HTC-A09-S002-1824-01

+ = 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: HTC-A09-S002-1824-01

Elapsed Live time: 3600
Elapsed Real Time: 3608

Channel								
1:	0	0	0	0	0	0	0	0
9:	7	169	156	137	125	109	92	114
17:	97	82	100	86	74	74	90	90
25:	80	79	92	94	81	78	85	100
33:	74	80	68	78	100	67	103	98
41:	74	91	85	90	107	113	145	131
49:	94	105	133	114	112	120	117	116
57:	127	111	131	146	139	130	186	209
65:	171	151	164	162	168	166	165	157
73:	145	173	313	326	379	377	219	139
81:	111	126	123	136	140	142	179	184
89:	137	155	134	155	220	205	133	87
97:	78	89	109	103	106	82	79	69
105:	106	107	90	84	106	90	80	89
113:	87	97	65	81	86	87	67	97
121:	78	84	88	84	93	88	91	92
129:	87	100	80	71	76	80	71	103
137:	76	93	70	73	77	69	68	93
145:	93	84	73	84	86	73	84	90
153:	67	88	95	66	85	91	63	75
161:	62	65	79	72	57	58	60	55
169:	67	68	83	66	56	61	67	68
177:	52	43	55	44	65	67	72	74
185:	84	131	110	76	74	57	68	55
193:	53	61	61	68	53	60	54	47
201:	63	68	45	52	57	54	48	55
209:	79	90	41	56	55	55	43	65
217:	51	49	44	41	59	57	52	52
225:	49	44	60	55	44	50	40	45
233:	46	49	45	57	62	140	325	225
241:	90	127	86	37	47	32	28	37
249:	39	38	28	26	40	40	39	40
257:	46	27	35	50	36	40	37	30
265:	32	34	32	46	42	56	44	45
273:	37	27	40	33	40	48	31	37
281:	32	24	39	35	42	33	35	31
289:	29	27	28	26	37	42	126	164
297:	76	26	25	31	50	31	17	27
305:	37	20	33	19	36	29	35	19
313:	27	27	22	30	36	39	26	23
321:	27	33	23	27	23	28	37	41
329:	35	35	15	30	34	21	36	30
337:	29	57	78	44	35	33	20	21
345:	29	22	29	29	26	19	87	220
353:	184	65	28	23	24	23	20	21
361:	18	22	21	21	22	19	25	15

369:	12	19	21	13	24	14	17	14

Sample Title: HTC-A09-S002-1824-01

Channel								
377:	24	17	21	30	24	29	10	22
385:	24	20	28	27	20	18	22	17
393:	19	20	22	23	19	24	24	24
401:	21	19	24	18	20	17	16	20
409:	30	27	25	21	18	10	19	20
417:	14	16	27	15	15	22	21	20
425:	12	15	14	16	22	16	18	10
433:	15	16	16	16	19	19	23	15
441:	14	12	14	14	15	13	15	14
449:	10	8	7	15	27	11	21	11
457:	19	12	13	16	22	19	21	30
465:	15	16	16	16	12	13	6	10
473:	14	12	16	14	11	11	18	14
481:	12	15	18	9	11	16	12	27
489:	19	15	13	16	12	24	14	13
497:	14	11	14	13	15	11	7	15
505:	14	12	9	14	26	29	51	37
513:	26	19	17	15	13	13	7	17
521:	8	12	10	19	7	18	12	9
529:	12	10	7	14	12	14	12	12
537:	17	10	9	17	11	6	14	16
545:	13	12	6	13	9	13	15	16
553:	13	14	9	16	15	19	10	13
561:	13	17	11	15	12	9	13	12
569:	13	14	16	13	19	12	14	18
577:	12	9	14	16	17	26	78	72
585:	32	9	11	11	15	13	11	11
593:	13	10	14	9	8	15	11	12
601:	13	18	8	11	9	10	17	38
609:	113	137	61	16	8	9	17	9
617:	9	11	6	8	5	14	7	10
625:	14	14	15	15	11	10	12	12
633:	8	7	7	11	10	7	8	11
641:	5	12	6	6	10	10	12	15
649:	8	5	10	13	5	7	14	8
657:	6	8	11	15	10	16	19	14
665:	14	17	13	13	11	10	11	16
673:	6	13	9	5	15	13	13	11
681:	8	6	7	10	7	7	4	12
689:	10	14	5	11	8	10	11	10
697:	6	13	11	10	8	10	28	12
705:	10	10	14	12	8	5	10	8
713:	7	5	8	13	8	8	1	6
721:	12	15	8	12	9	9	24	27
729:	5	8	10	9	4	8	5	6
737:	8	14	8	8	8	7	12	7
745:	5	6	6	7	4	8	5	9
753:	7	15	6	16	8	13	5	12
761:	5	14	4	12	10	11	8	18
769:	23	12	7	14	14	5	9	10
777:	7	6	7	5	11	5	8	8
785:	8	12	15	3	7	6	7	4
793:	5	8	14	9	10	5	7	7

801:	9	6	9	4	12	14	14	11

Sample Title: HTC-A09-S002-1824-01

Channel								
809:	11	8	7	8	10	6	3	8
817:	11	12	12	9	10	5	16	6
825:	11	6	9	11	9	8	10	5
833:	8	6	13	7	7	4	13	9
841:	8	8	6	10	7	4	7	7
849:	6	4	7	4	10	8	11	5
857:	4	4	3	19	13	4	10	5
865:	10	11	12	7	6	4	10	9
873:	7	3	8	2	10	4	1	7
881:	8	9	5	7	6	4	6	7
889:	3	10	9	4	7	8	3	7
897:	10	9	9	5	6	3	4	3
905:	8	6	6	8	10	29	51	43
913:	15	10	9	5	10	8	13	6
921:	13	7	8	3	4	10	4	7
929:	10	9	11	7	3	10	14	8
937:	5	11	10	8	6	4	5	5
945:	7	10	3	9	6	5	9	5
953:	6	6	5	6	2	10	7	3
961:	9	7	7	12	7	7	11	24
969:	31	21	10	6	5	4	7	10
977:	6	7	7	4	6	2	4	4
985:	11	8	6	8	7	9	4	8
993:	10	5	5	7	4	12	3	5
1001:	9	5	5	6	6	13	8	10
1009:	4	11	10	2	7	10	7	6
1017:	8	6	3	4	4	4	2	4
1025:	9	3	6	11	5	3	10	7
1033:	4	6	7	4	6	6	6	5
1041:	4	5	5	5	5	4	6	6
1049:	4	7	6	6	5	4	3	10
1057:	4	10	7	5	5	6	8	10
1065:	0	5	3	6	7	9	4	7
1073:	8	6	8	2	5	5	5	7
1081:	6	7	5	5	9	10	6	11
1089:	4	8	6	6	7	5	8	7
1097:	5	2	13	5	7	7	11	8
1105:	10	3	4	6	7	5	7	8
1113:	8	7	4	6	7	5	15	31
1121:	25	19	9	8	5	13	6	10
1129:	7	5	9	4	6	4	2	7
1137:	8	11	5	7	3	11	7	5
1145:	5	2	6	2	10	8	9	5
1153:	14	10	7	6	5	4	10	11
1161:	4	2	4	11	4	3	6	10
1169:	4	6	6	7	7	9	5	10
1177:	7	2	10	9	6	4	7	7
1185:	6	6	8	6	9	4	7	6
1193:	12	9	10	8	9	2	11	7
1201:	12	10	11	6	6	6	8	11
1209:	10	10	8	7	9	11	20	8
1217:	5	7	7	8	6	8	2	5
1225:	4	12	7	11	7	5	7	8

1233:	9	5	5	13	10	21	19	9

Sample Title: HTC-A09-S002-1824-01

Channel								
1241:	6	9	6	10	6	5	11	9
1249:	9	5	8	8	4	10	3	8
1257:	5	3	3	9	7	5	7	5
1265:	7	6	5	7	3	4	2	6
1273:	3	4	5	8	7	2	7	8
1281:	6	9	6	2	8	5	4	7
1289:	5	6	5	5	4	4	5	4
1297:	3	6	3	4	4	7	4	3
1305:	5	4	4	4	6	2	5	5
1313:	5	6	2	4	1	4	7	8
1321:	4	1	8	12	1	2	3	2
1329:	4	3	4	4	0	5	7	1
1337:	1	4	2	0	5	2	5	9
1345:	2	4	1	2	5	9	2	4
1353:	2	3	3	2	2	2	3	3
1361:	0	4	7	4	4	5	4	6
1369:	2	3	6	1	2	7	2	5
1377:	11	10	9	8	2	2	1	3
1385:	6	6	0	4	1	3	1	3
1393:	2	1	6	4	0	0	2	3
1401:	3	9	3	3	2	4	7	7
1409:	2	2	2	4	2	4	0	8
1417:	2	3	4	1	0	4	2	5
1425:	3	4	3	0	2	4	4	3
1433:	2	2	2	1	1	1	1	3
1441:	6	2	0	0	5	1	5	5
1449:	0	1	5	2	3	1	3	1
1457:	7	3	42	138	199	118	20	5
1465:	2	1	3	0	4	4	1	3
1473:	1	2	2	3	1	5	1	2
1481:	2	1	2	1	0	3	3	2
1489:	1	1	1	2	2	0	4	1
1497:	1	0	1	1	3	3	2	4
1505:	2	2	2	4	6	6	2	0
1513:	3	7	3	2	3	3	1	1
1521:	2	3	2	3	2	0	1	3
1529:	2	2	0	1	0	1	2	1
1537:	2	1	7	3	0	4	3	3
1545:	2	2	3	2	2	2	1	2
1553:	0	0	1	1	4	0	1	2
1561:	0	2	1	2	2	1	1	2
1569:	1	2	1	2	3	0	1	2
1577:	1	0	3	1	3	4	1	1
1585:	0	0	4	4	5	4	0	6
1593:	7	3	3	2	1	0	0	1
1601:	3	0	4	4	1	0	1	2
1609:	0	2	1	2	2	0	0	2
1617:	0	4	1	7	1	2	1	1
1625:	0	2	2	1	5	0	3	2
1633:	1	2	2	2	1	2	3	2
1641:	0	0	1	1	0	1	1	0
1649:	0	1	0	0	3	1	3	2
1657:	1	1	0	2	6	3	0	0

1665:	3	1	1	2	0	0	0	1

Sample Title: HTC-A09-S002-1824-01

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

2097:	0	1	0	0	3	3	0	2

Sample Title: HTC-A09-S002-1824-01

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

2529:	0	0	0	0	1	0	0	0

Sample Title: HTC-A09-S002-1824-01

Channel								
2537:	0	0	0	0	0	2	0	0
2545:	0	1	0	1	0	2	0	0
2553:	0	1	0	0	0	0	0	0
2561:	0	0	1	0	0	0	0	2
2569:	0	1	0	0	0	0	0	0
2577:	1	0	0	0	0	0	0	0
2585:	1	0	0	0	0	0	0	0
2593:	0	1	1	0	1	0	0	0
2601:	1	0	0	0	0	0	0	0
2609:	0	0	1	7	8	19	10	4
2617:	2	1	0	0	0	0	0	0
2625:	0	0	0	0	0	0	0	1
2633:	1	0	0	1	1	1	0	0
2641:	0	0	0	0	0	0	0	0
2649:	0	0	0	0	0	0	1	0
2657:	1	1	0	0	0	1	0	1
2665:	1	0	0	0	0	0	0	0
2673:	1	1	0	0	0	0	0	0
2681:	0	0	0	0	0	0	0	0
2689:	0	0	0	1	0	0	0	0
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:	0	0	0	0	0	0	0	1
2737:	0	0	0	0	1	0	0	0
2745:	0	1	1	0	0	0	0	0
2753:	0	0	1	0	0	0	0	0
2761:	2	0	1	1	0	0	0	0
2769:	0	0	0	0	1	1	0	0
2777:	0	0	1	0	0	0	0	0
2785:	0	1	0	0	0	0	0	0
2793:	0	0	0	0	0	1	0	0
2801:	0	0	1	0	0	0	1	1
2809:	0	0	0	1	0	0	1	0
2817:	0	0	1	1	0	0	1	0
2825:	0	0	0	1	1	0	0	0
2833:	1	0	1	0	0	0	0	0
2841:	1	0	0	0	0	0	0	0
2849:	0	0	1	0	0	1	0	0
2857:	0	1	1	0	0	0	0	0
2865:	1	1	0	0	0	0	0	1
2873:	0	0	0	0	1	2	0	0
2881:	1	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	0	1
2921:	1	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	1	1	0	0	0	0	0
2945:	4	0	0	0	0	0	0	0
2953:	0	0	0	0	0	0	0	0

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S002-1824-01

Channel								
2969:	0	0	1	0	0	0	0	0
2977:	0	0	0	0	2	0	0	0
2985:	1	0	0	0	0	0	0	0
2993:	1	1	0	1	0	0	0	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	0	1	0	0	2	1
3025:	0	0	0	0	0	0	0	0
3033:	0	0	0	0	0	0	0	0
3041:	0	0	0	0	0	0	0	0
3049:	0	0	0	0	1	0	0	0
3057:	1	0	0	0	0	1	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	1	0	1	0	0	0	0	0
3097:	0	0	0	0	0	1	0	0
3105:	0	0	0	0	0	0	0	0
3113:	0	1	1	0	0	0	0	0
3121:	0	0	0	0	0	0	0	0
3129:	0	1	0	0	0	0	0	1
3137:	0	1	0	1	0	0	0	0
3145:	0	0	0	1	0	0	1	0
3153:	0	0	0	0	1	0	0	0
3161:	0	0	0	1	0	0	0	0
3169:	0	0	0	0	0	0	1	0
3177:	0	0	0	0	0	1	0	1
3185:	1	0	0	0	1	1	0	0
3193:	1	0	1	1	0	0	1	0
3201:	0	0	0	0	0	0	0	0
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	2	0	0	0	0	0	0	1
3241:	0	0	0	1	0	0	0	0
3249:	0	0	0	0	0	0	0	1
3257:	0	0	0	1	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	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	0	0	0	1	0	1	1
3321:	0	0	0	0	0	0	0	1
3329:	0	1	0	0	0	0	0	1
3337:	0	0	0	0	1	0	0	0
3345:	0	0	0	0	0	0	0	1
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	1	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	1	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: HTC-A09-S002-1824-01

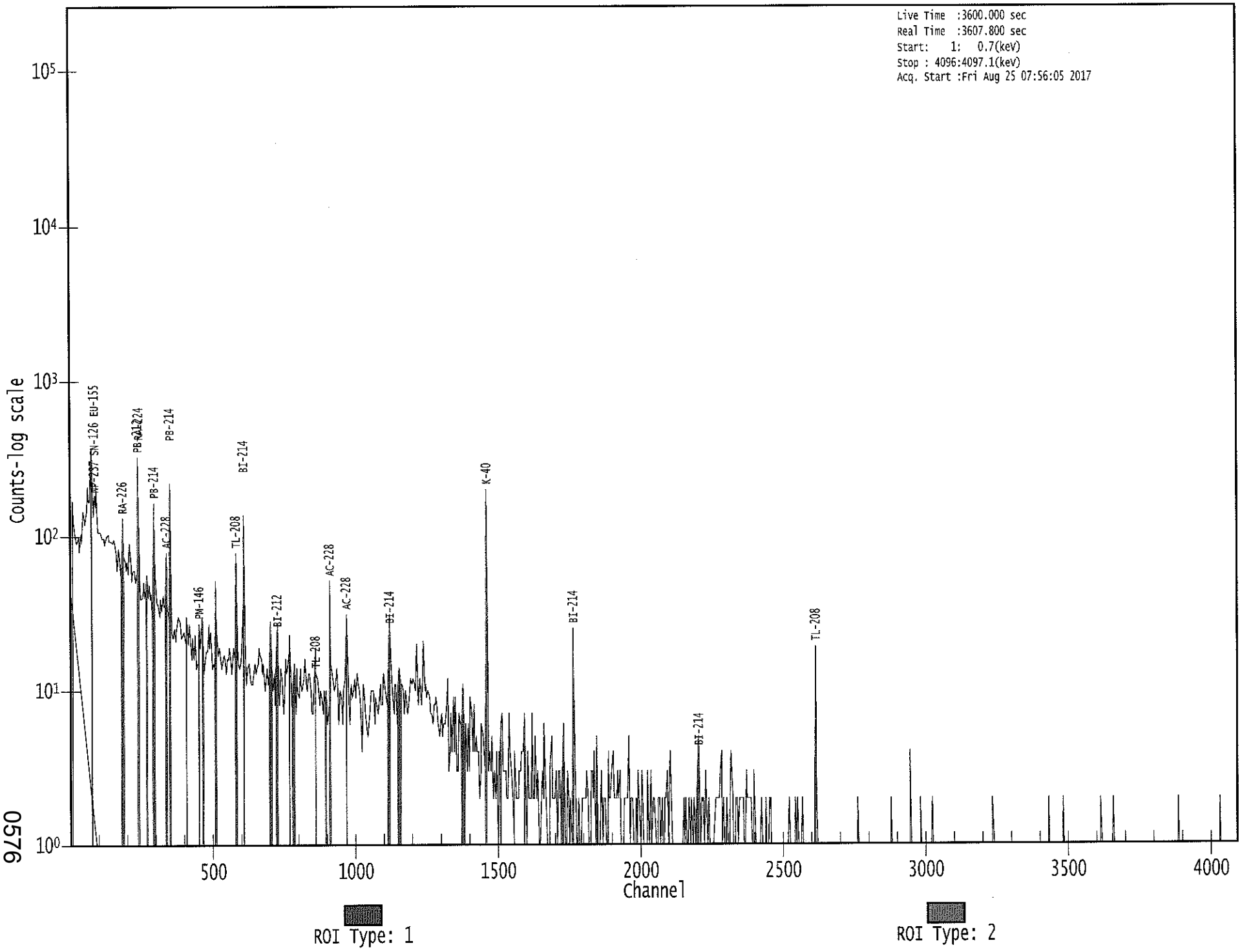
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	1	0	0	0	0	0	0	0
3425:	0	0	0	0	0	1	2	0
3433:	0	0	0	0	0	0	1	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	1	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	2	0	0	0	0	0	0
3489:	1	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	1	1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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S002-1824-01

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

0000055965.CNF



0576

Apex-Gamma

8/25

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707093-10
Sample Description	: HTC-A09-S002-2430-01
Sample Type	: SOIL
Sample Size	: 8.103E+02 grams
Facility	: Countroom
Sample Taken On	: 5/16/2017 10:51:43AM
Acquisition Started	: 8/25/2017 7:56:13AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3602.7 seconds
Dead Time	: 0.07 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 15 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 1/14/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55966

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/25/2017 8:57:19AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	76.09	75.15	0.0000	0.00
2	92.79	91.85	0.0000	0.00
3	130.08	129.16	0.0000	0.00
4	186.00	185.09	0.0000	0.00
5	239.42	238.53	0.0000	0.00
6	294.82	293.95	0.0000	0.00
7	338.36	337.50	0.0000	0.00
8	352.10	351.24	0.0000	0.00
9	510.99	510.20	0.0000	0.00
10	583.45	582.68	0.0000	0.00
11	609.40	608.64	0.0000	0.00
12	652.50	651.76	0.0000	0.00
13	728.85	728.14	0.0000	0.00
14	911.11	910.47	0.0000	0.00
15	1119.82	1119.27	0.0000	0.00
16	1378.96	1378.54	0.0000	0.00
17	1388.41	1388.00	0.0000	0.00
18	1460.80	1460.43	0.0000	0.00
19	1591.74	1591.43	0.0000	0.00
20	1764.25	1764.03	0.0000	0.00
21	1804.86	1804.67	0.0000	0.00
22	1848.89	1848.73	0.0000	0.00
23	2104.23	2104.21	0.0000	0.00
24	2203.63	2203.68	0.0000	0.00
25	2297.01	2297.11	0.0000	0.00
26	2614.17	2614.49	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 8:57:19AM

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

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
1	76.09	69 -	81	75.15	8.42E+02	162.49	2.69E+03	4.16
2	92.79	88 -	96	91.85	1.69E+02	111.09	1.74E+03	2.73
3	130.08	126 -	132	129.16	5.90E+01	70.49	8.60E+02	3.71
4	186.00	182 -	188	185.09	8.87E+01	62.82	6.51E+02	2.27
5	239.42	232 -	245	238.53	5.78E+02	104.85	9.60E+02	2.71
6	294.82	289 -	298	293.95	1.61E+02	64.69	5.09E+02	2.53
7	338.36	333 -	342	337.50	1.11E+02	54.26	3.50E+02	2.10
8	352.10	347 -	355	351.24	2.81E+02	55.47	2.97E+02	2.19
9	510.99	505 -	515	510.20	1.05E+02	44.04	2.01E+02	2.14
10	583.45	576 -	589	582.68	1.16E+02	53.27	2.56E+02	2.26
11	609.40	604 -	613	608.64	2.16E+02	44.17	1.55E+02	2.54
12	652.50	648 -	655	651.76	2.30E+01	24.90	8.80E+01	1.20
13	728.85	724 -	732	728.14	2.90E+01	29.57	1.16E+02	5.48
14	911.11	903 -	915	910.47	7.05E+01	34.12	1.03E+02	2.13
15	1119.82	1113 -	1125	1119.27	8.43E+01	29.84	6.53E+01	4.16
16	1378.96	1373 -	1383	1378.54	1.47E+01	17.13	2.66E+01	1.26
17	1388.41	1385 -	1391	1388.00	1.40E+01	7.48	0.00E+00	4.00
18	1460.80	1454 -	1466	1460.43	4.17E+02	44.08	3.20E+01	2.86
19	1591.74	1586 -	1596	1591.43	2.44E+01	11.76	5.26E+00	6.59
20	1764.25	1760 -	1768	1764.03	2.80E+01	15.13	1.80E+01	2.90
21	1804.86	1801 -	1807	1804.67	9.00E+00	6.00	0.00E+00	1.66
22	1848.89	1845 -	1852	1848.73	1.02E+01	8.00	3.67E+00	4.11
23	2104.23	2098 -	2107	2104.21	9.53E+00	10.49	1.09E+01	1.23
24	2203.63	2199 -	2207	2203.68	1.18E+01	8.73	4.43E+00	3.35
25	2297.01	2294 -	2299	2297.11	4.58E+00	5.74	2.83E+00	1.84
26	2614.17	2608 -	2619	2614.49	4.30E+01	13.11	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

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/25/2017 8:57:19AM

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

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
1	76.09	69 -	81	8.42E+02	162.49	2.69E+03	1.25E+02
2	92.79	88 -	96	1.69E+02	111.09	1.74E+03	8.88E+01
3	130.08	126 -	132	5.90E+01	70.49	8.60E+02	5.66E+01
4	186.00	182 -	188	8.87E+01	62.82	6.51E+02	4.93E+01
5	239.42	232 -	245	5.78E+02	104.85	9.60E+02	7.66E+01
6	294.82	289 -	298	1.61E+02	64.69	5.09E+02	4.89E+01
7	338.36	333 -	342	1.11E+02	54.26	3.50E+02	4.11E+01
8	352.10	347 -	355	2.81E+02	55.47	2.97E+02	3.63E+01
9	510.99	505 -	515	1.05E+02	44.04	2.01E+02	3.21E+01
10	583.45	576 -	589	1.16E+02	53.27	2.56E+02	4.00E+01
11	609.40	604 -	613	2.16E+02	44.17	1.55E+02	2.71E+01
12	652.50	648 -	655	2.30E+01	24.90	8.80E+01	1.89E+01
13	728.85	724 -	732	2.90E+01	29.57	1.16E+02	2.26E+01
14	911.11	903 -	915	7.05E+01	34.12	1.03E+02	2.44E+01
15	1119.82	1113 -	1125	8.43E+01	29.84	6.53E+01	1.93E+01
16	1378.96	1373 -	1383	1.47E+01	17.13	2.66E+01	1.26E+01
17	1388.41	1385 -	1391	1.40E+01	7.48	0.00E+00	0.00E+00
18	1460.80	1454 -	1466	4.17E+02	44.08	3.20E+01	1.36E+01
19	1591.74	1586 -	1596	2.44E+01	11.76	5.26E+00	5.25E+00
20	1764.25	1760 -	1768	2.80E+01	15.13	1.80E+01	8.89E+00
21	1804.86	1801 -	1807	9.00E+00	6.00	0.00E+00	0.00E+00
22	1848.89	1845 -	1852	1.02E+01	8.00	3.67E+00	3.97E+00
23	2104.23	2098 -	2107	9.53E+00	10.49	1.09E+01	6.97E+00
24	2203.63	2199 -	2207	1.18E+01	8.73	4.43E+00	4.43E+00
25	2297.01	2294 -	2299	4.58E+00	5.74	2.83E+00	3.15E+00
26	2614.17	2608 -	2619	4.30E+01	13.11	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 1707093-10

HTC-A09-S002-2430-01

PEAK WITH NID REPORT

Peak Analysis Performed on : 8/25/2017 8:57:19AM

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

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

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
1	76.09	69 -	81	75.15	8.42E+02	162.49	2.69E+03	.....
2	92.79	88 -	96	91.85	1.69E+02	111.09	1.74E+03	GA-67
3	130.08	126 -	132	129.16	5.90E+01	70.49	8.60E+02	.....
4	186.00	182 -	188	185.09	8.87E+01	62.82	6.51E+02	RA-226
5	239.42	232 -	245	238.53	5.78E+02	104.85	9.60E+02	PB-212
6	294.82	289 -	298	293.95	1.61E+02	64.69	5.09E+02	PB-214
7	338.36	333 -	342	337.50	1.11E+02	54.26	3.50E+02	AC-228
8	352.10	347 -	355	351.24	2.81E+02	55.47	2.97E+02	PB-214
9	510.99	505 -	515	510.20	1.05E+02	44.04	2.01E+02	.....
10	583.45	576 -	589	582.68	1.16E+02	53.27	2.56E+02	TL-208
11	609.40	604 -	613	608.64	2.16E+02	44.17	1.55E+02	BI-214
12	652.50	648 -	655	651.76	2.30E+01	24.90	8.80E+01	.....
13	728.85	724 -	732	728.14	2.90E+01	29.57	1.16E+02	.....
14	911.11	903 -	915	910.47	7.05E+01	34.12	1.03E+02	AC-228 TL-204
15	1119.82	1113 -	1125	1119.27	8.43E+01	29.84	6.53E+01	BI-214 SC-46
16	1378.96	1373 -	1383	1378.54	1.47E+01	17.13	2.66E+01	.....
17	1388.41	1385 -	1391	1388.00	1.40E+01	7.48	0.00E+00	.....
18	1460.80	1454 -	1466	1460.43	4.17E+02	44.08	3.20E+01	K-40
19	1591.74	1586 -	1596	1591.43	2.44E+01	11.76	5.26E+00	.....
20	1764.25	1760 -	1768	1764.03	2.80E+01	15.13	1.80E+01	BI-214
21	1804.86	1801 -	1807	1804.67	9.00E+00	6.00	0.00E+00	.....
22	1848.89	1845 -	1852	1848.73	1.02E+01	8.00	3.67E+00	.....
23	2104.23	2098 -	2107	2104.21	9.53E+00	10.49	1.09E+01	.....
24	2203.63	2199 -	2207	2203.68	1.18E+01	8.73	4.43E+00	BI-214
25	2297.01	2294 -	2299	2297.11	4.58E+00	5.74	2.83E+00	.....
26	2614.17	2608 -	2619	2614.49	4.30E+01	13.11	0.00E+00	TL-208

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

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 8/25/2017 8:57:19AM

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
1	76.09	8.42E+02	162.49	2.32E-02	1.91E-03
2	92.79	1.69E+02	111.09	2.37E-02	2.09E-03
3	130.08	5.90E+01	70.49	2.15E-02	1.62E-03
4	186.00	8.87E+01	62.82	1.69E-02	1.40E-03
5	239.42	5.78E+02	104.85	1.35E-02	1.14E-03
6	294.82	1.61E+02	64.69	1.10E-02	9.14E-04
7	338.36	1.11E+02	54.26	9.60E-03	8.23E-04
8	352.10	2.81E+02	55.47	9.21E-03	7.94E-04
9	510.99	1.05E+02	44.04	6.28E-03	6.61E-04
10	583.45	1.16E+02	53.27	5.50E-03	6.31E-04
11	609.40	2.16E+02	44.17	5.27E-03	6.20E-04
12	652.50	2.30E+01	24.90	4.93E-03	6.03E-04
13	728.85	2.90E+01	29.57	4.44E-03	5.14E-04
14	911.11	7.05E+01	34.12	3.62E-03	2.99E-04
15	1119.82	8.43E+01	29.84	3.02E-03	2.50E-04
16	1378.96	1.47E+01	17.13	2.51E-03	2.20E-04
17	1388.41	1.40E+01	7.48	2.50E-03	2.19E-04
18	1460.80	4.17E+02	44.08	2.38E-03	2.08E-04
19	1591.74	2.44E+01	11.76	2.20E-03	1.88E-04
20	1764.25	2.80E+01	15.13	2.00E-03	1.62E-04
21	1804.86	9.00E+00	6.00	1.95E-03	1.56E-04
22	1848.89	1.02E+01	8.00	1.91E-03	1.51E-04
23	2104.23	9.53E+00	10.49	1.67E-03	1.51E-04
24	2203.63	1.18E+01	8.73	1.58E-03	1.51E-04
25	2297.01	4.58E+00	5.74	1.51E-03	1.51E-04
26	2614.17	4.30E+01	13.11	1.28E-03	1.51E-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 : 8/25/2017 8:57:19AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055576.CNF

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	76.09	8.42E+02	162.49	2.66E+01	8.34E+00	8.16E+02	1.63E+02
2	92.79	1.69E+02	111.09	5.99E+01	8.61E+00	1.09E+02	1.11E+02
3	130.08	5.90E+01	70.49			5.90E+01	7.05E+01
4	186.00	8.87E+01	62.82	2.43E+01	7.50E+00	6.44E+01	6.33E+01
5	239.42	5.78E+02	104.85			5.78E+02	1.05E+02
6	294.82	1.61E+02	64.69			1.61E+02	6.47E+01
7	338.36	1.11E+02	54.26			1.11E+02	5.43E+01
8	352.10	2.81E+02	55.47			2.81E+02	5.55E+01
9	510.99	1.05E+02	44.04	4.55E+01	4.99E+00	5.90E+01	4.43E+01
10	583.45	1.16E+02	53.27			1.16E+02	5.33E+01
11	609.40	2.16E+02	44.17			2.16E+02	4.42E+01
12	652.50	2.30E+01	24.90			2.30E+01	2.49E+01
13	728.85	2.90E+01	29.57			2.90E+01	2.96E+01
14	911.11	7.05E+01	34.12			7.05E+01	3.41E+01
15	1119.82	8.43E+01	29.84			8.43E+01	2.98E+01
16	1378.96	1.47E+01	17.13			1.47E+01	1.71E+01
17	1388.41	1.40E+01	7.48			1.40E+01	7.48E+00
18	1460.80	4.17E+02	44.08			4.17E+02	4.41E+01
19	1591.74	2.44E+01	11.76			2.44E+01	1.18E+01
20	1764.25	2.80E+01	15.13			2.80E+01	1.51E+01
21	1804.86	9.00E+00	6.00			9.00E+00	6.00E+00
22	1848.89	1.02E+01	8.00			1.02E+01	8.00E+00
23	2104.23	9.53E+00	10.49			9.53E+00	1.05E+01
24	2203.63	1.18E+01	8.73			1.18E+01	8.73E+00
25	2297.01	4.58E+00	5.74			4.58E+00	5.74E+00
26	2614.17	4.30E+01	13.11			4.30E+01	1.31E+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 : 8/25/2017 8:57:19AM

Ref. Peak Energy : 0.00 Reference Date :
Peak Ratio : 0.00 Uncertainty : 0.00
Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000055576.CNF

Corrected Area is: Original * Peak Ratio - Background

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
1	76.09	8.42E+02	162.49	2.66E+01	8.34E+00	8.16E+02	1.63E+02
2	92.79	1.69E+02	111.09	5.99E+01	8.61E+00	1.09E+02	1.11E+02

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
3	130.08	5.90E+01	70.49			5.90E+01	7.05E+01
4	186.00	8.87E+01	62.82	2.43E+01	7.50E+00	6.44E+01	6.33E+01
5	239.42	5.78E+02	104.85			5.78E+02	1.05E+02
6	294.82	1.61E+02	64.69			1.61E+02	6.47E+01
7	338.36	1.11E+02	54.26			1.11E+02	5.43E+01
8	352.10	2.81E+02	55.47			2.81E+02	5.55E+01
9	510.99	1.05E+02	44.04	4.55E+01	4.99E+00	5.90E+01	4.43E+01
10	583.45	1.16E+02	53.27			1.16E+02	5.33E+01
11	609.40	2.16E+02	44.17			2.16E+02	4.42E+01
12	652.50	2.30E+01	24.90			2.30E+01	2.49E+01
13	728.85	2.90E+01	29.57			2.90E+01	2.96E+01
14	911.11	7.05E+01	34.12			7.05E+01	3.41E+01
15	1119.82	8.43E+01	29.84			8.43E+01	2.98E+01
16	1378.96	1.47E+01	17.13			1.47E+01	1.71E+01
17	1388.41	1.40E+01	7.48			1.40E+01	7.48E+00
18	1460.80	4.17E+02	44.08			4.17E+02	4.41E+01
19	1591.74	2.44E+01	11.76			2.44E+01	1.18E+01
20	1764.25	2.80E+01	15.13			2.80E+01	1.51E+01
21	1804.86	9.00E+00	6.00			9.00E+00	6.00E+00
22	1848.89	1.02E+01	8.00			1.02E+01	8.00E+00
23	2104.23	9.53E+00	10.49			9.53E+00	1.05E+01
24	2203.63	1.18E+01	8.73			1.18E+01	8.73E+00
25	2297.01	4.58E+00	5.74			4.58E+00	5.74E+00
26	2614.17	4.30E+01	13.11			4.30E+01	1.31E+01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	1.000	1460.81	*	10.67	1.52E+01	2.10E+00
TL-208	0.858	583.14	*	30.22	6.47E-01	3.06E-01
		860.37		4.48		
		2614.66	*	35.85	8.68E-01	2.84E-01
PB-212	0.808	238.63	*	44.60	8.86E-01	1.77E-01
		300.09		3.41		
BI-214	0.988	609.31	*	46.30	8.21E-01	1.94E-01

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-214	0.988	1120.29	*	15.10	1.72E+00	6.24E-01
		1764.49	*	15.80	8.22E-01	4.49E-01
		2204.22	*	4.98	1.39E+00	1.04E+00
PB-214	0.988	295.21	*	19.19	7.02E-01	2.89E-01
		351.92	*	37.19	7.61E-01	1.64E-01
RA-226	0.993	186.21	*	3.28	1.07E+00	2.23E+00
AC-228	0.586	338.32	*	11.40	9.38E-01	4.66E-01
		911.07	*	27.70	6.51E-01	3.20E-01
		969.11		16.60		

* = 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 : 8/25/2017 8:57:19AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
1	76.09	2.26575E-01	9.97		
2	92.79	3.02224E-02	51.21		
3	130.08	1.63957E-02	59.72		
9	510.99	1.63767E-02	37.59		
12	652.50	6.38889E-03	54.13		
13	728.85	8.05875E-03	50.97		
16	1378.96	4.08730E-03	58.22		
17	1388.41	3.88889E-03	26.73		
19	1591.74	6.76955E-03	24.12	D-Esc	
21	1804.86	2.50000E-03	33.33		
22	1848.89	2.82407E-03	39.34		
23	2104.23	2.64815E-03	55.01		
25	2297.01	1.27315E-03	62.67		

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	1.00	1460.81	*	10.67	1.52E+01	2.10E+00
TL-208	0.85	583.14	*	30.22	6.47E-01	3.06E-01
		860.37		4.48		
		2614.66	*	35.85	8.68E-01	2.84E-01
PB-212	0.80	238.63	*	44.60	8.86E-01	1.77E-01
		300.09		3.41		
BI-214	0.98	609.31	*	46.30	8.21E-01	1.94E-01
		1120.29	*	15.10	1.72E+00	6.24E-01
		1764.49	*	15.80	8.22E-01	4.49E-01
		2204.22	*	4.98	1.39E+00	1.04E+00
PB-214	0.98	295.21	*	19.19	7.02E-01	2.89E-01
		351.92	*	37.19	7.61E-01	1.64E-01
RA-226	0.99	186.21	*	3.28	1.07E+00	2.23E+00
AC-228	0.58	338.32	*	11.40	9.38E-01	4.66E-01
		911.07	*	27.70	6.51E-01	3.20E-01
		969.11		16.60		

* = 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 1707093-10

HTC-A09-S002-2430-01

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	1.000	1.52E+01	2.10E+00	
TL-208	0.858	7.66E-01	2.08E-01	
PB-212	0.808	8.86E-01	1.77E-01	
BI-214	0.988	9.02E-01	1.69E-01	
PB-214	0.988	7.47E-01	1.42E-01	
RA-226	0.993	1.07E+00	2.23E+00	
AC-228	0.586	7.43E-01	2.64E-01	

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

Errors quoted at 2.000sigma

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/25/2017 8:57:19AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
1	76.09	2.26575E-01	9.97		
2	92.79	3.02224E-02	51.21		
3	130.08	1.63957E-02	59.72		
9	510.99	1.63767E-02	37.59		
12	652.50	6.38889E-03	54.13		
13	728.85	8.05875E-03	50.97		
16	1378.96	4.08730E-03	58.22		
17	1388.41	3.88889E-03	26.73		
19	1591.74	6.76955E-03	24.12	D-Esc	
21	1804.86	2.50000E-03	33.33		
22	1848.89	2.82407E-03	39.34		
23	2104.23	2.64815E-03	55.01		
25	2297.01	1.27315E-03	62.67		

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	-8.46E-01	2.16E+00	2.16E+00
+	NA-22	1274.54	99.94	-3.49E-02	1.03E-01	1.03E-01
+	@ NA-24	1368.53	99.99	0.00E+00	1.00E+26	1.00E+26
	@	2754.09	99.86	1.00E+26		1.00E+26

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	AL-26	1808.65		99.76	-1.85E-02	8.29E-02	8.29E-02
+	K-40	1460.81	*	10.67	1.52E+01	1.09E+00	1.09E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-2.50E-02	5.95E-02	5.95E-02
		78.34		96.00	2.43E-01		7.34E-02
+	SC-46	889.25		99.98	2.31E-02	2.20E-01	2.20E-01
		1120.51		99.99	4.16E-01		3.47E-01
+	V-48	983.52		99.98	-6.29E-01	7.34E+00	7.34E+00
		1312.10		97.50	-1.12E-01		8.14E+00
+	CR-51	320.08		9.83	-6.21E-01	7.02E+00	7.02E+00
+	MN-54	834.83		99.97	2.81E-02	1.14E-01	1.14E-01
+	CO-56	846.75		99.96	-6.51E-03	2.26E-01	2.26E-01
		1037.75		14.03	4.62E-01		1.69E+00
		1238.25		67.00	-1.17E-02		4.64E-01
		1771.40		15.51	-3.45E-01		1.09E+00
		2598.48		16.90	-1.72E-01		7.60E-01
+	CO-57	122.06		85.51	2.07E-02	6.50E-02	6.50E-02
		136.48		10.60	8.73E-02		5.66E-01
+	CO-58	810.76		99.40	2.99E-02	2.15E-01	2.15E-01
+	FE-59	1099.22		56.50	-8.80E-02	7.95E-01	7.95E-01
		1291.56		43.20	2.98E-01		1.15E+00
+	CO-60	1173.22		100.00	2.56E-02	8.92E-02	1.30E-01
		1332.49		100.00	-6.07E-03		8.92E-02
+	ZN-65	1115.52		50.75	-2.41E-02	3.23E-01	3.23E-01
+	GA-67	93.31		35.70	3.96E+08	3.13E+08	3.13E+08
		208.95		2.24	2.51E+08		4.78E+09
		300.22		16.00	3.99E+08		7.74E+08
+	SE-75	121.11		16.70	1.01E-02	1.38E-01	4.58E-01
		136.00		59.20	2.81E-02		1.38E-01
		264.65		59.80	-4.82E-02		1.52E-01
		279.53		25.20	-1.19E-01		3.82E-01
		400.65		11.40	9.98E-01		1.01E+00
+	RB-82	776.52		13.00	-2.82E+00	1.03E+01	1.03E+01
+	RB-83	520.41		46.00	2.86E-01	3.32E-01	3.32E-01
		529.64		30.30	2.71E-01		4.63E-01
		552.65		16.40	-7.56E-02		8.55E-01
+	KR-85	513.99		0.43	8.72E+00	1.92E+01	1.92E+01
+	SR-85	513.99		99.27	1.10E-01	2.42E-01	2.42E-01
+	Y-88	898.02		93.40	-8.51E-02	1.32E-01	1.75E-01
		1836.01		99.38	8.31E-03		1.32E-01
+	MO-93	263.06		56.72	-2.75E-02	7.85E-02	8.93E-02
		684.67		99.68	7.16E-02		9.20E-02
		1477.11		99.08	2.30E-02		7.85E-02
+	NB-93M	16.57		9.43	9.83E+00	5.94E+00	5.94E+00
+	NB-94	702.63		100.00	-7.05E-03	8.77E-02	8.77E-02
		871.10		100.00	9.94E-03		9.30E-02
+	NB-95	765.79		99.81	-6.46E-01	6.70E-01	6.70E-01

Analysis Report for 1707093-10

HTC-A09-S002-2430-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-95M	235.69	25.00	8.61E+07	8.06E+07	8.06E+07
+	ZR-95	724.18	43.70	2.71E-01	5.31E-01	6.70E-01
		756.72	55.30	3.58E-01		5.31E-01
+	MO-99	181.06	6.20	3.63E+10	7.47E+10	8.53E+10
		739.58	12.80	3.07E+10		7.47E+10
		778.00	4.50	-2.82E+11		2.02E+11
+	RU-103	497.08	89.00	-8.88E-02	4.17E-01	4.17E-01
+	RU-106	621.84	9.80	2.99E-02	9.08E-01	9.08E-01
+	AG-108M	433.93	89.90	-1.55E-03	6.34E-02	6.34E-02
		614.37	90.40	1.96E-03		7.54E-02
		722.95	90.50	3.99E-02		1.02E-01
+	CD-109	88.03	3.72	2.28E-01	1.68E+00	1.68E+00
+	AG-110M	657.75	93.14	6.77E-03	1.18E-01	1.18E-01
		677.61	10.53	1.91E-02		1.04E+00
		706.67	16.46	1.37E-01		7.22E-01
		763.93	21.98	2.03E-01		5.85E-01
		884.67	71.63	5.78E-02		1.78E-01
		1384.27	23.94	-2.62E-01		4.24E-01
+	CD-113M	263.70	0.02	-7.74E+01	2.20E+02	2.20E+02
+	SN-113	255.12	1.93	2.07E-01	1.68E-01	4.73E+00
		391.69	64.90	6.92E-02		1.68E-01
+	TE123M	159.00	84.10	-4.74E-02	1.02E-01	1.02E-01
+	SB-124	602.71	97.87	5.71E-02	2.20E-01	2.20E-01
		645.85	7.26	-8.88E-01		2.72E+00
		722.78	11.10	1.04E+00		2.66E+00
		1691.02	49.00	-1.39E-01		3.12E-01
+	I-125	35.49	6.49	2.19E-01	4.18E+00	4.18E+00
+	SB-125	176.33	6.89	-1.39E-01	2.07E-01	7.16E-01
		427.89	29.33	-2.37E-02		2.07E-01
		463.38	10.35	3.13E-02		6.90E-01
		600.56	17.80	1.09E-01		4.25E-01
		635.90	11.32	3.19E-02		7.41E-01
+	SB-126	414.70	83.30	-4.51E+00	1.99E+01	1.99E+01
		666.33	99.60	5.08E+00		2.41E+01
		695.00	99.60	7.70E+00		2.58E+01
		720.50	53.80	2.17E+01		4.67E+01
+	SN-126	87.57	37.00	1.97E-02	1.45E-01	1.45E-01
+	SB-127	473.00	25.00	2.11E+06	1.96E+07	1.98E+07
		685.20	35.70	1.52E+07		1.96E+07
		783.80	14.70	7.93E+06		4.90E+07
+	I-129	29.78	57.00	-3.01E-02	2.04E-01	2.04E-01
		33.60	13.20	2.21E-03		6.99E-01
		39.58	7.52	1.90E-01		9.66E-01
+	I-131	284.30	6.05	2.70E+03	3.93E+02	5.49E+03
		364.48	81.20	3.42E+00		3.93E+02
		636.97	7.26	-1.34E+03		6.35E+03
		722.89	1.80	1.20E+04		3.07E+04
+	TE-132	49.72	13.10	-4.72E+08	1.18E+08	9.41E+08

Analysis Report for 1707093-10

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TE-132	228.16	88.00	-2.72E+07	1.18E+08	1.18E+08
+	BA-133	81.00	33.00	2.85E-02	1.25E-01	1.71E-01
		302.84	17.80	1.54E-01		3.26E-01
		356.01	60.00	2.98E-02		1.25E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	1.51E+04	9.08E+04	9.08E+04
+	CS-134	563.23	8.38	1.35E-01	8.89E-02	8.80E-01
		569.32	15.43	-1.59E-01		4.46E-01
		604.70	97.60	2.33E-02		8.89E-02
		795.84	85.40	5.83E-02		1.19E-01
		801.93	8.73	-5.10E-01		1.02E+00
+	CS-135	268.24	16.00	7.47E-02	3.32E-01	3.32E-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	0.00E+00		1.00E+26
+	CS-136	153.22	7.46	-4.77E+01	1.73E+01	1.24E+02
		163.89	4.61	2.00E+02		2.25E+02
		176.55	13.56	-1.05E+01		6.98E+01
		273.65	12.66	-3.82E+01		8.46E+01
		340.57	48.50	2.79E+01		2.83E+01
		818.50	99.70	3.29E+00		1.73E+01
		1048.07	79.60	-1.63E+00		2.27E+01
		1235.34	19.70	1.04E+02		1.45E+02
+	CS-137	661.65	85.12	8.21E-02	1.06E-01	1.06E-01
+	LA-138	788.74	34.00	-1.49E-01	1.13E-01	2.54E-01
		1435.80	66.00	-3.52E-02		1.13E-01
+	CE-139	165.85	80.35	3.26E-02	1.02E-01	1.02E-01
+	BA-140	162.64	6.70	1.93E+02	6.09E+01	1.82E+02
		304.84	4.50	1.40E+02		2.88E+02
		423.70	3.20	-3.05E+01		4.21E+02
		437.55	2.00	-1.17E+02		6.96E+02
		537.32	25.00	1.32E+01		6.09E+01
+	LA-140	328.77	20.50	2.38E+01	2.40E+01	6.94E+01
		487.03	45.50	-2.13E+01		2.92E+01
		815.85	23.50	4.25E+00		8.69E+01
		1596.49	95.49	-2.79E+00		2.40E+01
+	CE-141	145.44	48.40	5.51E-01	8.48E-01	8.48E-01
+	@ 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	2.72E-01	5.52E-01	5.52E-01
+	PM-144	476.78	42.00	-7.34E-02	8.08E-02	1.77E-01
		618.01	98.60	3.29E-03		8.08E-02
		696.49	99.49	3.09E-02		1.13E-01
+	PM-145	36.85	21.70	-2.51E-01	1.96E-01	3.67E-01
		37.36	39.70	-1.34E-01		1.96E-01
		42.30	15.10	-4.83E-01		4.43E-01
		72.40	2.31	-5.85E+00		2.75E+00
+	PM-146	453.90	39.94	8.29E-02	1.61E-01	1.61E-01

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-146	735.90	14.01	-1.72E-01	1.61E-01	6.39E-01
		747.13	13.10	-7.70E-02		6.64E-01
+	ND-147	91.11	28.90	1.70E+02	1.14E+02	1.14E+02
		531.02	13.10	1.97E+01		2.71E+02
+	PM-149	285.90	3.10	6.25E+12	9.44E+13	9.44E+13
+	EU-152	121.78	20.50	6.75E-02	2.12E-01	2.12E-01
		244.69	5.40	8.11E-02		1.12E+00
		344.27	19.13	5.26E-02		2.79E-01
		778.89	9.20	-1.15E+00		9.18E-01
		964.01	10.40	-2.69E-01		1.14E+00
		1085.78	7.22	1.07E-01		1.51E+00
		1112.02	9.60	1.29E-01		1.11E+00
		1407.95	14.94	-6.36E-02		6.63E-01
+	GD-153	97.43	31.30	-3.21E-03	1.98E-01	1.98E-01
		103.18	22.20	1.09E-02		2.59E-01
+	EU-154	123.07	40.50	4.13E-02	1.09E-01	1.09E-01
		723.30	19.70	2.06E-01		5.09E-01
		873.19	11.50	1.95E-01		8.35E-01
		996.32	10.30	2.16E-01		9.33E-01
		1004.76	17.90	-8.43E-02		5.12E-01
		1274.45	35.50	-9.33E-02		2.75E-01
+	EU-155	86.50	30.90	9.64E-02	1.82E-01	1.82E-01
		105.30	20.70	-1.63E-02		2.15E-01
+	EU-156	811.77	10.40	-2.15E+00	7.81E+01	7.81E+01
		1153.47	7.20	9.72E-01		1.57E+02
		1230.71	8.90	-1.91E+01		1.46E+02
+	HO-166M	184.41	72.60	6.81E-02	7.43E-02	7.43E-02
		280.45	29.60	-7.46E-02		1.81E-01
		410.94	11.10	2.34E-01		5.50E-01
		711.69	54.10	2.00E-02		1.61E-01
+	TM-171	66.72	0.14	-2.16E+01	4.41E+01	4.41E+01
+	HF-172	67.35	5.31	-5.68E-01	4.32E-01	1.16E+00
		125.81	11.30	7.11E-03		4.32E-01
+	LU-172	181.53	20.60	2.09E+03	5.52E+03	8.21E+03
		900.72	29.81	-4.76E+03		1.03E+04
		1093.66	62.50	3.08E+02		5.52E+03
+	LU-173	100.72	5.24	-2.85E-01	2.87E-01	9.39E-01
		272.11	21.20	-5.49E-02		2.87E-01
+	HF-175	343.40	84.00	3.20E-02	1.69E-01	1.69E-01
+	LU-176	88.34	13.30	5.47E-02	5.16E-02	4.05E-01
		201.83	86.00	1.31E-02		5.96E-02
		306.78	94.00	-4.64E-02		5.16E-02
+	HF-181	133.02	41.70	1.34E-01	4.18E-01	5.82E-01
		345.85	17.20	3.02E-01		1.58E+00
		482.03	82.80	3.25E-01		4.18E-01
+	TA-182	67.75	41.20	-1.05E-01	2.51E-01	2.51E-01
		1121.30	34.90	7.60E-01		7.88E-01
		1189.05	16.23	-9.25E-02		1.40E+00
		1221.41	26.98	3.20E-01		8.91E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TA-182	1231.02		11.44	1.34E-01	2.51E-01	2.15E+00
+	IR-192	308.46		29.68	-1.86E-01	3.50E-01	4.21E-01
		468.07		48.10	-4.19E-02		3.50E-01
+	HG-203	279.19		77.30	8.10E-02	3.16E-01	3.16E-01
+	TL-204	374.74		94.11	1.43E-02	6.46E-02	6.46E-02
		899.15		99.16	-3.84E-02		9.29E-02
		911.74		91.10	1.92E-01		1.45E-01
+	BI-207	569.67		97.72	-2.31E-02	6.46E-02	6.46E-02
		1063.62		74.90	-6.17E-02		1.27E-01
+	TL-208	583.14	*	30.22	6.47E-01	5.46E-02	4.62E-01
		860.37		4.48	6.28E-01		2.10E+00
		2614.66	*	35.85	8.68E-01		5.46E-02
+	BI-210M	262.00		45.00	-5.80E-02	1.09E-01	1.09E-01
		300.00		23.00	1.34E-01		2.61E-01
+	PB-210	46.50		4.25	5.56E-01	1.52E+00	1.52E+00
+	PB-211	404.84		2.90	-3.82E-01	2.09E+00	2.09E+00
		831.96		2.90	2.85E-01		2.97E+00
+	BI-212	727.17		11.80	1.45E-01	8.26E-01	8.26E-01
		1620.62		2.75	0.00E+00		3.22E+00
+	PB-212	238.63	*	44.60	8.86E-01	2.39E-01	2.39E-01
		300.09		3.41	9.07E-01		1.76E+00
+	BI-214	609.31	*	46.30	8.21E-01	2.16E-01	2.16E-01
		1120.29	*	15.10	1.72E+00		8.42E-01
		1764.49	*	15.80	8.22E-01		6.01E-01
		2204.22	*	4.98	1.39E+00		1.36E+00
+	PB-214	295.21	*	19.19	7.02E-01	2.04E-01	4.40E-01
		351.92	*	37.19	7.61E-01		2.04E-01
+	RN-219	401.80		6.50	5.76E-01	9.71E-01	9.71E-01
+	RA-223	323.87		3.88	-7.74E-01	1.43E+00	1.43E+00
+	RA-224	240.98		3.95	7.57E+00	2.26E+00	2.26E+00
+	RA-225	40.00		31.00	5.11E+00	2.60E+01	2.60E+01
+	RA-226	186.21	*	3.28	1.07E+00	1.73E+00	1.73E+00
+	TH-227	50.10		8.40	-3.48E-01	6.77E-01	6.94E-01
		236.00		11.50	7.23E-01		6.77E-01
		256.20		6.30	1.75E-02		7.86E-01
+	AC-228	338.32	*	11.40	9.38E-01	4.77E-01	7.19E-01
		911.07	*	27.70	6.51E-01		4.77E-01
		969.11		16.60	8.15E-01		8.06E-01
+	TH-230	48.44		16.90	2.27E-01	3.67E-01	3.67E-01
		62.85		4.60	-6.99E-02		1.25E+00
		67.67		0.37	-6.37E+00		1.52E+01
+	PA-231	283.67		1.60	1.70E+00	2.48E+00	3.45E+00
		302.67		2.30	1.17E+00		2.48E+00
+	TH-231	25.64		14.70	-4.31E-02	8.03E-01	1.13E+00
		84.21		6.40	2.12E-01		8.03E-01
+	PA-233	311.98		38.60	-6.20E-01	1.75E+00	1.75E+00
+	PA-234	131.20		20.40	-9.58E-03	2.25E-01	2.25E-01
		733.99		8.80	-1.35E-01		1.00E+00

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PA-234	946.00	12.00	5.03E-01	2.25E-01	7.63E-01
+	PA-234M	1001.03	0.92	-1.10E+00	9.61E+00	9.61E+00
+	TH-234	63.29	3.80	-8.42E-02	1.51E+00	1.51E+00
+	U-235	143.76	10.50	9.32E-02	4.52E-01	4.52E-01
		163.35	4.70	1.16E+00		1.10E+00
		205.31	4.70	-8.68E-01		1.08E+00
+	NP-237	86.50	12.60	2.28E-01	4.30E-01	4.30E-01
+	NP-239	106.10	22.70	9.84E+10	1.49E+12	1.49E+12
		228.18	10.70	-8.42E+11		3.65E+12
		277.60	14.10	1.73E+12		3.08E+12
+	AM-241	59.54	35.90	6.89E-02	1.64E-01	1.64E-01
+	AM-243	74.67	66.00	4.44E-01	1.13E-01	1.13E-01
+	CM-243	209.75	3.29	5.87E-01	3.95E-01	1.60E+00
		228.14	10.60	-1.08E-01		4.70E-01
		277.60	14.00	2.23E-01		3.95E-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	2.16E+00	2.16E+00	-8.46E-01	1.01E+00
	NA-22	1274.54		99.94	1.03E-01	1.03E-01	-3.49E-02	4.64E-02
@	NA-24	1368.53		99.99	1.00E+26	1.00E+26	0.00E+00	1.00E+20
@		2754.09		99.86	1.00E+26		1.00E+26	1.00E+20
	AL-26	1808.65		99.76	8.29E-02	8.29E-02	-1.85E-02	3.50E-02
+	K-40	1460.81	*	10.67	1.09E+00	1.09E+00	1.52E+01	4.97E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
TI-44	67.88	94.40	5.95E-02	5.95E-02	-2.50E-02	2.91E-02
	78.34	96.00	7.34E-02		2.43E-01	3.61E-02
SC-46	889.25	99.98	2.20E-01	2.20E-01	2.31E-02	1.02E-01
	1120.51	99.99	3.47E-01		4.16E-01	1.64E-01
V-48	983.52	99.98	7.34E+00	7.34E+00	-6.29E-01	3.37E+00
	1312.10	97.50	8.14E+00		-1.12E-01	3.68E+00
CR-51	320.08	9.83	7.02E+00	7.02E+00	-6.21E-01	3.35E+00
MN-54	834.83	99.97	1.14E-01	1.14E-01	2.81E-02	5.29E-02
CO-56	846.75	99.96	2.26E-01	2.26E-01	-6.51E-03	1.05E-01
	1037.75	14.03	1.69E+00		4.62E-01	7.77E-01
	1238.25	67.00	4.64E-01		-1.17E-02	2.16E-01
	1771.40	15.51	1.09E+00		-3.45E-01	4.49E-01
	2598.48	16.90	7.60E-01		-1.72E-01	2.40E-01
CO-57	122.06	85.51	6.50E-02	6.50E-02	2.07E-02	3.16E-02
	136.48	10.60	5.66E-01		8.73E-02	2.76E-01
CO-58	810.76	99.40	2.15E-01	2.15E-01	2.99E-02	9.92E-02
FE-59	1099.22	56.50	7.95E-01	7.95E-01	-8.80E-02	3.63E-01
	1291.56	43.20	1.15E+00		2.98E-01	5.24E-01
CO-60	1173.22	100.00	1.30E-01	8.92E-02	2.56E-02	6.03E-02
	1332.49	100.00	8.92E-02		-6.07E-03	3.96E-02
ZN-65	1115.52	50.75	3.23E-01	3.23E-01	-2.41E-02	1.51E-01
GA-67	93.31	35.70	3.13E+08	3.13E+08	3.96E+08	1.53E+08
	208.95	2.24	4.78E+09		2.51E+08	2.32E+09
	300.22	16.00	7.74E+08		3.99E+08	3.72E+08
SE-75	121.11	16.70	4.58E-01	1.38E-01	1.01E-02	2.23E-01
	136.00	59.20	1.38E-01		2.81E-02	6.70E-02
	264.65	59.80	1.52E-01		-4.82E-02	7.28E-02
	279.53	25.20	3.82E-01		-1.19E-01	1.83E-01
	400.65	11.40	1.01E+00		9.98E-01	4.81E-01
RB-82	776.52	13.00	1.03E+01	1.03E+01	-2.82E+00	4.78E+00
RB-83	520.41	46.00	3.32E-01	3.32E-01	2.86E-01	1.56E-01
	529.64	30.30	4.63E-01		2.71E-01	2.16E-01
	552.65	16.40	8.55E-01		-7.56E-02	3.98E-01
KR-85	513.99	0.43	1.92E+01	1.92E+01	8.72E+00	9.12E+00
SR-85	513.99	99.27	2.42E-01	2.42E-01	1.10E-01	1.15E-01
Y-88	898.02	93.40	1.75E-01	1.32E-01	-8.51E-02	8.05E-02
	1836.01	99.38	1.32E-01		8.31E-03	5.33E-02
MO-93	263.06	56.72	8.93E-02	7.85E-02	-2.75E-02	4.29E-02
	684.67	99.68	9.20E-02		7.16E-02	4.33E-02
	1477.11	99.08	7.85E-02		2.30E-02	3.38E-02
NB-93M	16.57	9.43	5.94E+00	5.94E+00	9.83E+00	2.88E+00
NB-94	702.63	100.00	8.77E-02	8.77E-02	-7.05E-03	4.11E-02
	871.10	100.00	9.30E-02		9.94E-03	4.32E-02
NB-95	765.79	99.81	6.70E-01	6.70E-01	-6.46E-01	3.13E-01
NB-95M	235.69	25.00	8.06E+07	8.06E+07	8.61E+07	3.94E+07
ZR-95	724.18	43.70	6.70E-01	5.31E-01	2.71E-01	3.16E-01
	756.72	55.30	5.31E-01		3.58E-01	2.50E-01
MO-99	181.06	6.20	8.53E+10	7.47E+10	3.63E+10	4.14E+10
	739.58	12.80	7.47E+10		3.07E+10	3.49E+10
	778.00	4.50	2.02E+11		-2.82E+11	9.35E+10
RU-103	497.08	89.00	4.17E-01	4.17E-01	-8.88E-02	1.96E-01
RU-106	621.84	9.80	9.08E-01	9.08E-01	2.99E-02	4.24E-01
AG-108M	433.93	89.90	6.34E-02	6.34E-02	-1.55E-03	2.98E-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AG-108M	614.37	90.40	7.54E-02	6.34E-02	1.96E-03	3.51E-02
	722.95	90.50	1.02E-01		3.99E-02	4.80E-02
CD-109	88.03	3.72	1.68E+00	1.68E+00	2.28E-01	8.24E-01
AG-110M	657.75	93.14	1.18E-01	1.18E-01	6.77E-03	5.56E-02
	677.61	10.53	1.04E+00		1.91E-02	4.86E-01
	706.67	16.46	7.22E-01		1.37E-01	3.39E-01
	763.93	21.98	5.85E-01		2.03E-01	2.75E-01
	884.67	71.63	1.78E-01		5.78E-02	8.30E-02
	1384.27	23.94	4.24E-01		-2.62E-01	1.84E-01
CD-113M	263.70	0.02	2.20E+02	2.20E+02	-7.74E+01	1.06E+02
SN-113	255.12	1.93	4.73E+00	1.68E-01	2.07E-01	2.27E+00
	391.69	64.90	1.68E-01		6.92E-02	7.99E-02
TE123M	159.00	84.10	1.02E-01	1.02E-01	-4.74E-02	4.95E-02
SB-124	602.71	97.87	2.20E-01	2.20E-01	5.71E-02	1.02E-01
	645.85	7.26	2.72E+00		-8.88E-01	1.25E+00
	722.78	11.10	2.66E+00		1.04E+00	1.25E+00
	1691.02	49.00	3.12E-01		-1.39E-01	1.17E-01
I-125	35.49	6.49	4.18E+00	4.18E+00	2.19E-01	2.03E+00
SB-125	176.33	6.89	7.16E-01	2.07E-01	-1.39E-01	3.47E-01
	427.89	29.33	2.07E-01		-2.37E-02	9.75E-02
	463.38	10.35	6.90E-01		3.13E-02	3.26E-01
	600.56	17.80	4.25E-01		1.09E-01	1.99E-01
	635.90	11.32	7.41E-01		3.19E-02	3.47E-01
SB-126	414.70	83.30	1.99E+01	1.99E+01	-4.51E+00	9.41E+00
	666.33	99.60	2.41E+01		5.08E+00	1.13E+01
	695.00	99.60	2.58E+01		7.70E+00	1.22E+01
	720.50	53.80	4.67E+01		2.17E+01	2.19E+01
SN-126	87.57	37.00	1.45E-01	1.45E-01	1.97E-02	7.13E-02
SB-127	473.00	25.00	1.98E+07	1.96E+07	2.11E+06	9.33E+06
	685.20	35.70	1.96E+07		1.52E+07	9.21E+06
	783.80	14.70	4.90E+07		7.93E+06	2.29E+07
I-129	29.78	57.00	2.04E-01	2.04E-01	-3.01E-02	9.90E-02
	33.60	13.20	6.99E-01		2.21E-03	3.40E-01
	39.58	7.52	9.66E-01		1.90E-01	4.71E-01
I-131	284.30	6.05	5.49E+03	3.93E+02	2.70E+03	2.64E+03
	364.48	81.20	3.93E+02		3.42E+00	1.86E+02
	636.97	7.26	6.35E+03		-1.34E+03	2.97E+03
	722.89	1.80	3.07E+04		1.20E+04	1.44E+04
TE-132	49.72	13.10	9.41E+08	1.18E+08	-4.72E+08	4.59E+08
	228.16	88.00	1.18E+08		-2.72E+07	5.69E+07
BA-133	81.00	33.00	1.71E-01	1.25E-01	2.85E-02	8.41E-02
	302.84	17.80	3.26E-01		1.54E-01	1.56E-01
	356.01	60.00	1.25E-01		2.98E-02	6.00E-02
@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
XE-133	81.00	38.00	9.08E+04	9.08E+04	1.51E+04	4.45E+04
CS-134	563.23	8.38	8.80E-01	8.89E-02	1.35E-01	4.11E-01
	569.32	15.43	4.46E-01		-1.59E-01	2.07E-01
	604.70	97.60	8.89E-02		2.33E-02	4.18E-02
	795.84	85.40	1.19E-01		5.83E-02	5.58E-02
	801.93	8.73	1.02E+00		-5.10E-01	4.71E-01
CS-135	268.24	16.00	3.32E-01	3.32E-01	7.47E-02	1.60E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@ I-135	1678.03	9.54	1.00E+26	1.00E+26	0.00E+00	1.00E+20
CS-136	153.22	7.46	1.24E+02	1.73E+01	-4.77E+01	6.02E+01
	163.89	4.61	2.25E+02		2.00E+02	1.10E+02
	176.55	13.56	6.98E+01		-1.05E+01	3.38E+01
	273.65	12.66	8.46E+01		-3.82E+01	4.06E+01
	340.57	48.50	2.83E+01		2.79E+01	1.36E+01
	818.50	99.70	1.73E+01		3.29E+00	8.02E+00
	1048.07	79.60	2.27E+01		-1.63E+00	1.03E+01
	1235.34	19.70	1.45E+02		1.04E+02	6.77E+01
CS-137	661.65	85.12	1.06E-01	1.06E-01	8.21E-02	4.99E-02
LA-138	788.74	34.00	2.54E-01	1.13E-01	-1.49E-01	1.18E-01
	1435.80	66.00	1.13E-01		-3.52E-02	4.86E-02
CE-139	165.85	80.35	1.02E-01	1.02E-01	3.26E-02	4.97E-02
BA-140	162.64	6.70	1.82E+02	6.09E+01	1.93E+02	8.85E+01
	304.84	4.50	2.88E+02		1.40E+02	1.38E+02
	423.70	3.20	4.21E+02		-3.05E+01	1.98E+02
	437.55	2.00	6.96E+02		-1.17E+02	3.28E+02
	537.32	25.00	6.09E+01		1.32E+01	2.84E+01
LA-140	328.77	20.50	6.94E+01	2.40E+01	2.38E+01	3.33E+01
	487.03	45.50	2.92E+01		-2.13E+01	1.36E+01
	815.85	23.50	8.69E+01		4.25E+00	4.03E+01
	1596.49	95.49	2.40E+01		-2.79E+00	1.06E+01
CE-141	145.44	48.40	8.48E-01	8.48E-01	5.51E-01	4.13E-01
@ 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	5.52E-01	5.52E-01	2.72E-01	2.69E-01
PM-144	476.78	42.00	1.77E-01	8.08E-02	-7.34E-02	8.31E-02
	618.01	98.60	8.08E-02		3.29E-03	3.75E-02
	696.49	99.49	1.13E-01		3.09E-02	5.32E-02
PM-145	36.85	21.70	3.67E-01	1.96E-01	-2.51E-01	1.79E-01
	37.36	39.70	1.96E-01		-1.34E-01	9.54E-02
	42.30	15.10	4.43E-01		-4.83E-01	2.16E-01
	72.40	2.31	2.75E+00		-5.85E+00	1.35E+00
PM-146	453.90	39.94	1.61E-01	1.61E-01	8.29E-02	7.60E-02
	735.90	14.01	6.39E-01		-1.72E-01	2.98E-01
	747.13	13.10	6.64E-01		-7.70E-02	3.09E-01
ND-147	91.11	28.90	1.14E+02	1.14E+02	1.70E+02	5.60E+01
	531.02	13.10	2.71E+02		1.97E+01	1.26E+02
PM-149	285.90	3.10	9.44E+13	9.44E+13	6.25E+12	4.53E+13
EU-152	121.78	20.50	2.12E-01	2.12E-01	6.75E-02	1.03E-01
	244.69	5.40	1.12E+00		8.11E-02	5.43E-01
	344.27	19.13	2.79E-01		5.26E-02	1.32E-01
	778.89	9.20	9.18E-01		-1.15E+00	4.26E-01
	964.01	10.40	1.14E+00		-2.69E-01	5.32E-01
	1085.78	7.22	1.51E+00		1.07E-01	6.98E-01
	1112.02	9.60	1.11E+00		1.29E-01	5.09E-01
	1407.95	14.94	6.63E-01		-6.36E-02	2.97E-01
GD-153	97.43	31.30	1.98E-01	1.98E-01	-3.21E-03	9.67E-02
	103.18	22.20	2.59E-01		1.09E-02	1.26E-01
EU-154	123.07	40.50	1.09E-01	1.09E-01	4.13E-02	5.31E-02
	723.30	19.70	5.09E-01		2.06E-01	2.40E-01
	873.19	11.50	8.35E-01		1.95E-01	3.88E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-154	996.32		10.30	9.33E-01	1.09E-01	2.16E-01	4.29E-01
		1004.76		17.90	5.12E-01		-8.43E-02	2.35E-01
		1274.45		35.50	2.75E-01		-9.33E-02	1.24E-01
	EU-155	86.50		30.90	1.82E-01	1.82E-01	9.64E-02	8.93E-02
		105.30		20.70	2.15E-01		-1.63E-02	1.05E-01
	EU-156	811.77		10.40	7.81E+01	7.81E+01	-2.15E+00	3.61E+01
		1153.47		7.20	1.57E+02		9.72E-01	7.27E+01
		1230.71		8.90	1.46E+02		-1.91E+01	6.81E+01
	HO-166M	184.41		72.60	7.43E-02	7.43E-02	6.81E-02	3.61E-02
		280.45		29.60	1.81E-01		-7.46E-02	8.69E-02
		410.94		11.10	5.50E-01		2.34E-01	2.61E-01
		711.69		54.10	1.61E-01		2.00E-02	7.55E-02
	TM-171	66.72		0.14	4.41E+01	4.41E+01	-2.16E+01	2.16E+01
	HF-172	67.35		5.31	1.16E+00	4.32E-01	-5.68E-01	5.69E-01
		125.81		11.30	4.32E-01		7.11E-03	2.11E-01
	LU-172	181.53		20.60	8.21E+03	5.52E+03	2.09E+03	3.99E+03
		900.72		29.81	1.03E+04		-4.76E+03	4.77E+03
		1093.66		62.50	5.52E+03		3.08E+02	2.54E+03
	LU-173	100.72		5.24	9.39E-01	2.87E-01	-2.85E-01	4.58E-01
		272.11		21.20	2.87E-01		-5.49E-02	1.38E-01
	HF-175	343.40		84.00	1.69E-01	1.69E-01	3.20E-02	8.04E-02
	LU-176	88.34		13.30	4.05E-01	5.16E-02	5.47E-02	1.98E-01
		201.83		86.00	5.96E-02		1.31E-02	2.89E-02
		306.78		94.00	5.16E-02		-4.64E-02	2.45E-02
	HF-181	133.02		41.70	5.82E-01	4.18E-01	1.34E-01	2.84E-01
		345.85		17.20	1.58E+00		3.02E-01	7.52E-01
		482.03		82.80	4.18E-01		3.25E-01	1.97E-01
	TA-182	67.75		41.20	2.51E-01	2.51E-01	-1.05E-01	1.23E-01
		1121.30		34.90	7.88E-01		7.60E-01	3.72E-01
		1189.05		16.23	1.40E+00		-9.25E-02	6.51E-01
		1221.41		26.98	8.91E-01		3.20E-01	4.15E-01
		1231.02		11.44	2.15E+00		1.34E-01	1.00E+00
	IR-192	308.46		29.68	4.21E-01	3.50E-01	-1.86E-01	2.00E-01
		468.07		48.10	3.50E-01		-4.19E-02	1.65E-01
	HG-203	279.19		77.30	3.16E-01	3.16E-01	8.10E-02	1.52E-01
	TL-204	374.74		94.11	6.46E-02	6.46E-02	1.43E-02	3.07E-02
		899.15		99.16	9.29E-02		-3.84E-02	4.28E-02
		911.74		91.10	1.45E-01		1.92E-01	6.85E-02
	BI-207	569.67		97.72	6.46E-02	6.46E-02	-2.31E-02	3.00E-02
		1063.62		74.90	1.27E-01		-6.17E-02	5.80E-02
+	TL-208	583.14	*	30.22	4.62E-01	5.46E-02	6.47E-01	2.23E-01
		860.37		4.48	2.10E+00		6.28E-01	9.78E-01
		2614.66	*	35.85	5.46E-02		8.68E-01	0.00E+00
	BI-210M	262.00		45.00	1.09E-01	1.09E-01	-5.80E-02	5.20E-02
		300.00		23.00	2.61E-01		1.34E-01	1.25E-01
	PB-210	46.50		4.25	1.52E+00	1.52E+00	5.56E-01	7.41E-01
	PB-211	404.84		2.90	2.09E+00	2.09E+00	-3.82E-01	9.91E-01
		831.96		2.90	2.97E+00		2.85E-01	1.38E+00
	BI-212	727.17		11.80	8.26E-01	8.26E-01	1.45E-01	3.89E-01
		1620.62		2.75	3.22E+00		0.00E+00	1.40E+00
+	PB-212	238.63	*	44.60	2.39E-01	2.39E-01	8.86E-01	1.18E-01
		300.09		3.41	1.76E+00		9.07E-01	8.46E-01
+	BI-214	609.31	*	46.30	2.16E-01	2.16E-01	8.21E-01	1.03E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BI-214	1120.29	*	15.10	8.42E-01	2.16E-01	1.72E+00	3.94E-01
		1764.49	*	15.80	6.01E-01		8.22E-01	2.61E-01
		2204.22	*	4.98	1.36E+00		1.39E+00	5.22E-01
+	PB-214	295.21	*	19.19	4.40E-01	2.04E-01	7.02E-01	2.14E-01
		351.92	*	37.19	2.04E-01		7.61E-01	9.83E-02
	RN-219	401.80		6.50	9.71E-01	9.71E-01	5.76E-01	4.61E-01
	RA-223	323.87		3.88	1.43E+00	1.43E+00	-7.74E-01	6.82E-01
	RA-224	240.98		3.95	2.26E+00	2.26E+00	7.57E+00	1.11E+00
	RA-225	40.00		31.00	2.60E+01	2.60E+01	5.11E+00	1.27E+01
+	RA-226	186.21	*	3.28	1.73E+00	1.73E+00	1.07E+00	8.40E-01
	TH-227	50.10		8.40	6.94E-01	6.77E-01	-3.48E-01	3.39E-01
		236.00		11.50	6.77E-01		7.23E-01	3.30E-01
		256.20		6.30	7.86E-01		1.75E-02	3.77E-01
+	AC-228	338.32	*	11.40	7.19E-01	4.77E-01	9.38E-01	3.48E-01
		911.07	*	27.70	4.77E-01		6.51E-01	2.26E-01
		969.11		16.60	8.06E-01		8.15E-01	3.81E-01
	TH-230	48.44		16.90	3.67E-01	3.67E-01	2.27E-01	1.79E-01
		62.85		4.60	1.25E+00		-6.99E-02	6.12E-01
		67.67		0.37	1.52E+01		-6.37E+00	7.42E+00
	PA-231	283.67		1.60	3.45E+00	2.48E+00	1.70E+00	1.66E+00
		302.67		2.30	2.48E+00		1.17E+00	1.19E+00
	TH-231	25.64		14.70	1.13E+00	8.03E-01	-4.31E-02	5.52E-01
		84.21		6.40	8.03E-01		2.12E-01	3.93E-01
	PA-233	311.98		38.60	1.75E+00	1.75E+00	-6.20E-01	8.32E-01
	PA-234	131.20		20.40	2.25E-01	2.25E-01	-9.58E-03	1.10E-01
		733.99		8.80	1.00E+00		-1.35E-01	4.68E-01
		946.00		12.00	7.63E-01		5.03E-01	3.52E-01
	PA-234M	1001.03		0.92	9.61E+00	9.61E+00	-1.10E+00	4.40E+00
	TH-234	63.29		3.80	1.51E+00	1.51E+00	-8.42E-02	7.38E-01
	U-235	143.76		10.50	4.52E-01	4.52E-01	9.32E-02	2.20E-01
		163.35		4.70	1.10E+00		1.16E+00	5.34E-01
		205.31		4.70	1.08E+00		-8.68E-01	5.21E-01
	NP-237	86.50		12.60	4.30E-01	4.30E-01	2.28E-01	2.11E-01
	NP-239	106.10		22.70	1.49E+12	1.49E+12	9.84E+10	7.25E+11
		228.18		10.70	3.65E+12		-8.42E+11	1.76E+12
		277.60		14.10	3.08E+12		1.73E+12	1.48E+12
	AM-241	59.54		35.90	1.64E-01	1.64E-01	6.89E-02	8.05E-02
	AM-243	74.67		66.00	1.13E-01	1.13E-01	4.44E-01	5.55E-02
	CM-243	209.75		3.29	1.60E+00	3.95E-01	5.87E-01	7.75E-01
		228.14		10.60	4.70E-01		-1.08E-01	2.27E-01
		277.60		14.00	3.95E-01		2.23E-01	1.90E-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 1707093-10

HTC-A09-S002-2430-01

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: HTC-A09-S002-2430-01

Elapsed Live time: 3600
Elapsed Real Time: 3603

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	24	107
17:	78	84	52	65	71	79	66	54
25:	62	57	66	46	68	48	69	65
33:	67	63	63	58	70	61	57	76
41:	77	72	57	74	117	82	89	66
49:	82	77	74	86	80	83	102	98
57:	92	111	115	107	98	150	106	115
65:	95	118	126	110	122	121	120	128
73:	206	267	250	318	254	115	106	97
81:	82	104	126	110	107	136	134	114
89:	123	116	144	157	138	90	81	77
97:	79	74	74	80	70	71	66	85
105:	70	64	77	69	71	64	50	76
113:	70	75	77	66	53	58	66	77
121:	57	66	78	57	61	63	65	82
129:	74	76	74	55	67	84	71	71
137:	62	53	72	57	78	65	75	77
145:	58	65	71	62	55	47	54	64
153:	77	52	52	50	69	52	53	74
161:	71	71	66	65	73	43	47	60
169:	48	43	51	48	49	55	37	45
177:	49	51	55	50	53	44	48	70
185:	92	77	46	37	53	50	41	45
193:	46	38	43	49	49	49	44	54
201:	45	49	43	48	45	38	45	57
209:	60	38	38	47	43	33	40	44
217:	28	57	44	40	41	31	46	44
225:	29	39	29	28	38	39	37	37
233:	38	40	50	67	149	205	141	80
241:	78	58	37	44	34	30	36	24
249:	29	27	28	29	27	27	26	28
257:	34	25	31	25	21	31	27	22
265:	31	31	29	35	30	29	30	22
273:	20	33	32	29	32	32	20	29
281:	27	25	27	32	32	28	24	20
289:	22	28	25	33	56	79	87	37
297:	25	23	36	24	32	34	25	18
305:	17	22	20	16	11	23	19	21
313:	23	23	25	22	18	20	27	16
321:	22	30	25	19	18	22	30	27
329:	32	20	25	25	18	21	25	29
337:	65	47	33	17	15	16	13	13
345:	21	24	15	15	21	77	142	92
353:	35	18	15	13	29	21	16	13
361:	15	17	12	19	16	16	13	17

369:	15	11	19	15	18	15	21	18

Sample Title: HTC-A09-S002-2430-01

Channel								
377:	15	17	18	11	9	7	17	18
385:	19	20	17	13	20	20	17	13
393:	20	14	8	12	19	13	18	23
401:	20	17	21	13	10	13	19	14
409:	17	24	14	10	13	15	12	16
417:	21	9	15	17	10	17	11	11
425:	9	14	13	15	9	16	11	14
433:	11	10	14	9	13	12	15	16
441:	20	10	19	12	13	7	12	9
449:	10	16	14	9	13	16	11	14
457:	10	10	17	16	12	23	12	14
465:	13	13	15	15	9	18	15	10
473:	13	10	15	8	12	7	16	11
481:	20	11	13	16	5	8	6	4
489:	12	11	13	8	4	14	13	15
497:	12	15	5	17	11	17	7	12
505:	9	9	18	19	26	45	29	18
513:	7	12	13	3	13	11	12	11
521:	8	15	13	5	5	11	7	10
529:	10	14	7	8	7	7	11	9
537:	4	18	10	10	8	11	10	11
545:	12	6	4	8	6	12	11	9
553:	7	7	9	13	10	12	6	12
561:	15	9	12	7	8	4	11	7
569:	10	8	11	7	18	7	14	11
577:	11	14	11	13	27	52	43	15
585:	11	10	12	9	5	8	11	7
593:	3	7	9	12	7	12	5	11
601:	9	12	11	4	8	5	35	81
609:	89	44	13	9	6	10	7	6
617:	8	8	7	8	9	6	18	12
625:	12	12	8	8	4	10	10	14
633:	13	12	4	13	11	7	11	10
641:	12	5	7	12	4	4	7	4
649:	9	6	15	8	10	7	8	3
657:	11	12	7	12	9	7	12	9
665:	12	5	8	11	11	6	5	7
673:	10	10	8	9	8	4	5	10
681:	9	8	11	7	7	16	10	8
689:	7	6	9	13	10	8	12	5
697:	14	9	9	8	5	13	8	8
705:	8	9	10	7	11	6	8	10
713:	9	6	7	5	9	5	14	10
721:	6	13	8	6	6	13	16	10
729:	12	6	13	5	7	6	5	10
737:	7	8	7	8	9	5	9	9
745:	1	11	8	4	8	7	4	9
753:	8	12	5	11	7	7	15	11
761:	4	9	7	6	6	6	17	8
769:	7	13	10	9	7	5	8	8
777:	7	6	6	5	3	8	19	9
785:	5	9	6	9	6	3	4	8
793:	6	6	16	12	5	6	5	6

801:	6	7	8	0	7	2	3	7

Sample Title: HTC-A09-S002-2430-01

Channel								
809:	4	5	6	5	7	8	4	8
817:	5	9	3	4	10	2	7	2
825:	7	4	3	6	2	11	7	7
833:	2	7	8	8	3	6	7	6
841:	7	10	11	3	1	8	5	10
849:	7	5	9	5	5	2	7	8
857:	5	7	8	9	8	5	6	4
865:	5	7	6	6	6	6	7	7
873:	4	8	6	8	6	3	7	11
881:	5	3	7	5	7	4	10	8
889:	4	7	8	6	4	6	6	3
897:	8	7	5	3	2	6	7	9
905:	3	4	5	3	15	22	32	11
913:	3	6	2	1	7	3	8	4
921:	8	9	3	4	6	4	4	6
929:	4	6	5	5	6	5	7	6
937:	7	4	5	1	4	7	9	8
945:	5	1	6	6	1	4	1	7
953:	4	3	8	7	1	4	6	5
961:	7	11	6	14	9	6	12	17
969:	16	10	8	9	3	4	4	7
977:	5	6	4	4	6	11	4	3
985:	4	3	5	8	2	4	3	10
993:	5	5	5	4	5	2	4	5
1001:	6	3	2	8	5	4	4	3
1009:	4	9	3	6	15	4	5	3
1017:	3	8	2	5	2	3	2	2
1025:	7	5	4	7	6	3	4	1
1033:	7	5	4	6	4	6	5	4
1041:	4	6	4	1	4	3	5	7
1049:	1	6	5	3	4	5	7	7
1057:	6	3	4	4	3	7	6	4
1065:	4	5	3	10	5	4	7	4
1073:	6	3	2	3	7	2	9	8
1081:	8	3	9	3	6	6	1	11
1089:	4	3	3	7	8	5	5	2
1097:	7	4	3	4	5	4	3	2
1105:	4	8	4	4	9	8	5	2
1113:	2	6	6	6	9	13	16	17
1121:	19	7	5	7	4	2	7	7
1129:	6	11	6	3	3	7	4	3
1137:	4	8	8	3	1	5	5	6
1145:	5	9	4	6	7	2	9	1
1153:	6	6	4	8	8	5	5	5
1161:	6	8	4	5	1	8	6	7
1169:	4	7	7	7	8	8	9	3
1177:	8	4	6	5	4	4	6	5
1185:	5	7	8	6	8	7	9	4
1193:	4	11	2	11	9	1	6	5
1201:	1	3	8	7	4	5	4	5
1209:	10	4	2	8	1	5	5	7
1217:	8	4	5	6	7	8	10	4
1225:	10	5	6	4	3	10	9	6

1233:	9	9	8	6	6	10	8	1

Sample Title: HTC-A09-S002-2430-01

Channel								
1241:	6	4	7	5	5	4	7	5
1249:	4	4	7	3	4	4	3	5
1257:	3	5	4	7	6	7	3	5
1265:	6	9	4	4	3	4	4	3
1273:	4	6	0	2	2	4	3	4
1281:	7	3	2	3	5	2	4	9
1289:	0	7	3	1	4	2	4	1
1297:	4	3	4	4	2	3	3	6
1305:	3	1	3	5	5	4	3	3
1313:	2	2	3	3	5	4	3	4
1321:	3	1	1	7	4	2	1	2
1329:	2	1	2	6	2	1	4	1
1337:	4	1	3	3	2	4	4	4
1345:	2	1	2	3	4	1	2	3
1353:	2	6	0	2	3	4	4	2
1361:	4	2	1	1	2	1	0	3
1369:	4	4	4	2	4	3	0	2
1377:	2	8	3	2	1	3	0	0
1385:	0	2	3	4	3	2	0	0
1393:	0	2	2	4	1	4	2	3
1401:	3	2	3	3	3	3	2	4
1409:	3	3	2	2	4	1	5	2
1417:	3	1	0	0	1	2	0	1
1425:	0	3	4	3	2	3	1	1
1433:	2	1	0	3	5	0	0	2
1441:	2	1	4	1	2	1	3	3
1449:	3	0	3	4	3	1	4	2
1457:	4	23	66	134	117	65	9	5
1465:	3	0	1	2	0	0	1	1
1473:	0	1	2	1	0	2	1	5
1481:	1	0	2	1	0	4	0	1
1489:	1	0	2	1	1	2	3	1
1497:	0	1	2	1	1	2	4	1
1505:	1	1	1	5	4	0	3	0
1513:	1	1	2	0	2	2	1	0
1521:	2	1	1	1	1	2	7	2
1529:	0	1	2	1	1	1	0	3
1537:	0	0	2	3	0	0	2	0
1545:	1	1	2	1	0	1	0	0
1553:	1	0	1	3	1	1	0	0
1561:	1	0	1	0	2	4	0	1
1569:	3	0	0	2	0	1	2	1
1577:	1	1	1	0	2	1	0	1
1585:	1	0	2	3	2	3	2	5
1593:	5	4	1	0	0	2	0	2
1601:	0	3	2	1	0	2	1	0
1609:	1	3	1	0	1	3	1	2
1617:	3	2	0	1	1	1	4	1
1625:	2	1	2	0	1	1	2	2
1633:	0	0	0	0	1	1	1	0
1641:	1	0	0	0	2	2	0	1
1649:	1	2	0	1	1	0	1	2
1657:	0	0	2	1	1	3	0	1

1665:	2	1	2	1	1	1	1	1

Sample Title: HTC-A09-S002-2430-01

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

2097:	1	1	1	0	0	0	3	7

Sample Title: HTC-A09-S002-2430-01

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

2529:	0	0	1	1	0	0	0	0

Sample Title: HTC-A09-S002-2430-01

Channel								
2537:	0	0	1	0	0	1	0	0
2545:	0	1	0	0	0	0	0	0
2553:	1	0	0	0	0	0	0	0
2561:	1	0	1	0	0	0	1	0
2569:	0	1	0	0	0	0	0	0
2577:	0	2	0	1	0	1	0	0
2585:	0	0	0	0	0	0	0	0
2593:	0	0	0	1	0	0	0	0
2601:	0	0	0	1	0	0	0	0
2609:	1	1	0	3	4	12	10	7
2617:	4	1	0	0	1	0	0	1
2625:	0	0	2	1	0	0	0	0
2633:	0	0	1	0	0	1	0	0
2641:	0	0	0	0	0	0	0	0
2649:	0	0	0	0	2	2	0	0
2657:	0	0	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	0	0	0	0	0	0	1
2689:	0	0	0	0	0	0	1	0
2697:	0	0	0	1	0	0	1	0
2705:	0	1	0	0	0	1	0	0
2713:	0	0	0	0	1	0	0	0
2721:	0	0	0	0	0	0	1	0
2729:	0	0	0	0	0	0	2	0
2737:	0	0	0	1	0	0	0	0
2745:	0	0	0	0	0	0	0	0
2753:	0	0	1	0	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	0	0	0	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	0	0	0	1	0	0	0	0
2793:	0	0	1	0	0	0	0	0
2801:	1	0	0	1	0	0	0	0
2809:	0	0	0	1	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	0	0	0	0	0	2	0	2
2833:	0	0	0	0	1	0	0	0
2841:	0	1	0	0	0	0	0	0
2849:	0	0	0	0	0	0	1	0
2857:	0	0	0	0	0	0	0	1
2865:	0	0	0	0	0	1	1	0
2873:	0	0	1	0	0	0	0	0
2881:	0	0	0	0	2	0	0	0
2889:	1	1	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	1
2913:	1	0	0	1	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	1	0
2937:	0	0	0	0	0	0	0	0
2945:	1	0	1	1	1	0	1	1
2953:	0	0	0	0	1	0	0	0

2961:	0	0	0	0	0	1	0	0

Sample Title: HTC-A09-S002-2430-01

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

3393:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S002-2430-01

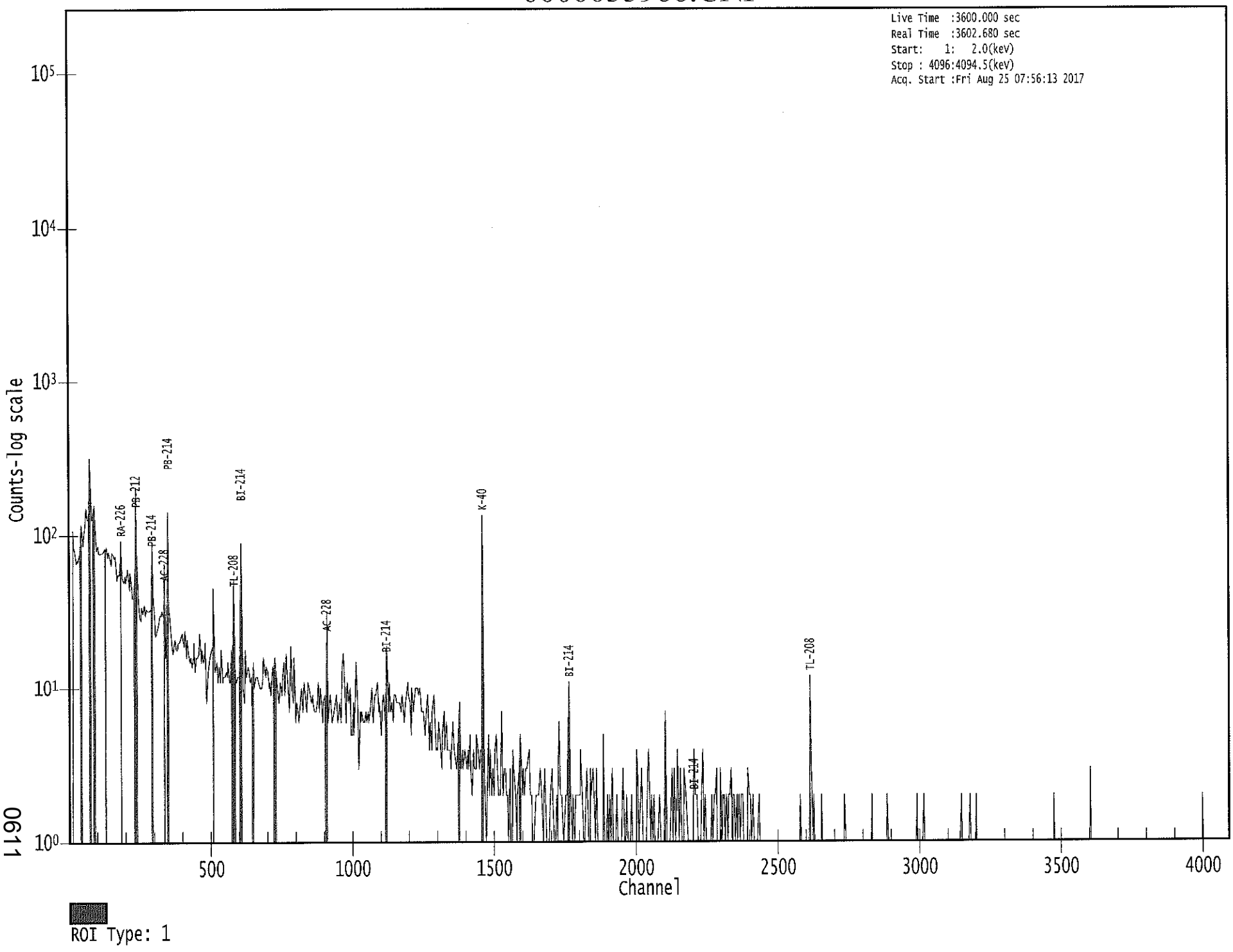
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	1	0
3417:	0	1	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	2	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	1	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A09-S002-2430-01

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	1	0
3857:	0	0	0	0	0	1	0	0
3865:	0	0	0	0	0	1	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	1	0	0	0
3905:	0	0	1	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	0	0	1	0	0	0
3945:	0	0	0	0	0	1	0	0
3953:	0	0	0	1	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	1	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	1	0	1	0	0	0	0
3993:	0	0	0	0	0	2	0	0
4001:	0	0	0	0	0	0	1	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:	1	0	0	0	0	0	1	1
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	1	0	1	0
4089:	0	1	0	0	0	0	1	0

0000055966.CNF



0611

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*************************************************************************
*****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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8/25

Last Results Report
8/25/17 5:54:07 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000004B.QCK

Detector: GE4
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 8/25/17 5:38:46 AM
Measurement Date: 8/25/17 5:38:48 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.2 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE4 [SD: 7.1196E+000+/-130.99]	1.5489E+000	-4.2527E-002 < : : : >

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

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

8/25

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*****************************************************************************
*****        G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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Last Results Report
8/25/17 5:53:58 AM

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

Detector: GE3
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 8/25/17 5:38:40 AM
Measurement Date: 8/25/17 5:38:42 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 901.6 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE3 [SD: 2.1784E+003+/-1173.5]	1.6130E+003	-4.8178E-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
8/25/17 5:53:49 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: 8/25/17 5:38:32 AM
Measurement Date: 8/25/17 5:38:34 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	2.0767E+000	3.1654E-002
[SD:-1.7048E+035+/-******]		< : : : >

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

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

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

Last Results Report
8/25/17 5:53:40 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: 8/25/17 5:38:26 AM
Measurement Date: 8/25/17 5:38:27 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: 2.2764E+000+/- 1.243]	2.1767E+000	-8.0255E-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)

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*****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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Last Results Report
8/25/17 5:36:26 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000004GAW-16C.QCK

Detector: GE4
Geometry: <None>
Certificate: GAW-16
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/16 12:00:00 PM
Measurement Date: 8/25/17 5:20:05 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 967.4 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.8279E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 kev	6.6067E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1332.49 ke	1.3318E+003	
Boundary Limits: [1.331E+003, 1.335E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1836.01 ke	1.8355E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	2.6653E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	2.4992E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	2.7951E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	3.0827E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		<Ab : : : >
Decay corrected activity	1.3941E+005	
Boundary Limits: [1.196E-001, 1.793E-001]		< : : : >
Decay corrected activity	6.2809E+004	

Boundary Limits: [4.890E-002, 7.335E-002] < : : : >

Decay corrected activity 9.0455E+004
Boundary Limits: [7.743E-002, 1.161E-001] < : : : >
Trend Test: The last 9 samples exhibit a bias trend.

Decay corrected activity 1.8735E+005
Boundary Limits: [1.609E-001, 2.414E-001] < : : : >

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

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*************************************************************************
*****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
*************************************************************************
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Last Results Report
8/25/17 5:35:49 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000003GAS-1602C.QC

Detector: GE3
Geometry: <None>
Certificate: GAS-1602
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/16 12:00:00 PM
Measurement Date: 8/25/17 5:19:58 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 933.2 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.9857E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6192E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Peak centroid 1332.49 ke	1.3327E+003	
Boundary Limits: [1.330E+003, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8361E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	2.0066E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	2.3206E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.6066E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.9370E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.5556E+005	
Boundary Limits: [1.189E-001, 1.784E-001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	6.2006E+004	
Boundary Limits: [4.862E-002, 7.293E-002]		< : : : >

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

Decay corrected activity 9.3574E+004
Boundary Limits: [7.700E-002, 1.155E-001] < : : : >
Trend Test: The last 9 samples exhibit a bias trend.

Decay corrected activity 1.8968E+005
Boundary Limits: [1.600E-001, 2.400E-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)

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*****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
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C
8/25

Last Results Report
8/25/17 5:35:38 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002GAS-1601C.QC

Detector: GE2
Geometry: <None>
Certificate: GAS-1601
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/16 12:00:00 PM
Measurement Date: 8/25/17 5:19:50 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 59.54 kev	6.0000E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 kev	6.6144E+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]		< : : : >
Peak centroid 1836.01 ke	1.8351E+003	
Boundary Limits: [1.833E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.2341E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	2.1254E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	2.1312E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Y-88	2.8512E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	1.4369E+005	
Boundary Limits: [1.190E-001, 1.785E-001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		

Decay corrected activity 7.3229E+004
Boundary Limits: [5.718E-002, 8.577E-002] < : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity Boundary Limits: [7.706E-002, 1.156E-001]	1.0430E+005	< : : : >
Decay corrected activity Boundary Limits: [1.602E-001, 2.403E-001]	2.0212E+005	< : : : >

Flags Key:
LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

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*************************************************************************
*****          G E N I E   Q U A L I T Y   A S S U R A N C E          *****
*************************************************************************
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Last Results Report
8/25/17 5:35:27 AM

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000001GAF-16C.QCK

Detector: GE1
Geometry: <None>
Certificate: GAF-16
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/16 12:00:00 PM
Measurement Date: 8/25/17 5:19:43 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 928.8 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.9996E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6179E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1332.49 ke	1.3324E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8358E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.4436E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	1.8348E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	2.2352E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.6366E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.5153E+004	
Boundary Limits: [1.254E-002, 1.881E-002]		< : : : >
Decay corrected activity	6.7429E+003	

Boundary Limits: [5.134E-003, 7.700E-003] < : : : >

Decay corrected activity 1.0955E+004
Boundary Limits: [8.130E-003, 1.220E-002] < : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	2.0828E+004	
Boundary Limits: [1.690E-002, 2.534E-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)