WESTON SOLUTIONS, INC.

PO# 0094759

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #17-07088-OR

September 15, 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 # 17-07088

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	SED	Sample Log-In
		8/30/17	[illegible]	Data Compilation
		8/31/17	[illegible]	First Technical Data Review
		9/5/17	[illegible]	Second Technical Data Review
		9/7/17	[illegible]	Data Entry/Electronic Deliverable
		9/7/17	[illegible]	Case Narrative
		9/14/17	[illegible]	Electronic Deliverable Proof
		9/15/17	[illegible]	Samples Analyzed within Holding Time Yes? [X] No? [ ]
		9/15/17	[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: [signature] 9/15/17

Laboratory Manager Date

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

17-07088
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-A03-S002-0612-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:36	1	16 oz Poly Jar	N	984.2 g
	HTC-A03-S002-1218-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:33	1	16 oz Poly Jar	N	1005.0 g
	HTC-A03-S002-1824-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:27	1	16 oz Poly Jar	N	Weight N/A
	HTC-A03-S002-2430-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:24	1	16 oz Poly Jar	N	Weight N/A
	HTC-A03-S002-3036-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:21	1	16 oz Poly Jar	Y	Weight N/A
	HTC-A03-S002-3036-02	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:21	1	16 oz Poly Jar	N	Weight N/A
	HTC-A03-S002-3642-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:18	1	16 oz Poly Jar	N	1069.3 g
	HTC-A03-S002-4248-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:15	1	16 oz Poly Jar	N	1066.5 g
	HTC-A03-S003-0006-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	08:48	1	16 oz Poly Jar	N	Weight N/A
	HTC-A03-S003-0612-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	08:45	1	16 oz Poly Jar	N	Weight N/A
	HTC-A03-S003-1218-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	08:42	1	16 oz Poly Jar	N	Weight N/A
	HTC-A03-S003-1824-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	08:39	1	16 oz Poly Jar	N	Weight N/A
	HTC-A03-S003-2430-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	08:36	1	16 oz Poly Jar	N	Weight N/A
	HTC-A03-S003-3036-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	08:33	1	16 oz Poly Jar	N	Weight N/A
4	HTC-A03-S003-3642-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	08:30	1	16 oz Poly Jar	N	Weight N/A
5	HTC-A03-S003-4248-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	08:27	1	16 oz Poly Jar	N	Weight N/A
6	HTC-A03-S004-0006-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:51	1	16 oz Poly Jar	N	Weight N/A
7	HTC-A03-S004-0612-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:48	1	16 oz Poly Jar	N	Weight N/A
8	HTC-A03-S004-1218-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:45	1	16 oz Poly Jar	N	Weight N/A
9	HTC-A03-S004-1824-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:42	1	16 oz Poly Jar	N	Weight N/A
10	HTC-A03-S004-2430-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:39	1	16 oz Poly Jar	N	Weight N/A
11	HTC-A03-S004-3036-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:36	1	16 oz Poly Jar	N	Weight N/A

7-18-17 JED

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 Dailey	7-18-17 0930	

0005

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

CHAIN OF CUSTODY RECORD
Case #: 445
Contact Name: Patrick Buster
Contact Phone: 903-348-3917

17-07088
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
12	HTC-A03-S004-3642-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:33	1	16 oz Poly Jar	N	Weight N/A
13 14 15	HTC-A03-S004-4248-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:30	1	16 oz Poly Jar	Y	Weight N/A
16	HTC-A03-S004-4248-02	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/13/2017	15:30	1	16 oz Poly Jar	N	Weight N/A
17	HTC-A04-S001-0006-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	10:11	1	16 oz Poly Jar	N	Weight N/A
18	HTC-A04-S001-0612-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	10:08	1	16 oz Poly Jar	N	Weight N/A
19	HTC-A04-S001-1218-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	10:05	1	16 oz Poly Jar	N	Weight N/A
20	HTC-A04-S001-1824-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	10:02	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S001-2430-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:59	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S001-3036-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:56	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S001-3642-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:53	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S001-4248-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/15/2017	09:50	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S002-0006-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	08:04	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S002-0612-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	08:02	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S002-1218-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	08:00	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S002-1824-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	07:58	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S002-2430-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	07:56	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S002-3036-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	07:54	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S002-3642-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	07:52	1	16 oz Poly Jar	N	Weight N/A
	HTC-A04-S002-4248-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	07:50	1	16 oz Poly Jar	N	Weight N/A
	HTC-A06-S001-0006-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	14:28	1	16 oz Poly Jar	N	Weight N/A
	HTC-A06-S001-0612-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	14:26	1	16 oz Poly Jar	N	Weight N/A
	HTC-A06-S001-1218-01	Gamma Spec (Modified), Isotopic Th and U	Soil/Rock/Slag	5/16/2017	14:24	1	16 oz Poly Jar	N	Weight N/A

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	

9000

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	17-07088
		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	42	L1.5
	05	37	L1.5
	06	45	L1.5
	07	51	L1.5
	08	48	L1.5
	09	36	L1.5
	10	44	L1.5
	11	49	L1.5
	12	43	L1.5
Fraction 14 is MS of fraction 13. Fraction 15 is MSD of fraction 13.	13	30	L1.5
	14	44	L1.5
	15	44	L1.5
	16	41	L1.5
	17	44	L1.5
	18	46	L1.5
	19	37	L1.5
	20	44	L1.5

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1200	[illegible]	7-31-17
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1130	[illegible]	8-1-17
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8/1/17 1130
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8/11/17 1135
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8/11/17 1135
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8-28-17 0948
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	0948
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8/28/17 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 #	17-07088
		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	42	L1.5
	05	37	L1.5
	06	45	L1.5
	07	51	L1.5
	08	48	L1.5
	09	36	L1.5
	10	44	L1.5
	11	49	L1.5
	12	43	L1.5
Fraction 14 is MS of fraction 13. Fraction 15 is MSD of fraction 13.	13	30	L1.5
	14	44	L1.5
	15	44	L1.5
	16	41	L1.5
	17	44	L1.5
	18	46	L1.5
	19	37	L1.5
	20	44	L1.5

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1200	[illegible]	7-31-17
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1130	[illegible]	8-1-17
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8/11/17 1130
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8/11/17 1130
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8-11-17 1130
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	8-25-17 0854
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	0854
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	TCB	8/25/17 1726
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

EBERLINE Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	17-07088
		Lab Deadline	See Comments
		Analysis	Gamma - Level 4
		Sample Matrix	SO

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
Re-Analysis: 2Fractions 04-13 & 16-20 only: 21 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.	04	42	L1.5
	05	37	L1.5
	06	45	L1.5
	07	51	L1.5
	08	48	L1.5
	09	36	L1.5
	10	44	L1.5
	11	49	L1.5
	12	43	L1.5
~~Original Lab Deadline: 08/15/17~~ EyT 07/19/17	13	30	L1.5
~~Rerun Lab Deadline: 08/15/17 Fractions 04-13 & 16-20 only:~~	16	41	L1.5
~~Quick Count: Report Ac228, Bi212/214, Cs137, K40, Pa234m,~~	17	44	L1.5
~~Pb212/214, Ra224, Ra226 from 186 keV peak, Ra228 from~~	18	46	L1.5
~~Ac228, Tl208, Th234 & positives. Report on dry weight basis.~~	19	37	L1.5
	20	44	L1.5

	Location (circle one)					Technician Initials	
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1200	Key Sey	7-31-17
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1210	Key Sey	8/1/17
Received by	Sample Storage	Rough Prep	Prep	Separations	~~Count Room~~ 1210		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	8/1/23	0815
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	17-07088
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-A03-S003-3642-01	05/15/17 08:30	SO	L1.5	X	X	X																					3
05	HTC-A03-S003-4248-01	05/15/17 08:27	SO	L1.5	X	X	X																					3
06	HTC-A03-S004-0006-01	05/13/17 15:51	SO	L1.5	X	X	X																					3
07	HTC-A03-S004-0612-01	05/13/17 15:48	SO	L1.5	X	X	X																					3
08	HTC-A03-S004-1218-01	05/13/17 15:45	SO	L1.5	X	X	X																					3
09	HTC-A03-S004-1824-01	05/13/17 15:42	SO	L1.5	X	X	X																					3
10	HTC-A03-S004-2430-01	05/13/17 15:39	SO	L1.5	X	X	X																					3
11	HTC-A03-S004-3036-01	05/13/17 15:36	SO	L1.5	X	X	X																					3
12	HTC-A03-S004-3642-01	05/13/17 15:33	SO	L1.5	X	X	X																					3
13	HTC-A03-S004-4248-01	05/13/17 15:30	SO	L1.5	X	X	X																					3
14	HTC-A03-S004-4248-01 MS	05/13/17 15:30	SO	L1.5		X	X																					2
15	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	SO	L1.5		X	X																					2
16	HTC-A03-S004-4248-02	05/13/17 15:30	SO	L1.5	X	X	X																					3
17	HTC-A04-S001-0006-01	05/15/17 10:11	SO	L1.5	X	X	X																					3
18	HTC-A04-S001-0612-01	05/15/17 10:08	SO	L1.5	X	X	X																					3
19	HTC-A04-S001-1218-01	05/15/17 10:05	SO	L1.5	X	X	X																					3
20	HTC-A04-S001-1824-01	05/15/17 10:02	SO	L1.5	X	X	X																					3
		Totals Per Analysis (non QA samples)			15	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

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

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

Invoice
Accounts Payable
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

0011

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Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 17-07088

SAMPLE MATRIX/MATRICES: (CIRCLE ONE OR BOTH)

AQUEOUS NON-AQUEOUS

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

WERE SAMPLES:

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

WERE CHAIN OF CUSTODY SEALS:

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

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

REMARKS: _____

SIGNATURE: James E Daily 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-42670

September 15, 2017

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

CASE NARRATIVE
Work Order # 17-07088-OR

SAMPLE RECEIPT

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

CLIENT ID	LAB ID	CLIENT ID	LAB ID
HTC-A03-S003-3642-01	17-07088-04	HTC-A03-S004-4248-01	17-07088-13
HTC-A03-S003-4248-01	17-07088-05	HTC-A03-S004-4248-01 MS	17-07088-14
HTC-A03-S004-0006-01	17-07088-06	HTC-A03-S004-4248-01 MSD	17-07088-15
HTC-A03-S004-0612-01	17-07088-07	HTC-A03-S004-4248-02	17-07088-16
HTC-A03-S004-1218-01	17-07088-08	HTC-A04-S001-0006-01	17-07088-17
HTC-A03-S004-1824-01	17-07088-09	HTC-A04-S001-0612-01	17-07088-18
HTC-A03-S004-2430-01	17-07088-10	HTC-A04-S001-1218-01	17-07088-19
HTC-A03-S004-3036-01	17-07088-11	HTC-A04-S001-1824-01	17-07088-20
HTC-A03-S004-3642-01	17-07088-12		

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.

SPECIAL CIRCUMSTANCES

Samples were dried and ground prior to analyses. Results are reported on a "dry weight" basis.

ANALYTICAL RESULTS CONTINUED

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.

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-235/236 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Uranium-238 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Uranium-234 and Uranium-238 laboratory control sample demonstrated an acceptable percent recovery. Results for the Uranium-234 and Uranium-238 matrix spike and matrix spike duplicate 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 a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Thorium-228, Thorium-230 and Thorium-232 laboratory control sample demonstrated an acceptable percent recovery. Results for the Thorium-228, Thorium-230 and Thorium-232 matrix spike and matrix spike duplicate 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.

ANALYTICAL RESULTS CONTINUED

GAMMA SPECTROSCOPY CONTINUED

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 Actinium-228, Potassium-40 and Radium-226 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: 9/15/2017

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:	Work Order Details:	
Smita Sumbaly	SDG:	17-07088
Weston Solutions, Inc.	Purchase Order:	0094759
1090 King Georges Post Rd Suite 201	Analysis Category:	ENVIRONMENTAL
Edison, NJ 08837	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											
17-07088-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Cobalt-60	EPA 901.1 Modified	1.35E+02	5.27E+00			pCi/g
17-07088-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	8.44E+01	3.38E+00			pCi/g
17-07088-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Cobalt-60	EPA 901.1 Modified	1.23E+02	7.47E+00	9.79E+00	1.34E+00	pCi/g
17-07088-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	7.98E+01	9.76E+00	1.06E+01	1.66E+00	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	8.14E-02	1.17E-01	1.17E-01	2.11E-01	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	-1.01E-01	3.28E-01	3.28E-01	4.36E-01	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	-7.38E-03	2.90E-02	2.90E-02	5.10E-02	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	3.29E-01	2.95E-01	2.96E-01	4.26E-01	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	1.10E+00	2.01E+00	2.01E+00	4.37E+00	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	2.42E-02	2.61E-02	2.61E-02	6.37E-02	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	6.43E-02	1.98E-01	1.98E-01	6.89E-01	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	7.53E-02	5.86E-02	5.87E-02	1.36E-01	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	8.14E-02	1.17E-01	1.17E-01	2.11E-01	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	5.75E-01	4.32E-01	4.33E-01	7.17E-01	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	4.29E-02	7.48E-02	7.49E-02	1.38E-01	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.01E+00	1.81E-01	1.88E-01	2.92E-01	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	7.79E-01	4.63E-01	4.65E-01	8.00E-01	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	2.14E-02	3.04E-02	3.04E-02	6.25E-02	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	1.99E+01	2.29E+00	2.51E+00	8.33E-01	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	-3.08E+00	4.44E+00	4.45E+00	6.17E+00	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.02E+00	1.21E-01	1.31E-01	1.83E-01	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	2.08E+00	7.92E-01	7.99E-01	2.05E+00	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	7.55E-01	1.25E-01	1.31E-01	1.70E-01	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	1.01E+00	1.81E-01	1.88E-01	2.92E-01	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.01E+00	7.07E-01	7.09E-01	1.11E+00	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	8.81E-01	1.35E-01	1.42E-01	9.47E-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:	17-07088
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
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	9.32E-01	1.86E-01	1.92E-01	3.67E-01	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	1.01E+00	4.51E-01	4.54E-01	6.81E-01	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	3.69E-02	4.62E-02	4.62E-02	7.46E-02	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	1.91E+01	2.24E+00	2.45E+00	9.37E-01	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	-7.98E-01	4.72E+00	4.72E+00	6.89E+00	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.06E+00	1.18E-01	1.30E-01	2.01E-01	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	1.09E+01	1.61E+00	1.70E+00	2.34E+00	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	7.21E-01	1.43E-01	1.48E-01	1.97E-01	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	9.32E-01	1.86E-01	1.92E-01	3.67E-01	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.37E+00	1.17E+00	1.17E+00	1.94E+00	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	8.67E-01	1.43E-01	1.50E-01	1.89E-01	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	9.43E-01	2.21E-01	2.27E-01	3.90E-01	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	5.40E-01	4.73E-01	4.74E-01	7.99E-01	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	6.02E-02	5.72E-02	5.73E-02	9.67E-02	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	1.90E+01	2.22E+00	2.43E+00	4.77E-01	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	4.00E+00	5.49E+00	5.50E+00	9.37E+00	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.04E+00	1.56E-01	1.65E-01	2.45E-01	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	1.57E+01	1.90E+00	2.07E+00	2.85E+00	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	9.15E-01	1.55E-01	1.62E-01	1.96E-01	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	9.43E-01	2.21E-01	2.27E-01	3.90E-01	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.70E+00	1.14E+00	1.14E+00	2.40E+00	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	9.36E-01	1.75E-01	1.82E-01	1.98E-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:	17-07088
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
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.45E+00	2.22E-01	2.34E-01	5.02E-01	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	1.03E+00	3.94E-01	3.98E-01	8.19E-01	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	-4.36E-03	4.99E-02	4.99E-02	7.40E-02	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	2.94E+01	2.96E+00	3.32E+00	1.07E+00	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	2.11E+00	5.17E+00	5.18E+00	8.08E+00	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.47E+00	1.57E-01	1.74E-01	2.49E-01	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	3.34E+00	1.27E+00	1.28E+00	2.81E+00	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	9.75E-01	1.48E-01	1.56E-01	2.45E-01	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	1.45E+00	2.22E-01	2.34E-01	5.02E-01	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.19E+00	1.33E+00	1.33E+00	2.23E+00	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	1.15E+00	1.71E-01	1.81E-01	1.31E-01	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.08E+00	2.65E-01	2.71E-01	4.28E-01	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	9.48E-01	4.85E-01	4.88E-01	1.12E+00	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	-1.56E-02	6.49E-02	6.49E-02	9.56E-02	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	2.17E+01	2.46E+00	2.70E+00	1.12E+00	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	3.97E-01	7.17E+00	7.17E+00	1.09E+01	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.25E+00	1.56E-01	1.69E-01	2.61E-01	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	1.70E+01	2.07E+00	2.25E+00	3.01E+00	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	9.60E-01	1.56E-01	1.63E-01	6.61E-02	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	1.08E+00	2.65E-01	2.71E-01	4.28E-01	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	9.60E-01	1.21E+00	1.21E+00	1.60E+00	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	8.74E-01	1.73E-01	1.79E-01	1.65E-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:	17-07088
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
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.41E+00	2.01E-01	2.14E-01	3.97E-01	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	1.01E+00	4.95E-01	4.98E-01	7.56E-01	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	1.36E-02	5.52E-02	5.52E-02	8.39E-02	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	2.67E+01	2.82E+00	3.13E+00	9.72E-01	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	3.88E+00	5.19E+00	5.20E+00	8.67E+00	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.43E+00	1.59E-01	1.75E-01	2.87E-01	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	4.56E+00	1.49E+00	1.51E+00	3.28E+00	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	1.08E+00	1.58E-01	1.68E-01	2.14E-01	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	1.41E+00	2.01E-01	2.14E-01	3.97E-01	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.73E+00	1.24E+00	1.24E+00	1.66E+00	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	1.27E+00	2.14E-01	2.23E-01	2.56E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.37E+00	2.52E-01	2.61E-01	4.64E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	8.34E-01	5.03E-01	5.05E-01	8.69E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	1.35E-02	5.98E-02	5.98E-02	9.21E-02	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	2.24E+01	2.58E+00	2.82E+00	1.10E+00	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	-1.07E+00	6.32E+00	6.32E+00	9.36E+00	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.61E+00	2.16E-01	2.31E-01	2.41E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	1.73E+01	2.05E+00	2.23E+00	2.98E+00	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	1.09E+00	1.88E-01	1.96E-01	2.60E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	1.37E+00	2.52E-01	2.61E-01	4.64E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	6.43E-01	1.21E+00	1.21E+00	1.58E+00	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	1.14E+00	2.43E-01	2.50E-01	4.34E-01	pCi/g

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EBERLINE SERVICES

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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:	**17-07088**
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
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.20E+00	2.81E-01	2.88E-01	5.71E-01	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	9.38E-01	7.26E-01	7.28E-01	1.26E+00	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	-1.15E-02	9.05E-02	9.05E-02	1.24E-01	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	1.95E+01	2.70E+00	2.88E+00	1.88E+00	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	2.77E-01	8.74E+00	8.74E+00	1.25E+01	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.14E+00	1.63E-01	1.73E-01	2.54E-01	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	1.51E+01	1.98E+00	2.13E+00	3.06E+00	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	7.89E-01	2.03E-01	2.07E-01	3.23E-01	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	1.20E+00	2.81E-01	2.88E-01	5.71E-01	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	3.88E+00	1.92E+00	1.93E+00	5.60E+00	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	8.41E-01	2.43E-01	2.46E-01	3.94E-01	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.41E+00	2.05E-01	2.18E-01	4.73E-01	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	1.12E+00	4.67E-01	4.71E-01	7.31E-01	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	5.92E-03	6.06E-02	6.06E-02	9.24E-02	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	2.64E+01	2.82E+00	3.13E+00	1.25E+00	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	-2.62E+00	6.17E+00	6.17E+00	8.32E+00	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.39E+00	1.61E-01	1.76E-01	2.93E-01	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	3.68E+00	1.48E+00	1.49E+00	3.30E+00	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	1.19E+00	1.82E-01	1.92E-01	2.65E-01	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	1.41E+00	2.05E-01	2.18E-01	4.73E-01	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.74E+00	1.33E+00	1.34E+00	1.81E+00	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	1.15E+00	1.81E-01	1.90E-01	2.04E-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

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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:	**17-07088**
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
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	9.05E-01	1.85E-01	1.91E-01	3.53E-01	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	8.22E-01	5.56E-01	5.58E-01	8.90E-01	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	-1.28E-02	3.64E-02	3.64E-02	8.44E-02	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	1.86E+01	2.20E+00	2.40E+00	8.38E-01	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	1.81E+00	5.70E+00	5.70E+00	9.23E+00	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.04E+00	1.51E-01	1.60E-01	2.36E-01	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	1.47E+01	1.81E+00	1.96E+00	2.73E+00	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	9.35E-01	1.63E-01	1.70E-01	2.41E-01	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	9.05E-01	1.85E-01	1.91E-01	3.53E-01	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.83E+00	1.06E+00	1.06E+00	1.47E+00	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	8.92E-01	2.28E-01	2.33E-01	3.05E-01	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.12E+00	3.25E-01	3.30E-01	7.55E-01	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Bismuth-212	EPA 901.1 Modified	7.14E-01	6.08E-01	6.09E-01	9.77E-01	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Cesium-137	EPA 901.1 Modified	-4.64E-02	1.00E-01	1.00E-01	1.31E-01	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Potassium-40	EPA 901.1 Modified	1.68E+01	2.53E+00	2.68E+00	1.71E+00	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	0.00E+00	1.11E+01	1.11E+01	1.51E+01	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Lead-212	EPA 901.1 Modified	1.10E+00	1.70E-01	1.79E-01	2.66E-01	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Radium-224	EPA 901.1 Modified	1.43E+01	2.04E+00	2.17E+00	3.30E+00	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Radium-226	EPA 901.1 Modified	9.11E-01	2.22E-01	2.27E-01	3.17E-01	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Radium-228	EPA 901.1 Modified	1.12E+00	3.25E-01	3.30E-01	7.55E-01	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.90E+00	1.34E+00	1.35E+00	2.05E+00	pCi/g
17-07088-13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/22/2017	17-07088	Thallium-208	EPA 901.1 Modified	8.60E-01	2.15E-01	2.19E-01	7.90E-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: 17-07088
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
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.18E+00	2.16E-01	2.25E-01	3.36E-01	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Bismuth-212	EPA 901.1 Modified	5.62E-01	4.92E-01	4.93E-01	8.03E-01	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Cesium-137	EPA 901.1 Modified	6.13E-03	5.43E-02	5.43E-02	8.27E-02	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Potassium-40	EPA 901.1 Modified	2.15E+01	2.40E+00	2.64E+00	1.11E+00	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	1.77E+00	5.81E+00	5.81E+00	9.19E+00	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Lead-212	EPA 901.1 Modified	1.18E+00	1.45E-01	1.57E-01	2.60E-01	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Radium-224	EPA 901.1 Modified	3.13E+00	1.30E+00	1.31E+00	2.93E+00	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Radium-226	EPA 901.1 Modified	1.16E+00	1.81E-01	1.91E-01	2.11E-01	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Radium-228	EPA 901.1 Modified	1.18E+00	2.16E-01	2.25E-01	3.36E-01	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.50E+00	1.27E+00	1.28E+00	1.72E+00	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/23/2017	17-07088	Thallium-208	EPA 901.1 Modified	1.09E+00	2.59E-01	2.65E-01	3.39E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.12E+00	1.90E-01	1.99E-01	3.02E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Bismuth-212	EPA 901.1 Modified	9.70E-01	5.60E-01	5.63E-01	8.88E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Cesium-137	EPA 901.1 Modified	1.91E-01	7.18E-02	7.25E-02	1.06E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Potassium-40	EPA 901.1 Modified	1.76E+01	2.11E+00	2.30E+00	7.14E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	-1.74E+00	5.30E+00	5.30E+00	7.48E+00	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Lead-212	EPA 901.1 Modified	1.00E+00	1.20E-01	1.30E-01	1.77E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Radium-224	EPA 901.1 Modified	2.33E+00	7.50E-01	7.60E-01	1.99E+00	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Radium-226	EPA 901.1 Modified	8.26E-01	1.16E-01	1.24E-01	3.09E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Radium-228	EPA 901.1 Modified	1.12E+00	1.90E-01	1.99E-01	3.02E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.26E+00	7.44E-01	7.47E-01	1.20E+00	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/23/2017	17-07088	Thallium-208	EPA 901.1 Modified	8.45E-01	1.40E-01	1.46E-01	1.60E-01	pCi/g

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

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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
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.16E+00	2.43E-01	2.50E-01	3.63E-01	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Bismuth-212	EPA 901.1 Modified	1.01E+00	4.23E-01	4.26E-01	6.58E-01	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Cesium-137	EPA 901.1 Modified	1.41E-01	7.83E-02	7.86E-02	1.22E-01	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Potassium-40	EPA 901.1 Modified	1.69E+01	2.17E+00	2.34E+00	1.39E+00	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	-3.83E+00	6.28E+00	6.28E+00	8.74E+00	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Lead-212	EPA 901.1 Modified	1.11E+00	1.50E-01	1.61E-01	2.31E-01	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Radium-224	EPA 901.1 Modified	2.57E+00	1.36E+00	1.36E+00	2.61E+00	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Radium-226	EPA 901.1 Modified	8.04E-01	1.46E-01	1.52E-01	3.04E-01	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Radium-228	EPA 901.1 Modified	1.16E+00	2.43E-01	2.50E-01	3.63E-01	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Thorium-234	EPA 901.1 Modified	2.00E+00	1.54E+00	1.55E+00	2.56E+00	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/23/2017	17-07088	Thallium-208	EPA 901.1 Modified	8.54E-01	1.73E-01	1.79E-01	1.09E-01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.23E+00	2.93E-01	3.00E-01	4.64E-01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Bismuth-212	EPA 901.1 Modified	8.82E-01	7.25E-01	7.26E-01	1.14E+00	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Cesium-137	EPA 901.1 Modified	5.61E-02	8.68E-02	8.69E-02	1.30E-01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Potassium-40	EPA 901.1 Modified	2.36E+01	2.91E+00	3.15E+00	9.95E-01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	3.32E+00	1.01E+01	1.01E+01	1.48E+01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Lead-212	EPA 901.1 Modified	1.41E+00	1.79E-01	1.93E-01	2.21E-01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Radium-224	EPA 901.1 Modified	2.67E+00	1.32E+00	1.33E+00	2.44E+00	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Radium-226	EPA 901.1 Modified	8.99E-01	2.06E-01	2.12E-01	3.07E-01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Radium-228	EPA 901.1 Modified	1.23E+00	2.93E-01	3.00E-01	4.64E-01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Thorium-234	EPA 901.1 Modified	-6.94E-01	1.36E+00	1.36E+00	1.94E+00	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/23/2017	17-07088	Thallium-208	EPA 901.1 Modified	1.33E+00	2.65E-01	2.74E-01	6.44E-02	pCi/g

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Work Order Details:

SDG:	**17-07088**
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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
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Actinium-228	EPA 901.1 Modified	1.33E+00	2.21E-01	2.31E-01	4.05E-01	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Bismuth-212	EPA 901.1 Modified	8.08E-01	4.07E-01	4.10E-01	7.69E-01	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Cesium-137	EPA 901.1 Modified	-4.07E-02	4.99E-02	5.00E-02	6.78E-02	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Potassium-40	EPA 901.1 Modified	2.85E+01	2.86E+00	3.22E+00	9.36E-01	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Protactinium-234m	EPA 901.1 Modified	5.71E+00	4.93E+00	4.94E+00	8.41E+00	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Lead-212	EPA 901.1 Modified	1.54E+00	1.60E-01	1.78E-01	2.17E-01	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Radium-224	EPA 901.1 Modified	2.94E+00	1.23E+00	1.24E+00	2.44E+00	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Radium-226	EPA 901.1 Modified	1.07E+00	1.34E-01	1.45E-01	2.78E-01	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Radium-228	EPA 901.1 Modified	1.33E+00	2.21E-01	2.31E-01	4.05E-01	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Thorium-234	EPA 901.1 Modified	1.90E+00	1.18E+00	1.19E+00	1.94E+00	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/23/2017	17-07088	Thallium-208	EPA 901.1 Modified	1.22E+00	1.73E-01	1.84E-01	1.97E-01	pCi/g
17-07088-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	4.82E+00	1.73E-01			pCi/g
17-07088-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	5.76E+00	9.25E-01	1.07E+00	1.33E-01	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	-2.82E-02	3.60E-02	3.61E-02	1.31E-01	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	4.31E-01	1.89E-01	1.93E-01	1.25E-01	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	7.81E-01	3.03E-01	3.11E-01	1.05E-01	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.02E+00	3.07E-01	3.22E-01	9.75E-02	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.73E+00	4.27E-01	4.57E-01	1.09E-01	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.03E+00	2.72E-01	2.88E-01	7.43E-02	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.31E+00	3.72E-01	3.92E-01	1.36E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.41E+00	3.47E-01	3.71E-01	1.23E-01	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.22E+00	3.36E-01	3.55E-01	1.27E-01	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.37E+00	3.56E-01	3.78E-01	1.04E-01	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.17E+00	3.51E-01	3.68E-01	9.23E-02	pCi/g
17-07088-13	MSO	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	3.95E-01	1.83E-01	1.87E-01	1.13E-01	pCi/g
17-07088-14	MS	HTC-A03-S004-4248-01 MS	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	6.74E+00	1.51E+00	1.64E+00	9.54E-02	pCi/g
17-07088-15	MSD	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	9.26E+00	2.43E+00	2.58E+00	2.45E-01	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	7.09E-01	2.44E-01	2.53E-01	1.18E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	9.94E-01	2.64E-01	2.80E-01	7.07E-02	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.34E+00	3.63E-01	3.84E-01	1.22E-01	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.52E+00	3.87E-01	4.13E-01	9.83E-02	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/25/2017	17-07088	Thorium-228	EPA 907.0 Modified	1.38E+00	3.35E-01	3.59E-01	8.35E-02	pCi/g

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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:	**17-07088**
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
17-07088-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	5.40E+00	1.46E-01			pCi/g
17-07088-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	6.47E+00	1.02E+00	1.29E+00	8.91E-02	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	7.68E-02	7.36E-02	7.42E-02	8.93E-02	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	5.00E-01	1.95E-01	2.05E-01	1.06E-01	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	7.06E-01	2.74E-01	2.87E-01	9.47E-02	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	8.78E-01	2.67E-01	2.89E-01	6.70E-02	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.04E+00	2.90E-01	3.18E-01	9.87E-02	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	9.32E-01	2.47E-01	2.72E-01	7.57E-02	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.02E+00	3.03E-01	3.29E-01	1.25E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.03E+00	2.68E-01	2.96E-01	7.29E-02	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.10E+00	3.00E-01	3.30E-01	7.85E-02	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.24E+00	3.21E-01	3.56E-01	8.77E-02	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	9.68E-01	3.00E-01	3.23E-01	9.52E-02	pCi/g
17-07088-13	MSO	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.97E-01	1.20E-01	1.23E-01	9.72E-02	pCi/g
17-07088-14	MS	HTC-A03-S004-4248-01 MS	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	5.83E+00	1.32E+00	1.50E+00	1.30E-01	pCi/g
17-07088-15	MSD	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	6.75E+00	1.81E+00	1.99E+00	1.26E-01	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.03E+00	2.96E-01	3.22E-01	7.58E-02	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	9.30E-01	2.44E-01	2.70E-01	6.41E-02	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.15E+00	3.15E-01	3.46E-01	8.65E-02	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	1.26E+00	3.29E-01	3.65E-01	6.45E-02	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/25/2017	17-07088	Thorium-230	EPA 907.0 Modified	8.97E-01	2.38E-01	2.63E-01	5.95E-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

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

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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: 17-07088
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
17-07088-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	4.82E+00	1.73E-01			pCi/g
17-07088-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	5.95E+00	9.48E-01	1.08E+00	7.10E-02	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	5.20E-02	5.96E-02	5.98E-02	7.82E-02	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	4.02E-01	1.71E-01	1.75E-01	9.39E-02	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	6.69E-01	2.64E-01	2.70E-01	8.25E-02	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	9.22E-01	2.77E-01	2.89E-01	8.81E-02	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.24E+00	3.25E-01	3.43E-01	6.83E-02	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	9.48E-01	2.50E-01	2.63E-01	8.05E-02	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.12E+00	3.20E-01	3.35E-01	1.11E-01	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.07E+00	2.76E-01	2.91E-01	6.23E-02	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.01E+00	2.83E-01	2.97E-01	6.87E-02	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.31E+00	3.33E-01	3.52E-01	7.76E-02	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.09E+00	3.23E-01	3.37E-01	6.61E-02	pCi/g
17-07088-13	MSO	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	2.51E-01	1.35E-01	1.37E-01	8.51E-02	pCi/g
17-07088-14	MS	HTC-A03-S004-4248-01 MS	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	6.35E+00	1.42E+00	1.53E+00	9.86E-02	pCi/g
17-07088-15	MSD	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	7.82E+00	2.06E+00	2.17E+00	1.26E-01	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.11E+00	3.12E-01	3.27E-01	8.63E-02	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.00E+00	2.57E-01	2.72E-01	6.39E-02	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.12E+00	3.07E-01	3.23E-01	7.84E-02	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.16E+00	3.11E-01	3.28E-01	7.60E-02	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/25/2017	17-07088	Thorium-232	EPA 907.0 Modified	1.26E+00	3.05E-01	3.25E-01	5.65E-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

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Final Report of Analysis

Report To:		Work Order Details:	
Smita Sumbaly		SDG:	17-07088
Weston Solutions, Inc.		Purchase Order:	0094759
1090 King Georges Post Rd Suite 201		Analysis Category:	ENVIRONMENTAL
Edison, NJ 08837		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
17-07088-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	7.32E+00	2.64E-01			pCi/g
17-07088-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	6.08E+00	8.26E-01	9.33E-01	8.02E-02	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	7.07E-02	6.07E-02	6.10E-02	5.97E-02	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	6.57E-01	2.00E-01	2.05E-01	7.88E-02	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	4.05E-01	1.45E-01	1.47E-01	7.66E-02	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	8.48E-01	2.27E-01	2.35E-01	9.42E-02	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	1.34E+00	3.10E-01	3.25E-01	9.05E-02	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	1.26E+00	2.89E-01	3.02E-01	7.29E-02	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	8.64E-01	2.15E-01	2.23E-01	5.71E-02	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	8.10E-01	2.34E-01	2.41E-01	8.96E-02	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	8.40E-01	2.14E-01	2.22E-01	6.38E-02	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	8.22E-01	2.13E-01	2.21E-01	4.77E-02	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	7.35E-01	1.90E-01	1.97E-01	5.05E-02	pCi/g
17-07088-13	MSO	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	5.29E-01	1.94E-01	1.98E-01	1.21E-01	pCi/g
17-07088-14	MS	HTC-A03-S004-4248-01 MS	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	6.42E+00	8.71E-01	9.85E-01	7.46E-02	pCi/g
17-07088-15	MSD	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	6.02E+00	8.03E-01	9.11E-01	6.24E-02	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	7.34E-01	2.01E-01	2.08E-01	1.05E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	1.04E+00	2.49E-01	2.60E-01	9.75E-02	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	8.76E-01	2.07E-01	2.17E-01	5.72E-02	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	8.30E-01	2.16E-01	2.24E-01	5.70E-02	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/28/2017	17-07088	Uranium-233/234	EPA 908.0 Modified	1.36E+00	2.81E-01	2.97E-01	4.81E-02	pCi/g

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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:	17-07088
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
17-07088-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	5.07E-01	1.78E-01	1.82E-01	8.64E-02	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	-1.05E-02	3.19E-02	3.19E-02	8.69E-02	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	1.24E-01	9.14E-02	9.18E-02	7.75E-02	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	4.06E-02	4.92E-02	4.92E-02	5.99E-02	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	1.58E-01	1.02E-01	1.03E-01	8.66E-02	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	2.82E-01	1.41E-01	1.42E-01	8.10E-02	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	1.41E-01	9.52E-02	9.58E-02	6.65E-02	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	1.00E-01	7.57E-02	7.60E-02	7.04E-02	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	1.75E-01	1.17E-01	1.18E-01	1.11E-01	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	3.95E-02	4.78E-02	4.79E-02	5.82E-02	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	1.11E-01	7.94E-02	7.98E-02	5.89E-02	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	9.11E-02	7.28E-02	7.31E-02	7.81E-02	pCi/g
17-07088-13	MSO	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	9.60E-02	9.29E-02	9.32E-02	1.15E-01	pCi/g
17-07088-14	MS	HTC-A03-S004-4248-01 MS	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	6.24E-01	1.99E-01	2.04E-01	6.99E-02	pCi/g
17-07088-15	MSD	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	5.77E-01	1.85E-01	1.90E-01	7.69E-02	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	2.08E-01	1.18E-01	1.19E-01	1.16E-01	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	1.73E-01	1.06E-01	1.07E-01	9.66E-02	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	1.25E-01	8.31E-02	8.35E-02	7.89E-02	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	3.66E-02	5.08E-02	5.09E-02	7.72E-02	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/28/2017	17-07088	Uranium-235/236	EPA 908.0 Modified	2.57E-01	1.16E-01	1.17E-01	5.94E-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:	17-07088
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
17-07088-01	LCS	KNOWN	07/19/17 00:00	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	7.09E+00	2.55E-01			pCi/g
17-07088-01	LCS	SPIKE	07/19/17 00:00	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	5.74E+00	7.89E-01	8.89E-01	7.34E-02	pCi/g
17-07088-02	MBL	BLANK	07/19/17 00:00	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	3.92E-02	4.98E-02	4.99E-02	7.45E-02	pCi/g
17-07088-03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	4.77E-01	1.66E-01	1.70E-01	6.87E-02	pCi/g
17-07088-04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	5.27E-01	1.65E-01	1.69E-01	6.08E-02	pCi/g
17-07088-05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	8.26E-01	2.22E-01	2.30E-01	8.49E-02	pCi/g
17-07088-06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	1.55E+00	3.38E-01	3.56E-01	7.17E-02	pCi/g
17-07088-07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	1.06E+00	2.59E-01	2.70E-01	7.70E-02	pCi/g
17-07088-08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	6.51E-01	1.82E-01	1.88E-01	6.48E-02	pCi/g
17-07088-09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	7.90E-01	2.31E-01	2.38E-01	9.33E-02	pCi/g
17-07088-10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	7.97E-01	2.06E-01	2.14E-01	4.70E-02	pCi/g
17-07088-11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	8.24E-01	2.14E-01	2.22E-01	6.43E-02	pCi/g
17-07088-12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	6.76E-01	1.81E-01	1.87E-01	5.93E-02	pCi/g
17-07088-13	MSO	HTC-A03-S004-4248-01	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	4.57E-01	1.75E-01	1.78E-01	8.13E-02	pCi/g
17-07088-14	MS	HTC-A03-S004-4248-01 MS	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	6.64E+00	8.95E-01	1.01E+00	7.43E-02	pCi/g
17-07088-15	MSD	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	6.57E+00	8.61E-01	9.81E-01	7.25E-02	pCi/g
17-07088-16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	7.56E-01	2.02E-01	2.09E-01	8.93E-02	pCi/g
17-07088-17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	1.08E+00	2.52E-01	2.64E-01	7.46E-02	pCi/g
17-07088-18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	7.54E-01	1.90E-01	1.98E-01	6.93E-02	pCi/g
17-07088-19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	8.92E-01	2.26E-01	2.35E-01	7.10E-02	pCi/g
17-07088-20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	7/18/2017	8/28/2017	17-07088	Uranium-238	EPA 908.0 Modified	1.12E+00	2.47E-01	2.60E-01	4.18E-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

SECTION V

ANALYTICAL STANDARD

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

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, 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

Method of measurement (see reverse of this certificate)

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

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

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

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

Not measured

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

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

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

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

Approved Signatory

Roger Wiltshire

Project Ref. AE2315

Roger Wiltshire

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

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

CURRENT DATE: 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 — Date Signed: 9-Jan-02

IPL Ref. No.: 867-54

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

CURRENT DATE: 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

NOTES:

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

Expiration Date: August 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

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Received
OCT 14 1991
TMA/Eberline
Oak Ridge Lab

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

Description of Solution

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

Radioimpurities

See attached technical data sheet

Radioactive Daughters

See attached technical data sheet

Radionuclide Concentration

0.207 µCi/gram.

Method of Calibration

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

Uncertainty of Measurement

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

NIST Traceability

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

Notes

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

QUALITY CONTROL

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

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

CURRENT DATE: 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 | **Reference Date** 11/1/1991 0:00

Parent Solution Conc. 2.30E+03 dpm/ml

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

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

SECONDARY VOLUMETRIC DILUTION

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

Final Activity Concentration: 2.2999E+01 dpm/ml

NOTES:

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

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

EBERLINE SERVICES

QUALITY CONTROL PROGRAM
MP-009

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

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

CURRENT DATE: 8/16/2017 0:00

SOLUTION REFERENCE #: IPL 867-54

SOLUTION #: Th-18

Principal Radionuclide	Half Life, Years	Half Life, Days
^{228}Th	7.340E+03	2.681E+06

Radionuclide: ^{228}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

$^{228}Th(NO_3)_4$ 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

NOTES:

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

Expiration Date: August 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, %	u_B, %	U, %*	Calibration Method**
Am-241	59.5	1.580E+06	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+02	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	4.659E+01	6.003E+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	2.219E+03	1.914E+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
17-07088	UUISO Apex	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		83.01%	15.36%	100.00%	3.60%	7.32E+00	2.64E-01	6.08E+00	9.33E-01	U-8a	3.20E+01	3.60E+00	5.08E-01
U-238		80.95%	15.48%	100.00%	3.60%	7.09E+00	2.55E-01	5.74E+00	8.89E-01	U-8a	3.10E+01	3.60E+00	5.08E-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)
U-234	2.61	81.31%	7.25E+00	2.61E-01	6.42E+00	9.85E-01	5.29E-01	1.98E-01	1.01E+00	U-8a	3.20E+01	3.60	5.08E-01
U-238	1.57	88.09%	7.02E+00	2.53E-01	6.64E+00	1.01E+00	4.57E-01	1.78E-01	1.01E+00	U-8a	3.10E+01	3.60	5.08E-01

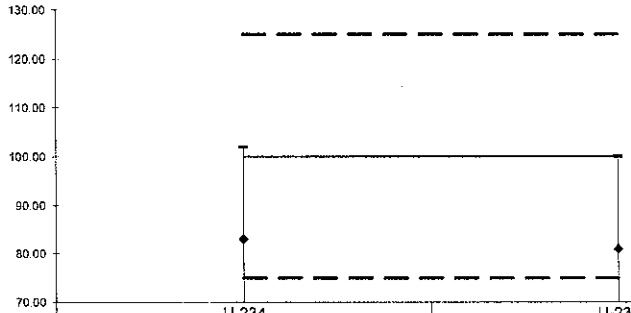
Duplicate Results / QC Summary

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Duplicate Result	Duplicate CSU	LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
U-234	1.96	47.48	4.05E-01	1.47E-01	6.57E-01	2.05E-01	0.83	OK				INV	OK
U-238	0.40	9.84	5.27E-01	1.69E-01	4.77E-01	1.70E-01	0.81	OK				OK	OK
U-235	1.57	101.42	4.06E-02	4.92E-02	1.24E-01	9.18E-02		OK				NA	OK

0050

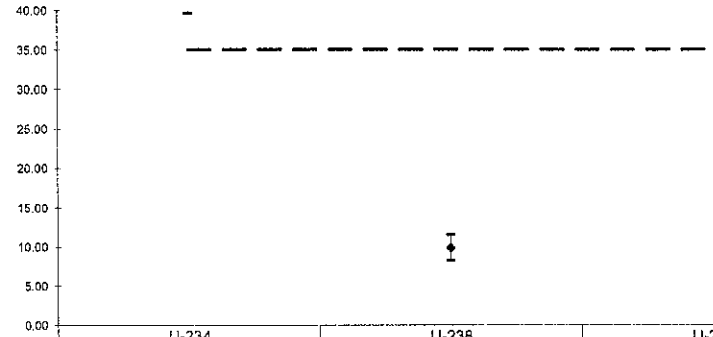
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	UUISO Apex	1	pCi	g	Weston Solutions, Inc.

LCS % Recovery



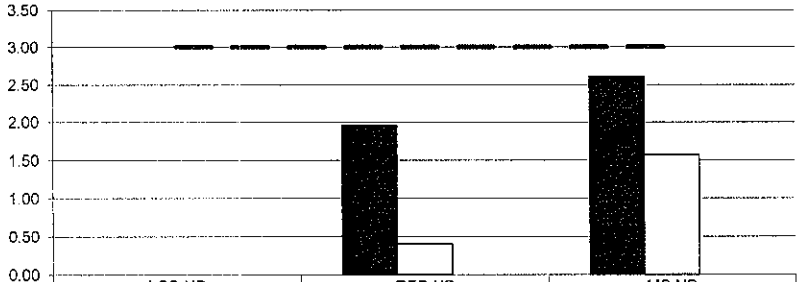
	U-234	U-238
Lower Error	64.06	61.86
Upper Error	101.97	100.03
%R	83.01	80.95
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



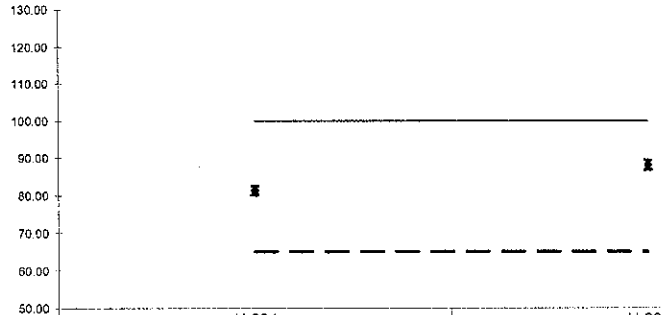
	U-234	U-238	U-235
Lower Error	55.37	11.50	144.83
Upper Error	39.60	8.18	58.01
RPD	47.48	9.84	101.42
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
U-234	0.00	1.96	2.61
U-238	0.00	0.40	1.57
	0.00	0.00	0.00
UCL	3	3	3

Matrix Spike % Recovery



	U-234	U-238
Lower Error	80.07	86.82
Upper Error	82.56	89.36
%R	81.31	88.09
LCL	65	65
Mean	100	100
UCL	135	135

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	UUISO Apex	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	83.01%	15.36%	100.00%	3.60%	7.32E+00	2.64E-01	6.08E+00	9.33E-01	U-8a	3.20E+01	3.60E+00	5.08E-01
U-238	80.95%	15.48%	100.00%	3.60%	7.09E+00	2.55E-01	5.74E+00	8.89E-01	U-8a	3.10E+01	3.60E+00	5.08E-01

Matrix Spike Duplicate

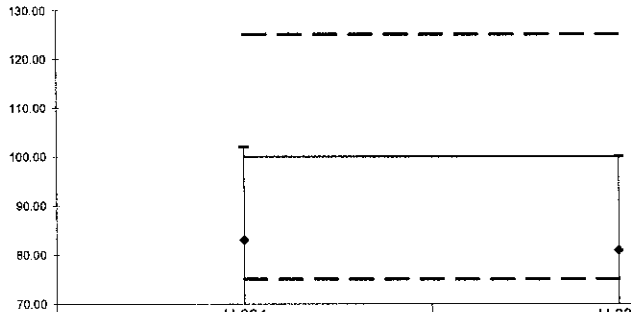
Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)
U-234	3.46	76.64%	7.16E+00	2.58E-01	6.02E+00	9.11E-01	5.29E-01	1.98E-01	1.02E+00	U-8a	3.20E+01	3.60	5.07E-01
U-238	1.60	88.10%	6.94E+00	2.50E-01	6.57E+00	9.81E-01	4.57E-01	1.78E-01	1.02E+00	U-8a	3.10E+01	3.60	5.07E-01

Duplicate Results / QC Summary

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Duplicate Result	Duplicate CSU	LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
U-234	1.96	47.48	4.05E-01	1.47E-01	6.57E-01	2.05E-01	0.83	OK				INV	OK
U-238	0.40	9.84	5.27E-01	1.69E-01	4.77E-01	1.70E-01	0.81	OK				OK	OK
U-235	1.57	101.42	4.06E-02	4.92E-02	1.24E-01	9.18E-02		OK				NA	OK

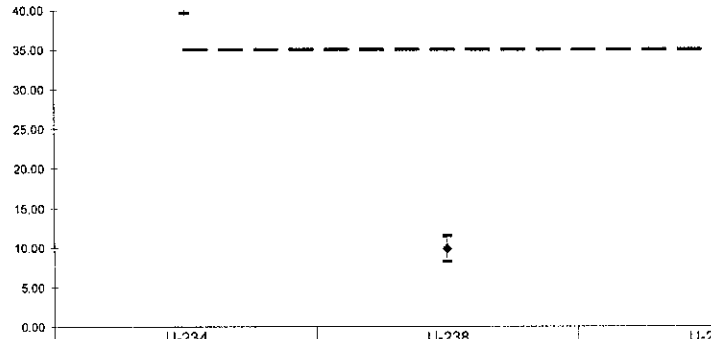
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	UUISO Apex	1	pCi	g	Weston Solutions, Inc.

LCS % Recovery



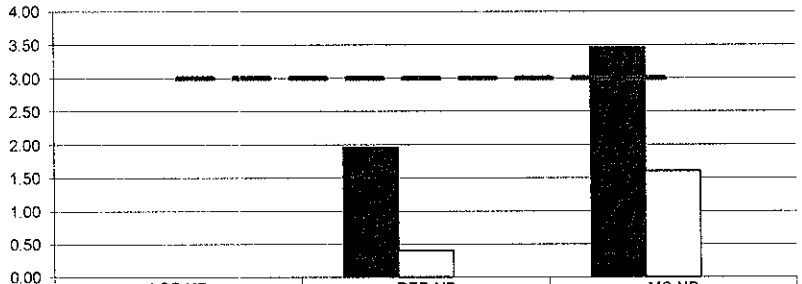
	U-234	U-238
Lower Error	64.06	61.86
Upper Error	101.97	100.03
%R	83.01	80.95
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



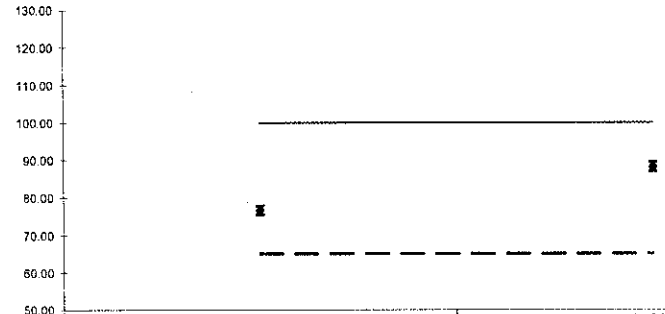
	U-234	U-238	U-235
Lower Error	55.37	11.50	144.83
Upper Error	39.60	8.18	58.01
RPD	47.48	9.84	101.42
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
U-234	0.00	1.96	3.46
U-238	0.00	0.40	1.60
	0.00	0.00	0.00
UCL	3	3	3

Matrix Spike % Recovery



	U-234	U-238
Lower Error	75.48	86.87
Upper Error	77.81	89.34
%R	76.64	88.10
LCL	65	65
Mean	100	100
UCL	135	135

0053

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	ThISO Apex	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		119.63%	18.61%	100.00%	3.60%	4.82E+00	1.73E-01	5.76E+00	1.07E+00	Th-8b	1.04E+02	3.60E+00	1.03E-01
TH-230		119.84%	19.98%	100.00%	2.70%	5.40E+00	1.46E-01	6.47E+00	1.29E+00	Th-1b	2.35E+01	2.70E+00	5.10E-01
TH-232		123.46%	18.20%	100.00%	3.60%	4.82E+00	1.73E-01	5.95E+00	1.08E+00	Th-8b	1.04E+02	3.60E+00	1.03E-01

Matrix Spike

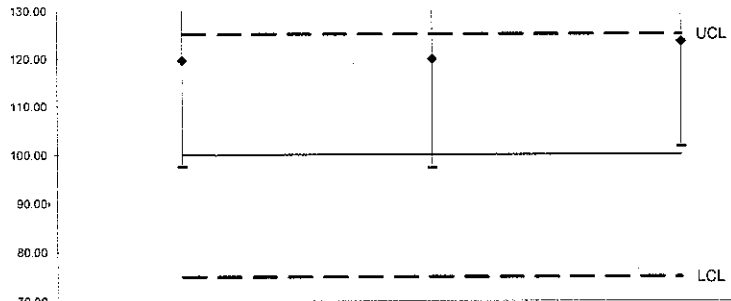
Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)
TH-228	0.22	103.01%	6.16E+00	2.22E-01	6.74E+00	1.64E+00	3.95E-01	1.87E-01	1.01E+00	Th-8b	1.04E+02	3.60	1.33E-01
TH-230	0.37	105.30%	5.35E+00	1.44E-01	5.83E+00	1.50E+00	1.97E-01	1.23E-01	1.01E+00	Th-1b	2.35E+01	2.70	5.10E-01
TH-232	0.08	99.03%	6.16E+00	2.22E-01	6.35E+00	1.53E+00	2.51E-01	1.37E-01	1.01E+00	Th-8b	1.04E+02	3.60	1.33E-01

Duplicate Results / QC Summary

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Duplicate Result	Duplicate CSU	LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
TH-228	1.87	57.62	7.81E-01	3.11E-01	4.31E-01	1.93E-01	1.20	OK				INV	OK
TH-230	1.15	34.20	7.06E-01	2.87E-01	5.00E-01	2.05E-01	1.20	OK				INV	OK
TH-232	1.62	49.76	6.69E-01	2.70E-01	4.02E-01	1.75E-01	1.23	OK				INV	OK

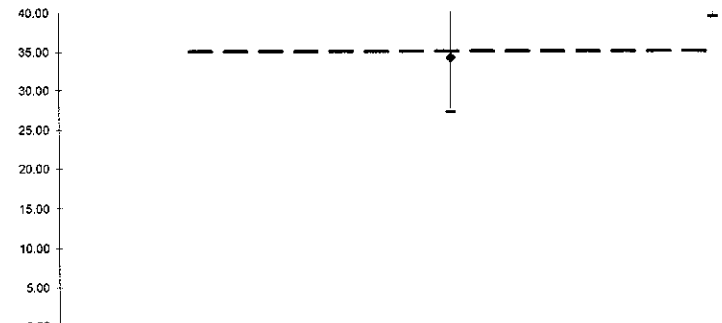
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	ThISO Apex	1	pCi	g	Weston Solutions, Inc.

LCS % Recovery



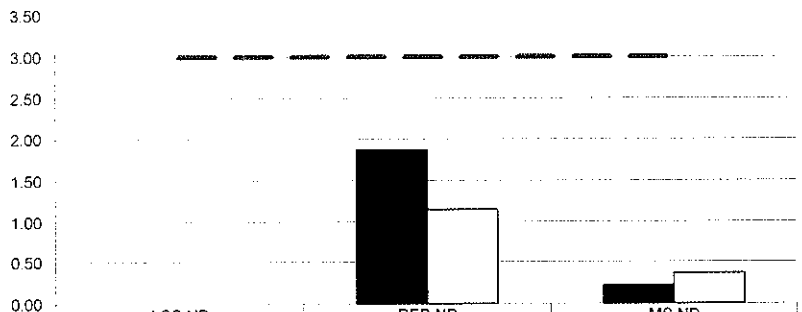
	TH-228	TH-230	TH-232
Lower Error	97.42	97.17	101.65
Upper Error	141.84	142.52	145.26
%R	119.63	119.84	123.46
LCL	75	75	75
Mean	100	100	100
UCL	125	125	125

Replicate Sample RPD



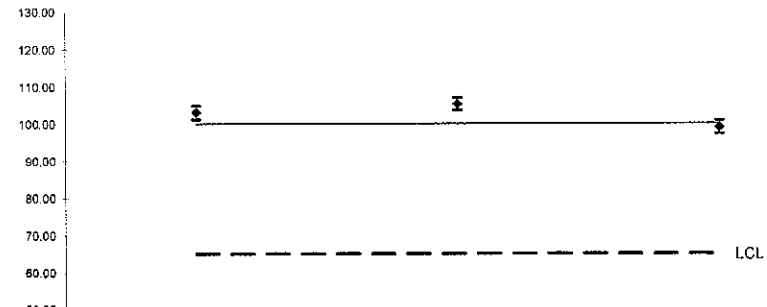
	TH-228	TH-230	TH-232
Lower Error	69.61	41.18	60.09
Upper Error	45.63	27.22	39.43
RPD	57.62	34.20	49.76
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
TH-228	0.00	1.87	0.22
TH-230	0.00	1.15	0.37
UCL	3	3	3

Matrix Spike % Recovery



	TH-228	TH-230	TH-232
Lower Error	101.15	103.66	97.28
Upper Error	104.88	106.95	100.78
%R	103.01	105.30	99.03
LCL	65	65	65
Mean	100	100	100
UCL	135	135	135

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	ThISO Apex	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		119.63%	18.61%	100.00%	3.60%	4.82E+00	1.73E-01	5.76E+00	1.07E+00	Th-8b	1.04E+02	3.60E+00	1.03E-01
TH-230		119.84%	19.98%	100.00%	2.70%	5.40E+00	1.46E-01	6.47E+00	1.29E+00	Th-1b	2.35E+01	2.70E+00	5.10E-01
TH-232		123.46%	18.20%	100.00%	3.60%	4.82E+00	1.73E-01	5.95E+00	1.08E+00	Th-8b	1.04E+02	3.60E+00	1.03E-01

Matrix Spike Duplicate

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)
TH-228	1.28	123.64%	7.17E+00	2.58E-01	9.26E+00	2.58E+00	3.95E-01	1.87E-01	1.03E+00	Th-8b	1.04E+02	3.60	1.58E-01
TH-230	0.50	107.39%	5.24E+00	1.42E-01	5.83E+00	1.50E+00	1.97E-01	1.23E-01	1.03E+00	Th-1b	2.35E+01	2.70	5.10E-01
TH-232	0.36	105.54%	7.17E+00	2.58E-01	7.82E+00	2.17E+00	2.51E-01	1.37E-01	1.03E+00	Th-8b	1.04E+02	3.60	1.58E-01

Duplicate Results

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Duplicate Result	Duplicate CSU
TH-228	1.87	57.62	7.81E-01	3.11E-01	4.31E-01	1.93E-01
TH-230	1.15	34.20	7.06E-01	2.87E-01	5.00E-01	2.05E-01
TH-232	1.62	49.76	6.69E-01	2.70E-01	4.02E-01	1.75E-01

QC Summary

LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
1.20	OK				INV	OK
1.20	OK				INV	OK
1.23	OK				INV	OK

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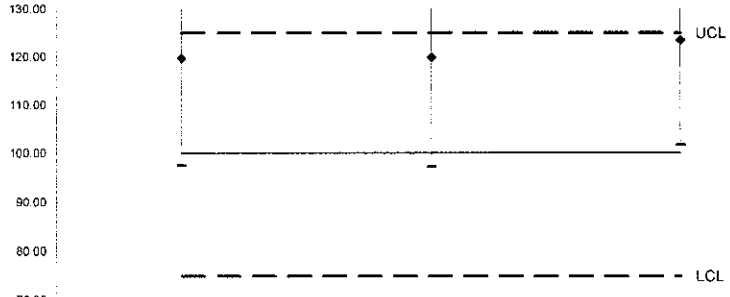
Version

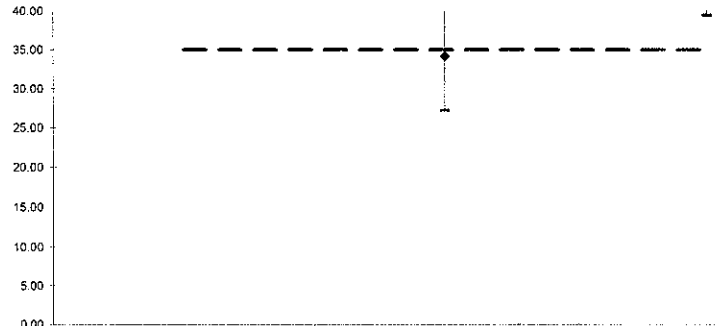
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	ThISO Apex	1	pCi	g	Weston Solutions, Inc.

LCS % Recovery



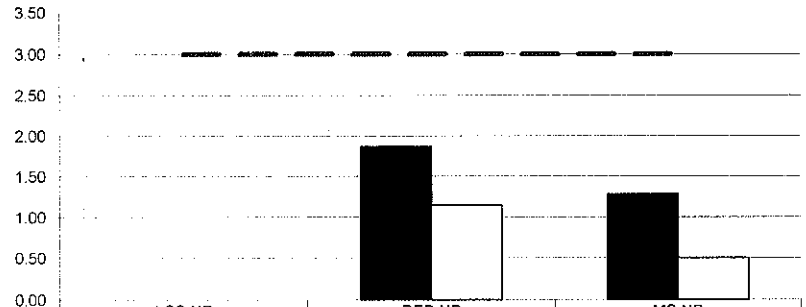
	TH-228	TH-230	TH-232
Lower Error	97.42	97.17	101.65
Upper Error	141.84	142.52	145.26
%R	119.63	119.84	123.46
LCL	75	75	75
Mean	100	100	100
UCL	125	125	125

Replicate Sample RPD



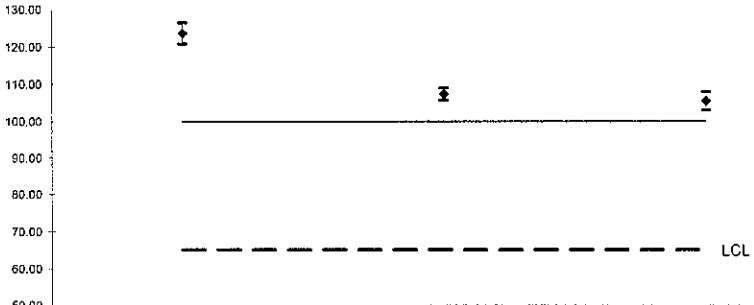
	TH-228	TH-230	TH-232
Lower Error	69.61	41.18	60.09
Upper Error	46.63	27.22	39.43
RPD	57.62	34.20	49.76
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
TH-228	0.00	1.87	1.28
TH-230	0.00	1.15	0.50
UCL	3	3	3

Matrix Spike % Recovery



	TH-228	TH-230	TH-232
Lower Error	120.80	105.75	103.11
Upper Error	126.48	109.03	107.98
%R	123.64	107.39	105.54
LCL	65	65	65
Mean	100	100	100
UCL	135	135	135

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	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		91.25%	7.93%	100.00%	3.89%	1.35E+02	5.27E+00	1.23E+02	9.79E+00	GAS-1402	1.35E+02	5.27E+00	7.36E+02
CS-137		94.59%	13.26%	100.00%	4.01%	8.44E+01	3.38E+00	7.98E+01	1.06E+01	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)

Replicate Sample

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU
AC-228	0.54	7.66	9.32E-01	1.92E-01	1.01E+00	1.88E-01
K-40	0.40	3.67	1.91E+01	2.45E+00	1.99E+01	2.51E+00
RA-226	0.33	4.53	7.21E-01	1.48E-01	7.55E-01	1.31E-01

QC Summary

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

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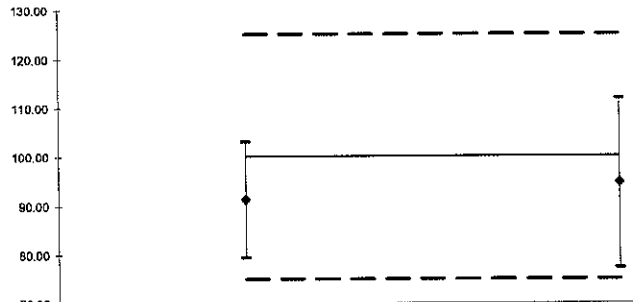
Version

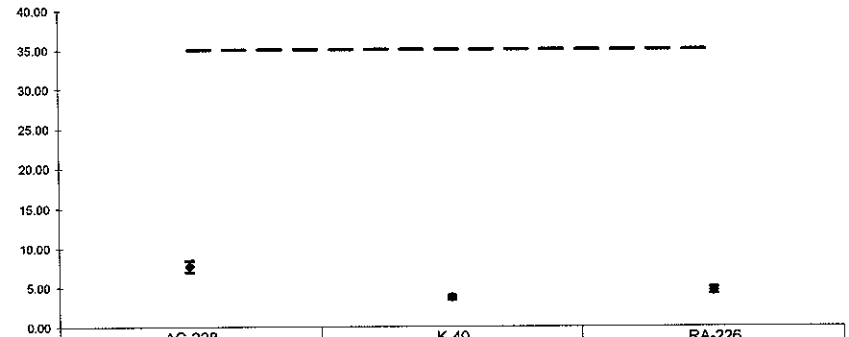
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
17-07088	Gamma	2	pCi	g	Weston Solutions, Inc.

LCS % Recovery



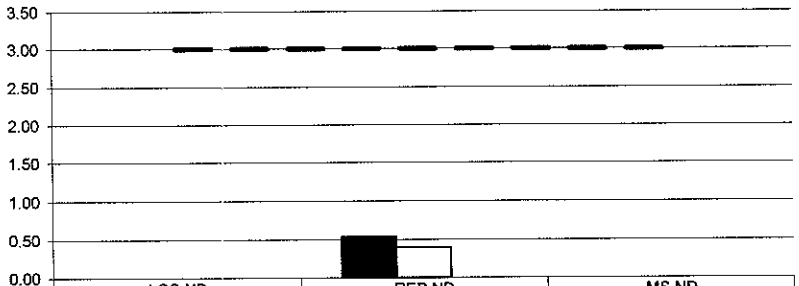
	CO-60	CS-137
Lower Error	79.42	77.32
Upper Error	103.07	111.86
%R	91.25	94.59
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	AC-228	K-40	RA-226
Lower Error	8.41	3.90	4.96
Upper Error	6.91	3.44	4.10
RPD	7.66	3.67	4.53
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
CO-60	0.00	0.54	0.00
CS-137	0.00	0.40	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike

0059

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	17-07088
Analysis Code	UUISO
Run Number	1

#	Date	Dept	User	Notes
1	08/11/17 08:23	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
8/11/17

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	17-07088
Analysis Code	UUISO
Run Number	1

#	Date	Dept	User	Notes
1	08/11/17 08:23	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	08/25/17 18:26	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.

8/25/17

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	17-07088
Analysis Code	UUISO
Run Number	1

#	Date	Dept	User	Notes
1	08/11/17 08:23	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	08/25/17 18:26	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	08/28/17 05:20	CHEM	TSMITH	Followed steps 12.1.7 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Uranium)

8-7-17
JM

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
17-07088	
Analysis Code	Run
UUISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
019093P	Hydrofluoric Acid	Reagent Grade	JHARVEY	8/11/2017
018971P	Nitric Acid	Reagent Grade	JHARVEY	8/11/2017
019133P	Perchloric Acid	Reagent Grade	JHARVEY	8/11/2017
018550P	Sulfuric Acid	Reagent Grade	JHARVEY	8/11/2017
017344P	Anion Exchange Resin	Reagent Grade	JDEMELAS	8/25/2017
019201S	HCl - HF	6.5N - 0.04N	JDEMELAS	8/25/2017
019221S	HCl - NH4I	8N - 0.1M	JDEMELAS	8/25/2017
019134D01	Hydrochloric Acid	0.5N	JDEMELAS	8/25/2017
019202S	Hydrochloric Acid	6.5N	JDEMELAS	8/25/2017
019219S	Hydrochloric Acid	8N	JDEMELAS	8/25/2017
019220S	HCl - HF	6.5N - 0.04N	JDEMELAS	8/25/2017
019183P	Hydrochloric Acid	Reagent Grade	JDEMELAS	8/25/2017
019187S	Carbon substrate	Solution	TSMITH	8/28/2017
019063P	Ethyl Alcohol	1	TSMITH	8/28/2017
019093P	Hydrofluoric Acid	Reagent Grade	TSMITH	8/28/2017
018890S	Neodymium Carrier	1 mg/ml	TSMITH	8/28/2017
019038P	Titanous Chloride	Reagent Grade	TSMITH	8/28/2017

Alpha #1

Date	Sample #	Client	Load Time	CT Time	Analyzed	Tech
8/24/17	1707145A(12-17)	Auxier	1124	2hr50min	UU	KB
8/25	Daily Pulse	LAB	0457	1hr	NA	C
8/25	SECCAL ~~(3-4)~~ (0-3,5)	LAB	~~0512~~ 0747	2hr5min	NA	C
8/25/17	Regentest R106A(1)	Lab	1021	1hr	UUNT	KB
8/25/17	1708017A(3-4)	Republic Services	1021	2hr50min	UU	KB
8/25/17	1707088A(1-3)	Weston	1022	2hr50min	Th	KB
8/25/17	1707088A(6-11)	Weston	1315	2hr50min	Th	KB
8/25/17	System Blkgd	Lab	1703	16.40 hr	2	KB
8/26	Daily Pulse	LAB	0945	1hr	NA	—
8/28	Daily Pulse	LAB	0518	1hr	NA	—
8/28	1708026A(1-3,5)	UCOR	0828	2hr5min	Ani 241	—
8/28	1708026A(1,2)	UCOR	0828	2hr5min	Ani 243	—
8/28/17	1708026A(1-3,5)	UCOR	1127	2hr50min	Np	KB
8/28/17	1708026A(1-2)	UCOR	1128	2hr50min	Th	KB
8/28/17	1707088A(14-19)	Weston	1432	2hr50min	UU	KB

Alpha #3

Date	Sample	Client	Inject time	Collection	Analyst	Tech
8/25/17	1707088A(17-20)	Weston	1408	2hr 50 –	TH	KB
8/25/17	1708035A(1-4)	TWPC	1410	2hr 50 –	UU	KB
8/25/17	System Blkgd	Lab	1703	16.70 hr	–	KB
8/26	Daily Pulse	LAB	0945	1 –	–	–
8/26	1708013A(1-4)	UCOR	1004	2hr 50 –	UU250	C
8/26	1708008A(1-4)	Omega	1004	2hr 50 –	Ph241	C
8/26	1708035A(1-4)	TWPC	1006	2hr 50 –	Ph241	C
8/28	Daily Pulse	LAB	0518	1 –	–	–
8/28	1708026A(3,5)	UCOR	0828	2hr 50 –	Ph243	C
8/28	1708026A(1-3,5,12)	UCOR	0828	2hr 50 –	Ph250	C
8/28	1708026A(1-3,5)	UCOR	0829	2hr 50 –	Ph242	C
8/28	1708110A(1-5)	United	0830	2hr 50 –	Ph250	C
8/28	1708035A(1-6,17,12)	TWPC	0830	2hr 50 –	Ph250	C
8/28/17	1708026A(3,5)	UCOR	1128	2hr 50 –	TH	KB
8/28/17	1708026A(1-3,5)	UCOR	1129	2hr 50 –	TH229	KB
8/28/17	1708026A(1-3,5)	UCOR	1129	2hr 50 –	UU	KB
8/28/17	1708026A(5)	UCOR	1130	2hr 50 –	UUNT	KB
8/28/17	1707088A(1-13)	Weston	1131	2hr 50 –	UU	KB
8/28/17	1707088A(20)	Weston	1432	2hr 50 –	UU	KB
8/28/17	1708052A(1-13)	TBE	1433	2hr 50 –	Rak	KB
8/28/17	1708030A(1-8)	MPA	1434	2hr 50 –	Rak	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	17-07088
Analysis Code	ThISO
Run Number	1

#	Date	Dept	User	Notes
1	08/11/17 08:23	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
8/11/17

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	17-07088
Analysis Code	ThISO
Run Number	1

#	Date	Dept	User	Notes
1	08/11/17 08:23	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	08/24/17 18:11	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.

8/24/17

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	17-07088
Analysis Code	ThISO
Run Number	1

#	Date	Dept	User	Notes
1	08/11/17 08:23	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	08/24/17 18:11	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	08/25/17 05:19	CHEM	TSMITH	Followed steps 12.2.5 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Thorium)

8-25-17
JW

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
17-07088	
Analysis Code	Run
ThISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
019093P	Hydrofluoric Acid	Reagent Grade	JHARVEY	8/11/2017
018971P	Nitric Acid	Reagent Grade	JHARVEY	8/11/2017
019133P	Perchloric Acid	Reagent Grade	JHARVEY	8/11/2017
018550P	Sulfuric Acid	Reagent Grade	JHARVEY	8/11/2017
017344P	Anion Exchange Resin	Reagent Grade	JDEMELAS	8/24/2017
019134P	Hydrochloric Acid	Reagent Grade	JDEMELAS	8/24/2017
019213S	Hydrochloric Acid	8N	JDEMELAS	8/24/2017
019214S	Nitric Acid	8N	JDEMELAS	8/24/2017
019204S	Nitric Acid	8N	JDEMELAS	8/24/2017
019074P	Nitric Acid	Reagent Grade	JDEMELAS	8/24/2017
019187S	Carbon substrate	Solution	TSMITH	8/25/2017
019106S	Cerrium Carrier	0.1mg/ml	TSMITH	8/25/2017
019063P	Ethyl Alcohol	1	TSMITH	8/25/2017
019093P	Hydrofluoric Acid	Reagent Grade	TSMITH	8/25/2017

Alpha #1

Date	Sample #	Client	Load Time	CT Time	Analyzed	Tech
8/24/17	1707145A(12-17)	Auxier	1124	2hr 50min	UU	KB
8/25	Daily Pulsar	LAB	0457	1hr	NA	C
8/25	SECCAL ~~[illegible]~~ (on 3-15)	LAB	~~0512~~ 0747	2hr	NA	C
8/25/17	Regentest R106A(1)	Lab	1021	1hr	UUNT	KB
8/25/17	1708017A(3-4)	Republic Services	1021	2hr 50min	UU	KB
8/25/17	1707088A(1-3)	Weston	1022	2hr 50min	Th	KB
8/25/17	1707088A(6-11)	Weston	1315	2hr 50min	Th	KB

Alpha #3

Date	Sample #	Client	Load Time	CT Time	Analyst	Tech
8/23/17	1708007A(2-4)	UCOR	1131	2hr50	UU	KB
8/23/17	1708006A (1-4)	UCOR	1132	2hr50	Th	KB
8/23/17	1708006A (1-4)	UCOR	1132	2hr50	Th229	KB
8/23/17	1708006A(1-4)	UCOR	1133	2hr50	Np	KB
8/23/17	1708006A (1-4)	UCOR	1133	2hr50	Pu242	KB
8/23/17	1707087A(1-5)	Weston	1134	2hr50	Th	KB
8/23/17	1708101A (1-4)	USA	1431	2hr50	Rab	KB
8/23/17	1707087A(6-20)	Weston	1433	2hr50	Th	KB
8/24	Daily Pulse	LAB	0520	1	[illegible]	—
8/24	1708008A(1-5)	Omega	0824	2hr5	PuIso	—
8/24	1708008A(1-4)	Omega	0825	2hr5	Pu242	C
8/24	1708008A(1-4)	Omega	0825	2hr5	UUIso	C
8/24	1707145A(1-4)	Auxier	0826	2hr5	UUIso	C
8/24/17	1707145A(18)	Auxier	1125	2hr50	UU	KB
8/24/17	Regentest R105A(1)	Lab	1126	1hr	UUNT	KB
8/24/17	1708086A (1-4)	Indust+Env.	1126	2hr50	Rab	KB
8/24/17	1708107A (1-4)	USA	1129	2hr50	Rab	KB
8/24/17	1707145A(1-14)	Auxier	1128	2hr50	Th	KB
8/24/17	1708010A(1-4)	Access	1426	2hr50	Rab	KB
8/24/17	1707145A(15-18)	Auxier	1426	2hr50	Th	KB
8/25	Daily Pulse	LAB	0457	1	[illegible]	—
8/25	SELCAL(33-48)	LAB	0513	2hr5	N/A	C
8/25	SELCAL (49-60)	LAB	1113	2hr5	N/A	—
8/25	1708017A(1-4)	Rep. Serv.	0623	2hr5	Rab	C
8/25	1708101A(1-4)	USA	0814	2hr5	UUIso	C
8/25	1707154A(1-4)	Div. Sci.	0815	2hr5	UUIso	—
8/25	1707086B(1-3,10-12)	Weston	0816	2hr5	UUIso	C
8/25	1708035A(1-4)	TWPC	0817	2hr5	PuIso	—
8/25	1708017A(1,2)	Rep. Serv.	0818	2hr5	UUIso	—
8/25/17	1707162A(1-8)	Accutest	1111	2hr50	Rab	KB
8/25/17	1708026A(1-3,5)	UCOR	1112	2hr50	Rab	KB
8/25/17	1707088A(4,5)	Weston	1112	2hr50	Th	KB

Alpha #3

Date	Sample #	Client	Fixed Time	CT Time	Analyzed	Tech
8/25/17	1707088A(12-20)	Weston	1408	2h.50 –	TL	KB
8/25/17	1708035A(1-4)	TWPC	1410	2h.50 –	UU	KB

GAMMA NOTES

GE 2

DATE	SAMPLE #	Client	Load Time	CT. Time	Analysis	Tech
~~8/17~~	~~GAS / 8/17~~	~~LAB~~				
~~8/17~~	~~Blank~~	~~LAB~~				
8/19/17	System Blkgd	Lab	1244	24 hrs	r	KB
8/21	GAS 1601	LAB	0516	15	r	C
8/21	DailyR	LAB	0541	15	r	C
~~8/21~~	~~1707086-12~~	~~Weston~~	~~Clear~~	~~2hr~~	~~r~~	~~C~~
8/21	GAS 1601	LAB	0836	15	r	C
8/21	DailyR	LAB	0853	15	r	C
8/21	1707085-06	Weston	0910	2hr	r	—
8/21	1708081-01	USA	1011	15	Br	—
8/21	1708081-04	USA	1026	15	Br	—
8/21	1708082-03	USA	1042	15	Br	C
8/21	1708082-06	USA	1058	15	Br	—
8/21	~~1707~~ 1707085-12	Weston	1114	2hr	r	—
8/21/17	1707085-14	Weston	1217	1hr	r	KB
8/21/17	1707085-18	Weston	1325	1hr	r	KB
8/21/17	1707086-03	Weston	1420	1hr	r	KB
8/21/17	1707086-04	Weston	1521	1hr	r	KB
8/21/17	1708091-03	Smoky Mt. Solutns.	1623	2hr	r	KB
8/21/17	1708091-04	Smoky Mt. Solutns	1823	2hr	r	KB
8/22	GAS 1601	LAB	0510	15	r	C
8/22	DailyR	LAB	0533	15	r	C
8/22	1707086-17	Weston	0553	2hr	r	—
8/22	1707161-03	USA	0655	2hr	r	
8/22	1707161-04	USA	0855	2hr	r	C
8/22	1707087-05	Weston	0901	2hr	r	—
8/22	1707087-04	Weston	1004	2hr	r	—
8/22	1707087-13	Weston	1106	2hr	r	—
8/22/17	1707087-17	Weston	1209	1hr	r	KB
8/22	1707088-03	Weston	1311	2hr	r	C
8/22	1707088-04	Weston	1413	2hr	r	C
8/22/17	1708002-03	MPA	1519	15 mins	Br	KB
8/22/17	1708002-07	MPA	1536	15 mins	Br	KB
8/22/17	1708006-04	Ucon	1552	15 —	Br	KB

GE 4

DATE	Sample #	Client	Load Time	CTI Time	Analysis	Tech
8/21	Ed 16	LAB	0516	15	✓	C
8/21	Daily R	LAB	0546	15	✓	
8/21	1707126-14	Weston	0605	1h	✓	—
8/21	1707126-16	Weston	0707	1h	✓	—
8/21	1707085-03	Weston	0810	1h	✓	—
8/21	1707085-04	Weston	0911	1h	✓	—
8/21	1708081-03	USA	1013	15	Ba	—
8/21	1708082-02	USA	1028	15	Ba	—
8/21	1708082-05	USA	1044	15	Ba	—
8/21	1707085-11	Weston	1101	1h	✓	C
8/21/17	1707085-01	Weston	1203	30mins	✓	KB
8/21/17	1707085-02	Weston	1235	1hr	✓	KB
8/21/17	1707085-20	Weston	1346	1hr	✓	KB
8/21/17	1707086-01	Weston	1448	30mins	✓	KB
8/21/17	1707086-02	Weston	1520	1hr	✓	KB
8/21/17	1707086-09	Weston	1621	1hr	✓	KB
~~8/21/17~~	~~1707086~~	~~Weston~~	~~KB 8/21/17~~	~~1hr~~	~~✓~~	~~KB~~
8/21/17	1708091-01	Smoky Mt. Solutn.	1722	30min	✓	KB
8/21/17	1708086-01	Indust. + Env.	1754	30mins	✓	KB
8/21/17	1708091-02	Smoky Mt. Solutn.	1826	4hrs	✓	KB
8/22	Ed 16	LAB	0510	15	✓	C
8/22	Daily R	LAB	0537	15	✓	—
8/22	Ed 16	LAB	0550	15	✓	—
8/22	1707086-19	Weston	0611	1h	✓	—
8/22	1707161-06	USA	0714	1h	✓	—
8/22	1707161-01	USA	0816	3h	✓	—
8/22	1707087-01	Weston	0848	3h	✓	—
8/22	1707087-02	Weston	0920	1h	✓	—
8/22	1707087-09	Weston	1021	1h	✓	—
8/22	1707087-15	Weston	1121	1h	✓	—
8/22/17	1707087-19	Weston	1223	1hr	✓	KB
8/22	1707088-02	Weston	1324	1h	✓	C
8/22/17	1707088-01	Weston	1425	30mins	✓	KB

GE3

DATE	Sample #	Client	Load Time	CT. Time	Analysis	Tech
8/19/17	System Blkgd	Lab	1245	24 hrs	✓	KB
8/21	~~GPS~~/1602	LAB	0516	15	✓	✓
8/21	Daily R	LAB	0546	15	✓	
8/21	1707126-13	Weston	0605	1h	✓	—
8/21	1707126-15	Weston	0707	1h	✓	—
8/21	1707126-18	Weston	0810	1h	✓	—
8/21	1707085-07	Weston	0911	1h	✓	—
8/21	1708081-02	USA	1013	15	Ba	—
8/21	1708082-01	USA	1028	15	Ba	—
8/21	1708082-04	USA	1044	15	Ba	—
8/21	1707085-08	Weston	1101	1h	✓	—
8/21/17	1707085-14	Weston	1203	1h	✓	KB
8/21/17	1707085-19	Weston	1223	1h	✓	KB
8/21/17	1707086-06	Weston	1424	1h	✓	KB
8/21/17	1707086-08	Weston	1524	1h	✓	KB
8/21/17	1707086-13	Weston	1625	1h	✓	KB
8/21/17	1707086-15	Weston	1726	1h	✓	KB
8/21/17	1708086-02	Indust. + Env.	1827	4 hrs	✓	KB
8/22	~~GPS~~/1602	LAB	0510	15	✓	✓
8/22	Daily R	LAB	0533	15	✓	
8/22	1707086-18	Weston	0550	1h	✓	—
8/22	1707161-05	USA	0655	1h	✓	—
8/22	1707161-02	USA	0759	1h	✓	—
8/22	1707087-06	Weston	0901	1h	✓	—
8/22	1707087-08	Weston	1004	1h	✓	—
8/22	1707087-14	Weston	1106	1h	✓	—
8/22/17	1707087-18	Weston	1208	1h	✓	KB
8/22	1707088-05	Weston	1311	1h	✓	—
8/22/17	1707088-07	Weston	1413	1hr	✓	KB
8/22/17	1708002-04	MPA	1519	15 mins	Ba	KB
8/22/17	1708006-01	UCOR	1534	15 mins	Ba	KB
8/22/17	1708011-01	MPA	1553	15 mins	Ba	KB
8/22/17	1708011-09	MPA	1610	15 —	Ba	
	1707088-09	Weston	1626	1h	✓	KB

GE 4

DATE	SAMPLE #	Client	Lost Time	CT. Time	Analysis	Tech
8/22/17	1708002-01	MPA	1454	15 mins	Ba	KB
8/22/17	1708002-05	MPA	1519	15 mins	Ba	KB
8/22/17	1708006-02	UCOR	1536	15 mins	Ba	KB
8/22/17	1708011-02	MPA	1553	15 mins	Ba	KB
8/22/17	1708011-05	MPA	1610	15 min	Ba	KB
8/22/17	1707088-10	Weston	1626	1 hr	r	KB
8/22/17	1707088-13	Weston	1727	1 hr	r	KB
8/22/17	1708095-02	Eden Foods	1828	2 hr	r	KB
8/23	GAW16	LAB	0517	15	r	[illegible]
8/23	DWLYR	LAB	0534	15	r	[illegible]
8/23	1707088-19	Weston	0601	[illegible]	r	—
8/23	1707088-06	Weston	0605	[illegible]	r	—

GE 3

DATE	SAmple #	Client	LoadTime	CTiTime	Analysis	Tech
8/22/17	1707088-12	Weston	1727	1h	✓	KB
8/22/17	1708095-05	Eden Foods	1828	2hr	✓	KB
8/23	~~CAS~~ 1602	LAB	0517	15	✓	[illegible]
8/23	[illegible]	LAB	0541	15	✓	[illegible]
8/23	1707088-13	Weston	0601	2h	✓	—
8/23	1707089-05	Weston	0705	2h	✓	—

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GE 2

DATE	SAmple #	Client	Load Time	CT. Time	Analysis	Tech
8/22/17	1708095-03	Eden Foods	1608	2hr	r	KB
8/22/17	1708095-04	Eden Foods	1810	2hr	r	KB
8/23	[illegible]	KB	0517	15	r	C
8/23	[illegible]	KB	0544	15	r	[illegible]
8/23	1707088-17	Weston	[illegible]	[illegible]	r	[illegible]
8/23	1707089-03	Weston	0705	[illegible]	r	C
8/23	1707089-04	Weston		[illegible]	r	C

GE 1

DATE	Sample #	Client	Load Time	CT. Time	Analysis	Tech
8/21/17	1707086-07	Weston	1524	1 hr	r	KB
8/21/17	1707086-10	Weston	1625	1 hr	r	KB
8/21/17	1707086-14	Weston	1726	1 hr	r	KB
8/21/17	1708086-03	Indust. + Env.	1827	4 hrs	r	KB
8/22	GAF16	LAB	0510	15	r	EC
8/22	Daily QC	LAB	0513	15	r	EC
8/22	1707086-16	Weston	0510	1 hr	r	—
8/22	1707086-20	Weston	0614	1 hr	r	—
8/22	1707086-07	LAB	0759	1 hr	r	—
8/22	1707087-03	Weston	0901	1 hr	r	EC
8/22	1707087-04	Weston	1004	1 hr	r	EC
8/22	1707087-12	Weston	1106	1 hr	r	—
8/22/17	1707087-16	Weston	1209	1 hr	r	KB
8/22/17	1707087-20	Weston	1311	1 hr	r	—
8/22/17	1707088-06	Weston	1413	1 hr	r	KB
8/22/17	1708002-02	MPA	1519	15 mins	Ba	KB
8/22/17	1708002-06	MPA	1535	15 mins	Ba	KB
8/22/17	1708006-03	MPA	1552	15 min	Ba	KB
8/22/17	1708011-03	MPA	1609	15 min	Ba	KB
8/22/17	1707088-08	Weston	1626	1 hr	r	KB
8/22/17	1707088-11	Weston	1727	1 hr	r	KB
8/22/17	1708036-04	Indust. + Env.	1827	4 hrs	r	KB
8/23	GAF16	LAB	0517	15	r	EC
8/23	Daily QC	LAB	0541	15	r	—
8/23	1707088-16	Weston	0601	1 hr	r	—
8/23	1707088-20	Weston	0705	1 hr	r	—

SECTION VIII

ANALYTICAL DATA (ISOTOPIC URANIUM)

17-07088
UUISO
Run 1

Work Order	17-07088
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-A03-S003-3642-01	42	05/15/17 08:30	1.1800E+00
04	DO	HTC-A03-S003-3642-01	42	05/15/17 08:30	1.1900E+00
05	TRG	HTC-A03-S003-4248-01	37	05/15/17 08:27	1.2000E+00
06	TRG	HTC-A03-S004-0006-01	45	05/13/17 15:51	1.0800E+00
07	TRG	HTC-A03-S004-0612-01	51	05/13/17 15:48	1.0800E+00
08	TRG	HTC-A03-S004-1218-01	48	05/13/17 15:45	1.3000E+00
09	TRG	HTC-A03-S004-1824-01	36	05/13/17 15:42	1.1500E+00
10	TRG	HTC-A03-S004-2430-01	44	05/13/17 15:39	1.1800E+00
11	TRG	HTC-A03-S004-3036-01	49	05/13/17 15:36	1.3000E+00
12	TRG	HTC-A03-S004-3642-01	43	05/13/17 15:33	1.1100E+00
13	MSO	HTC-A03-S004-4248-01	30	05/13/17 15:30	1.0000E+00
14	MS	HTC-A03-S004-4248-01	44	05/15/17 08:30	1.0100E+00
15	MSD	HTC-A03-S004-4248-01 MSD	44	05/13/17 15:30	1.0200E+00
16	TRG	HTC-A03-S004-4248-02	41	05/13/17 15:30	1.0200E+00
17	TRG	HTC-A04-S001-0006-01	44	05/15/17 10:11	1.0800E+00
18	TRG	HTC-A04-S001-0612-01	46	05/15/17 10:08	1.1500E+00
19	TRG	HTC-A04-S001-1218-01	37	05/15/17 10:05	1.1100E+00
20	TRG	HTC-A04-S001-1824-01	44	05/15/17 10:02	1.5700E+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.

17-07088
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	0.6084	11.1		0.00								
02	MBL	0.6086	11.1		0.00								
03	DUP	0.6080	11.1		0.00								
04	DO	0.6063	11.1		0.00								
05	TRG	0.6060	11.1		0.00								
06	TRG	0.6068	11.1		0.00								
07	TRG	0.6054	11.1		0.00								
08	TRG	0.6049	11.1		0.00								
09	TRG	0.6065	11.1		0.00								
10	TRG	0.6050	11.1		0.00								
11	TRG	0.6049	11.1		0.00								
12	TRG	0.6038	11.1		0.00								
13	MSO	0.6066	11.1		0.00								
14	MS	0.6049	11.1		0.00								
15	MSD	0.6083	11.1		0.00								
16	TRG	0.6042	11.1		0.00								
17	TRG	0.6048	11.1		0.00								
18	TRG	0.6065	11.1		0.00								
19	TRG	0.6055	11.1		0.00								
20	TRG	0.6062	11.1		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.

17-07088
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			08/11/17 08:22	JHARVEY				
02	MBL			08/11/17 08:22	JHARVEY				
03	DUP			08/11/17 08:22	JHARVEY				
04	DO	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
05	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
06	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
07	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
08	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
09	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
10	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
11	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
12	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
13	MSO	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
14	MS	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
15	MSD	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
16	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
17	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
18	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
19	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				
20	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:22	JHARVEY				

* 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: 17-07088-UUISO-1

Client: 8800 Weston Solutions, Inc.
Eberline Analytical Work Order: 17-07088
Analysis Code: UUISO
Run: 1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-234	LCS	LCS	pCi/g	6.08E+00	8.26E-01	8.02E-02	7.32E+00	83.01	OK		OK	
02	U-234	MBL	BLANK	pCi/g	7.07E-02	6.07E-02	5.97E-02					OK	OK
03	U-234	DUP	HTC-A03-S003-3642-01	pCi/g	6.57E-01	2.00E-01	7.88E-02				INV	OK	
04	U-234	DO	HTC-A03-S003-3642-01	pCi/g	4.05E-01	1.45E-01	7.66E-02					OK	
05	U-234	TRG	HTC-A03-S003-4248-01	pCi/g	8.48E-01	2.27E-01	9.42E-02					OK	
06	U-234	TRG	HTC-A03-S004-0006-01	pCi/g	1.34E+00	3.10E-01	9.05E-02					OK	
07	U-234	TRG	HTC-A03-S004-0612-01	pCi/g	1.26E+00	2.89E-01	7.29E-02					OK	
08	U-234	TRG	HTC-A03-S004-1218-01	pCi/g	8.64E-01	2.15E-01	5.71E-02					OK	
09	U-234	TRG	HTC-A03-S004-1824-01	pCi/g	8.10E-01	2.34E-01	8.96E-02					OK	
10	U-234	TRG	HTC-A03-S004-2430-01	pCi/g	8.40E-01	2.14E-01	6.38E-02					OK	
11	U-234	TRG	HTC-A03-S004-3036-01	pCi/g	8.22E-01	2.13E-01	4.77E-02					OK	
12	U-234	TRG	HTC-A03-S004-3642-01	pCi/g	7.35E-01	1.90E-01	5.05E-02					OK	
13	U-234	MSO	HTC-A03-S004-4248-01	pCi/g	5.29E-01	1.94E-01	1.21E-01					OK	
14	U-234	MS	HTC-A03-S004-4248-01	pCi/g	6.42E+00	8.71E-01	7.46E-02					OK	
15	U-234	MSD	HTC-A03-S004-4248-01 MSD	pCi/g	6.02E+00	8.03E-01	6.24E-02					OK	
16	U-234	TRG	HTC-A03-S004-4248-02	pCi/g	7.34E-01	2.01E-01	1.05E-01					OK	
17	U-234	TRG	HTC-A04-S001-0006-01	pCi/g	1.04E+00	2.49E-01	9.75E-02					OK	
18	U-234	TRG	HTC-A04-S001-0612-01	pCi/g	8.76E-01	2.07E-01	5.72E-02					OK	
19	U-234	TRG	HTC-A04-S001-1218-01	pCi/g	8.30E-01	2.16E-01	5.70E-02					OK	
20	U-234	TRG	HTC-A04-S001-1824-01	pCi/g	1.36E+00	2.81E-01	4.81E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07088
Client: 6800 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	132.51	0.00	0.00			
02	U-234	MBL	07/19/17 00:00	1.00E+00	130.97	0.00	0.00			
03	U-234	DUP	05/15/17 08:30	1.18E+00	104.83	0.00	0.00			
04	U-234	DO	05/15/17 08:30	1.19E+00	128.87	0.00	0.00			
05	U-234	TRG	05/15/17 08:27	1.20E+00	124.15	0.00	0.00			
06	U-234	TRG	05/13/17 15:51	1.08E+00	103.05	0.00	0.00			
07	U-234	TRG	05/13/17 15:48	1.08E+00	125.60	0.00	0.00			
08	U-234	TRG	05/13/17 15:45	1.30E+00	137.75	0.00	0.00			
09	U-234	TRG	05/13/17 15:42	1.15E+00	101.78	0.00	0.00			
10	U-234	TRG	05/13/17 15:39	1.18E+00	120.89	0.00	0.00			
11	U-234	TRG	05/13/17 15:36	1.30E+00	107.24	0.00	0.00			
12	U-234	TRG	05/13/17 15:33	1.11E+00	127.60	0.00	0.00			
13	U-234	MSO	05/13/17 15:30	1.00E+00	115.49	0.00	0.00			
14	U-234	MS	05/15/17 08:30	1.01E+00	142.02	0.00	0.00			
15	U-234	MSD	05/13/17 15:30	1.02E+00	125.01	0.00	0.00			
16	U-234	TRG	05/13/17 15:30	1.02E+00	120.79	0.00	0.00			
17	U-234	TRG	05/15/17 10:11	1.08E+00	103.81	0.00	0.00			
18	U-234	TRG	05/15/17 10:08	1.15E+00	120.93	0.00	0.00			
19	U-234	TRG	05/15/17 10:05	1.11E+00	108.65	0.00	0.00			
20	U-234	TRG	05/15/17 10:02	1.57E+00	99.92	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07088
Client: 0600 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	08/28/17 11:30		A_Spec	Alpha_046	170	5.20 E+02	8.00 E-03	17.1	
02	U-234	MBL	08/28/17 11:30		A_Spec	Alpha_047	170	5.66 E+00	2.00 E-03	16.2	
03	U-234	DUP	08/28/17 11:30		A_Spec	Alpha_048	170	5.00 E+01	0.00 E+00	16.3	
04	U-234	DO	08/28/17 11:30		A_Spec	Alpha_049	170	3.48 E+01	7.00 E-03	14.9	
05	U-234	TRG	08/28/17 11:31		A_Spec	Alpha_050	170	6.81 E+01	1.10 E-02	14.3	
06	U-234	TRG	08/28/17 11:31		A_Spec	Alpha_052	170	9.78 E+01	7.00 E-03	17.4	
07	U-234	TRG	08/28/17 11:31		A_Spec	Alpha_053	170	9.73 E+01	4.00 E-03	15.1	
08	U-234	TRG	08/28/17 11:31		A_Spec	Alpha_054	170	7.95 E+01	3.00 E-03	13.6	
09	U-234	TRG	08/28/17 11:31		A_Spec	Alpha_056	170	5.70 E+01	6.00 E-03	15.9	
10	U-234	TRG	08/28/17 11:30		A_Spec	Alpha_057	170	7.43 E+01	4.00 E-03	16.5	
11	U-234	TRG	08/28/17 11:30		A_Spec	Alpha_058	170	7.18 E+01	1.00 E-03	16.6	
12	U-234	TRG	08/28/17 11:31		A_Spec	Alpha_059	170	6.97 E+01	2.00 E-03	17.8	
13	U-234	MSO	08/28/17 11:31		A_Spec	Alpha_060	170	3.40 E+01	1.20 E-02	14.8	
14	U-234	MS	08/28/17 14:32		A_Spec	Alpha_003	170	5.42 E+02	6.00 E-03	15.6	
15	U-234	MSD	08/28/17 14:32		A_Spec	Alpha_004	170	5.44 E+02	4.00 E-03	18.8	
16	U-234	TRG	08/28/17 14:32		A_Spec	Alpha_010	170	6.38 E+01	1.90 E-02	18.7	
17	U-234	TRG	08/28/17 14:32		A_Spec	Alpha_011	170	8.76 E+01	1.40 E-02	19.9	
18	U-234	TRG	08/28/17 14:32		A_Spec	Alpha_012	170.02	8.63 E+01	4.00 E-03	18.8	
19	U-234	TRG	08/28/17 14:32		A_Spec	Alpha_014	170.02	6.97 E+01	2.00 E-03	18.5	
20	U-234	TRG	08/28/17 14:32		A_Spec	Alpha_033	170	1.35 E+02	2.00 E-03	16.8	

Eberline Analytical
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-UUISO-1

Client: Weston Solutions, Inc. 0091
Eberline Analytical Work Order: 17-07088
Analysis Code: UUISO
Run: 1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-238	LCS	LCS	pCi/g	5.74E+00	7.89E-01	7.34E-02	7.09E+00	80.95	OK		OK	
02	U-238	MBL	BLANK	pCi/g	3.92E-02	4.98E-02	7.45E-02					OK	OK
03	U-238	DUP	HTC-A03-S003-3642-01	pCi/g	4.77E-01	1.66E-01	6.87E-02				OK	OK	
04	U-238	DO	HTC-A03-S003-3642-01	pCi/g	5.27E-01	1.65E-01	6.08E-02					OK	
05	U-238	TRG	HTC-A03-S003-4248-01	pCi/g	8.26E-01	2.22E-01	8.49E-02					OK	
06	U-238	TRG	HTC-A03-S004-0006-01	pCi/g	1.55E+00	3.38E-01	7.17E-02					OK	
07	U-238	TRG	HTC-A03-S004-0612-01	pCi/g	1.06E+00	2.59E-01	7.70E-02					OK	
08	U-238	TRG	HTC-A03-S004-1218-01	pCi/g	6.51E-01	1.82E-01	6.48E-02					OK	
09	U-238	TRG	HTC-A03-S004-1824-01	pCi/g	7.90E-01	2.31E-01	9.33E-02					OK	
10	U-238	TRG	HTC-A03-S004-2430-01	pCi/g	7.97E-01	2.06E-01	4.70E-02					OK	
11	U-238	TRG	HTC-A03-S004-3036-01	pCi/g	8.24E-01	2.14E-01	6.43E-02					OK	
12	U-238	TRG	HTC-A03-S004-3642-01	pCi/g	6.76E-01	1.81E-01	5.93E-02					OK	
13	U-238	MSO	HTC-A03-S004-4248-01	pCi/g	4.57E-01	1.75E-01	8.13E-02					OK	
14	U-238	MS	HTC-A03-S004-4248-01	pCi/g	6.64E+00	8.95E-01	7.43E-02					OK	
15	U-238	MSD	HTC-A03-S004-4248-01 MSD	pCi/g	6.57E+00	8.61E-01	7.25E-02					OK	
16	U-238	TRG	HTC-A03-S004-4248-02	pCi/g	7.56E-01	2.02E-01	8.93E-02					OK	
17	U-238	TRG	HTC-A04-S001-0006-01	pCi/g	1.08E+00	2.52E-01	7.46E-02					OK	
18	U-238	TRG	HTC-A04-S001-0612-01	pCi/g	7.54E-01	1.90E-01	6.93E-02					OK	
19	U-238	TRG	HTC-A04-S001-1218-01	pCi/g	8.92E-01	2.26E-01	7.10E-02					OK	
20	U-238	TRG	HTC-A04-S001-1824-01	pCi/g	1.12E+00	2.47E-01	4.18E-02					OK	

Work Order: 17-07088-UUISO-1

Client: Weston Solutions, Inc. 0092
Eberline Analytical Work Order: 17-07088
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	132.51	0.00	0.00			
02	U-238	MBL	07/19/17 00:00	1.00E+00	130.97	0.00	0.00			
03	U-238	DUP	05/15/17 08:30	1.18E+00	104.83	0.00	0.00			
04	U-238	DO	05/15/17 08:30	1.19E+00	128.87	0.00	0.00			
05	U-238	TRG	05/15/17 08:27	1.20E+00	124.15	0.00	0.00			
06	U-238	TRG	05/13/17 15:51	1.08E+00	103.05	0.00	0.00			
07	U-238	TRG	05/13/17 15:48	1.08E+00	125.60	0.00	0.00			
08	U-238	TRG	05/13/17 15:45	1.30E+00	137.75	0.00	0.00			
09	U-238	TRG	05/13/17 15:42	1.15E+00	101.78	0.00	0.00			
10	U-238	TRG	05/13/17 15:39	1.18E+00	120.89	0.00	0.00			
11	U-238	TRG	05/13/17 15:36	1.30E+00	107.24	0.00	0.00			
12	U-238	TRG	05/13/17 15:33	1.11E+00	127.60	0.00	0.00			
13	U-238	MSO	05/13/17 15:30	1.00E+00	115.49	0.00	0.00			
14	U-238	MS	05/15/17 08:30	1.01E+00	142.02	0.00	0.00			
15	U-238	MSD	05/13/17 15:30	1.02E+00	125.01	0.00	0.00			
16	U-238	TRG	05/13/17 15:30	1.02E+00	120.79	0.00	0.00			
17	U-238	TRG	05/15/17 10:11	1.08E+00	103.81	0.00	0.00			
18	U-238	TRG	05/15/17 10:08	1.15E+00	120.93	0.00	0.00			
19	U-238	TRG	05/15/17 10:05	1.11E+00	108.65	0.00	0.00			
20	U-238	TRG	05/15/17 10:02	1.57E+00	99.92	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0093

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	08/28/17 11:30		A_Spec	Alpha_046	170	4.93 E+02	6.00 E-03	17.1	
02	U-238	MBL	08/28/17 11:30		A_Spec	Alpha_047	170	3.15 E+00	5.00 E-03	16.2	
03	U-238	DUP	08/28/17 11:30		A_Spec	Alpha_048	170	3.65 E+01	3.00 E-03	16.3	
04	U-238	DO	08/28/17 11:30		A_Spec	Alpha_049	170	4.55 E+01	3.00 E-03	14.9	
05	U-238	TRG	08/28/17 11:31		A_Spec	Alpha_050	170	6.66 E+01	8.00 E-03	14.3	
06	U-238	TRG	08/28/17 11:31		A_Spec	Alpha_052	170	1.13 E+02	3.00 E-03	17.4	
07	U-238	TRG	08/28/17 11:31		A_Spec	Alpha_053	170	8.22 E+01	5.00 E-03	15.1	
08	U-238	TRG	08/28/17 11:31		A_Spec	Alpha_054	170	6.02 E+01	5.00 E-03	13.6	
09	U-238	TRG	08/28/17 11:31		A_Spec	Alpha_056	170	5.58 E+01	7.00 E-03	15.9	
10	U-238	TRG	08/28/17 11:30		A_Spec	Alpha_057	170	7.08 E+01	1.00 E-03	16.5	
11	U-238	TRG	08/28/17 11:30		A_Spec	Alpha_058	170	7.23 E+01	4.00 E-03	16.6	
12	U-238	TRG	08/28/17 11:31		A_Spec	Alpha_059	170	6.43 E+01	4.00 E-03	17.8	
13	U-238	MSO	08/28/17 11:31		A_Spec	Alpha_060	170	2.95 E+01	3.00 E-03	14.8	
14	U-238	MS	08/28/17 14:32		A_Spec	Alpha_003	170	5.63 E+02	6.00 E-03	15.6	
15	U-238	MSD	08/28/17 14:32		A_Spec	Alpha_004	170	5.97 E+02	7.00 E-03	18.8	
16	U-238	TRG	08/28/17 14:32		A_Spec	Alpha_010	170	6.60 E+01	1.20 E-02	18.7	
17	U-238	TRG	08/28/17 14:32		A_Spec	Alpha_011	170	9.10 E+01	6.00 E-03	19.9	
18	U-238	TRG	08/28/17 14:32		A_Spec	Alpha_012	170.02	7.46 E+01	8.00 E-03	18.8	
19	U-238	TRG	08/28/17 14:32		A_Spec	Alpha_014	170.02	7.51 E+01	5.00 E-03	18.5	
20	U-238	TRG	08/28/17 14:32		A_Spec	Alpha_033	170	1.12 E+02	1.00 E-03	16.8	

Eberline Analytical
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0094

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-235	LCS	LCS	pCi/g	5.07E-01	1.78E-01	8.64E-02					OK	
02	U-235	MBL	BLANK	pCi/g	-1.05E-02	3.19E-02	8.69E-02					OK	OK
03	U-235	DUP	HTC-A03-S003-3642-01	pCi/g	1.24E-01	9.14E-02	7.75E-02				NA	OK	
04	U-235	DO	HTC-A03-S003-3642-01	pCi/g	4.06E-02	4.92E-02	5.99E-02					OK	
05	U-235	TRG	HTC-A03-S003-4248-01	pCi/g	1.58E-01	1.02E-01	8.66E-02					OK	
06	U-235	TRG	HTC-A03-S004-0006-01	pCi/g	2.82E-01	1.41E-01	8.10E-02					OK	
07	U-235	TRG	HTC-A03-S004-0612-01	pCi/g	1.41E-01	9.52E-02	6.65E-02					OK	
08	U-235	TRG	HTC-A03-S004-1218-01	pCi/g	1.00E-01	7.57E-02	7.04E-02					OK	
09	U-235	TRG	HTC-A03-S004-1824-01	pCi/g	1.75E-01	1.17E-01	1.11E-01					OK	
10	U-235	TRG	HTC-A03-S004-2430-01	pCi/g	3.95E-02	4.78E-02	5.82E-02					OK	
11	U-235	TRG	HTC-A03-S004-3036-01	pCi/g	1.11E-01	7.94E-02	5.89E-02					OK	
12	U-235	TRG	HTC-A03-S004-3642-01	pCi/g	9.11E-02	7.28E-02	7.81E-02					OK	
13	U-235	MSO	HTC-A03-S004-4248-01	pCi/g	9.60E-02	9.29E-02	1.15E-01					OK	
14	U-235	MS	HTC-A03-S004-4248-01	pCi/g	6.24E-01	1.99E-01	6.99E-02					OK	
15	U-235	MSD	HTC-A03-S004-4248-01 MSD	pCi/g	5.77E-01	1.85E-01	7.69E-02					OK	
16	U-235	TRG	HTC-A03-S004-4248-02	pCi/g	2.08E-01	1.18E-01	1.16E-01					OK	
17	U-235	TRG	HTC-A04-S001-0006-01	pCi/g	1.73E-01	1.06E-01	9.66E-02					OK	
18	U-235	TRG	HTC-A04-S001-0612-01	pCi/g	1.25E-01	8.31E-02	7.89E-02					OK	
19	U-235	TRG	HTC-A04-S001-1218-01	pCi/g	3.66E-02	5.08E-02	7.72E-02					OK	
20	U-235	TRG	HTC-A04-S001-1824-01	pCi/g	2.57E-01	1.16E-01	5.94E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0096

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	132.51	0.00	0.00			
02	U-235	MBL	07/19/17 00:00	1.00E+00	130.97	0.00	0.00			
03	U-235	DUP	05/15/17 08:30	1.18E+00	104.83	0.00	0.00			
04	U-235	DO	05/15/17 08:30	1.19E+00	128.87	0.00	0.00			
05	U-235	TRG	05/15/17 08:27	1.20E+00	124.15	0.00	0.00			
06	U-235	TRG	05/13/17 15:51	1.08E+00	103.05	0.00	0.00			
07	U-235	TRG	05/13/17 15:48	1.08E+00	125.60	0.00	0.00			
08	U-235	TRG	05/13/17 15:45	1.30E+00	137.75	0.00	0.00			
09	U-235	TRG	05/13/17 15:42	1.15E+00	101.78	0.00	0.00			
10	U-235	TRG	05/13/17 15:39	1.18E+00	120.89	0.00	0.00			
11	U-235	TRG	05/13/17 15:36	1.30E+00	107.24	0.00	0.00			
12	U-235	TRG	05/13/17 15:33	1.11E+00	127.60	0.00	0.00			
13	U-235	MSO	05/13/17 15:30	1.00E+00	115.49	0.00	0.00			
14	U-235	MS	05/15/17 08:30	1.01E+00	142.02	0.00	0.00			
15	U-235	MSD	05/13/17 15:30	1.02E+00	125.01	0.00	0.00			
16	U-235	TRG	05/13/17 15:30	1.02E+00	120.79	0.00	0.00			
17	U-235	TRG	05/15/17 10:11	1.08E+00	103.81	0.00	0.00			
18	U-235	TRG	05/15/17 10:08	1.15E+00	120.93	0.00	0.00			
19	U-235	TRG	05/15/17 10:05	1.11E+00	108.65	0.00	0.00			
20	U-235	TRG	05/15/17 10:02	1.57E+00	99.92	0.00	0.00			

Preliminary Data Report & Analytical Calculations
Work Order: 17-07088-UUISO-1

Client: 9600 Weston Solutions, Inc.
Eberline Analytical Work Order: 17-07088
Analysis Code: UUISO
Run: 1

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	08/28/17 11:30		A_Spec	Alpha_046	170	3.52 E+01	5.00 E-03	17.1	
02	U-235	MBL	08/28/17 11:30		A_Spec	Alpha_047	170	-6.80 E-01	4.00 E-03	16.2	
03	U-235	DUP	08/28/17 11:30		A_Spec	Alpha_048	170	7.66 E+00	2.00 E-03	16.3	
04	U-235	DO	08/28/17 11:30		A_Spec	Alpha_049	170	2.83 E+00	1.00 E-03	14.9	
05	U-235	TRG	08/28/17 11:31		A_Spec	Alpha_050	170	1.03 E+01	4.00 E-03	14.3	
06	U-235	TRG	08/28/17 11:31		A_Spec	Alpha_052	170	1.67 E+01	2.00 E-03	17.4	
07	U-235	TRG	08/28/17 11:31		A_Spec	Alpha_053	170	8.83 E+00	1.00 E-03	15.1	
08	U-235	TRG	08/28/17 11:31		A_Spec	Alpha_054	170	7.49 E+00	3.00 E-03	13.6	
09	U-235	TRG	08/28/17 11:31		A_Spec	Alpha_056	170	9.98 E+00	6.00 E-03	15.9	
10	U-235	TRG	08/28/17 11:30		A_Spec	Alpha_057	170	2.83 E+00	1.00 E-03	16.5	
11	U-235	TRG	08/28/17 11:30		A_Spec	Alpha_058	170	7.83 E+00	1.00 E-03	16.6	
12	U-235	TRG	08/28/17 11:31		A_Spec	Alpha_059	170	7.00 E+00	0.00 E+00	17.8	
13	U-235	MSO	08/28/17 11:31		A_Spec	Alpha_060	170	5.00 E+00	0.00 E+00	14.8	
14	U-235	MS	08/28/17 14:32		A_Spec	Alpha_003	170	4.27 E+01	2.00 E-03	15.6	
15	U-235	MSD	08/28/17 14:32		A_Spec	Alpha_004	170	4.23 E+01	4.00 E-03	18.8	
16	U-235	TRG	08/28/17 14:32		A_Spec	Alpha_010	170	1.46 E+01	1.40 E-02	18.7	
17	U-235	TRG	08/28/17 14:32		A_Spec	Alpha_011	170	1.18 E+01	7.00 E-03	19.9	
18	U-235	TRG	08/28/17 14:32		A_Spec	Alpha_012	170.02	9.98 E+00	6.00 E-03	18.8	
19	U-235	TRG	08/28/17 14:32		A_Spec	Alpha_014	170.02	2.49 E+00	3.00 E-03	18.5	
20	U-235	TRG	08/28/17 14:32		A_Spec	Alpha_033	170	2.07 E+01	2.00 E-03	16.8	

Count Room Report
Client: Weston Solutions, Inc.

17-07088-UUISO-1 (pCi/g) in SO
Tracer ID: U-10a

#46-60

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	0.6084	11.1459		0.00		
02	MBL	BLANK	07/19/17 00:00	1.0000	0.6086	11.1496		0.00		
03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	1.1800	0.6080	11.1386		0.00		
04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	1.1900	0.6063	11.1074		0.00		
05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	1.2000	0.6060	11.1019		0.00		
06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	1.0800	0.6068	11.1166		0.00		
07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	1.0800	0.6054	11.0909		0.00		
08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	1.3000	0.6049	11.0818		0.00		
09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	1.1500	0.6065	11.1111		0.00		
10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	1.1800	0.6050	11.0836		0.00		
11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	1.3000	0.6049	11.0818		0.00		
12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	1.1100	0.6038	11.0616		0.00		
13	MSO	HTC-A03-S004-4248-01	05/13/17 15:30	1.0000	0.6066	11.1129		0.00		
14	MS	HTC-A03-S004-4248-01	05/15/17 08:30	1.0100	0.6049	11.0818		0.00		
15	MSD	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	1.0200	0.6083	11.1441		0.00		
16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	1.0200	0.6042	11.0689		0.00		
17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	1.0800	0.6048	11.0799		0.00		
18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	1.1500	0.6065	11.1111		0.00		
19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	1.1100	0.6055	11.0928		0.00		
20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	1.5700	0.6062	11.1056		0.00		

#3-14

0097 #33

Eberline Analytical
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 8/11/2017 8:22 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
17-07088	1	UUISO	8/11/2017 8:20	JHARVEY		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
U-234	U-8a	32.000	8/11/2017	0.550	0.5078	0.5094		0.5068	7.32	0.264	7.34	0.264	0.00	0.000	7.31	0.263
U-238	U-8a	31.000	8/11/2017	0.550	0.5078	0.5094		0.5068	7.09	0.255	7.11	0.256	0.00	0.000	7.08	0.255

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	U-232	U-10a	18.320	8/11/2017	0.6084	0.6600
02	U-232	U-10a	18.320	8/11/2017	0.6086	0.6600
03	U-232	U-10a	18.320	8/11/2017	0.6080	0.6600
04	U-232	U-10a	18.320	8/11/2017	0.6063	0.6600
05	U-232	U-10a	18.320	8/11/2017	0.6060	0.6600
06	U-232	U-10a	18.320	8/11/2017	0.6068	0.6600
07	U-232	U-10a	18.320	8/11/2017	0.6054	0.6600
08	U-232	U-10a	18.320	8/11/2017	0.6049	0.6600
09	U-232	U-10a	18.320	8/11/2017	0.6065	0.6600
10	U-232	U-10a	18.320	8/11/2017	0.6050	0.6600
11	U-232	U-10a	18.320	8/11/2017	0.6049	0.6600
12	U-232	U-10a	18.320	8/11/2017	0.6038	0.6600
13	U-232	U-10a	18.320	8/11/2017	0.6066	0.6600
14	U-232	U-10a	18.320	8/11/2017	0.6049	0.6600
15	U-232	U-10a	18.320	8/11/2017	0.6083	0.6600
16	U-232	U-10a	18.320	8/11/2017	0.6042	0.6600
17	U-232	U-10a	18.320	8/11/2017	0.6048	0.6600
18	U-232	U-10a	18.320	8/11/2017	0.6065	0.6600
19	U-232	U-10a	18.320	8/11/2017	0.6055	0.6600
20	U-232	U-10a	18.320	8/11/2017	0.6062	0.6600

Balance Printer Tapes

Tracer

0.6084 g
0.6086 g
0.6080 g
0.6063 g
0.6060 g
0.6068 g
0.6054 g
0.6049 g
0.6065 g
0.6050 g
0.6049 g
0.6038 g
0.6066 g
0.6049 g
0.6083 g
0.6042 g
0.6048 g
0.6065 g
0.6055 g
0.6062 g

LCS

0.5078 g

Matrix Spike

0.5094 g

0.5068 g

0098

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

(ORDB01) OR 3.0.0 Mod 011/18/2015 09:56

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
17-07088	1	UUISO	grams	8/10/2017	JHARVEY

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				1.00E+00	1.0000E+00	1.0000E+00				
02	BLANK	MBL				1.00E+00	1.0000E+00	1.0000E+00				
03	HTC-A03-S003-3642-01	DUP				1.00E+00	1.1800E+00	1.1800E+00				
04	HTC-A03-S003-3642-01	DO				1.00E+00	1.1900E+00	1.1900E+00				
05	HTC-A03-S003-4248-01	TRG				1.00E+00	1.2000E+00	1.2000E+00				
06	HTC-A03-S004-0006-01	TRG				1.00E+00	1.0800E+00	1.0800E+00				
07	HTC-A03-S004-0612-01	TRG				1.00E+00	1.0800E+00	1.0800E+00				
08	HTC-A03-S004-1218-01	TRG				1.00E+00	1.3000E+00	1.3000E+00				
09	HTC-A03-S004-1824-01	TRG				1.00E+00	1.1500E+00	1.1500E+00				
10	HTC-A03-S004-2430-01	TRG				1.00E+00	1.1800E+00	1.1800E+00				
11	HTC-A03-S004-3036-01	TRG				1.00E+00	1.3000E+00	1.3000E+00				
12	HTC-A03-S004-3642-01	TRG				1.00E+00	1.1100E+00	1.1100E+00				
13	HTC-A03-S004-4248-01	MSO				1.00E+00	1.0000E+00	1.0000E+00				
14	HTC-A03-S004-4248-01 MS	MS				1.00E+00	1.0100E+00	1.0100E+00				
15	HTC-A03-S004-4248-01 MSD	MSD				1.00E+00	1.0200E+00	1.0200E+00				
16	HTC-A03-S004-4248-02	TRG				1.00E+00	1.0200E+00	1.0200E+00				
17	HTC-A04-S001-0006-01	TRG				1.00E+00	1.0800E+00	1.0800E+00				
18	HTC-A04-S001-0612-01	TRG				1.00E+00	1.1500E+00	1.1500E+00				
19	HTC-A04-S001-1218-01	TRG				1.00E+00	1.1100E+00	1.1100E+00				
20	HTC-A04-S001-1824-01	TRG				1.00E+00	1.5700E+00	1.5700E+00				

Comments	

6600

Technician: [signature] Date: 8/11/17

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

Rough Sample Preparation
Log Book

Printed: 8/1/2017 9:08 AM

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
17-07088	8/10/2017	7/31/2017	8/1/2017	8/2/2017	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-A03-S003-3642-01	14.6400	957.6400	792.5900	943.0000	777.9500	17.50%	82.50%	0.0000	0.0000	
05	HTC-A03-S003-4248-01	14.6600	932.2000	766.1500	917.5400	751.4900	18.10%	81.90%	0.0000	0.0000	
06	HTC-A03-S004-0006-01	14.6800	996.8400	787.1400	982.1600	772.4600	21.35%	78.65%	0.0000	0.0000	
07	HTC-A03-S004-0612-01	14.7000	958.4800	785.8600	943.7800	771.1600	18.29%	81.71%	0.0000	0.0000	
08	HTC-A03-S004-1218-01	14.6700	868.2000	712.3600	853.5300	697.6900	18.26%	81.74%	0.0000	0.0000	
09	HTC-A03-S004-1824-01	14.6300	962.0000	805.8800	947.3700	791.2500	16.48%	83.52%	0.0000	0.0000	
10	HTC-A03-S004-2430-01	14.6500	902.3200	750.3500	887.6700	735.7000	17.12%	82.88%	0.0000	0.0000	
11	HTC-A03-S004-3036-01	14.6900	846.8800	697.6600	832.1900	682.9700	17.93%	82.07%	0.0000	0.0000	
12	HTC-A03-S004-3642-01	14.7000	951.8800	783.2700	937.1800	768.5700	17.99%	82.01%	0.0000	0.0000	
13	HTC-A03-S004-4248-01	14.7300	795.8600	650.6900	781.1300	635.9600	18.58%	81.42%	0.0000	0.0000	
14	HTC-A03-S004-4248-01 MS	14.6900	767.4400	626.5300	752.7500	611.8400	18.72%	81.28%	0.0000	0.0000	
15	HTC-A03-S004-4248-01 MSD	14.6900	767.4400	626.5300	752.7500	611.8400	18.72%	81.28%	0.0000	0.0000	
16	HTC-A03-S004-4248-02	14.6200	738.7600	603.1400	724.1400	588.5200	18.73%	81.27%	0.0000	0.0000	
17	HTC-A04-S001-0006-01	14.6800	967.1600	745.8600	952.4800	731.1800	23.23%	76.77%	0.0000	0.0000	
18	HTC-A04-S001-0612-01	14.6800	999.2200	798.9700	984.5400	784.2900	20.34%	79.66%	0.0000	0.0000	
19	HTC-A04-S001-1218-01	14.6100	956.2800	785.3800	941.6700	770.7700	18.15%	81.85%	0.0000	0.0000	
20	HTC-A04-S001-1824-01	14.5600	989.2600	800.7600	974.7000	786.2000	19.34%	80.66%	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)**

0100

Technician: [signature] Date: **Analysis: Rough Prep Logbook** **Analysis: UUISO Page No. 10175**

VB
8/28/17

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_046
Chamber Serial Number: 04026482B
Detector Serial Number: 58762
Env. Background: System Bkgd 194885
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 8/28/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:30:20 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.608 mL
Effective Efficiency: 0.2271 +/- 0.0122
Counting Efficiency: 0.1713 +/- 0.0029 on 11/18/2016 10:08:38 AM
Chem. Recovery Factor: 1.3251 +/- 0.0746

Control Certificate Name: NatU_U-8A
Chem. Recov. of Control: U-238 0.712113 +/- 0.054298
Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

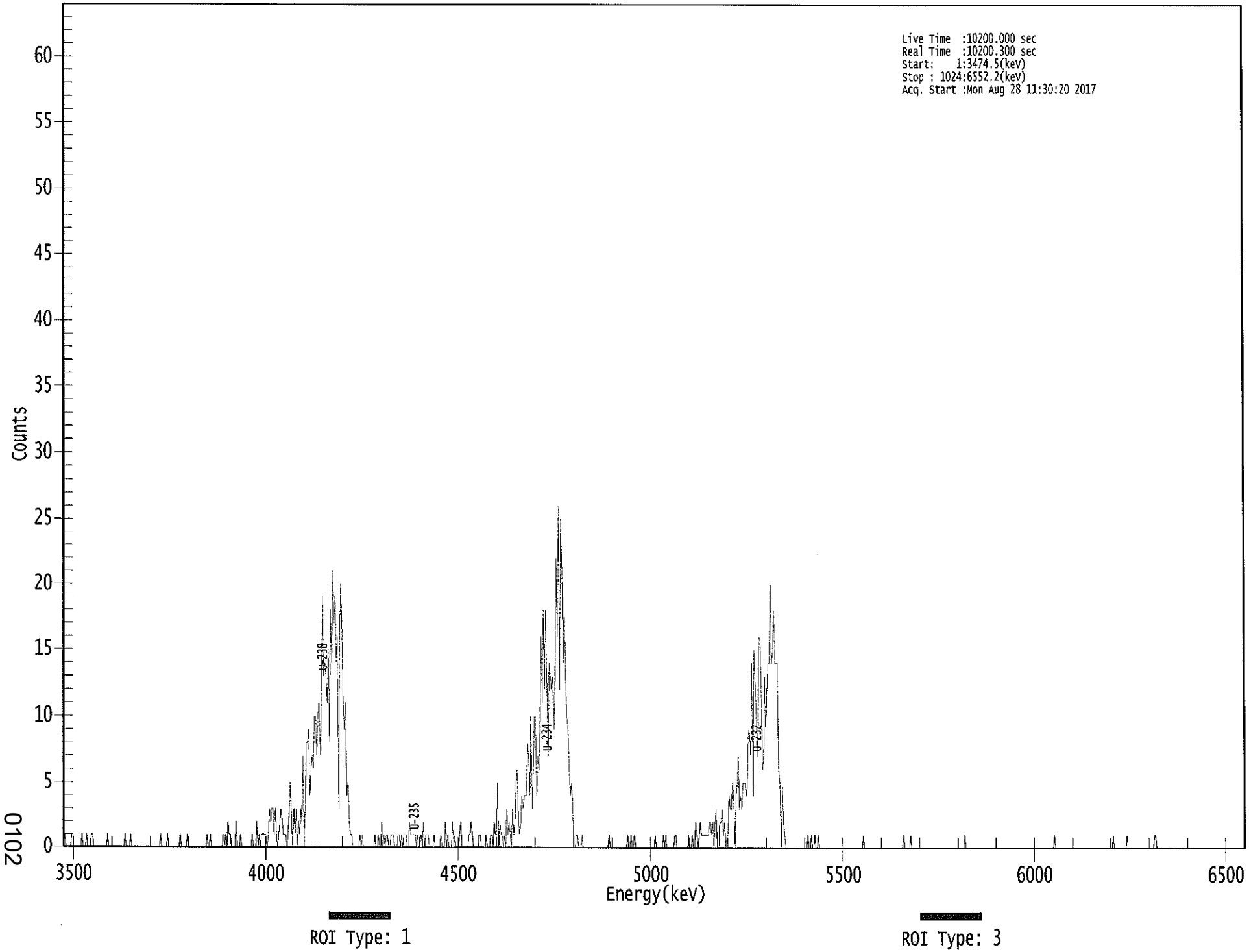
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.281	426.81	9.50	1.19	0.00E+000	30.1
U-234		4.734	519.64	8.61	1.36	0.00E+000	11.8
U-235		4.388	35.15	33.52	0.85	0.00E+000	3.0
U-238		4.151	492.98	8.84	1.02	0.00E+000	21.6

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*	4.99E+000 +/- 5.25E-001	7.70E-002 +/- 8.10E-003
U-234	0.994	4761.50*	6.08E+000 +/- 8.26E-001	8.02E-002 +/- 8.43E-003
U-235	1.000	4385.50*	5.07E-001 +/- 1.78E-001	8.64E-002 +/- 9.09E-003
U-238	0.992	4184.40*	5.74E+000 +/- 7.89E-001	7.34E-002 +/- 7.72E-003

0000192838.CNF



0102

****
***** 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	1	0	0	0	0	0	1
9:	1	0	0	0	0	0	0	0
17:	1	0	0	0	1	0	0	0
25:	1	1	0	0	0	0	0	0
33:	0	0	0	0	0	0	1	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	1	0	0
57:	0	0	1	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	1	0	0	0
89:	0	0	1	0	0	0	0	0
97:	0	0	0	0	0	1	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	1	0	0	1
129:	0	0	0	0	0	0	0	0
137:	0	0	1	0	1	0	2	1
145:	1	0	0	0	0	2	0	0
153:	0	1	0	0	0	0	0	0
161:	0	0	0	1	0	0	0	2
169:	0	1	0	1	1	1	1	1
177:	0	1	3	2	3	3	1	3
185:	1	0	1	2	3	2	1	1
193:	1	0	1	3	5	2	0	3
201:	1	3	0	2	1	3	2	7
209:	1	3	8	8	9	4	6	7
217:	6	10	10	7	10	11	7	10
225:	19	13	14	13	11	15	8	18
233:	14	21	17	19	14	16	3	16
241:	20	17	11	9	11	4	5	2
249:	1	1	0	0	0	0	0	0
257:	1	0	1	0	0	0	0	0
265:	0	0	0	0	0	1	0	0
273:	1	0	0	2	0	1	0	1
281:	1	0	0	1	1	1	0	0
289:	0	1	1	0	1	0	1	1
297:	1	0	0	2	1	1	1	1
305:	1	0	1	0	0	1	0	2
313:	0	1	1	1	0	0	0	0
321:	1	0	0	0	0	0	1	0
329:	0	0	2	0	1	0	0	0
337:	2	0	1	0	0	0	1	2
345:	0	0	0	0	0	0	1	1
353:	2	1	0	0	0	0	0	1
361:	1	0	0	0	0	1	0	0

369:	0	1	1	0	2	1	1	5

Sample Title: 01

Channel								
377:	0	2	1	1	0	1	0	3
385:	1	2	1	0	3	1	2	5
393:	6	2	1	2	4	3	4	4
401:	4	8	7	4	10	3	6	10
409:	10	4	7	6	9	16	11	18
417:	12	18	13	7	14	13	12	13
425:	9	13	22	16	26	12	25	22
433:	14	19	13	10	9	6	4	5
441:	3	0	0	1	1	0	0	0
449:	1	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	1
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	1
489:	0	0	1	0	0	1	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	1
513:	0	0	0	0	0	0	1	0
521:	1	0	0	0	0	0	0	0
529:	1	1	0	0	0	0	0	0
537:	0	0	0	0	1	0	0	1
545:	0	0	2	1	0	1	2	1
553:	1	1	1	1	1	1	2	2
561:	1	2	0	2	3	0	0	2
569:	2	3	1	2	0	1	1	4
577:	3	3	5	4	0	4	5	7
585:	3	4	3	5	5	5	4	5
593:	9	9	7	14	4	15	12	10
601:	7	16	16	12	6	7	13	8
609:	12	14	14	20	14	15	18	14
617:	14	14	6	5	0	5	2	1
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	1	0	0	1	0
649:	0	1	0	0	1	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	1	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	1	0
729:	0	0	0	0	1	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	1	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 01

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	1	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	1	0	0	0
913:	0	0	0	0	0	0	0	0
921:	1	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	1	1	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	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 9/29/17

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_047
Chamber Serial Number: 02030596A
Detector Serial Number: 91086
Env. Background: System Bkgd 194886
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 8/28/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:30:17 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.609 mL
Effective Efficiency: 0.2125 +/- 0.0117
Counting Efficiency: 0.1623 +/- 0.0028 on 11/18/2016 10:08:37 AM
Chem. Recovery Factor: 1.3097 +/- 0.0756

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

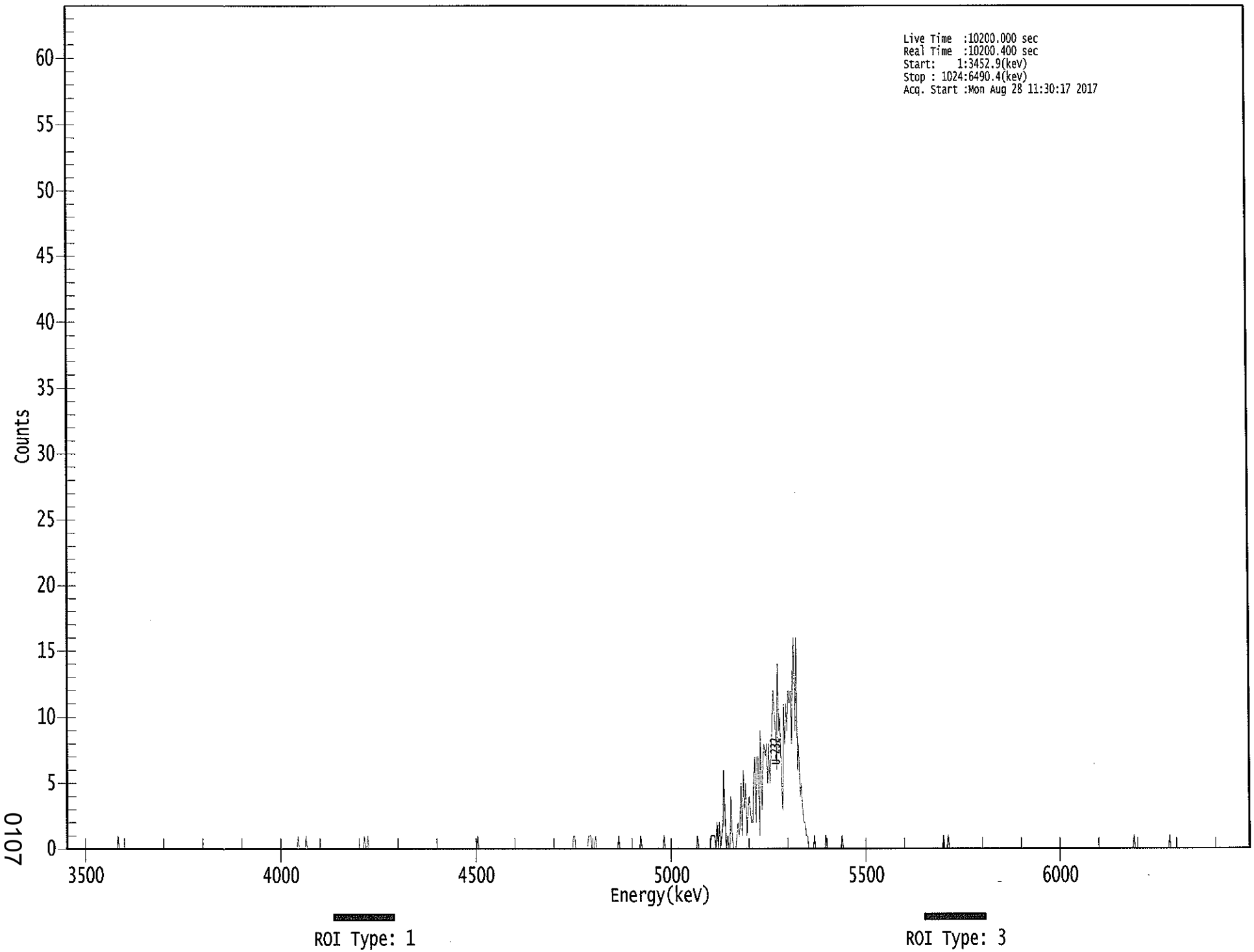
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.272	399.66	9.81	0.34	0.00E+000	14.3
U-234		4.781	5.66	85.23	0.34	0.00E+000	5.9
U-235		4.397	-0.68	304.44	0.68	0.00E+000	0.0
U-238		4.136	3.15	126.67	0.85	0.00E+000	3.0

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.993	5302.50*	4.99E+000 +/- 5.39E-001	5.97E-002 +/- 6.45E-003
U-234	0.997	4761.50*	7.07E-002 +/- 6.07E-002	5.97E-002 +/- 6.45E-003
U-235	0.999	4385.50*	-1.05E-002 +/- 3.19E-002	8.69E-002 +/- 9.39E-003
U-238	0.983	4184.40*	3.92E-002 +/- 4.98E-002	7.45E-002 +/- 8.04E-003

0000192846.CNF



0107

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

369:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	0	0	0	1	1	0
441:	0	0	0	0	0	0	0	0
449:	0	0	1	1	1	0	0	0
457:	1	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	1	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	1
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	1	0	0	0	0
521:	0	0	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	1	0	0	0	0	0	0	0
553:	0	0	0	0	1	1	1	1
561:	0	2	0	2	0	1	2	6
569:	2	0	1	0	0	4	1	0
577:	0	0	1	2	1	2	5	1
585:	6	3	5	1	3	4	3	2
593:	2	5	7	2	7	7	1	9
601:	3	7	8	7	8	5	8	5
609:	7	10	12	10	9	6	14	9
617:	10	5	3	11	8	11	9	12
625:	11	12	8	15	16	9	16	6
633:	8	4	5	3	2	2	1	1
641:	0	0	0	0	0	1	0	0
649:	0	0	0	0	0	0	0	1
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	1	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	1	0	0
761:	0	1	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 02

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

Apex-Alpha™

KB 8/28/17

Sample Description: HTC-A03-S003-3642-01-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_048
Chamber Serial Number: 02030596B
Detector Serial Number: 83111
Env. Background: System Bkgd 194887
Reagent Blank: <not performed>

Sample Size: 1.180E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:30:19 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.608 mL
Effective Efficiency: 0.1712 +/- 0.0103
Counting Efficiency: 0.1633 +/- 0.0028 on 11/18/2016 10:08:35 AM
Chem. Recovery Factor: 1.0483 +/- 0.0658

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

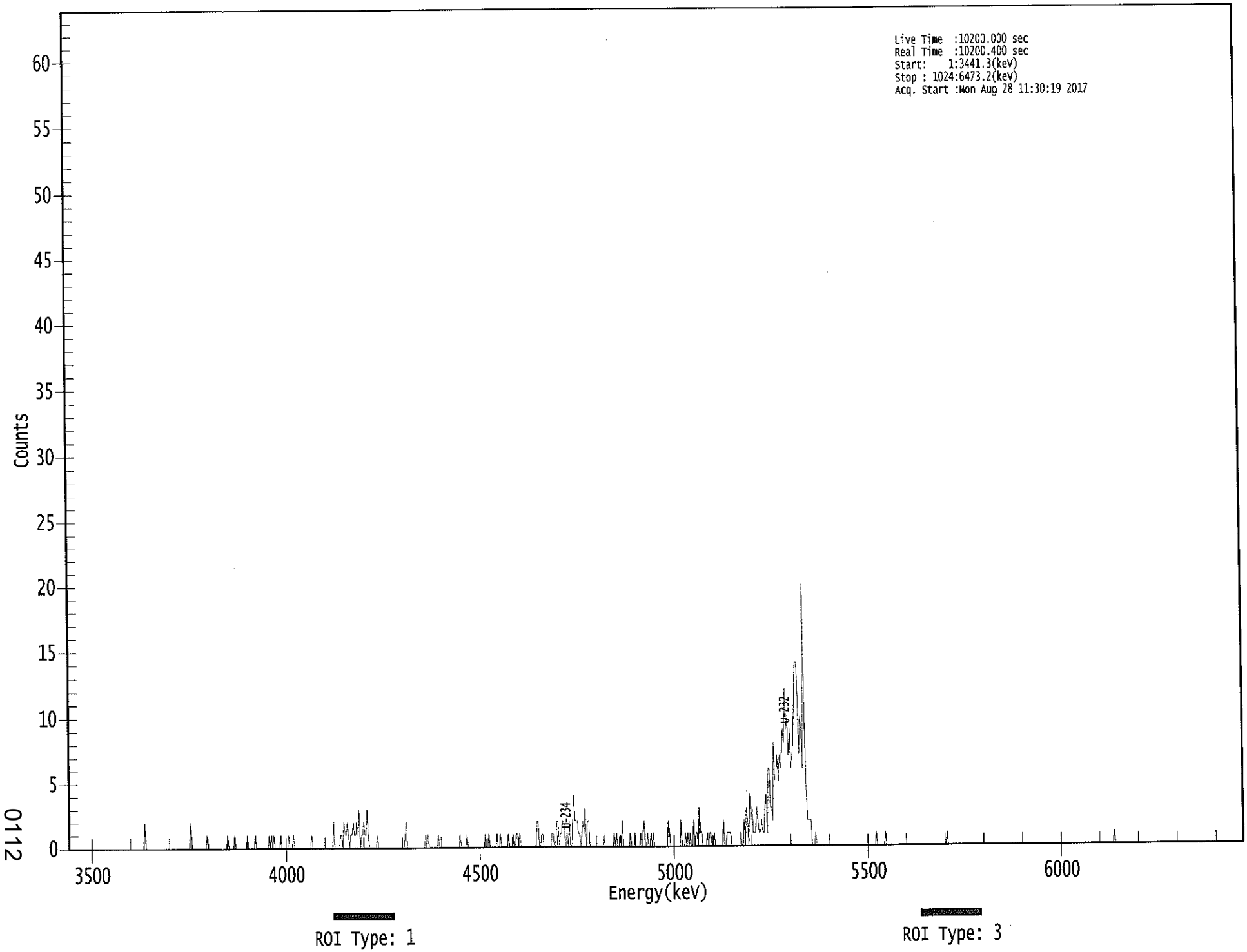
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.290	321.66	10.94	0.34	0.00E+000	5.1
U-234		4.725	50.00	27.99	0.00	0.00E+000	5.9
U-235		4.370	7.66	72.63	0.34	0.00E+000	4.4
U-238		4.166	36.49	32.71	0.51	0.00E+000	3.7

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*	4.24E+000 +/- 5.01E-001	6.30E-002 +/- 7.45E-003
U-234	0.990	4761.50*	6.57E-001 +/- 2.00E-001	7.88E-002 +/- 9.32E-003
U-235	0.998	4385.50*	1.24E-001 +/- 9.14E-002	7.75E-002 +/- 9.17E-003
U-238	0.998	4184.40*	4.77E-001 +/- 1.66E-001	6.87E-002 +/- 8.12E-003

0000192847.CNF



0112

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

Sample Title: 03

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	2	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	2	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	1	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	1	0	0	0	0	0
145:	1	0	0	0	0	0	0	0
153:	0	0	0	1	0	0	0	0
161:	0	0	1	0	0	0	0	0
169:	0	0	0	0	0	0	1	0
177:	1	0	1	0	0	0	0	0
185:	1	0	0	0	0	0	0	1
193:	0	0	0	1	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	1	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	2	0
233:	0	0	0	0	1	1	0	2
241:	1	1	2	1	0	1	1	2
249:	1	1	2	1	3	0	1	1
257:	2	1	1	3	1	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	2	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	1	0
313:	1	0	0	0	0	0	0	0
321:	0	1	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	1	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	0

369:	0	0	0	0	1	0	0	1

Sample Title: 03

Channel								
377:	0	0	0	0	0	0	1	0
385:	0	0	1	0	0	1	1	0
393:	1	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	2
409:	2	0	0	1	1	0	0	0
417:	0	0	0	0	1	1	0	0
425:	2	2	0	1	1	2	2	1
433:	0	1	0	2	0	0	2	4
441:	2	2	2	1	1	0	1	2
449:	1	3	0	2	2	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	1	0	0	0	0	0	0
473:	0	0	1	0	1	0	0	1
481:	0	2	0	0	0	0	0	0
489:	1	0	0	0	1	0	0	0
497:	0	1	0	1	2	0	0	1
505:	0	0	1	0	1	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	2	1	0	0	0	0	0
529:	0	0	0	0	2	0	0	0
537:	1	0	1	0	1	0	0	2
545:	0	1	1	0	3	1	1	0
553:	0	0	0	1	0	1	1	0
561:	0	1	0	0	0	0	0	0
569:	0	2	0	0	1	1	1	1
577:	0	0	0	0	0	0	0	0
585:	1	0	0	2	0	3	2	0
593:	4	2	3	1	1	1	3	2
601:	1	1	2	1	1	3	4	1
609:	6	6	3	3	2	8	5	5
617:	7	5	7	6	7	9	8	12
625:	9	10	7	9	6	7	8	11
633:	14	14	13	7	10	9	6	20
641:	10	5	2	2	2	2	0	0
649:	0	1	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	1	0
705:	0	0	0	0	0	0	1	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	1	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 03

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

KB 8/29/17

Apex-Alpha™

Sample Description: HTC-A03-S003-3642-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_049
Chamber Serial Number: 10006121A
Detector Serial Number: 49
Env. Background: System Bkgd 194888
Reagent Blank: <not performed>

Sample Size: 1.190E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:30:59 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.606 mL
Effective Efficiency: 0.1918 +/- 0.0111
Counting Efficiency: 0.1488 +/- 0.0026 on 11/18/2016 3:34:20 PM
Chem. Recovery Factor: 1.2887 +/- 0.0776

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

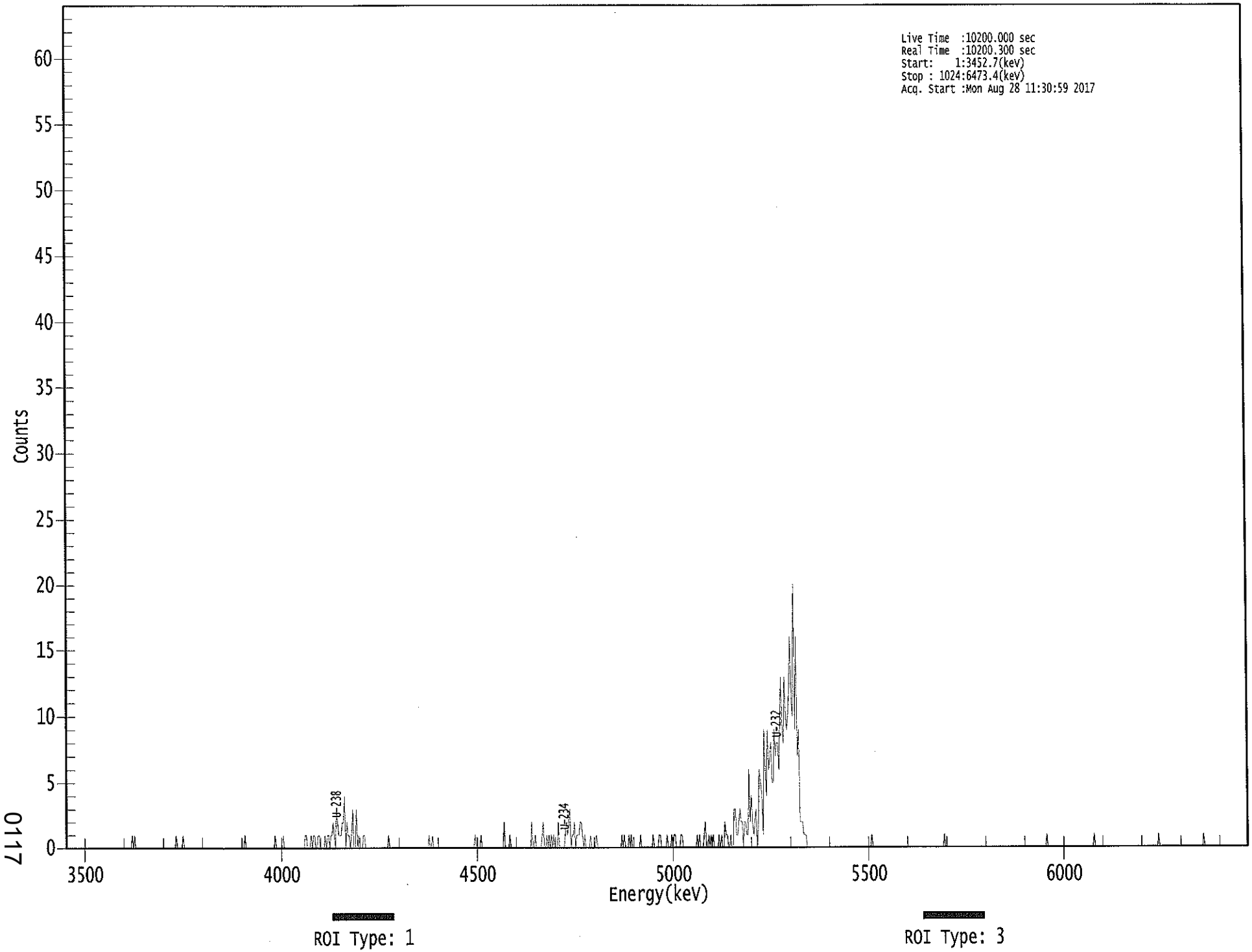
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.269	359.32	10.35	0.68	0.00E+000	5.6
U-234		4.726	34.81	33.88	1.19	0.00E+000	5.9
U-235		4.419	2.83	120.53	0.17	0.00E+000	3.0
U-238		4.143	45.49	29.25	0.51	0.00E+000	4.4

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.992	5302.50*	4.19E+000 +/- 4.73E-001	6.58E-002 +/- 7.43E-003
U-234	0.991	4761.50*	4.05E-001 +/- 1.45E-001	7.66E-002 +/- 8.65E-003
U-235	0.992	4385.50*	4.06E-002 +/- 4.92E-002	5.99E-002 +/- 6.76E-003
U-238	0.988	4184.40*	5.27E-001 +/- 1.65E-001	6.08E-002 +/- 6.86E-003

0000192843.CNF



0117

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

Sample Title: 04

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	0	0	0	0	0	0	0

Sample Title: 04

Channel								
377:	0	0	2	0	0	0	0	1
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	2	0	0	1	0	0
409:	0	0	0	1	2	0	0	1
417:	0	1	0	1	0	1	0	0
425:	0	2	0	0	0	0	0	1
433:	2	1	2	3	0	1	1	2
441:	0	1	1	1	2	2	1	0
449:	1	0	0	0	0	1	0	0
457:	0	0	1	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	1	0	1	0	0	0	1	0
489:	1	0	0	0	0	0	0	0
497:	1	0	0	0	0	0	0	0
505:	0	0	0	1	0	0	0	0
513:	1	1	0	0	0	0	0	1
521:	0	0	0	1	0	1	1	0
529:	0	0	0	1	1	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	1	0	1	0	0	0	1
553:	2	0	0	1	0	1	0	1
561:	0	0	0	0	1	0	1	0
569:	0	2	1	1	0	0	1	0
577:	0	3	3	1	1	2	3	2
585:	2	0	2	2	1	1	6	2
593:	4	2	1	2	3	0	2	6
601:	5	4	1	9	6	4	9	6
609:	7	8	5	5	9	7	8	8
617:	6	10	13	9	8	13	10	9
625:	10	12	16	11	10	20	9	16
633:	7	9	2	2	2	1	1	1
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	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:	1	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	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	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:	1	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	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	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	1	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	1	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™

VCB 8/28/17

Sample Description: HTC-A03-S003-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_050
Chamber Serial Number: 10006121B
Detector Serial Number: 50
Env. Background: System Bkgd 194889
Reagent Blank: <not performed>

Sample Size: 1.200E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:31:01 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.606 mL
Effective Efficiency: 0.1778 +/- 0.0106
Counting Efficiency: 0.1433 +/- 0.0025 on 11/18/2016 3:34:18 PM
Chem. Recovery Factor: 1.2415 +/- 0.0770

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

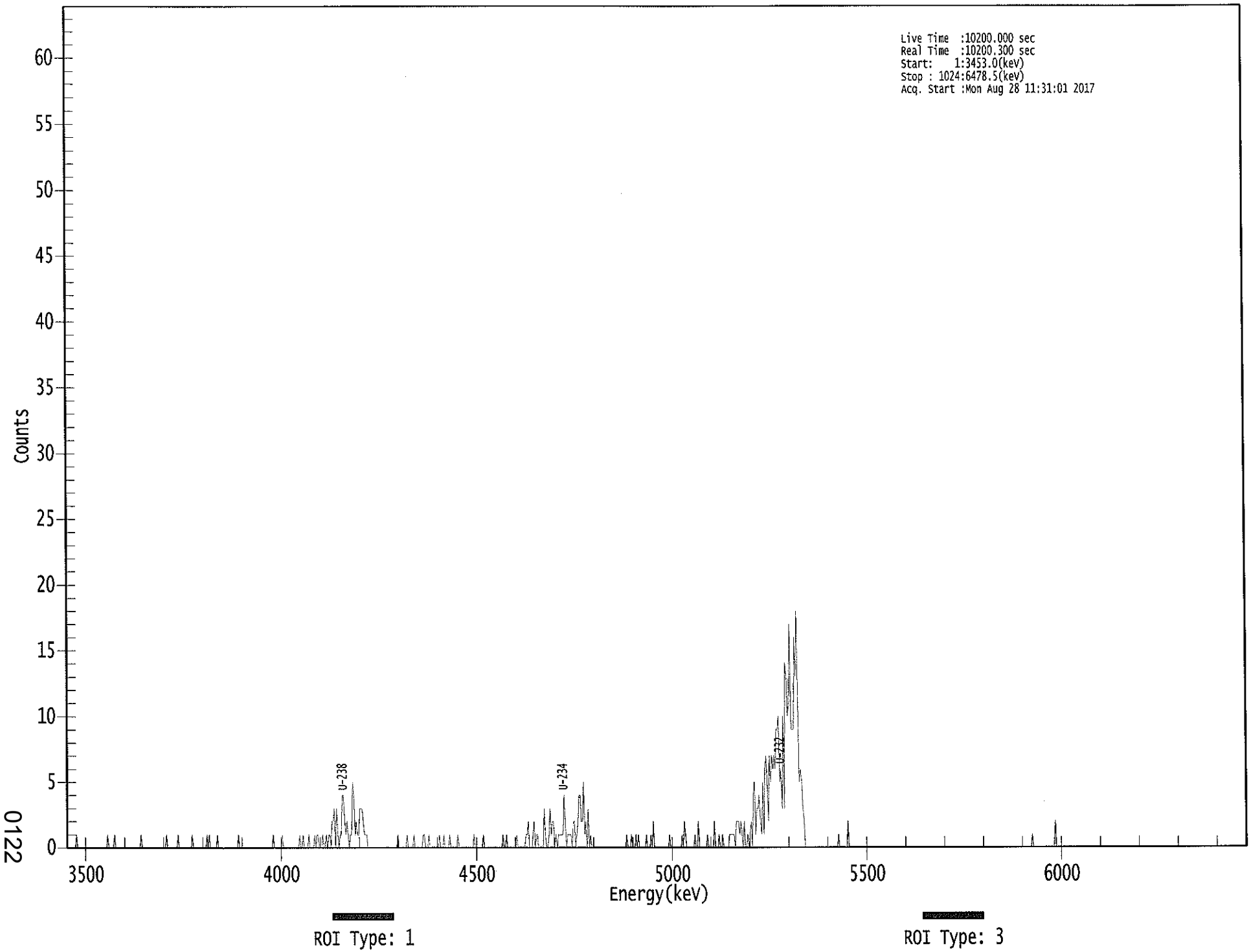
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.280	332.98	10.76	1.02	0.00E+000	12.8
U-234		4.725	68.13	24.12	1.87	0.00E+000	4.3
U-235		4.388	10.32	63.32	0.68	0.00E+000	3.0
U-238		4.160	66.64	24.29	1.36	0.00E+000	6.3

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	4.15E+000 +/- 4.85E-001	7.86E-002 +/- 9.17E-003
U-234	0.991	4761.50*	8.48E-001 +/- 2.27E-001	9.42E-002 +/- 1.10E-002
U-235	1.000	4385.50*	1.58E-001 +/- 1.02E-001	8.66E-002 +/- 1.01E-002
U-238	0.996	4184.40*	8.26E-001 +/- 2.22E-001	8.49E-002 +/- 9.91E-003

0000192848.CNF



0122

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

Sample Title: 05

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	0	0	0	0	0	0	0

Sample Title: 05

Channel								
377:	0	1	0	0	1	0	0	0
385:	0	0	0	0	0	1	0	0
393:	0	0	0	0	0	1	1	2
401:	0	0	0	1	2	0	1	1
409:	0	0	0	0	0	3	1	0
417:	0	1	3	1	2	2	0	1
425:	0	1	1	1	1	1	4	2
433:	0	1	1	1	1	0	2	2
441:	0	1	2	4	4	2	2	5
449:	1	2	0	3	0	1	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	1	0	0	0
489:	1	0	0	0	1	0	1	0
497:	0	0	0	0	0	1	0	0
505:	0	1	0	2	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	1	0	0	0	0	0	0
529:	0	0	0	0	1	0	2	1
537:	0	0	0	0	0	0	0	1
545:	0	0	2	0	0	0	0	0
553:	0	0	1	0	0	0	0	0
561:	2	0	0	0	1	0	0	1
569:	0	0	0	0	0	1	1	1
577:	1	1	0	2	2	2	1	2
585:	1	0	2	0	0	1	0	1
593:	2	0	4	5	1	3	3	4
601:	2	1	5	1	6	7	5	2
609:	7	5	7	6	7	6	9	9
617:	10	5	6	3	10	3	14	13
625:	10	11	17	9	9	9	16	13
633:	18	11	5	6	5	3	2	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	1	0	0	0
673:	0	0	0	0	2	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 05

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

ICB 8/29/17

Sample Description: HTC-A03-S004-0006-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_052
Chamber Serial Number: 10006123B
Detector Serial Number: 52
Env. Background: System Bkgd 194890
Reagent Blank: <not performed>

Sample Size: 1.080E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:31:06 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.607 mL
Effective Efficiency: 0.1790 +/- 0.0106
Counting Efficiency: 0.1737 +/- 0.0030 on 11/18/2016 3:34:15 PM
Chem. Recovery Factor: 1.0305 +/- 0.0635

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

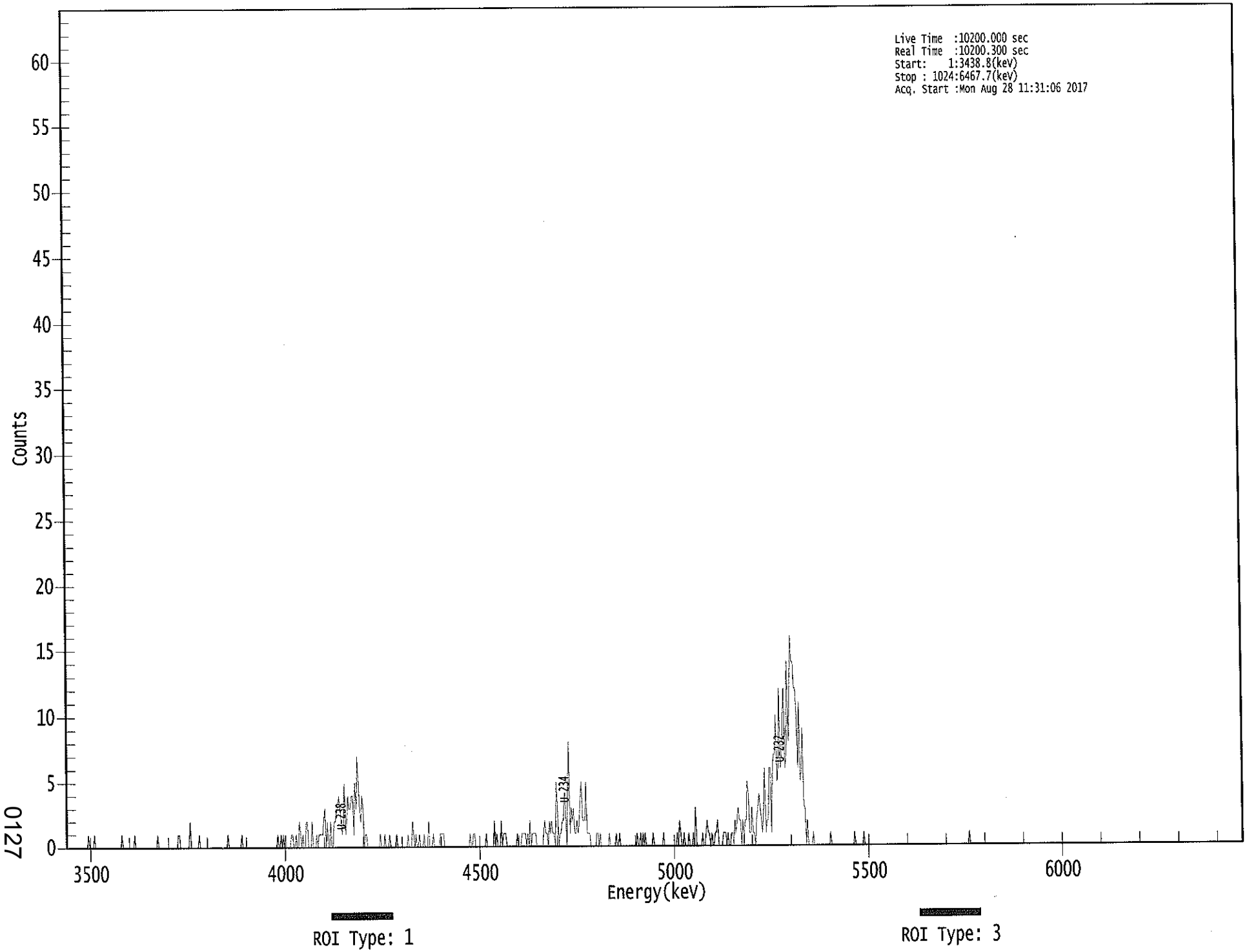
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.276	335.66	10.70	0.34	0.00E+000	22.2
U-234		4.722	97.81	19.96	1.19	0.00E+000	4.7
U-235		4.383	16.66	48.59	0.34	0.00E+000	4.4
U-238		4.146	113.49	18.45	0.51	0.00E+000	7.8

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*	4.62E+000 +/- 5.37E-001	6.58E-002 +/- 7.65E-003
U-234	0.989	4761.50*	1.34E+000 +/- 3.10E-001	9.05E-002 +/- 1.05E-002
U-235	1.000	4385.50*	2.82E-001 +/- 1.41E-001	8.10E-002 +/- 9.41E-003
U-238	0.990	4184.40*	1.55E+000 +/- 3.38E-001	7.17E-002 +/- 8.33E-003

0000192844.CNF



0127

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

Sample Title: 06

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	1	0	0	0	0
25:	1	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	1	0	0	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	0
89:	0	0	0	0	0	0	0	0
97:	0	1	1	0	0	0	0	0
105:	0	0	0	2	0	0	0	0
113:	0	0	0	1	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	1	0	0	0
145:	0	0	0	0	0	0	0	0
153:	1	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	1
185:	0	0	1	0	1	0	1	0
193:	0	0	0	1	1	0	0	1
201:	0	0	2	1	0	1	0	0
209:	2	2	0	0	0	2	0	0
217:	0	1	0	1	1	1	1	2
225:	3	0	2	0	0	2	0	0
233:	2	2	3	3	4	3	2	1
241:	2	5	1	2	4	3	3	4
249:	4	1	5	3	7	5	3	2
257:	4	3	0	1	1	0	0	0
265:	0	0	0	0	0	0	0	0
273:	1	0	0	0	1	0	0	0
281:	1	0	0	0	0	0	1	0
289:	0	0	0	0	0	0	0	0
297:	1	0	0	0	2	1	0	1
305:	0	0	1	0	0	0	1	0
313:	0	0	2	0	0	0	1	0
321:	0	0	0	0	1	1	1	1
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	1	0
353:	0	1	1	0	0	0	0	0
361:	0	0	0	0	1	0	0	0

369:	0	0	0	2	0	1	0	0

Sample Title: 06

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

xb 8/29/17

Apex-Alpha™

Sample Description: HTC-A03-S004-0612-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 07
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_053
Chamber Serial Number: 10006122A
Detector Serial Number: 53
Env. Background: System Bkgd 194891
Reagent Blank: <not performed>

Sample Size: 1.080E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:31:02 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1902 +/- 0.0110
Counting Efficiency: 0.1515 +/- 0.0026 on 11/18/2016 3:34:14 PM
Chem. Recovery Factor: 1.2560 +/- 0.0758

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

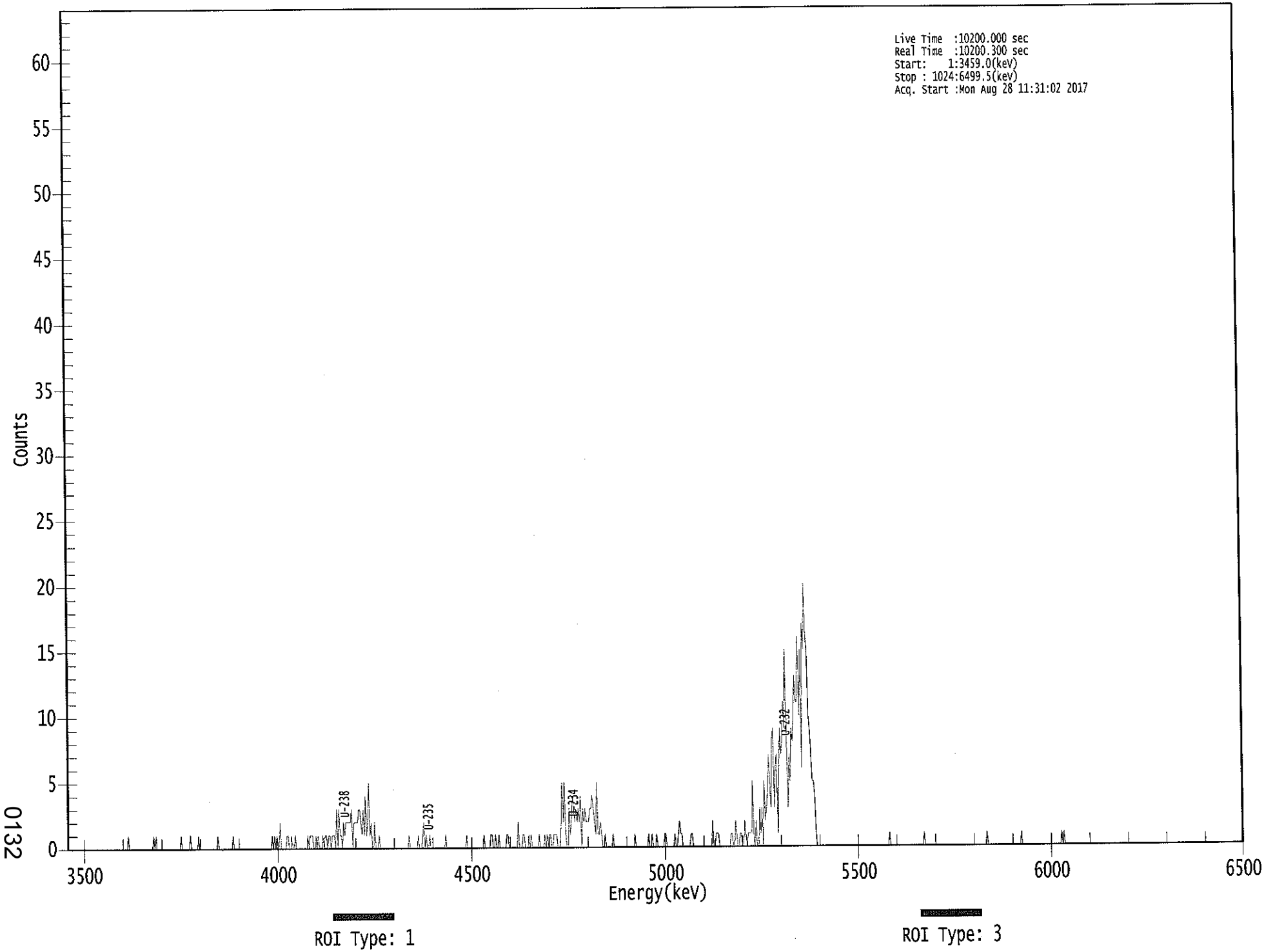
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.317	355.83	10.39	0.17	0.00E+000	15.3
U-234		4.766	97.32	19.95	0.68	0.00E+000	5.0
U-235		4.392	8.83	66.70	0.17	0.00E+000	4.5
U-238		4.175	82.15	21.76	0.85	0.00E+000	4.3

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*	4.61E+000 +/- 5.23E-001	5.41E-002 +/- 6.13E-003
U-234	1.000	4761.50*	1.26E+000 +/- 2.89E-001	7.29E-002 +/- 8.26E-003
U-235	1.000	4385.50*	1.41E-001 +/- 9.52E-002	6.65E-002 +/- 7.54E-003
U-238	0.999	4184.40*	1.06E+000 +/- 2.59E-001	7.70E-002 +/- 8.73E-003

0000192851.CNF



0132

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

Sample Title: 07

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	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	1	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	1	0	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	1	0	0	0	0	0
105:	0	0	1	0	0	0	0	0
113:	0	1	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	1	0	0	0	0	0
137:	0	0	0	0	0	0	0	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	1	0	1	0	1	0	0
185:	2	0	0	0	0	0	1	1
193:	0	0	1	0	0	1	0	0
201:	0	0	0	0	0	0	0	0
209:	1	0	1	1	1	0	0	1
217:	0	1	0	0	0	1	0	1
225:	1	0	1	1	0	1	1	1
233:	0	3	0	3	1	1	0	2
241:	1	2	2	2	2	2	3	0
249:	2	2	2	2	3	3	2	1
257:	3	1	4	1	2	5	1	2
265:	0	0	2	0	0	0	1	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:	1	0	0	0	0	0	0	0
305:	1	0	0	0	1	2	0	1
313:	0	0	1	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	1	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	1	0	0	0	0	0
353:	0	0	0	0	0	0	0	0
361:	0	1	0	0	0	0	0	1

369:	1	0	0	1	0	0	1	0

Sample Title: 07

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

801:	0	0	0	0	0	0	0	0

Sample Title: 07

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

Apex-Alpha™

KB 8/28/17

Sample Description: HTC-A03-S004-1218-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 08
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_054
Chamber Serial Number: 10006122B
Detector Serial Number: 54
Env. Background: System Bkgd 194892
Reagent Blank: <not performed>

Sample Size: 1.300E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:31:04 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1878 +/- 0.0109
Counting Efficiency: 0.1363 +/- 0.0024 on 11/18/2016 3:34:12 PM
Chem. Recovery Factor: 1.3775 +/- 0.0837

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

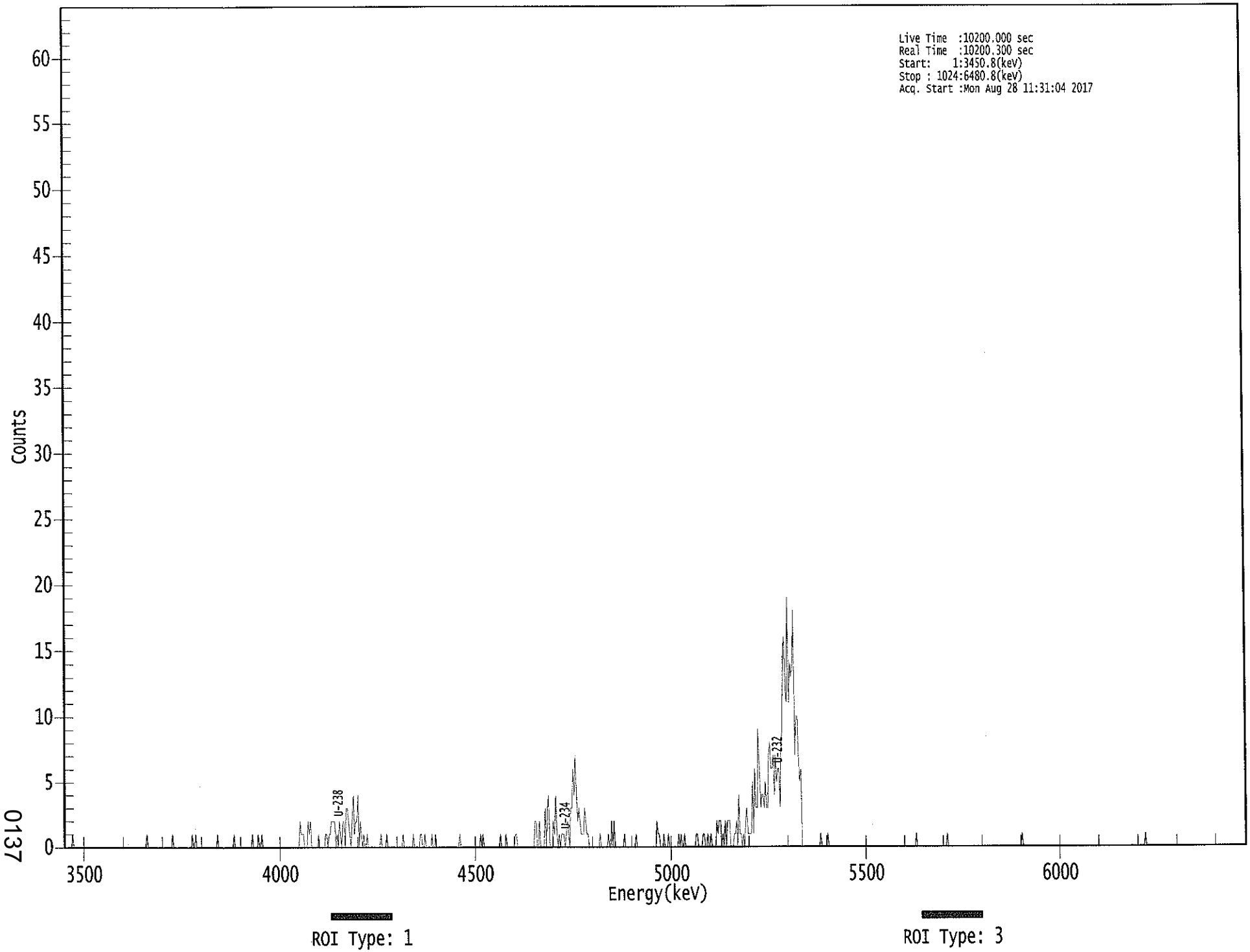
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.278	350.98	10.48	1.02	0.00E+000	31.7
U-234		4.733	79.49	22.07	0.51	0.00E+000	12.1
U-235		4.375	7.49	74.41	0.51	0.00E+000	3.0
U-238		4.154	60.15	25.48	0.85	0.00E+000	4.9

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	3.83E+000 +/- 4.37E-001	6.87E-002 +/- 7.84E-003
U-234	0.994	4761.50*	8.64E-001 +/- 2.15E-001	5.71E-002 +/- 6.51E-003
U-235	0.999	4385.50*	1.00E-001 +/- 7.57E-002	7.04E-002 +/- 8.03E-003
U-238	0.993	4184.40*	6.51E-001 +/- 1.82E-001	6.48E-002 +/- 7.40E-003

0000192849.CNF



0137

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

Sample Title: 08

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	1
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	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	1	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	1	0
113:	0	1	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	1	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	1	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	1	0	0	0	0	1
169:	0	0	1	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	2	1	1	1	0
209:	0	0	2	1	2	0	0	0
217:	0	0	0	1	0	0	0	0
225:	0	1	1	0	1	1	2	2
233:	2	2	0	1	0	2	1	0
241:	2	2	0	3	3	2	1	0
249:	2	4	1	2	2	4	0	2
257:	1	0	1	0	0	1	0	0
265:	0	0	0	0	0	0	0	0
273:	0	1	0	0	0	0	1	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	1	0	0
305:	0	0	0	1	1	0	0	1
313:	0	0	0	0	0	1	0	0
321:	1	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	1	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	0	1
361:	0	1	0	0	0	0	0	0

369:	0	0	0	0	0	0	0	0

Sample Title: 08

Channel								
377:	1	0	0	0	0	1	0	0
385:	0	0	0	0	0	1	1	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	2	2
409:	0	0	2	0	0	0	0	3
417:	0	3	4	0	0	0	2	1
425:	4	1	0	1	0	1	1	1
433:	0	1	2	1	0	3	3	6
441:	4	7	4	2	3	2	1	1
449:	1	3	2	1	1	0	0	0
457:	0	0	0	0	0	0	1	0
465:	0	0	0	0	0	1	0	0
473:	2	0	2	0	0	0	0	0
481:	0	0	0	1	0	0	0	0
489:	0	0	0	0	0	1	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	2
513:	1	1	0	0	0	1	0	0
521:	0	1	0	0	0	0	0	0
529:	0	0	1	0	1	0	0	1
537:	0	0	0	0	0	0	0	0
545:	0	1	1	0	0	0	0	1
553:	1	0	0	1	0	0	1	0
561:	0	0	0	2	1	2	2	0
569:	1	0	2	0	2	2	2	0
577:	0	0	1	1	2	0	4	1
585:	1	0	1	0	2	3	1	1
593:	1	1	5	1	6	3	3	9
601:	6	3	4	4	3	5	3	3
609:	7	8	6	6	7	4	7	5
617:	6	6	3	8	9	15	16	12
625:	11	19	11	14	13	14	18	7
633:	10	10	7	5	6	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	1	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	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:	1	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	1	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 08

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	1	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	1
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	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™

Sample Description:	HTC-A03-S004-1824-01
Spectrum File:	\\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification:	1707088A-UU
Sample Identification:	09
Sample Geometry:	Shelf 2
Procedure Description:	U iso
Detector Name:	Alpha_056
Chamber Serial Number:	10006124B
Detector Serial Number:	56
Env. Background:	System Bkgd 194893
Reagent Blank:	<not performed>
Sample Size:	1.150E+000 +/- 0.000E+000 gram
Sample Date/Time:	5/13/2017 6:28:52 AM
Acquisition Date/Time:	8/28/2017 11:31:07 AM
Acquisition Live Time:	170.0 minutes
Acquisition Real Time:	170.0 minutes
Tracer Certificate:	U232_UU-10A
Tracer Quantity:	0.607 mL
Effective Efficiency:	0.1623 +/- 0.0100
Counting Efficiency:	0.1595 +/- 0.0027 on 11/18/2016 3:34:09 PM
Chem. Recovery Factor:	1.0178 +/- 0.0653
Peak Match Tolerance:	0.150 MeV

PEAK AREA REPORT

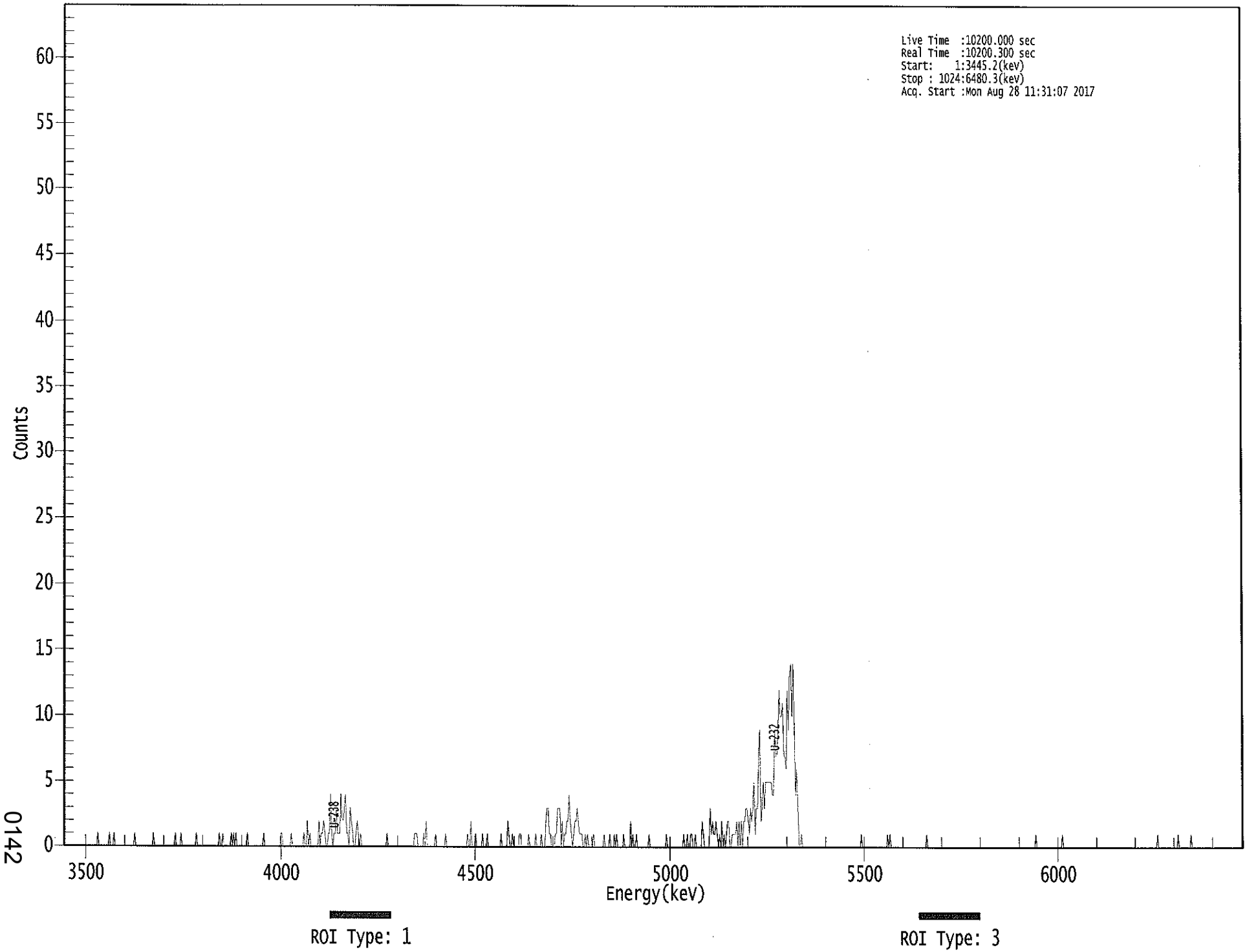
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.272	304.15	11.26	0.85	0.00E+000	21.8
U-234		4.726	56.98	26.24	1.02	0.00E+000	5.9
U-235		4.404	9.98	65.65	1.02	0.00E+000	3.0
U-238		4.138	55.81	26.56	1.19	0.00E+000	4.0

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.993	5302.50*	4.34E+000 +/- 5.26E-001	8.54E-002 +/- 1.04E-002
U-234	0.991	4761.50*	8.10E-001 +/- 2.34E-001	8.96E-002 +/- 1.09E-002
U-235	0.998	4385.50*	1.75E-001 +/- 1.17E-001	1.11E-001 +/- 1.34E-002
U-238	0.985	4184.40*	7.90E-001 +/- 2.31E-001	9.33E-002 +/- 1.13E-002

0000192852.CNF



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

Sample Title: 09

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
377:	0	0	1	0	0	0	0	0
385:	2	1	0	0	1	0	0	0
393:	0	0	1	1	0	0	0	0
401:	0	0	1	0	0	0	0	0
409:	1	0	0	0	0	1	0	0
417:	0	2	3	3	1	1	0	0
425:	0	1	1	3	3	3	0	2
433:	0	1	1	2	2	4	2	1
441:	0	1	2	2	3	2	1	1
449:	1	0	0	1	0	1	0	0
457:	0	0	1	0	0	0	0	0
465:	0	0	0	1	0	0	0	0
473:	1	0	0	0	1	0	1	0
481:	0	0	0	0	1	0	0	0
489:	0	0	2	0	1	0	0	1
497:	0	0	0	0	0	0	0	0
505:	0	0	1	0	0	0	0	0
513:	0	0	0	0	0	0	0	0
521:	0	1	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	1	0	0	1	0	0	1	1
545:	0	0	1	0	0	0	0	0
553:	2	1	0	0	0	0	0	3
561:	1	2	1	1	2	1	0	1
569:	0	2	0	1	0	1	2	2
577:	0	0	1	1	1	1	2	0
585:	2	0	2	0	2	2	3	3
593:	2	1	3	2	3	5	1	3
601:	3	7	9	2	3	5	3	5
609:	5	5	5	5	5	4	4	9
617:	7	7	9	12	10	10	11	7
625:	7	6	12	9	13	14	10	14
633:	10	4	6	3	0	0	1	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	1	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	1	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	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: 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	1	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	1	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	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	1	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	1	0
969:	0	0	0	0	0	0	0	0
977:	0	1	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™

NB 8/28/17

Sample Description: HTC-A03-S004-2430-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 10
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_057
Chamber Serial Number: 01017326A
Detector Serial Number: 57
Env. Background: System Bkgd 194894
Reagent Blank: <not performed>

Sample Size: 1.180E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:30:55 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1990 +/- 0.0113
Counting Efficiency: 0.1646 +/- 0.0028 on 11/18/2016 3:34:08 PM
Chem. Recovery Factor: 1.2089 +/- 0.0717

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

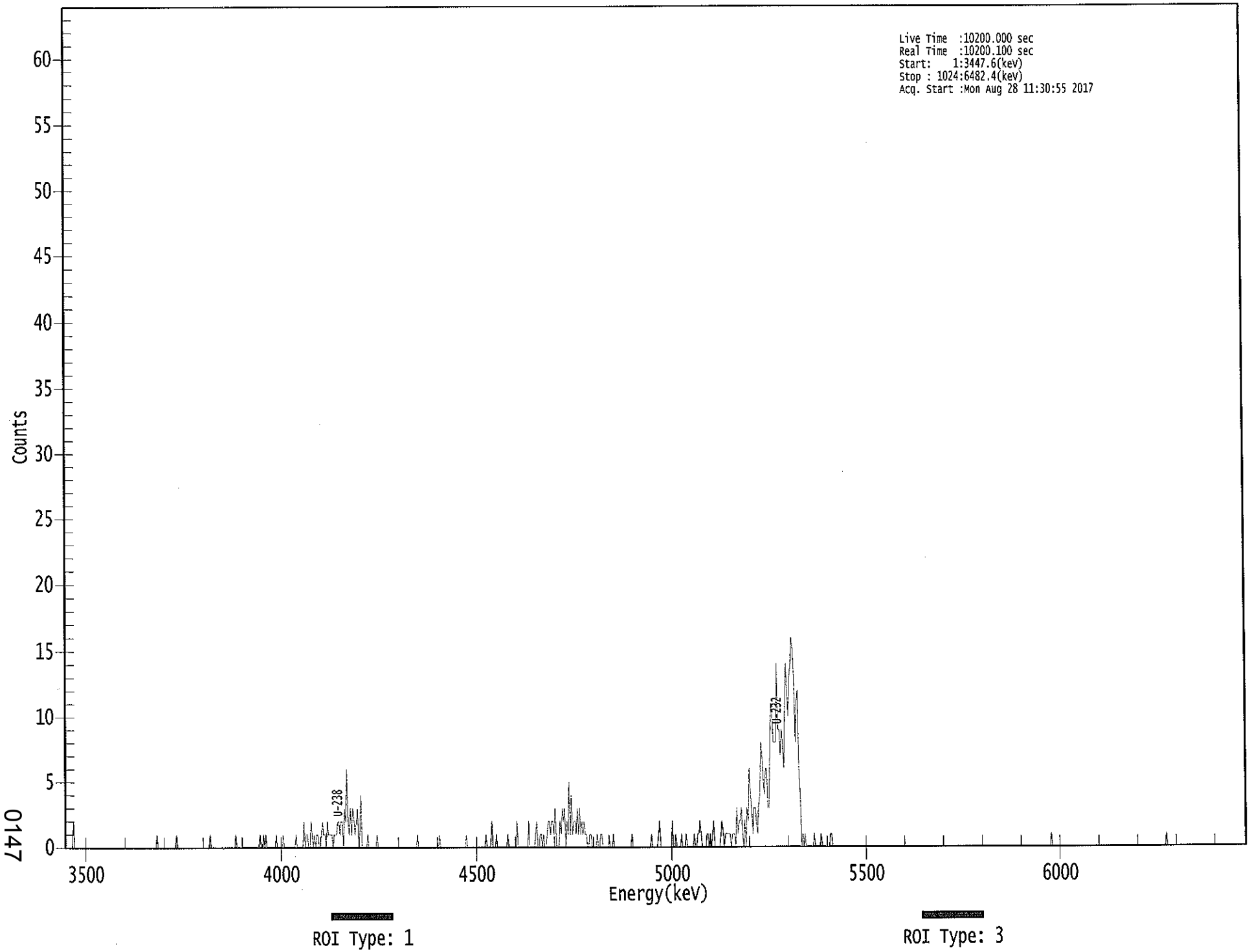
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.274	372.00	10.18	0.00	0.00E+000	28.2
U-234		4.728	74.32	22.86	0.68	0.00E+000	3.7
U-235		4.410	2.83	120.53	0.17	0.00E+000	3.0
U-238		4.147	70.83	23.32	0.17	0.00E+000	4.4

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.994	5302.50*	4.22E+000 +/- 4.70E-001	6.80E-002 +/- 7.57E-003
U-234	0.992	4761.50*	8.40E-001 +/- 2.14E-001	6.38E-002 +/- 7.10E-003
U-235	0.996	4385.50*	3.95E-002 +/- 4.78E-002	5.82E-002 +/- 6.48E-003
U-238	0.990	4184.40*	7.97E-001 +/- 2.06E-001	4.70E-002 +/- 5.23E-003

0000192845.CNF



0147

****
***** 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	2
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	1
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	1	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	1	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	1	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	1	0	0	1	0	1	0	0
177:	0	0	0	0	0	0	1	0
185:	0	0	0	0	1	0	0	0
193:	0	0	0	0	0	0	0	1
201:	0	0	0	0	0	0	2	0
209:	1	1	0	0	2	1	0	1
217:	0	1	1	0	0	1	2	1
225:	1	0	2	1	1	1	1	0
233:	1	1	1	2	2	1	2	2
241:	0	3	2	6	2	1	3	1
249:	3	2	1	2	3	0	1	4
257:	0	0	0	0	0	1	0	0
265:	0	0	0	0	0	1	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	1	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	1	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	0	1	0	0	0	0

369:	2	0	0	0	1	0	0	0

Sample Title: 10

Channel								
377:	0	0	0	0	0	0	1	0
385:	0	0	0	0	0	0	2	0
393:	0	0	0	0	0	0	0	0
401:	2	0	0	0	0	0	1	2
409:	0	0	1	1	0	1	0	0
417:	1	2	2	1	2	2	1	3
425:	0	0	0	2	1	3	2	3
433:	0	2	1	5	1	4	1	2
441:	2	1	3	1	3	1	2	1
449:	2	1	1	0	0	1	1	0
457:	0	0	0	1	0	0	1	1
465:	0	0	0	0	0	1	0	0
473:	0	1	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	1	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	0	1	0	0	0	0	0
513:	1	2	0	0	0	0	0	0
521:	0	0	0	0	2	0	0	1
529:	0	0	0	0	1	0	0	0
537:	1	0	0	0	0	0	0	1
545:	0	0	1	1	2	1	0	0
553:	0	0	1	1	0	1	0	1
561:	2	0	0	0	0	0	1	2
569:	1	0	1	1	1	1	1	0
577:	1	1	1	0	3	1	2	2
585:	3	1	0	2	0	3	2	6
593:	4	3	1	3	3	2	1	3
601:	4	8	7	5	4	6	6	3
609:	3	8	11	10	8	8	8	14
617:	9	9	7	9	8	6	10	14
625:	12	10	13	14	16	15	13	8
633:	11	12	6	4	0	1	0	1
641:	0	0	0	0	0	0	0	1
649:	0	0	0	0	0	1	0	0
657:	0	0	0	0	0	1	1	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

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

Apex-Alpha™

KB 8/28/18

Sample Description: HTC-A03-S004-3036-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 11
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_058
Chamber Serial Number: 01017326B
Detector Serial Number: 58
Env. Background: System Bkgd 194895
Reagent Blank: <not performed>

Sample Size: 1.300E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:30:57 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1785 +/- 0.0106
Counting Efficiency: 0.1665 +/- 0.0028 on 11/18/2016 3:34:06 PM
Chem. Recovery Factor: 1.0724 +/- 0.0663

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

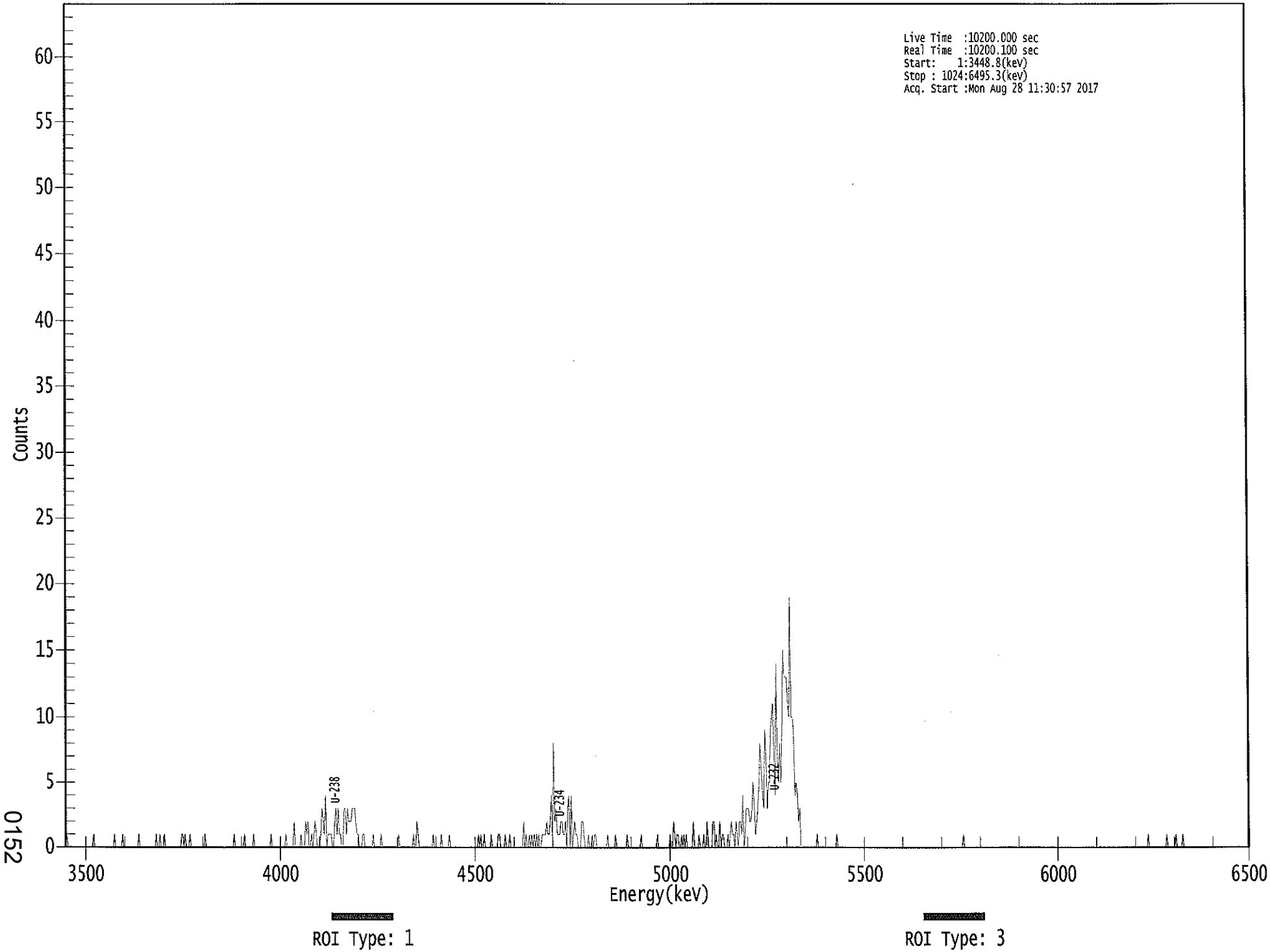
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.271	333.66	10.74	0.34	0.00E+000	28.0
U-234		4.719	71.83	23.16	0.17	0.00E+000	3.5
U-235		4.368	7.83	70.93	0.17	0.00E+000	4.5
U-238		4.142	72.32	23.17	0.68	0.00E+000	3.5

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.993	5302.50*	3.83E+000 +/- 4.46E-001	5.49E-002 +/- 6.39E-003
U-234	0.987	4761.50*	8.22E-001 +/- 2.13E-001	4.77E-002 +/- 5.56E-003
U-235	0.998	4385.50*	1.11E-001 +/- 7.94E-002	5.89E-002 +/- 6.86E-003
U-238	0.987	4184.40*	8.24E-001 +/- 2.14E-001	6.43E-002 +/- 7.48E-003

0000192850.CNF



0152

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

Sample Title: 11

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	0	0	0	0	0	1	1	0

Sample Title: 11

Channel								
377:	0	0	0	1	0	0	0	1
385:	0	0	0	0	0	0	0	0
393:	0	0	0	2	0	1	0	0
401:	1	0	1	0	1	0	1	0
409:	1	0	0	1	1	1	1	2
417:	1	1	2	4	0	8	2	3
425:	1	1	1	2	2	1	1	2
433:	0	3	4	0	4	0	1	2
441:	1	1	0	0	0	2	2	1
449:	0	0	0	1	0	0	1	0
457:	1	1	0	0	0	0	0	0
465:	0	0	0	1	0	0	0	0
473:	0	0	1	0	0	0	0	0
481:	0	0	0	0	1	0	0	0
489:	0	0	0	0	0	0	0	0
497:	1	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	1	0	0	2	1	0	1
529:	1	0	0	1	0	1	0	1
537:	0	0	0	0	0	2	0	0
545:	0	0	1	0	0	0	1	0
553:	0	2	0	0	0	0	2	2
561:	0	1	0	0	2	0	1	1
569:	0	0	0	1	0	1	2	1
577:	1	0	2	1	0	2	2	1
585:	4	0	1	3	3	3	2	2
593:	3	5	3	1	2	3	5	8
601:	6	4	3	9	7	3	5	5
609:	9	10	11	7	4	14	7	5
617:	8	5	9	15	13	13	13	11
625:	10	19	10	10	9	4	5	4
633:	2	3	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	1	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	1	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	1
777:	0	0	0	0	0	0	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: 11

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	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	1
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	1
953:	0	0	0	0	0	0	0	1
961:	0	0	0	0	0	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™

DB 8/28/17

Sample Description: HTC-A03-S004-3642-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 12
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_059
Chamber Serial Number: 10006125A
Detector Serial Number: 59
Env. Background: System Bkgd 194896
Reagent Blank: <not performed>

Sample Size: 1.110E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:31:09 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.604 mL
Effective Efficiency: 0.2267 +/- 0.0122
Counting Efficiency: 0.1776 +/- 0.0030 on 11/18/2016 3:40:57 PM
Chem. Recovery Factor: 1.2760 +/- 0.0720

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

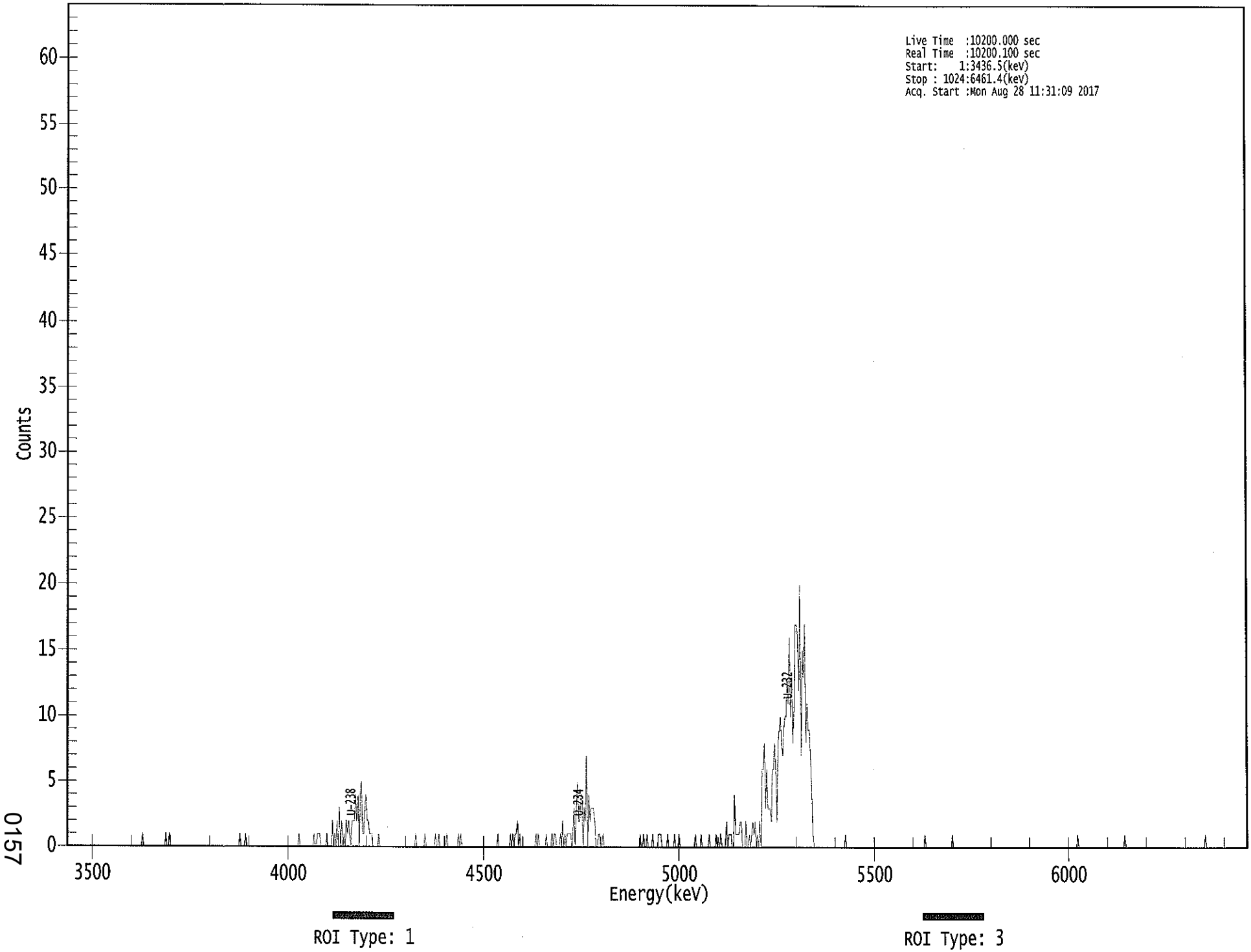
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.282	422.83	9.53	0.17	0.00E+000	18.0
U-234		4.746	69.66	23.55	0.34	0.00E+000	3.5
U-235		4.389	7.00	79.20	0.00	0.00E+000	3.0
U-238		4.164	64.32	24.59	0.68	0.00E+000	5.9

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.997	5302.50*	4.48E+000 +/- 4.72E-001	4.42E-002 +/- 4.66E-003
U-234	0.998	4761.50*	7.35E-001 +/- 1.90E-001	5.05E-002 +/- 5.32E-003
U-235	1.000	4385.50*	9.11E-002 +/- 7.28E-002	7.81E-002 +/- 8.23E-003
U-238	0.997	4184.40*	6.76E-001 +/- 1.81E-001	5.93E-002 +/- 6.25E-003

0000192855.CNF



0157

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

Sample Title: 12

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	1	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	1	0	0
89:	1	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	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	1	0	0
153:	0	0	1	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:	1	0	0	0	0	0	0	0
209:	0	0	0	0	0	1	0	0
217:	1	1	1	0	0	0	0	0
225:	1	0	0	0	0	2	0	1
233:	0	2	0	3	0	2	0	1
241:	0	2	1	2	1	0	2	2
249:	2	4	2	4	0	4	5	1
257:	1	3	4	2	2	1	1	1
265:	0	0	0	0	0	1	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	1	0	0
305:	0	0	0	0	0	1	0	0
313:	0	0	0	0	0	0	1	0
321:	0	1	0	0	0	0	0	0
329:	1	0	0	0	0	0	0	0
337:	0	0	1	0	1	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	1	0	0	0

Sample Title: 12

Channel								
377:	0	0	0	0	0	0	0	1
385:	0	1	0	1	1	2	0	1
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	1	0	1
409:	0	0	0	0	0	0	1	0
417:	0	0	0	1	0	1	1	0
425:	0	0	1	0	2	0	1	0
433:	1	1	1	1	0	1	3	0
441:	3	5	2	2	4	4	0	3
449:	2	7	0	4	2	3	3	3
457:	2	0	0	1	1	0	0	1
465:	0	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	1
497:	0	0	1	0	0	1	0	0
505:	0	0	1	0	0	0	0	1
513:	1	1	0	0	0	0	0	1
521:	0	0	0	0	0	1	0	0
529:	0	1	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	1
545:	0	0	0	0	1	0	0	0
553:	0	0	0	1	0	0	0	0
561:	0	1	0	0	0	1	0	0
569:	0	0	2	0	1	1	1	0
577:	0	4	1	1	1	1	2	2
585:	0	0	0	2	0	0	1	0
593:	1	2	1	2	0	1	0	2
601:	0	6	6	8	3	6	3	3
609:	3	2	6	6	8	6	2	8
617:	9	10	8	7	9	10	10	13
625:	11	16	10	13	8	11	17	17
633:	16	12	20	7	15	13	17	8
641:	11	9	9	7	4	1	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	1	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	1	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	1	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 12

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	1	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	1	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	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	1	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 8/28/17

Apex-Alpha™

Sample Description: HTC-A03-S004-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 13
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_060
Chamber Serial Number: 10006125B
Detector Serial Number: 60
Env. Background: System Bkgd 194897
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 11:31:11 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.607 mL
Effective Efficiency: 0.1705 +/- 0.0103
Counting Efficiency: 0.1477 +/- 0.0026 on 11/18/2016 3:34:04 PM
Chem. Recovery Factor: 1.1549 +/- 0.0728

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

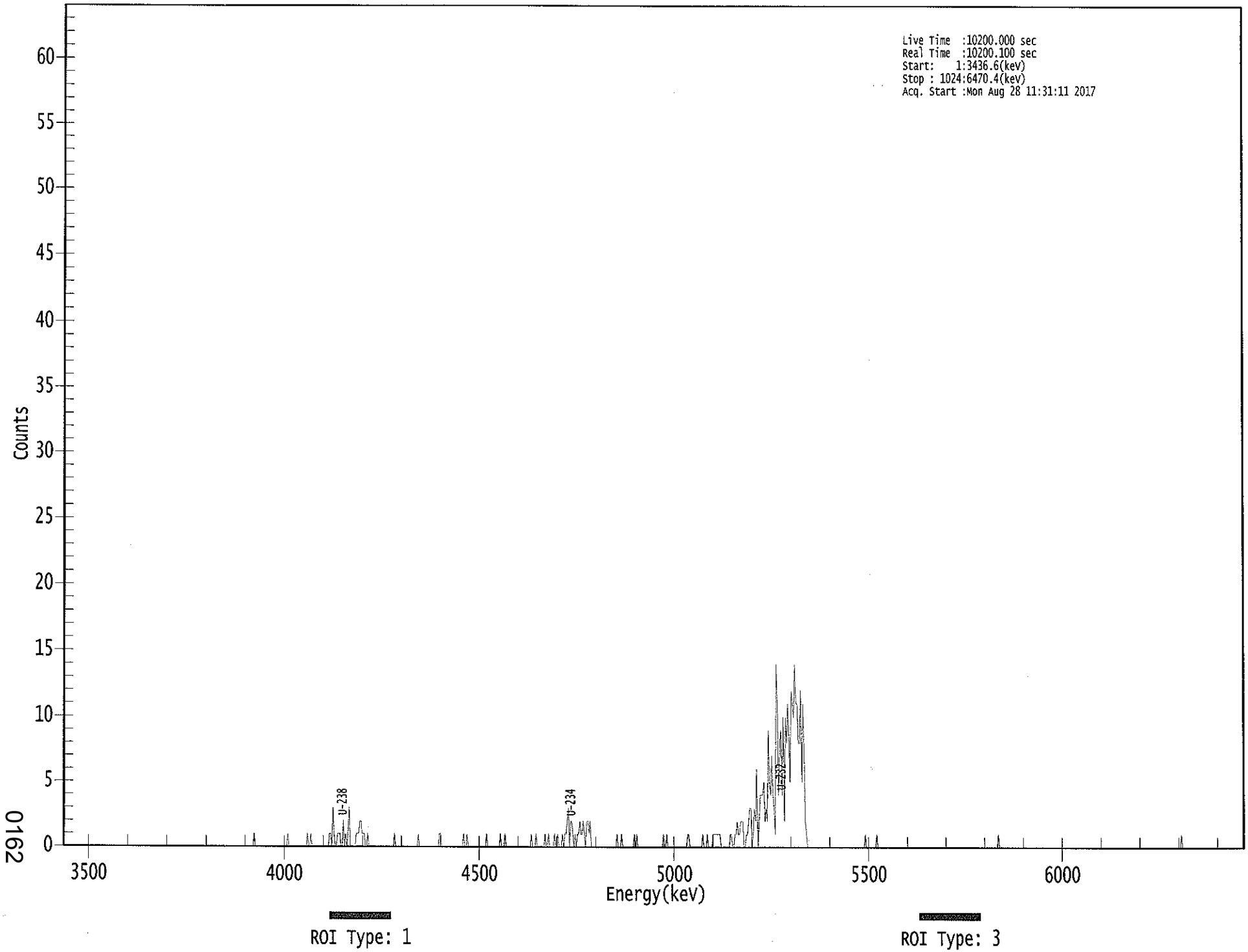
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.277	319.64	10.99	1.36	0.00E+000	6.3
U-234		4.739	33.96	34.80	2.04	0.00E+000	5.9
U-235		4.414	5.00	96.02	0.00	0.00E+000	3.0
U-238		4.152	29.49	36.46	0.51	0.00E+000	3.7

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*	4.99E+000 +/- 5.93E-001	1.07E-001 +/- 1.27E-002
U-234	0.996	4761.50*	5.29E-001 +/- 1.94E-001	1.21E-001 +/- 1.44E-002
U-235	0.994	4385.50*	9.60E-002 +/- 9.29E-002	1.15E-001 +/- 1.37E-002
U-238	0.993	4184.40*	4.57E-001 +/- 1.75E-001	8.13E-002 +/- 9.66E-003

0000192856.CNF



0162

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

Sample Title: 13

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	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	1	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	1	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	1	0	0	1	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	1	1	0
233:	3	1	0	0	1	1	1	0
241:	0	2	0	1	0	1	3	0
249:	0	0	0	0	1	1	1	2
257:	2	1	1	1	0	0	1	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	1	0	0
289:	0	0	0	0	0	0	0	0
297:	0	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	0	0	0	1	1	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	1	0	0	1	0	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: 13

Channel								
377:	0	1	0	0	0	1	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	1	0	0	0
409:	1	0	0	0	0	0	0	0
417:	1	0	0	1	0	0	0	0
425:	1	0	0	1	0	0	0	1
433:	0	1	1	2	3	0	2	2
441:	1	0	1	0	1	1	2	1
449:	1	2	1	0	2	2	1	2
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	1	0
481:	0	0	1	0	0	0	0	0
489:	0	0	0	0	0	1	0	1
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	1	0
521:	0	1	0	0	0	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	1	1	0	0	0
545:	0	0	0	0	0	0	0	0
553:	1	0	0	0	1	0	0	0
561:	0	1	1	1	1	1	1	1
569:	0	0	0	0	0	0	0	0
577:	1	1	0	0	1	1	2	1
585:	1	2	2	2	0	0	1	1
593:	2	3	3	0	1	3	2	6
601:	0	2	4	4	4	5	2	3
609:	2	9	5	4	7	4	3	1
617:	14	11	4	8	9	4	10	2
625:	10	8	11	8	5	12	11	10
633:	14	11	11	8	8	12	5	11
641:	7	2	1	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	1	0	0
697:	0	0	0	0	0	0	0	1
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 13

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

Apex-Alpha™

WB 8/28/17

Sample Description: HTC-A03-S004-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 14
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_003
Chamber Serial Number:
Detector Serial Number: 3
Env. Background: System Bkgd 194868
Reagent Blank: <not performed>

Sample Size: 1.010E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 2:32:33 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.2219 +/- 0.0120
Counting Efficiency: 0.1562 +/- 0.0027 on 11/19/2016 1:08:16 PM
Chem. Recovery Factor: 1.4202 +/- 0.0810

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

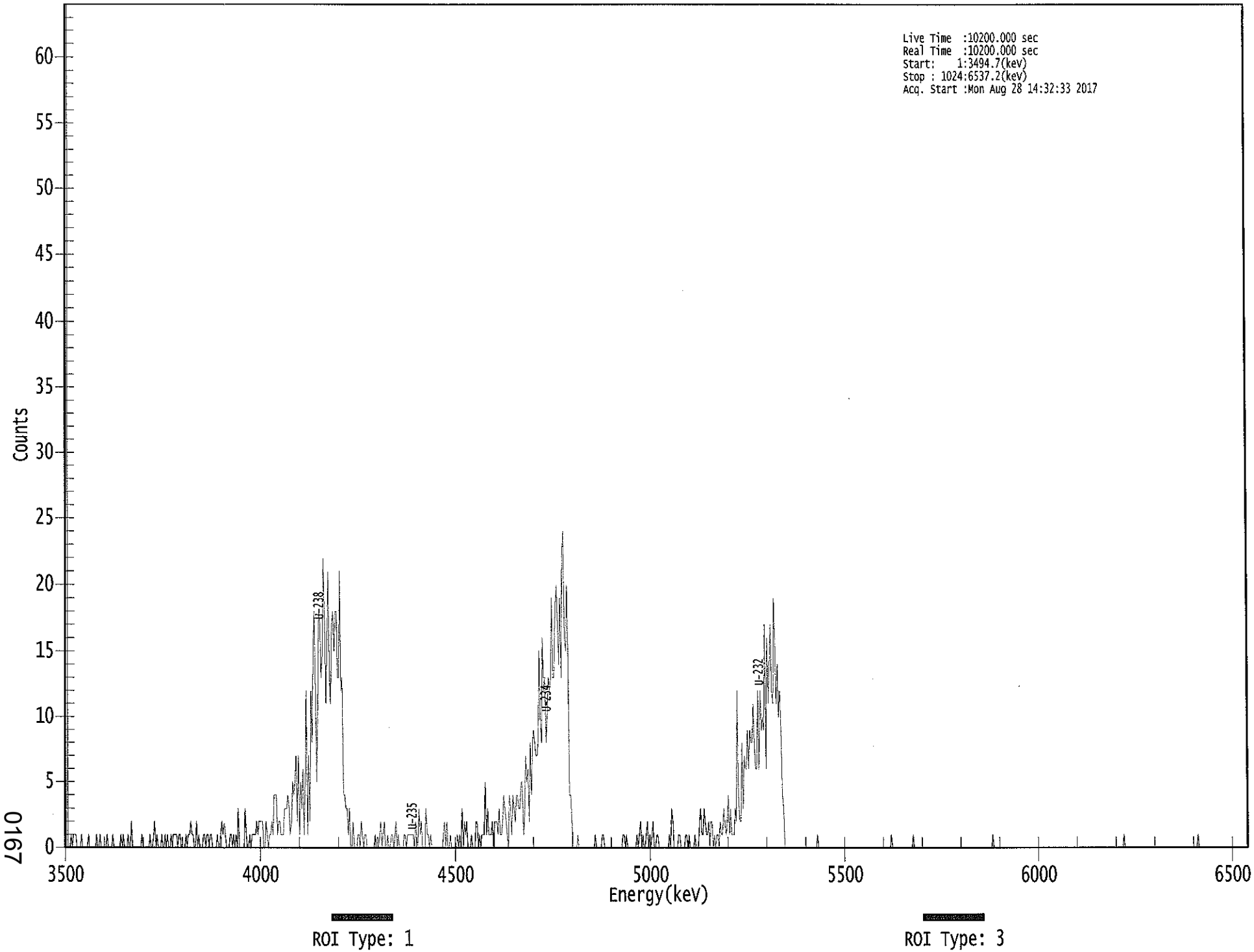
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.278	414.66	9.63	0.34	0.00E+000	37.1
U-234		4.731	541.98	8.43	1.02	0.00E+000	48.2
U-235		4.388	42.66	30.15	0.34	0.00E+000	3.7
U-238		4.150	562.98	8.27	1.02	0.00E+000	20.8

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*	4.93E+000 +/- 5.24E-001	5.68E-002 +/- 6.04E-003
U-234	0.993	4761.50*	6.42E+000 +/- 8.71E-001	7.46E-002 +/- 7.94E-003
U-235	1.000	4385.50*	6.24E-001 +/- 1.99E-001	6.99E-002 +/- 7.43E-003
U-238	0.992	4184.40*	6.64E+000 +/- 8.95E-001	7.43E-002 +/- 7.90E-003

0000192866.CNF



0167

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

Sample Title: 14

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	10200	10200	0	0	0	1	0	1
9:	1	1	0	0	0	0	1	0
17:	0	0	0	0	1	0	0	0
25:	0	0	0	1	0	0	1	0
33:	0	0	0	0	1	0	0	0
41:	0	1	0	0	0	0	0	0
49:	1	0	1	0	0	0	1	0
57:	0	2	0	0	0	0	0	0
65:	0	0	1	0	0	0	0	0
73:	0	1	0	0	1	2	0	1
81:	0	0	0	1	0	0	1	0
89:	1	0	0	1	0	1	1	1
97:	1	0	1	1	0	0	0	0
105:	1	0	1	1	2	1	1	0
113:	0	2	0	1	0	0	0	1
121:	1	0	1	1	0	1	1	0
129:	0	0	0	1	0	0	1	2
137:	1	2	1	0	0	0	1	1
145:	0	1	0	1	0	3	0	0
153:	0	0	0	3	1	0	0	1
161:	0	1	1	1	1	2	1	2
169:	2	2	2	0	0	2	1	0
177:	1	1	2	1	4	4	4	1
185:	2	2	1	1	1	3	3	3
193:	4	3	1	2	5	4	5	7
201:	2	7	1	5	3	6	1	5
209:	12	1	7	2	12	8	15	18
217:	12	5	11	18	17	13	15	22
225:	17	11	16	21	13	11	17	18
233:	15	18	18	13	13	21	12	13
241:	4	4	3	3	1	3	0	0
249:	2	0	0	0	1	1	0	2
257:	1	0	1	1	0	0	0	0
265:	0	0	0	1	0	0	0	1
273:	2	0	1	2	0	0	1	0
281:	0	1	1	0	1	2	0	1
289:	0	0	0	0	1	1	0	1
297:	1	1	1	1	1	0	2	1
305:	0	3	1	2	0	0	0	3
313:	1	1	0	1	0	0	0	0
321:	0	0	0	0	0	0	1	2
329:	0	2	0	0	1	0	0	0
337:	0	0	1	0	1	0	3	0
345:	2	1	2	0	0	0	1	0
353:	0	0	2	2	0	1	0	1
361:	1	1	5	1	3	1	1	1

369:	2	0	2	2	2	1	3	1

Sample Title: 14

Channel								
377:	1	2	4	3	2	1	0	4
385:	3	1	4	3	2	4	4	3
393:	3	5	5	1	2	7	5	6
401:	2	8	4	8	9	8	7	7
409:	8	15	10	8	16	12	13	8
417:	10	13	12	13	19	13	13	18
425:	20	17	14	19	13	22	24	16
433:	15	20	14	4	4	2	0	0
441:	0	0	1	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	1	0	0	0	0	0	1
465:	1	0	0	0	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	1	1	0	1	0	0	0
489:	0	0	0	0	0	1	0	1
497:	2	0	1	0	0	1	2	0
505:	1	0	1	2	0	0	1	1
513:	0	0	0	0	0	0	0	0
521:	0	1	0	3	2	0	0	0
529:	0	1	1	0	0	0	0	1
537:	1	0	1	0	0	0	0	1
545:	0	0	0	2	3	1	1	3
553:	2	1	1	2	0	2	2	0
561:	1	0	1	1	0	2	1	1
569:	3	2	1	2	4	1	3	1
577:	1	1	3	2	12	4	2	2
585:	8	3	7	6	6	9	6	9
593:	8	8	11	8	6	6	12	6
601:	12	9	10	9	17	6	16	11
609:	14	17	12	11	19	15	11	14
617:	10	12	9	4	3	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	1	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	1	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	1	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	1	0	0	0	0	0	0

Sample Title: 14

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	1	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	1	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 8/28/13

Sample Description: HTC-A03-S004-4248-01 MSD
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 15
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_004
Chamber Serial Number:
Detector Serial Number: 4
Env. Background: System Bkgd 194869
Reagent Blank: <not performed>

Sample Size: 1.020E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 2:32:34 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.608 mL
Effective Efficiency: 0.2354 +/- 0.0124
Counting Efficiency: 0.1883 +/- 0.0032 on 11/19/2016 1:08:17 PM
Chem. Recovery Factor: 1.2501 +/- 0.0694

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

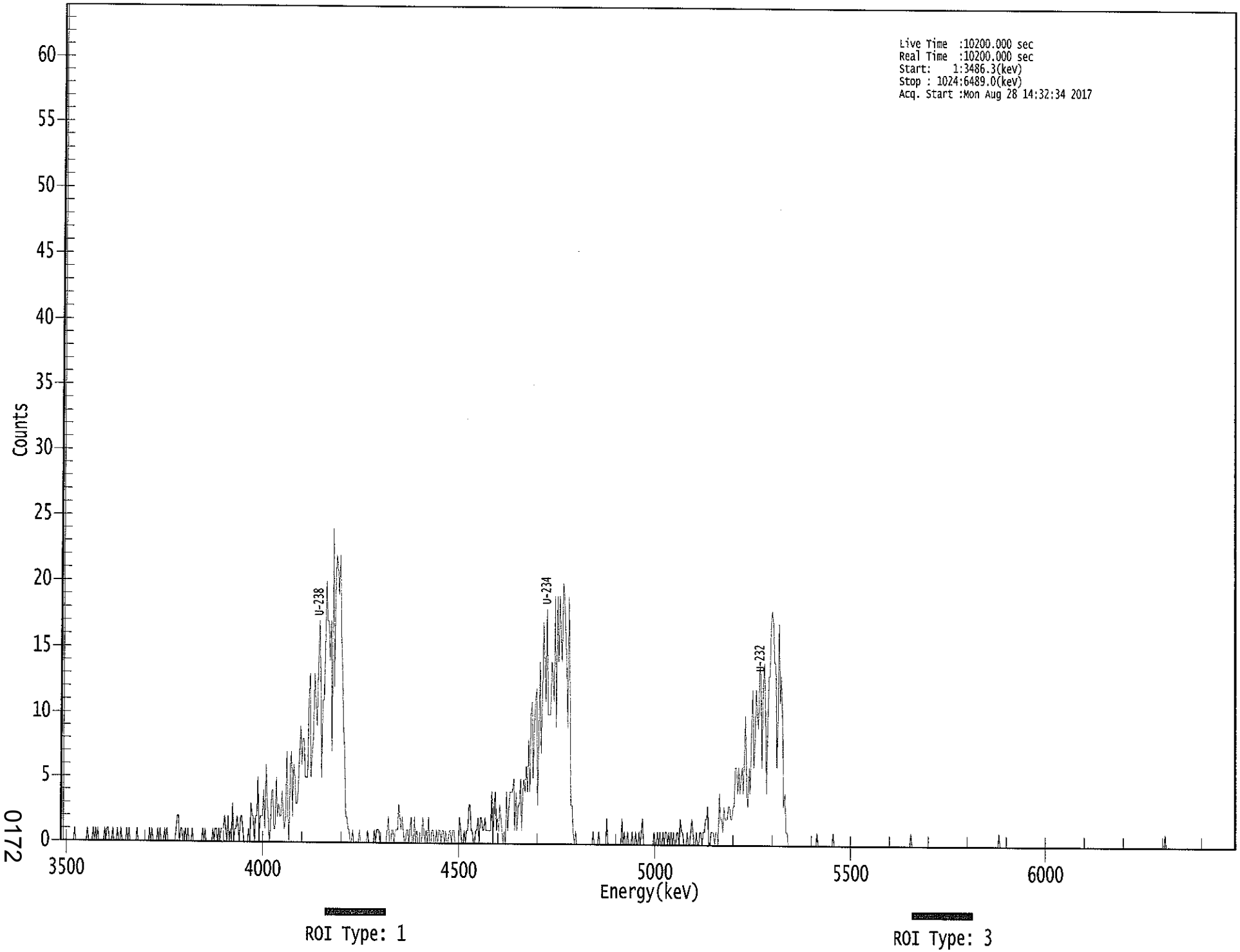
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.270	442.49	9.32	0.51	0.00E+000	22.4
U-234		4.725	544.32	8.41	0.68	0.00E+000	28.5
U-235		4.392	42.32	30.41	0.68	0.00E+000	6.6
U-238		4.143	596.81	8.03	1.19	0.00E+000	5.0

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.993	5302.50*	4.91E+000 +/- 5.08E-001	5.82E-002 +/- 6.03E-003
U-234	0.991	4761.50*	6.02E+000 +/- 8.03E-001	6.24E-002 +/- 6.46E-003
U-235	1.000	4385.50*	5.77E-001 +/- 1.85E-001	7.69E-002 +/- 7.97E-003
U-238	0.988	4184.40*	6.57E+000 +/- 8.61E-001	7.25E-002 +/- 7.51E-003

0000192865.CNF



0172

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

Sample Title: 15

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	10200	10200	0	0	0	0	0	0
9:	0	0	0	0	1	0	0	0
17:	0	0	0	0	0	0	0	1
25:	0	0	0	0	1	0	1	0
33:	1	0	0	0	0	0	1	0
41:	1	1	0	0	0	1	0	0
49:	0	1	0	0	1	0	0	0
57:	0	1	0	1	0	0	0	0
65:	0	0	1	0	0	0	0	0
73:	0	0	0	0	0	1	0	1
81:	0	0	0	0	1	0	1	0
89:	0	0	1	0	1	0	0	0
97:	0	0	0	0	1	2	2	0
105:	1	1	0	0	1	0	1	0
113:	0	0	1	0	0	0	0	0
121:	0	0	0	1	0	1	0	0
129:	0	0	0	0	1	0	1	1
137:	0	1	0	1	1	1	2	1
145:	0	2	0	1	0	3	0	1
153:	1	2	1	0	2	2	1	0
161:	0	0	0	1	0	3	2	2
169:	0	2	2	5	0	2	2	2
177:	4	1	6	3	2	0	1	4
185:	4	1	1	5	2	3	2	2
193:	4	2	1	2	7	2	0	6
201:	7	2	6	5	3	3	4	7
209:	9	6	8	8	5	5	5	11
217:	13	5	7	8	13	11	9	13
225:	17	13	5	11	11	15	20	17
233:	17	14	17	7	24	12	20	22
241:	21	19	22	16	13	9	7	2
249:	2	1	1	0	0	1	0	0
257:	0	0	0	1	0	0	0	0
265:	0	0	1	0	0	0	0	0
273:	1	0	1	1	1	0	0	0
281:	0	0	0	1	2	0	0	1
289:	1	0	1	1	1	3	2	1
297:	2	1	0	0	1	1	0	1
305:	2	0	0	2	0	1	0	0
313:	0	0	2	1	0	1	0	2
321:	0	0	1	1	0	0	1	0
329:	1	1	0	1	1	0	1	0
337:	0	1	1	0	1	1	0	0
345:	0	0	2	1	0	0	1	0
353:	1	1	3	3	1	1	0	0
361:	1	1	2	0	2	2	1	1

369:	2	1	1	1	1	1	4	0

Sample Title: 15

Channel								
377:	3	4	1	2	1	3	2	1
385:	0	1	0	4	1	3	4	4
393:	4	5	1	4	1	3	3	5
401:	1	4	5	4	6	4	8	4
409:	10	11	5	9	11	12	3	9
417:	14	7	11	17	14	11	18	10
425:	10	10	14	13	11	19	9	19
433:	14	19	16	14	20	19	16	14
441:	9	19	12	3	3	1	0	1
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	1	0
465:	0	0	0	1	0	0	0	0
473:	0	0	2	0	0	0	0	0
481:	0	0	0	0	0	0	0	2
489:	0	1	0	0	1	0	0	0
497:	1	0	0	1	0	0	1	0
505:	1	2	0	0	0	0	0	0
513:	0	0	0	1	0	0	1	0
521:	1	0	0	1	0	1	1	0
529:	1	0	1	0	1	0	0	1
537:	1	0	2	1	1	0	0	0
545:	1	0	0	1	2	1	0	0
553:	1	0	0	1	1	0	1	1
561:	2	2	3	0	0	1	1	1
569:	0	1	1	0	4	2	2	1
577:	3	2	2	2	3	3	2	2
585:	3	3	6	6	4	6	4	5
593:	6	4	7	10	4	3	6	4
601:	9	12	6	8	12	10	9	14
609:	13	6	12	14	11	4	9	13
617:	13	17	18	17	14	14	6	10
625:	17	11	13	9	3	4	1	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	1	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	1
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	1	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801:	0	0	0	0	0	0	0	0

Sample Title: 15

Channel								
809:	0	0	0	0	0	0	0	0
817:	1	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	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

KB 5/28/18

Apex-Alpha™

Sample Description: HTC-A03-S004-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 16
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_010
Chamber Serial Number:
Detector Serial Number: 10
Env. Background: System Bkgd 194870
Reagent Blank: <not performed>

Sample Size: 1.020E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 2:32:35 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.604 mL
Effective Efficiency: 0.2261 +/- 0.0122
Counting Efficiency: 0.1872 +/- 0.0032 on 11/19/2016 1:08:16 PM
Chem. Recovery Factor: 1.2079 +/- 0.0684

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

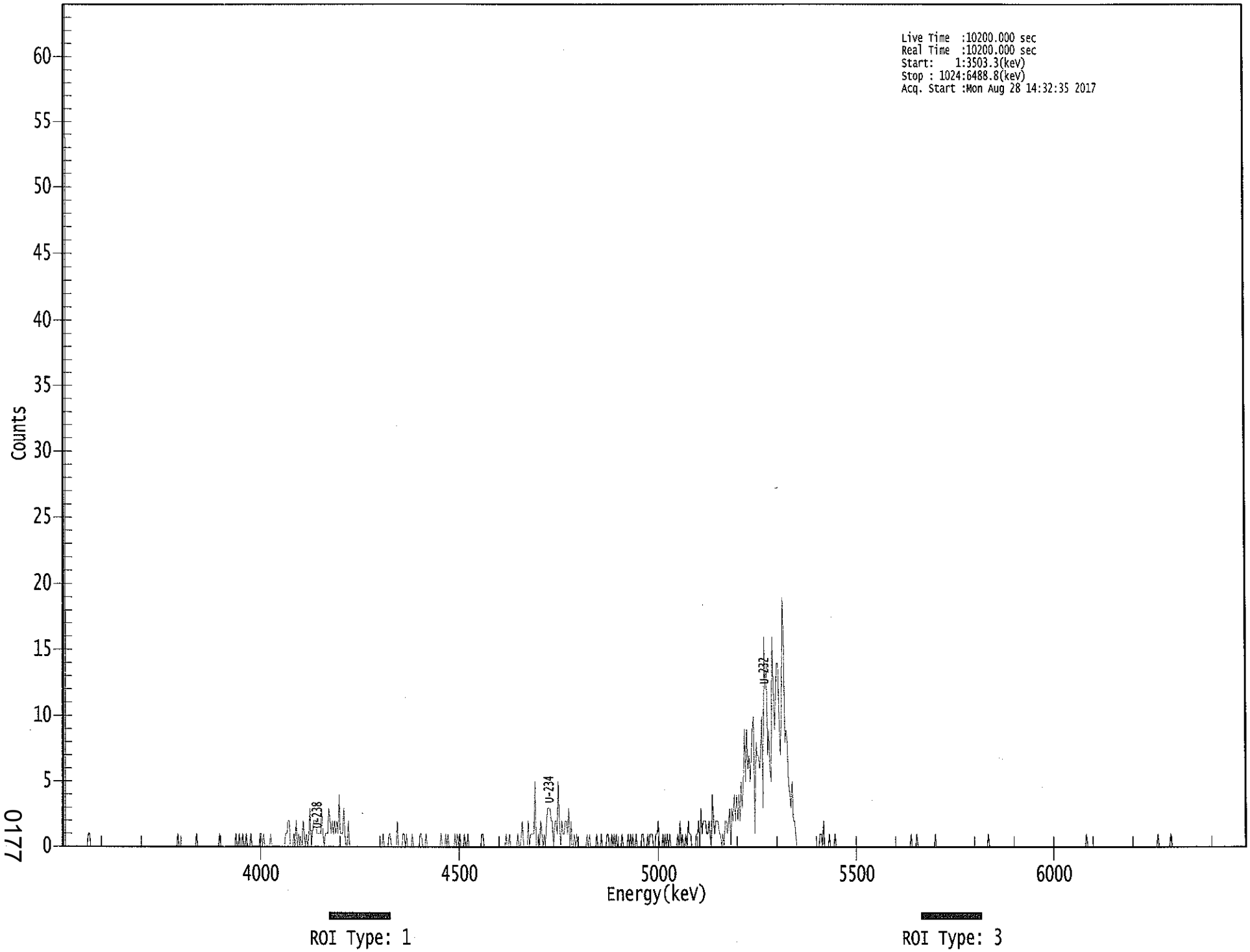
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.271	422.13	9.56	1.87	0.00E+000	8.7
U-234		4.729	63.77	25.26	3.23	0.00E+000	3.3
U-235		4.395	14.62	55.93	2.38	0.00E+000	2.9
U-238		4.144	65.96	24.57	2.04	0.00E+000	3.9

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*	4.87E+000 +/- 5.15E-001	8.74E-002 +/- 9.25E-003
U-234	0.992	4761.50*	7.34E-001 +/- 2.01E-001	1.05E-001 +/- 1.11E-002
U-235	0.999	4385.50*	2.08E-001 +/- 1.18E-001	1.16E-001 +/- 1.23E-002
U-238	0.989	4184.40*	7.56E-001 +/- 2.02E-001	8.93E-002 +/- 9.44E-003

0000192864.CNF



0177

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

Sample Title: 16

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	10200	10200	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	1	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	1	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	1	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	1
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	1	0	0
153:	1	0	0	1	0	0	1	0
161:	0	0	1	0	0	0	0	0
169:	0	0	1	1	0	1	0	0
177:	0	0	0	1	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	1	1	2	2	0	0	0	1
201:	0	2	0	1	0	0	0	2
209:	1	0	1	0	1	3	0	1
217:	2	2	2	1	1	1	1	3
225:	1	0	1	1	1	3	2	1
233:	2	1	2	1	2	1	4	1
241:	1	1	3	1	0	0	2	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	1	0	0	0
281:	0	1	1	0	0	0	0	0
289:	2	0	0	0	0	1	1	0
297:	1	0	0	0	0	1	0	0
305:	0	0	0	0	1	1	0	0
313:	0	1	0	0	0	0	0	0
321:	0	0	0	0	0	0	1	0
329:	0	0	1	0	1	0	0	0
337:	0	0	1	0	1	0	1	0
345:	0	0	1	0	0	1	0	0
353:	0	0	0	0	0	0	0	0
361:	0	1	1	0	0	0	0	0

369:	0	0	0	0	0	0	0	0

Sample Title: 16

Channel								
377:	0	0	0	0	0	0	1	0
385:	0	1	0	0	0	0	0	0
393:	1	0	0	1	2	0	0	0
401:	0	2	0	1	1	1	1	5
409:	0	0	1	0	2	1	0	1
417:	0	2	3	3	3	2	2	0
425:	2	2	1	5	2	0	2	1
433:	1	2	2	1	3	0	2	0
441:	0	1	0	1	0	0	0	0
449:	0	0	0	0	1	0	1	0
457:	0	0	0	0	1	0	0	0
465:	1	0	0	0	0	1	1	0
473:	0	1	0	1	0	1	0	0
481:	0	0	1	0	0	0	0	1
489:	0	1	0	1	0	0	1	0
497:	0	0	0	1	1	0	0	0
505:	1	0	1	1	1	0	0	1
513:	1	2	0	0	0	1	0	1
521:	0	1	0	1	0	0	0	0
529:	0	0	1	0	2	0	1	0
537:	0	1	0	2	1	1	0	0
545:	0	0	1	1	2	0	3	1
553:	2	2	2	1	1	2	1	0
561:	4	2	1	2	2	2	1	1
569:	0	1	0	2	2	1	2	3
577:	0	3	2	4	2	4	2	4
585:	2	5	3	5	9	5	9	6
593:	7	5	7	9	10	1	8	7
601:	7	6	7	10	3	16	12	14
609:	7	9	6	5	16	12	9	12
617:	14	14	10	7	10	19	16	8
625:	9	8	5	4	3	5	2	2
633:	1	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	1	1	0
657:	2	0	0	0	0	1	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	0	0	0
729:	0	0	0	0	1	0	0	0
737:	0	1	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	1	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	1

801:	0	0	0	0	0	0	0	0

Sample Title: 16

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	1	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	1	0	0	0	0	0
953:	0	0	0	0	0	1	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	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 8/28/17

Sample Description: HTC-A04-S001-0006-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 17
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_011
Chamber Serial Number:
Detector Serial Number: 11
Env. Background: System Bkgd 194871
Reagent Blank: <not performed>

Sample Size: 1.080E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 2:32:36 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.2067 +/- 0.0116
Counting Efficiency: 0.1991 +/- 0.0034 on 11/19/2016 1:08:17 PM
Chem. Recovery Factor: 1.0381 +/- 0.0607

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

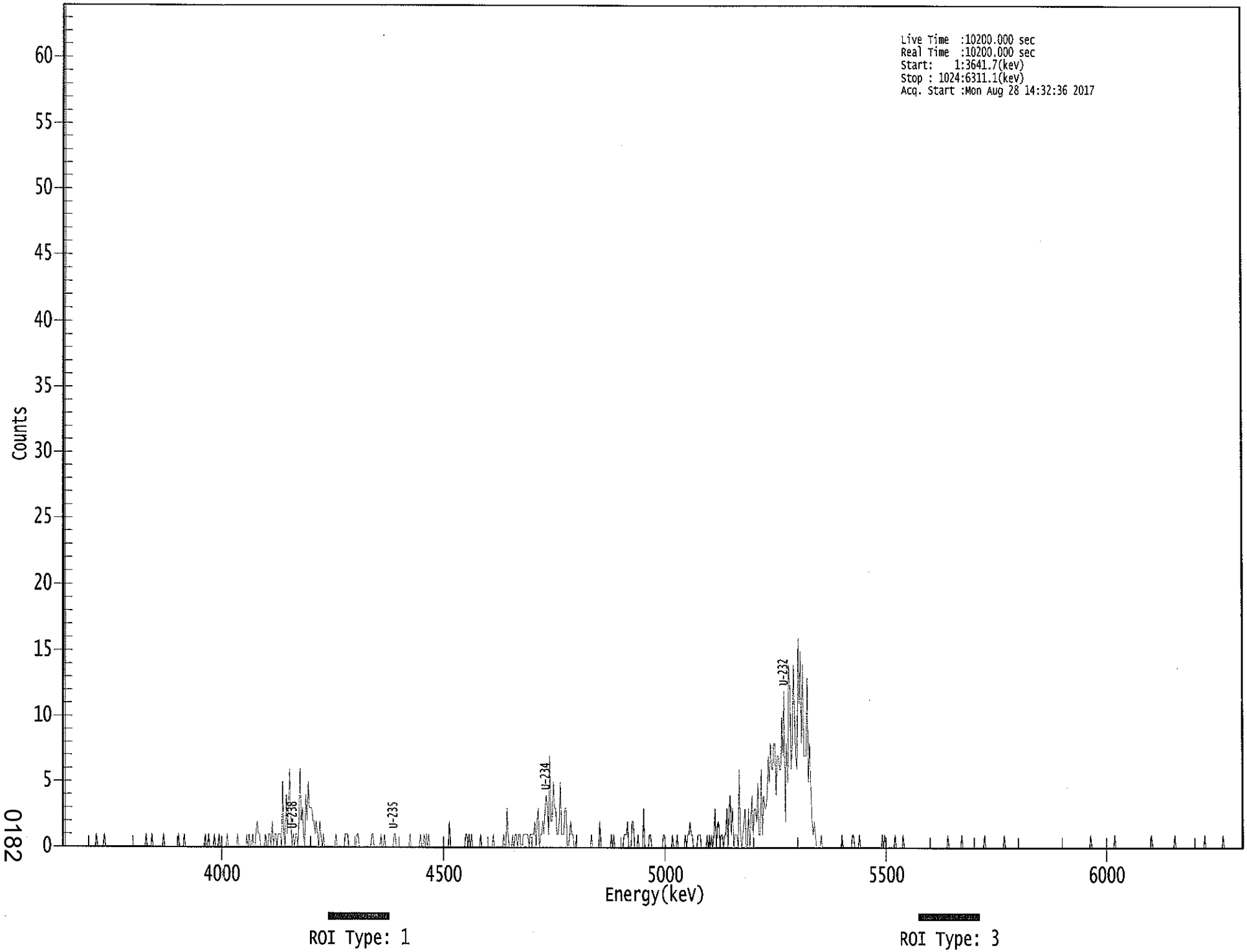
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.271	386.30	10.00	1.70	0.00E+000	9.9
U-234		4.731	87.62	21.27	2.38	0.00E+000	3.3
U-235		4.389	11.81	60.30	1.19	0.00E+000	5.2
U-238		4.161	90.98	20.68	1.02	0.00E+000	4.6

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.993	5302.50*	4.61E+000 +/- 5.05E-001	8.76E-002 +/- 9.61E-003
U-234	0.994	4761.50*	1.04E+000 +/- 2.49E-001	9.75E-002 +/- 1.07E-002
U-235	1.000	4385.50*	1.73E-001 +/- 1.06E-001	9.66E-002 +/- 1.06E-002
U-238	0.996	4184.40*	1.08E+000 +/- 2.52E-001	7.46E-002 +/- 8.18E-003

0000192867.CNF



0182

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

Sample Title: 17

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	10200	10200	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	1	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	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	1	0	0	0	0	1	0	0
81:	0	0	0	0	0	0	0	1
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	1	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	1	0	0	1	0
129:	0	0	0	1	0	0	0	1
137:	0	0	0	0	0	0	1	0
145:	0	0	0	0	0	0	0	1
153:	0	0	0	0	0	0	0	1
161:	0	1	0	0	1	0	0	1
169:	2	1	1	0	0	0	0	1
177:	0	0	1	1	0	2	0	1
185:	1	0	1	1	1	0	5	1
193:	0	4	1	3	6	2	0	1
201:	0	1	1	0	2	6	2	3
209:	1	0	4	2	5	3	3	3
217:	2	2	1	2	1	0	2	1
225:	0	1	0	0	0	0	0	0
233:	0	0	0	0	1	0	0	0
241:	0	0	0	0	1	1	1	0
249:	0	0	0	0	0	0	1	1
257:	0	0	0	0	0	0	0	0
265:	0	0	0	1	1	0	0	0
273:	0	0	0	1	0	0	1	0
281:	0	0	0	0	0	0	1	1
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	1	0	0	0
305:	0	0	0	0	0	1	0	0
313:	1	0	1	0	1	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	2	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	1	1	0	1
353:	0	1	0	0	0	0	0	0
361:	0	1	0	0	0	0	0	0

369:	0	0	0	0	1	0	0	0

Sample Title: 17

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

801:	0	0	0	0	0	0	0	0

Sample Title: 17

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

Apex-Alpha™

KB 8/28/17

Sample Description: HTC-A04-S001-0612-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 18
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_012
Chamber Serial Number:
Detector Serial Number: 12
Env. Background: System Bkgd 194872
Reagent Blank: <not performed>

Sample Size: 1.150E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 2:32:37 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.607 mL
Effective Efficiency: 0.2275 +/- 0.0122
Counting Efficiency: 0.1881 +/- 0.0032 on 11/19/2016 1:08:18 PM
Chem. Recovery Factor: 1.2093 +/- 0.0682

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

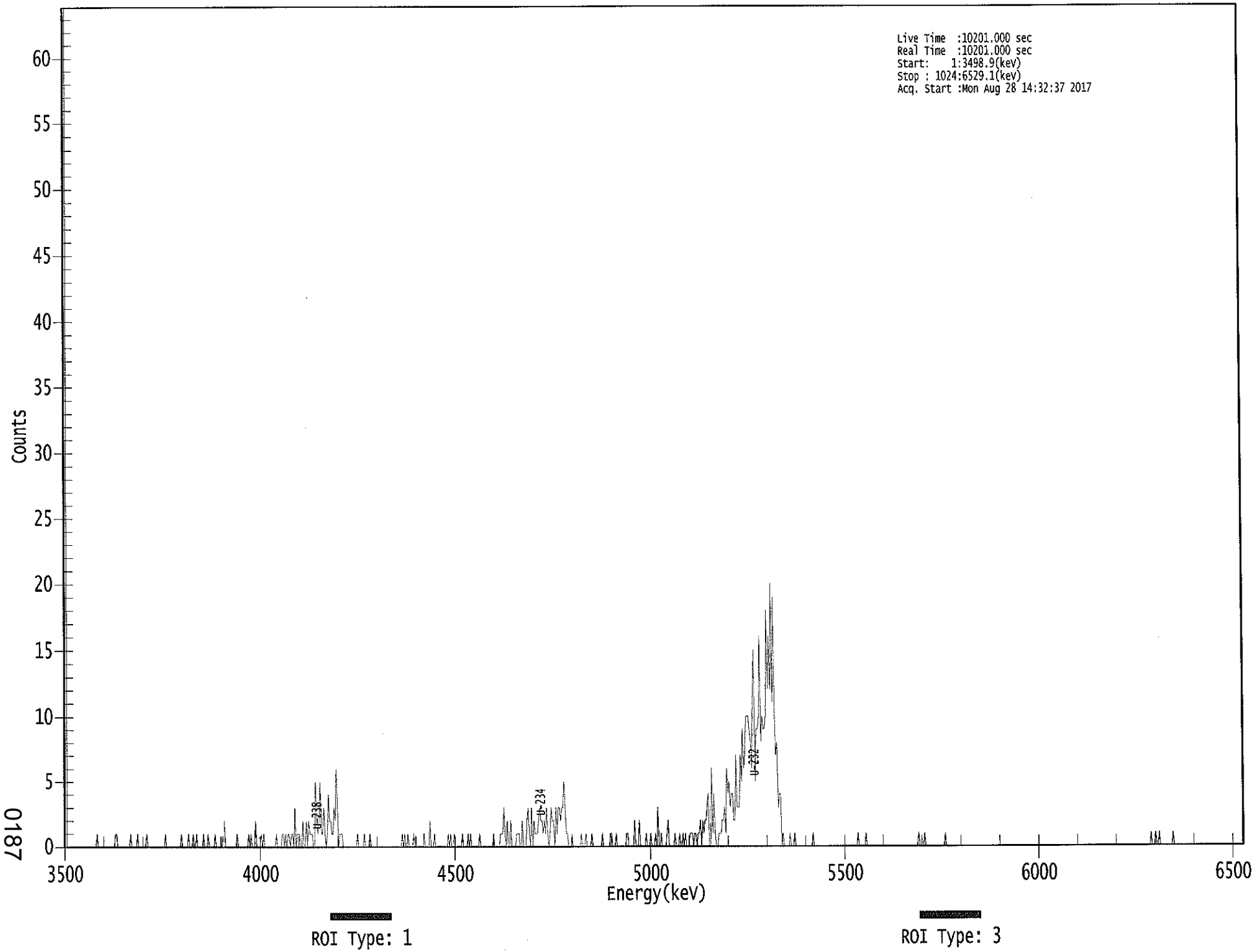
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.270	426.30	9.52	1.70	0.00E+000	23.7
U-234		4.723	86.32	21.19	0.68	0.00E+000	11.1
U-235		4.428	9.98	65.65	1.02	0.00E+000	3.0
U-238		4.147	74.64	22.93	1.36	0.00E+000	5.2

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.993	5302.50*	4.34E+000 +/- 4.57E-001	7.48E-002 +/- 7.87E-003
U-234	0.990	4761.50*	8.76E-001 +/- 2.07E-001	5.72E-002 +/- 6.03E-003
U-235	0.987	4385.50*	1.25E-001 +/- 8.31E-002	7.89E-002 +/- 8.31E-003
U-238	0.990	4184.40*	7.54E-001 +/- 1.90E-001	6.93E-002 +/- 7.30E-003

0000192868.CNF



0187

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

Sample Title: 18

Elapsed Live time: 10201
Elapsed Real Time: 10201

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

369:	0	0	0	1	0	0	0	0

Sample Title: 18

Channel								
377:	0	1	1	1	3	1	0	2
385:	0	0	2	0	0	0	0	1
393:	1	1	0	0	2	0	0	0
401:	2	3	1	0	3	0	2	1
409:	1	1	2	3	2	2	1	2
417:	1	3	1	0	1	3	2	2
425:	0	3	1	3	3	2	3	3
433:	5	3	1	1	0	0	0	1
441:	0	0	0	0	0	0	0	1
449:	0	0	0	1	0	0	0	0
457:	1	0	0	0	0	0	0	0
465:	0	1	0	0	0	0	0	0
473:	1	1	0	0	0	1	0	0
481:	0	0	0	0	0	0	1	1
489:	0	0	0	0	0	2	0	0
497:	0	2	0	0	0	0	0	1
505:	0	0	0	1	0	0	0	1
513:	0	3	0	0	1	0	0	0
521:	0	1	2	0	0	0	0	0
529:	1	0	0	0	1	0	0	1
537:	0	1	0	0	0	1	1	1
545:	0	1	1	0	1	1	2	0
553:	2	1	2	2	3	4	0	0
561:	6	1	4	1	0	0	1	1
569:	1	2	2	3	1	6	4	5
577:	3	4	4	2	2	7	3	3
585:	3	7	5	9	6	7	10	10
593:	10	9	8	6	12	15	5	9
601:	9	10	16	8	10	9	9	10
609:	18	12	16	12	20	11	19	10
617:	7	8	3	4	4	0	1	0
625:	0	0	0	0	1	0	0	0
633:	1	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	1	0	0	0	0	0	0	0
657:	0	0	0	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	1
689:	0	0	0	0	0	0	1	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	1	0	0	0
745:	0	1	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	1	0	0	0	0
769:	0	0	0	0	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: 18

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	1	0
945:	0	0	1	0	0	1	0	0
953:	0	0	0	0	0	0	0	0
961:	0	1	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	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 8/29/17

Apex-Alpha™

Sample Description: HTC-A04-S001-1218-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 19
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_014
Chamber Serial Number:
Detector Serial Number: 14
Env. Background: System Bkgd 194873
Reagent Blank: <not performed>

Sample Size: 1.110E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 2:32:39 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.2007 +/- 0.0114
Counting Efficiency: 0.1847 +/- 0.0032 on 11/19/2016 1:08:18 PM
Chem. Recovery Factor: 1.0865 +/- 0.0643

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

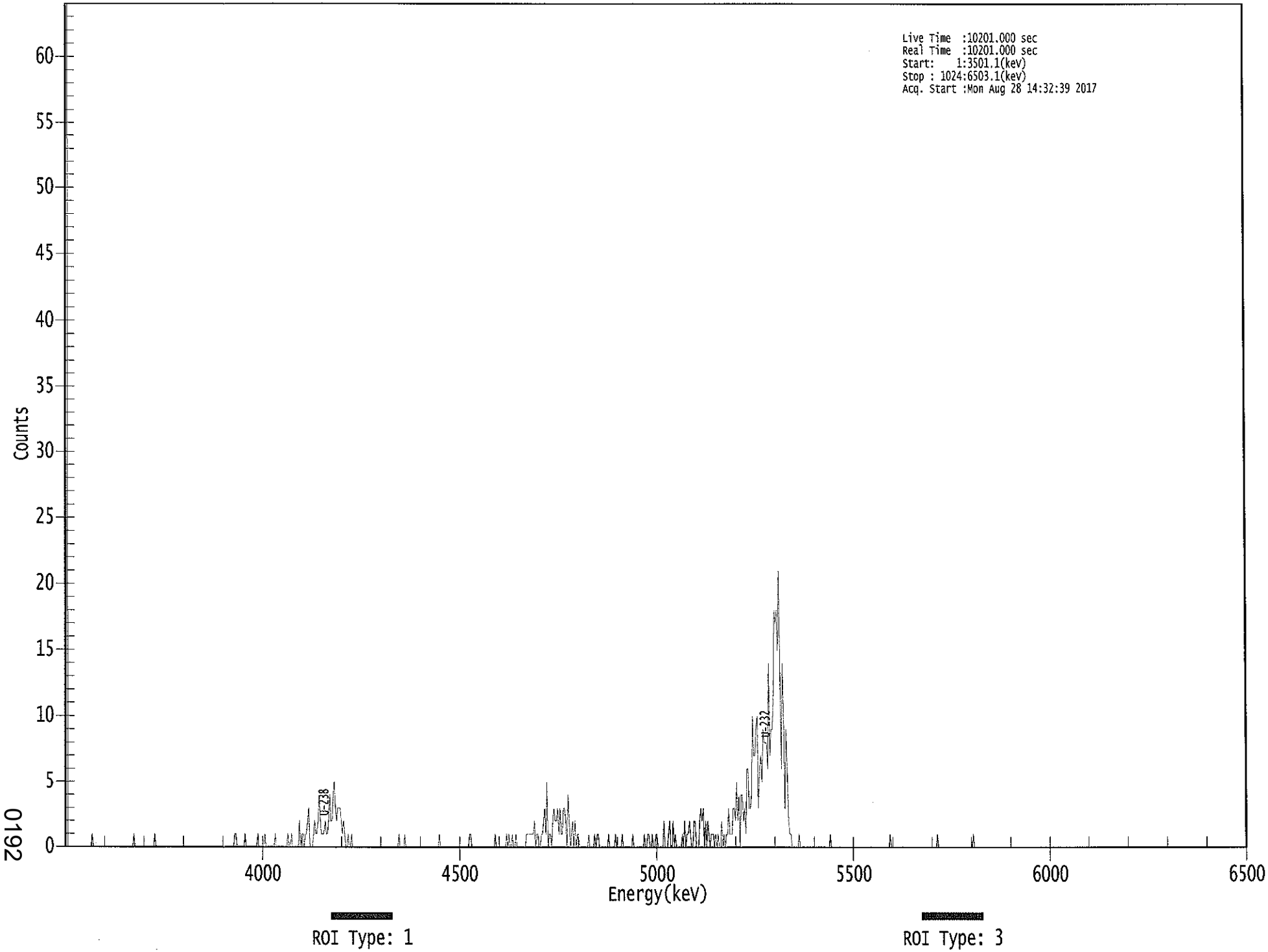
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.278	375.47	10.14	1.53	0.00E+000	19.6
U-234		4.734	69.66	23.55	0.34	0.00E+000	3.3
U-235		4.385	2.49	138.30	0.51	0.00E+000	2.9
U-238		4.157	75.15	22.76	0.85	0.00E+000	9.5

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.996	5302.50*	4.49E+000 +/- 4.98E-001	8.50E-002 +/- 9.43E-003
U-234	0.995	4761.50*	8.30E-001 +/- 2.16E-001	5.70E-002 +/- 6.32E-003
U-235	1.000	4385.50*	3.66E-002 +/- 5.08E-002	7.72E-002 +/- 8.56E-003
U-238	0.995	4184.40*	8.92E-001 +/- 2.26E-001	7.10E-002 +/- 7.88E-003

0000192869.CNF



0192

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

Sample Title: 19

Elapsed Live time: 10201
Elapsed Real Time: 10201

Channel								
1:	10201	10201	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	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	1	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	1	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	1	1	0	0	0	0
153:	0	0	0	1	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	1	0	0
185:	0	0	0	0	0	0	0	0
193:	1	0	0	1	0	0	0	0
201:	0	0	2	0	1	1	0	1
209:	1	2	3	0	0	0	1	2
217:	1	1	2	4	2	1	1	1
225:	2	1	1	2	4	2	2	4
233:	5	3	2	3	3	3	2	1
241:	2	1	0	0	1	0	0	1
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	1	0	0	0	0	1	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	1	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	1	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

369:	0	0	0	1	0	0	0	0

Sample Title: 19

Channel								
377:	0	0	0	0	0	1	0	1
385:	0	0	1	0	0	1	0	0
393:	0	0	0	0	0	0	1	1
401:	1	1	1	1	1	2	0	1
409:	1	0	0	1	1	2	3	1
417:	5	0	1	1	0	2	3	2
425:	2	3	1	3	1	1	3	3
433:	2	0	4	2	0	1	2	0
441:	2	0	1	1	0	0	0	0
449:	0	0	0	0	1	0	0	0
457:	0	1	0	1	1	0	0	0
465:	0	0	0	0	0	1	0	0
473:	0	0	0	1	0	0	0	0
481:	0	1	0	0	0	0	0	0
489:	0	0	1	0	0	0	0	0
497:	0	0	0	0	1	0	0	1
505:	1	0	0	1	0	0	1	1
513:	0	0	0	0	0	2	0	0
521:	0	1	2	0	0	2	0	1
529:	0	0	0	0	0	1	0	2
537:	0	1	1	2	1	0	0	2
545:	2	0	0	0	2	3	2	3
553:	0	2	0	2	1	0	1	1
561:	1	0	1	0	1	0	0	2
569:	0	1	0	1	1	3	1	1
577:	1	3	3	2	5	2	4	0
585:	4	4	2	3	1	6	6	3
593:	3	4	10	7	7	9	10	3
601:	6	7	5	9	8	8	8	6
609:	14	7	9	9	11	18	17	18
617:	15	21	14	6	14	10	3	9
625:	6	2	1	1	0	0	0	0
633:	0	0	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	0	0	0	1	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	1	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	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	1	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: 19

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™

bp 8/28/17

Sample Description: HTC-A04-S001-1824-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001928
Batch Identification: 1707088A-UU
Sample Identification: 20
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_033
Chamber Serial Number: 04026479A
Detector Serial Number: 91132
Env. Background: System Bkgd 194874
Reagent Blank: <not performed>

Sample Size: 1.570E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:52 AM
Acquisition Date/Time: 8/28/2017 2:32:53 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.606 mL
Effective Efficiency: 0.1680 +/- 0.0102
Counting Efficiency: 0.1681 +/- 0.0029 on 11/18/2016 10:08:33 AM
Chem. Recovery Factor: 0.9992 +/- 0.0632

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

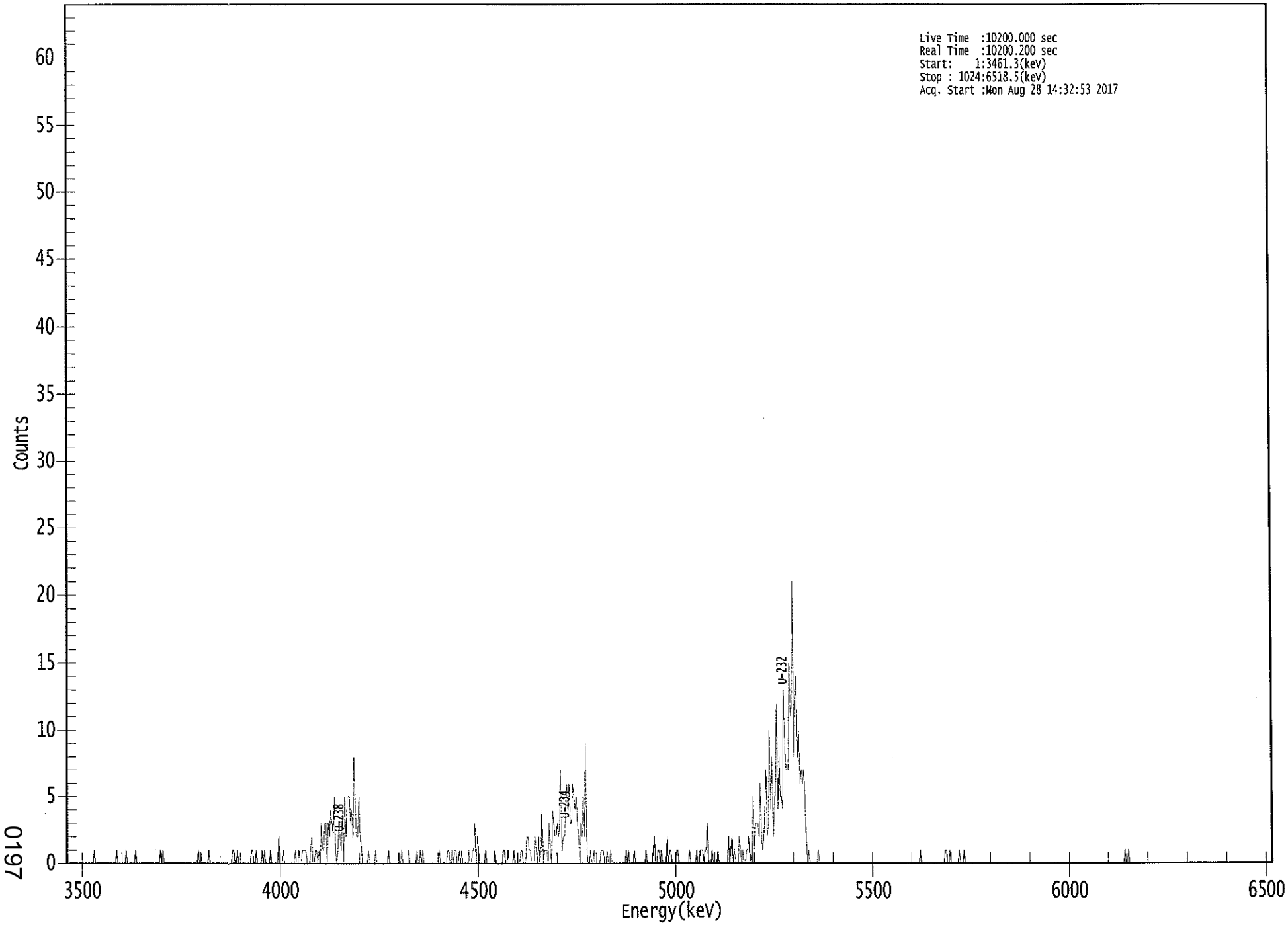
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.275	314.66	11.06	0.34	0.00E+000	13.1
U-234		4.723	134.66	16.92	0.34	0.00E+000	3.6
U-235		4.434	20.66	43.53	0.34	0.00E+000	3.7
U-238		4.150	111.83	18.55	0.17	0.00E+000	5.0

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.995	5302.50*	3.18E+000 +/- 3.79E-001	4.83E-002 +/- 5.76E-003
U-234	0.990	4761.50*	1.36E+000 +/- 2.81E-001	4.81E-002 +/- 5.75E-003
U-235	0.984	4385.50*	2.57E-001 +/- 1.16E-001	5.94E-002 +/- 7.09E-003
U-238	0.992	4184.40*	1.12E+000 +/- 2.47E-001	4.18E-002 +/- 4.99E-003

0000192882.CNF



0197

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

Sample Title: 20

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

369:	0	1	1	0	0	1	0	0

Sample Title: 20

Channel								
377:	0	0	1	0	0	0	0	0
385:	1	1	0	0	0	2	2	1
393:	1	0	0	0	2	1	0	2
401:	0	1	4	0	1	1	1	0
409:	3	1	0	4	3	2	2	3
417:	2	3	7	1	2	2	3	6
425:	4	6	3	3	6	5	4	5
433:	3	2	0	3	2	5	2	9
441:	1	0	0	1	0	0	1	0
449:	0	0	0	0	1	1	1	0
457:	0	1	0	0	1	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	1	0	1	0	0	0	0
481:	1	0	0	0	0	0	0	0
489:	0	0	1	0	0	0	0	0
497:	1	2	0	0	1	1	0	1
505:	0	0	0	0	2	0	1	1
513:	0	0	0	0	1	1	0	0
521:	0	0	0	0	0	0	0	1
529:	0	0	0	0	0	1	0	0
537:	1	1	1	0	1	1	3	0
545:	0	0	1	0	0	0	0	1
553:	0	0	0	0	0	0	0	0
561:	2	0	1	2	0	1	0	0
569:	0	2	1	0	1	0	0	1
577:	1	2	0	1	0	5	1	3
585:	3	3	2	6	2	1	2	4
593:	7	2	3	10	4	8	2	4
601:	6	12	4	8	5	5	4	13
609:	9	7	7	7	15	11	12	21
617:	8	12	14	8	10	6	7	6
625:	7	5	2	0	1	0	0	0
633:	0	0	0	0	1	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	1	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	1	1	0	0	1	0	0	0
753:	0	0	0	0	1	0	0	0
761:	1	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: 20

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	1	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

8/28/2017 5:34:13 AM

Apex-Alpha™

QA SUMMARY REPORT

Review Of QA Results - Pulser Check

Date : 8/28/2017
Time : 5:34:13 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Passed	8/28/2017 5:18:45 AM
Alpha_004	21f	ALL	Passed	8/28/2017 5:18:46 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	8/28/2017 5:18:47 AM
Alpha_011	21f	ALL	Passed	8/28/2017 5:18:48 AM
Alpha_012	21f	ALL	Passed	8/28/2017 5:18:49 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Passed	8/28/2017 5:18:50 AM
Alpha_015	21f	ALL	Not Done	
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:18:51 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:18:52 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:18:54 AM
Alpha_036	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:18:57 AM
Alpha_037	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:18:59 AM
Alpha_038	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:02 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:04 AM
Alpha_040	Alpha Analyst100DC	Peak FWHM	Action	8/28/2017 5:19:06 AM
Alpha_041	Alpha Analyst100DC	ALL	Not Done	
Alpha_042	Alpha Analyst100DC	ALL	Not Done	
Alpha_043	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:09 AM
Alpha_044	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:12 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:14 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:17 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:20 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:23 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:26 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:28 AM
Alpha_051	Alpha Analyst100DC	ALL	Not Done	
Alpha_052	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:31 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:34 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:37 AM
Alpha_055	Alpha Analyst100DC	ALL	Not Done	
Alpha_056	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:39 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:43 AM
Alpha_058	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:46 AM

8/28/2017 5:34:13 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:49 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	8/28/2017 5:19:52 AM

APPROVED BY: _____

APPROVAL DATE: 8/28/17

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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

17-07088
ThISO
Run 1

Work Order	17-07088
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-A03-S003-3642-01	42	05/15/17 08:30	1.1600E+00
04	DO	HTC-A03-S003-3642-01	42	05/15/17 08:30	1.1700E+00
05	TRG	HTC-A03-S003-4248-01	37	05/15/17 08:27	1.2000E+00
06	TRG	HTC-A03-S004-0006-01	45	05/13/17 15:51	1.1500E+00
07	TRG	HTC-A03-S004-0612-01	51	05/13/17 15:48	1.2500E+00
08	TRG	HTC-A03-S004-1218-01	48	05/13/17 15:45	1.4300E+00
09	TRG	HTC-A03-S004-1824-01	36	05/13/17 15:42	1.2300E+00
10	TRG	HTC-A03-S004-2430-01	44	05/13/17 15:39	1.1300E+00
11	TRG	HTC-A03-S004-3036-01	49	05/13/17 15:36	1.2200E+00
12	TRG	HTC-A03-S004-3642-01	43	05/13/17 15:33	1.0900E+00
13	MSO	HTC-A03-S004-4248-01	30	05/13/17 15:30	1.0200E+00
14	MS	HTC-A03-S004-4248-01	44	05/15/17 08:30	1.0100E+00
15	MSD	HTC-A03-S004-4248-01 MSD	44	05/13/17 15:30	1.0300E+00
16	TRG	HTC-A03-S004-4248-02	41	05/13/17 15:30	1.0300E+00
17	TRG	HTC-A04-S001-0006-01	44	05/15/17 10:11	1.1700E+00
18	TRG	HTC-A04-S001-0612-01	46	05/15/17 10:08	1.2300E+00
19	TRG	HTC-A04-S001-1218-01	37	05/15/17 10:05	1.0500E+00
20	TRG	HTC-A04-S001-1824-01	44	05/15/17 10:02	1.6800E+00

0205

* 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.

17-07088
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	0.4699	10.6		0.00								
02	MBL	0.2360	5.3		0.00								
03	DUP	0.2353	5.3		0.00								
04	DO	0.2358	5.3		0.00								
05	TRG	0.2341	5.3		0.00								
06	TRG	0.2352	5.3		0.00								
07	TRG	0.2360	5.3		0.00								
08	TRG	0.2348	5.3		0.00								
09	TRG	0.2352	5.3		0.00								
10	TRG	0.2344	5.3		0.00								
11	TRG	0.2342	5.3		0.00								
12	TRG	0.2345	5.3		0.00								
13	MSO	0.2332	5.2		0.00								
14	MS	0.2345	5.3		0.00								
15	MSD	0.2333	5.2		0.00								
16	TRG	0.2337	5.2		0.00								
17	TRG	0.2332	5.2		0.00								
18	TRG	0.2346	5.3		0.00								
19	TRG	0.2342	5.3		0.00								
20	TRG	0.2342	5.3		0.00								

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

17-07088
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			08/11/17 08:20	JHARVEY				
02	MBL			08/11/17 08:20	JHARVEY				
03	DUP			08/11/17 08:20	JHARVEY				
04	DO	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
05	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
06	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
07	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
08	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
09	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
10	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
11	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
12	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
13	MSO	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
14	MS	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
15	MSD	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
16	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
17	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
18	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
19	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				
20	TRG	08/01/17 09:08	KSALLINGS	08/11/17 08:20	JHARVEY				

* 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: 17-07088-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0208

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	5.76E+00	9.25E-01	1.33E-01	4.82E+00	119.63	OK		OK	
02	TH-228	MBL	BLANK	pCi/g	-2.82E-02	3.60E-02	1.31E-01					OK	OK
03	TH-228	DUP	HTC-A03-S003-3642-01	pCi/g	4.31E-01	1.89E-01	1.25E-01				INV	OK	
04	TH-228	DO	HTC-A03-S003-3642-01	pCi/g	7.81E-01	3.03E-01	1.05E-01					OK	
05	TH-228	TRG	HTC-A03-S003-4248-01	pCi/g	1.02E+00	3.07E-01	9.75E-02					OK	
06	TH-228	TRG	HTC-A03-S004-0006-01	pCi/g	1.73E+00	4.27E-01	1.09E-01					OK	
07	TH-228	TRG	HTC-A03-S004-0612-01	pCi/g	1.03E+00	2.72E-01	7.43E-02					OK	
08	TH-228	TRG	HTC-A03-S004-1218-01	pCi/g	1.31E+00	3.72E-01	1.36E-01					OK	
09	TH-228	TRG	HTC-A03-S004-1824-01	pCi/g	1.41E+00	3.47E-01	1.23E-01					OK	
10	TH-228	TRG	HTC-A03-S004-2430-01	pCi/g	1.22E+00	3.36E-01	1.27E-01					OK	
11	TH-228	TRG	HTC-A03-S004-3036-01	pCi/g	1.37E+00	3.56E-01	1.04E-01					OK	
12	TH-228	TRG	HTC-A03-S004-3642-01	pCi/g	1.17E+00	3.51E-01	9.23E-02					OK	
13	TH-228	MSO	HTC-A03-S004-4248-01	pCi/g	3.95E-01	1.83E-01	1.13E-01					OK	
14	TH-228	MS	HTC-A03-S004-4248-01	pCi/g	6.74E+00	1.51E+00	9.54E-02					OK	
15	TH-228	MSD	HTC-A03-S004-4248-01 MSD	pCi/g	9.26E+00	2.43E+00	2.45E-01					OK	
16	TH-228	TRG	HTC-A03-S004-4248-02	pCi/g	7.09E-01	2.44E-01	1.18E-01					OK	
17	TH-228	TRG	HTC-A04-S001-0006-01	pCi/g	9.94E-01	2.64E-01	7.07E-02					OK	
18	TH-228	TRG	HTC-A04-S001-0612-01	pCi/g	1.34E+00	3.63E-01	1.22E-01					OK	
19	TH-228	TRG	HTC-A04-S001-1218-01	pCi/g	1.52E+00	3.87E-01	9.83E-02					OK	
20	TH-228	TRG	HTC-A04-S001-1824-01	pCi/g	1.38E+00	3.35E-01	8.35E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0209

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	89.60	0.00	0.00			
02	TH-228	MBL	07/19/17 00:00	1.00E+00	94.58	0.00	0.00			
03	TH-228	DUP	05/15/17 08:30	1.16E+00	82.95	0.00	0.00			
04	TH-228	DO	05/15/17 08:30	1.17E+00	70.61	0.00	0.00			
05	TH-228	TRG	05/15/17 08:27	1.20E+00	96.69	0.00	0.00			
06	TH-228	TRG	05/13/17 15:51	1.15E+00	113.33	0.00	0.00			
07	TH-228	TRG	05/13/17 15:48	1.25E+00	105.87	0.00	0.00			
08	TH-228	TRG	05/13/17 15:45	1.43E+00	74.93	0.00	0.00			
09	TH-228	TRG	05/13/17 15:42	1.23E+00	97.93	0.00	0.00			
10	TH-228	TRG	05/13/17 15:39	1.13E+00	95.23	0.00	0.00			
11	TH-228	TRG	05/13/17 15:36	1.22E+00	95.46	0.00	0.00			
12	TH-228	TRG	05/13/17 15:33	1.09E+00	91.23	0.00	0.00			
13	TH-228	MSO	05/13/17 15:30	1.02E+00	92.71	0.00	0.00			
14	TH-228	MS	05/15/17 08:30	1.01E+00	80.48	0.00	0.00			
15	TH-228	MSD	05/13/17 15:30	1.03E+00	46.88	0.00	0.00			
16	TH-228	TRG	05/13/17 15:30	1.03E+00	112.37	0.00	0.00			
17	TH-228	TRG	05/15/17 10:11	1.17E+00	137.53	0.00	0.00			
18	TH-228	TRG	05/15/17 10:08	1.23E+00	88.80	0.00	0.00			
19	TH-228	TRG	05/15/17 10:05	1.05E+00	103.30	0.00	0.00			
20	TH-228	TRG	05/15/17 10:02	1.68E+00	89.28	0.00	0.00			

Preliminary Data Report & Analytical Calculations
Work Order: 17-07088-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0210

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-228	LCS	08/25/17 10:22		A_Spec	Alpha_011	170.02	3.88 E+02	1.80 E-02	19.9
02	TH-228	MBL	08/25/17 10:22		A_Spec	Alpha_012	170.02	-1.89 E+00	1.70 E-02	18.8
03	TH-228	DUP	08/25/17 10:22		A_Spec	Alpha_014	170.02	2.61 E+01	1.10 E-02	18.5
04	TH-228	DO	08/25/17 11:12		A_Spec	Alpha_047	170	3.57 E+01	2.00 E-03	16.2
05	TH-228	TRG	08/25/17 11:12		A_Spec	Alpha_048	170	6.60 E+01	6.00 E-03	16.3
06	TH-228	TRG	08/25/17 13:15		A_Spec	Alpha_003	170	1.20 E+02	1.10 E-02	15.6
07	TH-228	TRG	08/25/17 13:15		A_Spec	Alpha_004	170	8.70 E+01	6.00 E-03	18.8
08	TH-228	TRG	08/25/17 13:15		A_Spec	Alpha_010	170.02	8.96 E+01	2.00 E-02	18.7
09	TH-228	TRG	08/25/17 13:15		A_Spec	Alpha_011	170.02	1.15 E+02	2.50 E-02	19.9
10	TH-228	TRG	08/25/17 13:15		A_Spec	Alpha_012	170	8.41 E+01	1.70 E-02	18.8
11	TH-228	TRG	08/25/17 13:15		A_Spec	Alpha_014	170	1.00 E+02	1.10 E-02	18.5
12	TH-228	TRG	08/25/17 14:08		A_Spec	Alpha_033	170	6.65 E+01	3.00 E-03	16.8
13	TH-228	MSO	08/25/17 14:08		A_Spec	Alpha_034	170	2.20 E+01	6.00 E-03	17.3
14	TH-228	MS	08/25/17 14:08		A_Spec	Alpha_035	170	2.95 E+02	1.00 E-03	15.8
15	TH-228	MSD	08/25/17 14:08		A_Spec	Alpha_036	170	2.77 E+02	1.00 E-02	18.2
16	TH-228	TRG	08/25/17 14:08		A_Spec	Alpha_037	170	4.43 E+01	1.00 E-02	15.9
17	TH-228	TRG	08/25/17 14:08		A_Spec	Alpha_038	170	8.42 E+01	5.00 E-03	15.4
18	TH-228	TRG	08/25/17 14:08		A_Spec	Alpha_039	170	9.24 E+01	1.50 E-02	18.5
19	TH-228	TRG	08/25/17 14:08		A_Spec	Alpha_040	170	1.02 E+02	7.00 E-03	18.1
20	TH-228	TRG	08/25/17 14:08		A_Spec	Alpha_043	170	1.32 E+02	1.30 E-02	18.7

Eberline Analytical
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0211

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	6.47E+00	1.02E+00	8.91E-02	5.40E+00	119.84	OK		OK	
02	TH-230	MBL	BLANK	pCi/g	7.68E-02	7.36E-02	8.93E-02					OK	OK
03	TH-230	DUP	HTC-A03-S003-3642-01	pCi/g	5.00E-01	1.95E-01	1.06E-01				INV	OK	
04	TH-230	DO	HTC-A03-S003-3642-01	pCi/g	7.06E-01	2.74E-01	9.47E-02					OK	
05	TH-230	TRG	HTC-A03-S003-4248-01	pCi/g	8.78E-01	2.67E-01	6.70E-02					OK	
06	TH-230	TRG	HTC-A03-S004-0006-01	pCi/g	1.04E+00	2.90E-01	9.87E-02					OK	
07	TH-230	TRG	HTC-A03-S004-0612-01	pCi/g	9.32E-01	2.47E-01	7.57E-02					OK	
08	TH-230	TRG	HTC-A03-S004-1218-01	pCi/g	1.02E+00	3.03E-01	1.25E-01					OK	
09	TH-230	TRG	HTC-A03-S004-1824-01	pCi/g	1.03E+00	2.68E-01	7.29E-02					OK	
10	TH-230	TRG	HTC-A03-S004-2430-01	pCi/g	1.10E+00	3.00E-01	7.85E-02					OK	
11	TH-230	TRG	HTC-A03-S004-3036-01	pCi/g	1.24E+00	3.21E-01	8.77E-02					OK	
12	TH-230	TRG	HTC-A03-S004-3642-01	pCi/g	9.68E-01	3.00E-01	9.52E-02					OK	
13	TH-230	MSO	HTC-A03-S004-4248-01	pCi/g	1.97E-01	1.20E-01	9.72E-02					OK	
14	TH-230	MS	HTC-A03-S004-4248-01	pCi/g	5.83E+00	1.32E+00	1.30E-01					OK	
15	TH-230	MSD	HTC-A03-S004-4248-01 MSD	pCi/g	6.75E+00	1.81E+00	1.26E-01					OK	
16	TH-230	TRG	HTC-A03-S004-4248-02	pCi/g	1.03E+00	2.96E-01	7.58E-02					OK	
17	TH-230	TRG	HTC-A04-S001-0006-01	pCi/g	9.30E-01	2.44E-01	6.41E-02					OK	
18	TH-230	TRG	HTC-A04-S001-0612-01	pCi/g	1.15E+00	3.15E-01	8.65E-02					OK	
19	TH-230	TRG	HTC-A04-S001-1218-01	pCi/g	1.26E+00	3.29E-01	6.45E-02					OK	
20	TH-230	TRG	HTC-A04-S001-1824-01	pCi/g	8.97E-01	2.38E-01	5.95E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 17-07088-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0212

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	89.60	0.00	0.00			
02	TH-230	MBL	07/19/17 00:00	1.00E+00	94.58	0.00	0.00			
03	TH-230	DUP	05/15/17 08:30	1.16E+00	82.95	0.00	0.00			
04	TH-230	DO	05/15/17 08:30	1.17E+00	70.61	0.00	0.00			
05	TH-230	TRG	05/15/17 08:27	1.20E+00	96.69	0.00	0.00			
06	TH-230	TRG	05/13/17 15:51	1.15E+00	113.33	0.00	0.00			
07	TH-230	TRG	05/13/17 15:48	1.25E+00	105.87	0.00	0.00			
08	TH-230	TRG	05/13/17 15:45	1.43E+00	74.93	0.00	0.00			
09	TH-230	TRG	05/13/17 15:42	1.23E+00	97.93	0.00	0.00			
10	TH-230	TRG	05/13/17 15:39	1.13E+00	95.23	0.00	0.00			
11	TH-230	TRG	05/13/17 15:36	1.22E+00	95.46	0.00	0.00			
12	TH-230	TRG	05/13/17 15:33	1.09E+00	91.23	0.00	0.00			
13	TH-230	MSO	05/13/17 15:30	1.02E+00	92.71	0.00	0.00			
14	TH-230	MS	05/15/17 08:30	1.01E+00	80.48	0.00	0.00			
15	TH-230	MSD	05/13/17 15:30	1.03E+00	46.88	0.00	0.00			
16	TH-230	TRG	05/13/17 15:30	1.03E+00	112.37	0.00	0.00			
17	TH-230	TRG	05/15/17 10:11	1.17E+00	137.53	0.00	0.00			
18	TH-230	TRG	05/15/17 10:08	1.23E+00	88.80	0.00	0.00			
19	TH-230	TRG	05/15/17 10:05	1.05E+00	103.30	0.00	0.00			
20	TH-230	TRG	05/15/17 10:02	1.68E+00	89.28	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-ThISO-1

Run	Analysis Code	Eberline Analytical Work Order	Client
1	ThISO	17-07088	Weston Solutions, Inc. 0213

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-230	LCS	08/25/17 10:22		A_Spec	Alpha_011	170.02	4.35 E+02	5.00 E-03	19.9
02	TH-230	MBL	08/25/17 10:22		A_Spec	Alpha_012	170.02	5.15 E+00	5.00 E-03	18.8
03	TH-230	DUP	08/25/17 10:22		A_Spec	Alpha_014	170.02	3.35 E+01	9.00 E-03	18.5
04	TH-230	DO	08/25/17 11:12		A_Spec	Alpha_047	170	3.57 E+01	2.00 E-03	16.2
05	TH-230	TRG	08/25/17 11:12		A_Spec	Alpha_048	170	6.27 E+01	2.00 E-03	16.3
06	TH-230	TRG	08/25/17 13:15		A_Spec	Alpha_003	170	8.01 E+01	1.10 E-02	15.6
07	TH-230	TRG	08/25/17 13:15		A_Spec	Alpha_004	170	8.75 E+01	9.00 E-03	18.8
08	TH-230	TRG	08/25/17 13:15		A_Spec	Alpha_010	170.02	7.74 E+01	2.10 E-02	18.7
09	TH-230	TRG	08/25/17 13:15		A_Spec	Alpha_011	170.02	9.28 E+01	7.00 E-03	19.9
10	TH-230	TRG	08/25/17 13:15		A_Spec	Alpha_012	170	8.42 E+01	5.00 E-03	18.8
11	TH-230	TRG	08/25/17 13:15		A_Spec	Alpha_014	170	1.00 E+02	9.00 E-03	18.5
12	TH-230	TRG	08/25/17 14:08		A_Spec	Alpha_033	170	6.10 E+01	0.00 E+00	16.8
13	TH-230	MSO	08/25/17 14:08		A_Spec	Alpha_034	170	1.21 E+01	5.00 E-03	17.3
14	TH-230	MS	08/25/17 14:08		A_Spec	Alpha_035	170	2.82 E+02	6.00 E-03	15.8
15	TH-230	MSD	08/25/17 14:08		A_Spec	Alpha_036	170	2.24 E+02	1.00 E-03	18.2
16	TH-230	TRG	08/25/17 14:08		A_Spec	Alpha_037	170	7.15 E+01	3.00 E-03	15.9
17	TH-230	TRG	08/25/17 14:08		A_Spec	Alpha_038	170	8.70 E+01	0.00 E+00	15.4
18	TH-230	TRG	08/25/17 14:08		A_Spec	Alpha_039	170	8.78 E+01	7.00 E-03	18.5
19	TH-230	TRG	08/25/17 14:08		A_Spec	Alpha_040	170	9.37 E+01	2.00 E-03	18.1
20	TH-230	TRG	08/25/17 14:08		A_Spec	Alpha_043	170	9.50 E+01	6.00 E-03	18.7

Eberline Analytical
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0214

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	5.95E+00	9.48E-01	7.10E-02	4.82E+00	123.46	OK		OK	
02	TH-232	MBL	BLANK	pCi/g	5.20E-02	5.96E-02	7.82E-02					OK	OK
03	TH-232	DUP	HTC-A03-S003-3642-01	pCi/g	4.02E-01	1.71E-01	9.39E-02				INV	OK	
04	TH-232	DO	HTC-A03-S003-3642-01	pCi/g	6.69E-01	2.64E-01	8.25E-02					OK	
05	TH-232	TRG	HTC-A03-S003-4248-01	pCi/g	9.22E-01	2.77E-01	8.81E-02					OK	
06	TH-232	TRG	HTC-A03-S004-0006-01	pCi/g	1.24E+00	3.25E-01	6.83E-02					OK	
07	TH-232	TRG	HTC-A03-S004-0612-01	pCi/g	9.48E-01	2.50E-01	8.05E-02					OK	
08	TH-232	TRG	HTC-A03-S004-1218-01	pCi/g	1.12E+00	3.20E-01	1.11E-01					OK	
09	TH-232	TRG	HTC-A03-S004-1824-01	pCi/g	1.07E+00	2.76E-01	6.23E-02					OK	
10	TH-232	TRG	HTC-A03-S004-2430-01	pCi/g	1.01E+00	2.83E-01	6.87E-02					OK	
11	TH-232	TRG	HTC-A03-S004-3036-01	pCi/g	1.31E+00	3.33E-01	7.76E-02					OK	
12	TH-232	TRG	HTC-A03-S004-3642-01	pCi/g	1.09E+00	3.23E-01	6.61E-02					OK	
13	TH-232	MSO	HTC-A03-S004-4248-01	pCi/g	2.51E-01	1.35E-01	8.51E-02					OK	
14	TH-232	MS	HTC-A03-S004-4248-01	pCi/g	6.35E+00	1.42E+00	9.86E-02					OK	
15	TH-232	MSD	HTC-A03-S004-4248-01 MSD	pCi/g	7.82E+00	2.06E+00	1.26E-01					OK	
16	TH-232	TRG	HTC-A03-S004-4248-02	pCi/g	1.11E+00	3.12E-01	8.63E-02					OK	
17	TH-232	TRG	HTC-A04-S001-0006-01	pCi/g	1.00E+00	2.57E-01	6.39E-02					OK	
18	TH-232	TRG	HTC-A04-S001-0612-01	pCi/g	1.12E+00	3.07E-01	7.84E-02					OK	
19	TH-232	TRG	HTC-A04-S001-1218-01	pCi/g	1.16E+00	3.11E-01	7.60E-02					OK	
20	TH-232	TRG	HTC-A04-S001-1824-01	pCi/g	1.26E+00	3.05E-01	5.65E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0215

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	89.60	0.00	0.00			
02	TH-232	MBL	07/19/17 00:00	1.00E+00	94.58	0.00	0.00			
03	TH-232	DUP	05/15/17 08:30	1.16E+00	82.95	0.00	0.00			
04	TH-232	DO	05/15/17 08:30	1.17E+00	70.61	0.00	0.00			
05	TH-232	TRG	05/15/17 08:27	1.20E+00	96.69	0.00	0.00			
06	TH-232	TRG	05/13/17 15:51	1.15E+00	113.33	0.00	0.00			
07	TH-232	TRG	05/13/17 15:48	1.25E+00	105.87	0.00	0.00			
08	TH-232	TRG	05/13/17 15:45	1.43E+00	74.93	0.00	0.00			
09	TH-232	TRG	05/13/17 15:42	1.23E+00	97.93	0.00	0.00			
10	TH-232	TRG	05/13/17 15:39	1.13E+00	95.23	0.00	0.00			
11	TH-232	TRG	05/13/17 15:36	1.22E+00	95.46	0.00	0.00			
12	TH-232	TRG	05/13/17 15:33	1.09E+00	91.23	0.00	0.00			
13	TH-232	MSO	05/13/17 15:30	1.02E+00	92.71	0.00	0.00			
14	TH-232	MS	05/15/17 08:30	1.01E+00	80.48	0.00	0.00			
15	TH-232	MSD	05/13/17 15:30	1.03E+00	46.88	0.00	0.00			
16	TH-232	TRG	05/13/17 15:30	1.03E+00	112.37	0.00	0.00			
17	TH-232	TRG	05/15/17 10:11	1.17E+00	137.53	0.00	0.00			
18	TH-232	TRG	05/15/17 10:08	1.23E+00	88.80	0.00	0.00			
19	TH-232	TRG	05/15/17 10:05	1.05E+00	103.30	0.00	0.00			
20	TH-232	TRG	05/15/17 10:02	1.68E+00	89.28	0.00	0.00			

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Analytical Work Order: 17-07088
Client: Weston Solutions, Inc.
0216

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-232	LCS	08/25/17 10:22		A_Spec	Alpha_011	170.02	4.01 E+02	2.00 E-03	19.9
02	TH-232	MBL	08/25/17 10:22		A_Spec	Alpha_012	170.02	3.49 E+00	3.00 E-03	18.8
03	TH-232	DUP	08/25/17 10:22		A_Spec	Alpha_014	170.02	2.70 E+01	6.00 E-03	18.5
04	TH-232	DO	08/25/17 11:12		A_Spec	Alpha_047	170	3.38 E+01	1.00 E-03	16.2
05	TH-232	TRG	08/25/17 11:12		A_Spec	Alpha_048	170	6.60 E+01	6.00 E-03	16.3
06	TH-232	TRG	08/25/17 13:15		A_Spec	Alpha_003	170	9.55 E+01	3.00 E-03	15.6
07	TH-232	TRG	08/25/17 13:15		A_Spec	Alpha_004	170	8.91 E+01	1.10 E-02	18.8
08	TH-232	TRG	08/25/17 13:15		A_Spec	Alpha_010	170.02	8.44 E+01	1.50 E-02	18.7
09	TH-232	TRG	08/25/17 13:15		A_Spec	Alpha_011	170.02	9.73 E+01	4.00 E-03	19.9
10	TH-232	TRG	08/25/17 13:15		A_Spec	Alpha_012	170	7.75 E+01	3.00 E-03	18.8
11	TH-232	TRG	08/25/17 13:15		A_Spec	Alpha_014	170	1.06 E+02	6.00 E-03	18.5
12	TH-232	TRG	08/25/17 14:08		A_Spec	Alpha_033	170	6.88 E+01	1.00 E-03	16.8
13	TH-232	MSO	08/25/17 14:08		A_Spec	Alpha_034	170	1.55 E+01	3.00 E-03	17.3
14	TH-232	MS	08/25/17 14:08		A_Spec	Alpha_035	170	3.08 E+02	2.00 E-03	15.8
15	TH-232	MSD	08/25/17 14:08		A_Spec	Alpha_036	170	2.60 E+02	1.00 E-03	18.2
16	TH-232	TRG	08/25/17 14:08		A_Spec	Alpha_037	170	7.72 E+01	5.00 E-03	15.9
17	TH-232	TRG	08/25/17 14:08		A_Spec	Alpha_038	170	9.42 E+01	5.00 E-03	15.4
18	TH-232	TRG	08/25/17 14:08		A_Spec	Alpha_039	170	8.52 E+01	5.00 E-03	18.5
19	TH-232	TRG	08/25/17 14:08		A_Spec	Alpha_040	170	8.63 E+01	4.00 E-03	18.1
20	TH-232	TRG	08/25/17 14:08		A_Spec	Alpha_043	170	1.34 E+02	0.00 E+00	18.7

Count Room Report
Client: Weston Solutions, Inc.

17-07088-ThISO-1 (pCi/g) in SO
Tracer ID: Th-18a

#114 #3-14 #33-43 47-48

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	0.4699	10.5540		0.00		
02	MBL	BLANK	07/19/17 00:00	1.0000	0.2360	5.3006		0.00		
03	DUP	HTC-A03-S003-3642-01	05/15/17 08:30	1.1600	0.2353	5.2848		0.00		
04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	1.1700	0.2358	5.2961		0.00		
05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	1.2000	0.2341	5.2579		0.00		
06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	1.1500	0.2352	5.2826		0.00		
07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	1.2500	0.2360	5.3006		0.00		
08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	1.4300	0.2348	5.2736		0.00		
09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	1.2300	0.2352	5.2826		0.00		
10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	1.1300	0.2344	5.2646		0.00		
11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	1.2200	0.2342	5.2601		0.00		
12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	1.0900	0.2345	5.2669		0.00		
13	MSO	HTC-A03-S004-4248-01	05/13/17 15:30	1.0200	0.2332	5.2377		0.00		
14	MS	HTC-A03-S004-4248-01	05/15/17 08:30	1.0100	0.2345	5.2669		0.00		
15	MSD	HTC-A03-S004-4248-01 MSD	05/13/17 15:30	1.0300	0.2333	5.2399		0.00		
16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	1.0300	0.2337	5.2489		0.00		
17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	1.1700	0.2332	5.2377		0.00		
18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	1.2300	0.2346	5.2691		0.00		
19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	1.0500	0.2342	5.2601		0.00		
20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	1.6800	0.2342	5.2601		0.00		

0217

Eberline Analytical
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 9/1/2017 3:43 PM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
17-07088	1	ThISO	8/11/2017 15:38	MMCDOUGALL		

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	8/11/2017	**0.100**	**0.1033**	**0.1333**		**0.1583**	4.82	0.173	6.22	0.224	0.00	0.000	7.38	0.266
Th-230	Th-1b	23.520	8/11/2017	**0.500**	**0.5098**	**0.5095**		**0.5084**	5.40	0.146	5.40	0.146	0.00	0.000	5.39	0.145
Th-232	Th-8b	103.560	8/11/2017	**0.100**	**0.1033**	**0.1333**		**0.1583**	4.82	0.173	6.22	0.224	0.00	0.000	7.38	0.266

Tracers						
fraction	*Isotope*	*Sol #*	*Activity dpm/g*	*Solution Date*	*Volume Used (g)*	*Approx Addition*
01	**Th-229**	Th-18a	22.460	8/11/2017	**0.4699**	**0.2200**
02	**Th-229**	Th-18a	22.460	8/11/2017	**0.2360**	**0.2200**
03	**Th-229**	Th-18a	22.460	8/11/2017	**0.2353**	**0.2200**
04	**Th-229**	Th-18a	22.460	8/11/2017	**0.2358**	**0.2200**
05	**Th-229**	Th-18a	22.460	8/11/2017	**0.2341**	**0.2200**
06	**Th-229**	Th-18a	22.460	8/11/2017	**0.2352**	**0.2200**
07	**Th-229**	Th-18a	22.460	8/11/2017	**0.2360**	**0.2200**
08	**Th-229**	Th-18a	22.460	8/11/2017	**0.2348**	**0.2200**
09	**Th-229**	Th-18a	22.460	8/11/2017	**0.2352**	**0.2200**
10	**Th-229**	Th-18a	22.460	8/11/2017	**0.2344**	**0.2200**
11	**Th-229**	Th-18a	22.460	8/11/2017	**0.2342**	**0.2200**
12	**Th-229**	Th-18a	22.460	8/11/2017	**0.2345**	**0.2200**
13	**Th-229**	Th-18a	22.460	8/11/2017	**0.2332**	**0.2200**
14	**Th-229**	Th-18a	22.460	8/11/2017	**0.2345**	**0.2200**
15	**Th-229**	Th-18a	22.460	8/11/2017	**0.2333**	**0.2200**
16	**Th-229**	Th-18a	22.460	8/11/2017	**0.2337**	**0.2200**
17	**Th-229**	Th-18a	22.460	8/11/2017	**0.2332**	**0.2200**
18	**Th-229**	Th-18a	22.460	8/11/2017	**0.2346**	**0.2200**
19	**Th-229**	Th-18a	22.460	8/11/2017	**0.2342**	**0.2200**
20	**Th-229**	Th-18a	22.460	8/11/2017	**0.2342**	**0.2200**

Balance Printer Tapes	
Tracer	LCS
	Matrix Spike

0218

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

(ORDB01) OR 3.0.0 Mod 011/18/2015 09:56

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
17-07088	1	ThISO	grams	8/10/2017	JHARVEY

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				1.00E+00	1.0000E+00	1.0000E+00				
02	BLANK	MBL				1.00E+00	1.0000E+00	1.0000E+00				
03	HTC-A03-S003-3642-01	DUP				1.00E+00	1.1600E+00	1.1600E+00				
04	HTC-A03-S003-3642-01	DO				1.00E+00	1.1700E+00	1.1700E+00				
05	HTC-A03-S003-4248-01	TRG				1.00E+00	1.2000E+00	1.2000E+00				
06	HTC-A03-S004-0006-01	TRG				1.00E+00	1.1500E+00	1.1500E+00				
07	HTC-A03-S004-0612-01	TRG				1.00E+00	1.2500E+00	1.2500E+00				
08	HTC-A03-S004-1218-01	TRG				1.00E+00	1.4300E+00	1.4300E+00				
09	HTC-A03-S004-1824-01	TRG				1.00E+00	1.2300E+00	1.2300E+00				
10	HTC-A03-S004-2430-01	TRG				1.00E+00	1.1300E+00	1.1300E+00				
11	HTC-A03-S004-3036-01	TRG				1.00E+00	1.2200E+00	1.2200E+00				
12	HTC-A03-S004-3642-01	TRG				1.00E+00	1.0900E+00	1.0900E+00				
13	HTC-A03-S004-4248-01	MSO				1.00E+00	1.0200E+00	1.0200E+00				
14	HTC-A03-S004-4248-01 MS	MS				1.00E+00	1.0100E+00	1.0100E+00				
15	HTC-A03-S004-4248-01 MSD	MSD				1.00E+00	1.0300E+00	1.0300E+00				
16	HTC-A03-S004-4248-02	TRG				1.00E+00	1.0300E+00	1.0300E+00				
17	HTC-A04-S001-0006-01	TRG				1.00E+00	1.1700E+00	1.1700E+00				
18	HTC-A04-S001-0612-01	TRG				1.00E+00	1.2300E+00	1.2300E+00				
19	HTC-A04-S001-1218-01	TRG				1.00E+00	1.0500E+00	1.0500E+00				
20	HTC-A04-S001-1824-01	TRG				1.00E+00	1.6800E+00	1.6800E+00				

Comments	

0219

Technician: JHarvey Date: 8/11/17

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
17-07088	8/10/2017	7/31/2017	8/1/2017	8/2/2017	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-A03-S003-3642-01	14.6400	957.6400	792.5900	943.0000	777.9500	17.50%	82.50%	0.0000	0.0000	
05	HTC-A03-S003-4248-01	14.6600	932.2000	766.1500	917.5400	751.4900	18.10%	81.90%	0.0000	0.0000	
06	HTC-A03-S004-0006-01	14.6800	996.8400	787.1400	982.1600	772.4600	21.35%	78.65%	0.0000	0.0000	
07	HTC-A03-S004-0612-01	14.7000	958.4800	785.8600	943.7800	771.1600	18.29%	81.71%	0.0000	0.0000	
08	HTC-A03-S004-1218-01	14.6700	868.2000	712.3600	853.5300	697.6900	18.26%	81.74%	0.0000	0.0000	
09	HTC-A03-S004-1824-01	14.6300	962.0000	805.8800	947.3700	791.2500	16.48%	83.52%	0.0000	0.0000	
10	HTC-A03-S004-2430-01	14.6500	902.3200	750.3500	887.6700	735.7000	17.12%	82.88%	0.0000	0.0000	
11	HTC-A03-S004-3036-01	14.6900	846.8800	697.6600	832.1900	682.9700	17.93%	82.07%	0.0000	0.0000	
12	HTC-A03-S004-3642-01	14.7000	951.8800	783.2700	937.1800	768.5700	17.99%	82.01%	0.0000	0.0000	
13	HTC-A03-S004-4248-01	14.7300	795.8600	650.6900	781.1300	635.9600	18.58%	81.42%	0.0000	0.0000	
14	HTC-A03-S004-4248-01 MS	14.6900	767.4400	626.5300	752.7500	611.8400	18.72%	81.28%	0.0000	0.0000	
15	HTC-A03-S004-4248-01 MSD	14.6900	767.4400	626.5300	752.7500	611.8400	18.72%	81.28%	0.0000	0.0000	
16	HTC-A03-S004-4248-02	14.6200	738.7600	603.1400	724.1400	588.5200	18.73%	81.27%	0.0000	0.0000	
17	HTC-A04-S001-0006-01	14.6800	967.1600	745.8600	952.4800	731.1800	23.23%	76.77%	0.0000	0.0000	
18	HTC-A04-S001-0612-01	14.6800	999.2200	798.9700	984.5400	784.2900	20.34%	79.66%	0.0000	0.0000	
19	HTC-A04-S001-1218-01	14.6100	956.2800	785.3800	941.6700	770.7700	18.15%	81.85%	0.0000	0.0000	
20	HTC-A04-S001-1824-01	14.5600	989.2600	800.7600	974.7000	786.2000	19.34%	80.66%	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)**

0220

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

KB
8/25/17

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_011
Chamber Serial Number:
Detector Serial Number: 11
Env. Background: System Bkgd 194203
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 8/25/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 10:22:11 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.470 mL
Effective Efficiency: 0.1784 +/- 0.0114
Counting Efficiency: 0.1991 +/- 0.0034 on 11/19/2016 1:08:17 PM
Chem. Recovery Factor: 0.8960 +/- 0.0594

Control Certificate Name: NatTh_Th-8
Chem. Recov. of Control: TH-232 1.234575 +/- 0.106949
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		5.797	6.45	93.34	2.55	0.00E+000	0.0
TH-228		5.378	387.94	10.00	3.06	0.00E+000	44.6
TH-229	T	4.868	320.13	10.99	1.87	0.00E+000	6.3
TH-230		4.625	435.15	9.41	0.85	0.00E+000	9.1
TH-232		3.963	400.66	9.80	0.34	0.00E+000	4.6

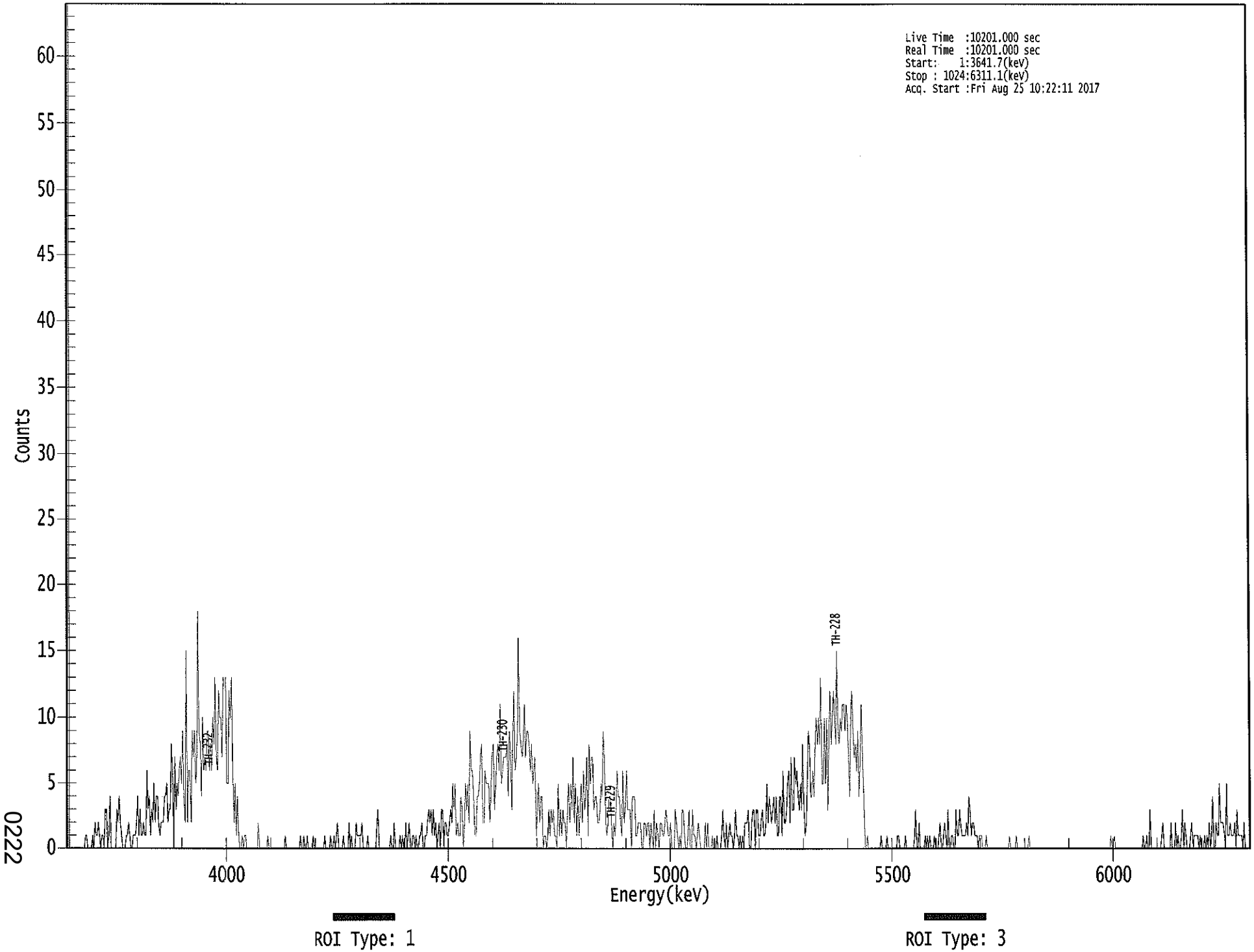
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.985	5850.00*	9.82E-002 +/- 9.25E-002	1.28E-001 +/- 1.60E-002
TH-228	0.998	5400.00*	5.76E+000 +/- 9.25E-001	1.33E-001 +/- 1.67E-002
TH-229	1.000	4872.00*	4.78E+000 +/- 6.00E-001	1.13E-001 +/- 1.42E-002
TH-230	0.989	4672.00*	6.47E+000 +/- 1.02E+000	8.91E-002 +/- 1.12E-002
TH-232	0.994	3997.00*	5.95E+000 +/- 9.48E-001	7.10E-002 +/- 8.92E-003

AG
8/28/17

0000192688.CNF



0222

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

Sample Title: 01

Elapsed Live time: 10201
Elapsed Real Time: 10201

Channel								
1:	10201	10201	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	1	1	0	0	0	0	1	0
25:	2	1	1	2	1	0	1	1
33:	0	3	3	0	1	4	0	0
41:	0	0	0	3	2	4	2	1
49:	0	0	0	1	1	2	1	0
57:	0	1	1	1	2	4	1	3
65:	1	1	2	1	1	6	3	4
73:	1	3	2	5	2	4	4	2
81:	1	2	2	2	4	4	5	2
89:	3	3	8	6	0	7	3	5
97:	4	6	7	5	9	4	2	15
105:	2	6	6	2	9	7	9	5
113:	6	18	9	8	4	10	6	7
121:	6	9	9	6	8	6	10	8
129:	13	7	6	12	10	10	7	13
137:	12	13	5	5	12	10	13	6
145:	2	5	1	4	1	0	0	1
153:	0	1	1	0	0	0	0	0
161:	0	0	0	0	0	2	0	0
169:	0	0	0	0	0	1	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	1	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	1	0	0	1	0	0	1
209:	0	0	0	0	1	0	0	0
217:	0	0	0	0	0	0	1	0
225:	0	0	0	1	0	0	1	0
233:	1	2	0	0	0	0	1	0
241:	0	0	0	2	0	1	0	0
249:	0	2	1	1	1	1	2	0
257:	0	0	0	1	0	0	0	0
265:	0	0	0	2	3	0	0	0
273:	0	0	0	0	0	0	0	1
281:	0	0	2	0	0	0	0	1
289:	0	1	0	0	2	0	1	2
297:	0	0	1	1	0	1	0	0
305:	1	1	2	0	0	1	1	2
313:	3	2	3	1	3	1	2	0
321:	1	2	0	3	3	0	2	2
329:	1	1	2	3	2	5	3	5
337:	1	2	1	1	4	3	0	2
345:	5	3	5	2	9	6	6	4
353:	1	1	4	4	5	7	8	2
361:	2	6	5	5	5	2	5	7

369:	8	3	5	7	8	6	11	5

Sample Title: 01

Channel								
377:	6	7	7	7	8	4	9	8
385:	3	8	12	6	7	9	16	9
393:	8	7	8	11	7	9	9	8
401:	6	8	5	6	7	1	3	5
409:	2	4	4	0	1	1	0	1
417:	3	1	3	2	3	1	1	0
425:	5	1	3	1	3	2	2	0
433:	3	5	2	5	3	7	2	5
441:	1	4	1	3	5	2	6	3
449:	4	7	1	8	5	7	7	3
457:	4	4	2	2	3	5	4	9
465:	7	2	1	2	4	4	2	0
473:	2	1	3	6	4	4	2	1
481:	6	2	3	6	3	3	3	0
489:	4	4	4	1	1	2	2	2
497:	0	0	2	2	1	2	2	0
505:	2	1	0	3	0	2	1	0
513:	2	2	1	1	2	3	2	1
521:	1	2	0	0	0	3	2	1
529:	0	1	0	3	3	1	0	0
537:	1	3	0	0	3	1	1	0
545:	1	2	1	0	0	0	0	2
553:	0	2	0	0	0	1	0	0
561:	0	1	0	0	0	1	3	1
569:	0	2	0	1	2	1	1	0
577:	1	3	1	1	0	1	0	1
585:	0	2	2	2	3	0	0	2
593:	3	3	0	3	3	1	1	2
601:	3	1	1	2	5	2	4	3
609:	2	3	4	2	4	1	1	4
617:	4	1	6	2	2	3	5	6
625:	2	7	3	3	7	5	6	4
633:	3	5	3	8	3	1	2	5
641:	9	8	4	4	6	4	8	10
649:	8	10	8	13	5	5	10	5
657:	10	3	9	12	8	10	12	10
665:	8	15	9	8	10	9	11	11
673:	9	11	10	7	4	10	12	9
681:	7	8	6	9	4	7	11	7
689:	4	0	0	1	0	0	0	0
697:	0	0	0	0	0	0	0	1
705:	0	0	0	0	1	0	0	0
713:	0	0	0	0	0	1	1	0
721:	0	0	0	0	1	0	0	0
729:	0	0	0	0	1	3	0	0
737:	2	0	0	0	0	1	0	1
745:	0	1	0	0	0	1	0	0
753:	0	1	2	0	0	1	2	1
761:	0	3	0	0	1	1	0	0
769:	3	1	1	3	2	1	1	1
777:	1	2	1	4	3	1	2	2
785:	1	1	1	0	1	1	1	0
793:	0	0	1	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	1	0
817:	0	0	0	0	1	0	0	0
825:	0	0	0	0	0	0	0	1
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	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	1	0
905:	0	1	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	1	0	0	1	0	0
937:	3	0	0	0	0	0	0	0
945:	0	0	1	2	0	0	0	0
953:	0	0	2	0	0	0	2	0
961:	1	0	0	1	3	0	2	1
969:	0	0	0	1	2	0	1	1
977:	1	1	0	1	0	0	0	1
985:	0	1	0	2	0	1	4	0
993:	0	2	1	1	5	2	2	2
1001:	1	0	5	1	1	2	1	1
1009:	1	2	0	3	1	1	1	1
1017:	0	2	0	0	0	0	0	0

Apex-Alpha™

KLP 8/25/17

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_012
Chamber Serial Number:
Detector Serial Number: 12
Env. Background: System Bkgd 194204
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 8/25/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 10:22:12 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.236 mL
Effective Efficiency: 0.1779 +/- 0.0152
Counting Efficiency: 0.1881 +/- 0.0032 on 11/19/2016 1:08:18 PM
Chem. Recovery Factor: 0.9458 +/- 0.0823

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		5.818	5.11	111.77	2.89	0.00E+000	4.4
TH-228		5.430	-1.89	126.63	2.89	0.00E+000	3.0
TH-229	T	4.880	160.30	15.58	1.70	0.00E+000	6.8
TH-230		4.658	5.15	94.34	0.85	0.00E+000	3.0
TH-232		3.942	3.49	113.53	0.51	0.00E+000	3.0

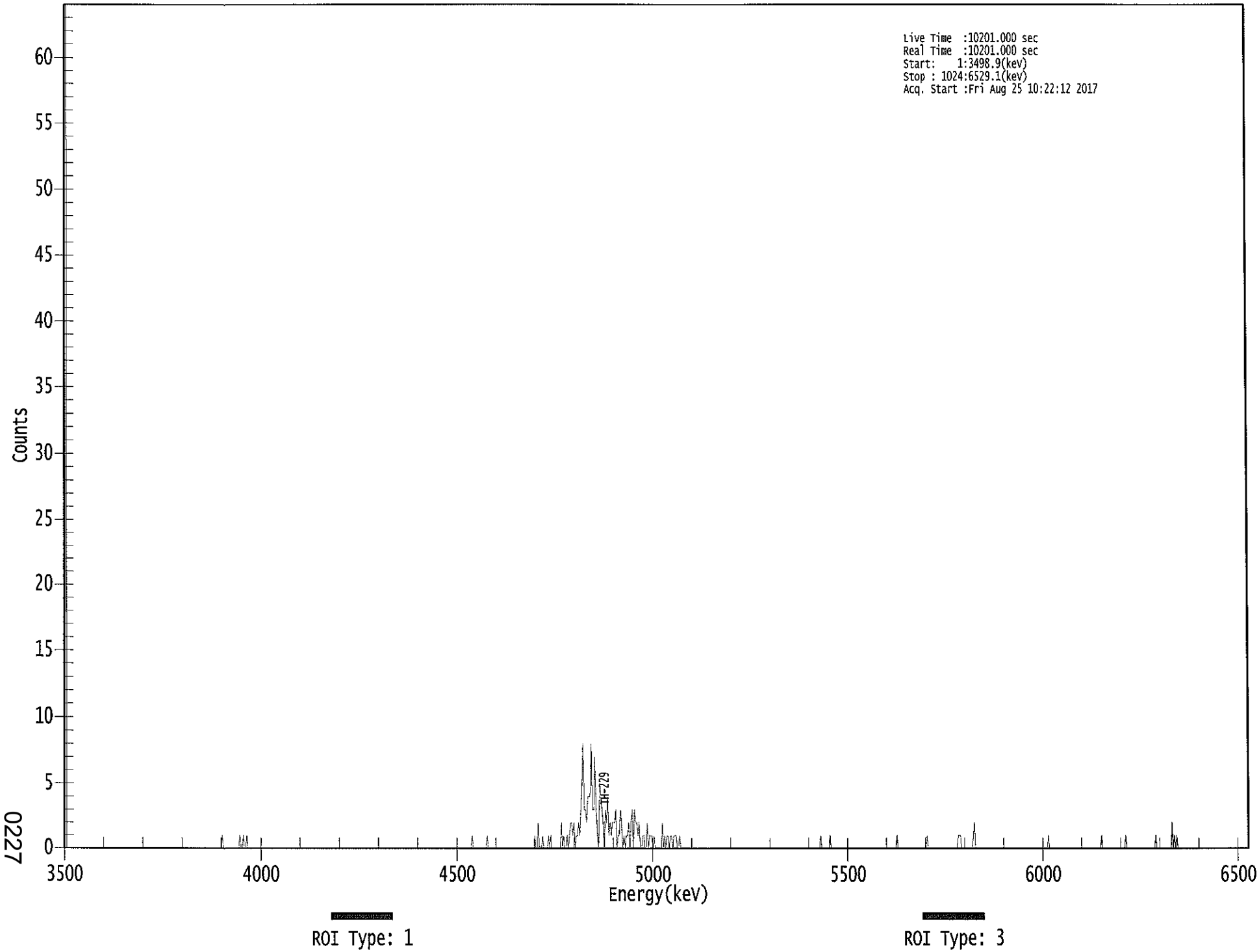
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.995	5850.00*	7.81E-002 +/- 8.82E-002	1.34E-001 +/- 2.24E-002
TH-228	0.995	5400.00*	-2.82E-002 +/- 3.60E-002	1.31E-001 +/- 2.18E-002
TH-229	1.000	4872.00*	2.40E+000 +/- 4.01E-001	1.10E-001 +/- 1.84E-002
TH-230	0.999	4672.00*	7.68E-002 +/- 7.36E-002	8.93E-002 +/- 1.49E-002
TH-232	0.984	3997.00*	5.20E-002 +/- 5.96E-002	7.82E-002 +/- 1.31E-002

AG 8/28/17

0000192621.CNF



0227

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

Sample Title: 02

Elapsed Live time: 10201
Elapsed Real Time: 10201

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

369:	0	0	0	0	0	0	0	0

Sample Title: 02

Channel								
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	1	0	0
409:	2	0	0	0	1	0	0	0
417:	0	1	0	1	0	0	0	0
425:	0	0	0	0	2	0	1	0
433:	0	1	0	1	2	2	1	2
441:	0	1	1	2	1	3	5	8
449:	3	3	2	4	4	4	8	3
457:	3	7	3	1	0	5	4	3
465:	2	0	3	2	4	1	2	1
473:	2	2	2	3	0	1	1	3
481:	2	0	1	0	1	1	2	0
489:	2	3	0	3	2	2	1	2
497:	0	0	1	1	0	0	2	0
505:	1	1	1	0	1	0	0	0
513:	0	0	0	2	0	1	0	1
521:	1	0	1	1	0	1	1	1
529:	0	0	1	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	1	0	0	0
657:	0	0	0	0	1	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	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:	1	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	1	1	1	0	0
777:	0	0	0	0	0	0	0	0
785:	1	2	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	1	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	1
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	1	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	1	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	2	0	1	0
961:	1	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

RB 8/25/17

Sample Description: HTC-A03-S003-3642-01-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_014
Chamber Serial Number:
Detector Serial Number: 14
Env. Background: System Bkgd 194205
Reagent Blank: <not performed>

Sample Size: 1.160E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 10:22:13 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.235 mL
Effective Efficiency: 0.1532 +/- 0.0140
Counting Efficiency: 0.1847 +/- 0.0032 on 11/19/2016 1:08:18 PM
Chem. Recovery Factor: 0.8295 +/- 0.0769

Peak Match Tolerance: 0.175 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227		5.859	0.47	627.14	1.53	0.00E+000	2.9
TH-228		5.373	26.13	39.92	1.87	0.00E+000	3.7
TH-229	T	4.882	137.64	16.80	1.36	0.00E+000	3.4
TH-230		4.627	33.47	34.77	1.53	0.00E+000	3.7
TH-232		3.967	26.98	38.56	1.02	0.00E+000	2.9

T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	1.000	5850.00*	7.25E-003 +/- 4.55E-002	1.10E-001 +/- 1.96E-002
TH-228	0.996	5400.00*	4.31E-001 +/- 1.89E-001	1.25E-001 +/- 2.23E-002
TH-229	0.999	4872.00*	2.06E+000 +/- 3.68E-001	1.03E-001 +/- 1.84E-002
TH-230	0.989	4672.00*	5.00E-001 +/- 1.95E-001	1.06E-001 +/- 1.90E-002
TH-232	0.995	3997.00*	4.02E-001 +/- 1.71E-001	9.39E-002 +/- 1.68E-002

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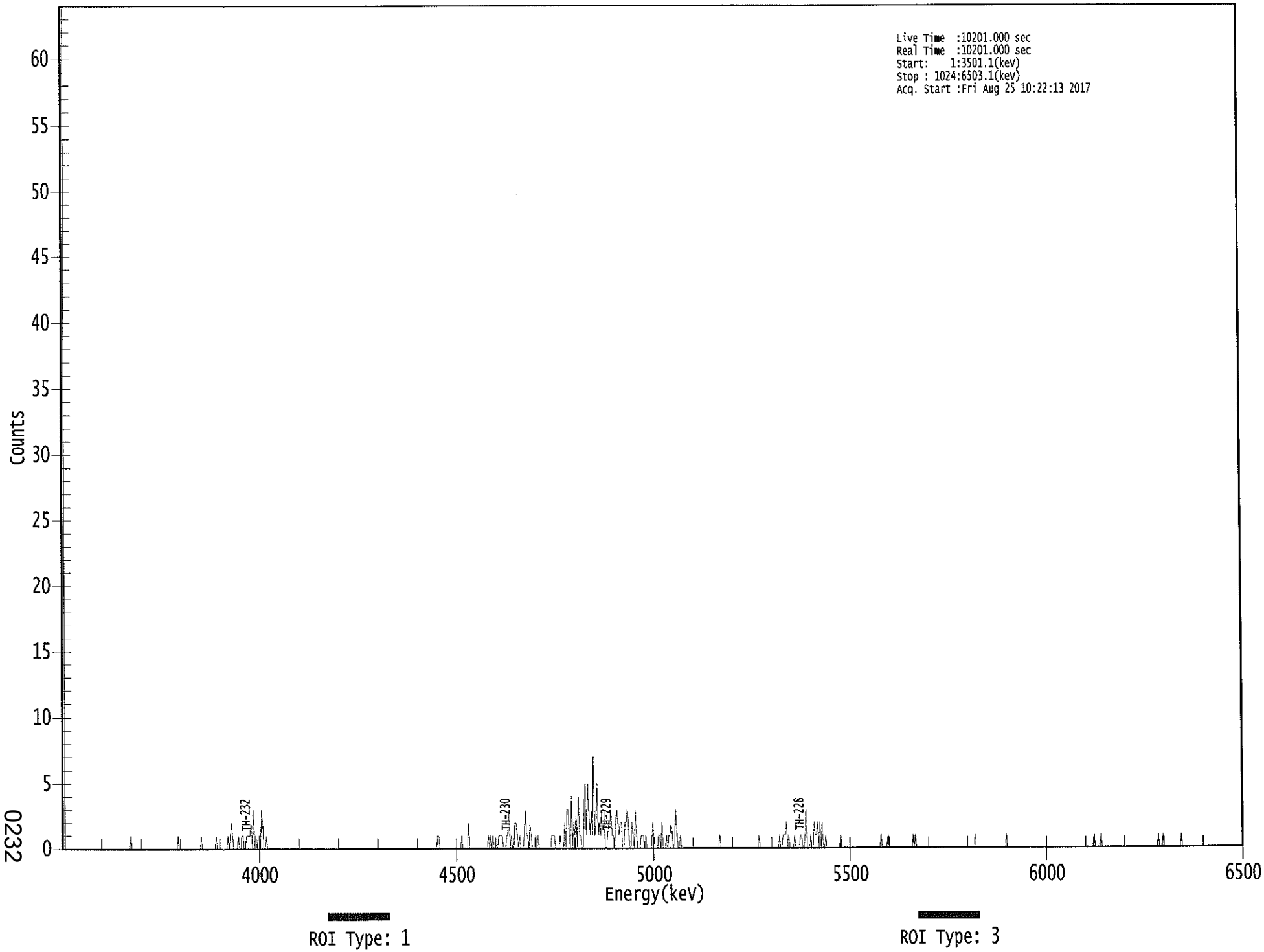
0000192622.CNF



0232

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

Sample Title: 03

Elapsed Live time: 10201
Elapsed Real Time: 10201

Channel								
1:	10201	10201	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	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	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:	1	0	0	0	0	0	0	0
129:	0	0	0	0	0	1	0	0
137:	0	0	0	0	0	0	0	1
145:	0	1	2	1	0	0	0	0
153:	1	0	0	1	1	0	0	1
161:	1	1	1	2	0	3	0	1
169:	0	1	1	0	3	2	0	0
177:	1	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	1	1	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	1	0	0	0	0	0	2
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

369:	1	0	1	0	1	0	0	0

Sample Title: 03

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

801:	0	0	0	0	0	0	0	0

Sample Title: 03

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

NB 8/25/17

Apex-Alpha™

Sample Description: HTC-A03-S003-3642-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 04
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: 1.170E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 11:12:16 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.236 mL
Effective Efficiency: 0.1146 +/- 0.0119
Counting Efficiency: 0.1623 +/- 0.0028 on 11/18/2016 10:08:37 AM
Chem. Recovery Factor: 0.7061 +/- 0.0742

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		5.769	5.49	88.08	0.51	0.00E+000	3.0
TH-228		5.355	35.66	33.00	0.34	0.00E+000	6.7
TH-229	T	4.863	103.15	19.39	0.85	0.00E+000	12.4
TH-230		4.633	35.66	33.00	0.34	0.00E+000	3.0
TH-232		3.950	33.83	33.80	0.17	0.00E+000	3.7

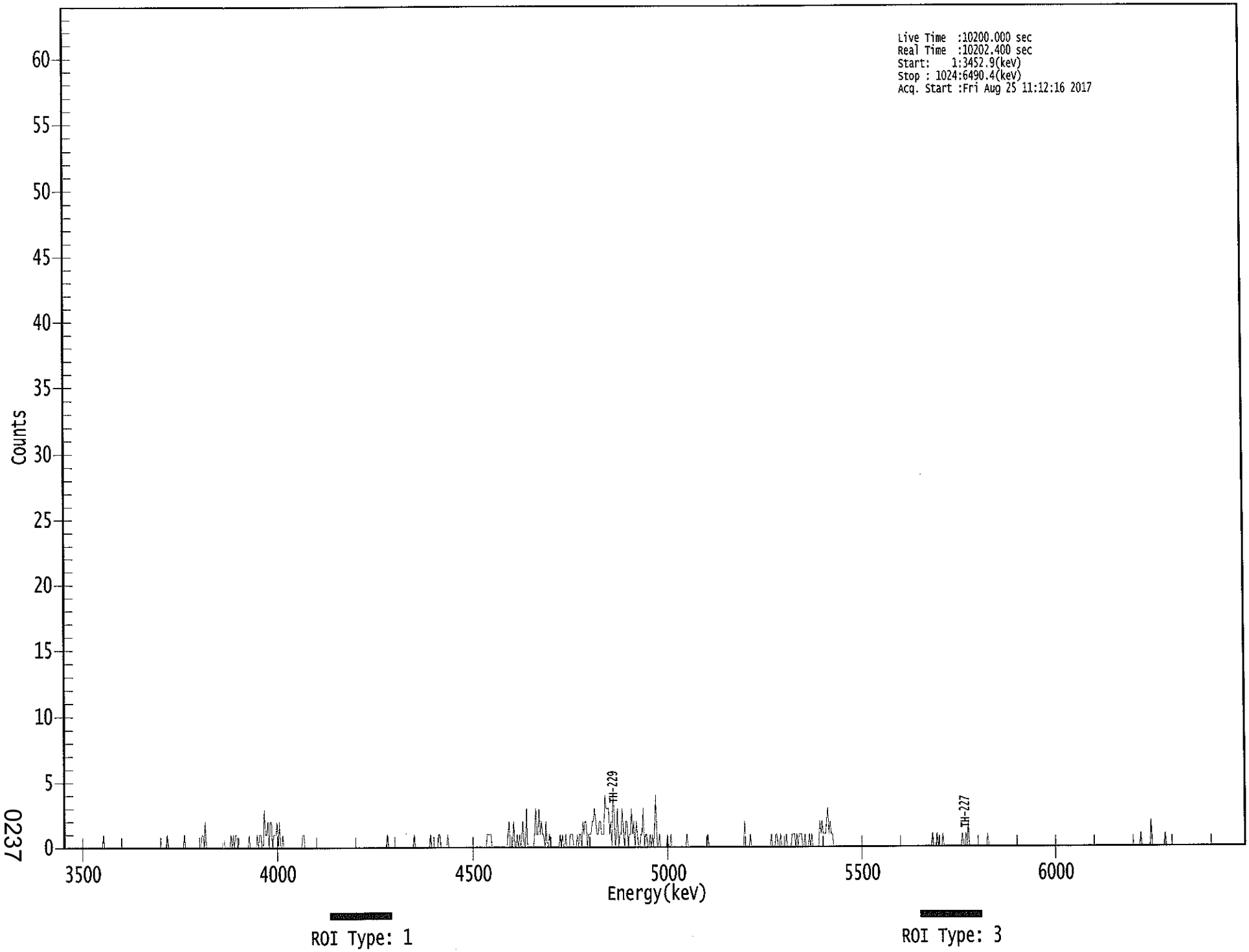
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.966	5850.00*	1.12E-001 +/- 1.01E-001	1.07E-001 +/- 2.18E-002
TH-228	0.990	5400.00*	7.81E-001 +/- 3.03E-001	1.05E-001 +/- 2.13E-002
TH-229	1.000	4872.00*	2.05E+000 +/- 4.16E-001	1.19E-001 +/- 2.42E-002
TH-230	0.992	4672.00*	7.06E-001 +/- 2.74E-001	9.47E-002 +/- 1.92E-002
TH-232	0.989	3997.00*	6.69E-001 +/- 2.64E-001	8.25E-002 +/- 1.68E-002

AG 8/28/17

0000192639.CNF



0237

****
***** 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: 10202

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	1	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	1	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	1	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	1
121:	1	0	2	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	1	0	0	0	0	0
145:	1	0	1	0	1	1	0	0
153:	0	0	0	0	0	0	0	0
161:	1	0	0	0	0	0	0	1
169:	0	1	1	0	0	3	1	1
177:	2	0	2	2	0	1	1	1
185:	2	0	2	0	0	1	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	1	1
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	1
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	1	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	1	0	0	0
321:	0	0	0	1	1	0	0	0
329:	0	0	0	1	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	1	1	1

369:	1	0	0	0	0	0	0	0

Sample Title: 04

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

801:	0	0	0	0	0	0	0	0

Sample Title: 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	1	0	0	0
937:	0	0	0	0	0	2	0	0
945:	0	0	0	0	0	0	0	0
953:	0	1	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KAB 8/25/17

Sample Description: HTC-A03-S003-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 05
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: 1.200E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 11:12:18 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.234 mL
Effective Efficiency: 0.1579 +/- 0.0142
Counting Efficiency: 0.1633 +/- 0.0028 on 11/18/2016 10:08:35 AM
Chem. Recovery Factor: 0.9669 +/- 0.0886

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		5.805	9.49	65.59	0.51	0.00E+000	3.0
TH-228		5.389	65.98	24.35	1.02	0.00E+000	8.9
TH-229	T	4.893	141.15	16.56	0.85	0.00E+000	5.3
TH-230		4.648	62.66	24.84	0.34	0.00E+000	3.5
TH-232		3.971	65.98	24.35	1.02	0.00E+000	3.3

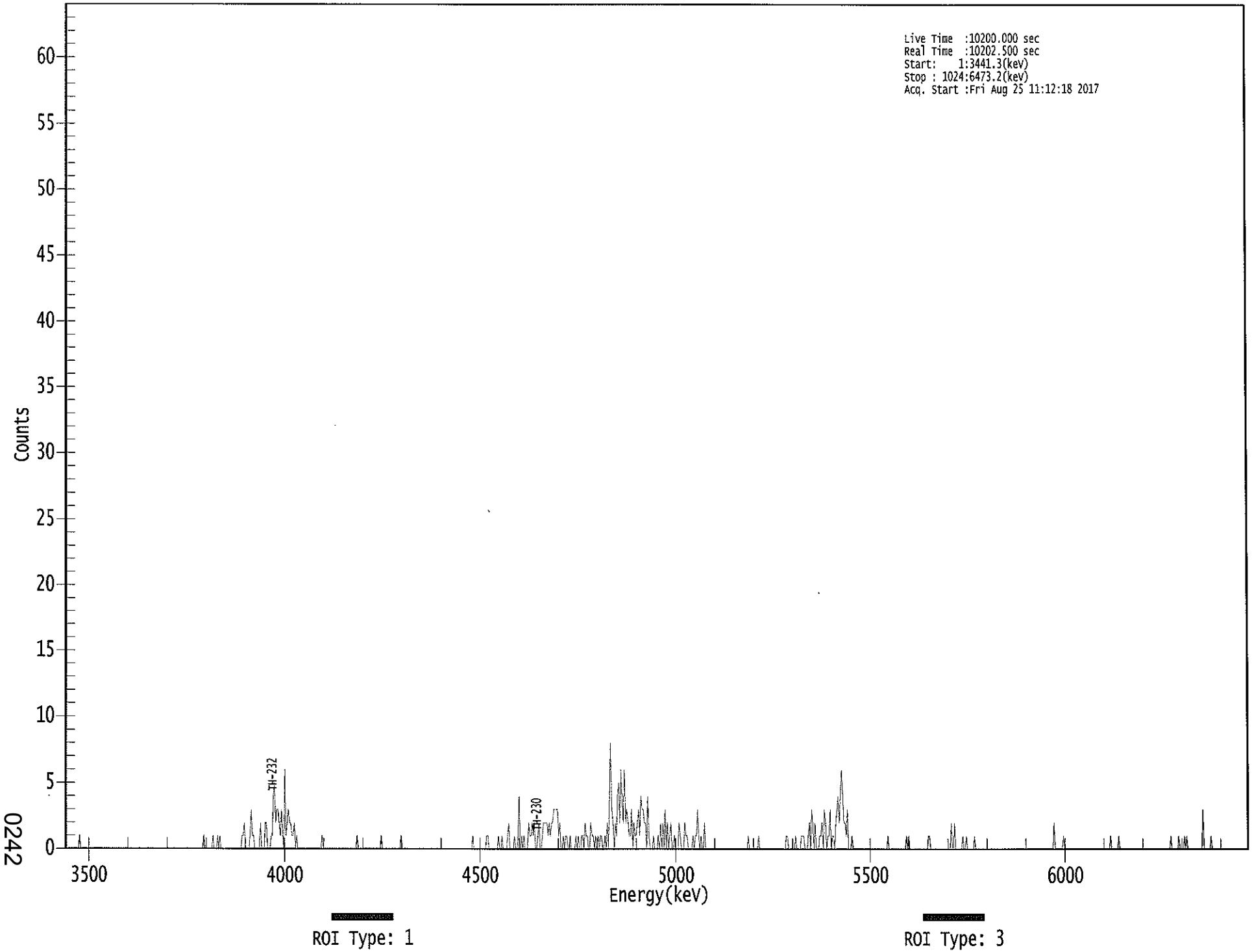
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.989	5850.00*	1.37E-001 +/- 9.33E-002	7.59E-002 +/- 1.34E-002
TH-228	0.999	5400.00*	1.02E+000 +/- 3.07E-001	9.75E-002 +/- 1.72E-002
TH-229	0.998	4872.00*	1.98E+000 +/- 3.50E-001	8.41E-002 +/- 1.48E-002
TH-230	0.997	4672.00*	8.78E-001 +/- 2.67E-001	6.70E-002 +/- 1.18E-002
TH-232	0.997	3997.00*	9.22E-001 +/- 2.77E-001	8.81E-002 +/- 1.55E-002

AG 8/28/17

0000192640.CNF



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

Sample Title: 05

Elapsed Live time: 10200
Elapsed Real Time: 10203

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	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	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	1
121:	0	0	0	0	0	0	0	1
129:	0	0	0	1	0	1	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	1	1	2	0	0	0	0	1
161:	3	1	1	0	0	0	0	0
169:	2	0	0	0	2	2	0	0
177:	0	1	1	4	5	2	3	3
185:	2	1	3	1	0	6	1	2
193:	3	2	2	1	1	2	0	1
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	1	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	1	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	1	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	1	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	1
353:	0	0	0	0	0	0	0	0
361:	0	0	0	1	1	0	0	0

369:	0	0	0	0	0	1	0	0

Sample Title: 05

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

801:	0	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	2	0
857:	0	0	0	0	0	0	1	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	1
905:	0	0	0	0	0	0	1	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	1	0	0	0	0
961:	0	0	1	0	0	0	0	1
969:	0	1	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	3
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

Apex-Alpha™

KB 8/25/17

Sample Description: HTC-A03-S004-0006-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_003
Chamber Serial Number:
Detector Serial Number: 3
Env. Background: System Bkgd 194200
Reagent Blank: <not performed>

Sample Size: 1.150E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 1:15:27 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.235 mL
Effective Efficiency: 0.1771 +/- 0.0151
Counting Efficiency: 0.1562 +/- 0.0027 on 11/19/2016 1:08:16 PM
Chem. Recovery Factor: 1.1333 +/- 0.0988

Peak Match Tolerance: 0.175 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227		5.853	9.79	70.43	2.21	0.00E+000	3.0
TH-228		5.378	120.13	18.04	1.87	0.00E+000	18.1
TH-229	T	4.887	158.98	15.60	1.02	0.00E+000	5.2
TH-230		4.637	80.13	22.19	1.87	0.00E+000	7.4
TH-232		3.964	95.49	20.12	0.51	0.00E+000	15.2

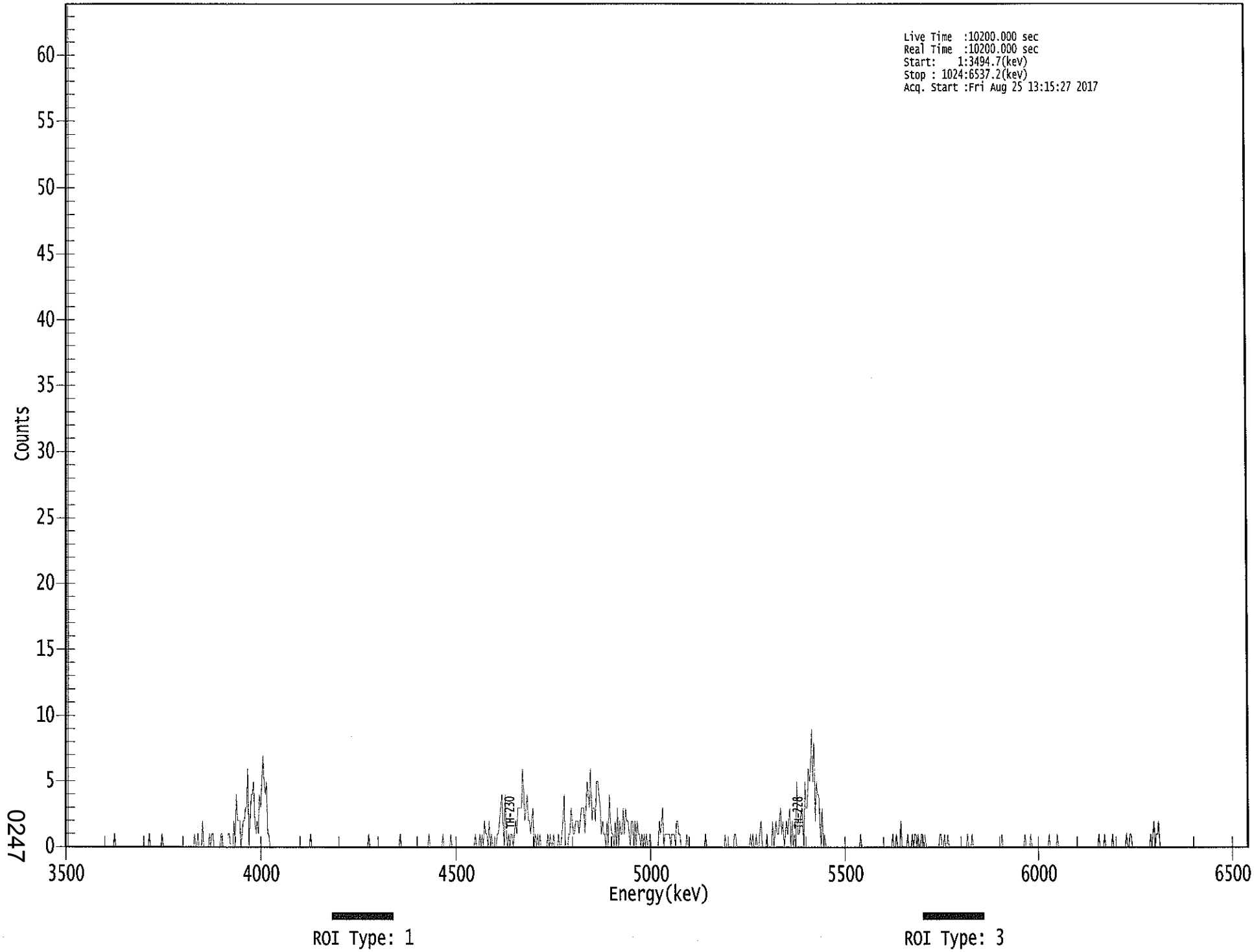
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	1.000	5850.00*	1.32E-001 +/- 9.55E-002	1.08E-001 +/- 1.80E-002
TH-228	0.997	5400.00*	1.73E+000 +/- 4.27E-001	1.09E-001 +/- 1.83E-002
TH-229	0.999	4872.00*	2.08E+000 +/- 3.48E-001	8.24E-002 +/- 1.38E-002
TH-230	0.994	4672.00*	1.04E+000 +/- 2.90E-001	9.87E-002 +/- 1.65E-002
TH-232	0.994	3997.00*	1.24E+000 +/- 3.25E-001	6.83E-002 +/- 1.14E-002

AG 8/28/17

0000192654.CNF



0247

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

Sample Title: 06

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	10200	10200	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	1	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:	1	0	0	0	0	0	0	0
81:	0	0	0	1	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	1
113:	0	0	1	0	0	0	2	0
121:	0	0	0	0	1	0	1	1
129:	0	0	0	0	0	0	1	1
137:	0	0	0	0	1	1	0	0
145:	0	2	0	4	2	2	2	0
153:	1	2	2	3	3	6	0	2
161:	4	4	5	2	1	2	1	4
169:	3	5	7	5	4	5	1	1
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	1	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	1	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	1	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	1	0	0	0	0	0	0
321:	0	0	0	0	0	1	0	0
329:	0	0	0	0	1	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	1	0	0	0	1	0	1
361:	0	2	1	1	0	2	0	1

369:	0	0	0	0	1	1	2	3

Sample Title: 06

Channel								
377:	4	2	0	4	1	0	1	0
385:	1	1	0	1	2	1	3	3
393:	3	3	6	4	2	3	4	2
401:	2	1	2	3	0	1	0	1
409:	0	1	0	0	0	0	0	0
417:	1	0	1	0	0	1	0	0
425:	0	1	0	0	1	2	4	0
433:	0	0	1	1	3	2	1	1
441:	2	2	2	1	2	3	3	3
449:	1	3	5	4	3	6	2	3
457:	3	2	5	5	4	3	1	2
465:	1	1	0	2	0	4	2	1
473:	1	0	2	0	3	0	2	1
481:	1	3	1	3	2	2	1	0
489:	2	2	0	2	0	2	1	1
497:	0	1	0	1	0	1	0	0
505:	1	0	0	0	0	0	0	0
513:	2	1	2	3	0	1	1	1
521:	1	1	0	1	1	1	0	2
529:	2	1	1	0	0	0	0	0
537:	1	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	1	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	1	0	0	0	0	0	0
577:	0	1	1	0	0	0	0	0
585:	0	0	0	0	0	0	0	1
593:	0	1	0	0	1	0	0	1
601:	2	0	0	0	0	1	0	0
609:	0	0	2	0	1	2	1	1
617:	2	3	1	2	0	1	2	1
625:	2	3	0	2	0	1	0	5
633:	1	1	2	3	2	0	5	3
641:	3	6	5	6	9	5	8	2
649:	5	4	4	2	0	3	0	1
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	1	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	1	0	0	1	0	0
721:	0	2	0	0	0	0	0	1
729:	0	0	0	1	0	1	1	0
737:	1	0	0	1	1	0	1	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	1	1	0	0	1
761:	0	0	1	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	1	0	0	0	1
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	1	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	1	0	0
833:	0	0	1	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	1	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	1	0	0
897:	0	0	1	0	0	0	0	0
905:	0	1	0	0	0	0	0	0
913:	0	0	0	0	0	1	0	0
921:	1	1	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	1	0	1	2	0	1
945:	1	2	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

JCB 9/20/17

Apex-Alpha™

Sample Description: HTC-A03-S004-0612-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 07
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_004
Chamber Serial Number:
Detector Serial Number: 4
Env. Background: System Bkgd 194201
Reagent Blank: <not performed>

Sample Size: 1.250E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 1:15:28 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.236 mL
Effective Efficiency: 0.1994 +/- 0.0162
Counting Efficiency: 0.1883 +/- 0.0032 on 11/19/2016 1:08:17 PM
Chem. Recovery Factor: 1.0587 +/- 0.0877

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		5.771	2.47	163.78	1.53	0.00E+000	2.9
TH-228		5.377	86.98	21.16	1.02	0.00E+000	5.4
TH-229	T	4.890	179.64	14.69	1.36	0.00E+000	3.5
TH-230		4.643	87.47	21.17	1.53	0.00E+000	12.4
TH-232		3.968	89.13	21.01	1.87	0.00E+000	5.9

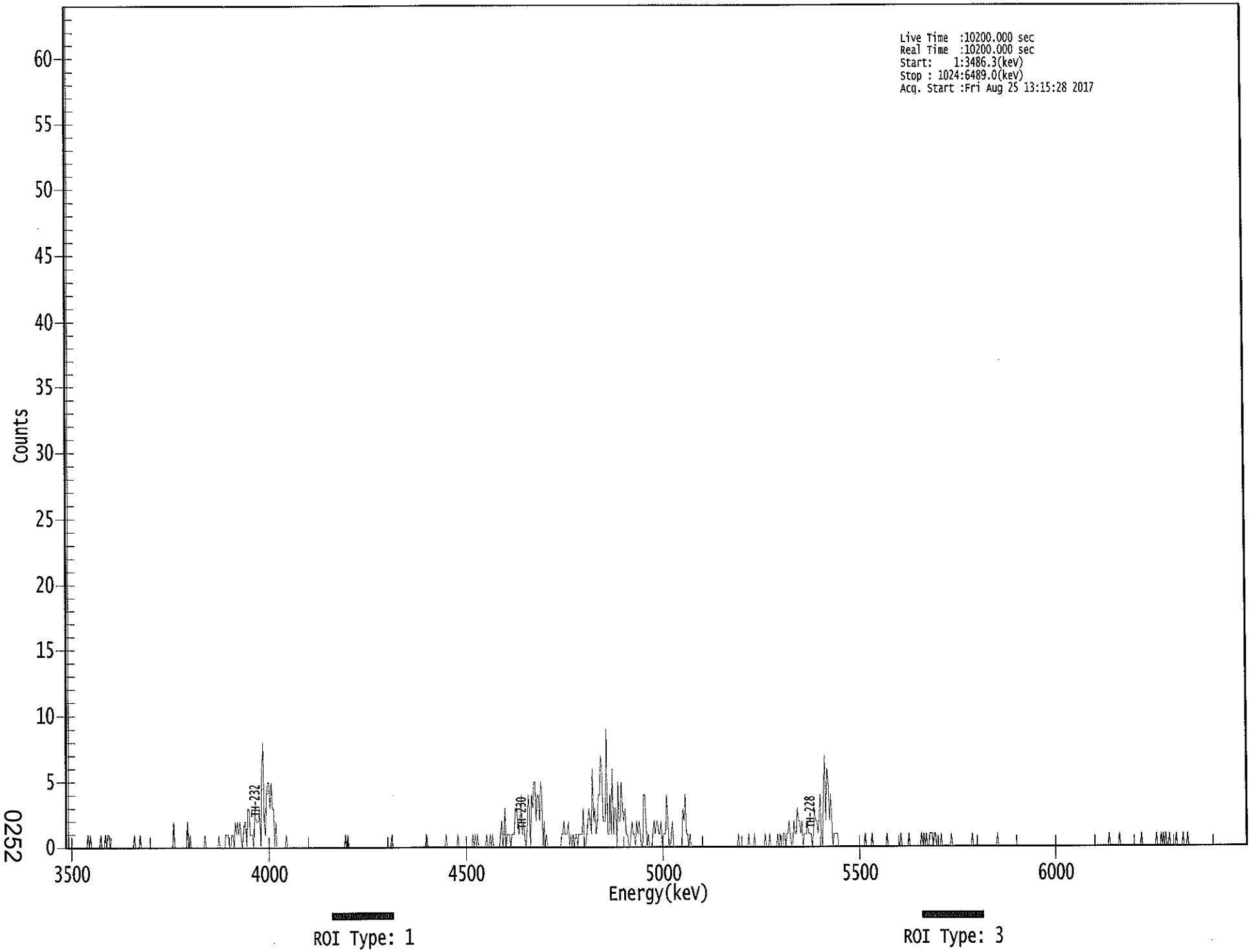
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.968	5850.00*	2.72E-002 +/- 4.47E-002	7.82E-002 +/- 1.24E-002
TH-228	0.997	5400.00*	1.03E+000 +/- 2.72E-001	7.43E-002 +/- 1.18E-002
TH-229	0.998	4872.00*	1.92E+000 +/- 3.05E-001	7.32E-002 +/- 1.16E-002
TH-230	0.996	4672.00*	9.32E-001 +/- 2.47E-001	7.57E-002 +/- 1.20E-002
TH-232	0.996	3997.00*	9.48E-001 +/- 2.50E-001	8.05E-002 +/- 1.28E-002

AG 8/28/17

0000192653.CNF



0252

****
***** 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:	10200	10200	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	1	0	1	0	0
25:	0	0	0	0	0	0	1	0
33:	0	0	1	0	1	1	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	1	0	0	0	0
65:	1	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	2	0	0
97:	0	0	0	0	0	0	0	0
105:	0	2	0	1	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	1	0	0	0	0	0	0	0
129:	0	0	0	0	1	0	0	0
137:	0	0	1	1	1	0	0	1
145:	1	0	2	1	2	1	2	1
153:	0	1	2	2	0	3	3	1
161:	1	1	0	3	2	2	2	3
169:	0	6	8	2	1	4	5	5
177:	3	5	3	3	0	2	0	0
185:	0	0	0	0	0	0	1	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	1	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	1	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	1
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	1	0	0	0	0	0	0	0
337:	0	0	1	0	0	0	0	0
345:	0	0	0	0	0	0	0	1
353:	0	1	0	1	0	0	0	0
361:	0	0	0	1	0	0	1	0

369:	1	0	0	0	0	0	0	1

Sample Title: 07

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

801:	0	0	0	0	0	0	1	0

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

Apex-Alpha™

ICB 8/25/17

Sample Description: HTC-A03-S004-1218-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 08
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_010
Chamber Serial Number:
Detector Serial Number: 10
Env. Background: System Bkgd 194202
Reagent Blank: <not performed>

Sample Size: 1.430E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 1:15:29 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.235 mL
Effective Efficiency: 0.1403 +/- 0.0135
Counting Efficiency: 0.1872 +/- 0.0032 on 11/19/2016 1:08:16 PM
Chem. Recovery Factor: 0.7493 +/- 0.0731

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	10.11	71.21	2.89	0.00E+000	2.9
TH-228		5.368	89.60	21.16	3.40	0.00E+000	8.4
TH-229	T	4.877	125.75	17.82	4.25	0.00E+000	3.9
TH-230		4.633	77.43	22.87	3.57	0.00E+000	2.9
TH-232		3.968	84.45	21.70	2.55	0.00E+000	5.6

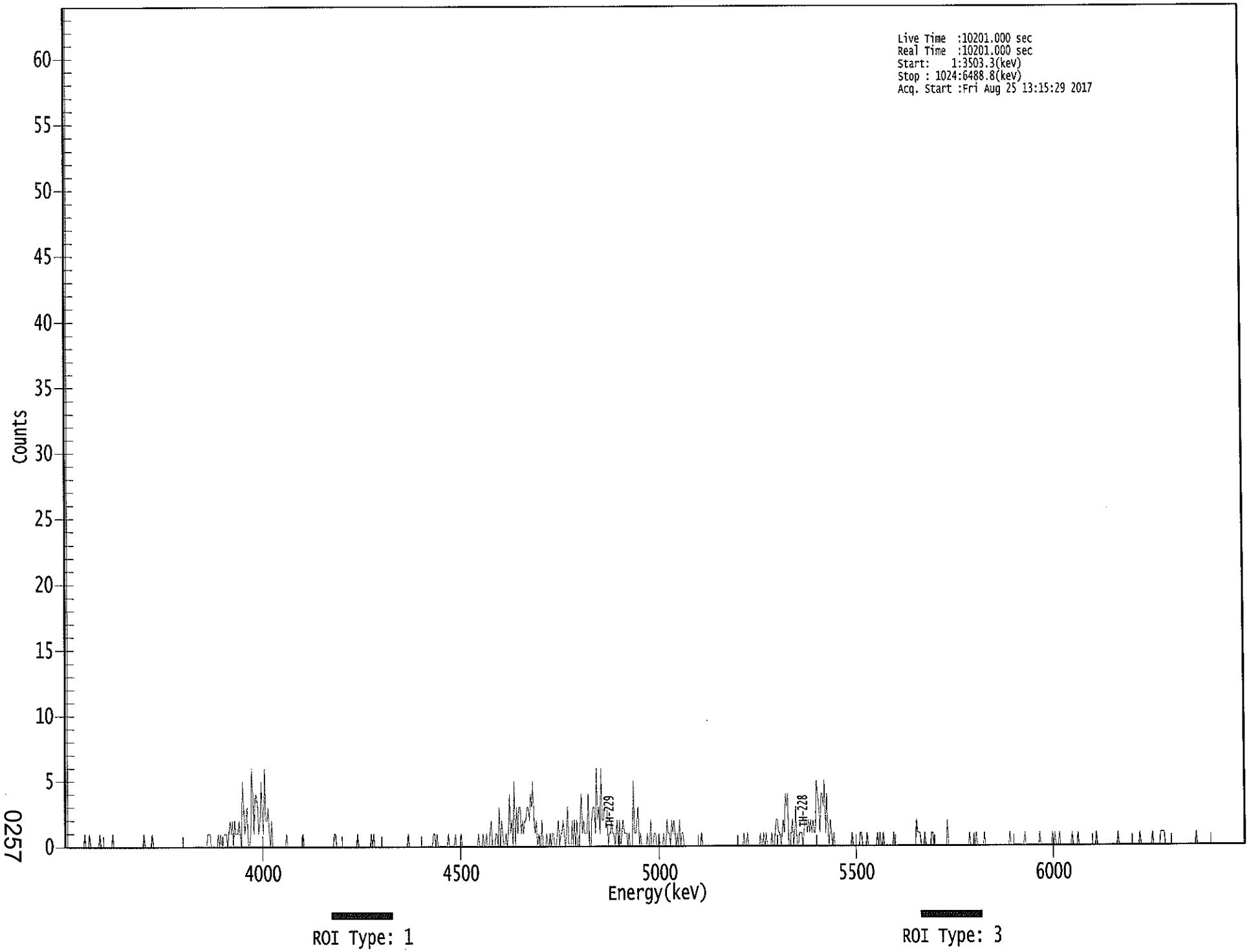
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.993	5850.00*	1.38E-001 +/- 1.02E-001	1.20E-001 +/- 2.25E-002
TH-228	0.995	5400.00*	1.31E+000 +/- 3.72E-001	1.36E-001 +/- 2.56E-002
TH-229	1.000	4872.00*	1.67E+000 +/- 3.14E-001	1.33E-001 +/- 2.51E-002
TH-230	0.992	4672.00*	1.02E+000 +/- 3.03E-001	1.25E-001 +/- 2.35E-002
TH-232	0.996	3997.00*	1.12E+000 +/- 3.20E-001	1.11E-001 +/- 2.09E-002

AG 8/28/17

0000192655.CNF



0257

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

Sample Title: 08

Elapsed Live time: 10201
Elapsed Real Time: 10201

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

369:	2	0	0	0	1	1	0	3

Sample Title: 08

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

801:	0	0	0	0	0	0	0	0

Sample Title: 08

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

Apex-Alpha™

KB 8/25/17

Sample Description: HTC-A03-S004-1824-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 09
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_011
Chamber Serial Number:
Detector Serial Number: 11
Env. Background: System Bkgd 194203
Reagent Blank: <not performed>

Sample Size: 1.230E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 1:15:30 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.235 mL
Effective Efficiency: 0.1950 +/- 0.0160
Counting Efficiency: 0.1991 +/- 0.0034 on 11/19/2016 1:08:17 PM
Chem. Recovery Factor: 0.9793 +/- 0.0821

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		5.831	7.45	84.98	2.55	0.00E+000	5.2
TH-228		5.379	114.75	18.69	4.25	0.00E+000	7.8
TH-229	T	4.890	175.13	14.90	1.87	0.00E+000	4.2
TH-230		4.642	92.81	20.50	1.19	0.00E+000	11.0
TH-232		3.968	97.32	19.95	0.68	0.00E+000	7.5

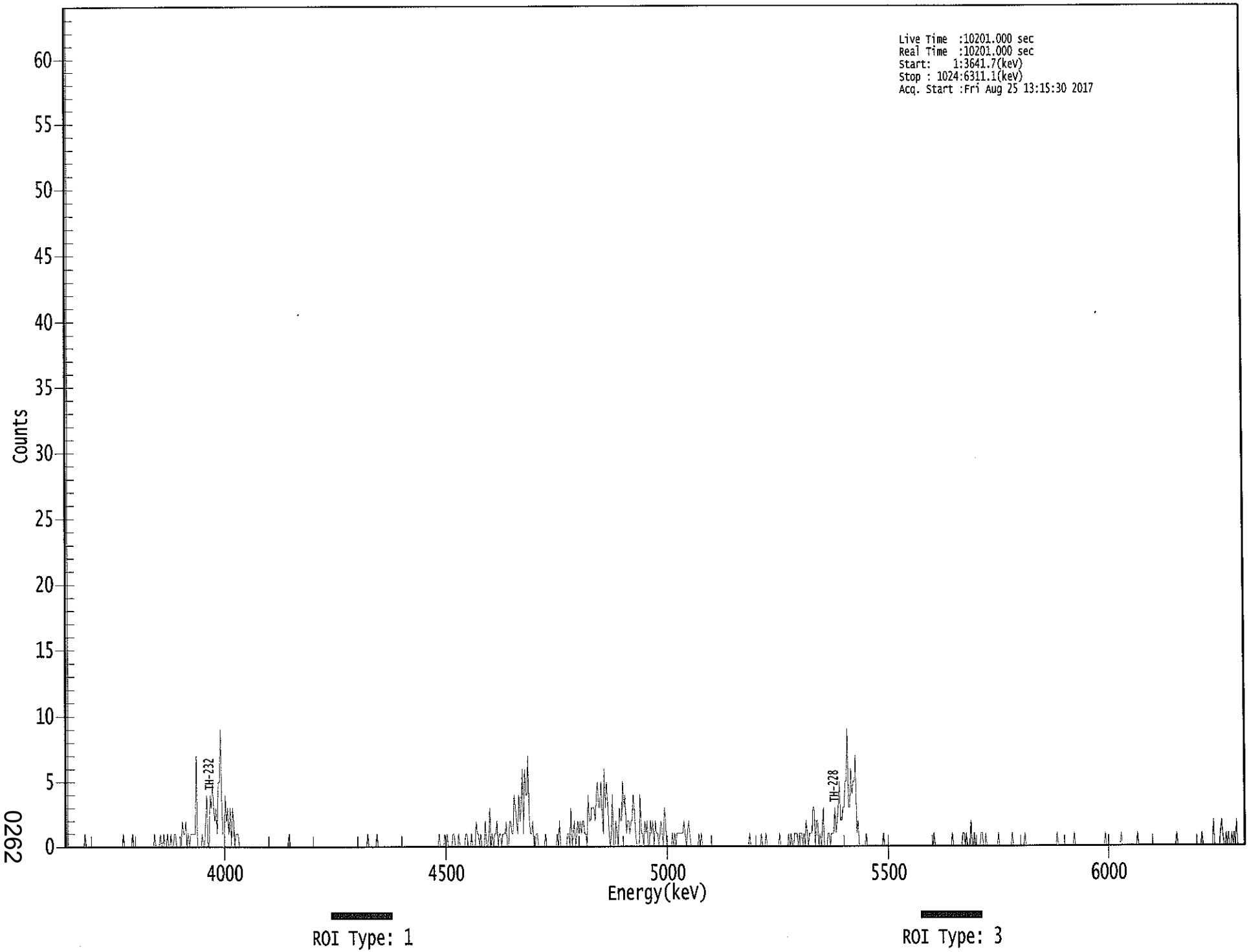
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.998	5850.00*	8.52E-002 +/- 7.37E-002	9.59E-002 +/- 1.54E-002
TH-228	0.998	5400.00*	1.41E+000 +/- 3.47E-001	1.23E-001 +/- 1.98E-002
TH-229	0.998	4872.00*	1.94E+000 +/- 3.13E-001	8.40E-002 +/- 1.35E-002
TH-230	0.995	4672.00*	1.03E+000 +/- 2.68E-001	7.29E-002 +/- 1.17E-002
TH-232	0.996	3997.00*	1.07E+000 +/- 2.76E-001	6.23E-002 +/- 1.00E-002

AG 8/28/17

0000192656.CNF



0262

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

Sample Title: 09

Elapsed Live time: 10201
Elapsed Real Time: 10201

Channel								
1:	10201	10201	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	1	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	1	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	1	0	0
81:	0	0	1	0	0	1	0	0
89:	1	0	0	1	0	0	1	1
97:	0	0	0	0	0	2	1	1
105:	2	0	1	0	1	1	1	1
113:	1	7	0	0	0	0	1	0
121:	0	2	4	0	0	4	3	5
129:	3	2	3	1	5	5	9	3
137:	1	0	4	2	3	1	3	0
145:	3	2	0	1	1	1	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	1	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	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	1	0	0
265:	0	0	0	0	0	1	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	1	0	0	0	0
329:	1	0	1	0	0	0	0	1
337:	1	0	0	0	1	0	0	0
345:	0	0	1	1	0	0	0	1
353:	0	0	0	2	1	1	0	1
361:	0	0	0	2	0	0	1	3

369:	0	1	0	1	1	2	0	1

Sample Title: 09

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

801:	0	0	0	0	0	0	0	0

Sample Title: 09

Channel								
809:	1	0	0	0	0	0	0	0
817:	0	0	0	0	1	0	0	0
825:	0	0	0	0	0	0	0	1
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	1	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	1	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	1	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	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	1	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	1	0	0	0	0	0	0
993:	0	0	0	2	0	0	0	0
1001:	0	1	2	1	0	0	1	0
1009:	1	0	0	1	0	1	0	2
1017:	0	0	0	0	0	0	0	1

Apex-Alpha™

KB 8/25/17

Sample Description: HTC-A03-S004-2430-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 10
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_012
Chamber Serial Number:
Detector Serial Number: 12
Env. Background: System Bkgd 194204
Reagent Blank: <not performed>

Sample Size: 1.130E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 1:15:31 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.234 mL
Effective Efficiency: 0.1791 +/- 0.0153
Counting Efficiency: 0.1881 +/- 0.0032 on 11/19/2016 1:08:18 PM
Chem. Recovery Factor: 0.9523 +/- 0.0829

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		5.833	9.11	76.04	2.89	0.00E+000	0.0
TH-228		5.376	84.11	21.80	2.89	0.00E+000	4.7
TH-229	T	4.892	160.30	15.58	1.70	0.00E+000	6.3
TH-230		4.645	84.15	21.49	0.85	0.00E+000	8.9
TH-232		3.974	77.49	22.35	0.51	0.00E+000	8.1

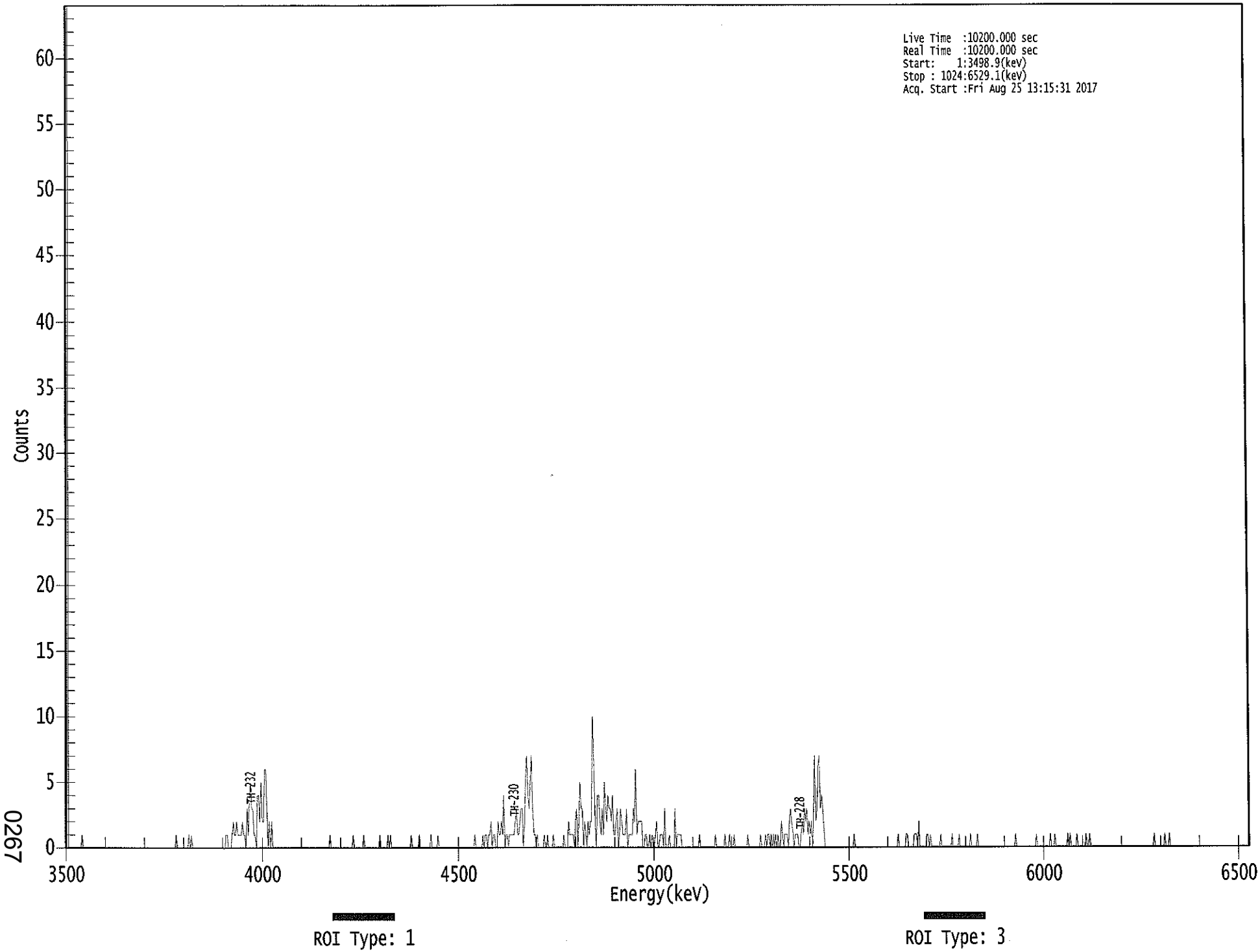
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.998	5850.00*	1.23E-001 +/- 9.61E-002	1.19E-001 +/- 1.98E-002
TH-228	0.997	5400.00*	1.22E+000 +/- 3.36E-001	1.27E-001 +/- 2.13E-002
TH-229	0.998	4872.00*	2.11E+000 +/- 3.53E-001	9.66E-002 +/- 1.62E-002
TH-230	0.996	4672.00*	1.10E+000 +/- 3.00E-001	7.85E-002 +/- 1.31E-002
TH-232	0.997	3997.00*	1.01E+000 +/- 2.83E-001	6.87E-002 +/- 1.15E-002

AG 8/28/17

0000192657.CNF



0267

****
***** 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:	10200	10200	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	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	1
97:	0	0	0	0	0	0	0	0
105:	0	0	1	0	1	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	1	0	0	0	1
145:	2	1	1	2	1	1	1	1
153:	2	1	1	0	3	1	4	5
161:	3	3	1	1	0	4	4	2
169:	5	2	2	6	6	3	0	2
177:	0	2	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	1	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	1
249:	0	0	0	0	0	0	0	0
257:	1	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	1	0
273:	0	0	0	0	0	1	0	1
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:	1	0	0	0	0	0	0	0
313:	0	0	1	0	0	0	0	0
321:	1	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:	1	0	0	0	0	0	0	1
361:	0	1	1	0	1	1	2	0

369:	1	1	0	0	2	1	1	2

Sample Title: 10

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

801:	0	0	0	0	0	0	0	0

Sample Title: 10

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	1	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	1	0
841:	0	0	0	0	0	0	0	0
849:	0	0	1	0	0	0	1	0
857:	0	0	0	0	0	0	0	0
865:	0	1	0	1	0	0	0	0
873:	0	1	0	0	0	0	0	0
881:	0	1	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	0	0	0
945:	0	0	0	0	0	1	0	0
953:	0	1	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

JUB 8/25/17

Apex-Alpha™

Sample Description: HTC-A03-S004-3036-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 11
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_014
Chamber Serial Number:
Detector Serial Number: 14
Env. Background: System Bkgd 194205
Reagent Blank: <not performed>

Sample Size: 1.220E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 1:15:32 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.234 mL
Effective Efficiency: 0.1763 +/- 0.0151
Counting Efficiency: 0.1847 +/- 0.0032 on 11/19/2016 1:08:18 PM
Chem. Recovery Factor: 0.9546 +/- 0.0836

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		5.852	8.47	74.12	1.53	0.00E+000	2.9
TH-228		5.367	100.13	19.80	1.87	0.00E+000	8.1
TH-229	T	4.893	157.64	15.69	1.36	0.00E+000	6.6
TH-230		4.627	100.47	19.73	1.53	0.00E+000	5.1
TH-232		3.974	105.98	19.15	1.02	0.00E+000	5.9

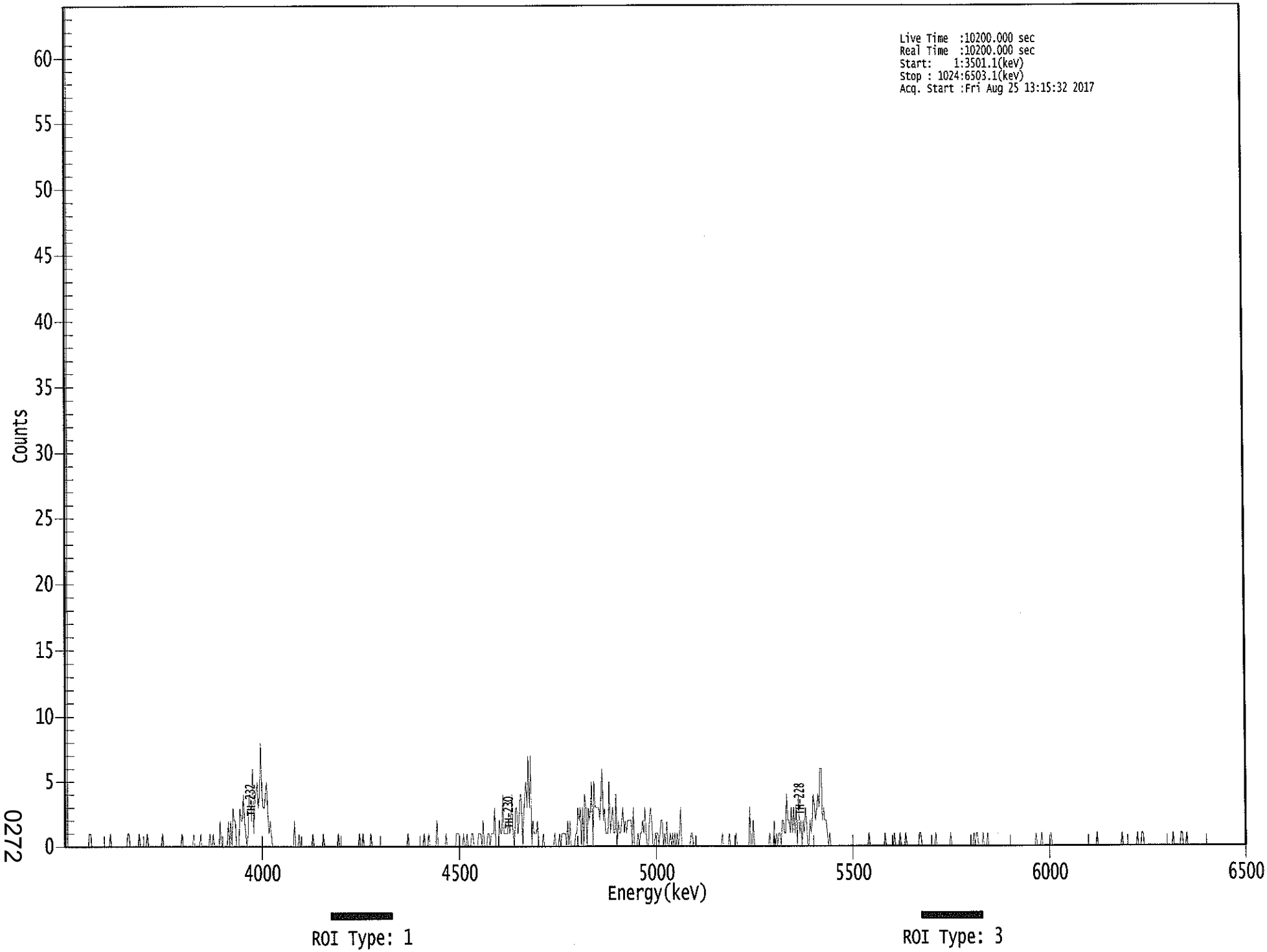
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	1.000	5850.00*	1.08E-001 +/- 8.21E-002	9.06E-002 +/- 1.52E-002
TH-228	0.994	5400.00*	1.37E+000 +/- 3.56E-001	1.04E-001 +/- 1.74E-002
TH-229	0.998	4872.00*	1.95E+000 +/- 3.28E-001	8.49E-002 +/- 1.43E-002
TH-230	0.989	4672.00*	1.24E+000 +/- 3.21E-001	8.77E-002 +/- 1.48E-002
TH-232	0.997	3997.00*	1.31E+000 +/- 3.33E-001	7.76E-002 +/- 1.31E-002

AG 8/28/17

0000192658.CNF



0272

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

Sample Title: 11

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	10200	10200	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	1	1	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	1
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	1	1
57:	0	0	0	0	0	0	0	0
65:	1	0	0	0	0	0	0	1
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	1	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	1	0	0
105:	0	0	0	0	0	0	0	1
113:	0	0	0	0	0	1	0	0
121:	0	0	0	0	0	1	0	0
129:	1	0	0	0	0	0	2	0
137:	0	0	0	0	0	2	0	2
145:	0	3	2	2	0	0	0	3
153:	2	2	4	2	1	0	1	4
161:	4	2	6	1	4	4	5	3
169:	4	8	4	3	3	4	5	3
177:	1	2	1	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	2	0
201:	0	0	1	0	0	0	0	0
209:	0	0	0	0	0	0	1	0
217:	0	0	0	0	0	0	0	1
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	1	0	0	0	0	0	0
265:	1	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	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	0	0	0	0	1	0
313:	0	0	1	0	0	0	0	0
321:	0	2	0	0	0	0	0	0
329:	0	1	0	0	0	0	0	0
337:	0	0	1	1	1	0	0	0
345:	1	0	0	1	0	0	0	1
353:	1	0	0	0	0	1	1	1
361:	0	2	0	0	0	1	1	0

369:	1	1	1	3	0	0	0	2

Sample Title: 11

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

801:	0	0	0	0	0	0	0	0

Sample Title: 11

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

Apex-Alpha™

KB 8/25/12

Sample Description: HTC-A03-S004-3642-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 12
Sample Geometry: Shelf 2
Procedure Description: Th iso

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

Sample Size: 1.090E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:22 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.235 mL
Effective Efficiency: 0.1534 +/- 0.0140
Counting Efficiency: 0.1681 +/- 0.0029 on 11/18/2016 10:08:33 AM
Chem. Recovery Factor: 0.9123 +/- 0.0845

Peak Match Tolerance: 0.175 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227		5.871	10.32	63.32	0.68	0.00E+000	3.0
TH-228		5.385	66.49	24.14	0.51	0.00E+000	4.1
TH-229	T	4.874	137.32	16.77	0.68	0.00E+000	5.2
TH-230		4.636	61.00	25.30	0.00	0.00E+000	4.1
TH-232		3.972	68.83	23.66	0.17	0.00E+000	13.4

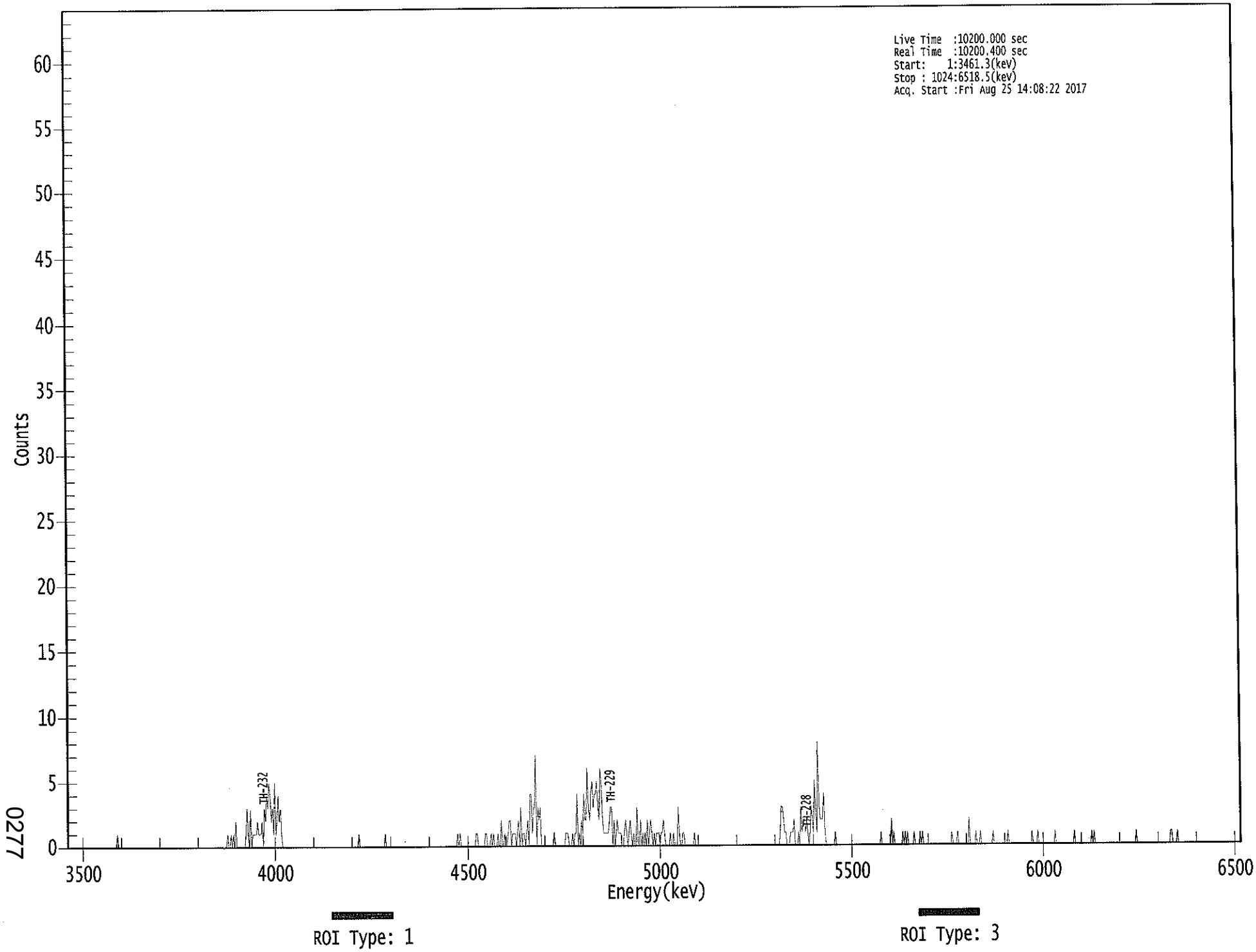
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.998	5850.00*	1.69E-001 +/- 1.11E-001	9.25E-002 +/- 1.65E-002
TH-228	0.999	5400.00*	1.17E+000 +/- 3.51E-001	9.23E-002 +/- 1.65E-002
TH-229	1.000	4872.00*	2.19E+000 +/- 3.90E-001	8.98E-002 +/- 1.60E-002
TH-230	0.993	4672.00*	9.68E-001 +/- 3.00E-001	9.52E-002 +/- 1.70E-002
TH-232	0.997	3997.00*	1.09E+000 +/- 3.23E-001	6.61E-002 +/- 1.18E-002

AG 8/28/17

0000192681.CNF



0277

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

Sample Title: 12

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	1	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	1	0	0	1	0
145:	1	0	2	0	0	0	0	0
153:	0	0	0	1	3	1	0	3
161:	0	1	1	1	1	2	1	1
169:	1	2	0	3	2	4	3	5
177:	4	2	3	1	5	1	2	4
185:	2	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	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	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	1	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	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	1	0	1	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	1	1	0	0	0
361:	0	0	0	1	1	0	0	0

369:	1	0	1	0	0	0	1	0

Sample Title: 12

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

801:	0	0	0	0	0	0	1	0

Sample Title: 12

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

JLP 8/25/17

Apex-Alpha™

Sample Description: HTC-A03-S004-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 13
Sample Geometry: Shelf 2
Procedure Description: Th iso

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

Sample Size: 1.020E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:24 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.233 mL
Effective Efficiency: 0.1602 +/- 0.0143
Counting Efficiency: 0.1728 +/- 0.0029 on 11/18/2016 10:08:58 AM
Chem. Recovery Factor: 0.9271 +/- 0.0844

Peak Match Tolerance: 0.175 MeV

PEAK AREA REPORT

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227		5.774	5.32	91.11	0.68	0.00E+000	3.0
TH-228		5.351	21.98	42.93	1.02	0.00E+000	3.0
TH-229	T	4.876	142.66	16.43	0.34	0.00E+000	5.4
TH-230		4.627	12.15	58.49	0.85	0.00E+000	3.0
TH-232		3.994	15.49	50.75	0.51	0.00E+000	8.9

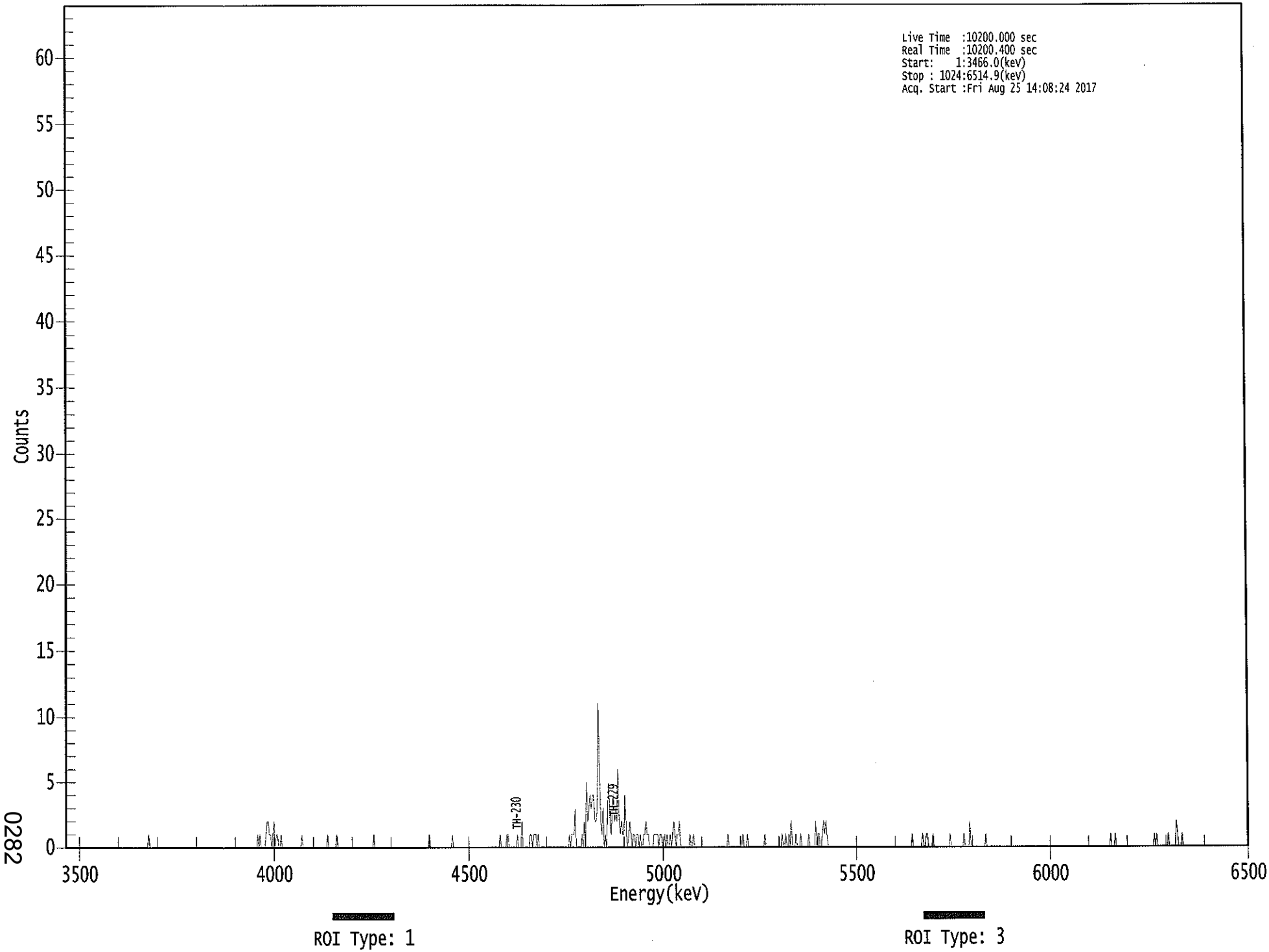
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.970	5850.00*	8.93E-002 +/- 8.28E-002	9.46E-002 +/- 1.66E-002
TH-228	0.987	5400.00*	3.95E-001 +/- 1.83E-001	1.13E-001 +/- 1.99E-002
TH-229	1.000	4872.00*	2.32E+000 +/- 4.07E-001	7.79E-002 +/- 1.36E-002
TH-230	0.989	4672.00*	1.97E-001 +/- 1.20E-001	9.72E-002 +/- 1.70E-002
TH-232	1.000	3997.00*	2.51E-001 +/- 1.35E-001	8.51E-002 +/- 1.49E-002

AG 8/28/17

0000192682.CNF



0282

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

Sample Title: 13

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	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	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	1	0	1
169:	0	0	0	0	1	2	2	1
177:	1	0	1	2	0	1	1	0
185:	0	1	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	1	0	0	0	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	1	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	1	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	1	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	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	0

369:	0	0	0	0	0	0	1	0

Sample Title: 13

Channel								
377:	0	0	0	0	1	1	0	0
385:	0	0	0	0	0	1	0	0
393:	0	2	0	0	0	0	0	0
401:	1	1	0	1	1	1	0	1
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	0	0	0	0
433:	0	0	1	0	1	1	1	3
441:	0	0	0	0	0	1	0	2
449:	0	5	2	3	4	3	4	4
457:	2	2	3	11	6	2	1	3
465:	0	1	0	3	5	2	1	3
473:	4	2	3	2	6	2	1	2
481:	1	1	4	1	0	1	2	1
489:	0	1	1	0	1	1	0	1
497:	0	0	1	1	2	1	1	0
505:	0	0	0	1	1	1	1	0
513:	1	1	0	0	1	0	1	0
521:	0	1	0	1	2	1	0	1
529:	1	2	0	0	0	0	0	0
537:	0	0	1	0	0	1	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	1	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	1	0	0	0	1	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	1	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	1	0	0	1	0	0
625:	1	0	2	0	0	0	1	0
633:	0	0	1	0	0	0	0	0
641:	0	1	0	0	0	0	0	2
649:	0	1	1	0	0	1	2	1
657:	2	1	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	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	1	0	0	1
745:	1	0	0	0	0	1	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	1	0	0	0
769:	0	0	0	0	0	0	0	0
777:	1	0	0	0	0	2	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: 13

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	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	1
905:	0	0	0	1	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	1	0	1
945:	0	0	0	0	0	0	0	0
953:	0	1	0	0	0	0	0	0
961:	2	1	0	0	0	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™

KCB 8/25/17

Sample Description: HTC-A03-S004-4248-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 14
Sample Geometry: Shelf 2
Procedure Description: Th iso

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

Sample Size: 1.010E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:26 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.235 mL
Effective Efficiency: 0.1271 +/- 0.0126
Counting Efficiency: 0.1580 +/- 0.0027 on 11/18/2016 10:08:56 AM
Chem. Recovery Factor: 0.8048 +/- 0.0807

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		5.838	7.49	74.41	0.51	0.00E+000	3.0
TH-228		5.326	294.83	11.42	0.17	0.00E+000	4.8
TH-229	T	4.893	113.83	18.39	0.17	0.00E+000	6.0
TH-230		4.585	281.98	11.70	1.02	0.00E+000	5.1
TH-232		3.926	307.66	11.18	0.34	0.00E+000	4.9

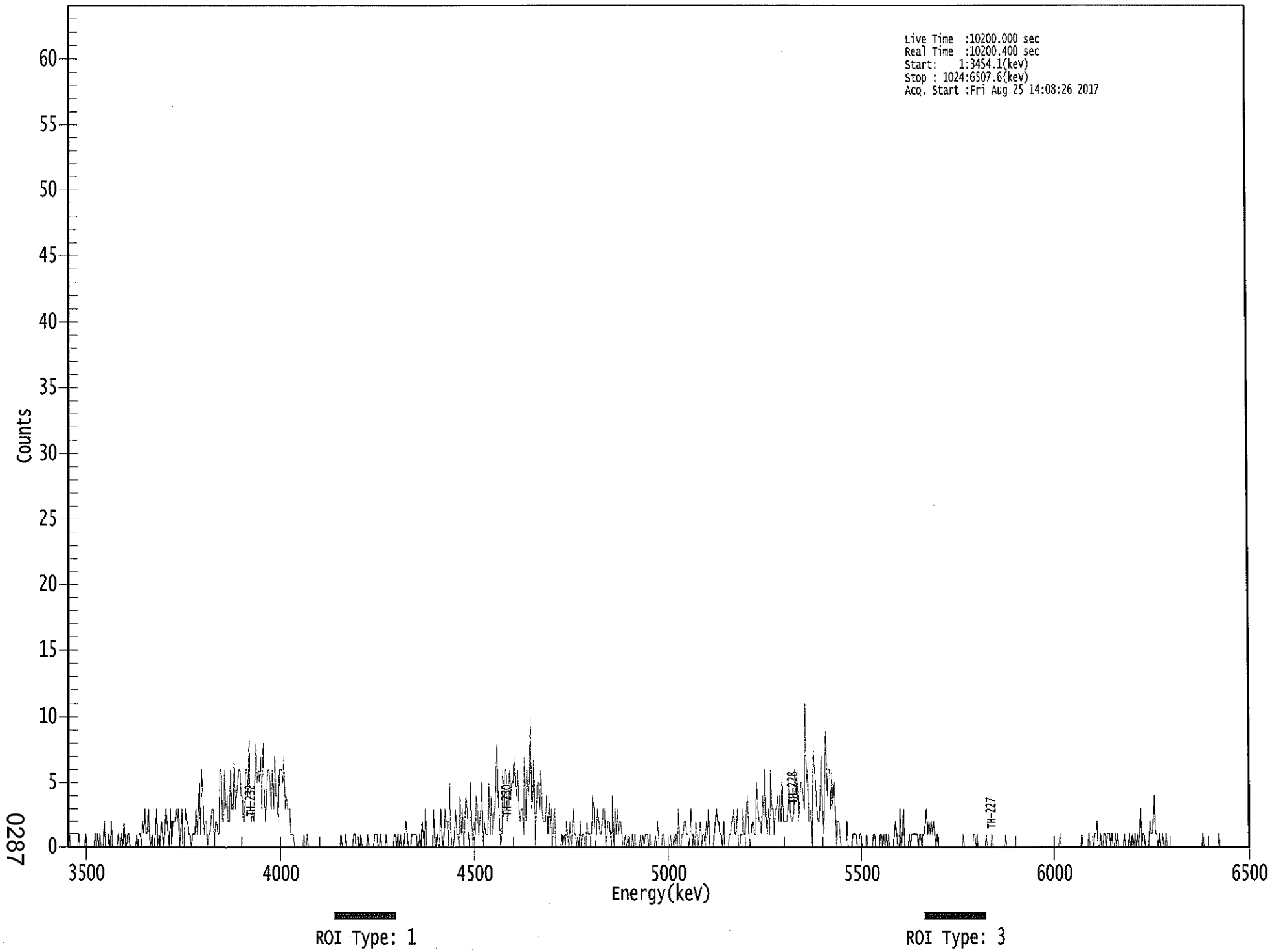
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.999	5850.00*	1.60E-001 +/- 1.23E-001	1.12E-001 +/- 2.17E-002
TH-228	0.971	5400.00*	6.74E+000 +/- 1.51E+000	9.54E-002 +/- 1.85E-002
TH-229	0.998	4872.00*	2.36E+000 +/- 4.57E-001	8.65E-002 +/- 1.68E-002
TH-230	0.961	4672.00*	5.83E+000 +/- 1.32E+000	1.30E-001 +/- 2.52E-002
TH-232	0.974	3997.00*	6.35E+000 +/- 1.42E+000	9.86E-002 +/- 1.91E-002

AG 8/28/17

0000192673.CNF



0287

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

Sample Title: 14

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	3	5	8	4	2	0	1	6

Sample Title: 14

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

801:	0	0	0	0	0	0	0	0

Sample Title: 14

Channel								
809:	0	0	0	1	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	1	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	1	0	0	0	0
889:	1	1	2	0	0	1	0	0
897:	1	1	0	1	1	1	0	1
905:	0	0	1	0	1	0	0	0
913:	0	0	1	0	0	0	1	0
921:	0	1	0	1	0	1	0	1
929:	3	0	1	1	0	0	0	0
937:	2	1	1	2	4	1	1	0
945:	1	0	0	1	0	0	1	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	1	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	1	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

Apex-Alpha™

KB 8/25/17

Sample Description: HTC-A03-S004-4248-01 MSD
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 15
Sample Geometry: Shelf 2
Procedure Description: Th iso

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

Sample Size: 1.030E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:29 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.233 mL
Effective Efficiency: 0.0855 +/- 0.0102
Counting Efficiency: 0.1824 +/- 0.0031 on 11/18/2016 10:08:54 AM
Chem. Recovery Factor: 0.4688 +/- 0.0566

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		5.918	11.49	59.30	0.51	0.00E+000	3.0
TH-228		5.356	277.30	11.81	1.70	0.00E+000	16.1
TH-229	T	4.891	76.15	22.61	0.85	0.00E+000	3.0
TH-230		4.612	223.83	13.11	0.17	0.00E+000	7.7
TH-232		3.944	259.83	12.16	0.17	0.00E+000	4.5

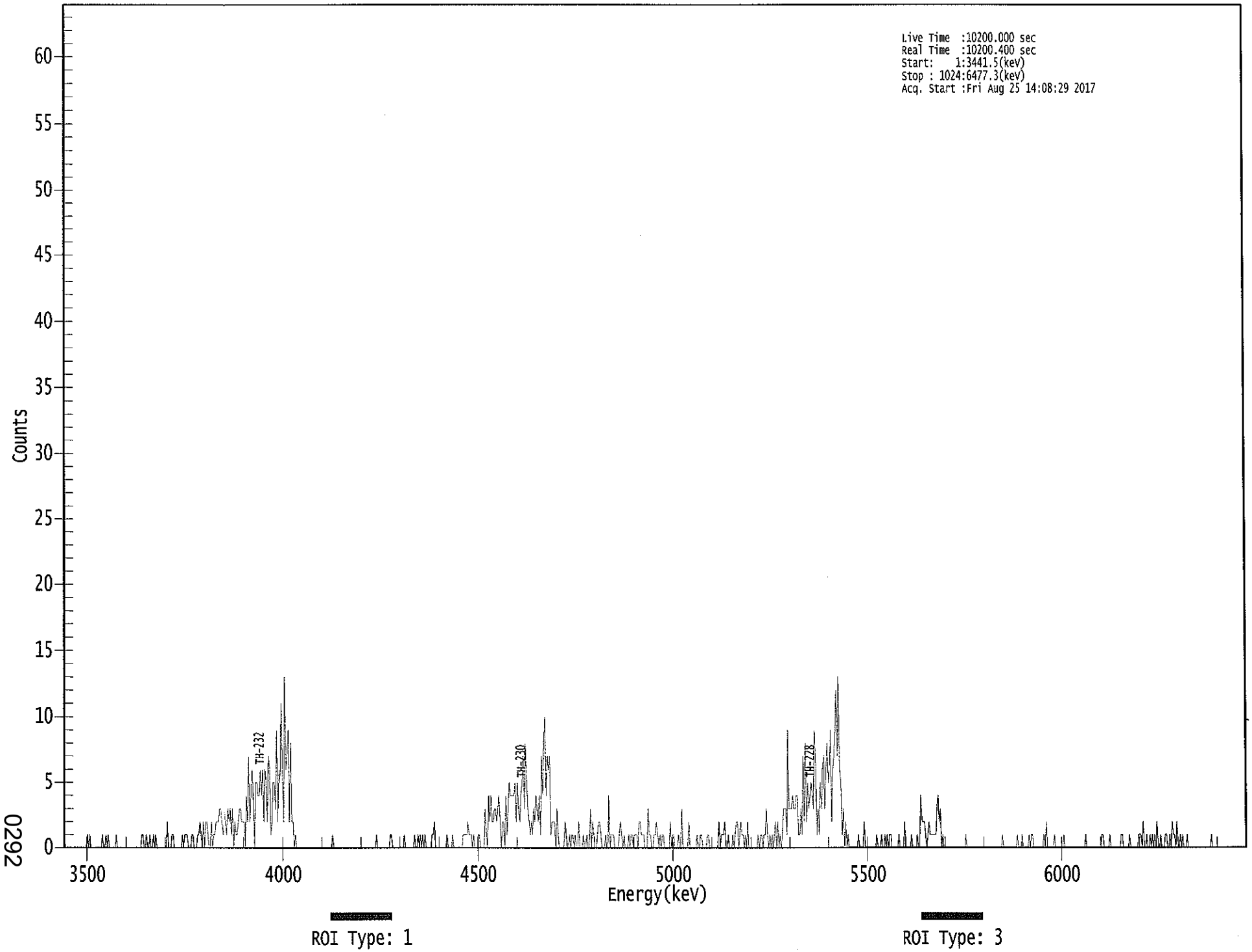
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.976	5850.00*	3.58E-001 +/- 2.28E-001	1.63E-001 +/- 3.83E-002
TH-228	0.990	5400.00*	9.26E+000 +/- 2.43E+000	2.45E-001 +/- 5.74E-002
TH-229	0.998	4872.00*	2.30E+000 +/- 5.39E-001	1.81E-001 +/- 4.24E-002
TH-230	0.982	4672.00*	6.75E+000 +/- 1.81E+000	1.26E-001 +/- 2.94E-002
TH-232	0.986	3997.00*	7.82E+000 +/- 2.06E+000	1.26E-001 +/- 2.94E-002

AG 8/28/17

0000192674.CNF



0292

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

Sample Title: 15

Elapsed Live time: 10200
Elapsed Real Time: 10200

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

369:	4	2	2	3	3	2	3	4

Sample Title: 15

Channel								
377:	2	0	2	2	0	4	1	3
385:	5	4	4	4	4	5	2	5
393:	3	2	4	5	7	3	8	5
401:	3	2	1	2	1	3	2	4
409:	3	2	4	1	7	4	8	10
417:	4	7	6	7	1	2	2	2
425:	0	3	1	0	0	0	0	0
433:	2	1	0	0	1	0	1	1
441:	0	1	0	0	2	0	0	0
449:	1	0	0	1	0	0	3	0
457:	2	1	0	0	1	2	2	1
465:	0	0	0	1	0	0	4	0
473:	1	1	1	0	0	0	0	1
481:	2	1	0	1	0	0	0	1
489:	0	1	1	0	1	1	1	0
497:	2	2	1	1	1	0	0	0
505:	3	1	1	0	0	1	1	2
513:	1	0	1	0	1	1	0	0
521:	0	0	0	2	0	1	1	0
529:	0	0	1	0	0	3	0	0
537:	0	0	0	2	0	0	0	0
545:	0	0	1	0	0	1	1	0
553:	0	0	0	1	1	0	0	0
561:	0	0	0	0	0	2	0	1
569:	1	1	2	0	0	1	0	0
577:	0	1	0	1	2	2	0	1
585:	2	1	1	0	1	0	2	0
593:	0	0	0	0	0	0	0	1
601:	0	1	1	0	1	1	3	1
609:	0	1	0	1	0	1	2	0
617:	2	0	1	0	1	3	3	3
625:	1	9	3	3	3	4	3	3
633:	4	4	1	1	3	1	7	2
641:	8	2	5	3	4	5	4	3
649:	9	7	1	3	1	5	3	6
657:	7	3	6	8	5	6	9	2
665:	6	7	9	12	7	13	6	5
673:	1	3	0	2	0	1	0	0
681:	0	0	0	0	0	0	1	0
689:	0	0	0	2	0	0	0	0
697:	0	0	0	0	0	0	1	0
705:	0	0	1	0	0	1	0	1
713:	0	1	1	0	0	0	0	0
721:	0	1	0	0	0	0	2	0
729:	0	0	0	0	1	0	0	0
737:	0	1	0	0	4	2	2	2
745:	1	0	1	2	1	1	1	1
753:	1	1	3	4	2	3	0	1
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	1	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: 15

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

NLB 8/28/17

Apex-Alpha™

Sample Description: HTC-A03-S004-4248-02
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 16
Sample Geometry: Shelf 2
Procedure Description: Th iso

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

Sample Size: 1.030E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/13/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:31 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.234 mL
Effective Efficiency: 0.1784 +/- 0.0152
Counting Efficiency: 0.1587 +/- 0.0027 on 11/18/2016 10:08:53 AM
Chem. Recovery Factor: 1.1237 +/- 0.0978

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		5.772	1.98	176.34	1.02	0.00E+000	3.0
TH-228		5.406	44.30	30.10	1.70	0.00E+000	3.8
TH-229	T	4.898	159.15	15.58	0.85	0.00E+000	4.7
TH-230		4.655	71.49	23.28	0.51	0.00E+000	8.0
TH-232		3.991	77.15	22.46	0.85	0.00E+000	4.1

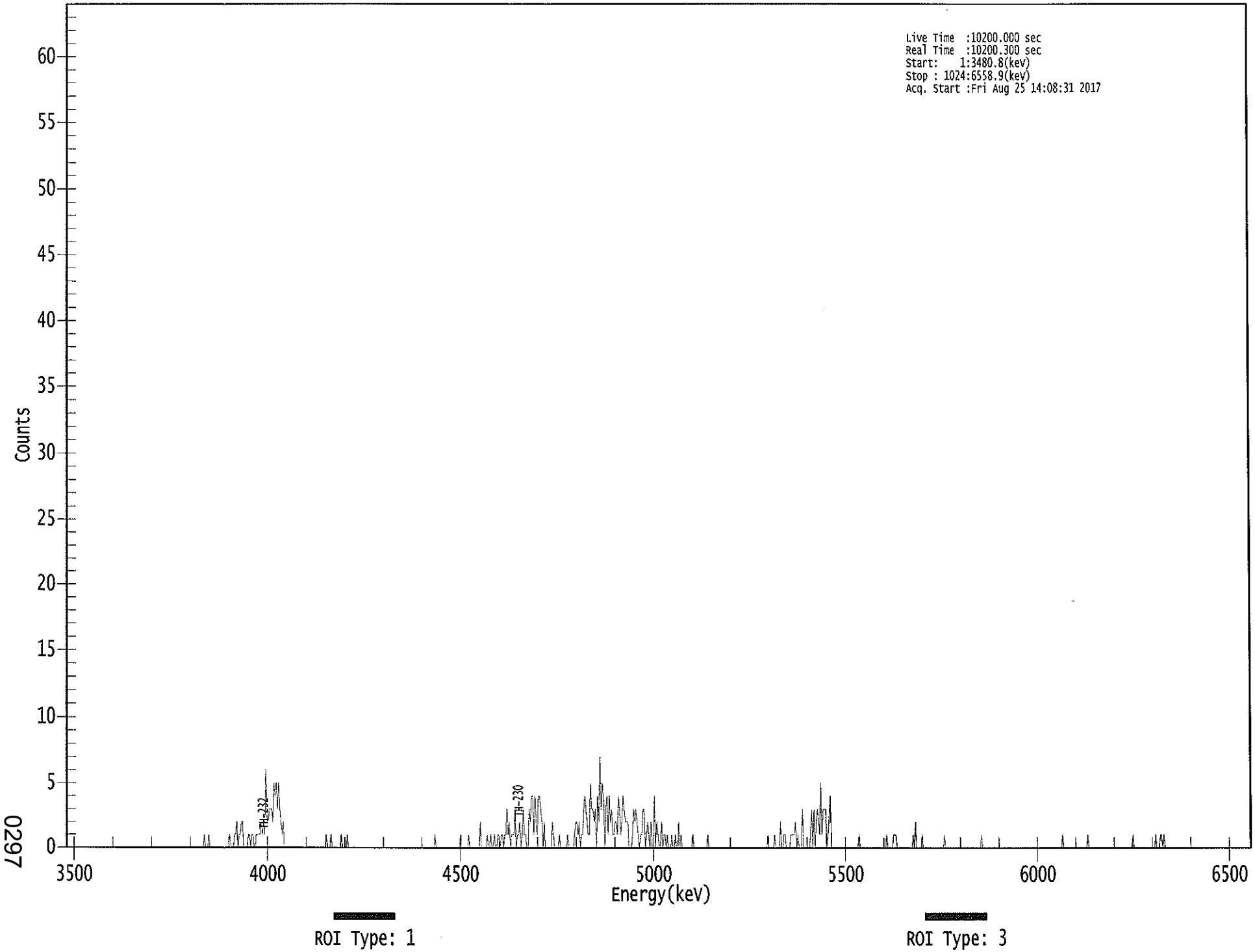
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.968	5850.00*	2.96E-002 +/- 5.24E-002	9.40E-002 +/- 1.57E-002
TH-228	1.000	5400.00*	7.09E-001 +/- 2.44E-001	1.18E-001 +/- 1.97E-002
TH-229	0.997	4872.00*	2.31E+000 +/- 3.86E-001	8.68E-002 +/- 1.45E-002
TH-230	0.999	4672.00*	1.03E+000 +/- 2.96E-001	7.58E-002 +/- 1.27E-002
TH-232	1.000	3997.00*	1.11E+000 +/- 3.12E-001	8.63E-002 +/- 1.44E-002

AG
8/28/17

0000192671.CNF



0297

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

Sample Title: 16

Elapsed Live time: 10200
Elapsed Real Time: 10200

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	1	0
121:	0	0	1	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	1	0	0	0
145:	1	1	2	0	1	1	2	2
153:	0	0	0	0	1	1	0	1
161:	1	0	0	1	1	1	1	2
169:	1	2	1	6	2	2	3	3
177:	3	2	5	4	5	3	5	3
185:	2	1	2	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	1
225:	0	0	0	1	0	0	0	0
233:	0	0	0	0	1	0	0	0
241:	0	1	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	1	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	1	0	0	0	0
345:	0	0	1	0	0	0	0	0
353:	0	0	0	0	2	0	0	0
361:	0	0	1	0	0	1	0	0

369:	1	0	0	1	1	0	1	1

Sample Title: 16

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

801:	0	0	0	0	0	0	0	0

Sample Title: 16

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	1	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	1	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:	1	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	1	0	0	0
945:	1	1	0	1	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	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™

NB 8/25/17

Sample Description: HTC-A04-S001-0006-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 17
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: 1.170E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:34 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.233 mL
Effective Efficiency: 0.2123 +/- 0.0168
Counting Efficiency: 0.1543 +/- 0.0027 on 11/18/2016 10:08:51 AM
Chem. Recovery Factor: 1.3753 +/- 0.1116

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		5.820	8.49	69.59	0.51	0.00E+000	3.0
TH-228		5.376	84.15	21.49	0.85	0.00E+000	5.4
TH-229	T	4.871	188.98	14.30	1.02	0.00E+000	7.0
TH-230		4.635	87.00	21.13	0.00	0.00E+000	5.6
TH-232		3.968	94.15	20.31	0.85	0.00E+000	4.8

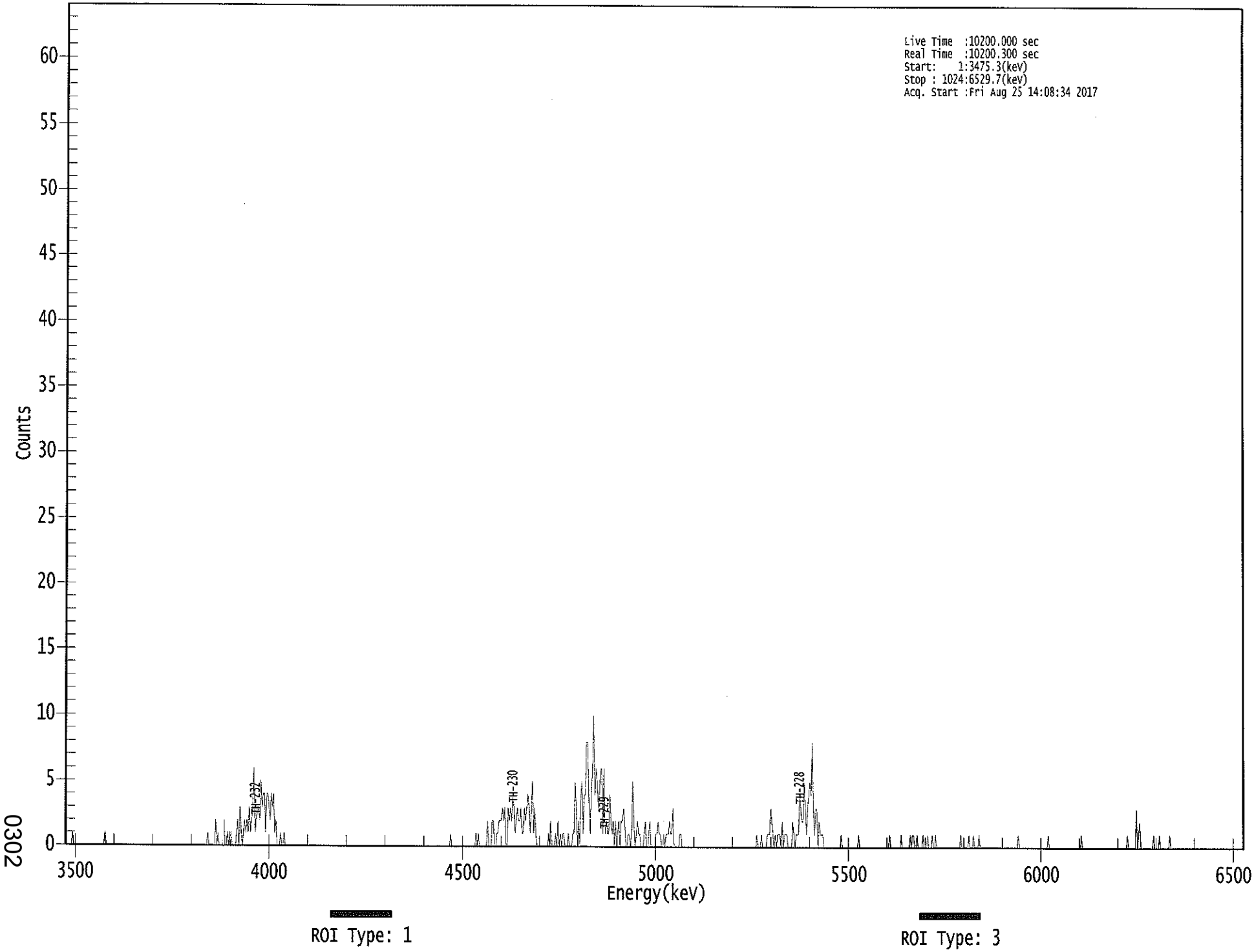
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.995	5850.00*	9.37E-002 +/- 6.68E-002	5.79E-002 +/- 9.00E-003
TH-228	0.997	5400.00*	9.94E-001 +/- 2.64E-001	7.07E-002 +/- 1.10E-002
TH-229	1.000	4872.00*	2.03E+000 +/- 3.15E-001	6.75E-002 +/- 1.05E-002
TH-230	0.993	4672.00*	9.30E-001 +/- 2.44E-001	6.41E-002 +/- 9.96E-003
TH-232	0.996	3997.00*	1.00E+000 +/- 2.57E-001	6.39E-002 +/- 9.93E-003

AG
8/28/17

0000192672.CNF



0302

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

Sample Title: 17

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	0	0	0	0	0	0
33:	0	0	1	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	1	0	0	0	0
129:	0	0	2	0	1	0	0	0
137:	0	2	0	0	1	0	1	1
145:	0	0	0	0	1	2	0	3
153:	1	0	1	2	1	2	1	3
161:	1	2	3	6	1	2	3	3
169:	2	5	3	4	4	1	4	4
177:	3	2	4	3	4	1	2	0
185:	0	0	1	0	0	1	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	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	1	0	1	0	0
361:	0	0	0	0	0	2	0	0

369:	0	2	2	0	0	1	1	2

Sample Title: 17

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

801:	0	0	0	0	0	0	0	0

Sample Title: 17

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	1	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	1	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	1	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	1	0	0	0	0	0	0
929:	0	3	0	1	2	0	0	0
937:	0	0	0	0	0	0	0	0
945:	1	0	0	0	0	1	0	0
953:	0	0	0	0	0	0	1	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0

MB 8/25/17

Apex-Alpha™

Sample Description: HTC-A04-S001-0612-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 18
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: 1.230E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:36 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.235 mL
Effective Efficiency: 0.1644 +/- 0.0146
Counting Efficiency: 0.1852 +/- 0.0031 on 11/18/2016 10:08:50 AM
Chem. Recovery Factor: 0.8880 +/- 0.0803

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		5.849	10.32	63.32	0.68	0.00E+000	3.0
TH-228		5.389	92.45	20.71	2.55	0.00E+000	7.8
TH-229	T	4.889	147.28	16.32	2.72	0.00E+000	12.7
TH-230		4.640	87.81	21.08	1.19	0.00E+000	6.2
TH-232		3.971	85.15	21.36	0.85	0.00E+000	9.3

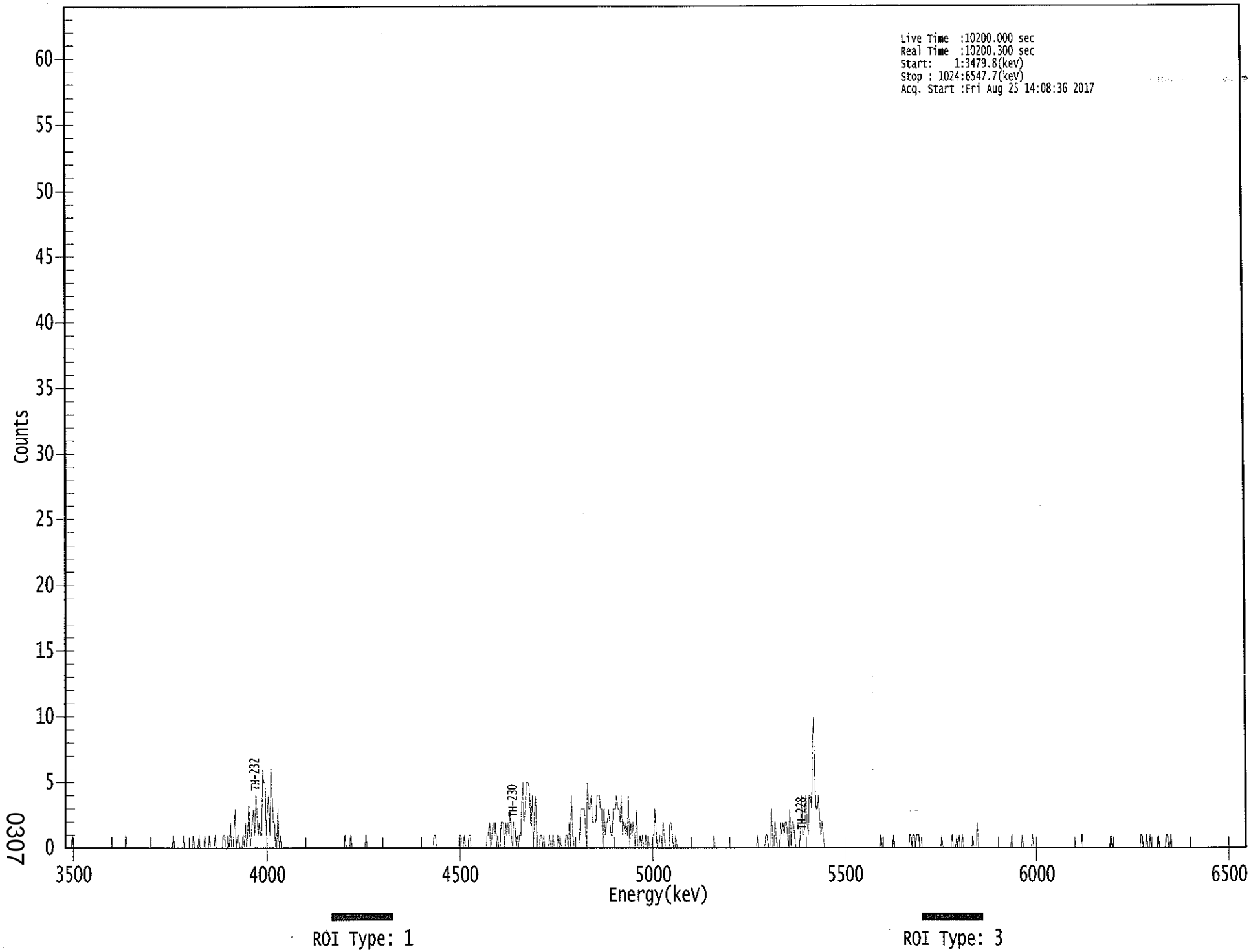
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	1.000	5850.00*	1.40E-001 +/- 9.19E-002	7.65E-002 +/- 1.33E-002
TH-228	0.999	5400.00*	1.34E+000 +/- 3.63E-001	1.22E-001 +/- 2.12E-002
TH-229	0.998	4872.00*	1.94E+000 +/- 3.38E-001	1.13E-001 +/- 1.97E-002
TH-230	0.995	4672.00*	1.15E+000 +/- 3.15E-001	8.65E-002 +/- 1.51E-002
TH-232	0.996	3997.00*	1.12E+000 +/- 3.07E-001	7.84E-002 +/- 1.37E-002

AG 8/28/17

0000192675.CNF



0307

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

Sample Title: 18

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	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	1	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	1	0
105:	0	0	0	0	0	0	1	0
113:	0	0	0	1	0	0	0	0
121:	1	0	0	0	1	0	0	0
129:	0	1	0	0	0	0	0	0
137:	1	1	0	0	1	0	2	0
145:	0	1	3	0	1	1	0	0
153:	0	1	0	2	0	1	4	0
161:	1	2	3	1	4	3	1	2
169:	1	1	6	5	5	1	3	4
177:	1	6	4	2	2	0	0	3
185:	0	1	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	1	0	0	0	0	1	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	1	0	0	0	0
265:	0	0	0	0	0	0	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	1	1
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	1	1	0	0
345:	1	0	0	0	1	1	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	1	1	2	0

369:	1	2	1	2	0	1	0	0

Sample Title: 18

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

801:	0	0	0	0	0	0	0	0

Sample Title: 18

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	1	0	0	0	0
825:	0	0	0	0	1	0	0	0
833:	0	0	0	0	0	1	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:	1	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	1	0	0	0	0	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	1	0	0	0
937:	1	0	0	1	0	0	0	0
945:	0	0	1	0	0	0	0	0
953:	0	1	1	0	0	1	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	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™

KG 8/25/17

Sample Description: HTC-A04-S001-1218-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 19
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: 1.050E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:39 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.234 mL
Effective Efficiency: 0.1873 +/- 0.0156
Counting Efficiency: 0.1813 +/- 0.0031 on 11/18/2016 10:08:48 AM
Chem. Recovery Factor: 1.0330 +/- 0.0879

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	8.32	71.13	0.68	0.00E+000	3.0
TH-228		5.387	101.81	19.56	1.19	0.00E+000	10.5
TH-229	T	4.890	167.49	15.17	0.51	0.00E+000	4.0
TH-230		4.651	93.66	20.30	0.34	0.00E+000	9.0
TH-232		3.978	86.32	21.19	0.68	0.00E+000	7.0

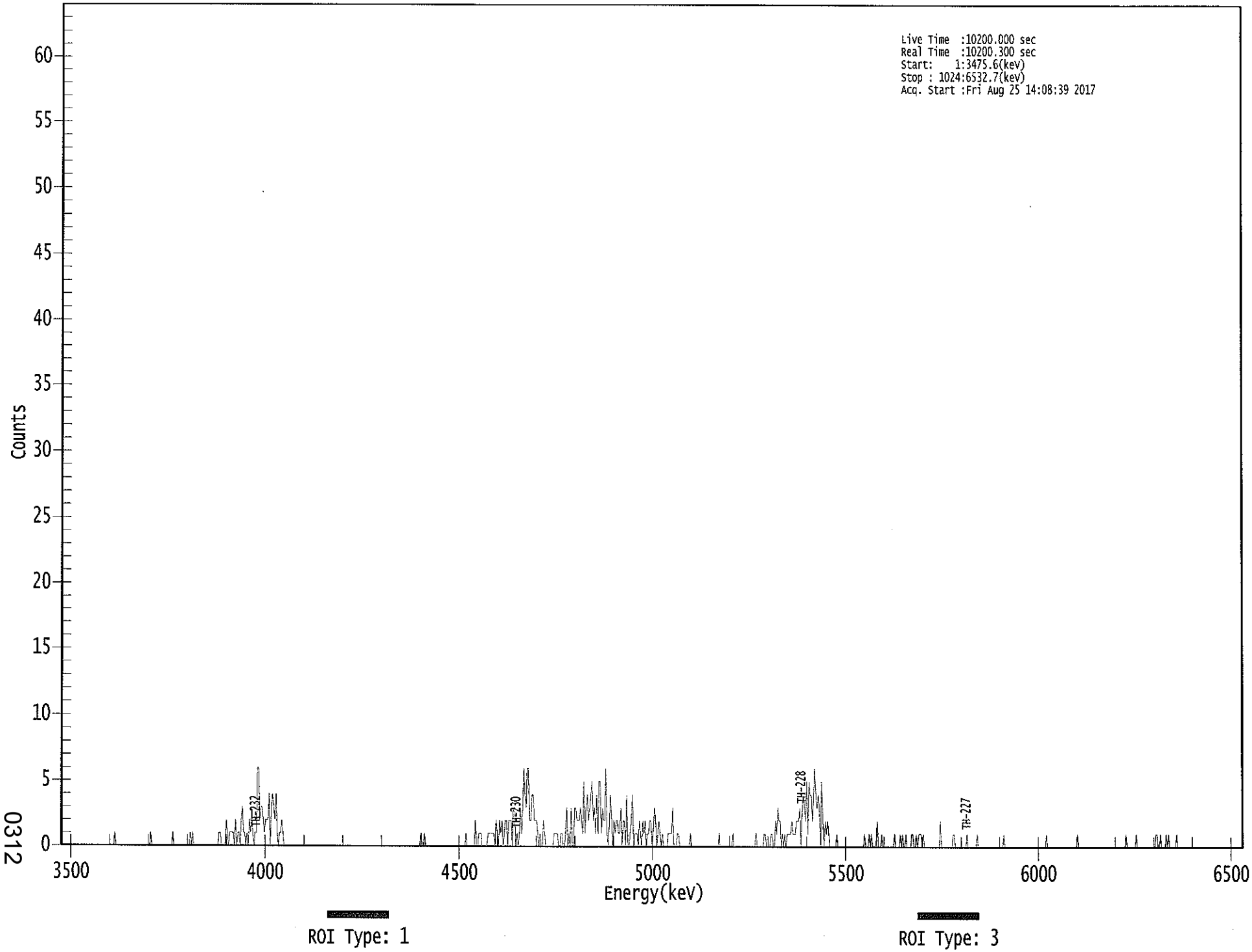
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.994	5850.00*	1.16E-001 +/- 8.46E-002	7.86E-002 +/- 1.29E-002
TH-228	0.999	5400.00*	1.52E+000 +/- 3.87E-001	9.83E-002 +/- 1.61E-002
TH-229	0.998	4872.00*	2.27E+000 +/- 3.71E-001	7.10E-002 +/- 1.16E-002
TH-230	0.998	4672.00*	1.26E+000 +/- 3.29E-001	6.45E-002 +/- 1.05E-002
TH-232	0.998	3997.00*	1.16E+000 +/- 3.11E-001	7.60E-002 +/- 1.24E-002

KG 8/28/17

0000192676.CNF



0312

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

Sample Title: 19

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	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	0
73:	0	0	0	0	0	1	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	1	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	1
113:	0	1	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:	1	1	0	0	0	0	2	1
145:	0	1	1	1	1	0	2	0
153:	1	1	0	2	3	1	1	0
161:	1	0	2	1	3	1	0	1
169:	1	6	6	2	3	3	2	1
177:	2	2	2	4	0	3	4	3
185:	2	4	1	0	1	1	2	1
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	1	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	0	0	0	1	0	0
353:	0	0	0	0	0	2	0	0
361:	1	1	1	0	0	0	0	0

369:	1	1	1	1	1	1	0	2

Sample Title: 19

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

Channel								
809:	0	0	0	0	0	0	0	1
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	1	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	1
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	1	0	0	0	0	0	0
929:	0	0	1	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	1	1	0	0	1
953:	0	0	0	0	1	0	1	0
961:	0	0	0	0	0	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 8/25/17

Sample Description: HTC-A04-S001-1824-01
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001926
Batch Identification: 1707088A-TH
Sample Identification: 20
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: 1.680E+000 +/- 0.000E+000 gram
Sample Date/Time: 5/15/2017 6:28:39 AM
Acquisition Date/Time: 8/25/2017 2:08:42 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.234 mL
Effective Efficiency: 0.1674 +/- 0.0147
Counting Efficiency: 0.1874 +/- 0.0032 on 11/18/2016 10:08:43 AM
Chem. Recovery Factor: 0.8928 +/- 0.0799

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	5.81	90.53	1.19	0.00E+000	3.0
TH-228		5.362	131.79	17.24	2.21	0.00E+000	18.4
TH-229	T	4.871	149.64	16.11	1.36	0.00E+000	5.0
TH-230		4.635	94.98	20.24	1.02	0.00E+000	7.4
TH-232		3.962	134.00	16.99	0.00	0.00E+000	5.0

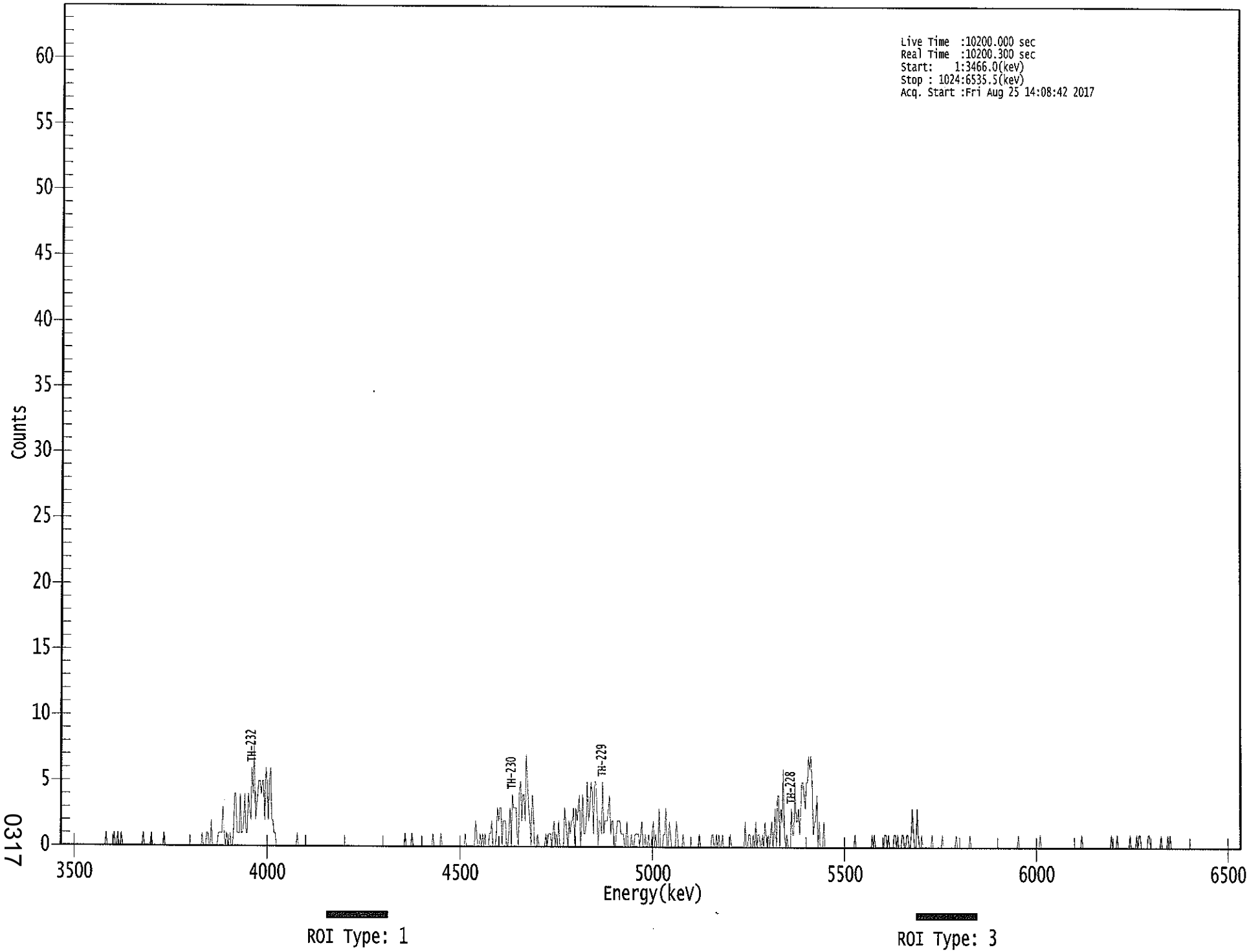
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
TH-227	0.996	5850.00*	5.67E-002 +/- 5.22E-002	6.42E-002 +/- 1.11E-002
TH-228	0.993	5400.00*	1.38E+000 +/- 3.35E-001	8.35E-002 +/- 1.44E-002
TH-229	1.000	4872.00*	1.42E+000 +/- 2.44E-001	6.49E-002 +/- 1.12E-002
TH-230	0.993	4672.00*	8.97E-001 +/- 2.38E-001	5.95E-002 +/- 1.02E-002
TH-232	0.993	3997.00*	1.26E+000 +/- 3.05E-001	5.65E-002 +/- 9.73E-003

AG 8/28/17

0000192683.CNF



0317

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

Sample Title: 20

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	1
41:	0	0	0	0	0	0	1	0
49:	0	1	0	0	1	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	0
81:	0	0	0	0	0	0	0	0
89:	0	1	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	1	0	0	0	1	1
129:	0	0	2	0	0	0	0	0
137:	1	1	1	1	3	1	0	1
145:	0	0	1	0	0	1	4	4
153:	1	1	1	4	1	1	2	4
161:	1	1	4	3	2	6	4	8
169:	2	3	4	5	5	4	5	5
177:	2	6	5	2	5	6	2	2
185:	1	1	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	1	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	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	1
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	1	0	0	0	0	0	0
329:	1	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	1	0	0
353:	0	0	0	0	0	0	2	1
361:	0	0	1	0	1	0	1	0

369:	0	0	1	1	2	0	0	0

Sample Title: 20

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

801:	0	0	0	0	0	0	0	0

Sample Title: 20

Channel								
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	1	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	1	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	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	1	0
913:	0	0	0	1	0	0	0	0
921:	0	0	0	0	0	0	1	0
929:	0	0	0	0	1	0	1	1
937:	0	0	0	0	0	0	1	1
945:	0	0	0	0	0	0	0	0
953:	0	1	0	0	0	0	0	1
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

8/25/2017 5:39:49 AM

Apex-Alpha™

QA SUMMARY REPORT

Review Of QA Results - Pulser Check

Date : 8/25/2017
Time : 5:39:49 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_001	21f	ALL	Not Done	
Alpha_002	21f	ALL	Not Done	
Alpha_003	21f	ALL	Passed	8/25/2017 4:57:31 AM
Alpha_004	21f	ALL	Passed	8/25/2017 4:57:32 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	8/25/2017 4:57:33 AM
Alpha_011	21f	ALL	Passed	8/25/2017 4:57:34 AM
Alpha_012	21f	ALL	Passed	8/25/2017 4:57:35 AM
Alpha_013	21f	ALL	Not Done	
Alpha_014	21f	ALL	Passed	8/25/2017 4:57:35 AM
Alpha_015	21f	ALL	Not Done	
Alpha_016	21f	ALL	Not Done	
Alpha_033	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:37 AM
Alpha_034	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:38 AM
Alpha_035	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:40 AM
Alpha_036	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:41 AM
Alpha_037	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:43 AM
Alpha_038	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:45 AM
Alpha_039	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:47 AM
Alpha_040	Alpha Analyst100DC	Peak FWHM	Action	8/25/2017 4:57:49 AM
Alpha_041	Alpha Analyst100DC	ALL	Not Done	
Alpha_042	Alpha Analyst100DC	ALL	Not Done	
Alpha_043	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:52 AM
Alpha_044	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:54 AM
Alpha_045	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:56 AM
Alpha_046	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:57:59 AM
Alpha_047	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:01 AM
Alpha_048	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:04 AM
Alpha_049	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:07 AM
Alpha_050	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:09 AM
Alpha_051	Alpha Analyst100DC	ALL	Not Done	
Alpha_052	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:12 AM
Alpha_053	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:15 AM
Alpha_054	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:18 AM
Alpha_055	Alpha Analyst100DC	ALL	Not Done	
Alpha_056	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:20 AM
Alpha_057	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:23 AM
Alpha_058	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:26 AM

Review of QA Results - Pulser Check

8/25/2017 5:39:49 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:29 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	8/25/2017 4:58:32 AM

APPROVED BY: _____

APPROVAL DATE: 8/25/17

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

Nuclide Library Title: Thorium

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

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

* = key line

TOTALS: 5 Nuclides 5 Energy Lines

SECTION X

ANALYTICAL DATA (GAMMA SPECTROSCOPY)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

17-07088
Gamma
Run 2

Work Order	17-07088
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-A03-S003-3642-01	42	05/15/17 08:30	7.1343E+02
04	DO	HTC-A03-S003-3642-01	42	05/15/17 08:30	7.1343E+02
05	TRG	HTC-A03-S003-4248-01	37	05/15/17 08:27	6.6435E+02
06	TRG	HTC-A03-S004-0006-01	45	05/13/17 15:51	6.8596E+02
07	TRG	HTC-A03-S004-0612-01	51	05/13/17 15:48	6.7908E+02
08	TRG	HTC-A03-S004-1218-01	48	05/13/17 15:45	5.8946E+02
09	TRG	HTC-A03-S004-1824-01	36	05/13/17 15:42	6.7206E+02
10	TRG	HTC-A03-S004-2430-01	44	05/13/17 15:39	6.8308E+02
11	TRG	HTC-A03-S004-3036-01	49	05/13/17 15:36	5.3406E+02
12	TRG	HTC-A03-S004-3642-01	43	05/13/17 15:33	6.8744E+02
13	TRG	HTC-A03-S004-4248-01	30	05/13/17 15:30	5.6081E+02
16	TRG	HTC-A03-S004-4248-02	41	05/13/17 15:30	5.1688E+02
17	TRG	HTC-A04-S001-0006-01	44	05/15/17 10:11	6.4332E+02
18	TRG	HTC-A04-S001-0612-01	46	05/15/17 10:08	6.4625E+02
19	TRG	HTC-A04-S001-1218-01	37	05/15/17 10:05	6.8806E+02
20	TRG	HTC-A04-S001-1824-01	44	05/15/17 10:02	7.0291E+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.

17-07088
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								
11	TRG				0.00								
12	TRG				0.00								
13	TRG				0.00								
16	TRG				0.00								
17	TRG				0.00								
18	TRG				0.00								
19	TRG				0.00								
20	TRG				0.00								

0326

* 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.

17-07088
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	08/01/17 09:08	KSALLINGS						
05	TRG	08/01/17 09:08	KSALLINGS						
06	TRG	08/01/17 09:08	KSALLINGS						
07	TRG	08/01/17 09:08	KSALLINGS						
08	TRG	08/01/17 09:08	KSALLINGS						
09	TRG	08/01/17 09:08	KSALLINGS						
10	TRG	08/01/17 09:08	KSALLINGS						
11	TRG	08/01/17 09:08	KSALLINGS						
12	TRG	08/01/17 09:08	KSALLINGS						
13	TRG	08/01/17 09:08	KSALLINGS						
16	TRG	08/01/17 09:08	KSALLINGS						
17	TRG	08/01/17 09:08	KSALLINGS						
18	TRG	08/01/17 09:08	KSALLINGS						
19	TRG	08/01/17 09:08	KSALLINGS						
20	TRG	08/01/17 09:08	KSALLINGS						

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

Eberline Analytical
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-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	1.23E+02	7.47E+00	1.34E+00	1.35E+02	91.25	OK		07/19/17 00:00	1.00E+00	08/22/17 14:25	YES
01	CS-137	LCS	LCS	pCi/g	7.98E+01	9.76E+00	1.66E+00	8.44E+01	94.59	OK		07/19/17 00:00	1.00E+00	08/22/17 14:25	YES
02	AC-228	MBL	BLANK	pCi/g	8.14E-02	1.17E-01	2.11E-01					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
02	BI-212	MBL	BLANK	pCi/g	-1.01E-01	3.28E-01	4.36E-01					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
02	RA-226	MBL	BLANK	pCi/g	7.53E-02	5.86E-02	1.36E-01					07/19/17 00:00	1.00E+00	08/22/17 13:24	YES
02	CS-137	MBL	BLANK	pCi/g	-7.38E-03	2.90E-02	5.10E-02					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
02	K-40	MBL	BLANK	pCi/g	3.29E-01	2.95E-01	4.26E-01					07/19/17 00:00	1.00E+00	08/22/17 13:24	YES
02	PA-234M	MBL	BLANK	pCi/g	1.10E+00	2.01E+00	4.37E+00					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
02	PB-212	MBL	BLANK	pCi/g	2.42E-02	2.61E-02	6.37E-02					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
02	RA-224	MBL	BLANK	pCi/g	6.43E-02	1.98E-01	6.89E-01					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
02	RA-228	MBL	BLANK	pCi/g	8.14E-02	1.17E-01	2.11E-01					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
02	TH-234	MBL	BLANK	pCi/g	5.75E-01	4.32E-01	7.17E-01					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
02	TL-208	MBL	BLANK	pCi/g	4.29E-02	7.48E-02	1.38E-01					07/19/17 00:00	1.00E+00	08/22/17 13:24	NO
03	AC-228	DUP	HTC-A03-S003-3642-01	pCi/g	1.01E+00	1.81E-01	2.92E-01				OK	05/15/17 08:30	7.13E+02	08/22/17 13:12	YES
03	BI-212	DUP	HTC-A03-S003-3642-01	pCi/g	7.79E-01	4.63E-01	8.00E-01					05/15/17 08:30	7.13E+02	08/22/17 13:12	YES
03	RA-226	DUP	HTC-A03-S003-3642-01	pCi/g	7.55E-01	1.25E-01	1.70E-01				OK	05/15/17 08:30	7.13E+02	08/22/17 13:12	YES
03	CS-137	DUP	HTC-A03-S003-3642-01	pCi/g	2.14E-02	3.04E-02	6.25E-02					05/15/17 08:30	7.13E+02	08/22/17 13:12	NO
03	K-40	DUP	HTC-A03-S003-3642-01	pCi/g	1.99E+01	2.29E+00	8.33E-01				OK	05/15/17 08:30	7.13E+02	08/22/17 13:12	YES
03	PA-234M	DUP	HTC-A03-S003-3642-01	pCi/g	-3.08E+00	4.44E+00	6.17E+00					05/15/17 08:30	7.13E+02	08/22/17 13:12	NO
03	PB-212	DUP	HTC-A03-S003-3642-01	pCi/g	1.02E+00	1.21E-01	1.83E-01					05/15/17 08:30	7.13E+02	08/22/17 13:12	YES
03	RA-224	DUP	HTC-A03-S003-3642-01	pCi/g	2.08E+00	7.92E-01	2.05E+00					05/15/17 08:30	7.13E+02	08/22/17 13:12	YES
03	RA-228	DUP	HTC-A03-S003-3642-01	pCi/g	1.01E+00	1.81E-01	2.92E-01					05/15/17 08:30	7.13E+02	08/22/17 13:12	YES
03	TH-234	DUP	HTC-A03-S003-3642-01	pCi/g	1.01E+00	7.07E-01	1.11E+00					05/15/17 08:30	7.13E+02	08/22/17 13:12	NO
03	TL-208	DUP	HTC-A03-S003-3642-01	pCi/g	8.81E-01	1.35E-01	9.47E-02					05/15/17 08:30	7.13E+02	08/22/17 13:12	YES
04	AC-228	DO	HTC-A03-S003-3642-01	pCi/g	9.32E-01	1.86E-01	3.67E-01					05/15/17 08:30	7.13E+02	08/22/17 14:13	YES
04	BI-212	DO	HTC-A03-S003-3642-01	pCi/g	1.01E+00	4.51E-01	6.81E-01					05/15/17 08:30	7.13E+02	08/22/17 14:13	YES
04	RA-226	DO	HTC-A03-S003-3642-01	pCi/g	7.21E-01	1.43E-01	1.97E-01					05/15/17 08:30	7.13E+02	08/22/17 14:13	YES
04	CS-137	DO	HTC-A03-S003-3642-01	pCi/g	3.69E-02	4.62E-02	7.46E-02					05/15/17 08:30	7.13E+02	08/22/17 14:13	NO
04	K-40	DO	HTC-A03-S003-3642-01	pCi/g	1.91E+01	2.24E+00	9.37E-01					05/15/17 08:30	7.13E+02	08/22/17 14:13	YES
04	PA-234M	DO	HTC-A03-S003-3642-01	pCi/g	-7.98E-01	4.72E+00	6.89E+00					05/15/17 08:30	7.13E+02	08/22/17 14:13	NO
04	PB-212	DO	HTC-A03-S003-3642-01	pCi/g	1.06E+00	1.18E-01	2.01E-01					05/15/17 08:30	7.13E+02	08/22/17 14:13	YES
04	RA-224	DO	HTC-A03-S003-3642-01	pCi/g	1.09E+01	1.61E+00	2.34E+00					05/15/17 08:30	7.13E+02	08/22/17 14:13	NO
04	RA-228	DO	HTC-A03-S003-3642-01	pCi/g	9.32E-01	1.86E-01	3.67E-01					05/15/17 08:30	7.13E+02	08/22/17 14:13	YES
04	TH-234	DO	HTC-A03-S003-3642-01	pCi/g	1.37E+00	1.17E+00	1.94E+00					05/15/17 08:30	7.13E+02	08/22/17 14:13	YES
04	TL-208	DO	HTC-A03-S003-3642-01	pCi/g	8.67E-01	1.43E-01	1.89E-01					05/15/17 08:30	7.13E+02	08/22/17 14:13	YES
05	AC-228	TRG	HTC-A03-S003-4248-01	pCi/g	9.43E-01	2.21E-01	3.90E-01					05/15/17 08:27	6.64E+02	08/22/17 13:12	YES
05	BI-212	TRG	HTC-A03-S003-4248-01	pCi/g	5.40E-01	4.73E-01	7.99E-01					05/15/17 08:27	6.64E+02	08/22/17 13:12	NO
05	RA-226	TRG	HTC-A03-S003-4248-01	pCi/g	9.15E-01	1.55E-01	1.96E-01					05/15/17 08:27	6.64E+02	08/22/17 13:12	YES

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Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-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
05	CS-137	TRG	HTC-A03-S003-4248-01	pCi/g	6.02E-02	5.72E-02	9.67E-02					05/15/17 08:27	6.64E+02	08/22/17 13:12	NO
05	K-40	TRG	HTC-A03-S003-4248-01	pCi/g	1.90E+01	2.22E+00	4.77E-01					05/15/17 08:27	6.64E+02	08/22/17 13:12	YES
05	PA-234M	TRG	HTC-A03-S003-4248-01	pCi/g	4.00E+00	5.49E+00	9.37E+00					05/15/17 08:27	6.64E+02	08/22/17 13:12	NO
05	PB-212	TRG	HTC-A03-S003-4248-01	pCi/g	1.04E+00	1.56E-01	2.45E-01					05/15/17 08:27	6.64E+02	08/22/17 13:12	NO
05	RA-224	TRG	HTC-A03-S003-4248-01	pCi/g	1.57E+01	1.90E+00	2.85E+00					05/15/17 08:27	6.64E+02	08/22/17 13:12	NO
05	RA-228	TRG	HTC-A03-S003-4248-01	pCi/g	9.43E-01	2.21E-01	3.90E-01					05/15/17 08:27	6.64E+02	08/22/17 13:12	YES
05	TH-234	TRG	HTC-A03-S003-4248-01	pCi/g	1.70E+00	1.14E+00	2.40E+00					05/15/17 08:27	6.64E+02	08/22/17 13:12	YES
05	TL-208	TRG	HTC-A03-S003-4248-01	pCi/g	9.36E-01	1.75E-01	1.98E-01					05/15/17 08:27	6.64E+02	08/22/17 13:12	YES
06	AC-228	TRG	HTC-A03-S004-0006-01	pCi/g	1.45E+00	2.22E-01	5.02E-01					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
06	BI-212	TRG	HTC-A03-S004-0006-01	pCi/g	1.03E+00	3.94E-01	8.19E-01					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
06	RA-226	TRG	HTC-A03-S004-0006-01	pCi/g	9.75E-01	1.48E-01	2.45E-01					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
06	CS-137	TRG	HTC-A03-S004-0006-01	pCi/g	-4.36E-03	4.99E-02	7.40E-02					05/13/17 15:51	6.86E+02	08/22/17 14:13	NO
06	K-40	TRG	HTC-A03-S004-0006-01	pCi/g	2.94E+01	2.96E+00	1.07E+00					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
06	PA-234M	TRG	HTC-A03-S004-0006-01	pCi/g	2.11E+00	5.17E+00	8.08E+00					05/13/17 15:51	6.86E+02	08/22/17 14:13	NO
06	PB-212	TRG	HTC-A03-S004-0006-01	pCi/g	1.47E+00	1.57E-01	2.49E-01					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
06	RA-224	TRG	HTC-A03-S004-0006-01	pCi/g	3.34E+00	1.27E+00	2.81E+00					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
06	RA-228	TRG	HTC-A03-S004-0006-01	pCi/g	1.45E+00	2.22E-01	5.02E-01					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
06	TH-234	TRG	HTC-A03-S004-0006-01	pCi/g	1.19E+00	1.33E+00	2.23E+00					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
06	TL-208	TRG	HTC-A03-S004-0006-01	pCi/g	1.15E+00	1.71E-01	1.31E-01					05/13/17 15:51	6.86E+02	08/22/17 14:13	YES
07	AC-228	TRG	HTC-A03-S004-0612-01	pCi/g	1.08E+00	2.65E-01	4.28E-01					05/13/17 15:48	6.79E+02	08/22/17 14:13	YES
07	BI-212	TRG	HTC-A03-S004-0612-01	pCi/g	9.48E-01	4.85E-01	1.12E+00					05/13/17 15:48	6.79E+02	08/22/17 14:13	YES
07	RA-226	TRG	HTC-A03-S004-0612-01	pCi/g	9.60E-01	1.56E-01	6.61E-02					05/13/17 15:48	6.79E+02	08/22/17 14:13	YES
07	CS-137	TRG	HTC-A03-S004-0612-01	pCi/g	-1.56E-02	6.49E-02	9.56E-02					05/13/17 15:48	6.79E+02	08/22/17 14:13	NO
07	K-40	TRG	HTC-A03-S004-0612-01	pCi/g	2.17E+01	2.46E+00	1.12E+00					05/13/17 15:48	6.79E+02	08/22/17 14:13	YES
07	PA-234M	TRG	HTC-A03-S004-0612-01	pCi/g	3.97E-01	7.17E+00	1.09E+01					05/13/17 15:48	6.79E+02	08/22/17 14:13	NO
07	PB-212	TRG	HTC-A03-S004-0612-01	pCi/g	1.25E+00	1.56E-01	2.61E-01					05/13/17 15:48	6.79E+02	08/22/17 14:13	YES
07	RA-224	TRG	HTC-A03-S004-0612-01	pCi/g	1.70E+01	2.07E+00	3.01E+00					05/13/17 15:48	6.79E+02	08/22/17 14:13	NO
07	RA-228	TRG	HTC-A03-S004-0612-01	pCi/g	1.08E+00	2.65E-01	4.28E-01					05/13/17 15:48	6.79E+02	08/22/17 14:13	YES
07	TH-234	TRG	HTC-A03-S004-0612-01	pCi/g	9.60E-01	1.21E+00	1.60E+00					05/13/17 15:48	6.79E+02	08/22/17 14:13	NO
07	TL-208	TRG	HTC-A03-S004-0612-01	pCi/g	8.74E-01	1.73E-01	1.65E-01					05/13/17 15:48	6.79E+02	08/22/17 14:13	YES
08	AC-228	TRG	HTC-A03-S004-1218-01	pCi/g	1.41E+00	2.01E-01	3.97E-01					05/13/17 15:45	5.89E+02	08/22/17 16:26	YES
08	BI-212	TRG	HTC-A03-S004-1218-01	pCi/g	1.01E+00	4.95E-01	7.56E-01					05/13/17 15:45	5.89E+02	08/22/17 16:26	YES
08	RA-226	TRG	HTC-A03-S004-1218-01	pCi/g	1.08E+00	1.58E-01	2.14E-01					05/13/17 15:45	5.89E+02	08/22/17 16:26	YES
08	CS-137	TRG	HTC-A03-S004-1218-01	pCi/g	1.36E-02	5.52E-02	8.39E-02					05/13/17 15:45	5.89E+02	08/22/17 16:26	NO
08	K-40	TRG	HTC-A03-S004-1218-01	pCi/g	2.67E+01	2.82E+00	9.72E-01					05/13/17 15:45	5.89E+02	08/22/17 16:26	YES
08	PA-234M	TRG	HTC-A03-S004-1218-01	pCi/g	3.88E+00	5.19E+00	8.67E+00					05/13/17 15:45	5.89E+02	08/22/17 16:26	NO
08	PB-212	TRG	HTC-A03-S004-1218-01	pCi/g	1.43E+00	1.59E-01	2.87E-01					05/13/17 15:45	5.89E+02	08/22/17 16:26	YES
08	RA-224	TRG	HTC-A03-S004-1218-01	pCi/g	4.56E+00	1.49E+00	3.28E+00					05/13/17 15:45	5.89E+02	08/22/17 16:26	YES

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Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-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
08	RA-228	TRG	HTC-A03-S004-1218-01	pCi/g	1.41E+00	2.01E-01	3.97E-01					05/13/17 15:45	5.89E+02	08/22/17 16:26	YES
08	TH-234	TRG	HTC-A03-S004-1218-01	pCi/g	1.73E+00	1.24E+00	1.66E+00					05/13/17 15:45	5.89E+02	08/22/17 16:26	NO
08	TL-208	TRG	HTC-A03-S004-1218-01	pCi/g	1.27E+00	2.14E-01	2.56E-01					05/13/17 15:45	5.89E+02	08/22/17 16:26	YES
09	AC-228	TRG	HTC-A03-S004-1824-01	pCi/g	1.37E+00	2.52E-01	4.64E-01					05/13/17 15:42	6.72E+02	08/22/17 16:26	YES
09	BI-212	TRG	HTC-A03-S004-1824-01	pCi/g	8.34E-01	5.03E-01	8.69E-01					05/13/17 15:42	6.72E+02	08/22/17 16:26	NO
09	RA-226	TRG	HTC-A03-S004-1824-01	pCi/g	1.09E+00	1.88E-01	2.60E-01					05/13/17 15:42	6.72E+02	08/22/17 16:26	YES
09	CS-137	TRG	HTC-A03-S004-1824-01	pCi/g	1.35E-02	5.98E-02	9.21E-02					05/13/17 15:42	6.72E+02	08/22/17 16:26	NO
09	K-40	TRG	HTC-A03-S004-1824-01	pCi/g	2.24E+01	2.58E+00	1.10E+00					05/13/17 15:42	6.72E+02	08/22/17 16:26	YES
09	PA-234M	TRG	HTC-A03-S004-1824-01	pCi/g	-1.07E+00	6.32E+00	9.36E+00					05/13/17 15:42	6.72E+02	08/22/17 16:26	NO
09	PB-212	TRG	HTC-A03-S004-1824-01	pCi/g	1.61E+00	2.16E-01	2.41E-01					05/13/17 15:42	6.72E+02	08/22/17 16:26	YES
09	RA-224	TRG	HTC-A03-S004-1824-01	pCi/g	1.73E+01	2.05E+00	2.98E+00					05/13/17 15:42	6.72E+02	08/22/17 16:26	NO
09	RA-228	TRG	HTC-A03-S004-1824-01	pCi/g	1.37E+00	2.52E-01	4.64E-01					05/13/17 15:42	6.72E+02	08/22/17 16:26	YES
09	TH-234	TRG	HTC-A03-S004-1824-01	pCi/g	6.43E-01	1.21E+00	1.58E+00					05/13/17 15:42	6.72E+02	08/22/17 16:26	NO
09	TL-208	TRG	HTC-A03-S004-1824-01	pCi/g	1.14E+00	2.43E-01	4.34E-01					05/13/17 15:42	6.72E+02	08/22/17 16:26	NO
10	AC-228	TRG	HTC-A03-S004-2430-01	pCi/g	1.20E+00	2.81E-01	5.71E-01					05/13/17 15:39	6.83E+02	08/22/17 16:26	YES
10	BI-212	TRG	HTC-A03-S004-2430-01	pCi/g	9.38E-01	7.26E-01	1.26E+00					05/13/17 15:39	6.83E+02	08/22/17 16:26	YES
10	RA-226	TRG	HTC-A03-S004-2430-01	pCi/g	7.89E-01	2.03E-01	3.23E-01					05/13/17 15:39	6.83E+02	08/22/17 16:26	YES
10	CS-137	TRG	HTC-A03-S004-2430-01	pCi/g	-1.15E-02	9.05E-02	1.24E-01					05/13/17 15:39	6.83E+02	08/22/17 16:26	NO
10	K-40	TRG	HTC-A03-S004-2430-01	pCi/g	1.95E+01	2.70E+00	1.88E+00					05/13/17 15:39	6.83E+02	08/22/17 16:26	YES
10	PA-234M	TRG	HTC-A03-S004-2430-01	pCi/g	2.77E-01	8.74E+00	1.25E+01					05/13/17 15:39	6.83E+02	08/22/17 16:26	NO
10	PB-212	TRG	HTC-A03-S004-2430-01	pCi/g	1.14E+00	1.63E-01	2.54E-01					05/13/17 15:39	6.83E+02	08/22/17 16:26	YES
10	RA-224	TRG	HTC-A03-S004-2430-01	pCi/g	1.51E+01	1.98E+00	3.06E+00					05/13/17 15:39	6.83E+02	08/22/17 16:26	NO
10	RA-228	TRG	HTC-A03-S004-2430-01	pCi/g	1.20E+00	2.81E-01	5.71E-01					05/13/17 15:39	6.83E+02	08/22/17 16:26	YES
10	TH-234	TRG	HTC-A03-S004-2430-01	pCi/g	3.88E+00	1.92E+00	5.60E+00					05/13/17 15:39	6.83E+02	08/22/17 16:26	YES
10	TL-208	TRG	HTC-A03-S004-2430-01	pCi/g	8.41E-01	2.43E-01	3.94E-01					05/13/17 15:39	6.83E+02	08/22/17 16:26	YES
11	AC-228	TRG	HTC-A03-S004-3036-01	pCi/g	1.41E+00	2.05E-01	4.73E-01					05/13/17 15:36	5.34E+02	08/22/17 17:27	YES
11	BI-212	TRG	HTC-A03-S004-3036-01	pCi/g	1.12E+00	4.67E-01	7.31E-01					05/13/17 15:36	5.34E+02	08/22/17 17:27	YES
11	RA-226	TRG	HTC-A03-S004-3036-01	pCi/g	1.19E+00	1.82E-01	2.65E-01					05/13/17 15:36	5.34E+02	08/22/17 17:27	YES
11	CS-137	TRG	HTC-A03-S004-3036-01	pCi/g	5.92E-03	6.06E-02	9.24E-02					05/13/17 15:36	5.34E+02	08/22/17 17:27	NO
11	K-40	TRG	HTC-A03-S004-3036-01	pCi/g	2.64E+01	2.82E+00	1.25E+00					05/13/17 15:36	5.34E+02	08/22/17 17:27	YES
11	PA-234M	TRG	HTC-A03-S004-3036-01	pCi/g	-2.62E+00	6.17E+00	8.32E+00					05/13/17 15:36	5.34E+02	08/22/17 17:27	NO
11	PB-212	TRG	HTC-A03-S004-3036-01	pCi/g	1.39E+00	1.61E-01	2.93E-01					05/13/17 15:36	5.34E+02	08/22/17 17:27	YES
11	RA-224	TRG	HTC-A03-S004-3036-01	pCi/g	3.68E+00	1.48E+00	3.30E+00					05/13/17 15:36	5.34E+02	08/22/17 17:27	YES
11	RA-228	TRG	HTC-A03-S004-3036-01	pCi/g	1.41E+00	2.05E-01	4.73E-01					05/13/17 15:36	5.34E+02	08/22/17 17:27	YES
11	TH-234	TRG	HTC-A03-S004-3036-01	pCi/g	1.74E+00	1.33E+00	1.81E+00					05/13/17 15:36	5.34E+02	08/22/17 17:27	NO
11	TL-208	TRG	HTC-A03-S004-3036-01	pCi/g	1.15E+00	1.81E-01	2.04E-01					05/13/17 15:36	5.34E+02	08/22/17 17:27	YES
12	AC-228	TRG	HTC-A03-S004-3642-01	pCi/g	9.05E-01	1.85E-01	3.53E-01					05/13/17 15:33	6.87E+02	08/22/17 17:27	YES
12	BI-212	TRG	HTC-A03-S004-3642-01	pCi/g	8.22E-01	5.56E-01	8.90E-01					05/13/17 15:33	6.87E+02	08/22/17 17:27	YES

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-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
12	RA-226	TRG	HTC-A03-S004-3642-01	pCi/g	9.35E-01	1.63E-01	2.41E-01					05/13/17 15:33	6.87E+02	08/22/17 17:27	YES
12	CS-137	TRG	HTC-A03-S004-3642-01	pCi/g	-1.28E-02	3.64E-02	8.44E-02					05/13/17 15:33	6.87E+02	08/22/17 17:27	NO
12	K-40	TRG	HTC-A03-S004-3642-01	pCi/g	1.86E+01	2.20E+00	8.38E-01					05/13/17 15:33	6.87E+02	08/22/17 17:27	YES
12	PA-234M	TRG	HTC-A03-S004-3642-01	pCi/g	1.81E+00	5.70E+00	9.23E+00					05/13/17 15:33	6.87E+02	08/22/17 17:27	NO
12	PB-212	TRG	HTC-A03-S004-3642-01	pCi/g	1.04E+00	1.51E-01	2.36E-01					05/13/17 15:33	6.87E+02	08/22/17 17:27	NO
12	RA-224	TRG	HTC-A03-S004-3642-01	pCi/g	1.47E+01	1.81E+00	2.73E+00					05/13/17 15:33	6.87E+02	08/22/17 17:27	NO
12	RA-228	TRG	HTC-A03-S004-3642-01	pCi/g	9.05E-01	1.85E-01	3.53E-01					05/13/17 15:33	6.87E+02	08/22/17 17:27	YES
12	TH-234	TRG	HTC-A03-S004-3642-01	pCi/g	1.83E+00	1.06E+00	1.47E+00					05/13/17 15:33	6.87E+02	08/22/17 17:27	NO
12	TL-208	TRG	HTC-A03-S004-3642-01	pCi/g	8.92E-01	2.28E-01	3.06E-01					05/13/17 15:33	6.87E+02	08/22/17 17:27	YES
13	AC-228	TRG	HTC-A03-S004-4248-01	pCi/g	1.12E+00	3.25E-01	7.55E-01					05/13/17 15:30	5.61E+02	08/22/17 17:27	YES
13	BI-212	TRG	HTC-A03-S004-4248-01	pCi/g	7.14E-01	6.08E-01	9.77E-01					05/13/17 15:30	5.61E+02	08/22/17 17:27	YES
13	RA-226	TRG	HTC-A03-S004-4248-01	pCi/g	9.11E-01	2.22E-01	3.17E-01					05/13/17 15:30	5.61E+02	08/22/17 17:27	YES
13	CS-137	TRG	HTC-A03-S004-4248-01	pCi/g	-4.64E-02	1.00E-01	1.31E-01					05/13/17 15:30	5.61E+02	08/22/17 17:27	NO
13	K-40	TRG	HTC-A03-S004-4248-01	pCi/g	1.68E+01	2.53E+00	1.71E+00					05/13/17 15:30	5.61E+02	08/22/17 17:27	YES
13	PA-234M	TRG	HTC-A03-S004-4248-01	pCi/g	0.00E+00	1.11E+01	1.51E+01					05/13/17 15:30	5.61E+02	08/22/17 17:27	NO
13	PB-212	TRG	HTC-A03-S004-4248-01	pCi/g	1.10E+00	1.70E-01	2.66E-01					05/13/17 15:30	5.61E+02	08/22/17 17:27	YES
13	RA-224	TRG	HTC-A03-S004-4248-01	pCi/g	1.43E+01	2.04E+00	3.30E+00					05/13/17 15:30	5.61E+02	08/22/17 17:27	NO
13	RA-228	TRG	HTC-A03-S004-4248-01	pCi/g	1.12E+00	3.25E-01	7.55E-01					05/13/17 15:30	5.61E+02	08/22/17 17:27	YES
13	TH-234	TRG	HTC-A03-S004-4248-01	pCi/g	1.90E+00	1.34E+00	2.05E+00					05/13/17 15:30	5.61E+02	08/22/17 17:27	NO
13	TL-208	TRG	HTC-A03-S004-4248-01	pCi/g	8.60E-01	2.15E-01	7.90E-02					05/13/17 15:30	5.61E+02	08/22/17 17:27	YES
16	AC-228	TRG	HTC-A03-S004-4248-02	pCi/g	1.18E+00	2.16E-01	3.36E-01					05/13/17 15:30	5.17E+02	08/23/17 06:00	YES
16	BI-212	TRG	HTC-A03-S004-4248-02	pCi/g	5.62E-01	4.92E-01	8.03E-01					05/13/17 15:30	5.17E+02	08/23/17 06:00	YES
16	RA-226	TRG	HTC-A03-S004-4248-02	pCi/g	1.16E+00	1.81E-01	2.11E-01					05/13/17 15:30	5.17E+02	08/23/17 06:00	YES
16	CS-137	TRG	HTC-A03-S004-4248-02	pCi/g	6.13E-03	5.43E-02	8.27E-02					05/13/17 15:30	5.17E+02	08/23/17 06:00	NO
16	K-40	TRG	HTC-A03-S004-4248-02	pCi/g	2.15E+01	2.40E+00	1.11E+00					05/13/17 15:30	5.17E+02	08/23/17 06:00	YES
16	PA-234M	TRG	HTC-A03-S004-4248-02	pCi/g	1.77E+00	5.81E+00	9.19E+00					05/13/17 15:30	5.17E+02	08/23/17 06:00	NO
16	PB-212	TRG	HTC-A03-S004-4248-02	pCi/g	1.18E+00	1.45E-01	2.60E-01					05/13/17 15:30	5.17E+02	08/23/17 06:00	YES
16	RA-224	TRG	HTC-A03-S004-4248-02	pCi/g	3.13E+00	1.30E+00	2.93E+00					05/13/17 15:30	5.17E+02	08/23/17 06:00	YES
16	RA-228	TRG	HTC-A03-S004-4248-02	pCi/g	1.18E+00	2.16E-01	3.36E-01					05/13/17 15:30	5.17E+02	08/23/17 06:00	YES
16	TH-234	TRG	HTC-A03-S004-4248-02	pCi/g	1.50E+00	1.27E+00	1.72E+00					05/13/17 15:30	5.17E+02	08/23/17 06:00	NO
16	TL-208	TRG	HTC-A03-S004-4248-02	pCi/g	1.09E+00	2.59E-01	3.39E-01					05/13/17 15:30	5.17E+02	08/23/17 06:00	YES
17	AC-228	TRG	HTC-A04-S001-0006-01	pCi/g	1.12E+00	1.90E-01	3.02E-01					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES
17	BI-212	TRG	HTC-A04-S001-0006-01	pCi/g	9.70E-01	5.60E-01	8.88E-01					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES
17	RA-226	TRG	HTC-A04-S001-0006-01	pCi/g	8.26E-01	1.16E-01	3.09E-01					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES
17	CS-137	TRG	HTC-A04-S001-0006-01	pCi/g	1.91E-01	7.18E-02	1.06E-01					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES
17	K-40	TRG	HTC-A04-S001-0006-01	pCi/g	1.76E+01	2.11E+00	7.14E-01					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES
17	PA-234M	TRG	HTC-A04-S001-0006-01	pCi/g	-1.74E+00	5.30E+00	7.48E+00					05/15/17 10:11	6.43E+02	08/23/17 06:00	NO
17	PB-212	TRG	HTC-A04-S001-0006-01	pCi/g	1.00E+00	1.20E-01	1.77E-01					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES

Preliminary Data Report & Analytical Calculations

Work Order: 17-07088-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
17	RA-224	TRG	HTC-A04-S001-0006-01	pCi/g	2.33E+00	7.50E-01	1.99E+00					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES
17	RA-228	TRG	HTC-A04-S001-0006-01	pCi/g	1.12E+00	1.90E-01	3.02E-01					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES
17	TH-234	TRG	HTC-A04-S001-0006-01	pCi/g	1.26E+00	7.44E-01	1.20E+00					05/15/17 10:11	6.43E+02	08/23/17 06:00	NO
17	TL-208	TRG	HTC-A04-S001-0006-01	pCi/g	8.45E-01	1.40E-01	1.60E-01					05/15/17 10:11	6.43E+02	08/23/17 06:00	YES
18	AC-228	TRG	HTC-A04-S001-0612-01	pCi/g	1.16E+00	2.43E-01	3.63E-01					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	BI-212	TRG	HTC-A04-S001-0612-01	pCi/g	1.01E+00	4.23E-01	6.58E-01					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	RA-226	TRG	HTC-A04-S001-0612-01	pCi/g	8.04E-01	1.46E-01	3.04E-01					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	CS-137	TRG	HTC-A04-S001-0612-01	pCi/g	1.41E-01	7.83E-02	1.22E-01					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	K-40	TRG	HTC-A04-S001-0612-01	pCi/g	1.69E+01	2.17E+00	1.39E+00					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	PA-234M	TRG	HTC-A04-S001-0612-01	pCi/g	-3.83E+00	6.28E+00	8.74E+00					05/15/17 10:08	6.46E+02	08/23/17 06:01	NO
18	PB-212	TRG	HTC-A04-S001-0612-01	pCi/g	1.11E+00	1.60E-01	2.31E-01					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	RA-224	TRG	HTC-A04-S001-0612-01	pCi/g	2.57E+00	1.36E+00	2.61E+00					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	RA-228	TRG	HTC-A04-S001-0612-01	pCi/g	1.16E+00	2.43E-01	3.63E-01					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	TH-234	TRG	HTC-A04-S001-0612-01	pCi/g	2.00E+00	1.54E+00	2.56E+00					05/15/17 10:08	6.46E+02	08/23/17 06:01	YES
18	TL-208	TRG	HTC-A04-S001-0612-01	pCi/g	8.54E-01	1.73E-01	1.09E-01					05/16/17 10:08	6.46E+02	08/23/17 06:01	YES
19	AC-228	TRG	HTC-A04-S001-1218-01	pCi/g	1.23E+00	2.93E-01	4.64E-01					05/15/17 10:05	6.88E+02	08/23/17 06:01	YES
19	BI-212	TRG	HTC-A04-S001-1218-01	pCi/g	8.82E-01	7.25E-01	1.14E+00					05/15/17 10:05	6.88E+02	08/23/17 06:01	NO
19	RA-226	TRG	HTC-A04-S001-1218-01	pCi/g	8.99E-01	2.06E-01	3.07E-01					05/15/17 10:05	6.88E+02	08/23/17 06:01	YES
19	CS-137	TRG	HTC-A04-S001-1218-01	pCi/g	5.61E-02	8.68E-02	1.30E-01					05/15/17 10:05	6.88E+02	08/23/17 06:01	NO
19	K-40	TRG	HTC-A04-S001-1218-01	pCi/g	2.36E+01	2.91E+00	9.95E-01					05/15/17 10:05	6.88E+02	08/23/17 06:01	YES
19	PA-234M	TRG	HTC-A04-S001-1218-01	pCi/g	3.32E+00	1.01E+01	1.48E+01					05/16/17 10:05	6.88E+02	08/23/17 06:01	NO
19	PB-212	TRG	HTC-A04-S001-1218-01	pCi/g	1.41E+00	1.79E-01	2.21E-01					05/15/17 10:05	6.88E+02	08/23/17 06:01	YES
19	RA-224	TRG	HTC-A04-S001-1218-01	pCi/g	2.67E+00	1.32E+00	2.44E+00					05/15/17 10:05	6.88E+02	08/23/17 06:01	YES
19	RA-228	TRG	HTC-A04-S001-1218-01	pCi/g	1.23E+00	2.93E-01	4.64E-01					05/15/17 10:05	6.88E+02	08/23/17 06:01	YES
19	TH-234	TRG	HTC-A04-S001-1218-01	pCi/g	-6.94E-01	1.36E+00	1.94E+00					05/15/17 10:05	6.88E+02	08/23/17 06:01	NO
19	TL-208	TRG	HTC-A04-S001-1218-01	pCi/g	1.33E+00	2.65E-01	6.44E-02					05/15/17 10:05	6.88E+02	08/23/17 06:01	YES
20	AC-228	TRG	HTC-A04-S001-1824-01	pCi/g	1.33E+00	2.21E-01	4.05E-01					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES
20	BI-212	TRG	HTC-A04-S001-1824-01	pCi/g	8.08E-01	4.07E-01	7.69E-01					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES
20	RA-226	TRG	HTC-A04-S001-1824-01	pCi/g	1.07E+00	1.34E-01	2.78E-01					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES
20	CS-137	TRG	HTC-A04-S001-1824-01	pCi/g	-4.07E-02	4.99E-02	6.78E-02					05/15/17 10:02	7.03E+02	08/23/17 07:05	NO
20	K-40	TRG	HTC-A04-S001-1824-01	pCi/g	2.85E+01	2.86E+00	9.36E-01					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES
20	PA-234M	TRG	HTC-A04-S001-1824-01	pCi/g	5.71E+00	4.93E+00	8.41E+00					05/15/17 10:02	7.03E+02	08/23/17 07:05	NO
20	PB-212	TRG	HTC-A04-S001-1824-01	pCi/g	1.54E+00	1.60E-01	2.17E-01					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES
20	RA-224	TRG	HTC-A04-S001-1824-01	pCi/g	2.94E+00	1.23E+00	2.44E+00					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES
20	RA-228	TRG	HTC-A04-S001-1824-01	pCi/g	1.33E+00	2.21E-01	4.05E-01					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES
20	TH-234	TRG	HTC-A04-S001-1824-01	pCi/g	1.90E+00	1.18E+00	1.94E+00					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES
20	TL-208	TRG	HTC-A04-S001-1824-01	pCi/g	1.22E+00	1.73E-01	1.97E-01					05/15/17 10:02	7.03E+02	08/23/17 07:05	YES

Count Room Report
Client: Weston Solutions, Inc.

17-07088-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-A03-S003-3642-01	05/15/17 08:30	713.4300				0.00		
04	DO	HTC-A03-S003-3642-01	05/15/17 08:30	713.4300				0.00		
05	TRG	HTC-A03-S003-4248-01	05/15/17 08:27	664.3500				0.00		
06	TRG	HTC-A03-S004-0006-01	05/13/17 15:51	685.9600				0.00		
07	TRG	HTC-A03-S004-0612-01	05/13/17 15:48	679.0800				0.00		
08	TRG	HTC-A03-S004-1218-01	05/13/17 15:45	589.4600				0.00		
09	TRG	HTC-A03-S004-1824-01	05/13/17 15:42	672.0600				0.00		
10	TRG	HTC-A03-S004-2430-01	05/13/17 15:39	683.0800				0.00		
11	TRG	HTC-A03-S004-3036-01	05/13/17 15:36	534.0600				0.00		
12	TRG	HTC-A03-S004-3642-01	05/13/17 15:33	687.4400				0.00		
13	TRG	HTC-A03-S004-4248-01	05/13/17 15:30	560.8100				0.00		
16	TRG	HTC-A03-S004-4248-02	05/13/17 15:30	516.8800				0.00		
17	TRG	HTC-A04-S001-0006-01	05/15/17 10:11	643.3200				0.00		
18	TRG	HTC-A04-S001-0612-01	05/15/17 10:08	646.2500				0.00		
19	TRG	HTC-A04-S001-1218-01	05/15/17 10:05	688.0600				0.00		
20	TRG	HTC-A04-S001-1824-01	05/15/17 10:02	702.9100				0.00		

Eberline Analytical
Oak Ridge Laboratory

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
17-07088	2	Gamma	grams	8/10/2017	KSALLINGS

Lab Fraction	Weston Solutions, Inc. Client ID	Sample Type	Muffle Data	Dilution Data			Aliquot Data		MS Aliquot Data		H-3 Solids Only	
			Ratio Post/Pre	No of Dils	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	HTC-A03-S003-3642-01	DUP					7.1343E+02	7.1343E+02				
04	HTC-A03-S003-3642-01	DO					7.1343E+02	7.1343E+02				
05	HTC-A03-S003-4248-01	TRG					6.6435E+02	6.6435E+02				
06	HTC-A03-S004-0006-01	TRG					6.8596E+02	6.8596E+02				
07	HTC-A03-S004-0612-01	TRG					6.7908E+02	6.7908E+02				
08	HTC-A03-S004-1218-01	TRG					5.8946E+02	5.8946E+02				
09	HTC-A03-S004-1824-01	TRG					6.7206E+02	6.7206E+02				
10	HTC-A03-S004-2430-01	TRG					6.8308E+02	6.8308E+02				
11	HTC-A03-S004-3036-01	TRG					5.3406E+02	5.3406E+02				
12	HTC-A03-S004-3642-01	TRG					6.8744E+02	6.8744E+02				
13	HTC-A03-S004-4248-01	TRG					5.6081E+02	5.6081E+02				
16	HTC-A03-S004-4248-02	TRG					5.1688E+02	5.1688E+02				
17	HTC-A04-S001-0006-01	TRG					6.4332E+02	6.4332E+02				
18	HTC-A04-S001-0612-01	TRG					6.4625E+02	6.4625E+02				
19	HTC-A04-S001-1218-01	TRG					6.8806E+02	6.8806E+02				
20	HTC-A04-S001-1824-01	TRG					7.0291E+02	7.0291E+02				

Comments	

0334

Technician: Keng Saej Date: 8/1/17

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
17-07088	8/10/2017	7/31/2017	8/1/2017	8/2/2017	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-A03-S003-3642-01	14.6400	957.6400	792.5900	943.0000	777.9500	17.50%	82.50%	0.0000	0.0000	
05	HTC-A03-S003-4248-01	14.6600	932.2000	766.1500	917.5400	751.4900	18.10%	81.90%	0.0000	0.0000	
06	HTC-A03-S004-0006-01	14.6800	996.8400	787.1400	982.1600	772.4600	21.35%	78.65%	0.0000	0.0000	
07	HTC-A03-S004-0612-01	14.7000	958.4800	785.8600	943.7800	771.1600	18.29%	81.71%	0.0000	0.0000	
08	HTC-A03-S004-1218-01	14.6700	868.2000	712.3600	853.5300	697.6900	18.26%	81.74%	0.0000	0.0000	
09	HTC-A03-S004-1824-01	14.6300	962.0000	805.8800	947.3700	791.2500	16.48%	83.52%	0.0000	0.0000	
10	HTC-A03-S004-2430-01	14.6500	902.3200	750.3500	887.6700	735.7000	17.12%	82.88%	0.0000	0.0000	
11	HTC-A03-S004-3036-01	14.6900	846.8800	697.6600	832.1900	682.9700	17.93%	82.07%	0.0000	0.0000	
12	HTC-A03-S004-3642-01	14.7000	951.8800	783.2700	937.1800	768.5700	17.99%	82.01%	0.0000	0.0000	
13	HTC-A03-S004-4248-01	14.7300	795.8600	650.6900	781.1300	635.9600	18.58%	81.42%	0.0000	0.0000	
14	HTC-A03-S004-4248-01 MS	14.6900	767.4400	626.5300	752.7500	611.8400	18.72%	81.28%	0.0000	0.0000	
15	HTC-A03-S004-4248-01 MSD	14.6900	767.4400	626.5300	752.7500	611.8400	18.72%	81.28%	0.0000	0.0000	
16	HTC-A03-S004-4248-02	14.6200	738.7600	603.1400	724.1400	588.5200	18.73%	81.27%	0.0000	0.0000	
17	HTC-A04-S001-0006-01	14.6800	967.1600	745.8600	952.4800	731.1800	23.23%	76.77%	0.0000	0.0000	
18	HTC-A04-S001-0612-01	14.6800	999.2200	798.9700	984.5400	784.2900	20.34%	79.66%	0.0000	0.0000	
19	HTC-A04-S001-1218-01	14.6100	956.2800	785.3800	941.6700	770.7700	18.15%	81.85%	0.0000	0.0000	
20	HTC-A04-S001-1824-01	14.5600	989.2600	800.7600	974.7000	786.2000	19.34%	80.66%	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)

0335

Technician: Kerry Sallings Date: Analysis: Rough Prep Logbook

Analysis: Gamma Page No. 10175

Eckert & Ziegler
Analytics

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Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

GAS-1402

98503
Sand in 16 Ounce PP Taral Jar Filled to Capacity

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

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

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

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

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

(Certificate continued on reverse side)

ANA Form005 Rev. —

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

RB 8/22/17

Apex-Gamma

Analysis Report for 1707088-01
GAS-1402

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-01
Sample Description	: GAS-1402
Sample Type	: SOIL
Sample Size	: 7.360E+02 grams
Facility	: Countroom
Sample Taken On	: 10/1/2014 9:29:15AM
Acquisition Started	: 8/22/2017 2:25:25PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-1602
Live Time	: 1800.0 seconds
Real Time	: 1824.8 seconds
Dead Time	: 1.36 %
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	: 55731

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 8/23/17

Analysis Report for 1707088-01

GAS-1402

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 2:55:53PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	22.67	21.71	0.0000	0.00
2	31.94	30.99	0.0000	0.00
3	53.04	52.09	0.0000	0.00
4	59.51	58.56	0.0000	0.00
5	67.94	66.99	0.0000	0.00
6	87.95	87.01	0.0000	0.00
7	122.08	121.15	0.0000	0.00
8	136.24	135.31	0.0000	0.00
9	165.96	165.05	0.0000	0.00
10	390.63	389.79	0.0000	0.00
11	417.32	416.49	0.0000	0.00
12	439.15	438.32	0.0000	0.00
13	542.83	542.04	0.0000	0.00
14	661.52	660.78	0.0000	0.00
15	821.15	820.47	0.0000	0.00
16	908.49	907.85	0.0000	0.00
17	933.74	933.11	0.0000	0.00
18	1032.73	1032.14	0.0000	0.00
19	1084.76	1084.21	0.0000	0.00
20	1172.91	1172.39	0.0000	0.00
21	1190.64	1190.13	0.0000	0.00
22	1332.11	1331.67	0.0000	0.00
23	1627.47	1627.18	0.0000	0.00
24	1668.82	1668.55	0.0000	0.00
25	1835.85	1835.68	0.0000	0.00
26	1949.27	1949.16	0.0000	0.00
27	2077.71	2077.68	0.0000	0.00
28	2296.10	2296.20	0.0000	0.00
29	2382.65	2382.81	0.0000	0.00
30	2504.79	2505.03	0.0000	0.00
31	2613.81	2614.13	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-01

GAS-1402

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 2:55:53PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	22.67	20 -	25	21.71	6.96E+04	872.72	8.66E+04	2.00
	2	31.94	29 -	34	30.99	1.43E+03	242.36	1.07E+04	2.01
M	3	53.04	43 -	62	52.09	1.47E+04	870.17	4.29E+04	5.02
m	4	59.51	43 -	62	58.56	7.95E+04	664.54	1.75E+04	2.24
	5	67.94	64 -	70	66.99	9.15E+02	318.65	1.79E+04	3.48
	6	87.95	80 -	93	87.01	2.68E+04	608.40	2.88E+04	2.23
	7	122.08	117 -	125	121.15	4.34E+03	312.33	1.23E+04	2.30
	8	136.24	132 -	139	135.31	5.93E+02	255.65	1.04E+04	2.19
	9	165.96	163 -	168	165.05	2.20E+02	191.79	7.18E+03	2.58
	10	390.63	387 -	393	389.79	2.89E+02	160.71	4.48E+03	3.99
	11	417.32	414 -	420	416.49	1.33E+02	162.75	4.72E+03	1.79
	12	439.15	436 -	441	438.32	1.38E+02	146.13	4.18E+03	1.96
	13	542.83	540 -	545	542.04	1.09E+02	109.75	2.31E+03	2.45
	14	661.52	654 -	666	660.78	1.52E+04	311.10	4.25E+03	2.45
	15	821.15	818 -	824	820.47	1.19E+02	115.83	2.37E+03	1.82
	16	908.49	905 -	911	907.85	1.20E+02	128.28	2.91E+03	1.80
	17	933.74	930 -	937	933.11	1.65E+02	148.46	3.59E+03	3.06
	18	1032.73	1028 -	1035	1032.14	1.58E+02	125.06	2.48E+03	2.11
	19	1084.76	1082 -	1086	1084.21	7.77E+01	84.66	1.53E+03	2.18
	20	1172.91	1166 -	1177	1172.39	1.19E+04	250.52	1.89E+03	2.68
	21	1190.64	1187 -	1193	1190.13	6.08E+01	65.36	7.28E+02	1.35
	22	1332.11	1325 -	1339	1331.67	1.08E+04	218.80	4.85E+02	2.64
	23	1627.47	1624 -	1631	1627.18	1.58E+01	18.65	4.65E+01	1.77
	24	1668.82	1665 -	1672	1668.55	1.88E+01	14.00	2.04E+01	3.66
	25	1835.85	1832 -	1840	1835.68	3.69E+01	23.05	6.02E+01	2.51
	26	1949.27	1943 -	1955	1949.16	2.16E+01	20.24	3.47E+01	3.64
	27	2077.71	2073 -	2082	2077.68	1.31E+01	17.06	3.19E+01	1.09
	28	2296.10	2289 -	2302	2296.20	1.62E+01	17.55	2.36E+01	8.61
	29	2382.65	2380 -	2385	2382.81	5.43E+00	6.08	3.14E+00	3.01
	30	2504.79	2501 -	2509	2505.03	8.60E+01	18.55	0.00E+00	3.30
	31	2613.81	2610 -	2617	2614.13	1.60E+01	8.00	0.00E+00	1.84

Analysis Report for 1707088-01

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 : 8/22/2017 2:55:53PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	22.67	20 -	25	6.96E+04	872.72	8.66E+04	5.71E+02
	2	31.94	29 -	34	1.43E+03	242.36	1.07E+04	1.89E+02
M	3	53.04	43 -	62	1.47E+04	870.17	4.29E+04	3.41E+02
m	4	59.51	43 -	62	7.95E+04	664.54	1.75E+04	2.17E+02
	5	67.94	64 -	70	9.15E+02	318.65	1.79E+04	2.57E+02
	6	87.95	80 -	93	2.68E+04	608.40	2.88E+04	4.22E+02
	7	122.08	117 -	125	4.34E+03	312.33	1.23E+04	2.33E+02
	8	136.24	132 -	139	5.93E+02	255.65	1.04E+04	2.06E+02
	9	165.96	163 -	168	2.20E+02	191.79	7.18E+03	1.56E+02
	10	390.63	387 -	393	2.89E+02	160.71	4.48E+03	1.29E+02
	11	417.32	414 -	420	1.33E+02	162.75	4.72E+03	1.32E+02
	12	439.15	436 -	441	1.38E+02	146.13	4.18E+03	1.19E+02
	13	542.83	540 -	545	1.09E+02	109.75	2.31E+03	8.86E+01
	14	661.52	654 -	666	1.52E+04	311.10	4.25E+03	1.56E+02
	15	821.15	818 -	824	1.19E+02	115.83	2.37E+03	9.35E+01
	16	908.49	905 -	911	1.20E+02	128.28	2.91E+03	1.04E+02
	17	933.74	930 -	937	1.65E+02	148.46	3.59E+03	1.20E+02
	18	1032.73	1028 -	1035	1.58E+02	125.06	2.48E+03	1.01E+02
	19	1084.76	1082 -	1086	7.77E+01	84.66	1.53E+03	6.81E+01
	20	1172.91	1166 -	1177	1.19E+04	250.52	1.89E+03	1.01E+02
	21	1190.64	1187 -	1193	6.08E+01	65.36	7.28E+02	5.22E+01
	22	1332.11	1325 -	1339	1.08E+04	218.80	4.85E+02	5.66E+01
	23	1627.47	1624 -	1631	1.58E+01	18.65	4.65E+01	1.39E+01
	24	1668.82	1665 -	1672	1.88E+01	14.00	2.04E+01	9.04E+00
	25	1835.85	1832 -	1840	3.69E+01	23.05	6.02E+01	1.61E+01
	26	1949.27	1943 -	1955	2.16E+01	20.24	3.47E+01	1.48E+01
	27	2077.71	2073 -	2082	1.31E+01	17.06	3.19E+01	1.27E+01
	28	2296.10	2289 -	2302	1.62E+01	17.55	2.36E+01	1.28E+01
	29	2382.65	2380 -	2385	5.43E+00	6.08	3.14E+00	3.21E+00
	30	2504.79	2501 -	2509	8.60E+01	18.55	0.00E+00	0.00E+00
	31	2613.81	2610 -	2617	1.60E+01	8.00	0.00E+00	0.00E+00

Analysis Report for 1707088-01

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 WITH NID REPORT

Peak Analysis Performed on : 8/22/2017 2:55:53PM

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

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	22.67	20 -	25	21.71	6.96E+04	872.72	8.66E+04	.....
	2	31.94	29 -	34	30.99	1.43E+03	242.36	1.07E+04	.....
M	3	53.04	43 -	62	52.09	1.47E+04	870.17	4.29E+04	.....
m	4	59.51	43 -	62	58.56	7.95E+04	664.54	1.75E+04	AM-241
	5	67.94	64 -	70	66.99	9.15E+02	318.65	1.79E+04	TI-44 TA-182 TH-230 HF-172
	6	87.95	80 -	93	87.01	2.68E+04	608.40	2.88E+04	CD-109 SN-126 LU-176
	7	122.08	117 -	125	121.15	4.34E+03	312.33	1.23E+04	CO-57 EU-152 SE-75 EU-154
	8	136.24	132 -	139	135.31	5.93E+02	255.65	1.04E+04	SE-75 CO-57
	9	165.96	163 -	168	165.05	2.20E+02	191.79	7.18E+03	CE-139
	10	390.63	387 -	393	389.79	2.89E+02	160.71	4.48E+03	.....
	11	417.32	414 -	420	416.49	1.33E+02	162.75	4.72E+03	.....
	12	439.15	436 -	441	438.32	1.38E+02	146.13	4.18E+03	.....
	13	542.83	540 -	545	542.04	1.09E+02	109.75	2.31E+03	.....
	14	661.52	654 -	666	660.78	1.52E+04	311.10	4.25E+03	CS-137
	15	821.15	818 -	824	820.47	1.19E+02	115.83	2.37E+03	.....
	16	908.49	905 -	911	907.85	1.20E+02	128.28	2.91E+03	.....
	17	933.74	930 -	937	933.11	1.65E+02	148.46	3.59E+03	.....
	18	1032.73	1028 -	1035	1032.14	1.58E+02	125.06	2.48E+03	.....
	19	1084.76	1082 -	1086	1084.21	7.77E+01	84.66	1.53E+03	.....
	20	1172.91	1166 -	1177	1172.39	1.19E+04	250.52	1.89E+03	CO-60
	21	1190.64	1187 -	1193	1190.13	6.08E+01	65.36	7.28E+02	.....

Analysis Report for 1707088-01

GAS-1402

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
22	1332.11	1325 -	1339	1331.67	1.08E+04	218.80	4.85E+02	CO-60
23	1627.47	1624 -	1631	1627.18	1.58E+01	18.65	4.65E+01	.....
24	1668.82	1665 -	1672	1668.55	1.88E+01	14.00	2.04E+01	.....
25	1835.85	1832 -	1840	1835.68	3.69E+01	23.05	6.02E+01	Y-88
26	1949.27	1943 -	1955	1949.16	2.16E+01	20.24	3.47E+01	.....
27	2077.71	2073 -	2082	2077.68	1.31E+01	17.06	3.19E+01	.....
28	2296.10	2289 -	2302	2296.20	1.62E+01	17.55	2.36E+01	.....
29	2382.65	2380 -	2385	2382.81	5.43E+00	6.08	3.14E+00	.....
30	2504.79	2501 -	2509	2505.03	8.60E+01	18.55	0.00E+00	.....
31	2613.81	2610 -	2617	2614.13	1.60E+01	8.00	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 : 8/22/2017 2:55:53PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	22.67	6.96E+04	872.72	3.98E-03	1.56E-03
	2	31.94	1.43E+03	242.36	9.05E-03	1.56E-03
M	3	53.04	1.47E+04	870.17	1.89E-02	1.56E-03
m	4	59.51	7.95E+04	664.54	2.07E-02	1.56E-03
	5	67.94	9.15E+02	318.65	2.23E-02	1.74E-03
	6	87.95	2.68E+04	608.40	2.37E-02	2.16E-03
	7	122.08	4.34E+03	312.33	2.21E-02	1.65E-03
	8	136.24	5.93E+02	255.65	2.10E-02	1.60E-03
	9	165.96	2.20E+02	191.79	1.85E-02	1.49E-03
	10	390.63	2.89E+02	160.71	8.27E-03	7.13E-04
	11	417.32	1.33E+02	162.75	7.73E-03	7.00E-04
	12	439.15	1.38E+02	146.13	7.33E-03	6.91E-04
	13	542.83	1.09E+02	109.75	5.91E-03	6.48E-04
	14	661.52	1.52E+04	311.10	4.87E-03	5.99E-04
	15	821.15	1.19E+02	115.83	3.98E-03	3.98E-04
	16	908.49	1.20E+02	128.28	3.63E-03	2.99E-04
	17	933.74	1.65E+02	148.46	3.54E-03	2.94E-04
	18	1032.73	1.58E+02	125.06	3.24E-03	2.70E-04
	19	1084.76	7.77E+01	84.66	3.10E-03	2.58E-04
	20	1172.91	1.19E+04	250.52	2.90E-03	2.38E-04

Analysis Report for 1707088-01

GAS-1402

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
21	1190.64	6.08E+01	65.36	2.86E-03	2.36E-04
22	1332.11	1.08E+04	218.80	2.59E-03	2.27E-04
23	1627.47	1.58E+01	18.65	2.16E-03	1.83E-04
24	1668.82	1.88E+01	14.00	2.11E-03	1.76E-04
25	1835.85	3.69E+01	23.05	1.92E-03	1.51E-04
26	1949.27	2.16E+01	20.24	1.81E-03	1.51E-04
27	2077.71	1.31E+01	17.06	1.69E-03	1.51E-04
28	2296.10	1.62E+01	17.55	1.51E-03	1.51E-04
29	2382.65	5.43E+00	6.08	1.44E-03	1.51E-04
30	2504.79	8.60E+01	18.55	1.35E-03	1.51E-04
31	2613.81	1.60E+01	8.00	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 : 8/22/2017 2:55:53PM

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	22.67	6.96E+04	872.72			6.96E+04	8.73E+02
	2	31.94	1.43E+03	242.36			1.43E+03	2.42E+02
M	3	53.04	1.47E+04	870.17			1.47E+04	8.70E+02
m	4	59.51	7.95E+04	664.54			7.95E+04	6.65E+02
	5	67.94	9.15E+02	318.65			9.15E+02	3.19E+02
	6	87.95	2.68E+04	608.40			2.68E+04	6.08E+02
	7	122.08	4.34E+03	312.33			4.34E+03	3.12E+02
	8	136.24	5.93E+02	255.65			5.93E+02	2.56E+02
	9	165.96	2.20E+02	191.79			2.20E+02	1.92E+02
	10	390.63	2.89E+02	160.71			2.89E+02	1.61E+02
	11	417.32	1.33E+02	162.75			1.33E+02	1.63E+02
	12	439.15	1.38E+02	146.13			1.38E+02	1.46E+02
	13	542.83	1.09E+02	109.75			1.09E+02	1.10E+02
	14	661.52	1.52E+04	311.10			1.52E+04	3.11E+02
	15	821.15	1.19E+02	115.83			1.19E+02	1.16E+02
	16	908.49	1.20E+02	128.28			1.20E+02	1.28E+02
	17	933.74	1.65E+02	148.46			1.65E+02	1.48E+02
	18	1032.73	1.58E+02	125.06			1.58E+02	1.25E+02
	19	1084.76	7.77E+01	84.66			7.77E+01	8.47E+01

Analysis Report for 1707088-01

GAS-1402

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
20	1172.91	1.19E+04	250.52			1.19E+04	2.51E+02
21	1190.64	6.08E+01	65.36			6.08E+01	6.54E+01
22	1332.11	1.08E+04	218.80			1.08E+04	2.19E+02
23	1627.47	1.58E+01	18.65			1.58E+01	1.87E+01
24	1668.82	1.88E+01	14.00			1.88E+01	1.40E+01
25	1835.85	3.69E+01	23.05			3.69E+01	2.30E+01
26	1949.27	2.16E+01	20.24			2.16E+01	2.02E+01
27	2077.71	1.31E+01	17.06			1.31E+01	1.71E+01
28	2296.10	1.62E+01	17.55			1.62E+01	1.75E+01
29	2382.65	5.43E+00	6.08			5.43E+00	6.08E+00
30	2504.79	8.60E+01	18.55			8.60E+01	1.85E+01
31	2613.81	1.60E+01	8.00			1.60E+01	8.00E+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 : 8/22/2017 2:55:53PM

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	22.67	6.96E+04	872.72			6.96E+04	8.73E+02
	2	31.94	1.43E+03	242.36			1.43E+03	2.42E+02
M	3	53.04	1.47E+04	870.17			1.47E+04	8.70E+02
m	4	59.51	7.95E+04	664.54			7.95E+04	6.65E+02
	5	67.94	9.15E+02	318.65			9.15E+02	3.19E+02
	6	87.95	2.68E+04	608.40			2.68E+04	6.08E+02
	7	122.08	4.34E+03	312.33			4.34E+03	3.12E+02
	8	136.24	5.93E+02	255.65			5.93E+02	2.56E+02
	9	165.96	2.20E+02	191.79			2.20E+02	1.92E+02
	10	390.63	2.89E+02	160.71			2.89E+02	1.61E+02
	11	417.32	1.33E+02	162.75			1.33E+02	1.63E+02
	12	439.15	1.38E+02	146.13			1.38E+02	1.46E+02
	13	542.83	1.09E+02	109.75			1.09E+02	1.10E+02
	14	661.52	1.52E+04	311.10			1.52E+04	3.11E+02
	15	821.15	1.19E+02	115.83			1.19E+02	1.16E+02
	16	908.49	1.20E+02	128.28			1.20E+02	1.28E+02

Analysis Report for 1707088-01

GAS-1402

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
17	933.74	1.65E+02	148.46			1.65E+02	1.48E+02
18	1032.73	1.58E+02	125.06			1.58E+02	1.25E+02
19	1084.76	7.77E+01	84.66			7.77E+01	8.47E+01
20	1172.91	1.19E+04	250.52			1.19E+04	2.51E+02
21	1190.64	6.08E+01	65.36			6.08E+01	6.54E+01
22	1332.11	1.08E+04	218.80			1.08E+04	2.19E+02
23	1627.47	1.58E+01	18.65			1.58E+01	1.87E+01
24	1668.82	1.88E+01	14.00			1.88E+01	1.40E+01
25	1835.85	3.69E+01	23.05			3.69E+01	2.30E+01
26	1949.27	2.16E+01	20.24			2.16E+01	2.02E+01
27	2077.71	1.31E+01	17.06			1.31E+01	1.71E+01
28	2296.10	1.62E+01	17.55			1.62E+01	1.75E+01
29	2382.65	5.43E+00	6.08			5.43E+00	6.08E+00
30	2504.79	8.60E+01	18.55			8.60E+01	1.85E+01
31	2613.81	1.60E+01	8.00			1.60E+01	8.00E+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
CO-57	0.926	122.06	*	85.51	6.99E+01	7.31E+00
		136.48	*	10.60	8.13E+01	3.57E+01
CO-60	0.980	1173.22	*	100.00	1.23E+02	1.04E+01
		1332.49	*	100.00	1.24E+02	1.12E+01
CD-109	0.973	88.03	*	3.72	3.00E+03	3.35E+02
SN-126	0.977	87.57	*	37.00	6.24E+01	5.87E+00
CS-137	0.997	661.65	*	85.12	7.98E+01	9.96E+00
CE-139	0.743	165.85	*	80.35	6.16E+01	5.40E+01
AM-241	1.000	59.54	*	35.90	2.19E+02	1.66E+01

Analysis Report for 1707088-01

GAS-1402

* = 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 : 8/22/2017 2:55:53PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	22.67	3.86782E+01	0.63		
	2	31.94	7.93105E-01	8.49		
M	3	53.04	8.17302E+00	2.96		
	5	67.94	5.08280E-01	17.41	Tol.	HF-172 TA-182 TH-230
	10	390.63	1.60308E-01	27.85		
	11	417.32	7.41587E-02	60.96		
	12	439.15	7.65498E-02	53.03		
	13	542.83	6.06862E-02	50.24		
	15	821.15	6.63172E-02	48.51	S-Esc	
	16	908.49	6.65330E-02	53.56		
	17	933.74	9.15095E-02	45.06		
	18	1032.73	8.76820E-02	39.62		
	19	1084.76	4.31803E-02	54.46		
	21	1190.64	3.37601E-02	53.78		
	23	1627.47	8.76068E-03	59.15		
	24	1668.82	1.04406E-02	37.25		
	25	1835.85	2.05058E-02	31.22	Tol.	Y-88
	26	1949.27	1.20157E-02	46.78		
	27	2077.71	7.25096E-03	65.35		
	28	2296.10	9.00794E-03	54.12		
	29	2382.65	3.01587E-03	56.03		
	30	2504.79	4.77778E-02	10.78	Sum	
	31	2613.81	8.88889E-03	25.00	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 1707088-01

GAS-1402

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
CO-57	0.92	122.06	*	85.51	6.99E+01	7.31E+00
		136.48	*	10.60	8.13E+01	3.57E+01
CO-60	0.98	1173.22	*	100.00	1.23E+02	1.04E+01
		1332.49	*	100.00	1.24E+02	1.12E+01
CD-109	0.97	88.03	*	3.72	3.00E+03	3.35E+02
SN-126	0.97	87.57	*	37.00	6.24E+01	5.87E+00
CS-137	0.99	661.65	*	85.12	7.98E+01	9.96E+00
CE-139	0.74	165.85	*	80.35	6.16E+01	5.40E+01
AM-241	1.00	59.54	*	35.90	2.19E+02	1.66E+01

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

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	CO-57	0.926	7.03E+01	7.16E+00	
	CO-60	0.980	1.23E+02	7.62E+00	
?	CD-109	0.973	3.00E+03	3.35E+02	
?	SN-126	0.977	6.24E+01	5.87E+00	
	CS-137	0.997	7.98E+01	9.96E+00	

Analysis Report for 1707088-01

GAS-1402

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
CE-139	0.743	6.16E+01	5.40E+01	
AM-241	1.000	2.19E+02	1.66E+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 1707088-01

GAS-1402

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 2:55:53PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	22.67	3.86782E+01	0.63		
	2	31.94	7.93105E-01	8.49		
M	3	53.04	8.17302E+00	2.96		
	5	67.94	5.08280E-01	17.41	Tol.	HF-172 TA-182 TH-230
	10	390.63	1.60308E-01	27.85		
	11	417.32	7.41587E-02	60.96		
	12	439.15	7.65498E-02	53.03		
	13	542.83	6.06862E-02	50.24		
	15	821.15	6.63172E-02	48.51	S-Esc	
	16	908.49	6.65330E-02	53.56		
	17	933.74	9.15095E-02	45.06		
	18	1032.73	8.76820E-02	39.62		
	19	1084.76	4.31803E-02	54.46		
	21	1190.64	3.37601E-02	53.78		
	23	1627.47	8.76068E-03	59.15		
	24	1668.82	1.04406E-02	37.25		
	25	1835.85	2.05058E-02	31.22	Tol.	Y-88
	26	1949.27	1.20157E-02	46.78		
	27	2077.71	7.25096E-03	65.35		
	28	2296.10	9.00794E-03	54.12		
	29	2382.65	3.01587E-03	56.03		
	30	2504.79	4.77778E-02	10.78	Sum	
	31	2613.81	8.88889E-03	25.00	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 1707088-01

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	-1.45E+06	5.85E+06	5.85E+06
+		NA-22	1274.54		99.94	-4.01E-01	1.05E+00	1.05E+00
+	@	NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26
	@		2754.09		99.86	0.00E+00		1.00E+26
+		AL-26	1808.65		99.76	-9.72E-02	2.57E-01	2.57E-01
+		K-40	1460.81		10.67	1.25E+00	3.01E+00	3.01E+00
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	1.06E+00	4.32E-01	4.65E-01
			78.34		96.00	1.26E-01		4.32E-01
+		SC-46	889.25		99.98	3.41E+03	6.71E+03	7.07E+03
			1120.51		99.99	2.62E+03		6.71E+03
+	@	V-48	983.52		99.98	1.00E+26	1.00E+26	1.00E+26
	@		1312.10		97.50	1.00E+26		1.00E+26
+		CR-51	320.08		9.83	-1.62E+11	1.50E+12	1.50E+12
+		MN-54	834.83		99.97	-4.03E+00	1.04E+01	1.04E+01
+		CO-56	846.75		99.96	-4.02E+03	2.76E+03	1.12E+04
			1037.75		14.03	-1.61E+04		8.82E+04
			1238.25		67.00	2.71E+02		9.85E+03
			1771.40		15.51	-3.57E+03		2.09E+04
			2598.48		16.90	0.00E+00		2.76E+03
+		CO-57	122.06	*	85.51	6.99E+01	7.55E+00	7.55E+00
			136.48	*	10.60	8.13E+01		5.69E+01
+		CO-58	810.76		99.40	3.87E+03	2.97E+04	2.97E+04
+		FE-59	1099.22		56.50	-1.51E+06	1.54E+07	2.77E+07
			1291.56		43.20	3.28E+05		1.54E+07
+		CO-60	1173.22	*	100.00	1.23E+02	1.34E+00	2.11E+00
			1332.49	*	100.00	1.24E+02		1.34E+00
+		ZN-65	1115.52		50.75	3.10E+01	4.57E+01	4.57E+01
+	@	GA-67	93.31		35.70	1.00E+26	1.00E+26	1.00E+26
	@		208.95		2.24	1.00E+26		1.00E+26
	@		300.22		16.00	1.00E+26		1.00E+26
+		SE-75	121.11		16.70	1.10E+04	2.51E+02	1.12E+03
			136.00		59.20	5.19E+02		2.51E+02
			264.65		59.80	-1.18E+02		3.39E+02
			279.53		25.20	-8.23E+01		8.13E+02
			400.65		11.40	1.12E+03		2.36E+03
+		RB-82	776.52		13.00	-7.86E+12	1.87E+13	1.87E+13
+		RB-83	520.41		46.00	-5.88E+02	6.76E+03	6.76E+03
			529.64		30.30	-6.14E+02		1.02E+04
			552.65		16.40	5.39E+03		1.86E+04
+		KR-85	513.99		0.43	9.96E+01	1.82E+02	1.82E+02
+		SR-85	513.99		99.27	2.89E+04	5.29E+04	5.29E+04

Analysis Report for 1707088-01

GAS-1402

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	Y-88	898.02		93.40	-1.26E+02	4.19E+02	1.19E+03
		1836.01		99.38	3.01E+02		4.19E+02
+	MO-93	263.06		56.72	5.25E-01	3.99E-01	9.57E-01
		684.67		99.68	1.18E-01		9.37E-01
		1477.11		99.08	5.62E-02		3.99E-01
+	NB-93M	16.57		9.43	-8.54E+03	8.05E+01	8.05E+01
+	NB-94	702.63		100.00	-1.62E-01	7.96E-01	7.96E-01
		871.10		100.00	-6.78E-02		1.08E+00
+	NB-95	765.79		99.81	3.02E+08	1.03E+09	1.03E+09
+	@ NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26
+	ZR-95	724.18		43.70	3.83E+04	1.43E+05	1.73E+05
		756.72		55.30	-1.29E+04		1.43E+05
+	@ MO-99	181.06		6.20	1.00E+26	1.00E+26	1.00E+26
	@	739.58		12.80	1.00E+26		1.00E+26
	@	778.00		4.50	1.00E+26		1.00E+26
+	RU-103	497.08		89.00	-1.27E+07	8.64E+07	8.64E+07
+	RU-106	621.84		9.80	5.93E-01	4.99E+01	4.99E+01
+	AG-108M	433.93		89.90	5.13E-02	7.28E-01	7.28E-01
		614.37		90.40	1.50E-01		7.51E-01
		722.95		90.50	-1.39E-01		9.11E-01
+	CD-109	88.03	*	3.72	3.00E+03	9.49E+01	9.49E+01
+	AG-110M	657.75		93.14	6.58E+02	2.60E+01	4.49E+01
		677.61		10.53	3.11E+01		1.36E+02
		706.67		16.46	8.99E+01		9.27E+01
		763.93		21.98	-8.81E+00		7.44E+01
		884.67		71.63	-7.39E+00		2.92E+01
		1384.27		23.94	1.08E+01		2.60E+01
+	CD-113M	263.70		0.02	2.68E+02	2.25E+03	2.25E+03
+	SN-113	255.12		1.93	-1.00E+03	5.20E+02	1.31E+04
		391.69		64.90	3.54E+02		5.20E+02
+	TE123M	159.00		84.10	-2.06E+00	1.76E+02	1.76E+02
+	SB-124	602.71		97.87	-1.32E+04	9.19E+04	1.30E+05
		645.85		7.26	3.89E+05		1.86E+06
		722.78		11.10	-2.14E+05		1.40E+06
		1691.02		49.00	-3.84E+04		9.19E+04
+	I-125	35.49		6.49	-3.22E+05	2.17E+06	2.17E+06
+	SB-125	176.33		6.89	7.34E-01	4.44E+00	1.04E+01
		427.89		29.33	-1.08E+00		4.44E+00
		463.38		10.35	1.93E+00		1.43E+01
		600.56		17.80	3.68E-01		7.68E+00
		635.90		11.32	-1.15E+00		1.22E+01
+	@ SB-126	414.70		83.30	1.00E+26	1.00E+26	1.00E+26
	@	666.33		99.60	1.00E+26		1.00E+26
	@	695.00		99.60	1.00E+26		1.00E+26
	@	720.50		53.80	1.00E+26		1.00E+26
+	SN-126	87.57	*	37.00	6.24E+01	1.97E+00	1.97E+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 1707088-01

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	-2.03E+01	2.04E+00	2.04E+00
			33.60		13.20	3.03E+00		6.47E+00
			39.58		7.52	-2.77E+01		8.58E+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	-9.87E-02	1.07E+00	1.46E+00
			302.84		17.80	-6.56E-01		3.23E+00
			356.01		60.00	-1.92E-01		1.07E+00
+	@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	@	XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26
+		CS-134	563.23		8.38	1.69E+00	1.80E+00	2.00E+01
			569.32		15.43	-3.53E+00		1.10E+01
			604.70		97.60	-1.12E+00		1.80E+00
			795.84		85.40	9.88E-01		2.85E+00
			801.93		8.73	5.51E-01		2.81E+01
+		CS-135	268.24		16.00	9.90E-01	2.84E+00	2.84E+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	1.66E+00	1.66E+00
+		LA-138	788.74		34.00	5.67E-01	4.15E-01	2.67E+00
			1435.80		66.00	-1.30E-01		4.15E-01
+		CE-139	165.85	*	80.35	6.16E+01	8.82E+01	8.82E+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	2.68E+08	3.92E+09	3.92E+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 1707088-01

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	-9.22E+00	3.96E+01	3.96E+01
+		PM-144	476.78	42.00	-7.44E-01	5.07E+00	1.24E+01
			618.01	98.60	-3.04E-01		5.07E+00
			696.49	99.49	7.21E-02		5.97E+00
+		PM-145	36.85	21.70	-3.76E+00	1.84E+00	3.45E+00
			37.36	39.70	-2.01E+00		1.84E+00
			42.30	15.10	-1.03E+01		4.69E+00
			72.40	2.31	-4.82E+00		2.02E+01
+		PM-146	453.90	39.94	-7.19E-01	2.46E+00	2.46E+00
			735.90	14.01	3.12E+00		8.65E+00
			747.13	13.10	2.53E+00		9.49E+00
+	@	ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26
	@		531.02	13.10	1.00E+26		1.00E+26
+	@	PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26
+		EU-152	121.78	20.50	2.30E+01	2.20E+00	2.34E+00
			244.69	5.40	-4.78E+00		9.31E+00
			344.27	19.13	7.07E-01		3.13E+00
			778.89	9.20	7.47E-01		1.11E+01
			964.01	10.40	-5.39E+00		1.39E+01
			1085.78	7.22	-8.76E+00		1.91E+01
			1112.02	9.60	7.51E+00		1.45E+01
			1407.95	14.94	-1.26E+00		2.20E+00
+		GD-153	97.43	31.30	-8.72E+00	1.89E+01	1.89E+01
			103.18	22.20	2.60E+01		2.74E+01
+		EU-154	123.07	40.50	1.16E+01	1.28E+00	1.28E+00
			723.30	19.70	1.15E+00		5.20E+00
			873.19	11.50	1.32E+00		1.18E+01
			996.32	10.30	2.20E+00		1.40E+01
			1004.76	17.90	3.44E+00		8.04E+00
			1274.45	35.50	-6.56E-01		1.72E+00
+		EU-155	86.50	30.90	1.10E+02	2.13E+00	3.60E+00
			105.30	20.70	1.91E-01		2.13E+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	2.67E-02	5.09E-01	5.09E-01
			280.45	29.60	-3.22E-01		1.53E+00
			410.94	11.10	2.07E+00		5.50E+00
			711.69	54.10	-8.12E-01		1.48E+00
+		TM-171	66.72	0.14	-1.18E+03	8.54E+02	8.54E+02
+		HF-172	67.35	5.31	-3.19E+01	8.96E+00	2.31E+01
			125.81	11.30	1.31E+00		8.96E+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	-8.22E+00	9.25E+00	2.37E+01
			272.11	21.20	2.47E+00		9.25E+00
+		HF-175	343.40	84.00	4.83E+03	2.14E+04	2.14E+04

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	LU-176	88.34	13.30	1.69E+02	4.62E-01	5.52E+00
		201.83	86.00	1.80E-01		4.62E-01
		306.78	94.00	3.09E-01		5.22E-01
+	HF-181	133.02	41.70	-4.87E+06	2.43E+07	2.43E+07
		345.85	17.20	-4.03E+07		9.43E+07
		482.03	82.80	-3.16E+06		2.55E+07
+	TA-182	67.75	41.20	1.41E+03	6.20E+02	6.20E+02
		1121.30	34.90	-1.80E+02		1.81E+03
		1189.05	16.23	2.55E+01		2.95E+03
		1221.41	26.98	-3.80E+02		1.42E+03
		1231.02	11.44	-8.03E+02		3.23E+03
+	IR-192	308.46	29.68	2.12E+04	2.97E+04	3.28E+04
		468.07	48.10	-1.88E+03		2.97E+04
+	HG-203	279.19	77.30	7.31E+05	3.92E+06	3.92E+06
+	TL-204	374.74	94.11	-3.20E-01	1.00E+00	1.00E+00
		899.15	99.16	7.41E-01		1.99E+00
		911.74	91.10	-2.25E-01		2.24E+00
+	BI-207	569.67	97.72	-2.24E-01	6.99E-01	6.99E-01
		1063.62	74.90	-3.89E-01		1.63E+00
+	TL-208	583.14	30.22	5.02E-01	9.48E-01	2.18E+00
		860.37	4.48	6.46E-01		2.37E+01
		2614.66	35.85	0.00E+00		9.48E-01
+	BI-210M	262.00	45.00	3.71E-01	9.99E-01	9.99E-01
		300.00	23.00	-1.95E+00		2.01E+00
+	PB-210	46.50	4.25	-2.10E-01	2.02E+01	2.02E+01
+	PB-211	404.84	2.90	-1.35E-01	2.05E+01	2.05E+01
		831.96	2.90	1.90E+01		3.50E+01
+	BI-212	727.17	11.80	-3.65E+00	6.93E+00	6.93E+00
		1620.62	2.75	1.84E-01		1.15E+01
+	PB-212	238.63	44.60	4.03E-01	9.93E-01	9.93E-01
		300.09	3.41	-1.31E+01		1.36E+01
+	BI-214	609.31	46.30	3.50E-01	1.46E+00	1.46E+00
		1120.29	15.10	2.79E+00		7.17E+00
		1764.49	15.80	8.97E-01		2.01E+00
		2204.22	4.98	-6.74E-01		6.74E+00
+	PB-214	295.21	19.19	1.44E+00	1.43E+00	2.46E+00
		351.92	37.19	-6.25E-02		1.43E+00
+	RN-219	401.80	6.50	9.15E-01	9.12E+00	9.12E+00
+	RA-223	323.87	3.88	-2.06E-01	1.28E+01	1.28E+01
+	RA-224	240.98	3.95	4.01E+00	1.12E+01	1.12E+01
+	@ RA-225	40.00	31.00	1.00E+26	1.00E+26	1.00E+26
+	RA-226	186.21	3.28	-1.34E+00	1.14E+01	1.14E+01
+	TH-227	50.10	8.40	5.23E+01	3.85E+00	9.97E+00
		236.00	11.50	1.04E+00		3.85E+00
		256.20	6.30	-4.97E+00		6.91E+00
+	AC-228	338.32	11.40	1.06E-01	4.30E+00	4.48E+00
		911.07	27.70	-2.01E+00		4.30E+00
		969.11	16.60	-3.16E+00		7.02E+00

Analysis Report for 1707088-01

GAS-1402

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TH-230	48.44		16.90	1.52E+01	4.71E+00	4.71E+00
		62.85		4.60	5.44E+02		2.16E+01
		67.67		0.37	2.62E+02		1.15E+02
+	PA-231	283.67		1.60	-7.69E+00	2.06E+01	2.85E+01
		302.67		2.30	-4.19E+00		2.06E+01
+	TH-231	25.64		14.70	-1.12E+02	7.89E+00	2.88E+01
		84.21		6.40	-2.62E+02		7.89E+00
+	PA-233	311.98		38.60	2.30E+11	7.59E+11	7.59E+11
+	PA-234	131.20		20.40	-3.82E-01	1.52E+00	1.52E+00
		733.99		8.80	2.89E+00		9.52E+00
		946.00		12.00	5.51E+00		1.08E+01
+	PA-234M	1001.03		0.92	-3.70E+01	1.23E+02	1.23E+02
+	TH-234	63.29		3.80	6.56E+02	2.61E+01	2.61E+01
+	U-235	143.76		10.50	3.24E-01	2.97E+00	2.97E+00
		163.35		4.70	-1.78E+00		7.22E+00
		205.31		4.70	-2.85E+00		8.54E+00
+	NP-237	86.50		12.60	1.81E+02	5.90E+00	5.90E+00
+	@ NP-239	106.10		22.70	1.00E+26	1.00E+26	1.00E+26
	@	228.18		10.70	1.00E+26		1.00E+26
	@	277.60		14.10	1.00E+26		1.00E+26
+	AM-241	59.54	*	35.90	2.19E+02	3.41E+00	3.41E+00
+	AM-243	74.67		66.00	2.99E-01	6.22E-01	6.22E-01
+	CM-243	209.75		3.29	-1.15E+00	3.47E+00	1.33E+01
		228.14		10.60	-5.89E-02		4.43E+00
		277.60		14.00	-4.50E-01		3.47E+00

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = 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 1707088-01

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	5.85E+06	5.85E+06	-1.45E+06	2.89E+06
	NA-22	1274.54		99.94	1.05E+00	1.05E+00	-4.01E-01	5.04E-01
@	NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		2754.09		99.86	1.00E+26		0.00E+00	1.00E+20
	AL-26	1808.65		99.76	2.57E-01	2.57E-01	-9.72E-02	1.14E-01
	K-40	1460.81		10.67	3.01E+00	3.01E+00	1.25E+00	1.40E+00
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	4.65E-01	4.32E-01	1.06E+00	2.31E-01
		78.34		96.00	4.32E-01		1.26E-01	2.15E-01
	SC-46	889.25		99.98	7.07E+03	6.71E+03	3.41E+03	3.49E+03
		1120.51		99.99	6.71E+03		2.62E+03	3.30E+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	1.50E+12	1.50E+12	-1.62E+11	7.44E+11
	MN-54	834.83		99.97	1.04E+01	1.04E+01	-4.03E+00	5.15E+00
	CO-56	846.75		99.96	1.12E+04	2.76E+03	-4.02E+03	5.51E+03
		1037.75		14.03	8.82E+04		-1.61E+04	4.34E+04
		1238.25		67.00	9.85E+03		2.71E+02	4.76E+03
		1771.40		15.51	2.09E+04		-3.57E+03	9.47E+03
		2598.48		16.90	2.76E+03		0.00E+00	0.00E+00
+	CO-57	122.06	*	85.51	7.55E+00	7.55E+00	6.99E+01	3.75E+00
		136.48	*	10.60	5.69E+01		8.13E+01	2.83E+01
	CO-58	810.76		99.40	2.97E+04	2.97E+04	3.87E+03	1.46E+04
	FE-59	1099.22		56.50	2.77E+07	1.54E+07	-1.51E+06	1.36E+07
		1291.56		43.20	1.54E+07		3.28E+05	7.37E+06
+	CO-60	1173.22	*	100.00	2.11E+00	1.34E+00	1.23E+02	1.04E+00
		1332.49	*	100.00	1.34E+00		1.24E+02	6.52E-01
	ZN-65	1115.52		50.75	4.57E+01	4.57E+01	3.10E+01	2.25E+01
@	GA-67	93.31		35.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		208.95		2.24	1.00E+26		1.00E+26	1.00E+20
@		300.22		16.00	1.00E+26		1.00E+26	1.00E+20
	SE-75	121.11		16.70	1.12E+03	2.51E+02	1.10E+04	5.55E+02
		136.00		59.20	2.51E+02		5.19E+02	1.24E+02
		264.65		59.80	3.39E+02		-1.18E+02	1.68E+02
		279.53		25.20	8.13E+02		-8.23E+01	4.02E+02
		400.65		11.40	2.36E+03		1.12E+03	1.17E+03
	RB-82	776.52		13.00	1.87E+13	1.87E+13	-7.86E+12	9.21E+12
	RB-83	520.41		46.00	6.76E+03	6.76E+03	-5.88E+02	3.33E+03
		529.64		30.30	1.02E+04		-6.14E+02	5.03E+03
		552.65		16.40	1.86E+04		5.39E+03	9.15E+03
	KR-85	513.99		0.43	1.82E+02	1.82E+02	9.96E+01	8.98E+01
	SR-85	513.99		99.27	5.29E+04	5.29E+04	2.89E+04	2.61E+04
	Y-88	898.02		93.40	1.19E+03	4.19E+02	-1.26E+02	5.87E+02
		1836.01		99.38	4.19E+02		3.01E+02	1.95E+02
	MO-93	263.06		56.72	9.57E-01	3.99E-01	5.25E-01	4.74E-01
		684.67		99.68	9.37E-01		1.18E-01	4.61E-01
		1477.11		99.08	3.99E-01		5.62E-02	1.86E-01
	NB-93M	16.57		9.43	8.05E+01	8.05E+01	-8.54E+03	4.00E+01
	NB-94	702.63		100.00	7.96E-01	7.96E-01	-1.62E-01	3.92E-01
		871.10		100.00	1.08E+00		-6.78E-02	5.31E-01
	NB-95	765.79		99.81	1.03E+09	1.03E+09	3.02E+08	5.09E+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	1.73E+05	1.43E+05	3.83E+04	8.52E+04

Analysis Report for 1707088-01

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	1.43E+05	1.43E+05	-1.29E+04	7.04E+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	8.64E+07	8.64E+07	-1.27E+07	4.26E+07
	RU-106	621.84		9.80	4.99E+01	4.99E+01	5.93E-01	2.45E+01
	AG-108M	433.93		89.90	7.28E-01	7.28E-01	5.13E-02	3.60E-01
		614.37		90.40	7.51E-01		1.50E-01	3.69E-01
		722.95		90.50	9.11E-01		-1.39E-01	4.49E-01
+	CD-109	88.03	*	3.72	9.49E+01	9.49E+01	3.00E+03	4.73E+01
	AG-110M	657.75		93.14	4.49E+01	2.60E+01	6.58E+02	2.23E+01
		677.61		10.53	1.36E+02		3.11E+01	6.72E+01
		706.67		16.46	9.27E+01		8.99E+01	4.56E+01
		763.93		21.98	7.44E+01		-8.81E+00	3.67E+01
		884.67		71.63	2.92E+01		-7.39E+00	1.44E+01
		1384.27		23.94	2.60E+01		1.08E+01	1.21E+01
	CD-113M	263.70		0.02	2.25E+03	2.25E+03	2.68E+02	1.12E+03
	SN-113	255.12		1.93	1.31E+04	5.20E+02	-1.00E+03	6.49E+03
		391.69		64.90	5.20E+02		3.54E+02	2.57E+02
	TE123M	159.00		84.10	1.76E+02	1.76E+02	-2.06E+00	8.71E+01
	SB-124	602.71		97.87	1.30E+05	9.19E+04	-1.32E+04	6.38E+04
		645.85		7.26	1.86E+06		3.89E+05	9.16E+05
		722.78		11.10	1.40E+06		-2.14E+05	6.88E+05
		1691.02		49.00	9.19E+04		-3.84E+04	4.08E+04
	I-125	35.49		6.49	2.17E+06	2.17E+06	-3.22E+05	1.08E+06
	SB-125	176.33		6.89	1.04E+01	4.44E+00	7.34E-01	5.17E+00
		427.89		29.33	4.44E+00		-1.08E+00	2.19E+00
		463.38		10.35	1.43E+01		1.93E+00	7.09E+00
		600.56		17.80	7.68E+00		3.68E-01	3.78E+00
		635.90		11.32	1.22E+01		-1.15E+00	6.03E+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	1.97E+00	1.97E+00	6.24E+01	9.82E-01
@	SB-127	473.00		25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		685.20		35.70	1.00E+26		1.00E+26	1.00E+20
@		783.80		14.70	1.00E+26		1.00E+26	1.00E+20
	I-129	29.78		57.00	2.04E+00	2.04E+00	-2.03E+01	1.01E+00
		33.60		13.20	6.47E+00		3.03E+00	3.21E+00
		39.58		7.52	8.58E+00		-2.77E+01	4.26E+00
@	I-131	284.30		6.05	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		364.48		81.20	1.00E+26		1.00E+26	1.00E+20
@		636.97		7.26	1.00E+26		1.00E+26	1.00E+20
@		722.89		1.80	1.00E+26		1.00E+26	1.00E+20
@	TE-132	49.72		13.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		228.16		88.00	1.00E+26		1.00E+26	1.00E+20
	BA-133	81.00		33.00	1.46E+00	1.07E+00	-9.87E-02	7.28E-01
		302.84		17.80	3.23E+00		-6.56E-01	1.60E+00
		356.01		60.00	1.07E+00		-1.92E-01	5.31E-01
@	I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	CS-134	563.23		8.38	2.00E+01	1.80E+00	1.69E+00	9.87E+00

Analysis Report for 1707088-01

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	1.10E+01	1.80E+00	-3.53E+00	5.43E+00
		604.70		97.60	1.80E+00		-1.12E+00	8.85E-01
		795.84		85.40	2.85E+00		9.88E-01	1.40E+00
		801.93		8.73	2.81E+01		5.51E-01	1.38E+01
	CS-135	268.24		16.00	2.84E+00	2.84E+00	9.90E-01	1.41E+00
@	I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		1260.41		28.60	1.00E+26		1.00E+26	1.00E+20
@		1678.03		9.54	1.00E+26		1.00E+26	1.00E+20
@	CS-136	153.22		7.46	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		163.89		4.61	1.00E+26		1.00E+26	1.00E+20
@		176.55		13.56	1.00E+26		1.00E+26	1.00E+20
@		273.65		12.66	1.00E+26		1.00E+26	1.00E+20
@		340.57		48.50	1.00E+26		1.00E+26	1.00E+20
@		818.50		99.70	1.00E+26		1.00E+26	1.00E+20
@		1048.07		79.60	1.00E+26		1.00E+26	1.00E+20
@		1235.34		19.70	1.00E+26		1.00E+26	1.00E+20
+	CS-137	661.65	*	85.12	1.66E+00	1.66E+00	7.98E+01	8.22E-01
	LA-138	788.74		34.00	2.67E+00	4.15E-01	5.67E-01	1.31E+00
		1435.80		66.00	4.15E-01		-1.30E-01	1.90E-01
+	CE-139	165.85	*	80.35	8.82E+01	8.82E+01	6.16E+01	4.37E+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	3.92E+09	3.92E+09	2.68E+08	1.94E+09
@	CE-143	57.36		11.80	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		293.26		42.00	1.00E+26		1.00E+26	1.00E+20
@		664.55		5.20	1.00E+26		1.00E+26	1.00E+20
	CE-144	133.54		10.80	3.96E+01	3.96E+01	-9.22E+00	1.96E+01
	PM-144	476.78		42.00	1.24E+01	5.07E+00	-7.44E-01	6.13E+00
		618.01		98.60	5.07E+00		-3.04E-01	2.50E+00
		696.49		99.49	5.97E+00		7.21E-02	2.94E+00
	PM-145	36.85		21.70	3.45E+00	1.84E+00	-3.76E+00	1.71E+00
		37.36		39.70	1.84E+00		-2.01E+00	9.15E-01
		42.30		15.10	4.69E+00		-1.03E+01	2.33E+00
		72.40		2.31	2.02E+01		-4.82E+00	1.00E+01
	PM-146	453.90		39.94	2.46E+00	2.46E+00	-7.19E-01	1.22E+00
		735.90		14.01	8.65E+00		3.12E+00	4.26E+00
		747.13		13.10	9.49E+00		2.53E+00	4.67E+00
@	ND-147	91.11		28.90	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		531.02		13.10	1.00E+26		1.00E+26	1.00E+20
@	PM-149	285.90		3.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	EU-152	121.78		20.50	2.34E+00	2.20E+00	2.30E+01	1.16E+00
		244.69		5.40	9.31E+00		-4.78E+00	4.61E+00
		344.27		19.13	3.13E+00		7.07E-01	1.55E+00
		778.89		9.20	1.11E+01		7.47E-01	5.48E+00
		964.01		10.40	1.39E+01		-5.39E+00	6.84E+00
		1085.78		7.22	1.91E+01		-8.76E+00	9.41E+00

Analysis Report for 1707088-01

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-152	1112.02	9.60	1.45E+01	2.20E+00	7.51E+00	7.13E+00
	1407.95	14.94	2.20E+00		-1.26E+00	1.01E+00
GD-153	97.43	31.30	1.89E+01	1.89E+01	-8.72E+00	9.39E+00
	103.18	22.20	2.74E+01		2.60E+01	1.36E+01
EU-154	123.07	40.50	1.28E+00	1.28E+00	1.16E+01	6.34E-01
	723.30	19.70	5.20E+00		1.15E+00	2.56E+00
	873.19	11.50	1.18E+01		1.32E+00	5.81E+00
	996.32	10.30	1.40E+01		2.20E+00	6.89E+00
	1004.76	17.90	8.04E+00		3.44E+00	3.96E+00
	1274.45	35.50	1.72E+00		-6.56E-01	8.25E-01
EU-155	86.50	30.90	3.60E+00	2.13E+00	1.10E+02	1.79E+00
	105.30	20.70	2.13E+00		1.91E-01	1.06E+00
@ EU-156	811.77	10.40	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1153.47	7.20	1.00E+26		1.00E+26	1.00E+20
@	1230.71	8.90	1.00E+26		1.00E+26	1.00E+20
HO-166M	184.41	72.60	5.09E-01	5.09E-01	2.67E-02	2.52E-01
	280.45	29.60	1.53E+00		-3.22E-01	7.59E-01
	410.94	11.10	5.50E+00		2.07E+00	2.72E+00
	711.69	54.10	1.48E+00		-8.12E-01	7.29E-01
TM-171	66.72	0.14	8.54E+02	8.54E+02	-1.18E+03	4.25E+02
HF-172	67.35	5.31	2.31E+01	8.96E+00	-3.19E+01	1.15E+01
	125.81	11.30	8.96E+00		1.31E+00	4.45E+00
@ LU-172	181.53	20.60	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	900.72	29.81	1.00E+26		1.00E+26	1.00E+20
@	1093.66	62.50	1.00E+26		1.00E+26	1.00E+20
LU-173	100.72	5.24	2.37E+01	9.25E+00	-8.22E+00	1.18E+01
	272.11	21.20	9.25E+00		2.47E+00	4.58E+00
HF-175	343.40	84.00	2.14E+04	2.14E+04	4.83E+03	1.06E+04
LU-176	88.34	13.30	5.52E+00	4.62E-01	1.69E+02	2.75E+00
	201.83	86.00	4.62E-01		1.80E-01	2.29E-01
	306.78	94.00	5.22E-01		3.09E-01	2.58E-01
HF-181	133.02	41.70	2.43E+07	2.43E+07	-4.87E+06	1.20E+07
	345.85	17.20	9.43E+07		-4.03E+07	4.66E+07
	482.03	82.80	2.55E+07		-3.16E+06	1.26E+07
TA-182	67.75	41.20	6.20E+02	6.20E+02	1.41E+03	3.08E+02
	1121.30	34.90	1.81E+03		-1.80E+02	8.91E+02
	1189.05	16.23	2.95E+03		2.55E+01	1.44E+03
	1221.41	26.98	1.42E+03		-3.80E+02	6.89E+02
	1231.02	11.44	3.23E+03		-8.03E+02	1.57E+03
IR-192	308.46	29.68	3.28E+04	2.97E+04	2.12E+04	1.62E+04
	468.07	48.10	2.97E+04		-1.88E+03	1.47E+04
HG-203	279.19	77.30	3.92E+06	3.92E+06	7.31E+05	1.94E+06
TL-204	374.74	94.11	1.00E+00	1.00E+00	-3.20E-01	4.95E-01
	899.15	99.16	1.99E+00		7.41E-01	9.81E-01
	911.74	91.10	2.24E+00		-2.25E-01	1.11E+00
BI-207	569.67	97.72	6.99E-01	6.99E-01	-2.24E-01	3.44E-01
	1063.62	74.90	1.63E+00		-3.89E-01	8.04E-01
TL-208	583.14	30.22	2.18E+00	9.48E-01	5.02E-01	1.08E+00
	860.37	4.48	2.37E+01		6.46E-01	1.17E+01
	2614.66	35.85	9.48E-01		0.00E+00	4.14E-01
BI-210M	262.00	45.00	9.99E-01	9.99E-01	3.71E-01	4.94E-01
	300.00	23.00	2.01E+00		-1.95E+00	9.96E-01
PB-210	46.50	4.25	2.02E+01	2.02E+01	-2.10E-01	1.01E+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	2.05E+01	2.05E+01	-1.35E-01	1.01E+01
	831.96	2.90	3.50E+01		1.90E+01	1.73E+01
BI-212	727.17	11.80	6.93E+00	6.93E+00	-3.65E+00	3.41E+00
	1620.62	2.75	1.15E+01		1.84E-01	5.28E+00
PB-212	238.63	44.60	9.93E-01	9.93E-01	4.03E-01	4.92E-01
	300.09	3.41	1.36E+01		-1.31E+01	6.72E+00
BI-214	609.31	46.30	1.46E+00	1.46E+00	3.50E-01	7.20E-01
	1120.29	15.10	7.17E+00		2.79E+00	3.52E+00
	1764.49	15.80	2.01E+00		8.97E-01	9.15E-01
	2204.22	4.98	6.74E+00		-6.74E-01	3.02E+00
PB-214	295.21	19.19	2.46E+00	1.43E+00	1.44E+00	1.22E+00
	351.92	37.19	1.43E+00		-6.25E-02	7.05E-01
RN-219	401.80	6.50	9.12E+00	9.12E+00	9.15E-01	4.51E+00
RA-223	323.87	3.88	1.28E+01	1.28E+01	-2.06E-01	6.35E+00
RA-224	240.98	3.95	1.12E+01	1.12E+01	4.01E+00	5.55E+00
@ RA-225	40.00	31.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
RA-226	186.21	3.28	1.14E+01	1.14E+01	-1.34E+00	5.66E+00
TH-227	50.10	8.40	9.97E+00	3.85E+00	5.23E+01	4.97E+00
	236.00	11.50	3.85E+00		1.04E+00	1.91E+00
	256.20	6.30	6.91E+00		-4.97E+00	3.42E+00
AC-228	338.32	11.40	4.48E+00	4.30E+00	1.06E-01	2.22E+00
	911.07	27.70	4.30E+00		-2.01E+00	2.12E+00
	969.11	16.60	7.02E+00		-3.16E+00	3.46E+00
TH-230	48.44	16.90	4.71E+00	4.71E+00	1.52E+01	2.35E+00
	62.85	4.60	2.16E+01		5.44E+02	1.08E+01
	67.67	0.37	1.15E+02		2.62E+02	5.72E+01
PA-231	283.67	1.60	2.85E+01	2.06E+01	-7.69E+00	1.41E+01
	302.67	2.30	2.06E+01		-4.19E+00	1.02E+01
TH-231	25.64	14.70	2.88E+01	7.89E+00	-1.12E+02	1.44E+01
	84.21	6.40	7.89E+00		-2.62E+02	3.93E+00
PA-233	311.98	38.60	7.59E+11	7.59E+11	2.30E+11	3.76E+11
PA-234	131.20	20.40	1.52E+00	1.52E+00	-3.82E-01	7.53E-01
	733.99	8.80	9.52E+00		2.89E+00	4.69E+00
	946.00	12.00	1.08E+01		5.51E+00	5.32E+00
PA-234M	1001.03	0.92	1.23E+02	1.23E+02	-3.70E+01	6.08E+01
TH-234	63.29	3.80	2.61E+01	2.61E+01	6.56E+02	1.30E+01
U-235	143.76	10.50	2.97E+00	2.97E+00	3.24E-01	1.47E+00
	163.35	4.70	7.22E+00		-1.78E+00	3.58E+00
	205.31	4.70	8.54E+00		-2.85E+00	4.23E+00
NP-237	86.50	12.60	5.90E+00	5.90E+00	1.81E+02	2.94E+00
@ NP-239	106.10	22.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	228.18	10.70	1.00E+26		1.00E+26	1.00E+20
@	277.60	14.10	1.00E+26		1.00E+26	1.00E+20
+ AM-241	59.54	* 35.90	3.41E+00	3.41E+00	2.19E+02	1.70E+00
AM-243	74.67	66.00	6.22E-01	6.22E-01	2.99E-01	3.09E-01
CM-243	209.75	3.29	1.33E+01	3.47E+00	-1.15E+00	6.62E+00
	228.14	10.60	4.43E+00		-5.89E-02	2.19E+00
	277.60	14.00	3.47E+00		-4.50E-01	1.72E+00

Analysis Report for 1707088-01

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: 1825

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	281	1874
17:	2006	1933	4616	19840	36983	24903	11474	12065
25:	7635	2358	898	772	879	1201	1619	1305
33:	909	856	1011	1059	978	934	1039	1128
41:	1320	1514	1617	1749	1938	2257	2898	3703
49:	4156	4030	3870	3749	3863	4071	4394	4950
57:	10512	28736	31685	11883	2021	1068	1098	1216
65:	1319	1504	1480	1446	1474	1431	1321	1474
73:	1376	1452	1378	1466	1405	1282	1362	1323
81:	1336	1429	1532	1558	2144	6336	12100	8170
89:	2257	809	739	718	723	785	721	670
97:	673	678	708	708	769	705	728	715
105:	785	683	704	708	759	684	707	767
113:	711	765	735	729	706	768	877	1489
121:	2447	1951	970	683	595	716	668	670
129:	696	664	666	717	706	693	889	855
137:	723	607	625	623	647	648	597	626
145:	624	601	578	664	631	575	650	629
153:	613	592	592	593	609	588	578	625
161:	619	595	605	672	691	695	566	580
169:	614	605	582	578	631	518	597	608
177:	593	607	554	611	590	609	598	632
185:	614	644	630	644	634	670	706	615
193:	595	656	596	565	627	597	666	616
201:	619	595	583	632	603	597	632	641
209:	579	588	608	627	638	585	620	619
217:	584	648	618	600	629	629	633	575
225:	605	625	607	620	593	561	575	574
233:	533	611	579	554	587	593	598	525
241:	511	546	511	522	514	506	496	536
249:	498	478	530	459	491	469	476	469
257:	485	470	498	503	459	457	495	509
265:	484	445	466	468	486	453	447	448
273:	465	440	457	428	430	471	433	410
281:	438	429	402	458	412	426	404	440
289:	416	431	417	410	436	443	436	373
297:	432	368	396	413	368	394	406	426
305:	427	426	415	433	413	427	399	376
313:	388	411	374	382	393	381	366	416
321:	427	362	394	394	354	366	395	402
329:	388	354	361	356	366	348	359	390
337:	381	406	340	386	380	381	349	346
345:	342	388	353	347	368	361	433	358
353:	360	362	386	358	352	375	337	364
361:	346	364	362	344	354	349	341	341

369:	373	390	370	364	355	379	347	341

Sample Title: GAS-1402

Channel								
377:	336	374	338	334	339	334	351	362
385:	340	304	339	357	395	404	338	375
393:	323	316	336	354	368	357	348	340
401:	380	341	371	325	354	324	346	343
409:	362	366	359	356	353	318	372	399
417:	356	361	340	348	329	350	343	349
425:	363	330	356	340	366	345	320	413
433:	375	365	327	333	379	402	368	371
441:	374	349	371	387	363	376	356	348
449:	393	356	363	362	352	395	378	344
457:	368	386	372	373	382	389	403	407
465:	382	370	399	369	383	378	379	379
473:	366	371	361	328	312	318	308	301
481:	324	299	277	303	308	291	281	263
489:	274	306	307	252	265	250	262	273
497:	270	262	263	260	258	288	256	236
505:	237	226	245	274	253	282	262	277
513:	262	251	254	222	217	240	243	211
521:	263	241	248	221	262	211	225	235
529:	231	230	228	230	202	236	200	256
537:	217	190	220	189	254	215	220	203
545:	182	186	217	190	205	213	189	189
553:	215	198	205	194	182	208	216	174
561:	210	209	199	200	202	195	210	214
569:	229	199	173	195	222	212	181	178
577:	188	195	184	195	211	217	207	207
585:	200	199	204	180	205	203	185	198
593:	202	190	198	205	191	183	217	193
601:	172	187	208	167	202	193	208	218
609:	197	182	187	183	185	201	164	205
617:	188	187	168	175	190	183	180	204
625:	180	167	194	180	216	188	167	184
633:	182	174	160	202	171	170	200	163
641:	179	184	201	189	190	185	192	192
649:	196	196	195	185	163	183	206	190
657:	172	308	1491	4401	5996	3122	720	197
665:	165	148	159	173	157	175	179	146
673:	152	166	158	152	162	154	152	166
681:	172	150	147	175	160	167	166	142
689:	172	152	175	176	175	156	170	149
697:	171	151	156	144	149	168	169	160
705:	159	184	162	173	166	152	132	160
713:	180	146	147	153	179	145	140	169
721:	155	155	176	175	144	161	158	155
729:	143	158	180	168	151	176	157	176
737:	162	151	165	150	177	174	194	171
745:	152	167	174	178	141	167	171	155
753:	152	156	157	174	154	174	159	162
761:	165	148	159	178	181	154	178	181
769:	159	168	155	160	162	139	150	176
777:	174	155	150	174	173	175	151	173
785:	159	166	195	150	140	172	192	164
793:	165	163	171	162	179	151	179	170

801:	165	182	157	164	185	172	173	177

Sample Title: GAS-1402

Channel								
809:	185	182	181	165	157	193	154	191
817:	142	172	171	214	201	173	191	180
825:	176	173	199	181	202	200	205	190
833:	174	186	180	167	198	172	188	204
841:	189	197	177	205	199	162	189	196
849:	189	187	219	175	164	200	175	189
857:	210	190	187	185	173	218	209	206
865:	207	198	196	187	201	202	208	198
873:	190	196	187	198	196	187	208	211
881:	209	225	215	194	207	198	221	183
889:	239	210	224	214	222	208	192	244
897:	233	198	236	209	202	210	226	209
905:	196	227	233	259	220	222	218	206
913:	216	207	261	247	219	235	249	217
921:	237	240	265	233	248	238	230	227
929:	205	199	232	277	252	263	249	255
937:	231	253	220	235	256	246	251	254
945:	251	225	249	244	238	241	235	268
953:	237	266	228	233	273	286	224	267
961:	236	239	217	212	211	176	200	188
969:	198	181	177	177	189	172	185	202
977:	207	192	193	177	177	186	181	190
985:	183	213	196	176	166	165	198	198
993:	184	168	188	173	174	159	148	192
1001:	169	163	192	169	183	170	162	158
1009:	172	173	171	181	152	172	173	148
1017:	196	179	172	172	180	163	158	178
1025:	178	161	187	156	182	188	176	179
1033:	197	198	122	163	140	150	138	153
1041:	185	147	174	176	164	171	184	154
1049:	161	131	167	176	169	142	153	187
1057:	169	173	190	168	139	170	142	166
1065:	154	139	154	144	169	154	163	184
1073:	179	173	158	178	164	160	173	186
1081:	149	146	170	188	193	145	168	159
1089:	147	167	165	187	169	171	148	161
1097:	146	166	164	167	143	163	142	148
1105:	144	145	181	160	174	158	171	144
1113:	155	135	148	159	153	138	124	125
1121:	114	98	107	122	100	96	109	107
1129:	106	107	92	92	106	100	101	99
1137:	91	101	98	93	109	77	86	93
1145:	86	88	95	73	97	99	88	89
1153:	79	82	102	84	99	91	95	97
1161:	88	111	86	80	92	82	102	91
1169:	145	486	2023	4031	3852	1571	328	92
1177:	61	79	76	77	65	76	64	66
1185:	66	58	53	63	62	65	83	52
1193:	47	52	52	57	62	45	45	52
1201:	46	50	54	51	35	49	48	50
1209:	42	50	42	39	38	32	39	48
1217:	33	42	34	29	38	44	37	39
1225:	36	39	37	42	38	22	24	45

1233:	35	35	26	37	29	38	29	32

Sample Title: GAS-1402

Channel								
1241:	27	38	36	32	22	25	17	24
1249:	20	26	24	19	26	33	28	29
1257:	26	17	27	21	25	19	14	17
1265:	26	22	31	21	26	25	14	29
1273:	12	24	15	22	14	20	27	11
1281:	20	19	24	21	27	20	17	15
1289:	29	24	22	20	17	17	19	18
1297:	14	21	33	23	17	20	20	15
1305:	18	20	28	18	14	20	20	17
1313:	22	6	15	23	15	17	14	21
1321:	12	19	30	25	19	20	40	56
1329:	264	1245	3186	3724	1895	477	52	17
1337:	10	10	11	12	9	6	8	3
1345:	7	14	9	6	7	11	5	5
1353:	10	14	6	8	4	5	6	12
1361:	7	6	6	3	7	5	12	5
1369:	6	9	7	9	5	11	8	5
1377:	4	3	5	8	12	4	10	8
1385:	5	4	8	8	5	11	4	9
1393:	3	6	8	5	9	11	1	6
1401:	6	5	12	5	5	4	10	6
1409:	2	5	2	7	9	5	7	4
1417:	13	6	6	8	6	7	5	2
1425:	9	1	5	9	6	6	3	5
1433:	6	6	3	4	8	2	4	5
1441:	4	5	6	2	10	7	7	9
1449:	2	6	3	8	6	3	2	8
1457:	6	7	11	7	5	3	3	6
1465:	5	7	3	4	4	6	2	9
1473:	3	9	5	10	7	4	6	7
1481:	7	6	5	7	4	3	6	4
1489:	10	9	3	7	4	4	4	6
1497:	4	2	3	5	3	2	6	1
1505:	3	5	7	4	3	5	3	4
1513:	2	6	4	3	3	6	3	3
1521:	2	7	5	6	2	5	4	4
1529:	5	5	4	4	7	8	8	3
1537:	3	10	8	0	5	5	7	7
1545:	2	7	5	9	2	6	6	8
1553:	5	6	6	1	2	4	6	4
1561:	6	8	4	2	7	8	3	5
1569:	7	3	7	2	2	1	8	5
1577:	8	6	7	4	3	4	1	3
1585:	5	6	6	6	8	2	3	6
1593:	5	8	2	6	4	3	6	2
1601:	4	8	3	3	4	6	6	5
1609:	4	7	4	5	3	12	3	3
1617:	8	4	6	5	8	3	2	5
1625:	4	3	10	8	3	3	3	2
1633:	5	6	2	2	2	5	7	5
1641:	4	5	3	6	4	1	6	7
1649:	1	2	2	2	2	3	2	4
1657:	4	5	4	5	6	4	2	1

1665:	1	3	4	7	4	5	4	1

Sample Title: GAS-1402

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

2097:	3	3	3	2	1	1	4	5

Sample Title: GAS-1402

Channel								
2105:	3	1	3	2	1	3	2	2
2113:	2	3	2	2	3	1	4	2
2121:	3	1	2	0	1	4	1	2
2129:	4	3	1	4	1	2	5	0
2137:	1	2	4	2	2	1	1	4
2145:	1	2	1	2	1	4	3	3
2153:	5	2	1	5	1	3	1	2
2161:	3	2	4	2	1	5	0	0
2169:	1	4	0	3	3	3	3	2
2177:	1	2	2	0	1	2	2	4
2185:	1	0	1	2	2	3	4	4
2193:	1	1	3	1	1	2	5	3
2201:	1	4	6	4	0	3	3	1
2209:	2	5	3	3	3	3	4	0
2217:	0	1	1	1	2	1	3	4
2225:	4	3	5	1	2	2	2	2
2233:	5	5	4	5	3	5	4	1
2241:	0	3	0	2	1	1	2	0
2249:	6	1	0	1	4	3	2	2
2257:	1	3	1	3	0	2	2	3
2265:	1	1	2	2	3	3	2	1
2273:	3	5	1	3	3	3	3	2
2281:	2	0	3	1	1	1	1	2
2289:	2	1	1	2	5	2	4	2
2297:	2	3	1	1	2	0	0	2
2305:	1	0	2	2	0	0	2	1
2313:	1	1	0	0	3	0	0	1
2321:	1	2	0	1	0	0	0	3
2329:	2	1	2	1	1	1	1	2
2337:	1	1	1	3	3	3	1	1
2345:	0	1	1	1	0	0	1	0
2353:	0	0	2	0	1	1	1	1
2361:	1	1	1	1	0	2	0	2
2369:	2	2	0	0	0	1	2	0
2377:	2	0	0	0	1	2	1	3
2385:	0	1	0	1	1	1	1	3
2393:	1	1	0	0	1	0	1	0
2401:	1	1	0	0	2	1	1	1
2409:	0	0	0	0	0	0	0	1
2417:	0	0	0	1	1	1	1	0
2425:	1	1	0	2	0	0	3	0
2433:	0	1	0	0	1	1	1	0
2441:	0	0	0	1	0	0	1	0
2449:	0	0	0	0	0	0	0	0
2457:	0	0	0	0	0	1	1	0
2465:	0	1	1	0	0	0	0	1
2473:	0	0	1	0	0	0	0	0
2481:	1	0	2	1	0	1	0	0
2489:	0	1	1	1	1	0	0	1
2497:	1	0	3	0	0	1	9	20
2505:	23	24	7	2	0	0	0	0
2513:	0	0	0	0	0	0	0	0
2521:	0	0	0	1	1	0	0	0

2529:	0	0	1	0	0	0	0	0

Sample Title: GAS-1402

Channel								
2537:	0	0	0	2	0	0	0	0
2545:	0	0	0	0	0	0	1	0
2553:	0	0	0	0	0	0	0	2
2561:	1	0	0	0	0	0	0	0
2569:	0	1	0	0	0	0	0	0
2577:	1	0	0	0	0	0	0	0
2585:	1	0	0	1	0	0	0	1
2593:	0	0	0	0	0	0	0	0
2601:	0	0	0	0	0	0	0	0
2609:	0	0	0	0	5	7	1	3
2617:	0	0	0	0	0	0	1	0
2625:	0	0	0	0	0	0	0	0
2633:	0	0	0	0	0	1	0	0
2641:	0	0	0	0	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	0	0	0	0	0
2665:	0	1	0	0	0	0	0	0
2673:	1	0	0	0	0	0	0	0
2681:	0	0	0	0	0	0	1	0
2689:	0	0	0	0	0	0	0	0
2697:	0	1	0	0	0	0	0	1
2705:	0	0	0	0	1	0	0	0
2713:	0	0	0	0	0	1	0	0
2721:	0	0	0	0	0	0	0	0
2729:	0	0	0	0	0	0	0	0
2737:	0	0	1	0	1	0	0	0
2745:	1	0	0	0	0	0	0	0
2753:	0	0	0	0	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	0	1	0	0	0	0	1
2777:	0	0	0	0	1	0	1	0
2785:	0	0	0	0	0	0	0	0
2793:	0	0	0	1	0	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	1	1	0	1
2817:	1	0	0	0	0	0	0	0
2825:	1	0	0	0	0	0	0	0
2833:	0	0	1	0	0	0	0	0
2841:	0	0	0	0	0	0	0	1
2849:	0	1	0	0	0	0	0	0
2857:	0	0	1	0	0	0	0	0
2865:	0	0	0	0	0	0	1	0
2873:	0	0	0	0	0	1	0	0
2881:	1	0	0	0	0	0	0	0
2889:	1	0	1	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	1	0	0
2913:	0	0	0	0	0	0	0	0
2921:	1	0	0	0	0	0	0	0
2929:	0	0	1	0	0	0	0	0
2937:	0	0	0	0	0	0	1	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	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:	0	0	0	1	0	0	0	0
2985:	0	0	0	0	1	0	0	0
2993:	0	0	0	0	0	0	0	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	1	0	0	0	0	0
3025:	0	0	0	0	0	0	0	0
3033:	0	0	0	0	0	0	0	0
3041:	0	0	0	0	0	0	0	0
3049:	0	0	0	0	0	0	0	0
3057:	0	0	0	0	0	1	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	1	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	0	0	1	0	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	0	0	0	0	1
3113:	0	0	0	0	0	0	0	0
3121:	0	0	0	1	0	0	0	0
3129:	0	0	0	0	0	0	0	0
3137:	0	0	0	0	1	1	0	0
3145:	0	0	0	0	0	0	0	0
3153:	0	0	0	0	0	0	0	0
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	0	0	0	1
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	0	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	0	0	0	0	0	0	0
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	0	0	0	0
3241:	0	0	0	0	0	0	0	0
3249:	1	0	0	1	0	0	0	0
3257:	0	0	0	0	0	0	0	0
3265:	0	0	0	0	2	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	1	0	0	0	1
3289:	0	0	0	0	0	0	0	0
3297:	0	1	0	0	0	1	0	0
3305:	0	0	0	0	0	0	0	0
3313:	0	0	0	0	0	0	0	1
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	1	0	0	0	0

3393:	0	1	0	0	0	0	1	1

Sample Title: GAS-1402

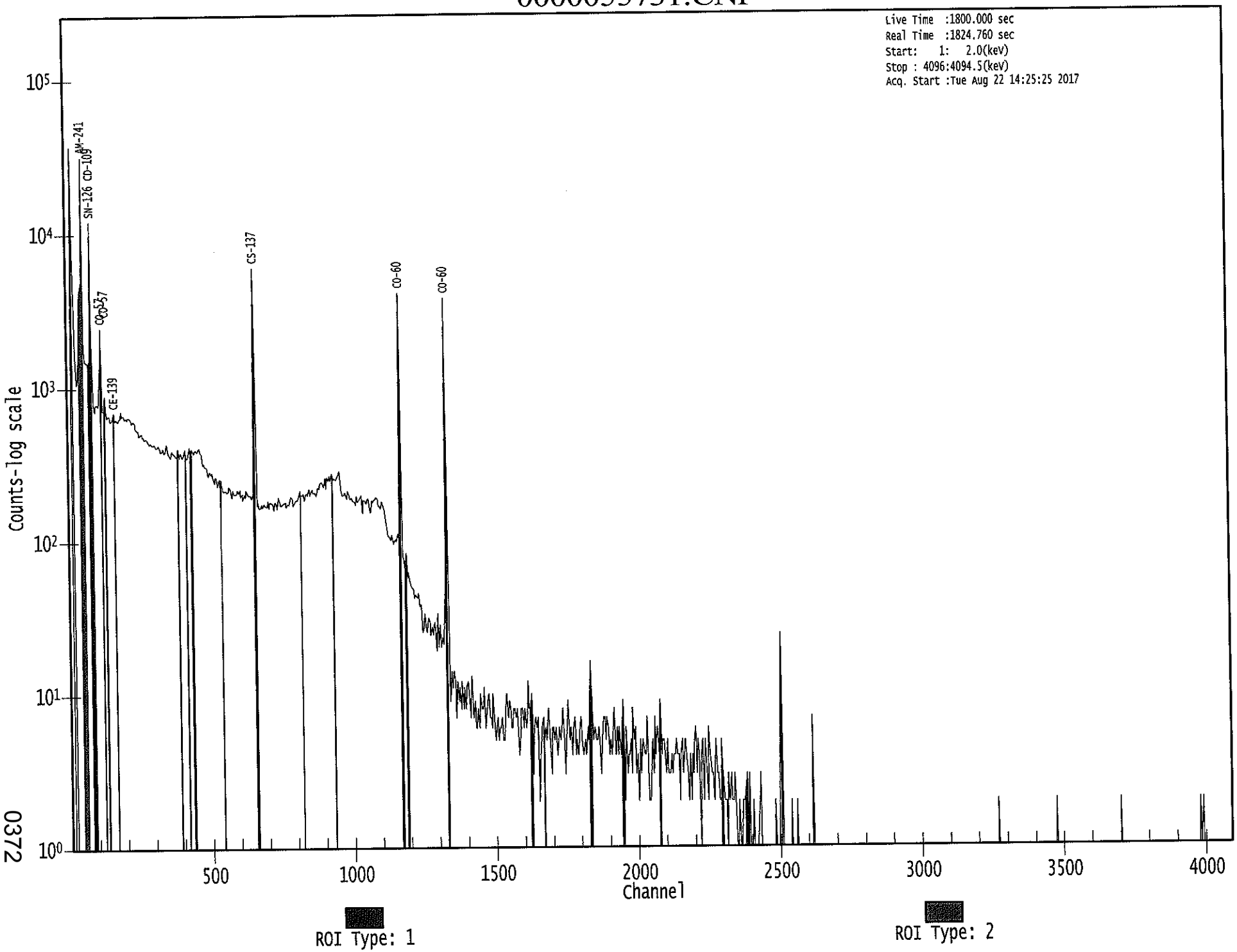
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	1	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	1	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	1
3473:	0	0	2	0	0	0	0	0
3481:	0	0	0	1	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	1	0	0	0	0	0	0
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:	1	0	0	1	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	1	0	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0	1
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	0	0	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	1
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	1
3681:	0	0	0	1	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	2	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	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	1	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	1	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	1	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	1	0
3881:	0	0	0	0	0	0	0	0
3889:	0	1	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	1	0	0	0	0	0	0
3969:	0	0	0	0	0	0	1	0
3977:	0	0	1	0	2	0	0	0
3985:	0	1	0	0	0	0	0	2
3993:	0	0	0	0	0	0	1	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	1	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	0	0	0	0	0	0	0

0000055731.CNF



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RB 8/22/17

Apex-Gamma

Analysis Report for 1707088-02
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GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-02
Sample Description	: BLANK
Sample Type	: SOIL
Sample Size	: 7.360E+02 grams
Facility	: Countroom
Sample Taken On	: 8/22/2017 9:29:39AM
Acquisition Started	: 8/22/2017 1:24:38PM
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	: 55727

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 8/23/17

Analysis Report for 1707088-02

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PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 2:24:51PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	176.46	175.55	0.0000	0.00
2	211.77	210.87	0.0000	0.00
3	243.26	242.37	0.0000	0.00
4	265.86	264.97	0.0000	0.00
5	546.44	545.65	0.0000	0.00
6	578.39	577.62	0.0000	0.00
7	605.05	604.28	0.0000	0.00
8	608.52	607.76	0.0000	0.00
9	668.80	668.06	0.0000	0.00
10	776.16	775.47	0.0000	0.00
11	819.69	819.01	0.0000	0.00
12	922.48	921.85	0.0000	0.00
13	1106.39	1105.84	0.0000	0.00
14	1460.04	1459.66	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-02

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PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 2:24:51PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	176.46	173 -	179	175.55	3.13E+01	25.11	9.34E+01	1.72
	2	211.77	205 -	216	210.87	4.31E+01	34.93	1.28E+02	2.41
	3	243.26	239 -	245	242.37	2.51E+01	19.07	4.59E+01	2.66
	4	265.86	262 -	267	264.97	2.05E+01	18.95	5.30E+01	1.64
	5	546.44	542 -	550	545.65	1.44E+01	14.33	2.31E+01	1.42
	6	578.39	572 -	584	577.62	2.70E+01	18.14	2.60E+01	1.01
M	7	605.05	603 -	619	604.28	8.47E+00	6.40	8.35E+00	3.08
m	8	608.52	603 -	619	607.76	1.81E+01	14.18	2.10E+01	2.98
	9	668.80	664 -	673	668.06	1.11E+01	12.12	1.38E+01	1.84
	10	776.16	772 -	778	775.47	7.50E+00	8.28	7.00E+00	1.75
	11	819.69	815 -	823	819.01	1.03E+01	10.02	9.33E+00	2.84
	12	922.48	919 -	924	921.85	1.30E+01	7.21	0.00E+00	3.58
	13	1106.39	1102 -	1108	1105.84	6.60E+00	8.03	6.80E+00	2.76
	14	1460.04	1456 -	1463	1459.66	8.20E+00	7.48	3.60E+00	3.97

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 : 8/22/2017 2:24:51PM

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

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
1	176.46	173 -	179	3.13E+01	25.11	9.34E+01	1.85E+01

Analysis Report for 1707088-02

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	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	2	211.77	205 -	216	4.31E+01	34.93	1.28E+02	2.66E+01
	3	243.26	239 -	245	2.51E+01	19.07	4.59E+01	1.33E+01
	4	265.86	262 -	267	2.05E+01	18.95	5.30E+01	1.37E+01
	5	546.44	542 -	550	1.44E+01	14.33	2.31E+01	9.98E+00
	6	578.39	572 -	584	2.70E+01	18.14	2.60E+01	1.22E+01
M	7	605.05	603 -	619	8.47E+00	6.40	8.35E+00	4.75E+00
m	8	608.52	603 -	619	1.81E+01	14.18	2.10E+01	7.54E+00
	9	668.80	664 -	673	1.11E+01	12.12	1.38E+01	8.33E+00
	10	776.16	772 -	778	7.50E+00	8.28	7.00E+00	5.10E+00
	11	819.69	815 -	823	1.03E+01	10.02	9.33E+00	6.32E+00
	12	922.48	919 -	924	1.30E+01	7.21	0.00E+00	0.00E+00
	13	1106.39	1102 -	1108	6.60E+00	8.03	6.80E+00	5.07E+00
	14	1460.04	1456 -	1463	8.20E+00	7.48	3.60E+00	3.96E+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 : 8/22/2017 2:24:51PM

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	176.46	173 -	179	175.55	3.13E+01	25.11	9.34E+01	CS-136 SB-125
	2	211.77	205 -	216	210.87	4.31E+01	34.93	1.28E+02	.....
	3	243.26	239 -	245	242.37	2.51E+01	19.07	4.59E+01	.....
	4	265.86	262 -	267	264.97	2.05E+01	18.95	5.30E+01	.....
	5	546.44	542 -	550	545.65	1.44E+01	14.33	2.31E+01	.....
	6	578.39	572 -	584	577.62	2.70E+01	18.14	2.60E+01	.....
M	7	605.05	603 -	619	604.28	8.47E+00	6.40	8.35E+00	CS-134
m	8	608.52	603 -	619	607.76	1.81E+01	14.18	2.10E+01	BI-214
	9	668.80	664 -	673	668.06	1.11E+01	12.12	1.38E+01	.....
	10	776.16	772 -	778	775.47	7.50E+00	8.28	7.00E+00	RB-82
	11	819.69	815 -	823	819.01	1.03E+01	10.02	9.33E+00	.....

Analysis Report for 1707088-02

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Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
12	922.48	919 -	924	921.85	1.30E+01	7.21	0.00E+00	.....
13	1106.39	1102 -	1108	1105.84	6.60E+00	8.03	6.80E+00	.....
14	1460.04	1456 -	1463	1459.66	8.20E+00	7.48	3.60E+00	K-40

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 : 8/22/2017 2:24:51PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	176.46	3.13E+01	25.11	1.76E-02	1.44E-03
	2	211.77	4.31E+01	34.93	1.52E-02	1.27E-03
	3	243.26	2.51E+01	19.07	1.33E-02	1.12E-03
	4	265.86	2.05E+01	18.95	1.22E-02	1.01E-03
	5	546.44	1.44E+01	14.33	5.87E-03	6.46E-04
	6	578.39	2.70E+01	18.14	5.55E-03	6.33E-04
M	7	605.05	8.47E+00	6.40	5.31E-03	6.22E-04
m	8	608.52	1.81E+01	14.18	5.28E-03	6.21E-04
	9	668.80	1.11E+01	12.12	4.82E-03	5.90E-04
	10	776.16	7.50E+00	8.28	4.19E-03	4.55E-04
	11	819.69	1.03E+01	10.02	3.98E-03	4.00E-04
	12	922.48	1.30E+01	7.21	3.58E-03	2.96E-04
	13	1106.39	6.60E+00	8.03	3.05E-03	2.53E-04
	14	1460.04	8.20E+00	7.48	2.39E-03	2.08E-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 1707088-02

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BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/22/2017 2:24:51PM

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	176.46	3.13E+01	25.11			3.13E+01	2.51E+01
	2	211.77	4.31E+01	34.93			4.31E+01	3.49E+01
	3	243.26	2.51E+01	19.07			2.51E+01	1.91E+01
	4	265.86	2.05E+01	18.95			2.05E+01	1.89E+01
	5	546.44	1.44E+01	14.33			1.44E+01	1.43E+01
	6	578.39	2.70E+01	18.14			2.70E+01	1.81E+01
M	7	605.05	8.47E+00	6.40			8.47E+00	6.40E+00
m	8	608.52	1.81E+01	14.18			1.81E+01	1.42E+01
	9	668.80	1.11E+01	12.12			1.11E+01	1.21E+01
	10	776.16	7.50E+00	8.28			7.50E+00	8.28E+00
	11	819.69	1.03E+01	10.02			1.03E+01	1.00E+01
	12	922.48	1.30E+01	7.21			1.30E+01	7.21E+00
	13	1106.39	6.60E+00	8.03			6.60E+00	8.03E+00
	14	1460.04	8.20E+00	7.48			8.20E+00	7.48E+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 : 8/22/2017 2:24:51PM

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	176.46	3.13E+01	25.11			3.13E+01	2.51E+01
2	211.77	4.31E+01	34.93			4.31E+01	3.49E+01
3	243.26	2.51E+01	19.07			2.51E+01	1.91E+01
4	265.86	2.05E+01	18.95			2.05E+01	1.89E+01

Analysis Report for 1707088-02

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	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	5	546.44	1.44E+01	14.33			1.44E+01	1.43E+01
	6	578.39	2.70E+01	18.14			2.70E+01	1.81E+01
M	7	605.05	8.47E+00	6.40			8.47E+00	6.40E+00
m	8	608.52	1.81E+01	14.18			1.81E+01	1.42E+01
	9	668.80	1.11E+01	12.12			1.11E+01	1.21E+01
	10	776.16	7.50E+00	8.28			7.50E+00	8.28E+00
	11	819.69	1.03E+01	10.02			1.03E+01	1.00E+01
	12	922.48	1.30E+01	7.21			1.30E+01	7.21E+00
	13	1106.39	6.60E+00	8.03			6.60E+00	8.03E+00
	14	1460.04	8.20E+00	7.48			8.20E+00	7.48E+00

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.910	1460.81	*	10.67	3.29E-01	3.01E-01
RB-82	0.980	776.52	*	13.00	1.41E-01	1.57E-01
BI-214	0.400	609.31	*	46.30	7.53E-02	5.98E-02
		1120.29		15.10		
		1764.49		15.80		
		2204.22		4.98		

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

Analysis Report for 1707088-02

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 2:24:51PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	176.46	8.70014E-03	40.09	Tol.	SB-125 CS-136
	2	211.77	1.19730E-02	40.52		
	3	243.26	6.96181E-03	38.04		
	4	265.86	5.69740E-03	46.19		
	5	546.44	4.01175E-03	49.60		
	6	578.39	7.50000E-03	33.59		
M	7	605.05	2.35320E-03	37.79	Tol.	CS-134
	9	668.80	3.07870E-03	54.70		
	11	819.69	2.87037E-03	48.51		
	12	922.48	3.61111E-03	27.74		
	13	1106.39	1.83333E-03	60.84		

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	0.91	1460.81	*	10.67	3.29E-01	3.01E-01
RB-82	0.98	776.52	*	13.00	1.41E-01	1.57E-01
BI-214	0.40	609.31	*	46.30	7.53E-02	5.98E-02
		1120.29		15.10		
		1764.49		15.80		
		2204.22		4.98		

Analysis Report for 1707088-02

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

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.910	3.29E-01	3.01E-01	
RB-82	0.980	1.41E-01	1.57E-01	
BI-214	0.400	7.53E-02	5.98E-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 1707088-02
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UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 2:24:51PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	176.46	8.70014E-03	40.09	Tol.	SB-125 CS-136
	2	211.77	1.19730E-02	40.52		
	3	243.26	6.96181E-03	38.04		
	4	265.86	5.69740E-03	46.19		
	5	546.44	4.01175E-03	49.60		
	6	578.39	7.50000E-03	33.59		
M	7	605.05	2.35320E-03	37.79	Tol.	CS-134
	9	668.80	3.07870E-03	54.70		
	11	819.69	2.87037E-03	48.51		
	12	922.48	3.61111E-03	27.74		
	13	1106.39	1.83333E-03	60.84		

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	-1.37E-01	3.19E-01	3.19E-01
+	NA-22	1274.54	99.94	0.00E+00	5.35E-02	5.35E-02
+	NA-24	1368.53	99.99	-4.95E-03	6.49E-02	6.49E-02
		2754.09	99.86	1.05E-02		7.74E-02
+	AL-26	1808.65	99.76	-2.36E-02	4.87E-02	4.87E-02

Analysis Report for 1707088-02

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	K-40	1460.81	*	10.67	3.29E-01	4.26E-01	4.26E-01
+	AR-41	1293.64		99.16	-2.64E-02	3.09E-01	3.09E-01
+	TI-44	67.88		94.40	-1.49E-02	2.29E-02	2.37E-02
		78.34		96.00	1.66E-03		2.29E-02
+	SC-46	889.25		99.98	1.24E-02	4.60E-02	4.60E-02
		1120.51		99.99	2.54E-02		7.03E-02
+	V-48	983.52		99.98	1.14E-02	5.67E-02	6.30E-02
		1312.10		97.50	-2.41E-02		5.67E-02
+	CR-51	320.08		9.83	5.13E-03	2.98E-01	2.98E-01
+	MN-54	834.83		99.97	5.51E-03	5.08E-02	5.08E-02
+	CO-56	846.75		99.96	1.55E-02	5.32E-02	5.32E-02
		1037.75		14.03	-1.02E-01		3.76E-01
		1238.25		67.00	7.82E-03		8.76E-02
		1771.40		15.51	1.65E-02		3.07E-01
		2598.48		16.90	0.00E+00		1.27E-01
+	CO-57	122.06		85.51	3.28E-03	2.19E-02	2.19E-02
		136.48		10.60	-5.29E-02		1.90E-01
+	CO-58	810.76		99.40	-1.99E-03	4.26E-02	4.26E-02
+	FE-59	1099.22		56.50	-1.36E-02	8.33E-02	8.33E-02
		1291.56		43.20	1.78E-02		1.41E-01
+	CO-60	1173.22		100.00	1.76E-02	3.66E-02	5.59E-02
		1332.49		100.00	-6.57E-04		3.66E-02
+	ZN-65	1115.52		50.75	-1.33E-02	1.05E-01	1.05E-01
+	GA-67	93.31		35.70	8.85E-02	7.36E-02	7.36E-02
		208.95		2.24	2.56E-01		1.27E+00
		300.22		16.00	-1.11E-01		1.80E-01
+	SE-75	121.11		16.70	5.95E-02	3.54E-02	1.13E-01
		136.00		59.20	1.66E-02		3.54E-02
		264.65		59.80	2.21E-02		5.08E-02
		279.53		25.20	-3.27E-02		1.09E-01
		400.65		11.40	-5.65E-02		2.78E-01
+	RB-82	776.52	*	13.00	1.41E-01	2.43E-01	2.43E-01
+	RB-83	520.41		46.00	-3.46E-02	7.02E-02	7.02E-02
		529.64		30.30	-4.02E-03		1.25E-01
		552.65		16.40	4.46E-02		2.29E-01
+	KR-85	513.99		0.43	1.14E+01	1.35E+01	1.35E+01
+	SR-85	513.99		99.27	5.01E-02	5.92E-02	5.92E-02
+	Y-88	898.02		93.40	1.34E-02	1.45E-02	4.97E-02
		1836.01		99.38	0.00E+00		1.45E-02
+	MO-93	263.06		56.72	-7.09E-03	4.50E-02	5.27E-02
		684.67		99.68	-7.75E-03		4.50E-02
		1477.11		99.08	1.74E-02		6.55E-02
+	NB-93M	16.57		9.43	6.08E+00	4.47E+00	4.47E+00
+	NB-94	702.63		100.00	2.22E-03	4.73E-02	4.73E-02
		871.10		100.00	4.60E-02		5.92E-02
+	NB-95	765.79		99.81	-3.63E-03	4.55E-02	4.55E-02
+	NB-95M	235.69		25.00	4.79E-02	1.15E-01	1.15E-01

Analysis Report for 1707088-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	ZR-95	724.18	43.70	2.05E-02	7.51E-02	1.17E-01
		756.72	55.30	-3.45E-02		7.51E-02
+	MO-99	181.06	6.20	-1.84E-01	3.95E-01	4.04E-01
		739.58	12.80	-5.72E-02		3.95E-01
		778.00	4.50	1.70E-01		1.18E+00
+	RU-103	497.08	89.00	-7.42E-03	4.00E-02	4.00E-02
+	RU-106	621.84	9.80	1.28E-01	4.63E-01	4.63E-01
+	AG-108M	433.93	89.90	-1.36E-03	3.82E-02	3.82E-02
		614.37	90.40	3.18E-03		4.96E-02
		722.95	90.50	3.46E-02		5.92E-02
+	CD-109	88.03	3.72	-7.36E-01	6.14E-01	6.14E-01
+	AG-110M	657.75	93.14	-4.61E-04	4.90E-02	4.90E-02
		677.61	10.53	3.31E-02		3.83E-01
		706.67	16.46	-1.36E-02		2.97E-01
		763.93	21.98	6.01E-02		2.20E-01
		884.67	71.63	-2.85E-02		5.76E-02
		1384.27	23.94	-5.11E-02		1.83E-01
+	CD-113M	263.70	0.02	-1.13E+01	1.37E+02	1.37E+02
+	SN-113	255.12	1.93	-7.50E-01	4.95E-02	1.38E+00
		391.69	64.90	1.58E-02		4.95E-02
+	TE123M	159.00	84.10	-9.82E-03	2.53E-02	2.53E-02
+	SB-124	602.71	97.87	1.51E-04	4.71E-02	4.71E-02
		645.85	7.26	-2.09E-01		5.86E-01
		722.78	11.10	2.83E-01		4.84E-01
		1691.02	49.00	2.34E-02		1.31E-01
+	I-125	35.49	6.49	-1.32E-01	6.68E-01	6.68E-01
+	SB-125	176.33	6.89	1.10E-01	1.34E-01	3.58E-01
		427.89	29.33	6.74E-02		1.34E-01
		463.38	10.35	-7.02E-02		3.19E-01
		600.56	17.80	-6.55E-03		2.52E-01
		635.90	11.32	3.63E-02		3.47E-01
+	SB-126	414.70	83.30	1.72E-03	4.06E-02	4.06E-02
		666.33	99.60	-2.14E-03		4.92E-02
		695.00	99.60	-7.80E-03		5.12E-02
		720.50	53.80	6.27E-04		9.34E-02
+	SN-126	87.57	37.00	-7.40E-02	6.17E-02	6.17E-02
+	SB-127	473.00	25.00	-1.29E-02	1.30E-01	1.43E-01
		685.20	35.70	-2.24E-02		1.30E-01
		783.80	14.70	1.04E-01		3.37E-01
+	I-129	29.78	57.00	-1.12E-02	1.11E-01	1.11E-01
		33.60	13.20	1.17E-01		3.74E-01
		39.58	7.52	2.54E-02		4.68E-01
+	I-131	284.30	6.05	7.43E-02	4.34E-02	5.07E-01
		364.48	81.20	9.87E-03		4.34E-02
		636.97	7.26	-2.88E-01		5.13E-01
		722.89	1.80	1.77E+00		3.02E+00
+	TE-132	49.72	13.10	7.98E-02	2.91E-02	2.15E-01
		228.16	88.00	-1.21E-02		2.91E-02

Analysis Report for 1707088-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BA-133	81.00	33.00	-4.98E-02	5.64E-02	6.53E-02
		302.84	17.80	2.36E-02		1.53E-01
		356.01	60.00	-1.71E-02		5.64E-02
+	I-133	529.87	86.30	-1.63E-03	5.08E-02	5.08E-02
+	XE-133	81.00	38.00	-4.43E-02	5.81E-02	5.81E-02
+	CS-134	563.23	8.38	0.00E+00	5.02E-02	5.13E-01
		569.32	15.43	-5.86E-03		2.70E-01
		604.70	97.60	-4.13E-03		5.02E-02
		795.84	85.40	2.15E-02		6.39E-02
		801.93	8.73	1.59E-01		6.29E-01
+	CS-135	268.24	16.00	-4.46E-02	1.76E-01	1.76E-01
+	I-135	1131.51	22.50	-7.23E-02	2.50E-01	2.89E-01
		1260.41	28.60	-4.51E-02		2.50E-01
		1678.03	9.54	-4.32E-01		5.96E-01
+	CS-136	153.22	7.46	-1.33E-01	5.37E-02	2.59E-01
		163.89	4.61	1.63E-01		5.22E-01
		176.55	13.56	1.01E-01		1.89E-01
		273.65	12.66	-3.19E-02		2.09E-01
		340.57	48.50	1.58E-02		5.99E-02
		818.50	99.70	1.73E-03		5.37E-02
		1048.07	79.60	2.23E-02		7.05E-02
		1235.34	19.70	-9.45E-03		3.00E-01
+	CS-137	661.65	85.12	-7.38E-03	5.10E-02	5.10E-02
+	LA-138	788.74	34.00	-8.95E-03	8.37E-02	1.42E-01
		1435.80	66.00	-1.15E-02		8.37E-02
+	CE-139	165.85	80.35	1.43E-04	2.99E-02	2.99E-02
+	BA-140	162.64	6.70	2.39E-01	1.34E-01	3.64E-01
		304.84	4.50	-3.02E-01		5.95E-01
		423.70	3.20	4.09E-01		1.19E+00
		437.55	2.00	-8.59E-02		1.72E+00
		537.32	25.00	3.05E-02		1.34E-01
+	LA-140	328.77	20.50	4.36E-02	4.56E-02	1.76E-01
		487.03	45.50	-6.87E-03		7.89E-02
		815.85	23.50	5.66E-02		2.27E-01
		1596.49	95.49	-4.91E-03		4.56E-02
+	CE-141	145.44	48.40	3.75E-02	4.65E-02	4.65E-02
+	CE-143	57.36	11.80	-2.09E-01	8.54E-02	1.93E-01
		293.26	42.00	1.52E-02		8.54E-02
		664.55	5.20	-2.22E-02		9.72E-01
+	CE-144	133.54	10.80	4.79E-02	1.89E-01	1.89E-01
+	PM-144	476.78	42.00	-2.82E-02	4.47E-02	7.89E-02
		618.01	98.60	-3.65E-03		4.47E-02
		696.49	99.49	2.31E-02		5.43E-02
+	PM-145	36.85	21.70	3.19E-02	1.01E-01	1.89E-01
		37.36	39.70	1.70E-02		1.01E-01
		42.30	15.10	-1.13E-01		2.09E-01
		72.40	2.31	-6.66E-01		9.13E-01
+	PM-146	453.90	39.94	-3.13E-03	9.02E-02	9.02E-02
		735.90	14.01	-1.42E-01		3.53E-01

Analysis Report for 1707088-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-146	747.13	13.10	1.32E-01	9.02E-02	3.83E-01
+	ND-147	91.11	28.90	5.49E-02	9.03E-02	9.03E-02
		531.02	13.10	-1.38E-02		2.78E-01
+	PM-149	285.90	3.10	-1.53E-01	1.03E+00	1.03E+00
+	EU-152	121.78	20.50	1.37E-02	9.11E-02	9.11E-02
		244.69	5.40	-6.62E-02		4.88E-01
		344.27	19.13	-1.13E-02		1.49E-01
		778.89	9.20	-3.98E-02		5.34E-01
		964.01	10.40	7.13E-02		5.55E-01
		1085.78	7.22	1.94E-01		7.23E-01
		1112.02	9.60	-2.36E-01		4.94E-01
		1407.95	14.94	4.25E-02		3.63E-01
+	GD-153	97.43	31.30	-7.65E-02	6.10E-02	6.10E-02
		103.18	22.20	4.35E-02		8.89E-02
+	EU-154	123.07	40.50	-1.94E-02	4.60E-02	4.60E-02
		723.30	19.70	4.53E-02		2.60E-01
		873.19	11.50	-2.10E-01		4.28E-01
		996.32	10.30	6.22E-02		5.16E-01
		1004.76	17.90	-1.27E-01		2.06E-01
		1274.45	35.50	0.00E+00		1.51E-01
+	EU-155	86.50	30.90	-1.78E-02	7.46E-02	7.46E-02
		105.30	20.70	-1.35E-02		9.19E-02
+	EU-156	811.77	10.40	1.26E-01	4.10E-01	4.10E-01
		1153.47	7.20	-2.84E-02		5.84E-01
		1230.71	8.90	-9.91E-03		6.25E-01
+	HO-166M	184.41	72.60	3.10E-02	3.90E-02	3.90E-02
		280.45	29.60	1.80E-02		1.02E-01
		410.94	11.10	-5.00E-02		3.09E-01
		711.69	54.10	1.40E-02		8.85E-02
+	TM-171	66.72	0.14	-5.23E+00	1.72E+01	1.72E+01
+	HF-172	67.35	5.31	-1.37E-01	1.69E-01	4.51E-01
		125.81	11.30	-2.91E-02		1.69E-01
+	LU-172	181.53	20.60	-5.25E-02	8.57E-02	1.26E-01
		900.72	29.81	6.20E-02		1.73E-01
		1093.66	62.50	-1.42E-02		8.57E-02
+	LU-173	100.72	5.24	-2.16E-02	1.23E-01	3.46E-01
		272.11	21.20	-1.40E-02		1.23E-01
+	HF-175	343.40	84.00	-2.57E-03	3.40E-02	3.40E-02
+	LU-176	88.34	13.30	-2.06E-01	2.72E-02	1.72E-01
		201.83	86.00	-1.42E-02		2.72E-02
		306.78	94.00	-4.03E-03		3.13E-02
+	HF-181	133.02	41.70	-3.91E-04	4.64E-02	4.85E-02
		345.85	17.20	-1.28E-02		1.73E-01
		482.03	82.80	2.32E-02		4.64E-02
+	TA-182	67.75	41.20	-3.41E-02	5.45E-02	5.45E-02
		1121.30	34.90	7.40E-02		2.01E-01
		1189.05	16.23	-3.96E-02		2.88E-01
		1221.41	26.98	-2.41E-02		1.46E-01
		1231.02	11.44	-7.50E-02		4.83E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	IR-192	308.46		29.68	-1.16E-02	6.59E-02	1.05E-01
		468.07		48.10	-2.51E-02		6.59E-02
+	HG-203	279.19		77.30	-4.89E-03	3.64E-02	3.64E-02
+	TL-204	374.74		94.11	-8.53E-03	2.95E-02	2.95E-02
		899.15		99.16	-9.83E-03		4.46E-02
		911.74		91.10	3.72E-02		6.23E-02
+	BI-207	569.67		97.72	-9.26E-04	4.26E-02	4.26E-02
		1063.62		74.90	-2.16E-03		6.85E-02
+	TL-208	583.14		30.22	4.29E-02	1.38E-01	1.38E-01
		860.37		4.48	-7.17E-01		8.43E-01
		2614.66		35.85	-3.95E-02		2.39E-01
+	BI-210M	262.00		45.00	5.47E-03	6.79E-02	6.79E-02
		300.00		23.00	-7.45E-02		1.20E-01
+	PB-210	46.50		4.25	5.55E-01	7.15E-01	7.15E-01
+	PB-211	404.84		2.90	3.56E-03	1.26E+00	1.26E+00
		831.96		2.90	1.69E-01		1.74E+00
+	BI-212	727.17		11.80	-1.01E-01	4.36E-01	4.36E-01
		1620.62		2.75	3.42E-01		2.06E+00
+	PB-212	238.63		44.60	2.42E-02	6.37E-02	6.37E-02
		300.09		3.41	-5.03E-01		8.11E-01
+	BI-214	609.31	*	46.30	7.53E-02	1.36E-01	1.36E-01
		1120.29		15.10	1.68E-01		4.64E-01
		1764.49		15.80	0.00E+00		3.48E-01
		2204.22		4.98	0.00E+00		3.51E-01
+	PB-214	295.21		19.19	3.27E-02	9.78E-02	1.68E-01
		351.92		37.19	5.10E-02		9.78E-02
+	RN-219	401.80		6.50	-7.42E-02	5.07E-01	5.07E-01
+	RA-223	323.87		3.88	-4.32E-01	8.02E-01	8.02E-01
+	RA-224	240.98		3.95	6.43E-02	6.89E-01	6.89E-01
+	RA-225	40.00		31.00	6.11E-03	1.13E-01	1.13E-01
+	RA-226	186.21		3.28	5.87E-01	8.70E-01	8.70E-01
+	TH-227	50.10		8.40	1.19E-01	2.42E-01	3.20E-01
		236.00		11.50	1.01E-01		2.42E-01
		256.20		6.30	-1.43E-02		4.37E-01
+	AC-228	338.32		11.40	2.13E-02	2.11E-01	2.71E-01
		911.07		27.70	8.14E-02		2.11E-01
		969.11		16.60	4.68E-02		3.61E-01
+	TH-230	48.44		16.90	1.23E-01	1.73E-01	1.73E-01
		62.85		4.60	4.77E-01		5.95E-01
		67.67		0.37	-3.80E+00		6.06E+00
+	PA-231	283.67		1.60	2.76E-01	1.18E+00	1.88E+00
		302.67		2.30	1.82E-01		1.18E+00
+	TH-231	25.64		14.70	1.10E-01	3.69E-01	7.27E-01
		84.21		6.40	2.17E-01		3.69E-01
+	PA-233	311.98		38.60	4.32E-02	8.98E-02	8.98E-02
+	PA-234	131.20		20.40	-2.93E-02	9.61E-02	9.61E-02
		733.99		8.80	4.13E-01		6.57E-01
		946.00		12.00	-5.94E-02		4.05E-01

Analysis Report for 1707088-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-234M	1001.03	0.92	1.10E+00	4.37E+00	4.37E+00
+	TH-234	63.29	3.80	5.75E-01	7.17E-01	7.17E-01
+	U-235	143.76	10.50	1.98E-02	2.12E-01	2.12E-01
		163.35	4.70	3.38E-01		5.15E-01
		205.31	4.70	-5.03E-02		5.36E-01
+	NP-237	86.50	12.60	-4.35E-02	1.83E-01	1.83E-01
+	NP-239	106.10	22.70	1.67E-02	8.97E-02	8.97E-02
		228.18	10.70	-1.01E-01		2.43E-01
		277.60	14.10	-3.13E-02		2.07E-01
+	AM-241	59.54	35.90	-8.96E-03	7.03E-02	7.03E-02
+	AM-243	74.67	66.00	1.31E-02	3.38E-02	3.38E-02
+	CM-243	209.75	3.29	3.49E-01	1.97E-01	8.44E-01
		228.14	10.60	-9.62E-02		2.33E-01
		277.60	14.00	-2.99E-02		1.97E-01

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = 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	3.19E-01	3.19E-01	-1.37E-01	1.40E-01
	NA-22	1274.54		99.94	5.35E-02	5.35E-02	0.00E+00	2.16E-02
	NA-24	1368.53		99.99	6.49E-02	6.49E-02	-4.95E-03	2.57E-02
		2754.09		99.86	7.74E-02		1.05E-02	2.45E-02
	AL-26	1808.65		99.76	4.87E-02	4.87E-02	-2.36E-02	1.72E-02
+	K-40	1460.81	*	10.67	4.26E-01	4.26E-01	3.29E-01	1.59E-01
	AR-41	1293.64		99.16	3.09E-01	3.09E-01	-2.64E-02	1.27E-01
	TI-44	67.88		94.40	2.37E-02	2.29E-02	-1.49E-02	1.12E-02

Analysis Report for 1707088-02

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TI-44	78.34		96.00	2.29E-02	2.29E-02	1.66E-03	1.08E-02
	SC-46	889.25		99.98	4.60E-02	4.60E-02	1.24E-02	1.93E-02
		1120.51		99.99	7.03E-02		2.54E-02	3.05E-02
	V-48	983.52		99.98	6.30E-02	5.67E-02	1.14E-02	2.74E-02
		1312.10		97.50	5.67E-02		-2.41E-02	2.29E-02
	CR-51	320.08		9.83	2.98E-01	2.98E-01	5.13E-03	1.35E-01
	MN-54	834.83		99.97	5.08E-02	5.08E-02	5.51E-03	2.19E-02
	CO-56	846.75		99.96	5.32E-02	5.32E-02	1.55E-02	2.30E-02
		1037.75		14.03	3.76E-01		-1.02E-01	1.58E-01
		1238.25		67.00	8.76E-02		7.82E-03	3.63E-02
		1771.40		15.51	3.07E-01		1.65E-02	1.09E-01
		2598.48		16.90	1.27E-01		0.00E+00	0.00E+00
	CO-57	122.06		85.51	2.19E-02	2.19E-02	3.28E-03	1.02E-02
		136.48		10.60	1.90E-01		-5.29E-02	8.89E-02
	CO-58	810.76		99.40	4.26E-02	4.26E-02	-1.99E-03	1.78E-02
	FE-59	1099.22		56.50	8.33E-02	8.33E-02	-1.36E-02	3.37E-02
		1291.56		43.20	1.41E-01		1.78E-02	5.86E-02
	CO-60	1173.22		100.00	5.59E-02	3.66E-02	1.76E-02	2.32E-02
		1332.49		100.00	3.66E-02		-6.57E-04	1.30E-02
	ZN-65	1115.52		50.75	1.05E-01	1.05E-01	-1.33E-02	4.37E-02
	GA-67	93.31		35.70	7.36E-02	7.36E-02	8.85E-02	3.51E-02
		208.95		2.24	1.27E+00		2.56E-01	5.92E-01
		300.22		16.00	1.80E-01		-1.11E-01	8.17E-02
	SE-75	121.11		16.70	1.13E-01	3.54E-02	5.95E-02	5.29E-02
		136.00		59.20	3.54E-02		1.66E-02	1.66E-02
		264.65		59.80	5.08E-02		2.21E-02	2.35E-02
		279.53		25.20	1.09E-01		-3.27E-02	4.99E-02
		400.65		11.40	2.78E-01		-5.65E-02	1.24E-01
+	RB-82	776.52	*	13.00	2.43E-01	2.43E-01	1.41E-01	9.61E-02
	RB-83	520.41		46.00	7.02E-02	7.02E-02	-3.46E-02	3.02E-02
		529.64		30.30	1.25E-01		-4.02E-03	5.49E-02
		552.65		16.40	2.29E-01		4.46E-02	9.98E-02
	KR-85	513.99		0.43	1.35E+01	1.35E+01	1.14E+01	6.25E+00
	SR-85	513.99		99.27	5.92E-02	5.92E-02	5.01E-02	2.74E-02
	Y-88	898.02		93.40	4.97E-02	1.45E-02	1.34E-02	2.08E-02
		1836.01		99.38	1.45E-02		0.00E+00	0.00E+00
	MO-93	263.06		56.72	5.27E-02	4.50E-02	-7.09E-03	2.44E-02
		684.67		99.68	4.50E-02		-7.75E-03	1.96E-02
		1477.11		99.08	6.55E-02		1.74E-02	2.68E-02
	NB-93M	16.57		9.43	4.47E+00	4.47E+00	6.08E+00	2.14E+00
	NB-94	702.63		100.00	4.73E-02	4.73E-02	2.22E-03	2.06E-02
		871.10		100.00	5.92E-02		4.60E-02	2.60E-02
	NB-95	765.79		99.81	4.55E-02	4.55E-02	-3.63E-03	1.95E-02
	NB-95M	235.69		25.00	1.15E-01	1.15E-01	4.79E-02	5.35E-02
	ZR-95	724.18		43.70	1.17E-01	7.51E-02	2.05E-02	5.17E-02
		756.72		55.30	7.51E-02		-3.45E-02	3.17E-02
	MO-99	181.06		6.20	4.04E-01	3.95E-01	-1.84E-01	1.88E-01
		739.58		12.80	3.95E-01		-5.72E-02	1.72E-01
		778.00		4.50	1.18E+00		1.70E-01	5.12E-01
	RU-103	497.08		89.00	4.00E-02	4.00E-02	-7.42E-03	1.76E-02
	RU-106	621.84		9.80	4.63E-01	4.63E-01	1.28E-01	2.04E-01
	AG-108M	433.93		89.90	3.82E-02	3.82E-02	-1.36E-03	1.71E-02
		614.37		90.40	4.96E-02		3.18E-03	2.19E-02

Analysis Report for 1707088-02

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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	722.95	90.50	5.92E-02	3.82E-02	3.46E-02	2.62E-02
CD-109	88.03	3.72	6.14E-01	6.14E-01	-7.36E-01	2.91E-01
AG-110M	657.75	93.14	4.90E-02	4.90E-02	-4.61E-04	2.15E-02
	677.61	10.53	3.83E-01		3.31E-02	1.64E-01
	706.67	16.46	2.97E-01		-1.36E-02	1.30E-01
	763.93	21.98	2.20E-01		6.01E-02	9.51E-02
	884.67	71.63	5.76E-02		-2.85E-02	2.36E-02
	1384.27	23.94	1.83E-01		-5.11E-02	6.86E-02
CD-113M	263.70	0.02	1.37E+02	1.37E+02	-1.13E+01	6.37E+01
SN-113	255.12	1.93	1.38E+00	4.95E-02	-7.50E-01	6.33E-01
	391.69	64.90	4.95E-02		1.58E-02	2.22E-02
TE123M	159.00	84.10	2.53E-02	2.53E-02	-9.82E-03	1.18E-02
SB-124	602.71	97.87	4.71E-02	4.71E-02	1.51E-04	2.09E-02
	645.85	7.26	5.86E-01		-2.09E-01	2.55E-01
	722.78	11.10	4.84E-01		2.83E-01	2.14E-01
	1691.02	49.00	1.31E-01		2.34E-02	5.21E-02
I-125	35.49	6.49	6.68E-01	6.68E-01	-1.32E-01	3.15E-01
SB-125	176.33	6.89	3.58E-01	1.34E-01	1.10E-01	1.68E-01
	427.89	29.33	1.34E-01		6.74E-02	6.08E-02
	463.38	10.35	3.19E-01		-7.02E-02	1.40E-01
	600.56	17.80	2.52E-01		-6.55E-03	1.11E-01
	635.90	11.32	3.47E-01		3.63E-02	1.49E-01
SB-126	414.70	83.30	4.06E-02	4.06E-02	1.72E-03	1.81E-02
	666.33	99.60	4.92E-02		-2.14E-03	2.17E-02
	695.00	99.60	5.12E-02		-7.80E-03	2.26E-02
	720.50	53.80	9.34E-02		6.27E-04	4.09E-02
SN-126	87.57	37.00	6.17E-02	6.17E-02	-7.40E-02	2.93E-02
SB-127	473.00	25.00	1.43E-01	1.30E-01	-1.29E-02	6.29E-02
	685.20	35.70	1.30E-01		-2.24E-02	5.65E-02
	783.80	14.70	3.37E-01		1.04E-01	1.45E-01
I-129	29.78	57.00	1.11E-01	1.11E-01	-1.12E-02	5.24E-02
	33.60	13.20	3.74E-01		1.17E-01	1.76E-01
	39.58	7.52	4.68E-01		2.54E-02	2.20E-01
I-131	284.30	6.05	5.07E-01	4.34E-02	7.43E-02	2.33E-01
	364.48	81.20	4.34E-02		9.87E-03	1.98E-02
	636.97	7.26	5.13E-01		-2.88E-01	2.18E-01
	722.89	1.80	3.02E+00		1.77E+00	1.34E+00
TE-132	49.72	13.10	2.15E-01	2.91E-02	7.98E-02	1.01E-01
	228.16	88.00	2.91E-02		-1.21E-02	1.34E-02
BA-133	81.00	33.00	6.53E-02	5.64E-02	-4.98E-02	3.09E-02
	302.84	17.80	1.53E-01		2.36E-02	6.90E-02
	356.01	60.00	5.64E-02		-1.71E-02	2.57E-02
I-133	529.87	86.30	5.08E-02	5.08E-02	-1.63E-03	2.23E-02
XE-133	81.00	38.00	5.81E-02	5.81E-02	-4.43E-02	2.75E-02
CS-134	563.23	8.38	5.13E-01	5.02E-02	0.00E+00	2.28E-01
	569.32	15.43	2.70E-01		-5.86E-03	1.19E-01
	604.70	97.60	5.02E-02		-4.13E-03	2.24E-02
	795.84	85.40	6.39E-02		2.15E-02	2.80E-02
	801.93	8.73	6.29E-01		1.59E-01	2.76E-01
CS-135	268.24	16.00	1.76E-01	1.76E-01	-4.46E-02	8.10E-02
I-135	1131.51	22.50	2.89E-01	2.50E-01	-7.23E-02	1.12E-01
	1260.41	28.60	2.50E-01		-4.51E-02	9.70E-02
	1678.03	9.54	5.96E-01		-4.32E-01	1.88E-01

Analysis Report for 1707088-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CS-136	153.22	7.46	2.59E-01	5.37E-02	-1.33E-01	1.20E-01
	163.89	4.61	5.22E-01		1.63E-01	2.45E-01
	176.55	13.56	1.89E-01		1.01E-01	8.85E-02
	273.65	12.66	2.09E-01		-3.19E-02	9.54E-02
	340.57	48.50	5.99E-02		1.58E-02	2.69E-02
	818.50	99.70	5.37E-02		1.73E-03	2.33E-02
	1048.07	79.60	7.05E-02		2.23E-02	2.98E-02
	1235.34	19.70	3.00E-01		-9.45E-03	1.24E-01
CS-137	661.65	85.12	5.10E-02	5.10E-02	-7.38E-03	2.22E-02
LA-138	788.74	34.00	1.42E-01	8.37E-02	-8.95E-03	6.10E-02
	1435.80	66.00	8.37E-02		-1.15E-02	3.32E-02
CE-139	165.85	80.35	2.99E-02	2.99E-02	1.43E-04	1.40E-02
BA-140	162.64	6.70	3.64E-01	1.34E-01	2.39E-01	1.71E-01
	304.84	4.50	5.95E-01		-3.02E-01	2.69E-01
	423.70	3.20	1.19E+00		4.09E-01	5.39E-01
	437.55	2.00	1.72E+00		-8.59E-02	7.64E-01
	537.32	25.00	1.34E-01		3.05E-02	5.79E-02
LA-140	328.77	20.50	1.76E-01	4.56E-02	4.36E-02	8.11E-02
	487.03	45.50	7.89E-02		-6.87E-03	3.48E-02
	815.85	23.50	2.27E-01		5.66E-02	9.88E-02
	1596.49	95.49	4.56E-02		-4.91E-03	1.61E-02
CE-141	145.44	48.40	4.65E-02	4.65E-02	3.75E-02	2.18E-02
CE-143	57.36	11.80	1.93E-01	8.54E-02	-2.09E-01	9.02E-02
	293.26	42.00	8.54E-02		1.52E-02	3.95E-02
	664.55	5.20	9.72E-01		-2.22E-02	4.26E-01
CE-144	133.54	10.80	1.89E-01	1.89E-01	4.79E-02	8.87E-02
PM-144	476.78	42.00	7.89E-02	4.47E-02	-2.82E-02	3.46E-02
	618.01	98.60	4.47E-02		-3.65E-03	1.96E-02
	696.49	99.49	5.43E-02		2.31E-02	2.41E-02
PM-145	36.85	21.70	1.89E-01	1.01E-01	3.19E-02	8.90E-02
	37.36	39.70	1.01E-01		1.70E-02	4.76E-02
	42.30	15.10	2.09E-01		-1.13E-01	9.83E-02
	72.40	2.31	9.13E-01		-6.66E-01	4.30E-01
PM-146	453.90	39.94	9.02E-02	9.02E-02	-3.13E-03	4.02E-02
	735.90	14.01	3.53E-01		-1.42E-01	1.54E-01
	747.13	13.10	3.83E-01		1.32E-01	1.67E-01
ND-147	91.11	28.90	9.03E-02	9.03E-02	5.49E-02	4.31E-02
	531.02	13.10	2.78E-01		-1.38E-02	1.21E-01
PM-149	285.90	3.10	1.03E+00	1.03E+00	-1.53E-01	4.72E-01
EU-152	121.78	20.50	9.11E-02	9.11E-02	1.37E-02	4.25E-02
	244.69	5.40	4.88E-01		-6.62E-02	2.25E-01
	344.27	19.13	1.49E-01		-1.13E-02	6.71E-02
	778.89	9.20	5.34E-01		-3.98E-02	2.31E-01
	964.01	10.40	5.55E-01		7.13E-02	2.39E-01
	1085.78	7.22	7.23E-01		1.94E-01	3.00E-01
	1112.02	9.60	4.94E-01		-2.36E-01	2.00E-01
	1407.95	14.94	3.63E-01		4.25E-02	1.44E-01
GD-153	97.43	31.30	6.10E-02	6.10E-02	-7.65E-02	2.86E-02
	103.18	22.20	8.89E-02		4.35E-02	4.18E-02
EU-154	123.07	40.50	4.60E-02	4.60E-02	-1.94E-02	2.15E-02
	723.30	19.70	2.60E-01		4.53E-02	1.14E-01
	873.19	11.50	4.28E-01		-2.10E-01	1.82E-01
	996.32	10.30	5.16E-01		6.22E-02	2.18E-01

Analysis Report for 1707088-02

BLANK

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-154	1004.76		17.90	2.06E-01	4.60E-02	-1.27E-01	7.99E-02
		1274.45		35.50	1.51E-01		0.00E+00	6.08E-02
	EU-155	86.50		30.90	7.46E-02	7.46E-02	-1.78E-02	3.54E-02
		105.30		20.70	9.19E-02		-1.35E-02	4.31E-02
	EU-156	811.77		10.40	4.10E-01	4.10E-01	1.26E-01	1.72E-01
		1153.47		7.20	5.84E-01		-2.84E-02	2.26E-01
		1230.71		8.90	6.25E-01		-9.91E-03	2.56E-01
	HO-166M	184.41		72.60	3.90E-02	3.90E-02	3.10E-02	1.84E-02
		280.45		29.60	1.02E-01		1.80E-02	4.68E-02
		410.94		11.10	3.09E-01		-5.00E-02	1.39E-01
		711.69		54.10	8.85E-02		1.40E-02	3.86E-02
	TM-171	66.72		0.14	1.72E+01	1.72E+01	-5.23E+00	8.14E+00
	HF-172	67.35		5.31	4.51E-01	1.69E-01	-1.37E-01	2.14E-01
		125.81		11.30	1.69E-01		-2.91E-02	7.88E-02
	LU-172	181.53		20.60	1.26E-01	8.57E-02	-5.25E-02	5.89E-02
		900.72		29.81	1.73E-01		6.20E-02	7.36E-02
		1093.66		62.50	8.57E-02		-1.42E-02	3.55E-02
	LU-173	100.72		5.24	3.46E-01	1.23E-01	-2.16E-02	1.62E-01
		272.11		21.20	1.23E-01		-1.40E-02	5.61E-02
	HF-175	343.40		84.00	3.40E-02	3.40E-02	-2.57E-03	1.53E-02
	LU-176	88.34		13.30	1.72E-01	2.72E-02	-2.06E-01	8.15E-02
		201.83		86.00	2.72E-02		-1.42E-02	1.26E-02
		306.78		94.00	3.13E-02		-4.03E-03	1.43E-02
	HF-181	133.02		41.70	4.85E-02	4.64E-02	-3.91E-04	2.27E-02
		345.85		17.20	1.73E-01		-1.28E-02	7.80E-02
		482.03		82.80	4.64E-02		2.32E-02	2.07E-02
	TA-182	67.75		41.20	5.45E-02	5.45E-02	-3.41E-02	2.57E-02
		1121.30		34.90	2.01E-01		7.40E-02	8.75E-02
		1189.05		16.23	2.88E-01		-3.96E-02	1.14E-01
		1221.41		26.98	1.46E-01		-2.41E-02	5.46E-02
		1231.02		11.44	4.83E-01		-7.50E-02	1.98E-01
	IR-192	308.46		29.68	1.05E-01	6.59E-02	-1.16E-02	4.80E-02
		468.07		48.10	6.59E-02		-2.51E-02	2.88E-02
	HG-203	279.19		77.30	3.64E-02	3.64E-02	-4.89E-03	1.67E-02
	TL-204	374.74		94.11	2.95E-02	2.95E-02	-8.53E-03	1.31E-02
		899.15		99.16	4.46E-02		-9.83E-03	1.85E-02
		911.74		91.10	6.23E-02		3.72E-02	2.69E-02
	BI-207	569.67		97.72	4.26E-02	4.26E-02	-9.26E-04	1.88E-02
		1063.62		74.90	6.85E-02		-2.16E-03	2.84E-02
	TL-208	583.14		30.22	1.38E-01	1.38E-01	4.29E-02	6.05E-02
		860.37		4.48	8.43E-01		-7.17E-01	3.40E-01
		2614.66		35.85	2.39E-01		-3.95E-02	8.96E-02
	BI-210M	262.00		45.00	6.79E-02	6.79E-02	5.47E-03	3.15E-02
		300.00		23.00	1.20E-01		-7.45E-02	5.46E-02
	PB-210	46.50		4.25	7.15E-01	7.15E-01	5.55E-01	3.38E-01
	PB-211	404.84		2.90	1.26E+00	1.26E+00	3.56E-03	5.71E-01
		831.96		2.90	1.74E+00		1.69E-01	7.51E-01
	BI-212	727.17		11.80	4.36E-01	4.36E-01	-1.01E-01	1.92E-01
		1620.62		2.75	2.06E+00		3.42E-01	7.96E-01
	PB-212	238.63		44.60	6.37E-02	6.37E-02	2.42E-02	2.96E-02
		300.09		3.41	8.11E-01		-5.03E-01	3.68E-01
+	BI-214	609.31	*	46.30	1.36E-01	1.36E-01	7.53E-02	6.24E-02
		1120.29		15.10	4.64E-01		1.68E-01	2.02E-01

Analysis Report for 1707088-02

BLANK

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BI-214	1764.49	15.80	3.48E-01	1.36E-01	0.00E+00	1.30E-01
	2204.22	4.98	3.51E-01		0.00E+00	0.00E+00
PB-214	295.21	19.19	1.68E-01	9.78E-02	3.27E-02	7.77E-02
	351.92	37.19	9.78E-02		5.10E-02	4.49E-02
RN-219	401.80	6.50	5.07E-01	5.07E-01	-7.42E-02	2.27E-01
RA-223	323.87	3.88	8.02E-01	8.02E-01	-4.32E-01	3.66E-01
RA-224	240.98	3.95	6.89E-01	6.89E-01	6.43E-02	3.19E-01
RA-225	40.00	31.00	1.13E-01	1.13E-01	6.11E-03	5.30E-02
RA-226	186.21	3.28	8.70E-01	8.70E-01	5.87E-01	4.10E-01
TH-227	50.10	8.40	3.20E-01	2.42E-01	1.19E-01	1.51E-01
	236.00	11.50	2.42E-01		1.01E-01	1.12E-01
	256.20	6.30	4.37E-01		-1.43E-02	2.01E-01
AC-228	338.32	11.40	2.71E-01	2.11E-01	2.13E-02	1.23E-01
	911.07	27.70	2.11E-01		8.14E-02	9.17E-02
	969.11	16.60	3.61E-01		4.68E-02	1.56E-01
TH-230	48.44	16.90	1.73E-01	1.73E-01	1.23E-01	8.19E-02
	62.85	4.60	5.95E-01		4.77E-01	2.84E-01
	67.67	0.37	6.06E+00		-3.80E+00	2.86E+00
PA-231	283.67	1.60	1.88E+00	1.18E+00	2.76E-01	8.66E-01
	302.67	2.30	1.18E+00		1.82E-01	5.34E-01
TH-231	25.64	14.70	7.27E-01	3.69E-01	1.10E-01	3.46E-01
	84.21	6.40	3.69E-01		2.17E-01	1.75E-01
PA-233	311.98	38.60	8.98E-02	8.98E-02	4.32E-02	4.15E-02
PA-234	131.20	20.40	9.61E-02	9.61E-02	-2.93E-02	4.49E-02
	733.99	8.80	6.57E-01		4.13E-01	2.93E-01
	946.00	12.00	4.05E-01		-5.94E-02	1.70E-01
PA-234M	1001.03	0.92	4.37E+00	4.37E+00	1.10E+00	1.73E+00
TH-234	63.29	3.80	7.17E-01	7.17E-01	5.75E-01	3.42E-01
U-235	143.76	10.50	2.12E-01	2.12E-01	1.98E-02	9.95E-02
	163.35	4.70	5.15E-01		3.38E-01	2.42E-01
	205.31	4.70	5.36E-01		-5.03E-02	2.49E-01
NP-237	86.50	12.60	1.83E-01	1.83E-01	-4.35E-02	8.68E-02
NP-239	106.10	22.70	8.97E-02	8.97E-02	1.67E-02	4.21E-02
	228.18	10.70	2.43E-01		-1.01E-01	1.12E-01
	277.60	14.10	2.07E-01		-3.13E-02	9.46E-02
AM-241	59.54	35.90	7.03E-02	7.03E-02	-8.96E-03	3.33E-02
AM-243	74.67	66.00	3.38E-02	3.38E-02	1.31E-02	1.60E-02
CM-243	209.75	3.29	8.44E-01	1.97E-01	3.49E-01	3.95E-01
	228.14	10.60	2.33E-01		-9.62E-02	1.07E-01
	277.60	14.00	1.97E-01		-2.99E-02	9.02E-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 1707088-02
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: 3611

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	1	55
17:	39	35	31	30	26	27	32	14
25:	21	14	16	16	11	16	10	14
33:	13	12	14	17	7	13	16	14
41:	10	8	9	13	17	18	21	14
49:	7	11	6	14	5	11	11	7
57:	11	11	12	21	22	25	26	20
65:	13	9	21	13	11	12	19	9
73:	12	16	20	21	9	12	14	13
81:	23	11	20	14	25	19	12	15
89:	14	18	22	44	26	12	8	9
97:	8	3	13	16	9	11	10	9
105:	15	9	13	11	8	8	9	13
113:	11	10	7	4	9	9	7	14
121:	11	10	8	7	8	12	15	7
129:	8	10	8	15	5	12	13	10
137:	9	11	9	5	18	8	15	13
145:	9	12	16	7	3	2	15	5
153:	10	9	9	10	8	6	11	11
161:	8	9	16	8	17	8	7	12
169:	15	9	11	4	7	11	20	13
177:	6	13	8	7	9	8	15	15
185:	20	16	9	9	7	11	9	9
193:	9	5	6	8	14	7	8	6
201:	11	4	10	6	8	11	9	6
209:	7	12	15	10	8	8	7	6
217:	2	7	5	7	9	11	8	8
225:	7	7	6	5	9	4	7	9
233:	5	5	9	11	10	7	3	9
241:	8	9	5	13	1	3	7	4
249:	11	3	10	4	6	2	6	8
257:	7	13	7	7	6	7	8	7
265:	10	13	2	4	4	4	4	9
273:	8	3	6	2	9	5	4	10
281:	4	4	10	7	7	3	5	8
289:	6	8	6	2	7	14	7	9
297:	3	4	6	4	3	4	7	4
305:	3	4	4	9	5	4	11	7
313:	7	6	3	7	3	3	8	1
321:	7	3	8	1	11	5	11	8
329:	2	7	3	7	5	7	2	3
337:	8	3	5	4	2	4	1	5
345:	1	9	3	5	5	6	6	7
353:	7	6	2	1	6	6	8	5
361:	8	4	6	3	7	2	5	3

369:	2	3	3	4	4	4	3	1

Sample Title: BLANK

Channel								
377:	1	3	6	5	3	4	3	2
385:	4	2	4	6	3	4	0	5
393:	5	2	2	2	4	1	2	4
401:	3	3	6	6	6	5	2	8
409:	3	3	3	2	5	4	3	2
417:	5	6	1	8	3	3	3	2
425:	7	4	2	3	8	6	2	2
433:	3	3	4	3	1	3	3	5
441:	2	6	0	5	5	7	5	6
449:	2	2	5	4	5	1	2	4
457:	5	1	1	3	2	5	4	1
465:	2	1	4	5	1	2	2	3
473:	6	2	3	1	2	1	2	6
481:	2	4	3	5	1	2	2	1
489:	5	3	3	2	3	8	1	0
497:	1	2	3	3	4	2	5	4
505:	3	3	1	8	6	17	10	8
513:	7	2	3	4	2	1	0	3
521:	3	4	0	2	4	4	2	4
529:	2	3	2	1	2	3	0	2
537:	1	2	4	1	1	1	1	4
545:	8	2	4	3	2	1	2	1
553:	3	5	2	2	2	4	3	1
561:	2	3	4	7	1	2	4	4
569:	3	4	1	1	4	5	0	9
577:	2	3	2	3	4	3	4	0
585:	2	2	0	5	3	3	3	1
593:	2	2	2	3	2	3	5	3
601:	4	1	2	5	1	2	9	4
609:	4	2	1	2	3	3	3	4
617:	3	4	0	1	3	3	6	2
625:	1	2	3	1	1	0	0	3
633:	3	2	0	0	3	2	1	4
641:	4	0	2	2	1	2	2	6
649:	1	3	4	1	2	3	2	2
657:	1	1	2	3	1	3	0	2
665:	2	1	1	4	5	1	1	1
673:	0	1	0	3	2	2	1	1
681:	2	3	1	1	1	4	1	1
689:	4	1	1	2	4	2	3	0
697:	5	1	3	2	2	1	1	2
705:	2	2	0	2	4	3	3	1
713:	1	0	2	0	2	3	3	2
721:	4	2	1	0	2	3	1	0
729:	2	7	0	4	1	3	3	1
737:	2	1	1	2	1	2	2	1
745:	3	1	0	3	1	3	1	0
753:	1	1	0	2	2	1	3	0
761:	1	3	1	0	2	3	1	1
769:	0	2	1	0	1	2	2	4
777:	2	0	1	2	1	0	0	3
785:	0	3	3	0	1	0	1	2
793:	3	2	2	3	1	1	2	2

801:	1	3	3	2	2	0	0	1

Sample Title: BLANK

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

1233:	1	1	1	0	1	3	1	0

Sample Title: BLANK

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

1665:	0	1	1	1	0	0	0	1

Sample Title: BLANK

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

2097:	1	0	0	0	0	0	1	0

Sample Title: BLANK

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

2529:	0	0	0	0	0	0	0	0

Sample Title: BLANK

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

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

3393:	0	1	0	0	0	0	0	0

Sample Title: BLANK

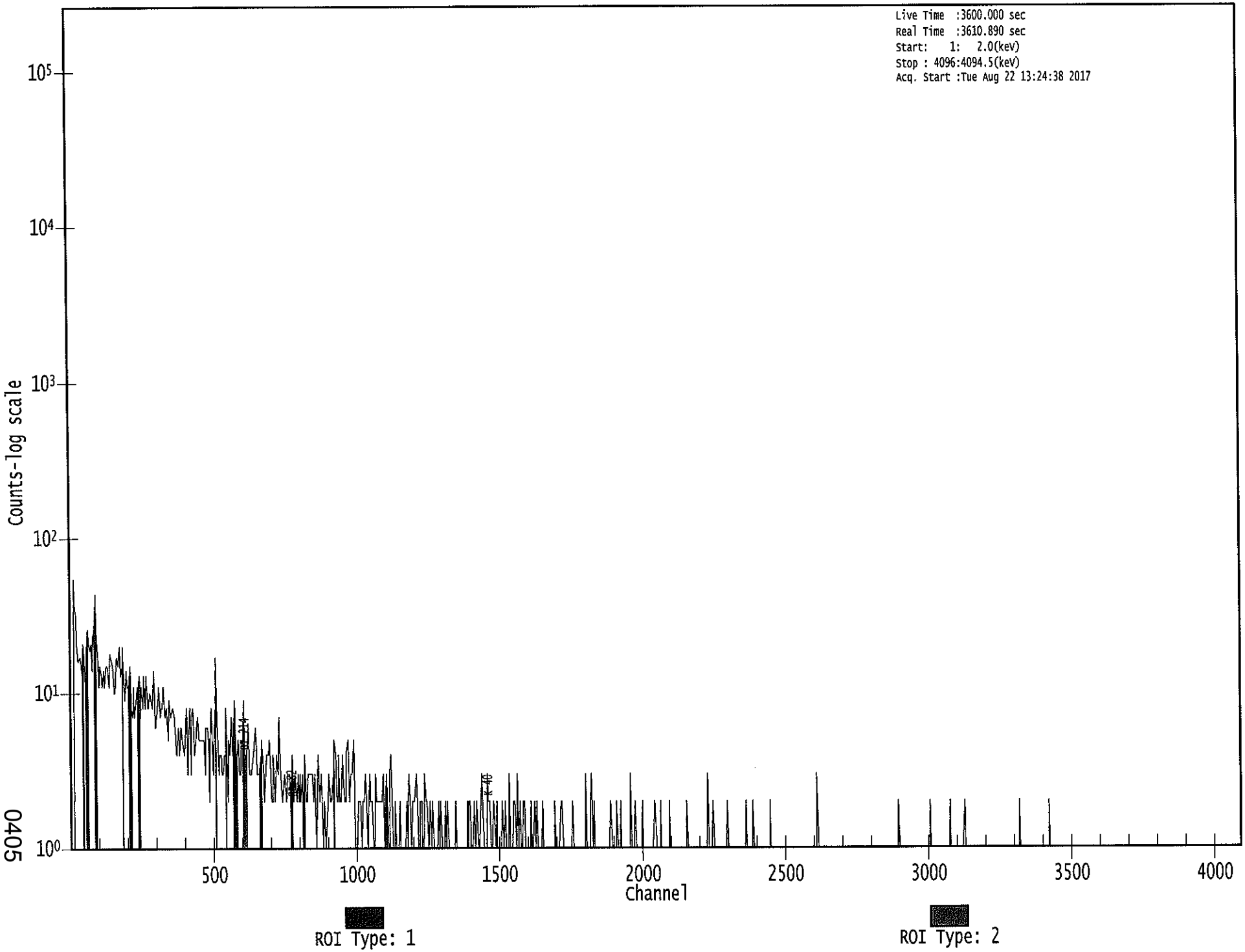
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	2	0	0
3425:	0	0	0	0	1	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	1	0	0	1	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	1	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	1	0	0	0	0	0	0
3497:	1	1	0	0	0	0	0	0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

3825:	0	0	0	0	1	0	0	0

Sample Title: BLANK

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

0000055727.CNF



0405

KB 8/22/17

Apex-Gamma

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-03
Sample Description	: HTC-A03-S003-3642-01
Sample Type	: SOIL
Sample Size	: 7.134E+02 grams
Facility	: Countroom
Sample Taken On	: 5/15/2017 9:30:05AM
Acquisition Started	: 8/22/2017 1:12:01PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.1 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 8/19/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55723

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 8/23/17

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 2:12:29PM
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	76.14	76.46	0.0000	0.00
2	93.25	93.55	0.0000	0.00
3	143.73	143.97	0.0000	0.00
4	186.03	186.22	0.0000	0.00
5	205.99	206.17	0.0000	0.00
6	209.66	209.83	0.0000	0.00
7	238.77	238.91	0.0000	0.00
8	241.88	242.01	0.0000	0.00
9	270.46	270.56	0.0000	0.00
10	295.23	295.31	0.0000	0.00
11	300.71	300.78	0.0000	0.00
12	329.77	329.81	0.0000	0.00
13	338.52	338.55	0.0000	0.00
14	351.94	351.96	0.0000	0.00
15	463.81	463.71	0.0000	0.00
16	510.58	510.43	0.0000	0.00
17	583.47	583.25	0.0000	0.00
18	609.50	609.25	0.0000	0.00
19	666.22	665.92	0.0000	0.00
20	727.24	726.88	0.0000	0.00
21	769.30	768.90	0.0000	0.00
22	860.88	860.39	0.0000	0.00
23	911.50	910.96	0.0000	0.00
24	949.74	949.17	0.0000	0.00
25	969.74	969.15	0.0000	0.00
26	1047.68	1047.01	0.0000	0.00
27	1120.82	1120.09	0.0000	0.00
28	1378.16	1377.21	0.0000	0.00
29	1402.21	1401.24	0.0000	0.00
30	1461.31	1460.29	0.0000	0.00
31	1581.71	1580.58	0.0000	0.00
32	1588.65	1587.52	0.0000	0.00
33	1593.95	1592.82	0.0000	0.00
34	1619.97	1618.81	0.0000	0.00
35	1708.60	1707.37	0.0000	0.00
36	1729.96	1728.72	0.0000	0.00
37	1764.63	1763.36	0.0000	0.00
38	1849.53	1848.19	0.0000	0.00
39	2060.80	2059.31	0.0000	0.00
40	2103.78	2102.26	0.0000	0.00
41	2183.41	2181.83	0.0000	0.00
42	2204.57	2202.98	0.0000	0.00

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	2470.61	2468.83	0.0000	0.00
44	2614.93	2613.06	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 2:12:29PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	76.14	72 -	83	76.46	9.39E+02	153.84	2.49E+03	3.81
	2	93.25	91 -	96	93.55	1.70E+02	83.31	1.20E+03	1.65
	3	143.73	141 -	147	143.97	1.11E+02	69.43	7.98E+02	2.78
	4	186.03	182 -	189	186.22	1.81E+02	73.38	7.71E+02	1.37
M	5	205.99	205 -	213	206.17	2.60E+01	23.52	1.50E+02	1.38
m	6	209.66	205 -	213	209.83	1.33E+02	53.97	4.76E+02	2.09
M	7	238.77	234 -	245	238.91	7.58E+02	70.54	3.74E+02	1.60
m	8	241.88	234 -	245	242.01	1.34E+02	50.80	3.14E+02	1.61
	9	270.46	268 -	274	270.56	6.06E+01	51.37	4.39E+02	1.49
	10	295.23	292 -	299	295.31	2.27E+02	61.16	4.80E+02	1.69
	11	300.71	299 -	304	300.78	3.67E+01	41.74	3.21E+02	1.85
	12	329.77	325 -	334	329.81	9.55E+01	57.30	4.13E+02	2.19
	13	338.52	335 -	343	338.55	1.72E+02	56.44	3.87E+02	2.08
	14	351.94	348 -	355	351.96	3.63E+02	60.89	3.76E+02	1.43
	15	463.81	460 -	468	463.71	8.09E+01	41.23	2.12E+02	1.70
	16	510.58	505 -	515	510.43	1.90E+02	49.94	2.32E+02	2.83
	17	583.47	579 -	586	583.25	2.35E+02	45.74	1.92E+02	1.69
	18	609.50	605 -	612	609.25	2.73E+02	49.36	2.24E+02	1.85
	19	666.22	663 -	669	665.92	2.98E+01	26.83	1.10E+02	2.06
	20	727.24	721 -	731	726.88	6.30E+01	42.18	2.04E+02	2.22
	21	769.30	764 -	773	768.90	3.91E+01	34.67	1.48E+02	7.45
	22	860.88	856 -	863	860.39	3.05E+01	26.83	9.91E+01	2.27
	23	911.50	906 -	914	910.96	1.65E+02	37.29	1.12E+02	1.91
	24	949.74	944 -	954	949.17	3.62E+01	31.06	1.08E+02	2.12
	25	969.74	966 -	974	969.15	7.96E+01	37.55	1.51E+02	2.15
	26	1047.68	1038 -	1054	1047.01	4.22E+01	42.10	1.52E+02	10.28
	27	1120.82	1114 -	1125	1120.09	6.62E+01	37.63	1.44E+02	2.11
	28	1378.16	1373 -	1382	1377.21	2.82E+01	17.00	2.56E+01	4.20
	29	1402.21	1399 -	1404	1401.24	9.56E+00	10.00	1.29E+01	2.61
	30	1461.31	1453 -	1466	1460.29	8.64E+02	61.92	4.25E+01	2.40
	31	1581.71	1577 -	1583	1580.58	1.20E+01	6.93	0.00E+00	3.81
M	32	1588.65	1584 -	1595	1587.52	2.17E+01	12.33	8.23E+00	3.29
m	33	1593.95	1584 -	1595	1592.82	9.67E+00	9.75	1.47E+01	3.29
	34	1619.97	1614 -	1623	1618.81	9.79E+00	13.27	1.84E+01	1.02
	35	1708.60	1704 -	1710	1707.37	5.36E+00	6.34	3.29E+00	1.25
	36	1729.96	1724 -	1733	1728.72	8.63E+00	11.79	1.48E+01	1.72
	37	1764.63	1757 -	1767	1763.36	5.81E+01	18.83	1.57E+01	2.86
	38	1849.53	1844 -	1851	1848.19	9.00E+00	9.17	8.00E+00	3.87
	39	2060.80	2057 -	2062	2059.31	6.88E+00	6.40	2.25E+00	3.14
	40	2103.78	2097 -	2105	2102.26	2.23E+01	12.02	7.38E+00	3.18

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	2183.41	2177 -	2185	2181.83	1.20E+01	6.93	0.00E+00	1.45
42	2204.57	2197 -	2208	2202.98	2.00E+01	13.27	1.20E+01	2.46
43	2470.61	2466 -	2471	2468.83	6.00E+00	4.90	0.00E+00	2.74
44	2614.93	2606 -	2617	2613.06	9.80E+01	19.80	0.00E+00	3.15

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 : 8/22/2017 2:12:29PM

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	76.14	72 -	83	9.39E+02	153.84	2.49E+03	1.16E+02
	2	93.25	91 -	96	1.70E+02	83.31	1.20E+03	6.50E+01
	3	143.73	141 -	147	1.11E+02	69.43	7.98E+02	5.44E+01
	4	186.03	182 -	189	1.81E+02	73.38	7.71E+02	5.61E+01
M	5	205.99	205 -	213	2.60E+01	23.52	1.50E+02	2.02E+01
m	6	209.66	205 -	213	1.33E+02	53.97	4.76E+02	3.59E+01
M	7	238.77	234 -	245	7.58E+02	70.54	3.74E+02	3.18E+01
m	8	241.88	234 -	245	1.34E+02	50.80	3.14E+02	2.91E+01
	9	270.46	268 -	274	6.06E+01	51.37	4.39E+02	4.02E+01
	10	295.23	292 -	299	2.27E+02	61.16	4.80E+02	4.37E+01
	11	300.71	299 -	304	3.67E+01	41.74	3.21E+02	3.28E+01
	12	329.77	325 -	334	9.55E+01	57.30	4.13E+02	4.43E+01
	13	338.52	335 -	343	1.72E+02	56.44	3.87E+02	4.11E+01
	14	351.94	348 -	355	3.63E+02	60.89	3.76E+02	3.91E+01
	15	463.81	460 -	468	8.09E+01	41.23	2.12E+02	3.05E+01
	16	510.58	505 -	515	1.90E+02	49.94	2.32E+02	3.42E+01
	17	583.47	579 -	586	2.35E+02	45.74	1.92E+02	2.79E+01
	18	609.50	605 -	612	2.73E+02	49.36	2.24E+02	3.01E+01
	19	666.22	663 -	669	2.98E+01	26.83	1.10E+02	2.01E+01
	20	727.24	721 -	731	6.30E+01	42.18	2.04E+02	3.21E+01
	21	769.30	764 -	773	3.91E+01	34.67	1.48E+02	2.66E+01
	22	860.88	856 -	863	3.05E+01	26.83	9.91E+01	2.01E+01
	23	911.50	906 -	914	1.65E+02	37.29	1.12E+02	2.22E+01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	24	949.74	944 -	954	3.62E+01	31.06	1.08E+02	2.35E+01
	25	969.74	966 -	974	7.96E+01	37.55	1.51E+02	2.72E+01
	26	1047.68	1038 -	1054	4.22E+01	42.10	1.52E+02	3.29E+01
	27	1120.82	1114 -	1125	6.62E+01	37.63	1.44E+02	2.79E+01
	28	1378.16	1373 -	1382	2.82E+01	17.00	2.56E+01	1.09E+01
	29	1402.21	1399 -	1404	9.56E+00	10.00	1.29E+01	6.46E+00
	30	1461.31	1453 -	1466	8.64E+02	61.92	4.25E+01	1.60E+01
	31	1581.71	1577 -	1583	1.20E+01	6.93	0.00E+00	0.00E+00
M	32	1588.65	1584 -	1595	2.17E+01	12.33	8.23E+00	4.72E+00
m	33	1593.95	1584 -	1595	9.67E+00	9.75	1.47E+01	6.30E+00
	34	1619.97	1614 -	1623	9.79E+00	13.27	1.84E+01	9.62E+00
	35	1708.60	1704 -	1710	5.36E+00	6.34	3.29E+00	3.57E+00
	36	1729.96	1724 -	1733	8.63E+00	11.79	1.48E+01	8.40E+00
	37	1764.63	1757 -	1767	5.81E+01	18.83	1.57E+01	9.09E+00
	38	1849.53	1844 -	1851	9.00E+00	9.17	8.00E+00	5.70E+00
	39	2060.80	2057 -	2062	6.88E+00	6.40	2.25E+00	3.02E+00
	40	2103.78	2097 -	2105	2.23E+01	12.02	7.38E+00	6.11E+00
	41	2183.41	2177 -	2185	1.20E+01	6.93	0.00E+00	0.00E+00
	42	2204.57	2197 -	2208	2.00E+01	13.27	1.20E+01	8.05E+00
	43	2470.61	2466 -	2471	6.00E+00	4.90	0.00E+00	0.00E+00
	44	2614.93	2606 -	2617	9.80E+01	19.80	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 : 8/22/2017 2:12:29PM

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	76.14	72 -	83	76.46	9.39E+02	153.84	2.49E+03	.....
2	93.25	91 -	96	93.55	1.70E+02	83.31	1.20E+03	GA-67
3	143.73	141 -	147	143.97	1.11E+02	69.43	7.98E+02	U-235
4	186.03	182 -	189	186.22	1.81E+02	73.38	7.71E+02	RA-226

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	5	205.99	205 -	213	206.17	2.60E+01	23.52	1.50E+02	U-235
m	6	209.66	205 -	213	209.83	1.33E+02	53.97	4.76E+02	CM-243
									GA-67
M	7	238.77	234 -	245	238.91	7.58E+02	70.54	3.74E+02	PB-212
m	8	241.88	234 -	245	242.01	1.34E+02	50.80	3.14E+02	RA-224
	9	270.46	268 -	274	270.56	6.06E+01	51.37	4.39E+02	.....
	10	295.23	292 -	299	295.31	2.27E+02	61.16	4.80E+02	PB-214
	11	300.71	299 -	304	300.78	3.67E+01	41.74	3.21E+02	GA-67
									PB-212
									BI-210M
	12	329.77	325 -	334	329.81	9.55E+01	57.30	4.13E+02	.....
	13	338.52	335 -	343	338.55	1.72E+02	56.44	3.87E+02	AC-228
	14	351.94	348 -	355	351.96	3.63E+02	60.89	3.76E+02	PB-214
	15	463.81	460 -	468	463.71	8.09E+01	41.23	2.12E+02	SB-125
	16	510.58	505 -	515	510.43	1.90E+02	49.94	2.32E+02	.....
	17	583.47	579 -	586	583.25	2.35E+02	45.74	1.92E+02	TL-208
	18	609.50	605 -	612	609.25	2.73E+02	49.36	2.24E+02	BI-214
	19	666.22	663 -	669	665.92	2.98E+01	26.83	1.10E+02	SB-126
	20	727.24	721 -	731	726.88	6.30E+01	42.18	2.04E+02	BI-212
	21	769.30	764 -	773	768.90	3.91E+01	34.67	1.48E+02	.....
	22	860.88	856 -	863	860.39	3.05E+01	26.83	9.91E+01	TL-208
	23	911.50	906 -	914	910.96	1.65E+02	37.29	1.12E+02	TL-204
									AC-228
	24	949.74	944 -	954	949.17	3.62E+01	31.06	1.08E+02	.....
	25	969.74	966 -	974	969.15	7.96E+01	37.55	1.51E+02	AC-228
	26	1047.68	1038 -	1054	1047.01	4.22E+01	42.10	1.52E+02	CS-136
	27	1120.82	1114 -	1125	1120.09	6.62E+01	37.63	1.44E+02	SC-46
									TA-182
									BI-214
	28	1378.16	1373 -	1382	1377.21	2.82E+01	17.00	2.56E+01	.....
	29	1402.21	1399 -	1404	1401.24	9.56E+00	10.00	1.29E+01	.....
	30	1461.31	1453 -	1466	1460.29	8.64E+02	61.92	4.25E+01	K-40
	31	1581.71	1577 -	1583	1580.58	1.20E+01	6.93	0.00E+00	.....
M	32	1588.65	1584 -	1595	1587.52	2.17E+01	12.33	8.23E+00	.....
m	33	1593.95	1584 -	1595	1592.82	9.67E+00	9.75	1.47E+01	.....
	34	1619.97	1614 -	1623	1618.81	9.79E+00	13.27	1.84E+01	BI-212
	35	1708.60	1704 -	1710	1707.37	5.36E+00	6.34	3.29E+00	.....
	36	1729.96	1724 -	1733	1728.72	8.63E+00	11.79	1.48E+01	.....
	37	1764.63	1757 -	1767	1763.36	5.81E+01	18.83	1.57E+01	BI-214
	38	1849.53	1844 -	1851	1848.19	9.00E+00	9.17	8.00E+00	.....
	39	2060.80	2057 -	2062	2059.31	6.88E+00	6.40	2.25E+00	.....
	40	2103.78	2097 -	2105	2102.26	2.23E+01	12.02	7.38E+00	.....
	41	2183.41	2177 -	2185	2181.83	1.20E+01	6.93	0.00E+00	.....
	42	2204.57	2197 -	2208	2202.98	2.00E+01	13.27	1.20E+01	BI-214
	43	2470.61	2466 -	2471	2468.83	6.00E+00	4.90	0.00E+00	.....
	44	2614.93	2606 -	2617	2613.06	9.80E+01	19.80	0.00E+00	TL-208

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

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 : 8/22/2017 2:12:29PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	76.14	9.39E+02	153.84	2.63E-02	2.11E-03
	2	93.25	1.70E+02	83.31	2.70E-02	2.32E-03
	3	143.73	1.11E+02	69.43	2.35E-02	1.70E-03
	4	186.03	1.81E+02	73.38	2.03E-02	1.53E-03
M	5	205.99	2.60E+01	23.52	1.90E-02	1.44E-03
m	6	209.66	1.33E+02	53.97	1.88E-02	1.43E-03
M	7	238.77	7.58E+02	70.54	1.72E-02	1.30E-03
m	8	241.88	1.34E+02	50.80	1.71E-02	1.28E-03
	9	270.46	6.06E+01	51.37	1.58E-02	1.16E-03
	10	295.23	2.27E+02	61.16	1.48E-02	1.10E-03
	11	300.71	3.67E+01	41.74	1.46E-02	1.09E-03
	12	329.77	9.55E+01	57.30	1.37E-02	1.05E-03
	13	338.52	1.72E+02	56.44	1.34E-02	1.04E-03
	14	351.94	3.63E+02	60.89	1.31E-02	1.02E-03
	15	463.81	8.09E+01	41.23	1.06E-02	9.06E-04
	16	510.58	1.90E+02	49.94	9.88E-03	8.65E-04
	17	583.47	2.35E+02	45.74	8.90E-03	8.02E-04
	18	609.50	2.73E+02	49.36	8.60E-03	7.79E-04
	19	666.22	2.98E+01	26.83	8.01E-03	7.30E-04
	20	727.24	6.30E+01	42.18	7.47E-03	6.71E-04
	21	769.30	3.91E+01	34.67	7.13E-03	6.30E-04
	22	860.88	3.05E+01	26.83	6.51E-03	5.42E-04
	23	911.50	1.65E+02	37.29	6.21E-03	5.01E-04
	24	949.74	3.62E+01	31.06	6.00E-03	4.88E-04
	25	969.74	7.96E+01	37.55	5.90E-03	4.81E-04
	26	1047.68	4.22E+01	42.10	5.54E-03	4.54E-04
	27	1120.82	6.62E+01	37.63	5.24E-03	4.28E-04
	28	1378.16	2.82E+01	17.00	4.45E-03	4.12E-04
	29	1402.21	9.56E+00	10.00	4.40E-03	4.05E-04
	30	1461.31	8.64E+02	61.92	4.26E-03	3.87E-04
	31	1581.71	1.20E+01	6.93	4.03E-03	3.53E-04
M	32	1588.65	2.17E+01	12.33	4.01E-03	3.51E-04
m	33	1593.95	9.67E+00	9.75	4.01E-03	3.49E-04
	34	1619.97	9.79E+00	13.27	3.96E-03	3.42E-04

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
35	1708.60	5.36E+00	6.34	3.82E-03	3.16E-04
36	1729.96	8.63E+00	11.79	3.79E-03	3.10E-04
37	1764.63	5.81E+01	18.83	3.75E-03	3.00E-04
38	1849.53	9.00E+00	9.17	3.64E-03	2.79E-04
39	2060.80	6.88E+00	6.40	3.44E-03	2.79E-04
40	2103.78	2.23E+01	12.02	3.41E-03	2.79E-04
41	2183.41	1.20E+01	6.93	3.35E-03	2.79E-04
42	2204.57	2.00E+01	13.27	3.34E-03	2.79E-04
43	2470.61	6.00E+00	4.90	3.23E-03	2.79E-04
44	2614.93	9.80E+01	19.80	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 : 8/22/2017 2:12:29PM

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	76.14	9.39E+02	153.84			9.39E+02	1.54E+02
	2	93.25	1.70E+02	83.31	4.88E+01	1.30E+00	1.21E+02	8.33E+01
	3	143.73	1.11E+02	69.43	1.06E+01	1.02E+01	1.00E+02	7.02E+01
	4	186.03	1.81E+02	73.38	3.48E+01	7.32E+00	1.46E+02	7.37E+01
M	5	205.99	2.60E+01	23.52			2.60E+01	2.35E+01
m	6	209.66	1.33E+02	53.97			1.33E+02	5.40E+01
M	7	238.77	7.58E+02	70.54	7.09E+00	6.85E+00	7.51E+02	7.09E+01
m	8	241.88	1.34E+02	50.80			1.34E+02	5.08E+01
	9	270.46	6.06E+01	51.37			6.06E+01	5.14E+01
	10	295.23	2.27E+02	61.16			2.27E+02	6.12E+01
	11	300.71	3.67E+01	41.74			3.67E+01	4.17E+01
	12	329.77	9.55E+01	57.30			9.55E+01	5.73E+01
	13	338.52	1.72E+02	56.44			1.72E+02	5.64E+01
	14	351.94	3.63E+02	60.89	1.04E+01	5.08E+00	3.52E+02	6.11E+01
	15	463.81	8.09E+01	41.23			8.09E+01	4.12E+01
	16	510.58	1.90E+02	49.94	7.08E+01	4.94E+00	1.19E+02	5.02E+01
	17	583.47	2.35E+02	45.74	5.65E+00	3.57E+00	2.29E+02	4.59E+01
	18	609.50	2.73E+02	49.36	1.07E+01	3.96E+00	2.62E+02	4.95E+01
	19	666.22	2.98E+01	26.83			2.98E+01	2.68E+01
	20	727.24	6.30E+01	42.18			6.30E+01	4.22E+01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	21	769.30	3.91E+01	34.67			3.91E+01	3.47E+01
	22	860.88	3.05E+01	26.83			3.05E+01	2.68E+01
	23	911.50	1.65E+02	37.29	2.63E+00	2.49E+00	1.62E+02	3.74E+01
	24	949.74	3.62E+01	31.06			3.62E+01	3.11E+01
	25	969.74	7.96E+01	37.55			7.96E+01	3.75E+01
	26	1047.68	4.22E+01	42.10			4.22E+01	4.21E+01
	27	1120.82	6.62E+01	37.63	2.45E+00	2.38E+00	6.38E+01	3.77E+01
	28	1378.16	2.82E+01	17.00			2.82E+01	1.70E+01
	29	1402.21	9.56E+00	10.00			9.56E+00	1.00E+01
	30	1461.31	8.64E+02	61.92	5.90E+00	2.63E+00	8.58E+02	6.20E+01
	31	1581.71	1.20E+01	6.93			1.20E+01	6.93E+00
M	32	1588.65	2.17E+01	12.33			2.17E+01	1.23E+01
m	33	1593.95	9.67E+00	9.75			9.67E+00	9.75E+00
	34	1619.97	9.79E+00	13.27			9.79E+00	1.33E+01
	35	1708.60	5.36E+00	6.34			5.36E+00	6.34E+00
	36	1729.96	8.63E+00	11.79			8.63E+00	1.18E+01
	37	1764.63	5.81E+01	18.83	3.33E+00	1.73E+00	5.48E+01	1.89E+01
	38	1849.53	9.00E+00	9.17			9.00E+00	9.17E+00
	39	2060.80	6.88E+00	6.40			6.88E+00	6.40E+00
	40	2103.78	2.23E+01	12.02			2.23E+01	1.20E+01
	41	2183.41	1.20E+01	6.93			1.20E+01	6.93E+00
	42	2204.57	2.00E+01	13.27			2.00E+01	1.33E+01
	43	2470.61	6.00E+00	4.90			6.00E+00	4.90E+00
	44	2614.93	9.80E+01	19.80	4.77E+00	1.52E+00	9.32E+01	1.99E+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 : 8/22/2017 2:12:29PM

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	76.14	9.39E+02	153.84			9.39E+02	1.54E+02
2	93.25	1.70E+02	83.31	4.88E+01	1.30E+00	1.21E+02	8.33E+01
3	143.73	1.11E+02	69.43	1.06E+01	1.02E+01	1.00E+02	7.02E+01
4	186.03	1.81E+02	73.38	3.48E+01	7.32E+00	1.46E+02	7.37E+01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	5	205.99	2.60E+01	23.52			2.60E+01	2.35E+01
m	6	209.66	1.33E+02	53.97			1.33E+02	5.40E+01
M	7	238.77	7.58E+02	70.54	7.09E+00	6.85E+00	7.51E+02	7.09E+01
m	8	241.88	1.34E+02	50.80			1.34E+02	5.08E+01
	9	270.46	6.06E+01	51.37			6.06E+01	5.14E+01
	10	295.23	2.27E+02	61.16			2.27E+02	6.12E+01
	11	300.71	3.67E+01	41.74			3.67E+01	4.17E+01
	12	329.77	9.55E+01	57.30			9.55E+01	5.73E+01
	13	338.52	1.72E+02	56.44			1.72E+02	5.64E+01
	14	351.94	3.63E+02	60.89	1.04E+01	5.08E+00	3.52E+02	6.11E+01
	15	463.81	8.09E+01	41.23			8.09E+01	4.12E+01
	16	510.58	1.90E+02	49.94	7.08E+01	4.94E+00	1.19E+02	5.02E+01
	17	583.47	2.35E+02	45.74	5.65E+00	3.57E+00	2.29E+02	4.59E+01
	18	609.50	2.73E+02	49.36	1.07E+01	3.96E+00	2.62E+02	4.95E+01
	19	666.22	2.98E+01	26.83			2.98E+01	2.68E+01
	20	727.24	6.30E+01	42.18			6.30E+01	4.22E+01
	21	769.30	3.91E+01	34.67			3.91E+01	3.47E+01
	22	860.88	3.05E+01	26.83			3.05E+01	2.68E+01
	23	911.50	1.65E+02	37.29	2.63E+00	2.49E+00	1.62E+02	3.74E+01
	24	949.74	3.62E+01	31.06			3.62E+01	3.11E+01
	25	969.74	7.96E+01	37.55			7.96E+01	3.75E+01
	26	1047.68	4.22E+01	42.10			4.22E+01	4.21E+01
	27	1120.82	6.62E+01	37.63	2.45E+00	2.38E+00	6.38E+01	3.77E+01
	28	1378.16	2.82E+01	17.00			2.82E+01	1.70E+01
	29	1402.21	9.56E+00	10.00			9.56E+00	1.00E+01
	30	1461.31	8.64E+02	61.92	5.90E+00	2.63E+00	8.58E+02	6.20E+01
	31	1581.71	1.20E+01	6.93			1.20E+01	6.93E+00
M	32	1588.65	2.17E+01	12.33			2.17E+01	1.23E+01
m	33	1593.95	9.67E+00	9.75			9.67E+00	9.75E+00
	34	1619.97	9.79E+00	13.27			9.79E+00	1.33E+01
	35	1708.60	5.36E+00	6.34			5.36E+00	6.34E+00
	36	1729.96	8.63E+00	11.79			8.63E+00	1.18E+01
	37	1764.63	5.81E+01	18.83	3.33E+00	1.73E+00	5.48E+01	1.89E+01
	38	1849.53	9.00E+00	9.17			9.00E+00	9.17E+00
	39	2060.80	6.88E+00	6.40			6.88E+00	6.40E+00
	40	2103.78	2.23E+01	12.02			2.23E+01	1.20E+01
	41	2183.41	1.20E+01	6.93			1.20E+01	6.93E+00
	42	2204.57	2.00E+01	13.27			2.00E+01	1.33E+01
	43	2470.61	6.00E+00	4.90			6.00E+00	4.90E+00
	44	2614.93	9.80E+01	19.80	4.77E+00	1.52E+00	9.32E+01	1.99E+01

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

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

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	0.960	1460.81	*	10.67	1.99E+01	2.34E+00
TL-208	0.984	583.14	*	30.22	8.97E-01	1.97E-01
		860.37	*	4.48	1.10E+00	9.73E-01
		2614.66	*	35.85	8.56E-01	1.97E-01
BI-212	0.987	727.17	*	11.80	7.53E-01	5.08E-01
		1620.62	*	2.75	9.46E-01	1.28E+00
PB-212	0.993	238.63	*	44.60	1.03E+00	1.24E-01
		300.09	*	3.41	7.73E-01	8.81E-01
BI-214	0.987	609.31	*	46.30	6.93E-01	1.45E-01
		1120.29	*	15.10	8.48E-01	5.06E-01
		1764.49	*	15.80	9.75E-01	3.45E-01
		2204.22	*	4.98	1.27E+00	8.46E-01
PB-214	1.000	295.21	*	19.19	8.39E-01	2.34E-01
		351.92	*	37.19	7.63E-01	1.45E-01
RA-224	0.879	240.98	*	3.95	2.08E+00	8.08E-01
RA-226	0.995	186.21	*	3.28	2.30E+00	4.37E+00
AC-228	0.966	338.32	*	11.40	1.18E+00	3.98E-01
		911.07	*	27.70	9.93E-01	2.42E-01
		969.11	*	16.60	8.55E-01	4.09E-01
U-235	0.605	143.76	*	10.50	4.27E-01	3.07E-01
		163.35		4.70		
		205.31	*	4.70	3.06E-01	2.83E-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 : 8/22/2017 2:12:29PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	76.14	2.60970E-01	8.19		
	2	93.25	3.36543E-02	34.38		
m	6	209.66	3.68628E-02	20.34	Tol.	CM-243
	9	270.46	1.68304E-02	42.39		
	12	329.77	2.65397E-02	29.99	Sum	
	15	463.81	2.24822E-02	25.47		
	16	510.58	3.31272E-02	21.04		
	19	666.22	8.28431E-03	44.98	Tol.	SB-126
	21	769.30	1.08604E-02	44.34	Sum	
	24	949.74	1.00432E-02	42.96	S-Esc	
	26	1047.68	1.17208E-02	49.89	Sum	
	28	1378.16	7.82859E-03	30.16		
	29	1402.21	2.65625E-03	52.29		
	31	1581.71	3.33333E-03	28.87		
M	32	1588.65	6.01650E-03	28.46	Sum	
m	33	1593.95	2.68652E-03	50.39		
	35	1708.60	1.48810E-03	59.21		
	36	1729.96	2.39583E-03	68.35	Sum	
	38	1849.53	2.50000E-03	50.92		
	39	2060.80	1.90972E-03	46.57	Sum	
	40	2103.78	6.19658E-03	26.94	S-Esc	
	41	2183.41	3.33333E-03	28.87		
	43	2470.61	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 IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.96	1460.81	*	10.67	1.99E+01	2.34E+00
TL-208	0.98	583.14	*	30.22	8.97E-01	1.97E-01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TL-208	0.98	860.37	*	4.48	1.10E+00	9.73E-01
		2614.66	*	35.85	8.56E-01	1.97E-01
BI-212	0.98	727.17	*	11.80	7.53E-01	5.08E-01
		1620.62	*	2.75	9.46E-01	1.28E+00
PB-212	0.99	238.63	*	44.60	1.03E+00	1.24E-01
		300.09	*	3.41	7.73E-01	8.81E-01
BI-214	0.98	609.31	*	46.30	6.93E-01	1.45E-01
		1120.29	*	15.10	8.48E-01	5.06E-01
		1764.49	*	15.80	9.75E-01	3.45E-01
		2204.22	*	4.98	1.27E+00	8.46E-01
PB-214	1.00	295.21	*	19.19	8.39E-01	2.34E-01
		351.92	*	37.19	7.63E-01	1.45E-01
RA-224	0.87	240.98	*	3.95	2.08E+00	8.08E-01
RA-226	0.99	186.21	*	3.28	2.30E+00	4.37E+00
AC-228	0.96	338.32	*	11.40	1.18E+00	3.98E-01
		911.07	*	27.70	9.93E-01	2.42E-01
		969.11	*	16.60	8.55E-01	4.09E-01
U-235	0.60	143.76	*	10.50	4.27E-01	3.07E-01
		163.35		4.70		
		205.31	*	4.70	3.06E-01	2.83E-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	0.960	1.99E+01	2.34E+00	
TL-208	0.984	8.81E-01	1.38E-01	
BI-212	0.987	7.79E-01	4.73E-01	
PB-212	0.993	1.02E+00	1.23E-01	
BI-214	0.987	7.55E-01	1.28E-01	
PB-214	1.000	7.84E-01	1.23E-01	
RA-224	0.879	2.08E+00	8.08E-01	

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
RA-226	0.995	2.30E+00	4.37E+00	
AC-228	0.966	1.01E+00	1.85E-01	
U-235	0.605	3.61E-01	2.08E-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 1707088-03

HTC-A03-S003-3642-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 2:12:29PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	76.14	2.60970E-01	8.19		
	2	93.25	3.36543E-02	34.38		
m	6	209.66	3.68628E-02	20.34	Tol.	CM-243
	9	270.46	1.68304E-02	42.39		
	12	329.77	2.65397E-02	29.99	Sum	
	15	463.81	2.24822E-02	25.47		
	16	510.58	3.31272E-02	21.04		
	19	666.22	8.28431E-03	44.98	Tol.	SB-126
	21	769.30	1.08604E-02	44.34	Sum	
	24	949.74	1.00432E-02	42.96	S-Esc	
	26	1047.68	1.17208E-02	49.89	Sum	
	28	1378.16	7.82859E-03	30.16		
	29	1402.21	2.65625E-03	52.29		
	31	1581.71	3.33333E-03	28.87		
M	32	1588.65	6.01650E-03	28.46	Sum	
m	33	1593.95	2.68652E-03	50.39		
	35	1708.60	1.48810E-03	59.21		
	36	1729.96	2.39583E-03	68.35	Sum	
	38	1849.53	2.50000E-03	50.92		
	39	2060.80	1.90972E-03	46.57	Sum	
	40	2103.78	6.19658E-03	26.94	S-Esc	
	41	2183.41	3.33333E-03	28.87		
	43	2470.61	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 1707088-03

HTC-A03-S003-3642-01

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	-4.40E-01	1.49E+00	1.49E+00
+		NA-22	1274.54		99.94	1.79E-02	8.20E-02	8.20E-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	-5.24E-03	3.43E-02	3.43E-02
+		K-40	1460.81	*	10.67	1.99E+01	8.33E-01	8.33E-01
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	9.04E-03	4.00E-02	4.00E-02
			78.34		96.00	6.43E-02		4.81E-02
+		SC-46	889.25		99.98	-7.23E-02	1.28E-01	1.28E-01
			1120.51		99.99	2.87E-01		2.33E-01
+		V-48	983.52		99.98	-2.49E-01	4.24E+00	4.34E+00
			1312.10		97.50	-3.98E+00		4.24E+00
+		CR-51	320.08		9.83	2.36E+00	5.32E+00	5.32E+00
+		MN-54	834.83		99.97	4.12E-02	8.45E-02	8.45E-02
+		CO-56	846.75		99.96	-1.08E-01	1.14E-01	1.14E-01
			1037.75		14.03	2.44E-01		1.01E+00
			1238.25		67.00	-1.58E-02		3.15E-01
			1771.40		15.51	-6.37E-01		6.53E-01
			2598.48		16.90	1.33E-02		7.00E-01
+		CO-57	122.06		85.51	5.76E-04	4.29E-02	4.29E-02
			136.48		10.60	3.67E-01		4.74E-01
+		CO-58	810.76		99.40	8.72E-03	1.55E-01	1.55E-01
+		FE-59	1099.22		56.50	-1.80E-01	5.65E-01	5.65E-01
			1291.56		43.20	-2.20E-01		6.95E-01
+		CO-60	1173.22		100.00	-1.20E-02	6.09E-02	8.23E-02
			1332.49		100.00	-1.71E-02		6.09E-02
+		ZN-65	1115.52		50.75	1.58E-02	1.86E-01	1.86E-01
+		GA-67	93.31		35.70	2.92E+08	1.61E+08	1.61E+08
			208.95		2.24	2.64E+09		3.10E+09
			300.22		16.00	-3.79E+07		4.06E+08
+		SE-75	121.11		16.70	-1.90E-01	1.16E-01	2.85E-01
			136.00		59.20	-4.97E-02		1.16E-01
			264.65		59.80	6.65E-02		1.22E-01
			279.53		25.20	1.27E-01		3.04E-01
			400.65		11.40	3.22E-01		6.83E-01
+		RB-82	776.52		13.00	-2.39E+00	5.72E+00	5.72E+00
+		RB-83	520.41		46.00	3.75E-03	2.05E-01	2.05E-01
			529.64		30.30	1.93E-01		3.30E-01
			552.65		16.40	3.51E-02		5.75E-01
+		KR-85	513.99		0.43	-2.27E+00	1.31E+01	1.31E+01
+		SR-85	513.99		99.27	-2.82E-02	1.62E-01	1.62E-01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	Y-88	898.02	93.40	-7.52E-03	1.00E-01	1.18E-01
		1836.01	99.38	3.85E-03		1.00E-01
+	MO-93	263.06	56.72	-4.46E-02	4.81E-02	6.97E-02
		684.67	99.68	7.03E-03		5.67E-02
		1477.11	99.08	-1.68E-02		4.81E-02
+	NB-93M	16.57	9.43	0.00E+00	6.15E+00	6.15E+00
+	NB-94	702.63	100.00	2.46E-02	5.76E-02	6.68E-02
		871.10	100.00	-1.75E-02		5.76E-02
+	NB-95	765.79	99.81	-4.63E-02	4.50E-01	4.50E-01
+	NB-95M	235.69	25.00	-3.81E+08	4.50E+07	4.50E+07
+	ZR-95	724.18	43.70	-3.78E-02	3.21E-01	4.63E-01
		756.72	55.30	2.53E-03		3.21E-01
+	MO-99	181.06	6.20	6.86E+09	3.18E+10	4.74E+10
		739.58	12.80	-7.60E+09		3.18E+10
		778.00	4.50	-5.90E+09		8.32E+10
+	RU-103	497.08	89.00	1.91E-01	3.12E-01	3.12E-01
+	RU-106	621.84	9.80	1.05E-01	6.82E-01	6.82E-01
+	AG-108M	433.93	89.90	-3.75E-02	4.25E-02	4.25E-02
		614.37	90.40	1.71E-02		6.84E-02
		722.95	90.50	-1.27E-01		6.55E-02
+	CD-109	88.03	3.72	6.94E-01	1.31E+00	1.31E+00
+	AG-110M	657.75	93.14	4.06E-03	7.90E-02	7.90E-02
		677.61	10.53	3.58E-01		7.38E-01
		706.67	16.46	1.58E-02		5.05E-01
		763.93	21.98	-2.20E-02		3.68E-01
		884.67	71.63	1.28E-02		1.13E-01
		1384.27	23.94	1.10E-01		3.00E-01
+	CD-113M	263.70	0.02	7.03E+01	1.80E+02	1.80E+02
+	SN-113	255.12	1.93	6.69E-01	1.08E-01	4.19E+00
		391.69	64.90	-7.17E-02		1.08E-01
+	TE123M	159.00	84.10	5.58E-02	8.38E-02	8.38E-02
+	SB-124	602.71	97.87	4.45E-02	1.93E-01	1.93E-01
		645.85	7.26	4.68E-01		2.35E+00
		722.78	11.10	-2.37E-01		1.61E+00
		1691.02	49.00	4.27E-02		3.62E-01
+	I-125	35.49	6.49	-2.36E+01	6.33E+00	6.33E+00
+	SB-125	176.33	6.89	3.28E-01	1.46E-01	6.60E-01
		427.89	29.33	-5.56E-02		1.46E-01
		463.38	10.35	4.78E-01		5.62E-01
		600.56	17.80	9.17E-03		3.51E-01
		635.90	11.32	-1.06E-01		5.14E-01
+	SB-126	414.70	83.30	-3.56E-01	1.34E+01	1.34E+01
		666.33	99.60	2.32E+00		1.54E+01
		695.00	99.60	-2.38E+00		1.52E+01
		720.50	53.80	7.44E+00		2.89E+01
+	SN-126	87.57	37.00	6.02E-02	1.13E-01	1.13E-01
+	SB-127	473.00	25.00	1.38E+06	8.84E+06	9.51E+06
		685.20	35.70	-4.96E+04		8.84E+06

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-127	783.80	14.70	2.95E+06	8.84E+06	2.33E+07
+	I-129	29.78	57.00	2.77E-01	4.07E-01	4.07E-01
		33.60	13.20	7.40E+00		1.87E+00
		39.58	7.52	6.92E-01		9.95E-01
+	I-131	284.30	6.05	1.37E+03	2.70E+02	3.45E+03
		364.48	81.20	-6.65E+01		2.70E+02
		636.97	7.26	9.02E+01		3.90E+03
		722.89	1.80	-3.29E+04		1.70E+04
+	TE-132	49.72	13.10	-1.03E+08	7.03E+07	4.58E+08
		228.16	88.00	-6.26E+06		7.03E+07
+	BA-133	81.00	33.00	2.46E-02	6.82E-02	1.03E-01
		302.84	17.80	-6.12E-02		2.53E-01
		356.01	60.00	3.85E-04		6.82E-02
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	1.04E+04	4.36E+04	4.36E+04
+	CS-134	563.23	8.38	9.39E-02	6.97E-02	6.42E-01
		569.32	15.43	1.62E-02		3.38E-01
		604.70	97.60	8.50E-03		6.97E-02
		795.84	85.40	3.08E-02		8.42E-02
		801.93	8.73	-2.65E-01		7.30E-01
+	CS-135	268.24	16.00	7.67E-02	2.80E-01	2.80E-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	7.07E+01	9.90E+00	1.02E+02
		163.89	4.61	-5.81E+01		1.58E+02
		176.55	13.56	2.90E+01		5.82E+01
		273.65	12.66	-2.39E+01		6.26E+01
		340.57	48.50	-2.05E+00		2.07E+01
		818.50	99.70	-1.77E+00		9.90E+00
		1048.07	79.60	-7.31E+00		1.62E+01
		1235.34	19.70	1.67E+01		8.63E+01
+	CS-137	661.65	85.12	2.14E-02	6.25E-02	6.25E-02
+	LA-138	788.74	34.00	5.57E-02	9.06E-02	1.86E-01
		1435.80	66.00	3.14E-02		9.06E-02
+	CE-139	165.85	80.35	7.97E-03	8.35E-02	8.35E-02
+	BA-140	162.64	6.70	-3.14E+01	3.85E+01	1.26E+02
		304.84	4.50	8.34E+01		2.05E+02
		423.70	3.20	1.51E+02		2.94E+02
		437.55	2.00	2.73E+01		4.66E+02
		537.32	25.00	1.41E+01		3.85E+01
+	LA-140	328.77	20.50	5.17E+01	1.46E+01	5.31E+01
		487.03	45.50	2.71E+00		2.06E+01
		815.85	23.50	-8.18E+00		4.97E+01
		1596.49	95.49	-4.83E-01		1.46E+01
+	CE-141	145.44	48.40	-1.75E-01	7.10E-01	7.10E-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 1707088-03

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CE-144	133.54	10.80	-2.92E-02	3.64E-01	3.64E-01
+	PM-144	476.78	42.00	-3.64E-02	6.72E-02	1.23E-01
		618.01	98.60	-2.57E-02		6.72E-02
		696.49	99.49	-3.10E-03		7.28E-02
+	PM-145	36.85	21.70	3.95E-03	2.38E-01	4.86E-01
		37.36	39.70	-1.05E-01		2.38E-01
		42.30	15.10	-2.17E-02		3.72E-01
		72.40	2.31	-6.27E+00		1.68E+00
+	PM-146	453.90	39.94	-7.83E-02	1.03E-01	1.03E-01
		735.90	14.01	-4.45E-02		4.17E-01
		747.13	13.10	-2.63E-02		4.20E-01
+	ND-147	91.11	28.90	-1.15E+02	6.65E+01	6.65E+01
		531.02	13.10	-3.47E+01		1.66E+02
+	PM-149	285.90	3.10	1.64E+13	4.06E+13	4.06E+13
+	EU-152	121.78	20.50	1.89E-03	1.41E-01	1.41E-01
		244.69	5.40	7.11E-02		8.07E-01
		344.27	19.13	1.15E-01		2.20E-01
		778.89	9.20	-4.11E-02		5.79E-01
		964.01	10.40	4.51E-01		7.89E-01
		1085.78	7.22	6.11E-02		9.51E-01
		1112.02	9.60	2.17E-01		7.36E-01
		1407.95	14.94	2.58E-01		4.80E-01
+	GD-153	97.43	31.30	-4.03E-02	1.23E-01	1.23E-01
		103.18	22.20	-3.83E-02		1.65E-01
+	EU-154	123.07	40.50	3.68E-03	7.51E-02	7.51E-02
		723.30	19.70	-5.94E-01		3.07E-01
		873.19	11.50	-1.48E-01		5.32E-01
		996.32	10.30	-1.96E-01		5.74E-01
		1004.76	17.90	-8.38E-02		3.41E-01
		1274.45	35.50	4.80E-02		2.19E-01
+	EU-155	86.50	30.90	2.27E-01	1.42E-01	1.42E-01
		105.30	20.70	2.73E-02		1.48E-01
+	EU-156	811.77	10.40	-5.72E-01	5.09E+01	5.09E+01
		1153.47	7.20	-1.54E+01		9.55E+01
		1230.71	8.90	5.73E+01		9.41E+01
+	HO-166M	184.41	72.60	8.98E-02	6.83E-02	6.83E-02
		280.45	29.60	-1.16E-01		1.32E-01
		410.94	11.10	1.70E-01		4.40E-01
		711.69	54.10	5.03E-02		1.13E-01
+	TM-171	66.72	0.14	-2.32E+00	2.93E+01	2.93E+01
+	HF-172	67.35	5.31	1.78E-01	3.06E-01	7.87E-01
		125.81	11.30	5.76E-02		3.06E-01
+	LU-172	181.53	20.60	8.29E+02	3.38E+03	5.72E+03
		900.72	29.81	1.39E+03		5.78E+03
		1093.66	62.50	1.51E+03		3.38E+03
+	LU-173	100.72	5.24	-6.52E-02	2.58E-01	6.23E-01
		272.11	21.20	1.69E-01		2.58E-01
+	HF-175	343.40	84.00	1.73E-02	1.35E-01	1.35E-01
+	LU-176	88.34	13.30	3.06E-01	4.54E-02	3.11E-01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LU-176	201.83		86.00	2.35E-02	4.54E-02	4.90E-02
		306.78		94.00	2.81E-02		4.54E-02
+	HF-181	133.02		41.70	2.81E-01	2.83E-01	3.96E-01
		345.85		17.20	-5.49E-01		1.26E+00
		482.03		82.80	4.20E-02		2.83E-01
+	TA-182	67.75		41.20	3.77E-02	1.67E-01	1.67E-01
		1121.30		34.90	6.53E-01		5.33E-01
		1189.05		16.23	3.19E-01		8.65E-01
		1221.41		26.98	2.37E-01		5.59E-01
		1231.02		11.44	8.80E-01		1.45E+00
+	IR-192	308.46		29.68	-1.54E-01	2.28E-01	3.41E-01
		468.07		48.10	-1.40E-03		2.28E-01
+	HG-203	279.19		77.30	8.65E-02	2.52E-01	2.52E-01
+	TL-204	374.74		94.11	1.46E-02	4.79E-02	4.79E-02
		899.15		99.16	1.42E-02		6.33E-02
		911.74		91.10	3.11E-01		1.37E-01
+	BI-207	569.67		97.72	2.35E-03	4.90E-02	4.90E-02
		1063.62		74.90	-1.47E-03		9.36E-02
+	TL-208	583.14	*	30.22	8.97E-01	9.47E-02	2.32E-01
		860.37	*	4.48	1.10E+00		1.55E+00
		2614.66	*	35.85	8.56E-01		9.47E-02
+	BI-210M	262.00		45.00	1.80E-02	8.94E-02	8.94E-02
		300.00		23.00	-1.84E-02		1.98E-01
+	PB-210	46.50		4.25	1.56E+00	1.26E+00	1.26E+00
+	PB-211	404.84		2.90	-5.52E-01	1.47E+00	1.47E+00
		831.96		2.90	-1.10E+00		2.13E+00
+	BI-212	727.17	*	11.80	7.53E-01	8.00E-01	8.00E-01
		1620.62	*	2.75	9.46E-01		2.12E+00
+	PB-212	238.63	*	44.60	1.03E+00	1.83E-01	1.83E-01
		300.09	*	3.41	7.73E-01		1.44E+00
+	BI-214	609.31	*	46.30	6.93E-01	1.70E-01	1.70E-01
		1120.29	*	15.10	8.48E-01		7.83E-01
		1764.49	*	15.80	9.75E-01		3.92E-01
		2204.22	*	4.98	1.27E+00		1.19E+00
+	PB-214	295.21	*	19.19	8.39E-01	1.78E-01	3.33E-01
		351.92	*	37.19	7.63E-01		1.78E-01
+	RN-219	401.80		6.50	-2.41E-01	6.63E-01	6.63E-01
+	RA-223	323.87		3.88	9.08E-02	1.03E+00	1.03E+00
+	RA-224	240.98	*	3.95	2.08E+00	2.05E+00	2.05E+00
+	RA-225	40.00		31.00	1.70E+01	2.44E+01	2.44E+01
+	RA-226	186.21	*	3.28	2.30E+00	1.85E+00	1.85E+00
+	TH-227	50.10		8.40	-1.09E-01	4.85E-01	4.85E-01
		236.00		11.50	-4.46E+00		5.26E-01
		256.20		6.30	3.22E-02		6.92E-01
+	AC-228	338.32	*	11.40	1.18E+00	2.92E-01	5.83E-01
		911.07	*	27.70	9.93E-01		2.92E-01
		969.11	*	16.60	8.55E-01		6.13E-01
+	TH-230	48.44		16.90	-2.38E-01	2.55E-01	2.55E-01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TH-230	62.85		4.60	1.00E+00	2.55E-01	9.30E-01
		67.67		0.37	2.30E+00		1.02E+01
+	PA-231	283.67		1.60	1.00E+00	1.92E+00	2.52E+00
		302.67		2.30	-4.65E-01		1.92E+00
+	TH-231	25.64		14.70	0.00E+00	1.09E-01	1.09E-01
		84.21		6.40	-6.50E-01		5.47E-01
+	PA-233	311.98		38.60	-6.42E-01	1.37E+00	1.37E+00
+	PA-234	131.20		20.40	-1.05E-01	1.54E-01	1.54E-01
		733.99		8.80	2.35E-01		6.67E-01
		946.00		12.00	2.91E-02		5.28E-01
+	PA-234M	1001.03		0.92	-3.08E+00	6.17E+00	6.17E+00
+	TH-234	63.29		3.80	1.01E+00	1.11E+00	1.11E+00
+	U-235	143.76	*	10.50	4.27E-01	4.83E-01	4.83E-01
		163.35		4.70	-3.07E-01		8.33E-01
		205.31	*	4.70	3.06E-01		1.17E+00
+	NP-237	86.50		12.60	5.36E-01	3.35E-01	3.35E-01
+	NP-239	106.10		22.70	1.14E+11	6.17E+11	6.17E+11
		228.18		10.70	-1.68E+11		1.89E+12
		277.60		14.10	1.52E+12		1.53E+12
+	AM-241	59.54		35.90	1.85E-02	1.10E-01	1.10E-01
+	AM-243	74.67		66.00	-9.70E-02	7.54E-02	7.54E-02
+	CM-243	209.75		3.29	1.85E+00	3.26E-01	1.49E+00
		228.14		10.60	-3.60E-02		4.04E-01
		277.60		14.00	3.24E-01		3.26E-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 1707088-03

HTC-A03-S003-3642-01

	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	1.49E+00	1.49E+00	-4.40E-01	6.99E-01
	NA-22	1274.54		99.94	8.20E-02	8.20E-02	1.79E-02	3.78E-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	3.43E-02	3.43E-02	-5.24E-03	1.33E-02
+	K-40	1460.81	*	10.67	8.33E-01	8.33E-01	1.99E+01	3.85E-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	4.00E-02	4.00E-02	9.04E-03	1.94E-02
		78.34		96.00	4.81E-02		6.43E-02	2.35E-02
	SC-46	889.25		99.98	1.28E-01	1.28E-01	-7.23E-02	5.89E-02
		1120.51		99.99	2.33E-01		2.87E-01	1.10E-01
	V-48	983.52		99.98	4.34E+00	4.24E+00	-2.49E-01	1.99E+00
		1312.10		97.50	4.24E+00		-3.98E+00	1.89E+00
	CR-51	320.08		9.83	5.32E+00	5.32E+00	2.36E+00	2.53E+00
	MN-54	834.83		99.97	8.45E-02	8.45E-02	4.12E-02	3.96E-02
	CO-56	846.75		99.96	1.14E-01	1.14E-01	-1.08E-01	5.18E-02
		1037.75		14.03	1.01E+00		2.44E-01	4.61E-01
		1238.25		67.00	3.15E-01		-1.58E-02	1.47E-01
		1771.40		15.51	6.53E-01		-6.37E-01	2.67E-01
		2598.48		16.90	7.00E-01		1.33E-02	2.87E-01
	CO-57	122.06		85.51	4.29E-02	4.29E-02	5.76E-04	2.06E-02
		136.48		10.60	4.74E-01		3.67E-01	2.30E-01
	CO-58	810.76		99.40	1.55E-01	1.55E-01	8.72E-03	7.18E-02
	FE-59	1099.22		56.50	5.65E-01	5.65E-01	-1.80E-01	2.60E-01
		1291.56		43.20	6.95E-01		-2.20E-01	3.14E-01
	CO-60	1173.22		100.00	8.23E-02	6.09E-02	-1.20E-02	3.82E-02
		1332.49		100.00	6.09E-02		-1.71E-02	2.72E-02
	ZN-65	1115.52		50.75	1.86E-01	1.86E-01	1.58E-02	8.59E-02
	GA-67	93.31		35.70	1.61E+08	1.61E+08	2.92E+08	7.84E+07
		208.95		2.24	3.10E+09		2.64E+09	1.50E+09
		300.22		16.00	4.06E+08		-3.79E+07	1.94E+08
	SE-75	121.11		16.70	2.85E-01	1.16E-01	-1.90E-01	1.37E-01
		136.00		59.20	1.16E-01		-4.97E-02	5.65E-02
		264.65		59.80	1.22E-01		6.65E-02	5.86E-02
		279.53		25.20	3.04E-01		1.27E-01	1.45E-01
		400.65		11.40	6.83E-01		3.22E-01	3.23E-01
	RB-82	776.52		13.00	5.72E+00	5.72E+00	-2.39E+00	2.63E+00
	RB-83	520.41		46.00	2.05E-01	2.05E-01	3.75E-03	9.56E-02
		529.64		30.30	3.30E-01		1.93E-01	1.54E-01
		552.65		16.40	5.75E-01		3.51E-02	2.67E-01
	KR-85	513.99		0.43	1.31E+01	1.31E+01	-2.27E+00	6.21E+00
	SR-85	513.99		99.27	1.62E-01	1.62E-01	-2.82E-02	7.70E-02
	Y-88	898.02		93.40	1.18E-01	1.00E-01	-7.52E-03	5.45E-02
		1836.01		99.38	1.00E-01		3.85E-03	4.26E-02
	MO-93	263.06		56.72	6.97E-02	4.81E-02	-4.46E-02	3.33E-02
		684.67		99.68	5.67E-02		7.03E-03	2.65E-02
		1477.11		99.08	4.81E-02		-1.68E-02	2.06E-02
	NB-93M	16.57		9.43	6.15E+00	6.15E+00	0.00E+00	0.00E+00
	NB-94	702.63		100.00	6.68E-02	5.76E-02	2.46E-02	3.16E-02
		871.10		100.00	5.76E-02		-1.75E-02	2.66E-02
	NB-95	765.79		99.81	4.50E-01	4.50E-01	-4.63E-02	2.11E-01
	NB-95M	235.69		25.00	4.50E+07	4.50E+07	-3.81E+08	2.19E+07
	ZR-95	724.18		43.70	4.63E-01	3.21E-01	-3.78E-02	2.19E-01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

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	3.21E-01	3.21E-01	2.53E-03	1.50E-01
MO-99	181.06	6.20	4.74E+10	3.18E+10	6.86E+09	2.29E+10
	739.58	12.80	3.18E+10		-7.60E+09	1.48E+10
	778.00	4.50	8.32E+10		-5.90E+09	3.84E+10
RU-103	497.08	89.00	3.12E-01	3.12E-01	1.91E-01	1.47E-01
RU-106	621.84	9.80	6.82E-01	6.82E-01	1.05E-01	3.20E-01
AG-108M	433.93	89.90	4.25E-02	4.25E-02	-3.75E-02	1.98E-02
	614.37	90.40	6.84E-02		1.71E-02	3.24E-02
	722.95	90.50	6.55E-02		-1.27E-01	3.06E-02
CD-109	88.03	3.72	1.31E+00	1.31E+00	6.94E-01	6.36E-01
AG-110M	657.75	93.14	7.90E-02	7.90E-02	4.06E-03	3.70E-02
	677.61	10.53	7.38E-01		3.58E-01	3.46E-01
	706.67	16.46	5.05E-01		1.58E-02	2.38E-01
	763.93	21.98	3.68E-01		-2.20E-02	1.72E-01
	884.67	71.63	1.13E-01		1.28E-02	5.25E-02
	1384.27	23.94	3.00E-01		1.10E-01	1.32E-01
CD-113M	263.70	0.02	1.80E+02	1.80E+02	7.03E+01	8.59E+01
SN-113	255.12	1.93	4.19E+00	1.08E-01	6.69E-01	2.02E+00
	391.69	64.90	1.08E-01		-7.17E-02	5.05E-02
TE123M	159.00	84.10	8.38E-02	8.38E-02	5.58E-02	4.05E-02
SB-124	602.71	97.87	1.93E-01	1.93E-01	4.45E-02	9.12E-02
	645.85	7.26	2.35E+00		4.68E-01	1.10E+00
	722.78	11.10	1.61E+00		-2.37E-01	7.54E-01
	1691.02	49.00	3.62E-01		4.27E-02	1.57E-01
I-125	35.49	6.49	6.33E+00	6.33E+00	-2.36E+01	3.08E+00
SB-125	176.33	6.89	6.60E-01	1.46E-01	3.28E-01	3.19E-01
	427.89	29.33	1.46E-01		-5.56E-02	6.85E-02
	463.38	10.35	5.62E-01		4.78E-01	2.67E-01
	600.56	17.80	3.51E-01		9.17E-03	1.66E-01
	635.90	11.32	5.14E-01		-1.06E-01	2.41E-01
SB-126	414.70	83.30	1.34E+01	1.34E+01	-3.56E-01	6.33E+00
	666.33	99.60	1.54E+01		2.32E+00	7.23E+00
	695.00	99.60	1.52E+01		-2.38E+00	7.12E+00
	720.50	53.80	2.89E+01		7.44E+00	1.36E+01
SN-126	87.57	37.00	1.13E-01	1.13E-01	6.02E-02	5.52E-02
SB-127	473.00	25.00	9.51E+06	8.84E+06	1.38E+06	4.44E+06
	685.20	35.70	8.84E+06		-4.96E+04	4.13E+06
	783.80	14.70	2.33E+07		2.95E+06	1.09E+07
I-129	29.78	57.00	4.07E-01	4.07E-01	2.77E-01	1.97E-01
	33.60	13.20	1.87E+00		7.40E+00	9.16E-01
	39.58	7.52	9.95E-01		6.92E-01	4.80E-01
I-131	284.30	6.05	3.45E+03	2.70E+02	1.37E+03	1.65E+03
	364.48	81.20	2.70E+02		-6.65E+01	1.28E+02
	636.97	7.26	3.90E+03		9.02E+01	1.83E+03
	722.89	1.80	1.70E+04		-3.29E+04	7.95E+03
TE-132	49.72	13.10	4.58E+08	7.03E+07	-1.03E+08	2.20E+08
	228.16	88.00	7.03E+07		-6.26E+06	3.38E+07
BA-133	81.00	33.00	1.03E-01	6.82E-02	2.46E-02	5.01E-02
	302.84	17.80	2.53E-01		-6.12E-02	1.21E-01
	356.01	60.00	6.82E-02		3.85E-04	3.22E-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	4.36E+04	4.36E+04	1.04E+04	2.11E+04
CS-134	563.23	8.38	6.42E-01	6.97E-02	9.39E-02	3.01E-01

Analysis Report for 1707088-03

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CS-134	569.32	15.43	3.38E-01	6.97E-02	1.62E-02	1.58E-01
	604.70	97.60	6.97E-02		8.50E-03	3.30E-02
	795.84	85.40	8.42E-02		3.08E-02	3.95E-02
	801.93	8.73	7.30E-01		-2.65E-01	3.39E-01
CS-135	268.24	16.00	2.80E-01	2.80E-01	7.67E-02	1.34E-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	1.02E+02	9.90E+00	7.07E+01	4.96E+01
	163.89	4.61	1.58E+02		-5.81E+01	7.63E+01
	176.55	13.56	5.82E+01		2.90E+01	2.82E+01
	273.65	12.66	6.26E+01		-2.39E+01	3.00E+01
	340.57	48.50	2.07E+01		-2.05E+00	9.95E+00
	818.50	99.70	9.90E+00		-1.77E+00	4.56E+00
	1048.07	79.60	1.62E+01		-7.31E+00	7.51E+00
	1235.34	19.70	8.63E+01		1.67E+01	4.04E+01
CS-137	661.65	85.12	6.25E-02	6.25E-02	2.14E-02	2.92E-02
LA-138	788.74	34.00	1.86E-01	9.06E-02	5.57E-02	8.68E-02
	1435.80	66.00	9.06E-02		3.14E-02	4.03E-02
CE-139	165.85	80.35	8.35E-02	8.35E-02	7.97E-03	4.04E-02
BA-140	162.64	6.70	1.26E+02	3.85E+01	-3.14E+01	6.09E+01
	304.84	4.50	2.05E+02		8.34E+01	9.79E+01
	423.70	3.20	2.94E+02		1.51E+02	1.38E+02
	437.55	2.00	4.66E+02		2.73E+01	2.19E+02
	537.32	25.00	3.85E+01		1.41E+01	1.80E+01
LA-140	328.77	20.50	5.31E+01	1.46E+01	5.17E+01	2.55E+01
	487.03	45.50	2.06E+01		2.71E+00	9.62E+00
	815.85	23.50	4.97E+01		-8.18E+00	2.29E+01
	1596.49	95.49	1.46E+01		-4.83E-01	6.49E+00
CE-141	145.44	48.40	7.10E-01	7.10E-01	-1.75E-01	3.45E-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	3.64E-01	3.64E-01	-2.92E-02	1.75E-01
PM-144	476.78	42.00	1.23E-01	6.72E-02	-3.64E-02	5.78E-02
	618.01	98.60	6.72E-02		-2.57E-02	3.16E-02
	696.49	99.49	7.28E-02		-3.10E-03	3.42E-02
PM-145	36.85	21.70	4.86E-01	2.38E-01	3.95E-03	2.35E-01
	37.36	39.70	2.38E-01		-1.05E-01	1.15E-01
	42.30	15.10	3.72E-01		-2.17E-02	1.79E-01
	72.40	2.31	1.68E+00		-6.27E+00	8.15E-01
PM-146	453.90	39.94	1.03E-01	1.03E-01	-7.83E-02	4.80E-02
	735.90	14.01	4.17E-01		-4.45E-02	1.94E-01
	747.13	13.10	4.20E-01		-2.63E-02	1.95E-01
ND-147	91.11	28.90	6.65E+01	6.65E+01	-1.15E+02	3.23E+01
	531.02	13.10	1.66E+02		-3.47E+01	7.71E+01
PM-149	285.90	3.10	4.06E+13	4.06E+13	1.64E+13	1.93E+13
EU-152	121.78	20.50	1.41E-01	1.41E-01	1.89E-03	6.75E-02
	244.69	5.40	8.07E-01		7.11E-02	3.88E-01
	344.27	19.13	2.20E-01		1.15E-01	1.04E-01
	778.89	9.20	5.79E-01		-4.11E-02	2.68E-01
	964.01	10.40	7.89E-01		4.51E-01	3.71E-01
	1085.78	7.22	9.51E-01		6.11E-02	4.38E-01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	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	7.36E-01	1.41E-01	2.17E-01	3.40E-01
		1407.95		14.94	4.80E-01		2.58E-01	2.18E-01
	GD-153	97.43		31.30	1.23E-01	1.23E-01	-4.03E-02	5.91E-02
		103.18		22.20	1.65E-01		-3.83E-02	7.94E-02
	EU-154	123.07		40.50	7.51E-02	7.51E-02	3.68E-03	3.61E-02
		723.30		19.70	3.07E-01		-5.94E-01	1.44E-01
		873.19		11.50	5.32E-01		-1.48E-01	2.46E-01
		996.32		10.30	5.74E-01		-1.96E-01	2.63E-01
		1004.76		17.90	3.41E-01		-8.38E-02	1.56E-01
		1274.45		35.50	2.19E-01		4.80E-02	1.01E-01
	EU-155	86.50		30.90	1.42E-01	1.42E-01	2.27E-01	6.91E-02
		105.30		20.70	1.48E-01		2.73E-02	7.11E-02
	EU-156	811.77		10.40	5.09E+01	5.09E+01	-5.72E-01	2.36E+01
		1153.47		7.20	9.55E+01		-1.54E+01	4.42E+01
		1230.71		8.90	9.41E+01		5.73E+01	4.40E+01
	HO-166M	184.41		72.60	6.83E-02	6.83E-02	8.98E-02	3.32E-02
		280.45		29.60	1.32E-01		-1.16E-01	6.31E-02
		410.94		11.10	4.40E-01		1.70E-01	2.09E-01
		711.69		54.10	1.13E-01		5.03E-02	5.33E-02
	TM-171	66.72		0.14	2.93E+01	2.93E+01	-2.32E+00	1.42E+01
	HF-172	67.35		5.31	7.87E-01	3.06E-01	1.78E-01	3.82E-01
		125.81		11.30	3.06E-01		5.76E-02	1.47E-01
	LU-172	181.53		20.60	5.72E+03	3.38E+03	8.29E+02	2.76E+03
		900.72		29.81	5.78E+03		1.39E+03	2.67E+03
		1093.66		62.50	3.38E+03		1.51E+03	1.57E+03
	LU-173	100.72		5.24	6.23E-01	2.58E-01	-6.52E-02	3.00E-01
		272.11		21.20	2.58E-01		1.69E-01	1.24E-01
	HF-175	343.40		84.00	1.35E-01	1.35E-01	1.73E-02	6.43E-02
	LU-176	88.34		13.30	3.11E-01	4.54E-02	3.06E-01	1.51E-01
		201.83		86.00	4.90E-02		2.35E-02	2.36E-02
		306.78		94.00	4.54E-02		2.81E-02	2.16E-02
	HF-181	133.02		41.70	3.96E-01	2.83E-01	2.81E-01	1.91E-01
		345.85		17.20	1.26E+00		-5.49E-01	5.96E-01
		482.03		82.80	2.83E-01		4.20E-02	1.33E-01
	TA-182	67.75		41.20	1.67E-01	1.67E-01	3.77E-02	8.08E-02
		1121.30		34.90	5.33E-01		6.53E-01	2.52E-01
		1189.05		16.23	8.65E-01		3.19E-01	4.01E-01
		1221.41		26.98	5.59E-01		2.37E-01	2.60E-01
		1231.02		11.44	1.45E+00		8.80E-01	6.76E-01
	IR-192	308.46		29.68	3.41E-01	2.28E-01	-1.54E-01	1.62E-01
		468.07		48.10	2.28E-01		-1.40E-03	1.07E-01
	HG-203	279.19		77.30	2.52E-01	2.52E-01	8.65E-02	1.21E-01
	TL-204	374.74		94.11	4.79E-02	4.79E-02	1.46E-02	2.27E-02
		899.15		99.16	6.33E-02		1.42E-02	2.92E-02
		911.74		91.10	1.37E-01		3.11E-01	6.58E-02
	BI-207	569.67		97.72	4.90E-02	4.90E-02	2.35E-03	2.29E-02
		1063.62		74.90	9.36E-02		-1.47E-03	4.33E-02
+	TL-208	583.14	*	30.22	2.32E-01	9.47E-02	8.97E-01	1.11E-01
		860.37	*	4.48	1.55E+00		1.10E+00	7.26E-01
		2614.66	*	35.85	9.47E-02		8.56E-01	3.49E-02
	BI-210M	262.00		45.00	8.94E-02	8.94E-02	1.80E-02	4.27E-02
		300.00		23.00	1.98E-01		-1.84E-02	9.46E-02
	PB-210	46.50		4.25	1.26E+00	1.26E+00	1.56E+00	6.10E-01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

	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	1.47E+00	1.47E+00	-5.52E-01	6.91E-01
		831.96		2.90	2.13E+00		-1.10E+00	9.93E-01
+	BI-212	727.17	*	11.80	8.00E-01	8.00E-01	7.53E-01	3.84E-01
		1620.62	*	2.75	2.12E+00		9.46E-01	9.29E-01
+	PB-212	238.63	*	44.60	1.83E-01	1.83E-01	1.03E+00	8.96E-02
		300.09	*	3.41	1.44E+00		7.73E-01	6.92E-01
+	BI-214	609.31	*	46.30	1.70E-01	1.70E-01	6.93E-01	8.14E-02
		1120.29	*	15.10	7.83E-01		8.48E-01	3.74E-01
		1764.49	*	15.80	3.92E-01		9.75E-01	1.72E-01
		2204.22	*	4.98	1.19E+00		1.27E+00	5.10E-01
+	PB-214	295.21	*	19.19	3.33E-01	1.78E-01	8.39E-01	1.62E-01
		351.92	*	37.19	1.78E-01		7.63E-01	8.59E-02
	RN-219	401.80		6.50	6.63E-01	6.63E-01	-2.41E-01	3.13E-01
	RA-223	323.87		3.88	1.03E+00	1.03E+00	9.08E-02	4.89E-01
+	RA-224	240.98	*	3.95	2.05E+00	2.05E+00	2.08E+00	1.01E+00
	RA-225	40.00		31.00	2.44E+01	2.44E+01	1.70E+01	1.18E+01
+	RA-226	186.21	*	3.28	1.85E+00	1.85E+00	2.30E+00	9.05E-01
	TH-227	50.10		8.40	4.85E-01	4.85E-01	-1.09E-01	2.33E-01
		236.00		11.50	5.26E-01		-4.46E+00	2.56E-01
		256.20		6.30	6.92E-01		3.22E-02	3.32E-01
+	AC-228	338.32	*	11.40	5.83E-01	2.92E-01	1.18E+00	2.82E-01
		911.07	*	27.70	2.92E-01		9.93E-01	1.38E-01
		969.11	*	16.60	6.13E-01		8.55E-01	2.92E-01
	TH-230	48.44		16.90	2.55E-01	2.55E-01	-2.38E-01	1.23E-01
		62.85		4.60	9.30E-01		1.00E+00	4.52E-01
		67.67		0.37	1.02E+01		2.30E+00	4.94E+00
	PA-231	283.67		1.60	2.52E+00	1.92E+00	1.00E+00	1.20E+00
		302.67		2.30	1.92E+00		-4.65E-01	9.18E-01
	TH-231	25.64		14.70	1.09E-01	1.09E-01	0.00E+00	0.00E+00
		84.21		6.40	5.47E-01		-6.50E-01	2.65E-01
	PA-233	311.98		38.60	1.37E+00	1.37E+00	-6.42E-01	6.52E-01
	PA-234	131.20		20.40	1.54E-01	1.54E-01	-1.05E-01	7.40E-02
		733.99		8.80	6.67E-01		2.35E-01	3.12E-01
		946.00		12.00	5.28E-01		2.91E-02	2.44E-01
	PA-234M	1001.03		0.92	6.17E+00	6.17E+00	-3.08E+00	2.82E+00
	TH-234	63.29		3.80	1.11E+00	1.11E+00	1.01E+00	5.42E-01
+	U-235	143.76	*	10.50	4.83E-01	4.83E-01	4.27E-01	2.35E-01
		163.35		4.70	8.33E-01		-3.07E-01	4.02E-01
		205.31	*	4.70	1.17E+00		3.06E-01	5.71E-01
	NP-237	86.50		12.60	3.35E-01	3.35E-01	5.36E-01	1.63E-01
	NP-239	106.10		22.70	6.17E+11	6.17E+11	1.14E+11	2.97E+11
		228.18		10.70	1.89E+12		-1.68E+11	9.10E+11
		277.60		14.10	1.53E+12		1.52E+12	7.34E+11
	AM-241	59.54		35.90	1.10E-01	1.10E-01	1.85E-02	5.35E-02
	AM-243	74.67		66.00	7.54E-02	7.54E-02	-9.70E-02	3.69E-02
	CM-243	209.75		3.29	1.49E+00	3.26E-01	1.85E+00	7.24E-01
		228.14		10.60	4.04E-01		-3.60E-02	1.94E-01
		277.60		14.00	3.26E-01		3.24E-01	1.56E-01

Analysis Report for 1707088-03

HTC-A03-S003-3642-01

+ = 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

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-A03-S003-3642-01

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	0	0	0	0	0	0	0
25:	0	0	0	0	36	103	177	166
33:	152	669	182	120	109	102	77	103
41:	78	51	73	74	61	76	127	73
49:	58	78	73	76	83	86	72	82
57:	91	96	93	114	105	101	140	163
65:	97	106	104	121	121	110	97	113
73:	141	132	326	218	361	379	102	114
81:	98	102	96	109	131	108	179	226
89:	101	166	109	111	216	164	85	87
97:	66	74	93	85	68	71	70	67
105:	78	86	71	77	76	62	81	68
113:	80	77	81	89	91	72	75	51
121:	57	70	73	75	79	78	80	74
129:	110	74	63	93	84	70	65	67
137:	80	64	72	46	64	66	74	92
145:	88	73	53	64	81	65	64	61
153:	67	79	72	50	69	55	53	78
161:	51	50	61	67	60	50	72	58
169:	59	47	49	51	58	55	74	52
177:	67	61	57	53	61	49	63	56
185:	65	141	79	61	52	33	61	59
193:	51	63	56	55	57	61	47	61
201:	51	56	56	32	42	57	45	42
209:	83	97	62	46	44	39	51	42
217:	45	55	37	47	49	31	53	44
225:	42	41	38	45	52	45	48	53
233:	47	47	60	50	51	228	525	115
241:	86	113	53	39	28	31	53	44
249:	33	36	34	46	45	49	38	32
257:	43	35	35	38	22	29	36	36
265:	26	37	32	25	38	63	44	36
273:	39	35	32	29	45	51	34	31
281:	20	33	20	30	31	30	27	21
289:	25	39	28	19	27	42	171	115
297:	42	27	24	46	41	32	30	24
305:	31	28	33	22	30	20	20	31
313:	33	28	33	19	19	31	29	23
321:	31	28	26	23	21	18	23	50
329:	46	32	33	28	27	24	15	22
337:	36	91	98	34	30	21	19	27
345:	24	23	14	32	15	29	77	257
353:	108	17	16	32	17	19	25	28
361:	19	27	26	25	18	13	27	20

369:	18	20	19	16	19	17	23	28

Sample Title: HTC-A03-S003-3642-01

Channel								
377:	20	20	24	20	17	27	19	21
385:	18	18	23	17	17	27	13	12
393:	14	13	24	25	16	13	21	22
401:	26	17	15	17	24	16	21	26
409:	29	34	17	18	24	17	23	10
417:	21	20	8	21	14	25	17	21
425:	14	14	13	21	17	10	21	20
433:	11	10	12	13	20	17	23	22
441:	16	12	19	15	14	13	18	12
449:	21	23	22	15	15	15	13	9
457:	18	18	11	12	16	22	42	26
465:	20	20	18	11	13	15	13	15
473:	15	15	12	6	18	17	20	18
481:	20	14	12	20	12	15	20	12
489:	13	11	12	13	11	19	15	18
497:	13	19	23	9	10	7	14	10
505:	8	13	22	22	27	48	69	54
513:	21	14	8	16	14	13	14	11
521:	11	13	12	9	11	6	13	16
529:	9	12	18	8	10	12	12	16
537:	17	9	11	5	14	16	12	17
545:	12	7	14	11	14	10	14	8
553:	10	14	9	10	16	8	11	15
561:	11	16	15	8	24	9	19	12
569:	17	10	10	10	13	11	5	18
577:	9	13	15	10	16	34	143	84
585:	19	10	10	12	18	11	14	12
593:	8	8	15	11	10	12	12	15
601:	18	14	15	17	11	19	14	38
609:	159	114	19	11	17	15	12	12
617:	18	9	12	9	8	13	12	7
625:	20	10	6	16	9	13	10	17
633:	13	14	12	9	4	13	10	14
641:	8	7	3	7	12	15	10	12
649:	14	10	12	13	10	11	14	5
657:	12	7	8	18	11	8	5	9
665:	20	17	12	14	8	10	15	6
673:	9	10	16	12	5	14	9	14
681:	8	10	6	10	9	16	10	8
689:	6	12	9	13	15	7	9	9
697:	15	9	15	11	13	16	13	16
705:	14	12	10	8	13	8	13	10
713:	12	16	5	8	17	14	10	5
721:	11	8	12	11	10	15	33	30
729:	17	12	6	15	11	6	11	11
737:	9	9	6	10	8	11	10	14
745:	7	7	2	8	9	7	8	5
753:	7	12	15	9	7	9	11	12
761:	13	11	8	9	14	7	9	17
769:	17	10	10	15	5	8	8	7
777:	7	8	2	8	9	6	10	12
785:	13	7	13	10	9	9	10	5
793:	8	22	17	15	5	4	10	6

801:	6	16	6	10	10	11	10	5

Sample Title: HTC-A03-S003-3642-01

Channel								
809:	12	7	10	5	8	8	4	8
817:	6	9	3	11	5	6	8	4
825:	12	9	9	7	10	6	8	14
833:	10	7	12	16	8	8	7	10
841:	8	8	3	5	9	5	6	3
849:	3	13	6	6	11	7	8	6
857:	7	7	11	20	16	10	3	8
865:	8	8	5	10	6	4	8	5
873:	10	6	12	8	4	16	6	8
881:	7	5	5	8	13	6	11	11
889:	4	8	2	3	10	7	5	6
897:	5	6	9	9	9	6	7	5
905:	8	4	8	9	13	34	88	55
913:	8	2	11	5	2	9	7	15
921:	5	10	11	3	6	5	5	7
929:	10	12	4	6	8	10	8	5
937:	7	5	5	9	4	7	8	4
945:	9	6	10	8	14	15	6	9
953:	4	5	3	3	10	7	8	9
961:	10	10	9	18	21	8	11	34
969:	49	28	8	5	8	4	6	6
977:	4	10	5	4	10	3	4	8
985:	3	9	5	5	5	4	6	7
993:	4	8	11	4	5	1	6	8
1001:	7	6	4	7	8	5	4	9
1009:	5	7	5	6	6	6	5	1
1017:	8	6	6	9	4	4	4	5
1025:	3	9	5	4	6	7	4	6
1033:	5	10	4	5	5	6	1	7
1041:	4	12	10	10	3	8	6	6
1049:	9	11	11	7	6	1	6	6
1057:	10	9	10	8	5	7	11	7
1065:	7	7	5	7	9	7	12	7
1073:	11	9	7	9	4	10	10	8
1081:	9	4	8	5	4	10	10	6
1089:	4	5	11	11	10	7	6	6
1097:	5	7	4	7	6	12	11	9
1105:	8	5	8	11	6	2	11	5
1113:	9	4	6	8	8	10	17	33
1121:	23	10	7	7	5	6	11	9
1129:	13	8	8	10	5	9	4	7
1137:	9	10	9	1	3	8	8	7
1145:	5	6	7	5	7	4	8	6
1153:	6	7	11	10	10	11	9	4
1161:	14	4	2	6	11	3	4	13
1169:	6	10	9	11	7	8	7	12
1177:	7	10	8	11	8	7	8	5
1185:	9	6	7	10	4	8	9	7
1193:	3	6	4	5	4	6	7	7
1201:	11	8	5	15	6	5	8	13
1209:	12	8	7	9	8	9	6	5
1217:	6	11	7	9	7	11	9	5
1225:	6	7	9	11	8	13	10	13

1233:	7	8	5	12	11	16	7	7

Sample Title: HTC-A03-S003-3642-01

Channel								
1241:	6	13	7	5	9	7	11	8
1249:	8	4	7	7	10	5	5	12
1257:	2	6	3	10	2	3	5	4
1265:	5	10	9	7	4	7	10	3
1273:	2	12	9	2	8	6	5	6
1281:	9	6	7	4	7	8	9	5
1289:	4	4	8	6	1	3	3	5
1297:	2	2	6	4	5	4	8	7
1305:	7	7	4	3	4	5	3	2
1313:	3	2	6	8	7	4	4	5
1321:	1	6	1	2	5	2	4	4
1329:	2	1	2	3	7	4	5	3
1337:	7	6	7	1	4	2	3	3
1345:	2	5	5	3	3	3	1	1
1353:	3	1	3	4	4	8	1	5
1361:	3	7	2	3	0	5	3	5
1369:	5	4	1	1	1	2	5	6
1377:	9	6	6	2	3	1	2	4
1385:	3	4	0	1	1	1	6	4
1393:	3	0	4	1	2	1	0	3
1401:	5	5	2	1	2	4	4	8
1409:	1	6	5	3	2	2	4	0
1417:	2	2	1	2	0	8	1	3
1425:	2	4	2	3	1	2	1	2
1433:	3	2	1	7	2	0	4	3
1441:	0	2	5	3	4	5	4	0
1449:	0	1	1	1	3	4	8	12
1457:	21	23	119	267	310	99	14	2
1465:	1	2	0	3	3	0	3	0
1473:	2	2	2	1	3	0	0	2
1481:	4	1	0	2	0	1	1	2
1489:	1	3	6	1	3	3	3	2
1497:	3	0	2	1	5	3	2	1
1505:	3	2	3	1	4	2	2	1
1513:	1	0	3	0	2	1	1	0
1521:	2	3	2	0	3	3	1	2
1529:	2	5	2	0	0	1	0	1
1537:	3	2	0	1	2	0	0	1
1545:	0	1	2	2	3	0	3	0
1553:	2	1	0	1	0	4	0	1
1561:	0	1	0	0	2	2	0	0
1569:	1	1	2	1	1	2	0	0
1577:	0	0	3	3	2	4	0	0
1585:	1	2	9	6	4	3	1	5
1593:	2	4	2	1	1	4	2	2
1601:	1	1	0	1	5	0	0	0
1609:	2	0	1	5	1	2	2	2
1617:	1	1	6	1	2	1	1	0
1625:	2	2	0	2	2	3	0	2
1633:	4	2	1	2	1	2	1	0
1641:	1	0	2	1	2	0	0	1
1649:	2	2	1	0	1	2	1	0
1657:	0	3	1	3	2	0	1	2

1665:	2	2	0	1	1	2	1	2

Sample Title: HTC-A03-S003-3642-01

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

2097:	0	2	0	1	3	7	5	8

Sample Title: HTC-A03-S003-3642-01

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

2529:	0	0	1	0	0	1	0	2

Sample Title: HTC-A03-S003-3642-01

Channel								
2537:	0	0	0	1	0	0	1	0
2545:	0	0	0	0	0	0	1	0
2553:	0	0	0	0	0	0	0	0
2561:	0	0	0	1	0	1	0	0
2569:	1	1	0	0	0	0	0	0
2577:	1	0	0	0	0	0	1	0
2585:	2	0	0	0	1	2	0	0
2593:	1	1	0	2	0	2	0	0
2601:	1	0	1	0	0	0	2	2
2609:	4	2	9	8	22	25	21	3
2617:	0	0	0	0	1	0	1	0
2625:	0	1	0	0	0	0	0	1
2633:	0	0	1	1	1	0	0	0
2641:	1	2	0	0	0	0	0	1
2649:	1	0	1	0	0	0	0	0
2657:	0	1	0	1	0	1	1	0
2665:	1	0	0	0	0	0	1	1
2673:	0	1	0	0	0	1	0	1
2681:	0	1	0	0	0	0	0	1
2689:	1	0	0	1	2	1	0	1
2697:	0	0	0	0	0	0	0	0
2705:	0	1	0	1	0	1	0	1
2713:	0	0	0	0	0	0	0	1
2721:	0	0	0	1	0	1	1	0
2729:	0	0	0	0	0	0	1	1
2737:	0	0	0	0	2	2	0	0
2745:	0	1	0	0	1	1	0	1
2753:	1	0	0	0	0	1	0	0
2761:	2	0	0	0	0	0	0	0
2769:	0	0	0	0	0	0	0	0
2777:	1	0	0	0	0	0	0	0
2785:	1	0	0	0	0	0	0	0
2793:	0	1	1	0	0	0	0	0
2801:	0	0	1	0	0	1	2	0
2809:	0	0	1	0	0	0	0	0
2817:	0	1	0	0	0	0	0	0
2825:	0	0	0	0	1	2	0	0
2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	0	1	1	0	0
2849:	0	0	0	0	0	0	0	1
2857:	0	0	0	0	0	0	0	0
2865:	1	1	0	0	0	1	0	0
2873:	0	0	0	0	0	0	0	0
2881:	0	0	0	0	0	0	0	0
2889:	0	0	1	0	0	0	0	0
2897:	1	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	0	0	0	0	0
2929:	0	0	1	0	0	0	0	0
2937:	0	0	0	0	0	0	0	1
2945:	0	1	0	0	0	0	0	0
2953:	0	0	0	0	1	0	0	0

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S003-3642-01

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

3393:	0	0	0	1	0	0	0	0

Sample Title: HTC-A03-S003-3642-01

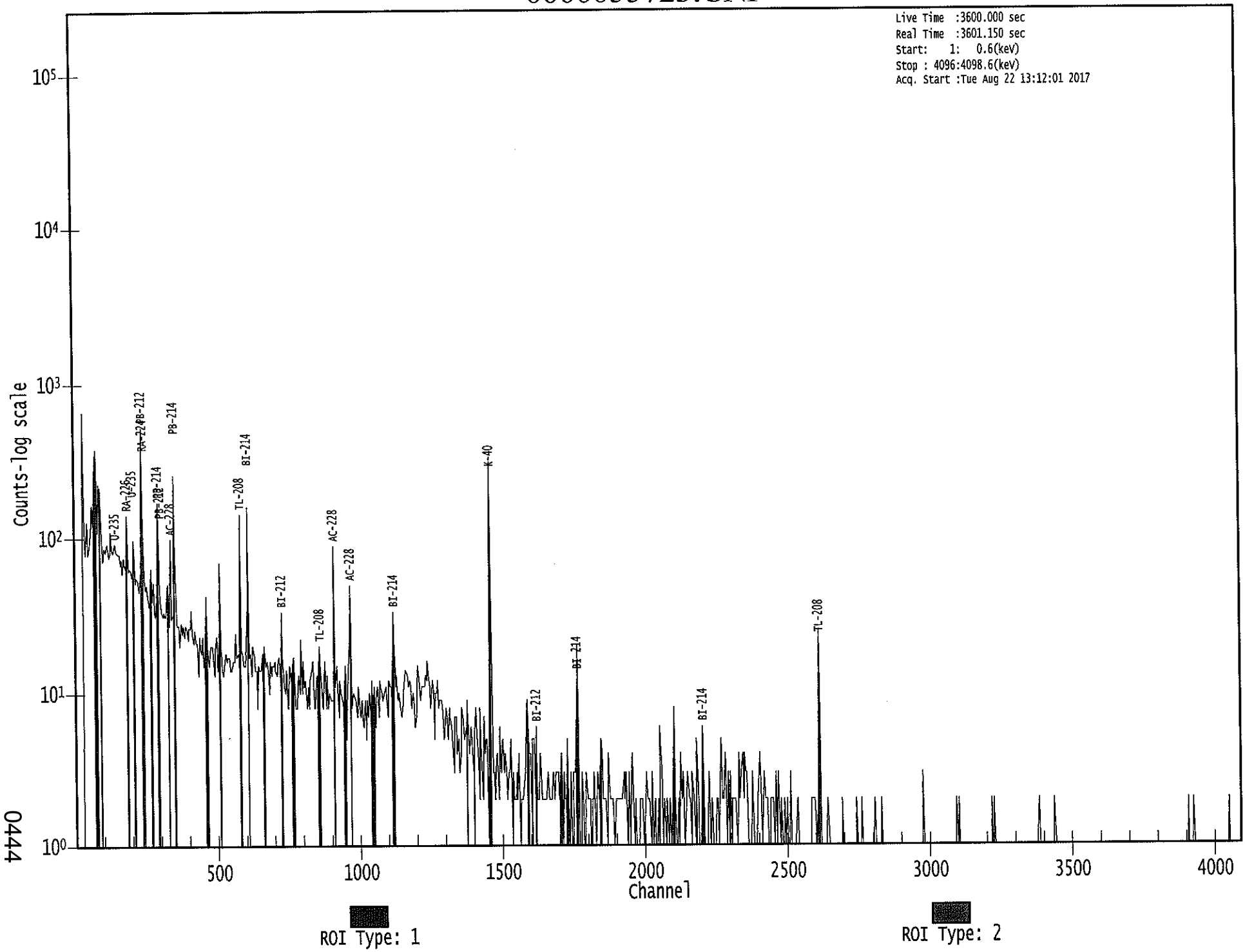
Channel								
3401:	0	0	1	0	0	0	0	0
3409:	1	0	0	0	1	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	1	1	0	0	1	0
3433:	0	1	0	0	2	0	0	0
3441:	0	0	0	1	0	0	0	0
3449:	0	0	1	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	1	0	0	0	0	0	0	1
3473:	0	1	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	1	0	0
3497:	0	0	0	0	0	0	1	0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

3825:	0	0	1	0	0	0	0	0

Sample Title: HTC-A03-S003-3642-01

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

0000055723.CNF



0444

KB 8/22/17

Apex-Gamma

Analysis Report for 1707088-04
HTC-A03-S003-3642-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-04
Sample Description	: HTC-A03-S003-3642-01
Sample Type	: SOIL
Sample Size	: 7.134E+02 grams
Facility	: Countroom
Sample Taken On	: 5/15/2017 9:30:32AM
Acquisition Started	: 8/22/2017 2:13:27PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.1 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 29 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 8/19/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55728

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 8/22/17

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 3:13:31PM
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	63.65	63.97	0.0000	0.00
2	76.25	76.56	0.0000	0.00
3	87.80	88.10	0.0000	0.00
4	163.96	164.17	0.0000	0.00
5	186.06	186.26	0.0000	0.00
6	200.18	200.36	0.0000	0.00
7	209.87	210.04	0.0000	0.00
8	238.88	239.01	0.0000	0.00
9	242.04	242.17	0.0000	0.00
10	269.78	269.89	0.0000	0.00
11	295.71	295.78	0.0000	0.00
12	328.05	328.10	0.0000	0.00
13	338.40	338.43	0.0000	0.00
14	352.01	352.02	0.0000	0.00
15	410.43	410.39	0.0000	0.00
16	454.00	453.92	0.0000	0.00
17	462.93	462.84	0.0000	0.00
18	503.02	502.89	0.0000	0.00
19	511.03	510.88	0.0000	0.00
20	583.53	583.31	0.0000	0.00
21	609.60	609.36	0.0000	0.00
22	620.09	619.84	0.0000	0.00
23	727.83	727.46	0.0000	0.00
24	754.97	754.58	0.0000	0.00
25	768.25	767.85	0.0000	0.00
26	837.78	837.31	0.0000	0.00
27	862.04	861.55	0.0000	0.00
28	892.01	891.49	0.0000	0.00
29	911.49	910.95	0.0000	0.00
30	966.25	965.67	0.0000	0.00
31	969.26	968.67	0.0000	0.00
32	1116.22	1115.49	0.0000	0.00
33	1120.79	1120.06	0.0000	0.00
34	1230.97	1230.15	0.0000	0.00
35	1237.96	1237.13	0.0000	0.00
36	1326.79	1325.88	0.0000	0.00
37	1351.72	1350.79	0.0000	0.00
38	1377.92	1376.96	0.0000	0.00
39	1402.21	1401.23	0.0000	0.00
40	1407.75	1406.77	0.0000	0.00
41	1423.74	1422.74	0.0000	0.00
42	1431.03	1430.03	0.0000	0.00

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1461.46	1460.43	0.0000	0.00
44	1496.33	1495.27	0.0000	0.00
45	1502.97	1501.91	0.0000	0.00
46	1521.68	1520.61	0.0000	0.00
47	1593.89	1592.75	0.0000	0.00
48	1670.07	1668.88	0.0000	0.00
49	1683.73	1682.52	0.0000	0.00
50	1713.98	1712.75	0.0000	0.00
51	1751.43	1750.17	0.0000	0.00
52	1757.01	1755.74	0.0000	0.00
53	1765.61	1764.34	0.0000	0.00
54	1872.10	1870.74	0.0000	0.00
55	1958.39	1956.97	0.0000	0.00
56	2104.21	2102.69	0.0000	0.00
57	2118.62	2117.09	0.0000	0.00
58	2136.74	2135.19	0.0000	0.00
59	2385.43	2383.71	0.0000	0.00
60	2615.20	2613.33	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 3:13:31PM

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	63.65	60 -	67	63.97	1.81E+02	101.61	1.60E+03	1.54
	2	76.25	72 -	79	76.56	9.06E+02	116.14	1.64E+03	3.79
M	3	87.80	83 -	97	88.10	1.38E+02	51.03	5.74E+02	1.10
	4	163.96	162 -	166	164.17	4.55E+01	51.57	5.51E+02	1.64
	5	186.06	183 -	190	186.26	1.54E+02	75.10	8.40E+02	1.61
	6	200.18	198 -	203	200.36	4.87E+01	52.53	5.13E+02	2.21
	7	209.87	206 -	215	210.04	7.14E+01	83.37	9.45E+02	5.41
M	8	238.88	234 -	248	239.01	7.78E+02	65.94	2.58E+02	1.45
m	9	242.04	234 -	248	242.17	1.17E+02	45.96	2.28E+02	1.46
	10	269.78	265 -	274	269.89	5.59E+01	67.53	6.18E+02	1.97
	11	295.71	290 -	301	295.78	2.27E+02	83.74	7.66E+02	1.94
	12	328.05	325 -	331	328.10	5.70E+01	43.19	2.98E+02	1.23
	13	338.40	334 -	343	338.43	1.62E+02	62.79	4.72E+02	1.90
	14	352.01	348 -	355	352.02	4.04E+02	58.45	3.00E+02	1.33
	15	410.43	406 -	414	410.39	4.93E+01	43.43	2.57E+02	4.81
M	16	454.00	449 -	469	453.92	2.03E+01	28.64	1.44E+02	2.00
m	17	462.93	449 -	469	462.84	4.98E+01	30.20	1.23E+02	2.02
M	18	503.02	496 -	525	502.89	2.94E+01	33.82	1.82E+02	2.52
m	19	511.03	496 -	525	510.88	1.80E+02	42.14	1.62E+02	2.53
	20	583.53	579 -	587	583.31	2.54E+02	47.95	1.96E+02	1.92
	21	609.60	604 -	614	609.36	2.63E+02	53.90	2.46E+02	2.06
	22	620.09	617 -	622	619.84	3.64E+01	21.47	6.33E+01	3.86
	23	727.83	723 -	732	727.46	8.47E+01	37.78	1.57E+02	2.01
	24	754.97	750 -	758	754.58	4.05E+01	32.24	1.35E+02	4.04
	25	768.25	765 -	772	767.85	3.00E+01	31.56	1.50E+02	2.03
	26	837.78	833 -	841	837.31	2.66E+01	32.31	1.45E+02	5.01
	27	862.04	857 -	867	861.55	7.29E+01	28.80	7.22E+01	3.88
	28	892.01	888 -	895	891.49	3.11E+01	20.69	4.78E+01	4.46
	29	911.49	905 -	916	910.95	1.74E+02	43.50	1.49E+02	1.90
M	30	966.25	962 -	973	965.67	3.63E+01	30.20	9.84E+01	2.68
m	31	969.26	962 -	973	968.67	6.39E+01	29.30	8.80E+01	2.19
M	32	1116.22	1113 -	1125	1115.49	1.75E+01	17.72	7.13E+01	3.13
m	33	1120.79	1113 -	1125	1120.06	8.82E+01	31.30	9.24E+01	2.61
	34	1230.97	1228 -	1233	1230.15	2.50E+01	21.63	7.60E+01	2.57
	35	1237.96	1233 -	1243	1237.13	4.46E+01	39.22	1.81E+02	3.38
	36	1326.79	1322 -	1332	1325.88	2.36E+01	22.59	5.68E+01	2.90
	37	1351.72	1347 -	1355	1350.79	1.70E+01	14.60	2.19E+01	1.75
	38	1377.92	1373 -	1381	1376.96	1.53E+01	20.17	5.13E+01	1.59
M	39	1402.21	1394 -	1412	1401.23	1.35E+01	14.19	2.40E+01	3.07
m	40	1407.75	1394 -	1412	1406.77	2.11E+01	16.41	2.11E+01	3.00

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	41	1423.74	1420 -	1433	1422.74	1.16E+01	10.00	1.53E+01	3.45
m	42	1431.03	1420 -	1433	1430.03	1.76E+01	12.81	1.23E+01	3.46
	43	1461.46	1454 -	1466	1460.43	8.33E+02	61.87	5.84E+01	2.39
	44	1496.33	1491 -	1499	1495.27	1.33E+01	11.86	1.34E+01	4.87
	45	1502.97	1500 -	1505	1501.91	9.06E+00	10.44	1.39E+01	2.13
	46	1521.68	1516 -	1524	1520.61	9.28E+00	11.17	1.34E+01	5.84
	47	1593.89	1590 -	1596	1592.75	1.38E+01	11.18	1.03E+01	2.09
	48	1670.07	1665 -	1672	1668.88	8.00E+00	5.66	0.00E+00	1.16
	49	1683.73	1676 -	1686	1682.52	9.24E+00	12.60	1.55E+01	6.13
	50	1713.98	1711 -	1715	1712.75	4.42E+00	5.50	3.17E+00	2.56
	51	1751.43	1748 -	1752	1750.17	6.00E+00	4.90	0.00E+00	1.98
	52	1757.01	1753 -	1758	1755.74	5.89E+00	7.35	6.22E+00	1.26
	53	1765.61	1760 -	1767	1764.34	3.69E+01	16.37	2.01E+01	2.10
	54	1872.10	1866 -	1873	1870.74	6.78E+00	7.21	4.44E+00	1.29
	55	1958.39	1951 -	1960	1956.97	6.28E+00	7.81	5.44E+00	2.74
	56	2104.21	2097 -	2106	2102.69	1.50E+01	14.14	2.00E+01	5.53
	57	2118.62	2114 -	2119	2117.09	7.32E+00	8.43	7.36E+00	1.83
	58	2136.74	2130 -	2139	2135.19	8.68E+00	8.31	4.64E+00	3.13
	59	2385.43	2380 -	2386	2383.71	7.00E+00	5.29	0.00E+00	3.32
	60	2615.20	2607 -	2618	2613.33	8.80E+01	21.17	1.20E+01	2.41

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

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 3:13:31PM

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	63.65	60 -	67	1.81E+02	101.61	1.60E+03	8.05E+01
	2	76.25	72 -	79	9.06E+02	116.14	1.64E+03	8.16E+01
M	3	87.80	83 -	97	1.38E+02	51.03	5.74E+02	3.94E+01
	4	163.96	162 -	166	4.55E+01	51.57	5.51E+02	4.09E+01
	5	186.06	183 -	190	1.54E+02	75.10	8.40E+02	5.83E+01
	6	200.18	198 -	203	4.87E+01	52.53	5.13E+02	4.16E+01
	7	209.87	206 -	215	7.14E+01	83.37	9.45E+02	6.71E+01
M	8	238.88	234 -	248	7.78E+02	65.94	2.58E+02	2.64E+01

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
m	9	242.04	234 -	248	1.17E+02	45.96	2.28E+02	2.48E+01
	10	269.78	265 -	274	5.59E+01	67.53	6.18E+02	5.41E+01
	11	295.71	290 -	301	2.27E+02	83.74	7.66E+02	6.42E+01
	12	328.05	325 -	331	5.70E+01	43.19	2.98E+02	3.33E+01
	13	338.40	334 -	343	1.62E+02	62.79	4.72E+02	4.72E+01
	14	352.01	348 -	355	4.04E+02	58.45	3.00E+02	3.49E+01
	15	410.43	406 -	414	4.93E+01	43.43	2.57E+02	3.38E+01
M	16	454.00	449 -	469	2.03E+01	28.64	1.44E+02	1.97E+01
m	17	462.93	449 -	469	4.98E+01	30.20	1.23E+02	1.82E+01
M	18	503.02	496 -	525	2.94E+01	33.82	1.82E+02	2.22E+01
m	19	511.03	496 -	525	1.80E+02	42.14	1.62E+02	2.09E+01
	20	583.53	579 -	587	2.54E+02	47.95	1.96E+02	2.94E+01
	21	609.60	604 -	614	2.63E+02	53.90	2.46E+02	3.54E+01
	22	620.09	617 -	622	3.64E+01	21.47	6.33E+01	1.46E+01
	23	727.83	723 -	732	8.47E+01	37.78	1.57E+02	2.71E+01
	24	754.97	750 -	758	4.05E+01	32.24	1.35E+02	2.44E+01
	25	768.25	765 -	772	3.00E+01	31.56	1.50E+02	2.43E+01
	26	837.78	833 -	841	2.66E+01	32.31	1.45E+02	2.52E+01
	27	862.04	857 -	867	7.29E+01	28.80	7.22E+01	1.91E+01
	28	892.01	888 -	895	3.11E+01	20.69	4.78E+01	1.43E+01
	29	911.49	905 -	916	1.74E+02	43.50	1.49E+02	2.84E+01
M	30	966.25	962 -	973	3.63E+01	30.20	9.84E+01	1.63E+01
m	31	969.26	962 -	973	6.39E+01	29.30	8.80E+01	1.54E+01
M	32	1116.22	1113 -	1125	1.75E+01	17.72	7.13E+01	1.39E+01
m	33	1120.79	1113 -	1125	8.82E+01	31.30	9.24E+01	1.58E+01
	34	1230.97	1228 -	1233	2.50E+01	21.63	7.60E+01	1.58E+01
	35	1237.96	1233 -	1243	4.46E+01	39.22	1.81E+02	3.03E+01
	36	1326.79	1322 -	1332	2.36E+01	22.59	5.68E+01	1.68E+01
	37	1351.72	1347 -	1355	1.70E+01	14.60	2.19E+01	9.90E+00
	38	1377.92	1373 -	1381	1.53E+01	20.17	5.13E+01	1.53E+01
M	39	1402.21	1394 -	1412	1.35E+01	14.19	2.40E+01	8.06E+00
m	40	1407.75	1394 -	1412	2.11E+01	16.41	2.11E+01	7.55E+00
M	41	1423.74	1420 -	1433	1.16E+01	10.00	1.53E+01	6.43E+00
m	42	1431.03	1420 -	1433	1.76E+01	12.81	1.23E+01	5.78E+00
	43	1461.46	1454 -	1466	8.33E+02	61.87	5.84E+01	1.83E+01
	44	1496.33	1491 -	1499	1.33E+01	11.86	1.34E+01	7.69E+00
	45	1502.97	1500 -	1505	9.06E+00	10.44	1.39E+01	7.01E+00
	46	1521.68	1516 -	1524	9.28E+00	11.17	1.34E+01	7.69E+00
	47	1593.89	1590 -	1596	1.38E+01	11.18	1.03E+01	6.86E+00
	48	1670.07	1665 -	1672	8.00E+00	5.66	0.00E+00	0.00E+00
	49	1683.73	1676 -	1686	9.24E+00	12.60	1.55E+01	9.07E+00
	50	1713.98	1711 -	1715	4.42E+00	5.50	3.17E+00	2.92E+00
	51	1751.43	1748 -	1752	6.00E+00	4.90	0.00E+00	0.00E+00
	52	1757.01	1753 -	1758	5.89E+00	7.35	6.22E+00	4.54E+00
	53	1765.61	1760 -	1767	3.69E+01	16.37	2.01E+01	9.01E+00
	54	1872.10	1866 -	1873	6.78E+00	7.21	4.44E+00	4.10E+00
	55	1958.39	1951 -	1960	6.28E+00	7.81	5.44E+00	4.92E+00
	56	2104.21	2097 -	2106	1.50E+01	14.14	2.00E+01	9.73E+00
	57	2118.62	2114 -	2119	7.32E+00	8.43	7.36E+00	5.31E+00
	58	2136.74	2130 -	2139	8.68E+00	8.31	4.64E+00	4.81E+00
	59	2385.43	2380 -	2386	7.00E+00	5.29	0.00E+00	0.00E+00

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
60	2615.20	2607 -	2618	8.80E+01	21.17	1.20E+01	8.05E+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 : 8/22/2017 3:13:31PM

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	63.65	60 -	67	63.97	1.81E+02	101.61	1.60E+03	TH-234 TH-230
	2	76.25	72 -	79	76.56	9.06E+02	116.14	1.64E+03	.....
M	3	87.80	83 -	97	88.10	1.38E+02	51.03	5.74E+02	SN-126 CD-109 LU-176
	4	163.96	162 -	166	164.17	4.55E+01	51.57	5.51E+02	CS-136 U-235
	5	186.06	183 -	190	186.26	1.54E+02	75.10	8.40E+02	RA-226
	6	200.18	198 -	203	200.36	4.87E+01	52.53	5.13E+02	.....
	7	209.87	206 -	215	210.04	7.14E+01	83.37	9.45E+02	CM-243 GA-67
M	8	238.88	234 -	248	239.01	7.78E+02	65.94	2.58E+02	PB-212
m	9	242.04	234 -	248	242.17	1.17E+02	45.96	2.28E+02	.....
	10	269.78	265 -	274	269.89	5.59E+01	67.53	6.18E+02	.....
	11	295.71	290 -	301	295.78	2.27E+02	83.74	7.66E+02	PB-214
	12	328.05	325 -	331	328.10	5.70E+01	43.19	2.98E+02	LA-140
	13	338.40	334 -	343	338.43	1.62E+02	62.79	4.72E+02	AC-228
	14	352.01	348 -	355	352.02	4.04E+02	58.45	3.00E+02	PB-214
	15	410.43	406 -	414	410.39	4.93E+01	43.43	2.57E+02	HO-166M
M	16	454.00	449 -	469	453.92	2.03E+01	28.64	1.44E+02	PM-146
m	17	462.93	449 -	469	462.84	4.98E+01	30.20	1.23E+02	SB-125
M	18	503.02	496 -	525	502.89	2.94E+01	33.82	1.82E+02	.....
m	19	511.03	496 -	525	510.88	1.80E+02	42.14	1.62E+02	.....
	20	583.53	579 -	587	583.31	2.54E+02	47.95	1.96E+02	TL-208

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	21	609.60	604 -	614	609.36	2.63E+02	53.90	2.46E+02	BI-214
	22	620.09	617 -	622	619.84	3.64E+01	21.47	6.33E+01	.....
	23	727.83	723 -	732	727.46	8.47E+01	37.78	1.57E+02	BI-212
	24	754.97	750 -	758	754.58	4.05E+01	32.24	1.35E+02	.....
	25	768.25	765 -	772	767.85	3.00E+01	31.56	1.50E+02	.....
	26	837.78	833 -	841	837.31	2.66E+01	32.31	1.45E+02	.....
	27	862.04	857 -	867	861.55	7.29E+01	28.80	7.22E+01	.....
	28	892.01	888 -	895	891.49	3.11E+01	20.69	4.78E+01	.....
	29	911.49	905 -	916	910.95	1.74E+02	43.50	1.49E+02	TL-204
									AC-228
M	30	966.25	962 -	973	965.67	3.63E+01	30.20	9.84E+01	.....
m	31	969.26	962 -	973	968.67	6.39E+01	29.30	8.80E+01	AC-228
M	32	1116.22	1113 -	1125	1115.49	1.75E+01	17.72	7.13E+01	ZN-65
m	33	1120.79	1113 -	1125	1120.06	8.82E+01	31.30	9.24E+01	SC-46
									BI-214
									TA-182
	34	1230.97	1228 -	1233	1230.15	2.50E+01	21.63	7.60E+01	TA-182
									EU-156
	35	1237.96	1233 -	1243	1237.13	4.46E+01	39.22	1.81E+02	CO-56
	36	1326.79	1322 -	1332	1325.88	2.36E+01	22.59	5.68E+01	.....
	37	1351.72	1347 -	1355	1350.79	1.70E+01	14.60	2.19E+01	.....
	38	1377.92	1373 -	1381	1376.96	1.53E+01	20.17	5.13E+01	.....
M	39	1402.21	1394 -	1412	1401.23	1.35E+01	14.19	2.40E+01	.....
m	40	1407.75	1394 -	1412	1406.77	2.11E+01	16.41	2.11E+01	EU-152
M	41	1423.74	1420 -	1433	1422.74	1.16E+01	10.00	1.53E+01	.....
m	42	1431.03	1420 -	1433	1430.03	1.76E+01	12.81	1.23E+01	.....
	43	1461.46	1454 -	1466	1460.43	8.33E+02	61.87	5.84E+01	K-40
	44	1496.33	1491 -	1499	1495.27	1.33E+01	11.86	1.34E+01	.....
	45	1502.97	1500 -	1505	1501.91	9.06E+00	10.44	1.39E+01	.....
	46	1521.68	1516 -	1524	1520.61	9.28E+00	11.17	1.34E+01	.....
	47	1593.89	1590 -	1596	1592.75	1.38E+01	11.18	1.03E+01	.....
	48	1670.07	1665 -	1672	1668.88	8.00E+00	5.66	0.00E+00	.....
	49	1683.73	1676 -	1686	1682.52	9.24E+00	12.60	1.55E+01	.....
	50	1713.98	1711 -	1715	1712.75	4.42E+00	5.50	3.17E+00	.....
	51	1751.43	1748 -	1752	1750.17	6.00E+00	4.90	0.00E+00	.....
	52	1757.01	1753 -	1758	1755.74	5.89E+00	7.35	6.22E+00	.....
	53	1765.61	1760 -	1767	1764.34	3.69E+01	16.37	2.01E+01	.....
	54	1872.10	1866 -	1873	1870.74	6.78E+00	7.21	4.44E+00	.....
	55	1958.39	1951 -	1960	1956.97	6.28E+00	7.81	5.44E+00	.....
	56	2104.21	2097 -	2106	2102.69	1.50E+01	14.14	2.00E+01	.....
	57	2118.62	2114 -	2119	2117.09	7.32E+00	8.43	7.36E+00	.....
	58	2136.74	2130 -	2139	2135.19	8.68E+00	8.31	4.64E+00	.....
	59	2385.43	2380 -	2386	2383.71	7.00E+00	5.29	0.00E+00	.....
	60	2615.20	2607 -	2618	2613.33	8.80E+01	21.17	1.20E+01	TL-208

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

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 : 8/22/2017 3:13:31PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	63.65	1.81E+02	101.61	2.39E-02	1.78E-03
	2	76.25	9.06E+02	116.14	2.63E-02	2.11E-03
M	3	87.80	1.38E+02	51.03	2.70E-02	2.42E-03
	4	163.96	4.55E+01	51.57	2.19E-02	1.63E-03
	5	186.06	1.54E+02	75.10	2.03E-02	1.53E-03
	6	200.18	4.87E+01	52.53	1.94E-02	1.47E-03
	7	209.87	7.14E+01	83.37	1.88E-02	1.43E-03
M	8	238.88	7.78E+02	65.94	1.72E-02	1.30E-03
m	9	242.04	1.17E+02	45.96	1.71E-02	1.28E-03
	10	269.78	5.59E+01	67.53	1.58E-02	1.16E-03
	11	295.71	2.27E+02	83.74	1.48E-02	1.10E-03
	12	328.05	5.70E+01	43.19	1.38E-02	1.05E-03
	13	338.40	1.62E+02	62.79	1.34E-02	1.04E-03
	14	352.01	4.04E+02	58.45	1.31E-02	1.02E-03
	15	410.43	4.93E+01	43.43	1.17E-02	9.52E-04
M	16	454.00	2.03E+01	28.64	1.08E-02	9.15E-04
m	17	462.93	4.98E+01	30.20	1.06E-02	9.07E-04
M	18	503.02	2.94E+01	33.82	9.99E-03	8.72E-04
m	19	511.03	1.80E+02	42.14	9.87E-03	8.65E-04
	20	583.53	2.54E+02	47.95	8.90E-03	8.02E-04
	21	609.60	2.63E+02	53.90	8.60E-03	7.79E-04
	22	620.09	3.64E+01	21.47	8.48E-03	7.70E-04
	23	727.83	8.47E+01	37.78	7.46E-03	6.70E-04
	24	754.97	4.05E+01	32.24	7.24E-03	6.44E-04
	25	768.25	3.00E+01	31.56	7.14E-03	6.31E-04
	26	837.78	2.66E+01	32.31	6.65E-03	5.64E-04
	27	862.04	7.29E+01	28.80	6.50E-03	5.41E-04
	28	892.01	3.11E+01	20.69	6.32E-03	5.12E-04
	29	911.49	1.74E+02	43.50	6.21E-03	5.01E-04
M	30	966.25	3.63E+01	30.20	5.92E-03	4.82E-04
m	31	969.26	6.39E+01	29.30	5.90E-03	4.81E-04
M	32	1116.22	1.75E+01	17.72	5.26E-03	4.30E-04
m	33	1120.79	8.82E+01	31.30	5.24E-03	4.28E-04
	34	1230.97	2.50E+01	21.63	4.86E-03	4.15E-04

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	35	1237.96	4.46E+01	39.22	4.84E-03	4.16E-04
	36	1326.79	2.36E+01	22.59	4.58E-03	4.24E-04
	37	1351.72	1.70E+01	14.60	4.52E-03	4.19E-04
	38	1377.92	1.53E+01	20.17	4.45E-03	4.12E-04
M	39	1402.21	1.35E+01	14.19	4.40E-03	4.05E-04
m	40	1407.75	2.11E+01	16.41	4.38E-03	4.03E-04
M	41	1423.74	1.16E+01	10.00	4.35E-03	3.98E-04
m	42	1431.03	1.76E+01	12.81	4.33E-03	3.96E-04
	43	1461.46	8.33E+02	61.87	4.26E-03	3.87E-04
	44	1496.33	1.33E+01	11.86	4.19E-03	3.77E-04
	45	1502.97	9.06E+00	10.44	4.18E-03	3.75E-04
	46	1521.68	9.28E+00	11.17	4.14E-03	3.70E-04
	47	1593.89	1.38E+01	11.18	4.01E-03	3.49E-04
	48	1670.07	8.00E+00	5.66	3.88E-03	3.27E-04
	49	1683.73	9.24E+00	12.60	3.86E-03	3.23E-04
	50	1713.98	4.42E+00	5.50	3.82E-03	3.14E-04
	51	1751.43	6.00E+00	4.90	3.76E-03	3.04E-04
	52	1757.01	5.89E+00	7.35	3.76E-03	3.02E-04
	53	1765.61	3.69E+01	16.37	3.74E-03	3.00E-04
	54	1872.10	6.78E+00	7.21	3.62E-03	2.79E-04
	55	1958.39	6.28E+00	7.81	3.53E-03	2.79E-04
	56	2104.21	1.50E+01	14.14	3.41E-03	2.79E-04
	57	2118.62	7.32E+00	8.43	3.40E-03	2.79E-04
	58	2136.74	8.68E+00	8.31	3.38E-03	2.79E-04
	59	2385.43	7.00E+00	5.29	3.25E-03	2.79E-04
	60	2615.20	8.80E+01	21.17	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 : 8/22/2017 3:13:31PM

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	63.65	1.81E+02	101.61	6.29E+01	1.34E+01	1.18E+02	1.02E+02
	2	76.25	9.06E+02	116.14			9.06E+02	1.16E+02
M	3	87.80	1.38E+02	51.03			1.38E+02	5.10E+01
	4	163.96	4.55E+01	51.57			4.55E+01	5.16E+01

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	5	186.06	1.54E+02	75.10	3.48E+01	7.32E+00	1.19E+02	7.55E+01
	6	200.18	4.87E+01	52.53			4.87E+01	5.25E+01
	7	209.87	7.14E+01	83.37			7.14E+01	8.34E+01
M	8	238.88	7.78E+02	65.94	7.09E+00	6.85E+00	7.71E+02	6.63E+01
m	9	242.04	1.17E+02	45.96			1.17E+02	4.60E+01
	10	269.78	5.59E+01	67.53			5.59E+01	6.75E+01
	11	295.71	2.27E+02	83.74			2.27E+02	8.37E+01
	12	328.05	5.70E+01	43.19			5.70E+01	4.32E+01
	13	338.40	1.62E+02	62.79			1.62E+02	6.28E+01
	14	352.01	4.04E+02	58.45	1.04E+01	5.08E+00	3.93E+02	5.87E+01
	15	410.43	4.93E+01	43.43			4.93E+01	4.34E+01
M	16	454.00	2.03E+01	28.64			2.03E+01	2.86E+01
m	17	462.93	4.98E+01	30.20			4.98E+01	3.02E+01
M	18	503.02	2.94E+01	33.82			2.94E+01	3.38E+01
m	19	511.03	1.80E+02	42.14	7.08E+01	4.94E+00	1.09E+02	4.24E+01
	20	583.53	2.54E+02	47.95	5.65E+00	3.57E+00	2.48E+02	4.81E+01
	21	609.60	2.63E+02	53.90	1.07E+01	3.96E+00	2.52E+02	5.40E+01
	22	620.09	3.64E+01	21.47			3.64E+01	2.15E+01
	23	727.83	8.47E+01	37.78			8.47E+01	3.78E+01
	24	754.97	4.05E+01	32.24			4.05E+01	3.22E+01
	25	768.25	3.00E+01	31.56			3.00E+01	3.16E+01
	26	837.78	2.66E+01	32.31			2.66E+01	3.23E+01
	27	862.04	7.29E+01	28.80			7.29E+01	2.88E+01
	28	892.01	3.11E+01	20.69			3.11E+01	2.07E+01
	29	911.49	1.74E+02	43.50	2.63E+00	2.49E+00	1.71E+02	4.36E+01
M	30	966.25	3.63E+01	30.20			3.63E+01	3.02E+01
m	31	969.26	6.39E+01	29.30			6.39E+01	2.93E+01
M	32	1116.22	1.75E+01	17.72			1.75E+01	1.77E+01
m	33	1120.79	8.82E+01	31.30	2.45E+00	2.38E+00	8.57E+01	3.14E+01
	34	1230.97	2.50E+01	21.63			2.50E+01	2.16E+01
	35	1237.96	4.46E+01	39.22			4.46E+01	3.92E+01
	36	1326.79	2.36E+01	22.59			2.36E+01	2.26E+01
	37	1351.72	1.70E+01	14.60			1.70E+01	1.46E+01
	38	1377.92	1.53E+01	20.17			1.53E+01	2.02E+01
M	39	1402.21	1.35E+01	14.19			1.35E+01	1.42E+01
m	40	1407.75	2.11E+01	16.41			2.11E+01	1.64E+01
M	41	1423.74	1.16E+01	10.00			1.16E+01	1.00E+01
m	42	1431.03	1.76E+01	12.81			1.76E+01	1.28E+01
	43	1461.46	8.33E+02	61.87	5.90E+00	2.63E+00	8.27E+02	6.19E+01
	44	1496.33	1.33E+01	11.86			1.33E+01	1.19E+01
	45	1502.97	9.06E+00	10.44			9.06E+00	1.04E+01
	46	1521.68	9.28E+00	11.17			9.28E+00	1.12E+01
	47	1593.89	1.38E+01	11.18			1.38E+01	1.12E+01
	48	1670.07	8.00E+00	5.66			8.00E+00	5.66E+00
	49	1683.73	9.24E+00	12.60			9.24E+00	1.26E+01
	50	1713.98	4.42E+00	5.50			4.42E+00	5.50E+00
	51	1751.43	6.00E+00	4.90			6.00E+00	4.90E+00
	52	1757.01	5.89E+00	7.35			5.89E+00	7.35E+00
	53	1765.61	3.69E+01	16.37	3.33E+00	1.73E+00	3.36E+01	1.65E+01
	54	1872.10	6.78E+00	7.21			6.78E+00	7.21E+00
	55	1958.39	6.28E+00	7.81			6.28E+00	7.81E+00
	56	2104.21	1.50E+01	14.14			1.50E+01	1.41E+01
	57	2118.62	7.32E+00	8.43			7.32E+00	8.43E+00
	58	2136.74	8.68E+00	8.31			8.68E+00	8.31E+00

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
59	2385.43	7.00E+00	5.29			7.00E+00	5.29E+00
60	2615.20	8.80E+01	21.17	4.77E+00	1.52E+00	8.32E+01	2.12E+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 : 8/22/2017 3:13:31PM

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	63.65	1.81E+02	101.61	6.29E+01	1.34E+01	1.18E+02	1.02E+02
	2	76.25	9.06E+02	116.14			9.06E+02	1.16E+02
M	3	87.80	1.38E+02	51.03			1.38E+02	5.10E+01
	4	163.96	4.55E+01	51.57			4.55E+01	5.16E+01
	5	186.06	1.54E+02	75.10	3.48E+01	7.32E+00	1.19E+02	7.55E+01
	6	200.18	4.87E+01	52.53			4.87E+01	5.25E+01
	7	209.87	7.14E+01	83.37			7.14E+01	8.34E+01
M	8	238.88	7.78E+02	65.94	7.09E+00	6.85E+00	7.71E+02	6.63E+01
m	9	242.04	1.17E+02	45.96			1.17E+02	4.60E+01
	10	269.78	5.59E+01	67.53			5.59E+01	6.75E+01
	11	295.71	2.27E+02	83.74			2.27E+02	8.37E+01
	12	328.05	5.70E+01	43.19			5.70E+01	4.32E+01
	13	338.40	1.62E+02	62.79			1.62E+02	6.28E+01
	14	352.01	4.04E+02	58.45	1.04E+01	5.08E+00	3.93E+02	5.87E+01
	15	410.43	4.93E+01	43.43			4.93E+01	4.34E+01
M	16	454.00	2.03E+01	28.64			2.03E+01	2.86E+01
m	17	462.93	4.98E+01	30.20			4.98E+01	3.02E+01
M	18	503.02	2.94E+01	33.82			2.94E+01	3.38E+01
m	19	511.03	1.80E+02	42.14	7.08E+01	4.94E+00	1.09E+02	4.24E+01
	20	583.53	2.54E+02	47.95	5.65E+00	3.57E+00	2.48E+02	4.81E+01
	21	609.60	2.63E+02	53.90	1.07E+01	3.96E+00	2.52E+02	5.40E+01
	22	620.09	3.64E+01	21.47			3.64E+01	2.15E+01
	23	727.83	8.47E+01	37.78			8.47E+01	3.78E+01
	24	754.97	4.05E+01	32.24			4.05E+01	3.22E+01
	25	768.25	3.00E+01	31.56			3.00E+01	3.16E+01
	26	837.78	2.66E+01	32.31			2.66E+01	3.23E+01

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	27	862.04	7.29E+01	28.80			7.29E+01	2.88E+01
	28	892.01	3.11E+01	20.69			3.11E+01	2.07E+01
	29	911.49	1.74E+02	43.50	2.63E+00	2.49E+00	1.71E+02	4.36E+01
M	30	966.25	3.63E+01	30.20			3.63E+01	3.02E+01
m	31	969.26	6.39E+01	29.30			6.39E+01	2.93E+01
M	32	1116.22	1.75E+01	17.72			1.75E+01	1.77E+01
m	33	1120.79	8.82E+01	31.30	2.45E+00	2.38E+00	8.57E+01	3.14E+01
	34	1230.97	2.50E+01	21.63			2.50E+01	2.16E+01
	35	1237.96	4.46E+01	39.22			4.46E+01	3.92E+01
	36	1326.79	2.36E+01	22.59			2.36E+01	2.26E+01
	37	1351.72	1.70E+01	14.60			1.70E+01	1.46E+01
	38	1377.92	1.53E+01	20.17			1.53E+01	2.02E+01
M	39	1402.21	1.35E+01	14.19			1.35E+01	1.42E+01
m	40	1407.75	2.11E+01	16.41			2.11E+01	1.64E+01
M	41	1423.74	1.16E+01	10.00			1.16E+01	1.00E+01
m	42	1431.03	1.76E+01	12.81			1.76E+01	1.28E+01
	43	1461.46	8.33E+02	61.87	5.90E+00	2.63E+00	8.27E+02	6.19E+01
	44	1496.33	1.33E+01	11.86			1.33E+01	1.19E+01
	45	1502.97	9.06E+00	10.44			9.06E+00	1.04E+01
	46	1521.68	9.28E+00	11.17			9.28E+00	1.12E+01
	47	1593.89	1.38E+01	11.18			1.38E+01	1.12E+01
	48	1670.07	8.00E+00	5.66			8.00E+00	5.66E+00
	49	1683.73	9.24E+00	12.60			9.24E+00	1.26E+01
	50	1713.98	4.42E+00	5.50			4.42E+00	5.50E+00
	51	1751.43	6.00E+00	4.90			6.00E+00	4.90E+00
	52	1757.01	5.89E+00	7.35			5.89E+00	7.35E+00
	53	1765.61	3.69E+01	16.37	3.33E+00	1.73E+00	3.36E+01	1.65E+01
	54	1872.10	6.78E+00	7.21			6.78E+00	7.21E+00
	55	1958.39	6.28E+00	7.81			6.28E+00	7.81E+00
	56	2104.21	1.50E+01	14.14			1.50E+01	1.41E+01
	57	2118.62	7.32E+00	8.43			7.32E+00	8.43E+00
	58	2136.74	8.68E+00	8.31			8.68E+00	8.31E+00
	59	2385.43	7.00E+00	5.29			7.00E+00	5.29E+00
	60	2615.20	8.80E+01	21.17	4.77E+00	1.52E+00	8.32E+01	2.12E+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

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.935	1460.81	*	10.67	1.91E+01	2.29E+00
ZN-65	0.924	1115.52	*	50.75	9.14E-02	9.29E-02
CD-109	0.991	88.03	*	3.72	1.68E+00	6.46E-01
SN-126	0.992	87.57	*	37.00	1.46E-01	5.54E-02
PM-146	0.425	453.90	*	39.94	5.13E-02	7.24E-02
		735.90		14.01		
		747.13		13.10		
TL-208	0.856	583.14	*	30.22	9.71E-01	2.07E-01
		860.37		4.48		
		2614.66	*	35.85	7.65E-01	2.06E-01
BI-212	0.714	727.17	*	11.80	1.01E+00	4.61E-01
		1620.62		2.75		
PB-212	0.886	238.63	*	44.60	1.06E+00	1.21E-01
		300.09		3.41		
BI-214	0.683	609.31	*	46.30	6.66E-01	1.55E-01
		1120.29	*	15.10	1.14E+00	4.28E-01
		1764.49		15.80		
		2204.22		4.98		
PB-214	0.986	295.21	*	19.19	8.40E-01	3.16E-01
		351.92	*	37.19	8.52E-01	1.43E-01
RA-226	0.996	186.21	*	3.28	1.89E+00	3.65E+00
AC-228	0.985	338.32	*	11.40	1.11E+00	4.39E-01
		911.07	*	27.70	1.05E+00	2.80E-01
		969.11	*	16.60	6.86E-01	3.20E-01
TH-234	0.980	63.29	*	3.80	1.37E+00	1.19E+00

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

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 3:13:31PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
2	76.25	2.51574E-01	6.41		
4	163.96	1.26389E-02	56.67	Tol.	CS-136 U-235
6	200.18	1.35410E-02	53.88		

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	7	209.87	1.98394E-02	58.37	Tol.	GA-67 CM-243
m	9	242.04	3.24945E-02	19.64		
	10	269.78	1.55365E-02	60.37		
	12	328.05	1.58407E-02	37.87		
	15	410.43	1.37001E-02	44.03	Tol.	HO-166M
m	17	462.93	1.38453E-02	30.29	Tol.	SB-125
M	18	503.02	8.17719E-03	57.45		
m	19	511.03	3.03113E-02	19.44		
	22	620.09	1.00980E-02	29.53		
	24	754.97	1.12500E-02	39.80		
	25	768.25	8.33333E-03	52.60		
	26	837.78	7.39478E-03	60.69		
	27	862.04	2.02548E-02	19.75		
	28	892.01	8.63636E-03	33.27		
M	30	966.25	1.00925E-02	41.56	Sum	
	34	1230.97	6.94885E-03	43.24	Tol.	EU-156 TA-182
	35	1237.96	1.24023E-02	43.92	Tol.	CO-56
	36	1326.79	6.54915E-03	47.92		
	37	1351.72	4.73214E-03	42.86		
	38	1377.92	4.26152E-03	65.75		
M	39	1402.21	3.75943E-03	52.41		
m	40	1407.75	5.86890E-03	38.83	Tol.	EU-152
M	41	1423.74	3.21068E-03	43.26	Sum	
m	42	1431.03	4.89510E-03	36.34		
	44	1496.33	3.70139E-03	44.52		
	45	1502.97	2.51736E-03	57.60		
	46	1521.68	2.57813E-03	60.17	Sum	
	47	1593.89	3.84503E-03	40.39	D-Esc	
	48	1670.07	2.22222E-03	35.36		
	49	1683.73	2.56536E-03	68.21		
	50	1713.98	1.22685E-03	62.26		
	51	1751.43	1.66667E-03	40.82		
	52	1757.01	1.63580E-03	62.39	Sum	
	53	1765.61	9.33498E-03	24.49		
	54	1872.10	1.88272E-03	53.20		
	55	1958.39	1.74383E-03	62.21		
	56	2104.21	4.16667E-03	47.14	S-Esc	
	57	2118.62	2.03283E-03	57.57		
	58	2136.74	2.41162E-03	47.84		
	59	2385.43	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

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

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	0.93	1460.81	*	10.67	1.91E+01	2.29E+00
ZN-65	0.92	1115.52	*	50.75	9.14E-02	9.29E-02
CD-109	0.99	88.03	*	3.72	1.68E+00	6.46E-01
SN-126	0.99	87.57	*	37.00	1.46E-01	5.54E-02
PM-146	0.42	453.90	*	39.94	5.13E-02	7.24E-02
		735.90		14.01		
		747.13		13.10		
TL-208	0.85	583.14	*	30.22	9.71E-01	2.07E-01
		860.37		4.48		
		2614.66	*	35.85	7.65E-01	2.06E-01
BI-212	0.71	727.17	*	11.80	1.01E+00	4.61E-01
		1620.62		2.75		
PB-212	0.88	238.63	*	44.60	1.06E+00	1.21E-01
		300.09		3.41		
BI-214	0.68	609.31	*	46.30	6.66E-01	1.55E-01
		1120.29	*	15.10	1.14E+00	4.28E-01
		1764.49		15.80		
		2204.22		4.98		
PB-214	0.98	295.21	*	19.19	8.40E-01	3.16E-01
		351.92	*	37.19	8.52E-01	1.43E-01
RA-226	0.99	186.21	*	3.28	1.89E+00	3.65E+00
AC-228	0.98	338.32	*	11.40	1.11E+00	4.39E-01
		911.07	*	27.70	1.05E+00	2.80E-01
		969.11	*	16.60	6.86E-01	3.20E-01
TH-234	0.98	63.29	*	3.80	1.37E+00	1.19E+00

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

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.935	1.91E+01	2.29E+00	
	ZN-65	0.924	9.14E-02	9.29E-02	
?	CD-109	0.991	1.68E+00	6.46E-01	
?	SN-126	0.992	1.46E-01	5.54E-02	
	PM-146	0.425	5.13E-02	7.24E-02	
	TL-208	0.856	8.67E-01	1.46E-01	
	BI-212	0.714	1.01E+00	4.61E-01	
	PB-212	0.886	1.06E+00	1.21E-01	
	BI-214	0.683	7.21E-01	1.46E-01	
	PB-214	0.986	8.50E-01	1.31E-01	
	RA-226	0.996	1.89E+00	3.65E+00	
	AC-228	0.985	9.32E-01	1.90E-01	
	TH-234	0.980	1.37E+00	1.19E+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 1707088-04

HTC-A03-S003-3642-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 3:13:31PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	76.25	2.51574E-01	6.41		
	4	163.96	1.26389E-02	56.67	Tol.	CS-136 U-235
	6	200.18	1.35410E-02	53.88		
	7	209.87	1.98394E-02	58.37	Tol.	GA-67 CM-243
m	9	242.04	3.24945E-02	19.64		
	10	269.78	1.55365E-02	60.37		
	12	328.05	1.58407E-02	37.87		
	15	410.43	1.37001E-02	44.03	Tol.	HO-166M
m	17	462.93	1.38453E-02	30.29	Tol.	SB-125
M	18	503.02	8.17719E-03	57.45		
m	19	511.03	3.03113E-02	19.44		
	22	620.09	1.00980E-02	29.53		
	24	754.97	1.12500E-02	39.80		
	25	768.25	8.33333E-03	52.60		
	26	837.78	7.39478E-03	60.69		
	27	862.04	2.02548E-02	19.75		
	28	892.01	8.63636E-03	33.27		
M	30	966.25	1.00925E-02	41.56	Sum	
	34	1230.97	6.94885E-03	43.24	Tol.	EU-156 TA-182
	35	1237.96	1.24023E-02	43.92	Tol.	CO-56
	36	1326.79	6.54915E-03	47.92		
	37	1351.72	4.73214E-03	42.86		
	38	1377.92	4.26152E-03	65.75		
M	39	1402.21	3.75943E-03	52.41		
m	40	1407.75	5.86890E-03	38.83	Tol.	EU-152
M	41	1423.74	3.21068E-03	43.26	Sum	
m	42	1431.03	4.89510E-03	36.34		
	44	1496.33	3.70139E-03	44.52		
	45	1502.97	2.51736E-03	57.60		
	46	1521.68	2.57813E-03	60.17	Sum	
	47	1593.89	3.84503E-03	40.39	D-Esc	
	48	1670.07	2.22222E-03	35.36		

Analysis Report for 1707088-04

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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
49	1683.73	2.56536E-03	68.21		
50	1713.98	1.22685E-03	62.26		
51	1751.43	1.66667E-03	40.82		
52	1757.01	1.63580E-03	62.39	Sum	
53	1765.61	9.33498E-03	24.49		
54	1872.10	1.88272E-03	53.20		
55	1958.39	1.74383E-03	62.21		
56	2104.21	4.16667E-03	47.14	S-Esc	
57	2118.62	2.03283E-03	57.57		
58	2136.74	2.41162E-03	47.84		
59	2385.43	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	-1.31E-01	1.54E+00	1.54E+00
+	NA-22	1274.54		99.94	-1.76E-02	7.33E-02	7.33E-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	-1.43E-02	4.29E-02	4.29E-02
+	K-40	1460.81	*	10.67	1.91E+01	9.37E-01	9.37E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-2.32E-02	3.69E-02	3.69E-02
		78.34		96.00	4.39E-02		4.72E-02
+	SC-46	889.25		99.98	-1.26E-03	1.37E-01	1.37E-01
		1120.51		99.99	3.72E-01		2.58E-01
+	V-48	983.52		99.98	2.83E-01	4.72E+00	4.72E+00
		1312.10		97.50	-2.60E-01		4.88E+00
+	CR-51	320.08		9.83	2.89E+00	5.21E+00	5.21E+00
+	MN-54	834.83		99.97	1.11E-03	8.29E-02	8.29E-02
+	CO-56	846.75		99.96	-1.70E-03	1.42E-01	1.42E-01
		1037.75		14.03	-6.34E-01		1.06E+00

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CO-56	1238.25		67.00	2.76E-01	1.42E-01	3.77E-01
		1771.40		15.51	-5.33E-01		8.47E-01
		2598.48		16.90	-1.24E-01		3.43E-01
+	CO-57	122.06		85.51	2.07E-02	4.55E-02	4.55E-02
		136.48		10.60	-2.39E-02		4.59E-01
+	CO-58	810.76		99.40	-1.46E-01	1.39E-01	1.39E-01
+	FE-59	1099.22		56.50	-1.96E-01	5.25E-01	5.25E-01
		1291.56		43.20	1.46E-01		7.25E-01
+	CO-60	1173.22		100.00	1.93E-02	7.02E-02	8.10E-02
		1332.49		100.00	7.64E-03		7.02E-02
+	ZN-65	1115.52	*	50.75	9.14E-02	3.06E-01	3.06E-01
+	GA-67	93.31		35.70	3.17E+08	1.64E+08	1.64E+08
		208.95		2.24	1.23E+09		3.00E+09
		300.22		16.00	2.23E+08		4.14E+08
+	SE-75	121.11		16.70	-2.21E-02	1.14E-01	3.10E-01
		136.00		59.20	-1.97E-02		1.14E-01
		264.65		59.80	2.92E-02		1.22E-01
		279.53		25.20	5.74E-02		3.04E-01
		400.65		11.40	-2.84E-01		6.37E-01
+	RB-82	776.52		13.00	1.61E-01	6.88E+00	6.88E+00
+	RB-83	520.41		46.00	-7.05E-02	2.01E-01	2.01E-01
		529.64		30.30	8.96E-02		3.04E-01
		552.65		16.40	4.40E-02		5.66E-01
+	KR-85	513.99		0.43	-1.24E+01	1.27E+01	1.27E+01
+	SR-85	513.99		99.27	-1.54E-01	1.58E-01	1.58E-01
+	Y-88	898.02		93.40	2.07E-02	9.61E-02	1.10E-01
		1836.01		99.38	5.89E-03		9.61E-02
+	MO-93	263.06		56.72	4.87E-02	4.81E-02	7.32E-02
		684.67		99.68	-9.56E-03		5.35E-02
		1477.11		99.08	-1.01E-02		4.81E-02
+	NB-93M	16.57		9.43	0.00E+00	6.15E+00	6.15E+00
+	NB-94	702.63		100.00	4.16E-02	5.54E-02	7.03E-02
		871.10		100.00	-3.48E-03		5.54E-02
+	NB-95	765.79		99.81	8.00E-02	4.80E-01	4.80E-01
+	NB-95M	235.69		25.00	-5.07E+08	4.01E+07	4.01E+07
+	ZR-95	724.18		43.70	-6.69E-02	3.67E-01	4.43E-01
		756.72		55.30	2.34E-01		3.67E-01
+	MO-99	181.06		6.20	6.78E+09	3.12E+10	4.77E+10
		739.58		12.80	-1.29E+10		3.12E+10
		778.00		4.50	-3.55E+10		9.38E+10
+	RU-103	497.08		89.00	2.02E-02	2.67E-01	2.67E-01
+	RU-106	621.84		9.80	-1.38E-01	6.78E-01	6.78E-01
+	AG-108M	433.93		89.90	8.39E-03	4.42E-02	4.42E-02
		614.37		90.40	1.78E-03		6.01E-02
		722.95		90.50	-1.20E-02		5.78E-02
+	CD-109	88.03	*	3.72	1.68E+00	3.00E+00	3.00E+00
+	AG-110M	657.75		93.14	-2.37E-02	7.90E-02	7.90E-02
		677.61		10.53	-1.51E-01		6.74E-01

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AG-110M	706.67		16.46	-7.22E-02	7.90E-02	5.29E-01
		763.93		21.98	4.90E-02		3.53E-01
		884.67		71.63	3.51E-02		1.11E-01
		1384.27		23.94	3.15E-02		2.85E-01
+	CD-113M	263.70		0.02	5.04E+01	1.78E+02	1.78E+02
+	SN-113	255.12		1.93	1.93E+00	1.23E-01	4.03E+00
		391.69		64.90	-6.21E-03		1.23E-01
+	TE123M	159.00		84.10	4.26E-02	8.59E-02	8.59E-02
+	SB-124	602.71		97.87	-5.96E-02	1.64E-01	1.64E-01
		645.85		7.26	4.22E-01		2.29E+00
		722.78		11.10	-1.88E-01		1.41E+00
		1691.02		49.00	5.83E-03		3.17E-01
+	I-125	35.49		6.49	-2.14E+01	6.15E+00	6.15E+00
+	SB-125	176.33		6.89	4.24E-01	1.62E-01	6.36E-01
		427.89		29.33	-2.16E-02		1.62E-01
		463.38		10.35	5.41E-01		5.42E-01
		600.56		17.80	-5.48E-02		3.13E-01
		635.90		11.32	2.31E-01		5.33E-01
+	SB-126	414.70		83.30	-2.21E+00	1.22E+01	1.22E+01
		666.33		99.60	4.71E+00		1.54E+01
		695.00		99.60	-4.67E+00		1.42E+01
		720.50		53.80	-2.67E+00		2.58E+01
+	SN-126	87.57	*	37.00	1.46E-01	2.60E-01	2.60E-01
+	SB-127	473.00		25.00	-3.43E+06	8.54E+06	9.32E+06
		685.20		35.70	1.33E+05		8.54E+06
		783.80		14.70	-5.78E+06		2.41E+07
+	I-129	29.78		57.00	1.72E-01	3.48E-01	3.48E-01
		33.60		13.20	7.53E+00		1.80E+00
		39.58		7.52	4.84E-01		1.03E+00
+	I-131	284.30		6.05	3.32E+02	2.46E+02	3.61E+03
		364.48		81.20	-4.04E+01		2.46E+02
		636.97		7.26	-8.69E+02		3.79E+03
		722.89		1.80	-3.13E+03		1.50E+04
+	TE-132	49.72		13.10	-3.79E+07	7.46E+07	4.62E+08
		228.16		88.00	4.36E+07		7.46E+07
+	BA-133	81.00		33.00	5.07E-02	7.04E-02	1.05E-01
		302.84		17.80	-1.69E-01		2.49E-01
		356.01		60.00	5.18E-03		7.04E-02
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	2.15E+04	4.44E+04	4.44E+04
+	CS-134	563.23		8.38	7.35E-02	6.19E-02	6.42E-01
		569.32		15.43	1.12E-02		3.50E-01
		604.70		97.60	2.23E-03		6.19E-02
		795.84		85.40	7.50E-03		8.26E-02
		801.93		8.73	-1.94E-01		7.87E-01
+	CS-135	268.24		16.00	8.91E-02	2.84E-01	2.84E-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

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CS-136	153.22		7.46	8.56E+01	1.05E+01	1.02E+02
		163.89		4.61	6.59E+01		1.67E+02
		176.55		13.56	3.75E+01		5.62E+01
		273.65		12.66	-1.35E+01		6.08E+01
		340.57		48.50	-1.12E+01		2.04E+01
		818.50		99.70	5.79E-01		1.05E+01
		1048.07		79.60	-7.57E+00		1.46E+01
		1235.34		19.70	1.60E+00		9.70E+01
+	CS-137	661.65		85.12	3.69E-02	7.46E-02	7.46E-02
+	LA-138	788.74		34.00	7.19E-02	7.87E-02	1.88E-01
		1435.80		66.00	-1.15E-02		7.87E-02
+	CE-139	165.85		80.35	2.08E-02	8.65E-02	8.65E-02
+	BA-140	162.64		6.70	2.75E+01	3.75E+01	1.33E+02
		304.84		4.50	-4.91E-01		1.93E+02
		423.70		3.20	-7.03E+01		3.02E+02
		437.55		2.00	-6.89E+01		4.09E+02
		537.32		25.00	8.57E+00		3.75E+01
+	LA-140	328.77		20.50	4.23E+01	1.43E+01	4.99E+01
		487.03		45.50	-3.94E+00		1.89E+01
		815.85		23.50	3.05E+01		5.26E+01
		1596.49		95.49	-5.96E-01		1.43E+01
+	CE-141	145.44		48.40	1.40E-01	7.04E-01	7.04E-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	-2.08E-02	3.56E-01	3.56E-01
+	PM-144	476.78		42.00	-1.09E-02	6.60E-02	1.27E-01
		618.01		98.60	1.98E-03		6.60E-02
		696.49		99.49	-1.41E-02		6.98E-02
+	PM-145	36.85		21.70	-2.90E-01	2.38E-01	4.65E-01
		37.36		39.70	-1.67E-02		2.38E-01
		42.30		15.10	1.20E-02		3.85E-01
		72.40		2.31	-7.00E+00		1.58E+00
+	PM-146	453.90	*	39.94	5.13E-02	3.04E-01	3.04E-01
		735.90		14.01	-2.68E-02		4.20E-01
		747.13		13.10	-5.37E-03		4.48E-01
+	ND-147	91.11		28.90	-9.60E+01	6.86E+01	6.86E+01
		531.02		13.10	-8.50E+01		1.49E+02
+	PM-149	285.90		3.10	7.00E+12	4.28E+13	4.28E+13
+	EU-152	121.78		20.50	6.79E-02	1.49E-01	1.49E-01
		244.69		5.40	-5.16E-01		8.27E-01
		344.27		19.13	5.11E-02		2.29E-01
		778.89		9.20	-2.45E-01		6.46E-01
		964.01		10.40	4.61E-02		7.01E-01
		1085.78		7.22	-1.16E-02		1.06E+00
		1112.02		9.60	2.03E-01		7.64E-01
		1407.95		14.94	1.10E-01		5.12E-01
+	GD-153	97.43		31.30	-1.61E-02	1.26E-01	1.26E-01
		103.18		22.20	4.74E-02		1.69E-01

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	EU-154	123.07		40.50	-1.45E-03	7.56E-02	7.56E-02
		723.30		19.70	-5.64E-02		2.71E-01
		873.19		11.50	1.30E-01		5.08E-01
		996.32		10.30	-2.80E-01		5.88E-01
		1004.76		17.90	6.91E-02		3.73E-01
		1274.45		35.50	-4.72E-02		1.96E-01
+	EU-155	86.50		30.90	2.00E-01	1.32E-01	1.32E-01
		105.30		20.70	6.63E-02		1.48E-01
+	EU-156	811.77		10.40	-2.47E+01	4.93E+01	4.93E+01
		1153.47		7.20	-1.37E+01		8.86E+01
		1230.71		8.90	-3.72E+01		9.11E+01
+	HO-166M	184.41		72.60	1.36E-01	6.98E-02	6.98E-02
		280.45		29.60	-1.10E-01		1.37E-01
		410.94		11.10	2.97E-01		4.30E-01
		711.69		54.10	-2.80E-02		1.12E-01
+	TM-171	66.72		0.14	-6.44E-01	2.80E+01	2.80E+01
+	HF-172	67.35		5.31	-4.58E-01	2.93E-01	7.26E-01
		125.81		11.30	1.07E-01		2.93E-01
+	LU-172	181.53		20.60	-2.75E+02	3.28E+03	5.43E+03
		900.72		29.81	2.14E+03		5.75E+03
		1093.66		62.50	4.00E+01		3.28E+03
+	LU-173	100.72		5.24	-1.29E-01	2.44E-01	6.17E-01
		272.11		21.20	5.30E-02		2.44E-01
+	HF-175	343.40		84.00	-6.04E-03	1.38E-01	1.38E-01
+	LU-176	88.34		13.30	1.48E-01	4.14E-02	2.99E-01
		201.83		86.00	-1.44E-02		4.93E-02
		306.78		94.00	-1.30E-02		4.14E-02
+	HF-181	133.02		41.70	4.39E-02	2.53E-01	3.78E-01
		345.85		17.20	-1.19E-01		1.17E+00
		482.03		82.80	5.91E-02		2.53E-01
+	TA-182	67.75		41.20	-9.69E-02	1.54E-01	1.54E-01
		1121.30		34.90	8.88E-01		5.89E-01
		1189.05		16.23	2.92E-01		9.38E-01
		1221.41		26.98	-6.52E-02		5.59E-01
		1231.02		11.44	-5.70E-01		1.40E+00
+	IR-192	308.46		29.68	-1.89E-02	2.13E-01	3.39E-01
		468.07		48.10	-1.02E-01		2.13E-01
+	HG-203	279.19		77.30	1.53E-01	2.53E-01	2.53E-01
+	TL-204	374.74		94.11	-1.33E-02	4.91E-02	4.91E-02
		899.15		99.16	9.70E-03		6.15E-02
		911.74		91.10	3.32E-01		1.39E-01
+	BI-207	569.67		97.72	1.62E-03	5.07E-02	5.07E-02
		1063.62		74.90	-1.51E-02		8.85E-02
+	TL-208	583.14	*	30.22	9.71E-01	1.89E-01	2.44E-01
		860.37		4.48	1.04E+00		1.58E+00
		2614.66	*	35.85	7.65E-01		1.89E-01
+	BI-210M	262.00		45.00	9.72E-03	9.02E-02	9.02E-02
		300.00		23.00	1.07E-01		2.00E-01
+	PB-210	46.50		4.25	1.65E+00	1.30E+00	1.30E+00

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PB-211	404.84		2.90	1.26E-01	1.37E+00	1.37E+00
		831.96		2.90	2.70E-01		1.97E+00
+	BI-212	727.17	*	11.80	1.01E+00	6.81E-01	6.81E-01
		1620.62		2.75	5.26E-01		2.12E+00
+	PB-212	238.63	*	44.60	1.06E+00	2.01E-01	2.01E-01
		300.09		3.41	7.24E-01		1.35E+00
+	BI-214	609.31	*	46.30	6.66E-01	1.97E-01	1.97E-01
		1120.29	*	15.10	1.14E+00		7.98E-01
		1764.49		15.80	5.95E-01		6.27E-01
		2204.22		4.98	5.06E-01		1.27E+00
+	PB-214	295.21	*	19.19	8.40E-01	1.60E-01	4.85E-01
		351.92	*	37.19	8.52E-01		1.60E-01
+	RN-219	401.80		6.50	-2.18E-01	6.30E-01	6.30E-01
+	RA-223	323.87		3.88	1.81E-01	1.04E+00	1.04E+00
+	RA-224	240.98		3.95	1.09E+01	2.34E+00	2.34E+00
+	RA-225	40.00		31.00	1.19E+01	2.53E+01	2.53E+01
+	RA-226	186.21	*	3.28	1.89E+00	1.92E+00	1.92E+00
+	TH-227	50.10		8.40	-3.98E-02	4.64E-01	4.85E-01
		236.00		11.50	-5.88E+00		4.64E-01
		256.20		6.30	-9.05E-02		6.72E-01
+	AC-228	338.32	*	11.40	1.11E+00	3.67E-01	6.67E-01
		911.07	*	27.70	1.05E+00		3.67E-01
		969.11	*	16.60	6.86E-01		6.09E-01
+	TH-230	48.44		16.90	-1.19E-01	2.68E-01	2.68E-01
		62.85		4.60	1.06E+00		9.76E-01
		67.67		0.37	-5.92E+00		9.39E+00
+	PA-231	283.67		1.60	2.42E-01	1.89E+00	2.63E+00
		302.67		2.30	-1.29E+00		1.89E+00
+	TH-231	25.64		14.70	0.00E+00	1.09E-01	1.09E-01
		84.21		6.40	-4.49E-01		5.21E-01
+	PA-233	311.98		38.60	1.10E+00	1.39E+00	1.39E+00
+	PA-234	131.20		20.40	5.50E-02	1.62E-01	1.62E-01
		733.99		8.80	-1.45E-01		6.58E-01
		946.00		12.00	-7.80E-02		4.57E-01
+	PA-234M	1001.03		0.92	-7.98E-01	6.89E+00	6.89E+00
+	TH-234	63.29	*	3.80	1.37E+00	1.94E+00	1.94E+00
+	U-235	143.76		10.50	7.11E-02	3.96E-01	3.96E-01
		163.35		4.70	3.47E-01		8.77E-01
		205.31		4.70	1.96E-01		8.99E-01
+	NP-237	86.50		12.60	4.72E-01	3.12E-01	3.12E-01
+	NP-239	106.10		22.70	2.81E+11	6.28E+11	6.28E+11
		228.18		10.70	1.18E+12		2.01E+12
		277.60		14.10	2.60E+11		1.50E+12
+	AM-241	59.54		35.90	4.04E-02	1.09E-01	1.09E-01
+	AM-243	74.67		66.00	-6.29E-02	7.60E-02	7.60E-02
+	CM-243	209.75		3.29	7.84E-02	3.17E-01	1.42E+00
		228.14		10.60	2.49E-01		4.25E-01

Analysis Report for 1707088-04

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Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
CM-243	277.60	14.00	5.48E-02	3.17E-01	3.17E-01

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	1.54E+00	1.54E+00	-1.31E-01	7.23E-01
	NA-22	1274.54		99.94	7.33E-02	7.33E-02	-1.76E-02	3.34E-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	4.29E-02	4.29E-02	-1.43E-02	1.76E-02
+	K-40	1460.81	*	10.67	9.37E-01	9.37E-01	1.91E+01	4.37E-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	3.69E-02	3.69E-02	-2.32E-02	1.78E-02
		78.34		96.00	4.72E-02		4.39E-02	2.30E-02
	SC-46	889.25		99.98	1.37E-01	1.37E-01	-1.26E-03	6.33E-02
		1120.51		99.99	2.58E-01		3.72E-01	1.23E-01
	V-48	983.52		99.98	4.72E+00	4.72E+00	2.83E-01	2.18E+00
		1312.10		97.50	4.88E+00		-2.60E-01	2.21E+00
	CR-51	320.08		9.83	5.21E+00	5.21E+00	2.89E+00	2.48E+00
	MN-54	834.83		99.97	8.29E-02	8.29E-02	1.11E-03	3.88E-02
	CO-56	846.75		99.96	1.42E-01	1.42E-01	-1.70E-03	6.59E-02
		1037.75		14.03	1.06E+00		-6.34E-01	4.85E-01
		1238.25		67.00	3.77E-01		2.76E-01	1.78E-01
		1771.40		15.51	8.47E-01		-5.33E-01	3.65E-01
		2598.48		16.90	3.43E-01		-1.24E-01	1.08E-01
	CO-57	122.06		85.51	4.55E-02	4.55E-02	2.07E-02	2.19E-02
		136.48		10.60	4.59E-01		-2.39E-02	2.22E-01
	CO-58	810.76		99.40	1.39E-01	1.39E-01	-1.46E-01	6.39E-02

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	FE-59	1099.22		56.50	5.25E-01	5.25E-01	-1.96E-01	2.40E-01
		1291.56		43.20	7.25E-01		1.46E-01	3.30E-01
	CO-60	1173.22		100.00	8.10E-02	7.02E-02	1.93E-02	3.76E-02
		1332.49		100.00	7.02E-02		7.64E-03	3.19E-02
+	ZN-65	1115.52	*	50.75	3.06E-01	3.06E-01	9.14E-02	1.46E-01
	GA-67	93.31		35.70	1.64E+08	1.64E+08	3.17E+08	8.01E+07
		208.95		2.24	3.00E+09		1.23E+09	1.45E+09
		300.22		16.00	4.14E+08		2.23E+08	1.98E+08
	SE-75	121.11		16.70	3.10E-01	1.14E-01	-2.21E-02	1.49E-01
		136.00		59.20	1.14E-01		-1.97E-02	5.50E-02
		264.65		59.80	1.22E-01		2.92E-02	5.86E-02
		279.53		25.20	3.04E-01		5.74E-02	1.45E-01
		400.65		11.40	6.37E-01		-2.84E-01	3.00E-01
	RB-82	776.52		13.00	6.88E+00	6.88E+00	1.61E-01	3.21E+00
	RB-83	520.41		46.00	2.01E-01	2.01E-01	-7.05E-02	9.33E-02
		529.64		30.30	3.04E-01		8.96E-02	1.41E-01
		552.65		16.40	5.66E-01		4.40E-02	2.62E-01
	KR-85	513.99		0.43	1.27E+01	1.27E+01	-1.24E+01	6.02E+00
	SR-85	513.99		99.27	1.58E-01	1.58E-01	-1.54E-01	7.46E-02
	Y-88	898.02		93.40	1.10E-01	9.61E-02	2.07E-02	5.03E-02
		1836.01		99.38	9.61E-02		5.89E-03	4.06E-02
	MO-93	263.06		56.72	7.32E-02	4.81E-02	4.87E-02	3.50E-02
		684.67		99.68	5.35E-02		-9.56E-03	2.49E-02
		1477.11		99.08	4.81E-02		-1.01E-02	2.06E-02
	NB-93M	16.57		9.43	6.15E+00	6.15E+00	0.00E+00	0.00E+00
	NB-94	702.63		100.00	7.03E-02	5.54E-02	4.16E-02	3.33E-02
		871.10		100.00	5.54E-02		-3.48E-03	2.55E-02
	NB-95	765.79		99.81	4.80E-01	4.80E-01	8.00E-02	2.26E-01
	NB-95M	235.69		25.00	4.01E+07	4.01E+07	-5.07E+08	1.94E+07
	ZR-95	724.18		43.70	4.43E-01	3.67E-01	-6.69E-02	2.09E-01
		756.72		55.30	3.67E-01		2.34E-01	1.73E-01
	MO-99	181.06		6.20	4.77E+10	3.12E+10	6.78E+09	2.30E+10
		739.58		12.80	3.12E+10		-1.29E+10	1.45E+10
		778.00		4.50	9.38E+10		-3.55E+10	4.37E+10
	RU-103	497.08		89.00	2.67E-01	2.67E-01	2.02E-02	1.24E-01
	RU-106	621.84		9.80	6.78E-01	6.78E-01	-1.38E-01	3.18E-01
	AG-108M	433.93		89.90	4.42E-02	4.42E-02	8.39E-03	2.07E-02
		614.37		90.40	6.01E-02		1.78E-03	2.82E-02
		722.95		90.50	5.78E-02		-1.20E-02	2.68E-02
+	CD-109	88.03	*	3.72	3.00E+00	3.00E+00	1.68E+00	1.48E+00
	AG-110M	657.75		93.14	7.90E-02	7.90E-02	-2.37E-02	3.70E-02
		677.61		10.53	6.74E-01		-1.51E-01	3.15E-01
		706.67		16.46	5.29E-01		-7.22E-02	2.50E-01
		763.93		21.98	3.53E-01		4.90E-02	1.65E-01
		884.67		71.63	1.11E-01		3.51E-02	5.15E-02
		1384.27		23.94	2.85E-01		3.15E-02	1.25E-01
	CD-113M	263.70		0.02	1.78E+02	1.78E+02	5.04E+01	8.51E+01
	SN-113	255.12		1.93	4.03E+00	1.23E-01	1.93E+00	1.93E+00
		391.69		64.90	1.23E-01		-6.21E-03	5.82E-02
	TE123M	159.00		84.10	8.59E-02	8.59E-02	4.26E-02	4.16E-02
	SB-124	602.71		97.87	1.64E-01	1.64E-01	-5.96E-02	7.67E-02
		645.85		7.26	2.29E+00		4.22E-01	1.07E+00
		722.78		11.10	1.41E+00		-1.88E-01	6.51E-01

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	SB-124	1691.02		49.00	3.17E-01	1.64E-01	5.83E-03	1.35E-01
	I-125	35.49		6.49	6.15E+00	6.15E+00	-2.14E+01	2.99E+00
	SB-125	176.33		6.89	6.36E-01	1.62E-01	4.24E-01	3.07E-01
		427.89		29.33	1.62E-01		-2.16E-02	7.62E-02
		463.38		10.35	5.42E-01		5.41E-01	2.57E-01
		600.56		17.80	3.13E-01		-5.48E-02	1.47E-01
		635.90		11.32	5.33E-01		2.31E-01	2.51E-01
	SB-126	414.70		83.30	1.22E+01	1.22E+01	-2.21E+00	5.71E+00
		666.33		99.60	1.54E+01		4.71E+00	7.25E+00
		695.00		99.60	1.42E+01		-4.67E+00	6.61E+00
		720.50		53.80	2.58E+01		-2.67E+00	1.20E+01
+	SN-126	87.57	*	37.00	2.60E-01	2.60E-01	1.46E-01	1.28E-01
	SB-127	473.00		25.00	9.32E+06	8.54E+06	-3.43E+06	4.35E+06
		685.20		35.70	8.54E+06		1.33E+05	3.98E+06
		783.80		14.70	2.41E+07		-5.78E+06	1.13E+07
	I-129	29.78		57.00	3.48E-01	3.48E-01	1.72E-01	1.68E-01
		33.60		13.20	1.80E+00		7.53E+00	8.83E-01
		39.58		7.52	1.03E+00		4.84E-01	4.98E-01
	I-131	284.30		6.05	3.61E+03	2.46E+02	3.32E+02	1.72E+03
		364.48		81.20	2.46E+02		-4.04E+01	1.16E+02
		636.97		7.26	3.79E+03		-8.69E+02	1.77E+03
		722.89		1.80	1.50E+04		-3.13E+03	6.97E+03
	TE-132	49.72		13.10	4.62E+08	7.46E+07	-3.79E+07	2.22E+08
		228.16		88.00	7.46E+07		4.36E+07	3.59E+07
	BA-133	81.00		33.00	1.05E-01	7.04E-02	5.07E-02	5.07E-02
		302.84		17.80	2.49E-01		-1.69E-01	1.19E-01
		356.01		60.00	7.04E-02		5.18E-03	3.33E-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	4.44E+04	4.44E+04	2.15E+04	2.15E+04
	CS-134	563.23		8.38	6.42E-01	6.19E-02	7.35E-02	3.01E-01
		569.32		15.43	3.50E-01		1.12E-02	1.64E-01
		604.70		97.60	6.19E-02		2.23E-03	2.91E-02
		795.84		85.40	8.26E-02		7.50E-03	3.87E-02
		801.93		8.73	7.87E-01		-1.94E-01	3.67E-01
	CS-135	268.24		16.00	2.84E-01	2.84E-01	8.91E-02	1.36E-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	1.02E+02	1.05E+01	8.56E+01	4.93E+01
		163.89		4.61	1.67E+02		6.59E+01	8.07E+01
		176.55		13.56	5.62E+01		3.75E+01	2.72E+01
		273.65		12.66	6.08E+01		-1.35E+01	2.90E+01
		340.57		48.50	2.04E+01		-1.12E+01	9.80E+00
		818.50		99.70	1.05E+01		5.79E-01	4.86E+00
		1048.07		79.60	1.46E+01		-7.57E+00	6.70E+00
		1235.34		19.70	9.70E+01		1.60E+00	4.57E+01
	CS-137	661.65		85.12	7.46E-02	7.46E-02	3.69E-02	3.52E-02
	LA-138	788.74		34.00	1.88E-01	7.87E-02	7.19E-02	8.80E-02
		1435.80		66.00	7.87E-02		-1.15E-02	3.44E-02
	CE-139	165.85		80.35	8.65E-02	8.65E-02	2.08E-02	4.19E-02
	BA-140	162.64		6.70	1.33E+02	3.75E+01	2.75E+01	6.46E+01
		304.84		4.50	1.93E+02		-4.91E-01	9.19E+01
		423.70		3.20	3.02E+02		-7.03E+01	1.43E+02

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BA-140	437.55		2.00	4.09E+02	3.75E+01	-6.89E+01	1.91E+02
		537.32		25.00	3.75E+01		8.57E+00	1.74E+01
	LA-140	328.77		20.50	4.99E+01	1.43E+01	4.23E+01	2.39E+01
		487.03		45.50	1.89E+01		-3.94E+00	8.80E+00
		815.85		23.50	5.26E+01		3.05E+01	2.44E+01
		1596.49		95.49	1.43E+01		-5.96E-01	6.35E+00
	CE-141	145.44		48.40	7.04E-01	7.04E-01	1.40E-01	3.42E-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	3.56E-01	3.56E-01	-2.08E-02	1.71E-01
	PM-144	476.78		42.00	1.27E-01	6.60E-02	-1.09E-02	5.98E-02
		618.01		98.60	6.60E-02		1.98E-03	3.10E-02
		696.49		99.49	6.98E-02		-1.41E-02	3.26E-02
	PM-145	36.85		21.70	4.65E-01	2.38E-01	-2.90E-01	2.25E-01
		37.36		39.70	2.38E-01		-1.67E-02	1.15E-01
		42.30		15.10	3.85E-01		1.20E-02	1.85E-01
		72.40		2.31	1.58E+00		-7.00E+00	7.67E-01
+	PM-146	453.90	*	39.94	3.04E-01	3.04E-01	5.13E-02	1.49E-01
		735.90		14.01	4.20E-01		-2.68E-02	1.96E-01
		747.13		13.10	4.48E-01		-5.37E-03	2.08E-01
	ND-147	91.11		28.90	6.86E+01	6.86E+01	-9.60E+01	3.34E+01
		531.02		13.10	1.49E+02		-8.50E+01	6.87E+01
	PM-149	285.90		3.10	4.28E+13	4.28E+13	7.00E+12	2.04E+13
	EU-152	121.78		20.50	1.49E-01	1.49E-01	6.79E-02	7.18E-02
		244.69		5.40	8.27E-01		-5.16E-01	3.98E-01
		344.27		19.13	2.29E-01		5.11E-02	1.09E-01
		778.89		9.20	6.46E-01		-2.45E-01	3.01E-01
		964.01		10.40	7.01E-01		4.61E-02	3.27E-01
		1085.78		7.22	1.06E+00		-1.16E-02	4.91E-01
		1112.02		9.60	7.64E-01		2.03E-01	3.53E-01
		1407.95		14.94	5.12E-01		1.10E-01	2.34E-01
	GD-153	97.43		31.30	1.26E-01	1.26E-01	-1.61E-02	6.08E-02
		103.18		22.20	1.69E-01		4.74E-02	8.13E-02
	EU-154	123.07		40.50	7.56E-02	7.56E-02	-1.45E-03	3.64E-02
		723.30		19.70	2.71E-01		-5.64E-02	1.26E-01
		873.19		11.50	5.08E-01		1.30E-01	2.34E-01
		996.32		10.30	5.88E-01		-2.80E-01	2.69E-01
		1004.76		17.90	3.73E-01		6.91E-02	1.72E-01
		1274.45		35.50	1.96E-01		-4.72E-02	8.94E-02
	EU-155	86.50		30.90	1.32E-01	1.32E-01	2.00E-01	6.42E-02
		105.30		20.70	1.48E-01		6.63E-02	7.15E-02
	EU-156	811.77		10.40	4.93E+01	4.93E+01	-2.47E+01	2.28E+01
		1153.47		7.20	8.86E+01		-1.37E+01	4.07E+01
		1230.71		8.90	9.11E+01		-3.72E+01	4.25E+01
	HO-166M	184.41		72.60	6.98E-02	6.98E-02	1.36E-01	3.39E-02
		280.45		29.60	1.37E-01		-1.10E-01	6.54E-02
		410.94		11.10	4.30E-01		2.97E-01	2.04E-01
		711.69		54.10	1.12E-01		-2.80E-02	5.26E-02
	TM-171	66.72		0.14	2.80E+01	2.80E+01	-6.44E-01	1.35E+01
	HF-172	67.35		5.31	7.26E-01	2.93E-01	-4.58E-01	3.51E-01
		125.81		11.30	2.93E-01		1.07E-01	1.41E-01
	LU-172	181.53		20.60	5.43E+03	3.28E+03	-2.75E+02	2.62E+03

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	LU-172	900.72		29.81	5.75E+03	3.28E+03	2.14E+03	2.66E+03
		1093.66		62.50	3.28E+03		4.00E+01	1.52E+03
	LU-173	100.72		5.24	6.17E-01	2.44E-01	-1.29E-01	2.97E-01
		272.11		21.20	2.44E-01		5.30E-02	1.17E-01
	HF-175	343.40		84.00	1.38E-01	1.38E-01	-6.04E-03	6.57E-02
	LU-176	88.34		13.30	2.99E-01	4.14E-02	1.48E-01	1.45E-01
		201.83		86.00	4.93E-02		-1.44E-02	2.38E-02
		306.78		94.00	4.14E-02		-1.30E-02	1.97E-02
	HF-181	133.02		41.70	3.78E-01	2.53E-01	4.39E-02	1.82E-01
		345.85		17.20	1.17E+00		-1.19E-01	5.53E-01
		482.03		82.80	2.53E-01		5.91E-02	1.18E-01
	TA-182	67.75		41.20	1.54E-01	1.54E-01	-9.69E-02	7.44E-02
		1121.30		34.90	5.89E-01		8.88E-01	2.81E-01
		1189.05		16.23	9.38E-01		2.92E-01	4.37E-01
		1221.41		26.98	5.59E-01		-6.52E-02	2.60E-01
		1231.02		11.44	1.40E+00		-5.70E-01	6.52E-01
	IR-192	308.46		29.68	3.39E-01	2.13E-01	-1.89E-02	1.61E-01
		468.07		48.10	2.13E-01		-1.02E-01	9.92E-02
	HG-203	279.19		77.30	2.53E-01	2.53E-01	1.53E-01	1.21E-01
	TL-204	374.74		94.11	4.91E-02	4.91E-02	-1.33E-02	2.33E-02
		899.15		99.16	6.15E-02		9.70E-03	2.83E-02
		911.74		91.10	1.39E-01		3.32E-01	6.69E-02
	BI-207	569.67		97.72	5.07E-02	5.07E-02	1.62E-03	2.37E-02
		1063.62		74.90	8.85E-02		-1.51E-02	4.08E-02
+	TL-208	583.14	*	30.22	2.44E-01	1.89E-01	9.71E-01	1.17E-01
		860.37		4.48	1.58E+00		1.04E+00	7.41E-01
		2614.66	*	35.85	1.89E-01		7.65E-01	8.19E-02
	BI-210M	262.00		45.00	9.02E-02	9.02E-02	9.72E-03	4.31E-02
		300.00		23.00	2.00E-01		1.07E-01	9.57E-02
	PB-210	46.50		4.25	1.30E+00	1.30E+00	1.65E+00	6.29E-01
	PB-211	404.84		2.90	1.37E+00	1.37E+00	1.26E-01	6.41E-01
		831.96		2.90	1.97E+00		2.70E-01	9.10E-01
+	BI-212	727.17	*	11.80	6.81E-01	6.81E-01	1.01E+00	3.24E-01
		1620.62		2.75	2.12E+00		5.26E-01	9.27E-01
+	PB-212	238.63	*	44.60	2.01E-01	2.01E-01	1.06E+00	9.87E-02
		300.09		3.41	1.35E+00		7.24E-01	6.46E-01
+	BI-214	609.31	*	46.30	1.97E-01	1.97E-01	6.66E-01	9.51E-02
		1120.29	*	15.10	7.98E-01		1.14E+00	3.81E-01
		1764.49		15.80	6.27E-01		5.95E-01	2.90E-01
		2204.22		4.98	1.27E+00		5.06E-01	5.51E-01
+	PB-214	295.21	*	19.19	4.85E-01	1.60E-01	8.40E-01	2.38E-01
		351.92	*	37.19	1.60E-01		8.52E-01	7.70E-02
	RN-219	401.80		6.50	6.30E-01	6.30E-01	-2.18E-01	2.97E-01
	RA-223	323.87		3.88	1.04E+00	1.04E+00	1.81E-01	4.94E-01
	RA-224	240.98		3.95	2.34E+00	2.34E+00	1.09E+01	1.15E+00
	RA-225	40.00		31.00	2.53E+01	2.53E+01	1.19E+01	1.22E+01
+	RA-226	186.21	*	3.28	1.92E+00	1.92E+00	1.89E+00	9.39E-01
	TH-227	50.10		8.40	4.85E-01	4.64E-01	-3.98E-02	2.33E-01
		236.00		11.50	4.64E-01		-5.88E+00	2.25E-01
		256.20		6.30	6.72E-01		-9.05E-02	3.22E-01
+	AC-228	338.32	*	11.40	6.67E-01	3.67E-01	1.11E+00	3.24E-01
		911.07	*	27.70	3.67E-01		1.05E+00	1.75E-01
		969.11	*	16.60	6.09E-01		6.86E-01	2.90E-01

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TH-230	48.44		16.90	2.68E-01	2.68E-01	-1.19E-01	1.29E-01
		62.85		4.60	9.76E-01		1.06E+00	4.75E-01
		67.67		0.37	9.39E+00		-5.92E+00	4.54E+00
	PA-231	283.67		1.60	2.63E+00	1.89E+00	2.42E-01	1.26E+00
		302.67		2.30	1.89E+00		-1.29E+00	9.03E-01
	TH-231	25.64		14.70	1.09E-01	1.09E-01	0.00E+00	0.00E+00
		84.21		6.40	5.21E-01		-4.49E-01	2.52E-01
	PA-233	311.98		38.60	1.39E+00	1.39E+00	1.10E+00	6.62E-01
	PA-234	131.20		20.40	1.62E-01	1.62E-01	5.50E-02	7.80E-02
		733.99		8.80	6.58E-01		-1.45E-01	3.07E-01
		946.00		12.00	4.57E-01		-7.80E-02	2.09E-01
	PA-234M	1001.03		0.92	6.89E+00	6.89E+00	-7.98E-01	3.17E+00
+	TH-234	63.29	*	3.80	1.94E+00	1.94E+00	1.37E+00	9.55E-01
	U-235	143.76		10.50	3.96E-01	3.96E-01	7.11E-02	1.92E-01
		163.35		4.70	8.77E-01		3.47E-01	4.25E-01
		205.31		4.70	8.99E-01		1.96E-01	4.34E-01
	NP-237	86.50		12.60	3.12E-01	3.12E-01	4.72E-01	1.52E-01
	NP-239	106.10		22.70	6.28E+11	6.28E+11	2.81E+11	3.03E+11
		228.18		10.70	2.01E+12		1.18E+12	9.70E+11
		277.60		14.10	1.50E+12		2.60E+11	7.21E+11
	AM-241	59.54		35.90	1.09E-01	1.09E-01	4.04E-02	5.28E-02
	AM-243	74.67		66.00	7.60E-02	7.60E-02	-6.29E-02	3.72E-02
	CM-243	209.75		3.29	1.42E+00	3.17E-01	7.84E-02	6.88E-01
		228.14		10.60	4.25E-01		2.49E-01	2.05E-01
		277.60		14.00	3.17E-01		5.48E-02	1.52E-01

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

Analysis Report for 1707088-04

HTC-A03-S003-3642-01

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-A03-S003-3642-01

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	0	0	0	0	0	0	0
25:	0	0	0	0	27	76	126	123
33:	126	626	180	101	106	95	88	97
41:	92	72	77	64	60	74	128	92
49:	65	74	70	61	90	95	73	72
57:	74	87	100	100	104	93	149	204
65:	118	101	112	88	93	118	113	100
73:	115	127	319	240	357	372	98	100
81:	112	110	91	113	108	94	147	202
89:	89	163	129	118	221	149	107	83
97:	82	87	78	89	66	64	78	76
105:	66	92	80	64	55	76	76	65
113:	74	73	79	67	65	73	64	63
121:	70	79	77	65	76	63	78	63
129:	94	95	77	83	68	72	69	65
137:	73	49	69	62	65	70	77	78
145:	65	87	77	56	64	51	60	72
153:	59	76	71	54	73	65	57	75
161:	52	57	58	84	72	50	61	63
169:	52	63	47	38	51	42	43	71
177:	60	53	61	50	68	47	54	32
185:	65	160	111	45	58	49	59	47
193:	48	36	54	55	49	37	52	67
201:	59	49	41	44	59	44	64	46
209:	67	72	53	60	55	39	44	44
217:	46	43	58	37	40	56	45	38
225:	43	44	45	44	52	60	38	50
233:	36	37	46	46	36	172	607	146
241:	77	107	72	38	33	40	32	25
249:	28	37	36	31	37	35	36	33
257:	49	32	40	24	36	34	31	39
265:	25	32	40	40	35	53	44	38
273:	34	24	36	28	43	46	35	27
281:	32	29	25	35	33	35	29	19
289:	30	22	29	31	28	44	139	133
297:	32	28	27	44	53	22	25	29
305:	24	24	26	28	17	26	26	26
313:	27	31	19	34	16	30	26	29
321:	24	27	24	22	20	25	25	59
329:	31	23	23	20	28	16	19	30
337:	35	103	81	33	25	30	26	24
345:	21	23	15	20	22	28	61	276
353:	102	22	23	17	26	20	18	19
361:	16	13	19	16	17	24	22	17

369:	21	27	18	26	22	20	23	24

Sample Title: HTC-A03-S003-3642-01

Channel								
377:	24	25	22	25	20	24	24	16
385:	30	21	22	26	32	22	17	21
393:	20	25	14	21	17	24	20	13
401:	21	22	11	20	21	12	16	21
409:	26	28	24	18	20	13	12	13
417:	19	20	26	21	25	18	19	18
425:	23	18	19	27	15	14	18	19
433:	17	13	9	14	10	21	10	15
441:	18	13	15	20	24	16	9	13
449:	13	14	13	18	18	25	16	16
457:	16	12	7	12	19	20	35	31
465:	12	11	19	18	5	13	14	15
473:	10	19	8	29	12	19	10	13
481:	22	8	11	12	10	9	21	12
489:	8	21	9	10	13	11	13	11
497:	13	11	15	6	18	11	30	13
505:	13	16	13	10	34	59	83	41
513:	26	14	12	13	16	17	11	11
521:	11	9	14	15	10	7	15	16
529:	9	8	9	9	10	12	10	15
537:	10	13	13	11	9	11	22	12
545:	10	17	11	9	14	13	13	8
553:	11	9	11	8	9	10	9	13
561:	14	22	12	12	14	14	17	20
569:	13	13	10	12	17	14	10	15
577:	13	16	9	13	20	37	133	98
585:	16	16	10	9	16	10	9	9
593:	5	10	11	12	11	16	8	7
601:	12	8	13	11	13	15	12	42
609:	132	105	29	6	13	8	13	5
617:	5	11	15	14	14	9	2	15
625:	11	10	16	15	11	14	10	13
633:	18	9	8	16	8	8	14	8
641:	6	11	7	10	9	9	12	10
649:	12	8	10	7	16	12	8	6
657:	9	15	10	15	10	17	17	12
665:	10	15	10	10	11	9	7	10
673:	12	7	14	6	4	15	10	10
681:	6	15	11	2	8	9	10	8
689:	11	8	4	11	11	8	10	8
697:	9	9	17	13	17	15	11	16
705:	20	14	12	10	12	13	14	9
713:	11	9	15	10	9	13	11	9
721:	5	4	9	6	6	16	45	39
729:	10	9	11	12	6	8	16	8
737:	6	15	5	9	7	10	11	9
745:	14	10	4	10	6	9	7	7
753:	20	11	16	21	10	7	8	13
761:	7	11	10	7	4	7	19	28
769:	18	9	11	9	16	7	2	9
777:	11	10	12	7	11	12	9	6
785:	11	13	14	9	8	9	9	6
793:	11	10	24	8	7	7	9	12

801:	13	9	8	10	12	16	6	7

Sample Title: HTC-A03-S003-3642-01

Channel								
809:	13	4	3	8	4	12	8	10
817:	4	8	7	4	11	6	7	9
825:	7	5	5	4	8	9	9	7
833:	8	7	11	14	16	15	6	14
841:	8	9	6	12	7	7	6	11
849:	6	9	6	2	8	4	6	5
857:	1	13	5	19	20	10	10	10
865:	7	9	5	2	8	6	10	4
873:	9	6	5	8	3	9	6	7
881:	4	10	8	10	9	8	4	5
889:	6	12	7	10	8	6	1	3
897:	8	6	8	8	9	5	6	10
905:	5	8	7	10	18	44	84	42
913:	11	7	6	6	4	7	4	3
921:	5	6	5	6	7	11	7	13
929:	8	6	8	9	16	15	15	7
937:	2	11	7	10	5	4	1	9
945:	10	1	4	9	5	5	8	11
953:	9	8	5	8	3	6	8	10
961:	5	7	5	8	17	14	10	34
969:	33	26	4	11	4	9	3	6
977:	7	5	12	6	12	6	3	12
985:	4	6	0	11	7	3	11	3
993:	3	7	4	7	9	4	7	6
1001:	12	5	4	8	9	4	8	7
1009:	5	10	10	10	5	5	6	12
1017:	9	9	9	10	7	6	7	5
1025:	11	12	5	6	7	4	7	13
1033:	4	10	9	3	3	6	4	7
1041:	10	8	7	7	7	9	4	5
1049:	6	4	9	9	11	7	10	9
1057:	7	12	4	7	5	11	7	3
1065:	7	6	8	6	10	8	11	7
1073:	7	9	6	14	6	10	7	5
1081:	11	7	5	8	6	8	10	15
1089:	8	10	7	9	3	7	9	7
1097:	4	5	7	5	7	5	5	9
1105:	5	7	8	10	7	9	6	9
1113:	6	5	7	15	8	13	22	54
1121:	21	10	6	6	4	5	4	2
1129:	6	11	5	7	5	9	2	8
1137:	5	11	6	8	6	9	5	14
1145:	7	10	6	7	3	5	2	7
1153:	5	11	7	7	11	7	9	9
1161:	6	10	12	8	9	10	12	7
1169:	9	5	12	4	7	9	10	4
1177:	5	8	11	10	14	10	6	9
1185:	6	9	9	11	5	9	14	8
1193:	6	11	10	14	8	5	9	7
1201:	6	9	12	10	9	8	6	12
1209:	13	9	8	11	8	12	12	10
1217:	7	7	8	11	8	9	8	8
1225:	10	9	3	4	12	16	14	7

1233:	10	7	21	10	22	15	13	9

Sample Title: HTC-A03-S003-3642-01

Channel								
1241:	10	8	10	6	14	8	7	7
1249:	5	10	7	7	8	10	10	9
1257:	6	8	7	3	5	5	2	7
1265:	9	5	3	5	8	6	5	3
1273:	7	4	4	6	7	7	4	5
1281:	7	5	5	9	8	1	7	4
1289:	4	6	4	10	4	2	6	2
1297:	2	5	6	8	4	2	3	7
1305:	12	8	4	5	2	6	5	8
1313:	1	3	5	2	5	4	5	4
1321:	2	2	9	3	11	3	3	3
1329:	7	5	4	2	4	5	6	3
1337:	6	4	3	4	8	3	3	2
1345:	0	3	0	2	5	8	3	3
1353:	3	3	1	1	1	3	2	6
1361:	6	4	7	1	1	4	3	3
1369:	1	5	2	2	6	3	0	5
1377:	12	7	3	2	3	1	5	1
1385:	2	3	3	0	4	1	4	5
1393:	1	2	3	4	0	3	2	3
1401:	5	7	2	1	2	8	5	10
1409:	3	4	3	0	2	2	2	5
1417:	2	2	2	1	3	3	6	1
1425:	2	1	2	4	3	8	4	3
1433:	0	1	2	1	1	1	3	4
1441:	1	2	0	2	0	2	6	3
1449:	1	4	3	1	4	1	3	4
1457:	4	43	111	257	310	107	15	2
1465:	3	2	2	2	3	2	2	1
1473:	0	3	0	0	1	3	2	2
1481:	1	2	3	3	0	1	3	0
1489:	1	0	0	1	3	1	3	5
1497:	5	2	0	3	3	4	5	1
1505:	0	2	2	3	4	2	3	0
1513:	2	2	0	1	3	0	0	0
1521:	5	4	3	0	2	1	1	2
1529:	0	1	2	3	2	2	0	0
1537:	2	1	0	0	1	0	1	2
1545:	1	0	0	1	1	0	0	3
1553:	1	2	1	2	0	2	0	1
1561:	2	0	0	1	0	1	1	1
1569:	0	2	1	1	1	2	2	1
1577:	2	1	2	1	1	4	2	7
1585:	1	4	9	6	4	0	3	7
1593:	6	1	2	0	0	1	1	1
1601:	1	1	2	2	3	0	1	2
1609:	3	0	2	2	0	1	0	1
1617:	3	1	5	3	1	2	1	1
1625:	3	1	1	2	2	2	5	1
1633:	1	2	3	3	0	4	1	0
1641:	4	2	2	2	2	1	0	1
1649:	1	1	1	0	0	1	4	2
1657:	0	1	2	7	2	2	0	0

1665:	0	0	2	0	4	1	1	0

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Channel								
1673:	0	1	2	1	1	1	3	1
1681:	2	0	4	2	2	0	0	0
1689:	1	3	2	0	2	3	1	0
1697:	3	0	2	1	3	0	0	1
1705:	1	1	4	1	1	0	0	3
1713:	1	2	0	1	0	1	1	3
1721:	2	1	1	1	0	0	2	3
1729:	4	1	1	2	1	1	1	1
1737:	0	0	4	1	0	2	0	0
1745:	2	1	0	0	1	3	2	0
1753:	0	0	2	6	1	0	2	1
1761:	1	1	7	19	14	4	0	2
1769:	0	1	2	1	2	1	0	0
1777:	2	2	1	1	1	1	0	0
1785:	0	1	1	1	2	0	0	0
1793:	1	0	1	0	0	1	1	1
1801:	1	2	0	1	1	0	1	1
1809:	2	0	1	1	0	3	1	0
1817:	2	2	1	1	1	1	0	1
1825:	1	1	1	1	1	2	1	0
1833:	2	0	1	3	1	1	1	1
1841:	0	1	0	0	0	0	5	3
1849:	2	1	0	3	0	2	1	0
1857:	1	1	0	0	2	0	2	0
1865:	1	0	1	1	0	0	5	2
1873:	0	0	1	0	2	2	0	1
1881:	5	3	0	0	1	0	1	0
1889:	0	1	1	2	2	2	1	0
1897:	2	1	4	0	2	1	2	0
1905:	0	2	2	0	2	0	1	0
1913:	1	2	2	1	1	2	1	0
1921:	0	1	0	2	0	1	1	1
1929:	1	0	0	3	1	1	2	1
1937:	1	2	1	2	0	0	0	0
1945:	1	0	1	0	2	0	1	1
1953:	0	0	0	1	2	1	3	0
1961:	0	1	1	1	0	2	1	3
1969:	0	1	0	0	1	0	0	0
1977:	0	1	1	0	0	2	0	0
1985:	2	1	2	1	0	1	2	1
1993:	0	0	0	0	2	0	2	1
2001:	0	0	0	0	1	1	1	1
2009:	1	0	3	0	2	0	2	2
2017:	1	1	1	0	0	1	0	2
2025:	1	0	1	1	1	1	1	2
2033:	0	0	1	0	1	1	1	1
2041:	1	0	0	1	1	1	0	0
2049:	2	1	1	3	0	3	1	2
2057:	1	1	2	1	0	2	1	1
2065:	1	0	1	0	0	0	1	1
2073:	1	1	0	2	0	1	2	1
2081:	0	2	0	0	0	0	1	0
2089:	0	0	0	3	0	0	0	1

2097:	1	1	1	4	5	2	1	4

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

2529:	2	0	0	0	1	0	0	0

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Channel								
2537:	0	0	0	0	0	0	0	1
2545:	0	0	0	0	2	1	0	0
2553:	0	1	0	0	1	0	0	0
2561:	0	0	0	2	1	0	1	0
2569:	1	1	0	0	1	1	1	0
2577:	0	0	1	0	0	0	0	0
2585:	0	0	1	1	1	0	0	0
2593:	1	0	0	0	0	0	0	0
2601:	0	0	0	0	1	1	0	2
2609:	3	4	6	9	24	25	9	9
2617:	3	0	1	0	0	1	0	2
2625:	0	0	0	0	0	1	0	0
2633:	0	0	1	0	0	0	0	0
2641:	0	0	1	0	0	1	0	0
2649:	0	0	1	0	0	0	0	0
2657:	0	0	1	1	0	0	0	1
2665:	0	0	0	1	0	0	1	0
2673:	0	0	0	0	0	0	0	1
2681:	1	0	0	0	2	0	0	1
2689:	0	0	1	0	0	0	2	0
2697:	0	1	0	1	0	0	0	1
2705:	0	0	0	0	0	1	1	1
2713:	1	0	0	0	0	0	0	0
2721:	0	0	1	0	0	1	1	0
2729:	1	0	0	0	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	0	1	1	2	0	0	1	0
2753:	1	0	0	1	1	0	0	1
2761:	1	1	0	0	0	0	1	0
2769:	0	0	0	0	0	1	0	2
2777:	0	0	0	1	0	0	0	1
2785:	0	0	3	0	0	0	0	0
2793:	0	2	0	1	0	1	0	0
2801:	0	1	1	1	0	0	0	0
2809:	0	0	0	0	1	1	0	1
2817:	0	1	0	0	2	0	1	0
2825:	2	1	0	0	0	0	0	0
2833:	0	0	0	0	1	0	0	0
2841:	1	1	1	0	0	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	0	1	0	0
2865:	1	0	0	0	0	0	0	0
2873:	0	0	0	0	0	0	0	0
2881:	0	1	0	0	0	0	0	1
2889:	0	2	1	0	0	0	0	0
2897:	1	0	0	0	2	0	0	0
2905:	0	1	0	1	0	0	1	0
2913:	0	0	0	0	0	0	0	1
2921:	1	1	0	1	1	0	2	0
2929:	1	0	0	0	0	0	0	1
2937:	0	0	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	1	1	0	1	0

2961:	0	1	0	0	0	0	0	0

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

3393:	0	0	1	0	0	1	0	0

Sample Title: HTC-A03-S003-3642-01

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

3825:	0	1	0	0	0	0	0	0

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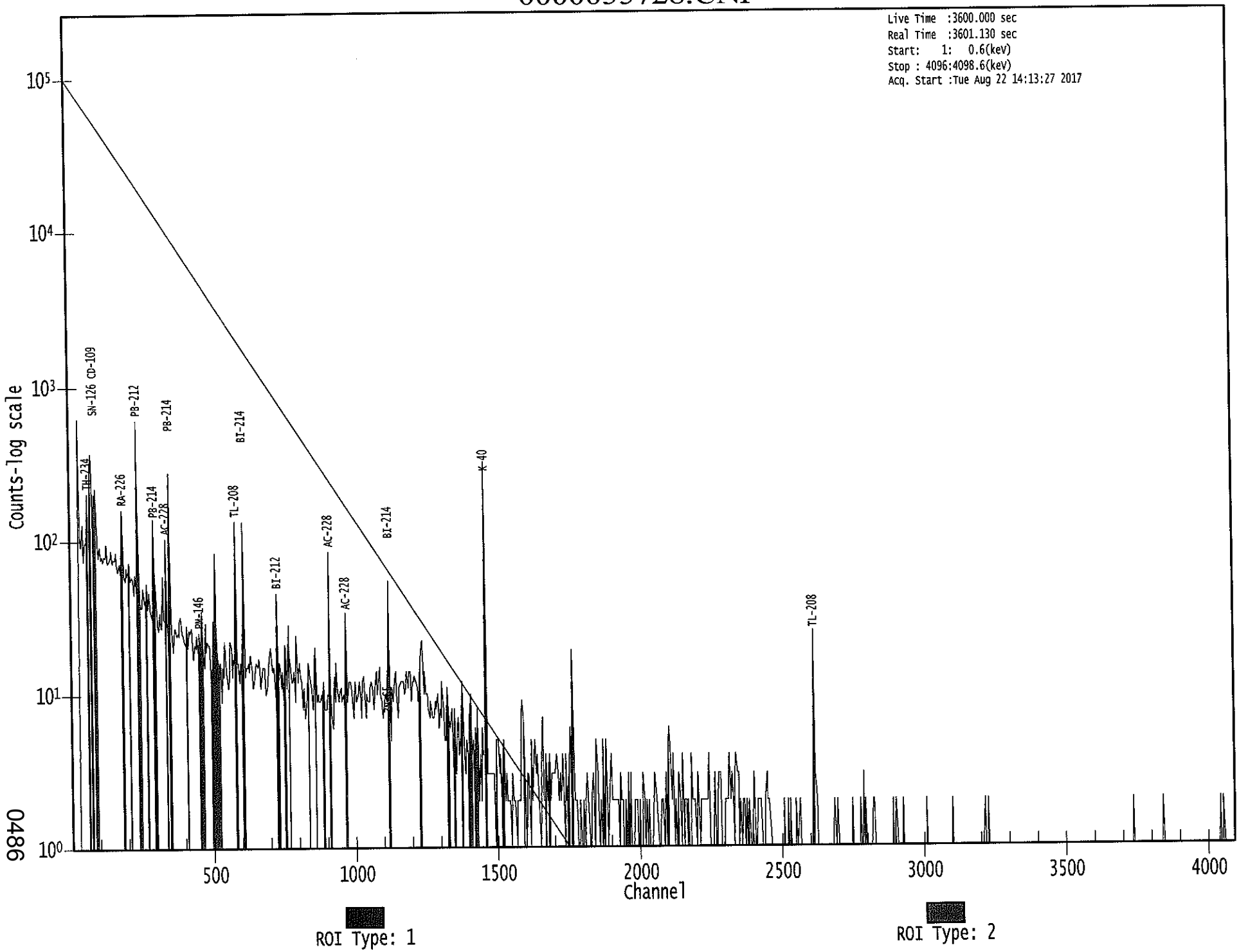
Channel								
3833:	0	0	0	0	0	1	0	0
3841:	2	0	0	0	0	1	0	0
3849:	0	1	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	1	0	0	0	0	0	0
3881:	0	0	0	1	1	0	0	0
3889:	0	0	0	1	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	1	0	0	0
3913:	0	0	0	0	0	0	0	1
3921:	0	0	0	0	1	0	0	0
3929:	0	0	0	0	0	0	0	0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

0000055728.CNF



0486

ICB 8/22/17

Apex-Gamma

Analysis Report for 1707088-05
HTC-A03-S003-4248-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-05
Sample Description	: HTC-A03-S003-4248-01
Sample Type	: SOIL
Sample Size	: 6.643E+02 grams
Facility	: Countroom
Sample Taken On	: 5/15/2017 9:30:58AM
Acquisition Started	: 8/22/2017 1:12:10PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3608.6 seconds
Dead Time	: 0.24 %
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	: 55724

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 2:13:01PM
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	26.05	26.37	0.0000	0.00
2	63.76	64.06	0.0000	0.00
3	75.21	75.51	0.0000	0.00
4	77.67	77.97	0.0000	0.00
5	87.34	87.64	0.0000	0.00
6	93.74	94.04	0.0000	0.00
7	186.37	186.64	0.0000	0.00
8	239.73	239.98	0.0000	0.00
9	270.89	271.13	0.0000	0.00
10	295.75	295.98	0.0000	0.00
11	300.86	301.09	0.0000	0.00
12	339.16	339.37	0.0000	0.00
13	352.36	352.57	0.0000	0.00
14	462.56	462.73	0.0000	0.00
15	474.16	474.33	0.0000	0.00
16	511.58	511.73	0.0000	0.00
17	583.77	583.90	0.0000	0.00
18	609.97	610.09	0.0000	0.00
19	728.42	728.51	0.0000	0.00
20	840.67	840.72	0.0000	0.00
21	875.68	875.72	0.0000	0.00
22	911.57	911.59	0.0000	0.00
23	969.76	969.76	0.0000	0.00
24	1120.83	1120.78	0.0000	0.00
25	1130.19	1130.13	0.0000	0.00
26	1138.19	1138.13	0.0000	0.00
27	1173.79	1173.72	0.0000	0.00
28	1238.52	1238.43	0.0000	0.00
29	1289.13	1289.02	0.0000	0.00
30	1318.34	1318.22	0.0000	0.00
31	1383.69	1383.55	0.0000	0.00
32	1428.96	1428.80	0.0000	0.00
33	1461.09	1460.92	0.0000	0.00
34	1469.34	1469.17	0.0000	0.00
35	1544.62	1544.42	0.0000	0.00
36	1555.91	1555.71	0.0000	0.00
37	1631.22	1631.00	0.0000	0.00
38	1729.64	1729.38	0.0000	0.00
39	1764.75	1764.48	0.0000	0.00
40	2615.09	2614.53	0.0000	0.00

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 2:13:01PM

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	26.05	22 -	30	26.37	1.01E+02	94.36	1.31E+03	3.71
m	2	63.76	59 -	68	64.06	1.82E+02	95.12	1.52E+03	2.17
M	3	75.21	72 -	83	75.51	3.62E+02	112.53	1.77E+03	2.21
m	4	77.67	72 -	83	77.97	5.63E+02	113.31	1.59E+03	2.22
	5	87.34	84 -	92	87.64	1.68E+02	122.52	2.23E+03	1.82
	6	93.74	92 -	98	94.04	1.72E+02	90.96	1.28E+03	1.85
	7	186.37	183 -	190	186.64	1.63E+02	74.89	8.13E+02	2.21
	8	239.73	236 -	245	239.98	9.01E+02	93.66	7.21E+02	2.19
	9	270.89	268 -	274	271.13	4.43E+01	49.37	4.13E+02	1.04
M	10	295.75	292 -	305	295.98	2.47E+02	51.74	3.07E+02	2.25
m	11	300.86	292 -	305	301.09	4.72E+01	44.38	2.79E+02	2.33
	12	339.16	335 -	343	339.37	1.33E+02	59.17	4.52E+02	1.81
	13	352.36	348 -	356	352.57	3.63E+02	59.89	3.27E+02	2.16
	14	462.56	458 -	466	462.73	9.41E+01	38.96	1.76E+02	3.51
	15	474.16	472 -	477	474.33	3.49E+01	26.34	1.06E+02	3.48
	16	511.58	507 -	518	511.73	9.98E+01	51.34	2.72E+02	2.95
	17	583.77	580 -	588	583.90	1.80E+02	43.80	1.84E+02	1.98
	18	609.97	606 -	615	610.09	2.65E+02	45.93	1.50E+02	2.31
	19	728.42	724 -	734	728.51	8.04E+01	35.01	1.19E+02	3.30
	20	840.67	838 -	845	840.72	2.50E+01	24.82	8.20E+01	1.87
	21	875.68	870 -	882	875.72	3.06E+01	34.10	1.19E+02	3.89
	22	911.57	908 -	916	911.59	1.13E+02	34.03	1.11E+02	2.33
	23	969.76	967 -	975	969.76	6.02E+01	34.41	1.38E+02	1.91
M	24	1120.83	1116 -	1133	1120.78	4.40E+01	25.00	7.42E+01	2.43
m	25	1130.19	1116 -	1133	1130.13	2.04E+01	21.00	6.02E+01	2.43
	26	1138.19	1134 -	1142	1138.13	3.65E+01	22.16	5.10E+01	5.03
	27	1173.79	1169 -	1179	1173.72	4.40E+01	28.91	8.80E+01	6.58
	28	1238.52	1235 -	1242	1238.43	2.51E+01	28.57	1.18E+02	1.81
	29	1289.13	1285 -	1294	1289.02	2.60E+01	21.31	5.00E+01	3.49
	30	1318.34	1315 -	1321	1318.22	1.55E+01	15.31	3.10E+01	1.76
	31	1383.69	1373 -	1394	1383.55	3.90E+01	26.91	4.21E+01	14.88
	32	1428.96	1422 -	1434	1428.80	1.85E+01	17.12	2.50E+01	6.44
	33	1461.09	1455 -	1466	1460.92	5.95E+02	49.27	5.90E+00	2.75
	34	1469.34	1467 -	1472	1469.17	1.01E+01	7.55	3.75E+00	3.52
	35	1544.62	1542 -	1547	1544.42	9.86E+00	7.28	2.27E+00	3.39
	36	1555.91	1552 -	1559	1555.71	8.14E+00	10.20	1.17E+01	3.90
	37	1631.22	1629 -	1633	1631.00	6.50E+00	6.96	5.00E+00	2.81
	38	1729.64	1726 -	1732	1729.38	9.50E+00	8.75	7.00E+00	2.88
	39	1764.75	1758 -	1769	1764.48	4.29E+01	17.78	1.82E+01	2.13
	40	2615.09	2610 -	2620	2614.53	6.98E+01	17.84	4.49E+00	2.83

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

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 : 8/22/2017 2:13:01PM

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	26.05	22 -	30	1.01E+02	94.36	1.31E+03	7.58E+01
m	2	63.76	59 -	68	1.82E+02	95.12	1.52E+03	6.40E+01
M	3	75.21	72 -	83	3.62E+02	112.53	1.77E+03	6.92E+01
m	4	77.67	72 -	83	5.63E+02	113.31	1.59E+03	6.56E+01
	5	87.34	84 -	92	1.68E+02	122.52	2.23E+03	9.84E+01
	6	93.74	92 -	98	1.72E+02	90.96	1.28E+03	7.16E+01
	7	186.37	183 -	190	1.63E+02	74.89	8.13E+02	5.79E+01
	8	239.73	236 -	245	9.01E+02	93.66	7.21E+02	5.91E+01
	9	270.89	268 -	274	4.43E+01	49.37	4.13E+02	3.91E+01
M	10	295.75	292 -	305	2.47E+02	51.74	3.07E+02	2.88E+01
m	11	300.86	292 -	305	4.72E+01	44.38	2.79E+02	2.75E+01
	12	339.16	335 -	343	1.33E+02	59.17	4.52E+02	4.48E+01
	13	352.36	348 -	356	3.63E+02	59.89	3.27E+02	3.80E+01
	14	462.56	458 -	466	9.41E+01	38.96	1.76E+02	2.78E+01
	15	474.16	472 -	477	3.49E+01	26.34	1.06E+02	1.94E+01
	16	511.58	507 -	518	9.98E+01	51.34	2.72E+02	3.89E+01
	17	583.77	580 -	588	1.80E+02	43.80	1.84E+02	2.85E+01
	18	609.97	606 -	615	2.65E+02	45.93	1.50E+02	2.66E+01
	19	728.42	724 -	734	8.04E+01	35.01	1.19E+02	2.47E+01
	20	840.67	838 -	845	2.50E+01	24.82	8.20E+01	1.87E+01
	21	875.68	870 -	882	3.06E+01	34.10	1.19E+02	2.65E+01
	22	911.57	908 -	916	1.13E+02	34.03	1.11E+02	2.19E+01
	23	969.76	967 -	975	6.02E+01	34.41	1.38E+02	2.52E+01
M	24	1120.83	1116 -	1133	4.40E+01	25.00	7.42E+01	1.42E+01
m	25	1130.19	1116 -	1133	2.04E+01	21.00	6.02E+01	1.28E+01
	26	1138.19	1134 -	1142	3.65E+01	22.16	5.10E+01	1.53E+01
	27	1173.79	1169 -	1179	4.40E+01	28.91	8.80E+01	2.11E+01
	28	1238.52	1235 -	1242	2.51E+01	28.57	1.18E+02	2.20E+01
	29	1289.13	1285 -	1294	2.60E+01	21.31	5.00E+01	1.54E+01
	30	1318.34	1315 -	1321	1.55E+01	15.31	3.10E+01	1.08E+01
	31	1383.69	1373 -	1394	3.90E+01	26.91	4.21E+01	1.96E+01

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
32	1428.96	1422 -	1434	1.85E+01	17.12	2.50E+01	1.22E+01
33	1461.09	1455 -	1466	5.95E+02	49.27	5.90E+00	5.68E+00
34	1469.34	1467 -	1472	1.01E+01	7.55	3.75E+00	3.34E+00
35	1544.62	1542 -	1547	9.86E+00	7.28	2.27E+00	3.03E+00
36	1555.91	1552 -	1559	8.14E+00	10.20	1.17E+01	6.95E+00
37	1631.22	1629 -	1633	6.50E+00	6.96	5.00E+00	3.90E+00
38	1729.64	1726 -	1732	9.50E+00	8.75	7.00E+00	5.10E+00
39	1764.75	1758 -	1769	4.29E+01	17.78	1.82E+01	9.88E+00
40	2615.09	2610 -	2620	6.98E+01	17.84	4.49E+00	5.15E+00

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

PEAK WITH NID REPORT

Peak Analysis Performed on : 8/22/2017 2:13:01PM

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	26.05	22 -	30	26.37	1.01E+02	94.36	1.31E+03	TH-231
m	2	63.76	59 -	68	64.06	1.82E+02	95.12	1.52E+03	TH-234
									TH-230
M	3	75.21	72 -	83	75.51	3.62E+02	112.53	1.77E+03	AM-243
m	4	77.67	72 -	83	77.97	5.63E+02	113.31	1.59E+03	TI-44
	5	87.34	84 -	92	87.64	1.68E+02	122.52	2.23E+03	SN-126
									CD-109
									NP-237
									EU-155
	6	93.74	92 -	98	94.04	1.72E+02	90.96	1.28E+03	GA-67
	7	186.37	183 -	190	186.64	1.63E+02	74.89	8.13E+02	RA-226
	8	239.73	236 -	245	239.98	9.01E+02	93.66	7.21E+02	.....
	9	270.89	268 -	274	271.13	4.43E+01	49.37	4.13E+02	.....
M	10	295.75	292 -	305	295.98	2.47E+02	51.74	3.07E+02	PB-214
m	11	300.86	292 -	305	301.09	4.72E+01	44.38	2.79E+02	GA-67
									PB-212
									BI-210M

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	12	339.16	335 -	343	339.37	1.33E+02	59.17	4.52E+02	AC-228
	13	352.36	348 -	356	352.57	3.63E+02	59.89	3.27E+02	PB-214
	14	462.56	458 -	466	462.73	9.41E+01	38.96	1.76E+02	SB-125
	15	474.16	472 -	477	474.33	3.49E+01	26.34	1.06E+02	.....
	16	511.58	507 -	518	511.73	9.98E+01	51.34	2.72E+02	.....
	17	583.77	580 -	588	583.90	1.80E+02	43.80	1.84E+02	TL-208
	18	609.97	606 -	615	610.09	2.65E+02	45.93	1.50E+02	BI-214
	19	728.42	724 -	734	728.51	8.04E+01	35.01	1.19E+02	.....
	20	840.67	838 -	845	840.72	2.50E+01	24.82	8.20E+01	.....
	21	875.68	870 -	882	875.72	3.06E+01	34.10	1.19E+02	.....
	22	911.57	908 -	916	911.59	1.13E+02	34.03	1.11E+02	TL-204 AC-228
	23	969.76	967 -	975	969.76	6.02E+01	34.41	1.38E+02	AC-228
M	24	1120.83	1116 -	1133	1120.78	4.40E+01	25.00	7.42E+01	SC-46 TA-182 BI-214
m	25	1130.19	1116 -	1133	1130.13	2.04E+01	21.00	6.02E+01	.....
	26	1138.19	1134 -	1142	1138.13	3.65E+01	22.16	5.10E+01	.....
	27	1173.79	1169 -	1179	1173.72	4.40E+01	28.91	8.80E+01	CO-60
	28	1238.52	1235 -	1242	1238.43	2.51E+01	28.57	1.18E+02	CO-56
	29	1289.13	1285 -	1294	1289.02	2.60E+01	21.31	5.00E+01	.....
	30	1318.34	1315 -	1321	1318.22	1.55E+01	15.31	3.10E+01	.....
	31	1383.69	1373 -	1394	1383.55	3.90E+01	26.91	4.21E+01	AG-110M
	32	1428.96	1422 -	1434	1428.80	1.85E+01	17.12	2.50E+01	.....
	33	1461.09	1455 -	1466	1460.92	5.95E+02	49.27	5.90E+00	K-40
	34	1469.34	1467 -	1472	1469.17	1.01E+01	7.55	3.75E+00	.....
	35	1544.62	1542 -	1547	1544.42	9.86E+00	7.28	2.27E+00	.....
	36	1555.91	1552 -	1559	1555.71	8.14E+00	10.20	1.17E+01	.....
	37	1631.22	1629 -	1633	1631.00	6.50E+00	6.96	5.00E+00	.....
	38	1729.64	1726 -	1732	1729.38	9.50E+00	8.75	7.00E+00	.....
	39	1764.75	1758 -	1769	1764.48	4.29E+01	17.78	1.82E+01	BI-214
	40	2615.09	2610 -	2620	2614.53	6.98E+01	17.84	4.49E+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 : 8/22/2017 2:13:01PM

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	26.05	1.01E+02	94.36	3.19E-03	1.73E-03
m	2	63.76	1.82E+02	95.12	2.45E-02	1.81E-03
M	3	75.21	3.62E+02	112.53	2.65E-02	2.02E-03
m	4	77.67	5.63E+02	113.31	2.68E-02	2.07E-03
	5	87.34	1.68E+02	122.52	2.72E-02	2.25E-03
	6	93.74	1.72E+02	90.96	2.71E-02	2.24E-03
	7	186.37	1.63E+02	74.89	1.96E-02	1.55E-03
	8	239.73	9.01E+02	93.66	1.61E-02	1.34E-03
	9	270.89	4.43E+01	49.37	1.45E-02	1.21E-03
M	10	295.75	2.47E+02	51.74	1.34E-02	1.15E-03
m	11	300.86	4.72E+01	44.38	1.32E-02	1.14E-03
	12	339.16	1.33E+02	59.17	1.19E-02	1.06E-03
	13	352.36	3.63E+02	59.89	1.15E-02	1.03E-03
	14	462.56	9.41E+01	38.96	9.03E-03	8.59E-04
	15	474.16	3.49E+01	26.34	8.83E-03	8.43E-04
	16	511.58	9.98E+01	51.34	8.25E-03	7.94E-04
	17	583.77	1.80E+02	43.80	7.32E-03	6.98E-04
	18	609.97	2.65E+02	45.93	7.04E-03	6.63E-04
	19	728.42	8.04E+01	35.01	6.00E-03	5.36E-04
	20	840.67	2.50E+01	24.82	5.28E-03	4.37E-04
	21	875.68	3.06E+01	34.10	5.10E-03	4.06E-04
	22	911.57	1.13E+02	34.03	4.92E-03	3.84E-04
	23	969.76	6.02E+01	34.41	4.66E-03	3.74E-04
M	24	1120.83	4.40E+01	25.00	4.12E-03	3.50E-04
m	25	1130.19	2.04E+01	21.00	4.09E-03	3.48E-04
	26	1138.19	3.65E+01	22.16	4.06E-03	3.47E-04
	27	1173.79	4.40E+01	28.91	3.96E-03	3.41E-04
	28	1238.52	2.51E+01	28.57	3.78E-03	3.22E-04
	29	1289.13	2.60E+01	21.31	3.66E-03	3.08E-04
	30	1318.34	1.55E+01	15.31	3.59E-03	3.00E-04
	31	1383.69	3.90E+01	26.91	3.46E-03	2.87E-04
	32	1428.96	1.85E+01	17.12	3.37E-03	2.80E-04
	33	1461.09	5.95E+02	49.27	3.31E-03	2.75E-04
	34	1469.34	1.01E+01	7.55	3.29E-03	2.74E-04
	35	1544.62	9.86E+00	7.28	3.17E-03	2.62E-04
	36	1555.91	8.14E+00	10.20	3.15E-03	2.60E-04
	37	1631.22	6.50E+00	6.96	3.04E-03	2.48E-04
	38	1729.64	9.50E+00	8.75	2.91E-03	2.32E-04
	39	1764.75	4.29E+01	17.78	2.86E-03	2.26E-04
	40	2615.09	6.98E+01	17.84	2.24E-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

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/22/2017 2:13:01PM

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	26.05	1.01E+02	94.36			1.01E+02	9.44E+01
m	2	63.76	1.82E+02	95.12	4.12E+01	5.67E+00	1.40E+02	9.53E+01
M	3	75.21	3.62E+02	112.53			3.62E+02	1.13E+02
m	4	77.67	5.63E+02	113.31			5.63E+02	1.13E+02
	5	87.34	1.68E+02	122.52			1.68E+02	1.23E+02
	6	93.74	1.72E+02	90.96	7.98E+01	7.31E+00	9.17E+01	9.13E+01
	7	186.37	1.63E+02	74.89	3.06E+01	5.82E+00	1.33E+02	7.51E+01
	8	239.73	9.01E+02	93.66	1.40E+01	2.71E+00	8.87E+02	9.37E+01
	9	270.89	4.43E+01	49.37			4.43E+01	4.94E+01
M	10	295.75	2.47E+02	51.74			2.47E+02	5.17E+01
m	11	300.86	4.72E+01	44.38			4.72E+01	4.44E+01
	12	339.16	1.33E+02	59.17			1.33E+02	5.92E+01
	13	352.36	3.63E+02	59.89	6.53E+00	4.43E+00	3.57E+02	6.00E+01
	14	462.56	9.41E+01	38.96			9.41E+01	3.90E+01
	15	474.16	3.49E+01	26.34			3.49E+01	2.63E+01
	16	511.58	9.98E+01	51.34	5.21E+01	4.74E+00	4.77E+01	5.16E+01
	17	583.77	1.80E+02	43.80			1.80E+02	4.38E+01
	18	609.97	2.65E+02	45.93	3.25E+00	2.97E+00	2.62E+02	4.60E+01
	19	728.42	8.04E+01	35.01			8.04E+01	3.50E+01
	20	840.67	2.50E+01	24.82			2.50E+01	2.48E+01
	21	875.68	3.06E+01	34.10			3.06E+01	3.41E+01
	22	911.57	1.13E+02	34.03	2.85E+00	2.76E+00	1.10E+02	3.41E+01
	23	969.76	6.02E+01	34.41			6.02E+01	3.44E+01
M	24	1120.83	4.40E+01	25.00			4.40E+01	2.50E+01
m	25	1130.19	2.04E+01	21.00			2.04E+01	2.10E+01
	26	1138.19	3.65E+01	22.16			3.65E+01	2.22E+01
	27	1173.79	4.40E+01	28.91	2.41E+00	1.81E+00	4.16E+01	2.90E+01
	28	1238.52	2.51E+01	28.57			2.51E+01	2.86E+01
	29	1289.13	2.60E+01	21.31			2.60E+01	2.13E+01
	30	1318.34	1.55E+01	15.31			1.55E+01	1.53E+01
	31	1383.69	3.90E+01	26.91			3.90E+01	2.69E+01
	32	1428.96	1.85E+01	17.12			1.85E+01	1.71E+01
	33	1461.09	5.95E+02	49.27	1.00E+00	1.77E+00	5.94E+02	4.93E+01
	34	1469.34	1.01E+01	7.55			1.01E+01	7.55E+00
	35	1544.62	9.86E+00	7.28			9.86E+00	7.28E+00
	36	1555.91	8.14E+00	10.20			8.14E+00	1.02E+01
	37	1631.22	6.50E+00	6.96			6.50E+00	6.96E+00
	38	1729.64	9.50E+00	8.75			9.50E+00	8.75E+00
	39	1764.75	4.29E+01	17.78			4.29E+01	1.78E+01
	40	2615.09	6.98E+01	17.84	1.86E+00	1.12E+00	6.79E+01	1.79E+01

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

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 : 8/22/2017 2:13:01PM

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	26.05	1.01E+02	94.36			1.01E+02	9.44E+01
m	2	63.76	1.82E+02	95.12	4.12E+01	5.67E+00	1.40E+02	9.53E+01
M	3	75.21	3.62E+02	112.53			3.62E+02	1.13E+02
m	4	77.67	5.63E+02	113.31			5.63E+02	1.13E+02
	5	87.34	1.68E+02	122.52			1.68E+02	1.23E+02
	6	93.74	1.72E+02	90.96	7.98E+01	7.31E+00	9.17E+01	9.13E+01
	7	186.37	1.63E+02	74.89	3.06E+01	5.82E+00	1.33E+02	7.51E+01
	8	239.73	9.01E+02	93.66	1.40E+01	2.71E+00	8.87E+02	9.37E+01
	9	270.89	4.43E+01	49.37			4.43E+01	4.94E+01
M	10	295.75	2.47E+02	51.74			2.47E+02	5.17E+01
m	11	300.86	4.72E+01	44.38			4.72E+01	4.44E+01
	12	339.16	1.33E+02	59.17			1.33E+02	5.92E+01
	13	352.36	3.63E+02	59.89	6.53E+00	4.43E+00	3.57E+02	6.00E+01
	14	462.56	9.41E+01	38.96			9.41E+01	3.90E+01
	15	474.16	3.49E+01	26.34			3.49E+01	2.63E+01
	16	511.58	9.98E+01	51.34	5.21E+01	4.74E+00	4.77E+01	5.16E+01
	17	583.77	1.80E+02	43.80			1.80E+02	4.38E+01
	18	609.97	2.65E+02	45.93	3.25E+00	2.97E+00	2.62E+02	4.60E+01
	19	728.42	8.04E+01	35.01			8.04E+01	3.50E+01
	20	840.67	2.50E+01	24.82			2.50E+01	2.48E+01
	21	875.68	3.06E+01	34.10			3.06E+01	3.41E+01
	22	911.57	1.13E+02	34.03	2.85E+00	2.76E+00	1.10E+02	3.41E+01
	23	969.76	6.02E+01	34.41			6.02E+01	3.44E+01
M	24	1120.83	4.40E+01	25.00			4.40E+01	2.50E+01
m	25	1130.19	2.04E+01	21.00			2.04E+01	2.10E+01
	26	1138.19	3.65E+01	22.16			3.65E+01	2.22E+01
	27	1173.79	4.40E+01	28.91	2.41E+00	1.81E+00	4.16E+01	2.90E+01
	28	1238.52	2.51E+01	28.57			2.51E+01	2.86E+01
	29	1289.13	2.60E+01	21.31			2.60E+01	2.13E+01
	30	1318.34	1.55E+01	15.31			1.55E+01	1.53E+01
	31	1383.69	3.90E+01	26.91			3.90E+01	2.69E+01
	32	1428.96	1.85E+01	17.12			1.85E+01	1.71E+01

Analysis Report for 1707088-05

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Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
33	1461.09	5.95E+02	49.27	1.00E+00	1.77E+00	5.94E+02	4.93E+01
34	1469.34	1.01E+01	7.55			1.01E+01	7.55E+00
35	1544.62	9.86E+00	7.28			9.86E+00	7.28E+00
36	1555.91	8.14E+00	10.20			8.14E+00	1.02E+01
37	1631.22	6.50E+00	6.96			6.50E+00	6.96E+00
38	1729.64	9.50E+00	8.75			9.50E+00	8.75E+00
39	1764.75	4.29E+01	17.78			4.29E+01	1.78E+01
40	2615.09	6.98E+01	17.84	1.86E+00	1.12E+00	6.79E+01	1.79E+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	0.988	1460.81	*	10.67	1.90E+01	2.27E+00
CD-109	0.925	88.03	*	3.72	2.19E+00	1.61E+00
SN-126	0.991	87.57	*	37.00	1.90E-01	1.39E-01
TL-208	0.846	583.14	*	30.22	9.20E-01	2.40E-01
		860.37		4.48		
		2614.66	*	35.85	9.56E-01	2.68E-01
BI-214	0.885	609.31	*	46.30	9.08E-01	1.81E-01
		1120.29	*	15.10	8.00E-01	4.60E-01
		1764.49	*	15.80	1.07E+00	4.52E-01
		2204.22		4.98		
PB-214	0.965	295.21	*	19.19	1.08E+00	2.45E-01
		351.92	*	37.19	9.41E-01	1.79E-01
RA-226	0.996	186.21	*	3.28	2.34E+00	4.48E+00
AC-228	0.939	338.32	*	11.40	1.11E+00	5.02E-01
		911.07	*	27.70	9.10E-01	2.92E-01
		969.11	*	16.60	8.79E-01	5.08E-01
TH-234	0.966	63.29	*	3.80	1.70E+00	1.16E+00
NP-237	0.895	86.50	*	12.60	5.57E-01	4.07E-01
AM-243	0.954	74.67	*	66.00	2.34E-01	7.47E-02

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

* = 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 : 8/22/2017 2:13:01PM
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	26.05	2.81146E-02	46.62	Tol.	TH-231
m	4	77.67	1.56335E-01	10.07		
	6	93.74	2.54721E-02	49.76		
	8	239.73	2.46516E-01	5.28		
	9	270.89	1.23069E-02	55.71		
m	11	300.86	1.31217E-02	46.97	Tol.	BI-210M PB-212
	14	462.56	2.61516E-02	20.69	Tol.	SB-125
	15	474.16	9.68434E-03	37.78		
	16	511.58	1.32510E-02	54.04		
	19	728.42	2.23234E-02	21.78		
	20	840.67	6.94444E-03	49.64		
	21	875.68	8.50309E-03	55.70		
m	25	1130.19	5.66466E-03	51.49		
	26	1138.19	1.01434E-02	30.34		
	27	1173.79	1.15536E-02	34.83	Tol.	CO-60
	28	1238.52	6.97751E-03	56.86		
	29	1289.13	7.22222E-03	40.98		
	30	1318.34	4.30108E-03	49.42		
	31	1383.69	1.08241E-02	34.53	Tol.	AG-110M
	32	1428.96	5.13889E-03	46.26		
	34	1469.34	2.81250E-03	37.28		
	35	1544.62	2.73990E-03	36.90		
	36	1555.91	2.26190E-03	62.62		
	37	1631.22	1.80556E-03	53.57		
	38	1729.64	2.63889E-03	46.03		

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

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

NUCLIDE 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	1.90E+01	2.27E+00
CD-109	0.92	88.03	*	3.72	2.19E+00	1.61E+00
SN-126	0.99	87.57	*	37.00	1.90E-01	1.39E-01
TL-208	0.84	583.14	*	30.22	9.20E-01	2.40E-01
		860.37		4.48		
		2614.66	*	35.85	9.56E-01	2.68E-01
BI-214	0.88	609.31	*	46.30	9.08E-01	1.81E-01
		1120.29	*	15.10	8.00E-01	4.60E-01
		1764.49	*	15.80	1.07E+00	4.52E-01
		2204.22		4.98		
PB-214	0.96	295.21	*	19.19	1.08E+00	2.45E-01
		351.92	*	37.19	9.41E-01	1.79E-01
RA-226	0.99	186.21	*	3.28	2.34E+00	4.48E+00
AC-228	0.93	338.32	*	11.40	1.11E+00	5.02E-01
		911.07	*	27.70	9.10E-01	2.92E-01
		969.11	*	16.60	8.79E-01	5.08E-01
TH-234	0.96	63.29	*	3.80	1.70E+00	1.16E+00
NP-237	0.89	86.50	*	12.60	5.57E-01	4.07E-01
AM-243	0.95	74.67	*	66.00	2.34E-01	7.47E-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

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.988	1.90E+01	2.27E+00	
?	CD-109	0.925	2.19E+00	1.61E+00	
?	SN-126	0.991	1.90E-01	1.39E-01	
	TL-208	0.846	9.36E-01	1.79E-01	
	BI-214	0.885	9.15E-01	1.58E-01	
	PB-214	0.965	9.90E-01	1.45E-01	
	RA-226	0.996	2.34E+00	4.48E+00	
	AC-228	0.939	9.43E-01	2.26E-01	
	TH-234	0.966	1.70E+00	1.16E+00	
?	NP-237	0.895	5.57E-01	4.07E-01	
	AM-243	0.954	2.34E-01	7.47E-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 1707088-05

HTC-A03-S003-4248-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 2:13:01PM
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	26.05	2.81146E-02	46.62	Tol.	TH-231
m	4	77.67	1.56335E-01	10.07		
	6	93.74	2.54721E-02	49.76		
	8	239.73	2.46516E-01	5.28		
	9	270.89	1.23069E-02	55.71		
m	11	300.86	1.31217E-02	46.97	Tol.	BI-210M PB-212
	14	462.56	2.61516E-02	20.69	Tol.	SB-125
	15	474.16	9.68434E-03	37.78		
	16	511.58	1.32510E-02	54.04		
	19	728.42	2.23234E-02	21.78		
	20	840.67	6.94444E-03	49.64		
	21	875.68	8.50309E-03	55.70		
m	25	1130.19	5.66466E-03	51.49		
	26	1138.19	1.01434E-02	30.34		
	27	1173.79	1.15536E-02	34.83	Tol.	CO-60
	28	1238.52	6.97751E-03	56.86		
	29	1289.13	7.22222E-03	40.98		
	30	1318.34	4.30108E-03	49.42		
	31	1383.69	1.08241E-02	34.53	Tol.	AG-110M
	32	1428.96	5.13889E-03	46.26		
	34	1469.34	2.81250E-03	37.28		
	35	1544.62	2.73990E-03	36.90		
	36	1555.91	2.26190E-03	62.62		
	37	1631.22	1.80556E-03	53.57		
	38	1729.64	2.63889E-03	46.03		

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 1707088-05

HTC-A03-S003-4248-01

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	-2.44E-01	2.07E+00	2.07E+00
+	NA-22	1274.54		99.94	3.70E-02	9.81E-02	9.81E-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	-3.27E-03	6.39E-02	6.39E-02
+	K-40	1460.81	*	10.67	1.90E+01	4.77E-01	4.77E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-8.44E-03	5.30E-02	5.30E-02
		78.34		96.00	1.93E-01		7.16E-02
+	SC-46	889.25		99.98	6.58E-02	1.87E-01	1.87E-01
		1120.51		99.99	3.18E-01		3.00E-01
+	V-48	983.52		99.98	1.57E+00	5.59E+00	5.91E+00
		1312.10		97.50	4.90E-02		5.59E+00
+	CR-51	320.08		9.83	-7.12E-01	6.70E+00	6.70E+00
+	MN-54	834.83		99.97	5.49E-02	1.05E-01	1.05E-01
+	CO-56	846.75		99.96	1.00E-02	1.56E-01	1.56E-01
		1037.75		14.03	3.73E-01		1.52E+00
		1238.25		67.00	2.79E-01		4.67E-01
		1771.40		15.51	-1.37E-01		8.00E-01
		2598.48		16.90	-7.13E-02		7.67E-01
+	CO-57	122.06		85.51	-2.24E-02	6.17E-02	6.17E-02
		136.48		10.60	-1.14E-01		5.00E-01
+	CO-58	810.76		99.40	-1.40E-01	1.73E-01	1.73E-01
+	FE-59	1099.22		56.50	8.92E-02	8.16E-01	8.16E-01
		1291.56		43.20	6.06E-01		1.06E+00
+	CO-60	1173.22		100.00	7.88E-02	8.54E-02	1.20E-01
		1332.49		100.00	-3.72E-02		8.54E-02
+	ZN-65	1115.52		50.75	-4.76E-03	2.47E-01	2.47E-01
+	GA-67	93.31		35.70	3.12E+08	2.06E+08	2.06E+08
		208.95		2.24	4.06E+08		3.74E+09
		300.22		16.00	-8.45E+08		6.01E+08
+	SE-75	121.11		16.70	1.04E-01	1.22E-01	4.38E-01
		136.00		59.20	9.25E-03		1.22E-01
		264.65		59.80	-1.66E-02		1.57E-01
		279.53		25.20	4.16E-02		4.06E-01
		400.65		11.40	-5.07E-01		9.19E-01
+	RB-82	776.52		13.00	-5.68E+00	8.12E+00	8.12E+00
+	RB-83	520.41		46.00	-1.30E-01	2.74E-01	2.74E-01
		529.64		30.30	-8.12E-02		4.85E-01
		552.65		16.40	7.77E-02		9.02E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	KR-85	513.99		0.43	2.14E+01	1.96E+01	1.96E+01
+	SR-85	513.99		99.27	2.66E-01	2.43E-01	2.43E-01
+	Y-88	898.02		93.40	6.37E-02	1.36E-01	1.78E-01
		1836.01		99.38	1.95E-02		1.36E-01
+	MO-93	263.06		56.72	1.88E-02	5.61E-02	9.78E-02
		684.67		99.68	-4.92E-02		7.10E-02
		1477.11		99.08	-1.26E-02		5.61E-02
+	NB-93M	16.57		9.43	-4.78E+01	5.72E+01	5.72E+01
+	NB-94	702.63		100.00	2.11E-02	7.93E-02	8.04E-02
		871.10		100.00	-1.70E-04		7.93E-02
+	NB-95	765.79		99.81	1.14E-01	6.21E-01	6.21E-01
+	NB-95M	235.69		25.00	3.10E+06	6.61E+07	6.61E+07
+	ZR-95	724.18		43.70	1.79E-02	3.96E-01	5.53E-01
		756.72		55.30	-2.62E-03		3.96E-01
+	MO-99	181.06		6.20	-2.80E+09	4.24E+10	5.31E+10
		739.58		12.80	-4.92E+09		4.24E+10
		778.00		4.50	-4.82E+10		1.18E+11
+	RU-103	497.08		89.00	1.74E-01	4.12E-01	4.12E-01
+	RU-106	621.84		9.80	-1.69E-01	8.37E-01	8.37E-01
+	AG-108M	433.93		89.90	-1.43E-02	6.54E-02	6.54E-02
		614.37		90.40	-9.01E-03		1.02E-01
		722.95		90.50	0.00E+00		8.33E-02
+	CD-109	88.03	*	3.72	2.19E+00	2.59E+00	2.59E+00
+	AG-110M	657.75		93.14	-4.88E-02	9.77E-02	9.77E-02
		677.61		10.53	3.17E-01		9.37E-01
		706.67		16.46	2.73E-01		6.27E-01
		763.93		21.98	-1.32E-01		4.87E-01
		884.67		71.63	-2.67E-02		1.28E-01
		1384.27		23.94	-6.40E-02		3.94E-01
+	CD-113M	263.70		0.02	3.19E+01	2.39E+02	2.39E+02
+	SN-113	255.12		1.93	4.01E+00	1.72E-01	5.55E+00
		391.69		64.90	-3.33E-02		1.72E-01
+	TE123M	159.00		84.10	-4.29E-03	9.28E-02	9.28E-02
+	SB-124	602.71		97.87	8.55E-02	2.16E-01	2.16E-01
		645.85		7.26	1.15E+00		3.18E+00
		722.78		11.10	0.00E+00		2.12E+00
		1691.02		49.00	-6.11E-02		4.43E-01
+	I-125	35.49		6.49	-2.34E+00	5.29E+00	5.29E+00
+	SB-125	176.33		6.89	-5.87E-02	2.10E-01	6.97E-01
		427.89		29.33	-2.29E-02		2.10E-01
		463.38		10.35	6.21E-01		7.83E-01
		600.56		17.80	1.81E-01		4.12E-01
		635.90		11.32	-1.97E-01		7.07E-01
+	SB-126	414.70		83.30	-5.77E+00	1.90E+01	1.93E+01
		666.33		99.60	-6.19E+00		2.00E+01
		695.00		99.60	1.63E+00		1.90E+01
		720.50		53.80	-2.18E+00		3.46E+01
+	SN-126	87.57	*	37.00	1.90E-01	2.25E-01	2.25E-01

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	SB-127	473.00	25.00	1.40E+05	1.11E+07	1.51E+07
		685.20	35.70	-7.68E+06		1.11E+07
		783.80	14.70	1.38E+07		3.36E+07
+	I-129	29.78	57.00	-6.14E-02	3.48E-01	3.48E-01
		33.60	13.20	2.93E-01		9.83E-01
		39.58	7.52	2.62E-01		1.21E+00
+	I-131	284.30	6.05	-1.04E+03	3.56E+02	4.88E+03
		364.48	81.20	-3.34E+02		3.56E+02
		636.97	7.26	1.02E+03		5.51E+03
		722.89	1.80	0.00E+00		2.16E+04
+	TE-132	49.72	13.10	-5.19E+08	9.77E+07	7.05E+08
		228.16	88.00	1.14E+07		9.77E+07
+	BA-133	81.00	33.00	-3.24E-01	1.46E-01	1.60E-01
		302.84	17.80	6.63E-02		3.36E-01
		356.01	60.00	-1.42E-02		1.46E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	-1.37E+05	6.75E+04	6.75E+04
+	CS-134	563.23	8.38	-2.72E-01	7.45E-02	8.56E-01
		569.32	15.43	-6.83E-02		4.61E-01
		604.70	97.60	7.83E-04		7.45E-02
		795.84	85.40	5.11E-02		1.16E-01
		801.93	8.73	-7.14E-01		8.73E-01
+	CS-135	268.24	16.00	7.13E-03	3.62E-01	3.62E-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	1.91E+01	1.35E+01	1.10E+02
		163.89	4.61	-5.98E+00		1.75E+02
		176.55	13.56	-5.17E+00		6.15E+01
		273.65	12.66	-1.73E+01		8.87E+01
		340.57	48.50	4.87E+01		3.03E+01
		818.50	99.70	-6.58E+00		1.35E+01
		1048.07	79.60	-7.12E+00		1.92E+01
		1235.34	19.70	1.19E+01		1.20E+02
+	CS-137	661.65	85.12	6.02E-02	9.67E-02	9.67E-02
+	LA-138	788.74	34.00	-6.16E-02	1.06E-01	2.41E-01
		1435.80	66.00	4.79E-02		1.06E-01
+	CE-139	165.85	80.35	1.20E-02	9.02E-02	9.02E-02
+	BA-140	162.64	6.70	-1.77E+01	5.74E+01	1.39E+02
		304.84	4.50	-2.15E+01		2.65E+02
		423.70	3.20	3.33E+01		4.07E+02
		437.55	2.00	4.02E+00		6.45E+02
		537.32	25.00	-1.83E+01		5.74E+01
+	LA-140	328.77	20.50	3.58E+01	1.95E+01	6.84E+01
		487.03	45.50	2.25E+00		3.09E+01
		815.85	23.50	5.63E+00		6.49E+01
		1596.49	95.49	2.48E+00		1.95E+01
+	CE-141	145.44	48.40	5.99E-02	7.30E-01	7.30E-01
+	@ CE-143	57.36	11.80	1.00E+26	1.00E+26	1.00E+26

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
@	CE-143	293.26	42.00	1.00E+26	1.00E+26	1.00E+26
@		664.55	5.20	1.00E+26		1.00E+26
+	CE-144	133.54	10.80	-4.25E-01	4.65E-01	4.65E-01
+	PM-144	476.78	42.00	-2.73E-02	8.01E-02	1.72E-01
		618.01	98.60	-3.05E-02		8.01E-02
		696.49	99.49	-2.05E-02		9.09E-02
+	PM-145	36.85	21.70	1.46E-01	2.49E-01	4.73E-01
		37.36	39.70	-2.81E-01		2.49E-01
		42.30	15.10	-3.01E-01		5.35E-01
		72.40	2.31	-3.98E+00		2.63E+00
+	PM-146	453.90	39.94	-2.38E-02	1.50E-01	1.50E-01
		735.90	14.01	1.58E-01		5.48E-01
		747.13	13.10	1.70E-01		6.08E-01
+	ND-147	91.11	28.90	-3.88E+01	9.74E+01	9.74E+01
		531.02	13.10	-1.89E+01		2.67E+02
+	PM-149	285.90	3.10	1.49E+13	5.94E+13	5.94E+13
+	EU-152	121.78	20.50	-7.34E-02	2.02E-01	2.02E-01
		244.69	5.40	-2.37E-01		1.26E+00
		344.27	19.13	-2.89E-02		3.27E-01
		778.89	9.20	3.06E-01		8.86E-01
		964.01	10.40	5.67E-01		9.79E-01
		1085.78	7.22	1.31E-02		1.21E+00
		1112.02	9.60	-2.88E-01		1.02E+00
		1407.95	14.94	1.45E-01		5.52E-01
+	GD-153	97.43	31.30	-2.64E-02	1.64E-01	1.64E-01
		103.18	22.20	1.05E-02		2.39E-01
+	EU-154	123.07	40.50	-4.41E-02	1.03E-01	1.03E-01
		723.30	19.70	0.00E+00		3.90E-01
		873.19	11.50	7.79E-02		7.31E-01
		996.32	10.30	-1.69E-01		7.73E-01
		1004.76	17.90	2.85E-02		4.79E-01
		1274.45	35.50	9.89E-02		2.63E-01
+	EU-155	86.50	30.90	1.82E-01	1.82E-01	1.82E-01
		105.30	20.70	-3.44E-02		2.01E-01
+	EU-156	811.77	10.40	-5.31E+00	6.05E+01	6.05E+01
		1153.47	7.20	3.30E+01		1.35E+02
		1230.71	8.90	4.62E+01		1.17E+02
+	HO-166M	184.41	72.60	7.90E-02	7.58E-02	7.58E-02
		280.45	29.60	2.13E-02		1.96E-01
		410.94	11.10	1.01E-01		5.83E-01
		711.69	54.10	4.77E-03		1.45E-01
+	TM-171	66.72	0.14	-4.29E+01	4.10E+01	4.10E+01
+	HF-172	67.35	5.31	-1.66E-01	4.12E-01	1.04E+00
		125.81	11.30	-5.93E-02		4.12E-01
+	LU-172	181.53	20.60	5.45E+02	4.46E+03	6.50E+03
		900.72	29.81	-3.27E+02		8.04E+03
		1093.66	62.50	9.55E+02		4.46E+03
+	LU-173	100.72	5.24	3.50E-01	3.28E-01	8.73E-01
		272.11	21.20	2.70E-01		3.28E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	HF-175	343.40		84.00	-1.73E-02	1.96E-01	1.96E-01
+	LU-176	88.34		13.30	3.41E-01	5.60E-02	4.18E-01
		201.83		86.00	2.07E-02		5.60E-02
		306.78		94.00	-7.03E-03		5.68E-02
+	HF-181	133.02		41.70	-2.31E-01	3.95E-01	4.96E-01
		345.85		17.20	-1.61E-01		1.69E+00
		482.03		82.80	2.67E-01		3.95E-01
+	TA-182	67.75		41.20	-3.52E-02	2.21E-01	2.21E-01
		1121.30		34.90	7.41E-01		6.90E-01
		1189.05		16.23	3.58E-01		1.27E+00
		1221.41		26.98	3.01E-01		7.85E-01
		1231.02		11.44	7.10E-01		1.79E+00
+	IR-192	308.46		29.68	-2.07E-01	3.34E-01	4.51E-01
		468.07		48.10	-3.68E-03		3.34E-01
+	HG-203	279.19		77.30	-2.50E-02	3.22E-01	3.22E-01
+	TL-204	374.74		94.11	-1.84E-02	6.66E-02	6.66E-02
		899.15		99.16	1.57E-02		8.95E-02
		911.74		91.10	3.03E-01		1.62E-01
+	BI-207	569.67		97.72	2.23E-02	6.77E-02	6.77E-02
		1063.62		74.90	3.31E-02		1.33E-01
+	TL-208	583.14	*	30.22	9.20E-01	1.98E-01	3.05E-01
		860.37		4.48	9.02E-01		2.04E+00
		2614.66	*	35.85	9.56E-01		1.98E-01
+	BI-210M	262.00		45.00	-2.81E-03	1.21E-01	1.21E-01
		300.00		23.00	-4.11E-01		2.92E-01
+	PB-210	46.50		4.25	7.40E-01	1.74E+00	1.74E+00
+	PB-211	404.84		2.90	-1.21E-01	2.06E+00	2.06E+00
		831.96		2.90	4.81E-01		2.81E+00
+	BI-212	727.17		11.80	5.40E-01	7.99E-01	7.99E-01
		1620.62		2.75	1.41E+00		3.02E+00
+	PB-212	238.63		44.60	1.04E+00	2.45E-01	2.45E-01
		300.09		3.41	-2.77E+00		1.97E+00
+	BI-214	609.31	*	46.30	9.08E-01	1.96E-01	1.96E-01
		1120.29	*	15.10	8.00E-01		1.31E+00
		1764.49	*	15.80	1.07E+00		5.61E-01
		2204.22		4.98	7.58E-01		1.96E+00
+	PB-214	295.21	*	19.19	1.08E+00	2.10E-01	5.12E-01
		351.92	*	37.19	9.41E-01		2.10E-01
+	RN-219	401.80		6.50	-3.84E-01	8.96E-01	8.96E-01
+	RA-223	323.87		3.88	-8.58E-01	1.46E+00	1.46E+00
+	RA-224	240.98		3.95	1.57E+01	2.85E+00	2.85E+00
+	RA-225	40.00		31.00	6.45E+00	2.97E+01	2.97E+01
+	RA-226	186.21	*	3.28	2.34E+00	2.12E+00	2.12E+00
+	TH-227	50.10		8.40	-5.51E-01	7.49E-01	7.49E-01
		236.00		11.50	3.62E-02		7.73E-01
		256.20		6.30	1.24E-01		9.20E-01
+	AC-228	338.32	*	11.40	1.11E+00	3.90E-01	7.68E-01
		911.07	*	27.70	9.10E-01		3.90E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AC-228	969.11	*	16.60	8.79E-01	3.90E-01	7.77E-01
+	TH-230	48.44		16.90	1.87E-01	4.09E-01	4.09E-01
		62.85		4.60	1.10E+00		1.29E+00
		67.67		0.37	-2.15E+00		1.35E+01
+	PA-231	283.67		1.60	-1.22E+00	2.55E+00	3.53E+00
		302.67		2.30	5.04E-01		2.55E+00
+	TH-231	25.64		14.70	1.28E+00	7.58E-01	2.62E+00
		84.21		6.40	-9.60E-01		7.58E-01
+	PA-233	311.98		38.60	1.05E-01	1.83E+00	1.83E+00
+	PA-234	131.20		20.40	9.89E-02	2.10E-01	2.10E-01
		733.99		8.80	2.35E-02		8.54E-01
		946.00		12.00	-2.77E-01		6.97E-01
+	PA-234M	1001.03		0.92	4.00E+00	9.37E+00	9.37E+00
+	TH-234	63.29	*	3.80	1.70E+00	2.40E+00	2.40E+00
+	U-235	143.76		10.50	-6.33E-02	4.04E-01	4.04E-01
		163.35		4.70	-3.15E-02		9.23E-01
		205.31		4.70	-8.56E-01		1.19E+00
+	NP-237	86.50	*	12.60	5.57E-01	6.60E-01	6.60E-01
+	NP-239	106.10		22.70	-1.44E+11	8.41E+11	8.41E+11
		228.18		10.70	3.06E+11		2.63E+12
		277.60		14.10	-1.76E+11		1.94E+12
+	AM-241	59.54		35.90	-1.64E-01	1.55E-01	1.55E-01
+	AM-243	74.67	*	66.00	2.34E-01	1.55E-01	1.55E-01
+	CM-243	209.75		3.29	1.14E+00	4.13E-01	1.84E+00
		228.14		10.60	6.55E-02		5.62E-01
		277.60		14.00	-3.75E-02		4.13E-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 1707088-05

HTC-A03-S003-4248-01

	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	2.07E+00	2.07E+00	-2.44E-01	9.76E-01
	NA-22	1274.54		99.94	9.81E-02	9.81E-02	3.70E-02	4.46E-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	6.39E-02	6.39E-02	-3.27E-03	2.65E-02
+	K-40	1460.81	*	10.67	4.77E-01	4.77E-01	1.90E+01	1.95E-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	5.30E-02	5.30E-02	-8.44E-03	2.59E-02
		78.34		96.00	7.16E-02		1.93E-01	3.52E-02
	SC-46	889.25		99.98	1.87E-01	1.87E-01	6.58E-02	8.64E-02
		1120.51		99.99	3.00E-01		3.18E-01	1.41E-01
	V-48	983.52		99.98	5.91E+00	5.59E+00	1.57E+00	2.71E+00
		1312.10		97.50	5.59E+00		4.90E-02	2.47E+00
	CR-51	320.08		9.83	6.70E+00	6.70E+00	-7.12E-01	3.20E+00
	MN-54	834.83		99.97	1.05E-01	1.05E-01	5.49E-02	4.89E-02
	CO-56	846.75		99.96	1.56E-01	1.56E-01	1.00E-02	7.10E-02
		1037.75		14.03	1.52E+00		3.73E-01	6.99E-01
		1238.25		67.00	4.67E-01		2.79E-01	2.19E-01
		1771.40		15.51	8.00E-01		-1.37E-01	3.18E-01
		2598.48		16.90	7.67E-01		-7.13E-02	2.87E-01
	CO-57	122.06		85.51	6.17E-02	6.17E-02	-2.24E-02	2.99E-02
		136.48		10.60	5.00E-01		-1.14E-01	2.42E-01
	CO-58	810.76		99.40	1.73E-01	1.73E-01	-1.40E-01	7.89E-02
	FE-59	1099.22		56.50	8.16E-01	8.16E-01	8.92E-02	3.78E-01
		1291.56		43.20	1.06E+00		6.06E-01	4.85E-01
	CO-60	1173.22		100.00	1.20E-01	8.54E-02	7.88E-02	5.59E-02
		1332.49		100.00	8.54E-02		-3.72E-02	3.82E-02
	ZN-65	1115.52		50.75	2.47E-01	2.47E-01	-4.76E-03	1.14E-01
	GA-67	93.31		35.70	2.06E+08	2.06E+08	3.12E+08	1.01E+08
		208.95		2.24	3.74E+09		4.06E+08	1.82E+09
		300.22		16.00	6.01E+08		-8.45E+08	2.90E+08
	SE-75	121.11		16.70	4.38E-01	1.22E-01	1.04E-01	2.13E-01
		136.00		59.20	1.22E-01		9.25E-03	5.92E-02
		264.65		59.80	1.57E-01		-1.66E-02	7.55E-02
		279.53		25.20	4.06E-01		4.16E-02	1.95E-01
		400.65		11.40	9.19E-01		-5.07E-01	4.36E-01
	RB-82	776.52		13.00	8.12E+00	8.12E+00	-5.68E+00	3.76E+00
	RB-83	520.41		46.00	2.74E-01	2.74E-01	-1.30E-01	1.28E-01
		529.64		30.30	4.85E-01		-8.12E-02	2.29E-01
		552.65		16.40	9.02E-01		7.77E-02	4.24E-01
	KR-85	513.99		0.43	1.96E+01	1.96E+01	2.14E+01	9.38E+00
	SR-85	513.99		99.27	2.43E-01	2.43E-01	2.66E-01	1.16E-01
	Y-88	898.02		93.40	1.78E-01	1.36E-01	6.37E-02	8.27E-02
		1836.01		99.38	1.36E-01		1.95E-02	5.73E-02
	MO-93	263.06		56.72	9.78E-02	5.61E-02	1.88E-02	4.70E-02
		684.67		99.68	7.10E-02		-4.92E-02	3.30E-02
		1477.11		99.08	5.61E-02		-1.26E-02	2.33E-02
	NB-93M	16.57		9.43	5.72E+01	5.72E+01	-4.78E+01	2.78E+01
	NB-94	702.63		100.00	8.04E-02	7.93E-02	2.11E-02	3.77E-02
		871.10		100.00	7.93E-02		-1.70E-04	3.67E-02
	NB-95	765.79		99.81	6.21E-01	6.21E-01	1.14E-01	2.92E-01

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	NB-95M	235.69		25.00	6.61E+07	6.61E+07	3.10E+06	3.23E+07
	ZR-95	724.18		43.70	5.53E-01	3.96E-01	1.79E-02	2.59E-01
		756.72		55.30	3.96E-01		-2.62E-03	1.84E-01
	MO-99	181.06		6.20	5.31E+10	4.24E+10	-2.80E+09	2.57E+10
		739.58		12.80	4.24E+10		-4.92E+09	1.98E+10
		778.00		4.50	1.18E+11		-4.82E+10	5.46E+10
	RU-103	497.08		89.00	4.12E-01	4.12E-01	1.74E-01	1.94E-01
	RU-106	621.84		9.80	8.37E-01	8.37E-01	-1.69E-01	3.91E-01
	AG-108M	433.93		89.90	6.54E-02	6.54E-02	-1.43E-02	3.09E-02
		614.37		90.40	1.02E-01		-9.01E-03	4.86E-02
		722.95		90.50	8.33E-02		0.00E+00	3.88E-02
+	CD-109	88.03	*	3.72	2.59E+00	2.59E+00	2.19E+00	1.28E+00
	AG-110M	657.75		93.14	9.77E-02	9.77E-02	-4.88E-02	4.56E-02
		677.61		10.53	9.37E-01		3.17E-01	4.39E-01
		706.67		16.46	6.27E-01		2.73E-01	2.93E-01
		763.93		21.98	4.87E-01		-1.32E-01	2.27E-01
		884.67		71.63	1.28E-01		-2.67E-02	5.82E-02
		1384.27		23.94	3.94E-01		-6.40E-02	1.73E-01
	CD-113M	263.70		0.02	2.39E+02	2.39E+02	3.19E+01	1.15E+02
	SN-113	255.12		1.93	5.55E+00	1.72E-01	4.01E+00	2.68E+00
		391.69		64.90	1.72E-01		-3.33E-02	8.21E-02
	TE123M	159.00		84.10	9.28E-02	9.28E-02	-4.29E-03	4.49E-02
	SB-124	602.71		97.87	2.16E-01	2.16E-01	8.55E-02	1.01E-01
		645.85		7.26	3.18E+00		1.15E+00	1.49E+00
		722.78		11.10	2.12E+00		0.00E+00	9.90E-01
		1691.02		49.00	4.43E-01		-6.11E-02	1.89E-01
	I-125	35.49		6.49	5.29E+00	5.29E+00	-2.34E+00	2.57E+00
	SB-125	176.33		6.89	6.97E-01	2.10E-01	-5.87E-02	3.37E-01
		427.89		29.33	2.10E-01		-2.29E-02	9.90E-02
		463.38		10.35	7.83E-01		6.21E-01	3.74E-01
		600.56		17.80	4.12E-01		1.81E-01	1.93E-01
		635.90		11.32	7.07E-01		-1.97E-01	3.32E-01
	SB-126	414.70		83.30	1.93E+01	1.90E+01	-5.77E+00	9.16E+00
		666.33		99.60	2.00E+01		-6.19E+00	9.40E+00
		695.00		99.60	1.90E+01		1.63E+00	8.89E+00
		720.50		53.80	3.46E+01		-2.18E+00	1.61E+01
+	SN-126	87.57	*	37.00	2.25E-01	2.25E-01	1.90E-01	1.11E-01
	SB-127	473.00		25.00	1.51E+07	1.11E+07	1.40E+05	7.18E+06
		685.20		35.70	1.11E+07		-7.68E+06	5.16E+06
		783.80		14.70	3.36E+07		1.38E+07	1.58E+07
	I-129	29.78		57.00	3.48E-01	3.48E-01	-6.14E-02	1.69E-01
		33.60		13.20	9.83E-01		2.93E-01	4.77E-01
		39.58		7.52	1.21E+00		2.62E-01	5.87E-01
	I-131	284.30		6.05	4.88E+03	3.56E+02	-1.04E+03	2.34E+03
		364.48		81.20	3.56E+02		-3.34E+02	1.69E+02
		636.97		7.26	5.51E+03		1.02E+03	2.59E+03
		722.89		1.80	2.16E+04		0.00E+00	1.01E+04
	TE-132	49.72		13.10	7.05E+08	9.77E+07	-5.19E+08	3.44E+08
		228.16		88.00	9.77E+07		1.14E+07	4.74E+07
	BA-133	81.00		33.00	1.60E-01	1.46E-01	-3.24E-01	7.83E-02
		302.84		17.80	3.36E-01		6.63E-02	1.61E-01
		356.01		60.00	1.46E-01		-1.42E-02	7.06E-02
	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
XE-133	81.00	38.00	6.75E+04	6.75E+04	-1.37E+05	3.30E+04
CS-134	563.23	8.38	8.56E-01	7.45E-02	-2.72E-01	4.02E-01
	569.32	15.43	4.61E-01		-6.83E-02	2.16E-01
	604.70	97.60	7.45E-02		7.83E-04	3.48E-02
	795.84	85.40	1.16E-01		5.11E-02	5.44E-02
	801.93	8.73	8.73E-01		-7.14E-01	4.02E-01
CS-135	268.24	16.00	3.62E-01	3.62E-01	7.13E-03	1.74E-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	1.35E+01	1.91E+01	5.34E+01
	163.89	4.61	1.75E+02		-5.98E+00	8.46E+01
	176.55	13.56	6.15E+01		-5.17E+00	2.97E+01
	273.65	12.66	8.87E+01		-1.73E+01	4.28E+01
	340.57	48.50	3.03E+01		4.87E+01	1.46E+01
	818.50	99.70	1.35E+01		-6.58E+00	6.20E+00
	1048.07	79.60	1.92E+01		-7.12E+00	8.78E+00
	1235.34	19.70	1.20E+02		1.19E+01	5.62E+01
CS-137	661.65	85.12	9.67E-02	9.67E-02	6.02E-02	4.56E-02
LA-138	788.74	34.00	2.41E-01	1.06E-01	-6.16E-02	1.12E-01
	1435.80	66.00	1.06E-01		4.79E-02	4.60E-02
CE-139	165.85	80.35	9.02E-02	9.02E-02	1.20E-02	4.36E-02
BA-140	162.64	6.70	1.39E+02	5.74E+01	-1.77E+01	6.74E+01
	304.84	4.50	2.65E+02		-2.15E+01	1.27E+02
	423.70	3.20	4.07E+02		3.33E+01	1.93E+02
	437.55	2.00	6.45E+02		4.02E+00	3.05E+02
	537.32	25.00	5.74E+01		-1.83E+01	2.70E+01
LA-140	328.77	20.50	6.84E+01	1.95E+01	3.58E+01	3.29E+01
	487.03	45.50	3.09E+01		2.25E+00	1.46E+01
	815.85	23.50	6.49E+01		5.63E+00	2.99E+01
	1596.49	95.49	1.95E+01		2.48E+00	8.61E+00
CE-141	145.44	48.40	7.30E-01	7.30E-01	5.99E-02	3.54E-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	4.65E-01	4.65E-01	-4.25E-01	2.25E-01
PM-144	476.78	42.00	1.72E-01	8.01E-02	-2.73E-02	8.12E-02
	618.01	98.60	8.01E-02		-3.05E-02	3.74E-02
	696.49	99.49	9.09E-02		-2.05E-02	4.25E-02
PM-145	36.85	21.70	4.73E-01	2.49E-01	1.46E-01	2.30E-01
	37.36	39.70	2.49E-01		-2.81E-01	1.21E-01
	42.30	15.10	5.35E-01		-3.01E-01	2.60E-01
	72.40	2.31	2.63E+00		-3.98E+00	1.29E+00
PM-146	453.90	39.94	1.50E-01	1.50E-01	-2.38E-02	7.07E-02
	735.90	14.01	5.48E-01		1.58E-01	2.55E-01
	747.13	13.10	6.08E-01		1.70E-01	2.83E-01
ND-147	91.11	28.90	9.74E+01	9.74E+01	-3.88E+01	4.77E+01
	531.02	13.10	2.67E+02		-1.89E+01	1.26E+02
PM-149	285.90	3.10	5.94E+13	5.94E+13	1.49E+13	2.86E+13
EU-152	121.78	20.50	2.02E-01	2.02E-01	-7.34E-02	9.80E-02
	244.69	5.40	1.26E+00		-2.37E-01	6.11E-01
	344.27	19.13	3.27E-01		-2.89E-02	1.57E-01
	778.89	9.20	8.86E-01		3.06E-01	4.13E-01

Analysis Report for 1707088-05

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	964.01		10.40	9.79E-01	2.02E-01	5.67E-01	4.58E-01
		1085.78		7.22	1.21E+00		1.31E-02	5.52E-01
		1112.02		9.60	1.02E+00		-2.88E-01	4.69E-01
		1407.95		14.94	5.52E-01		1.45E-01	2.46E-01
	GD-153	97.43		31.30	1.64E-01	1.64E-01	-2.64E-02	7.95E-02
		103.18		22.20	2.39E-01		1.05E-02	1.16E-01
	EU-154	123.07		40.50	1.03E-01	1.03E-01	-4.41E-02	4.98E-02
		723.30		19.70	3.90E-01		0.00E+00	1.82E-01
		873.19		11.50	7.31E-01		7.79E-02	3.39E-01
		996.32		10.30	7.73E-01		-1.69E-01	3.53E-01
		1004.76		17.90	4.79E-01		2.85E-02	2.20E-01
		1274.45		35.50	2.63E-01		9.89E-02	1.19E-01
	EU-155	86.50		30.90	1.82E-01	1.82E-01	1.82E-01	8.93E-02
		105.30		20.70	2.01E-01		-3.44E-02	9.76E-02
	EU-156	811.77		10.40	6.05E+01	6.05E+01	-5.31E+00	2.78E+01
		1153.47		7.20	1.35E+02		3.30E+01	6.28E+01
		1230.71		8.90	1.17E+02		4.62E+01	5.41E+01
	HO-166M	184.41		72.60	7.58E-02	7.58E-02	7.90E-02	3.68E-02
		280.45		29.60	1.96E-01		2.13E-02	9.44E-02
		410.94		11.10	5.83E-01		1.01E-01	2.78E-01
		711.69		54.10	1.45E-01		4.77E-03	6.78E-02
	TM-171	66.72		0.14	4.10E+01	4.10E+01	-4.29E+01	2.00E+01
	HF-172	67.35		5.31	1.04E+00	4.12E-01	-1.66E-01	5.09E-01
		125.81		11.30	4.12E-01		-5.93E-02	2.00E-01
	LU-172	181.53		20.60	6.50E+03	4.46E+03	5.45E+02	3.15E+03
		900.72		29.81	8.04E+03		-3.27E+02	3.72E+03
		1093.66		62.50	4.46E+03		9.55E+02	2.06E+03
	LU-173	100.72		5.24	8.73E-01	3.28E-01	3.50E-01	4.24E-01
		272.11		21.20	3.28E-01		2.70E-01	1.58E-01
	HF-175	343.40		84.00	1.96E-01	1.96E-01	-1.73E-02	9.37E-02
	LU-176	88.34		13.30	4.18E-01	5.60E-02	3.41E-01	2.05E-01
		201.83		86.00	5.60E-02		2.07E-02	2.70E-02
		306.78		94.00	5.68E-02		-7.03E-03	2.72E-02
	HF-181	133.02		41.70	4.96E-01	3.95E-01	-2.31E-01	2.41E-01
		345.85		17.20	1.69E+00		-1.61E-01	8.08E-01
		482.03		82.80	3.95E-01		2.67E-01	1.87E-01
	TA-182	67.75		41.20	2.21E-01	2.21E-01	-3.52E-02	1.08E-01
		1121.30		34.90	6.90E-01		7.41E-01	3.25E-01
		1189.05		16.23	1.27E+00		3.58E-01	5.89E-01
		1221.41		26.98	7.85E-01		3.01E-01	3.65E-01
		1231.02		11.44	1.79E+00		7.10E-01	8.32E-01
	IR-192	308.46		29.68	4.51E-01	3.34E-01	-2.07E-01	2.15E-01
		468.07		48.10	3.34E-01		-3.68E-03	1.58E-01
	HG-203	279.19		77.30	3.22E-01	3.22E-01	-2.50E-02	1.55E-01
	TL-204	374.74		94.11	6.66E-02	6.66E-02	-1.84E-02	3.17E-02
		899.15		99.16	8.95E-02		1.57E-02	4.15E-02
		911.74		91.10	1.62E-01		3.03E-01	7.75E-02
	BI-207	569.67		97.72	6.77E-02	6.77E-02	2.23E-02	3.17E-02
		1063.62		74.90	1.33E-01		3.31E-02	6.19E-02
+	TL-208	583.14	*	30.22	3.05E-01	1.98E-01	9.20E-01	1.45E-01
		860.37		4.48	2.04E+00		9.02E-01	9.55E-01
		2614.66	*	35.85	1.98E-01		9.56E-01	8.02E-02
	BI-210M	262.00		45.00	1.21E-01	1.21E-01	-2.81E-03	5.82E-02

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BI-210M	300.00		23.00	2.92E-01	1.21E-01	-4.11E-01	1.41E-01
	PB-210	46.50		4.25	1.74E+00	1.74E+00	7.40E-01	8.47E-01
	PB-211	404.84		2.90	2.06E+00	2.06E+00	-1.21E-01	9.79E-01
		831.96		2.90	2.81E+00		4.81E-01	1.31E+00
	BI-212	727.17		11.80	7.99E-01	7.99E-01	5.40E-01	3.78E-01
		1620.62		2.75	3.02E+00		1.41E+00	1.33E+00
	PB-212	238.63		44.60	2.45E-01	2.45E-01	1.04E+00	1.20E-01
		300.09		3.41	1.97E+00		-2.77E+00	9.52E-01
+	BI-214	609.31	*	46.30	1.96E-01	1.96E-01	9.08E-01	9.34E-02
		1120.29	*	15.10	1.31E+00		8.00E-01	6.29E-01
		1764.49	*	15.80	5.61E-01		1.07E+00	2.47E-01
		2204.22		4.98	1.96E+00		7.58E-01	8.57E-01
+	PB-214	295.21	*	19.19	5.12E-01	2.10E-01	1.08E+00	2.50E-01
		351.92	*	37.19	2.10E-01		9.41E-01	1.01E-01
	RN-219	401.80		6.50	8.96E-01	8.96E-01	-3.84E-01	4.25E-01
	RA-223	323.87		3.88	1.46E+00	1.46E+00	-8.58E-01	7.01E-01
	RA-224	240.98		3.95	2.85E+00	2.85E+00	1.57E+01	1.40E+00
	RA-225	40.00		31.00	2.97E+01	2.97E+01	6.45E+00	1.45E+01
+	RA-226	186.21	*	3.28	2.12E+00	2.12E+00	2.34E+00	1.04E+00
	TH-227	50.10		8.40	7.49E-01	7.49E-01	-5.51E-01	3.65E-01
		236.00		11.50	7.73E-01		3.62E-02	3.78E-01
		256.20		6.30	9.20E-01		1.24E-01	4.44E-01
+	AC-228	338.32	*	11.40	7.68E-01	3.90E-01	1.11E+00	3.73E-01
		911.07	*	27.70	3.90E-01		9.10E-01	1.84E-01
		969.11	*	16.60	7.77E-01		8.79E-01	3.69E-01
	TH-230	48.44		16.90	4.09E-01	4.09E-01	1.87E-01	2.00E-01
		62.85		4.60	1.29E+00		1.10E+00	6.31E-01
		67.67		0.37	1.35E+01		-2.15E+00	6.59E+00
	PA-231	283.67		1.60	3.53E+00	2.55E+00	-1.22E+00	1.70E+00
		302.67		2.30	2.55E+00		5.04E-01	1.23E+00
	TH-231	25.64		14.70	2.62E+00	7.58E-01	1.28E+00	1.28E+00
		84.21		6.40	7.58E-01		-9.60E-01	3.70E-01
	PA-233	311.98		38.60	1.83E+00	1.83E+00	1.05E-01	8.75E-01
	PA-234	131.20		20.40	2.10E-01	2.10E-01	9.89E-02	1.02E-01
		733.99		8.80	8.54E-01		2.35E-02	3.98E-01
		946.00		12.00	6.97E-01		-2.77E-01	3.22E-01
	PA-234M	1001.03		0.92	9.37E+00	9.37E+00	4.00E+00	4.32E+00
+	TH-234	63.29	*	3.80	2.40E+00	2.40E+00	1.70E+00	1.18E+00
	U-235	143.76		10.50	4.04E-01	4.04E-01	-6.33E-02	1.96E-01
		163.35		4.70	9.23E-01		-3.15E-02	4.46E-01
		205.31		4.70	1.19E+00		-8.56E-01	5.79E-01
+	NP-237	86.50	*	12.60	6.60E-01	6.60E-01	5.57E-01	3.25E-01
	NP-239	106.10		22.70	8.41E+11	8.41E+11	-1.44E+11	4.08E+11
		228.18		10.70	2.63E+12		3.06E+11	1.27E+12
		277.60		14.10	1.94E+12		-1.76E+11	9.32E+11
	AM-241	59.54		35.90	1.55E-01	1.55E-01	-1.64E-01	7.56E-02
+	AM-243	74.67	*	66.00	1.55E-01	1.55E-01	2.34E-01	7.66E-02
	CM-243	209.75		3.29	1.84E+00	4.13E-01	1.14E+00	8.92E-01
		228.14		10.60	5.62E-01		6.55E-02	2.72E-01
		277.60		14.00	4.13E-01		-3.75E-02	1.99E-01

Analysis Report for 1707088-05

HTC-A03-S003-4248-01

+ = 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-A03-S003-4248-01

Elapsed Live time: 3600
Elapsed Real Time: 3609

Channel								
1:	0	0	0	0	0	0	0	0
9:	2	126	172	152	130	122	81	85
17:	63	78	79	74	65	67	71	88
25:	80	94	106	81	86	85	73	80
33:	85	63	83	76	71	85	83	81
41:	113	88	96	79	87	118	142	117
49:	84	114	99	91	101	105	91	93
57:	110	116	102	139	110	112	160	171
65:	168	109	103	102	114	128	140	141
73:	137	167	276	282	312	381	232	132
81:	125	101	88	111	119	129	149	194
89:	161	142	146	131	158	181	117	85
97:	70	71	62	80	79	84	84	75
105:	65	79	81	85	79	76	70	82
113:	82	69	72	71	67	80	70	79
121:	77	68	76	62	72	91	72	76
129:	76	86	85	58	68	56	66	59
137:	83	59	61	66	83	68	64	70
145:	68	60	67	63	55	71	54	61
153:	66	75	77	69	59	64	66	56
161:	67	54	59	57	56	67	54	61
169:	66	48	53	67	60	53	73	47
177:	64	46	52	60	57	59	60	60
185:	64	115	103	70	55	43	46	53
193:	52	67	54	50	51	48	48	51
201:	60	55	48	52	47	47	41	50
209:	70	71	53	46	63	47	50	51
217:	47	44	49	33	58	50	45	49
225:	45	64	41	55	42	42	44	42
233:	49	45	49	38	56	134	354	280
241:	117	102	80	65	36	26	31	43
249:	37	27	34	42	40	38	46	34
257:	38	35	31	31	38	37	27	28
265:	29	30	27	27	30	31	67	31
273:	37	28	35	32	25	40	34	32
281:	25	29	37	27	30	35	24	29
289:	37	33	27	21	24	30	83	130
297:	72	36	31	27	44	32	27	32
305:	18	20	20	25	25	20	17	28
313:	31	23	23	28	20	29	18	19
321:	28	24	20	22	22	18	31	36
329:	37	26	32	32	26	29	29	26
337:	28	52	84	51	38	30	21	23
345:	23	21	19	21	22	26	43	150
353:	167	60	23	15	18	21	23	30
361:	22	17	19	16	23	14	21	18

369:	22	29	22	20	16	23	18	22

Sample Title: HTC-A03-S003-4248-01

Channel								
377:	18	22	18	21	20	22	18	13
385:	18	19	18	18	23	17	17	19
393:	19	26	16	25	22	20	23	11
401:	17	24	12	13	16	24	14	18
409:	15	26	25	21	11	23	21	15
417:	17	20	17	17	18	15	17	20
425:	13	14	16	11	18	21	7	13
433:	12	17	23	17	13	9	17	15
441:	10	12	18	24	14	11	21	18
449:	15	12	15	7	13	15	16	16
457:	9	10	19	15	13	28	34	34
465:	25	4	16	13	15	21	10	14
473:	17	18	19	14	6	8	12	12
481:	17	13	20	13	15	11	13	18
489:	14	18	11	13	11	11	18	13
497:	14	12	16	10	12	7	13	7
505:	13	14	14	18	7	34	39	40
513:	21	15	17	12	12	7	12	8
521:	12	14	8	6	14	17	11	6
529:	12	16	11	16	18	12	13	13
537:	16	9	13	12	13	13	13	14
545:	8	9	10	10	8	15	11	16
553:	12	10	10	10	10	16	8	10
561:	9	9	12	22	9	7	17	11
569:	12	11	9	8	9	9	10	14
577:	11	11	10	11	10	14	68	96
585:	37	21	8	7	13	13	12	9
593:	13	10	15	5	13	9	9	15
601:	12	12	10	9	9	6	10	14
609:	72	118	70	23	11	8	8	7
617:	9	14	9	10	8	21	9	7
625:	6	11	11	11	9	5	12	15
633:	10	15	15	9	13	8	12	16
641:	11	10	13	13	8	10	10	13
649:	10	6	9	4	6	14	7	6
657:	15	6	12	6	13	18	10	16
665:	17	11	4	14	10	17	8	8
673:	7	12	11	9	11	8	11	13
681:	10	7	8	11	7	7	9	12
689:	14	13	6	13	4	11	12	9
697:	11	8	9	9	18	8	9	8
705:	15	12	12	9	5	13	7	8
713:	24	9	7	13	7	9	9	8
721:	9	14	5	7	11	11	22	23
729:	18	12	13	8	9	6	4	11
737:	12	8	11	6	7	6	14	8
745:	15	11	5	11	7	7	6	6
753:	8	8	8	14	5	10	4	10
761:	9	10	13	5	9	11	12	11
769:	19	7	15	8	10	7	4	8
777:	9	4	11	8	11	14	9	9
785:	15	11	7	9	6	11	9	13
793:	11	9	14	17	11	11	7	10

801:	4	8	4	8	4	12	8	7

Sample Title: HTC-A03-S003-4248-01

Channel								
809:	6	7	4	7	3	4	11	6
817:	5	5	11	5	8	7	8	13
825:	7	4	9	3	6	6	7	9
833:	8	9	14	9	9	5	7	18
841:	17	4	6	5	4	4	10	2
849:	5	5	4	6	7	3	9	6
857:	7	7	6	16	16	13	6	7
865:	8	4	6	7	6	6	8	3
873:	7	14	11	6	10	6	4	4
881:	8	3	4	3	5	7	7	8
889:	10	6	10	5	7	7	8	7
897:	7	8	10	9	10	4	8	5
905:	9	8	5	5	9	11	51	47
913:	27	6	7	5	9	7	4	5
921:	6	8	3	7	7	3	3	5
929:	8	4	8	6	5	11	7	9
937:	6	7	3	7	8	10	3	9
945:	2	6	9	11	9	8	10	6
953:	5	3	3	5	6	10	5	5
961:	8	7	8	12	14	17	4	14
969:	32	39	11	9	7	6	7	5
977:	3	5	5	3	7	7	4	8
985:	8	4	3	3	7	6	8	6
993:	8	8	2	3	4	6	7	3
1001:	9	8	9	5	9	2	5	6
1009:	7	5	6	7	6	7	5	3
1017:	6	2	11	4	5	4	7	4
1025:	7	11	6	13	5	8	4	6
1033:	5	6	6	5	7	5	7	5
1041:	12	5	6	11	7	5	8	6
1049:	4	6	3	7	6	8	3	8
1057:	5	3	5	4	6	7	6	7
1065:	11	9	11	6	12	8	2	11
1073:	2	1	3	3	9	7	6	7
1081:	4	5	4	8	5	7	6	6
1089:	4	6	7	3	10	7	7	8
1097:	10	6	9	4	7	9	6	8
1105:	6	9	11	11	7	9	6	5
1113:	5	11	6	6	7	7	16	22
1121:	24	12	7	7	6	6	6	4
1129:	5	13	11	4	2	6	3	8
1137:	13	10	6	8	8	0	4	13
1145:	3	3	7	5	10	4	10	8
1153:	8	7	11	8	7	5	9	9
1161:	4	8	10	12	10	6	14	2
1169:	6	11	6	7	7	13	13	9
1177:	7	7	2	6	8	7	11	6
1185:	6	7	12	6	8	11	10	7
1193:	6	10	7	6	5	5	10	13
1201:	11	5	9	5	8	9	5	5
1209:	13	12	8	5	1	9	7	10
1217:	4	14	8	4	10	7	10	9
1225:	7	6	6	6	6	9	10	9

1233:	6	11	6	6	14	22	14	5

Sample Title: HTC-A03-S003-4248-01

Channel								
1241:	11	6	7	5	10	6	9	7
1249:	3	5	6	6	5	11	6	5
1257:	6	6	5	5	5	5	6	4
1265:	4	4	5	6	1	2	5	6
1273:	4	5	5	4	5	4	5	8
1281:	7	7	6	1	4	3	5	10
1289:	6	7	6	4	3	3	2	3
1297:	3	6	7	4	3	5	2	3
1305:	3	6	1	4	2	3	5	2
1313:	3	2	3	3	3	10	7	3
1321:	2	2	4	6	1	2	7	1
1329:	4	3	5	3	4	3	3	7
1337:	5	3	4	5	4	6	4	2
1345:	3	1	0	4	3	4	2	3
1353:	4	4	4	2	3	4	5	3
1361:	3	4	2	2	0	1	3	4
1369:	3	4	4	3	0	2	2	1
1377:	7	7	5	2	3	2	1	4
1385:	2	2	3	2	3	3	4	3
1393:	2	0	1	4	2	5	3	1
1401:	2	2	1	2	1	0	7	2
1409:	4	4	4	6	0	3	4	0
1417:	3	1	0	4	1	2	1	1
1425:	2	3	5	5	2	2	2	4
1433:	2	0	1	5	0	4	3	0
1441:	1	0	4	1	2	3	2	3
1449:	2	1	5	3	0	0	1	1
1457:	1	9	39	161	210	137	31	7
1465:	1	0	0	5	2	2	3	0
1473:	1	0	0	1	1	1	1	1
1481:	2	1	1	3	0	2	0	1
1489:	0	0	2	1	0	1	3	3
1497:	3	0	2	0	2	1	2	2
1505:	0	1	0	0	4	4	1	5
1513:	3	1	2	2	1	3	2	0
1521:	2	1	2	1	4	2	0	1
1529:	1	1	0	1	0	3	0	1
1537:	2	1	3	5	0	1	2	3
1545:	3	2	0	0	0	1	2	0
1553:	0	4	2	3	4	1	0	1
1561:	1	4	1	1	0	0	1	2
1569:	2	1	2	0	1	2	0	1
1577:	0	1	3	2	0	1	0	1
1585:	1	1	2	3	4	0	5	4
1593:	3	2	2	1	2	1	3	2
1601:	1	2	4	0	2	1	2	0
1609:	1	2	0	0	1	0	0	2
1617:	2	2	1	3	4	0	1	3
1625:	2	1	3	0	1	3	1	4
1633:	0	1	0	2	0	2	1	0
1641:	2	0	1	2	4	0	2	0
1649:	0	2	0	0	2	3	1	1
1657:	1	1	0	1	1	3	3	3

1665:	1	1	1	3	2	0	1	1

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Channel								
1673:	1	2	1	2	1	1	1	0
1681:	0	0	0	1	1	2	2	1
1689:	1	0	1	1	0	4	1	1
1697:	2	0	1	2	2	1	0	0
1705:	1	1	2	0	1	0	1	1
1713:	3	1	1	3	0	1	0	3
1721:	1	0	4	0	1	0	1	3
1729:	2	5	2	0	1	0	0	0
1737:	1	0	1	0	0	0	1	1
1745:	0	2	0	0	0	1	0	0
1753:	0	1	1	2	1	1	1	1
1761:	0	4	7	12	18	5	1	2
1769:	0	1	0	0	0	0	1	0
1777:	1	0	0	2	1	1	3	2
1785:	1	2	0	0	1	0	0	0
1793:	2	1	0	0	0	0	1	0
1801:	0	2	1	0	1	1	0	1
1809:	0	0	0	5	0	0	2	0
1817:	1	0	1	0	1	0	0	1
1825:	2	0	1	2	1	2	1	1
1833:	1	0	1	1	2	0	0	4
1841:	0	0	0	0	0	0	4	0
1849:	0	2	2	1	1	0	2	0
1857:	0	0	0	0	2	0	0	1
1865:	0	2	1	2	0	1	0	1
1873:	2	1	2	1	1	0	1	0
1881:	3	2	0	1	0	1	0	2
1889:	2	0	1	0	3	0	1	0
1897:	0	0	1	0	1	0	0	1
1905:	1	0	0	0	1	1	1	0
1913:	0	0	1	0	1	0	2	2
1921:	0	0	1	0	0	2	3	0
1929:	1	2	0	1	2	1	1	2
1937:	0	0	1	0	0	0	1	1
1945:	1	0	0	3	2	0	0	0
1953:	1	2	3	0	1	0	2	2
1961:	1	1	0	1	1	0	2	2
1969:	1	0	1	1	3	0	1	1
1977:	2	1	0	1	3	0	0	1
1985:	1	1	0	2	0	2	0	0
1993:	1	2	1	0	0	0	2	0
2001:	0	0	2	0	1	0	0	0
2009:	3	0	0	0	0	0	0	1
2017:	0	1	0	0	0	1	0	0
2025:	1	1	1	2	1	0	1	0
2033:	1	3	0	0	0	0	0	2
2041:	1	1	1	1	1	2	0	3
2049:	1	0	2	1	0	1	3	0
2057:	0	1	0	0	2	0	1	1
2065:	2	1	0	0	0	1	0	0
2073:	0	0	1	0	0	0	0	2
2081:	1	1	0	0	1	0	1	2
2089:	1	1	1	0	0	1	1	1

2097:	1	1	2	0	2	3	3	1

Sample Title: HTC-A03-S003-4248-01

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

2529:	1	1	0	0	1	0	0	0

Sample Title: HTC-A03-S003-4248-01

Channel								
2537:	0	1	1	0	0	0	0	0
2545:	1	0	1	0	0	1	1	0
2553:	0	0	0	0	1	0	0	0
2561:	0	0	0	0	0	0	0	1
2569:	0	0	0	0	0	0	0	0
2577:	2	0	0	1	0	0	0	0
2585:	0	1	1	0	0	1	0	2
2593:	0	0	0	0	0	0	1	1
2601:	1	0	0	0	0	0	0	1
2609:	1	0	1	7	8	20	20	11
2617:	3	1	1	0	0	0	0	0
2625:	0	0	0	0	1	0	1	0
2633:	0	0	0	0	0	0	0	1
2641:	0	0	0	0	0	1	0	1
2649:	0	0	0	0	0	1	0	0
2657:	0	0	0	0	1	0	0	0
2665:	0	0	1	0	0	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	0	0	0	0	2	0	1	0
2689:	0	0	0	0	0	0	0	0
2697:	0	0	0	0	0	0	0	0
2705:	0	0	0	1	0	0	0	0
2713:	1	0	0	1	0	0	1	0
2721:	0	0	0	0	0	0	0	0
2729:	0	0	0	1	0	0	0	0
2737:	0	1	0	0	1	0	0	1
2745:	0	1	0	0	0	0	0	0
2753:	1	0	0	0	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	0	0	0	0	1	0	0
2777:	0	0	1	0	1	0	0	0
2785:	0	0	1	0	0	1	0	0
2793:	0	0	0	2	0	0	0	1
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	1	0
2817:	0	1	0	0	0	1	0	0
2825:	1	1	0	0	0	0	0	1
2833:	0	0	0	0	0	0	1	0
2841:	0	0	0	0	1	0	1	0
2849:	0	1	0	0	0	0	0	0
2857:	0	0	0	0	0	0	0	0
2865:	0	0	0	0	0	0	0	0
2873:	0	0	0	0	0	1	0	0
2881:	0	0	0	0	0	0	0	0
2889:	0	0	0	1	0	0	0	0
2897:	0	0	0	0	0	0	0	1
2905:	0	0	0	0	0	0	1	0
2913:	0	0	0	0	1	0	0	2
2921:	0	0	0	0	0	0	0	0
2929:	0	0	1	2	1	0	1	0
2937:	0	0	2	0	0	0	1	0
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	1	0

Sample Title: HTC-A03-S003-4248-01

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

3393:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S003-4248-01

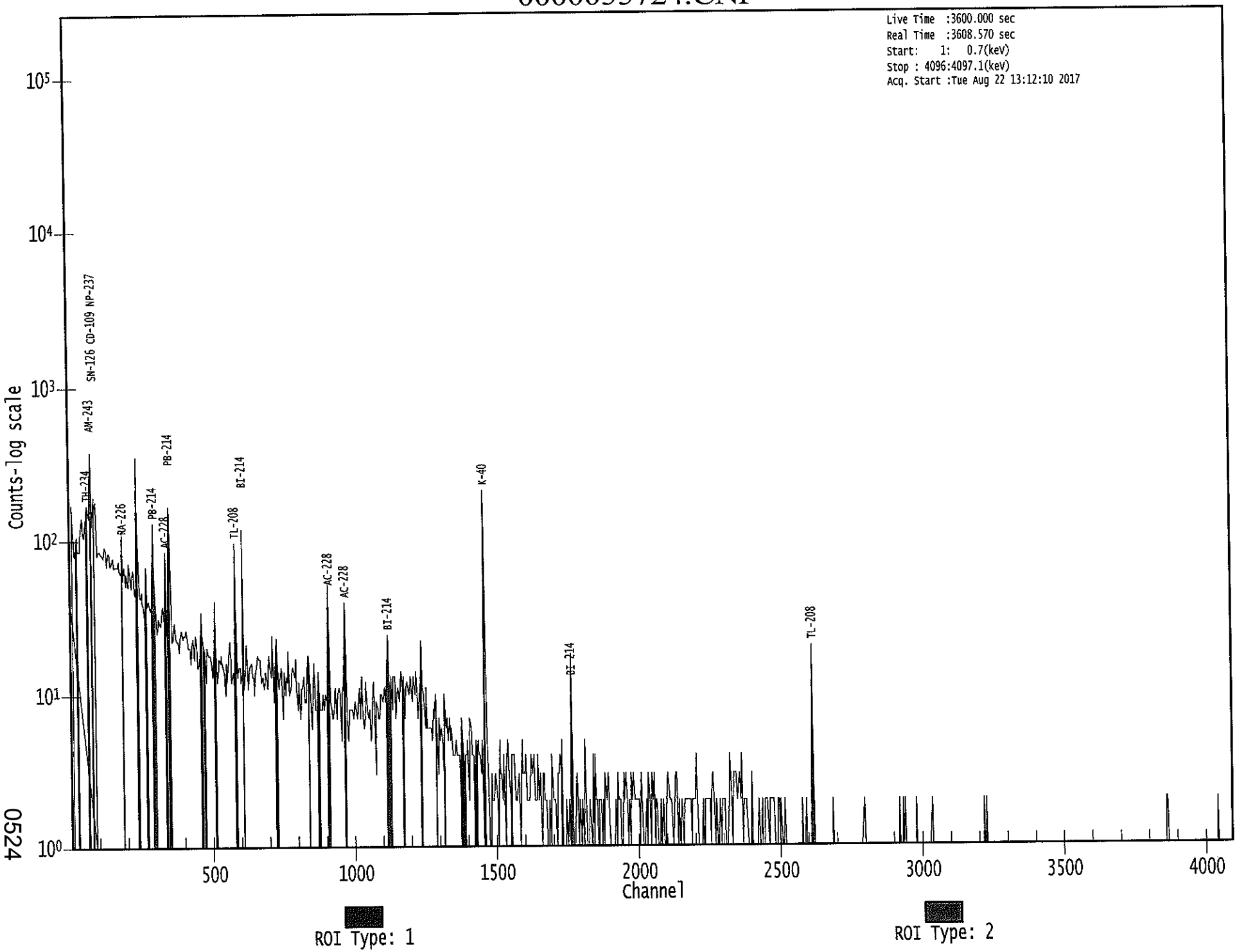
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	1	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	1	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	1
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	1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

3825:	0	0	0	0	1	0	1	0

Sample Title: HTC-A03-S003-4248-01

Channel								
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	1	0	0	1	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	2	0	1	0
3865:	2	0	0	0	0	0	0	0
3873:	1	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	1	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	1
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	1
3945:	0	0	1	0	0	0	0	0
3953:	0	1	0	0	0	0	0	1
3961:	0	0	0	0	0	0	0	0
3969:	0	1	0	0	0	0	0	0
3977:	0	0	0	0	1	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	1	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	1	0
4025:	0	0	1	0	0	0	0	0
4033:	1	1	0	0	0	0	0	0
4041:	0	2	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	1	0	0	0	0
4089:	0	0	0	0	0	0	1	0

0000055724.CNF



0524

Apex-Gamma

Analysis Report for 1707088-06
HTC-A03-S004-0006-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-06
Sample Description	: HTC-A03-S004-0006-01
Sample Type	: SOIL
Sample Size	: 6.860E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2017 9:31:26AM
Acquisition Started	: 8/22/2017 2:13:37PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.6 seconds
Dead Time	: 0.05 %
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	: 55729

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 3:14:07PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	62.92	63.52	0.0000	0.00
2	74.68	75.28	0.0000	0.00
3	77.23	77.82	0.0000	0.00
4	87.15	87.73	0.0000	0.00
5	92.65	93.22	0.0000	0.00
6	115.09	115.64	0.0000	0.00
7	166.47	166.97	0.0000	0.00
8	186.05	186.52	0.0000	0.00
9	209.31	209.76	0.0000	0.00
10	238.63	239.06	0.0000	0.00
11	241.74	242.17	0.0000	0.00
12	270.42	270.82	0.0000	0.00
13	278.21	278.59	0.0000	0.00
14	285.41	285.78	0.0000	0.00
15	295.18	295.55	0.0000	0.00
16	300.42	300.79	0.0000	0.00
17	328.19	328.53	0.0000	0.00
18	338.39	338.71	0.0000	0.00
19	351.93	352.24	0.0000	0.00
20	410.06	410.31	0.0000	0.00
21	462.94	463.14	0.0000	0.00
22	467.81	468.00	0.0000	0.00
23	511.68	511.83	0.0000	0.00
24	525.00	525.14	0.0000	0.00
25	583.48	583.56	0.0000	0.00
26	609.42	609.48	0.0000	0.00
27	623.44	623.48	0.0000	0.00
28	727.44	727.37	0.0000	0.00
29	731.70	731.63	0.0000	0.00
30	786.17	786.04	0.0000	0.00
31	795.33	795.20	0.0000	0.00
32	805.67	805.52	0.0000	0.00
33	860.90	860.69	0.0000	0.00
34	893.34	893.11	0.0000	0.00
35	911.51	911.26	0.0000	0.00
36	950.63	950.34	0.0000	0.00
37	965.42	965.12	0.0000	0.00
38	969.35	969.04	0.0000	0.00
39	1034.24	1033.86	0.0000	0.00
40	1080.74	1080.32	0.0000	0.00
41	1103.96	1103.52	0.0000	0.00
42	1120.67	1120.21	0.0000	0.00

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1124.46	1124.00	0.0000	0.00
44	1238.43	1237.85	0.0000	0.00
45	1306.89	1306.24	0.0000	0.00
46	1317.89	1317.24	0.0000	0.00
47	1334.50	1333.82	0.0000	0.00
48	1378.43	1377.72	0.0000	0.00
49	1461.26	1460.46	0.0000	0.00
50	1464.93	1464.13	0.0000	0.00
51	1497.85	1497.02	0.0000	0.00
52	1508.76	1507.92	0.0000	0.00
53	1538.47	1537.60	0.0000	0.00
54	1545.50	1544.62	0.0000	0.00
55	1562.17	1561.27	0.0000	0.00
56	1590.06	1589.14	0.0000	0.00
57	1631.31	1630.35	0.0000	0.00
58	1730.23	1729.17	0.0000	0.00
59	1758.01	1756.93	0.0000	0.00
60	1765.07	1763.97	0.0000	0.00
61	1830.82	1829.67	0.0000	0.00
62	1838.29	1837.13	0.0000	0.00
63	1978.41	1977.11	0.0000	0.00
64	1983.07	1981.77	0.0000	0.00
65	2105.32	2103.90	0.0000	0.00
66	2190.25	2188.75	0.0000	0.00
67	2204.82	2203.30	0.0000	0.00
68	2311.26	2309.64	0.0000	0.00
69	2342.28	2340.63	0.0000	0.00
70	2348.80	2347.14	0.0000	0.00
71	2614.92	2613.01	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 3:14:07PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	62.92	60 -	67	63.52	2.00E+02	126.14	2.53E+03	1.40
M	2	74.68	71 -	82	75.28	4.73E+02	103.60	1.72E+03	1.81
m	3	77.23	71 -	82	77.82	7.84E+02	111.27	1.62E+03	1.82
	4	87.15	86 -	90	87.73	8.36E+01	93.82	1.89E+03	1.19
	5	92.65	90 -	96	93.22	4.53E+02	116.70	2.11E+03	1.88
	6	115.09	113 -	119	115.64	7.63E+01	87.94	1.34E+03	1.68
	7	166.47	163 -	170	166.97	1.16E+02	85.21	1.13E+03	4.51
	8	186.05	182 -	192	186.52	2.37E+02	115.02	1.63E+03	2.05
	9	209.31	207 -	212	209.76	8.63E+01	66.24	7.97E+02	1.96
M	10	238.63	233 -	246	239.06	1.14E+03	84.57	6.11E+02	1.74
m	11	241.74	233 -	246	242.17	2.26E+02	85.30	5.75E+02	1.82
	12	270.42	267 -	275	270.82	9.80E+01	74.48	7.96E+02	2.44
	13	278.21	276 -	282	278.59	5.76E+01	58.67	5.77E+02	1.91
	14	285.41	283 -	290	285.78	7.14E+01	58.72	5.17E+02	2.91
M	15	295.18	291 -	306	295.55	3.51E+02	57.60	3.78E+02	1.99
m	16	300.42	291 -	306	300.79	1.08E+02	56.04	4.80E+02	2.49
	17	328.19	323 -	332	328.53	6.02E+01	67.46	6.18E+02	2.13
	18	338.39	334 -	343	338.71	2.66E+02	73.96	6.28E+02	1.69
	19	351.93	348 -	356	352.24	5.41E+02	75.33	5.41E+02	1.74
	20	410.06	407 -	414	410.31	4.62E+01	47.33	3.40E+02	1.74
M	21	462.94	460 -	472	463.14	5.32E+01	38.41	2.77E+02	1.86
m	22	467.81	460 -	472	468.00	2.63E+01	30.83	1.83E+02	1.80
	23	511.68	507 -	521	511.83	2.50E+02	76.11	4.83E+02	1.84
	24	525.00	521 -	529	525.14	4.67E+01	40.80	2.23E+02	1.86
	25	583.48	579 -	589	583.56	3.40E+02	63.34	3.58E+02	1.96
	26	609.42	603 -	614	609.48	3.83E+02	70.51	4.24E+02	2.05
	27	623.44	620 -	627	623.48	4.20E+01	32.56	1.50E+02	2.54
M	28	727.44	723 -	734	727.37	9.33E+01	35.20	1.55E+02	2.23
m	29	731.70	723 -	734	731.63	2.10E+01	32.97	1.49E+02	2.24
M	30	786.17	784 -	799	786.04	3.35E+01	21.07	8.55E+01	2.02
m	31	795.33	784 -	799	795.20	5.70E+01	28.57	1.15E+02	2.10
	32	805.67	800 -	812	805.52	5.00E+01	44.92	2.12E+02	4.12
	33	860.90	857 -	864	860.69	3.16E+01	35.10	1.85E+02	2.16
	34	893.34	890 -	895	893.11	2.42E+01	24.90	9.97E+01	2.14
	35	911.51	905 -	916	911.26	1.99E+02	59.83	3.48E+02	2.11
	36	950.63	947 -	954	950.34	2.68E+01	30.46	1.39E+02	3.21
M	37	965.42	961 -	978	965.12	7.41E+01	31.22	9.86E+01	2.22
m	38	969.35	961 -	978	969.04	1.78E+02	35.31	8.83E+01	2.22
	39	1034.24	1028 -	1038	1033.86	3.48E+01	39.15	1.82E+02	5.73
	40	1080.74	1077 -	1083	1080.32	2.26E+01	25.92	1.01E+02	3.00

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1103.96	1100 -	1108	1103.52	2.71E+01	33.17	1.52E+02	4.76
M	42	1120.67	1117 -	1130	1120.21	8.78E+01	33.56	1.51E+02	2.28
m	43	1124.46	1117 -	1130	1124.00	2.45E+01	28.35	1.09E+02	2.08
	44	1238.43	1234 -	1242	1237.85	3.24E+01	41.00	2.39E+02	1.79
	45	1306.89	1298 -	1313	1306.24	4.44E+01	41.04	1.45E+02	13.25
	46	1317.89	1314 -	1321	1317.24	2.37E+01	20.20	5.27E+01	2.65
	47	1334.50	1324 -	1346	1333.82	4.72E+01	53.03	1.88E+02	16.61
	48	1378.43	1375 -	1381	1377.72	2.06E+01	19.60	5.29E+01	1.29
M	49	1461.26	1454 -	1472	1460.46	1.44E+03	77.45	3.17E+01	2.30
m	50	1464.93	1454 -	1472	1464.13	5.39E+01	79.92	4.40E+01	3.87
	51	1497.85	1494 -	1500	1497.02	1.80E+01	11.35	9.91E+00	3.42
	52	1508.76	1501 -	1514	1507.92	4.55E+01	19.26	2.09E+01	2.42
	53	1538.47	1534 -	1540	1537.60	1.19E+01	9.19	6.27E+00	2.91
	54	1545.50	1542 -	1550	1544.62	8.97E+00	11.35	1.61E+01	1.82
	55	1562.17	1557 -	1564	1561.27	1.00E+01	11.66	1.60E+01	1.35
	56	1590.06	1581 -	1595	1589.14	3.12E+01	26.34	5.95E+01	7.31
	57	1631.31	1625 -	1635	1630.35	1.50E+01	14.73	1.80E+01	2.16
	58	1730.23	1726 -	1733	1729.17	1.15E+01	14.70	2.89E+01	1.27
M	59	1758.01	1754 -	1774	1756.93	1.27E+01	8.37	6.00E+00	3.33
m	60	1765.07	1754 -	1774	1763.97	6.65E+01	18.11	8.00E+00	2.74
	61	1830.82	1826 -	1833	1829.67	1.80E+01	8.49	0.00E+00	4.57
	62	1838.29	1835 -	1840	1837.13	5.14E+00	6.08	3.71E+00	2.97
M	63	1978.41	1974 -	1985	1977.11	1.12E+01	7.76	1.77E+00	3.70
m	64	1983.07	1974 -	1985	1981.77	1.11E+01	10.21	6.18E+00	3.10
	65	2105.32	2097 -	2109	2103.90	2.23E+01	18.95	2.93E+01	6.87
	66	2190.25	2185 -	2191	2188.75	8.58E+00	8.51	6.83E+00	2.14
	67	2204.82	2199 -	2208	2203.30	1.62E+01	15.52	2.57E+01	2.30
	68	2311.26	2306 -	2313	2309.64	1.10E+01	6.63	0.00E+00	2.00
	69	2342.28	2337 -	2344	2340.63	7.22E+00	7.21	3.56E+00	2.63
	70	2348.80	2345 -	2351	2347.14	6.91E+00	8.28	8.18E+00	1.33
	71	2614.92	2609 -	2616	2613.01	1.24E+02	22.80	3.98E+00	3.35

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 : 8/22/2017 3:14:07PM

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

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	62.92	60 -	67	2.00E+02	126.14	2.53E+03	1.01E+02
M	2	74.68	71 -	82	4.73E+02	103.60	1.72E+03	6.82E+01
m	3	77.23	71 -	82	7.84E+02	111.27	1.62E+03	6.61E+01
	4	87.15	86 -	90	8.36E+01	93.82	1.89E+03	7.56E+01
	5	92.65	90 -	96	4.53E+02	116.70	2.11E+03	8.93E+01
	6	115.09	113 -	119	7.63E+01	87.94	1.34E+03	7.08E+01
	7	166.47	163 -	170	1.16E+02	85.21	1.13E+03	6.78E+01
	8	186.05	182 -	192	2.37E+02	115.02	1.63E+03	9.11E+01
	9	209.31	207 -	212	8.63E+01	66.24	7.97E+02	5.23E+01
M	10	238.63	233 -	246	1.14E+03	84.57	6.11E+02	4.07E+01
m	11	241.74	233 -	246	2.26E+02	85.30	5.75E+02	3.94E+01
	12	270.42	267 -	275	9.80E+01	74.48	7.96E+02	5.90E+01
	13	278.21	276 -	282	5.76E+01	58.67	5.77E+02	4.66E+01
	14	285.41	283 -	290	7.14E+01	58.72	5.17E+02	4.62E+01
M	15	295.18	291 -	306	3.51E+02	57.60	3.78E+02	3.20E+01
m	16	300.42	291 -	306	1.08E+02	56.04	4.80E+02	3.60E+01
	17	328.19	323 -	332	6.02E+01	67.46	6.18E+02	5.40E+01
	18	338.39	334 -	343	2.66E+02	73.96	6.28E+02	5.46E+01
	19	351.93	348 -	356	5.41E+02	75.33	5.41E+02	4.87E+01
	20	410.06	407 -	414	4.62E+01	47.33	3.40E+02	3.73E+01
M	21	462.94	460 -	472	5.32E+01	38.41	2.77E+02	2.74E+01
m	22	467.81	460 -	472	2.63E+01	30.83	1.83E+02	2.22E+01
	23	511.68	507 -	521	2.50E+02	76.11	4.83E+02	2.57E+01
	24	525.00	521 -	529	4.67E+01	40.80	2.23E+02	3.16E+01
	25	583.48	579 -	589	3.40E+02	63.34	3.58E+02	2.25E+01
	26	609.42	603 -	614	3.83E+02	70.51	4.24E+02	4.82E+01
	27	623.44	620 -	627	4.20E+01	32.56	1.50E+02	2.45E+01
M	28	727.44	723 -	734	9.33E+01	35.20	1.55E+02	2.05E+01
m	29	731.70	723 -	734	2.10E+01	32.97	1.49E+02	2.01E+01
M	30	786.17	784 -	799	3.35E+01	21.07	8.55E+01	1.52E+01
m	31	795.33	784 -	799	5.70E+01	28.57	1.15E+02	1.76E+01
	32	805.67	800 -	812	5.00E+01	44.92	2.12E+02	3.51E+01
	33	860.90	857 -	864	3.16E+01	35.10	1.85E+02	2.73E+01
	34	893.34	890 -	895	2.42E+01	24.90	9.97E+01	1.88E+01
	35	911.51	905 -	916	1.99E+02	59.83	3.48E+02	4.34E+01
	36	950.63	947 -	954	2.68E+01	30.46	1.39E+02	2.36E+01
M	37	965.42	961 -	978	7.41E+01	31.22	9.86E+01	1.63E+01
m	38	969.35	961 -	978	1.78E+02	35.31	8.83E+01	1.54E+01
	39	1034.24	1028 -	1038	3.48E+01	39.15	1.82E+02	3.07E+01
	40	1080.74	1077 -	1083	2.26E+01	25.92	1.01E+02	1.98E+01
	41	1103.96	1100 -	1108	2.71E+01	33.17	1.52E+02	2.59E+01
M	42	1120.67	1117 -	1130	8.78E+01	33.56	1.51E+02	2.02E+01
m	43	1124.46	1117 -	1130	2.45E+01	28.35	1.09E+02	1.72E+01
	44	1238.43	1234 -	1242	3.24E+01	41.00	2.39E+02	3.24E+01
	45	1306.89	1298 -	1313	4.44E+01	41.04	1.45E+02	1.58E+01
	46	1317.89	1314 -	1321	2.37E+01	20.20	5.27E+01	1.46E+01
	47	1334.50	1324 -	1346	4.72E+01	53.03	1.88E+02	4.21E+01
	48	1378.43	1375 -	1381	2.06E+01	19.60	5.29E+01	1.43E+01
M	49	1461.26	1454 -	1472	1.44E+03	77.45	3.17E+01	9.26E+00
m	50	1464.93	1454 -	1472	5.39E+01	79.92	4.40E+01	1.09E+01
	51	1497.85	1494 -	1500	1.80E+01	11.35	9.91E+00	6.18E+00

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	52	1508.76	1501 -	1514	4.55E+01	19.26	2.09E+01	1.13E+01
	53	1538.47	1534 -	1540	1.19E+01	9.19	6.27E+00	5.00E+00
	54	1545.50	1542 -	1550	8.97E+00	11.35	1.61E+01	7.92E+00
	55	1562.17	1557 -	1564	1.00E+01	11.66	1.60E+01	8.05E+00
	56	1590.06	1581 -	1595	3.12E+01	26.34	5.95E+01	1.96E+01
	57	1631.31	1625 -	1635	1.50E+01	14.73	1.80E+01	1.03E+01
	58	1730.23	1726 -	1733	1.15E+01	14.70	2.89E+01	1.07E+01
M	59	1758.01	1754 -	1774	1.27E+01	8.37	6.00E+00	4.03E+00
m	60	1765.07	1754 -	1774	6.65E+01	18.11	8.00E+00	4.65E+00
	61	1830.82	1826 -	1833	1.80E+01	8.49	0.00E+00	0.00E+00
	62	1838.29	1835 -	1840	5.14E+00	6.08	3.71E+00	3.33E+00
M	63	1978.41	1974 -	1985	1.12E+01	7.76	1.77E+00	2.19E+00
m	64	1983.07	1974 -	1985	1.11E+01	10.21	6.18E+00	4.09E+00
	65	2105.32	2097 -	2109	2.23E+01	18.95	2.93E+01	1.35E+01
	66	2190.25	2185 -	2191	8.58E+00	8.51	6.83E+00	5.08E+00
	67	2204.82	2199 -	2208	1.62E+01	15.52	2.57E+01	1.09E+01
	68	2311.26	2306 -	2313	1.10E+01	6.63	0.00E+00	0.00E+00
	69	2342.28	2337 -	2344	7.22E+00	7.21	3.56E+00	3.95E+00
	70	2348.80	2345 -	2351	6.91E+00	8.28	8.18E+00	5.25E+00
	71	2614.92	2609 -	2616	1.24E+02	22.80	3.98E+00	4.02E+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 : 8/22/2017 3:14:07PM

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	62.92	60 -	67	63.52	2.00E+02	126.14	2.53E+03	TH-230 TH-234
M	2	74.68	71 -	82	75.28	4.73E+02	103.60	1.72E+03	AM-243
m	3	77.23	71 -	82	77.82	7.84E+02	111.27	1.62E+03	.....
	4	87.15	86 -	90	87.73	8.36E+01	93.82	1.89E+03	SN-126

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									NP-237
									EU-155
									CD-109
	5	92.65	90 -	96	93.22	4.53E+02	116.70	2.11E+03	GA-67
	6	115.09	113 -	119	115.64	7.63E+01	87.94	1.34E+03	.....
	7	166.47	163 -	170	166.97	1.16E+02	85.21	1.13E+03	CE-139
	8	186.05	182 -	192	186.52	2.37E+02	115.02	1.63E+03	RA-226
	9	209.31	207 -	212	209.76	8.63E+01	66.24	7.97E+02	GA-67
									CM-243
M	10	238.63	233 -	246	239.06	1.14E+03	84.57	6.11E+02	PB-212
m	11	241.74	233 -	246	242.17	2.26E+02	85.30	5.75E+02	RA-224
	12	270.42	267 -	275	270.82	9.80E+01	74.48	7.96E+02	.....
	13	278.21	276 -	282	278.59	5.76E+01	58.67	5.77E+02	CM-243
									NP-239
									HG-203
	14	285.41	283 -	290	285.78	7.14E+01	58.72	5.17E+02	PM-149
M	15	295.18	291 -	306	295.55	3.51E+02	57.60	3.78E+02	PB-214
m	16	300.42	291 -	306	300.79	1.08E+02	56.04	4.80E+02	GA-67
									PB-212
									BI-210M
	17	328.19	323 -	332	328.53	6.02E+01	67.46	6.18E+02	LA-140
	18	338.39	334 -	343	338.71	2.66E+02	73.96	6.28E+02	AC-228
	19	351.93	348 -	356	352.24	5.41E+02	75.33	5.41E+02	PB-214
	20	410.06	407 -	414	410.31	4.62E+01	47.33	3.40E+02	HO-166M
M	21	462.94	460 -	472	463.14	5.32E+01	38.41	2.77E+02	SB-125
m	22	467.81	460 -	472	468.00	2.63E+01	30.83	1.83E+02	IR-192
	23	511.68	507 -	521	511.83	2.50E+02	76.11	4.83E+02	.....
	24	525.00	521 -	529	525.14	4.67E+01	40.80	2.23E+02	.....
	25	583.48	579 -	589	583.56	3.40E+02	63.34	3.58E+02	TL-208
	26	609.42	603 -	614	609.48	3.83E+02	70.51	4.24E+02	BI-214
	27	623.44	620 -	627	623.48	4.20E+01	32.56	1.50E+02	.....
M	28	727.44	723 -	734	727.37	9.33E+01	35.20	1.55E+02	BI-212
m	29	731.70	723 -	734	731.63	2.10E+01	32.97	1.49E+02	.....
M	30	786.17	784 -	799	786.04	3.35E+01	21.07	8.55E+01	.....
m	31	795.33	784 -	799	795.20	5.70E+01	28.57	1.15E+02	CS-134
	32	805.67	800 -	812	805.52	5.00E+01	44.92	2.12E+02	.....
	33	860.90	857 -	864	860.69	3.16E+01	35.10	1.85E+02	TL-208
	34	893.34	890 -	895	893.11	2.42E+01	24.90	9.97E+01	.....
	35	911.51	905 -	916	911.26	1.99E+02	59.83	3.48E+02	TL-204
									AC-228
	36	950.63	947 -	954	950.34	2.68E+01	30.46	1.39E+02	.....
M	37	965.42	961 -	978	965.12	7.41E+01	31.22	9.86E+01	.....
m	38	969.35	961 -	978	969.04	1.78E+02	35.31	8.83E+01	AC-228
	39	1034.24	1028 -	1038	1033.86	3.48E+01	39.15	1.82E+02	.....
	40	1080.74	1077 -	1083	1080.32	2.26E+01	25.92	1.01E+02	.....
	41	1103.96	1100 -	1108	1103.52	2.71E+01	33.17	1.52E+02	.....
M	42	1120.67	1117 -	1130	1120.21	8.78E+01	33.56	1.51E+02	SC-46
									BI-214
									TA-182
m	43	1124.46	1117 -	1130	1124.00	2.45E+01	28.35	1.09E+02	.....
	44	1238.43	1234 -	1242	1237.85	3.24E+01	41.00	2.39E+02	CO-56
	45	1306.89	1298 -	1313	1306.24	4.44E+01	41.04	1.45E+02	.....
	46	1317.89	1314 -	1321	1317.24	2.37E+01	20.20	5.27E+01	.....
	47	1334.50	1324 -	1346	1333.82	4.72E+01	53.03	1.88E+02	.....

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	48	1378.43	1375 -	1381	1377.72	2.06E+01	19.60	5.29E+01	.....
M	49	1461.26	1454 -	1472	1460.46	1.44E+03	77.45	3.17E+01	K-40
m	50	1464.93	1454 -	1472	1464.13	5.39E+01	79.92	4.40E+01	.....
	51	1497.85	1494 -	1500	1497.02	1.80E+01	11.35	9.91E+00	.....
	52	1508.76	1501 -	1514	1507.92	4.55E+01	19.26	2.09E+01	.....
	53	1538.47	1534 -	1540	1537.60	1.19E+01	9.19	6.27E+00	.....
	54	1545.50	1542 -	1550	1544.62	8.97E+00	11.35	1.61E+01	.....
	55	1562.17	1557 -	1564	1561.27	1.00E+01	11.66	1.60E+01	.....
	56	1590.06	1581 -	1595	1589.14	3.12E+01	26.34	5.95E+01	.....
	57	1631.31	1625 -	1635	1630.35	1.50E+01	14.73	1.80E+01	.....
	58	1730.23	1726 -	1733	1729.17	1.15E+01	14.70	2.89E+01	.....
M	59	1758.01	1754 -	1774	1756.93	1.27E+01	8.37	6.00E+00	.....
m	60	1765.07	1754 -	1774	1763.97	6.65E+01	18.11	8.00E+00	BI-214
	61	1830.82	1826 -	1833	1829.67	1.80E+01	8.49	0.00E+00	.....
	62	1838.29	1835 -	1840	1837.13	5.14E+00	6.08	3.71E+00	.....
M	63	1978.41	1974 -	1985	1977.11	1.12E+01	7.76	1.77E+00	.....
m	64	1983.07	1974 -	1985	1981.77	1.11E+01	10.21	6.18E+00	.....
	65	2105.32	2097 -	2109	2103.90	2.23E+01	18.95	2.93E+01	.....
	66	2190.25	2185 -	2191	2188.75	8.58E+00	8.51	6.83E+00	.....
	67	2204.82	2199 -	2208	2203.30	1.62E+01	15.52	2.57E+01	BI-214
	68	2311.26	2306 -	2313	2309.64	1.10E+01	6.63	0.00E+00	.....
	69	2342.28	2337 -	2344	2340.63	7.22E+00	7.21	3.56E+00	.....
	70	2348.80	2345 -	2351	2347.14	6.91E+00	8.28	8.18E+00	.....
	71	2614.92	2609 -	2616	2613.01	1.24E+02	22.80	3.98E+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 : 8/22/2017 3:14:07PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	62.92	2.00E+02	126.14	2.70E-02	2.25E-03
M	2	74.68	4.73E+02	103.60	2.75E-02	2.38E-03
m	3	77.23	7.84E+02	111.27	2.75E-02	2.41E-03
	4	87.15	8.36E+01	93.82	2.74E-02	2.51E-03
	5	92.65	4.53E+02	116.70	2.73E-02	2.45E-03
	6	115.09	7.63E+01	87.94	2.62E-02	2.09E-03

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	7	166.47	1.16E+02	85.21	2.29E-02	1.74E-03
	8	186.05	2.37E+02	115.02	2.17E-02	1.68E-03
	9	209.31	8.63E+01	66.24	2.04E-02	1.61E-03
M	10	238.63	1.14E+03	84.57	1.89E-02	1.53E-03
m	11	241.74	2.26E+02	85.30	1.87E-02	1.52E-03
	12	270.42	9.80E+01	74.48	1.74E-02	1.43E-03
	13	278.21	5.76E+01	58.67	1.71E-02	1.41E-03
	14	285.41	7.14E+01	58.72	1.68E-02	1.39E-03
M	15	295.18	3.51E+02	57.60	1.64E-02	1.37E-03
m	16	300.42	1.08E+02	56.04	1.62E-02	1.36E-03
	17	328.19	6.02E+01	67.46	1.53E-02	1.29E-03
	18	338.39	2.66E+02	73.96	1.50E-02	1.27E-03
	19	351.93	5.41E+02	75.33	1.45E-02	1.24E-03
	20	410.06	4.62E+01	47.33	1.30E-02	1.13E-03
M	21	462.94	5.32E+01	38.41	1.19E-02	1.10E-03
m	22	467.81	2.63E+01	30.83	1.18E-02	1.10E-03
	23	511.68	2.50E+02	76.11	1.10E-02	1.07E-03
	24	525.00	4.67E+01	40.80	1.08E-02	1.06E-03
	25	583.48	3.40E+02	63.34	9.96E-03	1.02E-03
	26	609.42	3.83E+02	70.51	9.63E-03	1.01E-03
	27	623.44	4.20E+01	32.56	9.47E-03	9.96E-04
M	28	727.44	9.33E+01	35.20	8.41E-03	8.67E-04
m	29	731.70	2.10E+01	32.97	8.37E-03	8.61E-04
M	30	786.17	3.35E+01	21.07	7.93E-03	7.74E-04
m	31	795.33	5.70E+01	28.57	7.86E-03	7.60E-04
	32	805.67	5.00E+01	44.92	7.78E-03	7.43E-04
	33	860.90	3.16E+01	35.10	7.40E-03	6.55E-04
	34	893.34	2.42E+01	24.90	7.19E-03	6.04E-04
	35	911.51	1.99E+02	59.83	7.08E-03	5.91E-04
	36	950.63	2.68E+01	30.46	6.86E-03	5.76E-04
M	37	965.42	7.41E+01	31.22	6.78E-03	5.71E-04
m	38	969.35	1.78E+02	35.31	6.76E-03	5.69E-04
	39	1034.24	3.48E+01	39.15	6.44E-03	5.44E-04
	40	1080.74	2.26E+01	25.92	6.24E-03	5.26E-04
	41	1103.96	2.71E+01	33.17	6.14E-03	5.18E-04
M	42	1120.67	8.78E+01	33.56	6.07E-03	5.11E-04
m	43	1124.46	2.45E+01	28.35	6.06E-03	5.10E-04
	44	1238.43	3.24E+01	41.00	5.64E-03	4.76E-04
	45	1306.89	4.44E+01	41.04	5.43E-03	4.60E-04
	46	1317.89	2.37E+01	20.20	5.39E-03	4.58E-04
	47	1334.50	4.72E+01	53.03	5.34E-03	4.54E-04
	48	1378.43	2.06E+01	19.60	5.22E-03	4.44E-04
M	49	1461.26	1.44E+03	77.45	5.01E-03	4.25E-04
m	50	1464.93	5.39E+01	79.92	5.00E-03	4.24E-04
	51	1497.85	1.80E+01	11.35	4.92E-03	4.16E-04
	52	1508.76	4.55E+01	19.26	4.89E-03	4.14E-04
	53	1538.47	1.19E+01	9.19	4.82E-03	4.07E-04
	54	1545.50	8.97E+00	11.35	4.81E-03	4.05E-04
	55	1562.17	1.00E+01	11.66	4.77E-03	4.01E-04
	56	1590.06	3.12E+01	26.34	4.71E-03	3.95E-04
	57	1631.31	1.50E+01	14.73	4.63E-03	3.85E-04
	58	1730.23	1.15E+01	14.70	4.44E-03	3.62E-04
M	59	1758.01	1.27E+01	8.37	4.39E-03	3.56E-04

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
m	60	1765.07	6.65E+01	18.11	4.37E-03	3.54E-04
	61	1830.82	1.80E+01	8.49	4.26E-03	3.39E-04
	62	1838.29	5.14E+00	6.08	4.25E-03	3.38E-04
M	63	1978.41	1.12E+01	7.76	4.03E-03	3.38E-04
m	64	1983.07	1.11E+01	10.21	4.03E-03	3.38E-04
	65	2105.32	2.23E+01	18.95	3.86E-03	3.38E-04
	66	2190.25	8.58E+00	8.51	3.75E-03	3.38E-04
	67	2204.82	1.62E+01	15.52	3.74E-03	3.38E-04
	68	2311.26	1.10E+01	6.63	3.61E-03	3.38E-04
	69	2342.28	7.22E+00	7.21	3.58E-03	3.38E-04
	70	2348.80	6.91E+00	8.28	3.57E-03	3.38E-04
	71	2614.92	1.24E+02	22.80	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 : 8/22/2017 3:14:07PM

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	62.92	2.00E+02	126.14	8.94E+01	1.41E+01	1.11E+02	1.27E+02
M	2	74.68	4.73E+02	103.60			4.73E+02	1.04E+02
m	3	77.23	7.84E+02	111.27	7.20E+00	1.47E+00	7.77E+02	1.11E+02
	4	87.15	8.36E+01	93.82			8.36E+01	9.38E+01
	5	92.65	4.53E+02	116.70	1.38E+02	1.72E+01	3.15E+02	1.18E+02
	6	115.09	7.63E+01	87.94			7.63E+01	8.79E+01
	7	166.47	1.16E+02	85.21			1.16E+02	8.52E+01
	8	186.05	2.37E+02	115.02	5.22E+01	7.59E+00	1.85E+02	1.15E+02
	9	209.31	8.63E+01	66.24			8.63E+01	6.62E+01
M	10	238.63	1.14E+03	84.57	2.13E+01	6.33E+00	1.12E+03	8.48E+01
m	11	241.74	2.26E+02	85.30			2.26E+02	8.53E+01
	12	270.42	9.80E+01	74.48	1.23E+00	4.98E+00	9.68E+01	7.47E+01
	13	278.21	5.76E+01	58.67			5.76E+01	5.87E+01
	14	285.41	7.14E+01	58.72			7.14E+01	5.87E+01
M	15	295.18	3.51E+02	57.60			3.51E+02	5.76E+01
m	16	300.42	1.08E+02	56.04			1.08E+02	5.60E+01
	17	328.19	6.02E+01	67.46			6.02E+01	6.75E+01
	18	338.39	2.66E+02	73.96			2.66E+02	7.40E+01

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	19	351.93	5.41E+02	75.33	5.79E+00	4.49E+00	5.35E+02	7.55E+01
	20	410.06	4.62E+01	47.33			4.62E+01	4.73E+01
M	21	462.94	5.32E+01	38.41			5.32E+01	3.84E+01
m	22	467.81	2.63E+01	30.83			2.63E+01	3.08E+01
	23	511.68	2.50E+02	76.11	7.28E+01	5.30E+00	1.78E+02	7.63E+01
	24	525.00	4.67E+01	40.80			4.67E+01	4.08E+01
	25	583.48	3.40E+02	63.34	2.72E+00	3.05E+00	3.37E+02	6.34E+01
	26	609.42	3.83E+02	70.51	6.35E+00	4.02E+00	3.77E+02	7.06E+01
	27	623.44	4.20E+01	32.56			4.20E+01	3.26E+01
M	28	727.44	9.33E+01	35.20			9.33E+01	3.52E+01
m	29	731.70	2.10E+01	32.97			2.10E+01	3.30E+01
M	30	786.17	3.35E+01	21.07			3.35E+01	2.11E+01
m	31	795.33	5.70E+01	28.57			5.70E+01	2.86E+01
	32	805.67	5.00E+01	44.92			5.00E+01	4.49E+01
	33	860.90	3.16E+01	35.10			3.16E+01	3.51E+01
	34	893.34	2.42E+01	24.90			2.42E+01	2.49E+01
	35	911.51	1.99E+02	59.83	5.31E+00	3.00E+00	1.94E+02	5.99E+01
	36	950.63	2.68E+01	30.46			2.68E+01	3.05E+01
M	37	965.42	7.41E+01	31.22			7.41E+01	3.12E+01
m	38	969.35	1.78E+02	35.31			1.78E+02	3.53E+01
	39	1034.24	3.48E+01	39.15			3.48E+01	3.91E+01
	40	1080.74	2.26E+01	25.92			2.26E+01	2.59E+01
	41	1103.96	2.71E+01	33.17			2.71E+01	3.32E+01
M	42	1120.67	8.78E+01	33.56			8.78E+01	3.36E+01
m	43	1124.46	2.45E+01	28.35			2.45E+01	2.84E+01
	44	1238.43	3.24E+01	41.00			3.24E+01	4.10E+01
	45	1306.89	4.44E+01	41.04			4.44E+01	4.10E+01
	46	1317.89	2.37E+01	20.20			2.37E+01	2.02E+01
	47	1334.50	4.72E+01	53.03			4.72E+01	5.30E+01
	48	1378.43	2.06E+01	19.60			2.06E+01	1.96E+01
M	49	1461.26	1.44E+03	77.45	8.09E+00	2.23E+00	1.44E+03	7.75E+01
m	50	1464.93	5.39E+01	79.92			5.39E+01	7.99E+01
	51	1497.85	1.80E+01	11.35			1.80E+01	1.13E+01
	52	1508.76	4.55E+01	19.26			4.55E+01	1.93E+01
	53	1538.47	1.19E+01	9.19			1.19E+01	9.19E+00
	54	1545.50	8.97E+00	11.35			8.97E+00	1.13E+01
	55	1562.17	1.00E+01	11.66			1.00E+01	1.17E+01
	56	1590.06	3.12E+01	26.34			3.12E+01	2.63E+01
	57	1631.31	1.50E+01	14.73			1.50E+01	1.47E+01
	58	1730.23	1.15E+01	14.70			1.15E+01	1.47E+01
M	59	1758.01	1.27E+01	8.37			1.27E+01	8.37E+00
m	60	1765.07	6.65E+01	18.11			6.65E+01	1.81E+01
	61	1830.82	1.80E+01	8.49			1.80E+01	8.49E+00
	62	1838.29	5.14E+00	6.08			5.14E+00	6.08E+00
M	63	1978.41	1.12E+01	7.76			1.12E+01	7.76E+00
m	64	1983.07	1.11E+01	10.21			1.11E+01	1.02E+01
	65	2105.32	2.23E+01	18.95			2.23E+01	1.90E+01
	66	2190.25	8.58E+00	8.51			8.58E+00	8.51E+00
	67	2204.82	1.62E+01	15.52			1.62E+01	1.55E+01
	68	2311.26	1.10E+01	6.63			1.10E+01	6.63E+00
	69	2342.28	7.22E+00	7.21			7.22E+00	7.21E+00
	70	2348.80	6.91E+00	8.28			6.91E+00	8.28E+00
	71	2614.92	1.24E+02	22.80	5.63E+00	1.38E+00	1.18E+02	2.28E+01

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

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 : 8/22/2017 3:14:07PM

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	62.92	2.00E+02	126.14	8.94E+01	1.41E+01	1.11E+02	1.27E+02
M	2	74.68	4.73E+02	103.60			4.73E+02	1.04E+02
m	3	77.23	7.84E+02	111.27	7.20E+00	1.47E+00	7.77E+02	1.11E+02
	4	87.15	8.36E+01	93.82			8.36E+01	9.38E+01
	5	92.65	4.53E+02	116.70	1.38E+02	1.72E+01	3.15E+02	1.18E+02
	6	115.09	7.63E+01	87.94			7.63E+01	8.79E+01
	7	166.47	1.16E+02	85.21			1.16E+02	8.52E+01
	8	186.05	2.37E+02	115.02	5.22E+01	7.59E+00	1.85E+02	1.15E+02
	9	209.31	8.63E+01	66.24			8.63E+01	6.62E+01
M	10	238.63	1.14E+03	84.57	2.13E+01	6.33E+00	1.12E+03	8.48E+01
m	11	241.74	2.26E+02	85.30			2.26E+02	8.53E+01
	12	270.42	9.80E+01	74.48	1.23E+00	4.98E+00	9.68E+01	7.47E+01
	13	278.21	5.76E+01	58.67			5.76E+01	5.87E+01
	14	285.41	7.14E+01	58.72			7.14E+01	5.87E+01
M	15	295.18	3.51E+02	57.60			3.51E+02	5.76E+01
m	16	300.42	1.08E+02	56.04			1.08E+02	5.60E+01
	17	328.19	6.02E+01	67.46			6.02E+01	6.75E+01
	18	338.39	2.66E+02	73.96			2.66E+02	7.40E+01
	19	351.93	5.41E+02	75.33	5.79E+00	4.49E+00	5.35E+02	7.55E+01
	20	410.06	4.62E+01	47.33			4.62E+01	4.73E+01
M	21	462.94	5.32E+01	38.41			5.32E+01	3.84E+01
m	22	467.81	2.63E+01	30.83			2.63E+01	3.08E+01
	23	511.68	2.50E+02	76.11	7.28E+01	5.30E+00	1.78E+02	7.63E+01
	24	525.00	4.67E+01	40.80			4.67E+01	4.08E+01
	25	583.48	3.40E+02	63.34	2.72E+00	3.05E+00	3.37E+02	6.34E+01
	26	609.42	3.83E+02	70.51	6.35E+00	4.02E+00	3.77E+02	7.06E+01
	27	623.44	4.20E+01	32.56			4.20E+01	3.26E+01
M	28	727.44	9.33E+01	35.20			9.33E+01	3.52E+01
m	29	731.70	2.10E+01	32.97			2.10E+01	3.30E+01
M	30	786.17	3.35E+01	21.07			3.35E+01	2.11E+01
m	31	795.33	5.70E+01	28.57			5.70E+01	2.86E+01
	32	805.67	5.00E+01	44.92			5.00E+01	4.49E+01

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	33	860.90	3.16E+01	35.10			3.16E+01	3.51E+01
	34	893.34	2.42E+01	24.90			2.42E+01	2.49E+01
	35	911.51	1.99E+02	59.83	5.31E+00	3.00E+00	1.94E+02	5.99E+01
	36	950.63	2.68E+01	30.46			2.68E+01	3.05E+01
M	37	965.42	7.41E+01	31.22			7.41E+01	3.12E+01
m	38	969.35	1.78E+02	35.31			1.78E+02	3.53E+01
	39	1034.24	3.48E+01	39.15			3.48E+01	3.91E+01
	40	1080.74	2.26E+01	25.92			2.26E+01	2.59E+01
	41	1103.96	2.71E+01	33.17			2.71E+01	3.32E+01
M	42	1120.67	8.78E+01	33.56			8.78E+01	3.36E+01
m	43	1124.46	2.45E+01	28.35			2.45E+01	2.84E+01
	44	1238.43	3.24E+01	41.00			3.24E+01	4.10E+01
	45	1306.89	4.44E+01	41.04			4.44E+01	4.10E+01
	46	1317.89	2.37E+01	20.20			2.37E+01	2.02E+01
	47	1334.50	4.72E+01	53.03			4.72E+01	5.30E+01
	48	1378.43	2.06E+01	19.60			2.06E+01	1.96E+01
M	49	1461.26	1.44E+03	77.45	8.09E+00	2.23E+00	1.44E+03	7.75E+01
m	50	1464.93	5.39E+01	79.92			5.39E+01	7.99E+01
	51	1497.85	1.80E+01	11.35			1.80E+01	1.13E+01
	52	1508.76	4.55E+01	19.26			4.55E+01	1.93E+01
	53	1538.47	1.19E+01	9.19			1.19E+01	9.19E+00
	54	1545.50	8.97E+00	11.35			8.97E+00	1.13E+01
	55	1562.17	1.00E+01	11.66			1.00E+01	1.17E+01
	56	1590.06	3.12E+01	26.34			3.12E+01	2.63E+01
	57	1631.31	1.50E+01	14.73			1.50E+01	1.47E+01
	58	1730.23	1.15E+01	14.70			1.15E+01	1.47E+01
M	59	1758.01	1.27E+01	8.37			1.27E+01	8.37E+00
m	60	1765.07	6.65E+01	18.11			6.65E+01	1.81E+01
	61	1830.82	1.80E+01	8.49			1.80E+01	8.49E+00
	62	1838.29	5.14E+00	6.08			5.14E+00	6.08E+00
M	63	1978.41	1.12E+01	7.76			1.12E+01	7.76E+00
m	64	1983.07	1.11E+01	10.21			1.11E+01	1.02E+01
	65	2105.32	2.23E+01	18.95			2.23E+01	1.90E+01
	66	2190.25	8.58E+00	8.51			8.58E+00	8.51E+00
	67	2204.82	1.62E+01	15.52			1.62E+01	1.55E+01
	68	2311.26	1.10E+01	6.63			1.10E+01	6.63E+00
	69	2342.28	7.22E+00	7.21			7.22E+00	7.21E+00
	70	2348.80	6.91E+00	8.28			6.91E+00	8.28E+00
	71	2614.92	1.24E+02	22.80	5.63E+00	1.38E+00	1.18E+02	2.28E+01

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

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

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	0.968	1460.81	*	10.67	2.94E+01	3.02E+00
CD-109	0.883	88.03	*	3.72	1.04E+00	1.18E+00
SN-126	0.972	87.57	*	37.00	9.02E-02	1.02E-01
CE-139	0.938	165.85	*	80.35	1.14E-01	8.47E-02
EU-155	0.323	86.50	*	30.90	1.12E-01	1.26E-01
		105.30		20.70		
IR-192	0.321	308.46		29.68		
		468.07	*	48.10	1.31E-01	1.54E-01
TL-208	0.984	583.14	*	30.22	1.23E+00	2.63E-01
		860.37	*	4.48	1.04E+00	1.16E+00
		2614.66	*	35.85	1.09E+00	2.39E-01
BI-212	0.754	727.17	*	11.80	1.03E+00	4.02E-01
		1620.62		2.75		
PB-212	0.999	238.63	*	44.60	1.46E+00	1.61E-01
		300.09	*	3.41	2.13E+00	1.12E+00
BI-214	0.981	609.31	*	46.30	9.25E-01	1.98E-01
		1120.29	*	15.10	1.05E+00	4.10E-01
		1764.49	*	15.80	1.05E+00	2.99E-01
		2204.22	*	4.98	9.52E-01	9.17E-01
PB-214	1.000	295.21	*	19.19	1.22E+00	2.24E-01
		351.92	*	37.19	1.08E+00	1.78E-01
RA-224	0.911	240.98	*	3.95	3.34E+00	1.29E+00
RA-226	0.996	186.21	*	3.28	2.84E+00	5.50E+00
AC-228	0.982	338.32	*	11.40	1.71E+00	4.96E-01
		911.07	*	27.70	1.08E+00	3.46E-01
		969.11	*	16.60	1.73E+00	3.74E-01
TH-234	0.978	63.29	*	3.80	1.19E+00	1.36E+00
NP-237	0.935	86.50	*	12.60	2.65E-01	2.98E-01
AM-243	1.000	74.67	*	66.00	2.85E-01	6.72E-02
CM-243	0.342	209.75	*	3.29	1.42E+00	1.09E+00
		228.14		10.60		
		277.60	*	14.00	2.65E-01	2.71E-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 1707088-06

HTC-A03-S004-0006-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 3:14:07PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	3	77.23	2.15911E-01	7.16		
	5	92.65	8.75605E-02	18.71		
	6	115.09	2.11820E-02	57.66		
	12	270.42	2.68795E-02	38.57		
	14	285.41	1.98249E-02	41.14	Tol.	PM-149
	17	328.19	1.67359E-02	55.98	Sum	
	20	410.06	1.28344E-02	51.22	Tol.	HO-166M
M	21	462.94	1.47809E-02	36.09		
	23	511.68	4.93577E-02	21.47		
	24	525.00	1.29712E-02	43.69	Sum	
	27	623.44	1.16773E-02	38.72		
m	29	731.70	5.83590E-03	78.46		
M	30	786.17	9.30034E-03	31.47		
m	31	795.33	1.58246E-02	25.07	Sum	
	32	805.67	1.38916E-02	44.92	Sum	
	34	893.34	6.71171E-03	51.53	Sum	
	36	950.63	7.43056E-03	56.94	S-Esc	
M	37	965.42	2.05765E-02	21.07	Sum	
	39	1034.24	9.65388E-03	56.32		
	40	1080.74	6.26522E-03	57.46		
	41	1103.96	7.53236E-03	61.17		
m	43	1124.46	6.81136E-03	57.82		
	44	1238.43	9.01133E-03	63.20	Tol.	CO-56
	45	1306.89	1.23196E-02	46.26	Sum	
	46	1317.89	6.57222E-03	42.69		
	47	1334.50	1.31147E-02	56.16		
	48	1378.43	5.70922E-03	47.67	Sum	
m	50	1464.93	1.49770E-02	74.12		
	51	1497.85	5.01208E-03	31.44		
	52	1508.76	1.26488E-02	21.15		
	53	1538.47	3.29630E-03	38.73		
	54	1545.50	2.49183E-03	63.24		
	55	1562.17	2.77778E-03	58.31		
	56	1590.06	8.67714E-03	42.17		
	57	1631.31	4.16667E-03	49.10		
	58	1730.23	3.20513E-03	63.69	Sum	
M	59	1758.01	3.53054E-03	32.91		
	61	1830.82	5.00000E-03	23.57	Sum	
	62	1838.29	1.42857E-03	59.14		
M	63	1978.41	3.12423E-03	34.51		
m	64	1983.07	3.07002E-03	46.19		
	65	2105.32	6.20496E-03	42.43		

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
66	2190.25	2.38426E-03	49.60		
68	2311.26	3.05556E-03	30.15		
69	2342.28	2.00617E-03	49.92		
70	2348.80	1.91919E-03	59.90	Sum	

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.96	1460.81	*	10.67	2.94E+01	3.02E+00
CD-109	0.88	88.03	*	3.72	1.04E+00	1.18E+00
SN-126	0.97	87.57	*	37.00	9.02E-02	1.02E-01
CE-139	0.93	165.85	*	80.35	1.14E-01	8.47E-02
EU-155	0.32	86.50	*	30.90	1.12E-01	1.26E-01
		105.30		20.70		
IR-192	0.32	308.46		29.68		
		468.07	*	48.10	1.31E-01	1.54E-01
TL-208	0.98	583.14	*	30.22	1.23E+00	2.63E-01
		860.37	*	4.48	1.04E+00	1.16E+00
		2614.66	*	35.85	1.09E+00	2.39E-01
BI-212	0.75	727.17	*	11.80	1.03E+00	4.02E-01
		1620.62		2.75		
PB-212	0.99	238.63	*	44.60	1.46E+00	1.61E-01
		300.09	*	3.41	2.13E+00	1.12E+00
BI-214	0.98	609.31	*	46.30	9.25E-01	1.98E-01
		1120.29	*	15.10	1.05E+00	4.10E-01
		1764.49	*	15.80	1.05E+00	2.99E-01
		2204.22	*	4.98	9.52E-01	9.17E-01
PB-214	1.00	295.21	*	19.19	1.22E+00	2.24E-01
		351.92	*	37.19	1.08E+00	1.78E-01
RA-224	0.91	240.98	*	3.95	3.34E+00	1.29E+00
RA-226	0.99	186.21	*	3.28	2.84E+00	5.50E+00
AC-228	0.98	338.32	*	11.40	1.71E+00	4.96E-01

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
AC-228	0.98	911.07	*	27.70	1.08E+00	3.46E-01
		969.11	*	16.60	1.73E+00	3.74E-01
TH-234	0.97	63.29	*	3.80	1.19E+00	1.36E+00
NP-237	0.93	86.50	*	12.60	2.65E-01	2.98E-01
AM-243	1.00	74.67	*	66.00	2.85E-01	6.72E-02
CM-243	0.34	209.75	*	3.29	1.42E+00	1.09E+00
		228.14		10.60		
		277.60	*	14.00	2.65E-01	2.71E-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	0.968	2.94E+01	3.02E+00	
?	CD-109	0.883	1.04E+00	1.18E+00	
?	SN-126	0.972	9.02E-02	1.02E-01	
	CE-139	0.938	1.14E-01	8.47E-02	
?	EU-155	0.323	1.12E-01	1.26E-01	
	IR-192	0.321	1.31E-01	1.54E-01	
X	HG-203	0.837			
	TL-208	0.984	1.15E+00	1.75E-01	
	BI-212	0.754	1.03E+00	4.02E-01	
	PB-212	0.999	1.47E+00	1.60E-01	
	BI-214	0.981	9.75E-01	1.51E-01	
	PB-214	1.000	1.14E+00	1.40E-01	
	RA-224	0.911	3.34E+00	1.29E+00	
	RA-226	0.996	2.84E+00	5.50E+00	
	AC-228	0.982	1.45E+00	2.26E-01	
	TH-234	0.978	1.19E+00	1.36E+00	
?	NP-237	0.935	2.65E-01	2.98E-01	
	AM-243	1.000	2.85E-01	6.72E-02	
	CM-243	0.342	3.32E-01	2.63E-01	

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

? = 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 1707088-06

HTC-A03-S004-0006-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 3:14:07PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	3	77.23	2.15911E-01	7.16		
	5	92.65	8.75605E-02	18.71		
	6	115.09	2.11820E-02	57.66		
	12	270.42	2.68795E-02	38.57		
	14	285.41	1.98249E-02	41.14	Tol.	PM-149
	17	328.19	1.67359E-02	55.98	Sum	
	20	410.06	1.28344E-02	51.22	Tol.	HO-166M
M	21	462.94	1.47809E-02	36.09		
	23	511.68	4.93577E-02	21.47		
	24	525.00	1.29712E-02	43.69	Sum	
	27	623.44	1.16773E-02	38.72		
m	29	731.70	5.83590E-03	78.46		
M	30	786.17	9.30034E-03	31.47		
m	31	795.33	1.58246E-02	25.07	Sum	
	32	805.67	1.38916E-02	44.92	Sum	
	34	893.34	6.71171E-03	51.53	Sum	
	36	950.63	7.43056E-03	56.94	S-Esc	
M	37	965.42	2.05765E-02	21.07	Sum	
	39	1034.24	9.65388E-03	56.32		
	40	1080.74	6.26522E-03	57.46		
	41	1103.96	7.53236E-03	61.17		
m	43	1124.46	6.81136E-03	57.82		
	44	1238.43	9.01133E-03	63.20	Tol.	CO-56
	45	1306.89	1.23196E-02	46.26	Sum	
	46	1317.89	6.57222E-03	42.69		
	47	1334.50	1.31147E-02	56.16		
	48	1378.43	5.70922E-03	47.67	Sum	
m	50	1464.93	1.49770E-02	74.12		
	51	1497.85	5.01208E-03	31.44		
	52	1508.76	1.26488E-02	21.15		
	53	1538.47	3.29630E-03	38.73		
	54	1545.50	2.49183E-03	63.24		
	55	1562.17	2.77778E-03	58.31		
	56	1590.06	8.67714E-03	42.17		
	57	1631.31	4.16667E-03	49.10		

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	58	1730.23	3.20513E-03	63.69	Sum	
M	59	1758.01	3.53054E-03	32.91		
	61	1830.82	5.00000E-03	23.57	Sum	
	62	1838.29	1.42857E-03	59.14		
M	63	1978.41	3.12423E-03	34.51		
m	64	1983.07	3.07002E-03	46.19		
	65	2105.32	6.20496E-03	42.43		
	66	2190.25	2.38426E-03	49.60		
	68	2311.26	3.05556E-03	30.15		
	69	2342.28	2.00617E-03	49.92		
	70	2348.80	1.91919E-03	59.90	Sum	

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	-1.88E-01	1.92E+00	1.92E+00
+	NA-22	1274.54		99.94	5.28E-02	9.23E-02	9.23E-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	5.87E-03	4.45E-02	4.45E-02
+	K-40	1460.81	*	10.67	2.94E+01	1.07E+00	1.07E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	2.16E-02	5.97E-02	5.97E-02
		78.34		96.00	1.97E-01		7.77E-02
+	SC-46	889.25		99.98	-7.41E-03	1.55E-01	1.55E-01
		1120.51		99.99	2.25E-01		2.55E-01
+	V-48	983.52		99.98	2.21E-02	5.47E+00	5.47E+00
		1312.10		97.50	4.03E-01		5.69E+00
+	CR-51	320.08		9.83	4.83E-01	6.52E+00	6.52E+00
+	MN-54	834.83		99.97	1.94E-02	9.03E-02	9.03E-02
+	CO-56	846.75		99.96	6.95E-02	1.75E-01	1.75E-01
		1037.75		14.03	2.96E-02		1.27E+00

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CO-56	1238.25		67.00	2.82E-01	1.75E-01	3.98E-01
		1771.40		15.51	-5.32E-01		6.87E-01
		2598.48		16.90	1.43E-01		5.12E-01
+	CO-57	122.06		85.51	1.80E-02	6.86E-02	6.86E-02
		136.48		10.60	-1.24E-01		5.68E-01
+	CO-58	810.76		99.40	2.04E-03	1.47E-01	1.47E-01
+	FE-59	1099.22		56.50	8.30E-02	6.55E-01	6.55E-01
		1291.56		43.20	-2.18E-01		8.37E-01
+	CO-60	1173.22		100.00	7.73E-02	8.35E-02	1.01E-01
		1332.49		100.00	4.54E-02		8.35E-02
+	ZN-65	1115.52		50.75	6.40E-02	2.00E-01	2.00E-01
+	GA-67	93.31		35.70	9.12E+08	3.94E+08	3.94E+08
		208.95		2.24	4.83E+09		5.27E+09
		300.22		16.00	-1.65E+09		8.36E+08
+	SE-75	121.11		16.70	-1.16E-02	1.41E-01	4.77E-01
		136.00		59.20	-3.08E-02		1.41E-01
		264.65		59.80	-3.77E-03		1.55E-01
		279.53		25.20	-1.73E-01		3.97E-01
		400.65		11.40	5.27E-01		8.82E-01
+	RB-82	776.52		13.00	4.33E-01	8.11E+00	8.11E+00
+	RB-83	520.41		46.00	4.14E-02	2.77E-01	2.77E-01
		529.64		30.30	-1.11E-01		3.93E-01
		552.65		16.40	9.78E-02		7.11E-01
+	KR-85	513.99		0.43	3.13E+01	1.94E+01	1.94E+01
+	SR-85	513.99		99.27	3.97E-01	2.45E-01	2.45E-01
+	Y-88	898.02		93.40	-3.91E-02	7.93E-02	1.20E-01
		1836.01		99.38	-4.31E-02		7.93E-02
+	MO-93	263.06		56.72	-4.44E-02	4.55E-02	9.19E-02
		684.67		99.68	3.39E-02		6.75E-02
		1477.11		99.08	-8.57E-03		4.55E-02
+	NB-93M	16.57		9.43	8.74E-02	4.98E-01	4.98E-01
+	NB-94	702.63		100.00	-2.49E-02	6.26E-02	6.39E-02
		871.10		100.00	-1.42E-02		6.26E-02
+	NB-95	765.79		99.81	3.32E-01	5.61E-01	5.61E-01
+	NB-95M	235.69		25.00	-5.58E+08	6.91E+07	6.91E+07
+	ZR-95	724.18		43.70	-5.33E-02	3.43E-01	5.02E-01
		756.72		55.30	-9.03E-02		3.43E-01
+	MO-99	181.06		6.20	-9.84E+09	6.04E+10	8.93E+10
		739.58		12.80	-2.38E+10		6.04E+10
		778.00		4.50	-9.26E+10		1.76E+11
+	RU-103	497.08		89.00	4.99E-02	3.65E-01	3.65E-01
+	RU-106	621.84		9.80	1.10E-02	6.98E-01	6.98E-01
+	AG-108M	433.93		89.90	-2.59E-02	6.05E-02	6.05E-02
		614.37		90.40	7.14E-04		7.75E-02
		722.95		90.50	-5.66E-03		7.16E-02
+	CD-109	88.03	*	3.72	1.04E+00	1.92E+00	1.92E+00
+	AG-110M	657.75		93.14	-7.50E-03	8.75E-02	8.75E-02
		677.61		10.53	7.54E-03		7.95E-01

Analysis Report for 1707088-06

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AG-110M	706.67		16.46	1.47E-01	8.75E-02	5.58E-01
		763.93		21.98	-1.45E-01		4.25E-01
		884.67		71.63	-7.76E-02		1.10E-01
		1384.27		23.94	-8.20E-02		2.91E-01
+	CD-113M	263.70		0.02	-4.67E+01	2.28E+02	2.28E+02
+	SN-113	255.12		1.93	-1.22E+00	1.58E-01	4.22E+00
		391.69		64.90	1.05E-01		1.58E-01
+	TE123M	159.00		84.10	4.53E-02	1.00E-01	1.00E-01
+	SB-124	602.71		97.87	6.94E-02	1.89E-01	1.89E-01
		645.85		7.26	-6.44E-01		2.68E+00
		722.78		11.10	-1.48E-01		1.87E+00
		1691.02		49.00	-1.49E-02		2.52E-01
+	I-125	35.49		6.49	1.32E+00	2.52E+00	2.52E+00
+	SB-125	176.33		6.89	-2.63E-02	1.92E-01	7.17E-01
		427.89		29.33	-9.08E-03		1.92E-01
		463.38		10.35	2.48E-01		6.51E-01
		600.56		17.80	1.86E-01		3.54E-01
		635.90		11.32	-5.35E-02		5.50E-01
+	SB-126	414.70		83.30	1.23E+00	1.73E+01	1.84E+01
		666.33		99.60	-2.21E+00		1.73E+01
		695.00		99.60	9.04E+00		1.93E+01
		720.50		53.80	-1.04E+01		3.27E+01
+	SN-126	87.57	*	37.00	9.02E-02	1.66E-01	1.66E-01
+	SB-127	473.00		25.00	4.49E+05	1.52E+07	1.71E+07
		685.20		35.70	7.64E+06		1.52E+07
		783.80		14.70	1.30E+07		4.18E+07
+	I-129	29.78		57.00	1.13E-02	9.61E-02	9.61E-02
		33.60		13.20	-6.11E-02		3.86E-01
		39.58		7.52	-2.84E-01		6.30E-01
+	I-131	284.30		6.05	5.40E+03	3.77E+02	5.64E+03
		364.48		81.20	-1.74E+02		3.77E+02
		636.97		7.26	-9.31E+02		4.91E+03
		722.89		1.80	-1.75E+03		2.21E+04
+	TE-132	49.72		13.10	-7.05E+08	1.21E+08	8.34E+08
		228.16		88.00	-2.66E+07		1.21E+08
+	BA-133	81.00		33.00	-4.20E-02	1.22E-01	1.64E-01
		302.84		17.80	3.65E-01		3.48E-01
		356.01		60.00	1.42E-05		1.22E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	-2.32E+04	9.04E+04	9.04E+04
+	CS-134	563.23		8.38	1.77E-01	6.92E-02	7.61E-01
		569.32		15.43	-9.59E-02		4.18E-01
		604.70		97.60	-7.30E-01		6.92E-02
		795.84		85.40	8.65E-02		9.54E-02
		801.93		8.73	-1.90E-01		8.04E-01
+	CS-135	268.24		16.00	1.03E-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

Analysis Report for 1707088-06

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CS-136	153.22		7.46	4.46E+01	1.32E+01	1.35E+02
		163.89		4.61	-1.44E+02		2.06E+02
		176.55		13.56	-2.58E+00		7.03E+01
		273.65		12.66	-5.61E+01		9.70E+01
		340.57		48.50	6.69E+01		3.24E+01
		818.50		99.70	1.47E+00		1.32E+01
		1048.07		79.60	-2.89E+00		1.94E+01
		1235.34		19.70	1.38E+01		1.12E+02
+	CS-137	661.65		85.12	-4.36E-03	7.40E-02	7.40E-02
+	LA-138	788.74		34.00	4.28E-02	8.03E-02	2.08E-01
		1435.80		66.00	-7.81E-03		8.03E-02
+	CE-139	165.85	*	80.35	1.14E-01	1.37E-01	1.37E-01
+	BA-140	162.64		6.70	-5.79E+00	5.75E+01	1.63E+02
		304.84		4.50	-3.16E+01		2.94E+02
		423.70		3.20	-1.10E+02		3.93E+02
		437.55		2.00	2.08E+02		6.71E+02
		537.32		25.00	9.07E+00		5.75E+01
+	LA-140	328.77		20.50	5.14E+01	1.32E+01	6.81E+01
		487.03		45.50	3.27E+00		2.87E+01
		815.85		23.50	-6.43E+00		5.99E+01
		1596.49		95.49	4.90E-01		1.32E+01
+	CE-141	145.44		48.40	1.28E-01	8.53E-01	8.53E-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	-1.61E-01	5.59E-01	5.59E-01
+	PM-144	476.78		42.00	4.72E-02	6.79E-02	1.58E-01
		618.01		98.60	-7.05E-03		6.79E-02
		696.49		99.49	4.63E-02		8.30E-02
+	PM-145	36.85		21.70	3.05E-02	1.26E-01	2.32E-01
		37.36		39.70	-1.22E-03		1.26E-01
		42.30		15.10	-1.27E-01		3.11E-01
		72.40		2.31	-5.12E+00		2.87E+00
+	PM-146	453.90		39.94	-6.19E-02	1.32E-01	1.32E-01
		735.90		14.01	1.47E-01		4.73E-01
		747.13		13.10	1.29E-01		5.05E-01
+	ND-147	91.11		28.90	2.67E+02	1.37E+02	1.37E+02
		531.02		13.10	-9.84E+01		2.40E+02
+	PM-149	285.90		3.10	8.76E+13	1.05E+14	1.05E+14
+	EU-152	121.78		20.50	-5.34E-03	2.20E-01	2.20E-01
		244.69		5.40	-4.00E-01		1.00E+00
		344.27		19.13	4.61E-02		2.82E-01
		778.89		9.20	3.12E-02		7.41E-01
		964.01		10.40	-2.03E+00		8.79E-01
		1085.78		7.22	4.57E-02		9.58E-01
		1112.02		9.60	-9.05E-02		7.94E-01
		1407.95		14.94	2.28E-01		4.70E-01
+	GD-153	97.43		31.30	6.19E-02	2.08E-01	2.08E-01
		103.18		22.20	1.46E-01		2.89E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	EU-154	123.07		40.50	2.09E-02	1.15E-01	1.15E-01
		723.30		19.70	-2.65E-02		3.36E-01
		873.19		11.50	8.74E-02		5.72E-01
		996.32		10.30	-5.61E-01		6.59E-01
		1004.76		17.90	6.63E-02		4.16E-01
		1274.45		35.50	1.41E-01		2.47E-01
+	EU-155	86.50	*	30.90	1.12E-01	2.07E-01	2.07E-01
		105.30		20.70	7.72E-02		2.40E-01
+	EU-156	811.77		10.40	-7.59E+00	5.18E+01	5.18E+01
		1153.47		7.20	6.19E+01		1.26E+02
		1230.71		8.90	3.34E+01		1.08E+02
+	HO-166M	184.41		72.60	1.30E-01	8.00E-02	8.00E-02
		280.45		29.60	-5.30E-02		1.90E-01
		410.94		11.10	1.86E-01		5.09E-01
		711.69		54.10	-2.74E-02		1.27E-01
+	TM-171	66.72		0.14	-4.15E+00	4.41E+01	4.41E+01
+	HF-172	67.35		5.31	4.24E-01	4.56E-01	1.17E+00
		125.81		11.30	-1.50E-01		4.56E-01
+	LU-172	181.53		20.60	-8.78E+02	4.35E+03	7.97E+03
		900.72		29.81	-6.75E+02		7.39E+03
		1093.66		62.50	2.49E+03		4.35E+03
+	LU-173	100.72		5.24	-5.07E-01	3.27E-01	1.01E+00
		272.11		21.20	2.73E-02		3.27E-01
+	HF-175	343.40		84.00	2.81E-02	1.75E-01	1.75E-01
+	LU-176	88.34		13.30	-2.49E-01	5.57E-02	4.67E-01
		201.83		86.00	-2.72E-02		5.57E-02
		306.78		94.00	2.36E-03		5.63E-02
+	HF-181	133.02		41.70	-1.70E-01	3.54E-01	5.91E-01
		345.85		17.20	2.65E-01		1.62E+00
		482.03		82.80	3.74E-02		3.54E-01
+	TA-182	67.75		41.20	9.10E-02	2.52E-01	2.52E-01
		1121.30		34.90	8.45E-01		6.08E-01
		1189.05		16.23	2.61E-01		1.04E+00
		1221.41		26.98	1.96E-01		6.50E-01
		1231.02		11.44	4.74E-01		1.53E+00
+	IR-192	308.46		29.68	3.75E-02	4.64E-01	4.64E-01
		468.07	*	48.10	1.31E-01		5.23E-01
+	HG-203	279.19	*	77.30	2.15E-01	3.58E-01	3.58E-01
+	TL-204	374.74		94.11	-2.79E-02	5.64E-02	5.64E-02
		899.15		99.16	-5.44E-02		6.24E-02
		911.74		91.10	4.21E-01		1.52E-01
+	BI-207	569.67		97.72	3.93E-02	6.30E-02	6.30E-02
		1063.62		74.90	-3.72E-02		9.50E-02
+	TL-208	583.14	*	30.22	1.23E+00	1.31E-01	3.19E-01
		860.37	*	4.48	1.04E+00		1.90E+00
		2614.66	*	35.85	1.09E+00		1.31E-01
+	BI-210M	262.00		45.00	-1.06E-02	1.17E-01	1.17E-01
		300.00		23.00	-8.09E-01		2.76E-01
+	PB-210	46.50		4.25	5.94E-01	1.19E+00	1.19E+00

Analysis Report for 1707088-06

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PB-211	404.84		2.90	2.88E-01	1.78E+00	1.78E+00
		831.96		2.90	-3.10E-01		2.30E+00
+	BI-212	727.17	*	11.80	1.03E+00	8.19E-01	8.19E-01
		1620.62		2.75	1.28E+00		2.38E+00
+	PB-212	238.63	*	44.60	1.46E+00	2.49E-01	2.49E-01
		300.09	*	3.41	2.13E+00		3.18E+00
+	BI-214	609.31	*	46.30	9.25E-01	2.45E-01	2.45E-01
		1120.29	*	15.10	1.05E+00		9.66E-01
		1764.49	*	15.80	1.05E+00		4.44E-01
		2204.22	*	4.98	9.52E-01		1.44E+00
+	PB-214	295.21	*	19.19	1.22E+00	2.04E-01	5.53E-01
		351.92	*	37.19	1.08E+00		2.04E-01
+	RN-219	401.80		6.50	2.40E-01	8.50E-01	8.50E-01
+	RA-223	323.87		3.88	-2.51E-02	1.28E+00	1.28E+00
+	RA-224	240.98	*	3.95	3.34E+00	2.81E+00	2.81E+00
+	RA-225	40.00		31.00	-6.92E+00	1.73E+01	1.73E+01
+	RA-226	186.21	*	3.28	2.84E+00	2.87E+00	2.87E+00
+	TH-227	50.10		8.40	-4.31E-03	5.45E-01	5.81E-01
		236.00		11.50	-4.40E+00		5.45E-01
		256.20		6.30	-4.96E-02		8.35E-01
+	AC-228	338.32	*	11.40	1.71E+00	5.02E-01	7.18E-01
		911.07	*	27.70	1.08E+00		5.02E-01
		969.11	*	16.60	1.73E+00		7.92E-01
+	TH-230	48.44		16.90	1.51E-02	2.98E-01	2.98E-01
		62.85		4.60	2.17E+00		1.33E+00
		67.67		0.37	5.49E+00		1.52E+01
+	PA-231	283.67		1.60	6.34E-01	2.64E+00	3.43E+00
		302.67		2.30	2.77E+00		2.64E+00
+	TH-231	25.64		14.70	-2.72E+00	4.66E-01	4.66E-01
		84.21		6.40	5.26E-02		8.88E-01
+	PA-233	311.98		38.60	-4.91E-01	1.88E+00	1.88E+00
+	PA-234	131.20		20.40	1.55E-01	2.39E-01	2.39E-01
		733.99		8.80	4.91E-02		7.57E-01
		946.00		12.00	1.11E-01		5.29E-01
+	PA-234M	1001.03		0.92	2.11E+00	8.08E+00	8.08E+00
+	TH-234	63.29	*	3.80	1.19E+00	2.23E+00	2.23E+00
+	U-235	143.76		10.50	1.54E-01	4.57E-01	4.57E-01
		163.35		4.70	-6.81E-01		9.75E-01
		205.31		4.70	3.02E-01		1.03E+00
+	NP-237	86.50	*	12.60	2.65E-01	4.88E-01	4.88E-01
+	NP-239	106.10		22.70	2.08E+11	1.81E+12	1.81E+12
		228.18		10.70	-8.44E+11		3.85E+12
		277.60		14.10	1.23E+12		3.49E+12
+	AM-241	59.54		35.90	-8.63E-03	1.48E-01	1.48E-01
+	AM-243	74.67	*	66.00	2.85E-01	1.66E-01	1.66E-01
+	CM-243	209.75	*	3.29	1.42E+00	4.41E-01	1.76E+00
		228.14		10.60	-9.89E-02		4.51E-01

Analysis Report for 1707088-06

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Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
CM-243	277.60	*	14.00	2.65E-01	4.41E-01	4.41E-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	1.92E+00	1.92E+00	-1.88E-01	9.13E-01
	NA-22	1274.54		99.94	9.23E-02	9.23E-02	5.28E-02	4.33E-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	4.45E-02	4.45E-02	5.87E-03	1.88E-02
+	K-40	1460.81	*	10.67	1.07E+00	1.07E+00	2.94E+01	5.09E-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	5.97E-02	5.97E-02	2.16E-02	2.93E-02
		78.34		96.00	7.77E-02		1.97E-01	3.83E-02
	SC-46	889.25		99.98	1.55E-01	1.55E-01	-7.41E-03	7.29E-02
		1120.51		99.99	2.55E-01		2.25E-01	1.22E-01
	V-48	983.52		99.98	5.47E+00	5.47E+00	2.21E-02	2.56E+00
		1312.10		97.50	5.69E+00		4.03E-01	2.62E+00
	CR-51	320.08		9.83	6.52E+00	6.52E+00	4.83E-01	3.14E+00
	MN-54	834.83		99.97	9.03E-02	9.03E-02	1.94E-02	4.27E-02
	CO-56	846.75		99.96	1.75E-01	1.75E-01	6.95E-02	8.29E-02
		1037.75		14.03	1.27E+00		2.96E-02	5.96E-01
		1238.25		67.00	3.98E-01		2.82E-01	1.89E-01
		1771.40		15.51	6.87E-01		-5.32E-01	2.90E-01
		2598.48		16.90	5.12E-01		1.43E-01	1.92E-01
	CO-57	122.06		85.51	6.86E-02	6.86E-02	1.80E-02	3.34E-02
		136.48		10.60	5.68E-01		-1.24E-01	2.77E-01
	CO-58	810.76		99.40	1.47E-01	1.47E-01	2.04E-03	6.85E-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)
	FE-59	1099.22		56.50	6.55E-01	6.55E-01	8.30E-02	3.07E-01
		1291.56		43.20	8.37E-01		-2.18E-01	3.88E-01
	CO-60	1173.22		100.00	1.01E-01	8.35E-02	7.73E-02	4.78E-02
		1332.49		100.00	8.35E-02		4.54E-02	3.89E-02
	ZN-65	1115.52		50.75	2.00E-01	2.00E-01	6.40E-02	9.37E-02
	GA-67	93.31		35.70	3.94E+08	3.94E+08	9.12E+08	1.94E+08
		208.95		2.24	5.27E+09		4.83E+09	2.56E+09
		300.22		16.00	8.36E+08		-1.65E+09	4.05E+08
	SE-75	121.11		16.70	4.77E-01	1.41E-01	-1.16E-02	2.32E-01
		136.00		59.20	1.41E-01		-3.08E-02	6.86E-02
		264.65		59.80	1.55E-01		-3.77E-03	7.52E-02
		279.53		25.20	3.97E-01		-1.73E-01	1.92E-01
		400.65		11.40	8.82E-01		5.27E-01	4.23E-01
	RB-82	776.52		13.00	8.11E+00	8.11E+00	4.33E-01	3.83E+00
	RB-83	520.41		46.00	2.77E-01	2.77E-01	4.14E-02	1.32E-01
		529.64		30.30	3.93E-01		-1.11E-01	1.86E-01
		552.65		16.40	7.11E-01		9.78E-02	3.36E-01
	KR-85	513.99		0.43	1.94E+01	1.94E+01	3.13E+01	9.36E+00
	SR-85	513.99		99.27	2.45E-01	2.45E-01	3.97E-01	1.19E-01
	Y-88	898.02		93.40	1.20E-01	7.93E-02	-3.91E-02	5.55E-02
		1836.01		99.38	7.93E-02		-4.31E-02	3.29E-02
	MO-93	263.06		56.72	9.19E-02	4.55E-02	-4.44E-02	4.45E-02
		684.67		99.68	6.75E-02		3.39E-02	3.21E-02
		1477.11		99.08	4.55E-02		-8.57E-03	1.97E-02
	NB-93M	16.57		9.43	4.98E-01	4.98E-01	8.74E-02	2.34E-01
	NB-94	702.63		100.00	6.39E-02	6.26E-02	-2.49E-02	3.02E-02
		871.10		100.00	6.26E-02		-1.42E-02	2.93E-02
	NB-95	765.79		99.81	5.61E-01	5.61E-01	3.32E-01	2.67E-01
	NB-95M	235.69		25.00	6.91E+07	6.91E+07	-5.58E+08	3.37E+07
	ZR-95	724.18		43.70	5.02E-01	3.43E-01	-5.33E-02	2.39E-01
		756.72		55.30	3.43E-01		-9.03E-02	1.62E-01
	MO-99	181.06		6.20	8.93E+10	6.04E+10	-9.84E+09	4.34E+10
		739.58		12.80	6.04E+10		-2.38E+10	2.86E+10
		778.00		4.50	1.76E+11		-9.26E+10	8.32E+10
	RU-103	497.08		89.00	3.65E-01	3.65E-01	4.99E-02	1.74E-01
	RU-106	621.84		9.80	6.98E-01	6.98E-01	1.10E-02	3.30E-01
	AG-108M	433.93		89.90	6.05E-02	6.05E-02	-2.59E-02	2.89E-02
		614.37		90.40	7.75E-02		7.14E-04	3.70E-02
		722.95		90.50	7.16E-02		-5.66E-03	3.38E-02
+	CD-109	88.03	*	3.72	1.92E+00	1.92E+00	1.04E+00	9.45E-01
	AG-110M	657.75		93.14	8.75E-02	8.75E-02	-7.50E-03	4.14E-02
		677.61		10.53	7.95E-01		7.54E-03	3.76E-01
		706.67		16.46	5.58E-01		1.47E-01	2.65E-01
		763.93		21.98	4.25E-01		-1.45E-01	2.01E-01
		884.67		71.63	1.10E-01		-7.76E-02	5.12E-02
		1384.27		23.94	2.91E-01		-8.20E-02	1.30E-01
	CD-113M	263.70		0.02	2.28E+02	2.28E+02	-4.67E+01	1.10E+02
	SN-113	255.12		1.93	4.22E+00	1.58E-01	-1.22E+00	2.03E+00
		391.69		64.90	1.58E-01		1.05E-01	7.60E-02
	TE123M	159.00		84.10	1.00E-01	1.00E-01	4.53E-02	4.89E-02
	SB-124	602.71		97.87	1.89E-01	1.89E-01	6.94E-02	8.93E-02
		645.85		7.26	2.68E+00		-6.44E-01	1.27E+00
		722.78		11.10	1.87E+00		-1.48E-01	8.84E-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-124	1691.02		49.00	2.52E-01	1.89E-01	-1.49E-02	1.05E-01
	I-125	35.49		6.49	2.52E+00	2.52E+00	1.32E+00	1.23E+00
	SB-125	176.33		6.89	7.17E-01	1.92E-01	-2.63E-02	3.48E-01
		427.89		29.33	1.92E-01		-9.08E-03	9.19E-02
		463.38		10.35	6.51E-01		2.48E-01	3.13E-01
		600.56		17.80	3.54E-01		1.86E-01	1.68E-01
		635.90		11.32	5.50E-01		-5.35E-02	2.60E-01
	SB-126	414.70		83.30	1.84E+01	1.73E+01	1.23E+00	8.80E+00
		666.33		99.60	1.73E+01		-2.21E+00	8.18E+00
		695.00		99.60	1.93E+01		9.04E+00	9.14E+00
		720.50		53.80	3.27E+01		-1.04E+01	1.54E+01
+	SN-126	87.57	*	37.00	1.66E-01	1.66E-01	9.02E-02	8.16E-02
	SB-127	473.00		25.00	1.71E+07	1.52E+07	4.49E+05	8.15E+06
		685.20		35.70	1.52E+07		7.64E+06	7.22E+06
		783.80		14.70	4.18E+07		1.30E+07	1.98E+07
	I-129	29.78		57.00	9.61E-02	9.61E-02	1.13E-02	4.67E-02
		33.60		13.20	3.86E-01		-6.11E-02	1.88E-01
		39.58		7.52	6.30E-01		-2.84E-01	3.06E-01
	I-131	284.30		6.05	5.64E+03	3.77E+02	5.40E+03	2.73E+03
		364.48		81.20	3.77E+02		-1.74E+02	1.81E+02
		636.97		7.26	4.91E+03		-9.31E+02	2.32E+03
		722.89		1.80	2.21E+04		-1.75E+03	1.05E+04
	TE-132	49.72		13.10	8.34E+08	1.21E+08	-7.05E+08	4.07E+08
		228.16		88.00	1.21E+08		-2.66E+07	5.86E+07
	BA-133	81.00		33.00	1.64E-01	1.22E-01	-4.20E-02	8.01E-02
		302.84		17.80	3.48E-01		3.65E-01	1.69E-01
		356.01		60.00	1.22E-01		1.42E-05	5.90E-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	9.04E+04	9.04E+04	-2.32E+04	4.43E+04
	CS-134	563.23		8.38	7.61E-01	6.92E-02	1.77E-01	3.61E-01
		569.32		15.43	4.18E-01		-9.59E-02	1.99E-01
		604.70		97.60	6.92E-02		-7.30E-01	3.29E-02
		795.84		85.40	9.54E-02		8.65E-02	4.53E-02
		801.93		8.73	8.04E-01		-1.90E-01	3.78E-01
	CS-135	268.24		16.00	3.67E-01	3.67E-01	1.03E-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	1.35E+02	1.32E+01	4.46E+01	6.55E+01
		163.89		4.61	2.06E+02		-1.44E+02	1.00E+02
		176.55		13.56	7.03E+01		-2.58E+00	3.41E+01
		273.65		12.66	9.70E+01		-5.61E+01	4.71E+01
		340.57		48.50	3.24E+01		6.69E+01	1.58E+01
		818.50		99.70	1.32E+01		1.47E+00	6.18E+00
		1048.07		79.60	1.94E+01		-2.89E+00	9.09E+00
		1235.34		19.70	1.12E+02		1.38E+01	5.35E+01
	CS-137	661.65		85.12	7.40E-02	7.40E-02	-4.36E-03	3.51E-02
	LA-138	788.74		34.00	2.08E-01	8.03E-02	4.28E-02	9.84E-02
		1435.80		66.00	8.03E-02		-7.81E-03	3.57E-02
+	CE-139	165.85	*	80.35	1.37E-01	1.37E-01	1.14E-01	6.71E-02
	BA-140	162.64		6.70	1.63E+02	5.75E+01	-5.79E+00	7.94E+01
		304.84		4.50	2.94E+02		-3.16E+01	1.42E+02
		423.70		3.20	3.93E+02		-1.10E+02	1.88E+02

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BA-140	437.55		2.00	6.71E+02	5.75E+01	2.08E+02	3.21E+02
		537.32		25.00	5.75E+01		9.07E+00	2.74E+01
	LA-140	328.77		20.50	6.81E+01	1.32E+01	5.14E+01	3.29E+01
		487.03		45.50	2.87E+01		3.27E+00	1.37E+01
		815.85		23.50	5.99E+01		-6.43E+00	2.80E+01
		1596.49		95.49	1.32E+01		4.90E-01	5.81E+00
	CE-141	145.44		48.40	8.53E-01	8.53E-01	1.28E-01	4.16E-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	5.59E-01	5.59E-01	-1.61E-01	2.72E-01
	PM-144	476.78		42.00	1.58E-01	6.79E-02	4.72E-02	7.52E-02
		618.01		98.60	6.79E-02		-7.05E-03	3.20E-02
		696.49		99.49	8.30E-02		4.63E-02	3.94E-02
	PM-145	36.85		21.70	2.32E-01	1.26E-01	3.05E-02	1.13E-01
		37.36		39.70	1.26E-01		-1.22E-03	6.12E-02
		42.30		15.10	3.11E-01		-1.27E-01	1.51E-01
		72.40		2.31	2.87E+00		-5.12E+00	1.41E+00
	PM-146	453.90		39.94	1.32E-01	1.32E-01	-6.19E-02	6.29E-02
		735.90		14.01	4.73E-01		1.47E-01	2.23E-01
		747.13		13.10	5.05E-01		1.29E-01	2.38E-01
	ND-147	91.11		28.90	1.37E+02	1.37E+02	2.67E+02	6.75E+01
		531.02		13.10	2.40E+02		-9.84E+01	1.14E+02
	PM-149	285.90		3.10	1.05E+14	1.05E+14	8.76E+13	5.10E+13
	EU-152	121.78		20.50	2.20E-01	2.20E-01	-5.34E-03	1.07E-01
		244.69		5.40	1.00E+00		-4.00E-01	4.87E-01
		344.27		19.13	2.82E-01		4.61E-02	1.36E-01
		778.89		9.20	7.41E-01		3.12E-02	3.50E-01
		964.01		10.40	8.79E-01		-2.03E+00	4.18E-01
		1085.78		7.22	9.58E-01		4.57E-02	4.46E-01
		1112.02		9.60	7.94E-01		-9.05E-02	3.71E-01
		1407.95		14.94	4.70E-01		2.28E-01	2.15E-01
	GD-153	97.43		31.30	2.08E-01	2.08E-01	6.19E-02	1.01E-01
		103.18		22.20	2.89E-01		1.46E-01	1.41E-01
	EU-154	123.07		40.50	1.15E-01	1.15E-01	2.09E-02	5.61E-02
		723.30		19.70	3.36E-01		-2.65E-02	1.59E-01
		873.19		11.50	5.72E-01		8.74E-02	2.68E-01
		996.32		10.30	6.59E-01		-5.61E-01	3.07E-01
		1004.76		17.90	4.16E-01		6.63E-02	1.95E-01
		1274.45		35.50	2.47E-01		1.41E-01	1.16E-01
+	EU-155	86.50	*	30.90	2.07E-01	2.07E-01	1.12E-01	1.02E-01
		105.30		20.70	2.40E-01		7.72E-02	1.17E-01
	EU-156	811.77		10.40	5.18E+01	5.18E+01	-7.59E+00	2.40E+01
		1153.47		7.20	1.26E+02		6.19E+01	5.97E+01
		1230.71		8.90	1.08E+02		3.34E+01	5.09E+01
	HO-166M	184.41		72.60	8.00E-02	8.00E-02	1.30E-01	3.91E-02
		280.45		29.60	1.90E-01		-5.30E-02	9.21E-02
		410.94		11.10	5.09E-01		1.86E-01	2.44E-01
		711.69		54.10	1.27E-01		-2.74E-02	6.03E-02
	TM-171	66.72		0.14	4.41E+01	4.41E+01	-4.15E+00	2.16E+01
	HF-172	67.35		5.31	1.17E+00	4.56E-01	4.24E-01	5.76E-01
		125.81		11.30	4.56E-01		-1.50E-01	2.22E-01
	LU-172	181.53		20.60	7.97E+03	4.35E+03	-8.78E+02	3.87E+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)
	LU-172	900.72		29.81	7.39E+03	4.35E+03	-6.75E+02	3.45E+03
		1093.66		62.50	4.35E+03		2.49E+03	2.04E+03
	LU-173	100.72		5.24	1.01E+00	3.27E-01	-5.07E-01	4.95E-01
		272.11		21.20	3.27E-01		2.73E-02	1.59E-01
	HF-175	343.40		84.00	1.75E-01	1.75E-01	2.81E-02	8.43E-02
	LU-176	88.34		13.30	4.67E-01	5.57E-02	-2.49E-01	2.29E-01
		201.83		86.00	5.57E-02		-2.72E-02	2.70E-02
		306.78		94.00	5.63E-02		2.36E-03	2.72E-02
	HF-181	133.02		41.70	5.91E-01	3.54E-01	-1.70E-01	2.88E-01
		345.85		17.20	1.62E+00		2.65E-01	7.79E-01
		482.03		82.80	3.54E-01		3.74E-02	1.69E-01
	TA-182	67.75		41.20	2.52E-01	2.52E-01	9.10E-02	1.24E-01
		1121.30		34.90	6.08E-01		8.45E-01	2.91E-01
		1189.05		16.23	1.04E+00		2.61E-01	4.91E-01
		1221.41		26.98	6.50E-01		1.96E-01	3.07E-01
		1231.02		11.44	1.53E+00		4.74E-01	7.21E-01
+	IR-192	308.46		29.68	4.64E-01	4.64E-01	3.75E-02	2.24E-01
		468.07	*	48.10	5.23E-01		1.31E-01	2.55E-01
	HG-203	279.19	*	77.30	3.58E-01	3.58E-01	2.15E-01	1.74E-01
	TL-204	374.74		94.11	5.64E-02	5.64E-02	-2.79E-02	2.70E-02
		899.15		99.16	6.24E-02		-5.44E-02	2.90E-02
		911.74		91.10	1.52E-01		4.21E-01	7.38E-02
	BI-207	569.67		97.72	6.30E-02	6.30E-02	3.93E-02	3.00E-02
		1063.62		74.90	9.50E-02		-3.72E-02	4.43E-02
+	TL-208	583.14	*	30.22	3.19E-01	1.31E-01	1.23E+00	1.55E-01
		860.37	*	4.48	1.90E+00		1.04E+00	9.03E-01
		2614.66	*	35.85	1.31E-01		1.09E+00	5.28E-02
	BI-210M	262.00		45.00	1.17E-01	1.17E-01	-1.06E-02	5.66E-02
		300.00		23.00	2.76E-01		-8.09E-01	1.34E-01
	PB-210	46.50		4.25	1.19E+00	1.19E+00	5.94E-01	5.83E-01
	PB-211	404.84		2.90	1.78E+00	1.78E+00	2.88E-01	8.51E-01
		831.96		2.90	2.30E+00		-3.10E-01	1.09E+00
+	BI-212	727.17	*	11.80	8.19E-01	8.19E-01	1.03E+00	3.95E-01
		1620.62		2.75	2.38E+00		1.28E+00	1.07E+00
+	PB-212	238.63	*	44.60	2.49E-01	2.49E-01	1.46E+00	1.23E-01
		300.09	*	3.41	3.18E+00		2.13E+00	1.57E+00
+	BI-214	609.31	*	46.30	2.45E-01	2.45E-01	9.25E-01	1.19E-01
		1120.29	*	15.10	9.66E-01		1.05E+00	4.67E-01
		1764.49	*	15.80	4.44E-01		1.05E+00	2.00E-01
		2204.22	*	4.98	1.44E+00		9.52E-01	6.43E-01
+	PB-214	295.21	*	19.19	5.53E-01	2.04E-01	1.22E+00	2.72E-01
		351.92	*	37.19	2.04E-01		1.08E+00	9.93E-02
	RN-219	401.80		6.50	8.50E-01	8.50E-01	2.40E-01	4.08E-01
	RA-223	323.87		3.88	1.28E+00	1.28E+00	-2.51E-02	6.17E-01
+	RA-224	240.98	*	3.95	2.81E+00	2.81E+00	3.34E+00	1.38E+00
	RA-225	40.00		31.00	1.73E+01	1.73E+01	-6.92E+00	8.43E+00
+	RA-226	186.21	*	3.28	2.87E+00	2.87E+00	2.84E+00	1.42E+00
	TH-227	50.10		8.40	5.81E-01	5.45E-01	-4.31E-03	2.83E-01
		236.00		11.50	5.45E-01		-4.40E+00	2.66E-01
		256.20		6.30	8.35E-01		-4.96E-02	4.04E-01
+	AC-228	338.32	*	11.40	7.18E-01	5.02E-01	1.71E+00	3.51E-01
		911.07	*	27.70	5.02E-01		1.08E+00	2.43E-01
		969.11	*	16.60	7.92E-01		1.73E+00	3.83E-01

Analysis Report for 1707088-06

HTC-A03-S004-0006-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TH-230	48.44		16.90	2.98E-01	2.98E-01	1.51E-02	1.45E-01
		62.85		4.60	1.33E+00		2.17E+00	6.53E-01
		67.67		0.37	1.52E+01		5.49E+00	7.45E+00
	PA-231	283.67		1.60	3.43E+00	2.64E+00	6.34E-01	1.66E+00
		302.67		2.30	2.64E+00		2.77E+00	1.28E+00
	TH-231	25.64		14.70	4.66E-01	4.66E-01	-2.72E+00	2.27E-01
		84.21		6.40	8.88E-01		5.26E-02	4.36E-01
	PA-233	311.98		38.60	1.88E+00	1.88E+00	-4.91E-01	9.09E-01
	PA-234	131.20		20.40	2.39E-01	2.39E-01	1.55E-01	1.17E-01
		733.99		8.80	7.57E-01		4.91E-02	3.58E-01
		946.00		12.00	5.29E-01		1.11E-01	2.46E-01
	PA-234M	1001.03		0.92	8.08E+00	8.08E+00	2.11E+00	3.80E+00
+	TH-234	63.29	*	3.80	2.23E+00	2.23E+00	1.19E+00	1.10E+00
	U-235	143.76		10.50	4.57E-01	4.57E-01	1.54E-01	2.22E-01
		163.35		4.70	9.75E-01		-6.81E-01	4.74E-01
		205.31		4.70	1.03E+00		3.02E-01	5.00E-01
+	NP-237	86.50	*	12.60	4.88E-01	4.88E-01	2.65E-01	2.40E-01
	NP-239	106.10		22.70	1.81E+12	1.81E+12	2.08E+11	8.84E+11
		228.18		10.70	3.85E+12		-8.44E+11	1.86E+12
		277.60		14.10	3.49E+12		1.23E+12	1.69E+12
	AM-241	59.54		35.90	1.48E-01	1.48E-01	-8.63E-03	7.24E-02
+	AM-243	74.67	*	66.00	1.66E-01	1.66E-01	2.85E-01	8.23E-02
+	CM-243	209.75	*	3.29	1.76E+00	4.41E-01	1.42E+00	8.60E-01
		228.14		10.60	4.51E-01		-9.89E-02	2.18E-01
		277.60	*	14.00	4.41E-01		2.65E-01	2.15E-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 1707088-06

HTC-A03-S004-0006-01

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-A03-S004-0006-01

Elapsed Live time: 3600
Elapsed Real Time: 3602

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	85	77	90	194	526	184
25:	69	80	86	63	83	84	73	89
33:	69	82	86	78	91	98	82	86
41:	88	72	96	89	94	103	150	111
49:	108	111	104	123	117	114	137	112
57:	127	113	152	140	168	168	204	287
65:	184	163	152	184	175	197	177	204
73:	205	204	417	395	420	590	231	174
81:	153	146	147	167	215	151	225	294
89:	172	185	200	167	354	329	136	138
97:	124	134	117	126	101	107	119	136
105:	110	139	113	103	124	101	113	106
113:	104	116	109	131	110	87	88	90
121:	92	91	97	110	109	97	99	103
129:	106	137	89	120	111	98	86	97
137:	115	97	94	109	93	95	90	108
145:	115	93	102	73	93	100	86	91
153:	100	102	104	91	77	101	80	104
161:	82	75	76	77	93	88	102	92
169:	91	60	73	70	82	83	78	67
177:	71	93	75	73	75	78	77	77
185:	96	180	160	92	76	81	66	71
193:	74	93	73	76	63	88	75	72
201:	75	66	78	69	81	80	73	58
209:	110	116	77	51	68	62	61	62
217:	60	81	67	71	72	60	73	50
225:	62	69	63	67	60	59	57	77
233:	52	74	65	74	80	227	716	316
241:	111	172	129	64	54	52	59	48
249:	52	48	31	49	55	45	27	52
257:	54	51	57	40	44	43	36	54
265:	43	38	46	42	58	66	78	56
273:	57	50	43	49	51	68	58	39
281:	34	47	29	57	54	49	41	38
289:	36	26	31	39	35	63	153	189
297:	66	31	46	73	68	53	50	31
305:	41	34	39	32	47	34	38	36
313:	32	40	36	43	45	27	33	35
321:	29	27	28	26	34	33	33	52
329:	53	38	43	29	39	26	36	35
337:	48	104	170	64	38	31	28	33
345:	34	35	29	30	30	31	94	329
353:	198	49	24	26	35	33	23	34
361:	31	28	27	18	22	29	25	27

369:	27	27	28	25	24	24	20	12

Sample Title: HTC-A03-S004-0006-01

Channel								
377:	32	37	29	33	35	33	27	34
385:	26	26	23	28	35	38	24	19
393:	31	30	24	20	20	31	33	23
401:	32	23	31	22	25	22	25	14
409:	36	44	26	24	26	21	18	30
417:	27	22	16	30	21	24	20	21
425:	24	22	22	23	28	14	22	24
433:	24	23	19	23	27	27	36	17
441:	19	23	16	24	18	14	19	20
449:	19	18	14	22	16	17	25	16
457:	22	24	28	26	20	29	48	39
465:	20	26	16	31	15	21	21	14
473:	15	26	17	16	23	14	25	20
481:	21	19	21	21	19	23	19	16
489:	20	16	20	14	25	21	24	14
497:	14	24	12	23	15	18	11	13
505:	24	20	21	22	26	64	114	59
513:	36	24	21	27	15	16	16	19
521:	12	15	25	29	15	14	18	18
529:	12	8	20	12	23	18	28	22
537:	20	18	15	19	15	24	20	18
545:	13	12	15	17	11	12	15	13
553:	12	15	15	17	15	10	15	15
561:	21	18	19	25	14	11	14	22
569:	23	25	18	11	22	17	14	18
577:	15	15	13	16	23	32	169	142
585:	40	23	29	16	16	20	24	17
593:	17	13	15	18	16	15	21	22
601:	19	16	10	11	18	12	19	38
609:	184	192	49	16	20	26	20	14
617:	13	18	7	9	14	13	18	22
625:	16	14	11	10	14	19	14	13
633:	12	12	13	12	19	22	11	11
641:	22	14	15	14	17	10	12	23
649:	17	16	17	20	20	11	13	14
657:	15	17	18	16	15	18	15	11
665:	18	19	14	10	14	14	15	19
673:	11	10	16	14	21	17	12	15
681:	14	13	25	21	11	14	18	16
689:	13	11	15	13	16	17	18	28
697:	16	10	17	10	15	14	15	17
705:	21	13	18	25	16	14	18	15
713:	17	17	23	17	16	12	16	15
721:	11	11	12	15	13	26	46	44
729:	19	12	22	18	13	9	12	18
737:	15	15	16	11	15	20	8	20
745:	17	9	13	13	14	9	6	15
753:	16	12	13	17	11	13	17	9
761:	14	15	12	21	14	18	19	19
769:	28	20	7	16	20	15	19	15
777:	10	14	8	14	17	21	14	8
785:	16	28	19	6	17	13	14	11
793:	10	20	33	27	13	7	8	10

801:	7	11	16	16	17	21	14	10

Sample Title: HTC-A03-S004-0006-01

Channel								
809:	8	13	5	8	7	8	7	8
817:	13	16	9	12	16	15	13	7
825:	5	12	11	9	9	10	13	18
833:	10	10	18	16	17	14	11	18
841:	15	10	13	14	14	6	18	16
849:	17	15	7	16	13	9	8	12
857:	10	6	13	27	30	18	12	8
865:	16	13	10	11	8	11	11	7
873:	11	12	8	15	11	9	10	14
881:	6	8	10	9	13	8	8	13
889:	14	11	12	14	15	17	5	6
897:	8	10	9	8	11	7	14	16
905:	12	4	14	9	16	49	116	91
913:	25	10	12	15	15	11	6	10
921:	9	10	15	9	12	13	5	13
929:	8	11	11	7	16	20	17	9
937:	9	17	6	6	6	4	13	11
945:	8	5	7	9	11	17	14	17
953:	10	11	11	9	17	18	10	5
961:	10	12	9	24	42	18	16	43
969:	90	36	18	11	6	14	15	12
977:	10	5	6	11	14	9	11	7
985:	11	6	15	10	11	10	8	14
993:	5	15	11	8	8	9	9	18
1001:	15	12	13	6	12	11	9	7
1009:	9	11	10	12	8	15	11	10
1017:	14	4	11	7	9	11	13	10
1025:	4	9	11	10	9	9	11	17
1033:	16	14	14	8	12	6	7	14
1041:	11	10	13	12	9	14	12	8
1049:	11	13	10	17	6	12	12	7
1057:	11	11	15	8	13	10	6	8
1065:	15	7	15	7	13	3	10	8
1073:	11	15	5	9	12	7	11	17
1081:	9	13	4	6	6	8	15	8
1089:	8	8	12	16	7	13	5	16
1097:	5	9	14	4	16	12	15	15
1105:	14	10	11	6	10	16	5	12
1113:	6	10	12	18	7	8	25	51
1121:	35	19	14	20	10	13	14	10
1129:	10	9	6	11	9	11	11	14
1137:	8	9	11	11	14	14	10	10
1145:	8	8	6	11	8	19	9	12
1153:	11	9	17	21	15	8	6	13
1161:	10	11	15	10	9	15	12	7
1169:	11	14	15	21	17	15	16	15
1177:	6	17	17	11	12	16	13	11
1185:	9	17	16	15	13	9	15	12
1193:	10	17	17	10	17	20	13	11
1201:	9	10	16	14	13	13	18	10
1209:	18	16	20	13	9	10	10	17
1217:	7	18	19	9	16	10	13	16
1225:	14	11	12	7	15	17	16	18

1233:	14	12	11	19	23	31	16	19

Sample Title: HTC-A03-S004-0006-01

Channel								
1241:	14	7	20	13	12	14	13	8
1249:	10	10	11	14	3	12	12	11
1257:	7	11	9	7	8	8	9	7
1265:	11	6	14	14	4	6	11	10
1273:	12	16	6	9	12	10	8	10
1281:	13	6	13	9	8	10	10	7
1289:	12	6	10	9	6	6	9	9
1297:	7	6	11	8	4	5	8	14
1305:	6	13	3	9	5	11	5	9
1313:	0	6	6	4	9	10	7	6
1321:	2	5	7	4	5	4	5	11
1329:	13	9	12	7	7	5	9	5
1337:	4	2	5	5	6	3	5	9
1345:	3	3	3	7	6	6	4	5
1353:	4	5	7	4	2	5	2	4
1361:	6	2	4	6	7	4	0	1
1369:	6	7	3	3	2	6	4	5
1377:	16	8	7	3	4	2	1	5
1385:	6	4	1	4	6	4	0	4
1393:	2	0	6	2	2	4	7	4
1401:	4	6	4	6	3	8	5	7
1409:	7	5	3	2	6	6	4	1
1417:	6	0	3	3	7	2	5	4
1425:	3	2	2	8	4	3	2	3
1433:	5	3	6	3	0	2	5	3
1441:	3	4	0	6	3	1	4	7
1449:	7	2	9	4	4	2	4	9
1457:	8	30	183	518	545	157	31	14
1465:	18	10	5	3	2	2	3	1
1473:	2	2	1	2	3	1	3	4
1481:	2	1	1	2	0	2	1	1
1489:	2	2	5	5	1	1	3	7
1497:	3	5	3	1	0	4	5	2
1505:	1	4	4	9	10	4	3	3
1513:	5	2	0	3	2	2	0	3
1521:	0	4	0	4	2	2	2	0
1529:	1	0	0	3	1	1	1	2
1537:	5	3	3	0	0	0	1	4
1545:	6	1	2	1	1	1	2	2
1553:	2	1	2	0	2	1	2	2
1561:	3	3	5	0	2	1	3	3
1569:	1	3	4	0	2	4	0	2
1577:	0	3	4	3	2	4	3	2
1585:	1	5	8	8	4	5	3	7
1593:	7	2	0	3	2	3	1	4
1601:	1	2	3	4	0	1	2	1
1609:	0	2	0	1	4	2	2	2
1617:	1	1	1	13	9	1	3	1
1625:	3	2	0	3	2	4	5	2
1633:	2	1	0	0	3	2	2	2
1641:	1	2	2	3	1	4	2	2
1649:	2	1	2	1	1	2	2	2
1657:	2	0	5	3	2	2	3	3

1665:	1	2	1	0	1	4	3	4

Sample Title: HTC-A03-S004-0006-01

Channel								
1673:	0	2	1	4	4	0	1	1
1681:	2	1	1	2	0	1	0	3
1689:	0	0	2	2	1	0	4	0
1697:	1	0	3	1	2	1	4	2
1705:	2	2	2	2	2	1	3	1
1713:	1	0	0	0	0	3	2	2
1721:	1	1	4	2	1	2	2	3
1729:	10	4	4	1	0	4	0	1
1737:	0	1	2	0	3	0	2	1
1745:	1	3	0	1	0	2	3	0
1753:	1	0	2	2	6	1	2	1
1761:	1	4	23	26	13	4	2	2
1769:	1	2	1	1	1	0	1	1
1777:	1	0	0	2	0	3	0	1
1785:	1	1	3	0	1	1	2	1
1793:	3	0	0	2	2	1	2	1
1801:	2	2	3	2	3	1	2	1
1809:	2	1	0	1	0	1	3	2
1817:	1	0	2	2	0	4	1	0
1825:	0	0	1	4	3	4	4	2
1833:	0	0	0	2	2	2	1	0
1841:	1	0	1	3	2	1	4	3
1849:	1	3	0	0	0	0	1	1
1857:	2	2	1	2	4	0	2	2
1865:	1	1	0	1	0	2	2	1
1873:	1	1	1	1	1	2	1	0
1881:	0	4	0	1	2	1	1	2
1889:	0	2	0	0	2	3	2	1
1897:	0	1	2	0	2	2	1	0
1905:	1	1	1	2	2	1	2	0
1913:	3	0	0	0	0	2	0	2
1921:	3	0	3	2	0	1	0	3
1929:	1	2	0	0	4	3	2	2
1937:	1	3	1	0	0	1	1	1
1945:	2	0	0	0	0	1	0	1
1953:	1	2	2	1	1	2	0	3
1961:	0	1	6	2	1	1	3	2
1969:	0	3	0	0	0	0	1	0
1977:	5	2	3	1	5	1	2	2
1985:	0	1	0	1	1	2	2	0
1993:	0	2	2	3	2	0	3	1
2001:	1	0	1	3	2	1	1	1
2009:	1	1	3	1	1	0	2	0
2017:	1	1	1	1	1	2	0	0
2025:	2	1	0	0	2	2	0	1
2033:	1	1	0	3	0	2	0	0
2041:	0	1	0	2	0	1	1	2
2049:	0	1	2	1	0	1	1	2
2057:	2	1	0	0	1	2	1	1
2065:	0	1	1	0	1	0	1	0
2073:	0	1	0	2	0	0	1	1
2081:	1	0	3	0	1	1	5	3
2089:	0	3	0	0	1	1	0	3

2097:	2	0	2	2	6	5	6	3

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

2529:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-0006-01

Channel								
2537:	0	0	0	0	1	1	1	0
2545:	0	0	1	0	0	0	0	0
2553:	1	0	0	2	0	2	1	0
2561:	1	0	0	0	0	1	0	0
2569:	1	0	0	1	0	0	0	0
2577:	0	1	0	1	1	0	0	0
2585:	0	2	1	0	0	0	0	0
2593:	0	0	0	1	1	0	1	0
2601:	0	0	0	1	0	0	2	0
2609:	0	3	8	35	32	34	14	0
2617:	1	1	1	0	0	0	1	0
2625:	0	0	0	0	2	0	2	0
2633:	0	0	0	0	0	0	0	0
2641:	1	0	1	0	2	0	0	0
2649:	0	0	0	0	1	0	0	0
2657:	1	0	0	1	0	0	0	1
2665:	0	0	0	0	0	1	0	0
2673:	0	0	0	0	0	0	0	0
2681:	0	0	0	1	0	0	0	2
2689:	1	2	0	1	0	0	0	0
2697:	1	1	0	0	0	0	0	0
2705:	0	1	2	0	1	1	0	0
2713:	0	0	0	0	0	1	1	1
2721:	0	1	0	0	0	0	1	1
2729:	1	0	0	1	0	0	0	1
2737:	0	0	0	1	0	0	0	0
2745:	0	0	0	1	0	0	0	1
2753:	1	0	0	0	0	0	0	0
2761:	0	1	1	0	0	0	1	2
2769:	0	0	0	0	1	0	0	1
2777:	1	0	0	0	2	0	2	0
2785:	0	0	1	0	1	0	0	1
2793:	1	0	0	0	0	0	1	0
2801:	0	0	1	0	0	0	0	1
2809:	0	1	1	0	0	0	0	0
2817:	0	0	1	0	0	0	0	0
2825:	1	0	0	1	1	0	0	0
2833:	0	1	0	0	0	0	0	0
2841:	0	0	0	0	1	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	1	0	0	0	0	0	1	0
2865:	0	0	1	0	0	0	0	0
2873:	0	0	0	0	0	0	1	0
2881:	0	0	1	0	0	0	0	1
2889:	0	1	1	0	0	1	0	1
2897:	0	1	0	0	0	1	1	0
2905:	0	0	0	0	0	0	0	0
2913:	1	0	2	0	0	0	0	1
2921:	0	0	0	0	1	0	0	0
2929:	0	0	0	0	1	1	0	0
2937:	1	0	0	1	0	0	0	0
2945:	0	0	0	0	0	0	0	1
2953:	0	0	0	0	0	0	0	0

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-0006-01

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

3393:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-0006-01

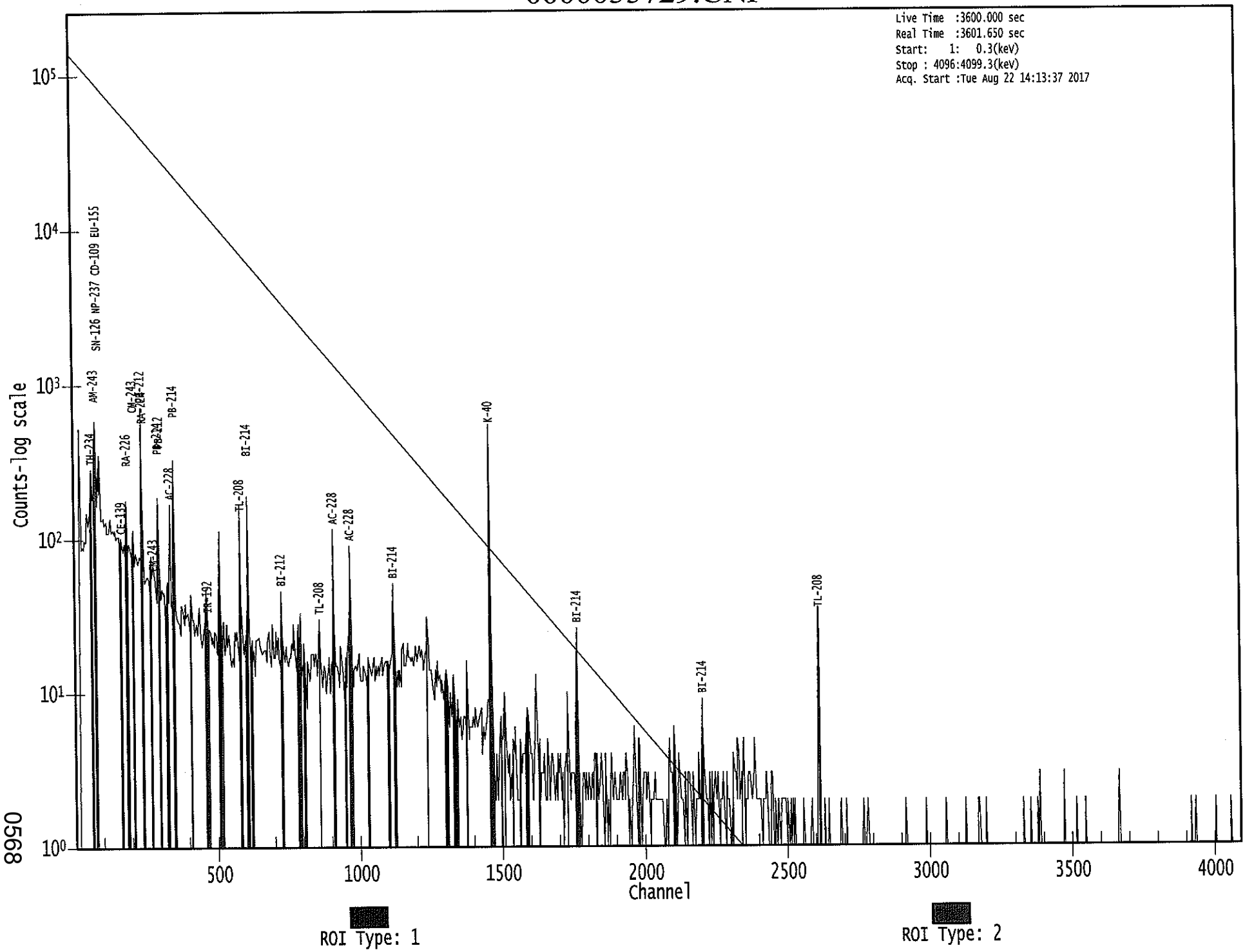
Channel								
3401:	0	0	1	0	0	0	0	0
3409:	0	0	0	0	1	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	1	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	1	0	0	0
3457:	0	0	0	0	0	0	1	0
3465:	0	0	0	0	0	0	0	3
3473:	0	0	0	0	0	0	1	0
3481:	0	0	0	0	0	0	0	1
3489:	0	0	0	1	1	0	0	0
3497:	0	0	0	0	0	0	0	0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

3825:	1	0	0	1	0	0	0	0

Sample Title: HTC-A03-S004-0006-01

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

0000055729.CNF



0568

NB 8/22/17

Apex-Gamma

Analysis Report for 1707088-07
HTC-A03-S004-0612-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-07
Sample Description	: HTC-A03-S004-0612-01
Sample Type	: SOIL
Sample Size	: 6.791E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2017 9:31:53AM
Acquisition Started	: 8/22/2017 2:13:44PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3608.1 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	: 55730

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 8/23/17

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 3:14:44PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	31.27	31.59	0.0000	0.00
2	76.74	77.04	0.0000	0.00
3	93.04	93.34	0.0000	0.00
4	143.74	144.02	0.0000	0.00
5	186.18	186.45	0.0000	0.00
6	209.19	209.44	0.0000	0.00
7	216.09	216.34	0.0000	0.00
8	222.15	222.40	0.0000	0.00
9	239.11	239.36	0.0000	0.00
10	242.40	242.64	0.0000	0.00
11	270.52	270.76	0.0000	0.00
12	295.39	295.62	0.0000	0.00
13	301.04	301.27	0.0000	0.00
14	328.77	328.98	0.0000	0.00
15	338.99	339.21	0.0000	0.00
16	352.35	352.56	0.0000	0.00
17	463.35	463.53	0.0000	0.00
18	511.44	511.59	0.0000	0.00
19	583.76	583.89	0.0000	0.00
20	609.61	609.73	0.0000	0.00
21	728.12	728.20	0.0000	0.00
22	731.12	731.20	0.0000	0.00
23	769.16	769.23	0.0000	0.00
24	795.54	795.59	0.0000	0.00
25	911.22	911.24	0.0000	0.00
26	968.00	968.00	0.0000	0.00
27	1120.94	1120.89	0.0000	0.00
28	1238.78	1238.69	0.0000	0.00
29	1270.12	1270.02	0.0000	0.00
30	1375.87	1375.73	0.0000	0.00
31	1408.51	1408.37	0.0000	0.00
32	1460.81	1460.65	0.0000	0.00
33	1466.53	1466.36	0.0000	0.00
34	1545.15	1544.95	0.0000	0.00
35	1660.44	1660.21	0.0000	0.00
36	1728.71	1728.46	0.0000	0.00
37	1734.88	1734.62	0.0000	0.00
38	1764.58	1764.32	0.0000	0.00
39	1838.29	1838.00	0.0000	0.00
40	2202.93	2202.51	0.0000	0.00
41	2341.11	2340.65	0.0000	0.00
42	2348.60	2348.13	0.0000	0.00

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	2355.97	2355.51	0.0000	0.00
44	2607.67	2607.11	0.0000	0.00
45	2614.18	2613.62	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 3:14:44PM

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	31.27	29 -	35	31.59	8.69E+01	81.32	1.15E+03	3.68
	2	76.74	72 -	81	77.04	1.21E+03	151.08	2.55E+03	3.24
	3	93.04	90 -	97	93.34	2.95E+02	114.11	1.91E+03	1.90
	4	143.74	140 -	147	144.02	7.89E+01	85.35	1.16E+03	2.80
	5	186.18	183 -	191	186.45	1.98E+02	85.91	1.02E+03	2.33
	6	209.19	206 -	213	209.44	9.50E+01	69.37	7.36E+02	1.49
	7	216.09	214 -	219	216.34	4.71E+01	52.86	5.20E+02	3.11
	8	222.15	220 -	225	222.40	5.34E+01	51.32	4.81E+02	3.59
M	9	239.11	234 -	247	239.36	8.28E+02	79.86	5.76E+02	2.06
m	10	242.40	234 -	247	242.64	1.60E+02	69.66	4.87E+02	2.06
	11	270.52	267 -	275	270.76	6.95E+01	63.69	5.83E+02	3.10
	12	295.39	292 -	299	295.62	2.03E+02	65.60	5.86E+02	1.94
	13	301.04	299 -	304	301.27	4.76E+01	45.65	3.71E+02	2.06
	14	328.77	326 -	332	328.98	4.03E+01	49.37	4.09E+02	1.89
	15	338.99	335 -	343	339.21	1.37E+02	60.95	4.80E+02	2.29
	16	352.35	349 -	357	352.56	3.35E+02	63.30	4.02E+02	2.28
	17	463.35	459 -	467	463.53	4.94E+01	40.70	2.23E+02	2.90
	18	511.44	505 -	519	511.59	1.80E+02	62.12	3.31E+02	2.62
	19	583.76	580 -	589	583.89	2.12E+02	51.89	2.61E+02	2.04
	20	609.61	605 -	613	609.73	2.77E+02	50.12	2.16E+02	2.29
M	21	728.12	722 -	734	728.20	6.07E+01	31.26	1.19E+02	2.23
m	22	731.12	722 -	734	731.20	2.38E+01	29.34	9.71E+01	2.23
	23	769.16	764 -	773	769.23	4.93E+01	39.06	1.89E+02	1.51
	24	795.54	791 -	802	795.59	3.30E+01	38.42	1.68E+02	3.13
	25	911.22	906 -	914	911.24	1.35E+02	38.05	1.40E+02	2.63
	26	968.00	962 -	973	968.00	1.40E+02	42.52	1.57E+02	2.45
	27	1120.94	1116 -	1127	1120.89	8.70E+01	38.73	1.44E+02	2.49
	28	1238.78	1235 -	1243	1238.69	3.64E+01	30.51	1.19E+02	5.03
	29	1270.12	1267 -	1273	1270.02	1.94E+01	20.90	6.32E+01	2.02
	30	1375.87	1370 -	1380	1375.73	1.90E+01	23.90	6.59E+01	1.17
	31	1408.51	1405 -	1411	1408.37	1.42E+01	12.22	1.56E+01	3.10
M	32	1460.81	1453 -	1469	1460.65	6.94E+02	54.00	1.89E+01	2.58
m	33	1466.53	1453 -	1469	1466.36	1.07E+01	26.61	8.30E+00	3.43
	34	1545.15	1540 -	1549	1544.95	1.06E+01	13.42	1.89E+01	2.81
	35	1660.44	1656 -	1663	1660.21	8.00E+00	8.94	8.00E+00	2.68
	36	1728.71	1725 -	1732	1728.46	1.57E+01	10.39	6.63E+00	5.33
	37	1734.88	1733 -	1737	1734.62	5.36E+00	5.85	3.29E+00	1.10
	38	1764.58	1760 -	1767	1764.32	3.80E+01	12.33	0.00E+00	2.39
	39	1838.29	1834 -	1840	1838.00	8.00E+00	5.66	0.00E+00	2.09
	40	2202.93	2198 -	2207	2202.51	2.28E+01	11.18	4.40E+00	5.81

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	2341.11	2336 -	2344	2340.65	9.15E+00	9.62	7.69E+00	1.17
42	2348.60	2345 -	2350	2348.13	4.58E+00	5.74	2.83E+00	2.72
43	2355.97	2352 -	2358	2355.51	7.00E+00	8.03	6.00E+00	2.34
44	2607.67	2604 -	2610	2607.11	5.14E+00	6.34	3.71E+00	1.26
45	2614.18	2610 -	2617	2613.62	5.62E+01	15.75	3.59E+00	1.65

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 : 8/22/2017 3:14:44PM

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	31.27	29 -	35	8.69E+01	81.32	1.15E+03	6.51E+01
	2	76.74	72 -	81	1.21E+03	151.08	2.55E+03	1.10E+02
	3	93.04	90 -	97	2.95E+02	114.11	1.91E+03	8.95E+01
	4	143.74	140 -	147	7.89E+01	85.35	1.16E+03	6.86E+01
	5	186.18	183 -	191	1.98E+02	85.91	1.02E+03	6.67E+01
	6	209.19	206 -	213	9.50E+01	69.37	7.36E+02	5.47E+01
	7	216.09	214 -	219	4.71E+01	52.86	5.20E+02	4.20E+01
	8	222.15	220 -	225	5.34E+01	51.32	4.81E+02	4.04E+01
M	9	239.11	234 -	247	8.28E+02	79.86	5.76E+02	3.95E+01
m	10	242.40	234 -	247	1.60E+02	69.66	4.87E+02	3.63E+01
	11	270.52	267 -	275	6.95E+01	63.69	5.83E+02	5.05E+01
	12	295.39	292 -	299	2.03E+02	65.60	5.86E+02	4.86E+01
	13	301.04	299 -	304	4.76E+01	45.65	3.71E+02	3.58E+01
	14	328.77	326 -	332	4.03E+01	49.37	4.09E+02	3.92E+01
	15	338.99	335 -	343	1.37E+02	60.95	4.80E+02	4.63E+01
	16	352.35	349 -	357	3.35E+02	63.30	4.02E+02	4.24E+01
	17	463.35	459 -	467	4.94E+01	40.70	2.23E+02	3.14E+01
	18	511.44	505 -	519	1.80E+02	62.12	3.31E+02	4.60E+01
	19	583.76	580 -	589	2.12E+02	51.89	2.61E+02	3.53E+01
	20	609.61	605 -	613	2.77E+02	50.12	2.16E+02	3.08E+01
M	21	728.12	722 -	734	6.07E+01	31.26	1.19E+02	1.80E+01
m	22	731.12	722 -	734	2.38E+01	29.34	9.71E+01	1.62E+01

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	23	769.16	764 -	773	4.93E+01	39.06	1.89E+02	3.00E+01
	24	795.54	791 -	802	3.30E+01	38.42	1.68E+02	3.01E+01
	25	911.22	906 -	914	1.35E+02	38.05	1.40E+02	2.48E+01
	26	968.00	962 -	973	1.40E+02	42.52	1.57E+02	2.91E+01
	27	1120.94	1116 -	1127	8.70E+01	38.73	1.44E+02	2.79E+01
	28	1238.78	1235 -	1243	3.64E+01	30.51	1.19E+02	2.30E+01
	29	1270.12	1267 -	1273	1.94E+01	20.90	6.32E+01	1.56E+01
	30	1375.87	1370 -	1380	1.90E+01	23.90	6.59E+01	1.83E+01
	31	1408.51	1405 -	1411	1.42E+01	12.22	1.56E+01	7.90E+00
M	32	1460.81	1453 -	1469	6.94E+02	54.00	1.89E+01	7.15E+00
m	33	1466.53	1453 -	1469	1.07E+01	26.61	8.30E+00	4.74E+00
	34	1545.15	1540 -	1549	1.06E+01	13.42	1.89E+01	9.65E+00
	35	1660.44	1656 -	1663	8.00E+00	8.94	8.00E+00	5.70E+00
	36	1728.71	1725 -	1732	1.57E+01	10.39	6.63E+00	5.53E+00
	37	1734.88	1733 -	1737	5.36E+00	5.85	3.29E+00	2.94E+00
	38	1764.58	1760 -	1767	3.80E+01	12.33	0.00E+00	0.00E+00
	39	1838.29	1834 -	1840	8.00E+00	5.66	0.00E+00	0.00E+00
	40	2202.93	2198 -	2207	2.28E+01	11.18	4.40E+00	4.78E+00
	41	2341.11	2336 -	2344	9.15E+00	9.62	7.69E+00	6.15E+00
	42	2348.60	2345 -	2350	4.58E+00	5.74	2.83E+00	3.15E+00
	43	2355.97	2352 -	2358	7.00E+00	8.03	6.00E+00	4.97E+00
	44	2607.67	2604 -	2610	5.14E+00	6.34	3.71E+00	3.65E+00
	45	2614.18	2610 -	2617	5.62E+01	15.75	3.59E+00	3.96E+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 : 8/22/2017 3:14:44PM

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	31.27	29 -	35	31.59	8.69E+01	81.32	1.15E+03	.....
2	76.74	72 -	81	77.04	1.21E+03	151.08	2.55E+03	.....

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	3	93.04	90 -	97	93.34	2.95E+02	114.11	1.91E+03	GA-67
	4	143.74	140 -	147	144.02	7.89E+01	85.35	1.16E+03	U-235
	5	186.18	183 -	191	186.45	1.98E+02	85.91	1.02E+03	RA-226
	6	209.19	206 -	213	209.44	9.50E+01	69.37	7.36E+02	GA-67
									CM-243
	7	216.09	214 -	219	216.34	4.71E+01	52.86	5.20E+02	.....
	8	222.15	220 -	225	222.40	5.34E+01	51.32	4.81E+02	.....
M	9	239.11	234 -	247	239.36	8.28E+02	79.86	5.76E+02	PB-212
m	10	242.40	234 -	247	242.64	1.60E+02	69.66	4.87E+02	.....
	11	270.52	267 -	275	270.76	6.95E+01	63.69	5.83E+02	.....
	12	295.39	292 -	299	295.62	2.03E+02	65.60	5.86E+02	PB-214
	13	301.04	299 -	304	301.27	4.76E+01	45.65	3.71E+02	GA-67
									PB-212
	14	328.77	326 -	332	328.98	4.03E+01	49.37	4.09E+02	LA-140
	15	338.99	335 -	343	339.21	1.37E+02	60.95	4.80E+02	AC-228
	16	352.35	349 -	357	352.56	3.35E+02	63.30	4.02E+02	PB-214
	17	463.35	459 -	467	463.53	4.94E+01	40.70	2.23E+02	SB-125
	18	511.44	505 -	519	511.59	1.80E+02	62.12	3.31E+02	.....
	19	583.76	580 -	589	583.89	2.12E+02	51.89	2.61E+02	TL-208
	20	609.61	605 -	613	609.73	2.77E+02	50.12	2.16E+02	BI-214
M	21	728.12	722 -	734	728.20	6.07E+01	31.26	1.19E+02	BI-212
m	22	731.12	722 -	734	731.20	2.38E+01	29.34	9.71E+01	.....
	23	769.16	764 -	773	769.23	4.93E+01	39.06	1.89E+02	.....
	24	795.54	791 -	802	795.59	3.30E+01	38.42	1.68E+02	CS-134
	25	911.22	906 -	914	911.24	1.35E+02	38.05	1.40E+02	AC-228
									TL-204
	26	968.00	962 -	973	968.00	1.40E+02	42.52	1.57E+02	.....
	27	1120.94	1116 -	1127	1120.89	8.70E+01	38.73	1.44E+02	TA-182
									SC-46
									BI-214
	28	1238.78	1235 -	1243	1238.69	3.64E+01	30.51	1.19E+02	CO-56
	29	1270.12	1267 -	1273	1270.02	1.94E+01	20.90	6.32E+01	.....
	30	1375.87	1370 -	1380	1375.73	1.90E+01	23.90	6.59E+01	.....
	31	1408.51	1405 -	1411	1408.37	1.42E+01	12.22	1.56E+01	EU-152
M	32	1460.81	1453 -	1469	1460.65	6.94E+02	54.00	1.89E+01	K-40
m	33	1466.53	1453 -	1469	1466.36	1.07E+01	26.61	8.30E+00	.....
	34	1545.15	1540 -	1549	1544.95	1.06E+01	13.42	1.89E+01	.....
	35	1660.44	1656 -	1663	1660.21	8.00E+00	8.94	8.00E+00	.....
	36	1728.71	1725 -	1732	1728.46	1.57E+01	10.39	6.63E+00	.....
	37	1734.88	1733 -	1737	1734.62	5.36E+00	5.85	3.29E+00	.....
	38	1764.58	1760 -	1767	1764.32	3.80E+01	12.33	0.00E+00	BI-214
	39	1838.29	1834 -	1840	1838.00	8.00E+00	5.66	0.00E+00	.....
	40	2202.93	2198 -	2207	2202.51	2.28E+01	11.18	4.40E+00	.....
	41	2341.11	2336 -	2344	2340.65	9.15E+00	9.62	7.69E+00	.....
	42	2348.60	2345 -	2350	2348.13	4.58E+00	5.74	2.83E+00	.....
	43	2355.97	2352 -	2358	2355.51	7.00E+00	8.03	6.00E+00	.....
	44	2607.67	2604 -	2610	2607.11	5.14E+00	6.34	3.71E+00	.....
	45	2614.18	2610 -	2617	2613.62	5.62E+01	15.75	3.59E+00	TL-208

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

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 : 8/22/2017 3:14:44PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	31.27	8.69E+01	81.32	6.52E-03	1.73E-03
	2	76.74	1.21E+03	151.08	2.67E-02	2.05E-03
	3	93.04	2.95E+02	114.11	2.71E-02	2.24E-03
	4	143.74	7.89E+01	85.35	2.32E-02	1.88E-03
	5	186.18	1.98E+02	85.91	1.96E-02	1.55E-03
	6	209.19	9.50E+01	69.37	1.79E-02	1.46E-03
	7	216.09	4.71E+01	52.86	1.75E-02	1.43E-03
	8	222.15	5.34E+01	51.32	1.71E-02	1.40E-03
M	9	239.11	8.28E+02	79.86	1.61E-02	1.34E-03
m	10	242.40	1.60E+02	69.66	1.59E-02	1.32E-03
	11	270.52	6.95E+01	63.69	1.45E-02	1.21E-03
	12	295.39	2.03E+02	65.60	1.35E-02	1.15E-03
	13	301.04	4.76E+01	45.65	1.32E-02	1.13E-03
	14	328.77	4.03E+01	49.37	1.23E-02	1.08E-03
	15	338.99	1.37E+02	60.95	1.19E-02	1.06E-03
	16	352.35	3.35E+02	63.30	1.15E-02	1.03E-03
	17	463.35	4.94E+01	40.70	9.02E-03	8.57E-04
	18	511.44	1.80E+02	62.12	8.25E-03	7.94E-04
	19	583.76	2.12E+02	51.89	7.32E-03	6.98E-04
	20	609.61	2.77E+02	50.12	7.04E-03	6.64E-04
M	21	728.12	6.07E+01	31.26	6.00E-03	5.36E-04
m	22	731.12	2.38E+01	29.34	5.98E-03	5.33E-04
	23	769.16	4.93E+01	39.06	5.72E-03	5.00E-04
	24	795.54	3.30E+01	38.42	5.55E-03	4.76E-04
	25	911.22	1.35E+02	38.05	4.92E-03	3.84E-04
	26	968.00	1.40E+02	42.52	4.67E-03	3.75E-04
	27	1120.94	8.70E+01	38.73	4.12E-03	3.49E-04
	28	1238.78	3.64E+01	30.51	3.78E-03	3.22E-04
	29	1270.12	1.94E+01	20.90	3.71E-03	3.13E-04
	30	1375.87	1.90E+01	23.90	3.47E-03	2.89E-04
	31	1408.51	1.42E+01	12.22	3.41E-03	2.83E-04
M	32	1460.81	6.94E+02	54.00	3.31E-03	2.75E-04
m	33	1466.53	1.07E+01	26.61	3.30E-03	2.74E-04
	34	1545.15	1.06E+01	13.42	3.17E-03	2.62E-04

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
35	1660.44	8.00E+00	8.94	3.00E-03	2.43E-04
36	1728.71	1.57E+01	10.39	2.91E-03	2.32E-04
37	1734.88	5.36E+00	5.85	2.90E-03	2.31E-04
38	1764.58	3.80E+01	12.33	2.87E-03	2.26E-04
39	1838.29	8.00E+00	5.66	2.78E-03	2.15E-04
40	2202.93	2.28E+01	11.18	2.47E-03	2.15E-04
41	2341.11	9.15E+00	9.62	2.38E-03	2.15E-04
42	2348.60	4.58E+00	5.74	2.37E-03	2.15E-04
43	2355.97	7.00E+00	8.03	2.37E-03	2.15E-04
44	2607.67	5.14E+00	6.34	2.24E-03	2.15E-04
45	2614.18	5.62E+01	15.75	2.24E-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 : 8/22/2017 3:14:44PM

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	31.27	8.69E+01	81.32			8.69E+01	8.13E+01
	2	76.74	1.21E+03	151.08			1.21E+03	1.51E+02
	3	93.04	2.95E+02	114.11	7.98E+01	7.31E+00	2.15E+02	1.14E+02
	4	143.74	7.89E+01	85.35			7.89E+01	8.53E+01
	5	186.18	1.98E+02	85.91	3.06E+01	5.82E+00	1.68E+02	8.61E+01
	6	209.19	9.50E+01	69.37			9.50E+01	6.94E+01
	7	216.09	4.71E+01	52.86			4.71E+01	5.29E+01
	8	222.15	5.34E+01	51.32			5.34E+01	5.13E+01
M	9	239.11	8.28E+02	79.86	1.40E+01	2.71E+00	8.14E+02	7.99E+01
m	10	242.40	1.60E+02	69.66			1.60E+02	6.97E+01
	11	270.52	6.95E+01	63.69			6.95E+01	6.37E+01
	12	295.39	2.03E+02	65.60			2.03E+02	6.56E+01
	13	301.04	4.76E+01	45.65			4.76E+01	4.57E+01
	14	328.77	4.03E+01	49.37			4.03E+01	4.94E+01
	15	338.99	1.37E+02	60.95			1.37E+02	6.10E+01
	16	352.35	3.35E+02	63.30	6.53E+00	4.43E+00	3.29E+02	6.35E+01
	17	463.35	4.94E+01	40.70			4.94E+01	4.07E+01
	18	511.44	1.80E+02	62.12	5.21E+01	4.74E+00	1.28E+02	6.23E+01
	19	583.76	2.12E+02	51.89			2.12E+02	5.19E+01

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	20	609.61	2.77E+02	50.12	3.25E+00	2.97E+00	2.74E+02	5.02E+01
M	21	728.12	6.07E+01	31.26			6.07E+01	3.13E+01
m	22	731.12	2.38E+01	29.34			2.38E+01	2.93E+01
	23	769.16	4.93E+01	39.06			4.93E+01	3.91E+01
	24	795.54	3.30E+01	38.42	0.00E+00	0.00E+00	3.30E+01	3.84E+01
	25	911.22	1.35E+02	38.05	2.85E+00	2.76E+00	1.32E+02	3.81E+01
	26	968.00	1.40E+02	42.52			1.40E+02	4.25E+01
	27	1120.94	8.70E+01	38.73			8.70E+01	3.87E+01
	28	1238.78	3.64E+01	30.51			3.64E+01	3.05E+01
	29	1270.12	1.94E+01	20.90			1.94E+01	2.09E+01
	30	1375.87	1.90E+01	23.90			1.90E+01	2.39E+01
	31	1408.51	1.42E+01	12.22			1.42E+01	1.22E+01
M	32	1460.81	6.94E+02	54.00	1.00E+00	1.77E+00	6.93E+02	5.40E+01
m	33	1466.53	1.07E+01	26.61			1.07E+01	2.66E+01
	34	1545.15	1.06E+01	13.42			1.06E+01	1.34E+01
	35	1660.44	8.00E+00	8.94			8.00E+00	8.94E+00
	36	1728.71	1.57E+01	10.39			1.57E+01	1.04E+01
	37	1734.88	5.36E+00	5.85			5.36E+00	5.85E+00
	38	1764.58	3.80E+01	12.33			3.80E+01	1.23E+01
	39	1838.29	8.00E+00	5.66			8.00E+00	5.66E+00
	40	2202.93	2.28E+01	11.18			2.28E+01	1.12E+01
	41	2341.11	9.15E+00	9.62			9.15E+00	9.62E+00
	42	2348.60	4.58E+00	5.74			4.58E+00	5.74E+00
	43	2355.97	7.00E+00	8.03			7.00E+00	8.03E+00
	44	2607.67	5.14E+00	6.34			5.14E+00	6.34E+00
	45	2614.18	5.62E+01	15.75	1.86E+00	1.12E+00	5.43E+01	1.58E+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 : 8/22/2017 3:14:44PM

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	31.27	8.69E+01	81.32			8.69E+01	8.13E+01
2	76.74	1.21E+03	151.08			1.21E+03	1.51E+02

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	3	93.04	2.95E+02	114.11	7.98E+01	7.31E+00	2.15E+02	1.14E+02
	4	143.74	7.89E+01	85.35			7.89E+01	8.53E+01
	5	186.18	1.98E+02	85.91	3.06E+01	5.82E+00	1.68E+02	8.61E+01
	6	209.19	9.50E+01	69.37			9.50E+01	6.94E+01
	7	216.09	4.71E+01	52.86			4.71E+01	5.29E+01
	8	222.15	5.34E+01	51.32			5.34E+01	5.13E+01
M	9	239.11	8.28E+02	79.86	1.40E+01	2.71E+00	8.14E+02	7.99E+01
m	10	242.40	1.60E+02	69.66			1.60E+02	6.97E+01
	11	270.52	6.95E+01	63.69			6.95E+01	6.37E+01
	12	295.39	2.03E+02	65.60			2.03E+02	6.56E+01
	13	301.04	4.76E+01	45.65			4.76E+01	4.57E+01
	14	328.77	4.03E+01	49.37			4.03E+01	4.94E+01
	15	338.99	1.37E+02	60.95			1.37E+02	6.10E+01
	16	352.35	3.35E+02	63.30	6.53E+00	4.43E+00	3.29E+02	6.35E+01
	17	463.35	4.94E+01	40.70			4.94E+01	4.07E+01
	18	511.44	1.80E+02	62.12	5.21E+01	4.74E+00	1.28E+02	6.23E+01
	19	583.76	2.12E+02	51.89			2.12E+02	5.19E+01
	20	609.61	2.77E+02	50.12	3.25E+00	2.97E+00	2.74E+02	5.02E+01
M	21	728.12	6.07E+01	31.26			6.07E+01	3.13E+01
m	22	731.12	2.38E+01	29.34			2.38E+01	2.93E+01
	23	769.16	4.93E+01	39.06			4.93E+01	3.91E+01
	24	795.54	3.30E+01	38.42	0.00E+00	0.00E+00	3.30E+01	3.84E+01
	25	911.22	1.35E+02	38.05	2.85E+00	2.76E+00	1.32E+02	3.81E+01
	26	968.00	1.40E+02	42.52			1.40E+02	4.25E+01
	27	1120.94	8.70E+01	38.73			8.70E+01	3.87E+01
	28	1238.78	3.64E+01	30.51			3.64E+01	3.05E+01
	29	1270.12	1.94E+01	20.90			1.94E+01	2.09E+01
	30	1375.87	1.90E+01	23.90			1.90E+01	2.39E+01
	31	1408.51	1.42E+01	12.22			1.42E+01	1.22E+01
M	32	1460.81	6.94E+02	54.00	1.00E+00	1.77E+00	6.93E+02	5.40E+01
m	33	1466.53	1.07E+01	26.61			1.07E+01	2.66E+01
	34	1545.15	1.06E+01	13.42			1.06E+01	1.34E+01
	35	1660.44	8.00E+00	8.94			8.00E+00	8.94E+00
	36	1728.71	1.57E+01	10.39			1.57E+01	1.04E+01
	37	1734.88	5.36E+00	5.85			5.36E+00	5.85E+00
	38	1764.58	3.80E+01	12.33			3.80E+01	1.23E+01
	39	1838.29	8.00E+00	5.66			8.00E+00	5.66E+00
	40	2202.93	2.28E+01	11.18			2.28E+01	1.12E+01
	41	2341.11	9.15E+00	9.62			9.15E+00	9.62E+00
	42	2348.60	4.58E+00	5.74			4.58E+00	5.74E+00
	43	2355.97	7.00E+00	8.03			7.00E+00	8.03E+00
	44	2607.67	5.14E+00	6.34			5.14E+00	6.34E+00
	45	2614.18	5.62E+01	15.75	1.86E+00	1.12E+00	5.43E+01	1.58E+01

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

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

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	1.000	1460.81	*	10.67	2.17E+01	2.51E+00
TL-208	0.844	583.14	*	30.22	1.06E+00	2.78E-01
		860.37		4.48		
		2614.66	*	35.85	7.49E-01	2.29E-01
BI-212	0.661	727.17	*	11.80	9.48E-01	4.95E-01
		1620.62		2.75		
PB-212	0.956	238.63	*	44.60	1.25E+00	1.61E-01
		300.09	*	3.41	1.17E+00	1.12E+00
BI-214	0.913	609.31	*	46.30	9.29E-01	1.92E-01
		1120.29	*	15.10	1.55E+00	7.02E-01
		1764.49	*	15.80	9.28E-01	3.10E-01
		2204.22		4.98		
PB-214	0.979	295.21	*	19.19	8.70E-01	2.90E-01
		351.92	*	37.19	8.47E-01	1.80E-01
RA-226	1.000	186.21	*	3.28	2.88E+00	5.49E+00
AC-228	0.564	338.32	*	11.40	1.11E+00	5.05E-01
		911.07	*	27.70	1.07E+00	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 : 8/22/2017 3:14:44PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	31.27	2.41412E-02	46.79		
	2	76.74	3.35191E-01	6.26		
	3	93.04	5.96315E-02	26.63	Tol.	GA-67
	4	143.74	2.19051E-02	54.11	Tol.	U-235
	6	209.19	2.63751E-02	36.53	Tol.	GA-67 CM-243
	7	216.09	1.30800E-02	56.13		
	8	222.15	1.48356E-02	48.05		
m	10	242.40	4.44723E-02	21.76		
	11	270.52	1.93152E-02	45.80		
	14	328.77	1.11922E-02	61.27	Tol.	LA-140
	17	463.35	1.37086E-02	41.24	Tol.	SB-125
	18	511.44	3.56115E-02	24.30		
m	22	731.12	6.61148E-03	61.64		
	23	769.16	1.36979E-02	39.61	Sum	
	24	795.54	9.16667E-03	58.21	Sum	
	26	968.00	3.88124E-02	15.22	Sum	
	28	1238.78	1.01128E-02	41.90		
	29	1270.12	5.38671E-03	53.88		
	30	1375.87	5.28846E-03	62.76		
	31	1408.51	3.94571E-03	43.00	Tol.	EU-152
m	33	1466.53	2.97496E-03	124.22		
	34	1545.15	2.93056E-03	63.58		
	35	1660.44	2.22222E-03	55.90		
	36	1728.71	4.35673E-03	33.13		
	37	1734.88	1.48810E-03	54.62		
	39	1838.29	2.22222E-03	35.36		
	40	2202.93	6.33333E-03	24.52		
	41	2341.11	2.54273E-03	52.53		
	42	2348.60	1.27315E-03	62.67	Sum	
	43	2355.97	1.94444E-03	57.37		
	44	2607.67	1.42857E-03	61.68		

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 1707088-07

HTC-A03-S004-0612-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	1.00	1460.81	*	10.67	2.17E+01	2.51E+00
TL-208	0.84	583.14	*	30.22	1.06E+00	2.78E-01
		860.37		4.48		
		2614.66	*	35.85	7.49E-01	2.29E-01
BI-212	0.66	727.17	*	11.80	9.48E-01	4.95E-01
		1620.62		2.75		
PB-212	0.95	238.63	*	44.60	1.25E+00	1.61E-01
		300.09	*	3.41	1.17E+00	1.12E+00
BI-214	0.91	609.31	*	46.30	9.29E-01	1.92E-01
		1120.29	*	15.10	1.55E+00	7.02E-01
		1764.49	*	15.80	9.28E-01	3.10E-01
		2204.22		4.98		
PB-214	0.97	295.21	*	19.19	8.70E-01	2.90E-01
		351.92	*	37.19	8.47E-01	1.80E-01
RA-226	1.00	186.21	*	3.28	2.88E+00	5.49E+00
AC-228	0.56	338.32	*	11.40	1.11E+00	5.05E-01
		911.07	*	27.70	1.07E+00	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

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	1.000	2.17E+01	2.51E+00	
TL-208	0.844	8.74E-01	1.77E-01	
BI-212	0.661	9.48E-01	4.95E-01	
PB-212	0.956	1.25E+00	1.60E-01	
BI-214	0.913	9.60E-01	1.59E-01	
PB-214	0.979	8.54E-01	1.53E-01	
RA-226	1.000	2.88E+00	5.49E+00	
AC-228	0.564	1.08E+00	2.71E-01	

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

? = 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 1707088-07

HTC-A03-S004-0612-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 3:14:44PM
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	31.27	2.41412E-02	46.79		
	2	76.74	3.35191E-01	6.26		
	3	93.04	5.96315E-02	26.63	Tol.	GA-67
	4	143.74	2.19051E-02	54.11	Tol.	U-235
	6	209.19	2.63751E-02	36.53	Tol.	GA-67
						CM-243
	7	216.09	1.30800E-02	56.13		
	8	222.15	1.48356E-02	48.05		
m	10	242.40	4.44723E-02	21.76		
	11	270.52	1.93152E-02	45.80		
	14	328.77	1.11922E-02	61.27	Tol.	LA-140
	17	463.35	1.37086E-02	41.24	Tol.	SB-125
	18	511.44	3.56115E-02	24.30		
m	22	731.12	6.61148E-03	61.64		
	23	769.16	1.36979E-02	39.61	Sum	
	24	795.54	9.16667E-03	58.21	Sum	
	26	968.00	3.88124E-02	15.22	Sum	
	28	1238.78	1.01128E-02	41.90		
	29	1270.12	5.38671E-03	53.88		
	30	1375.87	5.28846E-03	62.76		
	31	1408.51	3.94571E-03	43.00	Tol.	EU-152
m	33	1466.53	2.97496E-03	124.22		
	34	1545.15	2.93056E-03	63.58		
	35	1660.44	2.22222E-03	55.90		
	36	1728.71	4.35673E-03	33.13		
	37	1734.88	1.48810E-03	54.62		
	39	1838.29	2.22222E-03	35.36		
	40	2202.93	6.33333E-03	24.52		
	41	2341.11	2.54273E-03	52.53		
	42	2348.60	1.27315E-03	62.67	Sum	
	43	2355.97	1.94444E-03	57.37		
	44	2607.67	1.42857E-03	61.68		

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

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	-2.27E-01	2.31E+00	2.31E+00
+	NA-22	1274.54		99.94	7.18E-03	1.01E-01	1.01E-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	-2.17E-02	6.25E-02	6.25E-02
+	K-40	1460.81	*	10.67	2.17E+01	1.12E+00	1.12E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-4.28E-04	6.07E-02	6.07E-02
		78.34		96.00	2.23E-01		7.52E-02
+	SC-46	889.25		99.98	7.67E-02	2.03E-01	2.03E-01
		1120.51		99.99	3.79E-01		3.33E-01
+	V-48	983.52		99.98	4.94E-01	6.72E+00	6.72E+00
		1312.10		97.50	2.99E+00		7.68E+00
+	CR-51	320.08		9.83	-5.36E+00	7.46E+00	7.46E+00
+	MN-54	834.83		99.97	-4.47E-02	9.85E-02	9.85E-02
+	CO-56	846.75		99.96	-5.68E-02	1.76E-01	1.76E-01
		1037.75		14.03	-1.15E-01		1.44E+00
		1238.25		67.00	3.21E-01		4.84E-01
		1771.40		15.51	-9.42E-01		5.65E-01
		2598.48		16.90	1.42E-01		6.59E-01
+	CO-57	122.06		85.51	-4.57E-02	6.17E-02	6.17E-02
		136.48		10.60	-8.52E-02		5.39E-01
+	CO-58	810.76		99.40	5.95E-03	2.32E-01	2.32E-01
+	FE-59	1099.22		56.50	9.17E-02	8.45E-01	8.45E-01
		1291.56		43.20	-1.00E-01		1.12E+00
+	CO-60	1173.22		100.00	1.27E-03	8.65E-02	1.16E-01
		1332.49		100.00	-1.32E-02		8.65E-02
+	ZN-65	1115.52		50.75	-8.89E-02	2.38E-01	2.38E-01
+	GA-67	93.31		35.70	5.40E+08	3.43E+08	3.43E+08
		208.95		2.24	4.85E+09		5.94E+09
		300.22		16.00	-1.62E+09		9.67E+08
+	SE-75	121.11		16.70	-2.60E-01	1.34E-01	4.36E-01

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00	59.20	-1.07E-02	1.34E-01	1.34E-01
		264.65	59.80	-2.99E-02		1.67E-01
		279.53	25.20	1.70E-01		4.39E-01
		400.65	11.40	3.99E-01		1.02E+00
+	RB-82	776.52	13.00	-5.10E+00	8.70E+00	8.70E+00
+	RB-83	520.41	46.00	4.55E-02	3.26E-01	3.26E-01
		529.64	30.30	-3.11E-02		4.78E-01
		552.65	16.40	4.07E-01		9.83E-01
+	KR-85	513.99	0.43	2.84E+01	2.21E+01	2.21E+01
+	SR-85	513.99	99.27	3.59E-01	2.79E-01	2.79E-01
+	Y-88	898.02	93.40	-2.55E-03	1.22E-01	1.68E-01
		1836.01	99.38	0.00E+00		1.22E-01
+	MO-93	263.06	56.72	-1.22E-03	6.74E-02	1.04E-01
		684.67	99.68	-1.42E-02		7.36E-02
		1477.11	99.08	1.38E-02		6.74E-02
+	NB-93M	16.57	9.43	7.52E+00	6.63E+01	6.63E+01
+	NB-94	702.63	100.00	1.71E-02	7.76E-02	8.18E-02
		871.10	100.00	-5.46E-03		7.76E-02
+	NB-95	765.79	99.81	2.05E-01	7.03E-01	7.03E-01
+	NB-95M	235.69	25.00	4.16E+07	1.04E+08	1.04E+08
+	ZR-95	724.18	43.70	-4.81E-01	4.09E-01	6.21E-01
		756.72	55.30	-2.59E-01		4.09E-01
+	MO-99	181.06	6.20	-4.70E+09	7.43E+10	8.66E+10
		739.58	12.80	2.19E+10		7.43E+10
		778.00	4.50	3.52E+10		1.97E+11
+	RU-103	497.08	89.00	-1.61E-01	4.30E-01	4.30E-01
+	RU-106	621.84	9.80	2.69E-02	9.30E-01	9.30E-01
+	AG-108M	433.93	89.90	-2.24E-02	6.99E-02	6.99E-02
		614.37	90.40	-7.61E-03		1.04E-01
		722.95	90.50	1.42E-03		9.34E-02
+	CD-109	88.03	3.72	6.81E-01	1.72E+00	1.72E+00
+	AG-110M	657.75	93.14	1.62E-02	1.09E-01	1.09E-01
		677.61	10.53	5.02E-01		9.79E-01
		706.67	16.46	5.35E-02		6.36E-01
		763.93	21.98	4.90E-02		5.13E-01
		884.67	71.63	5.21E-02		1.58E-01
		1384.27	23.94	-3.54E-03		4.60E-01
+	CD-113M	263.70	0.02	-6.32E+01	2.46E+02	2.46E+02
+	SN-113	255.12	1.93	-2.63E+00	1.83E-01	5.26E+00
		391.69	64.90	7.16E-02		1.83E-01
+	TE123M	159.00	84.10	-4.39E-04	9.64E-02	9.64E-02
+	SB-124	602.71	97.87	2.41E-02	2.24E-01	2.24E-01
		645.85	7.26	3.75E-03		3.20E+00
		722.78	11.10	3.70E-02		2.44E+00
		1691.02	49.00	1.66E-01		4.08E-01
+	I-125	35.49	6.49	2.50E+00	5.78E+00	5.78E+00
+	SB-125	176.33	6.89	-2.18E-01	2.43E-01	6.98E-01
		427.89	29.33	2.45E-02		2.43E-01

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-125	463.38	10.35	4.92E-01	2.43E-01	7.13E-01
		600.56	17.80	1.45E-01		4.37E-01
		635.90	11.32	6.02E-02		6.47E-01
+	SB-126	414.70	83.30	1.16E+01	2.27E+01	2.39E+01
		666.33	99.60	6.02E+00		2.34E+01
		695.00	99.60	9.15E+00		2.27E+01
		720.50	53.80	8.89E+00		4.51E+01
+	SN-126	87.57	37.00	5.89E-02	1.49E-01	1.49E-01
+	SB-127	473.00	25.00	6.57E+05	1.66E+07	2.05E+07
		685.20	35.70	-3.19E+06		1.66E+07
		783.80	14.70	4.39E+06		4.25E+07
+	I-129	29.78	57.00	-2.08E-01	3.58E-01	3.58E-01
		33.60	13.20	-1.51E-01		1.06E+00
		39.58	7.52	-9.34E-02		1.17E+00
+	I-131	284.30	6.05	-4.25E+03	4.49E+02	5.93E+03
		364.48	81.20	1.19E+02		4.49E+02
		636.97	7.26	-1.67E+03		5.70E+03
		722.89	1.80	4.39E+02		2.89E+04
+	TE-132	49.72	13.10	-4.82E+08	1.45E+08	1.08E+09
		228.16	88.00	1.93E+07		1.45E+08
+	BA-133	81.00	33.00	-3.38E-02	1.42E-01	1.63E-01
		302.84	17.80	4.33E-02		3.74E-01
		356.01	60.00	1.56E-02		1.42E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	-1.86E+04	8.99E+04	8.99E+04
+	CS-134	563.23	8.38	3.57E-01	8.79E-02	9.65E-01
		569.32	15.43	-1.47E-02		5.29E-01
		604.70	97.60	8.96E-03		8.79E-02
		795.84	85.40	8.74E-02		1.16E-01
		801.93	8.73	-2.15E-01		8.99E-01
+	CS-135	268.24	16.00	-2.98E-02	3.74E-01	3.74E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	4.43E+01	1.78E+01	1.29E+02
		163.89	4.61	3.71E+01		2.06E+02
		176.55	13.56	-2.14E+01		6.84E+01
		273.65	12.66	-1.70E+01		1.01E+02
		340.57	48.50	4.91E+01		3.40E+01
		818.50	99.70	-1.41E+00		1.78E+01
		1048.07	79.60	-1.08E+01		2.21E+01
		1235.34	19.70	2.64E+01		1.34E+02
+	CS-137	661.65	85.12	-1.56E-02	9.56E-02	9.56E-02
+	LA-138	788.74	34.00	-1.46E-02	1.25E-01	2.20E-01
		1435.80	66.00	4.87E-02		1.25E-01
+	CE-139	165.85	80.35	3.75E-02	9.67E-02	9.67E-02
+	BA-140	162.64	6.70	7.89E+01	6.13E+01	1.66E+02
		304.84	4.50	-2.41E+01		3.19E+02
		423.70	3.20	-1.73E+01		4.91E+02

Analysis Report for 1707088-07

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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	-9.83E+01	6.13E+01	7.72E+02
			537.32	25.00	-3.04E+00		6.13E+01
+		LA-140	328.77	20.50	1.82E+01	2.03E+01	8.01E+01
			487.03	45.50	-5.82E+00		3.31E+01
			815.85	23.50	-2.11E+01		8.47E+01
			1596.49	95.49	-1.36E+00		2.03E+01
+		CE-141	145.44	48.40	4.32E-01	8.31E-01	8.31E-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	-3.56E-02	5.40E-01	5.40E-01
+		PM-144	476.78	42.00	-1.01E-02	9.11E-02	1.89E-01
			618.01	98.60	2.45E-02		9.90E-02
			696.49	99.49	-3.53E-02		9.11E-02
+		PM-145	36.85	21.70	-2.48E-01	2.61E-01	4.83E-01
			37.36	39.70	1.17E-01		2.61E-01
			42.30	15.10	-3.70E-01		5.15E-01
			72.40	2.31	-7.92E+00		2.65E+00
+		PM-146	453.90	39.94	3.47E-02	1.66E-01	1.66E-01
			735.90	14.01	3.63E-02		5.41E-01
			747.13	13.10	-2.68E-01		6.20E-01
+		ND-147	91.11	28.90	-6.35E+01	1.15E+02	1.15E+02
			531.02	13.10	-1.98E+01		2.81E+02
+		PM-149	285.90	3.10	-2.78E+13	1.15E+14	1.15E+14
+		EU-152	121.78	20.50	-1.49E-01	2.01E-01	2.01E-01
			244.69	5.40	-2.83E+00		1.31E+00
			344.27	19.13	1.60E-02		3.36E-01
			778.89	9.20	1.94E-01		8.23E-01
			964.01	10.40	-1.79E+00		1.04E+00
			1085.78	7.22	-1.95E-01		1.32E+00
			1112.02	9.60	2.54E-01		1.07E+00
			1407.95	14.94	2.71E-01		5.40E-01
+		GD-153	97.43	31.30	-4.47E-02	1.86E-01	1.86E-01
			103.18	22.20	-1.30E-01		2.56E-01
+		EU-154	123.07	40.50	-3.74E-02	1.05E-01	1.05E-01
			723.30	19.70	6.65E-03		4.38E-01
			873.19	11.50	2.98E-01		7.34E-01
			996.32	10.30	-9.84E-02		9.26E-01
			1004.76	17.90	2.02E-01		5.49E-01
			1274.45	35.50	1.92E-02		2.70E-01
+		EU-155	86.50	30.90	1.26E-01	1.85E-01	1.85E-01
			105.30	20.70	4.92E-02		2.18E-01
+		EU-156	811.77	10.40	-3.03E+01	7.84E+01	7.84E+01
			1153.47	7.20	-3.77E+01		1.48E+02
			1230.71	8.90	2.28E+01		1.46E+02
+		HO-166M	184.41	72.60	9.79E-02	7.86E-02	7.86E-02
			280.45	29.60	6.80E-02		2.08E-01
			410.94	11.10	-4.43E-02		5.80E-01
			711.69	54.10	1.17E-03		1.45E-01

Analysis Report for 1707088-07

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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	-4.27E+01	4.55E+01	4.55E+01
+	HF-172	67.35		5.31	-8.43E-03	4.34E-01	1.20E+00
		125.81		11.30	-2.19E-01		4.34E-01
+	LU-172	181.53		20.60	5.82E+02	6.06E+03	7.94E+03
		900.72		29.81	-3.20E+02		9.63E+03
		1093.66		62.50	3.42E+03		6.06E+03
+	LU-173	100.72		5.24	3.96E-01	3.44E-01	9.56E-01
		272.11		21.20	2.49E-01		3.44E-01
+	HF-175	343.40		84.00	9.77E-03	2.05E-01	2.05E-01
+	LU-176	88.34		13.30	1.56E-01	5.98E-02	4.25E-01
		201.83		86.00	4.18E-02		5.98E-02
		306.78		94.00	-2.03E-02		6.14E-02
+	HF-181	133.02		41.70	-1.05E-01	4.08E-01	5.82E-01
		345.85		17.20	4.63E-01		1.89E+00
		482.03		82.80	-2.31E-02		4.08E-01
+	TA-182	67.75		41.20	-1.80E-03	2.56E-01	2.56E-01
		1121.30		34.90	8.40E-01		7.69E-01
		1189.05		16.23	2.78E-01		1.25E+00
		1221.41		26.98	-3.26E-01		7.48E-01
		1231.02		11.44	3.23E-01		2.07E+00
+	IR-192	308.46		29.68	2.95E-02	3.25E-01	5.16E-01
		468.07		48.10	-1.18E-02		3.25E-01
+	HG-203	279.19		77.30	2.43E-01	3.64E-01	3.64E-01
+	TL-204	374.74		94.11	3.44E-03	6.95E-02	6.95E-02
		899.15		99.16	2.12E-02		8.69E-02
		911.74		91.10	3.39E-01		1.73E-01
+	BI-207	569.67		97.72	2.52E-03	7.63E-02	7.63E-02
		1063.62		74.90	-6.86E-03		1.12E-01
+	TL-208	583.14	*	30.22	1.06E+00	1.65E-01	3.67E-01
		860.37		4.48	6.72E-01		2.02E+00
		2614.66	*	35.85	7.49E-01		1.65E-01
+	BI-210M	262.00		45.00	4.41E-02	1.31E-01	1.31E-01
		300.00		23.00	-5.10E-01		3.05E-01
+	PB-210	46.50		4.25	1.01E+00	1.72E+00	1.72E+00
+	PB-211	404.84		2.90	-1.33E+00	2.03E+00	2.03E+00
		831.96		2.90	-7.89E-01		2.73E+00
+	BI-212	727.17	*	11.80	9.48E-01	1.12E+00	1.12E+00
		1620.62		2.75	-1.04E+00		2.29E+00
+	PB-212	238.63	*	44.60	1.25E+00	2.61E-01	2.61E-01
		300.09	*	3.41	1.17E+00		1.82E+00
+	BI-214	609.31	*	46.30	9.29E-01	6.61E-02	2.20E-01
		1120.29	*	15.10	1.55E+00		1.04E+00
		1764.49	*	15.80	9.28E-01		6.61E-02
		2204.22		4.98	1.45E+00		2.21E+00
+	PB-214	295.21	*	19.19	8.70E-01	2.28E-01	4.28E-01
		351.92	*	37.19	8.47E-01		2.28E-01
+	RN-219	401.80		6.50	5.84E-01	9.97E-01	9.97E-01
+	RA-223	323.87		3.88	1.91E-01	1.57E+00	1.57E+00

Analysis Report for 1707088-07

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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	1.70E+01	3.01E+00	3.01E+00
+	RA-225	40.00		31.00	-2.53E+00	3.17E+01	3.17E+01
+	RA-226	186.21	*	3.28	2.88E+00	2.37E+00	2.37E+00
+	TH-227	50.10		8.40	-3.32E-01	7.44E-01	7.44E-01
		236.00		11.50	3.28E-01		8.18E-01
		256.20		6.30	-5.15E-01		8.80E-01
+	AC-228	338.32	*	11.40	1.11E+00	4.28E-01	7.75E-01
		911.07	*	27.70	1.07E+00		4.28E-01
		969.11		16.60	1.32E+00		9.07E-01
+	TH-230	48.44		16.90	1.05E-01	4.01E-01	4.01E-01
		62.85		4.60	5.17E-01		1.32E+00
		67.67		0.37	-1.09E-01		1.55E+01
+	PA-231	283.67		1.60	-3.19E+00	2.84E+00	3.66E+00
		302.67		2.30	3.29E-01		2.84E+00
+	TH-231	25.64		14.70	8.82E-01	7.89E-01	2.63E+00
		84.21		6.40	-4.93E-01		7.89E-01
+	PA-233	311.98		38.60	9.75E-01	2.10E+00	2.10E+00
+	PA-234	131.20		20.40	2.38E-01	2.41E-01	2.41E-01
		733.99		8.80	-1.79E-01		8.48E-01
		946.00		12.00	-7.43E-02		7.32E-01
+	PA-234M	1001.03		0.92	3.97E-01	1.09E+01	1.09E+01
+	TH-234	63.29		3.80	9.60E-01	1.60E+00	1.60E+00
+	U-235	143.76		10.50	3.02E-01	4.51E-01	4.51E-01
		163.35		4.70	1.76E-01		9.76E-01
		205.31		4.70	-1.42E-01		1.22E+00
+	NP-237	86.50		12.60	2.98E-01	4.38E-01	4.38E-01
+	NP-239	106.10		22.70	3.75E+11	1.66E+12	1.66E+12
		228.18		10.70	6.14E+11		4.62E+12
		277.60		14.10	1.92E+12		3.79E+12
+	AM-241	59.54		35.90	-7.69E-02	1.61E-01	1.61E-01
+	AM-243	74.67		66.00	1.19E-02	1.10E-01	1.10E-01
+	CM-243	209.75		3.29	1.18E+00	4.43E-01	1.84E+00
		228.14		10.60	7.19E-02		5.41E-01
		277.60		14.00	2.24E-01		4.43E-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 1707088-07

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NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	2.31E+00	2.31E+00	-2.27E-01	1.10E+00
	NA-22	1274.54		99.94	1.01E-01	1.01E-01	7.18E-03	4.62E-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	6.25E-02	6.25E-02	-2.17E-02	2.59E-02
+	K-40	1460.81	*	10.67	1.12E+00	1.12E+00	2.17E+01	5.19E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	6.07E-02	6.07E-02	-4.28E-04	2.97E-02
		78.34		96.00	7.52E-02		2.23E-01	3.70E-02
	SC-46	889.25		99.98	2.03E-01	2.03E-01	7.67E-02	9.45E-02
		1120.51		99.99	3.33E-01		3.79E-01	1.58E-01
	V-48	983.52		99.98	6.72E+00	6.72E+00	4.94E-01	3.10E+00
		1312.10		97.50	7.68E+00		2.99E+00	3.50E+00
	CR-51	320.08		9.83	7.46E+00	7.46E+00	-5.36E+00	3.58E+00
	MN-54	834.83		99.97	9.85E-02	9.85E-02	-4.47E-02	4.57E-02
	CO-56	846.75		99.96	1.76E-01	1.76E-01	-5.68E-02	8.10E-02
		1037.75		14.03	1.44E+00		-1.15E-01	6.59E-01
		1238.25		67.00	4.84E-01		3.21E-01	2.28E-01
		1771.40		15.51	5.65E-01		-9.42E-01	2.00E-01
		2598.48		16.90	6.59E-01		1.42E-01	2.34E-01
	CO-57	122.06		85.51	6.17E-02	6.17E-02	-4.57E-02	2.99E-02
		136.48		10.60	5.39E-01		-8.52E-02	2.62E-01
	CO-58	810.76		99.40	2.32E-01	2.32E-01	5.95E-03	1.08E-01
	FE-59	1099.22		56.50	8.45E-01	8.45E-01	9.17E-02	3.92E-01
		1291.56		43.20	1.12E+00		-1.00E-01	5.14E-01
	CO-60	1173.22		100.00	1.16E-01	8.65E-02	1.27E-03	5.39E-02
		1332.49		100.00	8.65E-02		-1.32E-02	3.89E-02
	ZN-65	1115.52		50.75	2.38E-01	2.38E-01	-8.89E-02	1.10E-01
	GA-67	93.31		35.70	3.43E+08	3.43E+08	5.40E+08	1.68E+08
		208.95		2.24	5.94E+09		4.85E+09	2.89E+09
		300.22		16.00	9.67E+08		-1.62E+09	4.68E+08
	SE-75	121.11		16.70	4.36E-01	1.34E-01	-2.60E-01	2.12E-01
		136.00		59.20	1.34E-01		-1.07E-02	6.52E-02
		264.65		59.80	1.67E-01		-2.99E-02	8.04E-02
		279.53		25.20	4.39E-01		1.70E-01	2.12E-01
		400.65		11.40	1.02E+00		3.99E-01	4.89E-01
	RB-82	776.52		13.00	8.70E+00	8.70E+00	-5.10E+00	4.03E+00
	RB-83	520.41		46.00	3.26E-01	3.26E-01	4.55E-02	1.54E-01
		529.64		30.30	4.78E-01		-3.11E-02	2.25E-01
		552.65		16.40	9.83E-01		4.07E-01	4.65E-01
	KR-85	513.99		0.43	2.21E+01	2.21E+01	2.84E+01	1.06E+01
	SR-85	513.99		99.27	2.79E-01	2.79E-01	3.59E-01	1.34E-01

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
Y-88	898.02	93.40	1.68E-01	1.22E-01	-2.55E-03	7.77E-02
	1836.01	99.38	1.22E-01		0.00E+00	5.08E-02
MO-93	263.06	56.72	1.04E-01	6.74E-02	-1.22E-03	5.00E-02
	684.67	99.68	7.36E-02		-1.42E-02	3.44E-02
	1477.11	99.08	6.74E-02		1.38E-02	2.90E-02
NB-93M	16.57	9.43	6.63E+01	6.63E+01	7.52E+00	3.24E+01
NB-94	702.63	100.00	8.18E-02	7.76E-02	1.71E-02	3.85E-02
	871.10	100.00	7.76E-02		-5.46E-03	3.59E-02
NB-95	765.79	99.81	7.03E-01	7.03E-01	2.05E-01	3.32E-01
NB-95M	235.69	25.00	1.04E+08	1.04E+08	4.16E+07	5.08E+07
ZR-95	724.18	43.70	6.21E-01	4.09E-01	-4.81E-01	2.93E-01
	756.72	55.30	4.09E-01		-2.59E-01	1.90E-01
MO-99	181.06	6.20	8.66E+10	7.43E+10	-4.70E+09	4.19E+10
	739.58	12.80	7.43E+10		2.19E+10	3.48E+10
	778.00	4.50	1.97E+11		3.52E+10	9.17E+10
RU-103	497.08	89.00	4.30E-01	4.30E-01	-1.61E-01	2.03E-01
RU-106	621.84	9.80	9.30E-01	9.30E-01	2.69E-02	4.38E-01
AG-108M	433.93	89.90	6.99E-02	6.99E-02	-2.24E-02	3.32E-02
	614.37	90.40	1.04E-01		-7.61E-03	4.98E-02
	722.95	90.50	9.34E-02		1.42E-03	4.40E-02
CD-109	88.03	3.72	1.72E+00	1.72E+00	6.81E-01	8.44E-01
AG-110M	657.75	93.14	1.09E-01	1.09E-01	1.62E-02	5.13E-02
	677.61	10.53	9.79E-01		5.02E-01	4.60E-01
	706.67	16.46	6.36E-01		5.35E-02	2.98E-01
	763.93	21.98	5.13E-01		4.90E-02	2.41E-01
	884.67	71.63	1.58E-01		5.21E-02	7.35E-02
	1384.27	23.94	4.60E-01		-3.54E-03	2.06E-01
CD-113M	263.70	0.02	2.46E+02	2.46E+02	-6.32E+01	1.19E+02
SN-113	255.12	1.93	5.26E+00	1.83E-01	-2.63E+00	2.54E+00
	391.69	64.90	1.83E-01		7.16E-02	8.76E-02
TE123M	159.00	84.10	9.64E-02	9.64E-02	-4.39E-04	4.68E-02
SB-124	602.71	97.87	2.24E-01	2.24E-01	2.41E-02	1.05E-01
	645.85	7.26	3.20E+00		3.75E-03	1.50E+00
	722.78	11.10	2.44E+00		3.70E-02	1.15E+00
	1691.02	49.00	4.08E-01		1.66E-01	1.71E-01
I-125	35.49	6.49	5.78E+00	5.78E+00	2.50E+00	2.81E+00
SB-125	176.33	6.89	6.98E-01	2.43E-01	-2.18E-01	3.37E-01
	427.89	29.33	2.43E-01		2.45E-02	1.16E-01
	463.38	10.35	7.13E-01		4.92E-01	3.39E-01
	600.56	17.80	4.37E-01		1.45E-01	2.06E-01
	635.90	11.32	6.47E-01		6.02E-02	3.03E-01
SB-126	414.70	83.30	2.39E+01	2.27E+01	1.16E+01	1.14E+01
	666.33	99.60	2.34E+01		6.02E+00	1.10E+01
	695.00	99.60	2.27E+01		9.15E+00	1.06E+01
	720.50	53.80	4.51E+01		8.89E+00	2.12E+01
SN-126	87.57	37.00	1.49E-01	1.49E-01	5.89E-02	7.30E-02
SB-127	473.00	25.00	2.05E+07	1.66E+07	6.57E+05	9.68E+06
	685.20	35.70	1.66E+07		-3.19E+06	7.75E+06
	783.80	14.70	4.25E+07		4.39E+06	1.98E+07
I-129	29.78	57.00	3.58E-01	3.58E-01	-2.08E-01	1.74E-01
	33.60	13.20	1.06E+00		-1.51E-01	5.15E-01
	39.58	7.52	1.17E+00		-9.34E-02	5.68E-01
I-131	284.30	6.05	5.93E+03	4.49E+02	-4.25E+03	2.85E+03

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

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	4.49E+02	4.49E+02	1.19E+02	2.14E+02
	636.97	7.26	5.70E+03		-1.67E+03	2.66E+03
	722.89	1.80	2.89E+04		4.39E+02	1.36E+04
TE-132	49.72	13.10	1.08E+09	1.45E+08	-4.82E+08	5.28E+08
	228.16	88.00	1.45E+08		1.93E+07	7.04E+07
BA-133	81.00	33.00	1.63E-01	1.42E-01	-3.38E-02	7.97E-02
	302.84	17.80	3.74E-01		4.33E-02	1.80E-01
	356.01	60.00	1.42E-01		1.56E-02	6.86E-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	8.99E+04	8.99E+04	-1.86E+04	4.40E+04
CS-134	563.23	8.38	9.65E-01	8.79E-02	3.57E-01	4.57E-01
	569.32	15.43	5.29E-01		-1.47E-02	2.50E-01
	604.70	97.60	8.79E-02		8.96E-03	4.16E-02
	795.84	85.40	1.16E-01		8.74E-02	5.46E-02
	801.93	8.73	8.99E-01		-2.15E-01	4.15E-01
CS-135	268.24	16.00	3.74E-01	3.74E-01	-2.98E-02	1.81E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	1.29E+02	1.78E+01	4.43E+01	6.26E+01
	163.89	4.61	2.06E+02		3.71E+01	9.99E+01
	176.55	13.56	6.84E+01		-2.14E+01	3.31E+01
	273.65	12.66	1.01E+02		-1.70E+01	4.86E+01
	340.57	48.50	3.40E+01		4.91E+01	1.64E+01
	818.50	99.70	1.78E+01		-1.41E+00	8.31E+00
	1048.07	79.60	2.21E+01		-1.08E+01	1.02E+01
	1235.34	19.70	1.34E+02		2.64E+01	6.28E+01
CS-137	661.65	85.12	9.56E-02	9.56E-02	-1.56E-02	4.51E-02
LA-138	788.74	34.00	2.20E-01	1.25E-01	-1.46E-02	1.02E-01
	1435.80	66.00	1.25E-01		4.87E-02	5.57E-02
CE-139	165.85	80.35	9.67E-02	9.67E-02	3.75E-02	4.69E-02
BA-140	162.64	6.70	1.66E+02	6.13E+01	7.89E+01	8.05E+01
	304.84	4.50	3.19E+02		-2.41E+01	1.53E+02
	423.70	3.20	4.91E+02		-1.73E+01	2.34E+02
	437.55	2.00	7.72E+02		-9.83E+01	3.67E+02
	537.32	25.00	6.13E+01		-3.04E+00	2.88E+01
LA-140	328.77	20.50	8.01E+01	2.03E+01	1.82E+01	3.86E+01
	487.03	45.50	3.31E+01		-5.82E+00	1.57E+01
	815.85	23.50	8.47E+01		-2.11E+01	3.95E+01
	1596.49	95.49	2.03E+01		-1.36E+00	8.92E+00
CE-141	145.44	48.40	8.31E-01	8.31E-01	4.32E-01	4.04E-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	5.40E-01	5.40E-01	-3.56E-02	2.63E-01
PM-144	476.78	42.00	1.89E-01	9.11E-02	-1.01E-02	8.95E-02
	618.01	98.60	9.90E-02		2.45E-02	4.69E-02
	696.49	99.49	9.11E-02		-3.53E-02	4.26E-02
PM-145	36.85	21.70	4.83E-01	2.61E-01	-2.48E-01	2.35E-01
	37.36	39.70	2.61E-01		1.17E-01	1.27E-01
	42.30	15.10	5.15E-01		-3.70E-01	2.50E-01
	72.40	2.31	2.65E+00		-7.92E+00	1.30E+00
PM-146	453.90	39.94	1.66E-01	1.66E-01	3.47E-02	7.88E-02

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

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	5.41E-01	1.66E-01	3.63E-02	2.52E-01
	747.13	13.10	6.20E-01		-2.68E-01	2.90E-01
ND-147	91.11	28.90	1.15E+02	1.15E+02	-6.35E+01	5.66E+01
	531.02	13.10	2.81E+02		-1.98E+01	1.32E+02
PM-149	285.90	3.10	1.15E+14	1.15E+14	-2.78E+13	5.55E+13
EU-152	121.78	20.50	2.01E-01	2.01E-01	-1.49E-01	9.77E-02
	244.69	5.40	1.31E+00		-2.83E+00	6.39E-01
	344.27	19.13	3.36E-01		1.60E-02	1.61E-01
	778.89	9.20	8.23E-01		1.94E-01	3.82E-01
	964.01	10.40	1.04E+00		-1.79E+00	4.88E-01
	1085.78	7.22	1.32E+00		-1.95E-01	6.10E-01
	1112.02	9.60	1.07E+00		2.54E-01	4.95E-01
	1407.95	14.94	5.40E-01		2.71E-01	2.40E-01
GD-153	97.43	31.30	1.86E-01	1.86E-01	-4.47E-02	9.06E-02
	103.18	22.20	2.56E-01		-1.30E-01	1.25E-01
EU-154	123.07	40.50	1.05E-01	1.05E-01	-3.74E-02	5.10E-02
	723.30	19.70	4.38E-01		6.65E-03	2.06E-01
	873.19	11.50	7.34E-01		2.98E-01	3.41E-01
	996.32	10.30	9.26E-01		-9.84E-02	4.31E-01
	1004.76	17.90	5.49E-01		2.02E-01	2.56E-01
	1274.45	35.50	2.70E-01		1.92E-02	1.24E-01
EU-155	86.50	30.90	1.85E-01	1.85E-01	1.26E-01	9.09E-02
	105.30	20.70	2.18E-01		4.92E-02	1.06E-01
EU-156	811.77	10.40	7.84E+01	7.84E+01	-3.03E+01	3.65E+01
	1153.47	7.20	1.48E+02		-3.77E+01	6.86E+01
	1230.71	8.90	1.46E+02		2.28E+01	6.84E+01
HO-166M	184.41	72.60	7.86E-02	7.86E-02	9.79E-02	3.82E-02
	280.45	29.60	2.08E-01		6.80E-02	1.00E-01
	410.94	11.10	5.80E-01		-4.43E-02	2.77E-01
	711.69	54.10	1.45E-01		1.17E-03	6.81E-02
TM-171	66.72	0.14	4.55E+01	4.55E+01	-4.27E+01	2.23E+01
HF-172	67.35	5.31	1.20E+00	4.34E-01	-8.43E-03	5.86E-01
	125.81	11.30	4.34E-01		-2.19E-01	2.11E-01
LU-172	181.53	20.60	7.94E+03	6.06E+03	5.82E+02	3.84E+03
	900.72	29.81	9.63E+03		-3.20E+02	4.46E+03
	1093.66	62.50	6.06E+03		3.42E+03	2.83E+03
LU-173	100.72	5.24	9.56E-01	3.44E-01	3.96E-01	4.66E-01
	272.11	21.20	3.44E-01		2.49E-01	1.66E-01
HF-175	343.40	84.00	2.05E-01	2.05E-01	9.77E-03	9.85E-02
LU-176	88.34	13.30	4.25E-01	5.98E-02	1.56E-01	2.08E-01
	201.83	86.00	5.98E-02		4.18E-02	2.89E-02
	306.78	94.00	6.14E-02		-2.03E-02	2.95E-02
HF-181	133.02	41.70	5.82E-01	4.08E-01	-1.05E-01	2.83E-01
	345.85	17.20	1.89E+00		4.63E-01	9.08E-01
	482.03	82.80	4.08E-01		-2.31E-02	1.93E-01
TA-182	67.75	41.20	2.56E-01	2.56E-01	-1.80E-03	1.26E-01
	1121.30	34.90	7.69E-01		8.40E-01	3.65E-01
	1189.05	16.23	1.25E+00		2.78E-01	5.84E-01
	1221.41	26.98	7.48E-01		-3.26E-01	3.47E-01
	1231.02	11.44	2.07E+00		3.23E-01	9.70E-01
IR-192	308.46	29.68	5.16E-01	3.25E-01	2.95E-02	2.48E-01
	468.07	48.10	3.25E-01		-1.18E-02	1.54E-01
HG-203	279.19	77.30	3.64E-01	3.64E-01	2.43E-01	1.76E-01

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

	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	6.95E-02	6.95E-02	3.44E-03	3.32E-02
		899.15		99.16	8.69E-02		2.12E-02	4.03E-02
		911.74		91.10	1.73E-01		3.39E-01	8.28E-02
	BI-207	569.67		97.72	7.63E-02	7.63E-02	2.52E-03	3.61E-02
		1063.62		74.90	1.12E-01		-6.86E-03	5.14E-02
+	TL-208	583.14	*	30.22	3.67E-01	1.65E-01	1.06E+00	1.77E-01
		860.37		4.48	2.02E+00		6.72E-01	9.48E-01
		2614.66	*	35.85	1.65E-01		7.49E-01	6.40E-02
	BI-210M	262.00		45.00	1.31E-01	1.31E-01	4.41E-02	6.33E-02
		300.00		23.00	3.05E-01		-5.10E-01	1.48E-01
	PB-210	46.50		4.25	1.72E+00	1.72E+00	1.01E+00	8.37E-01
	PB-211	404.84		2.90	2.03E+00	2.03E+00	-1.33E+00	9.62E-01
		831.96		2.90	2.73E+00		-7.89E-01	1.27E+00
+	BI-212	727.17	*	11.80	1.12E+00	1.12E+00	9.48E-01	5.39E-01
		1620.62		2.75	2.29E+00		-1.04E+00	9.69E-01
+	PB-212	238.63	*	44.60	2.61E-01	2.61E-01	1.25E+00	1.28E-01
		300.09	*	3.41	1.82E+00		1.17E+00	8.76E-01
+	BI-214	609.31	*	46.30	2.20E-01	6.61E-02	9.29E-01	1.05E-01
		1120.29	*	15.10	1.04E+00		1.55E+00	4.97E-01
		1764.49	*	15.80	6.61E-02		9.28E-01	0.00E+00
		2204.22		4.98	2.21E+00		1.45E+00	9.83E-01
+	PB-214	295.21	*	19.19	4.28E-01	2.28E-01	8.70E-01	2.08E-01
		351.92	*	37.19	2.28E-01		8.47E-01	1.10E-01
	RN-219	401.80		6.50	9.97E-01	9.97E-01	5.84E-01	4.76E-01
	RA-223	323.87		3.88	1.57E+00	1.57E+00	1.91E-01	7.53E-01
	RA-224	240.98		3.95	3.01E+00	3.01E+00	1.70E+01	1.48E+00
	RA-225	40.00		31.00	3.17E+01	3.17E+01	-2.53E+00	1.54E+01
+	RA-226	186.21	*	3.28	2.37E+00	2.37E+00	2.88E+00	1.16E+00
	TH-227	50.10		8.40	7.44E-01	7.44E-01	-3.32E-01	3.63E-01
		236.00		11.50	8.18E-01		3.28E-01	4.01E-01
		256.20		6.30	8.80E-01		-5.15E-01	4.25E-01
+	AC-228	338.32	*	11.40	7.75E-01	4.28E-01	1.11E+00	3.76E-01
		911.07	*	27.70	4.28E-01		1.07E+00	2.03E-01
		969.11		16.60	9.07E-01		1.32E+00	4.34E-01
	TH-230	48.44		16.90	4.01E-01	4.01E-01	1.05E-01	1.96E-01
		62.85		4.60	1.32E+00		5.17E-01	6.47E-01
		67.67		0.37	1.55E+01		-1.09E-01	7.58E+00
	PA-231	283.67		1.60	3.66E+00	2.84E+00	-3.19E+00	1.76E+00
		302.67		2.30	2.84E+00		3.29E-01	1.37E+00
	TH-231	25.64		14.70	2.63E+00	7.89E-01	8.82E-01	1.28E+00
		84.21		6.40	7.89E-01		-4.93E-01	3.86E-01
	PA-233	311.98		38.60	2.10E+00	2.10E+00	9.75E-01	1.01E+00
	PA-234	131.20		20.40	2.41E-01	2.41E-01	2.38E-01	1.17E-01
		733.99		8.80	8.48E-01		-1.79E-01	3.95E-01
		946.00		12.00	7.32E-01		-7.43E-02	3.40E-01
	PA-234M	1001.03		0.92	1.09E+01	1.09E+01	3.97E-01	5.08E+00
	TH-234	63.29		3.80	1.60E+00	1.60E+00	9.60E-01	7.85E-01
	U-235	143.76		10.50	4.51E-01	4.51E-01	3.02E-01	2.20E-01
		163.35		4.70	9.76E-01		1.76E-01	4.73E-01
		205.31		4.70	1.22E+00		-1.42E-01	5.91E-01
	NP-237	86.50		12.60	4.38E-01	4.38E-01	2.98E-01	2.14E-01
	NP-239	106.10		22.70	1.66E+12	1.66E+12	3.75E+11	8.09E+11
		228.18		10.70	4.62E+12		6.14E+11	2.24E+12

Analysis Report for 1707088-07

HTC-A03-S004-0612-01

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	3.79E+12	1.66E+12	1.92E+12	1.83E+12
AM-241	59.54	35.90	1.61E-01	1.61E-01	-7.69E-02	7.90E-02
AM-243	74.67	66.00	1.10E-01	1.10E-01	1.19E-02	5.40E-02
CM-243	209.75	3.29	1.84E+00	4.43E-01	1.18E+00	8.94E-01
	228.14	10.60	5.41E-01		7.19E-02	2.62E-01
	277.60	14.00	4.43E-01		2.24E-01	2.14E-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-A03-S004-0612-01

Elapsed Live time: 3600
Elapsed Real Time: 3608

Channel								
1:	0	0	0	0	0	0	0	0
9:	3	143	158	157	137	130	122	115
17:	101	115	95	93	110	91	110	106
25:	105	92	95	73	74	98	110	95
33:	107	92	85	92	89	94	73	108
41:	80	85	90	95	97	101	143	131
49:	87	101	95	108	96	124	122	94
57:	104	126	137	143	139	114	169	219
65:	149	151	148	162	157	150	157	141
73:	172	172	272	358	373	491	262	137
81:	103	115	117	114	151	137	159	208
89:	158	150	180	138	213	236	129	105
97:	100	93	103	93	101	111	80	79
105:	89	104	106	97	86	87	86	92
113:	92	82	87	96	95	79	83	73
121:	79	72	68	83	88	100	79	84
129:	116	113	108	88	91	82	82	90
137:	73	73	78	75	84	80	81	96
145:	92	84	65	73	75	59	66	81
153:	66	84	89	74	73	78	57	60
161:	77	65	57	74	77	71	56	71
169:	72	56	70	64	66	69	51	74
177:	58	60	52	52	72	58	52	68
185:	84	118	131	76	55	61	61	54
193:	61	58	59	69	49	50	65	72
201:	66	61	58	61	46	50	63	56
209:	52	85	63	50	44	45	58	55
217:	56	47	46	39	64	48	58	54
225:	31	46	56	48	48	35	58	35
233:	64	45	42	62	64	158	418	344
241:	132	120	103	49	49	40	34	42
249:	29	31	36	44	28	31	28	35
257:	39	44	45	49	39	27	44	38
265:	31	32	30	35	38	50	54	53
273:	34	33	34	33	36	40	48	39
281:	40	38	26	34	34	34	28	36
289:	48	34	36	29	37	49	103	140
297:	64	40	34	46	52	39	32	30
305:	24	38	25	24	28	28	33	31
313:	34	27	29	36	16	34	25	33
321:	35	25	18	30	38	28	25	47
329:	54	36	31	24	29	34	30	21
337:	31	67	87	57	30	32	22	23
345:	31	26	30	34	19	30	57	155
353:	151	65	23	21	15	24	23	20
361:	18	29	17	23	24	23	14	21

369:	22	17	20	23	23	17	17	23

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Channel								
377:	24	32	27	24	26	22	29	17
385:	24	26	18	20	22	27	23	23
393:	18	19	27	19	20	21	26	22
401:	23	16	21	25	19	17	11	13
409:	26	19	22	22	21	21	28	26
417:	23	25	20	17	18	13	23	26
425:	15	22	22	21	22	21	19	15
433:	16	22	23	9	19	20	18	19
441:	18	16	22	14	18	22	17	23
449:	18	17	14	15	19	17	19	19
457:	15	11	16	13	13	21	25	27
465:	18	13	15	8	17	18	10	14
473:	13	22	9	17	15	17	18	14
481:	20	17	14	11	13	12	19	17
489:	11	15	13	17	18	16	12	15
497:	14	16	11	16	22	11	23	8
505:	13	15	15	15	19	37	60	47
513:	26	14	22	18	21	13	11	12
521:	14	16	17	15	15	14	16	13
529:	13	11	12	11	12	9	15	5
537:	19	10	12	14	14	12	14	13
545:	18	18	15	12	13	17	14	11
553:	19	13	12	16	11	11	7	16
561:	11	16	15	13	18	16	17	13
569:	17	21	10	11	15	15	11	10
577:	12	15	18	11	12	24	106	76
585:	45	24	14	15	15	9	11	11
593:	6	10	13	15	11	19	10	12
601:	13	11	10	15	8	10	15	35
609:	97	128	62	20	10	15	19	13
617:	10	22	9	12	21	14	14	11
625:	10	12	9	12	13	8	9	13
633:	6	10	12	15	12	7	9	3
641:	14	11	5	13	14	7	14	20
649:	5	9	11	15	6	8	8	13
657:	15	13	10	14	12	16	13	12
665:	17	14	16	9	13	7	13	11
673:	8	8	8	17	15	10	2	12
681:	19	11	7	12	6	10	16	7
689:	7	8	10	13	14	10	11	13
697:	9	11	8	10	14	10	14	15
705:	13	10	14	10	8	9	9	11
713:	17	10	13	12	8	15	13	12
721:	13	11	12	12	16	11	26	32
729:	22	9	18	9	9	6	6	11
737:	6	13	11	7	13	15	9	8
745:	10	11	11	16	4	10	10	16
753:	11	10	13	7	7	11	9	6
761:	12	12	9	11	10	16	10	18
769:	26	10	15	16	12	6	8	7
777:	9	9	8	8	9	8	4	10
785:	10	11	8	8	8	6	8	8
793:	7	12	20	12	16	8	9	6

801:	7	4	10	4	10	13	14	14

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Channel								
809:	8	8	9	8	12	13	5	10
817:	8	5	13	13	12	10	8	16
825:	8	5	11	5	11	12	7	6
833:	7	8	7	16	6	7	11	12
841:	6	9	11	5	6	6	5	9
849:	7	8	7	6	5	14	9	10
857:	6	9	8	17	14	12	7	8
865:	7	6	6	6	5	7	12	7
873:	6	8	10	8	6	7	10	9
881:	7	9	12	5	5	9	12	9
889:	7	5	9	13	10	7	7	6
897:	7	9	12	6	6	8	6	6
905:	9	8	12	5	13	30	54	53
913:	24	6	8	8	8	6	9	9
921:	10	8	9	6	8	7	10	5
929:	8	7	6	11	9	11	12	11
937:	7	6	11	10	9	5	5	14
945:	6	6	8	10	8	8	12	4
953:	5	6	7	4	6	7	8	11
961:	4	6	6	12	20	20	15	31
969:	49	33	13	10	3	13	12	7
977:	10	6	4	13	9	8	8	6
985:	3	5	8	4	6	10	10	10
993:	6	5	5	11	8	15	9	7
1001:	9	13	9	6	10	9	6	9
1009:	5	7	6	10	8	8	4	10
1017:	4	4	7	6	9	3	11	6
1025:	5	7	9	11	12	6	5	7
1033:	7	9	5	6	8	2	6	7
1041:	8	2	8	11	8	6	6	6
1049:	5	6	7	10	6	10	13	7
1057:	13	9	2	7	6	4	5	7
1065:	7	5	7	9	6	10	10	9
1073:	6	5	5	11	5	6	5	7
1081:	10	5	9	3	3	12	8	10
1089:	6	6	11	8	7	12	6	12
1097:	11	8	5	5	8	7	7	6
1105:	9	7	7	8	9	14	11	3
1113:	8	7	5	7	6	9	19	34
1121:	29	14	9	8	13	8	3	9
1129:	8	9	6	6	10	9	9	7
1137:	4	7	3	10	8	9	9	9
1145:	6	8	12	6	11	7	12	10
1153:	5	7	10	7	10	11	9	5
1161:	9	11	9	9	8	6	6	6
1169:	11	9	9	8	14	6	11	7
1177:	6	13	11	0	9	8	6	5
1185:	8	14	13	8	4	9	6	7
1193:	9	7	13	10	6	8	16	12
1201:	9	12	6	8	9	7	12	15
1209:	8	11	8	12	12	7	4	12
1217:	9	8	6	8	7	7	15	6
1225:	8	13	10	13	17	7	7	14

1233:	12	9	6	13	12	12	18	12

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Channel								
1241:	12	7	4	8	9	11	11	12
1249:	7	10	7	10	10	2	7	7
1257:	3	9	5	9	9	2	9	7
1265:	6	7	5	8	10	12	5	5
1273:	6	1	8	8	5	6	3	11
1281:	6	10	7	7	6	6	6	9
1289:	5	4	6	4	7	8	9	5
1297:	7	4	8	4	4	2	3	2
1305:	8	5	3	2	5	2	5	9
1313:	4	4	6	4	4	1	9	7
1321:	8	2	4	8	3	3	4	6
1329:	1	4	5	6	6	2	3	6
1337:	2	7	7	4	2	4	2	2
1345:	2	6	3	7	4	3	2	3
1353:	1	2	3	6	3	5	5	4
1361:	3	7	3	3	5	1	7	2
1369:	3	2	6	1	4	4	7	5
1377:	5	12	4	2	5	3	5	3
1385:	2	2	5	3	5	4	4	3
1393:	2	1	3	1	2	3	6	1
1401:	1	7	0	1	3	2	3	5
1409:	5	4	0	1	3	4	1	2
1417:	2	4	3	2	0	3	2	3
1425:	5	5	3	1	2	1	4	1
1433:	3	3	6	2	5	2	2	1
1441:	2	1	4	6	2	4	2	5
1449:	4	2	2	3	1	4	4	2
1457:	4	14	86	207	250	116	30	2
1465:	1	5	2	1	0	1	2	0
1473:	1	2	1	1	1	1	2	3
1481:	1	2	0	2	3	3	0	0
1489:	3	3	1	0	3	2	0	4
1497:	0	2	0	1	1	5	2	1
1505:	1	1	2	2	3	4	3	2
1513:	1	1	2	0	2	0	1	3
1521:	0	0	3	2	2	1	2	2
1529:	0	1	5	4	1	1	3	1
1537:	1	2	2	1	3	0	2	2
1545:	5	3	3	1	0	1	1	2
1553:	1	3	1	5	2	1	3	1
1561:	1	1	0	1	4	0	2	0
1569:	2	1	1	1	1	2	2	0
1577:	1	2	0	0	1	1	3	3
1585:	3	5	4	3	4	3	2	5
1593:	3	3	0	1	0	2	3	1
1601:	1	3	1	2	1	1	1	1
1609:	1	5	2	1	1	2	1	1
1617:	0	2	0	2	0	2	2	1
1625:	2	3	2	2	2	4	2	1
1633:	2	1	1	0	0	1	2	4
1641:	2	0	1	4	1	3	2	1
1649:	2	2	1	0	2	0	1	0
1657:	0	1	3	2	5	1	0	1

1665:	2	1	1	0	1	4	1	1

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

2097:	0	2	5	1	1	5	4	1

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

2529:	0	0	0	1	0	0	0	0

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Channel								
2537:	0	0	0	0	0	0	0	0
2545:	0	1	0	0	0	0	0	0
2553:	0	0	0	0	0	0	1	0
2561:	1	0	1	1	0	1	0	0
2569:	0	0	0	0	0	0	0	1
2577:	1	0	0	0	0	0	0	0
2585:	1	0	1	0	0	0	0	0
2593:	0	0	0	1	0	0	0	0
2601:	1	0	0	0	0	1	4	1
2609:	1	0	1	8	24	11	9	5
2617:	0	0	0	0	0	0	1	0
2625:	0	0	0	1	0	0	0	1
2633:	1	0	0	0	0	0	0	0
2641:	0	0	1	0	0	0	1	0
2649:	0	0	0	0	0	0	0	1
2657:	0	1	0	0	0	0	0	1
2665:	1	0	1	0	0	0	0	0
2673:	0	0	0	0	0	0	0	1
2681:	0	0	0	1	1	1	1	0
2689:	0	0	1	0	1	1	0	0
2697:	0	0	0	0	1	0	0	0
2705:	1	0	0	1	0	1	0	0
2713:	0	1	0	0	0	1	1	0
2721:	1	0	0	0	1	0	0	0
2729:	1	0	0	0	1	0	0	0
2737:	0	1	1	0	1	0	0	0
2745:	0	0	0	0	0	1	0	0
2753:	0	0	0	0	0	0	0	0
2761:	0	0	0	0	0	1	0	0
2769:	1	0	0	0	1	0	1	0
2777:	0	0	1	0	1	0	0	0
2785:	0	0	0	0	0	1	0	1
2793:	0	0	0	0	0	1	0	0
2801:	0	0	0	0	1	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	0	0	0	0	0	0	0	0
2833:	1	0	0	0	1	0	0	1
2841:	0	1	0	0	1	0	0	0
2849:	0	1	0	0	1	0	0	0
2857:	0	0	0	0	0	0	1	0
2865:	0	0	0	0	0	0	1	0
2873:	0	0	0	1	0	2	1	0
2881:	0	0	0	0	1	0	0	0
2889:	0	1	0	0	0	0	0	0
2897:	0	0	1	1	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	0	0	0	0	1
2921:	0	0	0	0	0	1	0	1
2929:	0	0	0	0	0	0	1	0
2937:	0	0	1	0	0	1	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	0	0	1

2961:	0	0	0	0	0	0	0	1

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

3393:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-0612-01

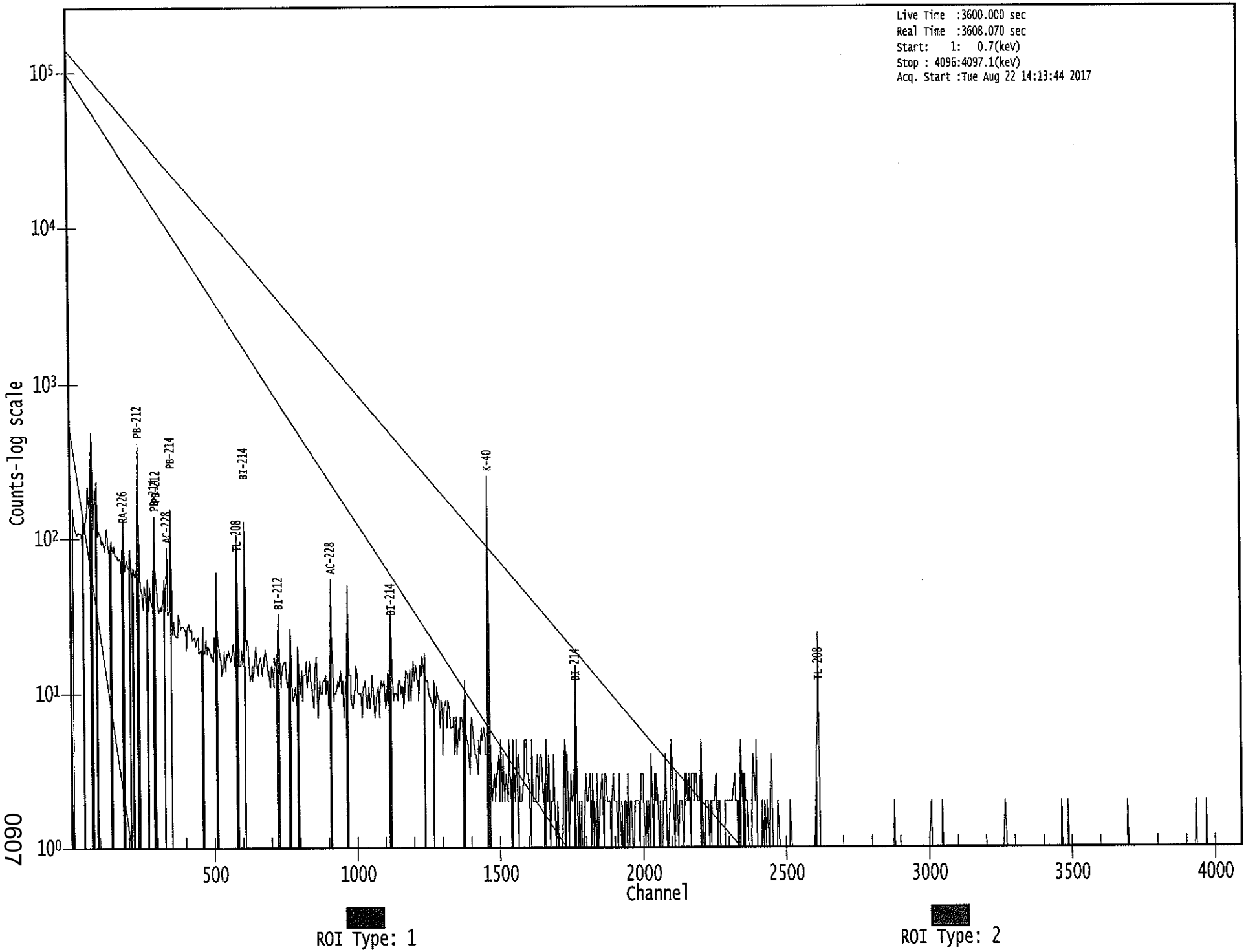
Channel								
3401:	0	0	0	0	0	0	1	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	1	0	0	0	0	0	0	1
3433:	0	0	0	0	1	1	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	1	0
3457:	0	0	0	0	0	1	0	2
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	1	0	0	0
3481:	0	0	0	0	2	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	1	1	0	0	1	0	0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

3825:	0	1	0	0	0	0	0	0

Sample Title: HTC-A03-S004-0612-01

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

0000055730.CNF



0607

Apex-Gamma

Analysis Report for 1707088-08
HTC-A03-S004-1218-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-08
Sample Description	: HTC-A03-S004-1218-01
Sample Type	: SOIL
Sample Size	: 5.895E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2017 9:32:21AM
Acquisition Started	: 8/22/2017 4:26:13PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.4 seconds
Dead Time	: 0.04 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 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	: 55750

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 5:26:21PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	74.72	75.31	0.0000	0.00
2	77.17	77.76	0.0000	0.00
3	87.29	87.87	0.0000	0.00
4	92.48	93.06	0.0000	0.00
5	129.84	130.38	0.0000	0.00
6	185.56	186.04	0.0000	0.00
7	209.70	210.15	0.0000	0.00
8	238.64	239.07	0.0000	0.00
9	241.82	242.24	0.0000	0.00
10	270.56	270.95	0.0000	0.00
11	277.19	277.58	0.0000	0.00
12	295.02	295.39	0.0000	0.00
13	338.69	339.01	0.0000	0.00
14	351.92	352.23	0.0000	0.00
15	410.30	410.56	0.0000	0.00
16	463.06	463.26	0.0000	0.00
17	510.71	510.86	0.0000	0.00
18	562.75	562.85	0.0000	0.00
19	583.32	583.40	0.0000	0.00
20	609.43	609.48	0.0000	0.00
21	726.97	726.90	0.0000	0.00
22	768.40	768.30	0.0000	0.00
23	784.26	784.14	0.0000	0.00
24	796.39	796.25	0.0000	0.00
25	860.84	860.64	0.0000	0.00
26	908.05	907.80	0.0000	0.00
27	911.42	911.17	0.0000	0.00
28	936.98	936.70	0.0000	0.00
29	949.43	949.14	0.0000	0.00
30	965.73	965.42	0.0000	0.00
31	969.26	968.96	0.0000	0.00
32	1026.62	1026.25	0.0000	0.00
33	1120.96	1120.50	0.0000	0.00
34	1238.66	1238.09	0.0000	0.00
35	1378.26	1377.54	0.0000	0.00
36	1461.26	1460.46	0.0000	0.00
37	1488.49	1487.67	0.0000	0.00
38	1527.99	1527.13	0.0000	0.00
39	1536.72	1535.85	0.0000	0.00
40	1578.64	1577.73	0.0000	0.00
41	1588.83	1587.91	0.0000	0.00
42	1630.49	1629.53	0.0000	0.00

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1730.00	1728.94	0.0000	0.00
44	1737.86	1736.80	0.0000	0.00
45	1764.59	1763.50	0.0000	0.00
46	1838.08	1836.92	0.0000	0.00
47	1848.49	1847.32	0.0000	0.00
48	1897.07	1895.84	0.0000	0.00
49	1929.87	1928.62	0.0000	0.00
50	2105.40	2103.98	0.0000	0.00
51	2204.89	2203.38	0.0000	0.00
52	2233.18	2231.64	0.0000	0.00
53	2308.41	2306.80	0.0000	0.00
54	2510.06	2508.25	0.0000	0.00
55	2614.70	2612.79	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 5:26:21PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M	1	74.72	73 -	83	75.31	3.64E+02	93.41	1.52E+03	1.81
m	2	77.17	73 -	83	77.76	6.80E+02	101.12	1.41E+03	1.82
m	3	87.29	83 -	98	87.87	3.24E+02	118.68	1.90E+03	3.08
m	4	92.48	83 -	98	93.06	5.70E+02	140.59	2.28E+03	3.58
	5	129.84	126 -	135	130.38	1.47E+02	105.28	1.50E+03	2.42
	6	185.56	182 -	190	186.04	2.12E+02	84.80	9.74E+02	2.25
	7	209.70	207 -	213	210.15	8.85E+01	66.34	7.25E+02	1.60
M	8	238.64	233 -	249	239.07	9.66E+02	74.83	4.31E+02	1.78
m	9	241.82	233 -	249	242.24	2.64E+02	85.45	5.33E+02	2.43
	10	270.56	268 -	274	270.95	8.61E+01	54.90	4.90E+02	1.84
	11	277.19	275 -	281	277.58	4.34E+01	53.96	4.93E+02	1.32
	12	295.02	291 -	298	295.39	2.68E+02	65.30	5.32E+02	1.99
	13	338.69	334 -	344	339.01	2.46E+02	70.53	5.27E+02	2.09
	14	351.92	348 -	355	352.23	4.15E+02	62.96	3.83E+02	1.54
	15	410.30	409 -	413	410.56	2.66E+01	29.65	1.71E+02	1.39
	16	463.06	460 -	467	463.26	6.58E+01	42.76	2.62E+02	1.62
	17	510.71	505 -	516	510.86	2.44E+02	60.93	3.43E+02	2.19
	18	562.75	561 -	565	562.85	2.44E+01	25.06	1.15E+02	2.44
	19	583.32	577 -	591	583.40	3.32E+02	73.80	4.29E+02	2.00
	20	609.43	604 -	612	609.48	3.46E+02	57.13	2.92E+02	2.00
	21	726.97	723 -	732	726.90	7.90E+01	38.54	1.72E+02	2.06
	22	768.40	765 -	770	768.30	3.75E+01	27.75	1.21E+02	1.70
	23	784.26	780 -	788	784.14	4.99E+01	35.05	1.60E+02	4.95
	24	796.39	793 -	800	796.25	3.50E+01	32.74	1.54E+02	1.14
	25	860.84	856 -	864	860.64	4.86E+01	34.42	1.51E+02	1.74
M	26	908.05	905 -	915	907.80	2.46E+01	36.12	1.03E+02	2.20
m	27	911.42	905 -	915	911.17	2.24E+02	37.76	1.03E+02	2.02
	28	936.98	929 -	945	936.70	4.80E+01	51.02	2.30E+02	10.87
	29	949.43	946 -	953	949.14	2.60E+01	27.86	1.12E+02	2.89
M	30	965.73	962 -	977	965.42	4.95E+01	29.58	1.11E+02	2.44
m	31	969.26	962 -	977	968.96	1.05E+02	32.24	9.79E+01	2.29
	32	1026.62	1022 -	1029	1026.25	2.60E+01	23.49	7.20E+01	2.86
	33	1120.96	1115 -	1125	1120.50	7.82E+01	40.87	1.80E+02	1.99
	34	1238.66	1233 -	1242	1238.09	4.06E+01	42.27	2.25E+02	1.72
	35	1378.26	1374 -	1381	1377.54	2.40E+01	18.33	4.00E+01	1.55
	36	1461.26	1454 -	1466	1460.46	1.13E+03	70.71	5.86E+01	2.27
	37	1488.49	1485 -	1490	1487.67	1.17E+01	11.75	1.87E+01	1.61
	38	1527.99	1524 -	1529	1527.13	8.00E+00	5.66	0.00E+00	2.60
	39	1536.72	1532 -	1539	1535.85	1.42E+01	10.20	7.67E+00	2.24
	40	1578.64	1572 -	1582	1577.73	1.64E+01	10.31	5.16E+00	3.23

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1588.83	1583 -	1594	1587.91	2.41E+01	19.70	3.78E+01	6.28
42	1630.49	1625 -	1634	1629.53	1.50E+01	14.14	2.00E+01	2.72
43	1730.00	1724 -	1733	1728.94	2.26E+01	13.96	1.48E+01	2.11
44	1737.86	1734 -	1739	1736.80	6.69E+00	6.40	2.63E+00	2.89
45	1764.59	1759 -	1770	1763.50	8.18E+01	20.69	1.45E+01	2.69
46	1838.08	1834 -	1839	1836.92	5.00E+00	7.07	6.00E+00	1.96
47	1848.49	1843 -	1850	1847.32	1.13E+01	11.83	1.54E+01	3.75
48	1897.07	1892 -	1899	1895.84	1.34E+01	10.00	7.18E+00	3.53
49	1929.87	1927 -	1930	1928.62	5.43E+00	6.00	3.14E+00	1.59
50	2105.40	2098 -	2110	2103.98	2.25E+01	14.02	1.11E+01	4.44
51	2204.89	2200 -	2206	2203.38	1.65E+01	10.22	7.10E+00	3.20
52	2233.18	2228 -	2234	2231.64	7.33E+00	6.95	3.33E+00	2.57
53	2308.41	2305 -	2311	2306.80	5.40E+00	8.03	9.20E+00	2.23
54	2510.06	2505 -	2511	2508.25	8.00E+00	5.66	0.00E+00	2.22
55	2614.70	2609 -	2618	2612.79	1.14E+02	24.41	2.00E+01	2.13

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 : 8/22/2017 5:26:21PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	1	74.72	73 -	83	3.64E+02	93.41	1.52E+03	6.40E+01
m	2	77.17	73 -	83	6.80E+02	101.12	1.41E+03	6.18E+01
m	3	87.29	83 -	98	3.24E+02	118.68	1.90E+03	7.16E+01
m	4	92.48	83 -	98	5.70E+02	140.59	2.28E+03	7.85E+01
	5	129.84	126 -	135	1.47E+02	105.28	1.50E+03	8.42E+01
	6	185.56	182 -	190	2.12E+02	84.80	9.74E+02	6.55E+01
	7	209.70	207 -	213	8.85E+01	66.34	7.25E+02	5.23E+01
M	8	238.64	233 -	249	9.66E+02	74.83	4.31E+02	3.41E+01
m	9	241.82	233 -	249	2.64E+02	85.45	5.33E+02	3.80E+01
	10	270.56	268 -	274	8.61E+01	54.90	4.90E+02	4.25E+01
	11	277.19	275 -	281	4.34E+01	53.96	4.93E+02	4.30E+01
	12	295.02	291 -	298	2.68E+02	65.30	5.32E+02	4.64E+01
	13	338.69	334 -	344	2.46E+02	70.53	5.27E+02	5.19E+01

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	14	351.92	348 -	355	4.15E+02	62.96	3.83E+02	3.94E+01
	15	410.30	409 -	413	2.66E+01	29.65	1.71E+02	2.29E+01
	16	463.06	460 -	467	6.58E+01	42.76	2.62E+02	3.25E+01
	17	510.71	505 -	516	2.44E+02	60.93	3.43E+02	4.30E+01
	18	562.75	561 -	565	2.44E+01	25.06	1.15E+02	1.89E+01
	19	583.32	577 -	591	3.32E+02	73.80	4.29E+02	2.06E+01
	20	609.43	604 -	612	3.46E+02	57.13	2.92E+02	3.56E+01
	21	726.97	723 -	732	7.90E+01	38.54	1.72E+02	2.81E+01
	22	768.40	765 -	770	3.75E+01	27.75	1.21E+02	2.05E+01
	23	784.26	780 -	788	4.99E+01	35.05	1.60E+02	2.64E+01
	24	796.39	793 -	800	3.50E+01	32.74	1.54E+02	2.51E+01
	25	860.84	856 -	864	4.86E+01	34.42	1.51E+02	2.59E+01
M	26	908.05	905 -	915	2.46E+01	36.12	1.03E+02	1.67E+01
m	27	911.42	905 -	915	2.24E+02	37.76	1.03E+02	1.67E+01
	28	936.98	929 -	945	4.80E+01	51.02	2.30E+02	4.04E+01
	29	949.43	946 -	953	2.60E+01	27.86	1.12E+02	2.13E+01
M	30	965.73	962 -	977	4.95E+01	29.58	1.11E+02	1.73E+01
m	31	969.26	962 -	977	1.05E+02	32.24	9.79E+01	1.63E+01
	32	1026.62	1022 -	1029	2.60E+01	23.49	7.20E+01	1.74E+01
	33	1120.96	1115 -	1125	7.82E+01	40.87	1.80E+02	3.03E+01
	34	1238.66	1233 -	1242	4.06E+01	42.27	2.25E+02	3.31E+01
	35	1378.26	1374 -	1381	2.40E+01	18.33	4.00E+01	1.27E+01
	36	1461.26	1454 -	1466	1.13E+03	70.71	5.86E+01	1.83E+01
	37	1488.49	1485 -	1490	1.17E+01	11.75	1.87E+01	7.86E+00
	38	1527.99	1524 -	1529	8.00E+00	5.66	0.00E+00	0.00E+00
	39	1536.72	1532 -	1539	1.42E+01	10.20	7.67E+00	5.66E+00
	40	1578.64	1572 -	1582	1.64E+01	10.31	5.16E+00	5.24E+00
	41	1588.83	1583 -	1594	2.41E+01	19.70	3.78E+01	7.91E+00
	42	1630.49	1625 -	1634	1.50E+01	14.14	2.00E+01	9.73E+00
	43	1730.00	1724 -	1733	2.26E+01	13.96	1.48E+01	8.40E+00
	44	1737.86	1734 -	1739	6.69E+00	6.40	2.63E+00	3.10E+00
	45	1764.59	1759 -	1770	8.18E+01	20.69	1.45E+01	8.26E+00
	46	1838.08	1834 -	1839	5.00E+00	7.07	6.00E+00	4.50E+00
	47	1848.49	1843 -	1850	1.13E+01	11.83	1.54E+01	8.00E+00
	48	1897.07	1892 -	1899	1.34E+01	10.00	7.18E+00	5.60E+00
	49	1929.87	1927 -	1930	5.43E+00	6.00	3.14E+00	3.11E+00
	50	2105.40	2098 -	2110	2.25E+01	14.02	1.11E+01	8.49E+00
	51	2204.89	2200 -	2206	1.65E+01	10.22	7.10E+00	5.11E+00
	52	2233.18	2228 -	2234	7.33E+00	6.95	3.33E+00	3.58E+00
	53	2308.41	2305 -	2311	5.40E+00	8.03	9.20E+00	5.38E+00
	54	2510.06	2505 -	2511	8.00E+00	5.66	0.00E+00	0.00E+00
	55	2614.70	2609 -	2618	1.14E+02	24.41	2.00E+01	9.73E+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 1707088-08

HTC-A03-S004-1218-01

PEAK WITH NID REPORT

Peak Analysis Performed on : 8/22/2017 5:26:21PM

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	74.72	73 -	83	75.31	3.64E+02	93.41	1.52E+03	AM-243
m	2	77.17	73 -	83	77.76	6.80E+02	101.12	1.41E+03	.....
m	3	87.29	83 -	98	87.87	3.24E+02	118.68	1.90E+03	SN-126
									CD-109
									NP-237
									EU-155
m	4	92.48	83 -	98	93.06	5.70E+02	140.59	2.28E+03	GA-67
	5	129.84	126 -	135	130.38	1.47E+02	105.28	1.50E+03	.....
	6	185.56	182 -	190	186.04	2.12E+02	84.80	9.74E+02	RA-226
	7	209.70	207 -	213	210.15	8.85E+01	66.34	7.25E+02	CM-243
									GA-67
M	8	238.64	233 -	249	239.07	9.66E+02	74.83	4.31E+02	PB-212
m	9	241.82	233 -	249	242.24	2.64E+02	85.45	5.33E+02	RA-224
	10	270.56	268 -	274	270.95	8.61E+01	54.90	4.90E+02	.....
	11	277.19	275 -	281	277.58	4.34E+01	53.96	4.93E+02	CM-243
									NP-239
	12	295.02	291 -	298	295.39	2.68E+02	65.30	5.32E+02	PB-214
	13	338.69	334 -	344	339.01	2.46E+02	70.53	5.27E+02	AC-228
	14	351.92	348 -	355	352.23	4.15E+02	62.96	3.83E+02	PB-214
	15	410.30	409 -	413	410.56	2.66E+01	29.65	1.71E+02	HO-166M
	16	463.06	460 -	467	463.26	6.58E+01	42.76	2.62E+02	SB-125
	17	510.71	505 -	516	510.86	2.44E+02	60.93	3.43E+02	.....
	18	562.75	561 -	565	562.85	2.44E+01	25.06	1.15E+02	CS-134
	19	583.32	577 -	591	583.40	3.32E+02	73.80	4.29E+02	TL-208
	20	609.43	604 -	612	609.48	3.46E+02	57.13	2.92E+02	BI-214
	21	726.97	723 -	732	726.90	7.90E+01	38.54	1.72E+02	BI-212
	22	768.40	765 -	770	768.30	3.75E+01	27.75	1.21E+02	.....
	23	784.26	780 -	788	784.14	4.99E+01	35.05	1.60E+02	SB-127
	24	796.39	793 -	800	796.25	3.50E+01	32.74	1.54E+02	CS-134
	25	860.84	856 -	864	860.64	4.86E+01	34.42	1.51E+02	TL-208
M	26	908.05	905 -	915	907.80	2.46E+01	36.12	1.03E+02	.....
m	27	911.42	905 -	915	911.17	2.24E+02	37.76	1.03E+02	TL-204
									AC-228
	28	936.98	929 -	945	936.70	4.80E+01	51.02	2.30E+02	.....
	29	949.43	946 -	953	949.14	2.60E+01	27.86	1.12E+02	.....
M	30	965.73	962 -	977	965.42	4.95E+01	29.58	1.11E+02	.....
m	31	969.26	962 -	977	968.96	1.05E+02	32.24	9.79E+01	AC-228
	32	1026.62	1022 -	1029	1026.25	2.60E+01	23.49	7.20E+01	.....

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
33	1120.96	1115 -	1125	1120.50	7.82E+01	40.87	1.80E+02	TA-182 SC-46 BI-214
34	1238.66	1233 -	1242	1238.09	4.06E+01	42.27	2.25E+02	CO-56
35	1378.26	1374 -	1381	1377.54	2.40E+01	18.33	4.00E+01	.....
36	1461.26	1454 -	1466	1460.46	1.13E+03	70.71	5.86E+01	K-40
37	1488.49	1485 -	1490	1487.67	1.17E+01	11.75	1.87E+01	.....
38	1527.99	1524 -	1529	1527.13	8.00E+00	5.66	0.00E+00	.....
39	1536.72	1532 -	1539	1535.85	1.42E+01	10.20	7.67E+00	.....
40	1578.64	1572 -	1582	1577.73	1.64E+01	10.31	5.16E+00	.....
41	1588.83	1583 -	1594	1587.91	2.41E+01	19.70	3.78E+01	.....
42	1630.49	1625 -	1634	1629.53	1.50E+01	14.14	2.00E+01	.....
43	1730.00	1724 -	1733	1728.94	2.26E+01	13.96	1.48E+01	.....
44	1737.86	1734 -	1739	1736.80	6.69E+00	6.40	2.63E+00	.....
45	1764.59	1759 -	1770	1763.50	8.18E+01	20.69	1.45E+01	BI-214
46	1838.08	1834 -	1839	1836.92	5.00E+00	7.07	6.00E+00	.....
47	1848.49	1843 -	1850	1847.32	1.13E+01	11.83	1.54E+01	.....
48	1897.07	1892 -	1899	1895.84	1.34E+01	10.00	7.18E+00	.....
49	1929.87	1927 -	1930	1928.62	5.43E+00	6.00	3.14E+00	.....
50	2105.40	2098 -	2110	2103.98	2.25E+01	14.02	1.11E+01	.....
51	2204.89	2200 -	2206	2203.38	1.65E+01	10.22	7.10E+00	BI-214
52	2233.18	2228 -	2234	2231.64	7.33E+00	6.95	3.33E+00	.....
53	2308.41	2305 -	2311	2306.80	5.40E+00	8.03	9.20E+00	.....
54	2510.06	2505 -	2511	2508.25	8.00E+00	5.66	0.00E+00	.....
55	2614.70	2609 -	2618	2612.79	1.14E+02	24.41	2.00E+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 : 8/22/2017 5:26:21PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	74.72	3.64E+02	93.41	2.75E-02	2.38E-03
m	2	77.17	6.80E+02	101.12	2.75E-02	2.40E-03
m	3	87.29	3.24E+02	118.68	2.74E-02	2.51E-03
m	4	92.48	5.70E+02	140.59	2.73E-02	2.45E-03
	5	129.84	1.47E+02	105.28	2.53E-02	1.93E-03

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	6	185.56	2.12E+02	84.80	2.17E-02	1.68E-03
	7	209.70	8.85E+01	66.34	2.04E-02	1.61E-03
M	8	238.64	9.66E+02	74.83	1.89E-02	1.53E-03
m	9	241.82	2.64E+02	85.45	1.87E-02	1.52E-03
	10	270.56	8.61E+01	54.90	1.74E-02	1.43E-03
	11	277.19	4.34E+01	53.96	1.71E-02	1.41E-03
	12	295.02	2.68E+02	65.30	1.64E-02	1.37E-03
	13	338.69	2.46E+02	70.53	1.49E-02	1.27E-03
	14	351.92	4.15E+02	62.96	1.45E-02	1.24E-03
	15	410.30	2.66E+01	29.65	1.30E-02	1.13E-03
	16	463.06	6.58E+01	42.76	1.19E-02	1.10E-03
	17	510.71	2.44E+02	60.93	1.10E-02	1.07E-03
	18	562.75	2.44E+01	25.06	1.02E-02	1.04E-03
	19	583.32	3.32E+02	73.80	9.96E-03	1.02E-03
	20	609.43	3.46E+02	57.13	9.63E-03	1.01E-03
	21	726.97	7.90E+01	38.54	8.41E-03	8.68E-04
	22	768.40	3.75E+01	27.75	8.06E-03	8.02E-04
	23	784.26	4.99E+01	35.05	7.94E-03	7.77E-04
	24	796.39	3.50E+01	32.74	7.85E-03	7.58E-04
	25	860.84	4.86E+01	34.42	7.40E-03	6.56E-04
M	26	908.05	2.46E+01	36.12	7.10E-03	5.93E-04
m	27	911.42	2.24E+02	37.76	7.08E-03	5.91E-04
	28	936.98	4.80E+01	51.02	6.94E-03	5.82E-04
	29	949.43	2.60E+01	27.86	6.87E-03	5.77E-04
M	30	965.73	4.95E+01	29.58	6.78E-03	5.71E-04
m	31	969.26	1.05E+02	32.24	6.76E-03	5.69E-04
	32	1026.62	2.60E+01	23.49	6.48E-03	5.47E-04
	33	1120.96	7.82E+01	40.87	6.07E-03	5.11E-04
	34	1238.66	4.06E+01	42.27	5.64E-03	4.76E-04
	35	1378.26	2.40E+01	18.33	5.22E-03	4.44E-04
	36	1461.26	1.13E+03	70.71	5.01E-03	4.25E-04
	37	1488.49	1.17E+01	11.75	4.94E-03	4.18E-04
	38	1527.99	8.00E+00	5.66	4.85E-03	4.09E-04
	39	1536.72	1.42E+01	10.20	4.83E-03	4.07E-04
	40	1578.64	1.64E+01	10.31	4.74E-03	3.97E-04
	41	1588.83	2.41E+01	19.70	4.71E-03	3.95E-04
	42	1630.49	1.50E+01	14.14	4.63E-03	3.85E-04
	43	1730.00	2.26E+01	13.96	4.44E-03	3.62E-04
	44	1737.86	6.69E+00	6.40	4.42E-03	3.61E-04
	45	1764.59	8.18E+01	20.69	4.37E-03	3.54E-04
	46	1838.08	5.00E+00	7.07	4.25E-03	3.38E-04
	47	1848.49	1.13E+01	11.83	4.23E-03	3.38E-04
	48	1897.07	1.34E+01	10.00	4.16E-03	3.38E-04
	49	1929.87	5.43E+00	6.00	4.11E-03	3.38E-04
	50	2105.40	2.25E+01	14.02	3.86E-03	3.38E-04
	51	2204.89	1.65E+01	10.22	3.74E-03	3.38E-04
	52	2233.18	7.33E+00	6.95	3.70E-03	3.38E-04
	53	2308.41	5.40E+00	8.03	3.62E-03	3.38E-04
	54	2510.06	8.00E+00	5.66	3.40E-03	3.38E-04
	55	2614.70	1.14E+02	24.41	3.31E-03	3.38E-04

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

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 : 8/22/2017 5:26:21PM

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.
M	1	74.72	3.64E+02	93.41			3.64E+02	9.34E+01
m	2	77.17	6.80E+02	101.12	7.20E+00	1.47E+00	6.73E+02	1.01E+02
m	3	87.29	3.24E+02	118.68			3.24E+02	1.19E+02
m	4	92.48	5.70E+02	140.59	1.38E+02	1.72E+01	4.32E+02	1.42E+02
	5	129.84	1.47E+02	105.28			1.47E+02	1.05E+02
	6	185.56	2.12E+02	84.80	5.22E+01	7.59E+00	1.60E+02	8.51E+01
	7	209.70	8.85E+01	66.34			8.85E+01	6.63E+01
M	8	238.64	9.66E+02	74.83	2.13E+01	6.33E+00	9.45E+02	7.51E+01
m	9	241.82	2.64E+02	85.45			2.64E+02	8.54E+01
	10	270.56	8.61E+01	54.90	1.23E+00	4.98E+00	8.48E+01	5.51E+01
	11	277.19	4.34E+01	53.96			4.34E+01	5.40E+01
	12	295.02	2.68E+02	65.30			2.68E+02	6.53E+01
	13	338.69	2.46E+02	70.53			2.46E+02	7.05E+01
	14	351.92	4.15E+02	62.96	5.79E+00	4.49E+00	4.10E+02	6.31E+01
	15	410.30	2.66E+01	29.65			2.66E+01	2.97E+01
	16	463.06	6.58E+01	42.76			6.58E+01	4.28E+01
	17	510.71	2.44E+02	60.93	7.28E+01	5.30E+00	1.71E+02	6.12E+01
	18	562.75	2.44E+01	25.06			2.44E+01	2.51E+01
	19	583.32	3.32E+02	73.80	2.72E+00	3.05E+00	3.29E+02	7.39E+01
	20	609.43	3.46E+02	57.13	6.35E+00	4.02E+00	3.40E+02	5.73E+01
	21	726.97	7.90E+01	38.54			7.90E+01	3.85E+01
	22	768.40	3.75E+01	27.75			3.75E+01	2.77E+01
	23	784.26	4.99E+01	35.05			4.99E+01	3.51E+01
	24	796.39	3.50E+01	32.74			3.50E+01	3.27E+01
	25	860.84	4.86E+01	34.42			4.86E+01	3.44E+01
M	26	908.05	2.46E+01	36.12			2.46E+01	3.61E+01
m	27	911.42	2.24E+02	37.76	5.31E+00	3.00E+00	2.18E+02	3.79E+01
	28	936.98	4.80E+01	51.02			4.80E+01	5.10E+01
	29	949.43	2.60E+01	27.86			2.60E+01	2.79E+01
M	30	965.73	4.95E+01	29.58			4.95E+01	2.96E+01
m	31	969.26	1.05E+02	32.24			1.05E+02	3.22E+01
	32	1026.62	2.60E+01	23.49			2.60E+01	2.35E+01
	33	1120.96	7.82E+01	40.87			7.82E+01	4.09E+01
	34	1238.66	4.06E+01	42.27			4.06E+01	4.23E+01
	35	1378.26	2.40E+01	18.33			2.40E+01	1.83E+01

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
36	1461.26	1.13E+03	70.71	8.09E+00	2.23E+00	1.12E+03	7.07E+01
37	1488.49	1.17E+01	11.75			1.17E+01	1.17E+01
38	1527.99	8.00E+00	5.66			8.00E+00	5.66E+00
39	1536.72	1.42E+01	10.20			1.42E+01	1.02E+01
40	1578.64	1.64E+01	10.31			1.64E+01	1.03E+01
41	1588.83	2.41E+01	19.70			2.41E+01	1.97E+01
42	1630.49	1.50E+01	14.14			1.50E+01	1.41E+01
43	1730.00	2.26E+01	13.96			2.26E+01	1.40E+01
44	1737.86	6.69E+00	6.40			6.69E+00	6.40E+00
45	1764.59	8.18E+01	20.69			8.18E+01	2.07E+01
46	1838.08	5.00E+00	7.07			5.00E+00	7.07E+00
47	1848.49	1.13E+01	11.83			1.13E+01	1.18E+01
48	1897.07	1.34E+01	10.00			1.34E+01	1.00E+01
49	1929.87	5.43E+00	6.00			5.43E+00	6.00E+00
50	2105.40	2.25E+01	14.02			2.25E+01	1.40E+01
51	2204.89	1.65E+01	10.22			1.65E+01	1.02E+01
52	2233.18	7.33E+00	6.95			7.33E+00	6.95E+00
53	2308.41	5.40E+00	8.03			5.40E+00	8.03E+00
54	2510.06	8.00E+00	5.66			8.00E+00	5.66E+00
55	2614.70	1.14E+02	24.41	5.63E+00	1.38E+00	1.08E+02	2.45E+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 : 8/22/2017 5:26:21PM

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.
M	1	74.72	3.64E+02	93.41			3.64E+02	9.34E+01
m	2	77.17	6.80E+02	101.12	7.20E+00	1.47E+00	6.73E+02	1.01E+02
m	3	87.29	3.24E+02	118.68			3.24E+02	1.19E+02
m	4	92.48	5.70E+02	140.59	1.38E+02	1.72E+01	4.32E+02	1.42E+02
	5	129.84	1.47E+02	105.28			1.47E+02	1.05E+02
	6	185.56	2.12E+02	84.80	5.22E+01	7.59E+00	1.60E+02	8.51E+01
	7	209.70	8.85E+01	66.34			8.85E+01	6.63E+01
M	8	238.64	9.66E+02	74.83	2.13E+01	6.33E+00	9.45E+02	7.51E+01

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
m	9	241.82	2.64E+02	85.45			2.64E+02	8.54E+01
	10	270.56	8.61E+01	54.90	1.23E+00	4.98E+00	8.48E+01	5.51E+01
	11	277.19	4.34E+01	53.96			4.34E+01	5.40E+01
	12	295.02	2.68E+02	65.30			2.68E+02	6.53E+01
	13	338.69	2.46E+02	70.53			2.46E+02	7.05E+01
	14	351.92	4.15E+02	62.96	5.79E+00	4.49E+00	4.10E+02	6.31E+01
	15	410.30	2.66E+01	29.65			2.66E+01	2.97E+01
	16	463.06	6.58E+01	42.76			6.58E+01	4.28E+01
	17	510.71	2.44E+02	60.93	7.28E+01	5.30E+00	1.71E+02	6.12E+01
	18	562.75	2.44E+01	25.06			2.44E+01	2.51E+01
	19	583.32	3.32E+02	73.80	2.72E+00	3.05E+00	3.29E+02	7.39E+01
	20	609.43	3.46E+02	57.13	6.35E+00	4.02E+00	3.40E+02	5.73E+01
	21	726.97	7.90E+01	38.54			7.90E+01	3.85E+01
	22	768.40	3.75E+01	27.75			3.75E+01	2.77E+01
	23	784.26	4.99E+01	35.05			4.99E+01	3.51E+01
	24	796.39	3.50E+01	32.74			3.50E+01	3.27E+01
	25	860.84	4.86E+01	34.42			4.86E+01	3.44E+01
M	26	908.05	2.46E+01	36.12			2.46E+01	3.61E+01
m	27	911.42	2.24E+02	37.76	5.31E+00	3.00E+00	2.18E+02	3.79E+01
	28	936.98	4.80E+01	51.02			4.80E+01	5.10E+01
	29	949.43	2.60E+01	27.86			2.60E+01	2.79E+01
M	30	965.73	4.95E+01	29.58			4.95E+01	2.96E+01
m	31	969.26	1.05E+02	32.24			1.05E+02	3.22E+01
	32	1026.62	2.60E+01	23.49			2.60E+01	2.35E+01
	33	1120.96	7.82E+01	40.87			7.82E+01	4.09E+01
	34	1238.66	4.06E+01	42.27			4.06E+01	4.23E+01
	35	1378.26	2.40E+01	18.33			2.40E+01	1.83E+01
	36	1461.26	1.13E+03	70.71	8.09E+00	2.23E+00	1.12E+03	7.07E+01
	37	1488.49	1.17E+01	11.75			1.17E+01	1.17E+01
	38	1527.99	8.00E+00	5.66			8.00E+00	5.66E+00
	39	1536.72	1.42E+01	10.20			1.42E+01	1.02E+01
	40	1578.64	1.64E+01	10.31			1.64E+01	1.03E+01
	41	1588.83	2.41E+01	19.70			2.41E+01	1.97E+01
	42	1630.49	1.50E+01	14.14			1.50E+01	1.41E+01
	43	1730.00	2.26E+01	13.96			2.26E+01	1.40E+01
	44	1737.86	6.69E+00	6.40			6.69E+00	6.40E+00
	45	1764.59	8.18E+01	20.69			8.18E+01	2.07E+01
	46	1838.08	5.00E+00	7.07			5.00E+00	7.07E+00
	47	1848.49	1.13E+01	11.83			1.13E+01	1.18E+01
	48	1897.07	1.34E+01	10.00			1.34E+01	1.00E+01
	49	1929.87	5.43E+00	6.00			5.43E+00	6.00E+00
	50	2105.40	2.25E+01	14.02			2.25E+01	1.40E+01
	51	2204.89	1.65E+01	10.22			1.65E+01	1.02E+01
	52	2233.18	7.33E+00	6.95			7.33E+00	6.95E+00
	53	2308.41	5.40E+00	8.03			5.40E+00	8.03E+00
	54	2510.06	8.00E+00	5.66			8.00E+00	5.66E+00
	55	2614.70	1.14E+02	24.41	5.63E+00	1.38E+00	1.08E+02	2.45E+01

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

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

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	0.968	1460.81	*	10.67	2.67E+01	2.87E+00
CD-109	0.917	88.03	*	3.72	4.71E+00	1.80E+00
SN-126	0.988	87.57	*	37.00	4.07E-01	1.54E-01
EU-155	0.304	86.50	*	30.90	5.06E-01	1.91E-01
		105.30		20.70		
TL-208	0.995	583.14	*	30.22	1.39E+00	3.44E-01
		860.37	*	4.48	1.87E+00	1.33E+00
		2614.66	*	35.85	1.16E+00	2.88E-01
BI-212	0.758	727.17	*	11.80	1.01E+00	5.05E-01
		1620.62		2.75		
PB-212	0.894	238.63	*	44.60	1.43E+00	1.62E-01
		300.09		3.41		
BI-214	0.981	609.31	*	46.30	9.70E-01	1.92E-01
		1120.29	*	15.10	1.09E+00	5.75E-01
		1764.49	*	15.80	1.51E+00	4.00E-01
		2204.22	*	4.98	1.13E+00	7.07E-01
PB-214	0.998	295.21	*	19.19	1.08E+00	2.79E-01
		351.92	*	37.19	9.65E-01	1.70E-01
RA-224	0.894	240.98	*	3.95	4.56E+00	1.52E+00
RA-226	0.934	186.21	*	3.28	2.86E+00	5.45E+00
AC-228	0.985	338.32	*	11.40	1.84E+00	5.50E-01
		911.07	*	27.70	1.42E+00	2.73E-01
		969.11	*	16.60	1.19E+00	3.79E-01
NP-237	0.905	86.50	*	12.60	1.19E+00	4.51E-01
AM-243	1.000	74.67	*	66.00	2.56E-01	6.92E-02
CM-243	0.362	209.75	*	3.29	1.70E+00	1.28E+00
		228.14		10.60		
		277.60	*	14.00	2.32E-01	2.89E-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 1707088-08

HTC-A03-S004-1218-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 5:26:21PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	2	77.17	1.86918E-01	7.51		
m	4	92.48	1.19982E-01	16.39	Tol.	GA-67
	5	129.84	4.06994E-02	35.93		
	10	270.56	2.35617E-02	32.50		
	15	410.30	7.38343E-03	55.78	Tol.	HO-166M
	16	463.06	1.82656E-02	32.51	Sum	
	17	510.71	4.74717E-02	17.89		
	18	562.75	6.77507E-03	51.37	Tol.	CS-134
	22	768.40	1.04195E-02	36.99	Sum	
	23	784.26	1.38515E-02	35.15		
	24	796.39	9.73090E-03	46.73	Tol.	CS-134
M	26	908.05	6.83485E-03	73.39		
	28	936.98	1.33402E-02	53.12	Sum	
	29	949.43	7.22222E-03	53.57	S-Esc	
M	30	965.73	1.37469E-02	29.89	Sum	
	32	1026.62	7.21550E-03	45.22		
	34	1238.66	1.12654E-02	52.12		
	35	1378.26	6.66667E-03	38.19		
	37	1488.49	3.24074E-03	50.35		
	38	1527.99	2.22222E-03	35.36		
	39	1536.72	3.93519E-03	35.99	Sum	
	40	1578.64	4.56140E-03	31.39	Sum	
	41	1588.83	6.69897E-03	40.84		
	42	1630.49	4.16667E-03	47.14		
	43	1730.00	6.28241E-03	30.87	Sum	
	44	1737.86	1.85764E-03	47.87	Sum	
	46	1838.08	1.38889E-03	70.71		
	47	1848.49	3.14327E-03	52.28	Sum	
	48	1897.07	3.72549E-03	37.28		
	49	1929.87	1.50794E-03	55.26		
	50	2105.40	6.24008E-03	31.20		
	52	2233.18	2.03704E-03	47.36		
	53	2308.41	1.50000E-03	74.36		
	54	2510.06	2.22222E-03	35.36		

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

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

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	0.96	1460.81	*	10.67	2.67E+01	2.87E+00
CD-109	0.91	88.03	*	3.72	4.71E+00	1.80E+00
SN-126	0.98	87.57	*	37.00	4.07E-01	1.54E-01
EU-155	0.30	86.50	*	30.90	5.06E-01	1.91E-01
		105.30		20.70		
TL-208	0.99	583.14	*	30.22	1.39E+00	3.44E-01
		860.37	*	4.48	1.87E+00	1.33E+00
		2614.66	*	35.85	1.16E+00	2.88E-01
BI-212	0.75	727.17	*	11.80	1.01E+00	5.05E-01
		1620.62		2.75		
PB-212	0.89	238.63	*	44.60	1.43E+00	1.62E-01
		300.09		3.41		
BI-214	0.98	609.31	*	46.30	9.70E-01	1.92E-01
		1120.29	*	15.10	1.09E+00	5.75E-01
		1764.49	*	15.80	1.51E+00	4.00E-01
		2204.22	*	4.98	1.13E+00	7.07E-01
PB-214	0.99	295.21	*	19.19	1.08E+00	2.79E-01
		351.92	*	37.19	9.65E-01	1.70E-01
RA-224	0.89	240.98	*	3.95	4.56E+00	1.52E+00
RA-226	0.93	186.21	*	3.28	2.86E+00	5.45E+00
AC-228	0.98	338.32	*	11.40	1.84E+00	5.50E-01
		911.07	*	27.70	1.42E+00	2.73E-01
		969.11	*	16.60	1.19E+00	3.79E-01
NP-237	0.90	86.50	*	12.60	1.19E+00	4.51E-01
AM-243	1.00	74.67	*	66.00	2.56E-01	6.92E-02
CM-243	0.36	209.75	*	3.29	1.70E+00	1.28E+00
		228.14		10.60		
		277.60	*	14.00	2.32E-01	2.89E-01

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

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.968	2.67E+01	2.87E+00	
?	CD-109	0.917	4.71E+00	1.80E+00	
?	SN-126	0.988	4.07E-01	1.54E-01	
?	EU-155	0.304	5.06E-01	1.91E-01	
	TL-208	0.995	1.27E+00	2.18E-01	
	BI-212	0.758	1.01E+00	5.05E-01	
	PB-212	0.894	1.43E+00	1.62E-01	
	BI-214	0.981	1.08E+00	1.62E-01	
	PB-214	0.998	9.96E-01	1.45E-01	
	RA-224	0.894	4.56E+00	1.52E+00	
	RA-226	0.934	2.86E+00	5.45E+00	
	AC-228	0.985	1.41E+00	2.05E-01	
?	NP-237	0.905	1.19E+00	4.51E-01	
	AM-243	1.000	2.56E-01	6.92E-02	
	CM-243	0.362	3.03E-01	2.82E-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 1707088-08

HTC-A03-S004-1218-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 5:26:21PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	2	77.17	1.86918E-01	7.51		
m	4	92.48	1.19982E-01	16.39	Tol.	GA-67
	5	129.84	4.06994E-02	35.93		
	10	270.56	2.35617E-02	32.50		
	15	410.30	7.38343E-03	55.78	Tol.	HO-166M
	16	463.06	1.82656E-02	32.51	Sum	
	17	510.71	4.74717E-02	17.89		
	18	562.75	6.77507E-03	51.37	Tol.	CS-134
	22	768.40	1.04195E-02	36.99	Sum	
	23	784.26	1.38515E-02	35.15		
	24	796.39	9.73090E-03	46.73	Tol.	CS-134
M	26	908.05	6.83485E-03	73.39		
	28	936.98	1.33402E-02	53.12	Sum	
	29	949.43	7.22222E-03	53.57	S-Esc	
M	30	965.73	1.37469E-02	29.89	Sum	
	32	1026.62	7.21550E-03	45.22		
	34	1238.66	1.12654E-02	52.12		
	35	1378.26	6.66667E-03	38.19		
	37	1488.49	3.24074E-03	50.35		
	38	1527.99	2.22222E-03	35.36		
	39	1536.72	3.93519E-03	35.99	Sum	
	40	1578.64	4.56140E-03	31.39	Sum	
	41	1588.83	6.69897E-03	40.84		
	42	1630.49	4.16667E-03	47.14		
	43	1730.00	6.28241E-03	30.87	Sum	
	44	1737.86	1.85764E-03	47.87	Sum	
	46	1838.08	1.38889E-03	70.71		
	47	1848.49	3.14327E-03	52.28	Sum	
	48	1897.07	3.72549E-03	37.28		
	49	1929.87	1.50794E-03	55.26		
	50	2105.40	6.24008E-03	31.20		
	52	2233.18	2.03704E-03	47.36		
	53	2308.41	1.50000E-03	74.36		
	54	2510.06	2.22222E-03	35.36		

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

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

NUCLIDE 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	-3.96E-01	1.97E+00	1.97E+00
+		NA-22	1274.54		99.94	-4.84E-02	8.59E-02	8.59E-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	-2.73E-02	3.89E-02	3.89E-02
+		K-40	1460.81	*	10.67	2.67E+01	9.72E-01	9.72E-01
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	1.56E-02	6.39E-02	6.39E-02
			78.34		96.00	2.31E-01		8.22E-02
+		SC-46	889.25		99.98	-5.62E-02	1.60E-01	1.60E-01
			1120.51		99.99	3.75E-01		2.75E-01
+		V-48	983.52		99.98	1.91E+00	6.31E+00	6.31E+00
			1312.10		97.50	1.63E+00		6.65E+00
+		CR-51	320.08		9.83	-3.06E+00	7.18E+00	7.18E+00
+		MN-54	834.83		99.97	4.37E-02	1.00E-01	1.00E-01
+		CO-56	846.75		99.96	1.00E-02	1.66E-01	1.66E-01
			1037.75		14.03	-6.37E-01		1.28E+00
			1238.25		67.00	4.91E-01		4.48E-01
			1771.40		15.51	-1.72E-01		6.89E-01
			2598.48		16.90	5.54E-02		4.07E-01
+		CO-57	122.06		85.51	1.55E-02	7.20E-02	7.20E-02
			136.48		10.60	-2.55E-01		5.76E-01
+		CO-58	810.76		99.40	3.74E-02	1.89E-01	1.89E-01
+		FE-59	1099.22		56.50	-3.96E-01	6.68E-01	6.68E-01
			1291.56		43.20	4.45E-02		8.99E-01
+		CO-60	1173.22		100.00	-5.99E-04	7.27E-02	9.80E-02
			1332.49		100.00	2.01E-02		7.27E-02
+		ZN-65	1115.52		50.75	2.67E-02	2.27E-01	2.27E-01
+		GA-67	93.31		35.70	9.22E+08	4.19E+08	4.19E+08
			208.95		2.24	5.17E+09		5.65E+09
			300.22		16.00	4.59E+08		8.48E+08
+		SE-75	121.11		16.70	-4.58E-03	1.43E-01	5.03E-01

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00		59.20	-6.32E-02	1.43E-01	1.43E-01
		264.65		59.80	3.85E-02		1.63E-01
		279.53		25.20	-1.65E-03		4.20E-01
		400.65		11.40	2.25E-02		9.40E-01
+	RB-82	776.52		13.00	-8.20E-01	8.33E+00	8.33E+00
+	RB-83	520.41		46.00	9.49E-03	3.09E-01	3.09E-01
		529.64		30.30	1.37E-01		4.44E-01
		552.65		16.40	3.18E-01		8.74E-01
+	KR-85	513.99		0.43	2.54E+01	2.16E+01	2.16E+01
+	SR-85	513.99		99.27	3.22E-01	2.74E-01	2.74E-01
+	Y-88	898.02		93.40	-7.62E-02	1.01E-01	1.37E-01
		1836.01		99.38	5.82E-03		1.01E-01
+	MO-93	263.06		56.72	3.66E-03	4.96E-02	9.94E-02
		684.67		99.68	2.71E-02		7.20E-02
		1477.11		99.08	-6.80E-03		4.96E-02
+	NB-93M	16.57		9.43	-3.43E-01	5.15E-01	5.15E-01
+	NB-94	702.63		100.00	-1.83E-02	6.73E-02	7.43E-02
		871.10		100.00	-3.69E-02		6.73E-02
+	NB-95	765.79		99.81	1.52E-02	6.23E-01	6.23E-01
+	NB-95M	235.69		25.00	-5.49E+08	7.25E+07	7.25E+07
+	ZR-95	724.18		43.70	1.12E-02	3.90E-01	5.33E-01
		756.72		55.30	1.88E-02		3.90E-01
+	MO-99	181.06		6.20	1.05E+10	6.13E+10	9.80E+10
		739.58		12.80	-7.93E+08		6.13E+10
		778.00		4.50	-3.49E+09		1.81E+11
+	RU-103	497.08		89.00	-1.35E-01	3.92E-01	3.92E-01
+	RU-106	621.84		9.80	-2.87E-01	8.01E-01	8.01E-01
+	AG-108M	433.93		89.90	1.20E-02	6.59E-02	6.59E-02
		614.37		90.40	-1.76E-02		8.10E-02
		722.95		90.50	5.21E-03		7.44E-02
+	CD-109	88.03	*	3.72	4.71E+00	4.22E+00	4.22E+00
+	AG-110M	657.75		93.14	-1.88E-02	9.19E-02	9.19E-02
		677.61		10.53	1.94E-01		8.63E-01
		706.67		16.46	-7.80E-02		5.84E-01
		763.93		21.98	-2.46E-02		4.34E-01
		884.67		71.63	7.54E-02		1.37E-01
		1384.27		23.94	-6.77E-02		3.32E-01
+	CD-113M	263.70		0.02	4.73E+01	2.41E+02	2.41E+02
+	SN-113	255.12		1.93	-3.36E-01	1.59E-01	4.43E+00
		391.69		64.90	-4.99E-02		1.59E-01
+	TE123M	159.00		84.10	-3.03E-02	1.04E-01	1.04E-01
+	SB-124	602.71		97.87	1.09E-03	2.33E-01	2.33E-01
		645.85		7.26	-1.61E+00		2.56E+00
		722.78		11.10	1.36E-01		1.94E+00
		1691.02		49.00	6.17E-03		3.08E-01
+	I-125	35.49		6.49	8.30E-01	2.61E+00	2.61E+00
+	SB-125	176.33		6.89	-7.84E-02	1.95E-01	7.59E-01
		427.89		29.33	-1.28E-01		1.95E-01

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-125	463.38		10.35	7.39E-01	1.95E-01	7.28E-01
		600.56		17.80	-6.18E-02		4.07E-01
		635.90		11.32	-3.80E-01		5.39E-01
+	SB-126	414.70		83.30	-2.99E+00	1.89E+01	1.89E+01
		666.33		99.60	8.73E+00		2.04E+01
		695.00		99.60	-1.87E+00		2.06E+01
		720.50		53.80	8.11E+00		3.44E+01
+	SN-126	87.57	*	37.00	4.07E-01	3.64E-01	3.64E-01
+	SB-127	473.00		25.00	-5.57E+06	1.65E+07	1.80E+07
		685.20		35.70	6.20E+06		1.65E+07
		783.80		14.70	4.71E+07		4.77E+07
+	I-129	29.78		57.00	-1.16E-02	1.03E-01	1.03E-01
		33.60		13.20	-5.17E-02		4.05E-01
		39.58		7.52	-8.99E-02		6.84E-01
+	I-131	284.30		6.05	-2.77E+02	4.22E+02	5.60E+03
		364.48		81.20	1.84E+01		4.22E+02
		636.97		7.26	-5.49E+02		5.16E+03
		722.89		1.80	1.63E+03		2.32E+04
+	TE-132	49.72		13.10	-1.24E+09	1.30E+08	9.17E+08
		228.16		88.00	4.12E+07		1.30E+08
+	BA-133	81.00		33.00	-7.38E-01	1.27E-01	1.68E-01
		302.84		17.80	1.09E-01		3.31E-01
		356.01		60.00	2.92E-02		1.27E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	-4.12E+05	9.40E+04	9.40E+04
+	CS-134	563.23		8.38	1.45E-01	8.60E-02	8.36E-01
		569.32		15.43	-6.30E-02		4.29E-01
		604.70		97.60	9.86E-04		8.60E-02
		795.84		85.40	5.24E-02		1.05E-01
		801.93		8.73	1.53E-01		8.54E-01
+	CS-135	268.24		16.00	-1.77E-02	3.89E-01	3.89E-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	2.82E+01	1.46E+01	1.43E+02
		163.89		4.61	5.81E+01		2.20E+02
		176.55		13.56	-7.72E+00		7.47E+01
		273.65		12.66	6.24E+00		1.06E+02
		340.57		48.50	8.10E+01		3.51E+01
		818.50		99.70	-1.86E+00		1.46E+01
		1048.07		79.60	-9.45E-01		2.17E+01
		1235.34		19.70	2.99E+01		1.28E+02
+	CS-137	661.65		85.12	1.36E-02	8.39E-02	8.39E-02
+	LA-138	788.74		34.00	7.02E-02	9.71E-02	2.34E-01
		1435.80		66.00	3.06E-02		9.71E-02
+	CE-139	165.85		80.35	-4.43E-02	9.85E-02	9.85E-02
+	BA-140	162.64		6.70	8.36E+01	5.43E+01	1.79E+02
		304.84		4.50	-2.37E+02		2.87E+02
		423.70		3.20	-8.97E+01		4.19E+02

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		BA-140	437.55		2.00	6.21E+01	5.43E+01	7.22E+02
			537.32		25.00	-1.27E+01		5.43E+01
+		LA-140	328.77		20.50	1.70E+01	1.38E+01	7.14E+01
			487.03		45.50	3.23E+00		3.08E+01
			815.85		23.50	-5.64E+00		7.24E+01
			1596.49		95.49	2.41E+00		1.38E+01
+		CE-141	145.44		48.40	7.94E-01	9.61E-01	9.61E-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	-2.15E-01	5.81E-01	5.81E-01
+		PM-144	476.78		42.00	5.38E-02	8.06E-02	1.66E-01
			618.01		98.60	-6.45E-03		8.06E-02
			696.49		99.49	-6.95E-03		8.92E-02
+		PM-145	36.85		21.70	-7.22E-02	1.33E-01	2.37E-01
			37.36		39.70	-9.30E-03		1.33E-01
			42.30		15.10	-1.75E-01		3.39E-01
			72.40		2.31	3.35E-01		2.96E+00
+		PM-146	453.90		39.94	-5.89E-02	1.40E-01	1.40E-01
			735.90		14.01	2.48E-01		4.83E-01
			747.13		13.10	-3.86E-02		5.29E-01
+		ND-147	91.11		28.90	1.73E+02	1.42E+02	1.42E+02
			531.02		13.10	1.75E+02		2.78E+02
+		PM-149	285.90		3.10	5.93E+12	1.10E+14	1.10E+14
+		EU-152	121.78		20.50	-2.11E-03	2.32E-01	2.32E-01
			244.69		5.40	-7.61E-02		1.08E+00
			344.27		19.13	4.21E-02		3.00E-01
			778.89		9.20	-7.50E-02		7.47E-01
			964.01		10.40	-1.49E+00		9.00E-01
			1085.78		7.22	4.97E-01		1.13E+00
			1112.02		9.60	2.35E-01		9.47E-01
			1407.95		14.94	1.85E-01		4.88E-01
+		GD-153	97.43		31.30	1.19E-01	2.16E-01	2.16E-01
			103.18		22.20	1.14E-01		3.02E-01
+		EU-154	123.07		40.50	-1.61E-02	1.17E-01	1.17E-01
			723.30		19.70	2.44E-02		3.49E-01
			873.19		11.50	2.09E-01		6.27E-01
			996.32		10.30	-2.58E-01		7.56E-01
			1004.76		17.90	-1.00E-02		4.31E-01
			1274.45		35.50	-1.29E-01		2.30E-01
+		EU-155	86.50	*	30.90	5.06E-01	2.55E-01	4.53E-01
			105.30		20.70	5.34E-02		2.55E-01
+		EU-156	811.77		10.40	-2.03E+01	6.48E+01	6.48E+01
			1153.47		7.20	-5.42E+01		1.19E+02
			1230.71		8.90	2.79E+01		1.21E+02
+		HO-166M	184.41		72.60	1.51E-01	8.41E-02	8.41E-02
			280.45		29.60	-1.39E-02		1.95E-01
			410.94		11.10	1.62E-01		5.31E-01
			711.69		54.10	2.89E-02		1.30E-01

Analysis Report for 1707088-08

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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	-9.34E+01	4.69E+01	4.69E+01
+	HF-172	67.35		5.31	3.06E-01	4.73E-01	1.26E+00
		125.81		11.30	5.86E-02		4.73E-01
+	LU-172	181.53		20.60	9.26E+02	4.86E+03	8.62E+03
		900.72		29.81	4.37E+03		8.63E+03
		1093.66		62.50	5.80E+02		4.86E+03
+	LU-173	100.72		5.24	-5.10E-01	3.60E-01	1.06E+00
		272.11		21.20	2.36E-01		3.60E-01
+	HF-175	343.40		84.00	2.57E-02	1.86E-01	1.86E-01
+	LU-176	88.34		13.30	-4.73E-02	5.57E-02	4.89E-01
		201.83		86.00	-1.28E-02		5.92E-02
		306.78		94.00	-2.02E-02		5.57E-02
+	HF-181	133.02		41.70	-2.27E-01	3.54E-01	6.15E-01
		345.85		17.20	2.43E-01		1.68E+00
		482.03		82.80	-2.36E-01		3.54E-01
+	TA-182	67.75		41.20	6.57E-02	2.70E-01	2.70E-01
		1121.30		34.90	9.01E-01		6.28E-01
		1189.05		16.23	-1.01E-01		1.09E+00
		1221.41		26.98	1.49E-01		7.13E-01
		1231.02		11.44	3.94E-01		1.71E+00
+	IR-192	308.46		29.68	-1.26E-01	3.12E-01	4.62E-01
		468.07		48.10	2.43E-02		3.12E-01
+	HG-203	279.19		77.30	-1.35E-03	3.44E-01	3.44E-01
+	TL-204	374.74		94.11	3.34E-02	6.71E-02	6.71E-02
		899.15		99.16	1.48E-02		7.54E-02
		911.74		91.10	4.63E-01		1.71E-01
+	BI-207	569.67		97.72	5.56E-03	6.30E-02	6.30E-02
		1063.62		74.90	1.64E-02		9.91E-02
+	TL-208	583.14	*	30.22	1.39E+00	2.56E-01	4.59E-01
		860.37	*	4.48	1.87E+00		2.09E+00
		2614.66	*	35.85	1.16E+00		2.56E-01
+	BI-210M	262.00		45.00	3.15E-02	1.24E-01	1.24E-01
		300.00		23.00	1.29E-01		2.74E-01
+	PB-210	46.50		4.25	8.41E-01	1.32E+00	1.32E+00
+	PB-211	404.84		2.90	-1.34E-01	2.08E+00	2.08E+00
		831.96		2.90	-1.31E+00		2.53E+00
+	BI-212	727.17	*	11.80	1.01E+00	7.56E-01	7.56E-01
		1620.62		2.75	3.65E-01		1.88E+00
+	PB-212	238.63	*	44.60	1.43E+00	2.87E-01	2.87E-01
		300.09		3.41	8.69E-01		1.85E+00
+	BI-214	609.31	*	46.30	9.70E-01	2.14E-01	2.14E-01
		1120.29	*	15.10	1.09E+00		8.80E-01
		1764.49	*	15.80	1.51E+00		3.55E-01
		2204.22	*	4.98	1.13E+00		8.86E-01
+	PB-214	295.21	*	19.19	1.08E+00	1.94E-01	3.86E-01
		351.92	*	37.19	9.65E-01		1.94E-01
+	RN-219	401.80		6.50	2.08E-01	9.30E-01	9.30E-01
+	RA-223	323.87		3.88	-1.32E+00	1.46E+00	1.46E+00

Analysis Report for 1707088-08

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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	4.56E+00	3.28E+00	3.28E+00
+	RA-225	40.00		31.00	5.31E+00	1.91E+01	1.91E+01
+	RA-226	186.21	*	3.28	2.86E+00	2.44E+00	2.44E+00
+	TH-227	50.10		8.40	-4.52E-01	5.63E-01	6.17E-01
		236.00		11.50	-4.26E+00		5.63E-01
		256.20		6.30	1.85E-01		8.73E-01
+	AC-228	338.32	*	11.40	1.84E+00	3.97E-01	7.97E-01
		911.07	*	27.70	1.42E+00		3.97E-01
		969.11	*	16.60	1.19E+00		8.76E-01
+	TH-230	48.44		16.90	1.20E-01	3.30E-01	3.30E-01
		62.85		4.60	1.55E+00		1.36E+00
		67.67		0.37	3.96E+00		1.63E+01
+	PA-231	283.67		1.60	1.17E-01	2.51E+00	3.46E+00
		302.67		2.30	8.25E-01		2.51E+00
+	TH-231	25.64		14.70	-3.11E+00	5.22E-01	5.22E-01
		84.21		6.40	-4.73E-01		9.22E-01
+	PA-233	311.98		38.60	1.64E-01	1.97E+00	1.97E+00
+	PA-234	131.20		20.40	1.54E-01	2.56E-01	2.56E-01
		733.99		8.80	-1.09E-01		7.21E-01
		946.00		12.00	1.92E-01		6.58E-01
+	PA-234M	1001.03		0.92	3.88E+00	8.67E+00	8.67E+00
+	TH-234	63.29		3.80	1.73E+00	1.66E+00	1.66E+00
+	U-235	143.76		10.50	2.29E-01	5.04E-01	5.04E-01
		163.35		4.70	2.74E-01		1.04E+00
		205.31		4.70	1.14E-01		1.07E+00
+	NP-237	86.50	*	12.60	1.19E+00	1.07E+00	1.07E+00
+	NP-239	106.10		22.70	6.57E+11	2.02E+12	2.02E+12
		228.18		10.70	1.32E+12		4.17E+12
		277.60		14.10	2.40E+12		3.85E+12
+	AM-241	59.54		35.90	-1.21E-01	1.53E-01	1.53E-01
+	AM-243	74.67	*	66.00	2.56E-01	1.67E-01	1.67E-01
+	CM-243	209.75	*	3.29	1.70E+00	4.74E-01	2.06E+00
		228.14		10.60	1.50E-01		4.75E-01
		277.60	*	14.00	2.32E-01		4.74E-01

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

Analysis Report for 1707088-08

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NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	1.97E+00	1.97E+00	-3.96E-01	9.34E-01
	NA-22	1274.54		99.94	8.59E-02	8.59E-02	-4.84E-02	3.96E-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	3.89E-02	3.89E-02	-2.73E-02	1.54E-02
+	K-40	1460.81	*	10.67	9.72E-01	9.72E-01	2.67E+01	4.54E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	6.39E-02	6.39E-02	1.56E-02	3.13E-02
		78.34		96.00	8.22E-02		2.31E-01	4.04E-02
	SC-46	889.25		99.98	1.60E-01	1.60E-01	-5.62E-02	7.47E-02
		1120.51		99.99	2.75E-01		3.75E-01	1.31E-01
	V-48	983.52		99.98	6.31E+00	6.31E+00	1.91E+00	2.94E+00
		1312.10		97.50	6.65E+00		1.63E+00	3.06E+00
	CR-51	320.08		9.83	7.18E+00	7.18E+00	-3.06E+00	3.45E+00
	MN-54	834.83		99.97	1.00E-01	1.00E-01	4.37E-02	4.73E-02
	CO-56	846.75		99.96	1.66E-01	1.66E-01	1.00E-02	7.72E-02
		1037.75		14.03	1.28E+00		-6.37E-01	5.94E-01
		1238.25		67.00	4.48E-01		4.91E-01	2.13E-01
		1771.40		15.51	6.89E-01		-1.72E-01	2.83E-01
		2598.48		16.90	4.07E-01		5.54E-02	1.29E-01
	CO-57	122.06		85.51	7.20E-02	7.20E-02	1.55E-02	3.50E-02
		136.48		10.60	5.76E-01		-2.55E-01	2.79E-01
	CO-58	810.76		99.40	1.89E-01	1.89E-01	3.74E-02	8.87E-02
	FE-59	1099.22		56.50	6.68E-01	6.68E-01	-3.96E-01	3.10E-01
		1291.56		43.20	8.99E-01		4.45E-02	4.14E-01
	CO-60	1173.22		100.00	9.80E-02	7.27E-02	-5.99E-04	4.59E-02
		1332.49		100.00	7.27E-02		2.01E-02	3.30E-02
	ZN-65	1115.52		50.75	2.27E-01	2.27E-01	2.67E-02	1.06E-01
	GA-67	93.31		35.70	4.19E+08	4.19E+08	9.22E+08	2.06E+08
		208.95		2.24	5.65E+09		5.17E+09	2.74E+09
		300.22		16.00	8.48E+08		4.59E+08	4.09E+08
	SE-75	121.11		16.70	5.03E-01	1.43E-01	-4.58E-03	2.44E-01
		136.00		59.20	1.43E-01		-6.32E-02	6.93E-02
		264.65		59.80	1.63E-01		3.85E-02	7.87E-02
		279.53		25.20	4.20E-01		-1.65E-03	2.03E-01
		400.65		11.40	9.40E-01		2.25E-02	4.49E-01
	RB-82	776.52		13.00	8.33E+00	8.33E+00	-8.20E-01	3.90E+00
	RB-83	520.41		46.00	3.09E-01	3.09E-01	9.49E-03	1.47E-01
		529.64		30.30	4.44E-01		1.37E-01	2.10E-01
		552.65		16.40	8.74E-01		3.18E-01	4.14E-01
	KR-85	513.99		0.43	2.16E+01	2.16E+01	2.54E+01	1.04E+01
	SR-85	513.99		99.27	2.74E-01	2.74E-01	3.22E-01	1.32E-01

Analysis Report for 1707088-08

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	Y-88	898.02		93.40	1.37E-01	1.01E-01	-7.62E-02	6.35E-02
		1836.01		99.38	1.01E-01		5.82E-03	4.28E-02
	MO-93	263.06		56.72	9.94E-02	4.96E-02	3.66E-03	4.80E-02
		684.67		99.68	7.20E-02		2.71E-02	3.40E-02
		1477.11		99.08	4.96E-02		-6.80E-03	2.12E-02
	NB-93M	16.57		9.43	5.15E-01	5.15E-01	-3.43E-01	2.40E-01
	NB-94	702.63		100.00	7.43E-02	6.73E-02	-1.83E-02	3.52E-02
		871.10		100.00	6.73E-02		-3.69E-02	3.13E-02
	NB-95	765.79		99.81	6.23E-01	6.23E-01	1.52E-02	2.96E-01
	NB-95M	235.69		25.00	7.25E+07	7.25E+07	-5.49E+08	3.52E+07
	ZR-95	724.18		43.70	5.33E-01	3.90E-01	1.12E-02	2.52E-01
		756.72		55.30	3.90E-01		1.88E-02	1.83E-01
	MO-99	181.06		6.20	9.80E+10	6.13E+10	1.05E+10	4.75E+10
		739.58		12.80	6.13E+10		-7.93E+08	2.87E+10
		778.00		4.50	1.81E+11		-3.49E+09	8.47E+10
	RU-103	497.08		89.00	3.92E-01	3.92E-01	-1.35E-01	1.86E-01
	RU-106	621.84		9.80	8.01E-01	8.01E-01	-2.87E-01	3.78E-01
	AG-108M	433.93		89.90	6.59E-02	6.59E-02	1.20E-02	3.14E-02
		614.37		90.40	8.10E-02		-1.76E-02	3.85E-02
		722.95		90.50	7.44E-02		5.21E-03	3.49E-02
+	CD-109	88.03	*	3.72	4.22E+00	4.22E+00	4.71E+00	2.09E+00
	AG-110M	657.75		93.14	9.19E-02	9.19E-02	-1.88E-02	4.33E-02
		677.61		10.53	8.63E-01		1.94E-01	4.07E-01
		706.67		16.46	5.84E-01		-7.80E-02	2.76E-01
		763.93		21.98	4.34E-01		-2.46E-02	2.04E-01
		884.67		71.63	1.37E-01		7.54E-02	6.42E-02
		1384.27		23.94	3.32E-01		-6.77E-02	1.48E-01
	CD-113M	263.70		0.02	2.41E+02	2.41E+02	4.73E+01	1.16E+02
	SN-113	255.12		1.93	4.43E+00	1.59E-01	-3.36E-01	2.12E+00
		391.69		64.90	1.59E-01		-4.99E-02	7.60E-02
	TE123M	159.00		84.10	1.04E-01	1.04E-01	-3.03E-02	5.06E-02
	SB-124	602.71		97.87	2.33E-01	2.33E-01	1.09E-03	1.11E-01
		645.85		7.26	2.56E+00		-1.61E+00	1.20E+00
		722.78		11.10	1.94E+00		1.36E-01	9.13E-01
		1691.02		49.00	3.08E-01		6.17E-03	1.29E-01
	I-125	35.49		6.49	2.61E+00	2.61E+00	8.30E-01	1.26E+00
	SB-125	176.33		6.89	7.59E-01	1.95E-01	-7.84E-02	3.67E-01
		427.89		29.33	1.95E-01		-1.28E-01	9.25E-02
		463.38		10.35	7.28E-01		7.39E-01	3.49E-01
		600.56		17.80	4.07E-01		-6.18E-02	1.93E-01
		635.90		11.32	5.39E-01		-3.80E-01	2.52E-01
	SB-126	414.70		83.30	1.89E+01	1.89E+01	-2.99E+00	8.99E+00
		666.33		99.60	2.04E+01		8.73E+00	9.67E+00
		695.00		99.60	2.06E+01		-1.87E+00	9.74E+00
		720.50		53.80	3.44E+01		8.11E+00	1.61E+01
+	SN-126	87.57	*	37.00	3.64E-01	3.64E-01	4.07E-01	1.80E-01
	SB-127	473.00		25.00	1.80E+07	1.65E+07	-5.57E+06	8.50E+06
		685.20		35.70	1.65E+07		6.20E+06	7.78E+06
		783.80		14.70	4.77E+07		4.71E+07	2.26E+07
	I-129	29.78		57.00	1.03E-01	1.03E-01	-1.16E-02	4.98E-02
		33.60		13.20	4.05E-01		-5.17E-02	1.96E-01
		39.58		7.52	6.84E-01		-8.99E-02	3.32E-01
	I-131	284.30		6.05	5.60E+03	4.22E+02	-2.77E+02	2.69E+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)
I-131	364.48	81.20	4.22E+02	4.22E+02	1.84E+01	2.02E+02
	636.97	7.26	5.16E+03		-5.49E+02	2.42E+03
	722.89	1.80	2.32E+04		1.63E+03	1.09E+04
TE-132	49.72	13.10	9.17E+08	1.30E+08	-1.24E+09	4.47E+08
	228.16	88.00	1.30E+08		4.12E+07	6.28E+07
BA-133	81.00	33.00	1.68E-01	1.27E-01	-7.38E-01	8.22E-02
	302.84	17.80	3.31E-01		1.09E-01	1.59E-01
	356.01	60.00	1.27E-01		2.92E-02	6.14E-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	9.40E+04	9.40E+04	-4.12E+05	4.59E+04
CS-134	563.23	8.38	8.36E-01	8.60E-02	1.45E-01	3.96E-01
	569.32	15.43	4.29E-01		-6.30E-02	2.02E-01
	604.70	97.60	8.60E-02		9.86E-04	4.10E-02
	795.84	85.40	1.05E-01		5.24E-02	4.97E-02
	801.93	8.73	8.54E-01		1.53E-01	3.99E-01
CS-135	268.24	16.00	3.89E-01	3.89E-01	-1.77E-02	1.89E-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	1.43E+02	1.46E+01	2.82E+01	6.96E+01
	163.89	4.61	2.20E+02		5.81E+01	1.07E+02
	176.55	13.56	7.47E+01		-7.72E+00	3.62E+01
	273.65	12.66	1.06E+02		6.24E+00	5.15E+01
	340.57	48.50	3.51E+01		8.10E+01	1.71E+01
	818.50	99.70	1.46E+01		-1.86E+00	6.81E+00
	1048.07	79.60	2.17E+01		-9.45E-01	1.01E+01
	1235.34	19.70	1.28E+02		2.99E+01	6.08E+01
CS-137	661.65	85.12	8.39E-02	8.39E-02	1.36E-02	3.97E-02
LA-138	788.74	34.00	2.34E-01	9.71E-02	7.02E-02	1.11E-01
	1435.80	66.00	9.71E-02		3.06E-02	4.34E-02
CE-139	165.85	80.35	9.85E-02	9.85E-02	-4.43E-02	4.77E-02
BA-140	162.64	6.70	1.79E+02	5.43E+01	8.36E+01	8.68E+01
	304.84	4.50	2.87E+02		-2.37E+02	1.38E+02
	423.70	3.20	4.19E+02		-8.97E+01	1.99E+02
	437.55	2.00	7.22E+02		6.21E+01	3.44E+02
	537.32	25.00	5.43E+01		-1.27E+01	2.56E+01
LA-140	328.77	20.50	7.14E+01	1.38E+01	1.70E+01	3.44E+01
	487.03	45.50	3.08E+01		3.23E+00	1.46E+01
	815.85	23.50	7.24E+01		-5.64E+00	3.39E+01
	1596.49	95.49	1.38E+01		2.41E+00	5.99E+00
CE-141	145.44	48.40	9.61E-01	9.61E-01	7.94E-01	4.68E-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	5.81E-01	5.81E-01	-2.15E-01	2.82E-01
PM-144	476.78	42.00	1.66E-01	8.06E-02	5.38E-02	7.87E-02
	618.01	98.60	8.06E-02		-6.45E-03	3.81E-02
	696.49	99.49	8.92E-02		-6.95E-03	4.22E-02
PM-145	36.85	21.70	2.37E-01	1.33E-01	-7.22E-02	1.15E-01
	37.36	39.70	1.33E-01		-9.30E-03	6.45E-02
	42.30	15.10	3.39E-01		-1.75E-01	1.65E-01
	72.40	2.31	2.96E+00		3.35E-01	1.45E+00
PM-146	453.90	39.94	1.40E-01	1.40E-01	-5.89E-02	6.62E-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)
	PM-146	735.90		14.01	4.83E-01	1.40E-01	2.48E-01	2.26E-01
		747.13		13.10	5.29E-01		-3.86E-02	2.48E-01
	ND-147	91.11		28.90	1.42E+02	1.42E+02	1.73E+02	6.96E+01
		531.02		13.10	2.78E+02		1.75E+02	1.32E+02
	PM-149	285.90		3.10	1.10E+14	1.10E+14	5.93E+12	5.28E+13
	EU-152	121.78		20.50	2.32E-01	2.32E-01	-2.11E-03	1.12E-01
		244.69		5.40	1.08E+00		-7.61E-02	5.25E-01
		344.27		19.13	3.00E-01		4.21E-02	1.44E-01
		778.89		9.20	7.47E-01		-7.50E-02	3.50E-01
		964.01		10.40	9.00E-01		-1.49E+00	4.25E-01
		1085.78		7.22	1.13E+00		4.97E-01	5.27E-01
		1112.02		9.60	9.47E-01		2.35E-01	4.44E-01
		1407.95		14.94	4.88E-01		1.85E-01	2.21E-01
	GD-153	97.43		31.30	2.16E-01	2.16E-01	1.19E-01	1.06E-01
		103.18		22.20	3.02E-01		1.14E-01	1.47E-01
	EU-154	123.07		40.50	1.17E-01	1.17E-01	-1.61E-02	5.67E-02
		723.30		19.70	3.49E-01		2.44E-02	1.64E-01
		873.19		11.50	6.27E-01		2.09E-01	2.92E-01
		996.32		10.30	7.56E-01		-2.58E-01	3.52E-01
		1004.76		17.90	4.31E-01		-1.00E-02	2.01E-01
		1274.45		35.50	2.30E-01		-1.29E-01	1.06E-01
+	EU-155	86.50	*	30.90	4.53E-01	2.55E-01	5.06E-01	2.25E-01
		105.30		20.70	2.55E-01		5.34E-02	1.24E-01
	EU-156	811.77		10.40	6.48E+01	6.48E+01	-2.03E+01	3.02E+01
		1153.47		7.20	1.19E+02		-5.42E+01	5.55E+01
		1230.71		8.90	1.21E+02		2.79E+01	5.70E+01
	HO-166M	184.41		72.60	8.41E-02	8.41E-02	1.51E-01	4.10E-02
		280.45		29.60	1.95E-01		-1.39E-02	9.40E-02
		410.94		11.10	5.31E-01		1.62E-01	2.53E-01
		711.69		54.10	1.30E-01		2.89E-02	6.11E-02
	TM-171	66.72		0.14	4.69E+01	4.69E+01	-9.34E+01	2.30E+01
	HF-172	67.35		5.31	1.26E+00	4.73E-01	3.06E-01	6.15E-01
		125.81		11.30	4.73E-01		5.86E-02	2.30E-01
	LU-172	181.53		20.60	8.62E+03	4.86E+03	9.26E+02	4.18E+03
		900.72		29.81	8.63E+03		4.37E+03	4.02E+03
		1093.66		62.50	4.86E+03		5.80E+02	2.27E+03
	LU-173	100.72		5.24	1.06E+00	3.60E-01	-5.10E-01	5.15E-01
		272.11		21.20	3.60E-01		2.36E-01	1.75E-01
	HF-175	343.40		84.00	1.86E-01	1.86E-01	2.57E-02	8.94E-02
	LU-176	88.34		13.30	4.89E-01	5.57E-02	-4.73E-02	2.40E-01
		201.83		86.00	5.92E-02		-1.28E-02	2.87E-02
		306.78		94.00	5.57E-02		-2.02E-02	2.67E-02
	HF-181	133.02		41.70	6.15E-01	3.54E-01	-2.27E-01	2.99E-01
		345.85		17.20	1.68E+00		2.43E-01	8.07E-01
		482.03		82.80	3.54E-01		-2.36E-01	1.68E-01
	TA-182	67.75		41.20	2.70E-01	2.70E-01	6.57E-02	1.32E-01
		1121.30		34.90	6.28E-01		9.01E-01	2.99E-01
		1189.05		16.23	1.09E+00		-1.01E-01	5.09E-01
		1221.41		26.98	7.13E-01		1.49E-01	3.36E-01
		1231.02		11.44	1.71E+00		3.94E-01	8.05E-01
	IR-192	308.46		29.68	4.62E-01	3.12E-01	-1.26E-01	2.22E-01
		468.07		48.10	3.12E-01		2.43E-02	1.48E-01
	HG-203	279.19		77.30	3.44E-01	3.44E-01	-1.35E-03	1.66E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TL-204	374.74		94.11	6.71E-02	6.71E-02	3.34E-02	3.22E-02
		899.15		99.16	7.54E-02		1.48E-02	3.51E-02
		911.74		91.10	1.71E-01		4.63E-01	8.26E-02
	BI-207	569.67		97.72	6.30E-02	6.30E-02	5.56E-03	2.98E-02
		1063.62		74.90	9.91E-02		1.64E-02	4.59E-02
+	TL-208	583.14	*	30.22	4.59E-01	2.56E-01	1.39E+00	2.24E-01
		860.37	*	4.48	2.09E+00		1.87E+00	9.95E-01
		2614.66	*	35.85	2.56E-01		1.16E+00	1.13E-01
	BI-210M	262.00		45.00	1.24E-01	1.24E-01	3.15E-02	5.99E-02
		300.00		23.00	2.74E-01		1.29E-01	1.32E-01
	PB-210	46.50		4.25	1.32E+00	1.32E+00	8.41E-01	6.45E-01
	PB-211	404.84		2.90	2.08E+00	2.08E+00	-1.34E-01	9.96E-01
		831.96		2.90	2.53E+00		-1.31E+00	1.19E+00
+	BI-212	727.17	*	11.80	7.56E-01	7.56E-01	1.01E+00	3.61E-01
		1620.62		2.75	1.88E+00		3.65E-01	8.03E-01
+	PB-212	238.63	*	44.60	2.87E-01	2.87E-01	1.43E+00	1.41E-01
		300.09		3.41	1.85E+00		8.69E-01	8.93E-01
+	BI-214	609.31	*	46.30	2.14E-01	2.14E-01	9.70E-01	1.03E-01
		1120.29	*	15.10	8.80E-01		1.09E+00	4.21E-01
		1764.49	*	15.80	3.55E-01		1.51E+00	1.52E-01
		2204.22	*	4.98	8.86E-01		1.13E+00	3.50E-01
+	PB-214	295.21	*	19.19	3.86E-01	1.94E-01	1.08E+00	1.88E-01
		351.92	*	37.19	1.94E-01		9.65E-01	9.38E-02
	RN-219	401.80		6.50	9.30E-01	9.30E-01	2.08E-01	4.45E-01
	RA-223	323.87		3.88	1.46E+00	1.46E+00	-1.32E+00	7.00E-01
+	RA-224	240.98	*	3.95	3.28E+00	3.28E+00	4.56E+00	1.62E+00
	RA-225	40.00		31.00	1.91E+01	1.91E+01	5.31E+00	9.27E+00
+	RA-226	186.21	*	3.28	2.44E+00	2.44E+00	2.86E+00	1.19E+00
	TH-227	50.10		8.40	6.17E-01	5.63E-01	-4.52E-01	3.00E-01
		236.00		11.50	5.63E-01		-4.26E+00	2.73E-01
		256.20		6.30	8.73E-01		1.85E-01	4.21E-01
+	AC-228	338.32	*	11.40	7.97E-01	3.97E-01	1.84E+00	3.88E-01
		911.07	*	27.70	3.97E-01		1.42E+00	1.90E-01
		969.11	*	16.60	8.76E-01		1.19E+00	4.23E-01
	TH-230	48.44		16.90	3.30E-01	3.30E-01	1.20E-01	1.61E-01
		62.85		4.60	1.36E+00		1.55E+00	6.68E-01
		67.67		0.37	1.63E+01		3.96E+00	7.96E+00
	PA-231	283.67		1.60	3.46E+00	2.51E+00	1.17E-01	1.67E+00
		302.67		2.30	2.51E+00		8.25E-01	1.21E+00
	TH-231	25.64		14.70	5.22E-01	5.22E-01	-3.11E+00	2.54E-01
		84.21		6.40	9.22E-01		-4.73E-01	4.51E-01
	PA-233	311.98		38.60	1.97E+00	1.97E+00	1.64E-01	9.49E-01
	PA-234	131.20		20.40	2.56E-01	2.56E-01	1.54E-01	1.25E-01
		733.99		8.80	7.21E-01		-1.09E-01	3.37E-01
		946.00		12.00	6.58E-01		1.92E-01	3.08E-01
	PA-234M	1001.03		0.92	8.67E+00	8.67E+00	3.88E+00	4.05E+00
	TH-234	63.29		3.80	1.66E+00	1.66E+00	1.73E+00	8.16E-01
	U-235	143.76		10.50	5.04E-01	5.04E-01	2.29E-01	2.45E-01
		163.35		4.70	1.04E+00		2.74E-01	5.03E-01
		205.31		4.70	1.07E+00		1.14E-01	5.17E-01
+	NP-237	86.50	*	12.60	1.07E+00	1.07E+00	1.19E+00	5.30E-01
	NP-239	106.10		22.70	2.02E+12	2.02E+12	6.57E+11	9.83E+11
		228.18		10.70	4.17E+12		1.32E+12	2.01E+12

Analysis Report for 1707088-08

HTC-A03-S004-1218-01

	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	3.85E+12	2.02E+12	2.40E+12	1.86E+12
	AM-241	59.54		35.90	1.53E-01	1.53E-01	-1.21E-01	7.47E-02
+	AM-243	74.67	*	66.00	1.67E-01	1.67E-01	2.56E-01	8.23E-02
+	CM-243	209.75	*	3.29	2.06E+00	4.74E-01	1.70E+00	1.00E+00
		228.14		10.60	4.75E-01		1.50E-01	2.29E-01
		277.60	*	14.00	4.74E-01		2.32E-01	2.30E-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-A03-S004-1218-01

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	66	93	68	168	517	173
25:	69	65	69	70	73	66	53	67
33:	67	66	52	74	77	71	59	76
41:	86	78	76	69	75	93	151	116
49:	76	102	83	100	106	103	111	102
57:	103	110	108	121	114	129	157	243
65:	138	130	143	151	151	158	142	176
73:	148	167	309	316	349	503	187	125
81:	127	112	101	146	146	142	182	220
89:	152	148	168	144	249	249	159	101
97:	90	100	105	114	79	70	88	96
105:	113	121	82	86	107	103	90	80
113:	73	86	74	88	81	86	80	66
121:	97	69	72	88	78	73	85	85
129:	103	117	96	95	82	80	80	69
137:	67	88	64	81	86	73	76	119
145:	96	85	68	89	74	75	72	70
153:	91	85	91	66	90	68	71	71
161:	69	70	72	74	67	58	54	65
169:	68	75	64	55	66	61	56	58
177:	67	78	57	70	62	49	70	70
185:	83	139	117	78	43	50	56	62
193:	78	58	55	73	55	60	76	63
201:	60	69	51	56	55	66	55	53
209:	74	103	68	48	50	41	65	58
217:	54	55	45	53	58	51	58	46
225:	39	45	56	39	48	57	49	51
233:	43	53	62	53	57	181	595	256
241:	108	146	115	52	48	50	42	38
249:	31	40	29	33	43	37	34	37
257:	28	49	38	38	35	30	33	45
265:	43	32	31	30	30	62	83	50
273:	43	33	44	41	42	57	39	31
281:	36	30	33	29	33	31	39	28
289:	34	29	33	38	34	52	135	158
297:	52	32	39	39	51	36	30	28
305:	22	24	25	27	22	36	28	26
313:	35	31	33	31	33	24	32	32
321:	20	29	29	24	42	20	36	39
329:	45	32	26	26	34	20	31	24
337:	34	111	126	52	21	32	35	24
345:	19	30	28	15	22	25	61	277
353:	148	38	21	32	26	22	23	21
361:	12	19	20	16	26	21	33	24

369:	28	27	18	30	24	23	26	30

Sample Title: HTC-A03-S004-1218-01

Channel								
377:	27	22	16	25	25	23	16	25
385:	28	27	24	23	27	18	24	23
393:	19	17	20	20	28	16	21	24
401:	24	26	23	28	20	24	19	24
409:	12	36	27	20	17	16	21	14
417:	18	22	18	24	18	16	24	24
425:	12	14	19	23	15	15	18	22
433:	17	23	21	14	26	17	26	18
441:	19	22	16	20	21	21	20	16
449:	22	15	16	14	16	11	20	16
457:	15	22	15	15	15	26	52	33
465:	19	19	18	17	18	14	15	16
473:	10	25	12	9	20	12	14	22
481:	16	13	18	13	10	16	29	17
489:	12	15	12	18	16	13	14	20
497:	16	17	14	17	19	20	13	11
505:	11	13	17	25	31	62	102	60
513:	28	24	22	20	15	22	15	18
521:	18	14	17	16	19	14	10	12
529:	17	21	16	14	14	14	5	15
537:	9	15	20	11	18	11	7	14
545:	19	9	5	13	11	16	15	18
553:	17	19	12	14	9	19	9	17
561:	11	23	21	17	10	10	17	12
569:	13	10	12	21	13	18	14	17
577:	15	16	26	21	13	48	160	123
585:	31	14	20	17	19	13	10	16
593:	15	14	15	15	16	12	16	15
601:	16	16	20	16	21	18	22	29
609:	166	171	37	12	16	18	14	12
617:	17	17	10	16	13	15	11	11
625:	20	12	19	20	11	7	15	7
633:	8	6	14	15	16	4	7	17
641:	16	15	7	8	10	12	13	8
649:	13	8	17	9	14	13	11	12
657:	14	7	16	13	14	13	15	17
665:	17	15	18	13	8	14	7	12
673:	8	13	12	12	15	15	11	14
681:	15	12	14	19	12	15	7	19
689:	11	7	16	13	15	3	15	17
697:	16	19	18	17	15	17	12	13
705:	12	19	14	17	11	13	21	10
713:	8	12	16	7	10	15	11	13
721:	14	5	6	11	15	17	42	37
729:	11	6	12	8	14	8	10	7
737:	11	14	10	4	7	12	13	12
745:	11	8	17	12	7	9	7	14
753:	16	10	12	18	13	12	10	12
761:	11	9	12	13	14	11	16	23
769:	29	5	10	20	14	11	14	7
777:	12	15	4	9	10	16	17	13
785:	19	24	15	7	15	11	18	11
793:	10	9	31	15	9	16	15	7

801:	11	9	11	13	4	7	6	14

Sample Title: HTC-A03-S004-1218-01

Channel								
809:	7	10	6	9	11	16	6	17
817:	7	8	8	13	13	8	10	13
825:	9	10	9	13	10	8	11	9
833:	13	8	19	21	14	9	8	14
841:	7	8	9	8	12	11	6	8
849:	16	3	11	7	8	12	12	8
857:	10	10	16	20	30	13	10	7
865:	7	15	11	8	7	11	7	8
873:	10	9	7	14	7	8	4	6
881:	11	8	10	10	15	6	12	6
889:	11	9	9	9	8	11	7	6
897:	7	6	13	4	12	16	8	6
905:	7	9	9	19	13	46	119	70
913:	13	12	9	12	11	9	9	7
921:	10	13	6	11	4	11	7	11
929:	2	9	7	9	10	20	16	13
937:	6	8	12	9	6	6	9	16
945:	5	9	9	16	10	12	10	11
953:	5	9	5	7	11	9	6	8
961:	8	9	10	13	32	18	10	38
969:	51	35	11	8	13	6	8	8
977:	5	7	12	11	7	10	9	9
985:	11	10	5	8	8	9	12	11
993:	7	11	11	9	6	8	11	11
1001:	10	12	10	7	7	7	8	10
1009:	5	7	7	9	3	5	4	9
1017:	5	7	7	5	8	5	10	6
1025:	8	12	7	14	0	6	11	11
1033:	10	10	6	7	8	9	9	6
1041:	11	10	8	13	6	5	12	8
1049:	10	13	16	11	9	13	6	6
1057:	6	6	11	13	5	8	3	8
1065:	9	7	5	6	11	4	9	9
1073:	7	8	7	9	6	10	14	3
1081:	7	6	11	9	8	9	10	9
1089:	7	8	12	11	9	9	12	8
1097:	7	13	4	8	5	12	10	14
1105:	9	7	15	6	6	15	11	10
1113:	14	11	8	9	8	9	22	43
1121:	27	17	9	7	9	5	11	13
1129:	9	8	8	9	7	16	4	13
1137:	7	9	4	7	8	14	8	14
1145:	9	10	9	13	11	8	11	8
1153:	12	6	10	7	8	14	7	6
1161:	7	7	8	14	8	9	14	8
1169:	13	11	10	8	15	6	8	19
1177:	12	11	5	7	13	5	8	8
1185:	14	11	12	8	13	12	14	7
1193:	13	11	13	14	8	8	13	8
1201:	11	10	9	18	9	13	14	12
1209:	14	5	13	14	7	13	14	11
1217:	14	14	9	19	14	9	14	10
1225:	12	9	8	10	14	16	11	18

1233:	14	9	18	5	22	35	20	15

Sample Title: HTC-A03-S004-1218-01

Channel								
1241:	9	6	9	10	3	7	12	7
1249:	9	8	9	6	11	11	9	11
1257:	8	7	8	7	12	5	7	9
1265:	5	7	8	5	13	6	7	11
1273:	8	6	7	4	4	11	8	4
1281:	8	11	12	5	6	8	10	3
1289:	6	12	5	8	11	2	4	5
1297:	5	5	5	8	7	4	2	6
1305:	8	7	4	1	7	7	10	7
1313:	4	9	6	4	7	5	7	3
1321:	9	5	1	6	7	3	7	3
1329:	5	4	6	4	4	7	3	2
1337:	3	2	2	0	4	1	4	6
1345:	6	1	7	5	4	4	4	3
1353:	4	1	4	3	2	1	3	3
1361:	6	2	6	0	4	3	4	5
1369:	5	3	5	5	2	3	5	4
1377:	8	13	3	5	3	2	5	3
1385:	4	2	3	5	3	1	4	2
1393:	3	1	2	1	4	4	2	3
1401:	5	6	0	3	1	3	5	9
1409:	6	5	0	6	6	0	2	2
1417:	2	2	7	1	1	3	4	2
1425:	2	3	3	4	1	2	2	3
1433:	4	3	5	1	3	5	2	3
1441:	5	5	2	3	2	2	0	2
1449:	4	3	2	2	2	1	2	5
1457:	6	28	139	431	384	109	18	17
1465:	11	4	2	2	2	0	3	0
1473:	3	1	1	1	2	3	1	1
1481:	4	4	0	1	1	3	4	8
1489:	4	1	3	4	0	5	7	4
1497:	5	2	1	2	3	4	1	1
1505:	4	1	3	4	9	3	1	2
1513:	3	2	4	0	2	1	1	1
1521:	3	1	0	0	0	2	3	3
1529:	0	0	0	0	1	1	3	6
1537:	4	2	1	1	4	3	3	1
1545:	2	1	0	2	0	2	0	0
1553:	1	1	0	0	1	3	3	2
1561:	2	3	4	0	0	1	3	0
1569:	1	2	0	0	1	2	1	2
1577:	0	4	3	4	2	0	1	3
1585:	1	5	5	9	5	2	2	7
1593:	2	1	4	3	2	0	2	1
1601:	2	0	1	0	0	2	1	1
1609:	1	2	0	0	1	0	0	3
1617:	2	1	2	4	1	1	1	2
1625:	0	2	2	2	6	6	4	1
1633:	2	0	2	2	3	2	3	3
1641:	2	0	1	0	0	1	1	2
1649:	0	0	1	1	1	4	1	1
1657:	1	1	4	1	4	2	2	1

1665:	2	6	1	2	0	0	3	4

Sample Title: HTC-A03-S004-1218-01

Channel								
1673:	1	2	2	0	3	1	2	2
1681:	0	2	3	1	2	2	1	1
1689:	1	0	3	2	1	0	1	3
1697:	1	1	0	4	0	2	0	2
1705:	1	2	0	0	0	1	0	1
1713:	1	1	1	1	0	4	0	0
1721:	1	0	1	1	0	2	0	8
1729:	11	5	2	1	0	1	0	3
1737:	1	3	0	0	3	0	2	3
1745:	3	3	0	2	1	1	1	1
1753:	2	1	2	1	0	0	0	4
1761:	4	8	25	24	14	5	1	1
1769:	2	1	1	1	0	2	2	1
1777:	0	2	2	0	0	2	4	1
1785:	1	1	1	2	0	0	1	0
1793:	1	1	2	3	1	2	2	0
1801:	3	0	0	2	0	2	2	0
1809:	0	1	0	3	2	2	1	2
1817:	2	1	4	0	0	2	0	0
1825:	1	2	0	1	1	0	0	2
1833:	0	0	1	1	3	3	0	2
1841:	0	1	2	1	1	4	4	3
1849:	4	0	1	0	2	0	0	0
1857:	2	2	0	1	1	0	0	0
1865:	3	1	1	0	0	3	2	2
1873:	3	1	1	2	1	1	0	1
1881:	3	1	0	0	1	2	1	0
1889:	1	0	2	0	1	3	5	2
1897:	5	1	0	0	1	3	1	0
1905:	2	0	0	1	0	2	0	1
1913:	1	1	1	0	1	0	1	1
1921:	0	1	3	3	2	2	0	3
1929:	4	0	0	0	0	0	1	3
1937:	1	0	1	2	1	1	3	1
1945:	1	2	2	1	0	3	2	1
1953:	2	0	1	3	3	1	2	2
1961:	2	0	2	1	4	0	2	1
1969:	2	2	0	2	2	1	0	0
1977:	3	2	1	1	0	1	2	0
1985:	0	1	1	1	0	0	2	0
1993:	0	0	3	2	0	3	1	1
2001:	0	1	0	0	0	0	0	1
2009:	3	0	1	0	1	0	0	0
2017:	1	1	2	0	0	2	2	2
2025:	1	0	2	0	2	1	1	2
2033:	1	2	1	1	2	1	0	0
2041:	1	0	1	1	0	2	2	0
2049:	1	1	3	1	0	0	2	3
2057:	1	1	1	1	3	0	1	0
2065:	0	0	0	0	1	0	1	2
2073:	1	1	2	1	2	0	1	1
2081:	1	0	3	2	1	1	3	0
2089:	0	0	0	1	1	0	0	0

2097:	1	1	0	1	4	4	5	5

Sample Title: HTC-A03-S004-1218-01

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

2529:	1	0	1	0	2	0	0	0

Sample Title: HTC-A03-S004-1218-01

Channel								
2537:	0	0	0	0	1	1	1	1
2545:	0	0	0	1	0	0	0	1
2553:	0	0	0	0	1	0	0	0
2561:	0	2	0	1	1	1	0	0
2569:	0	0	0	0	0	0	0	0
2577:	1	1	0	0	2	0	0	0
2585:	0	0	0	0	0	0	0	0
2593:	0	0	0	0	0	0	0	0
2601:	1	0	0	0	0	0	0	2
2609:	0	4	12	30	48	20	5	1
2617:	2	2	0	1	1	2	0	1
2625:	0	0	0	1	2	0	0	1
2633:	0	0	0	0	0	0	0	1
2641:	0	0	2	0	0	1	0	0
2649:	0	1	0	1	0	1	0	1
2657:	0	0	1	0	1	0	0	0
2665:	0	1	0	0	0	1	1	0
2673:	0	0	1	1	1	0	0	0
2681:	0	1	0	0	1	2	0	0
2689:	1	0	1	0	0	0	1	1
2697:	0	0	0	0	0	1	0	1
2705:	0	0	0	0	0	0	0	0
2713:	0	0	0	0	1	0	0	1
2721:	0	0	0	1	0	0	0	0
2729:	0	1	1	0	0	1	0	1
2737:	0	0	1	1	0	0	0	0
2745:	2	1	0	0	0	1	0	0
2753:	1	0	0	0	0	0	0	0
2761:	0	1	0	0	2	0	1	0
2769:	0	0	0	0	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	1	0	0	0	1	0	0	0
2793:	1	0	0	0	0	0	2	0
2801:	1	0	1	0	2	0	0	1
2809:	1	0	0	0	0	0	0	0
2817:	0	0	0	1	0	0	0	0
2825:	0	0	1	0	0	0	0	0
2833:	0	1	0	0	0	0	0	1
2841:	0	0	0	0	1	0	0	0
2849:	1	0	0	1	0	1	0	0
2857:	0	0	0	0	1	0	1	1
2865:	0	0	1	0	0	0	0	0
2873:	1	0	0	0	0	0	0	1
2881:	1	0	0	0	0	2	0	0
2889:	1	0	1	0	0	0	0	0
2897:	0	0	0	0	0	0	0	1
2905:	1	0	1	0	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	1	1	0	0
2937:	0	0	0	0	0	0	1	1
2945:	0	0	0	0	1	0	1	0
2953:	0	0	0	1	1	0	0	0

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-1218-01

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

3393:	1	0	1	0	0	1	0	0

Sample Title: HTC-A03-S004-1218-01

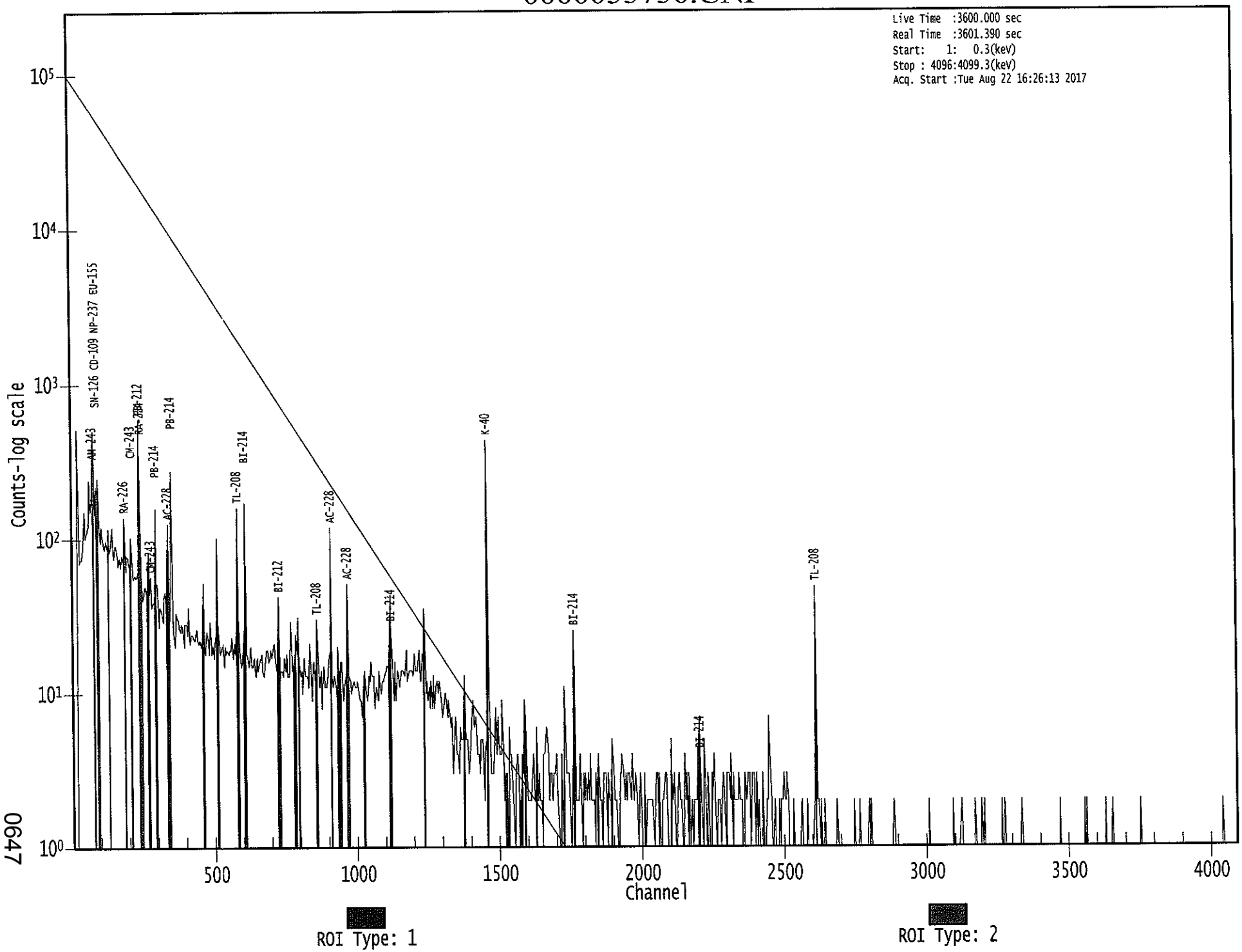
Channel								
3401:	0	0	0	0	0	0	1	0
3409:	0	0	0	0	1	0	0	0
3417:	0	0	0	0	0	1	0	0
3425:	0	1	0	0	0	0	0	0
3433:	1	1	0	0	0	0	0	0
3441:	0	0	0	0	0	1	1	0
3449:	1	0	0	0	1	0	0	0
3457:	0	0	0	1	0	0	0	0
3465:	0	0	0	0	2	0	0	0
3473:	0	0	0	0	1	0	0	0
3481:	0	0	1	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	1	0	0	1	0	0	0	0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

3825:	0	1	0	0	0	1	0	0

Sample Title: HTC-A03-S004-1218-01

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

0000055750.CNF



0647

KB 8/22/17

Apex-Gamma

Analysis Report for 1707088-09
HTC-A03-S004-1824-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-09
Sample Description	: HTC-A03-S004-1824-01
Sample Type	: SOIL
Sample Size	: 6.721E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2017 9:32:49AM
Acquisition Started	: 8/22/2017 4:26:22PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3608.3 seconds
Dead Time	: 0.23 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 1/14/2017
Efficiency Calibration Used Done On	: 1/14/2017
Efficiency Calibration Description	:
Sample Number	: 55751

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 5:26:56PM
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	64.55	64.86	0.0000	0.00
2	75.20	75.50	0.0000	0.00
3	77.62	77.93	0.0000	0.00
4	93.14	93.44	0.0000	0.00
5	113.24	113.53	0.0000	0.00
6	130.27	130.55	0.0000	0.00
7	186.39	186.66	0.0000	0.00
8	209.87	210.12	0.0000	0.00
9	239.63	239.88	0.0000	0.00
10	270.47	270.70	0.0000	0.00
11	295.55	295.78	0.0000	0.00
12	301.35	301.58	0.0000	0.00
13	328.13	328.35	0.0000	0.00
14	339.04	339.26	0.0000	0.00
15	352.40	352.61	0.0000	0.00
16	431.01	431.20	0.0000	0.00
17	463.93	464.10	0.0000	0.00
18	489.33	489.49	0.0000	0.00
19	510.96	511.11	0.0000	0.00
20	583.27	583.40	0.0000	0.00
21	609.26	609.38	0.0000	0.00
22	729.27	729.35	0.0000	0.00
23	871.21	871.24	0.0000	0.00
24	910.77	910.79	0.0000	0.00
25	922.12	922.14	0.0000	0.00
26	964.83	964.83	0.0000	0.00
27	968.83	968.83	0.0000	0.00
28	1119.18	1119.13	0.0000	0.00
29	1311.35	1311.24	0.0000	0.00
30	1319.99	1319.87	0.0000	0.00
31	1361.34	1361.21	0.0000	0.00
32	1367.98	1367.84	0.0000	0.00
33	1376.81	1376.67	0.0000	0.00
34	1460.55	1460.38	0.0000	0.00
35	1494.84	1494.67	0.0000	0.00
36	1512.05	1511.87	0.0000	0.00
37	1527.98	1527.79	0.0000	0.00
38	1536.80	1536.61	0.0000	0.00
39	1729.27	1729.01	0.0000	0.00
40	1763.93	1763.67	0.0000	0.00
41	1845.63	1845.33	0.0000	0.00
42	1892.98	1892.67	0.0000	0.00

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	2101.74	2101.36	0.0000	0.00
44	2107.18	2106.80	0.0000	0.00
45	2288.24	2287.80	0.0000	0.00
46	2334.14	2333.68	0.0000	0.00
47	2439.50	2439.01	0.0000	0.00
48	2613.53	2612.98	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 5:26:56PM

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	64.55	61 -	68	64.86	1.63E+02	112.84	2.01E+03	1.60
M	2	75.20	71 -	82	75.50	3.92E+02	99.10	1.46E+03	2.01
m	3	77.62	71 -	82	77.93	7.01E+02	106.96	1.43E+03	2.02
	4	93.14	90 -	97	93.44	3.43E+02	111.61	1.79E+03	2.48
	5	113.24	110 -	117	113.53	7.50E+01	85.74	1.17E+03	3.16
	6	130.27	127 -	134	130.55	8.65E+01	87.11	1.20E+03	1.52
	7	186.39	181 -	192	186.66	2.36E+02	107.00	1.31E+03	2.27
	8	209.87	205 -	214	210.12	1.21E+02	88.28	1.03E+03	3.14
	9	239.63	234 -	246	239.88	1.04E+03	112.55	9.90E+02	2.31
	10	270.47	267 -	275	270.70	8.25E+01	61.85	5.43E+02	3.04
	11	295.55	293 -	299	295.78	2.20E+02	55.83	4.13E+02	1.93
	12	301.35	299 -	305	301.58	7.80E+01	50.08	4.00E+02	1.80
	13	328.13	324 -	332	328.35	7.39E+01	53.00	3.86E+02	2.91
	14	339.04	334 -	345	339.26	1.84E+02	69.66	5.10E+02	2.24
	15	352.40	348 -	357	352.61	3.84E+02	65.35	3.92E+02	2.33
	16	431.01	429 -	433	431.20	2.20E+01	26.60	1.38E+02	1.11
	17	463.93	460 -	468	464.10	3.80E+01	43.58	2.66E+02	2.05
	18	489.33	484 -	494	489.49	5.69E+01	44.25	2.30E+02	6.64
	19	510.96	506 -	516	511.11	1.58E+02	51.07	2.62E+02	3.57
	20	583.27	577 -	589	583.40	2.37E+02	60.93	3.26E+02	2.41
	21	609.26	603 -	616	609.38	3.21E+02	56.95	2.19E+02	2.68
	22	729.27	723 -	738	729.35	9.81E+01	54.30	2.54E+02	3.75
	23	871.21	867 -	877	871.24	3.38E+01	30.38	1.06E+02	6.73
	24	910.77	905 -	916	910.79	1.43E+02	40.40	1.33E+02	2.11
	25	922.12	920 -	925	922.14	1.62E+01	19.39	6.55E+01	1.85
M	26	964.83	962 -	980	964.83	3.79E+01	22.36	6.41E+01	2.81
m	27	968.83	962 -	980	968.83	1.21E+02	34.31	9.06E+01	3.05
	28	1119.18	1113 -	1125	1119.13	7.60E+01	41.04	1.62E+02	2.20
	29	1311.35	1308 -	1315	1311.24	1.63E+01	18.11	4.33E+01	1.16
	30	1319.99	1316 -	1324	1319.87	1.71E+01	18.17	3.98E+01	2.40
	31	1361.34	1358 -	1364	1361.21	1.78E+01	14.20	2.24E+01	1.53
	32	1367.98	1365 -	1372	1367.84	1.51E+01	14.42	2.58E+01	2.97
	33	1376.81	1373 -	1381	1376.67	1.65E+01	18.17	4.11E+01	1.75
	34	1460.55	1455 -	1466	1460.38	7.10E+02	56.71	4.39E+01	2.45
	35	1494.84	1493 -	1497	1494.67	8.50E+00	7.52	5.00E+00	2.64
	36	1512.05	1504 -	1521	1511.87	3.27E+01	17.94	1.46E+01	12.08
	37	1527.98	1523 -	1531	1527.79	8.50E+00	9.62	9.00E+00	1.28
	38	1536.80	1534 -	1541	1536.61	8.41E+00	11.49	1.72E+01	3.36
	39	1729.27	1725 -	1732	1729.01	1.22E+01	9.80	7.63E+00	2.80
	40	1763.93	1759 -	1767	1763.67	4.36E+01	15.25	8.83E+00	1.75

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1845.63	1841 -	1849	1845.33	1.50E+01	7.75	0.00E+00	6.44
	42	1892.98	1888 -	1895	1892.67	6.00E+00	8.49	8.00E+00	2.39
M	43	2101.74	2096 -	2109	2101.36	9.01E+00	11.40	1.30E+01	3.40
m	44	2107.18	2096 -	2109	2106.80	9.01E+00	7.87	1.70E+00	3.40
	45	2288.24	2284 -	2290	2287.80	5.00E+00	4.47	0.00E+00	2.41
	46	2334.14	2329 -	2337	2333.68	7.90E+00	7.76	4.20E+00	2.79
	47	2439.50	2435 -	2442	2439.01	6.00E+00	6.93	4.00E+00	0.93
	48	2613.53	2606 -	2617	2612.98	6.66E+01	17.78	6.86E+00	3.08

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 : 8/22/2017 5:26:56PM

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	64.55	61 -	68	1.63E+02	112.84	2.01E+03	9.03E+01
M	2	75.20	71 -	82	3.92E+02	99.10	1.46E+03	6.28E+01
m	3	77.62	71 -	82	7.01E+02	106.96	1.43E+03	6.21E+01
	4	93.14	90 -	97	3.43E+02	111.61	1.79E+03	8.65E+01
	5	113.24	110 -	117	7.50E+01	85.74	1.17E+03	6.90E+01
	6	130.27	127 -	134	8.65E+01	87.11	1.20E+03	7.00E+01
	7	186.39	181 -	192	2.36E+02	107.00	1.31E+03	8.42E+01
	8	209.87	205 -	214	1.21E+02	88.28	1.03E+03	7.03E+01
	9	239.63	234 -	246	1.04E+03	112.55	9.90E+02	7.57E+01
	10	270.47	267 -	275	8.25E+01	61.85	5.43E+02	4.86E+01
	11	295.55	293 -	299	2.20E+02	55.83	4.13E+02	3.89E+01
	12	301.35	299 -	305	7.80E+01	50.08	4.00E+02	3.85E+01
	13	328.13	324 -	332	7.39E+01	53.00	3.86E+02	4.12E+01
	14	339.04	334 -	345	1.84E+02	69.66	5.10E+02	5.27E+01
	15	352.40	348 -	357	3.84E+02	65.35	3.92E+02	4.30E+01
	16	431.01	429 -	433	2.20E+01	26.60	1.38E+02	2.05E+01
	17	463.93	460 -	468	3.80E+01	43.58	2.66E+02	3.44E+01
	18	489.33	484 -	494	5.69E+01	44.25	2.30E+02	3.42E+01
	19	510.96	506 -	516	1.58E+02	51.07	2.62E+02	3.65E+01

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	20	583.27	577 -	589	2.37E+02	60.93	3.26E+02	4.32E+01
	21	609.26	603 -	616	3.21E+02	56.95	2.19E+02	3.64E+01
	22	729.27	723 -	738	9.81E+01	54.30	2.54E+02	4.16E+01
	23	871.21	867 -	877	3.38E+01	30.38	1.06E+02	2.31E+01
	24	910.77	905 -	916	1.43E+02	40.40	1.33E+02	2.67E+01
	25	922.12	920 -	925	1.62E+01	19.39	6.55E+01	1.45E+01
M	26	964.83	962 -	980	3.79E+01	22.36	6.41E+01	1.32E+01
m	27	968.83	962 -	980	1.21E+02	34.31	9.06E+01	1.56E+01
	28	1119.18	1113 -	1125	7.60E+01	41.04	1.62E+02	8.36E+00
	29	1311.35	1308 -	1315	1.63E+01	18.11	4.33E+01	1.33E+01
	30	1319.99	1316 -	1324	1.71E+01	18.17	3.98E+01	1.33E+01
	31	1361.34	1358 -	1364	1.78E+01	14.20	2.24E+01	9.39E+00
	32	1367.98	1365 -	1372	1.51E+01	14.42	2.58E+01	9.99E+00
	33	1376.81	1373 -	1381	1.65E+01	18.17	4.11E+01	1.34E+01
	34	1460.55	1455 -	1466	7.10E+02	56.71	4.39E+01	1.59E+01
	35	1494.84	1493 -	1497	8.50E+00	7.52	5.00E+00	3.90E+00
	36	1512.05	1504 -	1521	3.27E+01	17.94	1.46E+01	1.14E+01
	37	1527.98	1523 -	1531	8.50E+00	9.62	9.00E+00	6.29E+00
	38	1536.80	1534 -	1541	8.41E+00	11.49	1.72E+01	8.15E+00
	39	1729.27	1725 -	1732	1.22E+01	9.80	7.63E+00	5.65E+00
	40	1763.93	1759 -	1767	4.36E+01	15.25	8.83E+00	6.27E+00
	41	1845.63	1841 -	1849	1.50E+01	7.75	0.00E+00	0.00E+00
	42	1892.98	1888 -	1895	6.00E+00	8.49	8.00E+00	5.70E+00
M	43	2101.74	2096 -	2109	9.01E+00	11.40	1.30E+01	5.92E+00
m	44	2107.18	2096 -	2109	9.01E+00	7.87	1.70E+00	2.15E+00
	45	2288.24	2284 -	2290	5.00E+00	4.47	0.00E+00	0.00E+00
	46	2334.14	2329 -	2337	7.90E+00	7.76	4.20E+00	4.40E+00
	47	2439.50	2435 -	2442	6.00E+00	6.93	4.00E+00	4.03E+00
	48	2613.53	2606 -	2617	6.66E+01	17.78	6.86E+00	5.80E+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 : 8/22/2017 5:26:56PM

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 1707088-09

HTC-A03-S004-1824-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	64.55	61 -	68	64.86	1.63E+02	112.84	2.01E+03	.....
M	2	75.20	71 -	82	75.50	3.92E+02	99.10	1.46E+03	AM-243
m	3	77.62	71 -	82	77.93	7.01E+02	106.96	1.43E+03	TI-44
	4	93.14	90 -	97	93.44	3.43E+02	111.61	1.79E+03	GA-67
	5	113.24	110 -	117	113.53	7.50E+01	85.74	1.17E+03	.....
	6	130.27	127 -	134	130.55	8.65E+01	87.11	1.20E+03	PA-234
	7	186.39	181 -	192	186.66	2.36E+02	107.00	1.31E+03	RA-226
	8	209.87	205 -	214	210.12	1.21E+02	88.28	1.03E+03	CM-243 GA-67
	9	239.63	234 -	246	239.88	1.04E+03	112.55	9.90E+02	PB-212
	10	270.47	267 -	275	270.70	8.25E+01	61.85	5.43E+02	.....
	11	295.55	293 -	299	295.78	2.20E+02	55.83	4.13E+02	PB-214
	12	301.35	299 -	305	301.58	7.80E+01	50.08	4.00E+02	.....
	13	328.13	324 -	332	328.35	7.39E+01	53.00	3.86E+02	LA-140
	14	339.04	334 -	345	339.26	1.84E+02	69.66	5.10E+02	AC-228
	15	352.40	348 -	357	352.61	3.84E+02	65.35	3.92E+02	PB-214
	16	431.01	429 -	433	431.20	2.20E+01	26.60	1.38E+02	.....
	17	463.93	460 -	468	464.10	3.80E+01	43.58	2.66E+02	SB-125
	18	489.33	484 -	494	489.49	5.69E+01	44.25	2.30E+02	.....
	19	510.96	506 -	516	511.11	1.58E+02	51.07	2.62E+02	.....
	20	583.27	577 -	589	583.40	2.37E+02	60.93	3.26E+02	TL-208
	21	609.26	603 -	616	609.38	3.21E+02	56.95	2.19E+02	BI-214
	22	729.27	723 -	738	729.35	9.81E+01	54.30	2.54E+02	.....
	23	871.21	867 -	877	871.24	3.38E+01	30.38	1.06E+02	NB-94
	24	910.77	905 -	916	910.79	1.43E+02	40.40	1.33E+02	AC-228 TL-204
	25	922.12	920 -	925	922.14	1.62E+01	19.39	6.55E+01	.....
M	26	964.83	962 -	980	964.83	3.79E+01	22.36	6.41E+01	EU-152
m	27	968.83	962 -	980	968.83	1.21E+02	34.31	9.06E+01	AC-228
	28	1119.18	1113 -	1125	1119.13	7.60E+01	41.04	1.62E+02	.....
	29	1311.35	1308 -	1315	1311.24	1.63E+01	18.11	4.33E+01	V-48
	30	1319.99	1316 -	1324	1319.87	1.71E+01	18.17	3.98E+01	.....
	31	1361.34	1358 -	1364	1361.21	1.78E+01	14.20	2.24E+01	.....
	32	1367.98	1365 -	1372	1367.84	1.51E+01	14.42	2.58E+01	NA-24
	33	1376.81	1373 -	1381	1376.67	1.65E+01	18.17	4.11E+01	.....
	34	1460.55	1455 -	1466	1460.38	7.10E+02	56.71	4.39E+01	K-40
	35	1494.84	1493 -	1497	1494.67	8.50E+00	7.52	5.00E+00	.....
	36	1512.05	1504 -	1521	1511.87	3.27E+01	17.94	1.46E+01	.....
	37	1527.98	1523 -	1531	1527.79	8.50E+00	9.62	9.00E+00	.....
	38	1536.80	1534 -	1541	1536.61	8.41E+00	11.49	1.72E+01	.....
	39	1729.27	1725 -	1732	1729.01	1.22E+01	9.80	7.63E+00	.....
	40	1763.93	1759 -	1767	1763.67	4.36E+01	15.25	8.83E+00	BI-214
	41	1845.63	1841 -	1849	1845.33	1.50E+01	7.75	0.00E+00	.....
	42	1892.98	1888 -	1895	1892.67	6.00E+00	8.49	8.00E+00	.....
M	43	2101.74	2096 -	2109	2101.36	9.01E+00	11.40	1.30E+01	.....
m	44	2107.18	2096 -	2109	2106.80	9.01E+00	7.87	1.70E+00	.....
	45	2288.24	2284 -	2290	2287.80	5.00E+00	4.47	0.00E+00	.....
	46	2334.14	2329 -	2337	2333.68	7.90E+00	7.76	4.20E+00	.....
	47	2439.50	2435 -	2442	2439.01	6.00E+00	6.93	4.00E+00	.....
	48	2613.53	2606 -	2617	2612.98	6.66E+01	17.78	6.86E+00	.....

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

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 : 8/22/2017 5:26:56PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	64.55	1.63E+02	112.84	2.47E-02	1.82E-03
M	2	75.20	3.92E+02	99.10	2.65E-02	2.02E-03
m	3	77.62	7.01E+02	106.96	2.68E-02	2.06E-03
	4	93.14	3.43E+02	111.61	2.71E-02	2.24E-03
	5	113.24	7.50E+01	85.74	2.59E-02	2.16E-03
	6	130.27	8.65E+01	87.11	2.45E-02	2.03E-03
	7	186.39	2.36E+02	107.00	1.96E-02	1.55E-03
	8	209.87	1.21E+02	88.28	1.79E-02	1.45E-03
	9	239.63	1.04E+03	112.55	1.61E-02	1.34E-03
	10	270.47	8.25E+01	61.85	1.45E-02	1.21E-03
	11	295.55	2.20E+02	55.83	1.35E-02	1.15E-03
	12	301.35	7.80E+01	50.08	1.32E-02	1.13E-03
	13	328.13	7.39E+01	53.00	1.23E-02	1.08E-03
	14	339.04	1.84E+02	69.66	1.19E-02	1.06E-03
	15	352.40	3.84E+02	65.35	1.15E-02	1.03E-03
	16	431.01	2.20E+01	26.60	9.62E-03	9.00E-04
	17	463.93	3.80E+01	43.58	9.01E-03	8.57E-04
	18	489.33	5.69E+01	44.25	8.58E-03	8.23E-04
	19	510.96	1.58E+02	51.07	8.25E-03	7.94E-04
	20	583.27	2.37E+02	60.93	7.32E-03	6.99E-04
	21	609.26	3.21E+02	56.95	7.04E-03	6.64E-04
	22	729.27	9.81E+01	54.30	5.99E-03	5.35E-04
	23	871.21	3.38E+01	30.38	5.12E-03	4.10E-04
	24	910.77	1.43E+02	40.40	4.92E-03	3.84E-04
	25	922.12	1.62E+01	19.39	4.87E-03	3.82E-04
M	26	964.83	3.79E+01	22.36	4.68E-03	3.75E-04
m	27	968.83	1.21E+02	34.31	4.67E-03	3.74E-04
	28	1119.18	7.60E+01	41.04	4.12E-03	3.50E-04
	29	1311.35	1.63E+01	18.11	3.61E-03	3.02E-04
	30	1319.99	1.71E+01	18.17	3.59E-03	2.99E-04
	31	1361.34	1.78E+01	14.20	3.50E-03	2.91E-04
	32	1367.98	1.51E+01	14.42	3.49E-03	2.90E-04
	33	1376.81	1.65E+01	18.17	3.47E-03	2.89E-04
	34	1460.55	7.10E+02	56.71	3.31E-03	2.75E-04

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	35	1494.84	8.50E+00	7.52	3.25E-03	2.70E-04
	36	1512.05	3.27E+01	17.94	3.22E-03	2.67E-04
	37	1527.98	8.50E+00	9.62	3.19E-03	2.64E-04
	38	1536.80	8.41E+00	11.49	3.18E-03	2.63E-04
	39	1729.27	1.22E+01	9.80	2.91E-03	2.32E-04
	40	1763.93	4.36E+01	15.25	2.87E-03	2.27E-04
	41	1845.63	1.50E+01	7.75	2.77E-03	2.15E-04
	42	1892.98	6.00E+00	8.49	2.72E-03	2.15E-04
M	43	2101.74	9.01E+00	11.40	2.54E-03	2.15E-04
m	44	2107.18	9.01E+00	7.87	2.54E-03	2.15E-04
	45	2288.24	5.00E+00	4.47	2.41E-03	2.15E-04
	46	2334.14	7.90E+00	7.76	2.38E-03	2.15E-04
	47	2439.50	6.00E+00	6.93	2.32E-03	2.15E-04
	48	2613.53	6.66E+01	17.78	2.24E-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 : 8/22/2017 5:26:56PM

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	64.55	1.63E+02	112.84			1.63E+02	1.13E+02
M	2	75.20	3.92E+02	99.10			3.92E+02	9.91E+01
m	3	77.62	7.01E+02	106.96			7.01E+02	1.07E+02
	4	93.14	3.43E+02	111.61	7.98E+01	7.31E+00	2.64E+02	1.12E+02
	5	113.24	7.50E+01	85.74			7.50E+01	8.57E+01
	6	130.27	8.65E+01	87.11			8.65E+01	8.71E+01
	7	186.39	2.36E+02	107.00	3.06E+01	5.82E+00	2.06E+02	1.07E+02
	8	209.87	1.21E+02	88.28			1.21E+02	8.83E+01
	9	239.63	1.04E+03	112.55	1.40E+01	2.71E+00	1.03E+03	1.13E+02
	10	270.47	8.25E+01	61.85			8.25E+01	6.19E+01
	11	295.55	2.20E+02	55.83			2.20E+02	5.58E+01
	12	301.35	7.80E+01	50.08			7.80E+01	5.01E+01
	13	328.13	7.39E+01	53.00			7.39E+01	5.30E+01
	14	339.04	1.84E+02	69.66			1.84E+02	6.97E+01
	15	352.40	3.84E+02	65.35	6.53E+00	4.43E+00	3.78E+02	6.55E+01
	16	431.01	2.20E+01	26.60			2.20E+01	2.66E+01

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	17	463.93	3.80E+01	43.58			3.80E+01	4.36E+01
	18	489.33	5.69E+01	44.25			5.69E+01	4.43E+01
	19	510.96	1.58E+02	51.07	5.21E+01	4.74E+00	1.06E+02	5.13E+01
	20	583.27	2.37E+02	60.93			2.37E+02	6.09E+01
	21	609.26	3.21E+02	56.95	3.25E+00	2.97E+00	3.18E+02	5.70E+01
	22	729.27	9.81E+01	54.30			9.81E+01	5.43E+01
	23	871.21	3.38E+01	30.38			3.38E+01	3.04E+01
	24	910.77	1.43E+02	40.40	2.85E+00	2.76E+00	1.41E+02	4.05E+01
	25	922.12	1.62E+01	19.39			1.62E+01	1.94E+01
M	26	964.83	3.79E+01	22.36			3.79E+01	2.24E+01
m	27	968.83	1.21E+02	34.31			1.21E+02	3.43E+01
	28	1119.18	7.60E+01	41.04			7.60E+01	4.10E+01
	29	1311.35	1.63E+01	18.11			1.63E+01	1.81E+01
	30	1319.99	1.71E+01	18.17			1.71E+01	1.82E+01
	31	1361.34	1.78E+01	14.20			1.78E+01	1.42E+01
	32	1367.98	1.51E+01	14.42			1.51E+01	1.44E+01
	33	1376.81	1.65E+01	18.17			1.65E+01	1.82E+01
	34	1460.55	7.10E+02	56.71	1.00E+00	1.77E+00	7.09E+02	5.67E+01
	35	1494.84	8.50E+00	7.52			8.50E+00	7.52E+00
	36	1512.05	3.27E+01	17.94			3.27E+01	1.79E+01
	37	1527.98	8.50E+00	9.62			8.50E+00	9.62E+00
	38	1536.80	8.41E+00	11.49			8.41E+00	1.15E+01
	39	1729.27	1.22E+01	9.80			1.22E+01	9.80E+00
	40	1763.93	4.36E+01	15.25			4.36E+01	1.52E+01
	41	1845.63	1.50E+01	7.75			1.50E+01	7.75E+00
	42	1892.98	6.00E+00	8.49			6.00E+00	8.49E+00
M	43	2101.74	9.01E+00	11.40			9.01E+00	1.14E+01
m	44	2107.18	9.01E+00	7.87			9.01E+00	7.87E+00
	45	2288.24	5.00E+00	4.47			5.00E+00	4.47E+00
	46	2334.14	7.90E+00	7.76			7.90E+00	7.76E+00
	47	2439.50	6.00E+00	6.93			6.00E+00	6.93E+00
	48	2613.53	6.66E+01	17.78			6.66E+01	1.78E+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 : 8/22/2017 5:26:56PM

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

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	64.55	1.63E+02	112.84			1.63E+02	1.13E+02
M	2	75.20	3.92E+02	99.10			3.92E+02	9.91E+01
m	3	77.62	7.01E+02	106.96			7.01E+02	1.07E+02
	4	93.14	3.43E+02	111.61	7.98E+01	7.31E+00	2.64E+02	1.12E+02
	5	113.24	7.50E+01	85.74			7.50E+01	8.57E+01
	6	130.27	8.65E+01	87.11			8.65E+01	8.71E+01
	7	186.39	2.36E+02	107.00	3.06E+01	5.82E+00	2.06E+02	1.07E+02
	8	209.87	1.21E+02	88.28			1.21E+02	8.83E+01
	9	239.63	1.04E+03	112.55	1.40E+01	2.71E+00	1.03E+03	1.13E+02
	10	270.47	8.25E+01	61.85			8.25E+01	6.19E+01
	11	295.55	2.20E+02	55.83			2.20E+02	5.58E+01
	12	301.35	7.80E+01	50.08			7.80E+01	5.01E+01
	13	328.13	7.39E+01	53.00			7.39E+01	5.30E+01
	14	339.04	1.84E+02	69.66			1.84E+02	6.97E+01
	15	352.40	3.84E+02	65.35	6.53E+00	4.43E+00	3.78E+02	6.55E+01
	16	431.01	2.20E+01	26.60			2.20E+01	2.66E+01
	17	463.93	3.80E+01	43.58			3.80E+01	4.36E+01
	18	489.33	5.69E+01	44.25			5.69E+01	4.43E+01
	19	510.96	1.58E+02	51.07	5.21E+01	4.74E+00	1.06E+02	5.13E+01
	20	583.27	2.37E+02	60.93			2.37E+02	6.09E+01
	21	609.26	3.21E+02	56.95	3.25E+00	2.97E+00	3.18E+02	5.70E+01
	22	729.27	9.81E+01	54.30			9.81E+01	5.43E+01
	23	871.21	3.38E+01	30.38			3.38E+01	3.04E+01
	24	910.77	1.43E+02	40.40	2.85E+00	2.76E+00	1.41E+02	4.05E+01
	25	922.12	1.62E+01	19.39			1.62E+01	1.94E+01
M	26	964.83	3.79E+01	22.36			3.79E+01	2.24E+01
m	27	968.83	1.21E+02	34.31			1.21E+02	3.43E+01
	28	1119.18	7.60E+01	41.04			7.60E+01	4.10E+01
	29	1311.35	1.63E+01	18.11			1.63E+01	1.81E+01
	30	1319.99	1.71E+01	18.17			1.71E+01	1.82E+01
	31	1361.34	1.78E+01	14.20			1.78E+01	1.42E+01
	32	1367.98	1.51E+01	14.42			1.51E+01	1.44E+01
	33	1376.81	1.65E+01	18.17			1.65E+01	1.82E+01
	34	1460.55	7.10E+02	56.71	1.00E+00	1.77E+00	7.09E+02	5.67E+01
	35	1494.84	8.50E+00	7.52			8.50E+00	7.52E+00
	36	1512.05	3.27E+01	17.94			3.27E+01	1.79E+01
	37	1527.98	8.50E+00	9.62			8.50E+00	9.62E+00
	38	1536.80	8.41E+00	11.49			8.41E+00	1.15E+01
	39	1729.27	1.22E+01	9.80			1.22E+01	9.80E+00
	40	1763.93	4.36E+01	15.25			4.36E+01	1.52E+01
	41	1845.63	1.50E+01	7.75			1.50E+01	7.75E+00
	42	1892.98	6.00E+00	8.49			6.00E+00	8.49E+00
M	43	2101.74	9.01E+00	11.40			9.01E+00	1.14E+01
m	44	2107.18	9.01E+00	7.87			9.01E+00	7.87E+00
	45	2288.24	5.00E+00	4.47			5.00E+00	4.47E+00
	46	2334.14	7.90E+00	7.76			7.90E+00	7.76E+00
	47	2439.50	6.00E+00	6.93			6.00E+00	6.93E+00
	48	2613.53	6.66E+01	17.78			6.66E+01	1.78E+01

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

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	0.989	1460.81	*	10.67	2.24E+01	2.63E+00
PB-212	0.758	238.63	*	44.60	1.61E+00	2.20E-01
		300.09		3.41		
BI-214	0.663	609.31	*	46.30	1.09E+00	2.21E-01
		1120.29		15.10		
		1764.49	*	15.80	1.08E+00	3.86E-01
		2204.22		4.98		
PB-214	0.970	295.21	*	19.19	9.53E-01	2.55E-01
		351.92	*	37.19	9.84E-01	1.92E-01
RA-226	0.995	186.21	*	3.28	3.58E+00	6.81E+00
AC-228	0.972	338.32	*	11.40	1.51E+00	5.88E-01
		911.07	*	27.70	1.15E+00	3.44E-01
		969.11	*	16.60	1.75E+00	5.14E-01
PA-234	0.419	131.20	*	20.40	1.94E-01	1.96E-01
		733.99		8.80		
		946.00		12.00		
AM-243	0.957	74.67	*	66.00	2.50E-01	6.60E-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 1707088-09

HTC-A03-S004-1824-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 5:26:56PM
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	64.55	4.52330E-02	34.65		
m	3	77.62	1.94689E-01	7.63		
	4	93.14	7.32397E-02	21.21	Tol.	GA-67
	5	113.24	2.08211E-02	57.20		
	8	209.87	3.35098E-02	36.59	Tol.	GA-67 CM-243
	10	270.47	2.29284E-02	37.47		
	12	301.35	2.16537E-02	32.12		
	13	328.13	2.05337E-02	35.85	Tol.	LA-140
	16	431.01	6.11111E-03	60.46		
	17	463.93	1.05531E-02	57.35	Tol.	SB-125
	18	489.33	1.57962E-02	38.91		
	19	510.96	2.94153E-02	24.22		
	20	583.27	6.58722E-02	12.85	Tol.	TL-208
	22	729.27	2.72543E-02	27.67		
	23	871.21	9.40134E-03	44.88		
	25	922.12	4.51247E-03	59.68		
M	26	964.83	1.05286E-02	29.50	Tol.	EU-152
	28	1119.18	2.11173E-02	26.99		
	29	1311.35	4.53582E-03	55.46		
	30	1319.99	4.74474E-03	53.20		
	31	1361.34	4.94732E-03	39.88		
	32	1367.98	4.19643E-03	47.73	Tol.	NA-24
	33	1376.81	4.57207E-03	55.20		
	35	1494.84	2.36111E-03	44.22		
	36	1512.05	9.08333E-03	27.44		
	37	1527.98	2.36111E-03	56.57		
	38	1536.80	2.33660E-03	68.29		
	39	1729.27	3.38542E-03	40.20		
	41	1845.63	4.16667E-03	25.82		
	42	1892.98	1.66667E-03	70.71		
M	43	2101.74	2.50190E-03	63.30		
m	44	2107.18	2.50141E-03	43.72		
	45	2288.24	1.38889E-03	44.72		
	46	2334.14	2.19444E-03	49.13		
	47	2439.50	1.66667E-03	57.74		
	48	2613.53	1.84921E-02	13.35		

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 1707088-09

HTC-A03-S004-1824-01

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	0.98	1460.81	*	10.67	2.24E+01	2.63E+00
PB-212	0.75	238.63	*	44.60	1.61E+00	2.20E-01
		300.09		3.41		
BI-214	0.66	609.31	*	46.30	1.09E+00	2.21E-01
		1120.29		15.10		
		1764.49	*	15.80	1.08E+00	3.86E-01
		2204.22		4.98		
PB-214	0.97	295.21	*	19.19	9.53E-01	2.55E-01
		351.92	*	37.19	9.84E-01	1.92E-01
RA-226	0.99	186.21	*	3.28	3.58E+00	6.81E+00
AC-228	0.97	338.32	*	11.40	1.51E+00	5.88E-01
		911.07	*	27.70	1.15E+00	3.44E-01
		969.11	*	16.60	1.75E+00	5.14E-01
PA-234	0.41	131.20	*	20.40	1.94E-01	1.96E-01
		733.99		8.80		
		946.00		12.00		
AM-243	0.95	74.67	*	66.00	2.50E-01	6.60E-02

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

INTERFERENCE CORRECTED REPORT

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.989	2.24E+01	2.63E+00	
PB-212	0.758	1.61E+00	2.20E-01	
BI-214	0.663	1.09E+00	1.92E-01	
PB-214	0.970	9.73E-01	1.53E-01	
RA-226	0.995	3.58E+00	6.81E+00	
AC-228	0.972	1.37E+00	2.57E-01	
PA-234	0.419	1.94E-01	1.96E-01	
AM-243	0.957	2.50E-01	6.60E-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 1707088-09

HTC-A03-S004-1824-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 5:26:56PM
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	64.55	4.52330E-02	34.65		
m	3	77.62	1.94689E-01	7.63		
	4	93.14	7.32397E-02	21.21	Tol.	GA-67
	5	113.24	2.08211E-02	57.20		
	8	209.87	3.35098E-02	36.59	Tol.	GA-67 CM-243
	10	270.47	2.29284E-02	37.47		
	12	301.35	2.16537E-02	32.12		
	13	328.13	2.05337E-02	35.85	Tol.	LA-140
	16	431.01	6.11111E-03	60.46		
	17	463.93	1.05531E-02	57.35	Tol.	SB-125
	18	489.33	1.57962E-02	38.91		
	19	510.96	2.94153E-02	24.22		
	20	583.27	6.58722E-02	12.85	Tol.	TL-208
	22	729.27	2.72543E-02	27.67		
	23	871.21	9.40134E-03	44.88		
	25	922.12	4.51247E-03	59.68		
M	26	964.83	1.05286E-02	29.50	Tol.	EU-152
	28	1119.18	2.11173E-02	26.99		
	29	1311.35	4.53582E-03	55.46		
	30	1319.99	4.74474E-03	53.20		
	31	1361.34	4.94732E-03	39.88		
	32	1367.98	4.19643E-03	47.73	Tol.	NA-24
	33	1376.81	4.57207E-03	55.20		
	35	1494.84	2.36111E-03	44.22		
	36	1512.05	9.08333E-03	27.44		
	37	1527.98	2.36111E-03	56.57		
	38	1536.80	2.33660E-03	68.29		
	39	1729.27	3.38542E-03	40.20		
	41	1845.63	4.16667E-03	25.82		
	42	1892.98	1.66667E-03	70.71		
M	43	2101.74	2.50190E-03	63.30		
m	44	2107.18	2.50141E-03	43.72		
	45	2288.24	1.38889E-03	44.72		
	46	2334.14	2.19444E-03	49.13		

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
47	2439.50	1.66667E-03	57.74		
48	2613.53	1.84921E-02	13.35		

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	4.51E-01	2.32E+00	2.32E+00
+	NA-22	1274.54		99.94	3.45E-02	1.03E-01	1.03E-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	-5.37E-03	6.93E-02	6.93E-02
+	K-40	1460.81	*	10.67	2.24E+01	1.10E+00	1.10E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-9.85E-03	5.65E-02	5.65E-02
		78.34		96.00	1.77E-01		7.33E-02
+	SC-46	889.25		99.98	2.98E-02	2.07E-01	2.07E-01
		1120.51		99.99	4.25E-01		3.27E-01
+	V-48	983.52		99.98	5.43E+00	7.90E+00	8.04E+00
		1312.10		97.50	3.87E+00		7.90E+00
+	CR-51	320.08		9.83	2.58E+00	7.28E+00	7.28E+00
+	MN-54	834.83		99.97	4.74E-02	1.07E-01	1.07E-01
+	CO-56	846.75		99.96	1.69E-01	2.18E-01	2.18E-01
		1037.75		14.03	-1.17E-01		1.44E+00
		1238.25		67.00	2.13E-01		4.68E-01
		1771.40		15.51	-2.66E-01		6.62E-01
		2598.48		16.90	-3.95E-01		6.67E-01
+	CO-57	122.06		85.51	8.91E-03	6.35E-02	6.35E-02
		136.48		10.60	-1.35E-01		5.24E-01
+	CO-58	810.76		99.40	0.00E+00	2.08E-01	2.08E-01
+	FE-59	1099.22		56.50	-3.86E-02	7.81E-01	7.81E-01
		1291.56		43.20	-1.94E-01		1.00E+00
+	CO-60	1173.22		100.00	-2.92E-02	9.17E-02	1.10E-01
		1332.49		100.00	-1.12E-02		9.17E-02

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	ZN-65	1115.52	50.75	-5.74E-01	2.77E-01	2.77E-01
+	GA-67	93.31	35.70	6.45E+08	3.54E+08	3.54E+08
		208.95	2.24	6.79E+09		6.55E+09
		300.22	16.00	-1.95E+09		1.01E+09
+	SE-75	121.11	16.70	-1.20E-01	1.30E-01	4.36E-01
		136.00	59.20	-1.47E-02		1.30E-01
		264.65	59.80	-4.84E-03		1.59E-01
		279.53	25.20	-5.83E-02		4.26E-01
		400.65	11.40	3.94E-02		1.03E+00
+	RB-82	776.52	13.00	3.66E+00	9.92E+00	9.92E+00
+	RB-83	520.41	46.00	6.77E-02	3.08E-01	3.08E-01
		529.64	30.30	-4.38E-02		4.73E-01
		552.65	16.40	1.00E-02		9.94E-01
+	KR-85	513.99	0.43	1.90E+01	2.12E+01	2.12E+01
+	SR-85	513.99	99.27	2.41E-01	2.69E-01	2.69E-01
+	Y-88	898.02	93.40	-5.35E-02	1.17E-01	1.71E-01
		1836.01	99.38	5.57E-04		1.17E-01
+	MO-93	263.06	56.72	1.01E-02	7.13E-02	9.71E-02
		684.67	99.68	-3.82E-02		7.13E-02
		1477.11	99.08	-9.99E-04		8.40E-02
+	NB-93M	16.57	9.43	-4.72E+01	6.28E+01	6.28E+01
+	NB-94	702.63	100.00	1.90E-03	8.45E-02	8.45E-02
		871.10	100.00	4.47E-02		8.78E-02
+	NB-95	765.79	99.81	1.59E-01	6.88E-01	6.88E-01
+	NB-95M	235.69	25.00	-1.37E+07	1.01E+08	1.01E+08
+	ZR-95	724.18	43.70	-6.66E-02	4.26E-01	5.95E-01
		756.72	55.30	-1.58E-01		4.26E-01
+	MO-99	181.06	6.20	1.49E+10	7.23E+10	9.04E+10
		739.58	12.80	1.17E+08		7.23E+10
		778.00	4.50	-2.01E+10		2.12E+11
+	RU-103	497.08	89.00	-3.15E-02	3.87E-01	3.87E-01
+	RU-106	621.84	9.80	5.80E-01	9.49E-01	9.49E-01
+	AG-108M	433.93	89.90	9.76E-03	7.36E-02	7.36E-02
		614.37	90.40	-1.64E-01		9.62E-02
		722.95	90.50	-7.62E-03		8.75E-02
+	CD-109	88.03	3.72	3.39E-01	1.73E+00	1.73E+00
+	AG-110M	657.75	93.14	-6.33E-02	1.02E-01	1.02E-01
		677.61	10.53	2.74E-01		9.26E-01
		706.67	16.46	-7.58E-02		6.46E-01
		763.93	21.98	-1.92E-01		5.22E-01
		884.67	71.63	4.91E-02		1.60E-01
		1384.27	23.94	-3.46E-02		4.02E-01
+	CD-113M	263.70	0.02	-6.02E+00	2.31E+02	2.31E+02
+	SN-113	255.12	1.93	2.29E+00	1.74E-01	5.60E+00
		391.69	64.90	-2.61E-02		1.74E-01
+	TE123M	159.00	84.10	2.79E-02	9.91E-02	9.91E-02
+	SB-124	602.71	97.87	1.01E-02	2.20E-01	2.20E-01
		645.85	7.26	-1.39E+00		3.10E+00

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-124	722.78	11.10	-1.99E-01	2.20E-01	2.29E+00
		1691.02	49.00	2.60E-01		4.66E-01
+	I-125	35.49	6.49	1.39E+00	5.67E+00	5.67E+00
+	SB-125	176.33	6.89	-1.26E-01	2.25E-01	6.96E-01
		427.89	29.33	-5.18E-02		2.25E-01
		463.38	10.35	4.94E-01		7.46E-01
		600.56	17.80	7.52E-02		4.13E-01
		635.90	11.32	-8.28E-02		6.96E-01
+	SB-126	414.70	83.30	-6.88E+00	2.22E+01	2.22E+01
		666.33	99.60	4.59E+00		2.25E+01
		695.00	99.60	-5.94E+00		2.42E+01
		720.50	53.80	-1.14E+00		4.11E+01
+	SN-126	87.57	37.00	2.93E-02	1.49E-01	1.49E-01
+	SB-127	473.00	25.00	4.67E+06	1.63E+07	2.21E+07
		685.20	35.70	-8.75E+06		1.63E+07
		783.80	14.70	1.83E+06		4.34E+07
+	I-129	29.78	57.00	-9.29E-04	3.50E-01	3.50E-01
		33.60	13.20	-6.63E-01		9.84E-01
		39.58	7.52	-1.17E-01		1.22E+00
+	I-131	284.30	6.05	-2.90E+02	4.77E+02	6.11E+03
		364.48	81.20	1.60E+02		4.77E+02
		636.97	7.26	-1.56E+03		6.07E+03
		722.89	1.80	-2.37E+03		2.73E+04
+	TE-132	49.72	13.10	-1.04E+09	1.54E+08	1.12E+09
		228.16	88.00	4.60E+07		1.54E+08
+	BA-133	81.00	33.00	-5.37E-01	1.50E-01	1.64E-01
		302.84	17.80	4.62E-01		3.91E-01
		356.01	60.00	-4.98E-03		1.50E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	-3.00E+05	9.14E+04	9.14E+04
+	CS-134	563.23	8.38	-2.90E-01	9.59E-02	8.83E-01
		569.32	15.43	5.97E-02		4.95E-01
		604.70	97.60	-3.60E-01		9.59E-02
		795.84	85.40	5.95E-02		1.13E-01
		801.93	8.73	8.93E-02		1.02E+00
+	CS-135	268.24	16.00	-5.41E-02	3.62E-01	3.62E-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	9.71E+00	1.65E+01	1.26E+02
		163.89	4.61	-1.10E+02		2.02E+02
		176.55	13.56	-1.24E+01		6.86E+01
		273.65	12.66	-2.23E+00		1.04E+02
		340.57	48.50	7.16E+01		3.48E+01
		818.50	99.70	-1.12E+00		1.65E+01
		1048.07	79.60	-2.69E+00		2.00E+01
		1235.34	19.70	6.97E+01		1.38E+02
+	CS-137	661.65	85.12	1.35E-02	9.21E-02	9.21E-02
+	LA-138	788.74	34.00	4.91E-03	1.13E-01	2.30E-01

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LA-138	1435.80	66.00	-6.45E-03	1.13E-01	1.13E-01
+	CE-139	165.85	80.35	1.99E-02	9.68E-02	9.68E-02
+	BA-140	162.64	6.70	-2.73E+01	6.57E+01	1.63E+02
		304.84	4.50	-7.22E+01		3.30E+02
		423.70	3.20	2.16E+02		5.05E+02
		437.55	2.00	3.73E+02		8.12E+02
		537.32	25.00	-5.95E+00		6.57E+01
+	LA-140	328.77	20.50	6.75E+01	2.16E+01	7.78E+01
		487.03	45.50	9.98E+00		3.56E+01
		815.85	23.50	1.57E+01		8.10E+01
		1596.49	95.49	1.70E+00		2.16E+01
+	CE-141	145.44	48.40	6.73E-02	8.04E-01	8.04E-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	-7.19E-02	5.18E-01	5.18E-01
+	PM-144	476.78	42.00	-5.69E-02	8.50E-02	1.81E-01
		618.01	98.60	-2.08E-02		8.50E-02
		696.49	99.49	1.06E-04		1.04E-01
+	PM-145	36.85	21.70	-1.34E-01	2.64E-01	4.83E-01
		37.36	39.70	5.98E-02		2.64E-01
		42.30	15.10	-2.88E-01		5.31E-01
		72.40	2.31	-4.68E+00		2.61E+00
+	PM-146	453.90	39.94	-5.45E-03	1.65E-01	1.65E-01
		735.90	14.01	-1.55E-01		5.86E-01
		747.13	13.10	1.73E-01		6.01E-01
+	ND-147	91.11	28.90	-9.33E+01	1.16E+02	1.16E+02
		531.02	13.10	4.26E+00		2.92E+02
+	PM-149	285.90	3.10	5.49E+13	1.21E+14	1.21E+14
+	EU-152	121.78	20.50	2.91E-02	2.07E-01	2.07E-01
		244.69	5.40	1.10E-02		1.29E+00
		344.27	19.13	1.20E-03		3.13E-01
		778.89	9.20	-3.11E-01		8.38E-01
		964.01	10.40	-1.78E+00		1.06E+00
		1085.78	7.22	-4.27E-01		1.28E+00
		1112.02	9.60	3.85E-02		1.10E+00
		1407.95	14.94	1.20E-01		5.78E-01
+	GD-153	97.43	31.30	-1.86E-02	1.84E-01	1.84E-01
		103.18	22.20	-2.62E-03		2.59E-01
+	EU-154	123.07	40.50	1.26E-02	1.06E-01	1.06E-01
		723.30	19.70	-3.57E-02		4.10E-01
		873.19	11.50	2.96E-01		7.70E-01
		996.32	10.30	-1.04E-02		8.59E-01
		1004.76	17.90	1.62E-01		5.02E-01
		1274.45	35.50	9.23E-02		2.76E-01
+	EU-155	86.50	30.90	1.09E-01	1.88E-01	1.88E-01
		105.30	20.70	1.16E-01		2.16E-01
+	EU-156	811.77	10.40	-1.69E+01	7.47E+01	7.47E+01
		1153.47	7.20	-4.80E+00		1.66E+02

Analysis Report for 1707088-09

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-156	1230.71		8.90	-1.27E+01	7.47E+01	1.41E+02
+	HO-166M	184.41		72.60	1.24E-01	8.09E-02	8.09E-02
		280.45		29.60	-9.16E-02		1.99E-01
		410.94		11.10	-1.60E-01		5.87E-01
		711.69		54.10	-8.24E-02		1.32E-01
+	TM-171	66.72		0.14	-1.35E+01	4.38E+01	4.38E+01
+	HF-172	67.35		5.31	-1.94E-01	4.24E-01	1.12E+00
		125.81		11.30	1.13E-01		4.24E-01
+	LU-172	181.53		20.60	-1.13E+04	5.59E+03	8.06E+03
		900.72		29.81	3.34E+03		9.82E+03
		1093.66		62.50	4.74E+02		5.59E+03
+	LU-173	100.72		5.24	-1.11E-01	3.48E-01	9.35E-01
		272.11		21.20	2.69E-01		3.48E-01
+	HF-175	343.40		84.00	7.32E-04	1.91E-01	1.91E-01
+	LU-176	88.34		13.30	1.34E-01	5.67E-02	4.25E-01
		201.83		86.00	-2.64E-02		5.67E-02
		306.78		94.00	-1.45E-02		6.26E-02
+	HF-181	133.02		41.70	-7.08E-02	3.89E-01	5.59E-01
		345.85		17.20	6.91E-03		1.75E+00
		482.03		82.80	4.61E-02		3.89E-01
+	TA-182	67.75		41.20	-4.16E-02	2.39E-01	2.39E-01
		1121.30		34.90	7.62E-01		7.31E-01
		1189.05		16.23	2.13E-01		1.29E+00
		1221.41		26.98	1.03E-01		7.92E-01
		1231.02		11.44	-1.80E-01		1.99E+00
+	IR-192	308.46		29.68	-2.24E-01	3.62E-01	4.87E-01
		468.07		48.10	3.39E-02		3.62E-01
+	HG-203	279.19		77.30	3.65E-03	3.47E-01	3.47E-01
+	TL-204	374.74		94.11	2.98E-02	7.11E-02	7.11E-02
		899.15		99.16	-1.25E-02		8.78E-02
		911.74		91.10	3.05E-01		1.69E-01
+	BI-207	569.67		97.72	3.45E-03	7.08E-02	7.08E-02
		1063.62		74.90	2.77E-02		1.29E-01
+	TL-208	583.14		30.22	1.14E+00	4.34E-01	4.34E-01
		860.37		4.48	1.18E+00		2.10E+00
		2614.66		35.85	8.62E-01		5.68E-01
+	BI-210M	262.00		45.00	9.34E-03	1.21E-01	1.21E-01
		300.00		23.00	-6.02E-01		3.13E-01
+	PB-210	46.50		4.25	1.77E+00	1.70E+00	1.70E+00
+	PB-211	404.84		2.90	5.68E-01	2.31E+00	2.31E+00
		831.96		2.90	8.53E-01		2.78E+00
+	BI-212	727.17		11.80	8.34E-01	8.69E-01	8.69E-01
		1620.62		2.75	8.96E-01		2.59E+00
+	PB-212	238.63	*	44.60	1.61E+00	2.41E-01	2.41E-01
		300.09		3.41	-4.06E+00		2.11E+00
+	BI-214	609.31	*	46.30	1.09E+00	2.60E-01	2.60E-01
		1120.29		15.10	1.22E+00		9.37E-01
		1764.49	*	15.80	1.08E+00		3.76E-01

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BI-214	2204.22		4.98	7.77E-01	2.60E-01	1.89E+00
+	PB-214	295.21	*	19.19	9.53E-01	2.33E-01	3.48E-01
		351.92	*	37.19	9.84E-01		2.33E-01
+	RN-219	401.80		6.50	-1.93E-01	9.98E-01	9.98E-01
+	RA-223	323.87		3.88	8.39E-02	1.51E+00	1.51E+00
+	RA-224	240.98		3.95	1.73E+01	2.98E+00	2.98E+00
+	RA-225	40.00		31.00	-3.20E+00	3.32E+01	3.32E+01
+	RA-226	186.21	*	3.28	3.58E+00	3.00E+00	3.00E+00
+	TH-227	50.10		8.40	-7.04E-01	7.53E-01	7.53E-01
		236.00		11.50	-1.06E-01		7.83E-01
		256.20		6.30	3.03E-01		9.25E-01
+	AC-228	338.32	*	11.40	1.51E+00	4.64E-01	8.89E-01
		911.07	*	27.70	1.15E+00		4.64E-01
		969.11	*	16.60	1.75E+00		1.10E+00
+	TH-230	48.44		16.90	-1.65E-01	3.95E-01	3.95E-01
		62.85		4.60	7.87E-01		1.30E+00
		67.67		0.37	-2.51E+00		1.44E+01
+	PA-231	283.67		1.60	-1.38E+00	2.97E+00	3.66E+00
		302.67		2.30	3.51E+00		2.97E+00
+	TH-231	25.64		14.70	6.82E-01	8.30E-01	2.58E+00
		84.21		6.40	-5.32E-02		8.30E-01
+	PA-233	311.98		38.60	1.15E-01	1.95E+00	1.95E+00
+	PA-234	131.20	*	20.40	1.94E-01	3.19E-01	3.19E-01
		733.99		8.80	-1.26E-02		9.55E-01
		946.00		12.00	4.94E-01		7.51E-01
+	PA-234M	1001.03		0.92	-1.07E+00	9.36E+00	9.36E+00
+	TH-234	63.29		3.80	6.43E-01	1.58E+00	1.58E+00
+	U-235	143.76		10.50	6.63E-02	4.25E-01	4.25E-01
		163.35		4.70	-5.18E-01		9.54E-01
		205.31		4.70	-1.09E-01		1.29E+00
+	NP-237	86.50		12.60	2.56E-01	4.45E-01	4.45E-01
+	NP-239	106.10		22.70	9.06E+11	1.69E+12	1.69E+12
		228.18		10.70	1.47E+12		4.92E+12
		277.60		14.10	6.41E+11		3.80E+12
+	AM-241	59.54		35.90	1.49E-03	1.60E-01	1.60E-01
+	AM-243	74.67	*	66.00	2.50E-01	1.51E-01	1.51E-01
+	CM-243	209.75		3.29	2.07E+00	4.32E-01	1.98E+00
		228.14		10.60	1.68E-01		5.61E-01
		277.60		14.00	7.30E-02		4.32E-01

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

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NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	2.32E+00	2.32E+00	4.51E-01	1.10E+00
	NA-22	1274.54		99.94	1.03E-01	1.03E-01	3.45E-02	4.73E-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	6.93E-02	6.93E-02	-5.37E-03	2.93E-02
+	K-40	1460.81	*	10.67	1.10E+00	1.10E+00	2.24E+01	5.09E-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	5.65E-02	5.65E-02	-9.85E-03	2.76E-02
		78.34		96.00	7.33E-02		1.77E-01	3.61E-02
	SC-46	889.25		99.98	2.07E-01	2.07E-01	2.98E-02	9.63E-02
		1120.51		99.99	3.27E-01		4.25E-01	1.55E-01
	V-48	983.52		99.98	8.04E+00	7.90E+00	5.43E+00	3.75E+00
		1312.10		97.50	7.90E+00		3.87E+00	3.60E+00
	CR-51	320.08		9.83	7.28E+00	7.28E+00	2.58E+00	3.48E+00
	MN-54	834.83		99.97	1.07E-01	1.07E-01	4.74E-02	5.01E-02
	CO-56	846.75		99.96	2.18E-01	2.18E-01	1.69E-01	1.02E-01
		1037.75		14.03	1.44E+00		-1.17E-01	6.58E-01
		1238.25		67.00	4.68E-01		2.13E-01	2.19E-01
		1771.40		15.51	6.62E-01		-2.66E-01	2.48E-01
		2598.48		16.90	6.67E-01		-3.95E-01	2.36E-01
	CO-57	122.06		85.51	6.35E-02	6.35E-02	8.91E-03	3.09E-02
		136.48		10.60	5.24E-01		-1.35E-01	2.54E-01
	CO-58	810.76		99.40	2.08E-01	2.08E-01	0.00E+00	9.67E-02
	FE-59	1099.22		56.50	7.81E-01	7.81E-01	-3.86E-02	3.60E-01
		1291.56		43.20	1.00E+00		-1.94E-01	4.56E-01
	CO-60	1173.22		100.00	1.10E-01	9.17E-02	-2.92E-02	5.09E-02
		1332.49		100.00	9.17E-02		-1.12E-02	4.14E-02
	ZN-65	1115.52		50.75	2.77E-01	2.77E-01	-5.74E-01	1.29E-01
	GA-67	93.31		35.70	3.54E+08	3.54E+08	6.45E+08	1.74E+08
		208.95		2.24	6.55E+09		6.79E+09	3.19E+09
		300.22		16.00	1.01E+09		-1.95E+09	4.90E+08
	SE-75	121.11		16.70	4.36E-01	1.30E-01	-1.20E-01	2.12E-01
		136.00		59.20	1.30E-01		-1.47E-02	6.30E-02
		264.65		59.80	1.59E-01		-4.84E-03	7.63E-02
		279.53		25.20	4.26E-01		-5.83E-02	2.05E-01
		400.65		11.40	1.03E+00		3.94E-02	4.90E-01
	RB-82	776.52		13.00	9.92E+00	9.92E+00	3.66E+00	4.64E+00

Analysis Report for 1707088-09

HTC-A03-S004-1824-01

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
RB-83	520.41	46.00	3.08E-01	3.08E-01	6.77E-02	1.45E-01
	529.64	30.30	4.73E-01		-4.38E-02	2.22E-01
	552.65	16.40	9.94E-01		1.00E-02	4.70E-01
KR-85	513.99	0.43	2.12E+01	2.12E+01	1.90E+01	1.02E+01
SR-85	513.99	99.27	2.69E-01	2.69E-01	2.41E-01	1.29E-01
Y-88	898.02	93.40	1.71E-01	1.17E-01	-5.35E-02	7.93E-02
	1836.01	99.38	1.17E-01		5.57E-04	4.80E-02
MO-93	263.06	56.72	9.71E-02	7.13E-02	1.01E-02	4.67E-02
	684.67	99.68	7.13E-02		-3.82E-02	3.32E-02
	1477.11	99.08	8.40E-02		-9.99E-04	3.73E-02
NB-93M	16.57	9.43	6.28E+01	6.28E+01	-4.72E+01	3.06E+01
NB-94	702.63	100.00	8.45E-02	8.45E-02	1.90E-03	3.98E-02
	871.10	100.00	8.78E-02		4.47E-02	4.09E-02
NB-95	765.79	99.81	6.88E-01	6.88E-01	1.59E-01	3.24E-01
NB-95M	235.69	25.00	1.01E+08	1.01E+08	-1.37E+07	4.94E+07
ZR-95	724.18	43.70	5.95E-01	4.26E-01	-6.66E-02	2.80E-01
	756.72	55.30	4.26E-01		-1.58E-01	1.99E-01
MO-99	181.06	6.20	9.04E+10	7.23E+10	1.49E+10	4.37E+10
	739.58	12.80	7.23E+10		1.17E+08	3.37E+10
	778.00	4.50	2.12E+11		-2.01E+10	9.88E+10
RU-103	497.08	89.00	3.87E-01	3.87E-01	-3.15E-02	1.82E-01
RU-106	621.84	9.80	9.49E-01	9.49E-01	5.80E-01	4.48E-01
AG-108M	433.93	89.90	7.36E-02	7.36E-02	9.76E-03	3.50E-02
	614.37	90.40	9.62E-02		-1.64E-01	4.57E-02
	722.95	90.50	8.75E-02		-7.62E-03	4.10E-02
CD-109	88.03	3.72	1.73E+00	1.73E+00	3.39E-01	8.46E-01
AG-110M	657.75	93.14	1.02E-01	1.02E-01	-6.33E-02	4.77E-02
	677.61	10.53	9.26E-01		2.74E-01	4.33E-01
	706.67	16.46	6.46E-01		-7.58E-02	3.03E-01
	763.93	21.98	5.22E-01		-1.92E-01	2.45E-01
	884.67	71.63	1.60E-01		4.91E-02	7.43E-02
	1384.27	23.94	4.02E-01		-3.46E-02	1.77E-01
CD-113M	263.70	0.02	2.31E+02	2.31E+02	-6.02E+00	1.11E+02
SN-113	255.12	1.93	5.60E+00	1.74E-01	2.29E+00	2.70E+00
	391.69	64.90	1.74E-01		-2.61E-02	8.28E-02
TE123M	159.00	84.10	9.91E-02	9.91E-02	2.79E-02	4.81E-02
SB-124	602.71	97.87	2.20E-01	2.20E-01	1.01E-02	1.03E-01
	645.85	7.26	3.10E+00		-1.39E+00	1.45E+00
	722.78	11.10	2.29E+00		-1.99E-01	1.07E+00
	1691.02	49.00	4.66E-01		2.60E-01	2.00E-01
I-125	35.49	6.49	5.67E+00	5.67E+00	1.39E+00	2.76E+00
SB-125	176.33	6.89	6.96E-01	2.25E-01	-1.26E-01	3.36E-01
	427.89	29.33	2.25E-01		-5.18E-02	1.07E-01
	463.38	10.35	7.46E-01		4.94E-01	3.56E-01
	600.56	17.80	4.13E-01		7.52E-02	1.94E-01
	635.90	11.32	6.96E-01		-8.28E-02	3.27E-01
SB-126	414.70	83.30	2.22E+01	2.22E+01	-6.88E+00	1.06E+01
	666.33	99.60	2.25E+01		4.59E+00	1.06E+01
	695.00	99.60	2.42E+01		-5.94E+00	1.14E+01
	720.50	53.80	4.11E+01		-1.14E+00	1.92E+01
SN-126	87.57	37.00	1.49E-01	1.49E-01	2.93E-02	7.31E-02
SB-127	473.00	25.00	2.21E+07	1.63E+07	4.67E+06	1.05E+07
	685.20	35.70	1.63E+07		-8.75E+06	7.61E+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)
SB-127	783.80	14.70	4.34E+07	1.63E+07	1.83E+06	2.02E+07
I-129	29.78	57.00	3.50E-01	3.50E-01	-9.29E-04	1.70E-01
	33.60	13.20	9.84E-01		-6.63E-01	4.78E-01
	39.58	7.52	1.22E+00		-1.17E-01	5.94E-01
I-131	284.30	6.05	6.11E+03	4.77E+02	-2.90E+02	2.95E+03
	364.48	81.20	4.77E+02		1.60E+02	2.28E+02
	636.97	7.26	6.07E+03		-1.56E+03	2.85E+03
	722.89	1.80	2.73E+04		-2.37E+03	1.28E+04
TE-132	49.72	13.10	1.12E+09	1.54E+08	-1.04E+09	5.45E+08
	228.16	88.00	1.54E+08		4.60E+07	7.45E+07
BA-133	81.00	33.00	1.64E-01	1.50E-01	-5.37E-01	8.00E-02
	302.84	17.80	3.91E-01		4.62E-01	1.89E-01
	356.01	60.00	1.50E-01		-4.98E-03	7.26E-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	9.14E+04	9.14E+04	-3.00E+05	4.47E+04
CS-134	563.23	8.38	8.83E-01	9.59E-02	-2.90E-01	4.15E-01
	569.32	15.43	4.95E-01		5.97E-02	2.33E-01
	604.70	97.60	9.59E-02		-3.60E-01	4.55E-02
	795.84	85.40	1.13E-01		5.95E-02	5.29E-02
	801.93	8.73	1.02E+00		8.93E-02	4.75E-01
CS-135	268.24	16.00	3.62E-01	3.62E-01	-5.41E-02	1.75E-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	1.65E+01	9.71E+00	6.10E+01
	163.89	4.61	2.02E+02		-1.10E+02	9.80E+01
	176.55	13.56	6.86E+01		-1.24E+01	3.31E+01
	273.65	12.66	1.04E+02		-2.23E+00	5.01E+01
	340.57	48.50	3.48E+01		7.16E+01	1.69E+01
	818.50	99.70	1.65E+01		-1.12E+00	7.69E+00
	1048.07	79.60	2.00E+01		-2.69E+00	9.07E+00
	1235.34	19.70	1.38E+02		6.97E+01	6.46E+01
CS-137	661.65	85.12	9.21E-02	9.21E-02	1.35E-02	4.33E-02
LA-138	788.74	34.00	2.30E-01	1.13E-01	4.91E-03	1.07E-01
	1435.80	66.00	1.13E-01		-6.45E-03	4.98E-02
CE-139	165.85	80.35	9.68E-02	9.68E-02	1.99E-02	4.69E-02
BA-140	162.64	6.70	1.63E+02	6.57E+01	-2.73E+01	7.92E+01
	304.84	4.50	3.30E+02		-7.22E+01	1.59E+02
	423.70	3.20	5.05E+02		2.16E+02	2.41E+02
	437.55	2.00	8.12E+02		3.73E+02	3.87E+02
	537.32	25.00	6.57E+01		-5.95E+00	3.10E+01
LA-140	328.77	20.50	7.78E+01	2.16E+01	6.75E+01	3.74E+01
	487.03	45.50	3.56E+01		9.98E+00	1.68E+01
	815.85	23.50	8.10E+01		1.57E+01	3.76E+01
	1596.49	95.49	2.16E+01		1.70E+00	9.55E+00
CE-141	145.44	48.40	8.04E-01	8.04E-01	6.73E-02	3.90E-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	5.18E-01	5.18E-01	-7.19E-02	2.52E-01
PM-144	476.78	42.00	1.81E-01	8.50E-02	-5.69E-02	8.54E-02
	618.01	98.60	8.50E-02		-2.08E-02	3.98E-02
	696.49	99.49	1.04E-01		1.06E-04	4.89E-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)
PM-145	36.85	21.70	4.83E-01	2.64E-01	-1.34E-01	2.35E-01
	37.36	39.70	2.64E-01		5.98E-02	1.29E-01
	42.30	15.10	5.31E-01		-2.88E-01	2.59E-01
	72.40	2.31	2.61E+00		-4.68E+00	1.28E+00
PM-146	453.90	39.94	1.65E-01	1.65E-01	-5.45E-03	7.83E-02
	735.90	14.01	5.86E-01		-1.55E-01	2.74E-01
	747.13	13.10	6.01E-01		1.73E-01	2.80E-01
ND-147	91.11	28.90	1.16E+02	1.16E+02	-9.33E+01	5.67E+01
	531.02	13.10	2.92E+02		4.26E+00	1.37E+02
PM-149	285.90	3.10	1.21E+14	1.21E+14	5.49E+13	5.82E+13
EU-152	121.78	20.50	2.07E-01	2.07E-01	2.91E-02	1.01E-01
	244.69	5.40	1.29E+00		1.10E-02	6.26E-01
	344.27	19.13	3.13E-01		1.20E-03	1.49E-01
	778.89	9.20	8.38E-01		-3.11E-01	3.89E-01
	964.01	10.40	1.06E+00		-1.78E+00	4.99E-01
	1085.78	7.22	1.28E+00		-4.27E-01	5.92E-01
	1112.02	9.60	1.10E+00		3.85E-02	5.09E-01
	1407.95	14.94	5.78E-01		1.20E-01	2.59E-01
GD-153	97.43	31.30	1.84E-01	1.84E-01	-1.86E-02	8.96E-02
	103.18	22.20	2.59E-01		-2.62E-03	1.26E-01
EU-154	123.07	40.50	1.06E-01	1.06E-01	1.26E-02	5.15E-02
	723.30	19.70	4.10E-01		-3.57E-02	1.92E-01
	873.19	11.50	7.70E-01		2.96E-01	3.59E-01
	996.32	10.30	8.59E-01		-1.04E-02	3.96E-01
	1004.76	17.90	5.02E-01		1.62E-01	2.32E-01
	1274.45	35.50	2.76E-01		9.23E-02	1.26E-01
EU-155	86.50	30.90	1.88E-01	1.88E-01	1.09E-01	9.23E-02
	105.30	20.70	2.16E-01		1.16E-01	1.05E-01
EU-156	811.77	10.40	7.47E+01	7.47E+01	-1.69E+01	3.46E+01
	1153.47	7.20	1.66E+02		-4.80E+00	7.76E+01
	1230.71	8.90	1.41E+02		-1.27E+01	6.58E+01
HO-166M	184.41	72.60	8.09E-02	8.09E-02	1.24E-01	3.94E-02
	280.45	29.60	1.99E-01		-9.16E-02	9.58E-02
	410.94	11.10	5.87E-01		-1.60E-01	2.80E-01
	711.69	54.10	1.32E-01		-8.24E-02	6.13E-02
TM-171	66.72	0.14	4.38E+01	4.38E+01	-1.35E+01	2.14E+01
HF-172	67.35	5.31	1.12E+00	4.24E-01	-1.94E-01	5.45E-01
	125.81	11.30	4.24E-01		1.13E-01	2.06E-01
LU-172	181.53	20.60	8.06E+03	5.59E+03	-1.13E+04	3.90E+03
	900.72	29.81	9.82E+03		3.34E+03	4.55E+03
	1093.66	62.50	5.59E+03		4.74E+02	2.59E+03
LU-173	100.72	5.24	9.35E-01	3.48E-01	-1.11E-01	4.55E-01
	272.11	21.20	3.48E-01		2.69E-01	1.68E-01
HF-175	343.40	84.00	1.91E-01	1.91E-01	7.32E-04	9.13E-02
LU-176	88.34	13.30	4.25E-01	5.67E-02	1.34E-01	2.08E-01
	201.83	86.00	5.67E-02		-2.64E-02	2.74E-02
	306.78	94.00	6.26E-02		-1.45E-02	3.01E-02
HF-181	133.02	41.70	5.59E-01	3.89E-01	-7.08E-02	2.72E-01
	345.85	17.20	1.75E+00		6.91E-03	8.36E-01
	482.03	82.80	3.89E-01		4.61E-02	1.83E-01
TA-182	67.75	41.20	2.39E-01	2.39E-01	-4.16E-02	1.17E-01
	1121.30	34.90	7.31E-01		7.62E-01	3.46E-01
	1189.05	16.23	1.29E+00		2.13E-01	6.00E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	TA-182	1221.41		26.98	7.92E-01	2.39E-01	1.03E-01	3.69E-01
		1231.02		11.44	1.99E+00		-1.80E-01	9.30E-01
	IR-192	308.46		29.68	4.87E-01	3.62E-01	-2.24E-01	2.33E-01
		468.07		48.10	3.62E-01		3.39E-02	1.72E-01
	HG-203	279.19		77.30	3.47E-01	3.47E-01	3.65E-03	1.67E-01
	TL-204	374.74		94.11	7.11E-02	7.11E-02	2.98E-02	3.40E-02
		899.15		99.16	8.78E-02		-1.25E-02	4.07E-02
		911.74		91.10	1.69E-01		3.05E-01	8.10E-02
	BI-207	569.67		97.72	7.08E-02	7.08E-02	3.45E-03	3.33E-02
		1063.62		74.90	1.29E-01		2.77E-02	5.96E-02
	TL-208	583.14		30.22	4.34E-01	4.34E-01	1.14E+00	2.10E-01
		860.37		4.48	2.10E+00		1.18E+00	9.83E-01
		2614.66		35.85	5.68E-01		8.62E-01	2.65E-01
	BI-210M	262.00		45.00	1.21E-01	1.21E-01	9.34E-03	5.81E-02
		300.00		23.00	3.13E-01		-6.02E-01	1.51E-01
	PB-210	46.50		4.25	1.70E+00	1.70E+00	1.77E+00	8.30E-01
	PB-211	404.84		2.90	2.31E+00	2.31E+00	5.68E-01	1.10E+00
		831.96		2.90	2.78E+00		8.53E-01	1.29E+00
	BI-212	727.17		11.80	8.69E-01	8.69E-01	8.34E-01	4.13E-01
		1620.62		2.75	2.59E+00		8.96E-01	1.12E+00
+	PB-212	238.63	*	44.60	2.41E-01	2.41E-01	1.61E+00	1.18E-01
		300.09		3.41	2.11E+00		-4.06E+00	1.02E+00
+	BI-214	609.31	*	46.30	2.60E-01	2.60E-01	1.09E+00	1.25E-01
		1120.29		15.10	9.37E-01		1.22E+00	4.44E-01
		1764.49	*	15.80	3.76E-01		1.08E+00	1.55E-01
		2204.22		4.98	1.89E+00		7.77E-01	8.20E-01
+	PB-214	295.21	*	19.19	3.48E-01	2.33E-01	9.53E-01	1.68E-01
		351.92	*	37.19	2.33E-01		9.84E-01	1.13E-01
	RN-219	401.80		6.50	9.98E-01	9.98E-01	-1.93E-01	4.76E-01
	RA-223	323.87		3.88	1.51E+00	1.51E+00	8.39E-02	7.23E-01
	RA-224	240.98		3.95	2.98E+00	2.98E+00	1.73E+01	1.47E+00
	RA-225	40.00		31.00	3.32E+01	3.32E+01	-3.20E+00	1.62E+01
+	RA-226	186.21	*	3.28	3.00E+00	3.00E+00	3.58E+00	1.48E+00
	TH-227	50.10		8.40	7.53E-01	7.53E-01	-7.04E-01	3.67E-01
		236.00		11.50	7.83E-01		-1.06E-01	3.83E-01
		256.20		6.30	9.25E-01		3.03E-01	4.47E-01
+	AC-228	338.32	*	11.40	8.89E-01	4.64E-01	1.51E+00	4.34E-01
		911.07	*	27.70	4.64E-01		1.15E+00	2.21E-01
		969.11	*	16.60	1.10E+00		1.75E+00	5.29E-01
	TH-230	48.44		16.90	3.95E-01	3.95E-01	-1.65E-01	1.93E-01
		62.85		4.60	1.30E+00		7.87E-01	6.39E-01
		67.67		0.37	1.44E+01		-2.51E+00	7.04E+00
	PA-231	283.67		1.60	3.66E+00	2.97E+00	-1.38E+00	1.76E+00
		302.67		2.30	2.97E+00		3.51E+00	1.43E+00
	TH-231	25.64		14.70	2.58E+00	8.30E-01	6.82E-01	1.26E+00
		84.21		6.40	8.30E-01		-5.32E-02	4.06E-01
	PA-233	311.98		38.60	1.95E+00	1.95E+00	1.15E-01	9.32E-01
+	PA-234	131.20	*	20.40	3.19E-01	3.19E-01	1.94E-01	1.57E-01
		733.99		8.80	9.55E-01		-1.26E-02	4.49E-01
		946.00		12.00	7.51E-01		4.94E-01	3.49E-01
	PA-234M	1001.03		0.92	9.36E+00	9.36E+00	-1.07E+00	4.32E+00
	TH-234	63.29		3.80	1.58E+00	1.58E+00	6.43E-01	7.75E-01
	U-235	143.76		10.50	4.25E-01	4.25E-01	6.63E-02	2.06E-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)
	U-235	163.35		4.70	9.54E-01	4.25E-01	-5.18E-01	4.62E-01
		205.31		4.70	1.29E+00		-1.09E-01	6.29E-01
	NP-237	86.50		12.60	4.45E-01	4.45E-01	2.56E-01	2.18E-01
	NP-239	106.10		22.70	1.69E+12	1.69E+12	9.06E+11	8.25E+11
		228.18		10.70	4.92E+12		1.47E+12	2.38E+12
		277.60		14.10	3.80E+12		6.41E+11	1.83E+12
	AM-241	59.54		35.90	1.60E-01	1.60E-01	1.49E-03	7.82E-02
+	AM-243	74.67	*	66.00	1.51E-01	1.51E-01	2.50E-01	7.45E-02
	CM-243	209.75		3.29	1.98E+00	4.32E-01	2.07E+00	9.65E-01
		228.14		10.60	5.61E-01		1.68E-01	2.72E-01
		277.60		14.00	4.32E-01		7.30E-02	2.08E-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-A03-S004-1824-01

Elapsed Live time: 3600
Elapsed Real Time: 3608

Channel								
1:	0	0	0	0	0	0	0	0
9:	3	146	211	127	138	131	121	89
17:	87	89	94	100	59	83	100	96
25:	88	82	74	106	73	70	88	82
33:	90	71	72	82	95	104	72	104
41:	97	94	97	94	85	105	127	130
49:	91	78	104	121	124	87	139	119
57:	123	122	123	133	127	128	139	199
65:	162	137	153	122	122	116	132	150
73:	133	155	298	332	307	470	256	117
81:	120	108	124	139	166	139	168	201
89:	148	143	178	144	203	216	155	108
97:	91	87	101	86	104	81	84	85
105:	108	97	87	81	81	78	73	90
113:	102	96	88	66	65	71	66	81
121:	79	70	70	90	80	80	74	80
129:	92	111	82	90	86	74	74	66
137:	79	72	75	70	83	75	65	77
145:	74	84	67	71	71	79	71	74
153:	70	63	77	73	59	78	64	81
161:	75	67	53	73	60	68	64	77
169:	74	62	52	48	57	74	69	42
177:	62	57	57	66	48	58	63	64
185:	80	122	142	84	59	69	53	49
193:	56	56	64	60	55	54	78	58
201:	55	55	49	62	59	64	53	57
209:	84	84	82	58	53	42	47	62
217:	49	53	60	54	56	45	49	47
225:	47	49	60	54	36	49	45	41
233:	44	41	46	50	60	149	373	357
241:	128	115	86	64	35	36	33	41
249:	38	36	36	34	39	39	40	43
257:	42	40	28	40	30	38	29	37
265:	23	25	24	33	41	44	57	45
273:	36	40	34	36	37	37	38	45
281:	24	26	38	28	47	33	33	31
289:	34	34	33	32	15	41	92	147
297:	76	34	22	46	64	42	33	37
305:	34	24	25	26	20	35	27	22
313:	27	24	19	22	25	21	26	26
321:	19	29	26	18	26	34	28	40
329:	32	49	23	17	25	22	28	17
337:	31	64	95	61	21	31	28	24
345:	17	22	20	17	25	21	50	152
353:	169	79	23	22	22	19	19	23
361:	17	24	20	30	23	18	25	25

369:	27	15	18	23	21	20	29	19

Sample Title: HTC-A03-S004-1824-01

Channel								
377:	25	26	25	19	13	22	13	24
385:	24	19	25	21	23	14	20	17
393:	17	19	29	20	19	24	21	26
401:	14	24	20	22	22	23	25	21
409:	16	25	21	21	21	19	23	21
417:	15	17	27	16	16	19	29	23
425:	19	23	14	11	16	18	18	28
433:	11	17	18	23	19	17	15	20
441:	24	16	18	18	19	16	17	13
449:	15	17	15	12	13	16	22	17
457:	19	19	15	18	19	15	21	30
465:	25	13	19	11	16	19	18	14
473:	19	17	15	12	14	17	12	13
481:	25	8	13	9	14	12	19	23
489:	19	14	17	16	20	9	11	15
497:	13	5	16	9	15	6	13	15
505:	15	11	14	19	20	49	56	52
513:	35	13	9	11	11	16	10	14
521:	9	9	11	16	14	7	16	12
529:	13	10	9	13	11	17	11	14
537:	14	13	10	15	17	14	15	8
545:	13	8	16	16	13	15	21	8
553:	13	13	15	17	15	14	14	11
561:	12	12	13	14	11	12	9	20
569:	17	8	14	9	10	13	12	11
577:	12	13	15	14	10	42	93	103
585:	46	13	13	13	13	14	19	13
593:	11	13	18	11	12	12	14	16
601:	10	7	6	13	12	10	28	46
609:	97	102	52	21	13	8	11	12
617:	6	9	8	12	17	15	12	16
625:	13	9	12	8	10	8	17	10
633:	14	12	9	14	9	11	12	8
641:	15	10	18	12	6	9	12	6
649:	8	15	11	11	17	10	6	12
657:	11	8	6	17	12	14	15	9
665:	12	13	12	11	12	6	12	11
673:	13	10	7	10	8	12	5	10
681:	20	4	7	5	11	16	11	9
689:	10	8	21	12	14	11	11	17
697:	15	10	16	13	9	18	12	19
705:	11	8	13	12	8	9	8	13
713:	10	7	6	11	13	7	17	11
721:	8	8	9	10	7	21	27	26
729:	24	12	13	12	11	14	13	7
737:	12	7	8	11	12	9	6	11
745:	7	12	9	11	8	6	7	8
753:	13	11	10	12	10	10	9	5
761:	13	12	12	16	10	6	12	12
769:	25	11	11	12	8	14	11	8
777:	6	14	5	13	6	7	10	8
785:	8	11	9	9	6	10	8	8
793:	5	13	15	14	12	7	11	10

801:	5	10	10	6	12	10	6	8

Sample Title: HTC-A03-S004-1824-01

Channel								
809:	7	12	7	8	4	10	7	9
817:	12	7	9	7	7	8	10	8
825:	5	6	7	7	5	8	6	10
833:	9	12	9	7	6	14	4	10
841:	12	4	12	12	7	7	12	13
849:	10	10	3	4	5	10	8	7
857:	8	16	8	14	16	9	6	9
865:	6	6	2	6	12	12	10	9
873:	11	5	10	6	4	7	8	4
881:	10	8	9	5	6	6	11	16
889:	10	4	11	7	7	14	8	7
897:	7	10	7	6	9	8	9	4
905:	3	7	10	11	12	25	63	43
913:	22	5	6	3	12	6	0	5
921:	5	15	15	5	4	11	5	15
929:	9	6	10	8	8	15	12	5
937:	13	9	11	7	4	4	4	10
945:	12	7	9	6	11	6	5	10
953:	2	11	8	5	8	4	14	7
961:	5	6	8	16	21	15	14	38
969:	36	34	13	6	8	8	6	6
977:	10	6	6	3	6	16	7	10
985:	9	8	11	9	4	7	9	9
993:	7	3	12	7	5	5	10	3
1001:	8	10	8	4	11	6	4	7
1009:	5	6	5	8	14	3	7	5
1017:	6	2	8	6	8	4	5	11
1025:	7	6	5	6	7	8	8	7
1033:	6	7	5	3	4	5	15	5
1041:	4	8	4	8	7	4	4	3
1049:	5	4	7	8	2	6	10	12
1057:	8	9	11	5	4	11	7	10
1065:	8	8	6	7	4	8	4	10
1073:	10	6	8	4	9	9	3	6
1081:	8	4	10	7	6	2	8	6
1089:	8	9	11	7	6	12	7	4
1097:	7	5	8	9	6	7	3	6
1105:	6	13	2	13	12	6	8	8
1113:	5	12	8	8	14	6	29	33
1121:	17	8	6	8	3	9	4	4
1129:	6	5	6	7	9	7	7	9
1137:	5	7	10	5	10	6	8	5
1145:	11	5	10	11	12	7	10	9
1153:	9	11	13	13	11	8	6	7
1161:	7	13	9	8	7	8	9	10
1169:	10	6	9	11	7	7	9	7
1177:	8	10	12	9	10	11	5	5
1185:	9	5	6	12	12	8	11	9
1193:	6	12	7	8	8	12	7	9
1201:	11	11	6	7	12	8	10	9
1209:	7	10	13	14	4	17	7	7
1217:	9	10	6	9	7	6	10	15
1225:	4	13	9	13	13	8	10	16

1233:	6	5	9	12	13	19	4	11

Sample Title: HTC-A03-S004-1824-01

Channel								
1241:	9	11	9	4	9	6	8	6
1249:	12	4	9	4	3	6	9	8
1257:	5	7	9	8	6	6	2	4
1265:	7	6	6	5	1	4	10	6
1273:	2	5	5	8	3	4	6	6
1281:	6	5	4	6	6	7	7	2
1289:	6	8	6	3	5	3	6	3
1297:	6	4	6	8	6	9	4	5
1305:	6	7	4	2	3	12	5	4
1313:	5	5	2	3	3	5	7	7
1321:	2	3	4	3	1	2	6	3
1329:	3	4	6	6	1	4	6	5
1337:	5	1	6	3	4	10	5	2
1345:	6	4	6	1	5	5	1	5
1353:	1	1	3	7	2	3	5	4
1361:	4	9	4	0	2	3	5	7
1369:	5	4	1	1	3	3	2	9
1377:	7	3	5	2	3	2	5	0
1385:	6	1	1	5	1	6	2	1
1393:	7	3	2	2	2	3	2	2
1401:	2	5	3	2	4	3	3	8
1409:	1	3	3	4	2	1	5	3
1417:	5	5	1	3	2	1	1	4
1425:	1	1	1	6	4	3	1	2
1433:	4	3	2	4	1	0	4	0
1441:	7	4	2	5	3	0	4	5
1449:	4	4	1	3	5	4	3	3
1457:	7	30	109	258	220	81	17	2
1465:	2	0	1	4	2	1	1	2
1473:	4	4	1	0	2	2	2	4
1481:	2	5	1	4	1	1	0	0
1489:	2	4	2	0	1	5	2	3
1497:	0	1	1	0	2	1	1	1
1505:	2	2	5	6	3	4	2	1
1513:	1	1	1	1	2	4	2	2
1521:	0	0	1	2	1	0	1	2
1529:	2	4	0	1	0	0	2	4
1537:	2	4	1	2	2	2	2	1
1545:	2	2	1	1	3	1	0	1
1553:	2	0	1	2	1	1	2	1
1561:	1	1	1	0	1	1	1	0
1569:	1	2	0	1	2	1	1	0
1577:	2	0	3	2	3	2	3	2
1585:	3	3	6	4	3	4	4	2
1593:	2	4	3	2	0	2	1	4
1601:	0	1	2	0	0	1	2	3
1609:	1	1	4	2	0	1	0	1
1617:	0	0	1	1	3	2	3	2
1625:	2	0	2	0	3	4	4	1
1633:	0	3	0	0	2	2	0	3
1641:	1	1	2	0	1	1	1	0
1649:	1	2	3	1	3	1	2	1
1657:	1	3	1	1	2	1	2	2

1665:	3	0	3	3	1	0	1	1

Sample Title: HTC-A03-S004-1824-01

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

2097:	1	1	0	1	3	7	1	2

Sample Title: HTC-A03-S004-1824-01

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

2529:	1	1	0	1	0	0	3	0

Sample Title: HTC-A03-S004-1824-01

Channel								
2537:	0	0	0	0	1	0	0	0
2545:	0	0	0	1	0	0	0	0
2553:	1	0	0	1	0	0	0	0
2561:	1	0	0	0	0	2	1	0
2569:	1	1	0	0	0	0	0	1
2577:	0	0	1	0	0	1	1	1
2585:	0	1	0	0	1	0	1	1
2593:	1	0	0	1	0	0	0	0
2601:	1	0	0	1	1	0	1	1
2609:	1	0	7	16	21	13	8	2
2617:	0	0	0	1	0	2	0	0
2625:	0	0	0	0	0	0	0	0
2633:	0	0	0	1	0	0	0	0
2641:	0	0	0	1	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	1	0	0	0	0
2665:	0	1	0	1	0	0	0	0
2673:	0	1	0	0	0	0	1	0
2681:	0	0	0	0	1	0	0	0
2689:	0	0	2	0	0	1	0	0
2697:	0	0	0	0	0	0	0	0
2705:	2	0	0	0	0	1	1	2
2713:	0	0	1	1	0	0	0	0
2721:	0	0	1	0	0	1	0	1
2729:	0	0	0	0	0	0	0	0
2737:	0	0	0	0	1	0	0	0
2745:	0	0	0	0	2	0	0	0
2753:	1	0	0	1	0	1	0	0
2761:	0	0	1	0	0	1	1	0
2769:	0	0	0	0	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	0	2	0	0	0	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	0	1	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	1	0	1
2825:	0	0	0	0	0	0	0	1
2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	1	0	0	0	0
2849:	0	0	1	0	0	0	1	0
2857:	0	0	0	0	1	0	0	1
2865:	0	0	0	1	1	0	0	0
2873:	0	0	0	1	0	0	0	0
2881:	0	0	0	0	1	0	0	0
2889:	0	0	1	1	0	0	0	2
2897:	0	0	0	0	0	0	0	0
2905:	1	0	0	0	0	1	0	0
2913:	0	0	0	0	0	0	1	1
2921:	0	0	0	0	0	1	1	0
2929:	0	0	0	0	0	0	0	1
2937:	0	1	0	0	1	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	1	0	1	0	0	0	0

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-1824-01

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

3393:	0	0	0	0	1	0	0	0

Sample Title: HTC-A03-S004-1824-01

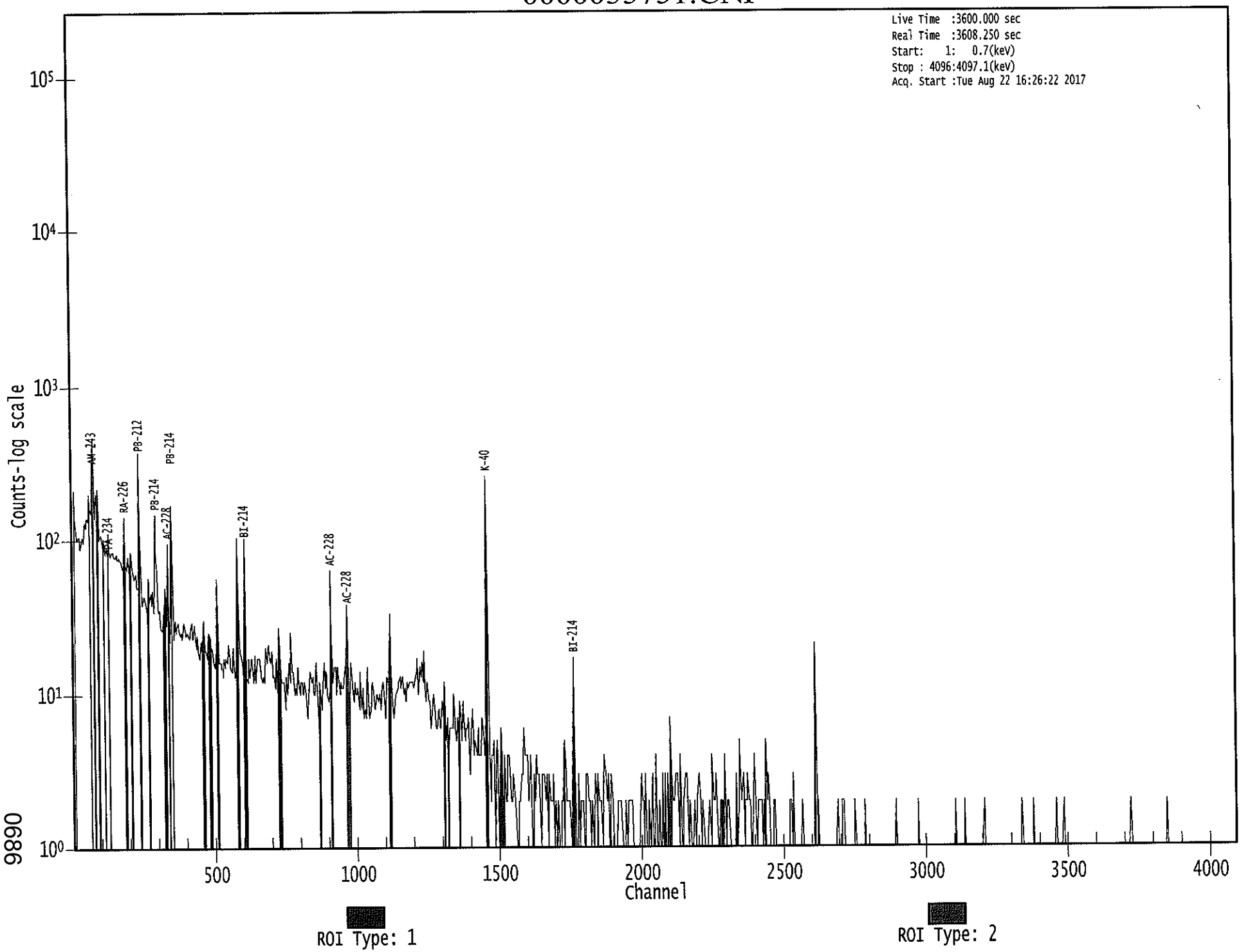
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	1	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	1	1	0	0	0	0	1
3449:	0	0	0	0	0	0	1	0
3457:	0	0	0	2	0	0	1	0
3465:	0	1	0	0	0	0	0	0
3473:	0	0	0	0	1	0	0	1
3481:	0	0	1	0	0	0	2	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	1	1	0	0	0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

Sample Title: HTC-A03-S004-1824-01

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

0000055751.CNF



9890

KB 8/22/17

Apex-Gamma

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-10
Sample Description	: HTC-A03-S004-2430-01
Sample Type	: SOIL
Sample Size	: 6.831E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2017 9:33:20AM
Acquisition Started	: 8/22/2017 4:26:32PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3602.0 seconds
Dead Time	: 0.05 %
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	: 55752

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 5:27:28PM
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	62.80	61.85	0.0000	0.00
2	69.19	68.24	0.0000	0.00
3	76.75	75.80	0.0000	0.00
4	84.32	83.38	0.0000	0.00
5	87.44	86.51	0.0000	0.00
6	93.02	92.08	0.0000	0.00
7	128.57	127.64	0.0000	0.00
8	185.86	184.95	0.0000	0.00
9	209.58	208.68	0.0000	0.00
10	238.89	238.00	0.0000	0.00
11	242.19	241.30	0.0000	0.00
12	270.46	269.58	0.0000	0.00
13	295.80	294.93	0.0000	0.00
14	338.44	337.58	0.0000	0.00
15	351.90	351.05	0.0000	0.00
16	462.65	461.84	0.0000	0.00
17	476.24	475.43	0.0000	0.00
18	511.11	510.31	0.0000	0.00
19	583.27	582.50	0.0000	0.00
20	609.73	608.97	0.0000	0.00
21	674.27	673.54	0.0000	0.00
22	727.33	726.61	0.0000	0.00
23	794.67	793.98	0.0000	0.00
24	890.57	889.93	0.0000	0.00
25	911.73	911.10	0.0000	0.00
26	964.37	963.75	0.0000	0.00
27	968.80	968.19	0.0000	0.00
28	1178.31	1177.79	0.0000	0.00
29	1200.71	1200.21	0.0000	0.00
30	1331.74	1331.30	0.0000	0.00
31	1460.70	1460.33	0.0000	0.00
32	1490.69	1490.32	0.0000	0.00
33	1592.76	1592.45	0.0000	0.00
34	1599.55	1599.24	0.0000	0.00
35	1620.66	1620.37	0.0000	0.00
36	1644.14	1643.86	0.0000	0.00
37	1764.51	1764.29	0.0000	0.00
38	1887.64	1887.50	0.0000	0.00
39	2117.25	2117.24	0.0000	0.00
40	2203.59	2203.63	0.0000	0.00
41	2250.31	2250.39	0.0000	0.00
42	2613.83	2614.14	0.0000	0.00

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 5:27:28PM

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	62.80	56 -	81	61.85	3.44E+02	143.40	2.09E+03	4.19
m	2	69.19	56 -	81	68.24	1.62E+02	148.10	2.19E+03	4.20
m	3	76.75	56 -	81	75.80	1.04E+03	154.34	2.35E+03	4.22
M	4	84.32	82 -	96	83.38	5.21E+01	45.31	5.61E+02	3.63
m	5	87.44	82 -	96	86.51	2.44E+02	106.63	1.60E+03	2.95
m	6	93.02	82 -	96	92.08	3.65E+02	105.80	1.43E+03	3.53
	7	128.57	124 -	131	127.64	1.26E+02	76.79	9.03E+02	3.07
	8	185.86	181 -	188	184.95	1.11E+02	72.47	8.05E+02	3.47
	9	209.58	204 -	212	208.68	6.63E+01	72.02	7.49E+02	2.39
M	10	238.89	233 -	245	238.00	6.36E+02	74.77	4.90E+02	2.25
m	11	242.19	233 -	245	241.30	1.56E+02	79.20	5.56E+02	2.82
	12	270.46	266 -	274	269.58	7.16E+01	58.78	4.91E+02	2.61
	13	295.80	290 -	301	294.93	1.93E+02	77.51	6.57E+02	2.22
	14	338.44	334 -	342	337.58	1.07E+02	52.07	3.52E+02	2.28
	15	351.90	346 -	356	351.05	2.91E+02	64.62	4.03E+02	2.04
	16	462.65	459 -	466	461.84	4.74E+01	36.11	1.89E+02	1.41
	17	476.24	472 -	479	475.43	3.44E+01	32.06	1.49E+02	3.39
	18	511.11	505 -	516	510.31	1.13E+02	50.16	2.57E+02	2.71
	19	583.27	578 -	587	582.50	1.12E+02	47.28	2.56E+02	2.11
	20	609.73	603 -	615	608.97	1.97E+02	50.52	2.06E+02	2.78
	21	674.27	670 -	677	673.54	3.31E+01	27.35	9.99E+01	1.42
	22	727.33	720 -	730	726.61	3.84E+01	37.20	1.61E+02	2.87
	23	794.67	789 -	797	793.98	3.18E+01	27.74	9.84E+01	3.20
	24	890.57	888 -	892	889.93	1.60E+01	15.29	3.80E+01	2.20
	25	911.73	908 -	918	911.10	1.11E+02	36.68	1.17E+02	2.81
M	26	964.37	961 -	982	963.75	3.32E+01	16.90	3.64E+01	2.88
m	27	968.80	961 -	982	968.19	6.73E+01	30.58	8.06E+01	3.27
	28	1178.31	1174 -	1183	1177.79	3.26E+01	27.00	8.68E+01	1.20
	29	1200.71	1195 -	1206	1200.21	4.83E+01	33.23	1.13E+02	6.06
	30	1331.74	1328 -	1336	1331.30	1.49E+01	19.56	5.01E+01	1.93
	31	1460.70	1455 -	1466	1460.33	4.52E+02	49.19	7.26E+01	2.82
	32	1490.69	1483 -	1499	1490.32	2.11E+01	16.26	1.77E+01	11.28
M	33	1592.76	1588 -	1603	1592.45	2.80E+01	14.53	1.60E+01	3.20
m	34	1599.55	1588 -	1603	1599.24	1.22E+01	12.61	1.17E+01	3.20
	35	1620.66	1616 -	1625	1620.37	1.13E+01	12.29	1.55E+01	2.81
	36	1644.14	1640 -	1646	1643.86	7.00E+00	5.29	0.00E+00	1.98
	37	1764.51	1759 -	1767	1764.29	1.51E+01	10.98	9.80E+00	2.35
	38	1887.64	1885 -	1890	1887.50	6.00E+00	4.90	0.00E+00	1.87
	39	2117.25	2114 -	2120	2117.24	7.17E+00	6.95	3.67E+00	4.65
	40	2203.59	2199 -	2206	2203.63	7.75E+00	8.94	8.50E+00	1.28

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	2250.31	2245 -	2255	2250.39	1.23E+01	9.50	5.40E+00	5.89
42	2613.83	2609 -	2618	2614.14	4.10E+01	15.30	1.00E+01	2.44

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 : 8/22/2017 5:27:28PM

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	62.80	56 -	81	3.44E+02	143.40	2.09E+03	7.52E+01
m	2	69.19	56 -	81	1.62E+02	148.10	2.19E+03	7.70E+01
m	3	76.75	56 -	81	1.04E+03	154.34	2.35E+03	7.97E+01
M	4	84.32	82 -	96	5.21E+01	45.31	5.61E+02	3.89E+01
m	5	87.44	82 -	96	2.44E+02	106.63	1.60E+03	6.57E+01
m	6	93.02	82 -	96	3.65E+02	105.80	1.43E+03	6.21E+01
	7	128.57	124 -	131	1.26E+02	76.79	9.03E+02	6.03E+01
	8	185.86	181 -	188	1.11E+02	72.47	8.05E+02	5.70E+01
	9	209.58	204 -	212	6.63E+01	72.02	7.49E+02	5.77E+01
M	10	238.89	233 -	245	6.36E+02	74.77	4.90E+02	3.64E+01
m	11	242.19	233 -	245	1.56E+02	79.20	5.56E+02	3.88E+01
	12	270.46	266 -	274	7.16E+01	58.78	4.91E+02	4.63E+01
	13	295.80	290 -	301	1.93E+02	77.51	6.57E+02	5.95E+01
	14	338.44	334 -	342	1.07E+02	52.07	3.52E+02	3.93E+01
	15	351.90	346 -	356	2.91E+02	64.62	4.03E+02	4.51E+01
	16	462.65	459 -	466	4.74E+01	36.11	1.89E+02	2.74E+01
	17	476.24	472 -	479	3.44E+01	32.06	1.49E+02	2.45E+01
	18	511.11	505 -	516	1.13E+02	50.16	2.57E+02	3.73E+01
	19	583.27	578 -	587	1.12E+02	47.28	2.56E+02	3.47E+01
	20	609.73	603 -	615	1.97E+02	50.52	2.06E+02	3.45E+01
	21	674.27	670 -	677	3.31E+01	27.35	9.99E+01	2.04E+01
	22	727.33	720 -	730	3.84E+01	37.20	1.61E+02	2.88E+01
	23	794.67	789 -	797	3.18E+01	27.74	9.84E+01	2.08E+01
	24	890.57	888 -	892	1.60E+01	15.29	3.80E+01	1.07E+01
	25	911.73	908 -	918	1.11E+02	36.68	1.17E+02	2.47E+01

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
M	26	964.37	961 -	982	3.32E+01	16.90	3.64E+01	9.91E+00
m	27	968.80	961 -	982	6.73E+01	30.58	8.06E+01	1.48E+01
	28	1178.31	1174 -	1183	3.26E+01	27.00	8.68E+01	2.01E+01
	29	1200.71	1195 -	1206	4.83E+01	33.23	1.13E+02	2.48E+01
	30	1331.74	1328 -	1336	1.49E+01	19.56	5.01E+01	1.48E+01
	31	1460.70	1455 -	1466	4.52E+02	49.19	7.26E+01	2.04E+01
	32	1490.69	1483 -	1499	2.11E+01	16.26	1.77E+01	1.10E+01
M	33	1592.76	1588 -	1603	2.80E+01	14.53	1.60E+01	6.58E+00
m	34	1599.55	1588 -	1603	1.22E+01	12.61	1.17E+01	5.61E+00
	35	1620.66	1616 -	1625	1.13E+01	12.29	1.55E+01	8.46E+00
	36	1644.14	1640 -	1646	7.00E+00	5.29	0.00E+00	0.00E+00
	37	1764.51	1759 -	1767	1.51E+01	10.98	9.80E+00	6.37E+00
	38	1887.64	1885 -	1890	6.00E+00	4.90	0.00E+00	0.00E+00
	39	2117.25	2114 -	2120	7.17E+00	6.95	3.67E+00	3.64E+00
	40	2203.59	2199 -	2206	7.75E+00	8.94	8.50E+00	5.75E+00
	41	2250.31	2245 -	2255	1.23E+01	9.50	5.40E+00	5.27E+00
	42	2613.83	2609 -	2618	4.10E+01	15.30	1.00E+01	6.88E+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 : 8/22/2017 5:27:28PM

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	62.80	56 -	81	61.85	3.44E+02	143.40	2.09E+03	TH-230 TH-234
m	2	69.19	56 -	81	68.24	1.62E+02	148.10	2.19E+03	.....
m	3	76.75	56 -	81	75.80	1.04E+03	154.34	2.35E+03	.....
M	4	84.32	82 -	96	83.38	5.21E+01	45.31	5.61E+02	TH-231
m	5	87.44	82 -	96	86.51	2.44E+02	106.63	1.60E+03	SN-126 CD-109 LU-176

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									NP-237
									EU-155
m	6	93.02	82 -	96	92.08	3.65E+02	105.80	1.43E+03	GA-67
	7	128.57	124 -	131	127.64	1.26E+02	76.79	9.03E+02	.....
	8	185.86	181 -	188	184.95	1.11E+02	72.47	8.05E+02	RA-226
	9	209.58	204 -	212	208.68	6.63E+01	72.02	7.49E+02	CM-243
									GA-67
M	10	238.89	233 -	245	238.00	6.36E+02	74.77	4.90E+02	PB-212
m	11	242.19	233 -	245	241.30	1.56E+02	79.20	5.56E+02	.....
	12	270.46	266 -	274	269.58	7.16E+01	58.78	4.91E+02	.....
	13	295.80	290 -	301	294.93	1.93E+02	77.51	6.57E+02	PB-214
	14	338.44	334 -	342	337.58	1.07E+02	52.07	3.52E+02	AC-228
	15	351.90	346 -	356	351.05	2.91E+02	64.62	4.03E+02	PB-214
	16	462.65	459 -	466	461.84	4.74E+01	36.11	1.89E+02	SB-125
	17	476.24	472 -	479	475.43	3.44E+01	32.06	1.49E+02	PM-144
	18	511.11	505 -	516	510.31	1.13E+02	50.16	2.57E+02	.....
	19	583.27	578 -	587	582.50	1.12E+02	47.28	2.56E+02	TL-208
	20	609.73	603 -	615	608.97	1.97E+02	50.52	2.06E+02	BI-214
	21	674.27	670 -	677	673.54	3.31E+01	27.35	9.99E+01	.....
	22	727.33	720 -	730	726.61	3.84E+01	37.20	1.61E+02	BI-212
	23	794.67	789 -	797	793.98	3.18E+01	27.74	9.84E+01	.....
	24	890.57	888 -	892	889.93	1.60E+01	15.29	3.80E+01	.....
	25	911.73	908 -	918	911.10	1.11E+02	36.68	1.17E+02	TL-204
									AC-228
M	26	964.37	961 -	982	963.75	3.32E+01	16.90	3.64E+01	EU-152
m	27	968.80	961 -	982	968.19	6.73E+01	30.58	8.06E+01	AC-228
	28	1178.31	1174 -	1183	1177.79	3.26E+01	27.00	8.68E+01	.....
	29	1200.71	1195 -	1206	1200.21	4.83E+01	33.23	1.13E+02	.....
	30	1331.74	1328 -	1336	1331.30	1.49E+01	19.56	5.01E+01	CO-60
	31	1460.70	1455 -	1466	1460.33	4.52E+02	49.19	7.26E+01	K-40
	32	1490.69	1483 -	1499	1490.32	2.11E+01	16.26	1.77E+01	.....
M	33	1592.76	1588 -	1603	1592.45	2.80E+01	14.53	1.60E+01	.....
m	34	1599.55	1588 -	1603	1599.24	1.22E+01	12.61	1.17E+01	.....
	35	1620.66	1616 -	1625	1620.37	1.13E+01	12.29	1.55E+01	BI-212
	36	1644.14	1640 -	1646	1643.86	7.00E+00	5.29	0.00E+00	.....
	37	1764.51	1759 -	1767	1764.29	1.51E+01	10.98	9.80E+00	BI-214
	38	1887.64	1885 -	1890	1887.50	6.00E+00	4.90	0.00E+00	.....
	39	2117.25	2114 -	2120	2117.24	7.17E+00	6.95	3.67E+00	.....
	40	2203.59	2199 -	2206	2203.63	7.75E+00	8.94	8.50E+00	BI-214
	41	2250.31	2245 -	2255	2250.39	1.23E+01	9.50	5.40E+00	.....
	42	2613.83	2609 -	2618	2614.14	4.10E+01	15.30	1.00E+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

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 8/22/2017 5:27:28PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	62.80	3.44E+02	143.40	2.14E-02	1.63E-03
m	2	69.19	1.62E+02	148.10	2.25E-02	1.76E-03
m	3	76.75	1.04E+03	154.34	2.33E-02	1.93E-03
M	4	84.32	5.21E+01	45.31	2.36E-02	2.09E-03
m	5	87.44	2.44E+02	106.63	2.37E-02	2.15E-03
m	6	93.02	3.65E+02	105.80	2.37E-02	2.09E-03
	7	128.57	1.26E+02	76.79	2.16E-02	1.63E-03
	8	185.86	1.11E+02	72.47	1.69E-02	1.40E-03
	9	209.58	6.63E+01	72.02	1.53E-02	1.28E-03
M	10	238.89	6.36E+02	74.77	1.36E-02	1.14E-03
m	11	242.19	1.56E+02	79.20	1.34E-02	1.13E-03
	12	270.46	7.16E+01	58.78	1.20E-02	9.89E-04
	13	295.80	1.93E+02	77.51	1.10E-02	9.12E-04
	14	338.44	1.07E+02	52.07	9.60E-03	8.22E-04
	15	351.90	2.91E+02	64.62	9.22E-03	7.94E-04
	16	462.65	4.74E+01	36.11	6.95E-03	6.81E-04
	17	476.24	3.44E+01	32.06	6.75E-03	6.76E-04
	18	511.11	1.13E+02	50.16	6.28E-03	6.61E-04
	19	583.27	1.12E+02	47.28	5.50E-03	6.31E-04
	20	609.73	1.97E+02	50.52	5.27E-03	6.20E-04
	21	674.27	3.31E+01	27.35	4.78E-03	5.83E-04
	22	727.33	3.84E+01	37.20	4.45E-03	5.16E-04
	23	794.67	3.18E+01	27.74	4.10E-03	4.32E-04
	24	890.57	1.60E+01	15.29	3.69E-03	3.11E-04
	25	911.73	1.11E+02	36.68	3.62E-03	2.99E-04
M	26	964.37	3.32E+01	16.90	3.44E-03	2.86E-04
m	27	968.80	6.73E+01	30.58	3.43E-03	2.85E-04
	28	1178.31	3.26E+01	27.00	2.88E-03	2.37E-04
	29	1200.71	4.83E+01	33.23	2.84E-03	2.36E-04
	30	1331.74	1.49E+01	19.56	2.59E-03	2.27E-04
	31	1460.70	4.52E+02	49.19	2.38E-03	2.08E-04
	32	1490.69	2.11E+01	16.26	2.34E-03	2.03E-04
M	33	1592.76	2.80E+01	14.53	2.20E-03	1.88E-04
m	34	1599.55	1.22E+01	12.61	2.19E-03	1.87E-04
	35	1620.66	1.13E+01	12.29	2.17E-03	1.84E-04
	36	1644.14	7.00E+00	5.29	2.14E-03	1.80E-04
	37	1764.51	1.51E+01	10.98	2.00E-03	1.62E-04
	38	1887.64	6.00E+00	4.90	1.87E-03	1.51E-04
	39	2117.25	7.17E+00	6.95	1.65E-03	1.51E-04
	40	2203.59	7.75E+00	8.94	1.58E-03	1.51E-04
	41	2250.31	1.23E+01	9.50	1.54E-03	1.51E-04
	42	2613.83	4.10E+01	15.30	1.28E-03	1.51E-04

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

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 : 8/22/2017 5:27:28PM

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.
M	1	62.80	3.44E+02	143.40	5.67E+01	8.57E+00	2.87E+02	1.44E+02
m	2	69.19	1.62E+02	148.10			1.62E+02	1.48E+02
m	3	76.75	1.04E+03	154.34			1.04E+03	1.54E+02
M	4	84.32	5.21E+01	45.31			5.21E+01	4.53E+01
m	5	87.44	2.44E+02	106.63			2.44E+02	1.07E+02
m	6	93.02	3.65E+02	105.80	5.99E+01	8.61E+00	3.05E+02	1.06E+02
	7	128.57	1.26E+02	76.79			1.26E+02	7.68E+01
	8	185.86	1.11E+02	72.47	2.43E+01	7.50E+00	8.63E+01	7.29E+01
	9	209.58	6.63E+01	72.02			6.63E+01	7.20E+01
M	10	238.89	6.36E+02	74.77	1.06E+01	6.01E+00	6.25E+02	7.50E+01
m	11	242.19	1.56E+02	79.20			1.56E+02	7.92E+01
	12	270.46	7.16E+01	58.78			7.16E+01	5.88E+01
	13	295.80	1.93E+02	77.51			1.93E+02	7.75E+01
	14	338.44	1.07E+02	52.07			1.07E+02	5.21E+01
	15	351.90	2.91E+02	64.62			2.91E+02	6.46E+01
	16	462.65	4.74E+01	36.11			4.74E+01	3.61E+01
	17	476.24	3.44E+01	32.06			3.44E+01	3.21E+01
	18	511.11	1.13E+02	50.16	4.55E+01	4.99E+00	6.77E+01	5.04E+01
	19	583.27	1.12E+02	47.28			1.12E+02	4.73E+01
	20	609.73	1.97E+02	50.52			1.97E+02	5.05E+01
	21	674.27	3.31E+01	27.35			3.31E+01	2.73E+01
	22	727.33	3.84E+01	37.20			3.84E+01	3.72E+01
	23	794.67	3.18E+01	27.74			3.18E+01	2.77E+01
	24	890.57	1.60E+01	15.29			1.60E+01	1.53E+01
	25	911.73	1.11E+02	36.68			1.11E+02	3.67E+01
M	26	964.37	3.32E+01	16.90			3.32E+01	1.69E+01
m	27	968.80	6.73E+01	30.58			6.73E+01	3.06E+01
	28	1178.31	3.26E+01	27.00			3.26E+01	2.70E+01
	29	1200.71	4.83E+01	33.23			4.83E+01	3.32E+01
	30	1331.74	1.49E+01	19.56			1.49E+01	1.96E+01
	31	1460.70	4.52E+02	49.19			4.52E+02	4.92E+01
	32	1490.69	2.11E+01	16.26			2.11E+01	1.63E+01
M	33	1592.76	2.80E+01	14.53			2.80E+01	1.45E+01
m	34	1599.55	1.22E+01	12.61			1.22E+01	1.26E+01
	35	1620.66	1.13E+01	12.29			1.13E+01	1.23E+01

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
36	1644.14	7.00E+00	5.29			7.00E+00	5.29E+00
37	1764.51	1.51E+01	10.98			1.51E+01	1.10E+01
38	1887.64	6.00E+00	4.90			6.00E+00	4.90E+00
39	2117.25	7.17E+00	6.95			7.17E+00	6.95E+00
40	2203.59	7.75E+00	8.94			7.75E+00	8.94E+00
41	2250.31	1.23E+01	9.50			1.23E+01	9.50E+00
42	2613.83	4.10E+01	15.30			4.10E+01	1.53E+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 : 8/22/2017 5:27:28PM

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.
M	1	62.80	3.44E+02	143.40	5.67E+01	8.57E+00	2.87E+02	1.44E+02
m	2	69.19	1.62E+02	148.10			1.62E+02	1.48E+02
m	3	76.75	1.04E+03	154.34			1.04E+03	1.54E+02
M	4	84.32	5.21E+01	45.31			5.21E+01	4.53E+01
m	5	87.44	2.44E+02	106.63			2.44E+02	1.07E+02
m	6	93.02	3.65E+02	105.80	5.99E+01	8.61E+00	3.05E+02	1.06E+02
	7	128.57	1.26E+02	76.79			1.26E+02	7.68E+01
	8	185.86	1.11E+02	72.47	2.43E+01	7.50E+00	8.63E+01	7.29E+01
	9	209.58	6.63E+01	72.02			6.63E+01	7.20E+01
M	10	238.89	6.36E+02	74.77	1.06E+01	6.01E+00	6.25E+02	7.50E+01
m	11	242.19	1.56E+02	79.20			1.56E+02	7.92E+01
	12	270.46	7.16E+01	58.78			7.16E+01	5.88E+01
	13	295.80	1.93E+02	77.51			1.93E+02	7.75E+01
	14	338.44	1.07E+02	52.07			1.07E+02	5.21E+01
	15	351.90	2.91E+02	64.62			2.91E+02	6.46E+01
	16	462.65	4.74E+01	36.11			4.74E+01	3.61E+01
	17	476.24	3.44E+01	32.06			3.44E+01	3.21E+01
	18	511.11	1.13E+02	50.16	4.55E+01	4.99E+00	6.77E+01	5.04E+01
	19	583.27	1.12E+02	47.28			1.12E+02	4.73E+01
	20	609.73	1.97E+02	50.52			1.97E+02	5.05E+01
	21	674.27	3.31E+01	27.35			3.31E+01	2.73E+01

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	22	727.33	3.84E+01	37.20			3.84E+01	3.72E+01
	23	794.67	3.18E+01	27.74			3.18E+01	2.77E+01
	24	890.57	1.60E+01	15.29			1.60E+01	1.53E+01
	25	911.73	1.11E+02	36.68			1.11E+02	3.67E+01
M	26	964.37	3.32E+01	16.90			3.32E+01	1.69E+01
m	27	968.80	6.73E+01	30.58			6.73E+01	3.06E+01
	28	1178.31	3.26E+01	27.00			3.26E+01	2.70E+01
	29	1200.71	4.83E+01	33.23			4.83E+01	3.32E+01
	30	1331.74	1.49E+01	19.56			1.49E+01	1.96E+01
	31	1460.70	4.52E+02	49.19			4.52E+02	4.92E+01
	32	1490.69	2.11E+01	16.26			2.11E+01	1.63E+01
M	33	1592.76	2.80E+01	14.53			2.80E+01	1.45E+01
m	34	1599.55	1.22E+01	12.61			1.22E+01	1.26E+01
	35	1620.66	1.13E+01	12.29			1.13E+01	1.23E+01
	36	1644.14	7.00E+00	5.29			7.00E+00	5.29E+00
	37	1764.51	1.51E+01	10.98			1.51E+01	1.10E+01
	38	1887.64	6.00E+00	4.90			6.00E+00	4.90E+00
	39	2117.25	7.17E+00	6.95			7.17E+00	6.95E+00
	40	2203.59	7.75E+00	8.94			7.75E+00	8.94E+00
	41	2250.31	1.23E+01	9.50			1.23E+01	9.50E+00
	42	2613.83	4.10E+01	15.30			4.10E+01	1.53E+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	0.998	1460.81	*	10.67	1.95E+01	2.75E+00
CD-109	0.946	88.03	*	3.72	3.54E+00	1.59E+00
SN-126	0.997	87.57	*	37.00	3.06E-01	1.37E-01
TL-208	0.827	583.14	*	30.22	7.42E-01	3.24E-01
		860.37		4.48		
		2614.66	*	35.85	9.82E-01	3.84E-01
BI-212	0.997	727.17	*	11.80	8.03E-01	7.84E-01
		1620.62	*	2.75	2.08E+00	2.27E+00
PB-212	0.888	238.63	*	44.60	1.14E+00	1.66E-01
		300.09		3.41		

Analysis Report for 1707088-10

HTC-A03-S004-2430-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-214	0.720	609.31	*	46.30	8.89E-01	2.50E-01
		1120.29		15.10		
		1764.49	*	15.80	5.26E-01	3.84E-01
		2204.22	*	4.98	1.08E+00	1.25E+00
PB-214	0.981	295.21	*	19.19	1.00E+00	4.12E-01
		351.92	*	37.19	9.32E-01	2.22E-01
RA-226	0.980	186.21	*	3.28	1.71E+00	3.44E+00
AC-228	0.961	338.32	*	11.40	1.07E+00	5.31E-01
		911.07	*	27.70	1.22E+00	4.15E-01
		969.11	*	16.60	1.30E+00	6.01E-01
TH-234	0.962	63.29	*	3.80	3.88E+00	1.96E+00
NP-237	0.868	86.50	*	12.60	8.97E-01	4.01E-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 : 8/22/2017 5:27:28PM
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	69.19	4.49016E-02	45.81		
m	3	76.75	2.89912E-01	7.39		
M	4	84.32	1.44710E-02	43.49	Tol.	TH-231
m	6	93.02	8.47518E-02	17.40	Tol.	GA-67
	7	128.57	3.51331E-02	30.35		
	9	209.58	1.84259E-02	54.28	Tol.	GA-67 CM-243
m	11	242.19	4.33955E-02	25.35		
	12	270.46	1.98786E-02	41.07		
	16	462.65	1.31612E-02	38.11		
	17	476.24	9.54638E-03	46.65	Tol.	PM-144
	18	511.11	1.88187E-02	37.20		
	21	674.27	9.18340E-03	41.36		
	23	794.67	8.83745E-03	43.60	Sum	
	24	890.57	4.44048E-03	47.82		
M	26	964.37	9.23127E-03	25.43	Tol.	EU-152
	28	1178.31	9.05884E-03	41.40		

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	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	29	1200.71	1.34286E-02	34.37		
	30	1331.74	4.14583E-03	65.54	Tol.	CO-60
	32	1490.69	5.87037E-03	38.48		
M	33	1592.76	7.78294E-03	25.92	D-Esc	
m	34	1599.55	3.39243E-03	51.62		
	36	1644.14	1.94444E-03	37.80		
	38	1887.64	1.66667E-03	40.82		
	39	2117.25	1.99074E-03	48.46	Sum	
	41	2250.31	3.41667E-03	38.62		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	1.95E+01	2.75E+00
CD-109	0.94	88.03	*	3.72	3.54E+00	1.59E+00
SN-126	0.99	87.57	*	37.00	3.06E-01	1.37E-01
TL-208	0.82	583.14	*	30.22	7.42E-01	3.24E-01
		860.37		4.48		
		2614.66	*	35.85	9.82E-01	3.84E-01
BI-212	0.99	727.17	*	11.80	8.03E-01	7.84E-01
		1620.62	*	2.75	2.08E+00	2.27E+00
PB-212	0.88	238.63	*	44.60	1.14E+00	1.66E-01
		300.09		3.41		
BI-214	0.72	609.31	*	46.30	8.89E-01	2.50E-01
		1120.29		15.10		
		1764.49	*	15.80	5.26E-01	3.84E-01
		2204.22	*	4.98	1.08E+00	1.25E+00
PB-214	0.98	295.21	*	19.19	1.00E+00	4.12E-01
		351.92	*	37.19	9.32E-01	2.22E-01
RA-226	0.98	186.21	*	3.28	1.71E+00	3.44E+00
AC-228	0.96	338.32	*	11.40	1.07E+00	5.31E-01
		911.07	*	27.70	1.22E+00	4.15E-01

Analysis Report for 1707088-10

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Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
AC-228	0.96	969.11	*	16.60	1.30E+00	6.01E-01
TH-234	0.96	63.29	*	3.80	3.88E+00	1.96E+00
NP-237	0.86	86.50	*	12.60	8.97E-01	4.01E-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	0.998	1.95E+01	2.75E+00	
?	CD-109	0.946	3.54E+00	1.59E+00	
?	SN-126	0.997	3.06E-01	1.37E-01	
	TL-208	0.827	8.41E-01	2.48E-01	
	BI-212	0.997	9.38E-01	7.41E-01	
	PB-212	0.888	1.14E+00	1.66E-01	
	BI-214	0.720	7.89E-01	2.07E-01	
	PB-214	0.981	9.48E-01	1.96E-01	
	RA-226	0.980	1.71E+00	3.44E+00	
	AC-228	0.961	1.20E+00	2.87E-01	
	TH-234	0.962	3.88E+00	1.96E+00	
?	NP-237	0.868	8.97E-01	4.01E-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 1707088-10

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 5:27:28PM
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	69.19	4.49016E-02	45.81		
m	3	76.75	2.89912E-01	7.39		
M	4	84.32	1.44710E-02	43.49	Tol.	TH-231
m	6	93.02	8.47518E-02	17.40	Tol.	GA-67
	7	128.57	3.51331E-02	30.35		
	9	209.58	1.84259E-02	54.28	Tol.	GA-67 CM-243
m	11	242.19	4.33955E-02	25.35		
	12	270.46	1.98786E-02	41.07		
	16	462.65	1.31612E-02	38.11		
	17	476.24	9.54638E-03	46.65	Tol.	PM-144
	18	511.11	1.88187E-02	37.20		
	21	674.27	9.18340E-03	41.36		
	23	794.67	8.83745E-03	43.60	Sum	
	24	890.57	4.44048E-03	47.82		
M	26	964.37	9.23127E-03	25.43	Tol.	EU-152
	28	1178.31	9.05884E-03	41.40		
	29	1200.71	1.34286E-02	34.37		
	30	1331.74	4.14583E-03	65.54	Tol.	CO-60
	32	1490.69	5.87037E-03	38.48		
M	33	1592.76	7.78294E-03	25.92	D-Esc	
m	34	1599.55	3.39243E-03	51.62		
	36	1644.14	1.94444E-03	37.80		
	38	1887.64	1.66667E-03	40.82		
	39	2117.25	1.99074E-03	48.46	Sum	
	41	2250.31	3.41667E-03	38.62		

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 1707088-10

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NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	4.70E-01	2.86E+00	2.86E+00
+	NA-22	1274.54		99.94	-1.86E-02	1.48E-01	1.48E-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	1.46E-03	9.41E-02	9.41E-02
+	K-40	1460.81	*	10.67	1.95E+01	1.88E+00	1.88E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-8.79E-02	7.06E-02	7.06E-02
		78.34		96.00	3.47E-01		9.08E-02
+	SC-46	889.25		99.98	-6.38E-02	2.53E-01	2.53E-01
		1120.51		99.99	2.01E-01		3.78E-01
+	V-48	983.52		99.98	1.72E+00	9.66E+00	9.66E+00
		1312.10		97.50	1.39E+00		1.16E+01
+	CR-51	320.08		9.83	-4.06E+00	8.34E+00	8.34E+00
+	MN-54	834.83		99.97	2.48E-02	1.42E-01	1.42E-01
+	CO-56	846.75		99.96	-1.10E-01	2.65E-01	2.65E-01
		1037.75		14.03	2.16E-01		2.17E+00
		1238.25		67.00	2.14E-01		6.50E-01
		1771.40		15.51	-1.84E-02		1.57E+00
		2598.48		16.90	-3.07E-01		1.14E+00
+	CO-57	122.06		85.51	2.80E-02	7.57E-02	7.57E-02
		136.48		10.60	2.21E-01		6.87E-01
+	CO-58	810.76		99.40	3.92E-02	2.89E-01	2.89E-01
+	FE-59	1099.22		56.50	-1.19E-01	1.14E+00	1.14E+00
		1291.56		43.20	8.39E-01		1.67E+00
+	CO-60	1173.22		100.00	-2.23E-02	1.41E-01	1.51E-01
		1332.49		100.00	5.34E-02		1.41E-01
+	ZN-65	1115.52		50.75	-2.25E-01	3.81E-01	3.81E-01
+	GA-67	93.31		35.70	5.96E+08	4.15E+08	4.15E+08
		208.95		2.24	5.75E+09		6.64E+09
		300.22		16.00	-1.21E+09		1.07E+09
+	SE-75	121.11		16.70	2.93E-01	1.69E-01	5.50E-01
		136.00		59.20	4.89E-02		1.69E-01
		264.65		59.80	-2.45E-02		1.83E-01
		279.53		25.20	2.78E-01		5.00E-01
		400.65		11.40	-1.49E-01		1.14E+00
+	RB-82	776.52		13.00	7.74E-01	1.37E+01	1.37E+01
+	RB-83	520.41		46.00	7.97E-02	4.10E-01	4.10E-01
		529.64		30.30	1.66E-01		5.99E-01
		552.65		16.40	4.05E-01		1.28E+00
+	KR-85	513.99		0.43	1.32E+01	2.44E+01	2.44E+01
+	SR-85	513.99		99.27	1.68E-01	3.10E-01	3.10E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	Y-88	898.02		93.40	2.36E-01	1.46E-01	2.63E-01
		1836.01		99.38	-4.23E-02		1.46E-01
+	MO-93	263.06		56.72	-6.67E-02	7.97E-02	1.06E-01
		684.67		99.68	-5.95E-03		1.12E-01
		1477.11		99.08	0.00E+00		7.97E-02
+	NB-93M	16.57		9.43	1.29E+01	7.05E+00	7.05E+00
+	NB-94	702.63		100.00	4.12E-03	1.06E-01	1.06E-01
		871.10		100.00	1.25E-02		1.09E-01
+	NB-95	765.79		99.81	3.72E-01	8.82E-01	8.82E-01
+	NB-95M	235.69		25.00	1.54E+08	1.14E+08	1.14E+08
+	ZR-95	724.18		43.70	4.99E-01	6.04E-01	8.61E-01
		756.72		55.30	-1.18E-01		6.04E-01
+	MO-99	181.06		6.20	2.01E+10	1.07E+11	1.17E+11
		739.58		12.80	2.99E+10		1.07E+11
		778.00		4.50	-9.64E+10		3.12E+11
+	RU-103	497.08		89.00	-9.25E-02	5.47E-01	5.47E-01
+	RU-106	621.84		9.80	3.46E-01	1.15E+00	1.15E+00
+	AG-108M	433.93		89.90	-2.25E-02	8.42E-02	8.42E-02
		614.37		90.40	3.49E-03		1.03E-01
		722.95		90.50	1.49E-02		1.33E-01
+	CD-109	88.03	*	3.72	3.54E+00	3.61E+00	3.61E+00
+	AG-110M	657.75		93.14	1.45E-02	1.53E-01	1.53E-01
		677.61		10.53	-7.69E-03		1.35E+00
		706.67		16.46	7.93E-02		8.52E-01
		763.93		21.98	-1.19E-01		6.91E-01
		884.67		71.63	-1.38E-02		1.95E-01
		1384.27		23.94	-1.20E-01		6.08E-01
+	CD-113M	263.70		0.02	-1.23E+02	2.60E+02	2.60E+02
+	SN-113	255.12		1.93	6.15E-02	2.08E-01	5.82E+00
		391.69		64.90	5.26E-03		2.08E-01
+	TE123M	159.00		84.10	-6.40E-02	1.19E-01	1.19E-01
+	SB-124	602.71		97.87	-8.75E-02	2.56E-01	2.56E-01
		645.85		7.26	-2.41E+00		3.50E+00
		722.78		11.10	3.89E-01		3.46E+00
		1691.02		49.00	6.92E-02		7.57E-01
+	I-125	35.49		6.49	-2.27E+00	4.90E+00	4.90E+00
+	SB-125	176.33		6.89	-4.20E-01	2.83E-01	8.74E-01
		427.89		29.33	1.16E-01		2.83E-01
		463.38		10.35	7.92E-01		9.15E-01
		600.56		17.80	-1.02E-01		5.01E-01
		635.90		11.32	-3.50E-01		7.97E-01
+	SB-126	414.70		83.30	-2.25E+01	2.23E+01	2.23E+01
		666.33		99.60	-1.52E+01		2.84E+01
		695.00		99.60	3.20E+01		3.57E+01
		720.50		53.80	2.28E+00		5.60E+01
+	SN-126	87.57	*	37.00	3.06E-01	3.12E-01	3.12E-01
+	SB-127	473.00		25.00	2.32E+06	2.53E+07	2.53E+07
		685.20		35.70	-1.36E+06		2.55E+07

Analysis Report for 1707088-10

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-127	783.80	14.70	7.48E+07	2.53E+07	7.22E+07
+	I-129	29.78	57.00	-2.78E-02	2.45E-01	2.45E-01
		33.60	13.20	2.34E-01		8.28E-01
		39.58	7.52	-4.02E-01		1.13E+00
+	I-131	284.30	6.05	-1.33E+03	5.14E+02	6.55E+03
		364.48	81.20	-2.60E+02		5.14E+02
		636.97	7.26	-3.78E+02		7.49E+03
		722.89	1.80	4.64E+03		4.13E+04
+	TE-132	49.72	13.10	-4.35E+08	1.65E+08	1.25E+09
		228.16	88.00	1.63E+06		1.65E+08
+	BA-133	81.00	33.00	-3.95E-01	1.47E-01	2.13E-01
		302.84	17.80	-4.58E-02		3.95E-01
		356.01	60.00	-1.70E-02		1.47E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	-2.21E+05	1.19E+05	1.19E+05
+	CS-134	563.23	8.38	4.04E-01	1.02E-01	1.16E+00
		569.32	15.43	-4.02E-01		5.74E-01
		604.70	97.60	-1.40E-02		1.02E-01
		795.84	85.40	2.07E-02		1.64E-01
		801.93	8.73	2.62E-01		1.41E+00
+	CS-135	268.24	16.00	-5.52E-02	4.18E-01	4.18E-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	7.54E+01	2.34E+01	1.58E+02
		163.89	4.61	-9.67E-01		2.53E+02
		176.55	13.56	-8.55E-01		8.69E+01
		273.65	12.66	-2.23E+01		1.14E+02
		340.57	48.50	4.62E+01		3.65E+01
		818.50	99.70	1.12E+01		2.34E+01
		1048.07	79.60	-4.38E+00		3.28E+01
		1235.34	19.70	1.72E+02		1.98E+02
+	CS-137	661.65	85.12	-1.15E-02	1.24E-01	1.24E-01
+	LA-138	788.74	34.00	4.47E-02	1.58E-01	3.08E-01
		1435.80	66.00	1.98E-02		1.58E-01
+	CE-139	165.85	80.35	1.13E-02	1.17E-01	1.17E-01
+	BA-140	162.64	6.70	2.75E+01	7.13E+01	2.04E+02
		304.84	4.50	-1.20E+02		3.50E+02
		423.70	3.20	-6.14E+01		5.69E+02
		437.55	2.00	4.46E+02		9.24E+02
		537.32	25.00	-4.28E+01		7.13E+01
+	LA-140	328.77	20.50	4.68E+01	3.89E+01	9.02E+01
		487.03	45.50	1.48E+01		4.49E+01
		815.85	23.50	-2.21E+01		1.08E+02
		1596.49	95.49	3.07E+01		3.89E+01
+	CE-141	145.44	48.40	-1.06E-01	9.83E-01	9.83E-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 1707088-10

HTC-A03-S004-2430-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CE-144	133.54	10.80	1.10E-01	6.55E-01	6.55E-01
+	PM-144	476.78	42.00	1.47E-01	1.02E-01	2.33E-01
		618.01	98.60	-4.39E-02		1.02E-01
		696.49	99.49	3.61E-02		1.44E-01
+	PM-145	36.85	21.70	-5.84E-02	2.35E-01	4.39E-01
		37.36	39.70	-3.12E-02		2.35E-01
		42.30	15.10	-3.12E-01		5.37E-01
		72.40	2.31	-7.90E+00		3.25E+00
+	PM-146	453.90	39.94	-9.96E-02	1.73E-01	1.73E-01
		735.90	14.01	1.10E-01		7.79E-01
		747.13	13.10	-5.72E-03		8.33E-01
+	ND-147	91.11	28.90	1.89E+02	1.43E+02	1.43E+02
		531.02	13.10	1.62E+02		3.69E+02
+	PM-149	285.90	3.10	-3.70E+12	1.26E+14	1.26E+14
+	EU-152	121.78	20.50	9.13E-02	2.47E-01	2.47E-01
		244.69	5.40	1.47E-01		1.35E+00
		344.27	19.13	-1.85E-02		3.56E-01
		778.89	9.20	-6.85E-02		1.29E+00
		964.01	10.40	1.07E-01		1.48E+00
		1085.78	7.22	4.07E-01		1.84E+00
		1112.02	9.60	-3.58E-01		1.44E+00
		1407.95	14.94	1.97E-01		7.86E-01
+	GD-153	97.43	31.30	2.99E-02	2.40E-01	2.40E-01
		103.18	22.20	1.12E-01		3.16E-01
+	EU-154	123.07	40.50	-5.41E-03	1.25E-01	1.25E-01
		723.30	19.70	3.77E-01		6.51E-01
		873.19	11.50	9.48E-02		9.58E-01
		996.32	10.30	-6.56E-02		1.15E+00
		1004.76	17.90	3.78E-02		7.10E-01
		1274.45	35.50	-4.97E-02		3.95E-01
+	EU-155	86.50	30.90	1.62E-01	2.23E-01	2.23E-01
		105.30	20.70	-1.56E-01		2.58E-01
+	EU-156	811.77	10.40	6.78E+00	1.04E+02	1.04E+02
		1153.47	7.20	5.32E+01		2.34E+02
		1230.71	8.90	9.05E+00		1.90E+02
+	HO-166M	184.41	72.60	8.24E-02	9.22E-02	9.22E-02
		280.45	29.60	1.14E-01		2.32E-01
		410.94	11.10	-9.81E-02		6.55E-01
		711.69	54.10	6.55E-02		1.92E-01
+	TM-171	66.72	0.14	-6.84E+00	5.43E+01	5.43E+01
+	HF-172	67.35	5.31	-1.80E-01	5.15E-01	1.43E+00
		125.81	11.30	-1.54E-02		5.15E-01
+	LU-172	181.53	20.60	1.55E+03	6.97E+03	1.06E+04
		900.72	29.81	-2.20E+03		1.47E+04
		1093.66	62.50	-2.48E+02		6.97E+03
+	LU-173	100.72	5.24	5.88E-01	3.85E-01	1.16E+00
		272.11	21.20	1.70E-01		3.85E-01
+	HF-175	343.40	84.00	-1.13E-02	2.17E-01	2.17E-01
+	LU-176	88.34	13.30	-2.27E-01	6.72E-02	4.98E-01

Analysis Report for 1707088-10

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LU-176	201.83		86.00	1.77E-02	6.72E-02	7.27E-02
		306.78		94.00	-2.00E-02		6.72E-02
+	HF-181	133.02		41.70	-1.12E-01	4.99E-01	6.92E-01
		345.85		17.20	-1.07E-01		2.03E+00
		482.03		82.80	7.53E-02		4.99E-01
+	TA-182	67.75		41.20	-3.71E-01	2.98E-01	2.98E-01
		1121.30		34.90	4.86E-01		8.71E-01
		1189.05		16.23	7.71E-01		1.83E+00
		1221.41		26.98	-2.10E-01		1.15E+00
		1231.02		11.44	-8.47E-01		2.70E+00
+	IR-192	308.46		29.68	-1.29E-01	4.09E-01	5.55E-01
		468.07		48.10	1.25E-01		4.09E-01
+	HG-203	279.19		77.30	1.45E-01	4.08E-01	4.08E-01
+	TL-204	374.74		94.11	4.75E-03	7.90E-02	7.90E-02
		899.15		99.16	1.22E-02		1.27E-01
		911.74		91.10	2.74E-01		2.11E-01
+	BI-207	569.67		97.72	-5.82E-02	8.30E-02	8.30E-02
		1063.62		74.90	-6.60E-03		1.76E-01
+	TL-208	583.14	*	30.22	7.42E-01	3.94E-01	4.77E-01
		860.37		4.48	1.47E+00		2.84E+00
		2614.66	*	35.85	9.82E-01		3.94E-01
+	BI-210M	262.00		45.00	2.06E-02	1.37E-01	1.37E-01
		300.00		23.00	-3.76E-01		3.32E-01
+	PB-210	46.50		4.25	7.83E-01	1.82E+00	1.82E+00
+	PB-211	404.84		2.90	-8.81E-01	2.66E+00	2.66E+00
		831.96		2.90	-2.55E+00		3.47E+00
+	BI-212	727.17	*	11.80	8.03E-01	1.26E+00	1.26E+00
		1620.62	*	2.75	2.08E+00		3.62E+00
+	PB-212	238.63	*	44.60	1.14E+00	2.54E-01	2.54E-01
		300.09		3.41	-2.53E+00		2.24E+00
+	BI-214	609.31	*	46.30	8.89E-01	3.23E-01	3.23E-01
		1120.29		15.10	5.75E-01		1.08E+00
		1764.49	*	15.80	5.26E-01		5.38E-01
		2204.22	*	4.98	1.08E+00		1.98E+00
+	PB-214	295.21	*	19.19	1.00E+00	2.98E-01	6.33E-01
		351.92	*	37.19	9.32E-01		2.98E-01
+	RN-219	401.80		6.50	-2.00E-01	1.13E+00	1.13E+00
+	RA-223	323.87		3.88	-1.89E-01	1.82E+00	1.82E+00
+	RA-224	240.98		3.95	1.51E+01	3.06E+00	3.06E+00
+	RA-225	40.00		31.00	-1.10E+01	3.11E+01	3.11E+01
+	RA-226	186.21	*	3.28	1.71E+00	2.35E+00	2.35E+00
+	TH-227	50.10		8.40	-2.94E-01	8.45E-01	8.45E-01
		236.00		11.50	1.19E+00		8.81E-01
		256.20		6.30	5.37E-01		9.92E-01
+	AC-228	338.32	*	11.40	1.07E+00	5.71E-01	8.17E-01
		911.07	*	27.70	1.22E+00		5.71E-01
		969.11	*	16.60	1.30E+00		2.38E+00
+	TH-230	48.44		16.90	-8.63E-03	4.31E-01	4.31E-01

Analysis Report for 1707088-10

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TH-230	62.85		4.60	1.84E+00	4.31E-01	1.57E+00
		67.67		0.37	-2.24E+01		1.80E+01
+	PA-231	283.67		1.60	-8.08E-01	3.00E+00	3.98E+00
		302.67		2.30	-3.48E-01		3.00E+00
+	TH-231	25.64		14.70	1.14E+00	9.83E-01	1.44E+00
		84.21		6.40	-8.88E-01		9.83E-01
+	PA-233	311.98		38.60	4.62E-01	2.30E+00	2.30E+00
+	PA-234	131.20		20.40	-1.65E-02	2.76E-01	2.76E-01
		733.99		8.80	2.90E-01		1.15E+00
		946.00		12.00	-5.42E-01		9.74E-01
+	PA-234M	1001.03		0.92	2.77E-01	1.25E+01	1.25E+01
+	TH-234	63.29	*	3.80	3.88E+00	5.60E+00	5.60E+00
+	U-235	143.76		10.50	3.08E-01	5.35E-01	5.35E-01
		163.35		4.70	1.62E-01		1.20E+00
		205.31		4.70	3.45E-02		1.33E+00
+	NP-237	86.50	*	12.60	8.97E-01	9.15E-01	9.15E-01
+	NP-239	106.10		22.70	-7.01E+11	2.04E+12	2.04E+12
		228.18		10.70	5.23E+10		5.29E+12
		277.60		14.10	1.58E+12		4.43E+12
+	AM-241	59.54		35.90	-2.81E-02	1.95E-01	1.95E-01
+	AM-243	74.67		66.00	5.11E-01	1.36E-01	1.36E-01
+	CM-243	209.75		3.29	1.13E+00	5.04E-01	1.98E+00
		228.14		10.60	5.97E-03		6.04E-01
		277.60		14.00	1.80E-01		5.04E-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 1707088-10

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	2.86E+00	2.86E+00	4.70E-01	1.35E+00
	NA-22	1274.54		99.94	1.48E-01	1.48E-01	-1.86E-02	6.79E-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	9.41E-02	9.41E-02	1.46E-03	3.94E-02
+	K-40	1460.81	*	10.67	1.88E+00	1.88E+00	1.95E+01	8.80E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	7.06E-02	7.06E-02	-8.79E-02	3.46E-02
		78.34		96.00	9.08E-02		3.47E-01	4.47E-02
	SC-46	889.25		99.98	2.53E-01	2.53E-01	-6.38E-02	1.17E-01
		1120.51		99.99	3.78E-01		2.01E-01	1.78E-01
	V-48	983.52		99.98	9.66E+00	9.66E+00	1.72E+00	4.47E+00
		1312.10		97.50	1.16E+01		1.39E+00	5.32E+00
	CR-51	320.08		9.83	8.34E+00	8.34E+00	-4.06E+00	3.98E+00
	MN-54	834.83		99.97	1.42E-01	1.42E-01	2.48E-02	6.64E-02
	CO-56	846.75		99.96	2.65E-01	2.65E-01	-1.10E-01	1.23E-01
		1037.75		14.03	2.17E+00		2.16E-01	1.00E+00
		1238.25		67.00	6.50E-01		2.14E-01	3.05E-01
		1771.40		15.51	1.57E+00		-1.84E-02	6.70E-01
		2598.48		16.90	1.14E+00		-3.07E-01	4.04E-01
	CO-57	122.06		85.51	7.57E-02	7.57E-02	2.80E-02	3.68E-02
		136.48		10.60	6.87E-01		2.21E-01	3.35E-01
	CO-58	810.76		99.40	2.89E-01	2.89E-01	3.92E-02	1.35E-01
	FE-59	1099.22		56.50	1.14E+00	1.14E+00	-1.19E-01	5.28E-01
		1291.56		43.20	1.67E+00		8.39E-01	7.74E-01
	CO-60	1173.22		100.00	1.51E-01	1.41E-01	-2.23E-02	7.04E-02
		1332.49		100.00	1.41E-01		5.34E-02	6.48E-02
	ZN-65	1115.52		50.75	3.81E-01	3.81E-01	-2.25E-01	1.78E-01
	GA-67	93.31		35.70	4.15E+08	4.15E+08	5.96E+08	2.03E+08
		208.95		2.24	6.64E+09		5.75E+09	3.22E+09
		300.22		16.00	1.07E+09		-1.21E+09	5.18E+08
	SE-75	121.11		16.70	5.50E-01	1.69E-01	2.93E-01	2.68E-01
		136.00		59.20	1.69E-01		4.89E-02	8.24E-02
		264.65		59.80	1.83E-01		-2.45E-02	8.77E-02
		279.53		25.20	5.00E-01		2.78E-01	2.41E-01
		400.65		11.40	1.14E+00		-1.49E-01	5.43E-01
	RB-82	776.52		13.00	1.37E+01	1.37E+01	7.74E-01	6.44E+00
	RB-83	520.41		46.00	4.10E-01	4.10E-01	7.97E-02	1.93E-01
		529.64		30.30	5.99E-01		1.66E-01	2.81E-01
		552.65		16.40	1.28E+00		4.05E-01	6.03E-01
	KR-85	513.99		0.43	2.44E+01	2.44E+01	1.32E+01	1.16E+01
	SR-85	513.99		99.27	3.10E-01	3.10E-01	1.68E-01	1.48E-01
	Y-88	898.02		93.40	2.63E-01	1.46E-01	2.36E-01	1.23E-01
		1836.01		99.38	1.46E-01		-4.23E-02	5.78E-02
	MO-93	263.06		56.72	1.06E-01	7.97E-02	-6.67E-02	5.10E-02
		684.67		99.68	1.12E-01		-5.95E-03	5.26E-02
		1477.11		99.08	7.97E-02		0.00E+00	3.34E-02
	NB-93M	16.57		9.43	7.05E+00	7.05E+00	1.29E+01	3.42E+00
	NB-94	702.63		100.00	1.06E-01	1.06E-01	4.12E-03	4.97E-02
		871.10		100.00	1.09E-01		1.25E-02	5.08E-02
	NB-95	765.79		99.81	8.82E-01	8.82E-01	3.72E-01	4.15E-01
	NB-95M	235.69		25.00	1.14E+08	1.14E+08	1.54E+08	5.55E+07
	ZR-95	724.18		43.70	8.61E-01	6.04E-01	4.99E-01	4.08E-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	6.04E-01	6.04E-01	-1.18E-01	2.83E-01
	MO-99	181.06		6.20	1.17E+11	1.07E+11	2.01E+10	5.68E+10
		739.58		12.80	1.07E+11		2.99E+10	5.04E+10
		778.00		4.50	3.12E+11		-9.64E+10	1.46E+11
	RU-103	497.08		89.00	5.47E-01	5.47E-01	-9.25E-02	2.58E-01
	RU-106	621.84		9.80	1.15E+00	1.15E+00	3.46E-01	5.39E-01
	AG-108M	433.93		89.90	8.42E-02	8.42E-02	-2.25E-02	3.99E-02
		614.37		90.40	1.03E-01		3.49E-03	4.81E-02
		722.95		90.50	1.33E-01		1.49E-02	6.26E-02
+	CD-109	88.03	*	3.72	3.61E+00	3.61E+00	3.54E+00	1.78E+00
	AG-110M	657.75		93.14	1.53E-01	1.53E-01	1.45E-02	7.20E-02
		677.61		10.53	1.35E+00		-7.69E-03	6.34E-01
		706.67		16.46	8.52E-01		7.93E-02	4.00E-01
		763.93		21.98	6.91E-01		-1.19E-01	3.24E-01
		884.67		71.63	1.95E-01		-1.38E-02	9.00E-02
		1384.27		23.94	6.08E-01		-1.20E-01	2.71E-01
	CD-113M	263.70		0.02	2.60E+02	2.60E+02	-1.23E+02	1.25E+02
	SN-113	255.12		1.93	5.82E+00	2.08E-01	6.15E-02	2.80E+00
		391.69		64.90	2.08E-01		5.26E-03	9.87E-02
	TE123M	159.00		84.10	1.19E-01	1.19E-01	-6.40E-02	5.78E-02
	SB-124	602.71		97.87	2.56E-01	2.56E-01	-8.75E-02	1.19E-01
		645.85		7.26	3.50E+00		-2.41E+00	1.62E+00
		722.78		11.10	3.46E+00		3.89E-01	1.64E+00
		1691.02		49.00	7.57E-01		6.92E-02	3.32E-01
	I-125	35.49		6.49	4.90E+00	4.90E+00	-2.27E+00	2.38E+00
	SB-125	176.33		6.89	8.74E-01	2.83E-01	-4.20E-01	4.24E-01
		427.89		29.33	2.83E-01		1.16E-01	1.34E-01
		463.38		10.35	9.15E-01		7.92E-01	4.35E-01
		600.56		17.80	5.01E-01		-1.02E-01	2.34E-01
		635.90		11.32	7.97E-01		-3.50E-01	3.71E-01
	SB-126	414.70		83.30	2.23E+01	2.23E+01	-2.25E+01	1.05E+01
		666.33		99.60	2.84E+01		-1.52E+01	1.33E+01
		695.00		99.60	3.57E+01		3.20E+01	1.69E+01
		720.50		53.80	5.60E+01		2.28E+00	2.62E+01
+	SN-126	87.57	*	37.00	3.12E-01	3.12E-01	3.06E-01	1.54E-01
	SB-127	473.00		25.00	2.53E+07	2.53E+07	2.32E+06	1.19E+07
		685.20		35.70	2.55E+07		-1.36E+06	1.20E+07
		783.80		14.70	7.22E+07		7.48E+07	3.41E+07
	I-129	29.78		57.00	2.45E-01	2.45E-01	-2.78E-02	1.19E-01
		33.60		13.20	8.28E-01		2.34E-01	4.03E-01
		39.58		7.52	1.13E+00		-4.02E-01	5.52E-01
	I-131	284.30		6.05	6.55E+03	5.14E+02	-1.33E+03	3.14E+03
		364.48		81.20	5.14E+02		-2.60E+02	2.44E+02
		636.97		7.26	7.49E+03		-3.78E+02	3.49E+03
		722.89		1.80	4.13E+04		4.64E+03	1.95E+04
	TE-132	49.72		13.10	1.25E+09	1.65E+08	-4.35E+08	6.10E+08
		228.16		88.00	1.65E+08		1.63E+06	7.99E+07
	BA-133	81.00		33.00	2.13E-01	1.47E-01	-3.95E-01	1.04E-01
		302.84		17.80	3.95E-01		-4.58E-02	1.90E-01
		356.01		60.00	1.47E-01		-1.70E-02	7.07E-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	1.19E+05	1.19E+05	-2.21E+05	5.83E+04
	CS-134	563.23		8.38	1.16E+00	1.02E-01	4.04E-01	5.45E-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	5.74E-01	1.02E-01	-4.02E-01	2.68E-01
	604.70	97.60	1.02E-01		-1.40E-02	4.78E-02
	795.84	85.40	1.64E-01		2.07E-02	7.74E-02
	801.93	8.73	1.41E+00		2.62E-01	6.57E-01
CS-135	268.24	16.00	4.18E-01	4.18E-01	-5.52E-02	2.01E-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	1.58E+02	2.34E+01	7.54E+01	7.68E+01
	163.89	4.61	2.53E+02		-9.67E-01	1.23E+02
	176.55	13.56	8.69E+01		-8.55E-01	4.22E+01
	273.65	12.66	1.14E+02		-2.23E+01	5.48E+01
	340.57	48.50	3.65E+01		4.62E+01	1.76E+01
	818.50	99.70	2.34E+01		1.12E+01	1.09E+01
	1048.07	79.60	3.28E+01		-4.38E+00	1.52E+01
	1235.34	19.70	1.98E+02		1.72E+02	9.34E+01
CS-137	661.65	85.12	1.24E-01	1.24E-01	-1.15E-02	5.82E-02
LA-138	788.74	34.00	3.08E-01	1.58E-01	4.47E-02	1.44E-01
	1435.80	66.00	1.58E-01		1.98E-02	6.97E-02
CE-139	165.85	80.35	1.17E-01	1.17E-01	1.13E-02	5.69E-02
BA-140	162.64	6.70	2.04E+02	7.13E+01	2.75E+01	9.91E+01
	304.84	4.50	3.50E+02		-1.20E+02	1.68E+02
	423.70	3.20	5.69E+02		-6.14E+01	2.69E+02
	437.55	2.00	9.24E+02		4.46E+02	4.38E+02
	537.32	25.00	7.13E+01		-4.28E+01	3.32E+01
LA-140	328.77	20.50	9.02E+01	3.89E+01	4.68E+01	4.33E+01
	487.03	45.50	4.49E+01		1.48E+01	2.13E+01
	815.85	23.50	1.08E+02		-2.21E+01	5.02E+01
	1596.49	95.49	3.89E+01		3.07E+01	1.77E+01
CE-141	145.44	48.40	9.83E-01	9.83E-01	-1.06E-01	4.78E-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	6.55E-01	6.55E-01	1.10E-01	3.19E-01
PM-144	476.78	42.00	2.33E-01	1.02E-01	1.47E-01	1.10E-01
	618.01	98.60	1.02E-01		-4.39E-02	4.73E-02
	696.49	99.49	1.44E-01		3.61E-02	6.79E-02
PM-145	36.85	21.70	4.39E-01	2.35E-01	-5.84E-02	2.14E-01
	37.36	39.70	2.35E-01		-3.12E-02	1.14E-01
	42.30	15.10	5.37E-01		-3.12E-01	2.62E-01
	72.40	2.31	3.25E+00		-7.90E+00	1.60E+00
PM-146	453.90	39.94	1.73E-01	1.73E-01	-9.96E-02	8.10E-02
	735.90	14.01	7.79E-01		1.10E-01	3.64E-01
	747.13	13.10	8.33E-01		-5.72E-03	3.90E-01
ND-147	91.11	28.90	1.43E+02	1.43E+02	1.89E+02	7.03E+01
	531.02	13.10	3.69E+02		1.62E+02	1.73E+02
PM-149	285.90	3.10	1.26E+14	1.26E+14	-3.70E+12	6.02E+13
EU-152	121.78	20.50	2.47E-01	2.47E-01	9.13E-02	1.20E-01
	244.69	5.40	1.35E+00		1.47E-01	6.53E-01
	344.27	19.13	3.56E-01		-1.85E-02	1.70E-01
	778.89	9.20	1.29E+00		-6.85E-02	6.08E-01
	964.01	10.40	1.48E+00		1.07E-01	6.99E-01
	1085.78	7.22	1.84E+00		4.07E-01	8.52E-01

Analysis Report for 1707088-10

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	EU-152	1112.02		9.60	1.44E+00	2.47E-01	-3.58E-01	6.66E-01
		1407.95		14.94	7.86E-01		1.97E-01	3.52E-01
	GD-153	97.43		31.30	2.40E-01	2.40E-01	2.99E-02	1.17E-01
		103.18		22.20	3.16E-01		1.12E-01	1.54E-01
	EU-154	123.07		40.50	1.25E-01	1.25E-01	-5.41E-03	6.06E-02
		723.30		19.70	6.51E-01		3.77E-01	3.08E-01
		873.19		11.50	9.58E-01		9.48E-02	4.44E-01
		996.32		10.30	1.15E+00		-6.56E-02	5.31E-01
		1004.76		17.90	7.10E-01		3.78E-02	3.29E-01
		1274.45		35.50	3.95E-01		-4.97E-02	1.81E-01
	EU-155	86.50		30.90	2.23E-01	2.23E-01	1.62E-01	1.10E-01
		105.30		20.70	2.58E-01		-1.56E-01	1.26E-01
	EU-156	811.77		10.40	1.04E+02	1.04E+02	6.78E+00	4.82E+01
		1153.47		7.20	2.34E+02		5.32E+01	1.10E+02
		1230.71		8.90	1.90E+02		9.05E+00	8.87E+01
	HO-166M	184.41		72.60	9.22E-02	9.22E-02	8.24E-02	4.49E-02
		280.45		29.60	2.32E-01		1.14E-01	1.12E-01
		410.94		11.10	6.55E-01		-9.81E-02	3.11E-01
		711.69		54.10	1.92E-01		6.55E-02	9.01E-02
	TM-171	66.72		0.14	5.43E+01	5.43E+01	-6.84E+00	2.66E+01
	HF-172	67.35		5.31	1.43E+00	5.15E-01	-1.80E-01	7.01E-01
		125.81		11.30	5.15E-01		-1.54E-02	2.51E-01
	LU-172	181.53		20.60	1.06E+04	6.97E+03	1.55E+03	5.14E+03
		900.72		29.81	1.47E+04		-2.20E+03	6.84E+03
		1093.66		62.50	6.97E+03		-2.48E+02	3.21E+03
	LU-173	100.72		5.24	1.16E+00	3.85E-01	5.88E-01	5.68E-01
		272.11		21.20	3.85E-01		1.70E-01	1.86E-01
	HF-175	343.40		84.00	2.17E-01	2.17E-01	-1.13E-02	1.04E-01
	LU-176	88.34		13.30	4.98E-01	6.72E-02	-2.27E-01	2.44E-01
		201.83		86.00	7.27E-02		1.77E-02	3.53E-02
		306.78		94.00	6.72E-02		-2.00E-02	3.21E-02
	HF-181	133.02		41.70	6.92E-01	4.99E-01	-1.12E-01	3.37E-01
		345.85		17.20	2.03E+00		-1.07E-01	9.68E-01
		482.03		82.80	4.99E-01		7.53E-02	2.35E-01
	TA-182	67.75		41.20	2.98E-01	2.98E-01	-3.71E-01	1.46E-01
		1121.30		34.90	8.71E-01		4.86E-01	4.09E-01
		1189.05		16.23	1.83E+00		7.71E-01	8.57E-01
		1221.41		26.98	1.15E+00		-2.10E-01	5.39E-01
		1231.02		11.44	2.70E+00		-8.47E-01	1.26E+00
	IR-192	308.46		29.68	5.55E-01	4.09E-01	-1.29E-01	2.65E-01
		468.07		48.10	4.09E-01		1.25E-01	1.93E-01
	HG-203	279.19		77.30	4.08E-01	4.08E-01	1.45E-01	1.97E-01
	TL-204	374.74		94.11	7.90E-02	7.90E-02	4.75E-03	3.76E-02
		899.15		99.16	1.27E-01		1.22E-02	5.93E-02
		911.74		91.10	2.11E-01		2.74E-01	1.01E-01
	BI-207	569.67		97.72	8.30E-02	8.30E-02	-5.82E-02	3.88E-02
		1063.62		74.90	1.76E-01		-6.60E-03	8.14E-02
+	TL-208	583.14	*	30.22	4.77E-01	3.94E-01	7.42E-01	2.30E-01
		860.37		4.48	2.84E+00		1.47E+00	1.33E+00
		2614.66	*	35.85	3.94E-01		9.82E-01	1.65E-01
	BI-210M	262.00		45.00	1.37E-01	1.37E-01	2.06E-02	6.57E-02
		300.00		23.00	3.32E-01		-3.76E-01	1.60E-01
	PB-210	46.50		4.25	1.82E+00	1.82E+00	7.83E-01	8.87E-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)
	PB-211	404.84		2.90	2.66E+00	2.66E+00	-8.81E-01	1.27E+00
		831.96		2.90	3.47E+00		-2.55E+00	1.60E+00
+	BI-212	727.17	*	11.80	1.26E+00	1.26E+00	8.03E-01	6.04E-01
		1620.62	*	2.75	3.62E+00		2.08E+00	1.56E+00
+	PB-212	238.63	*	44.60	2.54E-01	2.54E-01	1.14E+00	1.25E-01
		300.09		3.41	2.24E+00		-2.53E+00	1.08E+00
+	BI-214	609.31	*	46.30	3.23E-01	3.23E-01	8.89E-01	1.56E-01
		1120.29		15.10	1.08E+00		5.75E-01	5.09E-01
		1764.49	*	15.80	5.38E-01		5.26E-01	2.22E-01
		2204.22	*	4.98	1.98E+00		1.08E+00	8.03E-01
+	PB-214	295.21	*	19.19	6.33E-01	2.98E-01	1.00E+00	3.10E-01
		351.92	*	37.19	2.98E-01		9.32E-01	1.45E-01
	RN-219	401.80		6.50	1.13E+00	1.13E+00	-2.00E-01	5.36E-01
	RA-223	323.87		3.88	1.82E+00	1.82E+00	-1.89E-01	8.71E-01
	RA-224	240.98		3.95	3.06E+00	3.06E+00	1.51E+01	1.50E+00
	RA-225	40.00		31.00	3.11E+01	3.11E+01	-1.10E+01	1.52E+01
+	RA-226	186.21	*	3.28	2.35E+00	2.35E+00	1.71E+00	1.15E+00
	TH-227	50.10		8.40	8.45E-01	8.45E-01	-2.94E-01	4.13E-01
		236.00		11.50	8.81E-01		1.19E+00	4.31E-01
		256.20		6.30	9.92E-01		5.37E-01	4.77E-01
+	AC-228	338.32	*	11.40	8.17E-01	5.71E-01	1.07E+00	3.95E-01
		911.07	*	27.70	5.71E-01		1.22E+00	2.71E-01
		969.11	*	16.60	2.38E+00		1.30E+00	1.16E+00
	TH-230	48.44		16.90	4.31E-01	4.31E-01	-8.63E-03	2.10E-01
		62.85		4.60	1.57E+00		1.84E+00	7.72E-01
		67.67		0.37	1.80E+01		-2.24E+01	8.81E+00
	PA-231	283.67		1.60	3.98E+00	3.00E+00	-8.08E-01	1.91E+00
		302.67		2.30	3.00E+00		-3.48E-01	1.44E+00
	TH-231	25.64		14.70	1.44E+00	9.83E-01	1.14E+00	7.03E-01
		84.21		6.40	9.83E-01		-8.88E-01	4.82E-01
	PA-233	311.98		38.60	2.30E+00	2.30E+00	4.62E-01	1.10E+00
	PA-234	131.20		20.40	2.76E-01	2.76E-01	-1.65E-02	1.35E-01
		733.99		8.80	1.15E+00		2.90E-01	5.35E-01
		946.00		12.00	9.74E-01		-5.42E-01	4.52E-01
	PA-234M	1001.03		0.92	1.25E+01	1.25E+01	2.77E-01	5.78E+00
+	TH-234	63.29	*	3.80	5.60E+00	5.60E+00	3.88E+00	2.78E+00
	U-235	143.76		10.50	5.35E-01	5.35E-01	3.08E-01	2.60E-01
		163.35		4.70	1.20E+00		1.62E-01	5.84E-01
		205.31		4.70	1.33E+00		3.45E-02	6.43E-01
+	NP-237	86.50	*	12.60	9.15E-01	9.15E-01	8.97E-01	4.53E-01
	NP-239	106.10		22.70	2.04E+12	2.04E+12	-7.01E+11	9.95E+11
		228.18		10.70	5.29E+12		5.23E+10	2.56E+12
		277.60		14.10	4.43E+12		1.58E+12	2.13E+12
	AM-241	59.54		35.90	1.95E-01	1.95E-01	-2.81E-02	9.55E-02
	AM-243	74.67		66.00	1.36E-01	1.36E-01	5.11E-01	6.71E-02
	CM-243	209.75		3.29	1.98E+00	5.04E-01	1.13E+00	9.61E-01
		228.14		10.60	6.04E-01		5.97E-03	2.92E-01
		277.60		14.00	5.04E-01		1.80E-01	2.43E-01

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HTC-A03-S004-2430-01

+ = 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-A03-S004-2430-01

Elapsed Live time: 3600
Elapsed Real Time: 3602

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	8	106
17:	87	69	75	67	67	85	85	76
25:	55	70	68	57	57	50	66	65
33:	58	66	65	61	56	60	81	70
41:	62	71	76	75	89	103	69	69
49:	97	71	94	83	93	97	75	78
57:	94	97	105	118	113	166	164	113
65:	108	124	94	123	128	118	110	129
73:	193	269	267	346	287	141	123	99
81:	101	91	125	106	116	173	153	116
89:	119	122	137	186	154	101	73	69
97:	79	83	78	85	69	78	90	73
105:	73	75	57	82	86	81	67	67
113:	81	85	64	60	70	81	66	59
121:	75	59	56	45	68	73	78	96
129:	80	71	67	56	79	63	80	82
137:	72	64	62	67	74	66	75	66
145:	71	53	51	61	59	63	53	60
153:	77	72	60	56	58	63	54	62
161:	52	59	58	49	69	48	56	55
169:	48	59	58	57	44	62	47	40
177:	49	55	64	47	47	60	60	69
185:	81	83	72	41	65	58	48	52
193:	59	48	39	54	56	51	56	58
201:	48	44	56	39	49	49	54	52
209:	65	54	48	31	43	42	37	40
217:	33	36	35	41	45	37	40	37
225:	37	40	46	51	45	34	51	36
233:	35	40	38	69	182	309	188	98
241:	85	76	39	31	24	45	26	33
249:	30	22	30	26	32	32	28	32
257:	34	39	29	24	36	20	31	27
265:	22	27	34	33	46	45	37	28
273:	35	32	27	38	48	37	32	26
281:	28	28	27	27	21	31	25	24
289:	34	18	37	25	48	77	98	51
297:	33	35	33	35	31	26	24	20
305:	25	31	12	19	26	20	25	21
313:	32	22	22	22	19	22	17	23
321:	28	21	29	29	24	22	28	34
329:	29	29	35	23	15	23	20	25
337:	59	58	36	22	19	21	19	23
345:	15	20	20	18	34	72	142	89
353:	34	23	20	20	18	16	19	24
361:	17	18	21	12	21	13	21	28

369:	15	22	17	14	15	21	25	21

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Channel								
377:	16	16	19	21	13	20	19	16
385:	18	19	23	22	17	19	15	13
393:	23	17	16	15	12	12	17	20
401:	15	23	19	14	26	19	15	22
409:	25	18	9	13	10	16	12	16
417:	9	15	18	21	16	14	17	17
425:	14	13	18	16	17	22	15	9
433:	13	20	12	17	20	16	12	11
441:	15	10	17	14	10	10	6	16
449:	13	6	8	13	10	7	11	20
457:	21	7	12	17	16	36	21	17
465:	12	11	16	10	12	15	9	8
473:	11	19	16	17	14	13	11	9
481:	13	17	16	15	13	13	17	14
489:	18	10	12	13	14	10	14	15
497:	11	19	12	15	18	14	12	10
505:	12	9	20	16	38	39	26	22
513:	20	14	15	11	10	13	19	13
521:	11	12	12	12	9	10	12	11
529:	10	13	10	14	10	8	8	9
537:	13	11	5	10	12	14	13	12
545:	11	14	14	13	18	8	5	15
553:	17	18	18	10	11	9	9	4
561:	14	17	14	14	14	11	9	11
569:	8	4	15	11	14	14	10	10
577:	13	12	10	11	24	63	67	23
585:	10	10	10	16	10	7	7	11
593:	9	5	14	9	9	16	8	10
601:	5	9	9	12	4	10	29	68
609:	66	41	22	12	9	13	5	9
617:	9	6	10	9	14	14	12	13
625:	14	5	8	7	8	11	11	7
633:	9	11	11	6	10	6	12	10
641:	10	5	5	10	11	4	7	9
649:	7	16	12	11	7	8	14	10
657:	9	8	13	14	11	10	7	8
665:	8	5	13	9	8	8	13	8
673:	18	11	9	9	7	3	12	10
681:	9	7	11	15	8	12	12	6
689:	7	18	9	15	12	10	17	6
697:	9	17	8	8	6	9	6	12
705:	3	11	9	10	5	14	7	12
713:	3	8	7	6	7	9	13	9
721:	9	7	4	10	14	23	19	14
729:	5	5	3	8	7	9	13	6
737:	10	8	8	7	12	8	10	4
745:	11	8	7	5	9	8	11	2
753:	12	13	8	10	8	7	8	9
761:	9	10	10	7	11	9	7	14
769:	9	7	6	7	9	9	5	10
777:	1	12	11	13	8	12	15	6
785:	16	12	2	5	3	5	6	7
793:	14	14	18	11	3	11	9	4

801:	10	7	8	8	9	5	10	9

Sample Title: HTC-A03-S004-2430-01

Channel								
809:	6	6	6	7	6	6	4	5
817:	7	8	9	13	4	11	5	3
825:	9	5	6	3	5	7	8	5
833:	4	5	8	11	9	9	9	9
841:	8	6	5	9	7	7	9	3
849:	10	2	7	9	4	4	5	7
857:	8	14	5	13	12	11	4	5
865:	7	8	4	5	4	8	2	7
873:	7	11	5	6	4	7	6	10
881:	5	5	7	6	5	5	4	3
889:	9	12	8	3	5	9	6	11
897:	12	5	7	10	8	3	2	9
905:	4	13	1	11	14	39	37	27
913:	8	6	9	10	6	3	7	3
921:	5	3	8	7	8	6	6	6
929:	5	5	10	10	8	9	6	3
937:	5	2	10	9	6	4	4	8
945:	8	9	3	9	4	4	11	6
953:	2	8	9	8	5	7	8	5
961:	2	7	11	18	10	13	19	20
969:	27	13	6	3	4	7	6	5
977:	3	7	9	4	6	1	7	8
985:	5	4	9	6	7	6	8	6
993:	6	3	8	2	5	2	11	6
1001:	6	3	4	9	4	6	8	10
1009:	5	6	6	5	3	9	9	4
1017:	7	6	11	4	8	6	6	7
1025:	3	2	2	5	8	7	3	5
1033:	3	7	3	5	4	8	10	7
1041:	6	12	2	4	9	6	6	9
1049:	5	3	9	6	2	5	4	6
1057:	4	6	4	9	7	9	2	6
1065:	4	6	9	4	11	7	4	6
1073:	4	9	7	4	8	6	8	4
1081:	7	6	7	7	7	8	3	7
1089:	2	5	4	5	6	6	5	6
1097:	7	8	3	7	4	9	6	6
1105:	8	5	4	9	3	9	7	8
1113:	6	3	7	5	6	13	9	20
1121:	11	6	6	6	6	6	10	6
1129:	0	6	3	4	8	6	6	7
1137:	6	10	5	9	6	5	10	11
1145:	5	11	8	8	6	7	10	11
1153:	9	5	11	14	7	7	7	6
1161:	6	8	7	8	6	9	5	7
1169:	6	5	5	4	4	3	7	6
1177:	19	7	6	10	8	5	5	5
1185:	8	10	7	8	7	10	2	7
1193:	12	5	5	10	9	17	4	11
1201:	8	8	13	6	8	6	3	7
1209:	9	7	6	10	6	10	7	12
1217:	7	9	10	12	7	6	8	10
1225:	5	8	11	7	5	5	7	11

1233:	9	8	9	5	9	19	15	6

Sample Title: HTC-A03-S004-2430-01

Channel								
1241:	7	4	9	7	3	6	7	9
1249:	6	3	6	7	4	7	4	4
1257:	4	8	9	1	1	6	7	5
1265:	6	5	8	3	4	4	4	5
1273:	5	4	7	7	3	5	6	4
1281:	7	3	8	2	5	2	7	3
1289:	8	6	6	4	9	4	5	6
1297:	4	3	6	4	8	5	3	8
1305:	7	7	3	4	5	10	2	3
1313:	6	3	5	5	2	6	2	4
1321:	4	5	5	7	4	1	2	3
1329:	5	2	8	8	4	4	3	3
1337:	3	2	6	6	3	5	2	2
1345:	3	4	3	3	3	2	1	5
1353:	4	1	3	0	2	2	4	2
1361:	1	2	1	2	2	2	6	5
1369:	0	3	3	6	3	2	3	2
1377:	7	3	2	3	2	1	2	4
1385:	4	2	2	3	3	1	3	3
1393:	2	0	4	4	0	2	3	0
1401:	2	1	2	4	1	2	6	1
1409:	5	2	2	2	0	4	3	1
1417:	1	0	1	3	1	0	2	2
1425:	5	2	3	2	2	1	1	0
1433:	0	3	1	2	4	4	4	2
1441:	2	2	2	4	1	0	0	2
1449:	2	2	2	4	3	6	4	3
1457:	7	17	93	160	133	59	9	1
1465:	1	1	2	0	2	0	2	1
1473:	3	0	1	1	0	1	0	0
1481:	3	0	0	3	1	1	1	3
1489:	1	6	1	1	1	1	4	2
1497:	3	1	0	2	0	0	2	0
1505:	1	1	0	4	0	1	2	2
1513:	2	2	1	4	2	7	2	1
1521:	2	2	2	2	1	1	0	1
1529:	1	1	1	1	3	2	2	1
1537:	2	2	1	1	0	2	3	1
1545:	4	2	1	0	1	1	1	3
1553:	0	1	2	1	1	3	0	3
1561:	2	2	1	0	1	0	0	1
1569:	2	1	2	3	1	3	4	0
1577:	2	0	2	3	0	0	0	1
1585:	1	0	2	0	2	2	4	11
1593:	6	3	3	2	1	2	5	3
1601:	1	1	0	1	0	3	1	1
1609:	1	1	0	1	0	1	0	0
1617:	1	0	3	4	5	2	3	1
1625:	0	3	2	1	0	2	2	1
1633:	1	1	1	0	1	2	0	0
1641:	0	1	1	3	2	0	0	0
1649:	3	0	2	1	3	0	1	0
1657:	1	1	0	1	0	2	1	0

1665:	2	0	0	2	0	4	1	0

Sample Title: HTC-A03-S004-2430-01

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

2097:	0	0	2	1	0	2	1	1

Sample Title: HTC-A03-S004-2430-01

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

2529:	0	0	3	2	0	1	0	0

Sample Title: HTC-A03-S004-2430-01

Channel								
2537:	0	1	0	0	1	0	0	1
2545:	0	0	0	0	0	0	1	0
2553:	0	1	0	0	0	1	1	0
2561:	0	1	0	0	0	0	1	1
2569:	0	0	4	0	0	1	0	0
2577:	0	0	1	0	0	1	0	0
2585:	0	0	0	1	0	0	1	1
2593:	1	1	0	0	0	1	0	0
2601:	1	0	0	0	0	0	0	1
2609:	0	0	1	3	8	16	14	3
2617:	1	0	1	0	0	0	0	0
2625:	0	0	0	0	1	0	0	0
2633:	0	0	0	0	1	0	1	1
2641:	0	0	0	1	0	1	0	1
2649:	0	0	0	0	0	0	0	1
2657:	0	0	2	0	0	0	0	0
2665:	0	1	0	1	0	0	0	0
2673:	0	1	0	0	0	1	1	0
2681:	0	0	0	0	2	0	0	0
2689:	0	0	0	1	0	0	0	0
2697:	0	0	1	1	1	0	1	1
2705:	0	0	0	0	0	0	0	1
2713:	0	0	1	0	1	1	0	0
2721:	0	0	0	1	0	1	0	0
2729:	0	0	0	1	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	1	0	0	0	0	0	0	1
2753:	0	1	0	0	1	1	1	0
2761:	1	0	1	0	0	0	0	1
2769:	0	0	0	1	0	1	1	0
2777:	1	0	0	0	1	1	1	0
2785:	0	0	1	0	0	1	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	1	0	1
2809:	0	0	1	0	1	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	0	0	0	0	1	0	0	0
2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	1	0	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	0	0	0	0
2865:	0	1	0	0	0	0	0	0
2873:	0	0	1	0	0	0	0	0
2881:	0	0	0	1	0	0	1	0
2889:	0	0	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	1	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	1	0	0	0	0
2929:	0	0	0	0	0	0	0	1
2937:	0	0	0	0	0	0	1	0
2945:	0	0	0	0	0	0	0	0
2953:	1	0	0	1	0	0	0	0

2961:	0	0	1	1	0	0	0	0

Sample Title: HTC-A03-S004-2430-01

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

3393:	0	0	0	0	0	1	0	0

Sample Title: HTC-A03-S004-2430-01

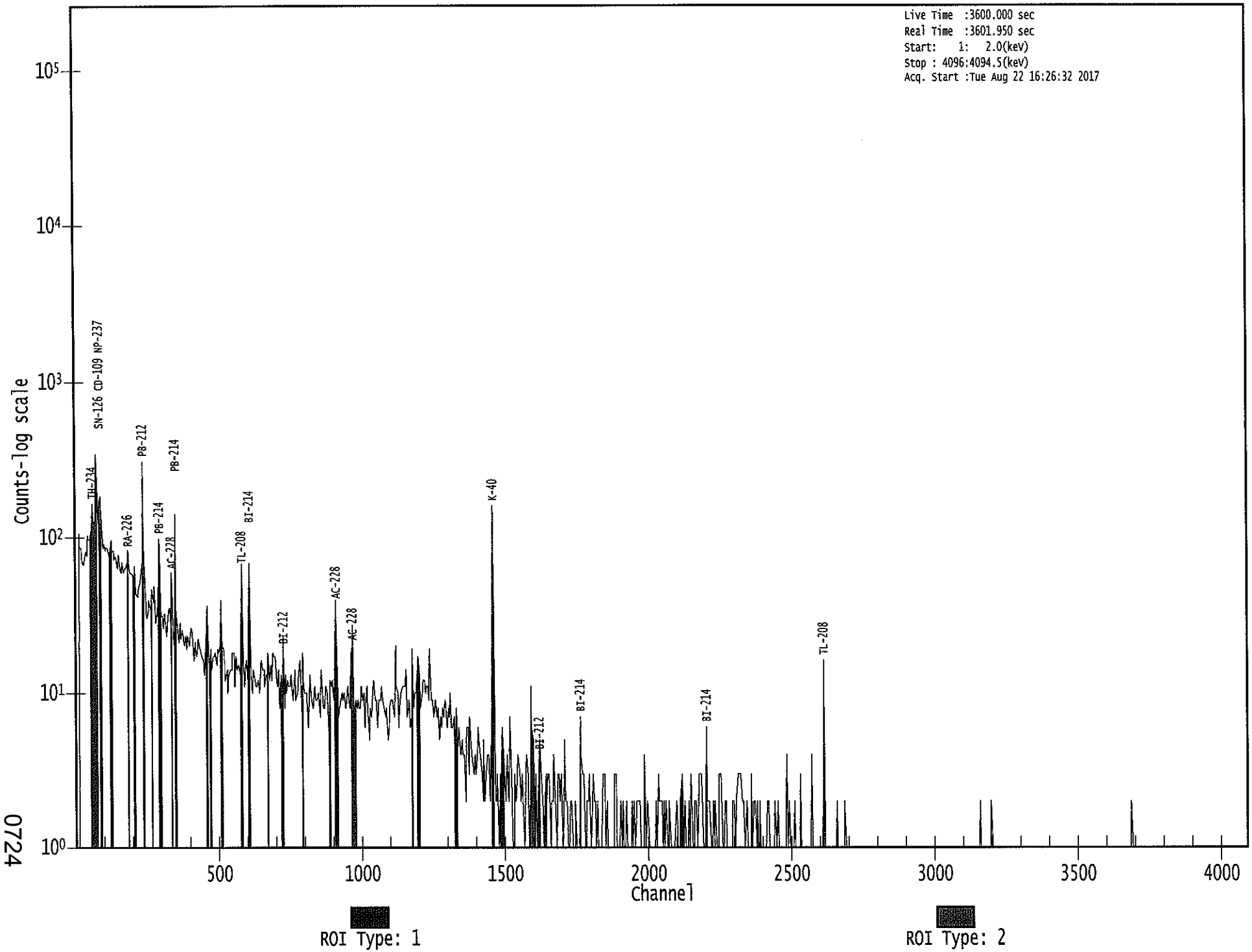
Channel								
3401:	0	0	1	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	1	0	0	1	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	1	0	0	1
3449:	0	0	0	0	0	0	0	0
3457:	0	0	1	1	0	0	0	0
3465:	0	0	0	0	0	0	1	0
3473:	0	0	0	0	0	0	0	1
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	1	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-2430-01

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

0000055752.CNF



0724

Apex-Gamma

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-11
Sample Description	: HTC-A03-S004-3036-01
Sample Type	: SOIL
Sample Size	: 5.341E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2013 9:33:49AM
Acquisition Started	: 8/22/2017 5:27:30PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE1
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)	: 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	: 55754

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 6:27:34PM
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	62.28	62.89	0.0000	0.00
2	74.56	75.15	0.0000	0.00
3	77.26	77.85	0.0000	0.00
4	87.57	88.15	0.0000	0.00
5	90.57	91.15	0.0000	0.00
6	129.29	129.82	0.0000	0.00
7	185.80	186.28	0.0000	0.00
8	207.63	208.09	0.0000	0.00
9	238.66	239.08	0.0000	0.00
10	241.91	242.33	0.0000	0.00
11	256.77	257.17	0.0000	0.00
12	270.58	270.98	0.0000	0.00
13	295.25	295.62	0.0000	0.00
14	300.20	300.56	0.0000	0.00
15	327.75	328.08	0.0000	0.00
16	338.53	338.86	0.0000	0.00
17	351.94	352.25	0.0000	0.00
18	409.52	409.77	0.0000	0.00
19	441.41	441.63	0.0000	0.00
20	463.00	463.20	0.0000	0.00
21	510.82	510.97	0.0000	0.00
22	561.63	561.73	0.0000	0.00
23	583.42	583.50	0.0000	0.00
24	609.23	609.29	0.0000	0.00
25	642.97	642.99	0.0000	0.00
26	716.91	716.86	0.0000	0.00
27	727.67	727.60	0.0000	0.00
28	768.14	768.03	0.0000	0.00
29	796.34	796.20	0.0000	0.00
30	860.63	860.43	0.0000	0.00
31	911.54	911.29	0.0000	0.00
32	916.09	915.83	0.0000	0.00
33	930.47	930.20	0.0000	0.00
34	934.07	933.80	0.0000	0.00
35	964.64	964.33	0.0000	0.00
36	969.37	969.06	0.0000	0.00
37	1120.38	1119.92	0.0000	0.00
38	1238.02	1237.44	0.0000	0.00
39	1242.79	1242.21	0.0000	0.00
40	1336.45	1335.77	0.0000	0.00
41	1378.34	1377.63	0.0000	0.00
42	1408.17	1407.43	0.0000	0.00

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1420.96	1420.21	0.0000	0.00
44	1432.22	1431.46	0.0000	0.00
45	1457.09	1456.30	0.0000	0.00
46	1461.22	1460.43	0.0000	0.00
47	1464.80	1464.00	0.0000	0.00
48	1558.92	1558.03	0.0000	0.00
49	1590.62	1589.70	0.0000	0.00
50	1598.15	1597.22	0.0000	0.00
51	1601.16	1600.22	0.0000	0.00
52	1621.32	1620.37	0.0000	0.00
53	1632.68	1631.72	0.0000	0.00
54	1729.26	1728.21	0.0000	0.00
55	1764.88	1763.79	0.0000	0.00
56	1835.78	1834.62	0.0000	0.00
57	2117.35	2115.92	0.0000	0.00
58	2142.03	2140.57	0.0000	0.00
59	2204.04	2202.53	0.0000	0.00
60	2259.62	2258.05	0.0000	0.00
61	2275.48	2273.89	0.0000	0.00
62	2464.48	2462.71	0.0000	0.00
63	2615.25	2613.34	0.0000	0.00
64	3197.96	3195.50	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 6:27:34PM

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	62.28	58 -	67	62.89	2.96E+02	124.85	2.06E+03	1.62
M	2	74.56	71 -	81	75.15	3.51E+02	88.37	1.17E+03	1.65
m	3	77.26	71 -	81	77.85	6.32E+02	95.79	1.15E+03	1.65
m	4	87.57	83 -	97	88.15	1.78E+02	72.35	9.90E+02	1.67
m	5	90.57	83 -	97	91.15	1.64E+02	75.01	9.17E+02	1.67
	6	129.29	126 -	133	129.82	8.33E+01	81.73	1.05E+03	2.08
	7	185.80	182 -	190	186.28	1.95E+02	82.97	9.36E+02	2.16
	8	207.63	204 -	213	208.09	1.18E+02	81.54	8.89E+02	1.99
M	9	238.66	235 -	249	239.08	8.56E+02	73.08	4.85E+02	1.77
m	10	241.91	235 -	249	242.33	1.93E+02	77.85	4.51E+02	1.95
	11	256.77	255 -	260	257.17	3.86E+01	45.13	3.79E+02	2.35
	12	270.58	266 -	275	270.98	9.27E+01	70.42	6.57E+02	4.23
	13	295.25	292 -	298	295.62	2.57E+02	54.71	3.58E+02	1.57
	14	300.20	299 -	303	300.56	4.72E+01	38.43	2.88E+02	2.11
	15	327.75	325 -	333	328.08	8.36E+01	55.38	4.25E+02	1.94
	16	338.53	334 -	344	338.86	2.26E+02	69.99	5.30E+02	1.86
	17	351.94	347 -	356	352.25	5.04E+02	73.32	4.80E+02	1.71
	18	409.52	405 -	414	409.77	6.40E+01	48.84	3.02E+02	2.40
	19	441.41	439 -	445	441.63	2.70E+01	33.18	1.78E+02	2.30
	20	463.00	458 -	468	463.20	9.04E+01	50.09	2.87E+02	2.12
	21	510.82	505 -	517	510.97	1.99E+02	60.16	3.34E+02	2.24
	22	561.63	559 -	565	561.73	2.68E+01	31.87	1.66E+02	3.48
	23	583.42	581 -	588	583.50	2.36E+02	46.35	2.02E+02	2.04
	24	609.23	604 -	614	609.29	3.60E+02	61.96	3.22E+02	2.09
	25	642.97	639 -	648	642.99	4.55E+01	33.14	1.33E+02	7.21
	26	716.91	713 -	720	716.86	2.99E+01	29.33	1.22E+02	3.70
	27	727.67	724 -	732	727.60	7.80E+01	34.58	1.38E+02	2.18
	28	768.14	764 -	770	768.03	3.92E+01	30.43	1.40E+02	1.23
	29	796.34	793 -	799	796.20	3.29E+01	27.50	1.10E+02	3.08
	30	860.63	856 -	862	860.43	3.23E+01	26.98	1.09E+02	1.86
M	31	911.54	906 -	918	911.29	1.89E+02	34.79	9.28E+01	1.87
m	32	916.09	906 -	918	915.83	1.59E+01	30.06	8.81E+01	2.31
M	33	930.47	928 -	939	930.20	1.43E+01	18.29	6.20E+01	2.21
m	34	934.07	928 -	939	933.80	3.23E+01	25.89	9.11E+01	2.21
M	35	964.64	960 -	974	964.33	5.09E+01	27.64	7.83E+01	2.69
m	36	969.37	960 -	974	969.06	1.11E+02	29.62	8.20E+01	2.38
	37	1120.38	1114 -	1125	1119.92	7.57E+01	42.33	1.87E+02	2.14
M	38	1238.02	1231 -	1254	1237.44	5.43E+01	29.73	1.18E+02	2.56
m	39	1242.79	1231 -	1254	1242.21	1.64E+01	25.12	9.30E+01	2.33
	40	1336.45	1333 -	1338	1335.77	1.16E+01	14.97	3.48E+01	2.33

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1378.34	1374 -	1381	1377.63	1.57E+01	16.73	3.66E+01	2.61
	42	1408.17	1405 -	1410	1407.43	2.04E+01	12.37	1.31E+01	3.52
M	43	1420.96	1419 -	1438	1420.21	7.80E+00	4.36	2.08E+00	2.63
m	44	1432.22	1419 -	1438	1431.46	1.62E+01	12.49	1.33E+01	2.63
M	45	1457.09	1455 -	1470	1456.30	9.06E+00	7.35	1.59E+01	2.64
m	46	1461.22	1455 -	1470	1460.43	1.01E+03	65.04	3.26E+01	2.15
m	47	1464.80	1455 -	1470	1464.00	3.46E+01	46.72	1.54E+01	2.19
	48	1558.92	1556 -	1561	1558.03	8.00E+00	6.71	2.00E+00	2.46
	49	1590.62	1583 -	1595	1589.70	2.35E+01	17.58	2.31E+01	7.52
M	50	1598.15	1596 -	1602	1597.22	8.63E+00	5.29	0.00E+00	2.29
m	51	1601.16	1596 -	1602	1600.22	1.14E+01	7.75	0.00E+00	2.00
	52	1621.32	1615 -	1624	1620.37	1.12E+01	13.56	1.95E+01	1.48
	53	1632.68	1626 -	1638	1631.72	1.39E+01	16.64	2.63E+01	2.99
	54	1729.26	1723 -	1734	1728.21	2.57E+01	12.33	6.59E+00	3.27
	55	1764.88	1758 -	1769	1763.79	6.39E+01	18.76	1.21E+01	2.44
	56	1835.78	1832 -	1838	1834.62	6.18E+00	8.99	9.64E+00	1.98
	57	2117.35	2112 -	2119	2115.92	9.00E+00	7.75	4.00E+00	5.63
	58	2142.03	2138 -	2143	2140.57	7.00E+00	5.29	0.00E+00	2.22
	59	2204.04	2197 -	2207	2202.53	2.54E+01	11.93	5.29E+00	3.02
	60	2259.62	2255 -	2260	2258.05	4.43E+00	6.78	5.14E+00	1.21
	61	2275.48	2272 -	2276	2273.89	6.07E+00	5.85	1.86E+00	2.68
	62	2464.48	2459 -	2465	2462.71	7.00E+00	5.29	0.00E+00	1.98
	63	2615.25	2608 -	2620	2613.34	1.08E+02	22.05	5.31E+00	2.81
	64	3197.96	3191 -	3197	3195.50	6.00E+00	4.90	0.00E+00	1.16

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

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 6:27:34PM

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	62.28	58 -	67	2.96E+02	124.85	2.06E+03	9.87E+01
M	2	74.56	71 -	81	3.51E+02	88.37	1.17E+03	5.64E+01
m	3	77.26	71 -	81	6.32E+02	95.79	1.15E+03	5.58E+01
m	4	87.57	83 -	97	1.78E+02	72.35	9.90E+02	5.17E+01

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
m	5	90.57	83 -	97	1.64E+02	75.01	9.17E+02	4.98E+01
	6	129.29	126 -	133	8.33E+01	81.73	1.05E+03	6.55E+01
	7	185.80	182 -	190	1.95E+02	82.97	9.36E+02	6.42E+01
	8	207.63	204 -	213	1.18E+02	81.54	8.89E+02	6.46E+01
M	9	238.66	235 -	249	8.56E+02	73.08	4.85E+02	3.62E+01
m	10	241.91	235 -	249	1.93E+02	77.85	4.51E+02	3.49E+01
	11	256.77	255 -	260	3.86E+01	45.13	3.79E+02	3.57E+01
	12	270.58	266 -	275	9.27E+01	70.42	6.57E+02	5.57E+01
	13	295.25	292 -	298	2.57E+02	54.71	3.58E+02	3.64E+01
	14	300.20	299 -	303	4.72E+01	38.43	2.88E+02	2.95E+01
	15	327.75	325 -	333	8.36E+01	55.38	4.25E+02	4.30E+01
	16	338.53	334 -	344	2.26E+02	69.99	5.30E+02	5.20E+01
	17	351.94	347 -	356	5.04E+02	73.32	4.80E+02	4.76E+01
	18	409.52	405 -	414	6.40E+01	48.84	3.02E+02	3.79E+01
	19	441.41	439 -	445	2.70E+01	33.18	1.78E+02	2.59E+01
	20	463.00	458 -	468	9.04E+01	50.09	2.87E+02	3.81E+01
	21	510.82	505 -	517	1.99E+02	60.16	3.34E+02	4.37E+01
	22	561.63	559 -	565	2.68E+01	31.87	1.66E+02	2.48E+01
	23	583.42	581 -	588	2.36E+02	46.35	2.02E+02	2.85E+01
	24	609.23	604 -	614	3.60E+02	61.96	3.22E+02	4.03E+01
	25	642.97	639 -	648	4.55E+01	33.14	1.33E+02	2.49E+01
	26	716.91	713 -	720	2.99E+01	29.33	1.22E+02	2.24E+01
	27	727.67	724 -	732	7.80E+01	34.58	1.38E+02	2.44E+01
	28	768.14	764 -	770	3.92E+01	30.43	1.40E+02	2.28E+01
	29	796.34	793 -	799	3.29E+01	27.50	1.10E+02	2.05E+01
	30	860.63	856 -	862	3.23E+01	26.98	1.09E+02	2.01E+01
M	31	911.54	906 -	918	1.89E+02	34.79	9.28E+01	1.58E+01
m	32	916.09	906 -	918	1.59E+01	30.06	8.81E+01	1.54E+01
M	33	930.47	928 -	939	1.43E+01	18.29	6.20E+01	1.29E+01
m	34	934.07	928 -	939	3.23E+01	25.89	9.11E+01	1.57E+01
M	35	964.64	960 -	974	5.09E+01	27.64	7.83E+01	1.46E+01
m	36	969.37	960 -	974	1.11E+02	29.62	8.20E+01	1.49E+01
	37	1120.38	1114 -	1125	7.57E+01	42.33	1.87E+02	3.17E+01
M	38	1238.02	1231 -	1254	5.43E+01	29.73	1.18E+02	1.78E+01
m	39	1242.79	1231 -	1254	1.64E+01	25.12	9.30E+01	1.59E+01
	40	1336.45	1333 -	1338	1.16E+01	14.97	3.48E+01	1.10E+01
	41	1378.34	1374 -	1381	1.57E+01	16.73	3.66E+01	1.21E+01
	42	1408.17	1405 -	1410	2.04E+01	12.37	1.31E+01	6.94E+00
M	43	1420.96	1419 -	1438	7.80E+00	4.36	2.08E+00	2.37E+00
m	44	1432.22	1419 -	1438	1.62E+01	12.49	1.33E+01	5.99E+00
M	45	1457.09	1455 -	1470	9.06E+00	7.35	1.59E+01	6.56E+00
m	46	1461.22	1455 -	1470	1.01E+03	65.04	3.26E+01	9.39E+00
m	47	1464.80	1455 -	1470	3.46E+01	46.72	1.54E+01	6.45E+00
	48	1558.92	1556 -	1561	8.00E+00	6.71	2.00E+00	2.96E+00
	49	1590.62	1583 -	1595	2.35E+01	17.58	2.31E+01	1.21E+01
M	50	1598.15	1596 -	1602	8.63E+00	5.29	0.00E+00	0.00E+00
m	51	1601.16	1596 -	1602	1.14E+01	7.75	0.00E+00	0.00E+00
	52	1621.32	1615 -	1624	1.12E+01	13.56	1.95E+01	9.69E+00
	53	1632.68	1626 -	1638	1.39E+01	16.64	2.63E+01	1.22E+01
	54	1729.26	1723 -	1734	2.57E+01	12.33	6.59E+00	5.76E+00
	55	1764.88	1758 -	1769	6.39E+01	18.76	1.21E+01	8.07E+00

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
56	1835.78	1832 -	1838	6.18E+00	8.99	9.64E+00	6.15E+00
57	2117.35	2112 -	2119	9.00E+00	7.75	4.00E+00	4.03E+00
58	2142.03	2138 -	2143	7.00E+00	5.29	0.00E+00	0.00E+00
59	2204.04	2197 -	2207	2.54E+01	11.93	5.29E+00	5.25E+00
60	2259.62	2255 -	2260	4.43E+00	6.78	5.14E+00	4.37E+00
61	2275.48	2272 -	2276	6.07E+00	5.85	1.86E+00	2.59E+00
62	2464.48	2459 -	2465	7.00E+00	5.29	0.00E+00	0.00E+00
63	2615.25	2608 -	2620	1.08E+02	22.05	5.31E+00	5.98E+00
64	3197.96	3191 -	3197	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 : 8/22/2017 6:27:34PM

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	62.28	58 -	67	62.89	2.96E+02	124.85	2.06E+03	TH-230
M	2	74.56	71 -	81	75.15	3.51E+02	88.37	1.17E+03	AM-243
m	3	77.26	71 -	81	77.85	6.32E+02	95.79	1.15E+03	.....
m	4	87.57	83 -	97	88.15	1.78E+02	72.35	9.90E+02	SN-126
									CD-109
									LU-176
m	5	90.57	83 -	97	91.15	1.64E+02	75.01	9.17E+02	ND-147
	6	129.29	126 -	133	129.82	8.33E+01	81.73	1.05E+03	.....
	7	185.80	182 -	190	186.28	1.95E+02	82.97	9.36E+02	RA-226
	8	207.63	204 -	213	208.09	1.18E+02	81.54	8.89E+02	.....
M	9	238.66	235 -	249	239.08	8.56E+02	73.08	4.85E+02	PB-212
m	10	241.91	235 -	249	242.33	1.93E+02	77.85	4.51E+02	RA-224
	11	256.77	255 -	260	257.17	3.86E+01	45.13	3.79E+02	TH-227
	12	270.58	266 -	275	270.98	9.27E+01	70.42	6.57E+02	.....
	13	295.25	292 -	298	295.62	2.57E+02	54.71	3.58E+02	PB-214
	14	300.20	299 -	303	300.56	4.72E+01	38.43	2.88E+02	GA-67
									PB-212

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									BI-210M
	15	327.75	325 -	333	328.08	8.36E+01	55.38	4.25E+02	.....
	16	338.53	334 -	344	338.86	2.26E+02	69.99	5.30E+02	AC-228
	17	351.94	347 -	356	352.25	5.04E+02	73.32	4.80E+02	PB-214
	18	409.52	405 -	414	409.77	6.40E+01	48.84	3.02E+02	.....
	19	441.41	439 -	445	441.63	2.70E+01	33.18	1.78E+02	.....
	20	463.00	458 -	468	463.20	9.04E+01	50.09	2.87E+02	SB-125
	21	510.82	505 -	517	510.97	1.99E+02	60.16	3.34E+02	.....
	22	561.63	559 -	565	561.73	2.68E+01	31.87	1.66E+02	.....
	23	583.42	581 -	588	583.50	2.36E+02	46.35	2.02E+02	TL-208
	24	609.23	604 -	614	609.29	3.60E+02	61.96	3.22E+02	BI-214
	25	642.97	639 -	648	642.99	4.55E+01	33.14	1.33E+02	.....
	26	716.91	713 -	720	716.86	2.99E+01	29.33	1.22E+02	.....
	27	727.67	724 -	732	727.60	7.80E+01	34.58	1.38E+02	BI-212
	28	768.14	764 -	770	768.03	3.92E+01	30.43	1.40E+02	.....
	29	796.34	793 -	799	796.20	3.29E+01	27.50	1.10E+02	CS-134
	30	860.63	856 -	862	860.43	3.23E+01	26.98	1.09E+02	TL-208
M	31	911.54	906 -	918	911.29	1.89E+02	34.79	9.28E+01	TL-204
									AC-228
m	32	916.09	906 -	918	915.83	1.59E+01	30.06	8.81E+01	.....
M	33	930.47	928 -	939	930.20	1.43E+01	18.29	6.20E+01	.....
m	34	934.07	928 -	939	933.80	3.23E+01	25.89	9.11E+01	.....
M	35	964.64	960 -	974	964.33	5.09E+01	27.64	7.83E+01	EU-152
m	36	969.37	960 -	974	969.06	1.11E+02	29.62	8.20E+01	AC-228
	37	1120.38	1114 -	1125	1119.92	7.57E+01	42.33	1.87E+02	BI-214
									SC-46
									TA-182
M	38	1238.02	1231 -	1254	1237.44	5.43E+01	29.73	1.18E+02	CO-56
m	39	1242.79	1231 -	1254	1242.21	1.64E+01	25.12	9.30E+01	.....
	40	1336.45	1333 -	1338	1335.77	1.16E+01	14.97	3.48E+01	.....
	41	1378.34	1374 -	1381	1377.63	1.57E+01	16.73	3.66E+01	.....
	42	1408.17	1405 -	1410	1407.43	2.04E+01	12.37	1.31E+01	EU-152
M	43	1420.96	1419 -	1438	1420.21	7.80E+00	4.36	2.08E+00	.....
m	44	1432.22	1419 -	1438	1431.46	1.62E+01	12.49	1.33E+01	.....
M	45	1457.09	1455 -	1470	1456.30	9.06E+00	7.35	1.59E+01	.....
m	46	1461.22	1455 -	1470	1460.43	1.01E+03	65.04	3.26E+01	K-40
m	47	1464.80	1455 -	1470	1464.00	3.46E+01	46.72	1.54E+01	.....
	48	1558.92	1556 -	1561	1558.03	8.00E+00	6.71	2.00E+00	.....
	49	1590.62	1583 -	1595	1589.70	2.35E+01	17.58	2.31E+01	.....
M	50	1598.15	1596 -	1602	1597.22	8.63E+00	5.29	0.00E+00	.....
m	51	1601.16	1596 -	1602	1600.22	1.14E+01	7.75	0.00E+00	.....
	52	1621.32	1615 -	1624	1620.37	1.12E+01	13.56	1.95E+01	BI-212
	53	1632.68	1626 -	1638	1631.72	1.39E+01	16.64	2.63E+01	.....
	54	1729.26	1723 -	1734	1728.21	2.57E+01	12.33	6.59E+00	.....
	55	1764.88	1758 -	1769	1763.79	6.39E+01	18.76	1.21E+01	BI-214
	56	1835.78	1832 -	1838	1834.62	6.18E+00	8.99	9.64E+00	Y-88
	57	2117.35	2112 -	2119	2115.92	9.00E+00	7.75	4.00E+00	.....
	58	2142.03	2138 -	2143	2140.57	7.00E+00	5.29	0.00E+00	.....
	59	2204.04	2197 -	2207	2202.53	2.54E+01	11.93	5.29E+00	BI-214
	60	2259.62	2255 -	2260	2258.05	4.43E+00	6.78	5.14E+00	.....
	61	2275.48	2272 -	2276	2273.89	6.07E+00	5.85	1.86E+00	.....
	62	2464.48	2459 -	2465	2462.71	7.00E+00	5.29	0.00E+00	.....
	63	2615.25	2608 -	2620	2613.34	1.08E+02	22.05	5.31E+00	TL-208
	64	3197.96	3191 -	3197	3195.50	6.00E+00	4.90	0.00E+00	.....

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

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 : 8/22/2017 6:27:34PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	62.28	2.96E+02	124.85	2.69E-02	2.25E-03
M	2	74.56	3.51E+02	88.37	2.75E-02	2.38E-03
m	3	77.26	6.32E+02	95.79	2.75E-02	2.41E-03
m	4	87.57	1.78E+02	72.35	2.74E-02	2.52E-03
m	5	90.57	1.64E+02	75.01	2.73E-02	2.48E-03
	6	129.29	8.33E+01	81.73	2.53E-02	1.93E-03
	7	185.80	1.95E+02	82.97	2.17E-02	1.68E-03
	8	207.63	1.18E+02	81.54	2.05E-02	1.62E-03
M	9	238.66	8.56E+02	73.08	1.89E-02	1.53E-03
m	10	241.91	1.93E+02	77.85	1.87E-02	1.52E-03
	11	256.77	3.86E+01	45.13	1.80E-02	1.47E-03
	12	270.58	9.27E+01	70.42	1.74E-02	1.43E-03
	13	295.25	2.57E+02	54.71	1.64E-02	1.37E-03
	14	300.20	4.72E+01	38.43	1.63E-02	1.36E-03
	15	327.75	8.36E+01	55.38	1.53E-02	1.29E-03
	16	338.53	2.26E+02	69.99	1.49E-02	1.27E-03
	17	351.94	5.04E+02	73.32	1.45E-02	1.24E-03
	18	409.52	6.40E+01	48.84	1.30E-02	1.13E-03
	19	441.41	2.70E+01	33.18	1.23E-02	1.11E-03
	20	463.00	9.04E+01	50.09	1.19E-02	1.10E-03
	21	510.82	1.99E+02	60.16	1.10E-02	1.07E-03
	22	561.63	2.68E+01	31.87	1.03E-02	1.04E-03
	23	583.42	2.36E+02	46.35	9.96E-03	1.02E-03
	24	609.23	3.60E+02	61.96	9.63E-03	1.01E-03
	25	642.97	4.55E+01	33.14	9.24E-03	9.84E-04
	26	716.91	2.99E+01	29.33	8.50E-03	8.84E-04
	27	727.67	7.80E+01	34.58	8.41E-03	8.67E-04
	28	768.14	3.92E+01	30.43	8.07E-03	8.03E-04
	29	796.34	3.29E+01	27.50	7.85E-03	7.58E-04
	30	860.63	3.23E+01	26.98	7.40E-03	6.56E-04
M	31	911.54	1.89E+02	34.79	7.08E-03	5.91E-04
m	32	916.09	1.59E+01	30.06	7.06E-03	5.90E-04
M	33	930.47	1.43E+01	18.29	6.98E-03	5.84E-04
m	34	934.07	3.23E+01	25.89	6.95E-03	5.83E-04

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	35	964.64	5.09E+01	27.64	6.79E-03	5.71E-04
m	36	969.37	1.11E+02	29.62	6.76E-03	5.69E-04
	37	1120.38	7.57E+01	42.33	6.07E-03	5.11E-04
M	38	1238.02	5.43E+01	29.73	5.64E-03	4.76E-04
m	39	1242.79	1.64E+01	25.12	5.63E-03	4.75E-04
	40	1336.45	1.16E+01	14.97	5.34E-03	4.54E-04
	41	1378.34	1.57E+01	16.73	5.22E-03	4.44E-04
	42	1408.17	2.04E+01	12.37	5.14E-03	4.37E-04
M	43	1420.96	7.80E+00	4.36	5.11E-03	4.34E-04
m	44	1432.22	1.62E+01	12.49	5.08E-03	4.31E-04
M	45	1457.09	9.06E+00	7.35	5.02E-03	4.26E-04
m	46	1461.22	1.01E+03	65.04	5.01E-03	4.25E-04
m	47	1464.80	3.46E+01	46.72	5.00E-03	4.24E-04
	48	1558.92	8.00E+00	6.71	4.78E-03	4.02E-04
	49	1590.62	2.35E+01	17.58	4.71E-03	3.95E-04
M	50	1598.15	8.63E+00	5.29	4.69E-03	3.93E-04
m	51	1601.16	1.14E+01	7.75	4.69E-03	3.92E-04
	52	1621.32	1.12E+01	13.56	4.65E-03	3.88E-04
	53	1632.68	1.39E+01	16.64	4.62E-03	3.85E-04
	54	1729.26	2.57E+01	12.33	4.44E-03	3.63E-04
	55	1764.88	6.39E+01	18.76	4.37E-03	3.54E-04
	56	1835.78	6.18E+00	8.99	4.25E-03	3.38E-04
	57	2117.35	9.00E+00	7.75	3.84E-03	3.38E-04
	58	2142.03	7.00E+00	5.29	3.81E-03	3.38E-04
	59	2204.04	2.54E+01	11.93	3.74E-03	3.38E-04
	60	2259.62	4.43E+00	6.78	3.67E-03	3.38E-04
	61	2275.48	6.07E+00	5.85	3.65E-03	3.38E-04
	62	2464.48	7.00E+00	5.29	3.45E-03	3.38E-04
	63	2615.25	1.08E+02	22.05	3.31E-03	3.38E-04
	64	3197.96	6.00E+00	4.90	2.85E-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 : 8/22/2017 6:27:34PM

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.

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	62.28	2.96E+02	124.85	8.94E+01	1.41E+01	2.07E+02	1.26E+02
M	2	74.56	3.51E+02	88.37			3.51E+02	8.84E+01
m	3	77.26	6.32E+02	95.79	7.20E+00	1.47E+00	6.25E+02	9.58E+01
m	4	87.57	1.78E+02	72.35			1.78E+02	7.23E+01
m	5	90.57	1.64E+02	75.01			1.64E+02	7.50E+01
	6	129.29	8.33E+01	81.73			8.33E+01	8.17E+01
	7	185.80	1.95E+02	82.97	5.22E+01	7.59E+00	1.43E+02	8.33E+01
	8	207.63	1.18E+02	81.54			1.18E+02	8.15E+01
M	9	238.66	8.56E+02	73.08	2.13E+01	6.33E+00	8.34E+02	7.33E+01
m	10	241.91	1.93E+02	77.85			1.93E+02	7.78E+01
	11	256.77	3.86E+01	45.13			3.86E+01	4.51E+01
	12	270.58	9.27E+01	70.42	1.23E+00	4.98E+00	9.15E+01	7.06E+01
	13	295.25	2.57E+02	54.71			2.57E+02	5.47E+01
	14	300.20	4.72E+01	38.43			4.72E+01	3.84E+01
	15	327.75	8.36E+01	55.38			8.36E+01	5.54E+01
	16	338.53	2.26E+02	69.99			2.26E+02	7.00E+01
	17	351.94	5.04E+02	73.32	5.79E+00	4.49E+00	4.98E+02	7.35E+01
	18	409.52	6.40E+01	48.84			6.40E+01	4.88E+01
	19	441.41	2.70E+01	33.18			2.70E+01	3.32E+01
	20	463.00	9.04E+01	50.09			9.04E+01	5.01E+01
	21	510.82	1.99E+02	60.16	7.28E+01	5.30E+00	1.26E+02	6.04E+01
	22	561.63	2.68E+01	31.87			2.68E+01	3.19E+01
	23	583.42	2.36E+02	46.35	2.72E+00	3.05E+00	2.33E+02	4.64E+01
	24	609.23	3.60E+02	61.96	6.35E+00	4.02E+00	3.54E+02	6.21E+01
	25	642.97	4.55E+01	33.14			4.55E+01	3.31E+01
	26	716.91	2.99E+01	29.33			2.99E+01	2.93E+01
	27	727.67	7.80E+01	34.58			7.80E+01	3.46E+01
	28	768.14	3.92E+01	30.43			3.92E+01	3.04E+01
	29	796.34	3.29E+01	27.50			3.29E+01	2.75E+01
	30	860.63	3.23E+01	26.98			3.23E+01	2.70E+01
M	31	911.54	1.89E+02	34.79	5.31E+00	3.00E+00	1.84E+02	3.49E+01
m	32	916.09	1.59E+01	30.06			1.59E+01	3.01E+01
M	33	930.47	1.43E+01	18.29			1.43E+01	1.83E+01
m	34	934.07	3.23E+01	25.89			3.23E+01	2.59E+01
M	35	964.64	5.09E+01	27.64			5.09E+01	2.76E+01
m	36	969.37	1.11E+02	29.62			1.11E+02	2.96E+01
	37	1120.38	7.57E+01	42.33			7.57E+01	4.23E+01
M	38	1238.02	5.43E+01	29.73			5.43E+01	2.97E+01
m	39	1242.79	1.64E+01	25.12			1.64E+01	2.51E+01
	40	1336.45	1.16E+01	14.97			1.16E+01	1.50E+01
	41	1378.34	1.57E+01	16.73			1.57E+01	1.67E+01
	42	1408.17	2.04E+01	12.37			2.04E+01	1.24E+01
M	43	1420.96	7.80E+00	4.36			7.80E+00	4.36E+00
m	44	1432.22	1.62E+01	12.49			1.62E+01	1.25E+01
M	45	1457.09	9.06E+00	7.35			9.06E+00	7.35E+00
m	46	1461.22	1.01E+03	65.04	8.09E+00	2.23E+00	1.00E+03	6.51E+01
m	47	1464.80	3.46E+01	46.72			3.46E+01	4.67E+01
	48	1558.92	8.00E+00	6.71			8.00E+00	6.71E+00
	49	1590.62	2.35E+01	17.58			2.35E+01	1.76E+01
M	50	1598.15	8.63E+00	5.29			8.63E+00	5.29E+00
m	51	1601.16	1.14E+01	7.75			1.14E+01	7.75E+00
	52	1621.32	1.12E+01	13.56			1.12E+01	1.36E+01
	53	1632.68	1.39E+01	16.64			1.39E+01	1.66E+01
	54	1729.26	2.57E+01	12.33			2.57E+01	1.23E+01

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
55	1764.88	6.39E+01	18.76			6.39E+01	1.88E+01
56	1835.78	6.18E+00	8.99			6.18E+00	8.99E+00
57	2117.35	9.00E+00	7.75			9.00E+00	7.75E+00
58	2142.03	7.00E+00	5.29			7.00E+00	5.29E+00
59	2204.04	2.54E+01	11.93			2.54E+01	1.19E+01
60	2259.62	4.43E+00	6.78			4.43E+00	6.78E+00
61	2275.48	6.07E+00	5.85			6.07E+00	5.85E+00
62	2464.48	7.00E+00	5.29			7.00E+00	5.29E+00
63	2615.25	1.08E+02	22.05	5.63E+00	1.38E+00	1.03E+02	2.21E+01
64	3197.96	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

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 8/22/2017 6:27:34PM

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	62.28	2.96E+02	124.85	8.94E+01	1.41E+01	2.07E+02	1.26E+02
M	2	74.56	3.51E+02	88.37			3.51E+02	8.84E+01
m	3	77.26	6.32E+02	95.79	7.20E+00	1.47E+00	6.25E+02	9.58E+01
m	4	87.57	1.78E+02	72.35			1.78E+02	7.23E+01
m	5	90.57	1.64E+02	75.01			1.64E+02	7.50E+01
	6	129.29	8.33E+01	81.73			8.33E+01	8.17E+01
	7	185.80	1.95E+02	82.97	5.22E+01	7.59E+00	1.43E+02	8.33E+01
	8	207.63	1.18E+02	81.54			1.18E+02	8.15E+01
M	9	238.66	8.56E+02	73.08	2.13E+01	6.33E+00	8.34E+02	7.33E+01
m	10	241.91	1.93E+02	77.85			1.93E+02	7.78E+01
	11	256.77	3.86E+01	45.13			3.86E+01	4.51E+01
	12	270.58	9.27E+01	70.42	1.23E+00	4.98E+00	9.15E+01	7.06E+01
	13	295.25	2.57E+02	54.71			2.57E+02	5.47E+01
	14	300.20	4.72E+01	38.43			4.72E+01	3.84E+01
	15	327.75	8.36E+01	55.38			8.36E+01	5.54E+01
	16	338.53	2.26E+02	69.99			2.26E+02	7.00E+01
	17	351.94	5.04E+02	73.32	5.79E+00	4.49E+00	4.98E+02	7.35E+01
	18	409.52	6.40E+01	48.84			6.40E+01	4.88E+01

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	19	441.41	2.70E+01	33.18			2.70E+01	3.32E+01
	20	463.00	9.04E+01	50.09			9.04E+01	5.01E+01
	21	510.82	1.99E+02	60.16	7.28E+01	5.30E+00	1.26E+02	6.04E+01
	22	561.63	2.68E+01	31.87			2.68E+01	3.19E+01
	23	583.42	2.36E+02	46.35	2.72E+00	3.05E+00	2.33E+02	4.64E+01
	24	609.23	3.60E+02	61.96	6.35E+00	4.02E+00	3.54E+02	6.21E+01
	25	642.97	4.55E+01	33.14			4.55E+01	3.31E+01
	26	716.91	2.99E+01	29.33			2.99E+01	2.93E+01
	27	727.67	7.80E+01	34.58			7.80E+01	3.46E+01
	28	768.14	3.92E+01	30.43			3.92E+01	3.04E+01
	29	796.34	3.29E+01	27.50			3.29E+01	2.75E+01
	30	860.63	3.23E+01	26.98			3.23E+01	2.70E+01
M	31	911.54	1.89E+02	34.79	5.31E+00	3.00E+00	1.84E+02	3.49E+01
m	32	916.09	1.59E+01	30.06			1.59E+01	3.01E+01
M	33	930.47	1.43E+01	18.29			1.43E+01	1.83E+01
m	34	934.07	3.23E+01	25.89			3.23E+01	2.59E+01
M	35	964.64	5.09E+01	27.64			5.09E+01	2.76E+01
m	36	969.37	1.11E+02	29.62			1.11E+02	2.96E+01
	37	1120.38	7.57E+01	42.33			7.57E+01	4.23E+01
M	38	1238.02	5.43E+01	29.73			5.43E+01	2.97E+01
m	39	1242.79	1.64E+01	25.12			1.64E+01	2.51E+01
	40	1336.45	1.16E+01	14.97			1.16E+01	1.50E+01
	41	1378.34	1.57E+01	16.73			1.57E+01	1.67E+01
	42	1408.17	2.04E+01	12.37			2.04E+01	1.24E+01
M	43	1420.96	7.80E+00	4.36			7.80E+00	4.36E+00
m	44	1432.22	1.62E+01	12.49			1.62E+01	1.25E+01
M	45	1457.09	9.06E+00	7.35			9.06E+00	7.35E+00
m	46	1461.22	1.01E+03	65.04	8.09E+00	2.23E+00	1.00E+03	6.51E+01
m	47	1464.80	3.46E+01	46.72			3.46E+01	4.67E+01
	48	1558.92	8.00E+00	6.71			8.00E+00	6.71E+00
	49	1590.62	2.35E+01	17.58			2.35E+01	1.76E+01
M	50	1598.15	8.63E+00	5.29			8.63E+00	5.29E+00
m	51	1601.16	1.14E+01	7.75			1.14E+01	7.75E+00
	52	1621.32	1.12E+01	13.56			1.12E+01	1.36E+01
	53	1632.68	1.39E+01	16.64			1.39E+01	1.66E+01
	54	1729.26	2.57E+01	12.33			2.57E+01	1.23E+01
	55	1764.88	6.39E+01	18.76			6.39E+01	1.88E+01
	56	1835.78	6.18E+00	8.99			6.18E+00	8.99E+00
	57	2117.35	9.00E+00	7.75			9.00E+00	7.75E+00
	58	2142.03	7.00E+00	5.29			7.00E+00	5.29E+00
	59	2204.04	2.54E+01	11.93			2.54E+01	1.19E+01
	60	2259.62	4.43E+00	6.78			4.43E+00	6.78E+00
	61	2275.48	6.07E+00	5.85			6.07E+00	5.85E+00
	62	2464.48	7.00E+00	5.29			7.00E+00	5.29E+00
	63	2615.25	1.08E+02	22.05	5.63E+00	1.38E+00	1.03E+02	2.21E+01
	64	3197.96	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 1707088-11

HTC-A03-S004-3036-01

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	0.973	1460.81	*	10.67	2.64E+01	2.87E+00
CD-109	0.913	88.03	*	3.72	2.54E+01	1.07E+01
SN-126	1.000	87.57	*	37.00	2.47E-01	1.03E-01
TL-208	0.966	583.14	*	30.22	1.09E+00	2.44E-01
		860.37	*	4.48	1.37E+00	1.15E+00
		2614.66	*	35.85	1.22E+00	2.90E-01
BI-212	0.954	727.17	*	11.80	1.11E+00	5.03E-01
		1620.62	*	2.75	1.24E+00	1.50E+00
PB-212	1.000	238.63	*	44.60	1.39E+00	1.67E-01
		300.09	*	3.41	1.20E+00	9.80E-01
BI-214	0.994	609.31	*	46.30	1.12E+00	2.28E-01
		1120.29	*	15.10	1.16E+00	6.57E-01
		1764.49	*	15.80	1.30E+00	3.97E-01
		2204.22	*	4.98	1.92E+00	9.19E-01
PB-214	1.000	295.21	*	19.19	1.15E+00	2.62E-01
		351.92	*	37.19	1.30E+00	2.21E-01
RA-224	0.871	240.98	*	3.95	3.68E+00	1.51E+00
RA-226	0.973	186.21	*	3.28	2.82E+00	5.42E+00
AC-228	0.978	338.32	*	11.40	1.86E+00	5.99E-01
		911.07	*	27.70	1.32E+00	2.73E-01
		969.11	*	16.60	1.39E+00	3.89E-01
AM-243	0.998	74.67	*	66.00	2.72E-01	7.25E-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

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 6:27:34PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	62.28	5.73640E-02	30.42	Tol.	TH-230
m	3	77.26	1.73519E-01	7.67		
m	5	90.57	4.55547E-02	22.87	Tol.	ND-147
	6	129.29	2.31428E-02	49.05		
	8	207.63	3.26478E-02	34.69		
	11	256.77	1.07085E-02	58.54	Tol.	TH-227
	12	270.58	2.54200E-02	38.57		
	15	327.75	2.32188E-02	33.13		
	18	409.52	1.77649E-02	38.18		
	19	441.41	7.50479E-03	61.41		
	20	463.00	2.50973E-02	27.72	Tol.	SB-125
	21	510.82	3.50693E-02	23.92		
	22	561.63	7.45455E-03	59.38		
	25	642.97	1.26389E-02	36.41		
	26	716.91	8.29823E-03	49.08		
	28	768.14	1.08779E-02	38.85		
	29	796.34	9.12721E-03	41.85		
m	32	916.09	4.41553E-03	94.55		
M	33	930.47	3.96712E-03	64.03		
m	34	934.07	8.96839E-03	40.10		
M	35	964.64	1.41502E-02	27.13	Tol.	EU-152
M	38	1238.02	1.50763E-02	27.39	Tol.	CO-56
m	39	1242.79	4.55106E-03	76.66		
	40	1336.45	3.22797E-03	64.40	Sum	
	41	1378.34	4.36274E-03	53.27		
	42	1408.17	5.67901E-03	30.25	Tol.	EU-152
M	43	1420.96	2.16781E-03	27.93	Sum	
m	44	1432.22	4.51182E-03	38.45		
M	45	1457.09	2.51565E-03	40.57		
m	47	1464.80	9.59890E-03	67.60		
	48	1558.92	2.22222E-03	41.93		
	49	1590.62	6.51587E-03	37.47		
M	50	1598.15	2.39684E-03	30.66		
m	51	1601.16	3.17030E-03	33.93		
	53	1632.68	3.85288E-03	60.00		
	54	1729.26	7.14080E-03	23.98	Sum	
	56	1835.78	1.71717E-03	72.68		
	57	2117.35	2.50000E-03	43.03	Sum	
	58	2142.03	1.94444E-03	37.80		
	60	2259.62	1.23016E-03	76.57		
	61	2275.48	1.68651E-03	48.20		
	62	2464.48	1.94444E-03	37.80		
	64	3197.96	1.66667E-03	40.82	Sum	

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 1707088-11

HTC-A03-S004-3036-01

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	0.97	1460.81	*	10.67	2.64E+01	2.87E+00
CD-109	0.91	88.03	*	3.72	2.54E+01	1.07E+01
SN-126	1.00	87.57	*	37.00	2.47E-01	1.03E-01
TL-208	0.96	583.14	*	30.22	1.09E+00	2.44E-01
		860.37	*	4.48	1.37E+00	1.15E+00
		2614.66	*	35.85	1.22E+00	2.90E-01
BI-212	0.95	727.17	*	11.80	1.11E+00	5.03E-01
		1620.62	*	2.75	1.24E+00	1.50E+00
PB-212	1.00	238.63	*	44.60	1.39E+00	1.67E-01
		300.09	*	3.41	1.20E+00	9.80E-01
BI-214	0.99	609.31	*	46.30	1.12E+00	2.28E-01
		1120.29	*	15.10	1.16E+00	6.57E-01
		1764.49	*	15.80	1.30E+00	3.97E-01
		2204.22	*	4.98	1.92E+00	9.19E-01
PB-214	1.00	295.21	*	19.19	1.15E+00	2.62E-01
		351.92	*	37.19	1.30E+00	2.21E-01
RA-224	0.87	240.98	*	3.95	3.68E+00	1.51E+00
RA-226	0.97	186.21	*	3.28	2.82E+00	5.42E+00
AC-228	0.97	338.32	*	11.40	1.86E+00	5.99E-01
		911.07	*	27.70	1.32E+00	2.73E-01
		969.11	*	16.60	1.39E+00	3.89E-01
AM-243	0.99	74.67	*	66.00	2.72E-01	7.25E-02

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

INTERFERENCE CORRECTED REPORT

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.973	2.64E+01	2.87E+00	
?	CD-109	0.913	2.54E+01	1.07E+01	
?	SN-126	1.000	2.47E-01	1.03E-01	
	TL-208	0.966	1.15E+00	1.84E-01	
	BI-212	0.954	1.12E+00	4.77E-01	
	PB-212	1.000	1.39E+00	1.64E-01	
	BI-214	0.994	1.19E+00	1.85E-01	
	PB-214	1.000	1.24E+00	1.69E-01	
	RA-224	0.871	3.68E+00	1.51E+00	
	RA-226	0.973	2.82E+00	5.42E+00	
	AC-228	0.978	1.41E+00	2.09E-01	
	AM-243	0.998	2.72E-01	7.25E-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 1707088-11

HTC-A03-S004-3036-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 6:27:34PM
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	62.28	5.73640E-02	30.42	Tol.	TH-230
m	3	77.26	1.73519E-01	7.67		
m	5	90.57	4.55547E-02	22.87	Tol.	ND-147
	6	129.29	2.31428E-02	49.05		
	8	207.63	3.26478E-02	34.69		
	11	256.77	1.07085E-02	58.54	Tol.	TH-227
	12	270.58	2.54200E-02	38.57		
	15	327.75	2.32188E-02	33.13		
	18	409.52	1.77649E-02	38.18		
	19	441.41	7.50479E-03	61.41		
	20	463.00	2.50973E-02	27.72	Tol.	SB-125
	21	510.82	3.50693E-02	23.92		
	22	561.63	7.45455E-03	59.38		
	25	642.97	1.26389E-02	36.41		
	26	716.91	8.29823E-03	49.08		
	28	768.14	1.08779E-02	38.85		
	29	796.34	9.12721E-03	41.85		
m	32	916.09	4.41553E-03	94.55		
M	33	930.47	3.96712E-03	64.03		
m	34	934.07	8.96839E-03	40.10		
M	35	964.64	1.41502E-02	27.13	Tol.	EU-152
M	38	1238.02	1.50763E-02	27.39	Tol.	CO-56
m	39	1242.79	4.55106E-03	76.66		
	40	1336.45	3.22797E-03	64.40	Sum	
	41	1378.34	4.36274E-03	53.27		
	42	1408.17	5.67901E-03	30.25	Tol.	EU-152
M	43	1420.96	2.16781E-03	27.93	Sum	
m	44	1432.22	4.51182E-03	38.45		
M	45	1457.09	2.51565E-03	40.57		
m	47	1464.80	9.59890E-03	67.60		
	48	1558.92	2.22222E-03	41.93		
	49	1590.62	6.51587E-03	37.47		
M	50	1598.15	2.39684E-03	30.66		
m	51	1601.16	3.17030E-03	33.93		
	53	1632.68	3.85288E-03	60.00		

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
54	1729.26	7.14080E-03	23.98	Sum	
56	1835.78	1.71717E-03	72.68		
57	2117.35	2.50000E-03	43.03	Sum	
58	2142.03	1.94444E-03	37.80		
60	2259.62	1.23016E-03	76.57		
61	2275.48	1.68651E-03	48.20		
62	2464.48	1.94444E-03	37.80		
64	3197.96	1.66667E-03	40.82	Sum	

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

NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59		10.42	7.27E+07	3.72E+08	3.72E+08
+	NA-22	1274.54		99.94	-2.26E-01	2.10E-01	2.10E-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	-2.46E-03	5.20E-02	5.20E-02
+	K-40	1460.81	*	10.67	2.64E+01	1.25E+00	1.25E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	2.88E-03	6.84E-02	6.84E-02
		78.34		96.00	2.15E-01		9.11E-02
+	SC-46	889.25		99.98	-1.02E+04	2.91E+04	2.91E+04
		1120.51		99.99	7.27E+04		5.26E+04
+	@ V-48	983.52		99.98	1.00E+26	1.00E+26	1.00E+26
	@	1312.10		97.50	1.00E+26		1.00E+26
+	CR-51	320.08		9.83	1.45E+16	5.82E+16	5.82E+16
+	MN-54	834.83		99.97	-7.15E-01	2.53E+00	2.53E+00
+	CO-56	846.75		99.96	2.65E+04	6.65E+04	6.65E+04
		1037.75		14.03	1.26E+05		5.39E+05
		1238.25		67.00	5.50E+04		1.69E+05
		1771.40		15.51	3.89E+04		3.24E+05
		2598.48		16.90	7.27E+04		3.08E+05

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		CO-57	122.06		85.51	-1.00E+00	3.02E+00	3.02E+00
			136.48		10.60	1.78E+00		2.53E+01
+		CO-58	810.76		99.40	-1.14E+05	3.11E+05	3.11E+05
+		FE-59	1099.22		56.50	-1.89E+09	4.83E+09	4.83E+09
			1291.56		43.20	-3.94E+09		6.04E+09
+		CO-60	1173.22		100.00	-4.16E-02	1.41E-01	1.65E-01
			1332.49		100.00	2.18E-02		1.41E-01
+		ZN-65	1115.52		50.75	-1.17E+00	1.40E+01	1.40E+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	-9.52E+02	7.02E+02	2.38E+03
			136.00		59.20	4.95E+01		7.02E+02
			264.65		59.80	6.95E+01		8.52E+02
			279.53		25.20	6.99E+02		2.10E+03
			400.65		11.40	-4.14E+02		4.51E+03
+		RB-82	776.52		13.00	3.89E+17	1.57E+18	1.57E+18
+		RB-83	520.41		46.00	-2.45E+03	3.80E+04	3.80E+04
			529.64		30.30	1.68E+04		6.34E+04
			552.65		16.40	4.36E+04		1.18E+05
+		KR-85	513.99		0.43	3.85E+01	2.85E+01	2.85E+01
+		SR-85	513.99		99.27	2.29E+06	1.69E+06	1.69E+06
+		Y-88	898.02		93.40	-1.26E+03	1.56E+03	1.98E+03
			1836.01		99.38	3.04E+02		1.56E+03
+		MO-93	263.06		56.72	2.08E-02	6.52E-02	1.36E-01
			684.67		99.68	-3.09E-03		9.14E-02
			1477.11		99.08	-8.99E-03		6.52E-02
+		NB-93M	16.57		9.43	-3.61E-01	7.30E-01	7.30E-01
+		NB-94	702.63		100.00	-1.54E-02	6.30E-02	7.09E-02
			871.10		100.00	-3.88E-02		6.30E-02
+		NB-95	765.79		99.81	1.90E+12	2.37E+12	2.37E+12
+	@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26
+		ZR-95	724.18		43.70	6.86E+05	2.88E+06	4.15E+06
			756.72		55.30	6.13E+04		2.88E+06
+	@	MO-99	181.06		6.20	1.00E+26	1.00E+26	1.00E+26
	@		739.58		12.80	1.00E+26		1.00E+26
	@		778.00		4.50	1.00E+26		1.00E+26
+		RU-103	497.08		89.00	-3.69E+10	5.73E+10	5.73E+10
+		RU-106	621.84		9.80	-3.55E+00	1.34E+01	1.34E+01
+		AG-108M	433.93		89.90	-2.28E-02	6.47E-02	6.47E-02
			614.37		90.40	2.00E-03		9.20E-02
			722.95		90.50	1.52E-02		7.57E-02
+		CD-109	88.03	*	3.72	2.54E+01	3.61E+01	3.61E+01
+		AG-110M	657.75		93.14	-9.29E-01	5.35E+00	5.35E+00
			677.61		10.53	2.34E+01		4.96E+01
			706.67		16.46	7.36E+00		3.36E+01
			763.93		21.98	-2.21E-01		2.72E+01

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AG-110M	884.67		71.63	-3.59E-01	5.35E+00	7.36E+00
		1384.27		23.94	-3.41E+00		1.73E+01
+	CD-113M	263.70		0.02	4.84E+01	3.24E+02	3.24E+02
+	SN-113	255.12		1.93	1.13E+04	1.18E+03	3.29E+04
		391.69		64.90	5.89E+02		1.18E+03
+	TE123M	159.00		84.10	1.15E+02	5.38E+02	5.38E+02
+	SB-124	602.71		97.87	-1.16E+06	4.10E+06	4.10E+06
		645.85		7.26	-3.97E+07		5.76E+07
		722.78		11.10	7.89E+06		3.91E+07
		1691.02		49.00	-1.21E+06		6.56E+06
+	I-125	35.49		6.49	-6.65E+06	5.92E+07	5.92E+07
+	SB-125	176.33		6.89	-6.01E-01	6.00E-01	2.15E+00
		427.89		29.33	1.33E-01		6.00E-01
		463.38		10.35	2.14E+00		2.13E+00
		600.56		17.80	-9.14E-02		1.08E+00
		635.90		11.32	7.38E-01		1.63E+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	2.47E-01	3.51E-01	3.51E-01
+	@ SB-127	473.00		25.00	1.00E+26	1.00E+26	1.00E+26
	@	685.20		35.70	1.00E+26		1.00E+26
	@	783.80		14.70	1.00E+26		1.00E+26
+	I-129	29.78		57.00	-3.62E-02	1.16E-01	1.16E-01
		33.60		13.20	2.44E-02		4.72E-01
		39.58		7.52	-2.30E-01		7.11E-01
+	@ 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	-9.35E-01	1.90E-01	2.32E-01
		302.84		17.80	9.43E-02		5.04E-01
		356.01		60.00	9.92E-03		1.90E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	@ XE-133	81.00		38.00	1.00E+26	1.00E+26	1.00E+26
+	CS-134	563.23		8.38	1.16E+00	3.40E-01	3.60E+00
		569.32		15.43	-3.28E-01		1.89E+00
		604.70		97.60	-5.51E-02		3.40E-01
		795.84		85.40	1.38E-01		4.09E-01
		801.93		8.73	3.73E-01		3.71E+00
+	CS-135	268.24		16.00	1.61E-01	4.18E-01	4.18E-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	1.00E+26	1.00E+26	1.00E+26

Analysis Report for 1707088-11

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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	1.00E+26	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	5.92E-03	9.24E-02	9.24E-02
+		LA-138	788.74	34.00	7.06E-02	9.66E-02	2.32E-01
			1435.80	66.00	2.21E-03		9.66E-02
+		CE-139	165.85	80.35	3.35E+01	1.72E+02	1.72E+02
+	@	BA-140	162.64	6.70	1.00E+26	1.00E+26	1.00E+26
	@		304.84	4.50	1.00E+26		1.00E+26
	@		423.70	3.20	1.00E+26		1.00E+26
	@		437.55	2.00	1.00E+26		1.00E+26
	@		537.32	25.00	1.00E+26		1.00E+26
+	@	LA-140	328.77	20.50	1.00E+26	1.00E+26	1.00E+26
	@		487.03	45.50	1.00E+26		1.00E+26
	@		815.85	23.50	1.00E+26		1.00E+26
	@		1596.49	95.49	1.00E+26		1.00E+26
+		CE-141	145.44	48.40	1.54E+13	3.35E+13	3.35E+13
+	@	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	-3.39E+00	2.04E+01	2.04E+01
+		PM-144	476.78	42.00	6.48E-02	1.36E+00	2.85E+00
			618.01	98.60	5.56E-01		1.46E+00
			696.49	99.49	9.63E-02		1.36E+00
+		PM-145	36.85	21.70	8.96E-02	1.64E-01	3.08E-01
			37.36	39.70	-7.77E-02		1.64E-01
			42.30	15.10	-1.74E-01		4.14E-01
			72.40	2.31	-4.21E+00		3.65E+00
+		PM-146	453.90	39.94	1.93E-02	2.66E-01	2.66E-01
			735.90	14.01	3.69E-02		8.96E-01
			747.13	13.10	1.12E-01		8.49E-01
+	@	ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26
	@		531.02	13.10	1.00E+26		1.00E+26
+	@	PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26
+		EU-152	121.78	20.50	-1.14E-01	2.87E-01	2.87E-01
			244.69	5.40	-7.30E-02		1.32E+00
			344.27	19.13	-5.17E-02		3.96E-01
			778.89	9.20	-9.35E-02		9.71E-01
			964.01	10.40	-1.73E+00		1.22E+00
			1085.78	7.22	-1.70E-01		1.29E+00
			1112.02	9.60	2.36E-01		1.13E+00
			1407.95	14.94	3.20E-01		6.51E-01
+		GD-153	97.43	31.30	-4.03E+00	1.43E+01	1.43E+01
			103.18	22.20	7.79E-01		2.05E+01

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		EU-154	123.07		40.50	1.24E-03	1.66E-01	1.66E-01
			723.30		19.70	9.59E-02		4.76E-01
			873.19		11.50	-4.14E-01		8.25E-01
			996.32		10.30	-2.08E-01		1.03E+00
			1004.76		17.90	2.11E-01		6.47E-01
			1274.45		35.50	-2.86E-01		2.65E-01
+		EU-155	86.50		30.90	7.54E-02	3.84E-01	3.84E-01
			105.30		20.70	5.95E-02		4.52E-01
+	@	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	1.54E-01	9.04E-02	9.04E-02
			280.45		29.60	-2.73E-02		2.04E-01
			410.94		11.10	4.86E-01		6.02E-01
			711.69		54.10	-1.98E-02		1.25E-01
+		TM-171	66.72		0.14	3.96E+01	2.13E+02	2.13E+02
+		HF-172	67.35		5.31	2.39E-01	2.15E+00	5.67E+00
			125.81		11.30	3.58E-01		2.15E+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	4.96E-02	2.83E+00	8.43E+00
			272.11		21.20	5.88E-01		2.83E+00
+		HF-175	343.40		84.00	-4.95E+04	3.93E+05	3.93E+05
+		LU-176	88.34		13.30	2.80E-02	5.82E-02	5.16E-01
			201.83		86.00	-6.54E-03		5.82E-02
			306.78		94.00	7.55E-03		6.46E-02
+		HF-181	133.02		41.70	-2.42E+09	9.11E+09	1.46E+10
			345.85		17.20	-5.77E+09		4.34E+10
			482.03		82.80	-1.99E+09		9.11E+09
+		TA-182	67.75		41.20	8.11E+01	1.93E+03	1.93E+03
			1121.30		34.90	5.96E+03		4.73E+03
			1189.05		16.23	1.54E+03		8.26E+03
			1221.41		26.98	8.60E+02		4.90E+03
			1231.02		11.44	2.20E+03		1.15E+04
+		IR-192	308.46		29.68	-1.86E+05	2.95E+05	4.48E+05
			468.07		48.10	-4.43E+04		2.95E+05
+		HG-203	279.19		77.30	3.34E+08	1.00E+09	1.00E+09
+		TL-204	374.74		94.11	1.97E-02	1.41E-01	1.41E-01
			899.15		99.16	-2.54E-02		1.67E-01
			911.74		91.10	8.01E-01		3.59E-01
+		BI-207	569.67		97.72	3.49E-02	7.98E-02	7.98E-02
			1063.62		74.90	2.04E-03		1.12E-01
+		TL-208	583.14	*	30.22	1.09E+00	2.04E-01	2.82E-01
			860.37	*	4.48	1.37E+00		1.82E+00
			2614.66	*	35.85	1.22E+00		2.04E-01
+		BI-210M	262.00		45.00	2.00E-02	1.32E-01	1.32E-01
			300.00		23.00	-9.79E-01		2.95E-01

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PB-210	46.50		4.25	1.30E+00	1.55E+00	1.55E+00
+	PB-211	404.84		2.90	-2.98E-01	2.07E+00	2.07E+00
		831.96		2.90	6.89E-01		2.69E+00
+	BI-212	727.17	*	11.80	1.11E+00	7.31E-01	7.31E-01
		1620.62	*	2.75	1.24E+00		2.43E+00
+	PB-212	238.63	*	44.60	1.39E+00	2.93E-01	2.93E-01
		300.09	*	3.41	1.20E+00		1.57E+00
+	BI-214	609.31	*	46.30	1.12E+00	2.65E-01	2.65E-01
		1120.29	*	15.10	1.16E+00		1.02E+00
		1764.49	*	15.80	1.30E+00		3.84E-01
		2204.22	*	4.98	1.92E+00		1.00E+00
+	PB-214	295.21	*	19.19	1.15E+00	2.57E-01	3.38E-01
		351.92	*	37.19	1.30E+00		2.57E-01
+	RN-219	401.80		6.50	-3.58E-02	9.40E-01	9.40E-01
+	RA-223	323.87		3.88	8.09E-02	1.61E+00	1.61E+00
+	RA-224	240.98	*	3.95	3.68E+00	3.30E+00	3.30E+00
+	@ RA-225	40.00		31.00	1.00E+26	1.00E+26	1.00E+26
+	RA-226	186.21	*	3.28	2.82E+00	2.65E+00	2.65E+00
+	TH-227	50.10		8.40	-5.96E-02	6.20E-01	6.49E-01
		236.00		11.50	-4.25E+00		6.20E-01
		256.20		6.30	-1.66E-02		9.52E-01
+	AC-228	338.32	*	11.40	1.86E+00	4.73E-01	8.80E-01
		911.07	*	27.70	1.32E+00		4.73E-01
		969.11	*	16.60	1.39E+00		8.05E-01
+	TH-230	48.44		16.90	1.14E-01	3.41E-01	3.41E-01
		62.85		4.60	2.12E+00		1.51E+00
		67.67		0.37	7.01E-01		1.66E+01
+	PA-231	283.67		1.60	-1.09E+00	2.94E+00	3.61E+00
		302.67		2.30	5.50E-01		2.94E+00
+	TH-231	25.64		14.70	-3.80E+00	5.75E-01	5.75E-01
		84.21		6.40	-9.34E-01		9.34E-01
+	PA-233	311.98		38.60	-2.42E+15	4.06E+16	4.06E+16
+	PA-234	131.20		20.40	6.55E-02	2.54E-01	2.54E-01
		733.99		8.80	-1.25E-01		8.48E-01
		946.00		12.00	-1.22E-01		5.77E-01
+	PA-234M	1001.03		0.92	-2.62E+00	8.32E+00	8.32E+00
+	TH-234	63.29		3.80	1.74E+00	1.81E+00	1.81E+00
+	U-235	143.76		10.50	3.06E-02	5.03E-01	5.03E-01
		163.35		4.70	2.56E-01		1.14E+00
		205.31		4.70	-7.88E-01		1.15E+00
+	NP-237	86.50		12.60	1.02E-01	5.18E-01	5.18E-01
+	@ 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	-3.33E-02	1.66E-01	1.66E-01
+	AM-243	74.67	*	66.00	2.72E-01	1.66E-01	1.66E-01
+	CM-243	209.75		3.29	8.91E-01	5.00E-01	1.94E+00

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
CM-243	228.14	10.60	-1.32E-01	5.00E-01	5.47E-01
	277.60	14.00	2.87E-02		5.00E-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	3.72E+08	3.72E+08	7.27E+07	1.76E+08
	NA-22	1274.54		99.94	2.10E-01	2.10E-01	-2.26E-01	9.44E-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	5.20E-02	5.20E-02	-2.46E-03	2.16E-02
+	K-40	1460.81	*	10.67	1.25E+00	1.25E+00	2.64E+01	5.90E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	6.84E-02	6.84E-02	2.88E-03	3.34E-02
		78.34		96.00	9.11E-02		2.15E-01	4.48E-02
	SC-46	889.25		99.98	2.91E+04	2.91E+04	-1.02E+04	1.35E+04
		1120.51		99.99	5.26E+04		7.27E+04	2.50E+04
@	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	5.82E+16	5.82E+16	1.45E+16	2.79E+16
	MN-54	834.83		99.97	2.53E+00	2.53E+00	-7.15E-01	1.19E+00
	CO-56	846.75		99.96	6.65E+04	6.65E+04	2.65E+04	3.09E+04
		1037.75		14.03	5.39E+05		1.26E+05	2.50E+05
		1238.25		67.00	1.69E+05		5.50E+04	7.98E+04
		1771.40		15.51	3.24E+05		3.89E+04	1.36E+05
		2598.48		16.90	3.08E+05		7.27E+04	1.22E+05
	CO-57	122.06		85.51	3.02E+00	3.02E+00	-1.00E+00	1.47E+00
		136.48		10.60	2.53E+01		1.78E+00	1.23E+01

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CO-58	810.76		99.40	3.11E+05	3.11E+05	-1.14E+05	1.45E+05
	FE-59	1099.22		56.50	4.83E+09	4.83E+09	-1.89E+09	2.22E+09
		1291.56		43.20	6.04E+09		-3.94E+09	2.74E+09
	CO-60	1173.22		100.00	1.65E-01	1.41E-01	-4.16E-02	7.70E-02
		1332.49		100.00	1.41E-01		2.18E-02	6.44E-02
	ZN-65	1115.52		50.75	1.40E+01	1.40E+01	-1.17E+00	6.47E+00
@	GA-67	93.31		35.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@		208.95		2.24	1.00E+26		1.00E+26	1.00E+20
@		300.22		16.00	1.00E+26		1.00E+26	1.00E+20
	SE-75	121.11		16.70	2.38E+03	7.02E+02	-9.52E+02	1.16E+03
		136.00		59.20	7.02E+02		4.95E+01	3.40E+02
		264.65		59.80	8.52E+02		6.95E+01	4.11E+02
		279.53		25.20	2.10E+03		6.99E+02	1.01E+03
		400.65		11.40	4.51E+03		-4.14E+02	2.15E+03
	RB-82	776.52		13.00	1.57E+18	1.57E+18	3.89E+17	7.37E+17
	RB-83	520.41		46.00	3.80E+04	3.80E+04	-2.45E+03	1.79E+04
		529.64		30.30	6.34E+04		1.68E+04	3.00E+04
		552.65		16.40	1.18E+05		4.36E+04	5.57E+04
	KR-85	513.99		0.43	2.85E+01	2.85E+01	3.85E+01	1.37E+01
	SR-85	513.99		99.27	1.69E+06	1.69E+06	2.29E+06	8.14E+05
	Y-88	898.02		93.40	1.98E+03	1.56E+03	-1.26E+03	9.19E+02
		1836.01		99.38	1.56E+03		3.04E+02	6.63E+02
	MO-93	263.06		56.72	1.36E-01	6.52E-02	2.08E-02	6.55E-02
		684.67		99.68	9.14E-02		-3.09E-03	4.28E-02
		1477.11		99.08	6.52E-02		-8.99E-03	2.76E-02
	NB-93M	16.57		9.43	7.30E-01	7.30E-01	-3.61E-01	3.42E-01
	NB-94	702.63		100.00	7.09E-02	6.30E-02	-1.54E-02	3.32E-02
		871.10		100.00	6.30E-02		-3.88E-02	2.89E-02
	NB-95	765.79		99.81	2.37E+12	2.37E+12	1.90E+12	1.12E+12
@	NB-95M	235.69		25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	ZR-95	724.18		43.70	4.15E+06	2.88E+06	6.86E+05	1.96E+06
		756.72		55.30	2.88E+06		6.13E+04	1.35E+06
@	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	5.73E+10	5.73E+10	-3.69E+10	2.70E+10
	RU-106	621.84		9.80	1.34E+01	1.34E+01	-3.55E+00	6.32E+00
	AG-108M	433.93		89.90	6.47E-02	6.47E-02	-2.28E-02	3.06E-02
		614.37		90.40	9.20E-02		2.00E-03	4.38E-02
		722.95		90.50	7.57E-02		1.52E-02	3.53E-02
+	CD-109	88.03	*	3.72	3.61E+01	3.61E+01	2.54E+01	1.78E+01
	AG-110M	657.75		93.14	5.35E+00	5.35E+00	-9.29E-01	2.50E+00
		677.61		10.53	4.96E+01		2.34E+01	2.33E+01
		706.67		16.46	3.36E+01		7.36E+00	1.58E+01
		763.93		21.98	2.72E+01		-2.21E-01	1.28E+01
		884.67		71.63	7.36E+00		-3.59E-01	3.40E+00
		1384.27		23.94	1.73E+01		-3.41E+00	7.49E+00
	CD-113M	263.70		0.02	3.24E+02	3.24E+02	4.84E+01	1.56E+02
	SN-113	255.12		1.93	3.29E+04	1.18E+03	1.13E+04	1.58E+04
		391.69		64.90	1.18E+03		5.89E+02	5.63E+02
	TE123M	159.00		84.10	5.38E+02	5.38E+02	1.15E+02	2.61E+02
	SB-124	602.71		97.87	4.10E+06	4.10E+06	-1.16E+06	1.92E+06
		645.85		7.26	5.76E+07		-3.97E+07	2.69E+07

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	SB-124	722.78		11.10	3.91E+07	4.10E+06	7.89E+06	1.83E+07
		1691.02		49.00	6.56E+06		-1.21E+06	2.72E+06
	I-125	35.49		6.49	5.92E+07	5.92E+07	-6.65E+06	2.87E+07
	SB-125	176.33		6.89	2.15E+00	6.00E-01	-6.01E-01	1.04E+00
		427.89		29.33	6.00E-01		1.33E-01	2.85E-01
		463.38		10.35	2.13E+00		2.14E+00	1.02E+00
		600.56		17.80	1.08E+00		-9.14E-02	5.10E-01
		635.90		11.32	1.63E+00		7.38E-01	7.62E-01
@	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	3.51E-01	3.51E-01	2.47E-01	1.74E-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	1.16E-01	1.16E-01	-3.62E-02	5.63E-02
		33.60		13.20	4.72E-01		2.44E-02	2.29E-01
		39.58		7.52	7.11E-01		-2.30E-01	3.45E-01
@	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	2.32E-01	1.90E-01	-9.35E-01	1.13E-01
		302.84		17.80	5.04E-01		9.43E-02	2.43E-01
		356.01		60.00	1.90E-01		9.92E-03	9.22E-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	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	CS-134	563.23		8.38	3.60E+00	3.40E-01	1.16E+00	1.71E+00
		569.32		15.43	1.89E+00		-3.28E-01	8.93E-01
		604.70		97.60	3.40E-01		-5.51E-02	1.62E-01
		795.84		85.40	4.09E-01		1.38E-01	1.93E-01
		801.93		8.73	3.71E+00		3.73E-01	1.74E+00
	CS-135	268.24		16.00	4.18E-01	4.18E-01	1.61E-01	2.02E-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	9.24E-02	9.24E-02	5.92E-03	4.35E-02
	LA-138	788.74		34.00	2.32E-01	9.66E-02	7.06E-02	1.09E-01
		1435.80		66.00	9.66E-02		2.21E-03	4.26E-02
	CE-139	165.85		80.35	1.72E+02	1.72E+02	3.35E+01	8.32E+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

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@ BA-140	423.70	3.20	1.00E+26	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	3.35E+13	3.35E+13	1.54E+13	1.63E+13
@ 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	2.04E+01	2.04E+01	-3.39E+00	9.90E+00
PM-144	476.78	42.00	2.85E+00	1.36E+00	6.48E-02	1.35E+00
	618.01	98.60	1.46E+00		5.56E-01	6.91E-01
	696.49	99.49	1.36E+00		9.63E-02	6.38E-01
PM-145	36.85	21.70	3.08E-01	1.64E-01	8.96E-02	1.49E-01
	37.36	39.70	1.64E-01		-7.77E-02	7.94E-02
	42.30	15.10	4.14E-01		-1.74E-01	2.01E-01
	72.40	2.31	3.65E+00		-4.21E+00	1.79E+00
PM-146	453.90	39.94	2.66E-01	2.66E-01	1.93E-02	1.26E-01
	735.90	14.01	8.96E-01		3.69E-02	4.20E-01
	747.13	13.10	8.49E-01		1.12E-01	3.94E-01
@ ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	531.02	13.10	1.00E+26		1.00E+26	1.00E+20
@ PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
EU-152	121.78	20.50	2.87E-01	2.87E-01	-1.14E-01	1.39E-01
	244.69	5.40	1.32E+00		-7.30E-02	6.39E-01
	344.27	19.13	3.96E-01		-5.17E-02	1.90E-01
	778.89	9.20	9.71E-01		-9.35E-02	4.53E-01
	964.01	10.40	1.22E+00		-1.73E+00	5.76E-01
	1085.78	7.22	1.29E+00		-1.70E-01	5.94E-01
	1112.02	9.60	1.13E+00		2.36E-01	5.24E-01
	1407.95	14.94	6.51E-01		3.20E-01	2.95E-01
GD-153	97.43	31.30	1.43E+01	1.43E+01	-4.03E+00	6.94E+00
	103.18	22.20	2.05E+01		7.79E-01	9.95E+00
EU-154	123.07	40.50	1.66E-01	1.66E-01	1.24E-03	8.04E-02
	723.30	19.70	4.76E-01		9.59E-02	2.22E-01
	873.19	11.50	8.25E-01		-4.14E-01	3.81E-01
	996.32	10.30	1.03E+00		-2.08E-01	4.75E-01
	1004.76	17.90	6.47E-01		2.11E-01	3.01E-01
	1274.45	35.50	2.65E-01		-2.86E-01	1.19E-01
EU-155	86.50	30.90	3.84E-01	3.84E-01	7.54E-02	1.88E-01
	105.30	20.70	4.52E-01		5.95E-02	2.20E-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	9.04E-02	9.04E-02	1.54E-01	4.40E-02
	280.45	29.60	2.04E-01		-2.73E-02	9.83E-02
	410.94	11.10	6.02E-01		4.86E-01	2.88E-01
	711.69	54.10	1.25E-01		-1.98E-02	5.84E-02
TM-171	66.72	0.14	2.13E+02	2.13E+02	3.96E+01	1.04E+02
HF-172	67.35	5.31	5.67E+00	2.15E+00	2.39E-01	2.77E+00
	125.81	11.30	2.15E+00		3.58E-01	1.04E+00

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@	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	8.43E+00	2.83E+00	4.96E-02	4.10E+00
		272.11		21.20	2.83E+00		5.88E-01	1.37E+00
	HF-175	343.40		84.00	3.93E+05	3.93E+05	-4.95E+04	1.88E+05
	LU-176	88.34		13.30	5.16E-01	5.82E-02	2.80E-02	2.53E-01
		201.83		86.00	5.82E-02		-6.54E-03	2.80E-02
		306.78		94.00	6.46E-02		7.55E-03	3.10E-02
	HF-181	133.02		41.70	1.46E+10	9.11E+09	-2.42E+09	7.06E+09
		345.85		17.20	4.34E+10		-5.77E+09	2.08E+10
		482.03		82.80	9.11E+09		-1.99E+09	4.31E+09
	TA-182	67.75		41.20	1.93E+03	1.93E+03	8.11E+01	9.41E+02
		1121.30		34.90	4.73E+03		5.96E+03	2.25E+03
		1189.05		16.23	8.26E+03		1.54E+03	3.87E+03
		1221.41		26.98	4.90E+03		8.60E+02	2.29E+03
		1231.02		11.44	1.15E+04		2.20E+03	5.36E+03
	IR-192	308.46		29.68	4.48E+05	2.95E+05	-1.86E+05	2.15E+05
		468.07		48.10	2.95E+05		-4.43E+04	1.40E+05
	HG-203	279.19		77.30	1.00E+09	1.00E+09	3.34E+08	4.83E+08
	TL-204	374.74		94.11	1.41E-01	1.41E-01	1.97E-02	6.76E-02
		899.15		99.16	1.67E-01		-2.54E-02	7.76E-02
		911.74		91.10	3.59E-01		8.01E-01	1.73E-01
	BI-207	569.67		97.72	7.98E-02	7.98E-02	3.49E-02	3.78E-02
		1063.62		74.90	1.12E-01		2.04E-03	5.18E-02
+	TL-208	583.14	*	30.22	2.82E-01	2.04E-01	1.09E+00	1.34E-01
		860.37	*	4.48	1.82E+00		1.37E+00	8.53E-01
		2614.66	*	35.85	2.04E-01		1.22E+00	8.58E-02
	BI-210M	262.00		45.00	1.32E-01	1.32E-01	2.00E-02	6.37E-02
		300.00		23.00	2.95E-01		-9.79E-01	1.42E-01
	PB-210	46.50		4.25	1.55E+00	1.55E+00	1.30E+00	7.55E-01
	PB-211	404.84		2.90	2.07E+00	2.07E+00	-2.98E-01	9.83E-01
		831.96		2.90	2.69E+00		6.89E-01	1.26E+00
+	BI-212	727.17	*	11.80	7.31E-01	7.31E-01	1.11E+00	3.46E-01
		1620.62	*	2.75	2.43E+00		1.24E+00	1.07E+00
+	PB-212	238.63	*	44.60	2.93E-01	2.93E-01	1.39E+00	1.44E-01
		300.09	*	3.41	1.57E+00		1.20E+00	7.49E-01
+	BI-214	609.31	*	46.30	2.65E-01	2.65E-01	1.12E+00	1.28E-01
		1120.29	*	15.10	1.02E+00		1.16E+00	4.87E-01
		1764.49	*	15.80	3.84E-01		1.30E+00	1.64E-01
		2204.22	*	4.98	1.00E+00		1.92E+00	3.98E-01
+	PB-214	295.21	*	19.19	3.38E-01	2.57E-01	1.15E+00	1.63E-01
		351.92	*	37.19	2.57E-01		1.30E+00	1.25E-01
	RN-219	401.80		6.50	9.40E-01	9.40E-01	-3.58E-02	4.48E-01
	RA-223	323.87		3.88	1.61E+00	1.61E+00	8.09E-02	7.75E-01
+	RA-224	240.98	*	3.95	3.30E+00	3.30E+00	3.68E+00	1.63E+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	2.65E+00	2.65E+00	2.82E+00	1.30E+00
	TH-227	50.10		8.40	6.49E-01	6.20E-01	-5.96E-02	3.16E-01
		236.00		11.50	6.20E-01		-4.25E+00	3.01E-01
		256.20		6.30	9.52E-01		-1.66E-02	4.59E-01
+	AC-228	338.32	*	11.40	8.80E-01	4.73E-01	1.86E+00	4.29E-01
		911.07	*	27.70	4.73E-01		1.32E+00	2.27E-01

Analysis Report for 1707088-11

HTC-A03-S004-3036-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	AC-228	969.11	*	16.60	8.05E-01	4.73E-01	1.39E+00	3.86E-01
	TH-230	48.44		16.90	3.41E-01	3.41E-01	1.14E-01	1.66E-01
		62.85		4.60	1.51E+00		2.12E+00	7.39E-01
		67.67		0.37	1.66E+01		7.01E-01	8.13E+00
	PA-231	283.67		1.60	3.61E+00	2.94E+00	-1.09E+00	1.73E+00
		302.67		2.30	2.94E+00		5.50E-01	1.42E+00
	TH-231	25.64		14.70	5.75E-01	5.75E-01	-3.80E+00	2.80E-01
		84.21		6.40	9.34E-01		-9.34E-01	4.56E-01
	PA-233	311.98		38.60	4.06E+16	4.06E+16	-2.42E+15	1.95E+16
	PA-234	131.20		20.40	2.54E-01	2.54E-01	6.55E-02	1.23E-01
		733.99		8.80	8.48E-01		-1.25E-01	3.98E-01
		946.00		12.00	5.77E-01		-1.22E-01	2.65E-01
	PA-234M	1001.03		0.92	8.32E+00	8.32E+00	-2.62E+00	3.84E+00
	TH-234	63.29		3.80	1.81E+00	1.81E+00	1.74E+00	8.87E-01
	U-235	143.76		10.50	5.03E-01	5.03E-01	3.06E-02	2.44E-01
		163.35		4.70	1.14E+00		2.56E-01	5.52E-01
		205.31		4.70	1.15E+00		-7.88E-01	5.53E-01
	NP-237	86.50		12.60	5.18E-01	5.18E-01	1.02E-01	2.54E-01
@	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	1.66E-01	1.66E-01	-3.33E-02	8.09E-02
+	AM-243	74.67	*	66.00	1.66E-01	1.66E-01	2.72E-01	8.18E-02
	CM-243	209.75		3.29	1.94E+00	5.00E-01	8.91E-01	9.39E-01
		228.14		10.60	5.47E-01		-1.32E-01	2.63E-01
		277.60		14.00	5.00E-01		2.87E-02	2.41E-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 1707088-11

HTC-A03-S004-3036-01

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-A03-S004-3036-01

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	74	95	71	171	571	177
25:	62	70	65	70	69	66	67	73
33:	81	66	73	71	75	55	63	60
41:	73	76	68	60	66	86	127	87
49:	83	82	82	85	91	86	91	84
57:	75	83	99	111	136	124	147	220
65:	157	126	125	128	133	117	124	118
73:	137	174	308	291	314	499	154	120
81:	103	122	100	117	145	100	140	200
89:	133	145	176	121	241	228	120	99
97:	78	78	74	85	95	81	78	83
105:	88	90	80	77	81	83	78	94
113:	84	76	90	82	76	75	77	73
121:	58	58	64	73	76	63	75	68
129:	98	98	73	78	57	69	55	71
137:	69	73	62	68	64	72	55	86
145:	84	68	72	80	77	69	68	73
153:	61	75	91	60	55	63	78	84
161:	60	57	69	69	72	69	63	51
169:	57	64	62	54	58	53	48	48
177:	73	62	49	69	59	50	58	51
185:	82	139	122	62	52	47	53	60
193:	36	42	66	66	66	49	62	54
201:	51	51	38	41	55	60	58	54
209:	80	78	38	50	48	49	49	37
217:	40	37	43	46	53	40	56	44
225:	49	39	48	39	45	43	47	41
233:	60	60	53	62	54	175	526	243
241:	81	128	96	45	27	44	36	28
249:	26	37	42	31	40	27	32	38
257:	48	46	35	29	37	38	36	33
265:	35	28	41	36	36	50	65	45
273:	33	52	35	33	50	42	35	33
281:	26	35	27	30	31	27	29	37
289:	25	27	22	25	29	39	97	172
297:	50	24	31	51	50	35	24	35
305:	33	32	28	28	17	31	23	31
313:	26	32	32	27	29	26	16	31
321:	27	35	26	20	22	33	38	56
329:	40	26	34	23	24	27	25	33
337:	31	90	128	48	36	31	24	18
345:	28	17	33	23	24	24	74	294
353:	173	47	30	22	24	23	19	18
361:	18	23	29	23	23	20	26	26

369:	21	16	34	25	22	25	20	19

Sample Title: HTC-A03-S004-3036-01

Channel								
377:	26	15	12	23	21	20	24	18
385:	26	28	13	10	26	19	17	18
393:	28	20	24	24	20	21	22	27
401:	16	23	17	12	21	18	16	24
409:	24	34	25	23	19	11	17	13
417:	26	18	20	13	19	15	22	15
425:	16	15	18	15	22	21	15	17
433:	10	21	10	13	19	17	12	19
441:	24	23	10	16	12	11	17	14
449:	17	21	21	17	17	12	23	16
457:	12	12	17	18	15	24	43	32
465:	21	20	17	15	13	12	17	19
473:	15	14	10	11	15	16	14	24
481:	16	9	17	11	11	10	23	16
489:	13	15	18	19	16	11	14	13
497:	13	13	8	13	15	16	14	12
505:	10	16	16	20	22	53	80	47
513:	34	20	18	13	17	12	12	17
521:	14	10	12	15	12	13	14	19
529:	15	13	13	20	15	19	10	13
537:	18	19	16	9	6	13	13	11
545:	15	7	11	9	14	10	21	14
553:	17	11	18	12	15	10	12	18
561:	14	23	22	11	10	15	14	17
569:	12	16	15	14	22	18	7	18
577:	17	12	11	13	11	31	109	121
585:	28	13	11	13	13	15	5	14
593:	15	10	16	22	11	21	13	11
601:	15	7	8	11	12	10	28	47
609:	159	170	38	19	12	15	24	9
617:	11	16	13	7	21	10	11	16
625:	12	19	12	12	8	13	5	8
633:	6	16	16	8	16	5	4	14
641:	14	16	7	10	10	15	13	9
649:	8	17	11	10	7	9	6	15
657:	8	12	12	5	14	16	12	10
665:	17	15	12	8	16	11	9	16
673:	9	8	11	8	11	10	11	17
681:	8	7	8	9	14	15	11	13
689:	14	6	13	7	10	11	11	8
697:	10	13	10	12	8	8	15	13
705:	14	7	12	14	7	13	10	8
713:	9	11	10	16	13	16	12	4
721:	10	11	8	4	9	19	38	32
729:	9	10	14	12	6	16	12	11
737:	9	12	11	9	9	10	10	12
745:	7	6	7	14	9	3	6	6
753:	10	11	13	13	10	6	11	6
761:	11	11	12	9	17	10	13	19
769:	34	7	12	21	13	17	7	11
777:	11	12	13	5	7	8	10	8
785:	14	16	11	12	10	8	11	12
793:	9	8	21	16	17	11	6	6

801:	13	8	14	14	13	12	13	14

Sample Title: HTC-A03-S004-3036-01

Channel								
809:	8	9	8	8	7	6	14	5
817:	10	9	8	5	13	8	11	10
825:	10	6	7	7	10	15	8	11
833:	7	7	14	9	11	15	12	14
841:	7	9	7	13	5	6	7	8
849:	8	10	2	7	5	7	12	7
857:	5	7	11	26	27	4	8	9
865:	18	7	9	4	8	8	6	5
873:	8	3	9	10	17	8	8	8
881:	12	7	5	5	8	5	8	5
889:	9	8	10	8	12	12	3	9
897:	11	6	10	7	7	9	11	10
905:	13	5	7	7	10	34	98	69
913:	17	7	12	17	6	6	6	7
921:	7	7	9	7	4	11	7	5
929:	7	13	7	11	14	22	13	8
937:	6	7	7	7	4	5	6	4
945:	5	7	8	11	4	11	9	15
953:	6	10	9	8	9	5	6	3
961:	7	12	12	20	28	8	13	29
969:	54	31	13	4	11	6	7	6
977:	11	10	6	6	11	9	5	5
985:	7	7	8	10	4	6	8	6
993:	8	5	11	6	5	10	5	5
1001:	13	10	6	2	7	15	7	5
1009:	11	7	5	12	5	10	7	6
1017:	10	5	5	5	7	6	8	4
1025:	7	6	7	7	4	3	4	6
1033:	11	6	8	11	6	8	10	5
1041:	4	6	10	2	4	7	7	6
1049:	13	9	5	6	4	5	7	6
1057:	6	7	8	8	9	3	9	4
1065:	5	9	7	5	10	8	8	6
1073:	6	7	8	4	9	11	7	10
1081:	7	8	6	6	4	5	7	7
1089:	7	4	5	8	6	6	9	6
1097:	8	8	7	3	7	8	14	5
1105:	4	8	6	3	5	10	12	9
1113:	5	9	7	7	9	7	28	40
1121:	23	14	9	7	9	8	6	3
1129:	7	10	9	5	11	8	12	8
1137:	10	8	8	8	9	11	7	9
1145:	3	6	7	10	8	7	13	9
1153:	19	9	9	17	7	5	8	7
1161:	10	9	6	13	5	6	7	9
1169:	11	6	9	10	10	5	12	10
1177:	8	13	17	10	11	8	10	7
1185:	11	10	12	9	11	11	12	10
1193:	12	8	10	12	11	9	5	7
1201:	10	13	10	9	11	11	10	7
1209:	20	6	10	9	7	9	15	13
1217:	9	11	13	5	14	6	11	10
1225:	7	8	9	5	13	12	5	11

1233:	13	12	13	7	24	21	14	11

Sample Title: HTC-A03-S004-3036-01

Channel								
1241:	7	14	8	8	10	7	9	6
1249:	5	11	8	8	5	5	6	6
1257:	5	8	5	5	6	6	6	6
1265:	15	7	10	9	8	10	3	1
1273:	2	3	1	6	10	5	7	8
1281:	16	3	5	9	11	5	8	5
1289:	8	3	6	5	4	2	6	10
1297:	5	8	3	9	8	6	10	9
1305:	5	4	8	2	5	4	5	4
1313:	7	7	5	3	5	5	4	3
1321:	2	5	0	7	8	5	5	5
1329:	8	3	8	3	4	4	6	8
1337:	6	1	4	6	4	5	3	5
1345:	1	3	1	5	10	2	5	8
1353:	2	2	5	2	6	3	1	2
1361:	2	1	1	4	4	4	3	2
1369:	3	0	3	4	2	2	4	2
1377:	8	9	7	1	1	4	2	3
1385:	3	1	0	1	6	2	3	2
1393:	4	0	5	3	1	3	4	5
1401:	4	5	1	4	0	8	6	8
1409:	5	0	1	3	4	0	5	1
1417:	1	1	0	4	1	1	0	5
1425:	5	1	2	1	2	1	8	8
1433:	1	3	3	2	2	0	2	2
1441:	0	4	2	1	1	0	6	4
1449:	3	3	4	2	3	5	3	8
1457:	4	24	138	393	369	107	10	16
1465:	6	6	1	1	1	0	2	0
1473:	0	2	1	1	4	1	1	3
1481:	2	1	2	1	1	0	1	2
1489:	3	1	3	1	2	1	5	0
1497:	2	2	2	5	3	1	1	2
1505:	3	3	5	4	4	6	4	0
1513:	1	3	0	6	1	4	0	3
1521:	3	3	0	2	4	4	0	0
1529:	1	3	4	0	3	0	2	1
1537:	5	3	2	4	4	3	3	2
1545:	1	2	1	1	3	1	0	2
1553:	3	2	1	0	4	2	2	1
1561:	0	0	1	1	4	2	1	2
1569:	0	2	1	0	1	0	2	1
1577:	2	4	4	3	2	1	3	1
1585:	1	2	5	5	4	4	1	4
1593:	3	2	0	0	4	3	0	6
1601:	2	0	0	0	0	2	0	1
1609:	0	1	3	2	2	1	2	2
1617:	0	1	2	6	3	2	2	1
1625:	0	1	1	2	1	2	5	2
1633:	4	1	3	1	2	2	1	1
1641:	3	1	2	1	2	1	1	3
1649:	0	1	0	0	1	1	0	1
1657:	3	0	1	1	3	2	2	1

1665:	1	1	1	2	0	2	2	0

Sample Title: HTC-A03-S004-3036-01

Channel								
1673:	2	0	1	2	0	1	1	0
1681:	3	1	1	2	0	0	1	0
1689:	4	1	1	0	1	2	3	2
1697:	0	1	1	0	1	1	3	0
1705:	0	2	2	0	1	0	1	0
1713:	0	1	0	1	1	1	0	1
1721:	1	0	0	1	1	2	6	4
1729:	8	3	2	1	1	0	1	1
1737:	0	0	2	1	1	1	0	0
1745:	2	3	0	1	1	2	2	0
1753:	1	2	1	0	0	0	2	2
1761:	2	2	16	23	13	5	4	1
1769:	0	2	1	0	1	0	1	2
1777:	0	3	0	3	1	1	3	0
1785:	1	1	0	0	1	1	0	2
1793:	0	1	0	1	2	2	2	2
1801:	0	3	1	1	0	2	0	2
1809:	1	2	1	2	1	0	1	2
1817:	1	0	0	1	2	0	4	1
1825:	1	1	2	0	1	2	2	0
1833:	2	3	4	1	1	0	1	0
1841:	4	1	0	0	1	8	2	2
1849:	3	0	0	1	0	2	1	0
1857:	3	2	1	1	0	1	1	0
1865:	3	0	1	1	0	1	1	1
1873:	1	2	1	0	2	2	1	0
1881:	2	1	1	0	1	3	1	1
1889:	1	0	2	1	1	1	3	3
1897:	2	2	2	1	2	3	0	0
1905:	2	0	1	0	0	1	1	1
1913:	0	1	1	0	0	1	1	2
1921:	0	1	2	0	0	1	0	1
1929:	1	2	1	0	1	0	4	0
1937:	0	2	0	0	0	0	2	1
1945:	1	0	5	0	1	1	0	1
1953:	0	1	0	0	1	1	1	0
1961:	1	2	2	1	2	1	1	2
1969:	0	0	3	0	2	2	1	1
1977:	2	1	0	2	0	0	1	1
1985:	0	0	1	0	1	0	2	1
1993:	0	1	0	2	1	0	0	1
2001:	3	0	1	1	1	1	1	2
2009:	0	0	0	0	0	2	2	0
2017:	0	2	1	3	2	1	0	2
2025:	0	1	1	1	0	0	1	0
2033:	1	1	1	2	1	2	2	1
2041:	1	2	1	0	1	2	0	0
2049:	2	2	2	0	4	1	2	3
2057:	2	0	1	0	0	0	1	2
2065:	1	2	0	0	1	1	2	0
2073:	2	0	0	0	0	1	2	1
2081:	2	3	2	0	1	1	1	1
2089:	1	0	1	1	0	1	1	2

2097:	2	1	3	1	2	2	5	2

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

2529:	0	1	2	0	0	0	1	1

Sample Title: HTC-A03-S004-3036-01

Channel								
2537:	1	0	0	0	1	1	1	1
2545:	1	1	1	1	2	0	0	1
2553:	0	0	0	0	0	1	0	0
2561:	1	0	0	1	1	1	0	0
2569:	0	0	1	1	1	0	1	1
2577:	0	0	1	0	1	1	0	0
2585:	1	1	0	0	0	0	1	0
2593:	1	1	0	1	0	0	0	1
2601:	1	0	0	1	0	0	1	0
2609:	1	0	7	25	36	25	9	2
2617:	3	2	1	0	0	0	0	0
2625:	2	0	0	1	0	1	0	0
2633:	0	0	0	1	0	0	0	0
2641:	0	0	0	0	0	1	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	1	0	0	1	0
2665:	0	0	1	0	1	0	0	0
2673:	0	0	2	1	1	0	0	1
2681:	1	0	2	0	0	1	0	0
2689:	1	0	0	0	1	0	1	1
2697:	1	0	0	0	0	0	0	0
2705:	0	1	1	0	0	0	1	1
2713:	0	1	1	0	1	0	0	0
2721:	1	1	0	0	0	0	0	0
2729:	2	0	0	1	0	0	0	0
2737:	0	1	0	1	2	0	0	0
2745:	0	0	0	0	0	0	0	0
2753:	1	0	0	0	0	0	2	2
2761:	0	2	0	1	1	1	0	0
2769:	1	0	0	1	0	0	0	0
2777:	0	0	0	2	0	0	0	2
2785:	0	1	1	0	0	0	0	0
2793:	0	1	0	0	0	1	0	0
2801:	0	0	0	1	1	0	0	0
2809:	0	0	0	1	0	0	0	0
2817:	0	0	0	0	0	0	0	1
2825:	0	0	0	1	0	0	0	0
2833:	0	0	0	0	1	0	0	0
2841:	0	1	0	0	0	0	0	0
2849:	0	0	0	1	0	1	0	1
2857:	0	0	0	0	0	0	0	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	0
2889:	0	1	0	2	1	1	0	0
2897:	1	0	0	0	1	0	0	0
2905:	0	0	0	1	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	1	0	0	0	0	0	0	0
2929:	1	0	0	0	0	0	0	0
2937:	0	0	0	0	0	0	2	0
2945:	0	0	0	1	2	0	0	1
2953:	0	1	0	0	1	1	1	1

2961:	0	0	1	0	0	0	0	0

Sample Title: HTC-A03-S004-3036-01

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

Sample Title: HTC-A03-S004-3036-01

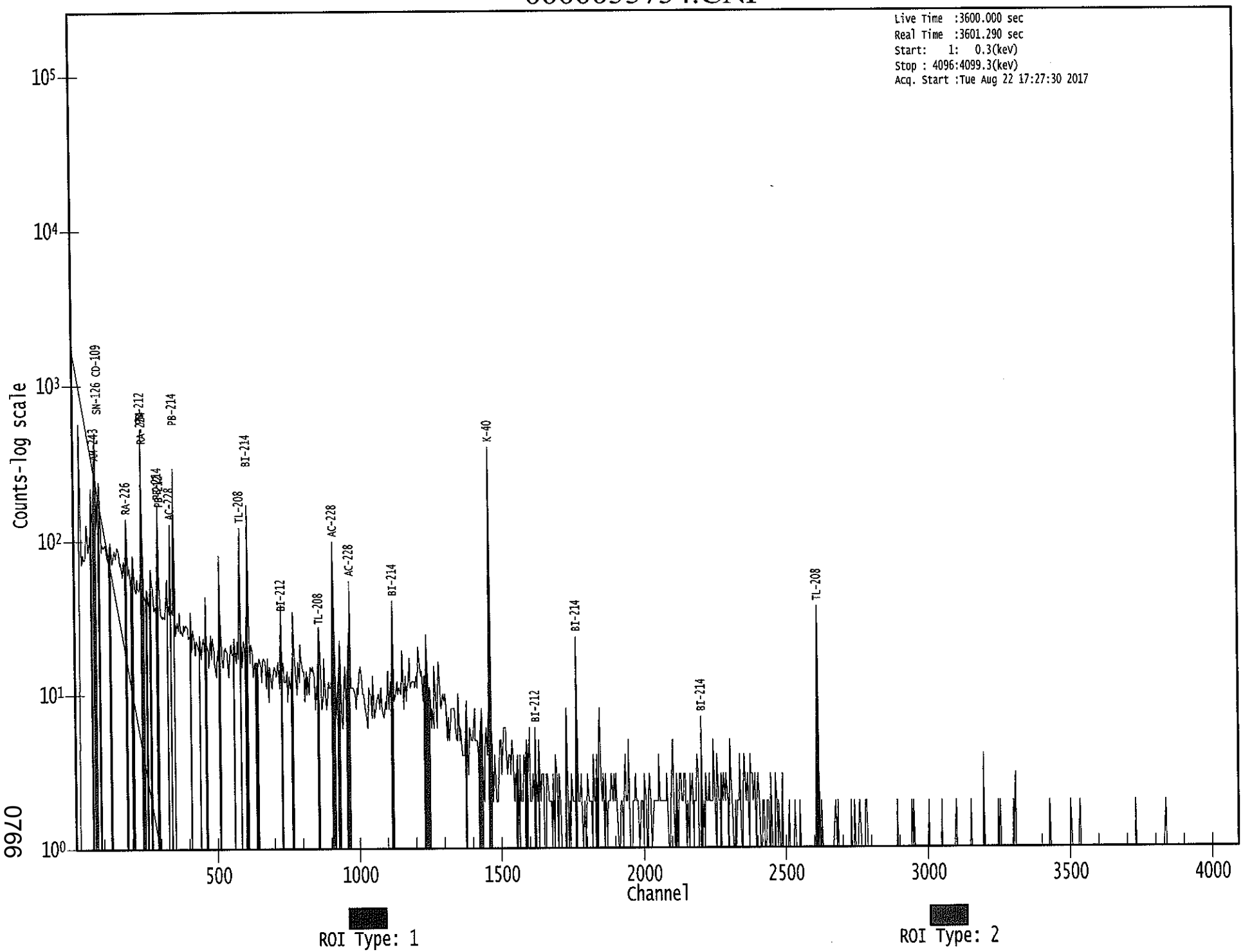
Channel								
3401:	1	1	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	1	1	0	0	0	0
3425:	0	0	0	2	0	0	0	1
3433:	0	1	0	0	0	0	0	0
3441:	0	0	1	0	0	0	0	0
3449:	0	0	0	0	1	1	0	0
3457:	0	0	0	0	0	0	1	0
3465:	1	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	1	0
3481:	1	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	2	0	0	0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

3825:	0	0	0	0	0	1	0	0

Sample Title: HTC-A03-S004-3036-01

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

0000055754.CNF



0766

 KB 8/22/17

Apex-Gamma

Analysis Report for 1707088-12
HTC-A03-S004-3642-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-12
Sample Description	: HTC-A03-S004-3642-01
Sample Type	: SOIL
Sample Size	: 6.874E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2017 9:34:21AM
Acquisition Started	: 8/22/2017 5:27:38PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3607.7 seconds
Dead Time	: 0.21 %
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	: 55755

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 8/23/17

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 6:28:12PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	76.60	76.90	0.0000	0.00
2	88.51	88.80	0.0000	0.00
3	93.46	93.76	0.0000	0.00
4	129.47	129.75	0.0000	0.00
5	145.81	146.08	0.0000	0.00
6	179.90	180.16	0.0000	0.00
7	186.57	186.84	0.0000	0.00
8	209.85	210.11	0.0000	0.00
9	239.69	239.94	0.0000	0.00
10	277.37	277.61	0.0000	0.00
11	295.59	295.81	0.0000	0.00
12	328.97	329.19	0.0000	0.00
13	338.61	338.82	0.0000	0.00
14	341.61	341.82	0.0000	0.00
15	352.23	352.44	0.0000	0.00
16	438.36	438.54	0.0000	0.00
17	463.25	463.43	0.0000	0.00
18	510.89	511.05	0.0000	0.00
19	583.59	583.72	0.0000	0.00
20	596.40	596.53	0.0000	0.00
21	609.54	609.66	0.0000	0.00
22	665.34	665.45	0.0000	0.00
23	727.68	727.76	0.0000	0.00
24	795.44	795.50	0.0000	0.00
25	816.85	816.90	0.0000	0.00
26	859.84	859.88	0.0000	0.00
27	903.44	903.46	0.0000	0.00
28	911.47	911.49	0.0000	0.00
29	932.69	932.71	0.0000	0.00
30	964.71	964.71	0.0000	0.00
31	969.29	969.29	0.0000	0.00
32	1093.83	1093.79	0.0000	0.00
33	1120.59	1120.54	0.0000	0.00
34	1125.52	1125.46	0.0000	0.00
35	1238.55	1238.45	0.0000	0.00
36	1376.93	1376.79	0.0000	0.00
37	1384.50	1384.36	0.0000	0.00
38	1401.53	1401.38	0.0000	0.00
39	1460.54	1460.38	0.0000	0.00
40	1512.92	1512.73	0.0000	0.00
41	1538.01	1537.81	0.0000	0.00
42	1660.53	1660.30	0.0000	0.00

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1763.88	1763.61	0.0000	0.00
44	1809.01	1808.73	0.0000	0.00
45	1877.81	1877.50	0.0000	0.00
46	1903.82	1903.51	0.0000	0.00
47	1944.63	1944.30	0.0000	0.00
48	2025.74	2025.38	0.0000	0.00
49	2103.46	2103.07	0.0000	0.00
50	2117.51	2117.12	0.0000	0.00
51	2203.68	2203.27	0.0000	0.00
52	2326.03	2325.57	0.0000	0.00
53	2613.54	2612.98	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 6:28:12PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	76.60	72 -	82	76.90	1.02E+03	152.57	2.54E+03	3.22
	2	88.51	87 -	91	88.80	1.11E+02	79.35	1.30E+03	1.72
	3	93.46	91 -	98	93.76	2.22E+02	106.43	1.65E+03	2.03
	4	129.47	126 -	133	129.75	7.17E+01	83.81	1.12E+03	2.21
	5	145.81	141 -	150	146.08	7.93E+01	97.44	1.30E+03	5.00
M	6	179.90	178 -	190	180.16	4.66E+01	33.91	2.89E+02	1.81
m	7	186.57	178 -	190	186.84	1.27E+02	54.16	5.34E+02	1.82
	8	209.85	207 -	213	210.11	8.75E+01	60.62	6.09E+02	2.11
	9	239.69	234 -	245	239.94	8.76E+02	104.08	9.11E+02	2.19
	10	277.37	275 -	280	277.61	3.88E+01	43.65	3.48E+02	2.77
	11	295.59	292 -	299	295.81	1.77E+02	58.34	4.51E+02	1.69
	12	328.97	327 -	332	329.19	3.95E+01	37.40	2.47E+02	1.58
M	13	338.61	335 -	344	338.82	1.26E+02	42.94	2.54E+02	1.96
m	14	341.61	335 -	344	341.82	3.26E+01	40.84	2.28E+02	1.96
	15	352.23	347 -	357	352.44	3.21E+02	66.51	4.19E+02	2.14
	16	438.36	434 -	442	438.54	4.94E+01	35.34	1.61E+02	3.50
	17	463.25	460 -	466	463.43	4.49E+01	31.15	1.44E+02	2.03
	18	510.89	505 -	515	511.05	1.69E+02	49.10	2.31E+02	2.68
	19	583.59	580 -	589	583.72	1.75E+02	44.60	1.82E+02	2.18
	20	596.40	589 -	603	596.53	5.15E+01	49.88	2.41E+02	11.75
	21	609.54	604 -	616	609.66	2.48E+02	59.53	3.04E+02	2.32
	22	665.34	663 -	670	665.45	2.87E+01	29.93	1.35E+02	3.76
	23	727.68	723 -	732	727.76	5.33E+01	36.50	1.59E+02	2.41
	24	795.44	791 -	800	795.50	3.14E+01	28.64	9.73E+01	3.77
	25	816.85	812 -	821	816.90	3.73E+01	28.98	9.54E+01	3.50
	26	859.84	855 -	866	859.88	5.04E+01	36.11	1.37E+02	2.38
	27	903.44	900 -	908	903.46	2.01E+01	23.49	7.38E+01	3.85
	28	911.47	908 -	916	911.49	1.05E+02	32.14	9.37E+01	2.83
	29	932.69	925 -	937	932.71	5.42E+01	32.34	9.77E+01	5.56
M	30	964.71	960 -	982	964.71	3.70E+01	25.76	5.72E+01	2.85
m	31	969.29	960 -	982	969.29	6.89E+01	28.56	6.31E+01	2.85
	32	1093.83	1089 -	1097	1093.79	3.31E+01	24.41	6.97E+01	3.10
M	33	1120.59	1114 -	1131	1120.54	5.92E+01	24.83	6.56E+01	2.38
m	34	1125.52	1114 -	1131	1125.46	2.00E+01	24.98	5.47E+01	2.67
	35	1238.55	1233 -	1245	1238.45	4.58E+01	36.32	1.24E+02	5.44
	36	1376.93	1374 -	1381	1376.79	1.96E+01	17.55	3.48E+01	1.96
	37	1384.50	1381 -	1389	1384.36	2.19E+01	13.14	1.23E+01	3.77
	38	1401.53	1397 -	1405	1401.38	1.42E+01	15.15	2.56E+01	4.79
	39	1460.54	1455 -	1464	1460.38	6.01E+02	51.17	3.13E+01	2.59
	40	1512.92	1505 -	1526	1512.73	2.75E+01	23.30	3.49E+01	6.13

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1538.01	1533 -	1542	1537.81	1.15E+01	9.00	5.00E+00	2.81
42	1660.53	1657 -	1663	1660.30	7.45E+00	8.28	7.09E+00	2.23
43	1763.88	1759 -	1766	1763.61	4.56E+01	15.10	6.73E+00	2.14
44	1809.01	1805 -	1812	1808.73	1.10E+01	6.63	0.00E+00	1.45
45	1877.81	1874 -	1880	1877.50	8.00E+00	5.66	0.00E+00	1.33
46	1903.82	1900 -	1906	1903.51	4.25E+00	6.02	3.50E+00	1.09
47	1944.63	1941 -	1947	1944.30	5.21E+00	6.34	3.57E+00	1.85
48	2025.74	2020 -	2029	2025.38	9.00E+00	10.30	1.00E+01	4.68
49	2103.46	2099 -	2106	2103.07	1.11E+01	8.25	3.85E+00	3.20
50	2117.51	2113 -	2120	2117.12	8.00E+00	7.48	4.00E+00	3.79
51	2203.68	2199 -	2207	2203.27	1.50E+01	7.75	0.00E+00	3.82
52	2326.03	2322 -	2328	2325.57	7.00E+00	5.29	0.00E+00	2.22
53	2613.54	2608 -	2616	2612.98	6.10E+01	15.62	0.00E+00	2.04

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 : 8/22/2017 6:28:12PM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	76.60	72 -	82	1.02E+03	152.57	2.54E+03	1.14E+02
	2	88.51	87 -	91	1.11E+02	79.35	1.30E+03	6.29E+01
	3	93.46	91 -	98	2.22E+02	106.43	1.65E+03	8.40E+01
	4	129.47	126 -	133	7.17E+01	83.81	1.12E+03	6.75E+01
	5	145.81	141 -	150	7.93E+01	97.44	1.30E+03	7.87E+01
M	6	179.90	178 -	190	4.66E+01	33.91	2.89E+02	2.79E+01
m	7	186.57	178 -	190	1.27E+02	54.16	5.34E+02	3.80E+01
	8	209.85	207 -	213	8.75E+01	60.62	6.09E+02	4.74E+01
	9	239.69	234 -	245	8.76E+02	104.08	9.11E+02	7.04E+01
	10	277.37	275 -	280	3.88E+01	43.65	3.48E+02	3.44E+01
	11	295.59	292 -	299	1.77E+02	58.34	4.51E+02	4.27E+01
	12	328.97	327 -	332	3.95E+01	37.40	2.47E+02	2.90E+01
M	13	338.61	335 -	344	1.26E+02	42.94	2.54E+02	2.62E+01
m	14	341.61	335 -	344	3.26E+01	40.84	2.28E+02	2.48E+01
	15	352.23	347 -	357	3.21E+02	66.51	4.19E+02	4.60E+01

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	16	438.36	434 -	442	4.94E+01	35.34	1.61E+02	2.67E+01
	17	463.25	460 -	466	4.49E+01	31.15	1.44E+02	2.31E+01
	18	510.89	505 -	515	1.69E+02	49.10	2.31E+02	3.42E+01
	19	583.59	580 -	589	1.75E+02	44.60	1.82E+02	2.95E+01
	20	596.40	589 -	603	5.15E+01	49.88	2.41E+02	1.62E+01
	21	609.54	604 -	616	2.48E+02	59.53	3.04E+02	4.15E+01
	22	665.34	663 -	670	2.87E+01	29.93	1.35E+02	2.30E+01
	23	727.68	723 -	732	5.33E+01	36.50	1.59E+02	2.75E+01
	24	795.44	791 -	800	3.14E+01	28.64	9.73E+01	2.17E+01
	25	816.85	812 -	821	3.73E+01	28.98	9.54E+01	2.16E+01
	26	859.84	855 -	866	5.04E+01	36.11	1.37E+02	2.73E+01
	27	903.44	900 -	908	2.01E+01	23.49	7.38E+01	1.79E+01
	28	911.47	908 -	916	1.05E+02	32.14	9.37E+01	2.03E+01
	29	932.69	925 -	937	5.42E+01	32.34	9.77E+01	2.37E+01
M	30	964.71	960 -	982	3.70E+01	25.76	5.72E+01	1.24E+01
m	31	969.29	960 -	982	6.89E+01	28.56	6.31E+01	1.31E+01
	32	1093.83	1089 -	1097	3.31E+01	24.41	6.97E+01	1.77E+01
M	33	1120.59	1114 -	1131	5.92E+01	24.83	6.56E+01	1.33E+01
m	34	1125.52	1114 -	1131	2.00E+01	24.98	5.47E+01	1.22E+01
	35	1238.55	1233 -	1245	4.58E+01	36.32	1.24E+02	2.77E+01
	36	1376.93	1374 -	1381	1.96E+01	17.55	3.48E+01	1.83E+01
	37	1384.50	1381 -	1389	2.19E+01	13.14	1.23E+01	7.59E+00
	38	1401.53	1397 -	1405	1.42E+01	15.15	2.56E+01	1.08E+01
	39	1460.54	1455 -	1464	6.01E+02	51.17	3.13E+01	1.20E+01
	40	1512.92	1505 -	1526	2.75E+01	23.30	3.49E+01	1.71E+01
	41	1538.01	1533 -	1542	1.15E+01	9.00	5.00E+00	4.86E+00
	42	1660.53	1657 -	1663	7.45E+00	8.28	7.09E+00	5.11E+00
	43	1763.88	1759 -	1766	4.56E+01	15.10	6.73E+00	5.54E+00
	44	1809.01	1805 -	1812	1.10E+01	6.63	0.00E+00	0.00E+00
	45	1877.81	1874 -	1880	8.00E+00	5.66	0.00E+00	0.00E+00
	46	1903.82	1900 -	1906	4.25E+00	6.02	3.50E+00	3.61E+00
	47	1944.63	1941 -	1947	5.21E+00	6.34	3.57E+00	3.62E+00
	48	2025.74	2020 -	2029	9.00E+00	10.30	1.00E+01	6.88E+00
	49	2103.46	2099 -	2106	1.11E+01	8.25	3.85E+00	4.00E+00
	50	2117.51	2113 -	2120	8.00E+00	7.48	4.00E+00	4.03E+00
	51	2203.68	2199 -	2207	1.50E+01	7.75	0.00E+00	0.00E+00
	52	2326.03	2322 -	2328	7.00E+00	5.29	0.00E+00	0.00E+00
	53	2613.54	2608 -	2616	6.10E+01	15.62	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 1707088-12

HTC-A03-S004-3642-01

PEAK WITH NID REPORT

Peak Analysis Performed on : 8/22/2017 6:28:12PM

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	76.60	72 -	82	76.90	1.02E+03	152.57	2.54E+03	.....
	2	88.51	87 -	91	88.80	1.11E+02	79.35	1.30E+03	LU-176
									CD-109
									SN-126
	3	93.46	91 -	98	93.76	2.22E+02	106.43	1.65E+03	GA-67
	4	129.47	126 -	133	129.75	7.17E+01	83.81	1.12E+03	.....
	5	145.81	141 -	150	146.08	7.93E+01	97.44	1.30E+03	CE-141
M	6	179.90	178 -	190	180.16	4.66E+01	33.91	2.89E+02	.....
m	7	186.57	178 -	190	186.84	1.27E+02	54.16	5.34E+02	RA-226
	8	209.85	207 -	213	210.11	8.75E+01	60.62	6.09E+02	CM-243
									GA-67
	9	239.69	234 -	245	239.94	8.76E+02	104.08	9.11E+02	.....
	10	277.37	275 -	280	277.61	3.88E+01	43.65	3.48E+02	CM-243
									NP-239
	11	295.59	292 -	299	295.81	1.77E+02	58.34	4.51E+02	PB-214
	12	328.97	327 -	332	329.19	3.95E+01	37.40	2.47E+02	LA-140
M	13	338.61	335 -	344	338.82	1.26E+02	42.94	2.54E+02	AC-228
m	14	341.61	335 -	344	341.82	3.26E+01	40.84	2.28E+02	.....
	15	352.23	347 -	357	352.44	3.21E+02	66.51	4.19E+02	PB-214
	16	438.36	434 -	442	438.54	4.94E+01	35.34	1.61E+02	BA-140
	17	463.25	460 -	466	463.43	4.49E+01	31.15	1.44E+02	SB-125
	18	510.89	505 -	515	511.05	1.69E+02	49.10	2.31E+02	.....
	19	583.59	580 -	589	583.72	1.75E+02	44.60	1.82E+02	TL-208
	20	596.40	589 -	603	596.53	5.15E+01	49.88	2.41E+02	.....
	21	609.54	604 -	616	609.66	2.48E+02	59.53	3.04E+02	BI-214
	22	665.34	663 -	670	665.45	2.87E+01	29.93	1.35E+02	CE-143
									SB-126
	23	727.68	723 -	732	727.76	5.33E+01	36.50	1.59E+02	BI-212
	24	795.44	791 -	800	795.50	3.14E+01	28.64	9.73E+01	CS-134
	25	816.85	812 -	821	816.90	3.73E+01	28.98	9.54E+01	LA-140
	26	859.84	855 -	866	859.88	5.04E+01	36.11	1.37E+02	TL-208
	27	903.44	900 -	908	903.46	2.01E+01	23.49	7.38E+01	.....
	28	911.47	908 -	916	911.49	1.05E+02	32.14	9.37E+01	TL-204
									AC-228
	29	932.69	925 -	937	932.71	5.42E+01	32.34	9.77E+01	.....
M	30	964.71	960 -	982	964.71	3.70E+01	25.76	5.72E+01	EU-152
m	31	969.29	960 -	982	969.29	6.89E+01	28.56	6.31E+01	AC-228
	32	1093.83	1089 -	1097	1093.79	3.31E+01	24.41	6.97E+01	LU-172
M	33	1120.59	1114 -	1131	1120.54	5.92E+01	24.83	6.56E+01	SC-46
									BI-214
									TA-182

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
m	34	1125.52	1114 -	1131	1125.46	2.00E+01	24.98	5.47E+01	.....
	35	1238.55	1233 -	1245	1238.45	4.58E+01	36.32	1.24E+02	CO-56
	36	1376.93	1374 -	1381	1376.79	1.96E+01	17.55	3.48E+01	.....
	37	1384.50	1381 -	1389	1384.36	2.19E+01	13.14	1.23E+01	AG-110M
	38	1401.53	1397 -	1405	1401.38	1.42E+01	15.15	2.56E+01	.....
	39	1460.54	1455 -	1464	1460.38	6.01E+02	51.17	3.13E+01	K-40
	40	1512.92	1505 -	1526	1512.73	2.75E+01	23.30	3.49E+01	.....
	41	1538.01	1533 -	1542	1537.81	1.15E+01	9.00	5.00E+00	.....
	42	1660.53	1657 -	1663	1660.30	7.45E+00	8.28	7.09E+00	.....
	43	1763.88	1759 -	1766	1763.61	4.56E+01	15.10	6.73E+00	BI-214
	44	1809.01	1805 -	1812	1808.73	1.10E+01	6.63	0.00E+00	AL-26
	45	1877.81	1874 -	1880	1877.50	8.00E+00	5.66	0.00E+00	.....
	46	1903.82	1900 -	1906	1903.51	4.25E+00	6.02	3.50E+00	.....
	47	1944.63	1941 -	1947	1944.30	5.21E+00	6.34	3.57E+00	.....
	48	2025.74	2020 -	2029	2025.38	9.00E+00	10.30	1.00E+01	.....
	49	2103.46	2099 -	2106	2103.07	1.11E+01	8.25	3.85E+00	.....
	50	2117.51	2113 -	2120	2117.12	8.00E+00	7.48	4.00E+00	.....
	51	2203.68	2199 -	2207	2203.27	1.50E+01	7.75	0.00E+00	BI-214
	52	2326.03	2322 -	2328	2325.57	7.00E+00	5.29	0.00E+00	.....
	53	2613.54	2608 -	2616	2612.98	6.10E+01	15.62	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 : 8/22/2017 6:28:12PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	76.60	1.02E+03	152.57	2.67E-02	2.05E-03
	2	88.51	1.11E+02	79.35	2.72E-02	2.26E-03
	3	93.46	2.22E+02	106.43	2.71E-02	2.24E-03
	4	129.47	7.17E+01	83.81	2.45E-02	2.04E-03
	5	145.81	7.93E+01	97.44	2.30E-02	1.85E-03
M	6	179.90	4.66E+01	33.91	2.01E-02	1.57E-03
m	7	186.57	1.27E+02	54.16	1.96E-02	1.55E-03
	8	209.85	8.75E+01	60.62	1.79E-02	1.45E-03
	9	239.69	8.76E+02	104.08	1.61E-02	1.34E-03
	10	277.37	3.88E+01	43.65	1.42E-02	1.19E-03

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	11	295.59	1.77E+02	58.34	1.35E-02	1.15E-03
	12	328.97	3.95E+01	37.40	1.23E-02	1.08E-03
M	13	338.61	1.26E+02	42.94	1.19E-02	1.06E-03
m	14	341.61	3.26E+01	40.84	1.18E-02	1.05E-03
	15	352.23	3.21E+02	66.51	1.15E-02	1.03E-03
	16	438.36	4.94E+01	35.34	9.48E-03	8.91E-04
	17	463.25	4.49E+01	31.15	9.02E-03	8.58E-04
	18	510.89	1.69E+02	49.10	8.26E-03	7.94E-04
	19	583.59	1.75E+02	44.60	7.32E-03	6.98E-04
	20	596.40	5.15E+01	49.88	7.18E-03	6.81E-04
	21	609.54	2.48E+02	59.53	7.04E-03	6.64E-04
	22	665.34	2.87E+01	29.93	6.51E-03	5.91E-04
	23	727.68	5.33E+01	36.50	6.01E-03	5.36E-04
	24	795.44	3.14E+01	28.64	5.55E-03	4.77E-04
	25	816.85	3.73E+01	28.98	5.42E-03	4.58E-04
	26	859.84	5.04E+01	36.11	5.18E-03	4.20E-04
	27	903.44	2.01E+01	23.49	4.96E-03	3.85E-04
	28	911.47	1.05E+02	32.14	4.92E-03	3.84E-04
	29	932.69	5.42E+01	32.34	4.82E-03	3.80E-04
M	30	964.71	3.70E+01	25.76	4.68E-03	3.75E-04
m	31	969.29	6.89E+01	28.56	4.66E-03	3.74E-04
	32	1093.83	3.31E+01	24.41	4.20E-03	3.54E-04
M	33	1120.59	5.92E+01	24.83	4.12E-03	3.50E-04
m	34	1125.52	2.00E+01	24.98	4.10E-03	3.49E-04
	35	1238.55	4.58E+01	36.32	3.78E-03	3.22E-04
	36	1376.93	1.96E+01	17.55	3.47E-03	2.88E-04
	37	1384.50	2.19E+01	13.14	3.45E-03	2.87E-04
	38	1401.53	1.42E+01	15.15	3.42E-03	2.85E-04
	39	1460.54	6.01E+02	51.17	3.31E-03	2.75E-04
	40	1512.92	2.75E+01	23.30	3.22E-03	2.67E-04
	41	1538.01	1.15E+01	9.00	3.18E-03	2.63E-04
	42	1660.53	7.45E+00	8.28	3.00E-03	2.43E-04
	43	1763.88	4.56E+01	15.10	2.87E-03	2.27E-04
	44	1809.01	1.10E+01	6.63	2.81E-03	2.19E-04
	45	1877.81	8.00E+00	5.66	2.74E-03	2.15E-04
	46	1903.82	4.25E+00	6.02	2.71E-03	2.15E-04
	47	1944.63	5.21E+00	6.34	2.67E-03	2.15E-04
	48	2025.74	9.00E+00	10.30	2.60E-03	2.15E-04
	49	2103.46	1.11E+01	8.25	2.54E-03	2.15E-04
	50	2117.51	8.00E+00	7.48	2.53E-03	2.15E-04
	51	2203.68	1.50E+01	7.75	2.46E-03	2.15E-04
	52	2326.03	7.00E+00	5.29	2.39E-03	2.15E-04
	53	2613.54	6.10E+01	15.62	2.24E-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

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/22/2017 6:28:12PM

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	76.60	1.02E+03	152.57			1.02E+03	1.53E+02
	2	88.51	1.11E+02	79.35			1.11E+02	7.93E+01
	3	93.46	2.22E+02	106.43	7.98E+01	7.31E+00	1.42E+02	1.07E+02
	4	129.47	7.17E+01	83.81			7.17E+01	8.38E+01
	5	145.81	7.93E+01	97.44			7.93E+01	9.74E+01
M	6	179.90	4.66E+01	33.91			4.66E+01	3.39E+01
m	7	186.57	1.27E+02	54.16	3.06E+01	5.82E+00	9.59E+01	5.45E+01
	8	209.85	8.75E+01	60.62			8.75E+01	6.06E+01
	9	239.69	8.76E+02	104.08	1.40E+01	2.71E+00	8.62E+02	1.04E+02
	10	277.37	3.88E+01	43.65			3.88E+01	4.36E+01
	11	295.59	1.77E+02	58.34			1.77E+02	5.83E+01
	12	328.97	3.95E+01	37.40			3.95E+01	3.74E+01
M	13	338.61	1.26E+02	42.94			1.26E+02	4.29E+01
m	14	341.61	3.26E+01	40.84			3.26E+01	4.08E+01
	15	352.23	3.21E+02	66.51	6.53E+00	4.43E+00	3.15E+02	6.67E+01
	16	438.36	4.94E+01	35.34			4.94E+01	3.53E+01
	17	463.25	4.49E+01	31.15			4.49E+01	3.11E+01
	18	510.89	1.69E+02	49.10	5.21E+01	4.74E+00	1.17E+02	4.93E+01
	19	583.59	1.75E+02	44.60			1.75E+02	4.46E+01
	20	596.40	5.15E+01	49.88			5.15E+01	4.99E+01
	21	609.54	2.48E+02	59.53	3.25E+00	2.97E+00	2.45E+02	5.96E+01
	22	665.34	2.87E+01	29.93			2.87E+01	2.99E+01
	23	727.68	5.33E+01	36.50			5.33E+01	3.65E+01
	24	795.44	3.14E+01	28.64	0.00E+00	0.00E+00	3.14E+01	2.86E+01
	25	816.85	3.73E+01	28.98			3.73E+01	2.90E+01
	26	859.84	5.04E+01	36.11			5.04E+01	3.61E+01
	27	903.44	2.01E+01	23.49			2.01E+01	2.35E+01
	28	911.47	1.05E+02	32.14	2.85E+00	2.76E+00	1.02E+02	3.23E+01
	29	932.69	5.42E+01	32.34			5.42E+01	3.23E+01
M	30	964.71	3.70E+01	25.76			3.70E+01	2.58E+01
m	31	969.29	6.89E+01	28.56			6.89E+01	2.86E+01
	32	1093.83	3.31E+01	24.41			3.31E+01	2.44E+01
M	33	1120.59	5.92E+01	24.83			5.92E+01	2.48E+01
m	34	1125.52	2.00E+01	24.98			2.00E+01	2.50E+01
	35	1238.55	4.58E+01	36.32			4.58E+01	3.63E+01
	36	1376.93	1.96E+01	17.55			1.96E+01	1.75E+01
	37	1384.50	2.19E+01	13.14			2.19E+01	1.31E+01
	38	1401.53	1.42E+01	15.15			1.42E+01	1.51E+01
	39	1460.54	6.01E+02	51.17	1.00E+00	1.77E+00	6.00E+02	5.12E+01
	40	1512.92	2.75E+01	23.30			2.75E+01	2.33E+01
	41	1538.01	1.15E+01	9.00			1.15E+01	9.00E+00
	42	1660.53	7.45E+00	8.28			7.45E+00	8.28E+00
	43	1763.88	4.56E+01	15.10			4.56E+01	1.51E+01
	44	1809.01	1.10E+01	6.63			1.10E+01	6.63E+00

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
45	1877.81	8.00E+00	5.66			8.00E+00	5.66E+00
46	1903.82	4.25E+00	6.02			4.25E+00	6.02E+00
47	1944.63	5.21E+00	6.34			5.21E+00	6.34E+00
48	2025.74	9.00E+00	10.30			9.00E+00	1.03E+01
49	2103.46	1.11E+01	8.25			1.11E+01	8.25E+00
50	2117.51	8.00E+00	7.48			8.00E+00	7.48E+00
51	2203.68	1.50E+01	7.75			1.50E+01	7.75E+00
52	2326.03	7.00E+00	5.29			7.00E+00	5.29E+00
53	2613.54	6.10E+01	15.62			6.10E+01	1.56E+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 : 8/22/2017 6:28:12PM

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	76.60	1.02E+03	152.57			1.02E+03	1.53E+02
	2	88.51	1.11E+02	79.35			1.11E+02	7.93E+01
	3	93.46	2.22E+02	106.43	7.98E+01	7.31E+00	1.42E+02	1.07E+02
	4	129.47	7.17E+01	83.81			7.17E+01	8.38E+01
	5	145.81	7.93E+01	97.44			7.93E+01	9.74E+01
M	6	179.90	4.66E+01	33.91			4.66E+01	3.39E+01
m	7	186.57	1.27E+02	54.16	3.06E+01	5.82E+00	9.59E+01	5.45E+01
	8	209.85	8.75E+01	60.62			8.75E+01	6.06E+01
	9	239.69	8.76E+02	104.08	1.40E+01	2.71E+00	8.62E+02	1.04E+02
	10	277.37	3.88E+01	43.65			3.88E+01	4.36E+01
	11	295.59	1.77E+02	58.34			1.77E+02	5.83E+01
	12	328.97	3.95E+01	37.40			3.95E+01	3.74E+01
M	13	338.61	1.26E+02	42.94			1.26E+02	4.29E+01
m	14	341.61	3.26E+01	40.84			3.26E+01	4.08E+01
	15	352.23	3.21E+02	66.51	6.53E+00	4.43E+00	3.15E+02	6.67E+01
	16	438.36	4.94E+01	35.34			4.94E+01	3.53E+01
	17	463.25	4.49E+01	31.15			4.49E+01	3.11E+01
	18	510.89	1.69E+02	49.10	5.21E+01	4.74E+00	1.17E+02	4.93E+01
	19	583.59	1.75E+02	44.60			1.75E+02	4.46E+01

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	20	596.40	5.15E+01	49.88			5.15E+01	4.99E+01
	21	609.54	2.48E+02	59.53	3.25E+00	2.97E+00	2.45E+02	5.96E+01
	22	665.34	2.87E+01	29.93			2.87E+01	2.99E+01
	23	727.68	5.33E+01	36.50			5.33E+01	3.65E+01
	24	795.44	3.14E+01	28.64	0.00E+00	0.00E+00	3.14E+01	2.86E+01
	25	816.85	3.73E+01	28.98			3.73E+01	2.90E+01
	26	859.84	5.04E+01	36.11			5.04E+01	3.61E+01
	27	903.44	2.01E+01	23.49			2.01E+01	2.35E+01
	28	911.47	1.05E+02	32.14	2.85E+00	2.76E+00	1.02E+02	3.23E+01
	29	932.69	5.42E+01	32.34			5.42E+01	3.23E+01
M	30	964.71	3.70E+01	25.76			3.70E+01	2.58E+01
m	31	969.29	6.89E+01	28.56			6.89E+01	2.86E+01
	32	1093.83	3.31E+01	24.41			3.31E+01	2.44E+01
M	33	1120.59	5.92E+01	24.83			5.92E+01	2.48E+01
m	34	1125.52	2.00E+01	24.98			2.00E+01	2.50E+01
	35	1238.55	4.58E+01	36.32			4.58E+01	3.63E+01
	36	1376.93	1.96E+01	17.55			1.96E+01	1.75E+01
	37	1384.50	2.19E+01	13.14			2.19E+01	1.31E+01
	38	1401.53	1.42E+01	15.15			1.42E+01	1.51E+01
	39	1460.54	6.01E+02	51.17	1.00E+00	1.77E+00	6.00E+02	5.12E+01
	40	1512.92	2.75E+01	23.30			2.75E+01	2.33E+01
	41	1538.01	1.15E+01	9.00			1.15E+01	9.00E+00
	42	1660.53	7.45E+00	8.28			7.45E+00	8.28E+00
	43	1763.88	4.56E+01	15.10			4.56E+01	1.51E+01
	44	1809.01	1.10E+01	6.63			1.10E+01	6.63E+00
	45	1877.81	8.00E+00	5.66			8.00E+00	5.66E+00
	46	1903.82	4.25E+00	6.02			4.25E+00	6.02E+00
	47	1944.63	5.21E+00	6.34			5.21E+00	6.34E+00
	48	2025.74	9.00E+00	10.30			9.00E+00	1.03E+01
	49	2103.46	1.11E+01	8.25			1.11E+01	8.25E+00
	50	2117.51	8.00E+00	7.48			8.00E+00	7.48E+00
	51	2203.68	1.50E+01	7.75			1.50E+01	7.75E+00
	52	2326.03	7.00E+00	5.29			7.00E+00	5.29E+00
	53	2613.54	6.10E+01	15.62			6.10E+01	1.56E+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 1707088-12

HTC-A03-S004-3642-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
AL-26	0.979	1808.65	*	99.76	4.28E-02	2.60E-02
K-40	0.989	1460.81	*	10.67	1.86E+01	2.24E+00
CD-109	0.965	88.03	*	3.72	1.40E+00	1.01E+00
SN-126	0.869	87.57	*	37.00	1.21E-01	8.68E-02
CE-141	0.932	145.44	*	48.40	6.75E-01	9.12E-01
TL-208	0.394	583.14	*	30.22	8.64E-01	2.35E-01
		860.37	*	4.48	2.37E+00	1.71E+00
		2614.66		35.85		
BI-212	0.739	727.17	*	11.80	8.22E-01	5.67E-01
		1620.62		2.75		
BI-214	0.978	609.31	*	46.30	8.19E-01	2.14E-01
		1120.29	*	15.10	1.04E+00	4.45E-01
		1764.49	*	15.80	1.10E+00	3.74E-01
		2204.22	*	4.98	1.33E+00	6.99E-01
PB-214	0.983	295.21	*	19.19	7.51E-01	2.55E-01
		351.92	*	37.19	8.02E-01	1.84E-01
RA-226	0.980	186.21	*	3.28	1.63E+00	3.13E+00
AC-228	0.983	338.32	*	11.40	1.01E+00	3.56E-01
		911.07	*	27.70	8.20E-01	2.66E-01
		969.11	*	16.60	9.72E-01	4.10E-01
CM-243	0.365	209.75	*	3.29	1.63E+00	1.14E+00
		228.14		10.60		
		277.60	*	14.00	2.14E-01	2.42E-01

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

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 6:28:12PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	76.60	2.84584E-01	7.45		
	3	93.46	3.93941E-02	37.61	Tol.	GA-67
	4	129.47	1.99244E-02	58.42		
M	6	179.90	1.29474E-02	36.37		
	9	239.69	2.39334E-01	6.04		
	12	328.97	1.09603E-02	47.40	Tol.	LA-140

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	14	341.61	9.05556E-03	62.64		
	16	438.36	1.37179E-02	35.78	D-Esc	
	17	463.25	1.24751E-02	34.68	Sum	
	18	510.89	3.25869E-02	21.02		
	20	596.40	1.43152E-02	48.39		
	22	665.34	7.97743E-03	52.11	Tol.	CE-143
	24	795.44	8.71528E-03	45.63	Sum	
	25	816.85	1.03595E-02	38.86	Sum	
	27	903.44	5.57749E-03	58.51		
	29	932.69	1.50458E-02	29.85		
M	30	964.71	1.02783E-02	34.81	Tol.	EU-152
	32	1093.83	9.20752E-03	36.83	Tol.	LU-172
m	34	1125.52	5.54673E-03	62.55		
	35	1238.55	1.27315E-02	39.62	Tol.	CO-56
	36	1376.93	5.43919E-03	44.81		
	37	1384.50	6.07143E-03	30.07	Tol.	AG-110M
	38	1401.53	3.95062E-03	53.26		
	40	1512.92	7.65123E-03	42.30		
	41	1538.01	3.19444E-03	39.13		
	42	1660.53	2.07071E-03	55.51		
	45	1877.81	2.22222E-03	35.36		
	46	1903.82	1.18056E-03	70.83		
	47	1944.63	1.44841E-03	60.84		
	48	2025.74	2.50000E-03	57.20		
	49	2103.46	3.07692E-03	37.22	Sum	
	50	2117.51	2.22222E-03	46.77		
	52	2326.03	1.94444E-03	37.80		
	53	2613.54	1.69444E-02	12.80		

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

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
AL-26	0.97	1808.65	*	99.76	4.28E-02	2.60E-02
K-40	0.98	1460.81	*	10.67	1.86E+01	2.24E+00
CD-109	0.96	88.03	*	3.72	1.40E+00	1.01E+00
SN-126	0.86	87.57	*	37.00	1.21E-01	8.68E-02
CE-141	0.93	145.44	*	48.40	6.75E-01	9.12E-01
TL-208	0.39	583.14	*	30.22	8.64E-01	2.35E-01
		860.37	*	4.48	2.37E+00	1.71E+00
		2614.66		35.85		
BI-212	0.73	727.17	*	11.80	8.22E-01	5.67E-01
		1620.62		2.75		
BI-214	0.97	609.31	*	46.30	8.19E-01	2.14E-01
		1120.29	*	15.10	1.04E+00	4.45E-01
		1764.49	*	15.80	1.10E+00	3.74E-01
		2204.22	*	4.98	1.33E+00	6.99E-01
PB-214	0.98	295.21	*	19.19	7.51E-01	2.55E-01
		351.92	*	37.19	8.02E-01	1.84E-01
RA-226	0.98	186.21	*	3.28	1.63E+00	3.13E+00
AC-228	0.98	338.32	*	11.40	1.01E+00	3.56E-01
		911.07	*	27.70	8.20E-01	2.66E-01
		969.11	*	16.60	9.72E-01	4.10E-01
CM-243	0.36	209.75	*	3.29	1.63E+00	1.14E+00
		228.14		10.60		
		277.60	*	14.00	2.14E-01	2.42E-01

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

INTERFERENCE CORRECTED REPORT

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	AL-26	0.979	4.28E-02	2.60E-02	
	K-40	0.989	1.86E+01	2.24E+00	
?	CD-109	0.965	1.40E+00	1.01E+00	
?	SN-126	0.869	1.21E-01	8.68E-02	

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
CE-141	0.932	6.75E-01	9.12E-01	
TL-208	0.394	8.92E-01	2.33E-01	
BI-212	0.739	8.22E-01	5.67E-01	
BI-214	0.978	9.35E-01	1.67E-01	
PB-214	0.983	7.84E-01	1.49E-01	
RA-226	0.980	1.63E+00	3.13E+00	
AC-228	0.983	9.05E-01	1.89E-01	
CM-243	0.365	2.75E-01	2.37E-01	

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

Errors quoted at 2.000sigma

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 6:28:12PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	76.60	2.84584E-01	7.45		
	3	93.46	3.93941E-02	37.61	Tol.	GA-67
	4	129.47	1.99244E-02	58.42		
M	6	179.90	1.29474E-02	36.37		
	9	239.69	2.39334E-01	6.04		
	12	328.97	1.09603E-02	47.40	Tol.	LA-140
m	14	341.61	9.05556E-03	62.64		
	16	438.36	1.37179E-02	35.78	D-Esc	
	17	463.25	1.24751E-02	34.68	Sum	
	18	510.89	3.25869E-02	21.02		
	20	596.40	1.43152E-02	48.39		
	22	665.34	7.97743E-03	52.11	Tol.	CE-143
	24	795.44	8.71528E-03	45.63	Sum	
	25	816.85	1.03595E-02	38.86	Sum	
	27	903.44	5.57749E-03	58.51		
	29	932.69	1.50458E-02	29.85		
M	30	964.71	1.02783E-02	34.81	Tol.	EU-152
	32	1093.83	9.20752E-03	36.83	Tol.	LU-172
m	34	1125.52	5.54673E-03	62.55		
	35	1238.55	1.27315E-02	39.62	Tol.	CO-56
	36	1376.93	5.43919E-03	44.81		
	37	1384.50	6.07143E-03	30.07	Tol.	AG-110M
	38	1401.53	3.95062E-03	53.26		
	40	1512.92	7.65123E-03	42.30		
	41	1538.01	3.19444E-03	39.13		
	42	1660.53	2.07071E-03	55.51		
	45	1877.81	2.22222E-03	35.36		
	46	1903.82	1.18056E-03	70.83		
	47	1944.63	1.44841E-03	60.84		
	48	2025.74	2.50000E-03	57.20		
	49	2103.46	3.07692E-03	37.22	Sum	
	50	2117.51	2.22222E-03	46.77		
	52	2326.03	1.94444E-03	37.80		
	53	2613.54	1.69444E-02	12.80		

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

NUCLIDE MDA REPORT

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

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		BE-7	477.59		10.42	-4.94E-01	2.05E+00	2.05E+00
+		NA-22	1274.54		99.94	6.27E-03	9.24E-02	9.24E-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	4.28E-02	1.05E-02	1.05E-02
+		K-40	1460.81	*	10.67	1.86E+01	8.38E-01	8.38E-01
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	-2.74E-02	5.33E-02	5.33E-02
			78.34		96.00	2.01E-01		7.04E-02
+		SC-46	889.25		99.98	-5.78E-02	1.63E-01	1.63E-01
			1120.51		99.99	2.64E-01		3.01E-01
+		V-48	983.52		99.98	-1.56E-01	6.74E+00	6.74E+00
			1312.10		97.50	2.19E+00		7.73E+00
+		CR-51	320.08		9.83	-1.94E-01	6.88E+00	6.88E+00
+		MN-54	834.83		99.97	-3.28E-02	8.99E-02	8.99E-02
+		CO-56	846.75		99.96	2.65E-02	1.77E-01	1.77E-01
			1037.75		14.03	-4.82E-01		1.42E+00
			1238.25		67.00	3.55E-01		4.55E-01
			1771.40		15.51	-6.38E-01		1.00E+00
			2598.48		16.90	3.51E-01		9.21E-01
+		CO-57	122.06		85.51	9.13E-03	6.06E-02	6.06E-02
			136.48		10.60	-1.79E-01		4.83E-01
+		CO-58	810.76		99.40	-6.79E-03	2.07E-01	2.07E-01
+		FE-59	1099.22		56.50	-1.18E-01	7.08E-01	7.08E-01
			1291.56		43.20	2.52E-01		1.03E+00
+		CO-60	1173.22		100.00	4.11E-02	8.55E-02	1.10E-01
			1332.49		100.00	-8.95E-03		8.55E-02
+		ZN-65	1115.52		50.75	6.94E-03	2.60E-01	2.60E-01
+		GA-67	93.31		35.70	6.45E+08	3.34E+08	3.34E+08
			208.95		2.24	1.34E+09		5.78E+09
			300.22		16.00	3.49E+08		8.83E+08
+		SE-75	121.11		16.70	1.39E-01	1.22E-01	4.38E-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	1.22E-01
		264.65		59.80	-9.44E-02		1.60E-01
		279.53		25.20	-5.89E-02		4.11E-01
		400.65		11.40	2.29E-01		9.31E-01
+	RB-82	776.52		13.00	-4.21E+00	8.33E+00	8.33E+00
+	RB-83	520.41		46.00	-3.24E-02	3.00E-01	3.00E-01
		529.64		30.30	-9.67E-02		4.87E-01
		552.65		16.40	-1.08E-01		8.67E-01
+	KR-85	513.99		0.43	-3.29E+00	2.06E+01	2.06E+01
+	SR-85	513.99		99.27	-4.18E-02	2.62E-01	2.62E-01
+	Y-88	898.02		93.40	-6.98E-03	1.35E-01	1.35E-01
		1836.01		99.38	-5.57E-03		1.49E-01
+	MO-93	263.06		56.72	-9.16E-03	6.92E-02	9.51E-02
		684.67		99.68	1.60E-03		6.92E-02
		1477.11		99.08	1.88E-02		7.29E-02
+	NB-93M	16.57		9.43	-1.27E+00	6.08E+01	6.08E+01
+	NB-94	702.63		100.00	2.32E-02	8.04E-02	8.04E-02
		871.10		100.00	3.16E-02		8.20E-02
+	NB-95	765.79		99.81	1.14E-01	6.52E-01	6.52E-01
+	NB-95M	235.69		25.00	3.26E+07	9.58E+07	9.58E+07
+	ZR-95	724.18		43.70	2.56E-02	4.01E-01	5.57E-01
		756.72		55.30	-4.59E-02		4.01E-01
+	MO-99	181.06		6.20	1.83E+10	6.83E+10	9.23E+10
		739.58		12.80	-5.90E+10		6.83E+10
		778.00		4.50	-3.62E+10		1.90E+11
+	RU-103	497.08		89.00	-2.91E-02	3.90E-01	3.90E-01
+	RU-106	621.84		9.80	-2.05E-01	8.07E-01	8.07E-01
+	AG-108M	433.93		89.90	-1.00E-03	5.86E-02	5.86E-02
		614.37		90.40	-2.06E-01		9.96E-02
		722.95		90.50	-3.48E-04		7.75E-02
+	CD-109	88.03	*	3.72	1.40E+00	1.62E+00	1.62E+00
+	AG-110M	657.75		93.14	7.05E-02	1.00E-01	1.00E-01
		677.61		10.53	2.59E-01		9.17E-01
		706.67		16.46	4.02E-01		6.61E-01
		763.93		21.98	-4.01E-02		5.10E-01
		884.67		71.63	6.36E-02		1.45E-01
		1384.27		23.94	2.54E-01		4.54E-01
+	CD-113M	263.70		0.02	-4.32E+01	2.32E+02	2.32E+02
+	SN-113	255.12		1.93	4.99E-01	1.73E-01	5.10E+00
		391.69		64.90	9.03E-04		1.73E-01
+	TE123M	159.00		84.10	-2.38E-02	8.76E-02	8.76E-02
+	SB-124	602.71		97.87	-7.54E-02	2.40E-01	2.40E-01
		645.85		7.26	-6.95E-01		2.91E+00
		722.78		11.10	-9.10E-03		2.03E+00
		1691.02		49.00	6.60E-03		4.39E-01
+	I-125	35.49		6.49	-1.17E+00	5.37E+00	5.37E+00
+	SB-125	176.33		6.89	6.47E-02	2.24E-01	6.56E-01
		427.89		29.33	1.21E-01		2.24E-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	2.90E-01	2.24E-01	6.92E-01
		600.56		17.80	2.53E-02		4.16E-01
		635.90		11.32	-1.53E-02		6.31E-01
+	SB-126	414.70		83.30	-1.44E+01	2.04E+01	2.04E+01
		666.33		99.60	1.24E+01		2.25E+01
		695.00		99.60	-3.83E+00		2.23E+01
		720.50		53.80	9.72E+00		3.60E+01
+	SN-126	87.57	*	37.00	1.21E-01	1.40E-01	1.40E-01
+	SB-127	473.00		25.00	-8.73E+05	1.60E+07	1.95E+07
		685.20		35.70	3.70E+05		1.60E+07
		783.80		14.70	2.55E+07		4.66E+07
+	I-129	29.78		57.00	-2.49E-01	3.21E-01	3.21E-01
		33.60		13.20	1.48E-01		9.83E-01
		39.58		7.52	-2.52E-01		1.08E+00
+	I-131	284.30		6.05	5.78E+03	4.18E+02	6.07E+03
		364.48		81.20	-1.02E+02		4.18E+02
		636.97		7.26	-2.68E+03		5.61E+03
		722.89		1.80	-1.09E+02		2.43E+04
+	TE-132	49.72		13.10	-2.48E+08	1.40E+08	1.13E+09
		228.16		88.00	-7.15E+07		1.40E+08
+	BA-133	81.00		33.00	-5.03E-01	1.36E-01	1.54E-01
		302.84		17.80	1.85E-01		3.34E-01
		356.01		60.00	9.21E-03		1.36E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	-2.83E+05	8.65E+04	8.65E+04
+	CS-134	563.23		8.38	-3.79E-01	8.81E-02	8.29E-01
		569.32		15.43	3.15E-01		4.99E-01
		604.70		97.60	-5.36E-01		8.81E-02
		795.84		85.40	9.20E-02		1.03E-01
		801.93		8.73	2.39E-01		8.71E-01
+	CS-135	268.24		16.00	1.01E-01	3.65E-01	3.65E-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	9.34E+00	1.61E+01	1.17E+02
		163.89		4.61	1.31E+01		1.85E+02
		176.55		13.56	6.39E+00		6.48E+01
		273.65		12.66	2.90E+01		9.90E+01
		340.57		48.50	5.73E+01		3.25E+01
		818.50		99.70	7.63E+00		1.61E+01
		1048.07		79.60	-1.48E+00		2.11E+01
		1235.34		19.70	2.24E+01		1.24E+02
+	CS-137	661.65		85.12	-1.28E-02	8.44E-02	8.44E-02
+	LA-138	788.74		34.00	-1.55E-02	1.13E-01	1.99E-01
		1435.80		66.00	-9.86E-03		1.13E-01
+	CE-139	165.85		80.35	-2.05E-02	8.36E-02	8.36E-02
+	BA-140	162.64		6.70	7.35E+01	6.47E+01	1.52E+02
		304.84		4.50	-9.77E+00		2.99E+02
		423.70		3.20	-1.96E+02		4.46E+02

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
		BA-140	437.55		2.00	7.02E+02	6.47E+01	7.29E+02
			537.32		25.00	1.08E+01		6.47E+01
+		LA-140	328.77		20.50	1.21E+01	1.97E+01	7.06E+01
			487.03		45.50	2.39E+01		3.38E+01
			815.85		23.50	6.49E+01		8.61E+01
			1596.49		95.49	1.24E+00		1.97E+01
+		CE-141	145.44	*	48.40	6.75E-01	1.36E+00	1.36E+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	1.13E-01	4.78E-01	4.78E-01
+		PM-144	476.78		42.00	-4.70E-02	8.72E-02	1.66E-01
			618.01		98.60	-2.67E-03		8.72E-02
			696.49		99.49	7.23E-02		9.99E-02
+		PM-145	36.85		21.70	-1.87E-01	2.40E-01	4.55E-01
			37.36		39.70	-9.01E-02		2.40E-01
			42.30		15.10	-4.14E-01		4.83E-01
			72.40		2.31	-6.81E+00		2.46E+00
+		PM-146	453.90		39.94	5.07E-02	1.63E-01	1.63E-01
			735.90		14.01	1.13E-01		5.54E-01
			747.13		13.10	3.63E-02		5.79E-01
+		ND-147	91.11		28.90	-6.16E+01	1.10E+02	1.10E+02
			531.02		13.10	1.40E+02		3.12E+02
+		PM-149	285.90		3.10	1.09E+14	1.18E+14	1.18E+14
+		EU-152	121.78		20.50	2.98E-02	1.98E-01	1.98E-01
			244.69		5.40	-3.57E-01		1.20E+00
			344.27		19.13	2.35E-02		2.97E-01
			778.89		9.20	-2.35E-01		7.72E-01
			964.01		10.40	-4.82E-01		9.59E-01
			1085.78		7.22	3.63E-02		1.23E+00
			1112.02		9.60	4.68E-02		9.73E-01
			1407.95		14.94	1.09E-01		3.79E-01
+		GD-153	97.43		31.30	7.65E-03	1.67E-01	1.67E-01
			103.18		22.20	-7.19E-02		2.28E-01
+		EU-154	123.07		40.50	-7.04E-03	1.01E-01	1.01E-01
			723.30		19.70	-1.63E-03		3.64E-01
			873.19		11.50	4.76E-01		7.36E-01
			996.32		10.30	-9.21E-02		7.47E-01
			1004.76		17.90	2.01E-01		4.96E-01
			1274.45		35.50	1.67E-02		2.47E-01
+		EU-155	86.50		30.90	-1.85E-02	1.77E-01	1.77E-01
			105.30		20.70	3.44E-02		1.93E-01
+		EU-156	811.77		10.40	2.65E+00	7.56E+01	7.56E+01
			1153.47		7.20	-2.83E+01		1.27E+02
			1230.71		8.90	-3.19E+01		1.20E+02
+		HO-166M	184.41		72.60	4.47E-02	7.15E-02	7.15E-02
			280.45		29.60	-2.07E-02		1.93E-01
			410.94		11.10	2.01E-01		5.66E-01
			711.69		54.10	4.02E-02		1.31E-01

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TM-171	66.72		0.14	-3.94E+01	4.04E+01	4.04E+01
+	HF-172	67.35		5.31	-5.41E-01	3.97E-01	1.05E+00
		125.81		11.30	3.31E-02		3.97E-01
+	LU-172	181.53		20.60	-2.29E+03	5.54E+03	8.11E+03
		900.72		29.81	5.99E+02		8.85E+03
		1093.66		62.50	2.32E+03		5.54E+03
+	LU-173	100.72		5.24	2.68E-01	3.26E-01	8.52E-01
		272.11		21.20	1.74E-01		3.26E-01
+	HF-175	343.40		84.00	1.43E-02	1.82E-01	1.82E-01
+	LU-176	88.34		13.30	2.42E-01	5.30E-02	3.97E-01
		201.83		86.00	1.07E-02		5.30E-02
		306.78		94.00	-3.75E-02		5.62E-02
+	HF-181	133.02		41.70	1.31E-01	4.06E-01	5.24E-01
		345.85		17.20	1.36E-01		1.57E+00
		482.03		82.80	1.30E-01		4.06E-01
+	TA-182	67.75		41.20	-1.16E-01	2.25E-01	2.25E-01
		1121.30		34.90	3.60E-01		6.69E-01
		1189.05		16.23	-7.13E-02		1.22E+00
		1221.41		26.98	1.52E-01		6.96E-01
		1231.02		11.44	-4.50E-01		1.70E+00
+	IR-192	308.46		29.68	1.34E-01	3.26E-01	4.66E-01
		468.07		48.10	1.01E-01		3.26E-01
+	HG-203	279.19		77.30	-5.57E-02	3.38E-01	3.38E-01
+	TL-204	374.74		94.11	1.56E-02	6.35E-02	6.35E-02
		899.15		99.16	9.61E-03		7.13E-02
		911.74		91.10	2.74E-01		1.50E-01
+	BI-207	569.67		97.72	5.26E-02	7.53E-02	7.53E-02
		1063.62		74.90	-7.88E-02		1.20E-01
+	TL-208	583.14	*	30.22	8.64E-01	3.05E-01	3.05E-01
		860.37	*	4.48	2.37E+00		2.70E+00
		2614.66		35.85	0.00E+00		5.31E-01
+	BI-210M	262.00		45.00	-5.60E-02	1.15E-01	1.15E-01
		300.00		23.00	1.07E-01		2.71E-01
+	PB-210	46.50		4.25	1.99E-01	1.68E+00	1.68E+00
+	PB-211	404.84		2.90	-1.16E+00	2.07E+00	2.07E+00
		831.96		2.90	8.49E-01		2.44E+00
+	BI-212	727.17	*	11.80	8.22E-01	8.90E-01	8.90E-01
		1620.62		2.75	7.81E-01		2.70E+00
+	PB-212	238.63		44.60	1.04E+00	2.36E-01	2.36E-01
		300.09		3.41	7.22E-01		1.83E+00
+	BI-214	609.31	*	46.30	8.19E-01	2.41E-01	2.89E-01
		1120.29	*	15.10	1.04E+00		1.20E+00
		1764.49	*	15.80	1.10E+00		3.33E-01
		2204.22	*	4.98	1.33E+00		2.41E-01
+	PB-214	295.21	*	19.19	7.51E-01	2.43E-01	3.73E-01
		351.92	*	37.19	8.02E-01		2.43E-01
+	RN-219	401.80		6.50	-6.50E-01	8.83E-01	8.83E-01
+	RA-223	323.87		3.88	-4.56E-02	1.38E+00	1.38E+00

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	RA-224	240.98		3.95	1.47E+01	2.73E+00	2.73E+00
+	RA-225	40.00		31.00	-6.88E+00	2.94E+01	2.94E+01
+	RA-226	186.21	*	3.28	1.63E+00	2.84E+00	2.84E+00
+	TH-227	50.10		8.40	-1.66E-01	7.38E-01	7.55E-01
		236.00		11.50	2.51E-01		7.38E-01
		256.20		6.30	1.26E-01		8.47E-01
+	AC-228	338.32	*	11.40	1.01E+00	3.53E-01	6.96E-01
		911.07	*	27.70	8.20E-01		3.53E-01
		969.11	*	16.60	9.72E-01		1.07E+00
+	TH-230	48.44		16.90	2.28E-01	4.01E-01	4.01E-01
		62.85		4.60	7.19E-01		1.22E+00
		67.67		0.37	-6.98E+00		1.36E+01
+	PA-231	283.67		1.60	5.19E-02	2.54E+00	3.56E+00
		302.67		2.30	1.41E+00		2.54E+00
+	TH-231	25.64		14.70	1.34E+00	7.53E-01	2.44E+00
		84.21		6.40	-2.55E-01		7.53E-01
+	PA-233	311.98		38.60	-5.01E-01	1.79E+00	1.79E+00
+	PA-234	131.20		20.40	7.93E-02	2.13E-01	2.13E-01
		733.99		8.80	-9.28E-02		8.38E-01
		946.00		12.00	-4.22E-01		5.85E-01
+	PA-234M	1001.03		0.92	1.81E+00	9.23E+00	9.23E+00
+	TH-234	63.29		3.80	1.83E+00	1.47E+00	1.47E+00
+	U-235	143.76		10.50	-1.09E-03	4.17E-01	4.17E-01
		163.35		4.70	6.15E-02		8.71E-01
		205.31		4.70	-5.01E-02		1.10E+00
+	NP-237	86.50		12.60	-4.36E-02	4.17E-01	4.17E-01
+	NP-239	106.10		22.70	2.73E+11	1.53E+12	1.53E+12
		228.18		10.70	-2.30E+12		4.51E+12
		277.60		14.10	6.26E+11		3.66E+12
+	AM-241	59.54		35.90	-3.92E-02	1.53E-01	1.53E-01
+	AM-243	74.67		66.00	7.10E-02	1.03E-01	1.03E-01
+	CM-243	209.75	*	3.29	1.63E+00	3.95E-01	1.82E+00
		228.14		10.60	-2.59E-01		5.08E-01
		277.60	*	14.00	2.14E-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

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

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	2.05E+00	2.05E+00	-4.94E-01	9.65E-01
	NA-22	1274.54		99.94	9.24E-02	9.24E-02	6.27E-03	4.19E-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	1.05E-02	1.05E-02	4.28E-02	0.00E+00
+	K-40	1460.81	*	10.67	8.38E-01	8.38E-01	1.86E+01	3.77E-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	5.33E-02	5.33E-02	-2.74E-02	2.60E-02
		78.34		96.00	7.04E-02		2.01E-01	3.46E-02
	SC-46	889.25		99.98	1.63E-01	1.63E-01	-5.78E-02	7.48E-02
		1120.51		99.99	3.01E-01		2.64E-01	1.42E-01
	V-48	983.52		99.98	6.74E+00	6.74E+00	-1.56E-01	3.11E+00
		1312.10		97.50	7.73E+00		2.19E+00	3.53E+00
	CR-51	320.08		9.83	6.88E+00	6.88E+00	-1.94E-01	3.29E+00
	MN-54	834.83		99.97	8.99E-02	8.99E-02	-3.28E-02	4.15E-02
	CO-56	846.75		99.96	1.77E-01	1.77E-01	2.65E-02	8.19E-02
		1037.75		14.03	1.42E+00		-4.82E-01	6.51E-01
		1238.25		67.00	4.55E-01		3.55E-01	2.13E-01
		1771.40		15.51	1.00E+00		-6.38E-01	4.20E-01
		2598.48		16.90	9.21E-01		3.51E-01	3.65E-01
	CO-57	122.06		85.51	6.06E-02	6.06E-02	9.13E-03	2.94E-02
		136.48		10.60	4.83E-01		-1.79E-01	2.34E-01
	CO-58	810.76		99.40	2.07E-01	2.07E-01	-6.79E-03	9.63E-02
	FE-59	1099.22		56.50	7.08E-01	7.08E-01	-1.18E-01	3.24E-01
		1291.56		43.20	1.03E+00		2.52E-01	4.72E-01
	CO-60	1173.22		100.00	1.10E-01	8.55E-02	4.11E-02	5.11E-02
		1332.49		100.00	8.55E-02		-8.95E-03	3.84E-02
	ZN-65	1115.52		50.75	2.60E-01	2.60E-01	6.94E-03	1.21E-01
	GA-67	93.31		35.70	3.34E+08	3.34E+08	6.45E+08	1.64E+08
		208.95		2.24	5.78E+09		1.34E+09	2.81E+09
		300.22		16.00	8.83E+08		3.49E+08	4.26E+08
	SE-75	121.11		16.70	4.38E-01	1.22E-01	1.39E-01	2.13E-01
		136.00		59.20	1.22E-01		1.46E-02	5.94E-02
		264.65		59.80	1.60E-01		-9.44E-02	7.69E-02
		279.53		25.20	4.11E-01		-5.89E-02	1.98E-01
		400.65		11.40	9.31E-01		2.29E-01	4.43E-01
	RB-82	776.52		13.00	8.33E+00	8.33E+00	-4.21E+00	3.85E+00
	RB-83	520.41		46.00	3.00E-01	3.00E-01	-3.24E-02	1.41E-01
		529.64		30.30	4.87E-01		-9.67E-02	2.30E-01
		552.65		16.40	8.67E-01		-1.08E-01	4.07E-01
	KR-85	513.99		0.43	2.06E+01	2.06E+01	-3.29E+00	9.90E+00
	SR-85	513.99		99.27	2.62E-01	2.62E-01	-4.18E-02	1.26E-01

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	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	1.35E-01	1.35E-01	-6.98E-03	6.15E-02
		1836.01		99.38	1.49E-01		-5.57E-03	6.40E-02
	MO-93	263.06		56.72	9.51E-02	6.92E-02	-9.16E-03	4.58E-02
		684.67		99.68	6.92E-02		1.60E-03	3.22E-02
		1477.11		99.08	7.29E-02		1.88E-02	3.18E-02
	NB-93M	16.57		9.43	6.08E+01	6.08E+01	-1.27E+00	2.96E+01
	NB-94	702.63		100.00	8.04E-02	8.04E-02	2.32E-02	3.78E-02
		871.10		100.00	8.20E-02		3.16E-02	3.81E-02
	NB-95	765.79		99.81	6.52E-01	6.52E-01	1.14E-01	3.07E-01
	NB-95M	235.69		25.00	9.58E+07	9.58E+07	3.26E+07	4.69E+07
	ZR-95	724.18		43.70	5.57E-01	4.01E-01	2.56E-02	2.62E-01
		756.72		55.30	4.01E-01		-4.59E-02	1.87E-01
	MO-99	181.06		6.20	9.23E+10	6.83E+10	1.83E+10	4.47E+10
		739.58		12.80	6.83E+10		-5.90E+10	3.18E+10
		778.00		4.50	1.90E+11		-3.62E+10	8.79E+10
	RU-103	497.08		89.00	3.90E-01	3.90E-01	-2.91E-02	1.83E-01
	RU-106	621.84		9.80	8.07E-01	8.07E-01	-2.05E-01	3.77E-01
	AG-108M	433.93		89.90	5.86E-02	5.86E-02	-1.00E-03	2.76E-02
		614.37		90.40	9.96E-02		-2.06E-01	4.75E-02
		722.95		90.50	7.75E-02		-3.48E-04	3.61E-02
+	CD-109	88.03	*	3.72	1.62E+00	1.62E+00	1.40E+00	7.91E-01
	AG-110M	657.75		93.14	1.00E-01	1.00E-01	7.05E-02	4.70E-02
		677.61		10.53	9.17E-01		2.59E-01	4.30E-01
		706.67		16.46	6.61E-01		4.02E-01	3.11E-01
		763.93		21.98	5.10E-01		-4.01E-02	2.40E-01
		884.67		71.63	1.45E-01		6.36E-02	6.71E-02
		1384.27		23.94	4.54E-01		2.54E-01	2.03E-01
	CD-113M	263.70		0.02	2.32E+02	2.32E+02	-4.32E+01	1.12E+02
	SN-113	255.12		1.93	5.10E+00	1.73E-01	4.99E-01	2.46E+00
		391.69		64.90	1.73E-01		9.03E-04	8.25E-02
	TE123M	159.00		84.10	8.76E-02	8.76E-02	-2.38E-02	4.24E-02
	SB-124	602.71		97.87	2.40E-01	2.40E-01	-7.54E-02	1.13E-01
		645.85		7.26	2.91E+00		-6.95E-01	1.36E+00
		722.78		11.10	2.03E+00		-9.10E-03	9.43E-01
		1691.02		49.00	4.39E-01		6.60E-03	1.87E-01
	I-125	35.49		6.49	5.37E+00	5.37E+00	-1.17E+00	2.61E+00
	SB-125	176.33		6.89	6.56E-01	2.24E-01	6.47E-02	3.17E-01
		427.89		29.33	2.24E-01		1.21E-01	1.06E-01
		463.38		10.35	6.92E-01		2.90E-01	3.29E-01
		600.56		17.80	4.16E-01		2.53E-02	1.95E-01
		635.90		11.32	6.31E-01		-1.53E-02	2.95E-01
	SB-126	414.70		83.30	2.04E+01	2.04E+01	-1.44E+01	9.68E+00
		666.33		99.60	2.25E+01		1.24E+01	1.06E+01
		695.00		99.60	2.23E+01		-3.83E+00	1.05E+01
		720.50		53.80	3.60E+01		9.72E+00	1.67E+01
+	SN-126	87.57	*	37.00	1.40E-01	1.40E-01	1.21E-01	6.84E-02
	SB-127	473.00		25.00	1.95E+07	1.60E+07	-8.73E+05	9.21E+06
		685.20		35.70	1.60E+07		3.70E+05	7.43E+06
		783.80		14.70	4.66E+07		2.55E+07	2.18E+07
	I-129	29.78		57.00	3.21E-01	3.21E-01	-2.49E-01	1.56E-01
		33.60		13.20	9.83E-01		1.48E-01	4.78E-01
		39.58		7.52	1.08E+00		-2.52E-01	5.24E-01
	I-131	284.30		6.05	6.07E+03	4.18E+02	5.78E+03	2.93E+03

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	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	4.18E+02	4.18E+02	-1.02E+02	1.99E+02
		636.97		7.26	5.61E+03		-2.68E+03	2.62E+03
		722.89		1.80	2.43E+04		-1.09E+02	1.13E+04
	TE-132	49.72		13.10	1.13E+09	1.40E+08	-2.48E+08	5.51E+08
		228.16		88.00	1.40E+08		-7.15E+07	6.78E+07
	BA-133	81.00		33.00	1.54E-01	1.36E-01	-5.03E-01	7.52E-02
		302.84		17.80	3.34E-01		1.85E-01	1.61E-01
		356.01		60.00	1.36E-01		9.21E-03	6.56E-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	8.65E+04	8.65E+04	-2.83E+05	4.23E+04
	CS-134	563.23		8.38	8.29E-01	8.81E-02	-3.79E-01	3.89E-01
		569.32		15.43	4.99E-01		3.15E-01	2.35E-01
		604.70		97.60	8.81E-02		-5.36E-01	4.17E-02
		795.84		85.40	1.03E-01		9.20E-02	4.82E-02
		801.93		8.73	8.71E-01		2.39E-01	4.02E-01
	CS-135	268.24		16.00	3.65E-01	3.65E-01	1.01E-01	1.76E-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		0.00E+00	1.00E+20
	CS-136	153.22		7.46	1.17E+02	1.61E+01	9.34E+00	5.65E+01
		163.89		4.61	1.85E+02		1.31E+01	8.95E+01
		176.55		13.56	6.48E+01		6.39E+00	3.13E+01
		273.65		12.66	9.90E+01		2.90E+01	4.78E+01
		340.57		48.50	3.25E+01		5.73E+01	1.57E+01
		818.50		99.70	1.61E+01		7.63E+00	7.47E+00
		1048.07		79.60	2.11E+01		-1.48E+00	9.64E+00
		1235.34		19.70	1.24E+02		2.24E+01	5.79E+01
	CS-137	661.65		85.12	8.44E-02	8.44E-02	-1.28E-02	3.95E-02
	LA-138	788.74		34.00	1.99E-01	1.13E-01	-1.55E-02	9.17E-02
		1435.80		66.00	1.13E-01		-9.86E-03	5.00E-02
	CE-139	165.85		80.35	8.36E-02	8.36E-02	-2.05E-02	4.04E-02
	BA-140	162.64		6.70	1.52E+02	6.47E+01	7.35E+01	7.34E+01
		304.84		4.50	2.99E+02		-9.77E+00	1.44E+02
		423.70		3.20	4.46E+02		-1.96E+02	2.12E+02
		437.55		2.00	7.29E+02		7.02E+02	3.46E+02
		537.32		25.00	6.47E+01		1.08E+01	3.05E+01
	LA-140	328.77		20.50	7.06E+01	1.97E+01	1.21E+01	3.38E+01
		487.03		45.50	3.38E+01		2.39E+01	1.60E+01
		815.85		23.50	8.61E+01		6.49E+01	4.02E+01
		1596.49		95.49	1.97E+01		1.24E+00	8.63E+00
+	CE-141	145.44	*	48.40	1.36E+00	1.36E+00	6.75E-01	6.71E-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	4.78E-01	4.78E-01	1.13E-01	2.32E-01
	PM-144	476.78		42.00	1.66E-01	8.72E-02	-4.70E-02	7.79E-02
		618.01		98.60	8.72E-02		-2.67E-03	4.10E-02
		696.49		99.49	9.99E-02		7.23E-02	4.71E-02
	PM-145	36.85		21.70	4.55E-01	2.40E-01	-1.87E-01	2.21E-01
		37.36		39.70	2.40E-01		-9.01E-02	1.17E-01
		42.30		15.10	4.83E-01		-4.14E-01	2.35E-01
		72.40		2.31	2.46E+00		-6.81E+00	1.20E+00
	PM-146	453.90		39.94	1.63E-01	1.63E-01	5.07E-02	7.72E-02

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

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	5.54E-01	1.63E-01	1.13E-01	2.59E-01
	747.13	13.10	5.79E-01		3.63E-02	2.70E-01
ND-147	91.11	28.90	1.10E+02	1.10E+02	-6.16E+01	5.39E+01
	531.02	13.10	3.12E+02		1.40E+02	1.48E+02
PM-149	285.90	3.10	1.18E+14	1.18E+14	1.09E+14	5.67E+13
EU-152	121.78	20.50	1.98E-01	1.98E-01	2.98E-02	9.60E-02
	244.69	5.40	1.20E+00		-3.57E-01	5.82E-01
	344.27	19.13	2.97E-01		2.35E-02	1.42E-01
	778.89	9.20	7.72E-01		-2.35E-01	3.57E-01
	964.01	10.40	9.59E-01		-4.82E-01	4.49E-01
	1085.78	7.22	1.23E+00		3.63E-02	5.66E-01
	1112.02	9.60	9.73E-01		4.68E-02	4.49E-01
	1407.95	14.94	3.79E-01		1.09E-01	1.60E-01
GD-153	97.43	31.30	1.67E-01	1.67E-01	7.65E-03	8.10E-02
	103.18	22.20	2.28E-01		-7.19E-02	1.11E-01
EU-154	123.07	40.50	1.01E-01	1.01E-01	-7.04E-03	4.88E-02
	723.30	19.70	3.64E-01		-1.63E-03	1.69E-01
	873.19	11.50	7.36E-01		4.76E-01	3.42E-01
	996.32	10.30	7.47E-01		-9.21E-02	3.41E-01
	1004.76	17.90	4.96E-01		2.01E-01	2.29E-01
	1274.45	35.50	2.47E-01		1.67E-02	1.12E-01
EU-155	86.50	30.90	1.77E-01	1.77E-01	-1.85E-02	8.65E-02
	105.30	20.70	1.93E-01		3.44E-02	9.38E-02
EU-156	811.77	10.40	7.56E+01	7.56E+01	2.65E+00	3.51E+01
	1153.47	7.20	1.27E+02		-2.83E+01	5.81E+01
	1230.71	8.90	1.20E+02		-3.19E+01	5.57E+01
HO-166M	184.41	72.60	7.15E-02	7.15E-02	4.47E-02	3.47E-02
	280.45	29.60	1.93E-01		-2.07E-02	9.29E-02
	410.94	11.10	5.66E-01		2.01E-01	2.70E-01
	711.69	54.10	1.31E-01		4.02E-02	6.09E-02
TM-171	66.72	0.14	4.04E+01	4.04E+01	-3.94E+01	1.97E+01
HF-172	67.35	5.31	1.05E+00	3.97E-01	-5.41E-01	5.13E-01
	125.81	11.30	3.97E-01		3.31E-02	1.92E-01
LU-172	181.53	20.60	8.11E+03	5.54E+03	-2.29E+03	3.93E+03
	900.72	29.81	8.85E+03		5.99E+02	4.07E+03
	1093.66	62.50	5.54E+03		2.32E+03	2.57E+03
LU-173	100.72	5.24	8.52E-01	3.26E-01	2.68E-01	4.14E-01
	272.11	21.20	3.26E-01		1.74E-01	1.58E-01
HF-175	343.40	84.00	1.82E-01	1.82E-01	1.43E-02	8.68E-02
LU-176	88.34	13.30	3.97E-01	5.30E-02	2.42E-01	1.94E-01
	201.83	86.00	5.30E-02		1.07E-02	2.55E-02
	306.78	94.00	5.62E-02		-3.75E-02	2.69E-02
HF-181	133.02	41.70	5.24E-01	4.06E-01	1.31E-01	2.54E-01
	345.85	17.20	1.57E+00		1.36E-01	7.48E-01
	482.03	82.80	4.06E-01		1.30E-01	1.92E-01
TA-182	67.75	41.20	2.25E-01	2.25E-01	-1.16E-01	1.10E-01
	1121.30	34.90	6.69E-01		3.60E-01	3.15E-01
	1189.05	16.23	1.22E+00		-7.13E-02	5.67E-01
	1221.41	26.98	6.96E-01		1.52E-01	3.21E-01
	1231.02	11.44	1.70E+00		-4.50E-01	7.85E-01
IR-192	308.46	29.68	4.66E-01	3.26E-01	1.34E-01	2.23E-01
	468.07	48.10	3.26E-01		1.01E-01	1.54E-01
HG-203	279.19	77.30	3.38E-01	3.38E-01	-5.57E-02	1.63E-01

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	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	6.35E-02	6.35E-02	1.56E-02	3.02E-02
		899.15		99.16	7.13E-02		9.61E-03	3.25E-02
		911.74		91.10	1.50E-01		2.74E-01	7.13E-02
	BI-207	569.67		97.72	7.53E-02	7.53E-02	5.26E-02	3.56E-02
		1063.62		74.90	1.20E-01		-7.88E-02	5.55E-02
+	TL-208	583.14	*	30.22	3.05E-01	3.05E-01	8.64E-01	1.46E-01
		860.37	*	4.48	2.70E+00		2.37E+00	1.29E+00
		2614.66		35.85	5.31E-01		0.00E+00	2.47E-01
	BI-210M	262.00		45.00	1.15E-01	1.15E-01	-5.60E-02	5.54E-02
		300.00		23.00	2.71E-01		1.07E-01	1.30E-01
	PB-210	46.50		4.25	1.68E+00	1.68E+00	1.99E-01	8.19E-01
	PB-211	404.84		2.90	2.07E+00	2.07E+00	-1.16E+00	9.85E-01
		831.96		2.90	2.44E+00		8.49E-01	1.13E+00
+	BI-212	727.17	*	11.80	8.90E-01	8.90E-01	8.22E-01	4.24E-01
		1620.62		2.75	2.70E+00		7.81E-01	1.17E+00
	PB-212	238.63		44.60	2.36E-01	2.36E-01	1.04E+00	1.16E-01
		300.09		3.41	1.83E+00		7.22E-01	8.80E-01
+	BI-214	609.31	*	46.30	2.89E-01	2.41E-01	8.19E-01	1.40E-01
		1120.29	*	15.10	1.20E+00		1.04E+00	5.76E-01
		1764.49	*	15.80	3.33E-01		1.10E+00	1.34E-01
		2204.22	*	4.98	2.41E-01		1.33E+00	0.00E+00
+	PB-214	295.21	*	19.19	3.73E-01	2.43E-01	7.51E-01	1.81E-01
		351.92	*	37.19	2.43E-01		8.02E-01	1.18E-01
	RN-219	401.80		6.50	8.83E-01	8.83E-01	-6.50E-01	4.19E-01
	RA-223	323.87		3.88	1.38E+00	1.38E+00	-4.56E-02	6.61E-01
	RA-224	240.98		3.95	2.73E+00	2.73E+00	1.47E+01	1.34E+00
	RA-225	40.00		31.00	2.94E+01	2.94E+01	-6.88E+00	1.43E+01
+	RA-226	186.21	*	3.28	2.84E+00	2.84E+00	1.63E+00	1.40E+00
	TH-227	50.10		8.40	7.55E-01	7.38E-01	-1.66E-01	3.68E-01
		236.00		11.50	7.38E-01		2.51E-01	3.61E-01
		256.20		6.30	8.47E-01		1.26E-01	4.08E-01
+	AC-228	338.32	*	11.40	6.96E-01	3.53E-01	1.01E+00	3.37E-01
		911.07	*	27.70	3.53E-01		8.20E-01	1.66E-01
		969.11	*	16.60	1.07E+00		9.72E-01	5.16E-01
	TH-230	48.44		16.90	4.01E-01	4.01E-01	2.28E-01	1.96E-01
		62.85		4.60	1.22E+00		7.19E-01	5.99E-01
		67.67		0.37	1.36E+01		-6.98E+00	6.63E+00
	PA-231	283.67		1.60	3.56E+00	2.54E+00	5.19E-02	1.72E+00
		302.67		2.30	2.54E+00		1.41E+00	1.22E+00
	TH-231	25.64		14.70	2.44E+00	7.53E-01	1.34E+00	1.19E+00
		84.21		6.40	7.53E-01		-2.55E-01	3.68E-01
	PA-233	311.98		38.60	1.79E+00	1.79E+00	-5.01E-01	8.56E-01
	PA-234	131.20		20.40	2.13E-01	2.13E-01	7.93E-02	1.03E-01
		733.99		8.80	8.38E-01		-9.28E-02	3.91E-01
		946.00		12.00	5.85E-01		-4.22E-01	2.67E-01
	PA-234M	1001.03		0.92	9.23E+00	9.23E+00	1.81E+00	4.26E+00
	TH-234	63.29		3.80	1.47E+00	1.47E+00	1.83E+00	7.21E-01
	U-235	143.76		10.50	4.17E-01	4.17E-01	-1.09E-03	2.03E-01
		163.35		4.70	8.71E-01		6.15E-02	4.21E-01
		205.31		4.70	1.10E+00		-5.01E-02	5.32E-01
	NP-237	86.50		12.60	4.17E-01	4.17E-01	-4.36E-02	2.04E-01
	NP-239	106.10		22.70	1.53E+12	1.53E+12	2.73E+11	7.43E+11
		228.18		10.70	4.51E+12		-2.30E+12	2.18E+12

Analysis Report for 1707088-12

HTC-A03-S004-3642-01

	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	3.66E+12	1.53E+12	6.26E+11	1.76E+12
	AM-241	59.54		35.90	1.53E-01	1.53E-01	-3.92E-02	7.49E-02
	AM-243	74.67		66.00	1.03E-01	1.03E-01	7.10E-02	5.07E-02
+	CM-243	209.75	*	3.29	1.82E+00	3.95E-01	1.63E+00	8.86E-01
		228.14		10.60	5.08E-01		-2.59E-01	2.46E-01
		277.60	*	14.00	3.95E-01		2.14E-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

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-A03-S004-3642-01

Elapsed Live time: 3600
Elapsed Real Time: 3608

Channel								
1:	0	0	0	0	0	0	0	0
9:	2	152	169	147	123	113	110	89
17:	97	97	76	83	69	88	80	88
25:	100	79	75	74	68	77	74	76
33:	97	79	91	72	84	71	75	91
41:	82	64	79	99	78	101	124	146
49:	99	113	91	102	110	114	109	93
57:	117	105	126	134	118	125	135	175
65:	142	117	101	134	123	128	126	124
73:	151	169	234	293	369	400	226	115
81:	113	101	115	112	150	128	126	185
89:	165	144	143	122	192	216	137	87
97:	77	74	85	81	86	79	64	66
105:	77	79	78	80	71	76	88	66
113:	101	79	74	75	80	55	86	81
121:	73	79	67	71	76	68	69	85
129:	85	101	92	66	66	71	76	66
137:	55	71	55	76	69	59	66	95
145:	80	78	72	84	68	59	59	60
153:	68	63	67	68	54	61	57	59
161:	59	52	66	62	55	44	48	56
169:	52	59	53	47	61	56	53	65
177:	48	46	54	71	61	76	50	57
185:	77	80	119	77	46	52	61	45
193:	51	44	44	56	49	54	50	55
201:	59	49	33	58	54	36	41	42
209:	57	84	75	48	45	50	41	50
217:	43	50	44	53	59	44	47	58
225:	38	36	51	39	46	41	39	35
233:	52	36	44	44	56	127	348	292
241:	110	97	77	65	35	30	33	34
249:	35	39	31	26	29	37	39	33
257:	38	37	24	39	31	34	26	31
265:	29	33	35	34	35	45	52	50
273:	30	32	29	37	41	42	33	31
281:	25	31	35	35	35	34	32	40
289:	25	18	24	28	25	36	74	130
297:	65	25	20	40	36	36	24	31
305:	26	19	28	24	15	25	24	36
313:	15	17	21	18	28	23	25	21
321:	22	23	18	23	28	27	16	33
329:	46	26	28	14	26	25	23	28
337:	22	65	82	47	28	36	20	15
345:	21	18	16	18	20	28	50	142
353:	149	43	16	29	20	22	23	14
361:	22	14	18	21	23	19	15	20

369:	25	20	20	23	20	20	20	18

Sample Title: HTC-A03-S004-3642-01

Channel								
377:	18	16	11	20	26	17	21	16
385:	14	12	28	30	28	20	22	12
393:	25	24	13	10	20	23	18	19
401:	15	19	17	18	15	20	28	14
409:	23	33	18	16	9	27	12	12
417:	22	22	11	29	19	14	14	15
425:	11	19	23	15	24	18	13	16
433:	9	10	9	12	18	27	11	23
441:	13	7	10	19	13	13	22	18
449:	17	12	9	27	13	14	20	16
457:	17	14	14	5	10	15	35	29
465:	16	7	15	16	21	13	14	14
473:	13	14	6	17	6	13	11	20
481:	14	16	13	13	21	14	18	10
489:	19	8	5	8	13	14	13	14
497:	12	11	10	9	13	14	14	13
505:	11	15	16	21	17	39	61	48
513:	25	23	9	9	11	15	15	10
521:	12	10	8	14	20	9	11	14
529:	16	14	13	12	14	19	11	14
537:	9	10	17	15	16	8	15	10
545:	15	18	14	16	9	8	14	9
553:	15	13	9	12	9	15	13	13
561:	6	13	22	6	13	5	18	10
569:	14	17	17	14	14	4	17	8
577:	10	10	14	6	8	30	67	83
585:	29	20	9	9	5	12	17	15
593:	8	14	6	8	16	7	5	21
601:	7	25	6	12	13	9	11	31
609:	86	111	55	16	17	14	9	16
617:	12	17	7	10	12	12	11	9
625:	8	8	10	14	15	5	7	13
633:	12	13	7	13	8	10	6	9
641:	11	13	6	9	6	15	9	11
649:	9	8	11	8	2	12	10	6
657:	12	13	10	15	7	6	5	16
665:	15	17	17	9	8	9	12	10
673:	8	13	5	12	11	14	14	7
681:	11	5	10	9	11	8	10	9
689:	10	7	9	9	11	13	13	15
697:	13	5	15	16	6	7	13	11
705:	16	16	8	13	11	13	5	10
713:	3	10	11	5	5	6	12	6
721:	9	8	9	5	7	16	28	25
729:	14	10	10	9	6	8	14	14
737:	4	13	8	8	7	10	9	18
745:	7	6	13	8	4	6	9	7
753:	8	3	17	12	4	7	9	10
761:	11	11	12	16	10	6	15	16
769:	12	15	8	15	7	9	8	5
777:	5	7	6	11	9	9	8	11
785:	15	7	12	5	6	7	5	5
793:	12	4	15	16	8	7	5	3

801:	5	7	6	11	11	7	9	6

Sample Title: HTC-A03-S004-3642-01

Channel								
809:	10	10	6	7	10	9	7	8
817:	14	11	10	8	1	6	3	6
825:	6	9	6	6	4	6	7	6
833:	6	6	12	1	7	10	10	11
841:	9	7	7	8	6	9	3	11
849:	6	5	2	9	3	7	5	10
857:	11	6	14	20	21	5	8	7
865:	6	6	5	7	6	9	9	11
873:	7	10	9	5	3	5	5	6
881:	6	6	9	8	7	5	9	8
889:	3	6	6	4	6	9	3	5
897:	7	7	4	1	7	5	10	10
905:	7	6	7	4	7	26	39	39
913:	17	7	8	5	5	8	5	7
921:	7	7	6	5	5	7	8	4
929:	4	6	10	14	11	9	12	11
937:	2	3	6	4	7	9	6	6
945:	7	2	3	7	5	7	10	7
953:	5	6	5	9	3	7	3	3
961:	6	4	7	20	17	10	8	20
969:	26	29	11	8	4	7	6	7
977:	5	10	7	8	8	3	5	10
985:	6	10	6	5	13	4	6	7
993:	4	5	5	5	6	4	9	3
1001:	8	8	6	11	6	7	5	8
1009:	4	6	6	6	9	7	9	10
1017:	6	9	7	5	7	3	7	4
1025:	7	4	10	5	9	6	4	8
1033:	11	3	8	5	7	5	6	5
1041:	6	10	6	10	6	5	4	8
1049:	6	4	7	4	5	3	5	2
1057:	11	7	4	10	10	5	10	4
1065:	5	10	5	14	11	5	6	7
1073:	7	8	7	5	7	8	7	14
1081:	6	7	8	7	4	7	8	6
1089:	5	8	3	9	9	14	9	9
1097:	2	3	7	6	8	4	10	5
1105:	7	9	2	7	8	3	7	9
1113:	6	7	8	8	10	8	14	19
1121:	33	7	8	4	12	8	3	9
1129:	6	7	1	4	10	8	9	9
1137:	10	10	8	7	7	9	8	8
1145:	6	8	4	9	8	5	5	4
1153:	4	5	7	12	6	5	7	10
1161:	7	7	9	7	12	6	9	7
1169:	7	11	11	10	7	6	4	10
1177:	5	7	4	1	8	6	9	12
1185:	3	15	8	7	6	9	5	9
1193:	10	9	5	8	7	8	8	10
1201:	5	10	3	14	9	9	8	8
1209:	10	8	6	7	10	8	9	3
1217:	4	8	9	6	5	4	7	11
1225:	6	10	14	12	7	6	5	7

1233:	8	8	4	14	15	11	14	9

Sample Title: HTC-A03-S004-3642-01

Channel								
1241:	9	5	4	5	2	4	5	6
1249:	4	3	7	6	2	6	10	6
1257:	3	8	3	6	1	6	8	5
1265:	8	8	2	9	2	5	3	3
1273:	7	5	3	4	7	5	5	6
1281:	5	7	6	1	2	5	4	6
1289:	3	6	9	4	4	5	4	4
1297:	8	5	0	4	4	4	2	5
1305:	10	5	2	4	6	8	4	4
1313:	3	6	5	4	5	4	9	5
1321:	4	4	1	4	5	5	4	4
1329:	0	6	3	4	8	1	5	6
1337:	3	5	5	2	4	2	0	1
1345:	3	4	4	4	1	4	4	2
1353:	3	8	3	3	3	1	2	2
1361:	1	2	3	4	1	1	4	1
1369:	3	3	1	3	2	3	4	7
1377:	12	7	2	1	1	4	6	6
1385:	4	3	1	3	0	1	3	2
1393:	4	5	1	2	2	2	3	5
1401:	5	4	3	3	0	2	2	2
1409:	2	2	0	0	1	1	2	3
1417:	1	4	3	1	0	4	2	0
1425:	1	1	2	2	4	3	3	3
1433:	1	2	3	3	5	1	4	4
1441:	2	1	4	1	2	1	3	2
1449:	2	1	1	2	0	4	1	2
1457:	3	27	98	206	196	69	15	0
1465:	1	0	1	0	1	1	4	1
1473:	5	2	2	1	0	1	3	0
1481:	2	1	0	2	2	2	4	2
1489:	1	1	1	2	1	1	3	1
1497:	3	0	1	2	1	0	3	1
1505:	0	1	2	4	5	3	4	1
1513:	4	2	3	2	1	2	1	2
1521:	1	3	2	1	1	0	2	0
1529:	1	1	2	0	0	1	1	0
1537:	4	0	6	1	1	0	1	0
1545:	1	3	0	0	2	1	1	0
1553:	3	0	1	2	2	2	2	0
1561:	1	0	3	0	1	2	2	1
1569:	2	0	0	0	1	2	1	5
1577:	2	0	3	2	3	2	1	2
1585:	1	1	5	4	4	3	4	4
1593:	4	2	3	0	1	0	1	2
1601:	0	2	1	0	2	0	0	2
1609:	4	2	3	2	4	2	0	1
1617:	2	1	1	2	4	0	3	1
1625:	1	1	1	1	6	1	2	1
1633:	1	0	2	0	1	1	1	2
1641:	1	1	0	2	1	0	0	0
1649:	2	1	1	2	1	1	2	0
1657:	0	1	1	3	4	2	0	2

1665:	1	2	0	1	0	0	3	1

Sample Title: HTC-A03-S004-3642-01

Channel								
1673:	1	0	1	1	0	1	1	2
1681:	2	1	1	1	1	2	1	3
1689:	0	0	3	2	1	1	0	1
1697:	1	0	0	0	1	2	1	2
1705:	2	2	1	0	0	1	2	1
1713:	1	0	0	0	1	2	0	0
1721:	1	1	0	1	1	1	1	2
1729:	2	3	3	1	0	2	1	3
1737:	1	1	1	1	1	0	0	1
1745:	0	3	0	1	1	2	1	0
1753:	0	0	3	0	1	0	0	1
1761:	1	3	14	21	9	0	2	1
1769:	1	1	0	0	2	0	2	0
1777:	1	0	1	0	0	1	1	1
1785:	2	0	0	1	3	0	2	2
1793:	1	2	2	0	0	0	3	1
1801:	3	1	1	0	0	2	0	1
1809:	5	2	1	0	0	1	0	0
1817:	1	2	0	1	1	2	0	0
1825:	0	0	0	1	0	4	1	1
1833:	1	2	0	0	3	2	4	0
1841:	1	0	1	0	0	0	1	0
1849:	0	2	1	0	0	1	2	0
1857:	0	0	0	1	2	1	1	0
1865:	0	0	0	0	3	0	1	2
1873:	0	0	0	1	4	1	2	0
1881:	0	2	1	2	0	0	1	0
1889:	3	0	2	0	1	0	1	0
1897:	0	0	1	0	0	0	4	1
1905:	1	0	0	1	0	1	0	0
1913:	1	1	2	0	0	0	1	0
1921:	1	1	1	0	2	0	1	0
1929:	2	2	2	2	0	0	1	1
1937:	1	1	1	0	0	1	0	2
1945:	3	1	0	1	0	1	1	0
1953:	0	1	1	1	0	1	0	0
1961:	3	1	0	1	1	4	1	0
1969:	0	0	1	0	1	0	0	0
1977:	0	1	0	1	1	1	2	1
1985:	1	1	1	0	0	0	0	0
1993:	1	0	3	0	1	1	0	0
2001:	2	0	1	0	1	1	0	1
2009:	0	0	1	1	0	1	1	1
2017:	1	0	1	0	1	1	0	4
2025:	1	3	1	3	0	1	2	1
2033:	0	0	0	0	0	0	0	0
2041:	1	3	2	0	2	1	2	0
2049:	1	2	0	2	2	1	1	1
2057:	0	1	2	0	0	0	0	0
2065:	0	1	1	0	2	1	0	1
2073:	0	0	2	0	1	0	1	0
2081:	3	1	0	1	2	2	0	2
2089:	0	1	1	1	0	0	1	2

2097:	0	0	0	1	0	3	3	4

Sample Title: HTC-A03-S004-3642-01

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

2529:	0	0	0	0	0	1	1	0

Sample Title: HTC-A03-S004-3642-01

Channel								
2537:	0	1	1	0	0	1	0	1
2545:	0	2	0	0	0	1	0	0
2553:	0	1	0	1	0	0	0	0
2561:	0	0	0	0	0	1	0	0
2569:	0	0	0	2	0	0	0	0
2577:	0	0	0	1	0	0	0	0
2585:	0	0	0	0	0	0	0	0
2593:	0	0	0	0	1	0	2	2
2601:	0	0	0	0	0	2	0	0
2609:	0	2	7	7	24	16	5	0
2617:	0	0	0	1	0	1	0	1
2625:	0	1	0	0	0	0	1	1
2633:	0	0	0	1	0	0	0	0
2641:	0	1	0	1	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	1	0	0	0	0	0	0	1
2665:	1	1	0	0	0	0	0	1
2673:	0	0	0	0	0	0	0	0
2681:	0	1	0	1	0	1	0	0
2689:	0	0	1	0	1	0	0	0
2697:	1	0	0	0	1	0	0	0
2705:	1	0	0	0	0	0	0	0
2713:	0	0	0	0	0	0	0	0
2721:	0	0	0	0	0	0	0	0
2729:	0	0	1	0	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	0	0	0	0	0	0	0	0
2753:	0	1	1	0	0	0	0	0
2761:	0	1	0	0	0	0	0	0
2769:	1	1	0	0	0	0	0	0
2777:	0	0	0	0	1	0	0	0
2785:	0	0	0	1	0	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	1	0	0	0	0	0	0
2809:	0	0	0	0	0	1	1	1
2817:	0	1	0	0	0	0	0	0
2825:	0	0	0	0	1	0	0	1
2833:	1	1	0	0	0	0	1	0
2841:	0	0	0	0	0	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	1	0	0	0	0	0
2865:	0	1	1	0	0	0	0	0
2873:	0	0	0	0	0	0	0	1
2881:	0	0	0	0	0	0	0	0
2889:	0	0	0	0	0	0	0	0
2897:	0	0	0	0	1	1	0	0
2905:	0	0	0	1	0	0	1	0
2913:	0	0	1	1	1	0	0	0
2921:	1	0	0	0	0	0	0	0
2929:	0	0	0	1	0	0	0	0
2937:	0	1	0	0	0	0	0	0
2945:	0	0	0	0	0	0	1	0
2953:	0	1	2	0	0	0	0	0

2961:	0	0	0	0	0	0	1	0

Sample Title: HTC-A03-S004-3642-01

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

3393:	0	0	0	0	0	0	1	0

Sample Title: HTC-A03-S004-3642-01

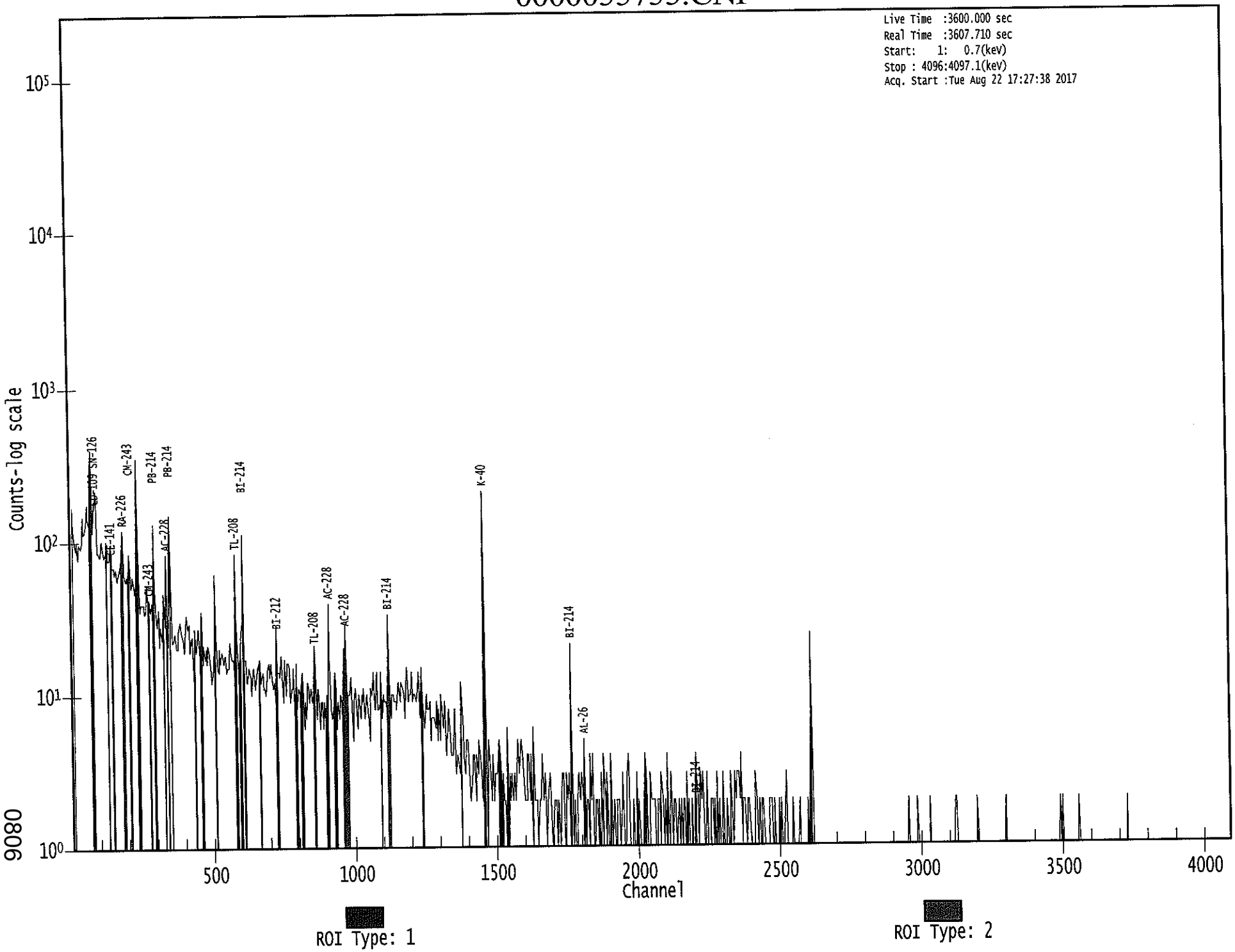
Channel								
3401:	0	0	0	0	0	0	1	0
3409:	0	0	0	0	0	0	0	0
3417:	0	1	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	1
3433:	0	0	0	1	0	0	1	0
3441:	0	0	0	0	0	0	0	1
3449:	0	1	0	0	0	0	0	0
3457:	0	0	1	1	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	1	0	0
3489:	0	0	1	2	0	0	1	0
3497:	0	0	0	2	0	1	1	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-3642-01

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

0000055755.CNF



9080

 KB 8/22/17

Apex-Gamma

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-13
Sample Description	: HTC-A03-S004-4248-01
Sample Type	: SOIL
Sample Size	: 5.608E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2017 9:34:49AM
Acquisition Started	: 8/22/2017 5:27:45PM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE4
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)	: 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	: 55756

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG 8/23/17

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/22/2017 6:28:46PM
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	46.91	45.96	0.0000	0.00
2	76.51	75.57	0.0000	0.00
3	84.36	83.42	0.0000	0.00
4	87.74	86.80	0.0000	0.00
5	93.45	92.51	0.0000	0.00
6	145.60	144.68	0.0000	0.00
7	186.11	185.20	0.0000	0.00
8	238.81	237.91	0.0000	0.00
9	241.99	241.10	0.0000	0.00
10	270.87	269.99	0.0000	0.00
11	277.25	276.37	0.0000	0.00
12	294.91	294.03	0.0000	0.00
13	338.67	337.81	0.0000	0.00
14	352.18	351.32	0.0000	0.00
15	410.25	409.42	0.0000	0.00
16	446.58	445.76	0.0000	0.00
17	461.05	460.24	0.0000	0.00
18	511.83	511.04	0.0000	0.00
19	583.21	582.44	0.0000	0.00
20	609.41	608.65	0.0000	0.00
21	618.05	617.29	0.0000	0.00
22	727.98	727.27	0.0000	0.00
23	767.61	766.91	0.0000	0.00
24	863.00	862.35	0.0000	0.00
25	878.65	878.00	0.0000	0.00
26	911.68	911.05	0.0000	0.00
27	969.31	968.70	0.0000	0.00
28	1119.31	1118.77	0.0000	0.00
29	1173.69	1173.17	0.0000	0.00
30	1325.26	1324.82	0.0000	0.00
31	1364.93	1364.50	0.0000	0.00
32	1460.64	1460.27	0.0000	0.00
33	1730.65	1730.42	0.0000	0.00
34	1765.06	1764.85	0.0000	0.00
35	1874.15	1874.00	0.0000	0.00
36	2203.16	2203.21	0.0000	0.00
37	2403.33	2403.50	0.0000	0.00
38	2614.07	2614.38	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/22/2017 6:28:46PM

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	46.91	43 -	48	45.96	8.50E+01	59.12	6.28E+02	2.94
	2	76.51	70 -	81	75.57	8.83E+02	134.70	1.80E+03	4.09
M	3	84.36	82 -	91	83.42	6.57E+01	32.23	2.80E+02	1.96
m	4	87.74	82 -	91	86.80	7.59E+01	88.22	1.39E+03	2.18
	5	93.45	91 -	96	92.51	1.24E+02	72.69	8.99E+02	2.13
	6	145.60	139 -	151	144.68	1.74E+02	94.15	9.58E+02	10.10
	7	186.11	181 -	189	185.20	8.67E+01	71.53	7.35E+02	2.22
M	8	238.81	233 -	244	237.91	5.10E+02	65.80	4.25E+02	2.33
m	9	241.99	233 -	244	241.10	1.19E+02	62.81	3.37E+02	2.33
	10	270.87	263 -	273	269.99	5.60E+01	59.65	4.42E+02	3.47
	11	277.25	274 -	280	276.37	3.83E+01	40.88	2.81E+02	3.72
	12	294.91	290 -	299	294.03	1.24E+02	61.69	4.79E+02	2.64
	13	338.67	334 -	342	337.81	8.12E+01	47.08	2.88E+02	2.96
	14	352.18	347 -	356	351.32	2.25E+02	58.63	3.56E+02	2.66
	15	410.25	407 -	413	409.42	2.80E+01	30.51	1.46E+02	1.93
	16	446.58	442 -	450	445.76	3.07E+01	33.29	1.49E+02	3.32
	17	461.05	455 -	464	460.24	4.57E+01	38.91	1.91E+02	3.84
	18	511.83	505 -	516	511.04	9.19E+01	45.69	2.12E+02	2.14
	19	583.21	578 -	586	582.44	1.19E+02	35.93	1.23E+02	2.36
	20	609.41	604 -	613	608.65	1.54E+02	41.67	1.60E+02	1.59
	21	618.05	615 -	620	617.29	1.55E+01	19.31	6.10E+01	2.82
	22	727.98	723 -	731	727.27	2.80E+01	24.08	7.20E+01	4.03
	23	767.61	763 -	771	766.91	2.16E+01	25.39	8.68E+01	4.90
	24	863.00	857 -	868	862.35	3.20E+01	27.28	7.40E+01	8.51
	25	878.65	869 -	889	878.00	4.99E+01	38.92	1.06E+02	15.67
	26	911.68	904 -	918	911.05	9.06E+01	37.84	1.13E+02	2.78
	27	969.31	965 -	972	968.70	4.75E+01	27.13	8.11E+01	2.10
	28	1119.31	1112 -	1125	1118.77	4.30E+01	32.47	9.80E+01	8.30
	29	1173.69	1170 -	1176	1173.17	1.54E+01	19.18	5.52E+01	2.62
	30	1325.26	1320 -	1330	1324.82	1.92E+01	19.07	3.77E+01	6.95
	31	1364.93	1361 -	1366	1364.50	7.00E+00	9.38	1.20E+01	0.93
	32	1460.64	1455 -	1467	1460.27	3.19E+02	40.02	3.66E+01	2.68
	33	1730.65	1726 -	1736	1730.42	1.39E+01	9.91	6.12E+00	2.29
	34	1765.06	1758 -	1771	1764.85	2.85E+01	15.43	1.30E+01	1.56
	35	1874.15	1871 -	1876	1874.00	7.00E+00	5.29	0.00E+00	1.00
	36	2203.16	2198 -	2208	2203.21	1.90E+01	8.72	0.00E+00	3.61
	37	2403.33	2399 -	2407	2403.50	8.00E+00	5.66	0.00E+00	1.98
	38	2614.07	2609 -	2619	2614.38	2.60E+01	10.20	0.00E+00	4.22

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

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 : 8/22/2017 6:28:46PM

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	46.91	43 -	48	8.50E+01	59.12	6.28E+02	4.62E+01
	2	76.51	70 -	81	8.83E+02	134.70	1.80E+03	9.94E+01
M	3	84.36	82 -	91	6.57E+01	32.23	2.80E+02	2.75E+01
m	4	87.74	82 -	91	7.59E+01	88.22	1.39E+03	6.14E+01
	5	93.45	91 -	96	1.24E+02	72.69	8.99E+02	5.69E+01
	6	145.60	139 -	151	1.74E+02	94.15	9.58E+02	7.43E+01
	7	186.11	181 -	189	8.67E+01	71.53	7.35E+02	5.68E+01
M	8	238.81	233 -	244	5.10E+02	65.80	4.25E+02	3.39E+01
m	9	241.99	233 -	244	1.19E+02	62.81	3.37E+02	3.02E+01
	10	270.87	263 -	273	5.60E+01	59.65	4.42E+02	4.75E+01
	11	277.25	274 -	280	3.83E+01	40.88	2.81E+02	3.20E+01
	12	294.91	290 -	299	1.24E+02	61.69	4.79E+02	4.73E+01
	13	338.67	334 -	342	8.12E+01	47.08	2.88E+02	3.57E+01
	14	352.18	347 -	356	2.25E+02	58.63	3.56E+02	4.14E+01
	15	410.25	407 -	413	2.80E+01	30.51	1.46E+02	2.35E+01
	16	446.58	442 -	450	3.07E+01	33.29	1.49E+02	2.58E+01
	17	461.05	455 -	464	4.57E+01	38.91	1.91E+02	3.00E+01
	18	511.83	505 -	516	9.19E+01	45.69	2.12E+02	3.41E+01
	19	583.21	578 -	586	1.19E+02	35.93	1.23E+02	2.34E+01
	20	609.41	604 -	613	1.54E+02	41.67	1.60E+02	2.75E+01
	21	618.05	615 -	620	1.55E+01	19.31	6.10E+01	1.45E+01
	22	727.98	723 -	731	2.80E+01	24.08	7.20E+01	1.78E+01
	23	767.61	763 -	771	2.16E+01	25.39	8.68E+01	1.94E+01
	24	863.00	857 -	868	3.20E+01	27.28	7.40E+01	2.04E+01
	25	878.65	869 -	889	4.99E+01	38.92	1.06E+02	2.98E+01
	26	911.68	904 -	918	9.06E+01	37.84	1.13E+02	2.69E+01
	27	969.31	965 -	972	4.75E+01	27.13	8.11E+01	1.92E+01
	28	1119.31	1112 -	1125	4.30E+01	32.47	9.80E+01	2.44E+01
	29	1173.69	1170 -	1176	1.54E+01	19.18	5.52E+01	1.44E+01
	30	1325.26	1320 -	1330	1.92E+01	19.07	3.77E+01	1.39E+01
	31	1364.93	1361 -	1366	7.00E+00	9.38	1.20E+01	6.37E+00

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
32	1460.64	1455 -	1467	3.19E+02	40.02	3.66E+01	1.49E+01
33	1730.65	1726 -	1736	1.39E+01	9.91	6.12E+00	5.36E+00
34	1765.06	1758 -	1771	2.85E+01	15.43	1.30E+01	9.16E+00
35	1874.15	1871 -	1876	7.00E+00	5.29	0.00E+00	0.00E+00
36	2203.16	2198 -	2208	1.90E+01	8.72	0.00E+00	0.00E+00
37	2403.33	2399 -	2407	8.00E+00	5.66	0.00E+00	0.00E+00
38	2614.07	2609 -	2619	2.60E+01	10.20	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 : 8/22/2017 6:28:46PM

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	46.91	43 -	48	45.96	8.50E+01	59.12	6.28E+02	PB-210
	2	76.51	70 -	81	75.57	8.83E+02	134.70	1.80E+03	.....
M	3	84.36	82 -	91	83.42	6.57E+01	32.23	2.80E+02	TH-231
m	4	87.74	82 -	91	86.80	7.59E+01	88.22	1.39E+03	SN-126
									CD-109
									LU-176
	5	93.45	91 -	96	92.51	1.24E+02	72.69	8.99E+02	GA-67
	6	145.60	139 -	151	144.68	1.74E+02	94.15	9.58E+02	CE-141
	7	186.11	181 -	189	185.20	8.67E+01	71.53	7.35E+02	RA-226
M	8	238.81	233 -	244	237.91	5.10E+02	65.80	4.25E+02	PB-212
m	9	241.99	233 -	244	241.10	1.19E+02	62.81	3.37E+02	.....
	10	270.87	263 -	273	269.99	5.60E+01	59.65	4.42E+02	.....
	11	277.25	274 -	280	276.37	3.83E+01	40.88	2.81E+02	CM-243
									NP-239
	12	294.91	290 -	299	294.03	1.24E+02	61.69	4.79E+02	PB-214
	13	338.67	334 -	342	337.81	8.12E+01	47.08	2.88E+02	AC-228
	14	352.18	347 -	356	351.32	2.25E+02	58.63	3.56E+02	PB-214
	15	410.25	407 -	413	409.42	2.80E+01	30.51	1.46E+02	HO-166M
	16	446.58	442 -	450	445.76	3.07E+01	33.29	1.49E+02	.....

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
17	461.05	455 -	464	460.24	4.57E+01	38.91	1.91E+02	.....
18	511.83	505 -	516	511.04	9.19E+01	45.69	2.12E+02	.....
19	583.21	578 -	586	582.44	1.19E+02	35.93	1.23E+02	TL-208
20	609.41	604 -	613	608.65	1.54E+02	41.67	1.60E+02	BI-214
21	618.05	615 -	620	617.29	1.55E+01	19.31	6.10E+01	PM-144
22	727.98	723 -	731	727.27	2.80E+01	24.08	7.20E+01	BI-212
23	767.61	763 -	771	766.91	2.16E+01	25.39	8.68E+01	.....
24	863.00	857 -	868	862.35	3.20E+01	27.28	7.40E+01	.....
25	878.65	869 -	889	878.00	4.99E+01	38.92	1.06E+02	.....
26	911.68	904 -	918	911.05	9.06E+01	37.84	1.13E+02	TL-204 AC-228
27	969.31	965 -	972	968.70	4.75E+01	27.13	8.11E+01	AC-228
28	1119.31	1112 -	1125	1118.77	4.30E+01	32.47	9.80E+01	BI-214
29	1173.69	1170 -	1176	1173.17	1.54E+01	19.18	5.52E+01	CO-60
30	1325.26	1320 -	1330	1324.82	1.92E+01	19.07	3.77E+01	.....
31	1364.93	1361 -	1366	1364.50	7.00E+00	9.38	1.20E+01	.....
32	1460.64	1455 -	1467	1460.27	3.19E+02	40.02	3.66E+01	K-40
33	1730.65	1726 -	1736	1730.42	1.39E+01	9.91	6.12E+00	.....
34	1765.06	1758 -	1771	1764.85	2.85E+01	15.43	1.30E+01	BI-214
35	1874.15	1871 -	1876	1874.00	7.00E+00	5.29	0.00E+00	.....
36	2203.16	2198 -	2208	2203.21	1.90E+01	8.72	0.00E+00	.....
37	2403.33	2399 -	2407	2403.50	8.00E+00	5.66	0.00E+00	.....
38	2614.07	2609 -	2619	2614.38	2.60E+01	10.20	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 : 8/22/2017 6:28:46PM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.91	8.50E+01	59.12	1.66E-02	1.56E-03
	2	76.51	8.83E+02	134.70	2.33E-02	1.92E-03
M	3	84.36	6.57E+01	32.23	2.36E-02	2.09E-03
m	4	87.74	7.59E+01	88.22	2.37E-02	2.16E-03
	5	93.45	1.24E+02	72.69	2.36E-02	2.08E-03
	6	145.60	1.74E+02	94.15	2.02E-02	1.57E-03
	7	186.11	8.67E+01	71.53	1.69E-02	1.40E-03

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	8	238.81	5.10E+02	65.80	1.36E-02	1.14E-03
m	9	241.99	1.19E+02	62.81	1.34E-02	1.13E-03
	10	270.87	5.60E+01	59.65	1.20E-02	9.87E-04
	11	277.25	3.83E+01	40.88	1.17E-02	9.56E-04
	12	294.91	1.24E+02	61.69	1.10E-02	9.14E-04
	13	338.67	8.12E+01	47.08	9.59E-03	8.22E-04
	14	352.18	2.25E+02	58.63	9.21E-03	7.94E-04
	15	410.25	2.80E+01	30.51	7.87E-03	7.03E-04
	16	446.58	3.07E+01	33.29	7.21E-03	6.88E-04
	17	461.05	4.57E+01	38.91	6.97E-03	6.82E-04
	18	511.83	9.19E+01	45.69	6.27E-03	6.61E-04
	19	583.21	1.19E+02	35.93	5.50E-03	6.31E-04
	20	609.41	1.54E+02	41.67	5.27E-03	6.20E-04
	21	618.05	1.55E+01	19.31	5.20E-03	6.17E-04
	22	727.98	2.80E+01	24.08	4.45E-03	5.15E-04
	23	767.61	2.16E+01	25.39	4.23E-03	4.66E-04
	24	863.00	3.20E+01	27.28	3.80E-03	3.46E-04
	25	878.65	4.99E+01	38.92	3.74E-03	3.26E-04
	26	911.68	9.06E+01	37.84	3.62E-03	2.99E-04
	27	969.31	4.75E+01	27.13	3.42E-03	2.85E-04
	28	1119.31	4.30E+01	32.47	3.02E-03	2.50E-04
	29	1173.69	1.54E+01	19.18	2.89E-03	2.37E-04
	30	1325.26	1.92E+01	19.07	2.60E-03	2.28E-04
	31	1364.93	7.00E+00	9.38	2.53E-03	2.22E-04
	32	1460.64	3.19E+02	40.02	2.39E-03	2.08E-04
	33	1730.65	1.39E+01	9.91	2.04E-03	1.67E-04
	34	1765.06	2.85E+01	15.43	2.00E-03	1.62E-04
	35	1874.15	7.00E+00	5.29	1.88E-03	1.51E-04
	36	2203.16	1.90E+01	8.72	1.58E-03	1.51E-04
	37	2403.33	8.00E+00	5.66	1.43E-03	1.51E-04
	38	2614.07	2.60E+01	10.20	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 : 8/22/2017 6:28:46PM

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

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	46.91	8.50E+01	59.12	2.81E+01	8.29E+00	5.69E+01	5.97E+01
	2	76.51	8.83E+02	134.70			8.83E+02	1.35E+02
M	3	84.36	6.57E+01	32.23			6.57E+01	3.22E+01
m	4	87.74	7.59E+01	88.22			7.59E+01	8.82E+01
	5	93.45	1.24E+02	72.69	5.99E+01	8.61E+00	6.45E+01	7.32E+01
	6	145.60	1.74E+02	94.15			1.74E+02	9.42E+01
	7	186.11	8.67E+01	71.53	2.43E+01	7.50E+00	6.24E+01	7.19E+01
M	8	238.81	5.10E+02	65.80	1.06E+01	6.01E+00	4.99E+02	6.61E+01
m	9	241.99	1.19E+02	62.81			1.19E+02	6.28E+01
	10	270.87	5.60E+01	59.65			5.60E+01	5.97E+01
	11	277.25	3.83E+01	40.88			3.83E+01	4.09E+01
	12	294.91	1.24E+02	61.69			1.24E+02	6.17E+01
	13	338.67	8.12E+01	47.08			8.12E+01	4.71E+01
	14	352.18	2.25E+02	58.63			2.25E+02	5.86E+01
	15	410.25	2.80E+01	30.51			2.80E+01	3.05E+01
	16	446.58	3.07E+01	33.29			3.07E+01	3.33E+01
	17	461.05	4.57E+01	38.91			4.57E+01	3.89E+01
	18	511.83	9.19E+01	45.69	4.55E+01	4.99E+00	4.63E+01	4.60E+01
	19	583.21	1.19E+02	35.93			1.19E+02	3.59E+01
	20	609.41	1.54E+02	41.67			1.54E+02	4.17E+01
	21	618.05	1.55E+01	19.31			1.55E+01	1.93E+01
	22	727.98	2.80E+01	24.08			2.80E+01	2.41E+01
	23	767.61	2.16E+01	25.39			2.16E+01	2.54E+01
	24	863.00	3.20E+01	27.28			3.20E+01	2.73E+01
	25	878.65	4.99E+01	38.92			4.99E+01	3.89E+01
	26	911.68	9.06E+01	37.84			9.06E+01	3.78E+01
	27	969.31	4.75E+01	27.13			4.75E+01	2.71E+01
	28	1119.31	4.30E+01	32.47			4.30E+01	3.25E+01
	29	1173.69	1.54E+01	19.18			1.54E+01	1.92E+01
	30	1325.26	1.92E+01	19.07			1.92E+01	1.91E+01
	31	1364.93	7.00E+00	9.38			7.00E+00	9.38E+00
	32	1460.64	3.19E+02	40.02			3.19E+02	4.00E+01
	33	1730.65	1.39E+01	9.91			1.39E+01	9.91E+00
	34	1765.06	2.85E+01	15.43			2.85E+01	1.54E+01
	35	1874.15	7.00E+00	5.29			7.00E+00	5.29E+00
	36	2203.16	1.90E+01	8.72			1.90E+01	8.72E+00
	37	2403.33	8.00E+00	5.66			8.00E+00	5.66E+00
	38	2614.07	2.60E+01	10.20			2.60E+01	1.02E+01

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

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 8/22/2017 6:28:46PM

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	46.91	8.50E+01	59.12	2.81E+01	8.29E+00	5.69E+01	5.97E+01
	2	76.51	8.83E+02	134.70			8.83E+02	1.35E+02
M	3	84.36	6.57E+01	32.23			6.57E+01	3.22E+01
m	4	87.74	7.59E+01	88.22			7.59E+01	8.82E+01
	5	93.45	1.24E+02	72.69	5.99E+01	8.61E+00	6.45E+01	7.32E+01
	6	145.60	1.74E+02	94.15			1.74E+02	9.42E+01
	7	186.11	8.67E+01	71.53	2.43E+01	7.50E+00	6.24E+01	7.19E+01
M	8	238.81	5.10E+02	65.80	1.06E+01	6.01E+00	4.99E+02	6.61E+01
m	9	241.99	1.19E+02	62.81			1.19E+02	6.28E+01
	10	270.87	5.60E+01	59.65			5.60E+01	5.97E+01
	11	277.25	3.83E+01	40.88			3.83E+01	4.09E+01
	12	294.91	1.24E+02	61.69			1.24E+02	6.17E+01
	13	338.67	8.12E+01	47.08			8.12E+01	4.71E+01
	14	352.18	2.25E+02	58.63			2.25E+02	5.86E+01
	15	410.25	2.80E+01	30.51			2.80E+01	3.05E+01
	16	446.58	3.07E+01	33.29			3.07E+01	3.33E+01
	17	461.05	4.57E+01	38.91			4.57E+01	3.89E+01
	18	511.83	9.19E+01	45.69	4.55E+01	4.99E+00	4.63E+01	4.60E+01
	19	583.21	1.19E+02	35.93			1.19E+02	3.59E+01
	20	609.41	1.54E+02	41.67			1.54E+02	4.17E+01
	21	618.05	1.55E+01	19.31			1.55E+01	1.93E+01
	22	727.98	2.80E+01	24.08			2.80E+01	2.41E+01
	23	767.61	2.16E+01	25.39			2.16E+01	2.54E+01
	24	863.00	3.20E+01	27.28			3.20E+01	2.73E+01
	25	878.65	4.99E+01	38.92			4.99E+01	3.89E+01
	26	911.68	9.06E+01	37.84			9.06E+01	3.78E+01
	27	969.31	4.75E+01	27.13			4.75E+01	2.71E+01
	28	1119.31	4.30E+01	32.47			4.30E+01	3.25E+01
	29	1173.69	1.54E+01	19.18			1.54E+01	1.92E+01
	30	1325.26	1.92E+01	19.07			1.92E+01	1.91E+01
	31	1364.93	7.00E+00	9.38			7.00E+00	9.38E+00
	32	1460.64	3.19E+02	40.02			3.19E+02	4.00E+01
	33	1730.65	1.39E+01	9.91			1.39E+01	9.91E+00
	34	1765.06	2.85E+01	15.43			2.85E+01	1.54E+01
	35	1874.15	7.00E+00	5.29			7.00E+00	5.29E+00
	36	2203.16	1.90E+01	8.72			1.90E+01	8.72E+00
	37	2403.33	8.00E+00	5.66			8.00E+00	5.66E+00
	38	2614.07	2.60E+01	10.20			2.60E+01	1.02E+01

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

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

NUCLIDE 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	0.996	1460.81	*	10.67	1.68E+01	2.59E+00
CD-109	0.986	88.03	*	3.72	1.34E+00	1.57E+00
SN-126	0.995	87.57	*	37.00	1.16E-01	1.35E-01
CE-141	0.949	145.44	*	48.40	2.07E+00	1.62E+00
TL-208	0.855	583.14	*	30.22	9.61E-01	3.09E-01
		860.37		4.48		
		2614.66	*	35.85	7.59E-01	3.11E-01
PB-210	0.974	46.50	*	4.25	1.09E+00	1.15E+00
BI-212	0.695	727.17	*	11.80	7.14E-01	6.20E-01
		1620.62		2.75		
PB-212	0.893	238.63	*	44.60	1.10E+00	1.73E-01
		300.09		3.41		
BI-214	0.900	609.31	*	46.30	8.45E-01	2.49E-01
		1120.29	*	15.10	1.26E+00	9.60E-01
		1764.49	*	15.80	1.21E+00	6.62E-01
		2204.22		4.98		
PB-214	0.988	295.21	*	19.19	7.86E-01	3.95E-01
		351.92	*	37.19	8.79E-01	2.41E-01
RA-226	0.998	186.21	*	3.28	1.50E+00	3.26E+00
AC-228	0.965	338.32	*	11.40	9.94E-01	5.83E-01
		911.07	*	27.70	1.21E+00	5.15E-01
		969.11	*	16.60	1.12E+00	6.46E-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 1707088-13

HTC-A03-S004-4248-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 6:28:46PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	76.51	2.45160E-01	7.63		
M	3	84.36	1.82510E-02	24.53	Tol.	TH-231
	5	93.45	1.79030E-02	56.79	Sum	
m	9	241.99	3.31444E-02	26.32		
	10	270.87	1.55621E-02	53.24		
	11	277.25	1.06370E-02	53.38	Tol.	NP-239 CM-243
	15	410.25	7.76815E-03	54.55	Tol.	HO-166M
	16	446.58	8.51587E-03	54.30		
	17	461.05	1.26832E-02	42.61		
	18	511.83	1.28652E-02	49.62		
	21	618.05	4.30857E-03	62.26	Tol.	PM-144
	23	767.61	6.00427E-03	58.74		
	24	863.00	8.88688E-03	42.63		
	25	878.65	1.38700E-02	38.97	Sum	
	29	1173.69	4.27326E-03	62.35	Tol.	CO-60
	30	1325.26	5.32164E-03	49.78		
	31	1364.93	1.94444E-03	67.01		
	33	1730.65	3.87255E-03	35.55		
	35	1874.15	1.94444E-03	37.80		
	36	2203.16	5.27778E-03	22.94		
	37	2403.33	2.22222E-03	35.36		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	1.68E+01	2.59E+00
CD-109	0.98	88.03	*	3.72	1.34E+00	1.57E+00
SN-126	0.99	87.57	*	37.00	1.16E-01	1.35E-01
CE-141	0.94	145.44	*	48.40	2.07E+00	1.62E+00
TL-208	0.85	583.14	*	30.22	9.61E-01	3.09E-01
		860.37		4.48		
		2614.66	*	35.85	7.59E-01	3.11E-01
PB-210	0.97	46.50	*	4.25	1.09E+00	1.15E+00
BI-212	0.69	727.17	*	11.80	7.14E-01	6.20E-01
		1620.62		2.75		
PB-212	0.89	238.63	*	44.60	1.10E+00	1.73E-01
		300.09		3.41		
BI-214	0.90	609.31	*	46.30	8.45E-01	2.49E-01
		1120.29	*	15.10	1.26E+00	9.60E-01
		1764.49	*	15.80	1.21E+00	6.62E-01
		2204.22		4.98		
PB-214	0.98	295.21	*	19.19	7.86E-01	3.95E-01
		351.92	*	37.19	8.79E-01	2.41E-01
RA-226	0.99	186.21	*	3.28	1.50E+00	3.26E+00
AC-228	0.96	338.32	*	11.40	9.94E-01	5.83E-01
		911.07	*	27.70	1.21E+00	5.15E-01
		969.11	*	16.60	1.12E+00	6.46E-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	0.996	1.68E+01	2.59E+00	
?	CD-109	0.986	1.34E+00	1.57E+00	
?	SN-126	0.995	1.16E-01	1.35E-01	
	CE-141	0.949	2.07E+00	1.62E+00	
	TL-208	0.855	8.60E-01	2.19E-01	

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
PB-210	0.974	1.09E+00	1.15E+00	
BI-212	0.695	7.14E-01	6.20E-01	
PB-212	0.893	1.10E+00	1.73E-01	
BI-214	0.900	9.11E-01	2.27E-01	
PB-214	0.988	8.54E-01	2.06E-01	
RA-226	0.998	1.50E+00	3.26E+00	
AC-228	0.965	1.12E+00	3.31E-01	

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

Errors quoted at 2.000sigma

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/22/2017 6:28:46PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	76.51	2.45160E-01	7.63		
M	3	84.36	1.82510E-02	24.53	Tol.	TH-231
	5	93.45	1.79030E-02	56.79	Sum	
m	9	241.99	3.31444E-02	26.32		
	10	270.87	1.55621E-02	53.24		
	11	277.25	1.06370E-02	53.38	Tol.	NP-239 CM-243
	15	410.25	7.76815E-03	54.55	Tol.	HO-166M
	16	446.58	8.51587E-03	54.30		
	17	461.05	1.26832E-02	42.61		
	18	511.83	1.28652E-02	49.62		
	21	618.05	4.30857E-03	62.26	Tol.	PM-144
	23	767.61	6.00427E-03	58.74		
	24	863.00	8.88688E-03	42.63		
	25	878.65	1.38700E-02	38.97	Sum	
	29	1173.69	4.27326E-03	62.35	Tol.	CO-60
	30	1325.26	5.32164E-03	49.78		
	31	1364.93	1.94444E-03	67.01		
	33	1730.65	3.87255E-03	35.55		
	35	1874.15	1.94444E-03	37.80		
	36	2203.16	5.27778E-03	22.94		
	37	2403.33	2.22222E-03	35.36		

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

NUCLIDE MDA REPORT

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

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		BE-7	477.59		10.42	4.98E-01	3.09E+00	3.09E+00
+		NA-22	1274.54		99.94	1.87E-02	1.55E-01	1.55E-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	-1.38E-02	8.26E-02	8.26E-02
+		K-40	1460.81	*	10.67	1.68E+01	1.71E+00	1.71E+00
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	-8.70E-02	7.51E-02	7.51E-02
			78.34		96.00	4.32E-01		1.02E-01
+		SC-46	889.25		99.98	-2.02E-02	2.59E-01	2.59E-01
			1120.51		99.99	4.15E-01		4.36E-01
+		V-48	983.52		99.98	-8.48E-03	1.01E+01	1.01E+01
			1312.10		97.50	-1.84E+00		1.02E+01
+		CR-51	320.08		9.83	-3.23E+00	9.12E+00	9.12E+00
+		MN-54	834.83		99.97	9.86E-03	1.61E-01	1.61E-01
+		CO-56	846.75		99.96	-4.23E-03	2.72E-01	2.72E-01
			1037.75		14.03	-1.50E+00		2.00E+00
			1238.25		67.00	-3.96E-02		6.68E-01
			1771.40		15.51	2.29E-01		1.92E+00
			2598.48		16.90	0.00E+00		4.05E-01
+		CO-57	122.06		85.51	-4.82E-02	7.94E-02	7.94E-02
			136.48		10.60	4.19E-01		7.09E-01
+		CO-58	810.76		99.40	-1.86E-01	2.90E-01	2.90E-01
+		FE-59	1099.22		56.50	-2.92E-01	1.17E+00	1.17E+00
			1291.56		43.20	-6.51E-01		1.61E+00
+		CO-60	1173.22		100.00	-3.68E-02	1.17E-01	1.74E-01
			1332.49		100.00	1.64E-02		1.17E-01
+		ZN-65	1115.52		50.75	3.49E-02	4.50E-01	4.50E-01
+		GA-67	93.31		35.70	5.85E+08	4.66E+08	4.66E+08
			208.95		2.24	3.35E+09		6.82E+09
			300.22		16.00	4.16E+08		1.21E+09
+		SE-75	121.11		16.70	-3.33E-01	1.82E-01	5.59E-01
			136.00		59.20	1.22E-01		1.82E-01
			264.65		59.80	-1.04E-03		1.96E-01
			279.53		25.20	7.52E-02		5.41E-01
			400.65		11.40	-3.93E-01		1.23E+00
+		RB-82	776.52		13.00	5.89E+00	1.47E+01	1.47E+01
+		RB-83	520.41		46.00	1.62E-01	4.29E-01	4.29E-01
			529.64		30.30	2.43E-01		6.67E-01
			552.65		16.40	1.01E+00		1.34E+00
+		KR-85	513.99		0.43	3.33E+01	2.85E+01	2.85E+01
+		SR-85	513.99		99.27	4.23E-01	3.62E-01	3.62E-01
+		Y-88	898.02		93.40	1.79E-01	1.91E-01	2.74E-01
			1836.01		99.38	2.03E-02		1.91E-01
+		MO-93	263.06		56.72	-2.21E-02	9.24E-02	1.17E-01
			684.67		99.68	-1.57E-02		1.12E-01
			1477.11		99.08	7.52E-03		9.24E-02

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	NB-93M	16.57		9.43	1.24E+01	8.15E+00	8.15E+00
+	NB-94	702.63		100.00	-1.07E-01	1.19E-01	1.19E-01
		871.10		100.00	6.22E-02		1.22E-01
+	NB-95	765.79		99.81	4.27E-02	9.83E-01	9.83E-01
+	NB-95M	235.69		25.00	1.97E+08	1.28E+08	1.28E+08
+	ZR-95	724.18		43.70	1.90E-01	6.35E-01	8.26E-01
		756.72		55.30	8.64E-02		6.35E-01
+	MO-99	181.06		6.20	-1.04E+10	1.05E+11	1.23E+11
		739.58		12.80	-8.68E+09		1.05E+11
		778.00		4.50	1.22E+11		3.37E+11
+	RU-103	497.08		89.00	-3.59E-02	5.86E-01	5.86E-01
+	RU-106	621.84		9.80	1.41E-01	1.17E+00	1.17E+00
+	AG-108M	433.93		89.90	-2.82E-02	8.90E-02	8.90E-02
		614.37		90.40	-4.37E-01		1.07E-01
		722.95		90.50	5.76E-02		1.28E-01
+	CD-109	88.03	*	3.72	1.34E+00	3.27E+00	3.27E+00
+	AG-110M	657.75		93.14	3.18E-02	1.62E-01	1.62E-01
		677.61		10.53	-1.08E+00		1.26E+00
		706.67		16.46	6.33E-02		9.48E-01
		763.93		21.98	4.36E-02		7.41E-01
		884.67		71.63	1.14E-01		2.39E-01
		1384.27		23.94	-2.01E-01		5.57E-01
+	CD-113M	263.70		0.02	-1.30E+01	2.84E+02	2.84E+02
+	SN-113	255.12		1.93	3.83E-01	2.30E-01	6.38E+00
		391.69		64.90	-1.08E-01		2.30E-01
+	TE123M	159.00		84.10	-3.60E-03	1.33E-01	1.33E-01
+	SB-124	602.71		97.87	3.56E-02	3.27E-01	3.27E-01
		645.85		7.26	-4.20E-01		4.42E+00
		722.78		11.10	1.51E+00		3.35E+00
		1691.02		49.00	3.63E-02		7.93E-01
+	I-125	35.49		6.49	-3.91E+00	5.34E+00	5.34E+00
+	SB-125	176.33		6.89	1.70E-01	3.01E-01	9.70E-01
		427.89		29.33	5.25E-02		3.01E-01
		463.38		10.35	4.00E-02		1.04E+00
		600.56		17.80	-1.73E-01		5.61E-01
		635.90		11.32	-1.93E-01		8.84E-01
+	SB-126	414.70		83.30	-3.67E+00	2.76E+01	2.76E+01
		666.33		99.60	-3.93E+00		3.54E+01
		695.00		99.60	-1.63E+01		3.38E+01
		720.50		53.80	3.52E+00		5.54E+01
+	SN-126	87.57	*	37.00	1.16E-01	2.82E-01	2.82E-01
+	SB-127	473.00		25.00	-1.21E+07	2.59E+07	2.74E+07
		685.20		35.70	-3.61E+06		2.59E+07
		783.80		14.70	1.42E+07		7.42E+07
+	I-129	29.78		57.00	3.16E-02	2.78E-01	2.78E-01
		33.60		13.20	4.18E-01		9.28E-01
		39.58		7.52	3.12E-01		1.25E+00
+	I-131	284.30		6.05	1.98E+03	6.18E+02	7.30E+03

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	I-131	364.48		81.20	7.95E+01	6.18E+02	6.18E+02
		636.97		7.26	-2.67E+03		7.87E+03
		722.89		1.80	1.80E+04		4.01E+04
+	TE-132	49.72		13.10	2.35E+08	1.80E+08	1.40E+09
		228.16		88.00	-9.93E+07		1.80E+08
+	BA-133	81.00		33.00	-5.28E-01	1.75E-01	2.29E-01
		302.84		17.80	1.25E-01		4.54E-01
		356.01		60.00	8.73E-03		1.75E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	-2.97E+05	1.29E+05	1.29E+05
+	CS-134	563.23		8.38	3.56E-01	1.23E-01	1.33E+00
		569.32		15.43	-1.11E-01		6.65E-01
		604.70		97.60	-1.84E-03		1.23E-01
		795.84		85.40	-2.74E-02		1.50E-01
		801.93		8.73	-7.03E-03		1.55E+00
+	CS-135	268.24		16.00	-1.66E-02	4.55E-01	4.55E-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	-2.34E+01	2.35E+01	1.65E+02
		163.89		4.61	-3.49E+01		2.79E+02
		176.55		13.56	2.27E+01		9.62E+01
		273.65		12.66	-5.73E+01		1.24E+02
		340.57		48.50	1.74E+01		3.90E+01
		818.50		99.70	8.14E+00		2.35E+01
		1048.07		79.60	-2.56E+00		3.35E+01
		1235.34		19.70	4.73E+01		2.01E+02
+	CS-137	661.65		85.12	-4.64E-02	1.31E-01	1.31E-01
+	LA-138	788.74		34.00	-3.00E-02	1.58E-01	3.61E-01
		1435.80		66.00	-1.26E-02		1.58E-01
+	CE-139	165.85		80.35	-3.81E-03	1.30E-01	1.30E-01
+	BA-140	162.64		6.70	-1.02E+02	8.57E+01	2.23E+02
		304.84		4.50	-6.53E+01		3.95E+02
		423.70		3.20	-6.13E+02		5.85E+02
		437.55		2.00	4.79E+02		1.01E+03
		537.32		25.00	-3.62E+00		8.57E+01
+	LA-140	328.77		20.50	4.41E+00	3.39E+01	9.42E+01
		487.03		45.50	-1.41E+01		4.48E+01
		815.85		23.50	5.34E+01		1.17E+02
		1596.49		95.49	1.31E+01		3.39E+01
+	CE-141	145.44	*	48.40	2.07E+00	1.80E+00	1.80E+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	2.43E-01	7.10E-01	7.10E-01
+	PM-144	476.78		42.00	-2.30E-02	1.17E-01	2.44E-01
		618.01		98.60	-1.29E-02		1.17E-01
		696.49		99.49	4.19E-02		1.50E-01
+	PM-145	36.85		21.70	-2.36E-01	2.54E-01	4.76E-01

Analysis Report for 1707088-13

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PM-145	37.36	39.70	-1.26E-01	2.54E-01	2.54E-01
		42.30	15.10	1.00E-01		5.81E-01
		72.40	2.31	-6.97E-02		3.53E+00
+	PM-146	453.90	39.94	-2.39E-02	1.87E-01	1.87E-01
		735.90	14.01	-2.52E-01		7.62E-01
		747.13	13.10	-2.50E-01		8.44E-01
+	ND-147	91.11	28.90	2.43E+02	1.62E+02	1.62E+02
		531.02	13.10	-1.23E+00		4.00E+02
+	PM-149	285.90	3.10	6.41E+13	1.44E+14	1.44E+14
+	EU-152	121.78	20.50	-1.57E-01	2.59E-01	2.59E-01
		244.69	5.40	-9.50E-02		1.45E+00
		344.27	19.13	1.37E-01		4.18E-01
		778.89	9.20	-5.89E-02		1.34E+00
		964.01	10.40	-1.35E-01		1.50E+00
		1085.78	7.22	4.96E-01		1.95E+00
		1112.02	9.60	2.68E-01		1.56E+00
		1407.95	14.94	7.37E-02		7.42E-01
+	GD-153	97.43	31.30	9.71E-02	2.66E-01	2.66E-01
		103.18	22.20	-3.52E-02		3.35E-01
+	EU-154	123.07	40.50	-6.70E-02	1.35E-01	1.35E-01
		723.30	19.70	1.43E-01		6.24E-01
		873.19	11.50	-1.90E-01		1.00E+00
		996.32	10.30	4.47E-01		1.32E+00
		1004.76	17.90	-1.06E-01		7.65E-01
		1274.45	35.50	5.01E-02		4.15E-01
+	EU-155	86.50	30.90	3.19E-01	2.52E-01	2.52E-01
		105.30	20.70	-2.55E-02		2.73E-01
+	EU-156	811.77	10.40	-3.95E+01	1.05E+02	1.05E+02
		1153.47	7.20	-4.73E+01		2.17E+02
		1230.71	8.90	6.08E+01		2.12E+02
+	HO-166M	184.41	72.60	8.06E-02	9.92E-02	9.92E-02
		280.45	29.60	7.00E-02		2.52E-01
		410.94	11.10	-1.55E-01		7.60E-01
		711.69	54.10	1.74E-01		2.24E-01
+	TM-171	66.72	0.14	-3.20E+01	5.77E+01	5.77E+01
+	HF-172	67.35	5.31	-8.43E-01	5.64E-01	1.52E+00
		125.81	11.30	1.74E-01		5.64E-01
+	LU-172	181.53	20.60	4.24E+02	8.61E+03	1.11E+04
		900.72	29.81	3.01E+02		1.44E+04
		1093.66	62.50	-5.40E+02		8.61E+03
+	LU-173	100.72	5.24	1.91E-01	4.06E-01	1.24E+00
		272.11	21.20	2.18E-02		4.06E-01
+	HF-175	343.40	84.00	8.38E-02	2.55E-01	2.55E-01
+	LU-176	88.34	13.30	1.41E-01	7.39E-02	5.66E-01
		201.83	86.00	-4.64E-04		7.39E-02
		306.78	94.00	-3.45E-02		7.40E-02
+	HF-181	133.02	41.70	-2.00E-01	5.37E-01	7.40E-01
		345.85	17.20	7.92E-01		2.37E+00
		482.03	82.80	1.64E-02		5.37E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TA-182	67.75		41.20	-3.67E-01	3.17E-01	3.17E-01
		1121.30		34.90	8.23E-01		9.66E-01
		1189.05		16.23	-4.29E-01		1.84E+00
		1221.41		26.98	2.69E-01		1.28E+00
		1231.02		11.44	-8.48E-01		2.85E+00
+	IR-192	308.46		29.68	4.67E-02	4.61E-01	6.31E-01
		468.07		48.10	-1.35E-02		4.61E-01
+	HG-203	279.19		77.30	2.94E-01	4.47E-01	4.47E-01
+	TL-204	374.74		94.11	1.84E-03	8.69E-02	8.69E-02
		899.15		99.16	-1.69E-02		1.27E-01
		911.74		91.10	3.35E-01		2.29E-01
+	BI-207	569.67		97.72	-1.60E-02	9.62E-02	9.62E-02
		1063.62		74.90	-2.69E-02		2.14E-01
+	TL-208	583.14	*	30.22	9.61E-01	7.90E-02	3.99E-01
		860.37		4.48	1.40E+00		2.94E+00
		2614.66	*	35.85	7.59E-01		7.90E-02
+	BI-210M	262.00		45.00	-2.11E-02	1.47E-01	1.47E-01
		300.00		23.00	1.27E-01		3.72E-01
+	PB-210	46.50	*	4.25	1.09E+00	1.87E+00	1.87E+00
+	PB-211	404.84		2.90	3.40E-01	2.75E+00	2.75E+00
		831.96		2.90	8.04E-01		4.44E+00
+	BI-212	727.17	*	11.80	7.14E-01	9.77E-01	9.77E-01
		1620.62		2.75	6.60E-01		4.07E+00
+	PB-212	238.63	*	44.60	1.10E+00	2.66E-01	2.66E-01
		300.09		3.41	8.60E-01		2.51E+00
+	BI-214	609.31	*	46.30	8.45E-01	3.17E-01	3.17E-01
		1120.29	*	15.10	1.26E+00		1.52E+00
		1764.49	*	15.80	1.21E+00		8.92E-01
		2204.22		4.98	2.86E+00		3.82E+00
+	PB-214	295.21	*	19.19	7.86E-01	3.34E-01	6.15E-01
		351.92	*	37.19	8.79E-01		3.34E-01
+	RN-219	401.80		6.50	-6.40E-01	1.19E+00	1.19E+00
+	RA-223	323.87		3.88	-8.93E-01	1.88E+00	1.88E+00
+	RA-224	240.98		3.95	1.43E+01	3.30E+00	3.30E+00
+	RA-225	40.00		31.00	8.59E+00	3.45E+01	3.45E+01
+	RA-226	186.21	*	3.28	1.50E+00	2.85E+00	2.85E+00
+	TH-227	50.10		8.40	1.57E-01	9.35E-01	9.35E-01
		236.00		11.50	1.52E+00		9.88E-01
		256.20		6.30	4.57E-01		1.09E+00
+	AC-228	338.32	*	11.40	9.94E-01	7.55E-01	9.09E-01
		911.07	*	27.70	1.21E+00		7.55E-01
		969.11	*	16.60	1.12E+00		9.69E-01
+	TH-230	48.44		16.90	-1.13E-01	4.74E-01	4.74E-01
		62.85		4.60	1.57E+00		1.70E+00
		67.67		0.37	-2.21E+01		1.91E+01
+	PA-231	283.67		1.60	1.20E+00	3.45E+00	4.42E+00
		302.67		2.30	9.52E-01		3.45E+00
+	TH-231	25.64		14.70	-5.89E-01	1.06E+00	1.54E+00

Analysis Report for 1707088-13

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	TH-231	84.21	6.40	-1.21E+00	1.06E+00	1.06E+00
+	PA-233	311.98	38.60	1.97E-01	2.51E+00	2.51E+00
+	PA-234	131.20	20.40	-4.27E-02	2.89E-01	2.89E-01
		733.99	8.80	2.90E-01		1.28E+00
		946.00	12.00	-7.46E-01		9.64E-01
+	PA-234M	1001.03	0.92	0.00E+00	1.51E+01	1.51E+01
+	TH-234	63.29	3.80	1.90E+00	2.05E+00	2.05E+00
+	U-235	143.76	10.50	4.83E-01	5.93E-01	5.93E-01
		163.35	4.70	-5.97E-01		1.31E+00
		205.31	4.70	-9.34E-01		1.35E+00
+	NP-237	86.50	12.60	7.52E-01	5.95E-01	5.95E-01
+	NP-239	106.10	22.70	8.38E+11	2.18E+12	2.18E+12
		228.18	10.70	-3.19E+12		5.77E+12
		277.60	14.10	1.89E+11		4.74E+12
+	AM-241	59.54	35.90	5.60E-02	2.16E-01	2.16E-01
+	AM-243	74.67	66.00	6.08E-01	1.52E-01	1.52E-01
+	CM-243	209.75	3.29	4.02E-02	5.33E-01	2.04E+00
		228.14	10.60	-3.60E-01		6.50E-01
		277.60	14.00	2.13E-02		5.33E-01

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

NUCLIDE MDA REPORT

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

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	3.09E+00	3.09E+00	4.98E-01	1.45E+00
NA-22	1274.54	99.94	1.55E-01	1.55E-01	1.87E-02	7.05E-02
@ NA-24	1368.53	99.99	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)
@	NA-24	2754.09		99.86	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	AL-26	1808.65		99.76	8.26E-02	8.26E-02	-1.38E-02	3.20E-02
+	K-40	1460.81	*	10.67	1.71E+00	1.71E+00	1.68E+01	7.82E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	7.51E-02	7.51E-02	-8.70E-02	3.67E-02
		78.34		96.00	1.02E-01		4.32E-01	5.00E-02
	SC-46	889.25		99.98	2.59E-01	2.59E-01	-2.02E-02	1.18E-01
		1120.51		99.99	4.36E-01		4.15E-01	2.04E-01
	V-48	983.52		99.98	1.01E+01	1.01E+01	-8.48E-03	4.62E+00
		1312.10		97.50	1.02E+01		-1.84E+00	4.54E+00
	CR-51	320.08		9.83	9.12E+00	9.12E+00	-3.23E+00	4.33E+00
	MN-54	834.83		99.97	1.61E-01	1.61E-01	9.86E-03	7.45E-02
	CO-56	846.75		99.96	2.72E-01	2.72E-01	-4.23E-03	1.24E-01
		1037.75		14.03	2.00E+00		-1.50E+00	9.05E-01
		1238.25		67.00	6.68E-01		-3.96E-02	3.10E-01
		1771.40		15.51	1.92E+00		2.29E-01	8.16E-01
		2598.48		16.90	4.05E-01		0.00E+00	0.00E+00
	CO-57	122.06		85.51	7.94E-02	7.94E-02	-4.82E-02	3.85E-02
		136.48		10.60	7.09E-01		4.19E-01	3.44E-01
	CO-58	810.76		99.40	2.90E-01	2.90E-01	-1.86E-01	1.33E-01
	FE-59	1099.22		56.50	1.17E+00	1.17E+00	-2.92E-01	5.35E-01
		1291.56		43.20	1.61E+00		-6.51E-01	7.28E-01
	CO-60	1173.22		100.00	1.74E-01	1.17E-01	-3.68E-02	8.04E-02
		1332.49		100.00	1.17E-01		1.64E-02	5.14E-02
	ZN-65	1115.52		50.75	4.50E-01	4.50E-01	3.49E-02	2.09E-01
	GA-67	93.31		35.70	4.66E+08	4.66E+08	5.85E+08	2.28E+08
		208.95		2.24	6.82E+09		3.35E+09	3.29E+09
		300.22		16.00	1.21E+09		4.16E+08	5.83E+08
	SE-75	121.11		16.70	5.59E-01	1.82E-01	-3.33E-01	2.71E-01
		136.00		59.20	1.82E-01		1.22E-01	8.82E-02
		264.65		59.80	1.96E-01		-1.04E-03	9.35E-02
		279.53		25.20	5.41E-01		7.52E-02	2.59E-01
		400.65		11.40	1.23E+00		-3.93E-01	5.78E-01
	RB-82	776.52		13.00	1.47E+01	1.47E+01	5.89E+00	6.81E+00
	RB-83	520.41		46.00	4.29E-01	4.29E-01	1.62E-01	2.00E-01
		529.64		30.30	6.67E-01		2.43E-01	3.11E-01
		552.65		16.40	1.34E+00		1.01E+00	6.27E-01
	KR-85	513.99		0.43	2.85E+01	2.85E+01	3.33E+01	1.36E+01
	SR-85	513.99		99.27	3.62E-01	3.62E-01	4.23E-01	1.72E-01
	Y-88	898.02		93.40	2.74E-01	1.91E-01	1.79E-01	1.27E-01
		1836.01		99.38	1.91E-01		2.03E-02	7.72E-02
	MO-93	263.06		56.72	1.17E-01	9.24E-02	-2.21E-02	5.57E-02
		684.67		99.68	1.12E-01		-1.57E-02	5.23E-02
		1477.11		99.08	9.24E-02		7.52E-03	3.83E-02
	NB-93M	16.57		9.43	8.15E+00	8.15E+00	1.24E+01	3.94E+00
	NB-94	702.63		100.00	1.19E-01	1.19E-01	-1.07E-01	5.54E-02
		871.10		100.00	1.22E-01		6.22E-02	5.60E-02
	NB-95	765.79		99.81	9.83E-01	9.83E-01	4.27E-02	4.60E-01
	NB-95M	235.69		25.00	1.28E+08	1.28E+08	1.97E+08	6.27E+07
	ZR-95	724.18		43.70	8.26E-01	6.35E-01	1.90E-01	3.85E-01
		756.72		55.30	6.35E-01		8.64E-02	2.94E-01
	MO-99	181.06		6.20	1.23E+11	1.05E+11	-1.04E+10	5.96E+10
		739.58		12.80	1.05E+11		-8.68E+09	4.84E+10

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	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	MO-99	778.00		4.50	3.37E+11	1.05E+11	1.22E+11	1.57E+11
	RU-103	497.08		89.00	5.86E-01	5.86E-01	-3.59E-02	2.74E-01
	RU-106	621.84		9.80	1.17E+00	1.17E+00	1.41E-01	5.42E-01
	AG-108M	433.93		89.90	8.90E-02	8.90E-02	-2.82E-02	4.18E-02
		614.37		90.40	1.07E-01		-4.37E-01	4.98E-02
		722.95		90.50	1.28E-01		5.76E-02	5.97E-02
+	CD-109	88.03	*	3.72	3.27E+00	3.27E+00	1.34E+00	1.61E+00
	AG-110M	657.75		93.14	1.62E-01	1.62E-01	3.18E-02	7.57E-02
		677.61		10.53	1.26E+00		-1.08E+00	5.82E-01
		706.67		16.46	9.48E-01		6.33E-02	4.42E-01
		763.93		21.98	7.41E-01		4.36E-02	3.45E-01
		884.67		71.63	2.39E-01		1.14E-01	1.11E-01
		1384.27		23.94	5.57E-01		-2.01E-01	2.39E-01
	CD-113M	263.70		0.02	2.84E+02	2.84E+02	-1.30E+01	1.35E+02
	SN-113	255.12		1.93	6.38E+00	2.30E-01	3.83E-01	3.06E+00
		391.69		64.90	2.30E-01		-1.08E-01	1.09E-01
	TE123M	159.00		84.10	1.33E-01	1.33E-01	-3.60E-03	6.44E-02
	SB-124	602.71		97.87	3.27E-01	3.27E-01	3.56E-02	1.52E-01
		645.85		7.26	4.42E+00		-4.20E-01	2.05E+00
		722.78		11.10	3.35E+00		1.51E+00	1.56E+00
		1691.02		49.00	7.93E-01		3.63E-02	3.40E-01
	I-125	35.49		6.49	5.34E+00	5.34E+00	-3.91E+00	2.59E+00
	SB-125	176.33		6.89	9.70E-01	3.01E-01	1.70E-01	4.69E-01
		427.89		29.33	3.01E-01		5.25E-02	1.42E-01
		463.38		10.35	1.04E+00		4.00E-02	4.94E-01
		600.56		17.80	5.61E-01		-1.73E-01	2.60E-01
		635.90		11.32	8.84E-01		-1.93E-01	4.08E-01
	SB-126	414.70		83.30	2.76E+01	2.76E+01	-3.67E+00	1.30E+01
		666.33		99.60	3.54E+01		-3.93E+00	1.66E+01
		695.00		99.60	3.38E+01		-1.63E+01	1.58E+01
		720.50		53.80	5.54E+01		3.52E+00	2.55E+01
+	SN-126	87.57	*	37.00	2.82E-01	2.82E-01	1.16E-01	1.39E-01
	SB-127	473.00		25.00	2.74E+07	2.59E+07	-1.21E+07	1.28E+07
		685.20		35.70	2.59E+07		-3.61E+06	1.21E+07
		783.80		14.70	7.42E+07		1.42E+07	3.46E+07
	I-129	29.78		57.00	2.78E-01	2.78E-01	3.16E-02	1.35E-01
		33.60		13.20	9.28E-01		4.18E-01	4.50E-01
		39.58		7.52	1.25E+00		3.12E-01	6.08E-01
	I-131	284.30		6.05	7.30E+03	6.18E+02	1.98E+03	3.49E+03
		364.48		81.20	6.18E+02		7.95E+01	2.93E+02
		636.97		7.26	7.87E+03		-2.67E+03	3.63E+03
		722.89		1.80	4.01E+04		1.80E+04	1.87E+04
	TE-132	49.72		13.10	1.40E+09	1.80E+08	2.35E+08	6.80E+08
		228.16		88.00	1.80E+08		-9.93E+07	8.65E+07
	BA-133	81.00		33.00	2.29E-01	1.75E-01	-5.28E-01	1.12E-01
		302.84		17.80	4.54E-01		1.25E-01	2.17E-01
		356.01		60.00	1.75E-01		8.73E-03	8.41E-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	1.29E+05	1.29E+05	-2.97E+05	6.31E+04
	CS-134	563.23		8.38	1.33E+00	1.23E-01	3.56E-01	6.24E-01
		569.32		15.43	6.65E-01		-1.11E-01	3.09E-01
		604.70		97.60	1.23E-01		-1.84E-03	5.75E-02
		795.84		85.40	1.50E-01		-2.74E-02	6.92E-02

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CS-134	801.93		8.73	1.55E+00	1.23E-01	-7.03E-03	7.21E-01
	CS-135	268.24		16.00	4.55E-01	4.55E-01	-1.66E-02	2.18E-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	1.65E+02	2.35E+01	-2.34E+01	7.97E+01
		163.89		4.61	2.79E+02		-3.49E+01	1.35E+02
		176.55		13.56	9.62E+01		2.27E+01	4.65E+01
		273.65		12.66	1.24E+02		-5.73E+01	5.95E+01
		340.57		48.50	3.90E+01		1.74E+01	1.87E+01
		818.50		99.70	2.35E+01		8.14E+00	1.08E+01
		1048.07		79.60	3.35E+01		-2.56E+00	1.53E+01
		1235.34		19.70	2.01E+02		4.73E+01	9.36E+01
	CS-137	661.65		85.12	1.31E-01	1.31E-01	-4.64E-02	6.10E-02
	LA-138	788.74		34.00	3.61E-01	1.58E-01	-3.00E-02	1.68E-01
		1435.80		66.00	1.58E-01		-1.26E-02	6.75E-02
	CE-139	165.85		80.35	1.30E-01	1.30E-01	-3.81E-03	6.32E-02
	BA-140	162.64		6.70	2.23E+02	8.57E+01	-1.02E+02	1.08E+02
		304.84		4.50	3.95E+02		-6.53E+01	1.88E+02
		423.70		3.20	5.85E+02		-6.13E+02	2.75E+02
		437.55		2.00	1.01E+03		4.79E+02	4.77E+02
		537.32		25.00	8.57E+01		-3.62E+00	3.99E+01
	LA-140	328.77		20.50	9.42E+01	3.39E+01	4.41E+00	4.49E+01
		487.03		45.50	4.48E+01		-1.41E+01	2.09E+01
		815.85		23.50	1.17E+02		5.34E+01	5.40E+01
		1596.49		95.49	3.39E+01		1.31E+01	1.49E+01
+	CE-141	145.44	*	48.40	1.80E+00	1.80E+00	2.07E+00	8.86E-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	7.10E-01	7.10E-01	2.43E-01	3.45E-01
	PM-144	476.78		42.00	2.44E-01	1.17E-01	-2.30E-02	1.14E-01
		618.01		98.60	1.17E-01		-1.29E-02	5.42E-02
		696.49		99.49	1.50E-01		4.19E-02	7.00E-02
	PM-145	36.85		21.70	4.76E-01	2.54E-01	-2.36E-01	2.31E-01
		37.36		39.70	2.54E-01		-1.26E-01	1.23E-01
		42.30		15.10	5.81E-01		1.00E-01	2.82E-01
		72.40		2.31	3.53E+00		-6.97E-02	1.73E+00
	PM-146	453.90		39.94	1.87E-01	1.87E-01	-2.39E-02	8.68E-02
		735.90		14.01	7.62E-01		-2.52E-01	3.51E-01
		747.13		13.10	8.44E-01		-2.50E-01	3.89E-01
	ND-147	91.11		28.90	1.62E+02	1.62E+02	2.43E+02	7.92E+01
		531.02		13.10	4.00E+02		-1.23E+00	1.86E+02
	PM-149	285.90		3.10	1.44E+14	1.44E+14	6.41E+13	6.86E+13
	EU-152	121.78		20.50	2.59E-01	2.59E-01	-1.57E-01	1.25E-01
		244.69		5.40	1.45E+00		-9.50E-02	6.98E-01
		344.27		19.13	4.18E-01		1.37E-01	1.99E-01
		778.89		9.20	1.34E+00		-5.89E-02	6.21E-01
		964.01		10.40	1.50E+00		-1.35E-01	7.00E-01
		1085.78		7.22	1.95E+00		4.96E-01	8.93E-01
		1112.02		9.60	1.56E+00		2.68E-01	7.19E-01
		1407.95		14.94	7.42E-01		7.37E-02	3.21E-01
	GD-153	97.43		31.30	2.66E-01	2.66E-01	9.71E-02	1.30E-01

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	GD-153	103.18		22.20	3.35E-01	2.66E-01	-3.52E-02	1.63E-01
	EU-154	123.07		40.50	1.35E-01	1.35E-01	-6.70E-02	6.53E-02
		723.30		19.70	6.24E-01		1.43E-01	2.91E-01
		873.19		11.50	1.00E+00		-1.90E-01	4.60E-01
		996.32		10.30	1.32E+00		4.47E-01	6.06E-01
		1004.76		17.90	7.65E-01		-1.06E-01	3.51E-01
		1274.45		35.50	4.15E-01		5.01E-02	1.88E-01
	EU-155	86.50		30.90	2.52E-01	2.52E-01	3.19E-01	1.24E-01
		105.30		20.70	2.73E-01		-2.55E-02	1.33E-01
	EU-156	811.77		10.40	1.05E+02	1.05E+02	-3.95E+01	4.81E+01
		1153.47		7.20	2.17E+02		-4.73E+01	9.96E+01
		1230.71		8.90	2.12E+02		6.08E+01	9.87E+01
	HO-166M	184.41		72.60	9.92E-02	9.92E-02	8.06E-02	4.82E-02
		280.45		29.60	2.52E-01		7.00E-02	1.21E-01
		410.94		11.10	7.60E-01		-1.55E-01	3.59E-01
		711.69		54.10	2.24E-01		1.74E-01	1.05E-01
	TM-171	66.72		0.14	5.77E+01	5.77E+01	-3.20E+01	2.82E+01
	HF-172	67.35		5.31	1.52E+00	5.64E-01	-8.43E-01	7.42E-01
		125.81		11.30	5.64E-01		1.74E-01	2.74E-01
	LU-172	181.53		20.60	1.11E+04	8.61E+03	4.24E+02	5.36E+03
		900.72		29.81	1.44E+04		3.01E+02	6.62E+03
		1093.66		62.50	8.61E+03		-5.40E+02	3.97E+03
	LU-173	100.72		5.24	1.24E+00	4.06E-01	1.91E-01	6.01E-01
		272.11		21.20	4.06E-01		2.18E-02	1.95E-01
	HF-175	343.40		84.00	2.55E-01	2.55E-01	8.38E-02	1.22E-01
	LU-176	88.34		13.30	5.66E-01	7.39E-02	1.41E-01	2.77E-01
		201.83		86.00	7.39E-02		-4.64E-04	3.56E-02
		306.78		94.00	7.40E-02		-3.45E-02	3.52E-02
	HF-181	133.02		41.70	7.40E-01	5.37E-01	-2.00E-01	3.59E-01
		345.85		17.20	2.37E+00		7.92E-01	1.13E+00
		482.03		82.80	5.37E-01		1.64E-02	2.51E-01
	TA-182	67.75		41.20	3.17E-01	3.17E-01	-3.67E-01	1.55E-01
		1121.30		34.90	9.66E-01		8.23E-01	4.51E-01
		1189.05		16.23	1.84E+00		-4.29E-01	8.49E-01
		1221.41		26.98	1.28E+00		2.69E-01	5.96E-01
		1231.02		11.44	2.85E+00		-8.48E-01	1.32E+00
	IR-192	308.46		29.68	6.31E-01	4.61E-01	4.67E-02	3.01E-01
		468.07		48.10	4.61E-01		-1.35E-02	2.16E-01
	HG-203	279.19		77.30	4.47E-01	4.47E-01	2.94E-01	2.14E-01
	TL-204	374.74		94.11	8.69E-02	8.69E-02	1.84E-03	4.11E-02
		899.15		99.16	1.27E-01		-1.69E-02	5.85E-02
		911.74		91.10	2.29E-01		3.35E-01	1.09E-01
	BI-207	569.67		97.72	9.62E-02	9.62E-02	-1.60E-02	4.48E-02
		1063.62		74.90	2.14E-01		-2.69E-02	9.92E-02
+	TL-208	583.14	*	30.22	3.99E-01	7.90E-02	9.61E-01	1.89E-01
		860.37		4.48	2.94E+00		1.40E+00	1.36E+00
		2614.66	*	35.85	7.90E-02		7.59E-01	0.00E+00
	BI-210M	262.00		45.00	1.47E-01	1.47E-01	-2.11E-02	7.03E-02
		300.00		23.00	3.72E-01		1.27E-01	1.79E-01
+	PB-210	46.50	*	4.25	1.87E+00	1.87E+00	1.09E+00	9.08E-01
	PB-211	404.84		2.90	2.75E+00	2.75E+00	3.40E-01	1.30E+00
		831.96		2.90	4.44E+00		8.04E-01	2.06E+00
+	BI-212	727.17	*	11.80	9.77E-01	9.77E-01	7.14E-01	4.54E-01

Analysis Report for 1707088-13

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BI-212	1620.62		2.75	4.07E+00	9.77E-01	6.60E-01	1.73E+00
+	PB-212	238.63	*	44.60	2.66E-01	2.66E-01	1.10E+00	1.30E-01
		300.09		3.41	2.51E+00		8.60E-01	1.21E+00
+	BI-214	609.31	*	46.30	3.17E-01	3.17E-01	8.45E-01	1.51E-01
		1120.29	*	15.10	1.52E+00		1.26E+00	7.18E-01
		1764.49	*	15.80	8.92E-01		1.21E+00	3.89E-01
		2204.22		4.98	3.82E+00		2.86E+00	1.68E+00
+	PB-214	295.21	*	19.19	6.15E-01	3.34E-01	7.86E-01	2.99E-01
		351.92	*	37.19	3.34E-01		8.79E-01	1.62E-01
	RN-219	401.80		6.50	1.19E+00	1.19E+00	-6.40E-01	5.62E-01
	RA-223	323.87		3.88	1.88E+00	1.88E+00	-8.93E-01	8.94E-01
	RA-224	240.98		3.95	3.30E+00	3.30E+00	1.43E+01	1.61E+00
	RA-225	40.00		31.00	3.45E+01	3.45E+01	8.59E+00	1.67E+01
+	RA-226	186.21	*	3.28	2.85E+00	2.85E+00	1.50E+00	1.39E+00
	TH-227	50.10		8.40	9.35E-01	9.35E-01	1.57E-01	4.56E-01
		236.00		11.50	9.88E-01		1.52E+00	4.83E-01
		256.20		6.30	1.09E+00		4.57E-01	5.22E-01
+	AC-228	338.32	*	11.40	9.09E-01	7.55E-01	9.94E-01	4.38E-01
		911.07	*	27.70	7.55E-01		1.21E+00	3.59E-01
		969.11	*	16.60	9.69E-01		1.12E+00	4.53E-01
	TH-230	48.44		16.90	4.74E-01	4.74E-01	-1.13E-01	2.31E-01
		62.85		4.60	1.70E+00		1.57E+00	8.33E-01
		67.67		0.37	1.91E+01		-2.21E+01	9.34E+00
	PA-231	283.67		1.60	4.42E+00	3.45E+00	1.20E+00	2.11E+00
		302.67		2.30	3.45E+00		9.52E-01	1.65E+00
	TH-231	25.64		14.70	1.54E+00	1.06E+00	-5.89E-01	7.45E-01
		84.21		6.40	1.06E+00		-1.21E+00	5.17E-01
	PA-233	311.98		38.60	2.51E+00	2.51E+00	1.97E-01	1.19E+00
	PA-234	131.20		20.40	2.89E-01	2.89E-01	-4.27E-02	1.40E-01
		733.99		8.80	1.28E+00		2.90E-01	5.95E-01
		946.00		12.00	9.64E-01		-7.46E-01	4.39E-01
	PA-234M	1001.03		0.92	1.51E+01	1.51E+01	0.00E+00	6.97E+00
	TH-234	63.29		3.80	2.05E+00	2.05E+00	1.90E+00	1.00E+00
	U-235	143.76		10.50	5.93E-01	5.93E-01	4.83E-01	2.88E-01
		163.35		4.70	1.31E+00		-5.97E-01	6.35E-01
		205.31		4.70	1.35E+00		-9.34E-01	6.52E-01
	NP-237	86.50		12.60	5.95E-01	5.95E-01	7.52E-01	2.91E-01
	NP-239	106.10		22.70	2.18E+12	2.18E+12	8.38E+11	1.06E+12
		228.18		10.70	5.77E+12		-3.19E+12	2.78E+12
		277.60		14.10	4.74E+12		1.89E+11	2.27E+12
	AM-241	59.54		35.90	2.16E-01	2.16E-01	5.60E-02	1.06E-01
	AM-243	74.67		66.00	1.52E-01	1.52E-01	6.08E-01	7.50E-02
	CM-243	209.75		3.29	2.04E+00	5.33E-01	4.02E-02	9.85E-01
		228.14		10.60	6.50E-01		-3.60E-01	3.13E-01
		277.60		14.00	5.33E-01		2.13E-02	2.55E-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 1707088-13
HTC-A03-S004-4248-01

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-A03-S004-4248-01

Elapsed Live time: 3600
Elapsed Real Time: 3602

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	10	84
17:	74	78	64	65	71	50	60	69
25:	42	66	51	38	48	57	59	54
33:	53	45	45	50	48	48	62	55
41:	58	56	55	55	81	81	78	49
49:	51	70	78	75	69	60	63	73
57:	82	78	102	74	94	132	127	90
65:	77	77	93	95	86	94	94	102
73:	139	237	249	278	252	107	90	80
81:	60	66	99	97	98	130	137	103
89:	115	105	109	144	126	83	61	51
97:	67	67	70	62	46	59	53	61
105:	59	61	49	50	49	48	64	56
113:	47	40	63	49	48	40	48	41
121:	49	50	45	51	51	65	59	61
129:	52	58	44	57	55	55	58	64
137:	48	46	31	53	67	48	62	48
145:	57	54	45	53	50	52	33	38
153:	56	45	47	44	64	47	44	42
161:	51	56	39	53	36	45	52	46
169:	52	43	38	39	39	39	52	43
177:	39	41	42	36	44	31	44	55
185:	77	73	42	49	39	44	39	38
193:	41	25	42	34	40	43	29	36
201:	38	36	25	35	36	30	35	55
209:	39	26	35	30	34	37	41	24
217:	17	35	37	30	41	40	34	31
225:	33	41	27	33	24	36	40	37
233:	35	35	31	52	155	254	133	67
241:	78	37	36	26	18	28	28	24
249:	23	24	18	18	26	30	22	24
257:	34	26	23	22	16	28	20	24
265:	19	19	25	20	38	40	30	29
273:	13	20	30	29	35	32	18	15
281:	30	26	21	30	12	21	23	23
289:	18	13	25	23	45	69	66	39
297:	28	29	27	36	22	24	18	14
305:	31	17	17	15	15	18	24	17
313:	25	17	17	21	19	21	12	15
321:	19	14	25	19	14	19	29	22
329:	22	18	21	20	18	18	15	31
337:	37	45	31	16	20	12	17	23
345:	18	23	20	11	26	68	100	97
353:	25	23	19	14	16	16	13	14
361:	12	18	19	20	14	21	15	19

369:	17	20	13	14	20	14	17	17

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Channel								
377:	9	8	16	15	9	16	13	21
385:	16	24	21	16	16	12	21	12
393:	12	14	13	17	15	11	12	13
401:	17	13	9	14	16	17	7	21
409:	26	16	15	13	3	16	15	13
417:	13	23	17	10	14	11	9	12
425:	11	11	13	19	13	9	16	9
433:	7	17	14	8	13	10	9	15
441:	13	7	13	13	19	11	17	9
449:	10	6	8	6	10	8	8	12
457:	10	12	15	24	15	18	18	9
465:	13	16	13	14	6	8	12	10
473:	10	8	15	15	8	11	6	14
481:	8	12	10	11	8	10	10	10
489:	10	12	14	9	11	12	11	5
497:	9	9	15	12	8	14	13	9
505:	13	11	6	14	19	38	29	15
513:	17	16	14	6	8	6	14	15
521:	4	10	8	5	5	11	12	8
529:	4	11	10	10	7	11	8	8
537:	8	15	4	8	10	9	13	10
545:	4	10	5	7	7	6	11	10
553:	15	8	15	5	6	8	7	11
561:	13	12	11	10	12	13	9	11
569:	2	9	9	9	9	9	6	10
577:	12	6	13	6	27	47	52	16
585:	12	2	8	10	7	6	6	5
593:	6	9	10	9	7	4	8	9
601:	9	13	5	11	8	12	18	42
609:	86	31	10	8	8	8	4	12
617:	7	14	6	3	6	11	6	7
625:	8	7	6	6	15	8	4	10
633:	9	5	7	1	9	8	8	11
641:	8	9	7	9	8	4	7	11
649:	9	6	9	3	10	9	7	9
657:	5	10	5	5	10	8	7	7
665:	8	12	7	9	9	12	10	12
673:	6	5	7	7	3	6	10	3
681:	3	8	7	8	8	7	6	10
689:	9	4	8	9	5	6	7	9
697:	11	7	12	7	8	7	10	5
705:	8	3	10	15	4	3	8	5
713:	8	9	6	3	3	8	6	9
721:	6	5	3	4	8	11	13	5
729:	9	8	3	5	4	6	7	4
737:	9	4	3	9	6	6	2	8
745:	5	2	13	4	4	3	5	6
753:	7	6	5	6	6	7	8	5
761:	9	5	3	9	4	9	9	14
769:	9	3	5	6	6	3	4	6
777:	8	7	10	8	7	4	5	9
785:	9	4	9	7	4	8	3	4
793:	5	11	5	9	7	3	3	7

801:	6	8	5	11	6	5	6	7

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Channel								
809:	2	3	6	2	4	5	5	6
817:	6	6	5	5	3	3	4	4
825:	4	4	6	8	5	8	2	3
833:	7	7	11	7	7	4	6	5
841:	4	10	6	2	5	4	3	5
849:	2	3	3	6	9	6	3	5
857:	4	1	12	7	11	4	7	5
865:	3	5	7	3	1	9	6	7
873:	4	4	4	1	3	5	5	8
881:	4	7	8	7	8	2	4	3
889:	3	3	2	6	6	9	4	7
897:	6	2	4	7	7	2	3	4
905:	3	4	8	4	12	26	30	19
913:	6	8	7	5	6	5	3	7
921:	7	4	5	3	5	1	3	5
929:	6	4	9	2	5	1	5	4
937:	3	6	5	4	6	2	7	1
945:	2	3	8	2	4	5	11	3
953:	5	5	6	3	7	1	4	3
961:	5	7	6	10	10	8	10	23
969:	22	7	6	2	2	3	8	3
977:	5	3	1	4	4	3	2	5
985:	4	10	5	4	5	2	3	4
993:	6	1	5	5	4	4	11	3
1001:	4	5	7	4	7	7	3	3
1009:	1	6	4	6	1	0	7	3
1017:	6	6	4	4	3	3	6	8
1025:	3	5	4	7	5	5	7	6
1033:	7	1	5	2	5	3	3	1
1041:	2	6	4	3	4	3	3	5
1049:	5	3	6	4	5	3	2	4
1057:	7	6	5	6	6	2	9	4
1065:	4	9	11	7	7	4	7	6
1073:	6	4	6	5	5	3	3	3
1081:	3	5	3	3	9	2	7	5
1089:	3	6	2	6	9	6	7	4
1097:	4	6	4	1	4	3	5	5
1105:	2	1	6	4	4	7	5	2
1113:	11	2	3	6	6	8	17	8
1121:	12	4	3	9	1	6	0	5
1129:	6	6	1	4	4	5	3	3
1137:	7	3	1	3	7	9	4	3
1145:	1	6	10	5	4	7	3	3
1153:	7	8	2	6	4	1	9	4
1161:	4	7	8	4	5	8	8	5
1169:	5	4	1	10	11	8	6	3
1177:	4	7	3	9	6	11	8	5
1185:	4	6	9	4	1	9	6	1
1193:	7	3	5	6	7	5	7	6
1201:	10	8	3	9	5	2	7	6
1209:	7	6	4	1	13	10	7	3
1217:	9	8	10	5	7	6	4	2
1225:	10	7	4	5	5	7	15	5

1233:	3	8	1	6	9	8	7	2

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Channel								
1241:	12	4	3	6	8	1	5	2
1249:	6	6	6	6	4	10	1	3
1257:	5	7	3	6	0	3	4	4
1265:	4	6	1	1	3	7	1	4
1273:	1	4	2	7	2	4	4	3
1281:	6	4	1	4	1	7	2	3
1289:	4	3	5	5	4	3	2	7
1297:	3	6	5	4	4	2	5	3
1305:	2	4	3	1	3	2	3	4
1313:	3	1	2	2	4	1	3	1
1321:	7	1	3	3	7	4	8	3
1329:	1	0	3	1	0	2	2	5
1337:	2	2	2	3	4	3	2	3
1345:	1	1	3	1	2	1	7	2
1353:	3	2	2	3	1	1	3	1
1361:	1	1	3	1	7	0	2	6
1369:	0	3	3	0	0	1	1	1
1377:	1	0	1	1	0	1	2	1
1385:	1	1	1	4	7	3	2	0
1393:	3	2	1	4	2	1	1	5
1401:	1	2	1	0	2	2	2	1
1409:	2	1	3	1	2	2	0	2
1417:	2	1	3	1	2	2	2	1
1425:	2	0	1	3	1	2	2	0
1433:	2	0	1	2	1	2	2	2
1441:	0	1	6	0	0	3	4	1
1449:	2	1	2	0	4	4	0	1
1457:	9	24	57	107	82	38	10	3
1465:	3	1	2	0	2	3	3	1
1473:	1	1	2	1	2	0	0	1
1481:	0	0	0	0	4	1	2	1
1489:	1	2	2	0	1	3	3	2
1497:	2	4	1	0	3	0	1	2
1505:	1	1	0	2	3	1	1	2
1513:	1	1	0	1	1	1	0	1
1521:	2	1	0	0	1	1	0	1
1529:	0	0	0	1	0	2	2	1
1537:	0	0	2	2	3	0	1	0
1545:	2	0	2	0	0	1	1	0
1553:	1	2	0	1	1	0	1	2
1561:	2	0	0	2	2	0	0	0
1569:	0	1	1	2	1	2	1	3
1577:	1	1	0	2	0	0	0	0
1585:	2	1	2	1	2	3	2	3
1593:	4	3	1	0	4	1	0	1
1601:	1	0	0	1	1	2	1	0
1609:	3	0	1	0	0	2	2	2
1617:	2	1	0	3	2	0	0	1
1625:	0	1	1	1	0	2	2	1
1633:	1	1	0	2	0	0	0	1
1641:	2	0	0	2	1	0	1	1
1649:	2	1	1	3	2	1	1	1
1657:	0	0	2	2	2	2	3	1

1665:	0	1	1	0	0	0	1	1

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

2097:	0	1	1	2	0	1	2	2

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

2529:	0	0	0	0	0	0	0	1

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

2961:	0	0	0	1	0	0	1	0

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

3393:	0	0	0	0	0	1	0	0

Sample Title: HTC-A03-S004-4248-01

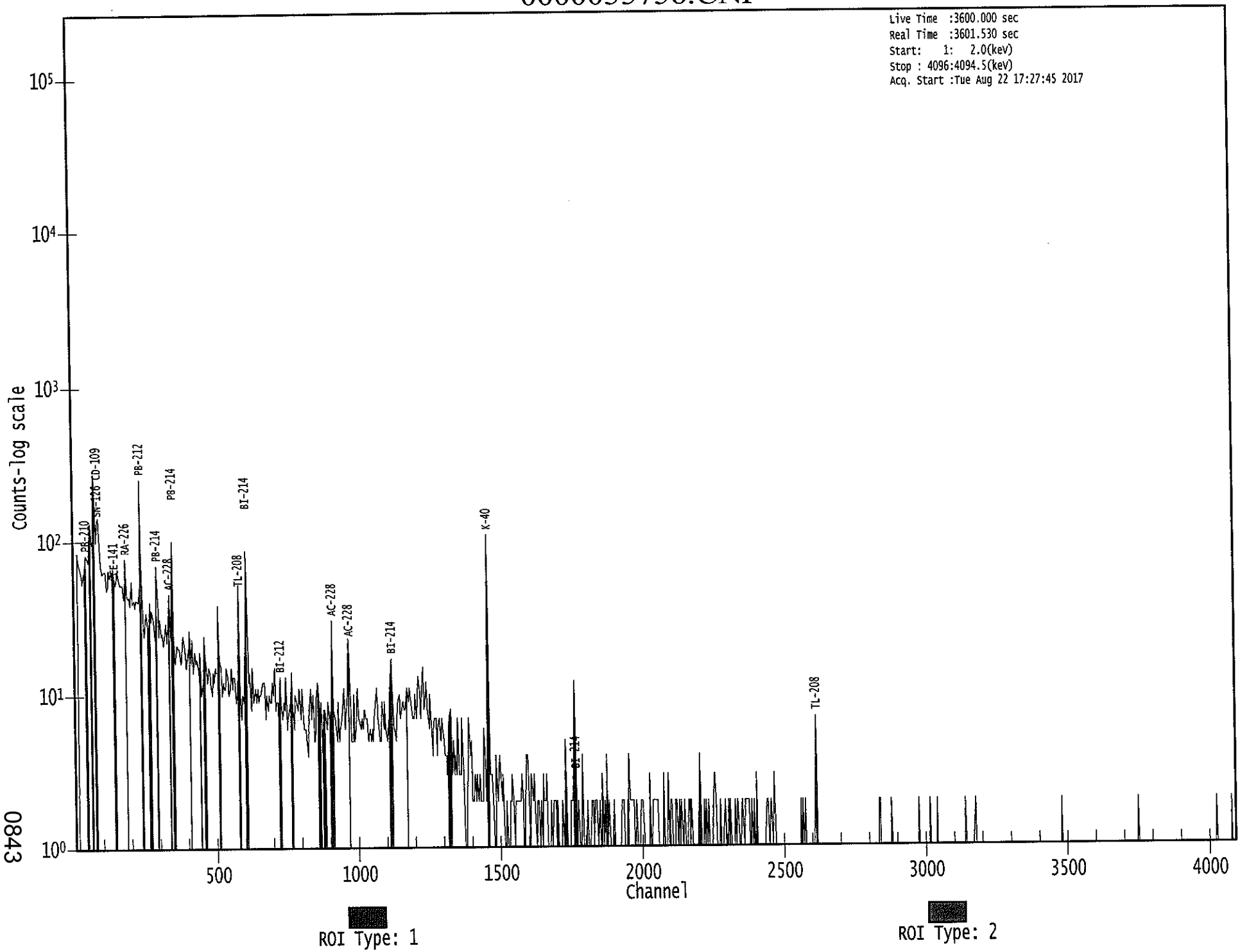
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	1	0	0	1	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	1	1	0	1
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	1	0	2	0
3481:	0	0	0	0	0	0	0	0
3489:	0	1	0	0	1	0	1	0
3497:	0	0	0	0	0	1	0	0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

3825:	0	1	1	0	0	0	0	0

Sample Title: HTC-A03-S004-4248-01

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

0000055756.CNF



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Apex-Gamma

8/23

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-16
Sample Description	: HTC-A03-S004-4248-01
Sample Type	: SOIL
Sample Size	: 5.169E+02 grams
Facility	: Countroom
Sample Taken On	: 5/13/2017 9:35:20AM
Acquisition Started	: 8/23/2017 6:00:53AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.1 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 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	: 55774

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/23/2017 7:00:57AM
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	46.11	46.74	0.0000	0.00
2	53.05	53.66	0.0000	0.00
3	74.56	75.15	0.0000	0.00
4	77.26	77.85	0.0000	0.00
5	87.25	87.83	0.0000	0.00
6	92.58	93.16	0.0000	0.00
7	129.16	129.70	0.0000	0.00
8	176.07	176.56	0.0000	0.00
9	185.47	185.95	0.0000	0.00
10	208.84	209.29	0.0000	0.00
11	238.58	239.00	0.0000	0.00
12	241.74	242.17	0.0000	0.00
13	270.03	270.42	0.0000	0.00
14	295.12	295.49	0.0000	0.00
15	300.65	301.01	0.0000	0.00
16	328.42	328.76	0.0000	0.00
17	338.58	338.90	0.0000	0.00
18	351.86	352.17	0.0000	0.00
19	511.12	511.27	0.0000	0.00
20	538.93	539.05	0.0000	0.00
21	568.18	568.27	0.0000	0.00
22	583.44	583.52	0.0000	0.00
23	609.81	609.86	0.0000	0.00
24	727.31	727.24	0.0000	0.00
25	794.98	794.85	0.0000	0.00
26	861.00	860.80	0.0000	0.00
27	911.88	911.63	0.0000	0.00
28	969.48	969.17	0.0000	0.00
29	1062.67	1062.27	0.0000	0.00
30	1120.56	1120.10	0.0000	0.00
31	1187.81	1187.28	0.0000	0.00
32	1195.06	1194.52	0.0000	0.00
33	1203.13	1202.59	0.0000	0.00
34	1207.56	1207.02	0.0000	0.00
35	1346.06	1345.38	0.0000	0.00
36	1378.03	1377.32	0.0000	0.00
37	1385.78	1385.06	0.0000	0.00
38	1461.49	1460.69	0.0000	0.00
39	1466.34	1465.54	0.0000	0.00
40	1555.43	1554.54	0.0000	0.00
41	1589.75	1588.83	0.0000	0.00
42	1600.07	1599.14	0.0000	0.00

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1730.00	1728.94	0.0000	0.00
44	1746.07	1745.00	0.0000	0.00
45	1765.23	1764.14	0.0000	0.00
46	1839.31	1838.15	0.0000	0.00
47	1947.27	1946.00	0.0000	0.00
48	1996.05	1994.73	0.0000	0.00
49	2118.48	2117.05	0.0000	0.00
50	2201.48	2199.97	0.0000	0.00
51	2205.02	2203.50	0.0000	0.00
52	2615.82	2613.91	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/23/2017 7:00:57AM

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	46.11	44 -	50	46.74	1.17E+02	71.50	8.51E+02	1.35
	2	53.05	51 -	56	53.66	6.69E+01	66.32	8.28E+02	1.69
M	3	74.56	71 -	83	75.15	3.52E+02	85.43	1.07E+03	1.65
m	4	77.26	71 -	83	77.85	5.05E+02	90.72	1.04E+03	1.65
M	5	87.25	83 -	101	87.83	3.68E+02	115.05	1.75E+03	3.93
m	6	92.58	83 -	101	93.16	3.26E+02	80.10	9.32E+02	1.94
	7	129.16	126 -	133	129.70	7.60E+01	79.40	9.92E+02	2.75
	8	176.07	173 -	180	176.56	8.72E+01	66.00	6.68E+02	2.98
	9	185.47	182 -	189	185.95	2.19E+02	69.43	6.53E+02	2.22
	10	208.84	206 -	212	209.29	5.67E+01	61.90	6.51E+02	1.87
M	11	238.58	233 -	247	239.00	7.03E+02	66.28	3.38E+02	1.82
m	12	241.74	233 -	247	242.17	1.59E+02	66.34	3.02E+02	1.82
	13	270.03	266 -	274	270.42	9.39E+01	56.68	4.36E+02	2.15
M	14	295.12	290 -	303	295.49	2.71E+02	50.67	3.09E+02	1.93
m	15	300.65	290 -	303	301.01	4.51E+01	40.73	3.11E+02	1.85
	16	328.42	324 -	332	328.76	4.47E+01	51.82	3.83E+02	1.63
	17	338.58	335 -	343	338.90	1.50E+02	57.44	4.07E+02	1.77
	18	351.86	348 -	356	352.17	3.55E+02	66.86	4.73E+02	1.67
	19	511.12	506 -	517	511.27	2.04E+02	54.15	2.65E+02	2.46
	20	538.93	536 -	543	539.05	2.43E+01	29.33	1.25E+02	2.99
	21	568.18	566 -	572	568.27	2.10E+01	25.84	1.08E+02	3.38
	22	583.44	579 -	587	583.52	2.29E+02	50.78	2.55E+02	2.03
	23	609.81	603 -	616	609.86	3.53E+02	62.06	2.64E+02	2.10
	24	727.31	723 -	730	727.24	3.84E+01	34.06	1.67E+02	2.25
	25	794.98	792 -	798	794.85	2.76E+01	25.68	9.67E+01	2.63
	26	861.00	856 -	864	860.80	2.50E+01	31.17	1.32E+02	1.99
	27	911.88	909 -	917	911.63	1.72E+02	36.47	8.77E+01	2.10
	28	969.48	965 -	973	969.17	7.29E+01	35.45	1.38E+02	1.60
	29	1062.67	1059 -	1065	1062.27	1.98E+01	20.21	6.05E+01	4.61
	30	1120.56	1116 -	1124	1120.10	6.70E+01	31.66	1.14E+02	1.63
	31	1187.81	1184 -	1190	1187.28	1.97E+01	21.85	7.05E+01	2.96
	32	1195.06	1191 -	1199	1194.52	2.54E+01	25.71	8.72E+01	4.28
M	33	1203.13	1200 -	1209	1202.59	1.42E+01	17.20	5.48E+01	3.39
m	34	1207.56	1200 -	1209	1207.02	2.09E+01	17.66	3.95E+01	2.51
	35	1346.06	1333 -	1360	1345.38	5.38E+01	36.50	6.83E+01	19.77
	36	1378.03	1375 -	1380	1377.32	1.38E+01	11.92	1.65E+01	1.59
	37	1385.78	1381 -	1389	1385.06	1.70E+01	13.60	1.80E+01	4.32
M	38	1461.49	1454 -	1469	1460.69	7.99E+02	57.81	2.37E+01	2.28
m	39	1466.34	1454 -	1469	1465.54	1.70E+01	28.98	3.95E+01	2.65
	40	1555.43	1552 -	1557	1554.54	6.31E+00	6.40	3.38E+00	2.81

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1589.75	1582 -	1595	1588.83	3.19E+01	22.14	3.43E+01	3.09
	42	1600.07	1596 -	1602	1599.14	7.00E+00	5.29	0.00E+00	1.98
	43	1730.00	1723 -	1733	1728.94	2.55E+01	13.58	1.11E+01	2.01
	44	1746.07	1742 -	1747	1745.00	8.00E+00	5.66	0.00E+00	1.16
	45	1765.23	1759 -	1768	1764.14	5.35E+01	19.72	2.50E+01	1.65
	46	1839.31	1833 -	1842	1838.15	1.16E+01	9.00	4.71E+00	5.10
	47	1947.27	1944 -	1948	1946.00	7.00E+00	5.29	0.00E+00	2.50
	48	1996.05	1990 -	2000	1994.73	1.10E+01	9.29	5.93E+00	2.16
	49	2118.48	2114 -	2121	2117.05	7.65E+00	7.48	4.70E+00	2.88
M	50	2201.48	2199 -	2207	2199.97	7.13E+00	3.46	0.00E+00	2.89
m	51	2205.02	2199 -	2207	2203.50	2.47E+01	10.00	0.00E+00	2.89
	52	2615.82	2610 -	2620	2613.91	8.11E+01	20.01	7.72E+00	3.21

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 : 8/23/2017 7:00:57AM

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	46.11	44 -	50	1.17E+02	71.50	8.51E+02	5.60E+01
	2	53.05	51 -	56	6.69E+01	66.32	8.28E+02	5.28E+01
M	3	74.56	71 -	83	3.52E+02	85.43	1.07E+03	5.37E+01
m	4	77.26	71 -	83	5.05E+02	90.72	1.04E+03	5.31E+01
M	5	87.25	83 -	101	3.68E+02	115.05	1.75E+03	6.88E+01
m	6	92.58	83 -	101	3.26E+02	80.10	9.32E+02	5.02E+01
	7	129.16	126 -	133	7.60E+01	79.40	9.92E+02	6.37E+01
	8	176.07	173 -	180	8.72E+01	66.00	6.68E+02	5.20E+01
	9	185.47	182 -	189	2.19E+02	69.43	6.53E+02	5.16E+01
	10	208.84	206 -	212	5.67E+01	61.90	6.51E+02	4.94E+01
M	11	238.58	233 -	247	7.03E+02	66.28	3.38E+02	3.02E+01
m	12	241.74	233 -	247	1.59E+02	66.34	3.02E+02	2.86E+01
	13	270.03	266 -	274	9.39E+01	56.68	4.36E+02	4.38E+01
M	14	295.12	290 -	303	2.71E+02	50.67	3.09E+02	2.89E+01
m	15	300.65	290 -	303	4.51E+01	40.73	3.11E+02	2.90E+01
	16	328.42	324 -	332	4.47E+01	51.82	3.83E+02	4.12E+01

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	17	338.58	335 -	343	1.50E+02	57.44	4.07E+02	4.27E+01
	18	351.86	348 -	356	3.55E+02	66.86	4.73E+02	4.54E+01
	19	511.12	506 -	517	2.04E+02	54.15	2.65E+02	3.78E+01
	20	538.93	536 -	543	2.43E+01	29.33	1.25E+02	2.27E+01
	21	568.18	566 -	572	2.10E+01	25.84	1.08E+02	1.99E+01
	22	583.44	579 -	587	2.29E+02	50.78	2.55E+02	3.35E+01
	23	609.81	603 -	616	3.53E+02	62.06	2.64E+02	2.07E+01
	24	727.31	723 -	730	3.84E+01	34.06	1.67E+02	2.61E+01
	25	794.98	792 -	798	2.76E+01	25.68	9.67E+01	1.93E+01
	26	861.00	856 -	864	2.50E+01	31.17	1.32E+02	2.43E+01
	27	911.88	909 -	917	1.72E+02	36.47	8.77E+01	2.08E+01
	28	969.48	965 -	973	7.29E+01	35.45	1.38E+02	2.55E+01
	29	1062.67	1059 -	1065	1.98E+01	20.21	6.05E+01	1.49E+01
	30	1120.56	1116 -	1124	6.70E+01	31.66	1.14E+02	2.23E+01
	31	1187.81	1184 -	1190	1.97E+01	21.85	7.05E+01	1.64E+01
	32	1195.06	1191 -	1199	2.54E+01	25.71	8.72E+01	1.94E+01
M	33	1203.13	1200 -	1209	1.42E+01	17.20	5.48E+01	1.22E+01
m	34	1207.56	1200 -	1209	2.09E+01	17.66	3.95E+01	1.03E+01
	35	1346.06	1333 -	1360	5.38E+01	36.50	6.83E+01	2.75E+01
	36	1378.03	1375 -	1380	1.38E+01	11.92	1.65E+01	7.66E+00
	37	1385.78	1381 -	1389	1.70E+01	13.60	1.80E+01	8.89E+00
M	38	1461.49	1454 -	1469	7.99E+02	57.81	2.37E+01	8.01E+00
m	39	1466.34	1454 -	1469	1.70E+01	28.98	3.95E+01	1.03E+01
	40	1555.43	1552 -	1557	6.31E+00	6.40	3.38E+00	3.26E+00
	41	1589.75	1582 -	1595	3.19E+01	22.14	3.43E+01	1.57E+01
	42	1600.07	1596 -	1602	7.00E+00	5.29	0.00E+00	0.00E+00
	43	1730.00	1723 -	1733	2.55E+01	13.58	1.11E+01	7.48E+00
	44	1746.07	1742 -	1747	8.00E+00	5.66	0.00E+00	0.00E+00
	45	1765.23	1759 -	1768	5.35E+01	19.72	2.50E+01	1.09E+01
	46	1839.31	1833 -	1842	1.16E+01	9.00	4.71E+00	4.82E+00
	47	1947.27	1944 -	1948	7.00E+00	5.29	0.00E+00	0.00E+00
	48	1996.05	1990 -	2000	1.10E+01	9.29	5.93E+00	5.33E+00
	49	2118.48	2114 -	2121	7.65E+00	7.48	4.70E+00	4.14E+00
M	50	2201.48	2199 -	2207	7.13E+00	3.46	0.00E+00	0.00E+00
m	51	2205.02	2199 -	2207	2.47E+01	10.00	0.00E+00	0.00E+00
	52	2615.82	2610 -	2620	8.11E+01	20.01	7.72E+00	7.16E+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 1707088-16

HTC-A03-S004-4248-01

PEAK WITH NID REPORT

Peak Analysis Performed on : 8/23/2017 7:00:57AM

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	46.11	44 -	50	46.74	1.17E+02	71.50	8.51E+02	PB-210
	2	53.05	51 -	56	53.66	6.69E+01	66.32	8.28E+02	.....
M	3	74.56	71 -	83	75.15	3.52E+02	85.43	1.07E+03	AM-243
m	4	77.26	71 -	83	77.85	5.05E+02	90.72	1.04E+03	.....
M	5	87.25	83 -	101	87.83	3.68E+02	115.05	1.75E+03	SN-126
									NP-237
									EU-155
									CD-109
m	6	92.58	83 -	101	93.16	3.26E+02	80.10	9.32E+02	GA-67
	7	129.16	126 -	133	129.70	7.60E+01	79.40	9.92E+02	.....
	8	176.07	173 -	180	176.56	8.72E+01	66.00	6.68E+02	SB-125
									CS-136
	9	185.47	182 -	189	185.95	2.19E+02	69.43	6.53E+02	RA-226
	10	208.84	206 -	212	209.29	5.67E+01	61.90	6.51E+02	GA-67
									CM-243
M	11	238.58	233 -	247	239.00	7.03E+02	66.28	3.38E+02	PB-212
m	12	241.74	233 -	247	242.17	1.59E+02	66.34	3.02E+02	RA-224
	13	270.03	266 -	274	270.42	9.39E+01	56.68	4.36E+02	.....
M	14	295.12	290 -	303	295.49	2.71E+02	50.67	3.09E+02	PB-214
m	15	300.65	290 -	303	301.01	4.51E+01	40.73	3.11E+02	GA-67
									PB-212
									BI-210M
	16	328.42	324 -	332	328.76	4.47E+01	51.82	3.83E+02	LA-140
	17	338.58	335 -	343	338.90	1.50E+02	57.44	4.07E+02	AC-228
	18	351.86	348 -	356	352.17	3.55E+02	66.86	4.73E+02	PB-214
	19	511.12	506 -	517	511.27	2.04E+02	54.15	2.65E+02	.....
	20	538.93	536 -	543	539.05	2.43E+01	29.33	1.25E+02	.....
	21	568.18	566 -	572	568.27	2.10E+01	25.84	1.08E+02	.....
	22	583.44	579 -	587	583.52	2.29E+02	50.78	2.55E+02	TL-208
	23	609.81	603 -	616	609.86	3.53E+02	62.06	2.64E+02	BI-214
	24	727.31	723 -	730	727.24	3.84E+01	34.06	1.67E+02	BI-212
	25	794.98	792 -	798	794.85	2.76E+01	25.68	9.67E+01	CS-134
	26	861.00	856 -	864	860.80	2.50E+01	31.17	1.32E+02	TL-208
	27	911.88	909 -	917	911.63	1.72E+02	36.47	8.77E+01	TL-204
									AC-228
	28	969.48	965 -	973	969.17	7.29E+01	35.45	1.38E+02	AC-228
	29	1062.67	1059 -	1065	1062.27	1.98E+01	20.21	6.05E+01	BI-207
	30	1120.56	1116 -	1124	1120.10	6.70E+01	31.66	1.14E+02	SC-46
									BI-214
									TA-182
	31	1187.81	1184 -	1190	1187.28	1.97E+01	21.85	7.05E+01	.....

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	32	1195.06	1191 -	1199	1194.52	2.54E+01	25.71	8.72E+01	.....
M	33	1203.13	1200 -	1209	1202.59	1.42E+01	17.20	5.48E+01	.....
m	34	1207.56	1200 -	1209	1207.02	2.09E+01	17.66	3.95E+01	.....
	35	1346.06	1333 -	1360	1345.38	5.38E+01	36.50	6.83E+01	.....
	36	1378.03	1375 -	1380	1377.32	1.38E+01	11.92	1.65E+01	.....
	37	1385.78	1381 -	1389	1385.06	1.70E+01	13.60	1.80E+01	.....
M	38	1461.49	1454 -	1469	1460.69	7.99E+02	57.81	2.37E+01	K-40
m	39	1466.34	1454 -	1469	1465.54	1.70E+01	28.98	3.95E+01	.....
	40	1555.43	1552 -	1557	1554.54	6.31E+00	6.40	3.38E+00	.....
	41	1589.75	1582 -	1595	1588.83	3.19E+01	22.14	3.43E+01	.....
	42	1600.07	1596 -	1602	1599.14	7.00E+00	5.29	0.00E+00	.....
	43	1730.00	1723 -	1733	1728.94	2.55E+01	13.58	1.11E+01	.....
	44	1746.07	1742 -	1747	1745.00	8.00E+00	5.66	0.00E+00	.....
	45	1765.23	1759 -	1768	1764.14	5.35E+01	19.72	2.50E+01	BI-214
	46	1839.31	1833 -	1842	1838.15	1.16E+01	9.00	4.71E+00	.....
	47	1947.27	1944 -	1948	1946.00	7.00E+00	5.29	0.00E+00	.....
	48	1996.05	1990 -	2000	1994.73	1.10E+01	9.29	5.93E+00	.....
	49	2118.48	2114 -	2121	2117.05	7.65E+00	7.48	4.70E+00	.....
M	50	2201.48	2199 -	2207	2199.97	7.13E+00	3.46	0.00E+00	.....
m	51	2205.02	2199 -	2207	2203.50	2.47E+01	10.00	0.00E+00	BI-214
	52	2615.82	2610 -	2620	2613.91	8.11E+01	20.01	7.72E+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 : 8/23/2017 7:00:57AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.11	1.17E+02	71.50	2.46E-02	2.22E-03
	2	53.05	6.69E+01	66.32	2.59E-02	2.22E-03
M	3	74.56	3.52E+02	85.43	2.75E-02	2.38E-03
m	4	77.26	5.05E+02	90.72	2.75E-02	2.41E-03
M	5	87.25	3.68E+02	115.05	2.74E-02	2.51E-03
m	6	92.58	3.26E+02	80.10	2.73E-02	2.45E-03
	7	129.16	7.60E+01	79.40	2.53E-02	1.94E-03
	8	176.07	8.72E+01	66.00	2.23E-02	1.71E-03
	9	185.47	2.19E+02	69.43	2.17E-02	1.68E-03

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	10	208.84	5.67E+01	61.90	2.04E-02	1.61E-03
M	11	238.58	7.03E+02	66.28	1.89E-02	1.53E-03
m	12	241.74	1.59E+02	66.34	1.87E-02	1.52E-03
	13	270.03	9.39E+01	56.68	1.74E-02	1.43E-03
M	14	295.12	2.71E+02	50.67	1.64E-02	1.37E-03
m	15	300.65	4.51E+01	40.73	1.62E-02	1.36E-03
	16	328.42	4.47E+01	51.82	1.53E-02	1.29E-03
	17	338.58	1.50E+02	57.44	1.49E-02	1.27E-03
	18	351.86	3.55E+02	66.86	1.45E-02	1.24E-03
	19	511.12	2.04E+02	54.15	1.10E-02	1.07E-03
	20	538.93	2.43E+01	29.33	1.06E-02	1.05E-03
	21	568.18	2.10E+01	25.84	1.02E-02	1.03E-03
	22	583.44	2.29E+02	50.78	9.96E-03	1.02E-03
	23	609.81	3.53E+02	62.06	9.63E-03	1.01E-03
	24	727.31	3.84E+01	34.06	8.41E-03	8.68E-04
	25	794.98	2.76E+01	25.68	7.86E-03	7.60E-04
	26	861.00	2.50E+01	31.17	7.40E-03	6.55E-04
	27	911.88	1.72E+02	36.47	7.08E-03	5.91E-04
	28	969.48	7.29E+01	35.45	6.76E-03	5.69E-04
	29	1062.67	1.98E+01	20.21	6.32E-03	5.33E-04
	30	1120.56	6.70E+01	31.66	6.07E-03	5.11E-04
	31	1187.81	1.97E+01	21.85	5.82E-03	4.88E-04
	32	1195.06	2.54E+01	25.71	5.79E-03	4.86E-04
M	33	1203.13	1.42E+01	17.20	5.76E-03	4.84E-04
m	34	1207.56	2.09E+01	17.66	5.75E-03	4.83E-04
	35	1346.06	5.38E+01	36.50	5.31E-03	4.51E-04
	36	1378.03	1.38E+01	11.92	5.22E-03	4.44E-04
	37	1385.78	1.70E+01	13.60	5.20E-03	4.42E-04
M	38	1461.49	7.99E+02	57.81	5.00E-03	4.25E-04
m	39	1466.34	1.70E+01	28.98	4.99E-03	4.23E-04
	40	1555.43	6.31E+00	6.40	4.79E-03	4.03E-04
	41	1589.75	3.19E+01	22.14	4.71E-03	3.95E-04
	42	1600.07	7.00E+00	5.29	4.69E-03	3.92E-04
	43	1730.00	2.55E+01	13.58	4.44E-03	3.62E-04
	44	1746.07	8.00E+00	5.66	4.41E-03	3.59E-04
	45	1765.23	5.35E+01	19.72	4.37E-03	3.54E-04
	46	1839.31	1.16E+01	9.00	4.25E-03	3.38E-04
	47	1947.27	7.00E+00	5.29	4.08E-03	3.38E-04
	48	1996.05	1.10E+01	9.29	4.01E-03	3.38E-04
	49	2118.48	7.65E+00	7.48	3.84E-03	3.38E-04
M	50	2201.48	7.13E+00	3.46	3.74E-03	3.38E-04
m	51	2205.02	2.47E+01	10.00	3.74E-03	3.38E-04
	52	2615.82	8.11E+01	20.01	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

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/23/2017 7:00:57AM

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	46.11	1.17E+02	71.50	3.67E+01	8.40E+00	8.07E+01	7.20E+01
	2	53.05	6.69E+01	66.32			6.69E+01	6.63E+01
M	3	74.56	3.52E+02	85.43			3.52E+02	8.54E+01
m	4	77.26	5.05E+02	90.72	7.20E+00	1.47E+00	4.98E+02	9.07E+01
M	5	87.25	3.68E+02	115.05			3.68E+02	1.15E+02
m	6	92.58	3.26E+02	80.10	1.38E+02	1.72E+01	1.88E+02	8.19E+01
	7	129.16	7.60E+01	79.40			7.60E+01	7.94E+01
	8	176.07	8.72E+01	66.00			8.72E+01	6.60E+01
	9	185.47	2.19E+02	69.43	5.22E+01	7.59E+00	1.66E+02	6.98E+01
	10	208.84	5.67E+01	61.90			5.67E+01	6.19E+01
M	11	238.58	7.03E+02	66.28	2.13E+01	6.33E+00	6.82E+02	6.66E+01
m	12	241.74	1.59E+02	66.34			1.59E+02	6.63E+01
	13	270.03	9.39E+01	56.68	1.23E+00	4.98E+00	9.27E+01	5.69E+01
M	14	295.12	2.71E+02	50.67			2.71E+02	5.07E+01
m	15	300.65	4.51E+01	40.73			4.51E+01	4.07E+01
	16	328.42	4.47E+01	51.82			4.47E+01	5.18E+01
	17	338.58	1.50E+02	57.44			1.50E+02	5.74E+01
	18	351.86	3.55E+02	66.86	5.79E+00	4.49E+00	3.49E+02	6.70E+01
	19	511.12	2.04E+02	54.15	7.28E+01	5.30E+00	1.32E+02	5.44E+01
	20	538.93	2.43E+01	29.33			2.43E+01	2.93E+01
	21	568.18	2.10E+01	25.84			2.10E+01	2.58E+01
	22	583.44	2.29E+02	50.78	2.72E+00	3.05E+00	2.26E+02	5.09E+01
	23	609.81	3.53E+02	62.06	6.35E+00	4.02E+00	3.46E+02	6.22E+01
	24	727.31	3.84E+01	34.06			3.84E+01	3.41E+01
	25	794.98	2.76E+01	25.68			2.76E+01	2.57E+01
	26	861.00	2.50E+01	31.17			2.50E+01	3.12E+01
	27	911.88	1.72E+02	36.47	5.31E+00	3.00E+00	1.67E+02	3.66E+01
	28	969.48	7.29E+01	35.45			7.29E+01	3.54E+01
	29	1062.67	1.98E+01	20.21			1.98E+01	2.02E+01
	30	1120.56	6.70E+01	31.66			6.70E+01	3.17E+01
	31	1187.81	1.97E+01	21.85			1.97E+01	2.18E+01
	32	1195.06	2.54E+01	25.71			2.54E+01	2.57E+01
M	33	1203.13	1.42E+01	17.20			1.42E+01	1.72E+01
m	34	1207.56	2.09E+01	17.66			2.09E+01	1.77E+01
	35	1346.06	5.38E+01	36.50			5.38E+01	3.65E+01
	36	1378.03	1.38E+01	11.92			1.38E+01	1.19E+01
	37	1385.78	1.70E+01	13.60			1.70E+01	1.36E+01
M	38	1461.49	7.99E+02	57.81	8.09E+00	2.23E+00	7.91E+02	5.79E+01
m	39	1466.34	1.70E+01	28.98			1.70E+01	2.90E+01
	40	1555.43	6.31E+00	6.40			6.31E+00	6.40E+00
	41	1589.75	3.19E+01	22.14			3.19E+01	2.21E+01
	42	1600.07	7.00E+00	5.29			7.00E+00	5.29E+00
	43	1730.00	2.55E+01	13.58			2.55E+01	1.36E+01
	44	1746.07	8.00E+00	5.66			8.00E+00	5.66E+00

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	45	1765.23	5.35E+01	19.72			5.35E+01	1.97E+01
	46	1839.31	1.16E+01	9.00			1.16E+01	9.00E+00
	47	1947.27	7.00E+00	5.29			7.00E+00	5.29E+00
	48	1996.05	1.10E+01	9.29			1.10E+01	9.29E+00
	49	2118.48	7.65E+00	7.48			7.65E+00	7.48E+00
M	50	2201.48	7.13E+00	3.46			7.13E+00	3.46E+00
m	51	2205.02	2.47E+01	10.00			2.47E+01	1.00E+01
	52	2615.82	8.11E+01	20.01	5.63E+00	1.38E+00	7.55E+01	2.01E+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 : 8/23/2017 7:00:57AM

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	46.11	1.17E+02	71.50	3.67E+01	8.40E+00	8.07E+01	7.20E+01
	2	53.05	6.69E+01	66.32			6.69E+01	6.63E+01
M	3	74.56	3.52E+02	85.43			3.52E+02	8.54E+01
m	4	77.26	5.05E+02	90.72	7.20E+00	1.47E+00	4.98E+02	9.07E+01
M	5	87.25	3.68E+02	115.05			3.68E+02	1.15E+02
m	6	92.58	3.26E+02	80.10	1.38E+02	1.72E+01	1.88E+02	8.19E+01
	7	129.16	7.60E+01	79.40			7.60E+01	7.94E+01
	8	176.07	8.72E+01	66.00			8.72E+01	6.60E+01
	9	185.47	2.19E+02	69.43	5.22E+01	7.59E+00	1.66E+02	6.98E+01
	10	208.84	5.67E+01	61.90			5.67E+01	6.19E+01
M	11	238.58	7.03E+02	66.28	2.13E+01	6.33E+00	6.82E+02	6.66E+01
m	12	241.74	1.59E+02	66.34			1.59E+02	6.63E+01
	13	270.03	9.39E+01	56.68	1.23E+00	4.98E+00	9.27E+01	5.69E+01
M	14	295.12	2.71E+02	50.67			2.71E+02	5.07E+01
m	15	300.65	4.51E+01	40.73			4.51E+01	4.07E+01
	16	328.42	4.47E+01	51.82			4.47E+01	5.18E+01
	17	338.58	1.50E+02	57.44			1.50E+02	5.74E+01
	18	351.86	3.55E+02	66.86	5.79E+00	4.49E+00	3.49E+02	6.70E+01
	19	511.12	2.04E+02	54.15	7.28E+01	5.30E+00	1.32E+02	5.44E+01
	20	538.93	2.43E+01	29.33			2.43E+01	2.93E+01

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	21	568.18	2.10E+01	25.84			2.10E+01	2.58E+01
	22	583.44	2.29E+02	50.78	2.72E+00	3.05E+00	2.26E+02	5.09E+01
	23	609.81	3.53E+02	62.06	6.35E+00	4.02E+00	3.46E+02	6.22E+01
	24	727.31	3.84E+01	34.06			3.84E+01	3.41E+01
	25	794.98	2.76E+01	25.68			2.76E+01	2.57E+01
	26	861.00	2.50E+01	31.17			2.50E+01	3.12E+01
	27	911.88	1.72E+02	36.47	5.31E+00	3.00E+00	1.67E+02	3.66E+01
	28	969.48	7.29E+01	35.45			7.29E+01	3.54E+01
	29	1062.67	1.98E+01	20.21			1.98E+01	2.02E+01
	30	1120.56	6.70E+01	31.66			6.70E+01	3.17E+01
	31	1187.81	1.97E+01	21.85			1.97E+01	2.18E+01
	32	1195.06	2.54E+01	25.71			2.54E+01	2.57E+01
M	33	1203.13	1.42E+01	17.20			1.42E+01	1.72E+01
m	34	1207.56	2.09E+01	17.66			2.09E+01	1.77E+01
	35	1346.06	5.38E+01	36.50			5.38E+01	3.65E+01
	36	1378.03	1.38E+01	11.92			1.38E+01	1.19E+01
	37	1385.78	1.70E+01	13.60			1.70E+01	1.36E+01
M	38	1461.49	7.99E+02	57.81	8.09E+00	2.23E+00	7.91E+02	5.79E+01
m	39	1466.34	1.70E+01	28.98			1.70E+01	2.90E+01
	40	1555.43	6.31E+00	6.40			6.31E+00	6.40E+00
	41	1589.75	3.19E+01	22.14			3.19E+01	2.21E+01
	42	1600.07	7.00E+00	5.29			7.00E+00	5.29E+00
	43	1730.00	2.55E+01	13.58			2.55E+01	1.36E+01
	44	1746.07	8.00E+00	5.66			8.00E+00	5.66E+00
	45	1765.23	5.35E+01	19.72			5.35E+01	1.97E+01
	46	1839.31	1.16E+01	9.00			1.16E+01	9.00E+00
	47	1947.27	7.00E+00	5.29			7.00E+00	5.29E+00
	48	1996.05	1.10E+01	9.29			1.10E+01	9.29E+00
	49	2118.48	7.65E+00	7.48			7.65E+00	7.48E+00
M	50	2201.48	7.13E+00	3.46			7.13E+00	3.46E+00
m	51	2205.02	2.47E+01	10.00			2.47E+01	1.00E+01
	52	2615.82	8.11E+01	20.01	5.63E+00	1.38E+00	7.55E+01	2.01E+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 1707088-16

HTC-A03-S004-4248-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.929	1460.81	*	10.67	2.15E+01	2.45E+00
CD-109	0.907	88.03	*	3.72	6.10E+00	2.02E+00
SN-126	0.984	87.57	*	37.00	5.26E-01	1.72E-01
EU-155	0.310	86.50	*	30.90	6.55E-01	2.14E-01
		105.30		20.70		
TL-208	0.386	583.14	*	30.22	1.09E+00	2.70E-01
		860.37	*	4.48	1.10E+00	1.37E+00
		2614.66		35.85		
PB-210	0.977	46.50	*	4.25	1.13E+00	1.02E+00
BI-212	0.761	727.17	*	11.80	5.62E-01	5.02E-01
		1620.62		2.75		
PB-212	0.996	238.63	*	44.60	1.18E+00	1.49E-01
		300.09	*	3.41	1.18E+00	1.07E+00
BI-214	0.953	609.31	*	46.30	1.13E+00	2.34E-01
		1120.29	*	15.10	1.06E+00	5.09E-01
		1764.49	*	15.80	1.12E+00	4.24E-01
		2204.22	*	4.98	1.93E+00	8.00E-01
PB-214	0.999	295.21	*	19.19	1.25E+00	2.55E-01
		351.92	*	37.19	9.37E-01	1.97E-01
RA-224	0.911	240.98	*	3.95	3.13E+00	1.33E+00
RA-226	0.916	186.21	*	3.28	3.39E+00	6.36E+00
AC-228	0.941	338.32	*	11.40	1.28E+00	5.02E-01
		911.07	*	27.70	1.24E+00	2.90E-01
		969.11	*	16.60	9.43E-01	4.65E-01
NP-237	0.914	86.50	*	12.60	1.55E+00	5.04E-01
AM-243	0.998	74.67	*	66.00	2.82E-01	7.26E-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

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/23/2017 7:00:57AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.05	1.85892E-02	49.55		
m	4	77.26	1.38246E-01	9.12		
m	6	92.58	5.22592E-02	21.77	Sum	

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	7	129.16	2.11118E-02	52.23		
	8	176.07	2.42353E-02	37.82	Tol.	SB-125 CS-136
	10	208.84	1.57403E-02	54.61	Tol.	CM-243
	13	270.03	2.57475E-02	30.69		
	16	328.42	1.24294E-02	57.91	Sum	
	19	511.12	3.65667E-02	20.66		
	20	538.93	6.74649E-03	60.37	Sum	
	21	568.18	5.84630E-03	61.38		
	25	794.98	7.67909E-03	46.44	Sum	
	29	1062.67	5.49167E-03	51.10	Tol.	BI-207
	31	1187.81	5.47980E-03	55.37		
	32	1195.06	7.05918E-03	50.57	Sum	
M	33	1203.13	3.94198E-03	60.62		
m	34	1207.56	5.80281E-03	42.28	Sum	
	35	1346.06	1.49542E-02	33.90		
	36	1378.03	3.82576E-03	43.26		
	37	1385.78	4.72222E-03	40.00		
m	39	1466.34	4.73602E-03	85.00		
	40	1555.43	1.75347E-03	50.72		
	41	1589.75	8.84921E-03	34.74		
	42	1600.07	1.94444E-03	37.80		
	43	1730.00	7.06989E-03	26.68	Sum	
	44	1746.07	2.22222E-03	35.36		
	46	1839.31	3.23413E-03	38.65	Sum	
	47	1947.27	1.94444E-03	37.80		
	48	1996.05	3.06548E-03	42.08		
	49	2118.48	2.12500E-03	48.91		
M	50	2201.48	1.97954E-03	24.30		
	52	2615.82	2.09767E-02	13.28		

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 1707088-16

HTC-A03-S004-4248-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.92	1460.81	*	10.67	2.15E+01	2.45E+00
CD-109	0.90	88.03	*	3.72	6.10E+00	2.02E+00
SN-126	0.98	87.57	*	37.00	5.26E-01	1.72E-01
EU-155	0.31	86.50	*	30.90	6.55E-01	2.14E-01
		105.30		20.70		
TL-208	0.38	583.14	*	30.22	1.09E+00	2.70E-01
		860.37	*	4.48	1.10E+00	1.37E+00
		2614.66		35.85		
PB-210	0.97	46.50	*	4.25	1.13E+00	1.02E+00
BI-212	0.76	727.17	*	11.80	5.62E-01	5.02E-01
		1620.62		2.75		
PB-212	0.99	238.63	*	44.60	1.18E+00	1.49E-01
		300.09	*	3.41	1.18E+00	1.07E+00
BI-214	0.95	609.31	*	46.30	1.13E+00	2.34E-01
		1120.29	*	15.10	1.06E+00	5.09E-01
		1764.49	*	15.80	1.12E+00	4.24E-01
		2204.22	*	4.98	1.93E+00	8.00E-01
PB-214	0.99	295.21	*	19.19	1.25E+00	2.55E-01
		351.92	*	37.19	9.37E-01	1.97E-01
RA-224	0.91	240.98	*	3.95	3.13E+00	1.33E+00
RA-226	0.91	186.21	*	3.28	3.39E+00	6.36E+00
AC-228	0.94	338.32	*	11.40	1.28E+00	5.02E-01
		911.07	*	27.70	1.24E+00	2.90E-01
		969.11	*	16.60	9.43E-01	4.65E-01
NP-237	0.91	86.50	*	12.60	1.55E+00	5.04E-01
AM-243	0.99	74.67	*	66.00	2.82E-01	7.26E-02

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

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.929	2.15E+01	2.45E+00	

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
?	CD-109	0.907	6.10E+00	2.02E+00	
?	SN-126	0.984	5.26E-01	1.72E-01	
?	EU-155	0.310	6.55E-01	2.14E-01	
	TL-208	0.386	1.09E+00	2.65E-01	
	PB-210	0.977	1.13E+00	1.02E+00	
	BI-212	0.761	5.62E-01	5.02E-01	
	PB-212	0.996	1.18E+00	1.48E-01	
	BI-214	0.953	1.16E+00	1.85E-01	
	PB-214	0.999	1.05E+00	1.56E-01	
	RA-224	0.911	3.13E+00	1.33E+00	
	RA-226	0.916	3.39E+00	6.36E+00	
	AC-228	0.941	1.18E+00	2.21E-01	
?	NP-237	0.914	1.55E+00	5.04E-01	
	AM-243	0.998	2.82E-01	7.26E-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 1707088-16

HTC-A03-S004-4248-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/23/2017 7:00:57AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	53.05	1.85892E-02	49.55		
m	4	77.26	1.38246E-01	9.12		
m	6	92.58	5.22592E-02	21.77	Sum	
	7	129.16	2.11118E-02	52.23		
	8	176.07	2.42353E-02	37.82	Tol.	SB-125
						CS-136
	10	208.84	1.57403E-02	54.61	Tol.	CM-243
	13	270.03	2.57475E-02	30.69		
	16	328.42	1.24294E-02	57.91	Sum	
	19	511.12	3.65667E-02	20.66		
	20	538.93	6.74649E-03	60.37	Sum	
	21	568.18	5.84630E-03	61.38		
	25	794.98	7.67909E-03	46.44	Sum	
	29	1062.67	5.49167E-03	51.10	Tol.	BI-207
	31	1187.81	5.47980E-03	55.37		
	32	1195.06	7.05918E-03	50.57	Sum	
M	33	1203.13	3.94198E-03	60.62		
m	34	1207.56	5.80281E-03	42.28	Sum	
	35	1346.06	1.49542E-02	33.90		
	36	1378.03	3.82576E-03	43.26		
	37	1385.78	4.72222E-03	40.00		
m	39	1466.34	4.73602E-03	85.00		
	40	1555.43	1.75347E-03	50.72		
	41	1589.75	8.84921E-03	34.74		
	42	1600.07	1.94444E-03	37.80		
	43	1730.00	7.06989E-03	26.68	Sum	
	44	1746.07	2.22222E-03	35.36		
	46	1839.31	3.23413E-03	38.65	Sum	
	47	1947.27	1.94444E-03	37.80		
	48	1996.05	3.06548E-03	42.08		
	49	2118.48	2.12500E-03	48.91		
M	50	2201.48	1.97954E-03	24.30		
	52	2615.82	2.09767E-02	13.28		

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

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	3.64E-01	2.26E+00	2.26E+00
+		NA-22	1274.54		99.94	1.53E-02	9.90E-02	9.90E-02
+	@	NA-24	1368.53		99.99	1.00E+26	1.00E+26	1.00E+26
	@		2754.09		99.86	0.00E+00		1.00E+26
+		AL-26	1808.65		99.76	3.39E-03	5.37E-02	5.37E-02
+		K-40	1460.81	*	10.67	2.15E+01	1.11E+00	1.11E+00
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	-1.26E-02	6.44E-02	6.44E-02
			78.34		96.00	1.55E-01		8.36E-02
+		SC-46	889.25		99.98	2.92E-02	1.63E-01	1.63E-01
			1120.51		99.99	4.00E-01		2.95E-01
+		V-48	983.52		99.98	3.94E+00	6.06E+00	6.72E+00
			1312.10		97.50	-1.63E-01		6.06E+00
+		CR-51	320.08		9.83	-3.29E+00	7.16E+00	7.16E+00
+		MN-54	834.83		99.97	5.68E-03	9.17E-02	9.17E-02
+		CO-56	846.75		99.96	4.49E-02	1.84E-01	1.84E-01
			1037.75		14.03	-4.36E-01		1.24E+00
			1238.25		67.00	1.73E-01		4.15E-01
			1771.40		15.51	2.26E-01		1.03E+00
			2598.48		16.90	9.52E-02		7.62E-01
+		CO-57	122.06		85.51	9.48E-03	7.32E-02	7.32E-02
			136.48		10.60	3.17E-01		6.31E-01
+		CO-58	810.76		99.40	5.12E-02	1.81E-01	1.81E-01
+		FE-59	1099.22		56.50	-1.83E-01	6.82E-01	6.82E-01
			1291.56		43.20	-2.24E-01		8.55E-01
+		CO-60	1173.22		100.00	4.13E-02	6.62E-02	9.14E-02
			1332.49		100.00	1.50E-02		6.62E-02
+		ZN-65	1115.52		50.75	2.15E-02	2.06E-01	2.06E-01
+		GA-67	93.31		35.70	7.56E+08	4.62E+08	4.62E+08
			208.95		2.24	4.54E+09		6.59E+09
			300.22		16.00	-2.53E+09		1.00E+09
+		SE-75	121.11		16.70	-1.10E-01	1.57E-01	5.07E-01

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SE-75	136.00		59.20	7.87E-02	1.57E-01	1.57E-01
		264.65		59.80	-3.28E-02		1.64E-01
		279.53		25.20	2.46E-01		4.55E-01
		400.65		11.40	-5.05E-01		9.46E-01
+	RB-82	776.52		13.00	7.88E-02	8.51E+00	8.51E+00
+	RB-83	520.41		46.00	-9.46E-02	2.97E-01	2.97E-01
		529.64		30.30	-1.13E-01		4.41E-01
		552.65		16.40	-3.72E-03		8.48E-01
+	KR-85	513.99		0.43	2.69E+01	2.24E+01	2.24E+01
+	SR-85	513.99		99.27	3.43E-01	2.85E-01	2.85E-01
+	Y-88	898.02		93.40	-2.77E-02	1.06E-01	1.55E-01
		1836.01		99.38	-7.50E-03		1.06E-01
+	MO-93	263.06		56.72	-6.21E-03	5.85E-02	9.92E-02
		684.67		99.68	-1.68E-03		7.28E-02
		1477.11		99.08	7.51E-03		5.85E-02
+	NB-93M	16.57		9.43	-4.93E-01	5.21E-01	5.21E-01
+	NB-94	702.63		100.00	4.41E-02	7.18E-02	7.96E-02
		871.10		100.00	2.22E-02		7.18E-02
+	NB-95	765.79		99.81	3.69E-01	6.42E-01	6.42E-01
+	NB-95M	235.69		25.00	-3.99E+08	8.79E+07	8.79E+07
+	ZR-95	724.18		43.70	1.06E-01	4.27E-01	5.82E-01
		756.72		55.30	7.89E-02		4.27E-01
+	MO-99	181.06		6.20	-2.56E+11	7.45E+10	1.11E+11
		739.58		12.80	-2.08E+09		7.45E+10
		778.00		4.50	-8.14E+10		2.06E+11
+	RU-103	497.08		89.00	1.84E-01	4.25E-01	4.25E-01
+	RU-106	621.84		9.80	4.08E-01	8.34E-01	8.34E-01
+	AG-108M	433.93		89.90	-1.17E-02	6.27E-02	6.27E-02
		614.37		90.40	-4.07E-01		8.51E-02
		722.95		90.50	1.91E-02		8.38E-02
+	CD-109	88.03	*	3.72	6.10E+00	5.01E+00	5.01E+00
+	AG-110M	657.75		93.14	-5.77E-02	9.03E-02	9.03E-02
		677.61		10.53	1.12E-01		9.08E-01
		706.67		16.46	-1.31E-01		6.00E-01
		763.93		21.98	-2.46E-01		4.77E-01
		884.67		71.63	-2.23E-02		1.19E-01
		1384.27		23.94	2.74E-01		4.02E-01
+	CD-113M	263.70		0.02	-5.36E+01	2.40E+02	2.40E+02
+	SN-113	255.12		1.93	6.04E-01	1.74E-01	4.84E+00
		391.69		64.90	-1.44E-02		1.74E-01
+	TE123M	159.00		84.10	-1.46E-02	1.06E-01	1.06E-01
+	SB-124	602.71		97.87	1.65E-02	2.35E-01	2.35E-01
		645.85		7.26	6.82E-01		2.94E+00
		722.78		11.10	5.02E-01		2.20E+00
		1691.02		49.00	-8.92E-02		2.79E-01
+	I-125	35.49		6.49	2.00E+00	2.87E+00	2.87E+00
+	SB-125	176.33		6.89	6.86E-01	2.15E-01	8.24E-01
		427.89		29.33	-2.18E-02		2.15E-01

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SB-125	463.38		10.35	2.30E-01	2.15E-01	7.07E-01
		600.56		17.80	1.09E-01		4.10E-01
		635.90		11.32	-1.83E-01		5.98E-01
+	SB-126	414.70		83.30	-7.29E+00	2.02E+01	2.14E+01
		666.33		99.60	3.65E+00		2.21E+01
		695.00		99.60	-1.45E+01		2.02E+01
		720.50		53.80	2.75E+01		4.02E+01
+	SN-126	87.57	*	37.00	5.26E-01	4.32E-01	4.32E-01
+	SB-127	473.00		25.00	-1.38E+07	1.85E+07	2.27E+07
		685.20		35.70	-4.27E+05		1.85E+07
		783.80		14.70	2.59E+07		4.78E+07
+	I-129	29.78		57.00	5.09E-02	1.10E-01	1.10E-01
		33.60		13.20	1.21E-01		4.31E-01
		39.58		7.52	3.05E-01		7.44E-01
+	I-131	284.30		6.05	1.10E+03	4.96E+02	6.41E+03
		364.48		81.20	1.87E+02		4.96E+02
		636.97		7.26	-1.74E+03		5.59E+03
		722.89		1.80	6.24E+03		2.74E+04
+	TE-132	49.72		13.10	-2.28E+09	1.51E+08	1.01E+09
		228.16		88.00	3.52E+07		1.51E+08
+	BA-133	81.00		33.00	-6.08E-01	1.39E-01	1.75E-01
		302.84		17.80	1.17E-01		3.73E-01
		356.01		60.00	1.71E-02		1.39E-01
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	-3.66E+05	1.05E+05	1.05E+05
+	CS-134	563.23		8.38	-1.11E-01	8.76E-02	8.10E-01
		569.32		15.43	7.18E-02		4.38E-01
		604.70		97.60	-7.32E-01		8.76E-02
		795.84		85.40	5.85E-02		1.03E-01
		801.93		8.73	3.09E-01		8.86E-01
+	CS-135	268.24		16.00	3.64E-01	4.00E-01	4.00E-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	1.48E+01	1.52E+01	1.46E+02
		163.89		4.61	-5.55E+01		2.37E+02
		176.55		13.56	6.96E+01		8.35E+01
		273.65		12.66	-1.46E+01		1.06E+02
		340.57		48.50	5.86E+01		3.57E+01
		818.50		99.70	3.58E+00		1.52E+01
		1048.07		79.60	1.03E+01		2.12E+01
		1235.34		19.70	6.05E+01		1.21E+02
+	CS-137	661.65		85.12	6.13E-03	8.27E-02	8.27E-02
+	LA-138	788.74		34.00	-2.05E-02	8.73E-02	2.16E-01
		1435.80		66.00	2.51E-02		8.73E-02
+	CE-139	165.85		80.35	6.11E-02	1.09E-01	1.09E-01
+	BA-140	162.64		6.70	7.31E+00	6.38E+01	1.91E+02
		304.84		4.50	-9.43E+00		3.28E+02
		423.70		3.20	-1.43E+01		4.74E+02

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BA-140	437.55		2.00	3.65E+01	6.38E+01	6.97E+02
		537.32		25.00	9.53E+00		6.38E+01
+	LA-140	328.77		20.50	3.97E+01	1.28E+01	7.81E+01
		487.03		45.50	-2.99E+00		3.16E+01
		815.85		23.50	6.35E+00		7.40E+01
		1596.49		95.49	-6.52E+00		1.28E+01
+	CE-141	145.44		48.40	8.17E-02	8.98E-01	8.98E-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	-6.78E-02	5.97E-01	5.97E-01
+	PM-144	476.78		42.00	1.08E-02	8.02E-02	1.79E-01
		618.01		98.60	-1.49E-02		8.02E-02
		696.49		99.49	-4.70E-02		8.38E-02
+	PM-145	36.85		21.70	-1.15E-02	1.42E-01	2.61E-01
		37.36		39.70	-2.39E-02		1.42E-01
		42.30		15.10	1.85E-01		3.50E-01
		72.40		2.31	-3.30E-01		3.23E+00
+	PM-146	453.90		39.94	9.72E-02	1.53E-01	1.53E-01
		735.90		14.01	2.94E-02		5.50E-01
		747.13		13.10	-3.42E-02		5.52E-01
+	ND-147	91.11		28.90	2.73E+02	1.52E+02	1.52E+02
		531.02		13.10	-3.46E+01		2.70E+02
+	PM-149	285.90		3.10	1.56E+13	1.40E+14	1.40E+14
+	EU-152	121.78		20.50	-5.03E-02	2.33E-01	2.33E-01
		244.69		5.40	-6.05E-01		1.07E+00
		344.27		19.13	1.13E-02		3.10E-01
		778.89		9.20	-2.82E-01		7.28E-01
		964.01		10.40	-3.44E-02		8.33E-01
		1085.78		7.22	-2.36E-01		1.14E+00
		1112.02		9.60	4.56E-01		8.86E-01
		1407.95		14.94	6.61E-04		5.33E-01
+	GD-153	97.43		31.30	-2.75E-01	2.04E-01	2.04E-01
		103.18		22.20	3.87E-02		2.93E-01
+	EU-154	123.07		40.50	3.83E-02	1.26E-01	1.26E-01
		723.30		19.70	8.95E-02		3.93E-01
		873.19		11.50	-2.79E-01		5.73E-01
		996.32		10.30	-2.65E-01		7.15E-01
		1004.76		17.90	2.42E-01		4.73E-01
		1274.45		35.50	4.08E-02		2.64E-01
+	EU-155	86.50	*	30.90	6.55E-01	2.39E-01	5.38E-01
		105.30		20.70	-1.57E-01		2.39E-01
+	EU-156	811.77		10.40	1.79E+01	6.59E+01	6.59E+01
		1153.47		7.20	3.34E+01		1.40E+02
		1230.71		8.90	1.80E+00		1.17E+02
+	HO-166M	184.41		72.60	1.80E-01	8.91E-02	8.91E-02
		280.45		29.60	1.57E-02		2.11E-01
		410.94		11.10	-8.79E-03		5.60E-01
		711.69		54.10	8.10E-02		1.35E-01

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TM-171	66.72		0.14	-3.15E+01	4.87E+01	4.87E+01
+	HF-172	67.35		5.31	-2.48E-01	5.03E-01	1.27E+00
		125.81		11.30	-2.83E-03		5.03E-01
+	LU-172	181.53		20.60	-2.07E+04	4.77E+03	9.02E+03
		900.72		29.81	-1.87E+03		9.66E+03
		1093.66		62.50	-1.21E+03		4.77E+03
+	LU-173	100.72		5.24	5.20E-01	3.49E-01	1.08E+00
		272.11		21.20	-7.05E-02		3.49E-01
+	HF-175	343.40		84.00	6.96E-03	1.93E-01	1.93E-01
+	LU-176	88.34		13.30	-7.70E-02	5.95E-02	5.10E-01
		201.83		86.00	-6.09E-03		5.95E-02
		306.78		94.00	7.70E-03		6.30E-02
+	HF-181	133.02		41.70	-7.24E-02	3.71E-01	6.38E-01
		345.85		17.20	6.59E-02		1.82E+00
		482.03		82.80	-7.55E-02		3.71E-01
+	TA-182	67.75		41.20	-5.35E-02	2.73E-01	2.73E-01
		1121.30		34.90	7.81E-01		6.71E-01
		1189.05		16.23	-4.53E-01		1.03E+00
		1221.41		26.98	-1.51E-01		6.06E-01
		1231.02		11.44	2.48E-02		1.62E+00
+	IR-192	308.46		29.68	-2.75E-01	3.44E-01	5.00E-01
		468.07		48.10	-1.89E-01		3.44E-01
+	HG-203	279.19		77.30	2.02E-01	3.74E-01	3.74E-01
+	TL-204	374.74		94.11	-4.33E-03	6.73E-02	6.73E-02
		899.15		99.16	-3.71E-02		8.01E-02
		911.74		91.10	3.67E-01		1.67E-01
+	BI-207	569.67		97.72	3.97E-02	6.49E-02	6.49E-02
		1063.62		74.90	6.03E-02		1.12E-01
+	TL-208	583.14	*	30.22	1.09E+00	3.39E-01	3.39E-01
		860.37	*	4.48	1.10E+00		2.25E+00
		2614.66		35.85	9.60E-01		5.59E-01
+	BI-210M	262.00		45.00	9.73E-03	1.26E-01	1.26E-01
		300.00		23.00	-1.17E+00		2.81E-01
+	PB-210	46.50	*	4.25	1.13E+00	1.65E+00	1.65E+00
+	PB-211	404.84		2.90	-3.45E-01	2.13E+00	2.13E+00
		831.96		2.90	-1.65E-01		2.37E+00
+	BI-212	727.17	*	11.80	5.62E-01	8.03E-01	8.03E-01
		1620.62		2.75	1.70E-01		2.14E+00
+	PB-212	238.63	*	44.60	1.18E+00	2.60E-01	2.60E-01
		300.09	*	3.41	1.18E+00		3.32E+00
+	BI-214	609.31	*	46.30	1.13E+00	2.11E-01	2.76E-01
		1120.29	*	15.10	1.06E+00		7.49E-01
		1764.49	*	15.80	1.12E+00		5.14E-01
		2204.22	*	4.98	1.93E+00		2.11E-01
+	PB-214	295.21	*	19.19	1.25E+00	2.53E-01	5.83E-01
		351.92	*	37.19	9.37E-01		2.53E-01
+	RN-219	401.80		6.50	-2.18E-01	9.47E-01	9.47E-01
+	RA-223	323.87		3.88	1.77E-01	1.49E+00	1.49E+00

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	RA-224	240.98	*	3.95	3.13E+00	2.93E+00	2.93E+00
+	RA-225	40.00		31.00	7.67E+00	2.07E+01	2.07E+01
+	RA-226	186.21	*	3.28	3.39E+00	2.23E+00	2.23E+00
+	TH-227	50.10		8.40	-7.68E-01	6.12E-01	6.21E-01
		236.00		11.50	-2.78E+00		6.12E-01
		256.20		6.30	6.07E-01		9.54E-01
+	AC-228	338.32	*	11.40	1.28E+00	3.36E-01	7.51E-01
		911.07	*	27.70	1.24E+00		3.36E-01
		969.11	*	16.60	9.43E-01		6.96E-01
+	TH-230	48.44		16.90	1.88E-01	3.35E-01	3.35E-01
		62.85		4.60	1.47E+00		1.42E+00
		67.67		0.37	-3.21E+00		1.64E+01
+	PA-231	283.67		1.60	1.16E+00	2.83E+00	3.80E+00
		302.67		2.30	8.91E-01		2.83E+00
+	TH-231	25.64		14.70	-3.74E+00	5.47E-01	5.47E-01
		84.21		6.40	-5.69E-01		9.47E-01
+	PA-233	311.98		38.60	3.91E-01	2.09E+00	2.09E+00
+	PA-234	131.20		20.40	-1.14E-01	2.47E-01	2.47E-01
		733.99		8.80	1.64E-01		8.60E-01
		946.00		12.00	2.15E-01		6.70E-01
+	PA-234M	1001.03		0.92	1.77E+00	9.19E+00	9.19E+00
+	TH-234	63.29		3.80	1.50E+00	1.72E+00	1.72E+00
+	U-235	143.76		10.50	1.68E-01	4.71E-01	4.71E-01
		163.35		4.70	-2.54E-01		1.09E+00
		205.31		4.70	7.84E-02		1.13E+00
+	NP-237	86.50	*	12.60	1.55E+00	1.27E+00	1.27E+00
+	NP-239	106.10		22.70	5.62E+11	2.28E+12	2.28E+12
		228.18		10.70	1.18E+12		5.07E+12
		277.60		14.10	7.87E+11		4.61E+12
+	AM-241	59.54		35.90	-1.26E-01	1.59E-01	1.59E-01
+	AM-243	74.67	*	66.00	2.82E-01	1.88E-01	1.88E-01
+	CM-243	209.75		3.29	1.02E+00	4.45E-01	1.77E+00
		228.14		10.60	1.14E-01		4.90E-01
		277.60		14.00	7.59E-02		4.45E-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 1707088-16

HTC-A03-S004-4248-01

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	2.26E+00	2.26E+00	3.64E-01	1.07E+00
	NA-22	1274.54		99.94	9.90E-02	9.90E-02	1.53E-02	4.57E-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		0.00E+00	1.00E+20
	AL-26	1808.65		99.76	5.37E-02	5.37E-02	3.39E-03	2.23E-02
+	K-40	1460.81	*	10.67	1.11E+00	1.11E+00	2.15E+01	5.16E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	6.44E-02	6.44E-02	-1.26E-02	3.14E-02
		78.34		96.00	8.36E-02		1.55E-01	4.11E-02
	SC-46	889.25		99.98	1.63E-01	1.63E-01	2.92E-02	7.53E-02
		1120.51		99.99	2.95E-01		4.00E-01	1.40E-01
	V-48	983.52		99.98	6.72E+00	6.06E+00	3.94E+00	3.12E+00
		1312.10		97.50	6.06E+00		-1.63E-01	2.72E+00
	CR-51	320.08		9.83	7.16E+00	7.16E+00	-3.29E+00	3.42E+00
	MN-54	834.83		99.97	9.17E-02	9.17E-02	5.68E-03	4.26E-02
	CO-56	846.75		99.96	1.84E-01	1.84E-01	4.49E-02	8.57E-02
		1037.75		14.03	1.24E+00		-4.36E-01	5.66E-01
		1238.25		67.00	4.15E-01		1.73E-01	1.95E-01
		1771.40		15.51	1.03E+00		2.26E-01	4.41E-01
		2598.48		16.90	7.62E-01		9.52E-02	2.95E-01
	CO-57	122.06		85.51	7.32E-02	7.32E-02	9.48E-03	3.55E-02
		136.48		10.60	6.31E-01		3.17E-01	3.06E-01
	CO-58	810.76		99.40	1.81E-01	1.81E-01	5.12E-02	8.33E-02
	FE-59	1099.22		56.50	6.82E-01	6.82E-01	-1.83E-01	3.13E-01
		1291.56		43.20	8.55E-01		-2.24E-01	3.87E-01
	CO-60	1173.22		100.00	9.14E-02	6.62E-02	4.13E-02	4.22E-02
		1332.49		100.00	6.62E-02		1.50E-02	2.93E-02
	ZN-65	1115.52		50.75	2.06E-01	2.06E-01	2.15E-02	9.45E-02
	GA-67	93.31		35.70	4.62E+08	4.62E+08	7.56E+08	2.26E+08
		208.95		2.24	6.59E+09		4.54E+09	3.19E+09
		300.22		16.00	1.00E+09		-2.53E+09	4.83E+08
	SE-75	121.11		16.70	5.07E-01	1.57E-01	-1.10E-01	2.45E-01
		136.00		59.20	1.57E-01		7.87E-02	7.60E-02
		264.65		59.80	1.64E-01		-3.28E-02	7.88E-02
		279.53		25.20	4.55E-01		2.46E-01	2.19E-01
		400.65		11.40	9.46E-01		-5.05E-01	4.50E-01
	RB-82	776.52		13.00	8.51E+00	8.51E+00	7.88E-02	3.96E+00
	RB-83	520.41		46.00	2.97E-01	2.97E-01	-9.46E-02	1.40E-01
		529.64		30.30	4.41E-01		-1.13E-01	2.07E-01
		552.65		16.40	8.48E-01		-3.72E-03	3.98E-01
	KR-85	513.99		0.43	2.24E+01	2.24E+01	2.69E+01	1.08E+01
	SR-85	513.99		99.27	2.85E-01	2.85E-01	3.43E-01	1.37E-01

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	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	1.55E-01	1.06E-01	-2.77E-02	7.20E-02
		1836.01		99.38	1.06E-01		-7.50E-03	4.39E-02
	MO-93	263.06		56.72	9.92E-02	5.85E-02	-6.21E-03	4.76E-02
		684.67		99.68	7.28E-02		-1.68E-03	3.41E-02
		1477.11		99.08	5.85E-02		7.51E-03	2.52E-02
	NB-93M	16.57		9.43	5.21E-01	5.21E-01	-4.93E-01	2.41E-01
	NB-94	702.63		100.00	7.96E-02	7.18E-02	4.41E-02	3.75E-02
		871.10		100.00	7.18E-02		2.22E-02	3.32E-02
	NB-95	765.79		99.81	6.42E-01	6.42E-01	3.69E-01	3.03E-01
	NB-95M	235.69		25.00	8.79E+07	8.79E+07	-3.99E+08	4.26E+07
	ZR-95	724.18		43.70	5.82E-01	4.27E-01	1.06E-01	2.75E-01
		756.72		55.30	4.27E-01		7.89E-02	2.01E-01
	MO-99	181.06		6.20	1.11E+11	7.45E+10	-2.56E+11	5.37E+10
		739.58		12.80	7.45E+10		-2.08E+09	3.46E+10
		778.00		4.50	2.06E+11		-8.14E+10	9.53E+10
	RU-103	497.08		89.00	4.25E-01	4.25E-01	1.84E-01	2.01E-01
	RU-106	621.84		9.80	8.34E-01	8.34E-01	4.08E-01	3.91E-01
	AG-108M	433.93		89.90	6.27E-02	6.27E-02	-1.17E-02	2.96E-02
		614.37		90.40	8.51E-02		-4.07E-01	4.03E-02
		722.95		90.50	8.38E-02		1.91E-02	3.93E-02
+	CD-109	88.03	*	3.72	5.01E+00	5.01E+00	6.10E+00	2.48E+00
	AG-110M	657.75		93.14	9.03E-02	9.03E-02	-5.77E-02	4.21E-02
		677.61		10.53	9.08E-01		1.12E-01	4.26E-01
		706.67		16.46	6.00E-01		-1.31E-01	2.82E-01
		763.93		21.98	4.77E-01		-2.46E-01	2.24E-01
		884.67		71.63	1.19E-01		-2.23E-02	5.46E-02
		1384.27		23.94	4.02E-01		2.74E-01	1.80E-01
	CD-113M	263.70		0.02	2.40E+02	2.40E+02	-5.36E+01	1.15E+02
	SN-113	255.12		1.93	4.84E+00	1.74E-01	6.04E-01	2.32E+00
		391.69		64.90	1.74E-01		-1.44E-02	8.30E-02
	TE123M	159.00		84.10	1.06E-01	1.06E-01	-1.46E-02	5.13E-02
	SB-124	602.71		97.87	2.35E-01	2.35E-01	1.65E-02	1.11E-01
		645.85		7.26	2.94E+00		6.82E-01	1.38E+00
		722.78		11.10	2.20E+00		5.02E-01	1.03E+00
		1691.02		49.00	2.79E-01		-8.92E-02	1.11E-01
	I-125	35.49		6.49	2.87E+00	2.87E+00	2.00E+00	1.39E+00
	SB-125	176.33		6.89	8.24E-01	2.15E-01	6.86E-01	3.98E-01
		427.89		29.33	2.15E-01		-2.18E-02	1.02E-01
		463.38		10.35	7.07E-01		2.30E-01	3.36E-01
		600.56		17.80	4.10E-01		1.09E-01	1.93E-01
		635.90		11.32	5.98E-01		-1.83E-01	2.79E-01
	SB-126	414.70		83.30	2.14E+01	2.02E+01	-7.29E+00	1.02E+01
		666.33		99.60	2.21E+01		3.65E+00	1.04E+01
		695.00		99.60	2.02E+01		-1.45E+01	9.41E+00
		720.50		53.80	4.02E+01		2.75E+01	1.88E+01
+	SN-126	87.57	*	37.00	4.32E-01	4.32E-01	5.26E-01	2.14E-01
	SB-127	473.00		25.00	2.27E+07	1.85E+07	-1.38E+07	1.07E+07
		685.20		35.70	1.85E+07		-4.27E+05	8.65E+06
		783.80		14.70	4.78E+07		2.59E+07	2.24E+07
	I-129	29.78		57.00	1.10E-01	1.10E-01	5.09E-02	5.29E-02
		33.60		13.20	4.31E-01		1.21E-01	2.08E-01
		39.58		7.52	7.44E-01		3.05E-01	3.60E-01
	I-131	284.30		6.05	6.41E+03	4.96E+02	1.10E+03	3.08E+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)
I-131	364.48	81.20	4.96E+02	4.96E+02	1.87E+02	2.37E+02
	636.97	7.26	5.59E+03		-1.74E+03	2.61E+03
	722.89	1.80	2.74E+04		6.24E+03	1.29E+04
TE-132	49.72	13.10	1.01E+09	1.51E+08	-2.28E+09	4.89E+08
	228.16	88.00	1.51E+08		3.52E+07	7.27E+07
BA-133	81.00	33.00	1.75E-01	1.39E-01	-6.08E-01	8.53E-02
	302.84	17.80	3.73E-01		1.17E-01	1.80E-01
	356.01	60.00	1.39E-01		1.71E-02	6.70E-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	1.05E+05	1.05E+05	-3.66E+05	5.14E+04
CS-134	563.23	8.38	8.10E-01	8.76E-02	-1.11E-01	3.80E-01
	569.32	15.43	4.38E-01		7.18E-02	2.05E-01
	604.70	97.60	8.76E-02		-7.32E-01	4.15E-02
	795.84	85.40	1.03E-01		5.85E-02	4.82E-02
	801.93	8.73	8.86E-01		3.09E-01	4.11E-01
CS-135	268.24	16.00	4.00E-01	4.00E-01	3.64E-01	1.93E-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	1.46E+02	1.52E+01	1.48E+01	7.05E+01
	163.89	4.61	2.37E+02		-5.55E+01	1.15E+02
	176.55	13.56	8.35E+01		6.96E+01	4.04E+01
	273.65	12.66	1.06E+02		-1.46E+01	5.09E+01
	340.57	48.50	3.57E+01		5.86E+01	1.73E+01
	818.50	99.70	1.52E+01		3.58E+00	7.06E+00
	1048.07	79.60	2.12E+01		1.03E+01	9.76E+00
	1235.34	19.70	1.21E+02		6.05E+01	5.66E+01
CS-137	661.65	85.12	8.27E-02	8.27E-02	6.13E-03	3.88E-02
LA-138	788.74	34.00	2.16E-01	8.73E-02	-2.05E-02	1.01E-01
	1435.80	66.00	8.73E-02		2.51E-02	3.78E-02
CE-139	165.85	80.35	1.09E-01	1.09E-01	6.11E-02	5.29E-02
BA-140	162.64	6.70	1.91E+02	6.38E+01	7.31E+00	9.22E+01
	304.84	4.50	3.28E+02		-9.43E+00	1.57E+02
	423.70	3.20	4.74E+02		-1.43E+01	2.25E+02
	437.55	2.00	6.97E+02		3.65E+01	3.29E+02
	537.32	25.00	6.38E+01		9.53E+00	3.00E+01
LA-140	328.77	20.50	7.81E+01	1.28E+01	3.97E+01	3.75E+01
	487.03	45.50	3.16E+01		-2.99E+00	1.49E+01
	815.85	23.50	7.40E+01		6.35E+00	3.43E+01
	1596.49	95.49	1.28E+01		-6.52E+00	5.32E+00
CE-141	145.44	48.40	8.98E-01	8.98E-01	8.17E-02	4.34E-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	5.97E-01	5.97E-01	-6.78E-02	2.89E-01
PM-144	476.78	42.00	1.79E-01	8.02E-02	1.08E-02	8.45E-02
	618.01	98.60	8.02E-02		-1.49E-02	3.76E-02
	696.49	99.49	8.38E-02		-4.70E-02	3.91E-02
PM-145	36.85	21.70	2.61E-01	1.42E-01	-1.15E-02	1.27E-01
	37.36	39.70	1.42E-01		-2.39E-02	6.87E-02
	42.30	15.10	3.50E-01		1.85E-01	1.69E-01
	72.40	2.31	3.23E+00		-3.30E-01	1.59E+00
PM-146	453.90	39.94	1.53E-01	1.53E-01	9.72E-02	7.23E-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)
	PM-146	735.90		14.01	5.50E-01	1.53E-01	2.94E-02	2.58E-01
		747.13		13.10	5.52E-01		-3.42E-02	2.57E-01
	ND-147	91.11		28.90	1.52E+02	1.52E+02	2.73E+02	7.42E+01
		531.02		13.10	2.70E+02		-3.46E+01	1.26E+02
	PM-149	285.90		3.10	1.40E+14	1.40E+14	1.56E+13	6.74E+13
	EU-152	121.78		20.50	2.33E-01	2.33E-01	-5.03E-02	1.13E-01
		244.69		5.40	1.07E+00		-6.05E-01	5.14E-01
		344.27		19.13	3.10E-01		1.13E-02	1.48E-01
		778.89		9.20	7.28E-01		-2.82E-01	3.37E-01
		964.01		10.40	8.33E-01		-3.44E-02	3.88E-01
		1085.78		7.22	1.14E+00		-2.36E-01	5.24E-01
		1112.02		9.60	8.86E-01		4.56E-01	4.09E-01
		1407.95		14.94	5.33E-01		6.61E-04	2.40E-01
	GD-153	97.43		31.30	2.04E-01	2.04E-01	-2.75E-01	9.87E-02
		103.18		22.20	2.93E-01		3.87E-02	1.42E-01
	EU-154	123.07		40.50	1.26E-01	1.26E-01	3.83E-02	6.11E-02
		723.30		19.70	3.93E-01		8.95E-02	1.85E-01
		873.19		11.50	5.73E-01		-2.79E-01	2.63E-01
		996.32		10.30	7.15E-01		-2.65E-01	3.28E-01
		1004.76		17.90	4.73E-01		2.42E-01	2.19E-01
		1274.45		35.50	2.64E-01		4.08E-02	1.22E-01
+	EU-155	86.50	*	30.90	5.38E-01	2.39E-01	6.55E-01	2.67E-01
		105.30		20.70	2.39E-01		-1.57E-01	1.16E-01
	EU-156	811.77		10.40	6.59E+01	6.59E+01	1.79E+01	3.04E+01
		1153.47		7.20	1.40E+02		3.34E+01	6.54E+01
		1230.71		8.90	1.17E+02		1.80E+00	5.46E+01
	HO-166M	184.41		72.60	8.91E-02	8.91E-02	1.80E-01	4.33E-02
		280.45		29.60	2.11E-01		1.57E-02	1.02E-01
		410.94		11.10	5.60E-01		-8.79E-03	2.66E-01
		711.69		54.10	1.35E-01		8.10E-02	6.33E-02
	TM-171	66.72		0.14	4.87E+01	4.87E+01	-3.15E+01	2.38E+01
	HF-172	67.35		5.31	1.27E+00	5.03E-01	-2.48E-01	6.19E-01
		125.81		11.30	5.03E-01		-2.83E-03	2.44E-01
	LU-172	181.53		20.60	9.02E+03	4.77E+03	-2.07E+04	4.35E+03
		900.72		29.81	9.66E+03		-1.87E+03	4.48E+03
		1093.66		62.50	4.77E+03		-1.21E+03	2.19E+03
	LU-173	100.72		5.24	1.08E+00	3.49E-01	5.20E-01	5.22E-01
		272.11		21.20	3.49E-01		-7.05E-02	1.69E-01
	HF-175	343.40		84.00	1.93E-01	1.93E-01	6.96E-03	9.22E-02
	LU-176	88.34		13.30	5.10E-01	5.95E-02	-7.70E-02	2.50E-01
		201.83		86.00	5.95E-02		-6.09E-03	2.87E-02
		306.78		94.00	6.30E-02		7.70E-03	3.02E-02
	HF-181	133.02		41.70	6.38E-01	3.71E-01	-7.24E-02	3.09E-01
		345.85		17.20	1.82E+00		6.59E-02	8.67E-01
		482.03		82.80	3.71E-01		-7.55E-02	1.75E-01
	TA-182	67.75		41.20	2.73E-01	2.73E-01	-5.35E-02	1.33E-01
		1121.30		34.90	6.71E-01		7.81E-01	3.18E-01
		1189.05		16.23	1.03E+00		-4.53E-01	4.74E-01
		1221.41		26.98	6.06E-01		-1.51E-01	2.79E-01
		1231.02		11.44	1.62E+00		2.48E-02	7.55E-01
	IR-192	308.46		29.68	5.00E-01	3.44E-01	-2.75E-01	2.39E-01
		468.07		48.10	3.44E-01		-1.89E-01	1.63E-01
	HG-203	279.19		77.30	3.74E-01	3.74E-01	2.02E-01	1.80E-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)
	TL-204	374.74		94.11	6.73E-02	6.73E-02	-4.33E-03	3.21E-02
		899.15		99.16	8.01E-02		-3.71E-02	3.72E-02
		911.74		91.10	1.67E-01		3.67E-01	8.01E-02
	BI-207	569.67		97.72	6.49E-02	6.49E-02	3.97E-02	3.05E-02
		1063.62		74.90	1.12E-01		6.03E-02	5.18E-02
+	TL-208	583.14	*	30.22	3.39E-01	3.39E-01	1.09E+00	1.63E-01
		860.37	*	4.48	2.25E+00		1.10E+00	1.06E+00
		2614.66		35.85	5.59E-01		9.60E-01	2.63E-01
	BI-210M	262.00		45.00	1.26E-01	1.26E-01	9.73E-03	6.06E-02
		300.00		23.00	2.81E-01		-1.17E+00	1.35E-01
+	PB-210	46.50	*	4.25	1.65E+00	1.65E+00	1.13E+00	8.04E-01
	PB-211	404.84		2.90	2.13E+00	2.13E+00	-3.45E-01	1.02E+00
		831.96		2.90	2.37E+00		-1.65E-01	1.10E+00
+	BI-212	727.17	*	11.80	8.03E-01	8.03E-01	5.62E-01	3.82E-01
		1620.62		2.75	2.14E+00		1.70E-01	9.16E-01
+	PB-212	238.63	*	44.60	2.60E-01	2.60E-01	1.18E+00	1.28E-01
		300.09	*	3.41	3.32E+00		1.18E+00	1.62E+00
+	BI-214	609.31	*	46.30	2.76E-01	2.11E-01	1.13E+00	1.34E-01
		1120.29	*	15.10	7.49E-01		1.06E+00	3.53E-01
		1764.49	*	15.80	5.14E-01		1.12E+00	2.29E-01
		2204.22	*	4.98	2.11E-01		1.93E+00	0.00E+00
+	PB-214	295.21	*	19.19	5.83E-01	2.53E-01	1.25E+00	2.85E-01
		351.92	*	37.19	2.53E-01		9.37E-01	1.23E-01
	RN-219	401.80		6.50	9.47E-01	9.47E-01	-2.18E-01	4.51E-01
	RA-223	323.87		3.88	1.49E+00	1.49E+00	1.77E-01	7.10E-01
+	RA-224	240.98	*	3.95	2.93E+00	2.93E+00	3.13E+00	1.44E+00
	RA-225	40.00		31.00	2.07E+01	2.07E+01	7.67E+00	1.00E+01
+	RA-226	186.21	*	3.28	2.23E+00	2.23E+00	3.39E+00	1.09E+00
	TH-227	50.10		8.40	6.21E-01	6.12E-01	-7.68E-01	3.01E-01
		236.00		11.50	6.12E-01		-2.78E+00	2.97E-01
		256.20		6.30	9.54E-01		6.07E-01	4.60E-01
+	AC-228	338.32	*	11.40	7.51E-01	3.36E-01	1.28E+00	3.64E-01
		911.07	*	27.70	3.36E-01		1.24E+00	1.58E-01
		969.11	*	16.60	6.96E-01		9.43E-01	3.31E-01
	TH-230	48.44		16.90	3.35E-01	3.35E-01	1.88E-01	1.63E-01
		62.85		4.60	1.42E+00		1.47E+00	6.93E-01
		67.67		0.37	1.64E+01		-3.21E+00	8.00E+00
	PA-231	283.67		1.60	3.80E+00	2.83E+00	1.16E+00	1.83E+00
		302.67		2.30	2.83E+00		8.91E-01	1.36E+00
	TH-231	25.64		14.70	5.47E-01	5.47E-01	-3.74E+00	2.66E-01
		84.21		6.40	9.47E-01		-5.69E-01	4.62E-01
	PA-233	311.98		38.60	2.09E+00	2.09E+00	3.91E-01	1.00E+00
	PA-234	131.20		20.40	2.47E-01	2.47E-01	-1.14E-01	1.20E-01
		733.99		8.80	8.60E-01		1.64E-01	4.03E-01
		946.00		12.00	6.70E-01		2.15E-01	3.11E-01
	PA-234M	1001.03		0.92	9.19E+00	9.19E+00	1.77E+00	4.27E+00
	TH-234	63.29		3.80	1.72E+00	1.72E+00	1.50E+00	8.42E-01
	U-235	143.76		10.50	4.71E-01	4.71E-01	1.68E-01	2.28E-01
		163.35		4.70	1.09E+00		-2.54E-01	5.25E-01
		205.31		4.70	1.13E+00		7.84E-02	5.43E-01
+	NP-237	86.50	*	12.60	1.27E+00	1.27E+00	1.55E+00	6.29E-01
	NP-239	106.10		22.70	2.28E+12	2.28E+12	5.62E+11	1.11E+12
		228.18		10.70	5.07E+12		1.18E+12	2.44E+12

Analysis Report for 1707088-16

HTC-A03-S004-4248-01

	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	4.61E+12	2.28E+12	7.87E+11	2.22E+12
	AM-241	59.54		35.90	1.59E-01	1.59E-01	-1.26E-01	7.74E-02
+	AM-243	74.67	*	66.00	1.88E-01	1.88E-01	2.82E-01	9.31E-02
	CM-243	209.75		3.29	1.77E+00	4.45E-01	1.02E+00	8.56E-01
		228.14		10.60	4.90E-01		1.14E-01	2.35E-01
		277.60		14.00	4.45E-01		7.59E-02	2.14E-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-A03-S004-4248-01

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	51	85	52	153	490	129
25:	66	61	49	70	61	53	48	54
33:	50	53	68	58	55	78	51	69
41:	63	74	63	43	70	83	137	77
49:	68	65	69	67	92	108	74	71
57:	70	80	99	95	104	103	144	170
65:	125	111	113	102	137	107	114	116
73:	152	154	329	247	283	401	138	105
81:	97	103	91	110	117	109	152	192
89:	114	124	143	107	234	173	85	59
97:	69	74	78	62	58	76	85	56
105:	60	72	74	70	80	72	56	86
113:	56	66	58	77	62	65	53	51
121:	47	59	76	69	67	69	68	80
129:	75	87	62	67	64	51	69	76
137:	68	73	52	54	65	47	54	80
145:	59	58	59	40	64	59	62	50
153:	66	61	72	50	61	52	50	67
161:	51	54	56	60	66	49	62	62
169:	36	59	62	39	45	48	52	76
177:	43	61	53	43	40	51	45	59
185:	76	125	107	45	37	37	48	47
193:	50	44	35	47	58	49	38	45
201:	41	36	52	56	45	56	42	43
209:	77	79	48	37	50	43	35	38
217:	45	59	55	49	40	52	48	39
225:	43	32	42	31	47	47	35	44
233:	30	40	49	43	55	181	423	193
241:	86	121	74	42	44	39	27	29
249:	32	25	33	23	30	35	40	29
257:	30	34	34	37	31	25	29	23
265:	27	22	31	30	30	53	57	33
273:	29	27	21	34	37	40	36	28
281:	32	29	37	27	31	28	29	22
289:	26	25	26	25	30	44	133	141
297:	41	21	26	32	51	33	20	32
305:	29	28	18	22	25	27	21	26
313:	25	30	22	35	17	22	18	20
321:	17	27	25	23	20	26	20	39
329:	46	17	24	21	17	30	25	21
337:	26	76	105	35	23	21	22	16
345:	23	23	25	19	23	26	66	239
353:	143	21	25	29	31	22	13	18
361:	14	27	18	22	20	27	14	25

369:	15	26	22	21	17	22	19	16

Sample Title: HTC-A03-S004-4248-01

Channel								
377:	14	30	19	16	18	17	12	23
385:	10	21	14	23	18	26	15	22
393:	17	18	19	20	22	18	20	15
401:	18	22	12	19	25	20	22	11
409:	14	31	18	15	18	22	19	14
417:	20	10	13	19	21	21	21	13
425:	15	14	12	19	16	14	18	20
433:	11	11	13	14	9	10	20	12
441:	15	13	16	17	10	14	12	17
449:	14	10	12	15	17	13	18	10
457:	14	8	8	15	10	19	38	21
465:	15	14	13	20	18	19	12	13
473:	12	13	16	16	17	20	11	8
481:	16	14	15	10	13	8	12	12
489:	16	13	10	12	14	17	13	10
497:	17	16	8	17	9	10	12	14
505:	10	11	11	15	24	54	82	53
513:	22	17	19	18	11	12	14	12
521:	14	10	9	12	16	11	16	13
529:	12	4	10	9	13	10	14	4
537:	11	16	16	18	9	7	6	8
545:	10	15	10	7	6	15	6	9
553:	9	13	13	13	12	18	11	14
561:	7	15	17	11	6	7	16	10
569:	16	12	8	6	11	10	6	12
577:	14	14	18	16	12	35	103	114
585:	25	21	12	13	20	7	14	11
593:	13	14	12	10	8	14	11	12
601:	10	16	12	10	11	22	10	31
609:	139	149	40	12	14	12	17	6
617:	5	12	16	6	12	14	10	9
625:	12	6	10	5	8	10	14	13
633:	10	11	9	8	8	9	11	8
641:	11	10	8	11	13	10	11	11
649:	7	10	5	12	17	12	14	10
657:	8	7	10	6	8	12	11	16
665:	14	11	16	9	9	14	10	7
673:	14	10	12	16	9	12	8	11
681:	11	10	9	17	7	15	10	8
689:	7	15	10	12	6	6	12	6
697:	15	9	14	15	15	17	11	9
705:	11	14	7	9	13	16	12	11
713:	8	9	6	4	9	11	10	10
721:	10	14	9	4	15	17	30	28
729:	14	5	14	9	15	12	13	10
737:	4	11	9	12	7	8	9	6
745:	7	12	10	15	8	5	7	13
753:	12	11	6	14	11	9	10	18
761:	9	7	17	10	10	10	16	13
769:	17	10	11	9	12	10	10	9
777:	5	10	3	9	6	10	7	11
785:	12	12	12	6	9	7	12	6
793:	13	13	17	16	6	5	6	8

801:	5	4	13	10	11	10	4	7

Sample Title: HTC-A03-S004-4248-01

Channel								
809:	8	7	4	9	7	7	6	3
817:	8	12	11	7	9	5	8	6
825:	7	8	5	4	7	6	6	6
833:	7	8	11	11	10	5	9	10
841:	7	6	9	7	7	10	6	14
849:	9	7	7	7	5	8	12	7
857:	7	6	7	20	23	11	6	4
865:	7	6	5	14	9	6	6	5
873:	6	6	5	7	5	6	6	5
881:	6	5	6	2	5	9	7	10
889:	5	6	3	8	5	10	9	8
897:	7	6	10	4	10	10	9	13
905:	6	9	6	13	3	28	81	62
913:	18	6	11	6	1	6	4	6
921:	8	5	5	8	5	4	7	7
929:	4	5	8	8	8	16	15	6
937:	5	6	7	12	4	5	8	11
945:	8	7	7	8	9	9	7	8
953:	5	4	7	6	10	7	7	8
961:	8	4	11	14	12	11	4	25
969:	51	23	8	3	5	3	8	2
977:	5	4	9	8	6	11	8	7
985:	11	4	3	4	6	10	1	7
993:	4	5	7	4	9	8	5	10
1001:	12	11	10	3	4	12	4	3
1009:	5	4	5	3	7	2	11	3
1017:	13	8	4	6	2	8	9	11
1025:	4	4	10	5	6	8	6	8
1033:	8	5	4	4	4	4	8	9
1041:	3	9	5	2	3	5	13	7
1049:	5	7	7	6	4	3	10	5
1057:	9	2	5	9	2	9	9	13
1065:	3	7	6	5	2	6	7	8
1073:	5	8	9	6	5	8	8	3
1081:	13	4	8	4	6	9	8	8
1089:	7	8	5	4	4	12	5	6
1097:	7	8	9	6	5	3	7	7
1105:	3	7	4	6	6	11	6	5
1113:	10	5	6	2	6	8	17	41
1121:	22	12	11	5	12	8	6	8
1129:	5	7	7	10	10	8	5	10
1137:	4	8	12	8	5	9	8	10
1145:	10	9	8	5	5	6	8	10
1153:	6	13	11	9	11	9	5	10
1161:	6	6	2	4	6	8	6	4
1169:	9	8	7	7	4	6	8	10
1177:	7	0	7	7	12	9	5	8
1185:	6	9	9	11	7	5	3	7
1193:	11	11	6	14	8	4	5	6
1201:	5	6	11	3	7	6	14	10
1209:	2	3	8	7	7	5	9	8
1217:	9	8	3	7	8	7	7	7
1225:	9	6	7	11	9	7	8	10

1233:	9	12	7	8	13	17	10	6

Sample Title: HTC-A03-S004-4248-01

Channel								
1241:	18	8	6	4	3	8	3	10
1249:	10	7	10	6	4	9	5	6
1257:	6	6	4	9	7	5	7	5
1265:	4	3	11	9	5	6	7	9
1273:	7	5	7	5	8	8	5	11
1281:	4	3	4	5	2	4	7	7
1289:	5	4	2	5	3	5	7	4
1297:	4	3	5	2	3	3	7	9
1305:	4	4	2	2	1	8	4	4
1313:	4	3	5	4	7	5	3	3
1321:	5	4	4	7	3	2	1	3
1329:	3	4	3	2	1	2	5	3
1337:	3	9	5	6	2	3	3	3
1345:	3	3	3	2	2	4	3	2
1353:	2	1	4	3	5	4	2	0
1361:	2	2	2	8	1	5	4	3
1369:	0	4	2	3	6	2	2	3
1377:	9	5	2	1	1	2	3	5
1385:	4	5	5	1	0	2	1	1
1393:	1	5	4	1	6	3	3	4
1401:	2	3	9	4	3	4	4	5
1409:	2	7	2	3	0	0	0	4
1417:	1	2	2	5	2	2	3	5
1425:	1	3	2	3	1	0	4	1
1433:	3	0	3	5	0	2	1	0
1441:	3	3	3	2	1	1	1	1
1449:	4	2	2	1	0	2	3	4
1457:	6	14	61	246	338	131	18	8
1465:	9	10	3	2	1	4	2	1
1473:	2	3	2	0	4	1	1	0
1481:	3	1	2	0	3	3	1	0
1489:	0	1	1	2	3	2	2	1
1497:	2	3	0	1	4	2	0	0
1505:	0	1	2	3	5	3	1	4
1513:	3	1	3	1	1	1	2	1
1521:	0	1	1	1	1	1	1	0
1529:	2	2	1	3	3	2	0	2
1537:	5	2	2	1	1	1	1	2
1545:	2	3	0	3	2	1	0	0
1553:	1	3	2	2	0	1	1	1
1561:	2	1	4	0	1	1	0	1
1569:	0	2	0	2	1	0	1	2
1577:	1	1	2	1	4	2	3	2
1585:	4	5	10	4	6	3	3	4
1593:	2	1	0	0	0	2	3	1
1601:	1	0	0	2	1	0	0	2
1609:	1	0	1	0	3	0	3	0
1617:	0	1	4	1	2	1	3	2
1625:	1	0	2	4	4	4	5	2
1633:	1	2	2	2	2	1	3	2
1641:	3	1	3	2	0	4	1	1
1649:	0	2	1	0	1	5	1	3
1657:	2	3	1	2	2	3	1	0

1665:	1	2	0	3	0	0	2	1

Sample Title: HTC-A03-S004-4248-01

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

2097:	0	0	1	2	4	2	2	2

Sample Title: HTC-A03-S004-4248-01

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

2529:	0	0	0	1	0	1	0	1

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Channel								
2537:	0	0	0	0	0	0	1	1
2545:	0	1	0	0	0	1	0	0
2553:	1	0	1	0	0	0	0	0
2561:	0	0	0	0	0	0	0	0
2569:	0	0	0	0	0	1	0	0
2577:	0	1	0	0	1	0	0	2
2585:	0	1	1	1	0	0	1	1
2593:	0	0	3	0	1	0	0	0
2601:	0	0	0	0	0	2	0	1
2609:	2	0	5	8	22	23	20	3
2617:	2	1	1	0	0	0	0	1
2625:	0	1	0	0	0	0	1	0
2633:	0	0	2	0	0	0	0	0
2641:	1	0	1	0	0	1	0	0
2649:	0	0	0	0	0	0	0	0
2657:	1	0	0	0	0	0	0	0
2665:	0	1	0	0	1	1	3	0
2673:	0	1	1	0	0	0	0	0
2681:	0	0	0	1	0	2	0	0
2689:	0	0	0	0	0	1	1	0
2697:	0	0	0	0	1	0	0	0
2705:	0	0	1	0	0	0	0	0
2713:	2	0	0	1	1	0	0	0
2721:	0	1	1	1	0	0	0	0
2729:	0	0	1	0	0	1	0	0
2737:	0	0	0	0	0	0	0	1
2745:	0	1	0	0	1	0	0	0
2753:	1	1	0	0	0	0	1	1
2761:	1	0	0	0	0	1	1	2
2769:	0	1	0	0	0	0	0	1
2777:	0	0	0	1	0	0	0	0
2785:	0	0	0	0	0	1	0	0
2793:	0	1	0	0	0	0	0	0
2801:	0	0	0	0	0	0	1	0
2809:	1	0	0	0	1	0	1	0
2817:	0	1	0	0	0	0	1	0
2825:	0	1	0	0	0	0	0	1
2833:	0	0	0	0	1	0	0	0
2841:	0	0	0	1	1	0	1	0
2849:	0	0	0	0	0	0	1	0
2857:	0	1	1	0	0	1	0	0
2865:	1	0	0	0	0	0	0	0
2873:	0	0	0	0	0	0	0	0
2881:	0	1	0	0	0	0	1	0
2889:	0	0	2	0	0	0	0	1
2897:	0	1	1	1	1	0	0	1
2905:	1	0	0	0	0	0	0	0
2913:	0	0	0	0	1	0	0	1
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	1	0	0	1	1
2937:	2	0	0	0	0	0	0	0
2945:	0	0	0	1	0	0	0	1
2953:	0	0	0	0	0	1	0	0

2961:	0	0	0	0	1	0	0	0

Sample Title: HTC-A03-S004-4248-01

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

3393:	0	0	0	0	0	1	0	0

Sample Title: HTC-A03-S004-4248-01

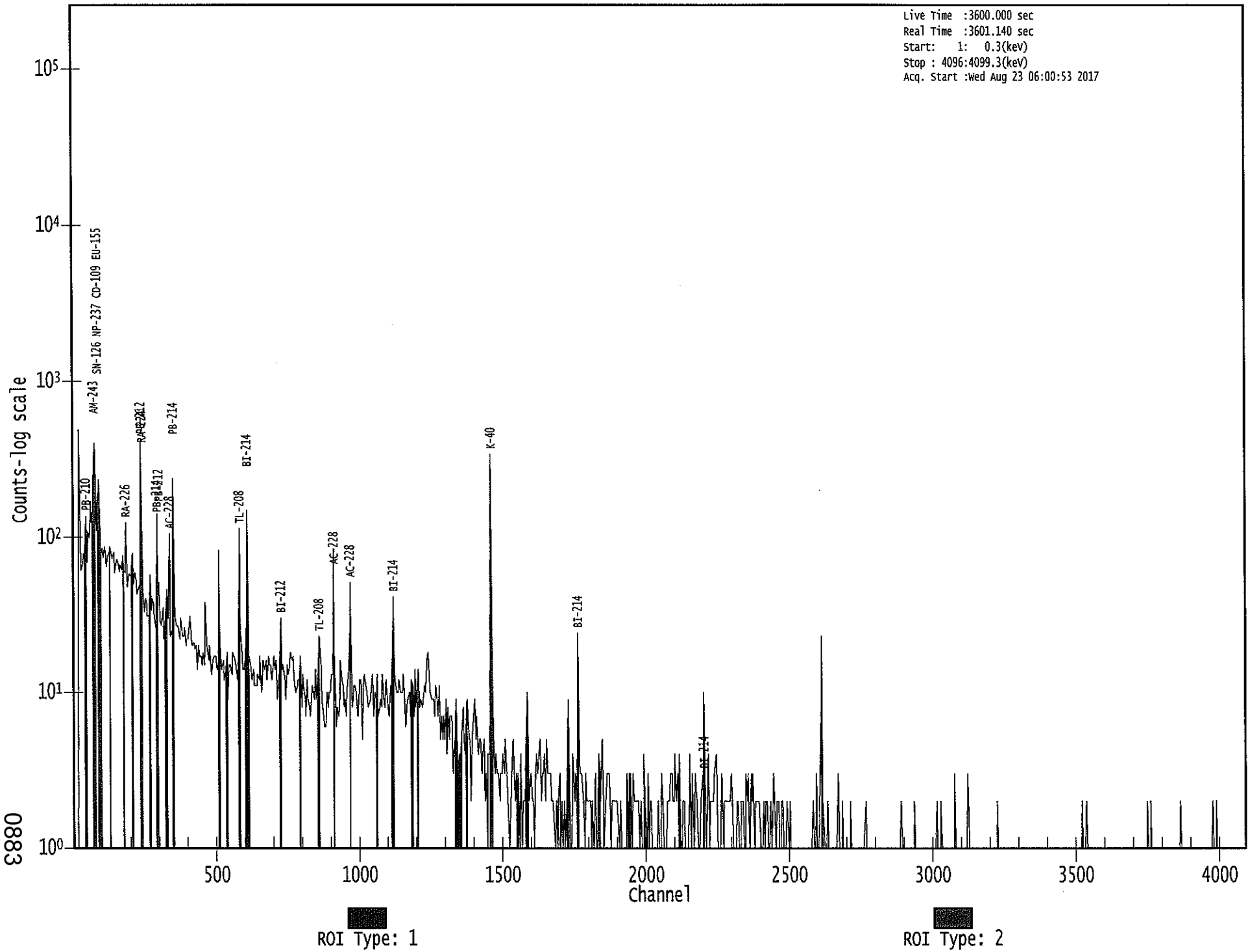
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	1	0	0
3417:	0	0	0	0	0	1	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	1	0	0	1	1	0	1
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	1	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	1	0
3473:	0	0	0	0	0	0	0	1
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	1
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A03-S004-4248-01

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

0000055774.CNF



0883

Apex-Gamma

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

8/23

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-17
Sample Description	: HTC-A04-S004-0006-01
Sample Type	: SOIL
Sample Size	: 6.433E+02 grams
Facility	: Countroom
Sample Taken On	: 5/15/2017 9:35:51AM
Acquisition Started	: 8/23/2017 6:00:59AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE2
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.0 seconds
Dead Time	: 0.03 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 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	: 55775

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/23/2017 7:01:30AM
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	76.20	76.52	0.0000	0.00
2	87.19	87.49	0.0000	0.00
3	93.03	93.32	0.0000	0.00
4	186.01	186.21	0.0000	0.00
5	218.46	218.62	0.0000	0.00
6	238.71	238.84	0.0000	0.00
7	241.88	242.01	0.0000	0.00
8	270.84	270.94	0.0000	0.00
9	277.24	277.33	0.0000	0.00
10	294.93	295.00	0.0000	0.00
11	300.01	300.09	0.0000	0.00
12	338.09	338.12	0.0000	0.00
13	351.86	351.88	0.0000	0.00
14	462.34	462.25	0.0000	0.00
15	479.78	479.67	0.0000	0.00
16	510.68	510.54	0.0000	0.00
17	562.34	562.14	0.0000	0.00
18	583.24	583.02	0.0000	0.00
19	606.07	605.83	0.0000	0.00
20	609.39	609.14	0.0000	0.00
21	619.25	619.00	0.0000	0.00
22	623.09	622.83	0.0000	0.00
23	661.50	661.20	0.0000	0.00
24	727.45	727.08	0.0000	0.00
25	769.35	768.95	0.0000	0.00
26	786.55	786.14	0.0000	0.00
27	794.47	794.04	0.0000	0.00
28	860.45	859.96	0.0000	0.00
29	911.20	910.66	0.0000	0.00
30	934.95	934.39	0.0000	0.00
31	968.13	967.54	0.0000	0.00
32	1120.70	1119.97	0.0000	0.00
33	1127.95	1127.21	0.0000	0.00
34	1238.84	1238.01	0.0000	0.00
35	1254.09	1253.24	0.0000	0.00
36	1460.97	1459.95	0.0000	0.00
37	1476.03	1474.99	0.0000	0.00
38	1509.57	1508.50	0.0000	0.00
39	1541.83	1540.73	0.0000	0.00
40	1618.87	1617.71	0.0000	0.00
41	1638.31	1637.14	0.0000	0.00
42	1666.19	1665.00	0.0000	0.00

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1671.86	1670.66	0.0000	0.00
44	1764.49	1763.22	0.0000	0.00
45	1791.20	1789.91	0.0000	0.00
46	1825.93	1824.62	0.0000	0.00
47	1907.38	1906.00	0.0000	0.00
48	1936.90	1935.50	0.0000	0.00
49	2203.70	2202.11	0.0000	0.00
50	2250.43	2248.80	0.0000	0.00
51	2338.95	2337.26	0.0000	0.00
52	2365.21	2363.50	0.0000	0.00
53	2614.40	2612.54	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/23/2017 7:01:30AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	76.20	72 -	81	76.52	8.27E+02	132.35	2.00E+03	3.88
	2	87.19	86 -	89	87.49	5.99E+01	60.70	8.66E+02	1.59
	3	93.03	91 -	96	93.32	1.79E+02	76.34	9.72E+02	1.54
	4	186.01	183 -	189	186.21	1.66E+02	61.39	5.59E+02	1.40
	5	218.46	215 -	222	218.62	5.25E+01	62.99	6.23E+02	2.64
M	6	238.71	235 -	245	238.84	6.68E+02	64.25	2.76E+02	1.45
m	7	241.88	235 -	245	242.01	1.34E+02	43.08	2.55E+02	1.46
	8	270.84	267 -	274	270.94	8.51E+01	53.67	4.22E+02	2.11
	9	277.24	275 -	280	277.33	3.91E+01	38.87	2.68E+02	3.36
M	10	294.93	291 -	303	295.00	1.72E+02	39.60	2.04E+02	1.42
m	11	300.01	291 -	303	300.09	3.90E+01	30.33	1.96E+02	1.43
	12	338.09	333 -	342	338.12	1.77E+02	59.19	3.98E+02	1.89
	13	351.86	348 -	354	351.88	3.03E+02	53.53	3.01E+02	1.40
	14	462.34	458 -	465	462.25	5.45E+01	38.21	2.05E+02	1.28
	15	479.78	477 -	482	479.67	2.18E+01	26.89	1.25E+02	2.36
	16	510.68	506 -	515	510.54	1.63E+02	46.78	2.18E+02	1.89
	17	562.34	558 -	566	562.14	3.12E+01	34.77	1.68E+02	4.48
	18	583.24	579 -	586	583.02	2.18E+02	42.47	1.54E+02	1.58
M	19	606.07	603 -	625	605.83	1.86E+01	26.08	8.90E+01	1.85
m	20	609.39	603 -	625	609.14	2.89E+02	38.56	7.16E+01	1.78
m	21	619.25	603 -	625	619.00	1.86E+01	19.87	6.64E+01	1.69
m	22	623.09	603 -	625	622.83	1.68E+01	21.91	7.85E+01	1.86
	23	661.50	657 -	666	661.20	1.14E+02	41.47	1.81E+02	2.04
	24	727.45	721 -	732	727.08	7.32E+01	42.66	1.88E+02	1.52
	25	769.35	766 -	772	768.95	3.42E+01	27.35	1.10E+02	1.20
	26	786.55	782 -	790	786.14	3.16E+01	28.81	1.09E+02	1.46
	27	794.47	791 -	798	794.04	2.37E+01	29.05	1.27E+02	2.68
	28	860.45	854 -	866	859.96	4.29E+01	34.18	1.18E+02	2.43
	29	911.20	907 -	917	910.66	1.43E+02	34.61	8.69E+01	2.29
	30	934.95	931 -	939	934.39	2.87E+01	23.49	6.66E+01	2.15
	31	968.13	962 -	972	967.54	1.21E+02	34.38	9.12E+01	2.10
M	32	1120.70	1116 -	1139	1119.97	7.02E+01	26.49	8.09E+01	2.35
m	33	1127.95	1116 -	1139	1127.21	1.94E+01	22.12	7.53E+01	2.36
	34	1238.84	1230 -	1243	1238.01	4.88E+01	41.23	1.64E+02	5.33
	35	1254.09	1250 -	1257	1253.24	3.15E+01	19.18	4.11E+01	4.93
	36	1460.97	1455 -	1465	1459.95	6.92E+02	54.51	2.58E+01	2.33
	37	1476.03	1472 -	1478	1474.99	7.17E+00	9.21	9.67E+00	2.12
	38	1509.57	1505 -	1511	1508.50	1.19E+01	10.23	1.02E+01	3.68
	39	1541.83	1536 -	1545	1540.73	1.04E+01	12.12	1.52E+01	6.28
	40	1618.87	1612 -	1622	1617.71	1.40E+01	7.48	0.00E+00	4.25

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1638.31	1635 -	1639	1637.14	7.00E+00	5.29	0.00E+00	1.66
42	1666.19	1663 -	1667	1665.00	4.50E+00	6.36	5.00E+00	2.83
43	1671.86	1668 -	1673	1670.66	6.75E+00	6.40	2.50E+00	2.68
44	1764.49	1759 -	1768	1763.22	4.12E+01	16.46	1.57E+01	2.45
45	1791.20	1786 -	1793	1789.91	1.10E+01	6.63	0.00E+00	3.75
46	1825.93	1821 -	1828	1824.62	1.03E+01	8.00	3.33E+00	3.11
47	1907.38	1902 -	1908	1906.00	6.00E+00	4.90	0.00E+00	1.33
48	1936.90	1931 -	1939	1935.50	1.00E+01	6.32	0.00E+00	2.75
49	2203.70	2196 -	2205	2202.11	1.34E+01	12.61	1.51E+01	3.85
50	2250.43	2245 -	2251	2248.80	5.67E+00	7.78	6.67E+00	2.87
51	2338.95	2334 -	2340	2337.26	7.39E+00	6.95	3.22E+00	3.61
52	2365.21	2359 -	2367	2363.50	1.00E+01	6.32	0.00E+00	2.38
53	2614.40	2607 -	2617	2612.54	7.83E+01	18.82	5.47E+00	3.51

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 : 8/23/2017 7:01:30AM

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	76.20	72 -	81	8.27E+02	132.35	2.00E+03	9.80E+01
	2	87.19	86 -	89	5.99E+01	60.70	8.66E+02	4.82E+01
	3	93.03	91 -	96	1.79E+02	76.34	9.72E+02	5.88E+01
	4	186.01	183 -	189	1.66E+02	61.39	5.59E+02	4.58E+01
	5	218.46	215 -	222	5.25E+01	62.99	6.23E+02	5.04E+01
M	6	238.71	235 -	245	6.68E+02	64.25	2.76E+02	2.73E+01
m	7	241.88	235 -	245	1.34E+02	43.08	2.55E+02	2.63E+01
	8	270.84	267 -	274	8.51E+01	53.67	4.22E+02	4.14E+01
	9	277.24	275 -	280	3.91E+01	38.87	2.68E+02	3.03E+01
M	10	294.93	291 -	303	1.72E+02	39.60	2.04E+02	2.35E+01
m	11	300.01	291 -	303	3.90E+01	30.33	1.96E+02	2.30E+01
	12	338.09	333 -	342	1.77E+02	59.19	3.98E+02	4.35E+01
	13	351.86	348 -	354	3.03E+02	53.53	3.01E+02	3.34E+01
	14	462.34	458 -	465	5.45E+01	38.21	2.05E+02	2.90E+01
	15	479.78	477 -	482	2.18E+01	26.89	1.25E+02	2.07E+01

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	16	510.68	506 -	515	1.63E+02	46.78	2.18E+02	3.22E+01
	17	562.34	558 -	566	3.12E+01	34.77	1.68E+02	2.71E+01
	18	583.24	579 -	586	2.18E+02	42.47	1.54E+02	2.51E+01
M	19	606.07	603 -	625	1.86E+01	26.08	8.90E+01	1.55E+01
m	20	609.39	603 -	625	2.89E+02	38.56	7.16E+01	1.39E+01
m	21	619.25	603 -	625	1.86E+01	19.87	6.64E+01	1.34E+01
m	22	623.09	603 -	625	1.68E+01	21.91	7.85E+01	1.46E+01
	23	661.50	657 -	666	1.14E+02	41.47	1.81E+02	2.92E+01
	24	727.45	721 -	732	7.32E+01	42.66	1.88E+02	1.59E+01
	25	769.35	766 -	772	3.42E+01	27.35	1.10E+02	2.03E+01
	26	786.55	782 -	790	3.16E+01	28.81	1.09E+02	2.18E+01
	27	794.47	791 -	798	2.37E+01	29.05	1.27E+02	2.25E+01
	28	860.45	854 -	866	4.29E+01	34.18	1.18E+02	2.60E+01
	29	911.20	907 -	917	1.43E+02	34.61	8.69E+01	2.06E+01
	30	934.95	931 -	939	2.87E+01	23.49	6.66E+01	1.72E+01
	31	968.13	962 -	972	1.21E+02	34.38	9.12E+01	2.17E+01
M	32	1120.70	1116 -	1139	7.02E+01	26.49	8.09E+01	1.48E+01
m	33	1127.95	1116 -	1139	1.94E+01	22.12	7.53E+01	1.43E+01
	34	1238.84	1230 -	1243	4.88E+01	41.23	1.64E+02	1.63E+01
	35	1254.09	1250 -	1257	3.15E+01	19.18	4.11E+01	1.28E+01
	36	1460.97	1455 -	1465	6.92E+02	54.51	2.58E+01	1.17E+01
	37	1476.03	1472 -	1478	7.17E+00	9.21	9.67E+00	6.16E+00
	38	1509.57	1505 -	1511	1.19E+01	10.23	1.02E+01	6.22E+00
	39	1541.83	1536 -	1545	1.04E+01	12.12	1.52E+01	8.44E+00
	40	1618.87	1612 -	1622	1.40E+01	7.48	0.00E+00	0.00E+00
	41	1638.31	1635 -	1639	7.00E+00	5.29	0.00E+00	0.00E+00
	42	1666.19	1663 -	1667	4.50E+00	6.36	5.00E+00	3.90E+00
	43	1671.86	1668 -	1673	6.75E+00	6.40	2.50E+00	3.08E+00
	44	1764.49	1759 -	1768	4.12E+01	16.46	1.57E+01	8.48E+00
	45	1791.20	1786 -	1793	1.10E+01	6.63	0.00E+00	0.00E+00
	46	1825.93	1821 -	1828	1.03E+01	8.00	3.33E+00	3.91E+00
	47	1907.38	1902 -	1908	6.00E+00	4.90	0.00E+00	0.00E+00
	48	1936.90	1931 -	1939	1.00E+01	6.32	0.00E+00	0.00E+00
	49	2203.70	2196 -	2205	1.34E+01	12.61	1.51E+01	8.43E+00
	50	2250.43	2245 -	2251	5.67E+00	7.78	6.67E+00	5.06E+00
	51	2338.95	2334 -	2340	7.39E+00	6.95	3.22E+00	3.55E+00
	52	2365.21	2359 -	2367	1.00E+01	6.32	0.00E+00	0.00E+00
	53	2614.40	2607 -	2617	7.83E+01	18.82	5.47E+00	5.28E+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 1707088-17

HTC-A04-S004-0006-01

PEAK WITH NID REPORT

Peak Analysis Performed on : 8/23/2017 7:01:30AM

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	76.20	72 -	81	76.52	8.27E+02	132.35	2.00E+03	.....
	2	87.19	86 -	89	87.49	5.99E+01	60.70	8.66E+02	SN-126
									NP-237
									EU-155
									CD-109
	3	93.03	91 -	96	93.32	1.79E+02	76.34	9.72E+02	GA-67
	4	186.01	183 -	189	186.21	1.66E+02	61.39	5.59E+02	RA-226
	5	218.46	215 -	222	218.62	5.25E+01	62.99	6.23E+02	.....
M	6	238.71	235 -	245	238.84	6.68E+02	64.25	2.76E+02	PB-212
m	7	241.88	235 -	245	242.01	1.34E+02	43.08	2.55E+02	RA-224
	8	270.84	267 -	274	270.94	8.51E+01	53.67	4.22E+02	.....
	9	277.24	275 -	280	277.33	3.91E+01	38.87	2.68E+02	CM-243
									NP-239
M	10	294.93	291 -	303	295.00	1.72E+02	39.60	2.04E+02	PB-214
m	11	300.01	291 -	303	300.09	3.90E+01	30.33	1.96E+02	BI-210M
									PB-212
									GA-67
	12	338.09	333 -	342	338.12	1.77E+02	59.19	3.98E+02	AC-228
	13	351.86	348 -	354	351.88	3.03E+02	53.53	3.01E+02	PB-214
	14	462.34	458 -	465	462.25	5.45E+01	38.21	2.05E+02	.....
	15	479.78	477 -	482	479.67	2.18E+01	26.89	1.25E+02	.....
	16	510.68	506 -	515	510.54	1.63E+02	46.78	2.18E+02	.....
	17	562.34	558 -	566	562.14	3.12E+01	34.77	1.68E+02	CS-134
	18	583.24	579 -	586	583.02	2.18E+02	42.47	1.54E+02	TL-208
M	19	606.07	603 -	625	605.83	1.86E+01	26.08	8.90E+01	.....
m	20	609.39	603 -	625	609.14	2.89E+02	38.56	7.16E+01	BI-214
m	21	619.25	603 -	625	619.00	1.86E+01	19.87	6.64E+01	.....
m	22	623.09	603 -	625	622.83	1.68E+01	21.91	7.85E+01	.....
	23	661.50	657 -	666	661.20	1.14E+02	41.47	1.81E+02	CS-137
	24	727.45	721 -	732	727.08	7.32E+01	42.66	1.88E+02	BI-212
	25	769.35	766 -	772	768.95	3.42E+01	27.35	1.10E+02	.....
	26	786.55	782 -	790	786.14	3.16E+01	28.81	1.09E+02	.....
	27	794.47	791 -	798	794.04	2.37E+01	29.05	1.27E+02	.....
	28	860.45	854 -	866	859.96	4.29E+01	34.18	1.18E+02	TL-208
	29	911.20	907 -	917	910.66	1.43E+02	34.61	8.69E+01	AC-228
									TL-204
	30	934.95	931 -	939	934.39	2.87E+01	23.49	6.66E+01	.....
	31	968.13	962 -	972	967.54	1.21E+02	34.38	9.12E+01	AC-228
M	32	1120.70	1116 -	1139	1119.97	7.02E+01	26.49	8.09E+01	SC-46
									BI-214
									TA-182

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
m	33	1127.95	1116 -	1139	1127.21	1.94E+01	22.12	7.53E+01	.....
	34	1238.84	1230 -	1243	1238.01	4.88E+01	41.23	1.64E+02	CO-56
	35	1254.09	1250 -	1257	1253.24	3.15E+01	19.18	4.11E+01	.....
	36	1460.97	1455 -	1465	1459.95	6.92E+02	54.51	2.58E+01	K-40
	37	1476.03	1472 -	1478	1474.99	7.17E+00	9.21	9.67E+00	.....
	38	1509.57	1505 -	1511	1508.50	1.19E+01	10.23	1.02E+01	.....
	39	1541.83	1536 -	1545	1540.73	1.04E+01	12.12	1.52E+01	.....
	40	1618.87	1612 -	1622	1617.71	1.40E+01	7.48	0.00E+00	.....
	41	1638.31	1635 -	1639	1637.14	7.00E+00	5.29	0.00E+00	.....
	42	1666.19	1663 -	1667	1665.00	4.50E+00	6.36	5.00E+00	.....
	43	1671.86	1668 -	1673	1670.66	6.75E+00	6.40	2.50E+00	.....
	44	1764.49	1759 -	1768	1763.22	4.12E+01	16.46	1.57E+01	BI-214
	45	1791.20	1786 -	1793	1789.91	1.10E+01	6.63	0.00E+00	.....
	46	1825.93	1821 -	1828	1824.62	1.03E+01	8.00	3.33E+00	.....
	47	1907.38	1902 -	1908	1906.00	6.00E+00	4.90	0.00E+00	.....
	48	1936.90	1931 -	1939	1935.50	1.00E+01	6.32	0.00E+00	.....
	49	2203.70	2196 -	2205	2202.11	1.34E+01	12.61	1.51E+01	BI-214
	50	2250.43	2245 -	2251	2248.80	5.67E+00	7.78	6.67E+00	.....
	51	2338.95	2334 -	2340	2337.26	7.39E+00	6.95	3.22E+00	.....
	52	2365.21	2359 -	2367	2363.50	1.00E+01	6.32	0.00E+00	.....
	53	2614.40	2607 -	2617	2612.54	7.83E+01	18.82	5.47E+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 : 8/23/2017 7:01:30AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	76.20	8.27E+02	132.35	2.63E-02	2.11E-03
	2	87.19	5.99E+01	60.70	2.70E-02	2.40E-03
	3	93.03	1.79E+02	76.34	2.70E-02	2.33E-03
	4	186.01	1.66E+02	61.39	2.03E-02	1.53E-03
	5	218.46	5.25E+01	62.99	1.83E-02	1.39E-03
M	6	238.71	6.68E+02	64.25	1.72E-02	1.30E-03
m	7	241.88	1.34E+02	43.08	1.71E-02	1.28E-03
	8	270.84	8.51E+01	53.67	1.58E-02	1.15E-03
	9	277.24	3.91E+01	38.87	1.55E-02	1.13E-03

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	10	294.93	1.72E+02	39.60	1.49E-02	1.10E-03
m	11	300.01	3.90E+01	30.33	1.47E-02	1.09E-03
	12	338.09	1.77E+02	59.19	1.35E-02	1.04E-03
	13	351.86	3.03E+02	53.53	1.31E-02	1.02E-03
	14	462.34	5.45E+01	38.21	1.07E-02	9.07E-04
	15	479.78	2.18E+01	26.89	1.04E-02	8.92E-04
	16	510.68	1.63E+02	46.78	9.88E-03	8.65E-04
	17	562.34	3.12E+01	34.77	9.16E-03	8.20E-04
	18	583.24	2.18E+02	42.47	8.90E-03	8.02E-04
M	19	606.07	1.86E+01	26.08	8.64E-03	7.82E-04
m	20	609.39	2.89E+02	38.56	8.60E-03	7.79E-04
m	21	619.25	1.86E+01	19.87	8.49E-03	7.71E-04
m	22	623.09	1.68E+01	21.91	8.45E-03	7.68E-04
	23	661.50	1.14E+02	41.47	8.06E-03	7.34E-04
	24	727.45	7.32E+01	42.66	7.46E-03	6.71E-04
	25	769.35	3.42E+01	27.35	7.13E-03	6.30E-04
	26	786.55	3.16E+01	28.81	7.01E-03	6.14E-04
	27	794.47	2.37E+01	29.05	6.95E-03	6.06E-04
	28	860.45	4.29E+01	34.18	6.51E-03	5.42E-04
	29	911.20	1.43E+02	34.61	6.21E-03	5.02E-04
	30	934.95	2.87E+01	23.49	6.08E-03	4.93E-04
	31	968.13	1.21E+02	34.38	5.91E-03	4.82E-04
M	32	1120.70	7.02E+01	26.49	5.24E-03	4.28E-04
m	33	1127.95	1.94E+01	22.12	5.22E-03	4.26E-04
	34	1238.84	4.88E+01	41.23	4.84E-03	4.16E-04
	35	1254.09	3.15E+01	19.18	4.79E-03	4.18E-04
	36	1460.97	6.92E+02	54.51	4.26E-03	3.88E-04
	37	1476.03	7.17E+00	9.21	4.23E-03	3.83E-04
	38	1509.57	1.19E+01	10.23	4.16E-03	3.74E-04
	39	1541.83	1.04E+01	12.12	4.10E-03	3.64E-04
	40	1618.87	1.40E+01	7.48	3.96E-03	3.42E-04
	41	1638.31	7.00E+00	5.29	3.93E-03	3.36E-04
	42	1666.19	4.50E+00	6.36	3.89E-03	3.28E-04
	43	1671.86	6.75E+00	6.40	3.88E-03	3.27E-04
	44	1764.49	4.12E+01	16.46	3.75E-03	3.00E-04
	45	1791.20	1.10E+01	6.63	3.71E-03	2.92E-04
	46	1825.93	1.03E+01	8.00	3.67E-03	2.82E-04
	47	1907.38	6.00E+00	4.90	3.58E-03	2.79E-04
	48	1936.90	1.00E+01	6.32	3.55E-03	2.79E-04
	49	2203.70	1.34E+01	12.61	3.34E-03	2.79E-04
	50	2250.43	5.67E+00	7.78	3.31E-03	2.79E-04
	51	2338.95	7.39E+00	6.95	3.27E-03	2.79E-04
	52	2365.21	1.00E+01	6.32	3.26E-03	2.79E-04
	53	2614.40	7.83E+01	18.82	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 1707088-17

HTC-A04-S004-0006-01

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 8/23/2017 7:01:30AM

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	76.20	8.27E+02	132.35			8.27E+02	1.32E+02
	2	87.19	5.99E+01	60.70			5.99E+01	6.07E+01
	3	93.03	1.79E+02	76.34	4.88E+01	1.30E+00	1.30E+02	7.64E+01
	4	186.01	1.66E+02	61.39	3.48E+01	7.32E+00	1.32E+02	6.18E+01
	5	218.46	5.25E+01	62.99			5.25E+01	6.30E+01
M	6	238.71	6.68E+02	64.25	7.09E+00	6.85E+00	6.61E+02	6.46E+01
m	7	241.88	1.34E+02	43.08			1.34E+02	4.31E+01
	8	270.84	8.51E+01	53.67			8.51E+01	5.37E+01
	9	277.24	3.91E+01	38.87			3.91E+01	3.89E+01
M	10	294.93	1.72E+02	39.60			1.72E+02	3.96E+01
m	11	300.01	3.90E+01	30.33			3.90E+01	3.03E+01
	12	338.09	1.77E+02	59.19			1.77E+02	5.92E+01
	13	351.86	3.03E+02	53.53	1.04E+01	5.08E+00	2.92E+02	5.38E+01
	14	462.34	5.45E+01	38.21			5.45E+01	3.82E+01
	15	479.78	2.18E+01	26.89			2.18E+01	2.69E+01
	16	510.68	1.63E+02	46.78	7.08E+01	4.94E+00	9.23E+01	4.70E+01
	17	562.34	3.12E+01	34.77			3.12E+01	3.48E+01
	18	583.24	2.18E+02	42.47	5.65E+00	3.57E+00	2.12E+02	4.26E+01
M	19	606.07	1.86E+01	26.08			1.86E+01	2.61E+01
m	20	609.39	2.89E+02	38.56	1.07E+01	3.96E+00	2.79E+02	3.88E+01
m	21	619.25	1.86E+01	19.87			1.86E+01	1.99E+01
m	22	623.09	1.68E+01	21.91			1.68E+01	2.19E+01
	23	661.50	1.14E+02	41.47	3.04E+00	3.15E+00	1.11E+02	4.16E+01
	24	727.45	7.32E+01	42.66			7.32E+01	4.27E+01
	25	769.35	3.42E+01	27.35			3.42E+01	2.73E+01
	26	786.55	3.16E+01	28.81			3.16E+01	2.88E+01
	27	794.47	2.37E+01	29.05			2.37E+01	2.91E+01
	28	860.45	4.29E+01	34.18			4.29E+01	3.42E+01
	29	911.20	1.43E+02	34.61	2.63E+00	2.49E+00	1.40E+02	3.47E+01
	30	934.95	2.87E+01	23.49			2.87E+01	2.35E+01
	31	968.13	1.21E+02	34.38			1.21E+02	3.44E+01
M	32	1120.70	7.02E+01	26.49	2.45E+00	2.38E+00	6.78E+01	2.66E+01
m	33	1127.95	1.94E+01	22.12			1.94E+01	2.21E+01
	34	1238.84	4.88E+01	41.23			4.88E+01	4.12E+01
	35	1254.09	3.15E+01	19.18			3.15E+01	1.92E+01
	36	1460.97	6.92E+02	54.51	5.90E+00	2.63E+00	6.86E+02	5.46E+01
	37	1476.03	7.17E+00	9.21			7.17E+00	9.21E+00
	38	1509.57	1.19E+01	10.23			1.19E+01	1.02E+01
	39	1541.83	1.04E+01	12.12			1.04E+01	1.21E+01
	40	1618.87	1.40E+01	7.48			1.40E+01	7.48E+00
	41	1638.31	7.00E+00	5.29			7.00E+00	5.29E+00
	42	1666.19	4.50E+00	6.36			4.50E+00	6.36E+00
	43	1671.86	6.75E+00	6.40			6.75E+00	6.40E+00
	44	1764.49	4.12E+01	16.46	3.33E+00	1.73E+00	3.78E+01	1.66E+01

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
45	1791.20	1.10E+01	6.63			1.10E+01	6.63E+00
46	1825.93	1.03E+01	8.00			1.03E+01	8.00E+00
47	1907.38	6.00E+00	4.90			6.00E+00	4.90E+00
48	1936.90	1.00E+01	6.32			1.00E+01	6.32E+00
49	2203.70	1.34E+01	12.61			1.34E+01	1.26E+01
50	2250.43	5.67E+00	7.78			5.67E+00	7.78E+00
51	2338.95	7.39E+00	6.95			7.39E+00	6.95E+00
52	2365.21	1.00E+01	6.32			1.00E+01	6.32E+00
53	2614.40	7.83E+01	18.82	4.77E+00	1.52E+00	7.35E+01	1.89E+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 : 8/23/2017 7:01:30AM

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	76.20	8.27E+02	132.35			8.27E+02	1.32E+02
	2	87.19	5.99E+01	60.70			5.99E+01	6.07E+01
	3	93.03	1.79E+02	76.34	4.88E+01	1.30E+00	1.30E+02	7.64E+01
	4	186.01	1.66E+02	61.39	3.48E+01	7.32E+00	1.32E+02	6.18E+01
	5	218.46	5.25E+01	62.99			5.25E+01	6.30E+01
M	6	238.71	6.68E+02	64.25	7.09E+00	6.85E+00	6.61E+02	6.46E+01
m	7	241.88	1.34E+02	43.08			1.34E+02	4.31E+01
	8	270.84	8.51E+01	53.67			8.51E+01	5.37E+01
	9	277.24	3.91E+01	38.87			3.91E+01	3.89E+01
M	10	294.93	1.72E+02	39.60			1.72E+02	3.96E+01
m	11	300.01	3.90E+01	30.33			3.90E+01	3.03E+01
	12	338.09	1.77E+02	59.19			1.77E+02	5.92E+01
	13	351.86	3.03E+02	53.53	1.04E+01	5.08E+00	2.92E+02	5.38E+01
	14	462.34	5.45E+01	38.21			5.45E+01	3.82E+01
	15	479.78	2.18E+01	26.89			2.18E+01	2.69E+01
	16	510.68	1.63E+02	46.78	7.08E+01	4.94E+00	9.23E+01	4.70E+01
	17	562.34	3.12E+01	34.77			3.12E+01	3.48E+01
	18	583.24	2.18E+02	42.47	5.65E+00	3.57E+00	2.12E+02	4.26E+01
M	19	606.07	1.86E+01	26.08			1.86E+01	2.61E+01

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
m	20	609.39	2.89E+02	38.56	1.07E+01	3.96E+00	2.79E+02	3.88E+01
m	21	619.25	1.86E+01	19.87			1.86E+01	1.99E+01
m	22	623.09	1.68E+01	21.91			1.68E+01	2.19E+01
	23	661.50	1.14E+02	41.47	3.04E+00	3.15E+00	1.11E+02	4.16E+01
	24	727.45	7.32E+01	42.66			7.32E+01	4.27E+01
	25	769.35	3.42E+01	27.35			3.42E+01	2.73E+01
	26	786.55	3.16E+01	28.81			3.16E+01	2.88E+01
	27	794.47	2.37E+01	29.05			2.37E+01	2.91E+01
	28	860.45	4.29E+01	34.18			4.29E+01	3.42E+01
	29	911.20	1.43E+02	34.61	2.63E+00	2.49E+00	1.40E+02	3.47E+01
	30	934.95	2.87E+01	23.49			2.87E+01	2.35E+01
	31	968.13	1.21E+02	34.38			1.21E+02	3.44E+01
M	32	1120.70	7.02E+01	26.49	2.45E+00	2.38E+00	6.78E+01	2.66E+01
m	33	1127.95	1.94E+01	22.12			1.94E+01	2.21E+01
	34	1238.84	4.88E+01	41.23			4.88E+01	4.12E+01
	35	1254.09	3.15E+01	19.18			3.15E+01	1.92E+01
	36	1460.97	6.92E+02	54.51	5.90E+00	2.63E+00	6.86E+02	5.46E+01
	37	1476.03	7.17E+00	9.21			7.17E+00	9.21E+00
	38	1509.57	1.19E+01	10.23			1.19E+01	1.02E+01
	39	1541.83	1.04E+01	12.12			1.04E+01	1.21E+01
	40	1618.87	1.40E+01	7.48			1.40E+01	7.48E+00
	41	1638.31	7.00E+00	5.29			7.00E+00	5.29E+00
	42	1666.19	4.50E+00	6.36			4.50E+00	6.36E+00
	43	1671.86	6.75E+00	6.40			6.75E+00	6.40E+00
	44	1764.49	4.12E+01	16.46	3.33E+00	1.73E+00	3.78E+01	1.66E+01
	45	1791.20	1.10E+01	6.63			1.10E+01	6.63E+00
	46	1825.93	1.03E+01	8.00			1.03E+01	8.00E+00
	47	1907.38	6.00E+00	4.90			6.00E+00	4.90E+00
	48	1936.90	1.00E+01	6.32			1.00E+01	6.32E+00
	49	2203.70	1.34E+01	12.61			1.34E+01	1.26E+01
	50	2250.43	5.67E+00	7.78			5.67E+00	7.78E+00
	51	2338.95	7.39E+00	6.95			7.39E+00	6.95E+00
	52	2365.21	1.00E+01	6.32			1.00E+01	6.32E+00
	53	2614.40	7.83E+01	18.82	4.77E+00	1.52E+00	7.35E+01	1.89E+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 1707088-17

HTC-A04-S004-0006-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.996	1460.81	*	10.67	1.76E+01	2.16E+00
CD-109	0.893	88.03	*	3.72	8.09E-01	8.24E-01
SN-126	0.977	87.57	*	37.00	7.00E-02	7.13E-02
CS-137	0.996	661.65	*	85.12	1.91E-01	7.33E-02
EU-155	0.317	86.50	*	30.90	8.71E-02	8.86E-02
		105.30		20.70		
TL-208	0.994	583.14	*	30.22	9.22E-01	2.03E-01
		860.37	*	4.48	1.72E+00	1.38E+00
		2614.66	*	35.85	7.49E-01	2.03E-01
BI-212	0.758	727.17	*	11.80	9.70E-01	5.72E-01
		1620.62		2.75		
PB-212	0.999	238.63	*	44.60	1.00E+00	1.24E-01
		300.09	*	3.41	9.09E-01	7.11E-01
BI-214	0.992	609.31	*	46.30	8.17E-01	1.36E-01
		1120.29	*	15.10	9.99E-01	4.00E-01
		1764.49	*	15.80	7.46E-01	3.32E-01
		2204.22	*	4.98	9.42E-01	8.88E-01
PB-214	0.995	295.21	*	19.19	7.04E-01	1.70E-01
		351.92	*	37.19	7.02E-01	1.40E-01
RA-224	0.879	240.98	*	3.95	2.33E+00	7.66E-01
RA-226	0.994	186.21	*	3.28	2.31E+00	4.36E+00
AC-228	0.952	338.32	*	11.40	1.35E+00	4.62E-01
		911.07	*	27.70	9.49E-01	2.48E-01
		969.11	*	16.60	1.44E+00	4.26E-01
NP-237	0.927	86.50	*	12.60	2.06E-01	2.09E-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 : 8/23/2017 7:01:30AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
1	76.20	2.29663E-01	8.00		
3	93.03	3.61543E-02	29.33		
5	218.46	1.45723E-02	60.04		
8	270.84	2.36486E-02	31.52		

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	9	277.24	1.08542E-02	49.74	Tol.	NP-239 CM-243
	14	462.34	1.51468E-02	35.04		
	15	479.78	6.04167E-03	61.81	Sum	
	16	510.68	2.56523E-02	25.47		
	17	562.34	8.66908E-03	55.71	Tol.	CS-134
M	19	606.07	5.15936E-03	70.20		
m	21	619.25	5.16536E-03	53.44		
m	22	623.09	4.67642E-03	65.07		
	25	769.35	9.50687E-03	39.96	Sum	
	26	786.55	8.78876E-03	45.53		
	27	794.47	6.57727E-03	61.35	Sum	
	30	934.95	7.96595E-03	40.95	Sum	
m	33	1127.95	5.38677E-03	57.04		
	34	1238.84	1.35475E-02	42.27		
	35	1254.09	8.73932E-03	30.49	S-Esc	
	37	1476.03	1.99074E-03	64.23		
	38	1509.57	3.30065E-03	43.07		
	39	1541.83	2.88580E-03	58.35		
	40	1618.87	3.88889E-03	26.73		
	41	1638.31	1.94444E-03	37.80	Sum	
	42	1666.19	1.25000E-03	70.71		
	43	1671.86	1.87500E-03	47.43		
	45	1791.20	3.05556E-03	30.15		
	46	1825.93	2.87037E-03	38.71		
	47	1907.38	1.66667E-03	40.82		
	48	1936.90	2.77778E-03	31.62	Sum	
	50	2250.43	1.57407E-03	68.63		
	51	2338.95	2.05247E-03	47.00		
	52	2365.21	2.77778E-03	31.62		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	1.76E+01	2.16E+00
CD-109	0.89	88.03	*	3.72	8.09E-01	8.24E-01
SN-126	0.97	87.57	*	37.00	7.00E-02	7.13E-02
CS-137	0.99	661.65	*	85.12	1.91E-01	7.33E-02
EU-155	0.31	86.50	*	30.90	8.71E-02	8.86E-02
		105.30		20.70		
TL-208	0.99	583.14	*	30.22	9.22E-01	2.03E-01
		860.37	*	4.48	1.72E+00	1.38E+00
		2614.66	*	35.85	7.49E-01	2.03E-01
BI-212	0.75	727.17	*	11.80	9.70E-01	5.72E-01
		1620.62		2.75		
PB-212	0.99	238.63	*	44.60	1.00E+00	1.24E-01
		300.09	*	3.41	9.09E-01	7.11E-01
BI-214	0.99	609.31	*	46.30	8.17E-01	1.36E-01
		1120.29	*	15.10	9.99E-01	4.00E-01
		1764.49	*	15.80	7.46E-01	3.32E-01
		2204.22	*	4.98	9.42E-01	8.88E-01
PB-214	0.99	295.21	*	19.19	7.04E-01	1.70E-01
		351.92	*	37.19	7.02E-01	1.40E-01
RA-224	0.87	240.98	*	3.95	2.33E+00	7.66E-01
RA-226	0.99	186.21	*	3.28	2.31E+00	4.36E+00
AC-228	0.95	338.32	*	11.40	1.35E+00	4.62E-01
		911.07	*	27.70	9.49E-01	2.48E-01
		969.11	*	16.60	1.44E+00	4.26E-01
NP-237	0.92	86.50	*	12.60	2.06E-01	2.09E-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	0.996	1.76E+01	2.16E+00	
?	CD-109	0.893	8.09E-01	8.24E-01	

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
?	SN-126	0.977	7.00E-02	7.13E-02	
	CS-137	0.996	1.91E-01	7.33E-02	
?	EU-155	0.317	8.71E-02	8.86E-02	
	TL-208	0.994	8.45E-01	1.43E-01	
	BI-212	0.758	9.70E-01	5.72E-01	
	PB-212	0.999	1.00E+00	1.22E-01	
	BI-214	0.992	8.26E-01	1.19E-01	
	PB-214	0.995	7.03E-01	1.08E-01	
	RA-224	0.879	2.33E+00	7.66E-01	
	RA-226	0.994	2.31E+00	4.36E+00	
	AC-228	0.952	1.12E+00	1.94E-01	
?	NP-237	0.927	2.06E-01	2.09E-01	

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

Errors quoted at 2.000sigma

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/23/2017 7:01:30AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	76.20	2.29663E-01	8.00		
	3	93.03	3.61543E-02	29.33		
	5	218.46	1.45723E-02	60.04		
	8	270.84	2.36486E-02	31.52		
	9	277.24	1.08542E-02	49.74	Tol.	NP-239 CM-243
	14	462.34	1.51468E-02	35.04		
	15	479.78	6.04167E-03	61.81	Sum	
	16	510.68	2.56523E-02	25.47		
	17	562.34	8.66908E-03	55.71	Tol.	CS-134
M	19	606.07	5.15936E-03	70.20		
m	21	619.25	5.16536E-03	53.44		
m	22	623.09	4.67642E-03	65.07		
	25	769.35	9.50687E-03	39.96	Sum	
	26	786.55	8.78876E-03	45.53		
	27	794.47	6.57727E-03	61.35	Sum	
	30	934.95	7.96595E-03	40.95	Sum	
m	33	1127.95	5.38677E-03	57.04		
	34	1238.84	1.35475E-02	42.27		
	35	1254.09	8.73932E-03	30.49	S-Esc	
	37	1476.03	1.99074E-03	64.23		
	38	1509.57	3.30065E-03	43.07		
	39	1541.83	2.88580E-03	58.35		
	40	1618.87	3.88889E-03	26.73		
	41	1638.31	1.94444E-03	37.80	Sum	
	42	1666.19	1.25000E-03	70.71		
	43	1671.86	1.87500E-03	47.43		
	45	1791.20	3.05556E-03	30.15		
	46	1825.93	2.87037E-03	38.71		
	47	1907.38	1.66667E-03	40.82		
	48	1936.90	2.77778E-03	31.62	Sum	
	50	2250.43	1.57407E-03	68.63		
	51	2338.95	2.05247E-03	47.00		
	52	2365.21	2.77778E-03	31.62		

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

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	3.71E-01	1.72E+00	1.72E+00
+		NA-22	1274.54		99.94	-3.25E-02	8.43E-02	8.43E-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	3.59E-03	5.52E-02	5.52E-02
+		K-40	1460.81	*	10.67	1.76E+01	7.14E-01	7.14E-01
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	3.62E-02	4.42E-02	4.42E-02
			78.34		96.00	4.93E-02		4.94E-02
+		SC-46	889.25		99.98	3.00E-02	1.41E-01	1.41E-01
			1120.51		99.99	2.95E-01		2.57E-01
+		V-48	983.52		99.98	4.35E-01	4.91E+00	4.91E+00
			1312.10		97.50	-3.19E-01		5.22E+00
+		CR-51	320.08		9.83	-2.97E+00	5.29E+00	5.29E+00
+		MN-54	834.83		99.97	3.51E-02	8.59E-02	8.59E-02
+		CO-56	846.75		99.96	9.29E-02	1.56E-01	1.56E-01
			1037.75		14.03	6.71E-01		1.29E+00
			1238.25		67.00	1.46E-01		3.82E-01
			1771.40		15.51	1.70E-01		8.79E-01
			2598.48		16.90	1.70E-01		6.82E-01
+		CO-57	122.06		85.51	-2.22E-02	4.47E-02	4.47E-02
			136.48		10.60	1.42E-01		5.18E-01
+		CO-58	810.76		99.40	1.11E-01	1.64E-01	1.64E-01
+		FE-59	1099.22		56.50	1.10E-01	6.39E-01	6.39E-01
			1291.56		43.20	-1.99E-01		7.32E-01
+		CO-60	1173.22		100.00	-1.84E-04	7.00E-02	7.61E-02
			1332.49		100.00	-2.12E-02		7.00E-02
+		ZN-65	1115.52		50.75	2.60E-02	1.97E-01	1.97E-01
+		GA-67	93.31		35.70	3.56E+08	1.91E+08	1.91E+08
			208.95		2.24	-5.51E+08		3.68E+09
			300.22		16.00	3.13E+08		5.01E+08
+		SE-75	121.11		16.70	7.19E-02	1.23E-01	3.24E-01

Analysis Report for 1707088-17

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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	-7.10E-02	1.23E-01	1.23E-01
		264.65		59.80	1.60E-02		1.24E-01
		279.53		25.20	-8.44E-02		2.94E-01
		400.65		11.40	-2.29E-02		6.53E-01
+	RB-82	776.52		13.00	-2.73E+00	6.46E+00	6.46E+00
+	RB-83	520.41		46.00	1.37E-01	2.62E-01	2.62E-01
		529.64		30.30	-7.77E-02		3.50E-01
		552.65		16.40	1.38E-01		6.58E-01
+	KR-85	513.99		0.43	-2.23E+01	1.21E+01	1.21E+01
+	SR-85	513.99		99.27	-2.78E-01	1.51E-01	1.51E-01
+	Y-88	898.02		93.40	5.80E-02	9.75E-02	1.33E-01
		1836.01		99.38	3.79E-02		9.75E-02
+	MO-93	263.06		56.72	-1.63E-02	5.70E-02	7.51E-02
		684.67		99.68	-8.10E-03		5.80E-02
		1477.11		99.08	-3.54E-03		5.70E-02
+	NB-93M	16.57		9.43	0.00E+00	6.82E+00	6.82E+00
+	NB-94	702.63		100.00	2.89E-02	5.95E-02	6.54E-02
		871.10		100.00	-7.03E-03		5.95E-02
+	NB-95	765.79		99.81	-3.43E-02	5.21E-01	5.21E-01
+	NB-95M	235.69		25.00	-3.12E+08	5.83E+07	5.83E+07
+	ZR-95	724.18		43.70	4.30E-01	3.58E-01	5.55E-01
		756.72		55.30	1.55E-01		3.58E-01
+	MO-99	181.06		6.20	1.28E+10	3.78E+10	5.77E+10
		739.58		12.80	-1.84E+10		3.78E+10
		778.00		4.50	2.75E+10		1.10E+11
+	RU-103	497.08		89.00	7.66E-02	3.14E-01	3.14E-01
+	RU-106	621.84		9.80	1.27E-01	7.25E-01	7.25E-01
+	AG-108M	433.93		89.90	2.28E-02	4.74E-02	4.74E-02
		614.37		90.40	-6.26E-01		6.08E-02
		722.95		90.50	-1.03E-01		7.67E-02
+	CD-109	88.03	*	3.72	8.09E-01	1.34E+00	1.34E+00
+	AG-110M	657.75		93.14	5.11E-03	9.36E-02	9.36E-02
		677.61		10.53	8.90E-02		7.39E-01
		706.67		16.46	-1.66E-01		4.89E-01
		763.93		21.98	-1.35E-02		3.98E-01
		884.67		71.63	2.50E-02		1.21E-01
		1384.27		23.94	2.51E-02		3.17E-01
+	CD-113M	263.70		0.02	-4.53E+01	1.82E+02	1.82E+02
+	SN-113	255.12		1.93	-9.04E-01	1.33E-01	3.99E+00
		391.69		64.90	-5.98E-02		1.33E-01
+	TE123M	159.00		84.10	6.17E-03	8.72E-02	8.72E-02
+	SB-124	602.71		97.87	-1.41E-02	1.66E-01	1.66E-01
		645.85		7.26	1.28E+00		2.59E+00
		722.78		11.10	1.18E-01		1.79E+00
		1691.02		49.00	5.86E-02		3.68E-01
+	I-125	35.49		6.49	-4.20E+01	5.87E+00	5.87E+00
+	SB-125	176.33		6.89	-8.65E-02	1.61E-01	6.42E-01
		427.89		29.33	3.43E-02		1.61E-01

Analysis Report for 1707088-17

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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	5.59E-01	1.61E-01	5.82E-01
		600.56		17.80	9.77E-02		3.15E-01
		635.90		11.32	1.46E-01		5.26E-01
+	SB-126	414.70		83.30	7.20E+00	1.52E+01	1.52E+01
		666.33		99.60	1.85E+00		1.60E+01
		695.00		99.60	-7.66E+00		1.55E+01
		720.50		53.80	-3.29E+00		2.88E+01
+	SN-126	87.57	*	37.00	7.00E-02	1.16E-01	1.16E-01
+	SB-127	473.00		25.00	2.92E+06	1.04E+07	1.28E+07
		685.20		35.70	0.00E+00		1.04E+07
		783.80		14.70	-2.18E+06		2.86E+07
+	I-129	29.78		57.00	-1.37E-02	4.11E-01	4.11E-01
		33.60		13.20	8.34E+00		2.01E+00
		39.58		7.52	2.43E-01		1.13E+00
+	I-131	284.30		6.05	2.42E+03	3.11E+02	4.02E+03
		364.48		81.20	1.57E+02		3.11E+02
		636.97		7.26	8.15E+02		4.12E+03
		722.89		1.80	-2.82E+04		2.11E+04
+	TE-132	49.72		13.10	3.12E+08	8.60E+07	6.22E+08
		228.16		88.00	3.41E+05		8.60E+07
+	BA-133	81.00		33.00	9.53E-03	7.23E-02	1.08E-01
		302.84		17.80	-1.84E-02		2.48E-01
		356.01		60.00	9.36E-03		7.23E-02
+	@ I-133	529.87		86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00		38.00	4.41E+03	5.01E+04	5.01E+04
+	CS-134	563.23		8.38	4.02E-01	6.47E-02	7.22E-01
		569.32		15.43	2.39E-02		3.46E-01
		604.70		97.60	6.97E-03		6.47E-02
		795.84		85.40	5.88E-02		9.51E-02
		801.93		8.73	1.05E-01		7.57E-01
+	CS-135	268.24		16.00	-1.49E-01	2.93E-01	2.93E-01
+	@ I-135	1131.51		22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41		28.60	1.00E+26		1.00E+26
	@	1678.03		9.54	1.00E+26		1.00E+26
+	CS-136	153.22		7.46	8.87E+00	1.12E+01	1.07E+02
		163.89		4.61	6.76E+01		1.72E+02
		176.55		13.56	-7.91E+00		5.87E+01
		273.65		12.66	-6.91E+01		6.85E+01
		340.57		48.50	-8.96E+00		2.14E+01
		818.50		99.70	4.77E+00		1.12E+01
		1048.07		79.60	-2.34E+00		1.66E+01
		1235.34		19.70	3.41E+01		1.01E+02
+	CS-137	661.65	*	85.12	1.91E-01	1.06E-01	1.06E-01
+	LA-138	788.74		34.00	7.08E-02	8.24E-02	2.12E-01
		1435.80		66.00	-1.99E-02		8.24E-02
+	CE-139	165.85		80.35	-2.00E-02	8.13E-02	8.13E-02
+	BA-140	162.64		6.70	-8.86E+01	3.70E+01	1.36E+02
		304.84		4.50	1.07E+02		2.17E+02
		423.70		3.20	-3.19E+01		3.18E+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	-1.39E+02	3.70E+01	4.74E+02
		537.32		25.00	-8.48E+00		3.70E+01
+	LA-140	328.77		20.50	2.25E+01	1.54E+01	5.10E+01
		487.03		45.50	-5.93E+00		1.98E+01
		815.85		23.50	-7.37E+00		5.32E+01
		1596.49		95.49	6.62E+00		1.54E+01
+	CE-141	145.44		48.40	-2.20E-02	7.13E-01	7.13E-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	-4.52E-02	3.74E-01	3.74E-01
+	PM-144	476.78		42.00	3.04E-02	7.11E-02	1.41E-01
		618.01		98.60	3.29E-02		7.59E-02
		696.49		99.49	-3.89E-02		7.11E-02
+	PM-145	36.85		21.70	2.09E-01	2.59E-01	5.03E-01
		37.36		39.70	-8.87E-02		2.59E-01
		42.30		15.10	1.04E-01		4.34E-01
		72.40		2.31	-8.47E+00		1.83E+00
+	PM-146	453.90		39.94	-2.29E-03	1.13E-01	1.13E-01
		735.90		14.01	4.37E-02		4.07E-01
		747.13		13.10	-3.79E-02		4.89E-01
+	ND-147	91.11		28.90	-1.16E+02	7.26E+01	7.26E+01
		531.02		13.10	3.80E+01		2.06E+02
+	PM-149	285.90		3.10	-2.20E+13	5.46E+13	5.46E+13
+	EU-152	121.78		20.50	-7.25E-02	1.46E-01	1.46E-01
		244.69		5.40	-1.32E-01		8.34E-01
		344.27		19.13	-2.29E-02		2.34E-01
		778.89		9.20	1.61E-01		6.43E-01
		964.01		10.40	-2.29E-02		8.60E-01
		1085.78		7.22	7.74E-01		1.17E+00
		1112.02		9.60	1.77E-01		7.92E-01
		1407.95		14.94	7.34E-02		4.61E-01
+	GD-153	97.43		31.30	-2.86E-02	1.31E-01	1.31E-01
		103.18		22.20	8.06E-02		1.96E-01
+	EU-154	123.07		40.50	-6.69E-02	7.47E-02	7.47E-02
		723.30		19.70	-4.81E-01		3.60E-01
		873.19		11.50	-6.70E-02		5.47E-01
		996.32		10.30	-2.01E-01		6.30E-01
		1004.76		17.90	1.57E-01		4.21E-01
		1274.45		35.50	-8.68E-02		2.26E-01
+	EU-155	86.50	*	30.90	8.71E-02	1.44E-01	1.44E-01
		105.30		20.70	6.12E-02		1.56E-01
+	EU-156	811.77		10.40	1.41E+01	5.37E+01	5.37E+01
		1153.47		7.20	6.09E+01		1.14E+02
		1230.71		8.90	-1.29E+00		9.48E+01
+	HO-166M	184.41		72.60	1.13E-01	7.17E-02	7.17E-02
		280.45		29.60	3.63E-03		1.42E-01
		410.94		11.10	2.73E-02		4.38E-01
		711.69		54.10	9.03E-03		1.17E-01

Analysis Report for 1707088-17

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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	1.79E+01	3.27E+01	3.27E+01
+	HF-172	67.35		5.31	7.14E-01	3.24E-01	8.72E-01
		125.81		11.30	1.17E-02		3.24E-01
+	LU-172	181.53		20.60	5.20E+02	3.37E+03	6.15E+03
		900.72		29.81	-4.42E+03		6.70E+03
		1093.66		62.50	-6.49E+02		3.37E+03
+	LU-173	100.72		5.24	-4.74E-01	2.83E-01	6.76E-01
		272.11		21.20	3.34E-01		2.83E-01
+	HF-175	343.40		84.00	4.65E-03	1.45E-01	1.45E-01
+	LU-176	88.34		13.30	1.08E-01	4.37E-02	3.05E-01
		201.83		86.00	-3.18E-02		5.10E-02
		306.78		94.00	1.07E-02		4.37E-02
+	HF-181	133.02		41.70	-9.20E-02	2.79E-01	3.82E-01
		345.85		17.20	5.75E-02		1.40E+00
		482.03		82.80	4.01E-02		2.79E-01
+	TA-182	67.75		41.20	1.52E-01	1.85E-01	1.85E-01
		1121.30		34.90	8.87E-01		6.07E-01
		1189.05		16.23	-3.47E-02		9.80E-01
		1221.41		26.98	-1.21E-01		5.71E-01
		1231.02		11.44	-1.92E-02		1.42E+00
+	IR-192	308.46		29.68	-1.90E-01	2.39E-01	3.26E-01
		468.07		48.10	-1.19E-01		2.39E-01
+	HG-203	279.19		77.30	-2.10E-02	2.47E-01	2.47E-01
+	TL-204	374.74		94.11	6.12E-03	5.10E-02	5.10E-02
		899.15		99.16	-4.38E-02		6.68E-02
		911.74		91.10	3.00E-01		1.38E-01
+	BI-207	569.67		97.72	3.46E-03	5.01E-02	5.01E-02
		1063.62		74.90	2.69E-02		9.62E-02
+	TL-208	583.14	*	30.22	9.22E-01	1.60E-01	2.34E-01
		860.37	*	4.48	1.72E+00		2.19E+00
		2614.66	*	35.85	7.49E-01		1.60E-01
+	BI-210M	262.00		45.00	5.87E-03	9.46E-02	9.46E-02
		300.00		23.00	1.31E-01		2.10E-01
+	PB-210	46.50		4.25	1.83E+00	1.50E+00	1.50E+00
+	PB-211	404.84		2.90	-5.73E-01	1.47E+00	1.47E+00
		831.96		2.90	-5.80E-02		2.26E+00
+	BI-212	727.17	*	11.80	9.70E-01	8.88E-01	8.88E-01
		1620.62		2.75	-5.76E-01		2.02E+00
+	PB-212	238.63	*	44.60	1.00E+00	1.77E-01	1.77E-01
		300.09	*	3.41	9.09E-01		2.68E+00
+	BI-214	609.31	*	46.30	8.17E-01	3.09E-01	3.09E-01
		1120.29	*	15.10	9.99E-01		1.44E+00
		1764.49	*	15.80	7.46E-01		4.13E-01
		2204.22	*	4.98	9.42E-01		1.37E+00
+	PB-214	295.21	*	19.19	7.04E-01	1.70E-01	4.72E-01
		351.92	*	37.19	7.02E-01		1.70E-01
+	RN-219	401.80		6.50	-2.21E-01	6.35E-01	6.35E-01
+	RA-223	323.87		3.88	2.79E-01	1.23E+00	1.23E+00

Analysis Report for 1707088-17

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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	2.33E+00	1.99E+00	1.99E+00
+	RA-225	40.00		31.00	6.16E+00	2.87E+01	2.87E+01
+	RA-226	186.21	*	3.28	2.31E+00	1.70E+00	1.70E+00
+	TH-227	50.10		8.40	2.85E-01	5.68E-01	5.68E-01
		236.00		11.50	-3.19E+00		5.96E-01
		256.20		6.30	4.82E-02		6.85E-01
+	AC-228	338.32	*	11.40	1.35E+00	3.02E-01	6.82E-01
		911.07	*	27.70	9.49E-01		3.02E-01
		969.11	*	16.60	1.44E+00		5.49E-01
+	TH-230	48.44		16.90	-4.29E-01	2.90E-01	2.90E-01
		62.85		4.60	1.45E+00		1.01E+00
		67.67		0.37	9.23E+00		1.13E+01
+	PA-231	283.67		1.60	1.67E+00	1.88E+00	2.77E+00
		302.67		2.30	-1.40E-01		1.88E+00
+	TH-231	25.64		14.70	0.00E+00	1.21E-01	1.21E-01
		84.21		6.40	4.33E-01		5.79E-01
+	PA-233	311.98		38.60	-3.00E-01	1.37E+00	1.37E+00
+	PA-234	131.20		20.40	-8.03E-02	1.56E-01	1.56E-01
		733.99		8.80	8.51E-02		6.13E-01
		946.00		12.00	4.90E-01		5.86E-01
+	PA-234M	1001.03		0.92	-1.74E+00	7.48E+00	7.48E+00
+	TH-234	63.29		3.80	1.26E+00	1.20E+00	1.20E+00
+	U-235	143.76		10.50	-7.09E-03	3.99E-01	3.99E-01
		163.35		4.70	3.44E-01		8.75E-01
		205.31		4.70	4.60E-01		1.00E+00
+	NP-237	86.50	*	12.60	2.06E-01	3.41E-01	3.41E-01
+	NP-239	106.10		22.70	3.14E+11	8.03E+11	8.03E+11
		228.18		10.70	9.72E+09		2.45E+12
		277.60		14.10	1.56E+12		1.87E+12
+	AM-241	59.54		35.90	-8.48E-03	1.19E-01	1.19E-01
+	AM-243	74.67		66.00	-1.20E-01	8.20E-02	8.20E-02
+	CM-243	209.75		3.29	9.33E-01	3.25E-01	1.53E+00
		228.14		10.60	1.69E-03		4.26E-01
		277.60		14.00	2.72E-01		3.25E-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

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NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	1.72E+00	1.72E+00	3.71E-01	8.08E-01
	NA-22	1274.54		99.94	8.43E-02	8.43E-02	-3.25E-02	3.86E-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	5.52E-02	5.52E-02	3.59E-03	2.33E-02
+	K-40	1460.81	*	10.67	7.14E-01	7.14E-01	1.76E+01	3.22E-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	4.42E-02	4.42E-02	3.62E-02	2.15E-02
		78.34		96.00	4.94E-02		4.93E-02	2.41E-02
	SC-46	889.25		99.98	1.41E-01	1.41E-01	3.00E-02	6.49E-02
		1120.51		99.99	2.57E-01		2.95E-01	1.22E-01
	V-48	983.52		99.98	4.91E+00	4.91E+00	4.35E-01	2.25E+00
		1312.10		97.50	5.22E+00		-3.19E-01	2.34E+00
	CR-51	320.08		9.83	5.29E+00	5.29E+00	-2.97E+00	2.51E+00
	MN-54	834.83		99.97	8.59E-02	8.59E-02	3.51E-02	4.00E-02
	CO-56	846.75		99.96	1.56E-01	1.56E-01	9.29E-02	7.22E-02
		1037.75		14.03	1.29E+00		6.71E-01	5.96E-01
		1238.25		67.00	3.82E-01		1.46E-01	1.79E-01
		1771.40		15.51	8.79E-01		1.70E-01	3.74E-01
		2598.48		16.90	6.82E-01		1.70E-01	2.71E-01
	CO-57	122.06		85.51	4.47E-02	4.47E-02	-2.22E-02	2.14E-02
		136.48		10.60	5.18E-01		1.42E-01	2.51E-01
	CO-58	810.76		99.40	1.64E-01	1.64E-01	1.11E-01	7.59E-02
	FE-59	1099.22		56.50	6.39E-01	6.39E-01	1.10E-01	2.95E-01
		1291.56		43.20	7.32E-01		-1.99E-01	3.29E-01
	CO-60	1173.22		100.00	7.61E-02	7.00E-02	-1.84E-04	3.48E-02
		1332.49		100.00	7.00E-02		-2.12E-02	3.14E-02
	ZN-65	1115.52		50.75	1.97E-01	1.97E-01	2.60E-02	9.05E-02
	GA-67	93.31		35.70	1.91E+08	1.91E+08	3.56E+08	9.28E+07
		208.95		2.24	3.68E+09		-5.51E+08	1.78E+09
		300.22		16.00	5.01E+08		3.13E+08	2.39E+08
	SE-75	121.11		16.70	3.24E-01	1.23E-01	7.19E-02	1.56E-01
		136.00		59.20	1.23E-01		-7.10E-02	5.94E-02
		264.65		59.80	1.24E-01		1.60E-02	5.93E-02
		279.53		25.20	2.94E-01		-8.44E-02	1.40E-01
		400.65		11.40	6.53E-01		-2.29E-02	3.05E-01
	RB-82	776.52		13.00	6.46E+00	6.46E+00	-2.73E+00	2.97E+00
	RB-83	520.41		46.00	2.62E-01	2.62E-01	1.37E-01	1.23E-01
		529.64		30.30	3.50E-01		-7.77E-02	1.63E-01
		552.65		16.40	6.58E-01		1.38E-01	3.06E-01
	KR-85	513.99		0.43	1.21E+01	1.21E+01	-2.23E+01	5.65E+00
	SR-85	513.99		99.27	1.51E-01	1.51E-01	-2.78E-01	7.06E-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)
	Y-88	898.02		93.40	1.33E-01	9.75E-02	5.80E-02	6.13E-02
		1836.01		99.38	9.75E-02		3.79E-02	4.04E-02
	MO-93	263.06		56.72	7.51E-02	5.70E-02	-1.63E-02	3.58E-02
		684.67		99.68	5.80E-02		-8.10E-03	2.69E-02
		1477.11		99.08	5.70E-02		-3.54E-03	2.47E-02
	NB-93M	16.57		9.43	6.82E+00	6.82E+00	0.00E+00	0.00E+00
	NB-94	702.63		100.00	6.54E-02	5.95E-02	2.89E-02	3.06E-02
		871.10		100.00	5.95E-02		-7.03E-03	2.73E-02
	NB-95	765.79		99.81	5.21E-01	5.21E-01	-3.43E-02	2.45E-01
	NB-95M	235.69		25.00	5.83E+07	5.83E+07	-3.12E+08	2.84E+07
	ZR-95	724.18		43.70	5.55E-01	3.58E-01	4.30E-01	2.63E-01
		756.72		55.30	3.58E-01		1.55E-01	1.68E-01
	MO-99	181.06		6.20	5.77E+10	3.78E+10	1.28E+10	2.78E+10
		739.58		12.80	3.78E+10		-1.84E+10	1.75E+10
		778.00		4.50	1.10E+11		2.75E+10	5.08E+10
	RU-103	497.08		89.00	3.14E-01	3.14E-01	7.66E-02	1.47E-01
	RU-106	621.84		9.80	7.25E-01	7.25E-01	1.27E-01	3.40E-01
	AG-108M	433.93		89.90	4.74E-02	4.74E-02	2.28E-02	2.21E-02
		614.37		90.40	6.08E-02		-6.26E-01	2.84E-02
		722.95		90.50	7.67E-02		-1.03E-01	3.60E-02
+	CD-109	88.03	*	3.72	1.34E+00	1.34E+00	8.09E-01	6.52E-01
	AG-110M	657.75		93.14	9.36E-02	9.36E-02	5.11E-03	4.41E-02
		677.61		10.53	7.39E-01		8.90E-02	3.44E-01
		706.67		16.46	4.89E-01		-1.66E-01	2.28E-01
		763.93		21.98	3.98E-01		-1.35E-02	1.86E-01
		884.67		71.63	1.21E-01		2.50E-02	5.61E-02
		1384.27		23.94	3.17E-01		2.51E-02	1.39E-01
	CD-113M	263.70		0.02	1.82E+02	1.82E+02	-4.53E+01	8.64E+01
	SN-113	255.12		1.93	3.99E+00	1.33E-01	-9.04E-01	1.90E+00
		391.69		64.90	1.33E-01		-5.98E-02	6.26E-02
	TE123M	159.00		84.10	8.72E-02	8.72E-02	6.17E-03	4.21E-02
	SB-124	602.71		97.87	1.66E-01	1.66E-01	-1.41E-02	7.69E-02
		645.85		7.26	2.59E+00		1.28E+00	1.21E+00
		722.78		11.10	1.79E+00		1.18E-01	8.36E-01
		1691.02		49.00	3.68E-01		5.86E-02	1.57E-01
	I-125	35.49		6.49	5.87E+00	5.87E+00	-4.20E+01	2.84E+00
	SB-125	176.33		6.89	6.42E-01	1.61E-01	-8.65E-02	3.09E-01
		427.89		29.33	1.61E-01		3.43E-02	7.55E-02
		463.38		10.35	5.82E-01		5.59E-01	2.76E-01
		600.56		17.80	3.15E-01		9.77E-02	1.47E-01
		635.90		11.32	5.26E-01		1.46E-01	2.45E-01
	SB-126	414.70		83.30	1.52E+01	1.52E+01	7.20E+00	7.14E+00
		666.33		99.60	1.60E+01		1.85E+00	7.46E+00
		695.00		99.60	1.55E+01		-7.66E+00	7.19E+00
		720.50		53.80	2.88E+01		-3.29E+00	1.33E+01
+	SN-126	87.57	*	37.00	1.16E-01	1.16E-01	7.00E-02	5.64E-02
	SB-127	473.00		25.00	1.28E+07	1.04E+07	2.92E+06	6.01E+06
		685.20		35.70	1.04E+07		0.00E+00	4.84E+06
		783.80		14.70	2.86E+07		-2.18E+06	1.33E+07
	I-129	29.78		57.00	4.11E-01	4.11E-01	-1.37E-02	1.99E-01
		33.60		13.20	2.01E+00		8.34E+00	9.87E-01
		39.58		7.52	1.13E+00		2.43E-01	5.48E-01
	I-131	284.30		6.05	4.02E+03	3.11E+02	2.42E+03	1.92E+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)
	I-131	364.48		81.20	3.11E+02	3.11E+02	1.57E+02	1.47E+02
		636.97		7.26	4.12E+03		8.15E+02	1.91E+03
		722.89		1.80	2.11E+04		-2.82E+04	9.93E+03
	TE-132	49.72		13.10	6.22E+08	8.60E+07	3.12E+08	3.00E+08
		228.16		88.00	8.60E+07		3.41E+05	4.13E+07
	BA-133	81.00		33.00	1.08E-01	7.23E-02	9.53E-03	5.23E-02
		302.84		17.80	2.48E-01		-1.84E-02	1.18E-01
		356.01		60.00	7.23E-02		9.36E-03	3.41E-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	5.01E+04	5.01E+04	4.41E+03	2.42E+04
	CS-134	563.23		8.38	7.22E-01	6.47E-02	4.02E-01	3.38E-01
		569.32		15.43	3.46E-01		2.39E-02	1.60E-01
		604.70		97.60	6.47E-02		6.97E-03	3.03E-02
		795.84		85.40	9.51E-02		5.88E-02	4.46E-02
		801.93		8.73	7.57E-01		1.05E-01	3.50E-01
	CS-135	268.24		16.00	2.93E-01	2.93E-01	-1.49E-01	1.40E-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	1.07E+02	1.12E+01	8.87E+00	5.15E+01
		163.89		4.61	1.72E+02		6.76E+01	8.31E+01
		176.55		13.56	5.87E+01		-7.91E+00	2.83E+01
		273.65		12.66	6.85E+01		-6.91E+01	3.27E+01
		340.57		48.50	2.14E+01		-8.96E+00	1.02E+01
		818.50		99.70	1.12E+01		4.77E+00	5.13E+00
		1048.07		79.60	1.66E+01		-2.34E+00	7.59E+00
		1235.34		19.70	1.01E+02		3.41E+01	4.71E+01
+	CS-137	661.65	*	85.12	1.06E-01	1.06E-01	1.91E-01	5.05E-02
	LA-138	788.74		34.00	2.12E-01	8.24E-02	7.08E-02	9.96E-02
		1435.80		66.00	8.24E-02		-1.99E-02	3.56E-02
	CE-139	165.85		80.35	8.13E-02	8.13E-02	-2.00E-02	3.92E-02
	BA-140	162.64		6.70	1.36E+02	3.70E+01	-8.86E+01	6.58E+01
		304.84		4.50	2.17E+02		1.07E+02	1.03E+02
		423.70		3.20	3.18E+02		-3.19E+01	1.49E+02
		437.55		2.00	4.74E+02		-1.39E+02	2.21E+02
		537.32		25.00	3.70E+01		-8.48E+00	1.70E+01
	LA-140	328.77		20.50	5.10E+01	1.54E+01	2.25E+01	2.43E+01
		487.03		45.50	1.98E+01		-5.93E+00	9.14E+00
		815.85		23.50	5.32E+01		-7.37E+00	2.44E+01
		1596.49		95.49	1.54E+01		6.62E+00	6.76E+00
	CE-141	145.44		48.40	7.13E-01	7.13E-01	-2.20E-02	3.45E-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	3.74E-01	3.74E-01	-4.52E-02	1.79E-01
	PM-144	476.78		42.00	1.41E-01	7.11E-02	3.04E-02	6.64E-02
		618.01		98.60	7.59E-02		3.29E-02	3.57E-02
		696.49		99.49	7.11E-02		-3.89E-02	3.31E-02
	PM-145	36.85		21.70	5.03E-01	2.59E-01	2.09E-01	2.43E-01
		37.36		39.70	2.59E-01		-8.87E-02	1.25E-01
		42.30		15.10	4.34E-01		1.04E-01	2.09E-01
		72.40		2.31	1.83E+00		-8.47E+00	8.87E-01
	PM-146	453.90		39.94	1.13E-01	1.13E-01	-2.29E-03	5.29E-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)
	PM-146	735.90		14.01	4.07E-01	1.13E-01	4.37E-02	1.88E-01
		747.13		13.10	4.89E-01		-3.79E-02	2.27E-01
	ND-147	91.11		28.90	7.26E+01	7.26E+01	-1.16E+02	3.52E+01
		531.02		13.10	2.06E+02		3.80E+01	9.61E+01
	PM-149	285.90		3.10	5.46E+13	5.46E+13	-2.20E+13	2.60E+13
	EU-152	121.78		20.50	1.46E-01	1.46E-01	-7.25E-02	7.01E-02
		244.69		5.40	8.34E-01		-1.32E-01	3.99E-01
		344.27		19.13	2.34E-01		-2.29E-02	1.11E-01
		778.89		9.20	6.43E-01		1.61E-01	2.97E-01
		964.01		10.40	8.60E-01		-2.29E-02	4.04E-01
		1085.78		7.22	1.17E+00		7.74E-01	5.44E-01
		1112.02		9.60	7.92E-01		1.77E-01	3.65E-01
		1407.95		14.94	4.61E-01		7.34E-02	2.06E-01
	GD-153	97.43		31.30	1.31E-01	1.31E-01	-2.86E-02	6.28E-02
		103.18		22.20	1.96E-01		8.06E-02	9.46E-02
	EU-154	123.07		40.50	7.47E-02	7.47E-02	-6.69E-02	3.58E-02
		723.30		19.70	3.60E-01		-4.81E-01	1.69E-01
		873.19		11.50	5.47E-01		-6.70E-02	2.52E-01
		996.32		10.30	6.30E-01		-2.01E-01	2.88E-01
		1004.76		17.90	4.21E-01		1.57E-01	1.95E-01
		1274.45		35.50	2.26E-01		-8.68E-02	1.03E-01
+	EU-155	86.50	*	30.90	1.44E-01	1.44E-01	8.71E-02	7.02E-02
		105.30		20.70	1.56E-01		6.12E-02	7.52E-02
	EU-156	811.77		10.40	5.37E+01	5.37E+01	1.41E+01	2.47E+01
		1153.47		7.20	1.14E+02		6.09E+01	5.30E+01
		1230.71		8.90	9.48E+01		-1.29E+00	4.39E+01
	HO-166M	184.41		72.60	7.17E-02	7.17E-02	1.13E-01	3.48E-02
		280.45		29.60	1.42E-01		3.63E-03	6.74E-02
		410.94		11.10	4.38E-01		2.73E-02	2.07E-01
		711.69		54.10	1.17E-01		9.03E-03	5.49E-02
	TM-171	66.72		0.14	3.27E+01	3.27E+01	1.79E+01	1.58E+01
	HF-172	67.35		5.31	8.72E-01	3.24E-01	7.14E-01	4.23E-01
		125.81		11.30	3.24E-01		1.17E-02	1.56E-01
	LU-172	181.53		20.60	6.15E+03	3.37E+03	5.20E+02	2.96E+03
		900.72		29.81	6.70E+03		-4.42E+03	3.09E+03
		1093.66		62.50	3.37E+03		-6.49E+02	1.54E+03
	LU-173	100.72		5.24	6.76E-01	2.83E-01	-4.74E-01	3.25E-01
		272.11		21.20	2.83E-01		3.34E-01	1.36E-01
	HF-175	343.40		84.00	1.45E-01	1.45E-01	4.65E-03	6.88E-02
	LU-176	88.34		13.30	3.05E-01	4.37E-02	1.08E-01	1.48E-01
		201.83		86.00	5.10E-02		-3.18E-02	2.46E-02
		306.78		94.00	4.37E-02		1.07E-02	2.07E-02
	HF-181	133.02		41.70	3.82E-01	2.79E-01	-9.20E-02	1.83E-01
		345.85		17.20	1.40E+00		5.75E-02	6.66E-01
		482.03		82.80	2.79E-01		4.01E-02	1.30E-01
	TA-182	67.75		41.20	1.85E-01	1.85E-01	1.52E-01	8.98E-02
		1121.30		34.90	6.07E-01		8.87E-01	2.88E-01
		1189.05		16.23	9.80E-01		-3.47E-02	4.54E-01
		1221.41		26.98	5.71E-01		-1.21E-01	2.64E-01
		1231.02		11.44	1.42E+00		-1.92E-02	6.57E-01
	IR-192	308.46		29.68	3.26E-01	2.39E-01	-1.90E-01	1.54E-01
		468.07		48.10	2.39E-01		-1.19E-01	1.11E-01
	HG-203	279.19		77.30	2.47E-01	2.47E-01	-2.10E-02	1.18E-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)
	TL-204	374.74		94.11	5.10E-02	5.10E-02	6.12E-03	2.41E-02
		899.15		99.16	6.68E-02		-4.38E-02	3.08E-02
		911.74		91.10	1.38E-01		3.00E-01	6.58E-02
	BI-207	569.67		97.72	5.01E-02	5.01E-02	3.46E-03	2.33E-02
		1063.62		74.90	9.62E-02		2.69E-02	4.42E-02
+	TL-208	583.14	*	30.22	2.34E-01	1.60E-01	9.22E-01	1.11E-01
		860.37	*	4.48	2.19E+00		1.72E+00	1.04E+00
		2614.66	*	35.85	1.60E-01		7.49E-01	6.63E-02
	BI-210M	262.00		45.00	9.46E-02	9.46E-02	5.87E-03	4.51E-02
		300.00		23.00	2.10E-01		1.31E-01	1.00E-01
	PB-210	46.50		4.25	1.50E+00	1.50E+00	1.83E+00	7.25E-01
	PB-211	404.84		2.90	1.47E+00	1.47E+00	-5.73E-01	6.88E-01
		831.96		2.90	2.26E+00		-5.80E-02	1.05E+00
+	BI-212	727.17	*	11.80	8.88E-01	8.88E-01	9.70E-01	4.26E-01
		1620.62		2.75	2.02E+00		-5.76E-01	8.64E-01
+	PB-212	238.63	*	44.60	1.77E-01	1.77E-01	1.00E+00	8.63E-02
		300.09	*	3.41	2.68E+00		9.09E-01	1.31E+00
+	BI-214	609.31	*	46.30	3.09E-01	3.09E-01	8.17E-01	1.51E-01
		1120.29	*	15.10	1.44E+00		9.99E-01	7.01E-01
		1764.49	*	15.80	4.13E-01		7.46E-01	1.80E-01
		2204.22	*	4.98	1.37E+00		9.42E-01	5.92E-01
+	PB-214	295.21	*	19.19	4.72E-01	1.70E-01	7.04E-01	2.30E-01
		351.92	*	37.19	1.70E-01		7.02E-01	8.20E-02
	RN-219	401.80		6.50	6.35E-01	6.35E-01	-2.21E-01	2.97E-01
	RA-223	323.87		3.88	1.23E+00	1.23E+00	2.79E-01	5.83E-01
+	RA-224	240.98	*	3.95	1.99E+00	1.99E+00	2.33E+00	9.71E-01
	RA-225	40.00		31.00	2.87E+01	2.87E+01	6.16E+00	1.39E+01
+	RA-226	186.21	*	3.28	1.70E+00	1.70E+00	2.31E+00	8.27E-01
	TH-227	50.10		8.40	5.68E-01	5.68E-01	2.85E-01	2.74E-01
		236.00		11.50	5.96E-01		-3.19E+00	2.90E-01
		256.20		6.30	6.85E-01		4.82E-02	3.27E-01
+	AC-228	338.32	*	11.40	6.82E-01	3.02E-01	1.35E+00	3.31E-01
		911.07	*	27.70	3.02E-01		9.49E-01	1.42E-01
		969.11	*	16.60	5.49E-01		1.44E+00	2.58E-01
	TH-230	48.44		16.90	2.90E-01	2.90E-01	-4.29E-01	1.39E-01
		62.85		4.60	1.01E+00		1.45E+00	4.91E-01
		67.67		0.37	1.13E+01		9.23E+00	5.47E+00
	PA-231	283.67		1.60	2.77E+00	1.88E+00	1.67E+00	1.32E+00
		302.67		2.30	1.88E+00		-1.40E-01	8.94E-01
	TH-231	25.64		14.70	1.21E-01	1.21E-01	0.00E+00	0.00E+00
		84.21		6.40	5.79E-01		4.33E-01	2.80E-01
	PA-233	311.98		38.60	1.37E+00	1.37E+00	-3.00E-01	6.50E-01
	PA-234	131.20		20.40	1.56E-01	1.56E-01	-8.03E-02	7.46E-02
		733.99		8.80	6.13E-01		8.51E-02	2.82E-01
		946.00		12.00	5.86E-01		4.90E-01	2.71E-01
	PA-234M	1001.03		0.92	7.48E+00	7.48E+00	-1.74E+00	3.44E+00
	TH-234	63.29		3.80	1.20E+00	1.20E+00	1.26E+00	5.81E-01
	U-235	143.76		10.50	3.99E-01	3.99E-01	-7.09E-03	1.93E-01
		163.35		4.70	8.75E-01		3.44E-01	4.22E-01
		205.31		4.70	1.00E+00		4.60E-01	4.85E-01
+	NP-237	86.50	*	12.60	3.41E-01	3.41E-01	2.06E-01	1.66E-01
	NP-239	106.10		22.70	8.03E+11	8.03E+11	3.14E+11	3.86E+11
		228.18		10.70	2.45E+12		9.72E+09	1.18E+12

Analysis Report for 1707088-17

HTC-A04-S004-0006-01

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	1.87E+12	8.03E+11	1.56E+12	8.93E+11
AM-241	59.54	35.90	1.19E-01	1.19E-01	-8.48E-03	5.75E-02
AM-243	74.67	66.00	8.20E-02	8.20E-02	-1.20E-01	4.01E-02
CM-243	209.75	3.29	1.53E+00	3.25E-01	9.33E-01	7.41E-01
	228.14	10.60	4.26E-01		1.69E-03	2.05E-01
	277.60	14.00	3.25E-01		2.72E-01	1.55E-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-A04-S004-0006-01

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	34	101	126	160
33:	229	637	81	96	103	88	86	104
41:	83	84	74	62	61	92	160	65
49:	75	79	80	66	68	78	89	82
57:	82	103	88	124	81	98	122	167
65:	86	90	110	134	101	91	116	115
73:	120	137	349	163	358	312	94	102
81:	79	98	89	113	120	83	157	159
89:	94	131	99	112	192	126	76	60
97:	62	76	75	85	61	67	93	79
105:	74	72	68	54	72	49	61	63
113:	51	60	60	63	76	61	50	71
121:	69	46	60	68	82	75	58	72
129:	83	72	54	64	71	45	70	65
137:	67	62	72	74	57	73	57	82
145:	49	48	65	48	60	38	52	54
153:	66	51	57	66	53	41	54	62
161:	56	42	56	57	43	60	38	35
169:	47	40	54	62	54	50	47	48
177:	47	45	50	49	50	45	44	40
185:	67	140	70	42	43	30	47	39
193:	43	40	50	53	40	48	57	42
201:	41	55	44	43	52	67	50	36
209:	81	69	43	52	44	44	39	50
217:	35	61	51	51	44	33	41	27
225:	38	37	37	46	29	50	41	38
233:	30	45	30	40	50	290	483	72
241:	85	122	48	36	29	33	30	39
249:	22	31	42	29	29	25	32	30
257:	33	35	31	33	34	24	34	21
265:	27	29	27	23	35	59	54	31
273:	38	29	21	35	36	32	28	21
281:	20	25	34	29	29	24	22	28
289:	29	29	24	30	35	41	142	73
297:	23	26	26	53	24	27	24	24
305:	23	26	25	14	19	16	16	22
313:	19	30	26	19	19	14	25	24
321:	23	23	34	25	31	21	25	37
329:	22	19	23	20	23	23	29	29
337:	34	96	75	20	30	17	20	17
345:	27	23	27	25	24	26	94	217
353:	55	12	22	21	19	18	22	19
361:	18	15	22	22	23	22	14	21

369:	16	25	13	19	17	22	13	22

Sample Title: HTC-A04-S004-0006-01

Channel								
377:	24	18	10	17	10	14	12	21
385:	12	17	22	15	24	16	21	19
393:	25	17	24	19	21	22	12	19
401:	11	16	15	10	20	16	14	20
409:	23	20	14	15	25	18	18	9
417:	21	13	15	12	21	14	14	18
425:	21	13	14	14	16	17	7	14
433:	14	17	8	14	11	16	16	14
441:	11	17	17	15	8	16	7	20
449:	13	9	13	10	16	13	15	12
457:	13	17	14	17	24	19	37	16
465:	13	9	11	13	18	16	20	20
473:	12	10	19	14	11	13	21	19
481:	14	6	12	13	10	9	10	8
489:	12	9	14	19	9	9	11	18
497:	14	12	15	12	16	13	14	12
505:	14	10	15	22	25	55	82	27
513:	16	13	7	13	15	15	20	15
521:	15	18	10	11	15	11	19	5
529:	15	8	14	17	12	8	15	7
537:	7	10	5	9	12	11	11	11
545:	13	9	12	11	10	16	8	11
553:	13	11	10	10	9	8	14	8
561:	14	18	19	10	15	9	11	6
569:	15	11	14	11	9	9	5	8
577:	13	11	13	15	11	55	128	51
585:	18	4	11	15	8	17	10	13
593:	8	13	4	7	11	10	5	8
601:	12	8	7	9	9	18	11	53
609:	169	77	9	4	7	6	12	13
617:	14	5	17	6	16	6	16	10
625:	3	10	9	9	9	4	7	9
633:	10	9	7	10	8	11	8	7
641:	7	5	10	14	10	11	6	11
649:	9	6	10	10	9	13	10	8
657:	9	10	11	25	63	51	11	5
665:	11	9	10	7	15	13	4	9
673:	9	7	11	5	10	10	13	8
681:	8	8	11	10	6	4	11	10
689:	6	12	12	9	7	5	14	8
697:	8	8	10	11	14	11	10	9
705:	10	7	9	7	12	7	13	10
713:	13	7	15	6	7	7	6	12
721:	9	7	8	6	18	21	47	21
729:	6	13	6	5	6	5	7	8
737:	9	5	8	6	8	7	16	9
745:	2	8	9	10	7	15	8	5
753:	14	7	16	6	11	9	7	7
761:	9	6	6	17	7	11	11	22
769:	10	13	12	10	4	4	6	9
777:	4	11	7	6	6	5	9	4
785:	19	13	7	13	11	5	8	7
793:	13	17	16	10	8	8	10	6

801:	7	5	6	8	6	4	9	9

Sample Title: HTC-A04-S004-0006-01

Channel								
809:	6	4	9	8	6	4	2	7
817:	9	5	2	11	8	4	3	4
825:	13	7	3	9	4	8	9	4
833:	8	14	12	10	5	3	11	11
841:	3	9	10	10	6	7	7	7
849:	6	2	5	5	4	3	5	6
857:	8	7	11	17	15	3	8	7
865:	8	4	7	5	7	2	6	7
873:	8	7	8	7	8	8	8	5
881:	5	7	10	4	9	9	7	3
889:	9	7	4	5	6	3	8	7
897:	11	5	7	7	2	6	10	14
905:	10	4	2	4	20	52	60	21
913:	9	4	5	6	3	6	6	9
921:	7	4	2	4	7	3	7	8
929:	11	4	4	5	12	15	8	3
937:	5	5	5	2	2	8	8	2
945:	8	8	11	7	3	5	7	8
953:	2	5	7	2	10	7	5	6
961:	7	5	10	13	21	20	9	26
969:	36	15	9	3	2	8	8	8
977:	9	5	5	5	12	4	4	3
985:	8	4	7	4	5	5	10	2
993:	6	5	3	7	8	5	4	7
1001:	8	8	5	8	11	4	8	9
1009:	2	3	6	8	4	7	8	5
1017:	3	5	7	8	5	7	6	5
1025:	6	6	6	3	7	8	7	5
1033:	7	9	8	3	5	9	8	9
1041:	3	4	5	3	7	9	6	7
1049:	3	6	10	6	9	2	8	9
1057:	6	4	2	3	9	8	7	3
1065:	5	9	7	6	8	6	2	7
1073:	4	7	9	6	3	7	8	4
1081:	5	11	8	4	14	11	4	7
1089:	3	7	7	6	5	7	4	2
1097:	8	6	7	5	13	7	5	8
1105:	4	3	6	8	6	5	7	4
1113:	6	9	6	6	3	11	23	37
1121:	17	11	4	9	6	5	14	8
1129:	5	8	4	8	7	8	6	10
1137:	6	10	5	5	5	8	8	4
1145:	7	5	6	3	7	5	5	10
1153:	6	12	11	8	6	5	3	7
1161:	6	5	12	7	7	4	6	7
1169:	5	9	7	2	6	7	3	8
1177:	2	6	5	10	8	5	7	8
1185:	7	5	8	10	10	6	9	10
1193:	7	11	9	4	9	5	7	10
1201:	5	11	12	9	9	6	2	9
1209:	6	7	9	6	5	7	9	7
1217:	8	7	8	5	8	7	6	8
1225:	5	12	10	6	9	7	10	5

1233:	7	13	7	9	14	19	10	7

Sample Title: HTC-A04-S004-0006-01

Channel								
1241:	10	12	1	7	7	8	12	5
1249:	2	2	11	4	7	11	9	5
1257:	3	3	4	5	4	5	5	6
1265:	3	3	4	2	4	8	8	6
1273:	6	7	8	2	2	10	6	10
1281:	7	5	6	4	5	3	4	3
1289:	5	2	5	5	3	4	4	8
1297:	3	1	5	5	0	2	1	5
1305:	1	7	3	2	4	5	1	5
1313:	5	4	4	2	1	3	4	1
1321:	2	4	4	5	4	5	5	2
1329:	1	4	6	3	5	4	3	10
1337:	2	4	1	1	4	1	2	3
1345:	1	0	3	1	4	3	2	3
1353:	3	3	3	4	3	2	4	3
1361:	5	1	1	0	1	5	2	2
1369:	1	4	4	1	1	4	4	2
1377:	6	5	1	2	3	2	1	3
1385:	4	2	1	2	1	4	0	6
1393:	1	2	0	2	4	3	2	4
1401:	0	5	0	5	2	4	5	2
1409:	2	2	2	3	1	3	6	1
1417:	1	3	4	5	3	1	2	1
1425:	2	1	6	3	3	3	2	2
1433:	1	1	2	3	1	2	0	2
1441:	1	0	2	2	2	3	2	2
1449:	2	3	1	5	4	3	1	2
1457:	14	56	144	275	178	29	3	3
1465:	0	1	0	1	1	1	1	1
1473:	1	3	4	2	1	0	1	1
1481:	3	1	2	1	1	0	2	0
1489:	5	3	3	3	3	2	2	0
1497:	3	2	5	3	2	3	3	0
1505:	0	1	4	3	2	7	0	3
1513:	1	2	1	2	1	2	1	0
1521:	1	0	2	4	1	0	3	4
1529:	1	1	0	1	3	0	0	1
1537:	0	2	3	3	2	2	1	4
1545:	0	2	0	0	2	2	2	0
1553:	1	2	0	1	2	2	3	0
1561:	1	2	1	0	0	1	3	0
1569:	0	2	1	3	1	2	2	0
1577:	0	3	1	4	1	2	4	3
1585:	1	4	7	2	3	3	5	4
1593:	1	2	1	0	2	2	1	0
1601:	0	3	1	3	1	2	0	0
1609:	0	2	0	0	1	1	0	1
1617:	3	2	3	2	1	0	0	2
1625:	3	0	3	3	2	1	1	2
1633:	1	0	0	1	4	2	0	0
1641:	0	1	1	1	0	3	0	0
1649:	2	1	0	0	0	3	0	0
1657:	0	0	3	3	2	1	0	3

1665:	1	3	0	1	0	3	2	2

Sample Title: HTC-A04-S004-0006-01

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

2097:	1	1	0	2	4	1	1	2

Sample Title: HTC-A04-S004-0006-01

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

2529:	0	0	0	0	1	0	0	0

Sample Title: HTC-A04-S004-0006-01

Channel								
2537:	0	0	0	0	1	0	0	2
2545:	0	1	0	0	0	0	0	0
2553:	0	1	0	0	1	0	0	1
2561:	1	0	0	2	0	0	0	2
2569:	0	1	1	0	0	1	1	0
2577:	0	0	0	0	0	0	0	1
2585:	2	0	0	1	1	0	1	0
2593:	2	1	1	0	0	1	0	0
2601:	0	0	0	0	0	1	0	4
2609:	3	2	9	19	20	17	6	1
2617:	0	0	0	0	0	0	0	0
2625:	0	0	0	0	0	1	1	0
2633:	0	0	0	0	0	1	1	0
2641:	0	0	0	0	0	0	0	0
2649:	0	1	0	0	0	0	0	0
2657:	1	0	1	0	1	0	0	1
2665:	0	2	0	0	1	0	0	0
2673:	0	0	0	0	0	0	0	1
2681:	0	0	1	0	1	0	2	0
2689:	0	0	0	1	3	0	0	0
2697:	0	0	0	0	0	0	0	0
2705:	0	0	0	0	2	1	1	0
2713:	0	0	1	0	0	0	0	0
2721:	0	0	0	1	1	0	0	1
2729:	0	0	0	1	0	0	0	0
2737:	0	0	0	0	0	1	0	0
2745:	1	0	1	0	0	0	0	0
2753:	0	0	1	0	0	1	1	1
2761:	0	0	0	0	0	0	0	1
2769:	0	0	0	0	0	0	0	0
2777:	1	0	0	0	0	2	0	0
2785:	0	0	0	0	0	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	0	1	0
2809:	0	0	0	0	0	0	1	0
2817:	0	0	0	0	0	0	0	1
2825:	2	0	0	0	0	0	0	0
2833:	0	0	0	1	0	0	0	0
2841:	0	0	0	1	1	0	1	1
2849:	0	0	0	1	0	0	1	0
2857:	0	0	2	1	0	0	0	0
2865:	0	0	0	0	0	0	0	0
2873:	0	0	0	0	0	0	0	1
2881:	1	0	0	0	0	0	0	0
2889:	0	0	1	0	0	0	0	1
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	2
2913:	0	0	1	0	0	0	0	0
2921:	0	0	0	0	1	0	1	0
2929:	0	0	1	0	0	0	2	0
2937:	0	0	1	0	2	0	0	0
2945:	0	0	0	0	0	1	0	0
2953:	0	1	0	1	1	0	0	0

2961:	1	1	0	0	0	1	2	0

Sample Title: HTC-A04-S004-0006-01

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

3393:	0	0	0	0	0	0	0	0

Sample Title: HTC-A04-S004-0006-01

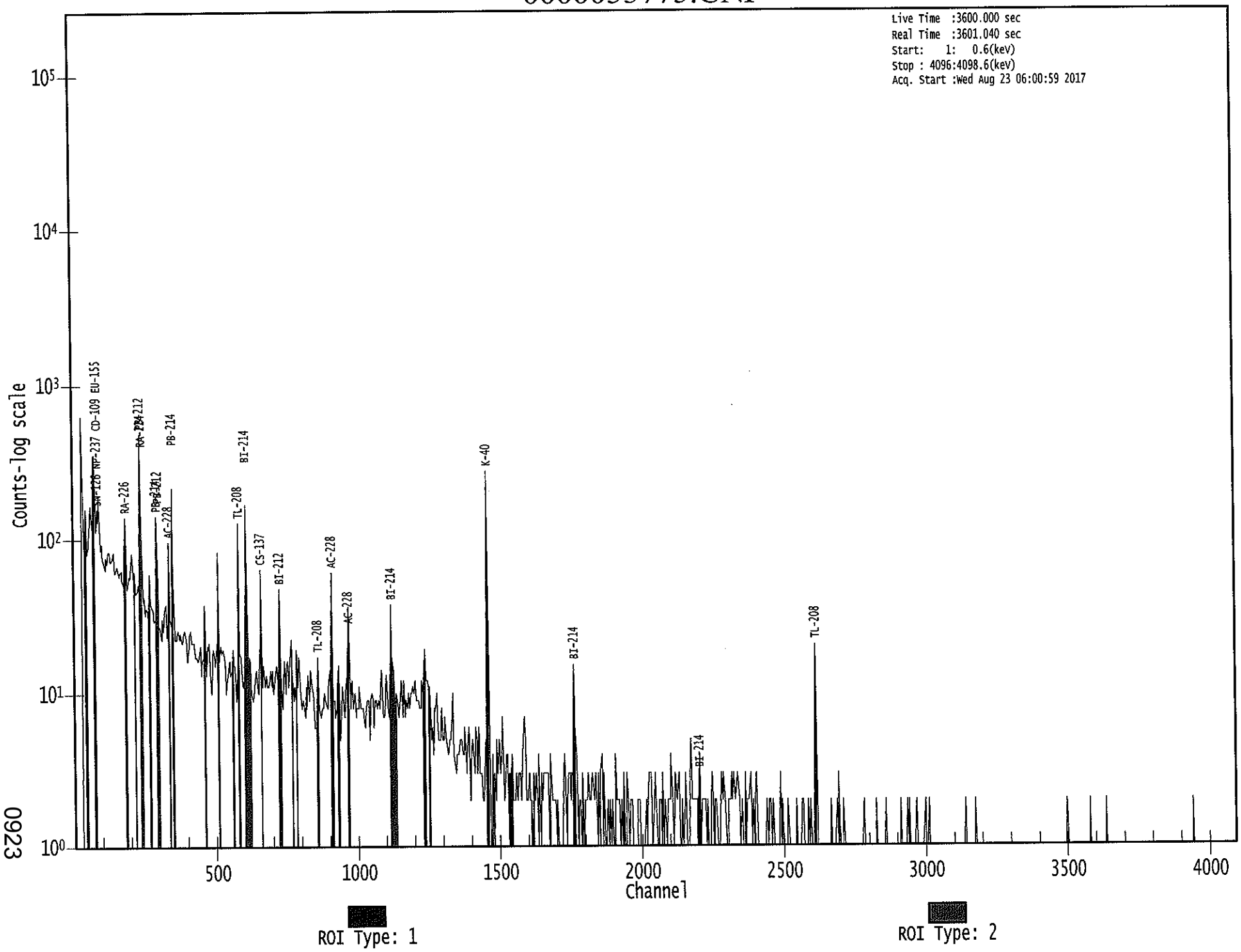
Channel								
3401:	0	0	0	0	0	1	1	0
3409:	0	0	0	0	1	0	1	0
3417:	0	0	0	0	0	0	0	0
3425:	1	0	1	1	0	0	1	0
3433:	0	0	0	1	0	0	0	0
3441:	0	0	0	0	0	0	0	1
3449:	0	0	0	1	0	0	0	0
3457:	1	1	0	0	0	0	1	0
3465:	0	1	0	0	1	1	0	0
3473:	1	0	0	0	0	0	0	1
3481:	0	0	0	0	1	0	0	0
3489:	0	0	0	0	0	0	1	0
3497:	2	0	0	0	0	0	1	0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

3825:	1	1	0	1	0	0	0	0

Sample Title: HTC-A04-S004-0006-01

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

0000055775.CNF



0923

Apex-Gamma

8/23

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-18
Sample Description	: HTC-A04-S001-0612-01
Sample Type	: SOIL
Sample Size	: 6.463E+02 grams
Facility	: Countroom
Sample Taken On	: 5/15/2017 9:36:17AM
Acquisition Started	: 8/23/2017 6:01:06AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3609.6 seconds
Dead Time	: 0.27 %
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	: 55776

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/23/2017 7:02:04AM
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	64.03	64.33	0.0000	0.00
2	76.39	76.69	0.0000	0.00
3	93.43	93.72	0.0000	0.00
4	116.32	116.61	0.0000	0.00
5	186.17	186.43	0.0000	0.00
6	238.93	239.18	0.0000	0.00
7	241.82	242.06	0.0000	0.00
8	270.70	270.93	0.0000	0.00
9	277.32	277.56	0.0000	0.00
10	295.51	295.73	0.0000	0.00
11	300.59	300.81	0.0000	0.00
12	327.99	328.21	0.0000	0.00
13	338.69	338.91	0.0000	0.00
14	352.32	352.53	0.0000	0.00
15	377.97	378.17	0.0000	0.00
16	523.68	523.83	0.0000	0.00
17	583.57	583.70	0.0000	0.00
18	609.49	609.62	0.0000	0.00
19	615.88	616.00	0.0000	0.00
20	661.69	661.80	0.0000	0.00
21	727.58	727.66	0.0000	0.00
22	769.14	769.20	0.0000	0.00
23	772.93	773.00	0.0000	0.00
24	822.97	823.02	0.0000	0.00
25	860.16	860.20	0.0000	0.00
26	873.27	873.31	0.0000	0.00
27	894.34	894.36	0.0000	0.00
28	911.53	911.55	0.0000	0.00
29	969.58	969.58	0.0000	0.00
30	1022.56	1022.54	0.0000	0.00
31	1120.25	1120.19	0.0000	0.00
32	1220.06	1219.98	0.0000	0.00
33	1227.85	1227.76	0.0000	0.00
34	1238.49	1238.40	0.0000	0.00
35	1325.92	1325.80	0.0000	0.00
36	1332.04	1331.91	0.0000	0.00
37	1369.20	1369.07	0.0000	0.00
38	1377.65	1377.52	0.0000	0.00
39	1460.93	1460.77	0.0000	0.00
40	1474.03	1473.86	0.0000	0.00
41	1562.26	1562.06	0.0000	0.00
42	1590.01	1589.80	0.0000	0.00

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1609.01	1608.79	0.0000	0.00
44	1614.43	1614.21	0.0000	0.00
45	1620.72	1620.50	0.0000	0.00
46	1631.97	1631.75	0.0000	0.00
47	1638.80	1638.57	0.0000	0.00
48	1661.91	1661.67	0.0000	0.00
49	1729.82	1729.57	0.0000	0.00
50	1764.88	1764.61	0.0000	0.00
51	1869.17	1868.87	0.0000	0.00
52	1931.07	1930.74	0.0000	0.00
53	1992.35	1992.00	0.0000	0.00
54	2019.80	2019.45	0.0000	0.00
55	2190.55	2190.14	0.0000	0.00
56	2305.03	2304.58	0.0000	0.00
57	2353.88	2353.42	0.0000	0.00
58	2393.47	2392.99	0.0000	0.00
59	2447.67	2447.17	0.0000	0.00
60	2614.99	2614.43	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/23/2017 7:02:04AM

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	64.03	60 -	68	64.33	2.02E+02	126.13	2.32E+03	1.77
	2	76.39	71 -	82	76.69	1.00E+03	163.99	2.84E+03	3.71
	3	93.43	92 -	98	93.72	2.11E+02	94.78	1.44E+03	2.16
	4	116.32	113 -	119	116.61	6.07E+01	73.01	9.21E+02	2.96
	5	186.17	182 -	191	186.43	1.67E+02	88.23	1.01E+03	2.42
M	6	238.93	234 -	246	239.18	6.94E+02	77.13	5.12E+02	2.25
m	7	241.82	234 -	246	242.06	1.39E+02	74.30	4.93E+02	2.27
	8	270.70	267 -	274	270.93	7.40E+01	53.29	4.24E+02	2.58
	9	277.32	275 -	281	277.56	6.18E+01	45.38	3.24E+02	3.73
M	10	295.51	292 -	305	295.73	2.33E+02	50.66	2.92E+02	2.18
m	11	300.59	292 -	305	300.81	7.60E+01	50.91	3.78E+02	2.54
	12	327.99	323 -	332	328.21	7.40E+01	55.01	3.90E+02	3.53
	13	338.69	335 -	343	338.91	9.71E+01	57.45	4.44E+02	2.08
	14	352.32	348 -	356	352.53	3.49E+02	59.14	3.21E+02	2.29
	15	377.97	376 -	380	378.17	2.53E+01	29.27	1.65E+02	2.35
	16	523.68	521 -	527	523.83	2.66E+01	28.80	1.29E+02	2.31
	17	583.57	580 -	589	583.70	1.62E+02	48.55	2.42E+02	1.81
M	18	609.49	605 -	621	609.62	2.26E+02	40.64	1.26E+02	2.61
m	19	615.88	605 -	621	616.00	1.70E+01	23.22	8.26E+01	1.96
	20	661.69	657 -	665	661.80	6.73E+01	37.55	1.75E+02	2.22
	21	727.58	724 -	731	727.66	6.06E+01	27.57	8.27E+01	2.28
M	22	769.14	764 -	776	769.20	2.83E+01	25.51	9.60E+01	2.25
m	23	772.93	764 -	776	773.00	2.86E+01	22.34	7.24E+01	2.05
	24	822.97	821 -	825	823.02	1.22E+01	14.27	3.36E+01	2.66
	25	860.16	856 -	864	860.20	2.81E+01	30.05	1.22E+02	2.14
	26	873.27	871 -	877	873.31	1.82E+01	20.80	6.36E+01	2.21
	27	894.34	891 -	897	894.36	1.75E+01	21.66	7.10E+01	3.02
	28	911.53	906 -	917	911.55	1.59E+02	34.70	6.80E+01	2.58
	29	969.58	965 -	977	969.58	6.44E+01	46.25	2.01E+02	2.61
	30	1022.56	1019 -	1027	1022.54	2.92E+01	19.45	3.97E+01	3.05
	31	1120.25	1114 -	1125	1120.19	6.71E+01	31.43	8.98E+01	2.56
	32	1220.06	1217 -	1224	1219.98	2.53E+01	24.41	7.95E+01	2.65
	33	1227.85	1225 -	1232	1227.76	3.49E+01	24.49	7.83E+01	3.27
	34	1238.49	1233 -	1245	1238.40	4.39E+01	35.74	1.28E+02	2.88
	35	1325.92	1323 -	1329	1325.80	9.84E+00	12.72	1.83E+01	1.87
	36	1332.04	1330 -	1334	1331.91	8.91E+00	9.76	1.42E+01	1.48
M	37	1369.20	1366 -	1387	1369.07	1.51E+01	10.39	7.61E+00	2.79
m	38	1377.65	1366 -	1387	1377.52	1.62E+01	14.14	1.75E+01	2.79
	39	1460.93	1454 -	1467	1460.77	5.13E+02	51.20	6.32E+01	2.54
	40	1474.03	1471 -	1477	1473.86	1.36E+01	8.50	2.80E+00	2.88

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1562.26	1557	1566	1562.06	1.16E+01	9.00	4.71E+00	3.25
	42	1590.01	1584	1596	1589.80	2.01E+01	15.71	1.98E+01	6.63
M	43	1609.01	1602	1617	1608.79	1.25E+01	13.08	1.71E+01	3.18
m	44	1614.43	1602	1617	1614.21	9.74E+00	10.95	4.00E+00	3.19
	45	1620.72	1618	1623	1620.50	8.04E+00	8.89	9.92E+00	1.77
	46	1631.97	1627	1636	1631.75	1.40E+01	12.45	1.20E+01	2.71
	47	1638.80	1637	1641	1638.57	7.00E+00	5.29	0.00E+00	1.47
	48	1661.91	1659	1665	1661.67	6.00E+00	8.03	8.00E+00	1.20
	49	1729.82	1725	1734	1729.57	1.40E+01	11.22	1.00E+01	3.68
	50	1764.88	1758	1769	1764.61	2.40E+01	18.33	3.01E+01	2.51
	51	1869.17	1866	1871	1868.87	4.58E+00	5.74	2.83E+00	2.72
	52	1931.07	1928	1934	1930.74	8.00E+00	8.51	8.00E+00	1.55
	53	1992.35	1988	1994	1992.00	6.00E+00	4.90	0.00E+00	2.88
	54	2019.80	2016	2023	2019.45	1.18E+01	8.49	4.43E+00	1.14
	55	2190.55	2186	2192	2190.14	7.00E+00	5.29	0.00E+00	1.16
	56	2305.03	2302	2307	2304.58	6.67E+00	7.35	4.67E+00	2.32
	57	2353.88	2349	2357	2353.42	8.92E+00	9.62	8.15E+00	1.82
	58	2393.47	2389	2396	2392.99	8.05E+00	7.48	3.90E+00	3.80
	59	2447.67	2443	2449	2447.17	6.00E+00	4.90	0.00E+00	1.98
	60	2614.99	2610	2619	2614.43	6.00E+01	15.49	0.00E+00	2.30

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 : 8/23/2017 7:02:04AM

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	64.03	60	68	2.02E+02	126.13	2.32E+03	1.01E+02
	2	76.39	71	82	1.00E+03	163.99	2.84E+03	1.24E+02
	3	93.43	92	98	2.11E+02	94.78	1.44E+03	7.42E+01
	4	116.32	113	119	6.07E+01	73.01	9.21E+02	5.86E+01
	5	186.17	182	191	1.67E+02	88.23	1.01E+03	6.93E+01
M	6	238.93	234	246	6.94E+02	77.13	5.12E+02	3.72E+01
m	7	241.82	234	246	1.39E+02	74.30	4.93E+02	3.65E+01
	8	270.70	267	274	7.40E+01	53.29	4.24E+02	4.15E+01

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	9	277.32	275 -	281	6.18E+01	45.38	3.24E+02	3.50E+01
M	10	295.51	292 -	305	2.33E+02	50.66	2.92E+02	2.81E+01
m	11	300.59	292 -	305	7.60E+01	50.91	3.78E+02	3.20E+01
	12	327.99	323 -	332	7.40E+01	55.01	3.90E+02	4.29E+01
	13	338.69	335 -	343	9.71E+01	57.45	4.44E+02	4.44E+01
	14	352.32	348 -	356	3.49E+02	59.14	3.21E+02	3.77E+01
	15	377.97	376 -	380	2.53E+01	29.27	1.65E+02	2.26E+01
	16	523.68	521 -	527	2.66E+01	28.80	1.29E+02	2.21E+01
	17	583.57	580 -	589	1.62E+02	48.55	2.42E+02	3.40E+01
M	18	609.49	605 -	621	2.26E+02	40.64	1.26E+02	1.85E+01
m	19	615.88	605 -	621	1.70E+01	23.22	8.26E+01	1.49E+01
	20	661.69	657 -	665	6.73E+01	37.55	1.75E+02	2.78E+01
	21	727.58	724 -	731	6.06E+01	27.57	8.27E+01	1.87E+01
M	22	769.14	764 -	776	2.83E+01	25.51	9.60E+01	1.61E+01
m	23	772.93	764 -	776	2.86E+01	22.34	7.24E+01	1.40E+01
	24	822.97	821 -	825	1.22E+01	14.27	3.36E+01	1.02E+01
	25	860.16	856 -	864	2.81E+01	30.05	1.22E+02	2.31E+01
	26	873.27	871 -	877	1.82E+01	20.80	6.36E+01	1.56E+01
	27	894.34	891 -	897	1.75E+01	21.66	7.10E+01	1.64E+01
	28	911.53	906 -	917	1.59E+02	34.70	6.80E+01	1.96E+01
	29	969.58	965 -	977	6.44E+01	46.25	2.01E+02	3.57E+01
	30	1022.56	1019 -	1027	2.92E+01	19.45	3.97E+01	1.33E+01
	31	1120.25	1114 -	1125	6.71E+01	31.43	8.98E+01	2.21E+01
	32	1220.06	1217 -	1224	2.53E+01	24.41	7.95E+01	1.83E+01
	33	1227.85	1225 -	1232	3.49E+01	24.49	7.83E+01	1.76E+01
	34	1238.49	1233 -	1245	4.39E+01	35.74	1.28E+02	2.73E+01
	35	1325.92	1323 -	1329	9.84E+00	12.72	1.83E+01	9.09E+00
	36	1332.04	1330 -	1334	8.91E+00	9.76	1.42E+01	6.35E+00
M	37	1369.20	1366 -	1387	1.51E+01	10.39	7.61E+00	4.53E+00
m	38	1377.65	1366 -	1387	1.62E+01	14.14	1.75E+01	6.88E+00
	39	1460.93	1454 -	1467	5.13E+02	51.20	6.32E+01	1.96E+01
	40	1474.03	1471 -	1477	1.36E+01	8.50	2.80E+00	3.47E+00
	41	1562.26	1557 -	1566	1.16E+01	9.00	4.71E+00	4.82E+00
	42	1590.01	1584 -	1596	2.01E+01	15.71	1.98E+01	1.06E+01
M	43	1609.01	1602 -	1617	1.25E+01	13.08	1.71E+01	6.80E+00
m	44	1614.43	1602 -	1617	9.74E+00	10.95	4.00E+00	3.29E+00
	45	1620.72	1618 -	1623	8.04E+00	8.89	9.92E+00	5.63E+00
	46	1631.97	1627 -	1636	1.40E+01	12.45	1.20E+01	8.18E+00
	47	1638.80	1637 -	1641	7.00E+00	5.29	0.00E+00	0.00E+00
	48	1661.91	1659 -	1665	6.00E+00	8.03	8.00E+00	5.23E+00
	49	1729.82	1725 -	1734	1.40E+01	11.22	1.00E+01	6.88E+00
	50	1764.88	1758 -	1769	2.40E+01	18.33	3.01E+01	1.27E+01
	51	1869.17	1866 -	1871	4.58E+00	5.74	2.83E+00	3.15E+00
	52	1931.07	1928 -	1934	8.00E+00	8.51	8.00E+00	5.23E+00
	53	1992.35	1988 -	1994	6.00E+00	4.90	0.00E+00	0.00E+00
	54	2019.80	2016 -	2023	1.18E+01	8.49	4.43E+00	4.10E+00
	55	2190.55	2186 -	2192	7.00E+00	5.29	0.00E+00	0.00E+00
	56	2305.03	2302 -	2307	6.67E+00	7.35	4.67E+00	4.30E+00
	57	2353.88	2349 -	2357	8.92E+00	9.62	8.15E+00	6.20E+00
	58	2393.47	2389 -	2396	8.05E+00	7.48	3.90E+00	4.01E+00
	59	2447.67	2443 -	2449	6.00E+00	4.90	0.00E+00	0.00E+00

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
60	2614.99	2610 -	2619	6.00E+01	15.49	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 : 8/23/2017 7:02:04AM

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	64.03	60 -	68	64.33	2.02E+02	126.13	2.32E+03	TH-234
	2	76.39	71 -	82	76.69	1.00E+03	163.99	2.84E+03	.....
	3	93.43	92 -	98	93.72	2.11E+02	94.78	1.44E+03	GA-67
	4	116.32	113 -	119	116.61	6.07E+01	73.01	9.21E+02	.....
	5	186.17	182 -	191	186.43	1.67E+02	88.23	1.01E+03	RA-226
M	6	238.93	234 -	246	239.18	6.94E+02	77.13	5.12E+02	PB-212
m	7	241.82	234 -	246	242.06	1.39E+02	74.30	4.93E+02	RA-224
	8	270.70	267 -	274	270.93	7.40E+01	53.29	4.24E+02	.....
	9	277.32	275 -	281	277.56	6.18E+01	45.38	3.24E+02	CM-243
									NP-239
M	10	295.51	292 -	305	295.73	2.33E+02	50.66	2.92E+02	PB-214
m	11	300.59	292 -	305	300.81	7.60E+01	50.91	3.78E+02	GA-67
									PB-212
									BI-210M
	12	327.99	323 -	332	328.21	7.40E+01	55.01	3.90E+02	LA-140
	13	338.69	335 -	343	338.91	9.71E+01	57.45	4.44E+02	AC-228
	14	352.32	348 -	356	352.53	3.49E+02	59.14	3.21E+02	PB-214
	15	377.97	376 -	380	378.17	2.53E+01	29.27	1.65E+02	.....
	16	523.68	521 -	527	523.83	2.66E+01	28.80	1.29E+02	.....
	17	583.57	580 -	589	583.70	1.62E+02	48.55	2.42E+02	TL-208
M	18	609.49	605 -	621	609.62	2.26E+02	40.64	1.26E+02	BI-214
m	19	615.88	605 -	621	616.00	1.70E+01	23.22	8.26E+01	.....
	20	661.69	657 -	665	661.80	6.73E+01	37.55	1.75E+02	CS-137
	21	727.58	724 -	731	727.66	6.06E+01	27.57	8.27E+01	BI-212
M	22	769.14	764 -	776	769.20	2.83E+01	25.51	9.60E+01	.....

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
m	23	772.93	764 -	776	773.00	2.86E+01	22.34	7.24E+01	.....
	24	822.97	821 -	825	823.02	1.22E+01	14.27	3.36E+01	.....
	25	860.16	856 -	864	860.20	2.81E+01	30.05	1.22E+02	TL-208
	26	873.27	871 -	877	873.31	1.82E+01	20.80	6.36E+01	EU-154
	27	894.34	891 -	897	894.36	1.75E+01	21.66	7.10E+01	.....
	28	911.53	906 -	917	911.55	1.59E+02	34.70	6.80E+01	TL-204 AC-228
	29	969.58	965 -	977	969.58	6.44E+01	46.25	2.01E+02	AC-228
	30	1022.56	1019 -	1027	1022.54	2.92E+01	19.45	3.97E+01	.....
	31	1120.25	1114 -	1125	1120.19	6.71E+01	31.43	8.98E+01	BI-214 SC-46
	32	1220.06	1217 -	1224	1219.98	2.53E+01	24.41	7.95E+01	.....
	33	1227.85	1225 -	1232	1227.76	3.49E+01	24.49	7.83E+01	.....
	34	1238.49	1233 -	1245	1238.40	4.39E+01	35.74	1.28E+02	CO-56
	35	1325.92	1323 -	1329	1325.80	9.84E+00	12.72	1.83E+01	.....
	36	1332.04	1330 -	1334	1331.91	8.91E+00	9.76	1.42E+01	CO-60
M	37	1369.20	1366 -	1387	1369.07	1.51E+01	10.39	7.61E+00	NA-24
m	38	1377.65	1366 -	1387	1377.52	1.62E+01	14.14	1.75E+01	.....
	39	1460.93	1454 -	1467	1460.77	5.13E+02	51.20	6.32E+01	K-40
	40	1474.03	1471 -	1477	1473.86	1.36E+01	8.50	2.80E+00	.....
	41	1562.26	1557 -	1566	1562.06	1.16E+01	9.00	4.71E+00	.....
	42	1590.01	1584 -	1596	1589.80	2.01E+01	15.71	1.98E+01	.....
M	43	1609.01	1602 -	1617	1608.79	1.25E+01	13.08	1.71E+01	.....
m	44	1614.43	1602 -	1617	1614.21	9.74E+00	10.95	4.00E+00	.....
	45	1620.72	1618 -	1623	1620.50	8.04E+00	8.89	9.92E+00	BI-212
	46	1631.97	1627 -	1636	1631.75	1.40E+01	12.45	1.20E+01	.....
	47	1638.80	1637 -	1641	1638.57	7.00E+00	5.29	0.00E+00	.....
	48	1661.91	1659 -	1665	1661.67	6.00E+00	8.03	8.00E+00	.....
	49	1729.82	1725 -	1734	1729.57	1.40E+01	11.22	1.00E+01	.....
	50	1764.88	1758 -	1769	1764.61	2.40E+01	18.33	3.01E+01	BI-214
	51	1869.17	1866 -	1871	1868.87	4.58E+00	5.74	2.83E+00	.....
	52	1931.07	1928 -	1934	1930.74	8.00E+00	8.51	8.00E+00	.....
	53	1992.35	1988 -	1994	1992.00	6.00E+00	4.90	0.00E+00	.....
	54	2019.80	2016 -	2023	2019.45	1.18E+01	8.49	4.43E+00	.....
	55	2190.55	2186 -	2192	2190.14	7.00E+00	5.29	0.00E+00	.....
	56	2305.03	2302 -	2307	2304.58	6.67E+00	7.35	4.67E+00	.....
	57	2353.88	2349 -	2357	2353.42	8.92E+00	9.62	8.15E+00	.....
	58	2393.47	2389 -	2396	2392.99	8.05E+00	7.48	3.90E+00	.....
	59	2447.67	2443 -	2449	2447.17	6.00E+00	4.90	0.00E+00	.....
	60	2614.99	2610 -	2619	2614.43	6.00E+01	15.49	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 1707088-18

HTC-A04-S001-0612-01

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 8/23/2017 7:02:04AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	64.03	2.02E+02	126.13	2.46E-02	1.81E-03
	2	76.39	1.00E+03	163.99	2.67E-02	2.04E-03
	3	93.43	2.11E+02	94.78	2.71E-02	2.24E-03
	4	116.32	6.07E+01	73.01	2.57E-02	2.14E-03
	5	186.17	1.67E+02	88.23	1.96E-02	1.55E-03
M	6	238.93	6.94E+02	77.13	1.61E-02	1.34E-03
m	7	241.82	1.39E+02	74.30	1.60E-02	1.33E-03
	8	270.70	7.40E+01	53.29	1.45E-02	1.21E-03
	9	277.32	6.18E+01	45.38	1.42E-02	1.19E-03
M	10	295.51	2.33E+02	50.66	1.35E-02	1.15E-03
m	11	300.59	7.60E+01	50.91	1.33E-02	1.14E-03
	12	327.99	7.40E+01	55.01	1.23E-02	1.08E-03
	13	338.69	9.71E+01	57.45	1.19E-02	1.06E-03
	14	352.32	3.49E+02	59.14	1.15E-02	1.03E-03
	15	377.97	2.53E+01	29.27	1.08E-02	9.80E-04
	16	523.68	2.66E+01	28.80	8.07E-03	7.78E-04
	17	583.57	1.62E+02	48.55	7.32E-03	6.98E-04
M	18	609.49	2.26E+02	40.64	7.04E-03	6.64E-04
m	19	615.88	1.70E+01	23.22	6.97E-03	6.55E-04
	20	661.69	6.73E+01	37.55	6.54E-03	5.95E-04
	21	727.58	6.06E+01	27.57	6.01E-03	5.36E-04
M	22	769.14	2.83E+01	25.51	5.72E-03	5.00E-04
m	23	772.93	2.86E+01	22.34	5.69E-03	4.96E-04
	24	822.97	1.22E+01	14.27	5.38E-03	4.52E-04
	25	860.16	2.81E+01	30.05	5.18E-03	4.19E-04
	26	873.27	1.82E+01	20.80	5.11E-03	4.08E-04
	27	894.34	1.75E+01	21.66	5.00E-03	3.89E-04
	28	911.53	1.59E+02	34.70	4.92E-03	3.84E-04
	29	969.58	6.44E+01	46.25	4.66E-03	3.74E-04
	30	1022.56	2.92E+01	19.45	4.45E-03	3.66E-04
	31	1120.25	6.71E+01	31.43	4.12E-03	3.50E-04
	32	1220.06	2.53E+01	24.41	3.83E-03	3.28E-04
	33	1227.85	3.49E+01	24.49	3.81E-03	3.25E-04
	34	1238.49	4.39E+01	35.74	3.78E-03	3.22E-04
	35	1325.92	9.84E+00	12.72	3.58E-03	2.97E-04
	36	1332.04	8.91E+00	9.76	3.56E-03	2.96E-04
M	37	1369.20	1.51E+01	10.39	3.49E-03	2.90E-04
m	38	1377.65	1.62E+01	14.14	3.47E-03	2.88E-04
	39	1460.93	5.13E+02	51.20	3.31E-03	2.75E-04
	40	1474.03	1.36E+01	8.50	3.29E-03	2.73E-04
	41	1562.26	1.16E+01	9.00	3.14E-03	2.59E-04
	42	1590.01	2.01E+01	15.71	3.10E-03	2.54E-04
M	43	1609.01	1.25E+01	13.08	3.07E-03	2.51E-04
m	44	1614.43	9.74E+00	10.95	3.06E-03	2.50E-04
	45	1620.72	8.04E+00	8.89	3.05E-03	2.49E-04

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
46	1631.97	1.40E+01	12.45	3.04E-03	2.48E-04
47	1638.80	7.00E+00	5.29	3.03E-03	2.47E-04
48	1661.91	6.00E+00	8.03	3.00E-03	2.43E-04
49	1729.82	1.40E+01	11.22	2.91E-03	2.32E-04
50	1764.88	2.40E+01	18.33	2.86E-03	2.26E-04
51	1869.17	4.58E+00	5.74	2.75E-03	2.15E-04
52	1931.07	8.00E+00	8.51	2.69E-03	2.15E-04
53	1992.35	6.00E+00	4.90	2.63E-03	2.15E-04
54	2019.80	1.18E+01	8.49	2.61E-03	2.15E-04
55	2190.55	7.00E+00	5.29	2.47E-03	2.15E-04
56	2305.03	6.67E+00	7.35	2.40E-03	2.15E-04
57	2353.88	8.92E+00	9.62	2.37E-03	2.15E-04
58	2393.47	8.05E+00	7.48	2.35E-03	2.15E-04
59	2447.67	6.00E+00	4.90	2.32E-03	2.15E-04
60	2614.99	6.00E+01	15.49	2.24E-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 : 8/23/2017 7:02:04AM

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	64.03	2.02E+02	126.13	4.12E+01	5.67E+00	1.61E+02	1.26E+02
	2	76.39	1.00E+03	163.99			1.00E+03	1.64E+02
	3	93.43	2.11E+02	94.78	7.98E+01	7.31E+00	1.31E+02	9.51E+01
	4	116.32	6.07E+01	73.01			6.07E+01	7.30E+01
	5	186.17	1.67E+02	88.23	3.06E+01	5.82E+00	1.36E+02	8.84E+01
M	6	238.93	6.94E+02	77.13	1.40E+01	2.71E+00	6.80E+02	7.72E+01
m	7	241.82	1.39E+02	74.30			1.39E+02	7.43E+01
	8	270.70	7.40E+01	53.29			7.40E+01	5.33E+01
	9	277.32	6.18E+01	45.38			6.18E+01	4.54E+01
M	10	295.51	2.33E+02	50.66			2.33E+02	5.07E+01
m	11	300.59	7.60E+01	50.91			7.60E+01	5.09E+01
	12	327.99	7.40E+01	55.01			7.40E+01	5.50E+01
	13	338.69	9.71E+01	57.45			9.71E+01	5.75E+01
	14	352.32	3.49E+02	59.14	6.53E+00	4.43E+00	3.43E+02	5.93E+01
	15	377.97	2.53E+01	29.27			2.53E+01	2.93E+01

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	16	523.68	2.66E+01	28.80			2.66E+01	2.88E+01
	17	583.57	1.62E+02	48.55			1.62E+02	4.85E+01
M	18	609.49	2.26E+02	40.64	3.25E+00	2.97E+00	2.22E+02	4.08E+01
m	19	615.88	1.70E+01	23.22			1.70E+01	2.32E+01
	20	661.69	6.73E+01	37.55			6.73E+01	3.75E+01
	21	727.58	6.06E+01	27.57			6.06E+01	2.76E+01
M	22	769.14	2.83E+01	25.51			2.83E+01	2.55E+01
m	23	772.93	2.86E+01	22.34			2.86E+01	2.23E+01
	24	822.97	1.22E+01	14.27			1.22E+01	1.43E+01
	25	860.16	2.81E+01	30.05			2.81E+01	3.00E+01
	26	873.27	1.82E+01	20.80			1.82E+01	2.08E+01
	27	894.34	1.75E+01	21.66			1.75E+01	2.17E+01
	28	911.53	1.59E+02	34.70	2.85E+00	2.76E+00	1.56E+02	3.48E+01
	29	969.58	6.44E+01	46.25			6.44E+01	4.62E+01
	30	1022.56	2.92E+01	19.45			2.92E+01	1.94E+01
	31	1120.25	6.71E+01	31.43			6.71E+01	3.14E+01
	32	1220.06	2.53E+01	24.41			2.53E+01	2.44E+01
	33	1227.85	3.49E+01	24.49			3.49E+01	2.45E+01
	34	1238.49	4.39E+01	35.74			4.39E+01	3.57E+01
	35	1325.92	9.84E+00	12.72			9.84E+00	1.27E+01
	36	1332.04	8.91E+00	9.76	1.38E+00	1.83E+00	7.53E+00	9.93E+00
M	37	1369.20	1.51E+01	10.39			1.51E+01	1.04E+01
m	38	1377.65	1.62E+01	14.14			1.62E+01	1.41E+01
	39	1460.93	5.13E+02	51.20	1.00E+00	1.77E+00	5.12E+02	5.12E+01
	40	1474.03	1.36E+01	8.50			1.36E+01	8.50E+00
	41	1562.26	1.16E+01	9.00			1.16E+01	9.00E+00
	42	1590.01	2.01E+01	15.71			2.01E+01	1.57E+01
M	43	1609.01	1.25E+01	13.08			1.25E+01	1.31E+01
m	44	1614.43	9.74E+00	10.95			9.74E+00	1.10E+01
	45	1620.72	8.04E+00	8.89			8.04E+00	8.89E+00
	46	1631.97	1.40E+01	12.45			1.40E+01	1.24E+01
	47	1638.80	7.00E+00	5.29			7.00E+00	5.29E+00
	48	1661.91	6.00E+00	8.03			6.00E+00	8.03E+00
	49	1729.82	1.40E+01	11.22			1.40E+01	1.12E+01
	50	1764.88	2.40E+01	18.33			2.40E+01	1.83E+01
	51	1869.17	4.58E+00	5.74			4.58E+00	5.74E+00
	52	1931.07	8.00E+00	8.51			8.00E+00	8.51E+00
	53	1992.35	6.00E+00	4.90			6.00E+00	4.90E+00
	54	2019.80	1.18E+01	8.49			1.18E+01	8.49E+00
	55	2190.55	7.00E+00	5.29			7.00E+00	5.29E+00
	56	2305.03	6.67E+00	7.35			6.67E+00	7.35E+00
	57	2353.88	8.92E+00	9.62			8.92E+00	9.62E+00
	58	2393.47	8.05E+00	7.48			8.05E+00	7.48E+00
	59	2447.67	6.00E+00	4.90			6.00E+00	4.90E+00
	60	2614.99	6.00E+01	15.49	1.86E+00	1.12E+00	5.81E+01	1.55E+01

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

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 8/23/2017 7:02:04AM

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	64.03	2.02E+02	126.13	4.12E+01	5.67E+00	1.61E+02	1.26E+02
	2	76.39	1.00E+03	163.99			1.00E+03	1.64E+02
	3	93.43	2.11E+02	94.78	7.98E+01	7.31E+00	1.31E+02	9.51E+01
	4	116.32	6.07E+01	73.01			6.07E+01	7.30E+01
	5	186.17	1.67E+02	88.23	3.06E+01	5.82E+00	1.36E+02	8.84E+01
M	6	238.93	6.94E+02	77.13	1.40E+01	2.71E+00	6.80E+02	7.72E+01
m	7	241.82	1.39E+02	74.30			1.39E+02	7.43E+01
	8	270.70	7.40E+01	53.29			7.40E+01	5.33E+01
	9	277.32	6.18E+01	45.38			6.18E+01	4.54E+01
M	10	295.51	2.33E+02	50.66			2.33E+02	5.07E+01
m	11	300.59	7.60E+01	50.91			7.60E+01	5.09E+01
	12	327.99	7.40E+01	55.01			7.40E+01	5.50E+01
	13	338.69	9.71E+01	57.45			9.71E+01	5.75E+01
	14	352.32	3.49E+02	59.14	6.53E+00	4.43E+00	3.43E+02	5.93E+01
	15	377.97	2.53E+01	29.27			2.53E+01	2.93E+01
	16	523.68	2.66E+01	28.80			2.66E+01	2.88E+01
	17	583.57	1.62E+02	48.55			1.62E+02	4.85E+01
M	18	609.49	2.26E+02	40.64	3.25E+00	2.97E+00	2.22E+02	4.08E+01
m	19	615.88	1.70E+01	23.22			1.70E+01	2.32E+01
	20	661.69	6.73E+01	37.55			6.73E+01	3.75E+01
	21	727.58	6.06E+01	27.57			6.06E+01	2.76E+01
M	22	769.14	2.83E+01	25.51			2.83E+01	2.55E+01
m	23	772.93	2.86E+01	22.34			2.86E+01	2.23E+01
	24	822.97	1.22E+01	14.27			1.22E+01	1.43E+01
	25	860.16	2.81E+01	30.05			2.81E+01	3.00E+01
	26	873.27	1.82E+01	20.80			1.82E+01	2.08E+01
	27	894.34	1.75E+01	21.66			1.75E+01	2.17E+01
	28	911.53	1.59E+02	34.70	2.85E+00	2.76E+00	1.56E+02	3.48E+01
	29	969.58	6.44E+01	46.25			6.44E+01	4.62E+01
	30	1022.56	2.92E+01	19.45			2.92E+01	1.94E+01
	31	1120.25	6.71E+01	31.43			6.71E+01	3.14E+01
	32	1220.06	2.53E+01	24.41			2.53E+01	2.44E+01
	33	1227.85	3.49E+01	24.49			3.49E+01	2.45E+01
	34	1238.49	4.39E+01	35.74			4.39E+01	3.57E+01
	35	1325.92	9.84E+00	12.72			9.84E+00	1.27E+01
	36	1332.04	8.91E+00	9.76	1.38E+00	1.83E+00	7.53E+00	9.93E+00
M	37	1369.20	1.51E+01	10.39			1.51E+01	1.04E+01
m	38	1377.65	1.62E+01	14.14			1.62E+01	1.41E+01
	39	1460.93	5.13E+02	51.20	1.00E+00	1.77E+00	5.12E+02	5.12E+01

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	40	1474.03	1.36E+01	8.50			1.36E+01	8.50E+00
	41	1562.26	1.16E+01	9.00			1.16E+01	9.00E+00
	42	1590.01	2.01E+01	15.71			2.01E+01	1.57E+01
M	43	1609.01	1.25E+01	13.08			1.25E+01	1.31E+01
m	44	1614.43	9.74E+00	10.95			9.74E+00	1.10E+01
	45	1620.72	8.04E+00	8.89			8.04E+00	8.89E+00
	46	1631.97	1.40E+01	12.45			1.40E+01	1.24E+01
	47	1638.80	7.00E+00	5.29			7.00E+00	5.29E+00
	48	1661.91	6.00E+00	8.03			6.00E+00	8.03E+00
	49	1729.82	1.40E+01	11.22			1.40E+01	1.12E+01
	50	1764.88	2.40E+01	18.33			2.40E+01	1.83E+01
	51	1869.17	4.58E+00	5.74			4.58E+00	5.74E+00
	52	1931.07	8.00E+00	8.51			8.00E+00	8.51E+00
	53	1992.35	6.00E+00	4.90			6.00E+00	4.90E+00
	54	2019.80	1.18E+01	8.49			1.18E+01	8.49E+00
	55	2190.55	7.00E+00	5.29			7.00E+00	5.29E+00
	56	2305.03	6.67E+00	7.35			6.67E+00	7.35E+00
	57	2353.88	8.92E+00	9.62			8.92E+00	9.62E+00
	58	2393.47	8.05E+00	7.48			8.05E+00	7.48E+00
	59	2447.67	6.00E+00	4.90			6.00E+00	4.90E+00
	60	2614.99	6.00E+01	15.49	1.86E+00	1.12E+00	5.81E+01	1.55E+01

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

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	0.998	1460.81	*	10.67	1.69E+01	2.22E+00
CS-137	1.000	661.65	*	85.12	1.41E-01	7.99E-02
TL-208	0.978	583.14	*	30.22	8.51E-01	2.68E-01
		860.37	*	4.48	1.41E+00	1.51E+00
		2614.66	*	35.85	8.42E-01	2.39E-01
BI-212	0.978	727.17	*	11.80	9.94E-01	4.61E-01
		1620.62	*	2.75	1.11E+00	1.23E+00
PB-212	0.984	238.63	*	44.60	1.10E+00	1.55E-01
		300.09	*	3.41	1.95E+00	1.32E+00
BI-214	0.926	609.31	*	46.30	7.92E-01	1.63E-01

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-214	0.926	1120.29	*	15.10	1.25E+00	5.97E-01
		1764.49	*	15.80	6.15E-01	4.73E-01
		2204.22		4.98		
PB-214	0.979	295.21	*	19.19	1.05E+00	2.45E-01
		351.92	*	37.19	9.29E-01	1.81E-01
RA-224	0.894	240.98	*	3.95	2.57E+00	1.39E+00
RA-226	1.000	186.21	*	3.28	2.47E+00	4.79E+00
AC-228	0.969	338.32	*	11.40	8.28E-01	4.96E-01
		911.07	*	27.70	1.33E+00	3.14E-01
		969.11	*	16.60	9.66E-01	6.99E-01
TH-234	0.917	63.29	*	3.80	2.00E+00	1.58E+00

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

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/23/2017 7:02:04AM
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	76.39	2.78234E-01	8.19		
	3	93.43	3.65073E-02	36.17		
	4	116.32	1.68485E-02	60.18		
	8	270.70	2.05556E-02	36.01		
	9	277.32	1.71739E-02	36.70	Tol.	NP-239 CM-243
	12	327.99	2.05556E-02	37.17		
	15	377.97	7.03704E-03	57.78		
	16	523.68	7.37790E-03	54.22		
m	19	615.88	4.71687E-03	68.36		
M	22	769.14	7.86338E-03	45.06	Sum	
m	23	772.93	7.94392E-03	39.06		
	24	822.97	3.39080E-03	58.43	Sum	
	26	873.27	5.05278E-03	57.18	Tol.	EU-154
	27	894.34	4.86111E-03	61.89		
	30	1022.56	8.10374E-03	33.33	Sum	
	32	1220.06	7.01923E-03	48.31		
	33	1227.85	9.68469E-03	35.13		

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	34	1238.49	1.21991E-02	40.69	Tol.	CO-56
	35	1325.92	2.73392E-03	64.61		
	36	1332.04	2.09039E-03	65.98	Tol.	CO-60
M	37	1369.20	4.19237E-03	34.43	Tol.	NA-24
m	38	1377.65	4.51144E-03	43.54		
	40	1474.03	3.77778E-03	31.25		
	41	1562.26	3.23413E-03	38.65		
	42	1590.01	5.58796E-03	39.04		
M	43	1609.01	3.47886E-03	52.21		
m	44	1614.43	2.70509E-03	56.24		
	46	1631.97	3.88889E-03	44.46	Sum	
	47	1638.80	1.94444E-03	37.80	Sum	
	48	1661.91	1.66667E-03	66.93		
	49	1729.82	3.88889E-03	40.09	Sum	
	51	1869.17	1.27315E-03	62.67		
	52	1931.07	2.22222E-03	53.22		
	53	1992.35	1.66667E-03	40.82		
	54	2019.80	3.27381E-03	36.00		
	55	2190.55	1.94444E-03	37.80		
	56	2305.03	1.85185E-03	55.11		
	57	2353.88	2.47863E-03	53.89		
	58	2393.47	2.23611E-03	46.48		
	59	2447.67	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 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	1.69E+01	2.22E+00
CS-137	1.00	661.65	*	85.12	1.41E-01	7.99E-02
TL-208	0.97	583.14	*	30.22	8.51E-01	2.68E-01
		860.37	*	4.48	1.41E+00	1.51E+00
		2614.66	*	35.85	8.42E-01	2.39E-01

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BI-212	0.97	727.17	*	11.80	9.94E-01	4.61E-01
		1620.62	*	2.75	1.11E+00	1.23E+00
PB-212	0.98	238.63	*	44.60	1.10E+00	1.55E-01
		300.09	*	3.41	1.95E+00	1.32E+00
BI-214	0.92	609.31	*	46.30	7.92E-01	1.63E-01
		1120.29	*	15.10	1.25E+00	5.97E-01
		1764.49	*	15.80	6.15E-01	4.73E-01
		2204.22		4.98		
PB-214	0.97	295.21	*	19.19	1.05E+00	2.45E-01
		351.92	*	37.19	9.29E-01	1.81E-01
RA-224	0.89	240.98	*	3.95	2.57E+00	1.39E+00
RA-226	1.00	186.21	*	3.28	2.47E+00	4.79E+00
AC-228	0.96	338.32	*	11.40	8.28E-01	4.96E-01
		911.07	*	27.70	1.33E+00	3.14E-01
		969.11	*	16.60	9.66E-01	6.99E-01
TH-234	0.91	63.29	*	3.80	2.00E+00	1.58E+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	0.998	1.69E+01	2.22E+00	
CS-137	1.000	1.41E-01	7.99E-02	
TL-208	0.978	8.54E-01	1.77E-01	
BI-212	0.978	1.01E+00	4.31E-01	
PB-212	0.984	1.11E+00	1.54E-01	
BI-214	0.926	8.04E-01	1.49E-01	
PB-214	0.979	9.71E-01	1.45E-01	
RA-224	0.894	2.57E+00	1.39E+00	
RA-226	1.000	2.47E+00	4.79E+00	
AC-228	0.969	1.16E+00	2.48E-01	
TH-234	0.917	2.00E+00	1.58E+00	

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

Errors quoted at 2.000sigma

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/23/2017 7:02:04AM
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	76.39	2.78234E-01	8.19		
	3	93.43	3.65073E-02	36.17		
	4	116.32	1.68485E-02	60.18		
	8	270.70	2.05556E-02	36.01		
	9	277.32	1.71739E-02	36.70	Tol.	NP-239 CM-243
	12	327.99	2.05556E-02	37.17		
	15	377.97	7.03704E-03	57.78		
	16	523.68	7.37790E-03	54.22		
m	19	615.88	4.71687E-03	68.36		
M	22	769.14	7.86338E-03	45.06	Sum	
m	23	772.93	7.94392E-03	39.06		
	24	822.97	3.39080E-03	58.43	Sum	
	26	873.27	5.05278E-03	57.18	Tol.	EU-154
	27	894.34	4.86111E-03	61.89		
	30	1022.56	8.10374E-03	33.33	Sum	
	32	1220.06	7.01923E-03	48.31		
	33	1227.85	9.68469E-03	35.13		
	34	1238.49	1.21991E-02	40.69	Tol.	CO-56
	35	1325.92	2.73392E-03	64.61		
	36	1332.04	2.09039E-03	65.98	Tol.	CO-60
M	37	1369.20	4.19237E-03	34.43	Tol.	NA-24
m	38	1377.65	4.51144E-03	43.54		
	40	1474.03	3.77778E-03	31.25		
	41	1562.26	3.23413E-03	38.65		
	42	1590.01	5.58796E-03	39.04		
M	43	1609.01	3.47886E-03	52.21		
m	44	1614.43	2.70509E-03	56.24		
	46	1631.97	3.88889E-03	44.46	Sum	
	47	1638.80	1.94444E-03	37.80	Sum	
	48	1661.91	1.66667E-03	66.93		
	49	1729.82	3.88889E-03	40.09	Sum	
	51	1869.17	1.27315E-03	62.67		
	52	1931.07	2.22222E-03	53.22		
	53	1992.35	1.66667E-03	40.82		

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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
54	2019.80	3.27381E-03	36.00		
55	2190.55	1.94444E-03	37.80		
56	2305.03	1.85185E-03	55.11		
57	2353.88	2.47863E-03	53.89		
58	2393.47	2.23611E-03	46.48		
59	2447.67	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	-1.46E+00	2.02E+00	2.02E+00
+	NA-22	1274.54		99.94	-6.62E-02	7.59E-02	7.59E-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	-4.91E-03	6.56E-02	6.56E-02
+	K-40	1460.81	*	10.67	1.69E+01	1.39E+00	1.39E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.94E-03	5.99E-02	5.99E-02
		78.34		96.00	1.65E-01		7.25E-02
+	SC-46	889.25		99.98	4.62E-03	1.77E-01	1.77E-01
		1120.51		99.99	3.06E-01		2.96E-01
+	V-48	983.52		99.98	-4.43E-01	5.67E+00	5.67E+00
		1312.10		97.50	2.77E+00		7.31E+00
+	CR-51	320.08		9.83	2.78E+00	7.16E+00	7.16E+00
+	MN-54	834.83		99.97	2.62E-02	1.04E-01	1.04E-01
+	CO-56	846.75		99.96	9.89E-03	1.81E-01	1.81E-01
		1037.75		14.03	-1.68E-01		1.52E+00
		1238.25		67.00	2.43E-01		4.62E-01
		1771.40		15.51	-2.92E-01		1.05E+00
		2598.48		16.90	2.46E-02		6.85E-01
+	CO-57	122.06		85.51	-1.91E-02	6.09E-02	6.09E-02
		136.48		10.60	6.55E-02		5.33E-01
+	CO-58	810.76		99.40	-5.61E-02	1.97E-01	1.97E-01

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	FE-59	1099.22	56.50	-6.70E-02	6.73E-01	6.73E-01
		1291.56	43.20	2.99E-01		1.01E+00
+	CO-60	1173.22	100.00	-7.06E-02	7.95E-02	9.19E-02
		1332.49	100.00	4.38E-02		7.95E-02
+	ZN-65	1115.52	50.75	-8.17E-03	2.34E-01	2.34E-01
+	GA-67	93.31	35.70	5.20E+08	2.63E+08	2.63E+08
		208.95	2.24	1.69E+09		4.37E+09
		300.22	16.00	-9.95E+08		7.26E+08
+	SE-75	121.11	16.70	5.12E-03	1.32E-01	4.33E-01
		136.00	59.20	6.69E-04		1.32E-01
		264.65	59.80	-1.50E-02		1.60E-01
		279.53	25.20	-2.42E-02		4.05E-01
		400.65	11.40	-1.12E-01		9.89E-01
+	RB-82	776.52	13.00	-1.79E+00	7.70E+00	7.70E+00
+	RB-83	520.41	46.00	7.22E-03	3.32E-01	3.32E-01
		529.64	30.30	1.88E-01		4.91E-01
		552.65	16.40	-1.48E-01		8.68E-01
+	KR-85	513.99	0.43	4.04E+00	1.99E+01	1.99E+01
+	SR-85	513.99	99.27	5.05E-02	2.48E-01	2.48E-01
+	Y-88	898.02	93.40	6.08E-02	1.28E-01	1.76E-01
		1836.01	99.38	-2.01E-02		1.28E-01
+	MO-93	263.06	56.72	3.00E-02	7.25E-02	9.71E-02
		684.67	99.68	-2.08E-02		7.25E-02
		1477.11	99.08	6.06E-04		8.16E-02
+	NB-93M	16.57	9.43	1.31E+01	1.05E+02	1.05E+02
+	NB-94	702.63	100.00	-4.48E-02	7.54E-02	7.54E-02
		871.10	100.00	1.13E-02		8.99E-02
+	NB-95	765.79	99.81	4.74E-02	6.20E-01	6.20E-01
+	NB-95M	235.69	25.00	5.92E+07	7.69E+07	7.69E+07
+	ZR-95	724.18	43.70	4.42E-02	3.66E-01	5.83E-01
		756.72	55.30	-8.31E-02		3.66E-01
+	MO-99	181.06	6.20	-2.77E+09	4.97E+10	6.28E+10
		739.58	12.80	6.22E+09		4.97E+10
		778.00	4.50	-2.80E+10		1.30E+11
+	RU-103	497.08	89.00	-6.24E-02	4.17E-01	4.17E-01
+	RU-106	621.84	9.80	1.27E-01	8.56E-01	8.56E-01
+	AG-108M	433.93	89.90	-4.33E-02	6.24E-02	6.24E-02
		614.37	90.40	-1.80E-01		9.65E-02
		722.95	90.50	1.25E-02		8.92E-02
+	CD-109	88.03	3.72	2.25E+00	1.79E+00	1.79E+00
+	AG-110M	657.75	93.14	1.56E-02	1.17E-01	1.17E-01
		677.61	10.53	1.74E-02		8.46E-01
		706.67	16.46	4.46E-02		6.41E-01
		763.93	21.98	5.43E-02		4.62E-01
		884.67	71.63	-3.31E-02		1.38E-01
		1384.27	23.94	-1.37E-01		3.49E-01
+	CD-113M	263.70	0.02	0.00E+00	2.35E+02	2.35E+02
+	SN-113	255.12	1.93	1.14E+00	1.77E-01	5.28E+00

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	SN-113	391.69	64.90	-2.82E-02	1.77E-01	1.77E-01
+	TE123M	159.00	84.10	-5.17E-02	9.59E-02	9.59E-02
+	SB-124	602.71	97.87	5.92E-02	2.28E-01	2.28E-01
		645.85	7.26	-1.37E-01		2.88E+00
		722.78	11.10	3.22E-01		2.29E+00
		1691.02	49.00	-1.22E-01		3.57E-01
+	I-125	35.49	6.49	9.05E-01	7.01E+00	7.01E+00
+	SB-125	176.33	6.89	-4.31E-01	2.33E-01	6.54E-01
		427.89	29.33	1.29E-01		2.33E-01
		463.38	10.35	1.79E-01		6.87E-01
		600.56	17.80	8.94E-02		4.29E-01
		635.90	11.32	6.62E-02		6.09E-01
+	SB-126	414.70	83.30	-1.13E+01	1.96E+01	2.01E+01
		666.33	99.60	7.88E+00		2.35E+01
		695.00	99.60	-6.81E+00		1.96E+01
		720.50	53.80	2.81E+00		3.75E+01
+	SN-126	87.57	37.00	1.95E-01	1.55E-01	1.55E-01
+	SB-127	473.00	25.00	7.82E+06	1.28E+07	1.65E+07
		685.20	35.70	-3.68E+06		1.28E+07
		783.80	14.70	1.58E+07		3.84E+07
+	I-129	29.78	57.00	-4.72E-02	4.55E-01	4.55E-01
		33.60	13.20	3.94E-01		1.29E+00
		39.58	7.52	-4.91E-02		1.41E+00
+	I-131	284.30	6.05	1.16E+03	4.18E+02	4.96E+03
		364.48	81.20	1.90E+02		4.18E+02
		636.97	7.26	-5.63E+02		4.75E+03
		722.89	1.80	3.45E+03		2.46E+04
+	TE-132	49.72	13.10	-3.99E+08	1.07E+08	9.35E+08
		228.16	88.00	3.23E+07		1.07E+08
+	BA-133	81.00	33.00	-6.38E-01	1.40E-01	1.57E-01
		302.84	17.80	4.41E-01		3.74E-01
		356.01	60.00	-7.61E-03		1.40E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	-2.95E+05	7.27E+04	7.27E+04
+	CS-134	563.23	8.38	4.61E-01	8.93E-02	9.80E-01
		569.32	15.43	-2.08E-02		4.83E-01
		604.70	97.60	-3.86E-04		8.93E-02
		795.84	85.40	3.75E-02		1.14E-01
		801.93	8.73	-3.97E-02		9.52E-01
+	CS-135	268.24	16.00	-2.11E-02	3.69E-01	3.69E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	3.25E+01	1.33E+01	1.19E+02
		163.89	4.61	8.14E+01		1.95E+02
		176.55	13.56	-3.94E+01		5.98E+01
		273.65	12.66	-6.95E+00		9.55E+01
		340.57	48.50	4.95E+01		3.13E+01
		818.50	99.70	-2.57E+00		1.33E+01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CS-136	1048.07		79.60	-9.75E+00	1.33E+01	1.76E+01
		1235.34		19.70	-5.87E+01		1.12E+02
+	CS-137	661.65	*	85.12	1.41E-01	1.22E-01	1.22E-01
+	LA-138	788.74		34.00	-1.26E-01	1.02E-01	2.31E-01
		1435.80		66.00	-5.25E-03		1.02E-01
+	CE-139	165.85		80.35	2.55E-02	9.21E-02	9.21E-02
+	BA-140	162.64		6.70	6.68E+01	5.86E+01	1.56E+02
		304.84		4.50	-5.61E+01		2.86E+02
		423.70		3.20	-2.63E+02		4.25E+02
		437.55		2.00	2.13E+02		6.69E+02
		537.32		25.00	-1.81E+01		5.86E+01
+	LA-140	328.77		20.50	4.49E+01	2.08E+01	7.18E+01
		487.03		45.50	-9.85E+00		2.96E+01
		815.85		23.50	2.52E+01		7.00E+01
		1596.49		95.49	8.83E-01		2.08E+01
+	CE-141	145.44		48.40	3.84E-03	7.70E-01	7.70E-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	-3.51E-01	5.01E-01	5.01E-01
+	PM-144	476.78		42.00	1.45E-02	8.76E-02	1.74E-01
		618.01		98.60	4.05E-03		8.76E-02
		696.49		99.49	-1.09E-02		9.10E-02
+	PM-145	36.85		21.70	1.64E-01	3.09E-01	6.03E-01
		37.36		39.70	-1.39E-01		3.09E-01
		42.30		15.10	-1.66E-01		6.14E-01
		72.40		2.31	-5.71E+00		2.72E+00
+	PM-146	453.90		39.94	-2.40E-02	1.59E-01	1.59E-01
		735.90		14.01	-1.52E-01		5.33E-01
		747.13		13.10	1.62E-01		5.72E-01
+	ND-147	91.11		28.90	-4.09E+01	1.07E+02	1.07E+02
		531.02		13.10	1.47E+02		2.87E+02
+	PM-149	285.90		3.10	5.42E+13	7.13E+13	7.13E+13
+	EU-152	121.78		20.50	-6.25E-02	1.99E-01	1.99E-01
		244.69		5.40	2.13E-01		1.25E+00
		344.27		19.13	2.95E-02		3.28E-01
		778.89		9.20	8.45E-02		8.07E-01
		964.01		10.40	-1.32E-01		9.93E-01
		1085.78		7.22	-2.59E-01		1.17E+00
		1112.02		9.60	-5.18E-02		8.95E-01
		1407.95		14.94	5.09E-02		5.44E-01
+	GD-153	97.43		31.30	3.88E-02	1.85E-01	1.85E-01
		103.18		22.20	-2.40E-02		2.58E-01
+	EU-154	123.07		40.50	4.63E-03	1.04E-01	1.04E-01
		723.30		19.70	5.87E-02		4.18E-01
		873.19		11.50	3.21E-02		7.26E-01
		996.32		10.30	2.96E-01		8.58E-01
		1004.76		17.90	4.57E-02		4.71E-01
		1274.45		35.50	-1.77E-01		2.03E-01

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	EU-155	86.50		30.90	1.70E-01	1.91E-01	1.91E-01
		105.30		20.70	-2.48E-02		2.14E-01
+	EU-156	811.77		10.40	-3.22E+00	6.76E+01	6.76E+01
		1153.47		7.20	9.96E+01		1.39E+02
		1230.71		8.90	-1.89E+01		1.26E+02
+	HO-166M	184.41		72.60	9.70E-02	7.90E-02	7.90E-02
		280.45		29.60	7.06E-02		1.96E-01
		410.94		11.10	-1.21E-01		5.75E-01
		711.69		54.10	-2.36E-02		1.45E-01
+	TM-171	66.72		0.14	-4.05E+01	4.55E+01	4.55E+01
+	HF-172	67.35		5.31	-3.82E-02	4.08E-01	1.18E+00
		125.81		11.30	-3.64E-01		4.08E-01
+	LU-172	181.53		20.60	2.62E+02	4.70E+03	6.95E+03
		900.72		29.81	2.33E+03		8.08E+03
		1093.66		62.50	3.06E+03		4.70E+03
+	LU-173	100.72		5.24	2.93E-01	3.35E-01	9.57E-01
		272.11		21.20	6.65E-02		3.35E-01
+	HF-175	343.40		84.00	1.78E-02	1.97E-01	1.97E-01
+	LU-176	88.34		13.30	4.29E-03	5.49E-02	4.27E-01
		201.83		86.00	7.28E-03		5.49E-02
		306.78		94.00	9.46E-03		5.98E-02
+	HF-181	133.02		41.70	-2.93E-01	3.87E-01	5.24E-01
		345.85		17.20	1.66E-01		1.79E+00
		482.03		82.80	5.09E-02		3.87E-01
+	TA-182	67.75		41.20	-8.12E-03	2.51E-01	2.51E-01
		1121.30		34.90	8.81E-01		6.87E-01
		1189.05		16.23	1.81E-01		1.20E+00
		1221.41		26.98	6.14E-02		7.66E-01
		1231.02		11.44	-2.83E-01		1.88E+00
+	IR-192	308.46		29.68	3.42E-01	3.33E-01	4.98E-01
		468.07		48.10	-1.78E-01		3.33E-01
+	HG-203	279.19		77.30	2.49E-02	3.37E-01	3.37E-01
+	TL-204	374.74		94.11	-5.48E-03	6.99E-02	6.99E-02
		899.15		99.16	7.15E-03		8.22E-02
		911.74		91.10	3.78E-01		1.73E-01
+	BI-207	569.67		97.72	-5.10E-03	7.00E-02	7.00E-02
		1063.62		74.90	4.19E-02		1.34E-01
+	TL-208	583.14	*	30.22	8.51E-01	1.09E-01	3.71E-01
		860.37	*	4.48	1.41E+00		2.45E+00
		2614.66	*	35.85	8.42E-01		1.09E-01
+	BI-210M	262.00		45.00	1.90E-02	1.19E-01	1.19E-01
		300.00		23.00	-4.17E-01		3.05E-01
+	PB-210	46.50		4.25	2.24E+00	1.97E+00	1.97E+00
+	PB-211	404.84		2.90	-7.89E-01	2.18E+00	2.18E+00
		831.96		2.90	5.40E-01		2.82E+00
+	BI-212	727.17	*	11.80	9.94E-01	6.58E-01	6.58E-01
		1620.62	*	2.75	1.11E+00		1.93E+00
+	PB-212	238.63	*	44.60	1.10E+00	2.31E-01	2.31E-01

Analysis Report for 1707088-18

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	PB-212	300.09	*	3.41	1.95E+00	2.31E-01	3.08E+00
+	BI-214	609.31	*	46.30	7.92E-01	3.04E-01	3.04E-01
		1120.29	*	15.10	1.25E+00		8.75E-01
		1764.49	*	15.80	6.15E-01		7.24E-01
		2204.22		4.98	5.68E-01		1.96E+00
+	PB-214	295.21	*	19.19	1.05E+00	2.14E-01	5.30E-01
		351.92	*	37.19	9.29E-01		2.14E-01
+	RN-219	401.80		6.50	-4.80E-01	9.50E-01	9.50E-01
+	RA-223	323.87		3.88	-2.08E-02	1.50E+00	1.50E+00
+	RA-224	240.98	*	3.95	2.57E+00	2.61E+00	2.61E+00
+	RA-225	40.00		31.00	-1.25E+00	3.59E+01	3.59E+01
+	RA-226	186.21	*	3.28	2.47E+00	2.59E+00	2.59E+00
+	TH-227	50.10		8.40	-3.65E-01	7.87E-01	8.55E-01
		236.00		11.50	6.05E-01		7.87E-01
		256.20		6.30	-3.70E-01		8.58E-01
+	AC-228	338.32	*	11.40	8.28E-01	3.63E-01	7.81E-01
		911.07	*	27.70	1.33E+00		3.63E-01
		969.11	*	16.60	9.66E-01		1.11E+00
+	TH-230	48.44		16.90	3.46E-01	4.66E-01	4.66E-01
		62.85		4.60	8.28E-01		1.40E+00
		67.67		0.37	-4.94E-01		1.53E+01
+	PA-231	283.67		1.60	-4.47E-01	2.84E+00	3.33E+00
		302.67		2.30	3.35E+00		2.84E+00
+	TH-231	25.64		14.70	1.05E+00	8.38E-01	3.51E+00
		84.21		6.40	-1.66E-01		8.38E-01
+	PA-233	311.98		38.60	8.47E-01	1.93E+00	1.93E+00
+	PA-234	131.20		20.40	1.13E-01	2.22E-01	2.22E-01
		733.99		8.80	1.60E-01		7.74E-01
		946.00		12.00	-1.85E-01		6.53E-01
+	PA-234M	1001.03		0.92	-3.83E+00	8.74E+00	8.74E+00
+	TH-234	63.29	*	3.80	2.00E+00	2.56E+00	2.56E+00
+	U-235	143.76		10.50	2.74E-01	4.44E-01	4.44E-01
		163.35		4.70	4.14E-01		9.89E-01
		205.31		4.70	-6.73E-01		1.19E+00
+	NP-237	86.50		12.60	4.01E-01	4.51E-01	4.51E-01
+	NP-239	106.10		22.70	-1.27E+11	1.10E+12	1.10E+12
		228.18		10.70	9.19E+11		3.05E+12
		277.60		14.10	1.26E+12		2.45E+12
+	AM-241	59.54		35.90	2.09E-02	1.73E-01	1.73E-01
+	AM-243	74.67		66.00	1.69E-01	1.12E-01	1.12E-01
+	CM-243	209.75		3.29	2.94E-01	4.25E-01	1.82E+00
		228.14		10.60	1.60E-01		5.31E-01
		277.60		14.00	2.19E-01		4.25E-01

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

+ = 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	2.02E+00	2.02E+00	-1.46E+00	9.47E-01
	NA-22	1274.54		99.94	7.59E-02	7.59E-02	-6.62E-02	3.34E-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	6.56E-02	6.56E-02	-4.91E-03	2.72E-02
+	K-40	1460.81	*	10.67	1.39E+00	1.39E+00	1.69E+01	6.49E-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	5.99E-02	5.99E-02	-1.94E-03	2.93E-02
		78.34		96.00	7.25E-02		1.65E-01	3.57E-02
	SC-46	889.25		99.98	1.77E-01	1.77E-01	4.62E-03	8.14E-02
		1120.51		99.99	2.96E-01		3.06E-01	1.39E-01
	V-48	983.52		99.98	5.67E+00	5.67E+00	-4.43E-01	2.57E+00
		1312.10		97.50	7.31E+00		2.77E+00	3.32E+00
	CR-51	320.08		9.83	7.16E+00	7.16E+00	2.78E+00	3.42E+00
	MN-54	834.83		99.97	1.04E-01	1.04E-01	2.62E-02	4.83E-02
	CO-56	846.75		99.96	1.81E-01	1.81E-01	9.89E-03	8.32E-02
		1037.75		14.03	1.52E+00		-1.68E-01	7.00E-01
		1238.25		67.00	4.62E-01		2.43E-01	2.16E-01
		1771.40		15.51	1.05E+00		-2.92E-01	4.41E-01
		2598.48		16.90	6.85E-01		2.46E-02	2.43E-01
	CO-57	122.06		85.51	6.09E-02	6.09E-02	-1.91E-02	2.95E-02
		136.48		10.60	5.33E-01		6.55E-02	2.59E-01
	CO-58	810.76		99.40	1.97E-01	1.97E-01	-5.61E-02	9.08E-02
	FE-59	1099.22		56.50	6.73E-01	6.73E-01	-6.70E-02	3.05E-01
		1291.56		43.20	1.01E+00		2.99E-01	4.57E-01
	CO-60	1173.22		100.00	9.19E-02	7.95E-02	-7.06E-02	4.19E-02
		1332.49		100.00	7.95E-02		4.38E-02	3.52E-02
	ZN-65	1115.52		50.75	2.34E-01	2.34E-01	-8.17E-03	1.07E-01
	GA-67	93.31		35.70	2.63E+08	2.63E+08	5.20E+08	1.29E+08

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

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	4.37E+09	2.63E+08	1.69E+09	2.12E+09
	300.22	16.00	7.26E+08		-9.95E+08	3.51E+08
SE-75	121.11	16.70	4.33E-01	1.32E-01	5.12E-03	2.10E-01
	136.00	59.20	1.32E-01		6.69E-04	6.39E-02
	264.65	59.80	1.60E-01		-1.50E-02	7.68E-02
	279.53	25.20	4.05E-01		-2.42E-02	1.95E-01
	400.65	11.40	9.89E-01		-1.12E-01	4.71E-01
RB-82	776.52	13.00	7.70E+00	7.70E+00	-1.79E+00	3.53E+00
RB-83	520.41	46.00	3.32E-01	3.32E-01	7.22E-03	1.57E-01
	529.64	30.30	4.91E-01		1.88E-01	2.31E-01
	552.65	16.40	8.68E-01		-1.48E-01	4.06E-01
KR-85	513.99	0.43	1.99E+01	1.99E+01	4.04E+00	9.49E+00
SR-85	513.99	99.27	2.48E-01	2.48E-01	5.05E-02	1.19E-01
Y-88	898.02	93.40	1.76E-01	1.28E-01	6.08E-02	8.17E-02
	1836.01	99.38	1.28E-01		-2.01E-02	5.29E-02
MO-93	263.06	56.72	9.71E-02	7.25E-02	3.00E-02	4.67E-02
	684.67	99.68	7.25E-02		-2.08E-02	3.37E-02
	1477.11	99.08	8.16E-02		6.06E-04	3.59E-02
NB-93M	16.57	9.43	1.05E+02	1.05E+02	1.31E+01	5.19E+01
NB-94	702.63	100.00	7.54E-02	7.54E-02	-4.48E-02	3.52E-02
	871.10	100.00	8.99E-02		1.13E-02	4.19E-02
NB-95	765.79	99.81	6.20E-01	6.20E-01	4.74E-02	2.90E-01
NB-95M	235.69	25.00	7.69E+07	7.69E+07	5.92E+07	3.76E+07
ZR-95	724.18	43.70	5.83E-01	3.66E-01	4.42E-02	2.74E-01
	756.72	55.30	3.66E-01		-8.31E-02	1.69E-01
MO-99	181.06	6.20	6.28E+10	4.97E+10	-2.77E+09	3.03E+10
	739.58	12.80	4.97E+10		6.22E+09	2.31E+10
	778.00	4.50	1.30E+11		-2.80E+10	5.98E+10
RU-103	497.08	89.00	4.17E-01	4.17E-01	-6.24E-02	1.97E-01
RU-106	621.84	9.80	8.56E-01	8.56E-01	1.27E-01	4.00E-01
AG-108M	433.93	89.90	6.24E-02	6.24E-02	-4.33E-02	2.94E-02
	614.37	90.40	9.65E-02		-1.80E-01	4.57E-02
	722.95	90.50	8.92E-02		1.25E-02	4.17E-02
CD-109	88.03	3.72	1.79E+00	1.79E+00	2.25E+00	8.79E-01
AG-110M	657.75	93.14	1.17E-01	1.17E-01	1.56E-02	5.52E-02
	677.61	10.53	8.46E-01		1.74E-02	3.92E-01
	706.67	16.46	6.41E-01		4.46E-02	3.00E-01
	763.93	21.98	4.62E-01		5.43E-02	2.15E-01
	884.67	71.63	1.38E-01		-3.31E-02	6.31E-02
	1384.27	23.94	3.49E-01		-1.37E-01	1.49E-01
CD-113M	263.70	0.02	2.35E+02	2.35E+02	0.00E+00	1.13E+02
SN-113	255.12	1.93	5.28E+00	1.77E-01	1.14E+00	2.55E+00
	391.69	64.90	1.77E-01		-2.82E-02	8.42E-02
TE123M	159.00	84.10	9.59E-02	9.59E-02	-5.17E-02	4.64E-02
SB-124	602.71	97.87	2.28E-01	2.28E-01	5.92E-02	1.07E-01
	645.85	7.26	2.88E+00		-1.37E-01	1.34E+00
	722.78	11.10	2.29E+00		3.22E-01	1.07E+00
	1691.02	49.00	3.57E-01		-1.22E-01	1.44E-01
I-125	35.49	6.49	7.01E+00	7.01E+00	9.05E-01	3.42E+00
SB-125	176.33	6.89	6.54E-01	2.33E-01	-4.31E-01	3.15E-01
	427.89	29.33	2.33E-01		1.29E-01	1.11E-01
	463.38	10.35	6.87E-01		1.79E-01	3.25E-01
	600.56	17.80	4.29E-01		8.94E-02	2.01E-01

Analysis Report for 1707088-18

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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	6.09E-01	2.33E-01	6.62E-02	2.82E-01
	SB-126	414.70		83.30	2.01E+01	1.96E+01	-1.13E+01	9.56E+00
		666.33		99.60	2.35E+01		7.88E+00	1.11E+01
		695.00		99.60	1.96E+01		-6.81E+00	9.15E+00
		720.50		53.80	3.75E+01		2.81E+00	1.75E+01
	SN-126	87.57		37.00	1.55E-01	1.55E-01	1.95E-01	7.61E-02
	SB-127	473.00		25.00	1.65E+07	1.28E+07	7.82E+06	7.79E+06
		685.20		35.70	1.28E+07		-3.68E+06	5.96E+06
		783.80		14.70	3.84E+07		1.58E+07	1.80E+07
	I-129	29.78		57.00	4.55E-01	4.55E-01	-4.72E-02	2.23E-01
		33.60		13.20	1.29E+00		3.94E-01	6.31E-01
		39.58		7.52	1.41E+00		-4.91E-02	6.89E-01
	I-131	284.30		6.05	4.96E+03	4.18E+02	1.16E+03	2.38E+03
		364.48		81.20	4.18E+02		1.90E+02	1.99E+02
		636.97		7.26	4.75E+03		-5.63E+02	2.20E+03
		722.89		1.80	2.46E+04		3.45E+03	1.15E+04
	TE-132	49.72		13.10	9.35E+08	1.07E+08	-3.99E+08	4.57E+08
		228.16		88.00	1.07E+08		3.23E+07	5.18E+07
	BA-133	81.00		33.00	1.57E-01	1.40E-01	-6.38E-01	7.68E-02
		302.84		17.80	3.74E-01		4.41E-01	1.80E-01
		356.01		60.00	1.40E-01		-7.61E-03	6.75E-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	7.27E+04	7.27E+04	-2.95E+05	3.55E+04
	CS-134	563.23		8.38	9.80E-01	8.93E-02	4.61E-01	4.63E-01
		569.32		15.43	4.83E-01		-2.08E-02	2.27E-01
		604.70		97.60	8.93E-02		-3.86E-04	4.22E-02
		795.84		85.40	1.14E-01		3.75E-02	5.35E-02
		801.93		8.73	9.52E-01		-3.97E-02	4.40E-01
	CS-135	268.24		16.00	3.69E-01	3.69E-01	-2.11E-02	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	1.19E+02	1.33E+01	3.25E+01	5.76E+01
		163.89		4.61	1.95E+02		8.14E+01	9.42E+01
		176.55		13.56	5.98E+01		-3.94E+01	2.88E+01
		273.65		12.66	9.55E+01		-6.95E+00	4.61E+01
		340.57		48.50	3.13E+01		4.95E+01	1.51E+01
		818.50		99.70	1.33E+01		-2.57E+00	6.10E+00
		1048.07		79.60	1.76E+01		-9.75E+00	7.94E+00
		1235.34		19.70	1.12E+02		-5.87E+01	5.21E+01
+	CS-137	661.65	*	85.12	1.22E-01	1.22E-01	1.41E-01	5.83E-02
	LA-138	788.74		34.00	2.31E-01	1.02E-01	-1.26E-01	1.07E-01
		1435.80		66.00	1.02E-01		-5.25E-03	4.40E-02
	CE-139	165.85		80.35	9.21E-02	9.21E-02	2.55E-02	4.45E-02
	BA-140	162.64		6.70	1.56E+02	5.86E+01	6.68E+01	7.55E+01
		304.84		4.50	2.86E+02		-5.61E+01	1.37E+02
		423.70		3.20	4.25E+02		-2.63E+02	2.01E+02
		437.55		2.00	6.69E+02		2.13E+02	3.16E+02
		537.32		25.00	5.86E+01		-1.81E+01	2.75E+01
	LA-140	328.77		20.50	7.18E+01	2.08E+01	4.49E+01	3.45E+01
		487.03		45.50	2.96E+01		-9.85E+00	1.39E+01
		815.85		23.50	7.00E+01		2.52E+01	3.22E+01
		1596.49		95.49	2.08E+01		8.83E-01	9.19E+00

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

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	7.70E-01	7.70E-01	3.84E-03	3.73E-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	5.01E-01	5.01E-01	-3.51E-01	2.43E-01
PM-144	476.78	42.00	1.74E-01	8.76E-02	1.45E-02	8.17E-02
	618.01	98.60	8.76E-02		4.05E-03	4.10E-02
	696.49	99.49	9.10E-02		-1.09E-02	4.24E-02
PM-145	36.85	21.70	6.03E-01	3.09E-01	1.64E-01	2.95E-01
	37.36	39.70	3.09E-01		-1.39E-01	1.51E-01
	42.30	15.10	6.14E-01		-1.66E-01	3.00E-01
	72.40	2.31	2.72E+00		-5.71E+00	1.33E+00
PM-146	453.90	39.94	1.59E-01	1.59E-01	-2.40E-02	7.51E-02
	735.90	14.01	5.33E-01		-1.52E-01	2.47E-01
	747.13	13.10	5.72E-01		1.62E-01	2.65E-01
ND-147	91.11	28.90	1.07E+02	1.07E+02	-4.09E+01	5.26E+01
	531.02	13.10	2.87E+02		1.47E+02	1.35E+02
PM-149	285.90	3.10	7.13E+13	7.13E+13	5.42E+13	3.42E+13
EU-152	121.78	20.50	1.99E-01	1.99E-01	-6.25E-02	9.65E-02
	244.69	5.40	1.25E+00		2.13E-01	6.09E-01
	344.27	19.13	3.28E-01		2.95E-02	1.57E-01
	778.89	9.20	8.07E-01		8.45E-02	3.73E-01
	964.01	10.40	9.93E-01		-1.32E-01	4.64E-01
	1085.78	7.22	1.17E+00		-2.59E-01	5.31E-01
	1112.02	9.60	8.95E-01		-5.18E-02	4.08E-01
	1407.95	14.94	5.44E-01		5.09E-02	2.41E-01
GD-153	97.43	31.30	1.85E-01	1.85E-01	3.88E-02	9.01E-02
	103.18	22.20	2.58E-01		-2.40E-02	1.26E-01
EU-154	123.07	40.50	1.04E-01	1.04E-01	4.63E-03	5.07E-02
	723.30	19.70	4.18E-01		5.87E-02	1.96E-01
	873.19	11.50	7.26E-01		3.21E-02	3.36E-01
	996.32	10.30	8.58E-01		2.96E-01	3.95E-01
	1004.76	17.90	4.71E-01		4.57E-02	2.16E-01
	1274.45	35.50	2.03E-01		-1.77E-01	8.93E-02
EU-155	86.50	30.90	1.91E-01	1.91E-01	1.70E-01	9.36E-02
	105.30	20.70	2.14E-01		-2.48E-02	1.04E-01
EU-156	811.77	10.40	6.76E+01	6.76E+01	-3.22E+00	3.12E+01
	1153.47	7.20	1.39E+02		9.96E+01	6.42E+01
	1230.71	8.90	1.26E+02		-1.89E+01	5.84E+01
HO-166M	184.41	72.60	7.90E-02	7.90E-02	9.70E-02	3.84E-02
	280.45	29.60	1.96E-01		7.06E-02	9.40E-02
	410.94	11.10	5.75E-01		-1.21E-01	2.73E-01
	711.69	54.10	1.45E-01		-2.36E-02	6.78E-02
TM-171	66.72	0.14	4.55E+01	4.55E+01	-4.05E+01	2.22E+01
HF-172	67.35	5.31	1.18E+00	4.08E-01	-3.82E-02	5.77E-01
	125.81	11.30	4.08E-01		-3.64E-01	1.98E-01
LU-172	181.53	20.60	6.95E+03	4.70E+03	2.62E+02	3.36E+03
	900.72	29.81	8.08E+03		2.33E+03	3.71E+03
	1093.66	62.50	4.70E+03		3.06E+03	2.17E+03
LU-173	100.72	5.24	9.57E-01	3.35E-01	2.93E-01	4.66E-01
	272.11	21.20	3.35E-01		6.65E-02	1.62E-01
HF-175	343.40	84.00	1.97E-01	1.97E-01	1.78E-02	9.45E-02
LU-176	88.34	13.30	4.27E-01	5.49E-02	4.29E-03	2.09E-01

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

	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	5.49E-02	5.49E-02	7.28E-03	2.65E-02
		306.78		94.00	5.98E-02		9.46E-03	2.86E-02
	HF-181	133.02		41.70	5.24E-01	3.87E-01	-2.93E-01	2.54E-01
		345.85		17.20	1.79E+00		1.66E-01	8.57E-01
		482.03		82.80	3.87E-01		5.09E-02	1.82E-01
	TA-182	67.75		41.20	2.51E-01	2.51E-01	-8.12E-03	1.23E-01
		1121.30		34.90	6.87E-01		8.81E-01	3.23E-01
		1189.05		16.23	1.20E+00		1.81E-01	5.56E-01
		1221.41		26.98	7.66E-01		6.14E-02	3.55E-01
		1231.02		11.44	1.88E+00		-2.83E-01	8.74E-01
	IR-192	308.46		29.68	4.98E-01	3.33E-01	3.42E-01	2.39E-01
		468.07		48.10	3.33E-01		-1.78E-01	1.57E-01
	HG-203	279.19		77.30	3.37E-01	3.37E-01	2.49E-02	1.62E-01
	TL-204	374.74		94.11	6.99E-02	6.99E-02	-5.48E-03	3.33E-02
		899.15		99.16	8.22E-02		7.15E-03	3.77E-02
		911.74		91.10	1.73E-01		3.78E-01	8.27E-02
	BI-207	569.67		97.72	7.00E-02	7.00E-02	-5.10E-03	3.28E-02
		1063.62		74.90	1.34E-01		4.19E-02	6.20E-02
+	TL-208	583.14	*	30.22	3.71E-01	1.09E-01	8.51E-01	1.79E-01
		860.37	*	4.48	2.45E+00		1.41E+00	1.16E+00
		2614.66	*	35.85	1.09E-01		8.42E-01	3.51E-02
	BI-210M	262.00		45.00	1.19E-01	1.19E-01	1.90E-02	5.71E-02
		300.00		23.00	3.05E-01		-4.17E-01	1.47E-01
	PB-210	46.50		4.25	1.97E+00	1.97E+00	2.24E+00	9.66E-01
	PB-211	404.84		2.90	2.18E+00	2.18E+00	-7.89E-01	1.04E+00
		831.96		2.90	2.82E+00		5.40E-01	1.31E+00
+	BI-212	727.17	*	11.80	6.58E-01	6.58E-01	9.94E-01	3.07E-01
		1620.62	*	2.75	1.93E+00		1.11E+00	7.79E-01
+	PB-212	238.63	*	44.60	2.31E-01	2.31E-01	1.10E+00	1.13E-01
		300.09	*	3.41	3.08E+00		1.95E+00	1.50E+00
+	BI-214	609.31	*	46.30	3.04E-01	3.04E-01	7.92E-01	1.47E-01
		1120.29	*	15.10	8.75E-01		1.25E+00	4.12E-01
		1764.49	*	15.80	7.24E-01		6.15E-01	3.27E-01
		2204.22		4.98	1.96E+00		5.68E-01	8.53E-01
+	PB-214	295.21	*	19.19	5.30E-01	2.14E-01	1.05E+00	2.59E-01
		351.92	*	37.19	2.14E-01		9.29E-01	1.03E-01
	RN-219	401.80		6.50	9.50E-01	9.50E-01	-4.80E-01	4.52E-01
	RA-223	323.87		3.88	1.50E+00	1.50E+00	-2.08E-02	7.18E-01
+	RA-224	240.98	*	3.95	2.61E+00	2.61E+00	2.57E+00	1.28E+00
	RA-225	40.00		31.00	3.59E+01	3.59E+01	-1.25E+00	1.75E+01
+	RA-226	186.21	*	3.28	2.59E+00	2.59E+00	2.47E+00	1.27E+00
	TH-227	50.10		8.40	8.55E-01	7.87E-01	-3.65E-01	4.18E-01
		236.00		11.50	7.87E-01		6.05E-01	3.85E-01
		256.20		6.30	8.58E-01		-3.70E-01	4.13E-01
+	AC-228	338.32	*	11.40	7.81E-01	3.63E-01	8.28E-01	3.79E-01
		911.07	*	27.70	3.63E-01		1.33E+00	1.70E-01
		969.11	*	16.60	1.11E+00		9.66E-01	5.36E-01
	TH-230	48.44		16.90	4.66E-01	4.66E-01	3.46E-01	2.28E-01
		62.85		4.60	1.40E+00		8.28E-01	6.86E-01
		67.67		0.37	1.53E+01		-4.94E-01	7.47E+00
	PA-231	283.67		1.60	3.33E+00	2.84E+00	-4.47E-01	1.59E+00
		302.67		2.30	2.84E+00		3.35E+00	1.37E+00
	TH-231	25.64		14.70	3.51E+00	8.38E-01	1.05E+00	1.72E+00

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

	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	8.38E-01	8.38E-01	-1.66E-01	4.10E-01
	PA-233	311.98		38.60	1.93E+00	1.93E+00	8.47E-01	9.24E-01
	PA-234	131.20		20.40	2.22E-01	2.22E-01	1.13E-01	1.08E-01
		733.99		8.80	7.74E-01		1.60E-01	3.57E-01
		946.00		12.00	6.53E-01		-1.85E-01	2.99E-01
	PA-234M	1001.03		0.92	8.74E+00	8.74E+00	-3.83E+00	3.99E+00
+	TH-234	63.29	*	3.80	2.56E+00	2.56E+00	2.00E+00	1.26E+00
	U-235	143.76		10.50	4.44E-01	4.44E-01	2.74E-01	2.16E-01
		163.35		4.70	9.89E-01		4.14E-01	4.79E-01
		205.31		4.70	1.19E+00		-6.73E-01	5.74E-01
	NP-237	86.50		12.60	4.51E-01	4.51E-01	4.01E-01	2.21E-01
	NP-239	106.10		22.70	1.10E+12	1.10E+12	-1.27E+11	5.34E+11
		228.18		10.70	3.05E+12		9.19E+11	1.47E+12
		277.60		14.10	2.45E+12		1.26E+12	1.18E+12
	AM-241	59.54		35.90	1.73E-01	1.73E-01	2.09E-02	8.45E-02
	AM-243	74.67		66.00	1.12E-01	1.12E-01	1.69E-01	5.53E-02
	CM-243	209.75		3.29	1.82E+00	4.25E-01	2.94E-01	8.83E-01
		228.14		10.60	5.31E-01		1.60E-01	2.57E-01
		277.60		14.00	4.25E-01		2.19E-01	2.05E-01

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

No Data Review Comments Entered.

Analysis Report for 1707088-18

HTC-A04-S001-0612-01

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

Sample Title: HTC-A04-S001-0612-01

Elapsed Live time: 3600
Elapsed Real Time: 3610

Channel								
1:	0	0	0	0	0	0	0	0
9:	98	714	621	528	408	331	308	262
17:	255	231	218	204	209	170	173	165
25:	151	151	152	152	129	130	129	124
33:	125	126	147	118	115	119	120	112
41:	114	121	120	105	120	129	170	133
49:	122	108	152	112	113	122	107	128
57:	120	136	137	132	138	141	169	205
65:	153	155	138	129	119	135	129	133
73:	141	193	278	304	362	382	167	116
81:	120	96	118	132	134	145	163	170
89:	170	153	124	120	211	206	135	99
97:	76	85	100	86	80	86	92	83
105:	85	89	77	80	88	77	63	76
113:	64	68	83	76	91	73	66	59
121:	71	68	75	59	75	72	74	66
129:	86	103	75	68	63	68	70	68
137:	69	78	67	81	59	78	86	81
145:	65	68	63	58	59	57	70	54
153:	57	78	81	71	63	59	69	68
161:	54	72	66	63	67	51	47	61
169:	43	44	55	43	63	52	50	37
177:	46	54	46	50	61	50	61	54
185:	74	114	111	71	53	45	38	55
193:	56	47	47	52	45	44	46	55
201:	43	48	45	50	49	45	37	44
209:	60	62	60	55	47	42	63	48
217:	47	51	44	39	51	40	35	24
225:	38	38	44	37	35	48	40	47
233:	37	40	39	46	59	158	332	245
241:	100	100	75	44	37	28	41	34
249:	30	28	40	40	27	33	38	37
257:	33	23	23	34	29	26	34	28
265:	27	27	26	31	25	46	55	46
273:	30	27	26	42	34	43	36	23
281:	20	22	29	37	23	18	24	29
289:	32	19	20	18	25	29	87	125
297:	63	25	22	49	50	36	32	19
305:	22	28	21	19	29	30	32	19
313:	22	14	24	16	25	19	31	27
321:	24	20	19	22	23	28	28	39
329:	30	37	25	18	21	26	29	22
337:	16	68	72	41	25	29	17	28
345:	25	21	21	21	23	25	55	154
353:	130	63	25	14	16	22	13	18
361:	18	18	25	24	21	23	21	17

369:	15	19	19	11	21	24	20	18

Sample Title: HTC-A04-S001-0612-01

Channel								
377:	24	27	27	12	18	16	21	19
385:	10	24	18	12	23	19	19	20
393:	13	25	16	22	27	18	19	14
401:	21	9	26	24	11	20	22	16
409:	23	25	14	18	17	14	20	18
417:	19	16	24	23	16	13	14	13
425:	17	16	19	16	18	16	16	10
433:	14	9	14	6	18	22	12	13
441:	13	13	11	13	15	20	14	23
449:	10	13	10	18	13	14	15	14
457:	13	21	14	13	11	18	21	25
465:	12	11	12	16	12	15	18	10
473:	15	16	17	7	12	5	18	10
481:	8	14	17	9	14	15	14	13
489:	9	7	12	13	15	15	9	18
497:	9	10	19	9	19	8	7	15
505:	9	12	15	13	26	42	45	38
513:	20	14	13	9	12	16	13	9
521:	13	13	13	17	17	10	8	8
529:	15	10	16	12	17	13	9	11
537:	9	12	13	13	13	12	16	10
545:	8	10	15	16	6	12	14	9
553:	13	8	9	7	10	13	14	17
561:	15	16	14	15	12	9	9	9
569:	12	10	16	13	9	10	15	10
577:	6	16	14	12	19	26	55	88
585:	31	16	15	11	10	13	7	11
593:	16	10	12	11	11	10	10	15
601:	12	11	11	9	9	9	11	37
609:	87	73	53	11	8	12	7	15
617:	8	15	9	14	6	7	14	9
625:	10	8	7	9	13	5	10	10
633:	7	7	10	7	12	7	6	4
641:	7	9	8	6	9	9	5	12
649:	9	8	10	11	13	8	15	9
657:	7	10	10	7	32	42	26	13
665:	8	15	20	8	10	8	9	7
673:	7	9	6	6	5	10	6	11
681:	11	7	8	8	9	13	8	7
689:	9	10	9	12	10	5	9	8
697:	10	9	13	11	6	12	5	10
705:	14	7	13	15	8	6	12	10
713:	8	15	10	10	6	8	7	10
721:	11	12	8	7	12	11	21	26
729:	13	9	3	4	10	12	6	7
737:	6	9	4	11	14	8	6	9
745:	8	11	2	11	5	7	7	4
753:	10	7	13	8	5	7	6	0
761:	7	9	9	7	11	4	11	11
769:	20	15	9	10	19	6	5	6
777:	5	2	8	9	9	11	10	6
785:	18	13	6	7	8	8	7	8
793:	9	12	17	13	10	5	7	9

801:	9	2	13	4	7	10	5	10

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Channel								
809:	7	6	9	3	5	7	10	7
817:	6	8	3	4	4	8	8	8
825:	1	5	6	5	9	11	6	9
833:	4	7	10	9	7	12	1	10
841:	8	8	9	9	8	4	5	4
849:	6	9	7	2	12	5	8	5
857:	9	2	12	22	19	8	9	3
865:	11	7	4	11	11	4	7	8
873:	11	11	4	6	3	5	7	6
881:	5	6	6	6	7	7	3	6
889:	7	9	4	8	10	7	13	8
897:	3	5	8	10	7	2	5	7
905:	6	3	7	7	8	27	53	46
913:	19	12	5	4	2	1	8	3
921:	3	11	7	3	7	8	7	6
929:	8	8	4	4	6	11	8	10
937:	6	5	9	8	7	4	6	8
945:	6	5	6	3	6	10	6	6
953:	3	6	8	6	4	5	7	9
961:	8	7	11	11	14	11	6	25
969:	32	27	9	11	6	8	8	4
977:	4	6	3	3	2	4	5	6
985:	4	7	5	9	5	9	3	6
993:	3	6	6	8	8	7	7	3
1001:	7	5	4	5	6	8	7	5
1009:	4	7	5	3	8	6	8	3
1017:	9	2	3	6	7	10	7	4
1025:	5	5	2	2	2	6	6	2
1033:	10	7	4	5	10	8	4	8
1041:	5	5	6	10	1	4	4	4
1049:	7	7	1	4	5	9	4	7
1057:	6	7	5	5	5	9	8	4
1065:	8	12	8	4	10	7	6	8
1073:	6	2	5	5	6	6	4	7
1081:	4	1	6	5	6	6	5	6
1089:	1	6	10	6	5	8	6	3
1097:	9	3	4	4	2	7	1	6
1105:	2	6	2	7	8	3	4	5
1113:	4	4	7	4	6	9	14	23
1121:	17	9	8	8	3	4	5	4
1129:	5	5	6	9	3	9	5	5
1137:	14	5	7	7	7	4	3	6
1145:	4	7	6	4	4	9	9	5
1153:	7	4	10	8	3	4	2	8
1161:	7	6	6	11	6	12	6	6
1169:	6	8	6	6	5	5	0	5
1177:	11	8	7	8	6	10	7	4
1185:	6	7	7	5	5	5	7	15
1193:	7	9	9	13	1	9	4	7
1201:	7	11	7	5	8	12	8	10
1209:	7	9	5	5	10	14	8	3
1217:	10	6	13	9	9	6	8	4
1225:	4	12	13	15	10	8	7	5

1233:	6	8	9	6	12	10	18	10

Sample Title: HTC-A04-S001-0612-01

Channel								
1241:	6	8	6	5	4	5	5	7
1249:	0	5	4	9	5	6	4	4
1257:	8	4	3	4	8	3	4	8
1265:	5	7	4	4	6	6	5	2
1273:	2	2	3	2	2	4	6	3
1281:	4	5	4	2	6	7	3	4
1289:	3	6	5	6	2	6	2	2
1297:	3	5	3	4	0	3	0	2
1305:	2	0	4	2	4	1	4	9
1313:	3	8	3	2	4	5	3	7
1321:	1	3	3	2	5	6	2	1
1329:	0	1	3	8	4	0	4	1
1337:	0	5	4	3	3	4	1	3
1345:	1	4	1	6	4	3	5	3
1353:	2	2	1	5	4	5	2	2
1361:	5	3	2	2	1	0	1	5
1369:	7	2	3	2	5	2	5	4
1377:	4	8	4	2	1	1	1	1
1385:	3	3	2	1	4	3	3	2
1393:	0	1	2	3	1	5	1	4
1401:	3	2	4	3	1	1	5	1
1409:	5	3	4	2	1	1	1	1
1417:	5	5	0	2	3	0	3	3
1425:	4	2	3	0	0	0	2	2
1433:	3	3	1	0	1	1	4	3
1441:	1	2	1	0	1	3	5	2
1449:	4	4	1	1	1	3	5	2
1457:	1	12	45	148	188	99	29	7
1465:	2	1	3	2	0	1	0	3
1473:	3	5	2	2	0	0	1	3
1481:	2	3	1	1	2	0	0	0
1489:	2	2	1	2	1	0	3	0
1497:	2	1	1	0	2	1	2	0
1505:	2	1	4	2	1	7	3	0
1513:	3	2	2	2	3	1	2	0
1521:	1	1	0	1	1	2	2	4
1529:	2	1	2	0	3	1	0	2
1537:	1	2	1	3	0	0	1	3
1545:	1	1	0	2	2	1	1	2
1553:	1	3	0	0	1	2	1	0
1561:	0	3	4	1	2	0	0	0
1569:	0	2	2	2	1	1	2	0
1577:	2	0	2	0	1	1	1	0
1585:	1	4	3	2	2	4	1	7
1593:	1	2	1	2	0	4	3	0
1601:	1	2	1	1	0	1	2	6
1609:	2	5	3	1	3	1	4	1
1617:	0	0	0	6	5	2	0	3
1625:	2	1	2	1	2	1	7	1
1633:	4	1	1	0	0	4	2	1
1641:	0	0	2	0	3	2	1	1
1649:	0	2	4	0	1	0	0	1
1657:	2	0	0	0	5	2	1	2

1665:	0	2	1	4	2	2	1	0

Sample Title: HTC-A04-S001-0612-01

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

2097:	0	0	1	1	1	1	2	3

Sample Title: HTC-A04-S001-0612-01

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

2529:	1	1	0	3	1	1	1	0

Sample Title: HTC-A04-S001-0612-01

Channel								
2537:	1	0	0	0	0	1	0	0
2545:	0	0	0	0	1	1	0	2
2553:	1	0	1	3	1	2	0	1
2561:	0	0	1	0	0	0	0	0
2569:	0	0	0	1	0	1	0	0
2577:	0	0	0	1	0	1	0	0
2585:	0	0	0	2	0	0	0	0
2593:	1	0	0	0	0	0	2	0
2601:	0	0	0	0	0	1	2	1
2609:	0	0	1	6	7	19	15	5
2617:	5	2	0	0	0	0	0	0
2625:	0	1	0	1	0	0	0	0
2633:	0	1	0	0	0	0	1	0
2641:	2	0	0	0	0	0	0	0
2649:	0	0	0	0	0	0	1	0
2657:	0	1	1	0	0	0	0	0
2665:	0	0	0	0	0	1	1	0
2673:	0	2	1	0	0	0	1	1
2681:	0	0	0	0	0	0	1	2
2689:	0	0	0	0	0	0	0	0
2697:	0	0	0	0	0	0	0	0
2705:	0	0	0	0	1	0	1	1
2713:	0	0	0	0	0	0	0	0
2721:	0	0	0	1	2	1	0	0
2729:	0	0	0	0	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	0	1	0	0	1	0	0	0
2753:	0	1	0	0	0	0	0	0
2761:	0	1	0	0	1	0	1	0
2769:	1	1	0	0	0	0	1	0
2777:	0	0	0	0	0	0	0	0
2785:	0	0	0	0	0	1	0	0
2793:	0	0	0	0	0	1	0	1
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	1	0	0	0	0	0	0	1
2833:	0	0	1	1	0	1	0	0
2841:	0	0	0	0	0	0	0	0
2849:	0	1	0	0	0	0	0	0
2857:	0	0	0	0	1	1	0	0
2865:	0	0	0	0	0	0	0	1
2873:	0	0	0	0	0	0	0	0
2881:	1	0	0	1	0	0	0	0
2889:	0	0	0	0	0	0	0	1
2897:	0	2	0	1	0	0	0	0
2905:	0	0	0	0	0	2	0	1
2913:	0	0	0	0	0	1	0	0
2921:	0	0	1	0	0	0	0	0
2929:	1	0	0	0	0	0	0	0
2937:	0	0	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-A04-S001-0612-01

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

3393:	0	0	0	0	0	0	1	0

Sample Title: HTC-A04-S001-0612-01

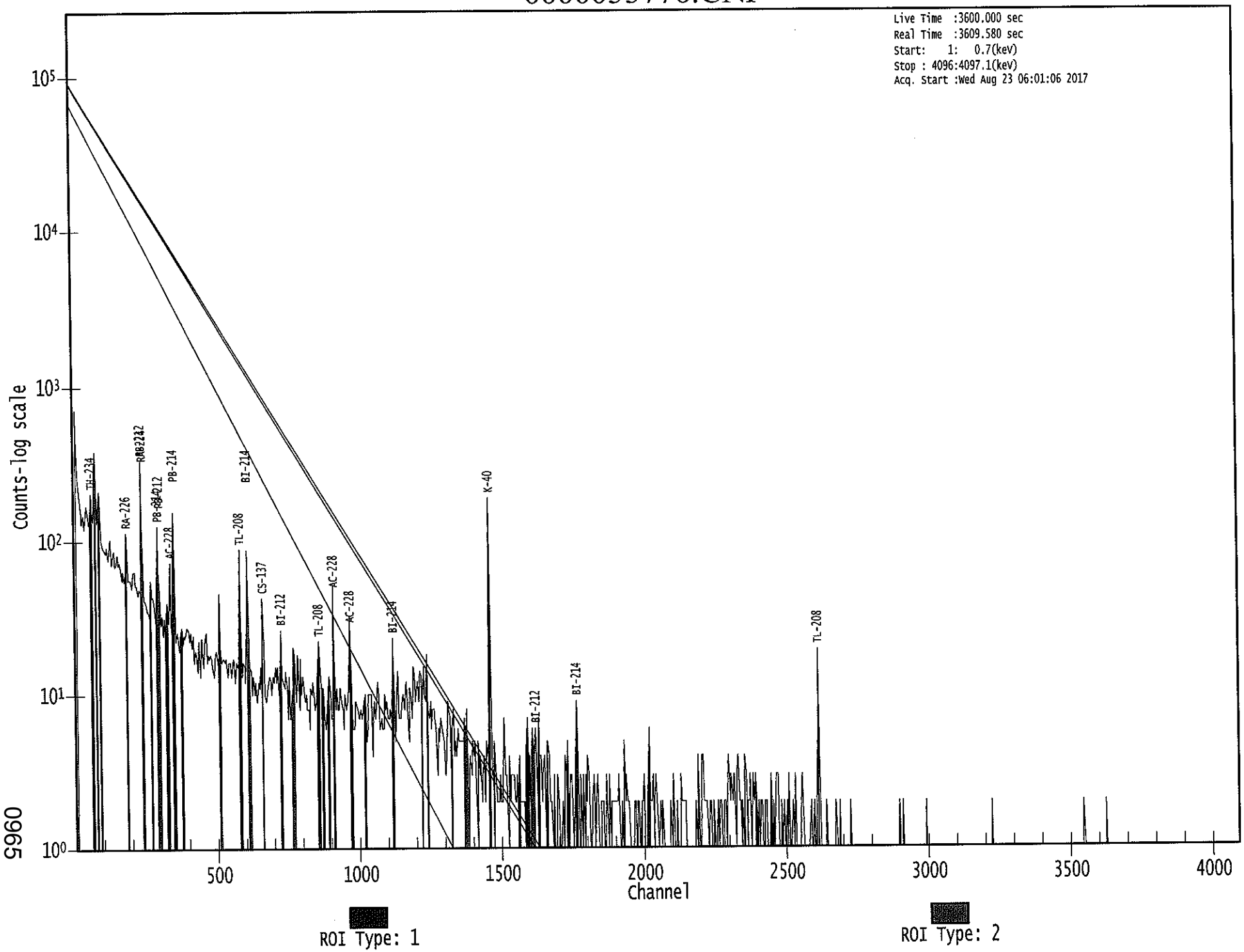
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	1	0	0	0	0	0
3433:	0	1	0	0	0	0	0	0
3441:	1	0	0	0	0	0	0	0
3449:	0	1	0	0	0	0	0	0
3457:	0	0	0	1	0	1	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	1	0	0	0	0	0
3481:	0	1	0	0	0	0	0	0
3489:	0	1	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0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

3825:	1	0	0	0	0	0	0	0

Sample Title: HTC-A04-S001-0612-01

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

0000055776.CNF



0965

Apex-Gamma

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Analysis Report for 1707088-19

HTC-A04-S001-1218-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-19
Sample Description	: HTC-A04-S001-1218-01
Sample Type	: SOIL
Sample Size	: 6.881E+02 grams
Facility	: Countroom
Sample Taken On	: 5/15/2017 9:36:45AM
Acquisition Started	: 8/23/2017 6:01:13AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE4
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3609.6 seconds
Dead Time	: 0.27 %
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	: 55777

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/23/2017 7:02:39AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	47.03	46.08	0.0000	0.00
2	76.09	75.15	0.0000	0.00
3	93.43	92.49	0.0000	0.00
4	99.20	98.26	0.0000	0.00
5	186.09	185.18	0.0000	0.00
6	208.35	207.45	0.0000	0.00
7	238.74	237.84	0.0000	0.00
8	241.89	241.00	0.0000	0.00
9	269.32	268.44	0.0000	0.00
10	295.18	294.31	0.0000	0.00
11	301.01	300.14	0.0000	0.00
12	328.39	327.53	0.0000	0.00
13	334.08	333.22	0.0000	0.00
14	338.40	337.54	0.0000	0.00
15	352.12	351.26	0.0000	0.00
16	462.91	462.09	0.0000	0.00
17	506.55	505.75	0.0000	0.00
18	510.78	509.98	0.0000	0.00
19	552.47	551.69	0.0000	0.00
20	566.50	565.73	0.0000	0.00
21	583.36	582.59	0.0000	0.00
22	609.10	608.34	0.0000	0.00
23	685.55	684.82	0.0000	0.00
24	784.35	783.66	0.0000	0.00
25	835.49	834.83	0.0000	0.00
26	846.94	846.28	0.0000	0.00
27	862.12	861.46	0.0000	0.00
28	911.37	910.73	0.0000	0.00
29	933.97	933.34	0.0000	0.00
30	967.16	966.55	0.0000	0.00
31	1085.58	1085.02	0.0000	0.00
32	1106.53	1105.98	0.0000	0.00
33	1120.68	1120.13	0.0000	0.00
34	1141.01	1140.48	0.0000	0.00
35	1149.11	1148.58	0.0000	0.00
36	1174.95	1174.44	0.0000	0.00
37	1228.80	1228.31	0.0000	0.00
38	1337.81	1337.37	0.0000	0.00
39	1437.16	1436.77	0.0000	0.00
40	1460.67	1460.29	0.0000	0.00
41	1511.41	1511.05	0.0000	0.00
42	1579.95	1579.64	0.0000	0.00

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1589.51	1589.20	0.0000	0.00
44	1764.81	1764.59	0.0000	0.00
45	2349.32	2349.45	0.0000	0.00
46	2614.17	2614.48	0.0000	0.00
47	3451.65	3452.60	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/23/2017 7:02:39AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	47.03	43 -	50	46.08	1.08E+02	89.62	1.28E+03	2.22
	2	76.09	69 -	80	75.15	1.15E+03	166.55	2.88E+03	3.89
	3	93.43	90 -	95	92.49	2.43E+02	85.88	1.22E+03	2.70
	4	99.20	96 -	100	98.26	7.95E+01	61.01	7.55E+02	2.03
	5	186.09	180 -	189	185.18	1.82E+02	91.18	1.08E+03	2.37
	6	208.35	202 -	211	207.45	1.21E+02	81.69	8.82E+02	2.75
M	7	238.74	233 -	243	237.84	8.00E+02	77.97	4.96E+02	2.41
m	8	241.89	233 -	243	241.00	1.30E+02	64.66	3.44E+02	1.79
	9	269.32	263 -	273	268.44	7.63E+01	72.75	6.63E+02	1.14
	10	295.18	290 -	297	294.31	1.76E+02	58.86	4.59E+02	2.21
	11	301.01	298 -	303	300.14	3.81E+01	40.45	2.92E+02	2.24
	12	328.39	324 -	331	327.53	6.22E+01	48.00	3.40E+02	1.23
M	13	334.08	332 -	342	333.22	3.32E+01	22.83	1.22E+02	2.39
m	14	338.40	332 -	342	337.54	1.42E+02	53.22	3.81E+02	2.64
	15	352.12	347 -	356	351.26	2.81E+02	65.06	4.43E+02	2.37
	16	462.91	459 -	465	462.09	3.85E+01	32.55	1.65E+02	2.57
M	17	506.55	503 -	514	505.75	2.12E+01	23.43	1.09E+02	3.02
m	18	510.78	503 -	514	509.98	1.18E+02	42.13	1.92E+02	2.84
	19	552.47	548 -	556	551.69	3.18E+01	35.69	1.78E+02	1.61
	20	566.50	558 -	575	565.73	7.42E+01	62.94	3.34E+02	9.60
	21	583.36	577 -	588	582.59	1.92E+02	50.83	2.25E+02	2.72
	22	609.10	603 -	613	608.34	2.07E+02	49.39	2.15E+02	2.20
	23	685.55	681 -	688	684.82	2.72E+01	30.79	1.40E+02	2.99
	24	784.35	780 -	786	783.66	2.28E+01	23.54	8.44E+01	3.74
	25	835.49	833 -	837	834.83	1.75E+01	18.77	6.31E+01	1.44
	26	846.94	843 -	850	846.28	1.93E+01	24.17	7.75E+01	2.63
	27	862.12	857 -	865	861.46	2.37E+01	28.32	1.01E+02	4.77
	28	911.37	907 -	916	910.73	1.05E+02	31.76	8.15E+01	2.05
	29	933.97	930 -	937	933.34	3.20E+01	22.63	6.40E+01	2.71
	30	967.16	956 -	975	966.55	1.24E+02	51.54	1.80E+02	7.22
	31	1085.58	1081 -	1088	1085.02	2.51E+01	23.41	7.18E+01	2.73
	32	1106.53	1101 -	1112	1105.98	2.98E+01	34.23	1.30E+02	3.49
	33	1120.68	1114 -	1128	1120.13	6.70E+01	41.15	1.50E+02	3.00
	34	1141.01	1138 -	1143	1140.48	1.43E+01	17.94	5.15E+01	2.21
	35	1149.11	1144 -	1154	1148.58	3.74E+01	28.50	8.91E+01	5.72
	36	1174.95	1170 -	1179	1174.44	2.63E+01	31.32	1.25E+02	5.57
	37	1228.80	1225 -	1231	1228.31	2.08E+01	23.28	8.25E+01	3.31
	38	1337.81	1330 -	1343	1337.37	2.40E+01	28.98	7.80E+01	10.51
	39	1437.16	1434 -	1440	1436.77	1.04E+01	12.39	1.93E+01	1.48
	40	1460.67	1456 -	1466	1460.29	5.50E+02	48.55	1.71E+01	2.83

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1511.41	1506 -	1516	1511.05	1.44E+01	16.22	2.71E+01	2.82
42	1579.95	1576 -	1583	1579.64	7.55E+00	8.72	6.91E+00	5.00
43	1589.51	1584 -	1594	1589.20	2.66E+01	13.73	1.09E+01	5.83
44	1764.81	1760 -	1768	1764.59	1.93E+01	12.84	1.33E+01	4.46
45	2349.32	2347 -	2352	2349.45	1.10E+01	6.63	0.00E+00	2.06
46	2614.17	2609 -	2620	2614.48	6.00E+01	15.49	0.00E+00	3.01
47	3451.65	3448 -	3454	3452.60	5.00E+00	4.47	0.00E+00	1.00

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

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/23/2017 7:02:39AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	47.03	43 -	50	1.08E+02	89.62	1.28E+03	7.17E+01
	2	76.09	69 -	80	1.15E+03	166.55	2.88E+03	1.25E+02
	3	93.43	90 -	95	2.43E+02	85.88	1.22E+03	6.58E+01
	4	99.20	96 -	100	7.95E+01	61.01	7.55E+02	4.80E+01
	5	186.09	180 -	189	1.82E+02	91.18	1.08E+03	7.16E+01
	6	208.35	202 -	211	1.21E+02	81.69	8.82E+02	6.47E+01
M	7	238.74	233 -	243	8.00E+02	77.97	4.96E+02	3.66E+01
m	8	241.89	233 -	243	1.30E+02	64.66	3.44E+02	3.05E+01
	9	269.32	263 -	273	7.63E+01	72.75	6.63E+02	5.80E+01
	10	295.18	290 -	297	1.76E+02	58.86	4.59E+02	4.32E+01
	11	301.01	298 -	303	3.81E+01	40.45	2.92E+02	3.17E+01
	12	328.39	324 -	331	6.22E+01	48.00	3.40E+02	3.73E+01
M	13	334.08	332 -	342	3.32E+01	22.83	1.22E+02	1.82E+01
m	14	338.40	332 -	342	1.42E+02	53.22	3.81E+02	3.21E+01
	15	352.12	347 -	356	2.81E+02	65.06	4.43E+02	4.58E+01
	16	462.91	459 -	465	3.85E+01	32.55	1.65E+02	2.47E+01
M	17	506.55	503 -	514	2.12E+01	23.43	1.09E+02	1.72E+01
m	18	510.78	503 -	514	1.18E+02	42.13	1.92E+02	2.28E+01
	19	552.47	548 -	556	3.18E+01	35.69	1.78E+02	2.78E+01
	20	566.50	558 -	575	7.42E+01	62.94	3.34E+02	4.98E+01

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
21	583.36	577 -	588	1.92E+02	50.83	2.25E+02	3.50E+01
22	609.10	603 -	613	2.07E+02	49.39	2.15E+02	3.30E+01
23	685.55	681 -	688	2.72E+01	30.79	1.40E+02	2.38E+01
24	784.35	780 -	786	2.28E+01	23.54	8.44E+01	1.77E+01
25	835.49	833 -	837	1.75E+01	18.77	6.31E+01	1.38E+01
26	846.94	843 -	850	1.93E+01	24.17	7.75E+01	1.85E+01
27	862.12	857 -	865	2.37E+01	28.32	1.01E+02	2.19E+01
28	911.37	907 -	916	1.05E+02	31.76	8.15E+01	1.99E+01
29	933.97	930 -	937	3.20E+01	22.63	6.40E+01	1.61E+01
30	967.16	956 -	975	1.24E+02	51.54	1.80E+02	3.82E+01
31	1085.58	1081 -	1088	2.51E+01	23.41	7.18E+01	1.74E+01
32	1106.53	1101 -	1112	2.98E+01	34.23	1.30E+02	2.67E+01
33	1120.68	1114 -	1128	6.70E+01	41.15	1.50E+02	3.10E+01
34	1141.01	1138 -	1143	1.43E+01	17.94	5.15E+01	1.34E+01
35	1149.11	1144 -	1154	3.74E+01	28.50	8.91E+01	2.12E+01
36	1174.95	1170 -	1179	2.63E+01	31.32	1.25E+02	2.43E+01
37	1228.80	1225 -	1231	2.08E+01	23.28	8.25E+01	1.76E+01
38	1337.81	1330 -	1343	2.40E+01	28.98	7.80E+01	1.19E+01
39	1437.16	1434 -	1440	1.04E+01	12.39	1.93E+01	8.70E+00
40	1460.67	1456 -	1466	5.50E+02	48.55	1.71E+01	1.02E+01
41	1511.41	1506 -	1516	1.44E+01	16.22	2.71E+01	1.18E+01
42	1579.95	1576 -	1583	7.55E+00	8.72	6.91E+00	5.56E+00
43	1589.51	1584 -	1594	2.66E+01	13.73	1.09E+01	7.45E+00
44	1764.81	1760 -	1768	1.93E+01	12.84	1.33E+01	7.69E+00
45	2349.32	2347 -	2352	1.10E+01	6.63	0.00E+00	0.00E+00
46	2614.17	2609 -	2620	6.00E+01	15.49	0.00E+00	0.00E+00
47	3451.65	3448 -	3454	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 : 8/23/2017 7:02:39AM

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 1707088-19

HTC-A04-S001-1218-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	47.03	43 -	50	46.08	1.08E+02	89.62	1.28E+03	PB-210
	2	76.09	69 -	80	75.15	1.15E+03	166.55	2.88E+03	.....
	3	93.43	90 -	95	92.49	2.43E+02	85.88	1.22E+03	GA-67
	4	99.20	96 -	100	98.26	7.95E+01	61.01	7.55E+02	.....
	5	186.09	180 -	189	185.18	1.82E+02	91.18	1.08E+03	RA-226
	6	208.35	202 -	211	207.45	1.21E+02	81.69	8.82E+02	GA-67
M	7	238.74	233 -	243	237.84	8.00E+02	77.97	4.96E+02	PB-212
m	8	241.89	233 -	243	241.00	1.30E+02	64.66	3.44E+02	RA-224
	9	269.32	263 -	273	268.44	7.63E+01	72.75	6.63E+02	.....
	10	295.18	290 -	297	294.31	1.76E+02	58.86	4.59E+02	PB-214
	11	301.01	298 -	303	300.14	3.81E+01	40.45	2.92E+02	GA-67
									PB-212
	12	328.39	324 -	331	327.53	6.22E+01	48.00	3.40E+02	LA-140
M	13	334.08	332 -	342	333.22	3.32E+01	22.83	1.22E+02	.....
m	14	338.40	332 -	342	337.54	1.42E+02	53.22	3.81E+02	AC-228
	15	352.12	347 -	356	351.26	2.81E+02	65.06	4.43E+02	PB-214
	16	462.91	459 -	465	462.09	3.85E+01	32.55	1.65E+02	SB-125
M	17	506.55	503 -	514	505.75	2.12E+01	23.43	1.09E+02	.....
m	18	510.78	503 -	514	509.98	1.18E+02	42.13	1.92E+02	.....
	19	552.47	548 -	556	551.69	3.18E+01	35.69	1.78E+02	RB-83
	20	566.50	558 -	575	565.73	7.42E+01	62.94	3.34E+02	.....
	21	583.36	577 -	588	582.59	1.92E+02	50.83	2.25E+02	TL-208
	22	609.10	603 -	613	608.34	2.07E+02	49.39	2.15E+02	BI-214
	23	685.55	681 -	688	684.82	2.72E+01	30.79	1.40E+02	SB-127
									MO-93
	24	784.35	780 -	786	783.66	2.28E+01	23.54	8.44E+01	SB-127
	25	835.49	833 -	837	834.83	1.75E+01	18.77	6.31E+01	MN-54
	26	846.94	843 -	850	846.28	1.93E+01	24.17	7.75E+01	CO-56
	27	862.12	857 -	865	861.46	2.37E+01	28.32	1.01E+02	.....
	28	911.37	907 -	916	910.73	1.05E+02	31.76	8.15E+01	AC-228
									TL-204
	29	933.97	930 -	937	933.34	3.20E+01	22.63	6.40E+01	.....
	30	967.16	956 -	975	966.55	1.24E+02	51.54	1.80E+02	.....
	31	1085.58	1081 -	1088	1085.02	2.51E+01	23.41	7.18E+01	EU-152
	32	1106.53	1101 -	1112	1105.98	2.98E+01	34.23	1.30E+02	.....
	33	1120.68	1114 -	1128	1120.13	6.70E+01	41.15	1.50E+02	SC-46
									BI-214
									TA-182
	34	1141.01	1138 -	1143	1140.48	1.43E+01	17.94	5.15E+01	.....
	35	1149.11	1144 -	1154	1148.58	3.74E+01	28.50	8.91E+01	.....
	36	1174.95	1170 -	1179	1174.44	2.63E+01	31.32	1.25E+02	.....
	37	1228.80	1225 -	1231	1228.31	2.08E+01	23.28	8.25E+01	.....
	38	1337.81	1330 -	1343	1337.37	2.40E+01	28.98	7.80E+01	.....
	39	1437.16	1434 -	1440	1436.77	1.04E+01	12.39	1.93E+01	.....
	40	1460.67	1456 -	1466	1460.29	5.50E+02	48.55	1.71E+01	K-40
	41	1511.41	1506 -	1516	1511.05	1.44E+01	16.22	2.71E+01	.....
	42	1579.95	1576 -	1583	1579.64	7.55E+00	8.72	6.91E+00	.....
	43	1589.51	1584 -	1594	1589.20	2.66E+01	13.73	1.09E+01	.....
	44	1764.81	1760 -	1768	1764.59	1.93E+01	12.84	1.33E+01	BI-214
	45	2349.32	2347 -	2352	2349.45	1.10E+01	6.63	0.00E+00	.....
	46	2614.17	2609 -	2620	2614.48	6.00E+01	15.49	0.00E+00	TL-208
	47	3451.65	3448 -	3454	3452.60	5.00E+00	4.47	0.00E+00	.....

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

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 : 8/23/2017 7:02:39AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	47.03	1.08E+02	89.62	1.67E-02	1.56E-03
	2	76.09	1.15E+03	166.55	2.32E-02	1.91E-03
	3	93.43	2.43E+02	85.88	2.36E-02	2.08E-03
	4	99.20	7.95E+01	61.01	2.35E-02	2.00E-03
	5	186.09	1.82E+02	91.18	1.69E-02	1.40E-03
	6	208.35	1.21E+02	81.69	1.54E-02	1.29E-03
M	7	238.74	8.00E+02	77.97	1.36E-02	1.14E-03
m	8	241.89	1.30E+02	64.66	1.34E-02	1.13E-03
	9	269.32	7.63E+01	72.75	1.21E-02	9.94E-04
	10	295.18	1.76E+02	58.86	1.10E-02	9.13E-04
	11	301.01	3.81E+01	40.45	1.08E-02	9.01E-04
	12	328.39	6.22E+01	48.00	9.90E-03	8.44E-04
M	13	334.08	3.32E+01	22.83	9.72E-03	8.32E-04
m	14	338.40	1.42E+02	53.22	9.60E-03	8.22E-04
	15	352.12	2.81E+02	65.06	9.21E-03	7.94E-04
	16	462.91	3.85E+01	32.55	6.95E-03	6.81E-04
M	17	506.55	2.12E+01	23.43	6.34E-03	6.63E-04
m	18	510.78	1.18E+02	42.13	6.28E-03	6.61E-04
	19	552.47	3.18E+01	35.69	5.81E-03	6.44E-04
	20	566.50	7.42E+01	62.94	5.67E-03	6.38E-04
	21	583.36	1.92E+02	50.83	5.50E-03	6.31E-04
	22	609.10	2.07E+02	49.39	5.28E-03	6.21E-04
	23	685.55	2.72E+01	30.79	4.71E-03	5.69E-04
	24	784.35	2.28E+01	23.54	4.15E-03	4.45E-04
	25	835.49	1.75E+01	18.77	3.91E-03	3.80E-04
	26	846.94	1.93E+01	24.17	3.87E-03	3.66E-04
	27	862.12	2.37E+01	28.32	3.80E-03	3.47E-04
	28	911.37	1.05E+02	31.76	3.62E-03	2.99E-04
	29	933.97	3.20E+01	22.63	3.54E-03	2.94E-04
	30	967.16	1.24E+02	51.54	3.43E-03	2.86E-04
	31	1085.58	2.51E+01	23.41	3.10E-03	2.58E-04
	32	1106.53	2.98E+01	34.23	3.05E-03	2.53E-04
	33	1120.68	6.70E+01	41.15	3.01E-03	2.50E-04
	34	1141.01	1.43E+01	17.94	2.97E-03	2.45E-04

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
35	1149.11	3.74E+01	28.50	2.95E-03	2.43E-04
36	1174.95	2.63E+01	31.32	2.89E-03	2.37E-04
37	1228.80	2.08E+01	23.28	2.78E-03	2.34E-04
38	1337.81	2.40E+01	28.98	2.58E-03	2.26E-04
39	1437.16	1.04E+01	12.39	2.42E-03	2.11E-04
40	1460.67	5.50E+02	48.55	2.38E-03	2.08E-04
41	1511.41	1.44E+01	16.22	2.31E-03	2.00E-04
42	1579.95	7.55E+00	8.72	2.22E-03	1.90E-04
43	1589.51	2.66E+01	13.73	2.21E-03	1.88E-04
44	1764.81	1.93E+01	12.84	2.00E-03	1.62E-04
45	2349.32	1.10E+01	6.63	1.47E-03	1.51E-04
46	2614.17	6.00E+01	15.49	1.28E-03	1.51E-04
47	3451.65	5.00E+00	4.47	8.25E-04	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 : 8/23/2017 7:02:39AM

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	47.03	1.08E+02	89.62	2.81E+01	8.29E+00	8.01E+01	9.00E+01
	2	76.09	1.15E+03	166.55	2.66E+01	8.34E+00	1.12E+03	1.67E+02
	3	93.43	2.43E+02	85.88	5.99E+01	8.61E+00	1.83E+02	8.63E+01
	4	99.20	7.95E+01	61.01			7.95E+01	6.10E+01
	5	186.09	1.82E+02	91.18	2.43E+01	7.50E+00	1.57E+02	9.15E+01
	6	208.35	1.21E+02	81.69			1.21E+02	8.17E+01
M	7	238.74	8.00E+02	77.97	1.06E+01	6.01E+00	7.89E+02	7.82E+01
m	8	241.89	1.30E+02	64.66			1.30E+02	6.47E+01
	9	269.32	7.63E+01	72.75			7.63E+01	7.27E+01
	10	295.18	1.76E+02	58.86			1.76E+02	5.89E+01
	11	301.01	3.81E+01	40.45			3.81E+01	4.04E+01
	12	328.39	6.22E+01	48.00			6.22E+01	4.80E+01
M	13	334.08	3.32E+01	22.83			3.32E+01	2.28E+01
m	14	338.40	1.42E+02	53.22			1.42E+02	5.32E+01
	15	352.12	2.81E+02	65.06			2.81E+02	6.51E+01
	16	462.91	3.85E+01	32.55			3.85E+01	3.26E+01
M	17	506.55	2.12E+01	23.43			2.12E+01	2.34E+01

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	18	510.78	1.18E+02	42.13	4.55E+01	4.99E+00	7.26E+01	4.24E+01
	19	552.47	3.18E+01	35.69			3.18E+01	3.57E+01
	20	566.50	7.42E+01	62.94			7.42E+01	6.29E+01
	21	583.36	1.92E+02	50.83			1.92E+02	5.08E+01
	22	609.10	2.07E+02	49.39			2.07E+02	4.94E+01
	23	685.55	2.72E+01	30.79			2.72E+01	3.08E+01
	24	784.35	2.28E+01	23.54			2.28E+01	2.35E+01
	25	835.49	1.75E+01	18.77			1.75E+01	1.88E+01
	26	846.94	1.93E+01	24.17			1.93E+01	2.42E+01
	27	862.12	2.37E+01	28.32			2.37E+01	2.83E+01
	28	911.37	1.05E+02	31.76			1.05E+02	3.18E+01
	29	933.97	3.20E+01	22.63			3.20E+01	2.26E+01
	30	967.16	1.24E+02	51.54			1.24E+02	5.15E+01
	31	1085.58	2.51E+01	23.41			2.51E+01	2.34E+01
	32	1106.53	2.98E+01	34.23			2.98E+01	3.42E+01
	33	1120.68	6.70E+01	41.15			6.70E+01	4.11E+01
	34	1141.01	1.43E+01	17.94			1.43E+01	1.79E+01
	35	1149.11	3.74E+01	28.50			3.74E+01	2.85E+01
	36	1174.95	2.63E+01	31.32			2.63E+01	3.13E+01
	37	1228.80	2.08E+01	23.28			2.08E+01	2.33E+01
	38	1337.81	2.40E+01	28.98			2.40E+01	2.90E+01
	39	1437.16	1.04E+01	12.39			1.04E+01	1.24E+01
	40	1460.67	5.50E+02	48.55			5.50E+02	4.85E+01
	41	1511.41	1.44E+01	16.22			1.44E+01	1.62E+01
	42	1579.95	7.55E+00	8.72			7.55E+00	8.72E+00
	43	1589.51	2.66E+01	13.73			2.66E+01	1.37E+01
	44	1764.81	1.93E+01	12.84			1.93E+01	1.28E+01
	45	2349.32	1.10E+01	6.63			1.10E+01	6.63E+00
	46	2614.17	6.00E+01	15.49			6.00E+01	1.55E+01
	47	3451.65	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 : 8/23/2017 7:02:39AM

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

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	47.03	1.08E+02	89.62	2.81E+01	8.29E+00	8.01E+01	9.00E+01
	2	76.09	1.15E+03	166.55	2.66E+01	8.34E+00	1.12E+03	1.67E+02
	3	93.43	2.43E+02	85.88	5.99E+01	8.61E+00	1.83E+02	8.63E+01
	4	99.20	7.95E+01	61.01			7.95E+01	6.10E+01
	5	186.09	1.82E+02	91.18	2.43E+01	7.50E+00	1.57E+02	9.15E+01
	6	208.35	1.21E+02	81.69			1.21E+02	8.17E+01
M	7	238.74	8.00E+02	77.97	1.06E+01	6.01E+00	7.89E+02	7.82E+01
m	8	241.89	1.30E+02	64.66			1.30E+02	6.47E+01
	9	269.32	7.63E+01	72.75			7.63E+01	7.27E+01
	10	295.18	1.76E+02	58.86			1.76E+02	5.89E+01
	11	301.01	3.81E+01	40.45			3.81E+01	4.04E+01
	12	328.39	6.22E+01	48.00			6.22E+01	4.80E+01
M	13	334.08	3.32E+01	22.83			3.32E+01	2.28E+01
m	14	338.40	1.42E+02	53.22			1.42E+02	5.32E+01
	15	352.12	2.81E+02	65.06			2.81E+02	6.51E+01
	16	462.91	3.85E+01	32.55			3.85E+01	3.26E+01
M	17	506.55	2.12E+01	23.43			2.12E+01	2.34E+01
m	18	510.78	1.18E+02	42.13	4.55E+01	4.99E+00	7.26E+01	4.24E+01
	19	552.47	3.18E+01	35.69			3.18E+01	3.57E+01
	20	566.50	7.42E+01	62.94			7.42E+01	6.29E+01
	21	583.36	1.92E+02	50.83			1.92E+02	5.08E+01
	22	609.10	2.07E+02	49.39			2.07E+02	4.94E+01
	23	685.55	2.72E+01	30.79			2.72E+01	3.08E+01
	24	784.35	2.28E+01	23.54			2.28E+01	2.35E+01
	25	835.49	1.75E+01	18.77			1.75E+01	1.88E+01
	26	846.94	1.93E+01	24.17			1.93E+01	2.42E+01
	27	862.12	2.37E+01	28.32			2.37E+01	2.83E+01
	28	911.37	1.05E+02	31.76			1.05E+02	3.18E+01
	29	933.97	3.20E+01	22.63			3.20E+01	2.26E+01
	30	967.16	1.24E+02	51.54			1.24E+02	5.15E+01
	31	1085.58	2.51E+01	23.41			2.51E+01	2.34E+01
	32	1106.53	2.98E+01	34.23			2.98E+01	3.42E+01
	33	1120.68	6.70E+01	41.15			6.70E+01	4.11E+01
	34	1141.01	1.43E+01	17.94			1.43E+01	1.79E+01
	35	1149.11	3.74E+01	28.50			3.74E+01	2.85E+01
	36	1174.95	2.63E+01	31.32			2.63E+01	3.13E+01
	37	1228.80	2.08E+01	23.28			2.08E+01	2.33E+01
	38	1337.81	2.40E+01	28.98			2.40E+01	2.90E+01
	39	1437.16	1.04E+01	12.39			1.04E+01	1.24E+01
	40	1460.67	5.50E+02	48.55			5.50E+02	4.85E+01
	41	1511.41	1.44E+01	16.22			1.44E+01	1.62E+01
	42	1579.95	7.55E+00	8.72			7.55E+00	8.72E+00
	43	1589.51	2.66E+01	13.73			2.66E+01	1.37E+01
	44	1764.81	1.93E+01	12.84			1.93E+01	1.28E+01
	45	2349.32	1.10E+01	6.63			1.10E+01	6.63E+00
	46	2614.17	6.00E+01	15.49			6.00E+01	1.55E+01
	47	3451.65	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 1707088-19

HTC-A04-S001-1218-01

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	0.997	1460.81	*	10.67	2.36E+01	2.97E+00
MN-54	0.931	834.83	*	99.97	6.08E-02	6.56E-02
TL-208	0.861	583.14	*	30.22	1.26E+00	3.63E-01
		860.37		4.48		
		2614.66	*	35.85	1.43E+00	4.05E-01
PB-210	0.955	46.50	*	4.25	1.24E+00	1.40E+00
PB-212	0.989	238.63	*	44.60	1.42E+00	1.85E-01
		300.09	*	3.41	1.13E+00	1.20E+00
BI-214	0.926	609.31	*	46.30	9.26E-01	2.46E-01
		1120.29	*	15.10	1.61E+00	9.96E-01
		1764.49	*	15.80	6.68E-01	4.47E-01
		2204.22		4.98		
PB-214	0.996	295.21	*	19.19	9.09E-01	3.13E-01
		351.92	*	37.19	8.94E-01	2.21E-01
RA-224	0.877	240.98	*	3.95	2.67E+00	1.35E+00
RA-226	0.998	186.21	*	3.28	3.09E+00	5.94E+00
AC-228	0.579	338.32	*	11.40	1.41E+00	5.44E-01
		911.07	*	27.70	1.15E+00	3.59E-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 : 8/23/2017 7:02:39AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	76.09	3.11736E-01	7.43		
	3	93.43	5.07576E-02	23.62	Sum	
	4	99.20	2.20742E-02	38.38	D-Esc	
	6	208.35	3.35770E-02	33.79	Tol.	GA-67
	9	269.32	2.11972E-02	47.67		
	12	328.39	1.72845E-02	38.57	Tol.	LA-140
M	13	334.08	9.21715E-03	34.40		
	16	462.91	1.06944E-02	42.28	Tol.	SB-125
M	17	506.55	5.87921E-03	55.34		
m	18	510.78	2.01616E-02	29.22		
	19	552.47	8.83838E-03	56.08		
	20	566.50	2.06028E-02	42.43		
	23	685.55	7.55584E-03	56.60	Tol.	SB-127
	24	784.35	6.33120E-03	51.63	Tol.	SB-127
	26	846.94	5.34962E-03	62.74	Sum	
	27	862.12	6.58971E-03	59.70		
	29	933.97	8.88889E-03	35.36		
	30	967.16	3.44328E-02	20.79		
	31	1085.58	6.97860E-03	46.59	Tol.	EU-152
	32	1106.53	8.27778E-03	57.44		
	34	1141.01	3.95833E-03	62.96		
	35	1149.11	1.03997E-02	38.06	Sum	
	36	1174.95	7.30961E-03	59.51		
	37	1228.80	5.77061E-03	56.03		
	38	1337.81	6.66226E-03	60.42		
	39	1437.16	2.87500E-03	59.85		
	41	1511.41	4.00794E-03	56.23		
	42	1579.95	2.09596E-03	57.77		
	43	1589.51	7.37847E-03	25.84		
	45	2349.32	3.05556E-03	30.15		
	47	3451.65	1.38889E-03	44.72		

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

NUCLIDE IDENTIFICATION REPORT

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

IDENTIFIED NUCLIDES

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	0.99	1460.81	*	10.67	2.36E+01	2.97E+00
MN-54	0.93	834.83	*	99.97	6.08E-02	6.56E-02
TL-208	0.86	583.14	*	30.22	1.26E+00	3.63E-01
		860.37		4.48		
		2614.66	*	35.85	1.43E+00	4.05E-01
PB-210	0.95	46.50	*	4.25	1.24E+00	1.40E+00
PB-212	0.98	238.63	*	44.60	1.42E+00	1.85E-01
		300.09	*	3.41	1.13E+00	1.20E+00
BI-214	0.92	609.31	*	46.30	9.26E-01	2.46E-01
		1120.29	*	15.10	1.61E+00	9.96E-01
		1764.49	*	15.80	6.68E-01	4.47E-01
		2204.22		4.98		
PB-214	0.99	295.21	*	19.19	9.09E-01	3.13E-01
		351.92	*	37.19	8.94E-01	2.21E-01
RA-224	0.87	240.98	*	3.95	2.67E+00	1.35E+00
RA-226	0.99	186.21	*	3.28	3.09E+00	5.94E+00
AC-228	0.57	338.32	*	11.40	1.41E+00	5.44E-01
		911.07	*	27.70	1.15E+00	3.59E-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

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.997	2.36E+01	2.97E+00	
MN-54	0.931	6.08E-02	6.56E-02	
TL-208	0.861	1.33E+00	2.70E-01	
PB-210	0.955	1.24E+00	1.40E+00	
PB-212	0.989	1.41E+00	1.83E-01	
BI-214	0.926	8.99E-01	2.11E-01	
PB-214	0.996	8.99E-01	1.80E-01	
RA-224	0.877	2.67E+00	1.35E+00	

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
RA-226	0.998	3.09E+00	5.94E+00	
AC-228	0.579	1.23E+00	2.99E-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 1707088-19

HTC-A04-S001-1218-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/23/2017 7:02:39AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	2	76.09	3.11736E-01	7.43		
	3	93.43	5.07576E-02	23.62	Sum	
	4	99.20	2.20742E-02	38.38	D-Esc	
	6	208.35	3.35770E-02	33.79	Tol.	GA-67
	9	269.32	2.11972E-02	47.67		
	12	328.39	1.72845E-02	38.57	Tol.	LA-140
M	13	334.08	9.21715E-03	34.40		
	16	462.91	1.06944E-02	42.28	Tol.	SB-125
M	17	506.55	5.87921E-03	55.34		
m	18	510.78	2.01616E-02	29.22		
	19	552.47	8.83838E-03	56.08		
	20	566.50	2.06028E-02	42.43		
	23	685.55	7.55584E-03	56.60	Tol.	SB-127
	24	784.35	6.33120E-03	51.63	Tol.	SB-127
	26	846.94	5.34962E-03	62.74	Sum	
	27	862.12	6.58971E-03	59.70		
	29	933.97	8.88889E-03	35.36		
	30	967.16	3.44328E-02	20.79		
	31	1085.58	6.97860E-03	46.59	Tol.	EU-152
	32	1106.53	8.27778E-03	57.44		
	34	1141.01	3.95833E-03	62.96		
	35	1149.11	1.03997E-02	38.06	Sum	
	36	1174.95	7.30961E-03	59.51		
	37	1228.80	5.77061E-03	56.03		
	38	1337.81	6.66226E-03	60.42		
	39	1437.16	2.87500E-03	59.85		
	41	1511.41	4.00794E-03	56.23		
	42	1579.95	2.09596E-03	57.77		
	43	1589.51	7.37847E-03	25.84		
	45	2349.32	3.05556E-03	30.15		
	47	3451.65	1.38889E-03	44.72		

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

NUCLIDE MDA REPORT

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

		Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+		BE-7	477.59		10.42	-3.71E-01	2.65E+00	2.65E+00
+		NA-22	1274.54		99.94	3.14E-02	1.57E-01	1.57E-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	2.10E-02	8.90E-02	8.90E-02
+		K-40	1460.81	*	10.67	2.36E+01	9.95E-01	9.95E-01
+	@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+		TI-44	67.88		94.40	-3.76E-02	7.70E-02	7.70E-02
			78.34		96.00	3.36E-01		9.59E-02
+		SC-46	889.25		99.98	-1.13E-01	2.61E-01	2.61E-01
			1120.51		99.99	2.91E-01		4.05E-01
+		V-48	983.52		99.98	-2.01E+00	8.77E+00	8.77E+00
			1312.10		97.50	-4.21E+00		8.89E+00
+		CR-51	320.08		9.83	3.05E+00	8.93E+00	8.93E+00
+		MN-54	834.83	*	99.97	6.08E-02	1.06E-01	1.06E-01
+		CO-56	846.75		99.96	1.56E-02	2.77E-01	2.77E-01
			1037.75		14.03	-6.99E-01		2.20E+00
			1238.25		67.00	2.15E-01		6.51E-01
			1771.40		15.51	-2.55E-01		1.35E+00
			2598.48		16.90	2.41E-01		1.12E+00
+		CO-57	122.06		85.51	3.73E-02	8.37E-02	8.37E-02
			136.48		10.60	-1.83E-01		6.90E-01
+		CO-58	810.76		99.40	1.24E-01	3.06E-01	3.06E-01
+		FE-59	1099.22		56.50	9.35E-02	1.15E+00	1.15E+00
			1291.56		43.20	-7.18E-01		1.49E+00
+		CO-60	1173.22		100.00	5.46E-03	1.48E-01	1.72E-01
			1332.49		100.00	1.46E-03		1.48E-01
+		ZN-65	1115.52		50.75	-5.78E-02	4.13E-01	4.13E-01
+		GA-67	93.31		35.70	4.39E+08	3.22E+08	3.22E+08
			208.95		2.24	4.46E+09		5.16E+09
			300.22		16.00	-1.55E+09		7.55E+08
+		SE-75	121.11		16.70	1.28E-01	1.71E-01	5.85E-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	-5.49E-02	1.71E-01	1.71E-01
		264.65	59.80	4.79E-03		1.97E-01
		279.53	25.20	3.27E-01		4.97E-01
		400.65	11.40	-4.80E-01		1.19E+00
+	RB-82	776.52	13.00	-1.50E+00	1.09E+01	1.09E+01
+	RB-83	520.41	46.00	1.54E-01	4.27E-01	4.27E-01
		529.64	30.30	-2.08E-01		5.63E-01
		552.65	16.40	8.91E-01		1.29E+00
+	KR-85	513.99	0.43	-4.31E+00	2.48E+01	2.48E+01
+	SR-85	513.99	99.27	-5.39E-02	3.09E-01	3.09E-01
+	Y-88	898.02	93.40	6.10E-03	1.64E-01	2.44E-01
		1836.01	99.38	4.37E-02		1.64E-01
+	MO-93	263.06	56.72	3.75E-02	8.61E-02	1.18E-01
		684.67	99.68	4.18E-02		1.20E-01
		1477.11	99.08	-3.32E-02		8.61E-02
+	NB-93M	16.57	9.43	1.55E+01	8.11E+00	8.11E+00
+	NB-94	702.63	100.00	-5.44E-03	1.15E-01	1.15E-01
		871.10	100.00	3.58E-02		1.25E-01
+	NB-95	765.79	99.81	1.44E-01	8.92E-01	8.92E-01
+	NB-95M	235.69	25.00	2.21E+08	9.44E+07	9.44E+07
+	ZR-95	724.18	43.70	1.32E-01	6.65E-01	8.77E-01
		756.72	55.30	2.60E-01		6.65E-01
+	MO-99	181.06	6.20	7.78E+09	8.02E+10	8.37E+10
		739.58	12.80	7.94E+09		8.02E+10
		778.00	4.50	-5.34E+09		1.77E+11
+	RU-103	497.08	89.00	-2.71E-01	4.86E-01	4.86E-01
+	RU-106	621.84	9.80	-1.99E-01	1.14E+00	1.14E+00
+	AG-108M	433.93	89.90	2.65E-02	8.72E-02	8.72E-02
		614.37	90.40	1.58E-02		9.94E-02
		722.95	90.50	-1.11E-01		1.35E-01
+	CD-109	88.03	3.72	1.22E+00	2.23E+00	2.23E+00
+	AG-110M	657.75	93.14	-6.89E-02	1.43E-01	1.43E-01
		677.61	10.53	-9.17E-02		1.35E+00
		706.67	16.46	-3.39E-01		9.05E-01
		763.93	21.98	-4.73E-01		7.10E-01
		884.67	71.63	-9.53E-02		2.10E-01
		1384.27	23.94	-3.06E-01		6.13E-01
+	CD-113M	263.70	0.02	1.91E+01	2.90E+02	2.90E+02
+	SN-113	255.12	1.93	1.33E+00	2.28E-01	6.31E+00
		391.69	64.90	-2.82E-04		2.28E-01
+	TE123M	159.00	84.10	4.01E-03	1.27E-01	1.27E-01
+	SB-124	602.71	97.87	1.93E-02	2.80E-01	2.80E-01
		645.85	7.26	-1.14E+00		3.80E+00
		722.78	11.10	-2.85E+00		3.48E+00
		1691.02	49.00	7.79E-02		6.58E-01
+	I-125	35.49	6.49	-2.60E+00	5.19E+00	5.19E+00
+	SB-125	176.33	6.89	2.36E-01	2.59E-01	9.50E-01
		427.89	29.33	-1.11E-01		2.59E-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	5.18E-01	2.59E-01	8.84E-01
		600.56	17.80	3.80E-02		5.11E-01
		635.90	11.32	3.57E-01		8.94E-01
+	SB-126	414.70	83.30	-8.95E-01	2.44E+01	2.44E+01
		666.33	99.60	-1.47E+01		2.82E+01
		695.00	99.60	3.27E+00		2.97E+01
		720.50	53.80	-7.63E+01		5.60E+01
+	SN-126	87.57	37.00	1.06E-01	1.93E-01	1.93E-01
+	SB-127	473.00	25.00	1.07E+07	2.04E+07	2.04E+07
		685.20	35.70	7.38E+06		2.13E+07
		783.80	14.70	8.00E+06		5.07E+07
+	I-129	29.78	57.00	1.79E-01	2.73E-01	2.73E-01
		33.60	13.20	-2.13E-01		9.00E-01
		39.58	7.52	6.58E-01		1.23E+00
+	I-131	284.30	6.05	-9.02E+02	4.62E+02	5.86E+03
		364.48	81.20	-9.62E+01		4.62E+02
		636.97	7.26	5.05E+02		7.07E+03
		722.89	1.80	-3.05E+04		3.73E+04
+	TE-132	49.72	13.10	-4.71E+06	1.30E+08	9.94E+08
		228.16	88.00	2.85E+07		1.30E+08
+	BA-133	81.00	33.00	3.22E-03	1.57E-01	2.24E-01
		302.84	17.80	-5.41E-02		3.94E-01
		356.01	60.00	-2.58E-03		1.57E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	XE-133	81.00	38.00	1.49E+03	1.04E+05	1.04E+05
+	CS-134	563.23	8.38	6.00E-01	1.11E-01	1.26E+00
		569.32	15.43	1.18E-01		6.77E-01
		604.70	97.60	7.69E-04		1.11E-01
		795.84	85.40	1.02E-01		1.61E-01
		801.93	8.73	-6.52E-01		1.35E+00
+	CS-135	268.24	16.00	2.99E-01	4.56E-01	4.56E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	8.68E+00	2.11E+01	1.55E+02
		163.89	4.61	7.10E+01		2.52E+02
		176.55	13.56	3.61E+01		8.77E+01
		273.65	12.66	8.06E+00		1.04E+02
		340.57	48.50	4.64E+01		3.79E+01
		818.50	99.70	-7.59E-01		2.11E+01
		1048.07	79.60	-5.77E+00		3.32E+01
		1235.34	19.70	3.47E+01		1.77E+02
+	CS-137	661.65	85.12	5.61E-02	1.30E-01	1.30E-01
+	LA-138	788.74	34.00	-2.65E-01	1.83E-01	3.51E-01
		1435.80	66.00	-3.03E-03		1.83E-01
+	CE-139	165.85	80.35	-1.60E-03	1.23E-01	1.23E-01
+	BA-140	162.64	6.70	-3.60E+01	7.52E+01	1.99E+02
		304.84	4.50	8.92E+01		3.33E+02
		423.70	3.20	6.45E+01		5.04E+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	6.23E+02	7.52E+01	8.78E+02
		537.32	25.00	2.37E+01		7.52E+01
+	LA-140	328.77	20.50	3.83E+01	2.80E+01	8.48E+01
		487.03	45.50	-1.67E+01		3.86E+01
		815.85	23.50	-1.19E+01		1.06E+02
		1596.49	95.49	-3.20E+00		2.80E+01
+	CE-141	145.44	48.40	2.55E-01	1.03E+00	1.03E+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	-4.13E-01	6.69E-01	6.69E-01
+	PM-144	476.78	42.00	-2.75E-02	1.08E-01	2.19E-01
		618.01	98.60	-2.75E-02		1.08E-01
		696.49	99.49	-4.58E-02		1.34E-01
+	PM-145	36.85	21.70	-5.36E-02	2.51E-01	4.70E-01
		37.36	39.70	-2.87E-02		2.51E-01
		42.30	15.10	-3.24E-02		5.49E-01
		72.40	2.31	-1.00E+01		3.55E+00
+	PM-146	453.90	39.94	1.09E-01	2.12E-01	2.12E-01
		735.90	14.01	-7.54E-02		8.16E-01
		747.13	13.10	3.97E-01		9.87E-01
+	ND-147	91.11	28.90	2.45E+01	1.39E+02	1.39E+02
		531.02	13.10	-1.51E+01		3.30E+02
+	PM-149	285.90	3.10	-4.34E+12	8.30E+13	8.30E+13
+	EU-152	121.78	20.50	1.22E-01	2.74E-01	2.74E-01
		244.69	5.40	-1.07E-01		1.37E+00
		344.27	19.13	2.78E-03		4.12E-01
		778.89	9.20	2.79E-01		1.12E+00
		964.01	10.40	-1.45E+00		1.51E+00
		1085.78	7.22	5.85E-01		1.97E+00
		1112.02	9.60	-9.66E-01		1.46E+00
		1407.95	14.94	2.50E-01		7.66E-01
+	GD-153	97.43	31.30	-1.07E-01	2.57E-01	2.57E-01
		103.18	22.20	-1.83E-02		3.28E-01
+	EU-154	123.07	40.50	6.40E-03	1.39E-01	1.39E-01
		723.30	19.70	1.01E-01		6.74E-01
		873.19	11.50	-1.20E-01		1.11E+00
		996.32	10.30	-1.16E+00		1.13E+00
		1004.76	17.90	6.67E-01		8.32E-01
		1274.45	35.50	8.40E-02		4.19E-01
+	EU-155	86.50	30.90	2.25E-01	2.42E-01	2.42E-01
		105.30	20.70	-1.19E-01		2.71E-01
+	EU-156	811.77	10.40	-1.19E+01	1.02E+02	1.02E+02
		1153.47	7.20	-5.46E+00		1.93E+02
		1230.71	8.90	-1.23E+01		1.92E+02
+	HO-166M	184.41	72.60	1.34E-01	9.89E-02	9.89E-02
		280.45	29.60	-1.79E-02		2.27E-01
		410.94	11.10	2.48E-01		7.23E-01
		711.69	54.10	-8.97E-02		2.13E-01

Analysis Report for 1707088-19

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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	-5.29E+00	5.80E+01	5.80E+01
+	HF-172	67.35		5.31	-1.39E-01	5.50E-01	1.53E+00
		125.81		11.30	-2.33E-01		5.50E-01
+	LU-172	181.53		20.60	-1.23E+01	6.69E+03	9.47E+03
		900.72		29.81	-8.64E+03		1.16E+04
		1093.66		62.50	2.03E+03		6.69E+03
+	LU-173	100.72		5.24	-1.20E-01	3.87E-01	1.22E+00
		272.11		21.20	-1.15E-02		3.87E-01
+	HF-175	343.40		84.00	1.67E-03	2.48E-01	2.48E-01
+	LU-176	88.34		13.30	2.93E-01	6.71E-02	5.36E-01
		201.83		86.00	1.32E-02		7.18E-02
		306.78		94.00	5.86E-03		6.71E-02
+	HF-181	133.02		41.70	-1.55E-01	4.64E-01	7.05E-01
		345.85		17.20	1.57E-02		2.25E+00
		482.03		82.80	-4.76E-02		4.64E-01
+	TA-182	67.75		41.20	-1.57E-01	3.22E-01	3.22E-01
		1121.30		34.90	5.94E-01		9.27E-01
		1189.05		16.23	2.58E-01		1.81E+00
		1221.41		26.98	2.18E-01		1.13E+00
		1231.02		11.44	2.62E-03		2.98E+00
+	IR-192	308.46		29.68	-6.58E-02	3.92E-01	5.42E-01
		468.07		48.10	-9.19E-03		3.92E-01
+	HG-203	279.19		77.30	9.87E-02	3.93E-01	3.93E-01
+	TL-204	374.74		94.11	2.71E-02	8.42E-02	8.42E-02
		899.15		99.16	-7.59E-02		1.21E-01
		911.74		91.10	3.09E-01		2.01E-01
+	BI-207	569.67		97.72	1.71E-02	9.81E-02	9.81E-02
		1063.62		74.90	-2.16E-02		1.81E-01
+	TL-208	583.14	*	30.22	1.26E+00	6.44E-02	4.78E-01
		860.37		4.48	3.15E+00		2.90E+00
		2614.66	*	35.85	1.43E+00		6.44E-02
+	BI-210M	262.00		45.00	3.60E-02	1.43E-01	1.43E-01
		300.00		23.00	-6.49E-01		3.17E-01
+	PB-210	46.50	*	4.25	1.24E+00	2.30E+00	2.30E+00
+	PB-211	404.84		2.90	-1.13E+00	2.65E+00	2.65E+00
		831.96		2.90	-1.34E-01		4.27E+00
+	BI-212	727.17		11.80	8.82E-01	1.14E+00	1.14E+00
		1620.62		2.75	1.44E+00		3.79E+00
+	PB-212	238.63	*	44.60	1.42E+00	2.21E-01	2.21E-01
		300.09	*	3.41	1.13E+00		1.95E+00
+	BI-214	609.31	*	46.30	9.26E-01	3.07E-01	3.07E-01
		1120.29	*	15.10	1.61E+00		1.55E+00
		1764.49	*	15.80	6.68E-01		6.25E-01
		2204.22		4.98	-4.16E-01		1.95E+00
+	PB-214	295.21	*	19.19	9.09E-01	3.01E-01	4.59E-01
		351.92	*	37.19	8.94E-01		3.01E-01
+	RN-219	401.80		6.50	-2.00E-01	1.17E+00	1.17E+00
+	RA-223	323.87		3.88	-1.26E-01	1.84E+00	1.84E+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	2.67E+00	2.44E+00	2.44E+00
+	RA-225	40.00		31.00	1.69E+01	3.14E+01	3.14E+01
+	RA-226	186.21	*	3.28	3.09E+00	2.90E+00	2.90E+00
+	TH-227	50.10		8.40	-4.32E-03	9.12E-01	9.12E-01
		236.00		11.50	2.26E+00		9.66E-01
		256.20		6.30	9.70E-03		1.06E+00
+	AC-228	338.32	*	11.40	1.41E+00	4.64E-01	1.01E+00
		911.07	*	27.70	1.15E+00		4.64E-01
		969.11		16.60	1.13E+00		1.10E+00
+	TH-230	48.44		16.90	2.53E-01	4.66E-01	4.66E-01
		62.85		4.60	-5.75E-01		1.61E+00
		67.67		0.37	-9.57E+00		1.96E+01
+	PA-231	283.67		1.60	-6.20E-01	2.99E+00	4.03E+00
		302.67		2.30	-4.11E-01		2.99E+00
+	TH-231	25.64		14.70	-8.58E-01	1.06E+00	1.51E+00
		84.21		6.40	2.55E-01		1.06E+00
+	PA-233	311.98		38.60	-1.53E+00	2.11E+00	2.11E+00
+	PA-234	131.20		20.40	2.13E-01	2.89E-01	2.89E-01
		733.99		8.80	-1.41E+00		1.25E+00
		946.00		12.00	-2.97E-01		9.75E-01
+	PA-234M	1001.03		0.92	3.32E+00	1.48E+01	1.48E+01
+	TH-234	63.29		3.80	-6.94E-01	1.94E+00	1.94E+00
+	U-235	143.76		10.50	1.19E-01	5.67E-01	5.67E-01
		163.35		4.70	-2.29E-01		1.27E+00
		205.31		4.70	-1.30E+00		1.38E+00
+	NP-237	86.50		12.60	5.31E-01	5.71E-01	5.71E-01
+	NP-239	106.10		22.70	3.53E+11	1.41E+12	1.41E+12
		228.18		10.70	8.11E+11		3.70E+12
		277.60		14.10	-4.26E+11		2.83E+12
+	AM-241	59.54		35.90	1.40E-02	2.08E-01	2.08E-01
+	AM-243	74.67		66.00	6.71E-01	1.48E-01	1.48E-01
+	CM-243	209.75		3.29	6.19E-01	4.91E-01	2.12E+00
		228.14		10.60	1.41E-01		6.43E-01
		277.60		14.00	-7.41E-02		4.91E-01

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

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NUCLIDE MDA REPORT

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

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	BE-7	477.59		10.42	2.65E+00	2.65E+00	-3.71E-01	1.25E+00
	NA-22	1274.54		99.94	1.57E-01	1.57E-01	3.14E-02	7.25E-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	8.90E-02	8.90E-02	2.10E-02	3.69E-02
+	K-40	1460.81	*	10.67	9.95E-01	9.95E-01	2.36E+01	4.39E-01
@	AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88		94.40	7.70E-02	7.70E-02	-3.76E-02	3.78E-02
		78.34		96.00	9.59E-02		3.36E-01	4.73E-02
	SC-46	889.25		99.98	2.61E-01	2.61E-01	-1.13E-01	1.21E-01
		1120.51		99.99	4.05E-01		2.91E-01	1.91E-01
	V-48	983.52		99.98	8.77E+00	8.77E+00	-2.01E+00	4.05E+00
		1312.10		97.50	8.89E+00		-4.21E+00	4.01E+00
	CR-51	320.08		9.83	8.93E+00	8.93E+00	3.05E+00	4.28E+00
+	MN-54	834.83	*	99.97	1.06E-01	1.06E-01	6.08E-02	4.81E-02
	CO-56	846.75		99.96	2.77E-01	2.77E-01	1.56E-02	1.29E-01
		1037.75		14.03	2.20E+00		-6.99E-01	1.02E+00
		1238.25		67.00	6.51E-01		2.15E-01	3.06E-01
		1771.40		15.51	1.35E+00		-2.55E-01	5.60E-01
		2598.48		16.90	1.12E+00		2.41E-01	3.97E-01
	CO-57	122.06		85.51	8.37E-02	8.37E-02	3.73E-02	4.08E-02
		136.48		10.60	6.90E-01		-1.83E-01	3.36E-01
	CO-58	810.76		99.40	3.06E-01	3.06E-01	1.24E-01	1.43E-01
	FE-59	1099.22		56.50	1.15E+00	1.15E+00	9.35E-02	5.35E-01
		1291.56		43.20	1.49E+00		-7.18E-01	6.83E-01
	CO-60	1173.22		100.00	1.72E-01	1.48E-01	5.46E-03	8.08E-02
		1332.49		100.00	1.48E-01		1.46E-03	6.82E-02
	ZN-65	1115.52		50.75	4.13E-01	4.13E-01	-5.78E-02	1.94E-01
	GA-67	93.31		35.70	3.22E+08	3.22E+08	4.39E+08	1.58E+08
		208.95		2.24	5.16E+09		4.46E+09	2.51E+09
		300.22		16.00	7.55E+08		-1.55E+09	3.64E+08
	SE-75	121.11		16.70	5.85E-01	1.71E-01	1.28E-01	2.86E-01
		136.00		59.20	1.71E-01		-5.49E-02	8.36E-02
		264.65		59.80	1.97E-01		4.79E-03	9.49E-02
		279.53		25.20	4.97E-01		3.27E-01	2.40E-01
		400.65		11.40	1.19E+00		-4.80E-01	5.66E-01
	RB-82	776.52		13.00	1.09E+01	1.09E+01	-1.50E+00	5.05E+00
	RB-83	520.41		46.00	4.27E-01	4.27E-01	1.54E-01	2.02E-01
		529.64		30.30	5.63E-01		-2.08E-01	2.64E-01
		552.65		16.40	1.29E+00		8.91E-01	6.10E-01
	KR-85	513.99		0.43	2.48E+01	2.48E+01	-4.31E+00	1.18E+01
	SR-85	513.99		99.27	3.09E-01	3.09E-01	-5.39E-02	1.48E-01

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
Y-88	898.02	93.40	2.44E-01	1.64E-01	6.10E-03	1.14E-01
	1836.01	99.38	1.64E-01		4.37E-02	6.73E-02
MO-93	263.06	56.72	1.18E-01	8.61E-02	3.75E-02	5.69E-02
	684.67	99.68	1.20E-01		4.18E-02	5.69E-02
	1477.11	99.08	8.61E-02		-3.32E-02	3.66E-02
NB-93M	16.57	9.43	8.11E+00	8.11E+00	1.55E+01	3.95E+00
NB-94	702.63	100.00	1.15E-01	1.15E-01	-5.44E-03	5.44E-02
	871.10	100.00	1.25E-01		3.58E-02	5.83E-02
NB-95	765.79	99.81	8.92E-01	8.92E-01	1.44E-01	4.21E-01
NB-95M	235.69	25.00	9.44E+07	9.44E+07	2.21E+08	4.63E+07
ZR-95	724.18	43.70	8.77E-01	6.65E-01	1.32E-01	4.16E-01
	756.72	55.30	6.65E-01		2.60E-01	3.14E-01
MO-99	181.06	6.20	8.37E+10	8.02E+10	7.78E+09	4.07E+10
	739.58	12.80	8.02E+10		7.94E+09	3.79E+10
	778.00	4.50	1.77E+11		-5.34E+09	8.19E+10
RU-103	497.08	89.00	4.86E-01	4.86E-01	-2.71E-01	2.28E-01
RU-106	621.84	9.80	1.14E+00	1.14E+00	-1.99E-01	5.34E-01
AG-108M	433.93	89.90	8.72E-02	8.72E-02	2.65E-02	4.14E-02
	614.37	90.40	9.94E-02		1.58E-02	4.66E-02
	722.95	90.50	1.35E-01		-1.11E-01	6.40E-02
CD-109	88.03	3.72	2.23E+00	2.23E+00	1.22E+00	1.09E+00
AG-110M	657.75	93.14	1.43E-01	1.43E-01	-6.89E-02	6.73E-02
	677.61	10.53	1.35E+00		-9.17E-02	6.38E-01
	706.67	16.46	9.05E-01		-3.39E-01	4.27E-01
	763.93	21.98	7.10E-01		-4.73E-01	3.34E-01
	884.67	71.63	2.10E-01		-9.53E-02	9.74E-02
	1384.27	23.94	6.13E-01		-3.06E-01	2.74E-01
CD-113M	263.70	0.02	2.90E+02	2.90E+02	1.91E+01	1.40E+02
SN-113	255.12	1.93	6.31E+00	2.28E-01	1.33E+00	3.05E+00
	391.69	64.90	2.28E-01		-2.82E-04	1.09E-01
TE123M	159.00	84.10	1.27E-01	1.27E-01	4.01E-03	6.18E-02
SB-124	602.71	97.87	2.80E-01	2.80E-01	1.93E-02	1.31E-01
	645.85	7.26	3.80E+00		-1.14E+00	1.77E+00
	722.78	11.10	3.48E+00		-2.85E+00	1.65E+00
	1691.02	49.00	6.58E-01		7.79E-02	2.83E-01
I-125	35.49	6.49	5.19E+00	5.19E+00	-2.60E+00	2.53E+00
SB-125	176.33	6.89	9.50E-01	2.59E-01	2.36E-01	4.62E-01
	427.89	29.33	2.59E-01		-1.11E-01	1.22E-01
	463.38	10.35	8.84E-01		5.18E-01	4.20E-01
	600.56	17.80	5.11E-01		3.80E-02	2.39E-01
	635.90	11.32	8.94E-01		3.57E-01	4.19E-01
SB-126	414.70	83.30	2.44E+01	2.44E+01	-8.95E-01	1.16E+01
	666.33	99.60	2.82E+01		-1.47E+01	1.33E+01
	695.00	99.60	2.97E+01		3.27E+00	1.40E+01
	720.50	53.80	5.60E+01		-7.63E+01	2.64E+01
SN-126	87.57	37.00	1.93E-01	1.93E-01	1.06E-01	9.47E-02
SB-127	473.00	25.00	2.04E+07	2.04E+07	1.07E+07	9.62E+06
	685.20	35.70	2.13E+07		7.38E+06	1.01E+07
	783.80	14.70	5.07E+07		8.00E+06	2.38E+07
I-129	29.78	57.00	2.73E-01	2.73E-01	1.79E-01	1.33E-01
	33.60	13.20	9.00E-01		-2.13E-01	4.39E-01
	39.58	7.52	1.23E+00		6.58E-01	5.98E-01
I-131	284.30	6.05	5.86E+03	4.62E+02	-9.02E+02	2.81E+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)
I-131	364.48	81.20	4.62E+02	4.62E+02	-9.62E+01	2.20E+02
	636.97	7.26	7.07E+03		5.05E+02	3.31E+03
	722.89	1.80	3.73E+04		-3.05E+04	1.76E+04
TE-132	49.72	13.10	9.94E+08	1.30E+08	-4.71E+06	4.86E+08
	228.16	88.00	1.30E+08		2.85E+07	6.29E+07
BA-133	81.00	33.00	2.24E-01	1.57E-01	3.22E-03	1.10E-01
	302.84	17.80	3.94E-01		-5.41E-02	1.89E-01
	356.01	60.00	1.57E-01		-2.58E-03	7.58E-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	1.04E+05	1.04E+05	1.49E+03	5.09E+04
CS-134	563.23	8.38	1.26E+00	1.11E-01	6.00E-01	5.97E-01
	569.32	15.43	6.77E-01		1.18E-01	3.20E-01
	604.70	97.60	1.11E-01		7.69E-04	5.23E-02
	795.84	85.40	1.61E-01		1.02E-01	7.60E-02
	801.93	8.73	1.35E+00		-6.52E-01	6.27E-01
CS-135	268.24	16.00	4.56E-01	4.56E-01	2.99E-01	2.21E-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	1.55E+02	2.11E+01	8.68E+00	7.54E+01
	163.89	4.61	2.52E+02		7.10E+01	1.22E+02
	176.55	13.56	8.77E+01		3.61E+01	4.27E+01
	273.65	12.66	1.04E+02		8.06E+00	5.03E+01
	340.57	48.50	3.79E+01		4.64E+01	1.83E+01
	818.50	99.70	2.11E+01		-7.59E-01	9.83E+00
	1048.07	79.60	3.32E+01		-5.77E+00	1.55E+01
	1235.34	19.70	1.77E+02		3.47E+01	8.31E+01
CS-137	661.65	85.12	1.30E-01	1.30E-01	5.61E-02	6.16E-02
LA-138	788.74	34.00	3.51E-01	1.83E-01	-2.65E-01	1.65E-01
	1435.80	66.00	1.83E-01		-3.03E-03	8.25E-02
CE-139	165.85	80.35	1.23E-01	1.23E-01	-1.60E-03	5.96E-02
BA-140	162.64	6.70	1.99E+02	7.52E+01	-3.60E+01	9.71E+01
	304.84	4.50	3.33E+02		8.92E+01	1.59E+02
	423.70	3.20	5.04E+02		6.45E+01	2.38E+02
	437.55	2.00	8.78E+02		6.23E+02	4.17E+02
	537.32	25.00	7.52E+01		2.37E+01	3.54E+01
LA-140	328.77	20.50	8.48E+01	2.80E+01	3.83E+01	4.08E+01
	487.03	45.50	3.86E+01		-1.67E+01	1.82E+01
	815.85	23.50	1.06E+02		-1.19E+01	4.96E+01
	1596.49	95.49	2.80E+01		-3.20E+00	1.24E+01
CE-141	145.44	48.40	1.03E+00	1.03E+00	2.55E-01	5.03E-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	6.69E-01	6.69E-01	-4.13E-01	3.26E-01
PM-144	476.78	42.00	2.19E-01	1.08E-01	-2.75E-02	1.03E-01
	618.01	98.60	1.08E-01		-2.75E-02	5.05E-02
	696.49	99.49	1.34E-01		-4.58E-02	6.32E-02
PM-145	36.85	21.70	4.70E-01	2.51E-01	-5.36E-02	2.29E-01
	37.36	39.70	2.51E-01		-2.87E-02	1.22E-01
	42.30	15.10	5.49E-01		-3.24E-02	2.68E-01
	72.40	2.31	3.55E+00		-1.00E+01	1.75E+00
PM-146	453.90	39.94	2.12E-01	2.12E-01	1.09E-01	1.01E-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)
PM-146	735.90	14.01	8.16E-01	2.12E-01	-7.54E-02	3.83E-01
	747.13	13.10	9.87E-01		3.97E-01	4.67E-01
ND-147	91.11	28.90	1.39E+02	1.39E+02	2.45E+01	6.81E+01
	531.02	13.10	3.30E+02		-1.51E+01	1.55E+02
PM-149	285.90	3.10	8.30E+13	8.30E+13	-4.34E+12	3.99E+13
EU-152	121.78	20.50	2.74E-01	2.74E-01	1.22E-01	1.34E-01
	244.69	5.40	1.37E+00		-1.07E-01	6.66E-01
	344.27	19.13	4.12E-01		2.78E-03	1.98E-01
	778.89	9.20	1.12E+00		2.79E-01	5.19E-01
	964.01	10.40	1.51E+00		-1.45E+00	7.12E-01
	1085.78	7.22	1.97E+00		5.85E-01	9.20E-01
	1112.02	9.60	1.46E+00		-9.66E-01	6.79E-01
	1407.95	14.94	7.66E-01		2.50E-01	3.42E-01
GD-153	97.43	31.30	2.57E-01	2.57E-01	-1.07E-01	1.26E-01
	103.18	22.20	3.28E-01		-1.83E-02	1.60E-01
EU-154	123.07	40.50	1.39E-01	1.39E-01	6.40E-03	6.78E-02
	723.30	19.70	6.74E-01		1.01E-01	3.20E-01
	873.19	11.50	1.11E+00		-1.20E-01	5.19E-01
	996.32	10.30	1.13E+00		-1.16E+00	5.22E-01
	1004.76	17.90	8.32E-01		6.67E-01	3.91E-01
	1274.45	35.50	4.19E-01		8.40E-02	1.94E-01
EU-155	86.50	30.90	2.42E-01	2.42E-01	2.25E-01	1.19E-01
	105.30	20.70	2.71E-01		-1.19E-01	1.32E-01
EU-156	811.77	10.40	1.02E+02	1.02E+02	-1.19E+01	4.77E+01
	1153.47	7.20	1.93E+02		-5.46E+00	9.00E+01
	1230.71	8.90	1.92E+02		-1.23E+01	9.03E+01
HO-166M	184.41	72.60	9.89E-02	9.89E-02	1.34E-01	4.82E-02
	280.45	29.60	2.27E-01		-1.79E-02	1.09E-01
	410.94	11.10	7.23E-01		2.48E-01	3.45E-01
	711.69	54.10	2.13E-01		-8.97E-02	1.01E-01
TM-171	66.72	0.14	5.80E+01	5.80E+01	-5.29E+00	2.85E+01
HF-172	67.35	5.31	1.53E+00	5.50E-01	-1.39E-01	7.50E-01
	125.81	11.30	5.50E-01		-2.33E-01	2.69E-01
LU-172	181.53	20.60	9.47E+03	6.69E+03	-1.23E+01	4.61E+03
	900.72	29.81	1.16E+04		-8.64E+03	5.40E+03
	1093.66	62.50	6.69E+03		2.03E+03	3.11E+03
LU-173	100.72	5.24	1.22E+00	3.87E-01	-1.20E-01	5.96E-01
	272.11	21.20	3.87E-01		-1.15E-02	1.87E-01
HF-175	343.40	84.00	2.48E-01	2.48E-01	1.67E-03	1.19E-01
LU-176	88.34	13.30	5.36E-01	6.71E-02	2.93E-01	2.63E-01
	201.83	86.00	7.18E-02		1.32E-02	3.48E-02
	306.78	94.00	6.71E-02		5.86E-03	3.21E-02
HF-181	133.02	41.70	7.05E-01	4.64E-01	-1.55E-01	3.44E-01
	345.85	17.20	2.25E+00		1.57E-02	1.08E+00
	482.03	82.80	4.64E-01		-4.76E-02	2.18E-01
TA-182	67.75	41.20	3.22E-01	3.22E-01	-1.57E-01	1.58E-01
	1121.30	34.90	9.27E-01		5.94E-01	4.38E-01
	1189.05	16.23	1.81E+00		2.58E-01	8.49E-01
	1221.41	26.98	1.13E+00		2.18E-01	5.30E-01
	1231.02	11.44	2.98E+00		2.62E-03	1.40E+00
IR-192	308.46	29.68	5.42E-01	3.92E-01	-6.58E-02	2.59E-01
	468.07	48.10	3.92E-01		-9.19E-03	1.85E-01
HG-203	279.19	77.30	3.93E-01	3.93E-01	9.87E-02	1.89E-01

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

	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	8.42E-02	8.42E-02	2.71E-02	4.02E-02
		899.15		99.16	1.21E-01		-7.59E-02	5.64E-02
		911.74		91.10	2.01E-01		3.09E-01	9.58E-02
	BI-207	569.67		97.72	9.81E-02	9.81E-02	1.71E-02	4.64E-02
		1063.62		74.90	1.81E-01		-2.16E-02	8.44E-02
+	TL-208	583.14	*	30.22	4.78E-01	6.44E-02	1.26E+00	2.30E-01
		860.37		4.48	2.90E+00		3.15E+00	1.36E+00
		2614.66	*	35.85	6.44E-02		1.43E+00	0.00E+00
	BI-210M	262.00		45.00	1.43E-01	1.43E-01	3.60E-02	6.90E-02
		300.00		23.00	3.17E-01		-6.49E-01	1.53E-01
+	PB-210	46.50	*	4.25	2.30E+00	2.30E+00	1.24E+00	1.13E+00
	PB-211	404.84		2.90	2.65E+00	2.65E+00	-1.13E+00	1.26E+00
		831.96		2.90	4.27E+00		-1.34E-01	2.00E+00
	BI-212	727.17		11.80	1.14E+00	1.14E+00	8.82E-01	5.40E-01
		1620.62		2.75	3.79E+00		1.44E+00	1.65E+00
+	PB-212	238.63	*	44.60	2.21E-01	2.21E-01	1.42E+00	1.08E-01
		300.09	*	3.41	1.95E+00		1.13E+00	9.37E-01
+	BI-214	609.31	*	46.30	3.07E-01	3.07E-01	9.26E-01	1.47E-01
		1120.29	*	15.10	1.55E+00		1.61E+00	7.45E-01
		1764.49	*	15.80	6.25E-01		6.68E-01	2.66E-01
		2204.22		4.98	1.95E+00		-4.16E-01	7.90E-01
+	PB-214	295.21	*	19.19	4.59E-01	3.01E-01	9.09E-01	2.23E-01
		351.92	*	37.19	3.01E-01		8.94E-01	1.46E-01
	RN-219	401.80		6.50	1.17E+00	1.17E+00	-2.00E-01	5.58E-01
	RA-223	323.87		3.88	1.84E+00	1.84E+00	-1.26E-01	8.84E-01
+	RA-224	240.98	*	3.95	2.44E+00	2.44E+00	2.67E+00	1.19E+00
	RA-225	40.00		31.00	3.14E+01	3.14E+01	1.69E+01	1.53E+01
+	RA-226	186.21	*	3.28	2.90E+00	2.90E+00	3.09E+00	1.42E+00
	TH-227	50.10		8.40	9.12E-01	9.12E-01	-4.32E-03	4.46E-01
		236.00		11.50	9.66E-01		2.26E+00	4.74E-01
		256.20		6.30	1.06E+00		9.70E-03	5.10E-01
+	AC-228	338.32	*	11.40	1.01E+00	4.64E-01	1.41E+00	4.90E-01
		911.07	*	27.70	4.64E-01		1.15E+00	2.17E-01
		969.11		16.60	1.10E+00		1.13E+00	5.26E-01
	TH-230	48.44		16.90	4.66E-01	4.66E-01	2.53E-01	2.28E-01
		62.85		4.60	1.61E+00		-5.75E-01	7.89E-01
		67.67		0.37	1.96E+01		-9.57E+00	9.63E+00
	PA-231	283.67		1.60	4.03E+00	2.99E+00	-6.20E-01	1.93E+00
		302.67		2.30	2.99E+00		-4.11E-01	1.44E+00
	TH-231	25.64		14.70	1.51E+00	1.06E+00	-8.58E-01	7.37E-01
		84.21		6.40	1.06E+00		2.55E-01	5.18E-01
	PA-233	311.98		38.60	2.11E+00	2.11E+00	-1.53E+00	1.01E+00
	PA-234	131.20		20.40	2.89E-01	2.89E-01	2.13E-01	1.41E-01
		733.99		8.80	1.25E+00		-1.41E+00	5.85E-01
		946.00		12.00	9.75E-01		-2.97E-01	4.52E-01
	PA-234M	1001.03		0.92	1.48E+01	1.48E+01	3.32E+00	6.94E+00
	TH-234	63.29		3.80	1.94E+00	1.94E+00	-6.94E-01	9.51E-01
	U-235	143.76		10.50	5.67E-01	5.67E-01	1.19E-01	2.77E-01
		163.35		4.70	1.27E+00		-2.29E-01	6.19E-01
		205.31		4.70	1.38E+00		-1.30E+00	6.68E-01
	NP-237	86.50		12.60	5.71E-01	5.71E-01	5.31E-01	2.81E-01
	NP-239	106.10		22.70	1.41E+12	1.41E+12	3.53E+11	6.88E+11
		228.18		10.70	3.70E+12		8.11E+11	1.79E+12

Analysis Report for 1707088-19

HTC-A04-S001-1218-01

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	2.83E+12	1.41E+12	-4.26E+11	1.36E+12
AM-241	59.54	35.90	2.08E-01	2.08E-01	1.40E-02	1.02E-01
AM-243	74.67	66.00	1.48E-01	1.48E-01	6.71E-01	7.30E-02
CM-243	209.75	3.29	2.12E+00	4.91E-01	6.19E-01	1.03E+00
	228.14	10.60	6.43E-01		1.41E-01	3.12E-01
	277.60	14.00	4.91E-01		-7.41E-02	2.36E-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-A04-S001-1218-01

Elapsed Live time: 3600
Elapsed Real Time: 3610

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	35	131
17:	99	110	93	96	97	84	76	83
25:	71	67	90	83	86	78	76	65
33:	73	48	82	97	71	74	77	90
41:	72	67	65	81	114	108	95	105
49:	94	86	97	111	105	114	95	114
57:	126	131	94	127	135	163	169	118
65:	134	149	156	135	133	154	143	178
73:	242	313	302	421	326	164	113	99
81:	116	126	150	144	143	174	176	146
89:	154	132	158	198	162	127	77	77
97:	92	105	114	69	80	80	90	79
105:	91	72	90	94	85	87	90	85
113:	86	95	78	75	69	80	80	85
121:	80	75	77	77	69	75	82	100
129:	91	87	75	84	68	63	80	74
137:	77	80	76	83	71	78	83	82
145:	69	75	82	60	57	79	75	77
153:	76	75	66	67	76	61	69	71
161:	68	66	58	66	61	74	62	58
169:	64	55	62	52	73	74	50	62
177:	62	55	60	54	58	59	61	95
185:	122	92	66	62	53	50	62	45
193:	59	57	56	60	56	50	58	43
201:	55	38	44	60	56	50	68	83
209:	73	53	37	47	43	62	52	57
217:	41	44	43	52	45	39	64	56
225:	49	57	41	42	50	41	44	38
233:	35	44	54	89	245	363	192	101
241:	100	69	30	38	38	26	43	30
249:	32	30	37	44	37	35	36	41
257:	32	33	43	35	28	36	27	29
265:	41	41	36	32	69	37	31	38
273:	27	31	30	46	43	26	30	25
281:	32	40	23	28	28	20	26	35
289:	29	30	30	29	56	105	91	40
297:	25	31	33	37	38	21	24	20
305:	23	29	26	16	21	20	22	22
313:	27	23	27	29	25	27	32	21
321:	29	29	26	21	31	27	48	26
329:	28	31	20	19	35	24	19	46
337:	75	75	34	28	35	23	31	25
345:	28	22	24	26	26	79	133	93
353:	49	30	21	21	22	21	26	19
361:	20	22	14	20	12	17	25	19

369:	18	24	17	27	24	20	19	26

Sample Title: HTC-A04-S001-1218-01

Channel								
377:	17	16	18	15	15	19	20	20
385:	20	20	24	25	19	26	20	28
393:	21	19	22	24	20	19	26	18
401:	16	18	15	20	23	15	25	22
409:	23	17	15	25	13	20	12	21
417:	18	14	19	12	16	11	21	21
425:	9	14	12	12	13	18	21	15
433:	11	16	27	10	15	17	17	14
441:	14	6	18	19	12	11	17	12
449:	17	10	16	16	17	20	17	22
457:	12	11	12	15	20	22	28	14
465:	10	14	12	16	9	14	15	13
473:	16	12	21	4	11	13	13	15
481:	12	14	12	7	17	16	16	13
489:	11	17	20	12	13	13	12	10
497:	9	14	8	7	21	12	10	8
505:	20	16	16	25	35	58	33	21
513:	12	10	11	9	17	16	12	11
521:	13	20	13	10	17	7	17	6
529:	7	11	16	9	12	12	10	14
537:	12	11	11	16	10	10	14	13
545:	15	13	10	6	11	14	16	25
553:	15	15	9	10	13	5	12	15
561:	19	18	12	15	14	14	13	13
569:	22	13	10	15	9	15	7	12
577:	10	7	15	14	39	71	66	35
585:	16	11	12	8	8	16	8	12
593:	8	11	13	13	11	12	10	12
601:	8	10	7	9	17	15	29	80
609:	93	34	10	11	10	12	7	12
617:	13	8	9	10	12	13	13	13
625:	14	10	13	7	10	4	11	11
633:	11	10	17	5	12	12	9	10
641:	10	9	11	9	6	9	9	11
649:	12	11	13	10	6	10	10	7
657:	11	9	8	7	16	12	12	8
665:	17	13	5	5	8	10	14	13
673:	6	11	11	11	12	14	8	10
681:	8	9	15	15	17	11	12	10
689:	7	11	12	9	10	10	11	11
697:	10	8	10	11	11	13	13	7
705:	8	16	7	16	8	4	11	15
713:	13	10	11	13	14	10	7	10
721:	11	13	7	4	17	25	24	14
729:	11	10	10	6	8	9	8	7
737:	11	9	13	12	5	16	16	11
745:	13	9	10	6	13	8	4	15
753:	10	7	14	10	13	9	14	7
761:	11	11	10	9	10	9	6	17
769:	12	8	10	6	4	8	0	8
777:	8	9	5	4	5	13	7	15
785:	15	6	9	8	7	10	5	8
793:	14	17	16	6	10	6	9	3

801:	8	10	7	3	8	10	6	11

Sample Title: HTC-A04-S001-1218-01

Channel								
809:	11	6	12	6	7	3	6	7
817:	8	7	11	8	7	7	7	9
825:	6	9	5	6	10	13	8	5
833:	7	10	17	9	6	7	10	13
841:	2	9	7	5	11	13	12	5
849:	3	2	4	10	10	5	5	12
857:	7	9	8	14	11	9	5	9
865:	2	4	8	8	9	6	8	4
873:	16	12	9	8	3	14	5	11
881:	7	5	7	7	3	4	8	8
889:	5	11	9	5	7	12	8	4
897:	6	8	9	5	5	5	9	6
905:	12	6	4	11	14	32	48	19
913:	4	6	2	6	1	10	4	7
921:	4	4	7	7	9	4	7	8
929:	4	4	8	8	12	14	9	5
937:	4	4	7	6	2	7	4	6
945:	5	9	11	6	6	9	8	15
953:	6	7	7	3	8	9	4	3
961:	7	7	18	19	12	14	14	28
969:	23	18	3	8	9	4	3	5
977:	6	3	2	2	5	9	7	6
985:	6	8	5	10	7	6	4	4
993:	5	4	7	6	7	3	8	4
1001:	10	16	10	6	11	5	8	10
1009:	3	6	7	6	5	10	4	13
1017:	4	10	8	10	8	6	5	7
1025:	12	3	3	5	8	2	7	6
1033:	9	6	3	10	4	9	5	8
1041:	3	12	5	7	7	9	4	6
1049:	5	7	15	7	10	3	6	6
1057:	12	6	6	8	8	6	8	5
1065:	9	4	7	7	5	6	11	3
1073:	9	10	5	8	5	12	2	6
1081:	7	7	5	10	13	9	7	3
1089:	3	9	5	7	8	4	9	6
1097:	8	7	4	7	5	8	6	14
1105:	13	9	10	5	6	4	9	6
1113:	4	6	9	6	11	5	22	15
1121:	22	6	6	6	5	13	5	5
1129:	5	5	7	7	6	5	12	7
1137:	4	7	3	11	9	7	3	4
1145:	9	6	7	12	8	13	5	6
1153:	6	6	3	6	9	6	10	4
1161:	7	9	9	7	8	8	9	11
1169:	8	4	9	6	14	12	13	6
1177:	7	11	7	6	8	8	6	8
1185:	8	9	4	6	7	10	8	10
1193:	10	9	6	7	7	5	10	7
1201:	12	8	4	11	8	8	10	11
1209:	9	2	5	6	15	10	4	7
1217:	10	13	7	7	10	7	6	9
1225:	5	5	14	11	13	9	5	5

1233:	17	6	12	10	11	11	9	12

Sample Title: HTC-A04-S001-1218-01

Channel								
1241:	8	7	7	9	5	6	7	5
1249:	8	4	4	3	6	8	5	1
1257:	9	6	7	5	3	8	8	6
1265:	7	7	3	3	5	6	5	3
1273:	5	7	6	3	7	9	4	7
1281:	7	6	6	6	9	8	3	4
1289:	6	6	4	8	5	3	4	6
1297:	3	8	5	4	3	5	7	5
1305:	4	4	7	2	1	2	3	3
1313:	4	3	6	4	4	6	2	6
1321:	4	2	0	7	2	7	4	3
1329:	6	4	1	8	8	7	4	4
1337:	2	2	4	4	6	8	1	1
1345:	4	3	4	4	3	3	3	4
1353:	5	2	2	3	0	3	2	1
1361:	0	4	2	5	4	2	4	0
1369:	3	6	4	5	4	0	2	3
1377:	4	7	4	2	2	2	3	6
1385:	2	2	4	1	4	4	2	1
1393:	2	3	0	4	0	0	1	3
1401:	3	2	2	0	6	3	3	5
1409:	1	2	2	2	2	1	1	3
1417:	6	2	4	4	3	3	3	4
1425:	1	0	1	1	2	1	5	2
1433:	2	2	2	7	4	2	1	2
1441:	0	2	5	3	2	0	3	4
1449:	2	1	2	2	1	5	4	0
1457:	2	33	109	185	153	60	12	3
1465:	2	0	0	0	0	2	2	2
1473:	0	1	2	0	0	1	2	3
1481:	2	3	1	2	3	1	0	1
1489:	3	2	1	1	2	2	3	4
1497:	2	2	2	0	2	3	1	2
1505:	3	0	1	4	3	2	7	2
1513:	5	1	2	1	1	0	1	1
1521:	3	2	2	3	1	0	0	0
1529:	1	0	1	0	1	3	1	3
1537:	3	1	0	0	1	1	1	0
1545:	0	4	1	2	1	1	0	3
1553:	0	1	4	0	1	1	0	0
1561:	0	2	3	0	2	2	1	2
1569:	0	0	1	0	1	0	2	0
1577:	3	0	2	2	3	1	0	0
1585:	2	0	5	5	4	3	4	7
1593:	1	1	1	4	1	1	1	4
1601:	3	2	1	1	0	3	0	1
1609:	0	1	1	2	1	1	1	1
1617:	2	2	3	3	2	1	0	1
1625:	1	0	1	1	0	2	2	1
1633:	0	1	1	2	1	2	0	1
1641:	2	1	1	1	4	0	2	3
1649:	1	1	0	1	0	1	0	0
1657:	0	0	1	0	0	1	0	1

1665:	0	0	1	1	1	0	0	0

Sample Title: HTC-A04-S001-1218-01

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

2097:	0	3	1	1	0	1	1	3

Sample Title: HTC-A04-S001-1218-01

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

2529:	0	0	0	0	2	0	0	0

Sample Title: HTC-A04-S001-1218-01

Channel								
2537:	0	0	0	0	0	0	0	2
2545:	1	1	0	0	1	0	0	0
2553:	0	0	0	1	1	0	0	1
2561:	0	0	1	0	0	0	1	0
2569:	0	0	0	1	1	0	0	0
2577:	0	0	0	0	1	0	0	0
2585:	0	1	0	0	1	0	0	0
2593:	0	0	0	0	0	1	0	0
2601:	0	1	0	0	0	0	0	0
2609:	0	1	0	4	8	17	17	10
2617:	1	1	1	0	0	0	1	0
2625:	0	1	0	0	0	0	0	0
2633:	0	0	0	0	0	0	0	0
2641:	0	0	1	0	2	0	1	0
2649:	0	0	0	0	0	2	0	0
2657:	0	0	0	0	0	1	0	0
2665:	0	0	0	0	0	1	0	0
2673:	0	2	0	0	0	0	0	1
2681:	0	0	0	0	0	0	0	2
2689:	1	0	0	0	0	0	0	0
2697:	0	0	1	0	0	0	0	0
2705:	1	2	0	0	0	0	0	0
2713:	0	0	0	0	0	0	1	1
2721:	0	0	1	0	1	0	0	0
2729:	0	0	0	0	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	0	0	0	0	0	0	0	0
2753:	0	0	0	0	1	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	0	1	0	0	1	0	0
2777:	0	0	2	0	0	0	0	0
2785:	0	0	1	0	0	0	0	0
2793:	0	1	0	0	0	0	0	0
2801:	0	0	0	0	0	0	0	1
2809:	0	0	0	0	1	0	0	1
2817:	0	0	0	0	1	0	1	0
2825:	0	0	0	0	0	1	0	0
2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	1	0	0	0	0
2849:	0	1	0	2	0	0	0	1
2857:	0	1	0	1	0	0	0	0
2865:	0	0	0	0	0	0	0	0
2873:	1	1	0	0	0	0	0	1
2881:	0	0	0	0	0	0	0	0
2889:	0	0	0	1	0	0	0	0
2897:	0	0	0	0	0	0	1	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	1	0	0	0	0	0
2929:	0	0	0	0	0	0	1	0
2937:	0	0	0	0	0	0	0	0
2945:	0	1	1	0	0	0	2	0
2953:	0	0	0	0	0	1	1	0

2961:	0	0	0	0	0	0	0	0

Sample Title: HTC-A04-S001-1218-01

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

3393:	0	1	0	0	0	0	0	0

Sample Title: HTC-A04-S001-1218-01

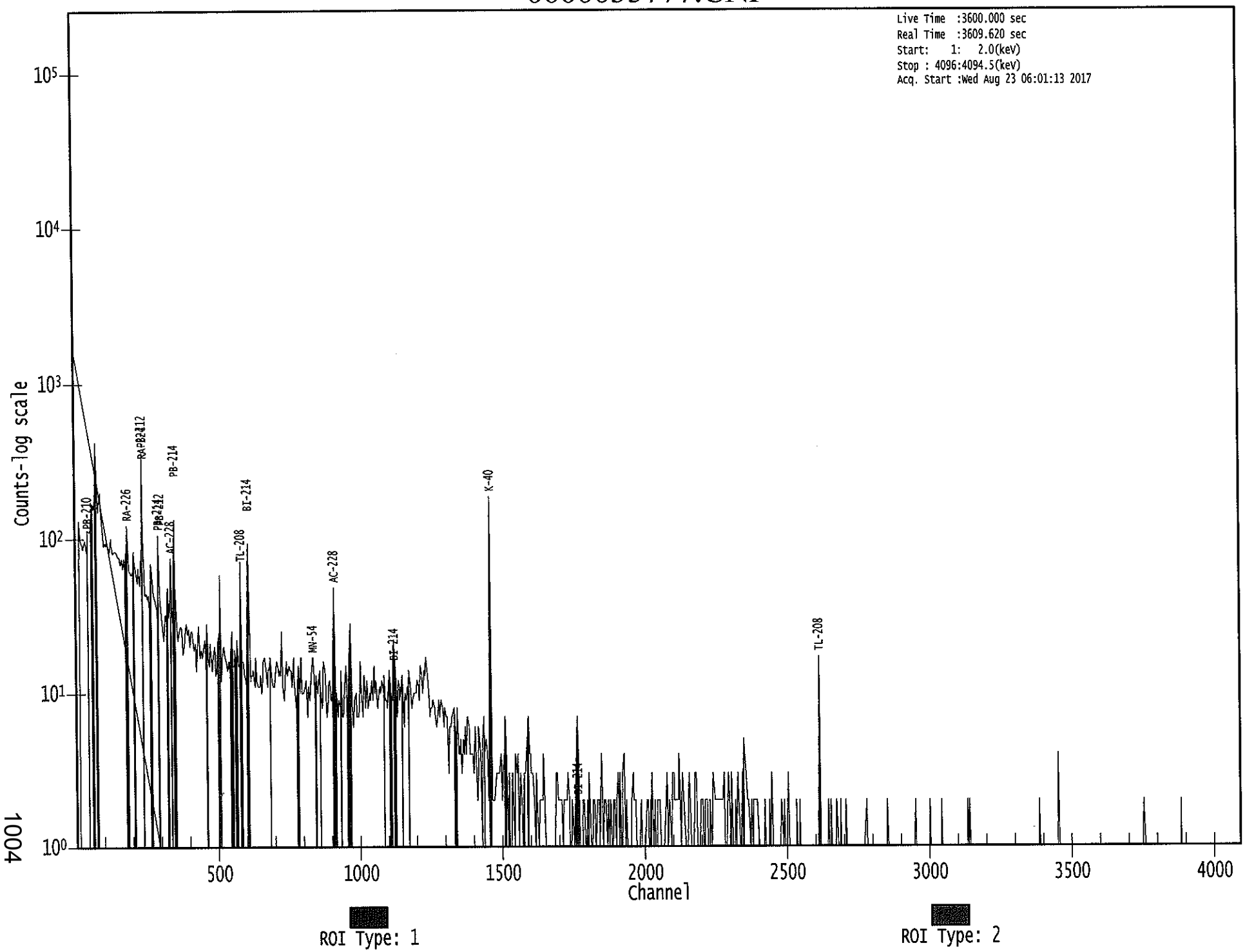
Channel								
3401:	0	0	0	0	0	1	1	0
3409:	1	0	0	0	0	0	0	1
3417:	0	0	0	0	0	1	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	1	0	0	0	0
3441:	1	0	0	1	0	0	0	0
3449:	0	0	1	0	4	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	1	0	0	0
3473:	0	0	0	0	0	1	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	1	0	0	1	1	1
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	0

Sample Title: HTC-A04-S001-1218-01

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

0000055777.CNF



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Apex-Gamma

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1707088-20
Sample Description	: HTC-A04-S001-1824-01
Sample Type	: SOIL
Sample Size	: 7.029E+02 grams
Facility	: Countroom
Sample Taken On	: 5/15/2017 9:37:15AM
Acquisition Started	: 8/23/2017 7:05:17AM
Procedure	: GAS-1602 pCi
Operator	: Administrator
Detector Name	: GE1
Geometry	: GAS-1602
Live Time	: 3600.0 seconds
Real Time	: 3601.6 seconds
Dead Time	: 0.05 %
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	: 55779

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
8/23/17

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

PEAK LOCATE REPORT

Peak Locate Performed on : 8/23/2017 8:05:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	46.21	46.84	0.0000	0.00
2	63.27	63.88	0.0000	0.00
3	76.11	76.70	0.0000	0.00
4	87.57	88.15	0.0000	0.00
5	92.34	92.92	0.0000	0.00
6	114.57	115.12	0.0000	0.00
7	129.17	129.70	0.0000	0.00
8	185.76	186.24	0.0000	0.00
9	209.79	210.24	0.0000	0.00
10	238.61	239.04	0.0000	0.00
11	241.74	242.17	0.0000	0.00
12	270.48	270.87	0.0000	0.00
13	295.01	295.38	0.0000	0.00
14	299.99	300.36	0.0000	0.00
15	322.70	323.05	0.0000	0.00
16	328.11	328.44	0.0000	0.00
17	338.07	338.39	0.0000	0.00
18	351.93	352.24	0.0000	0.00
19	355.89	356.20	0.0000	0.00
20	381.80	382.08	0.0000	0.00
21	408.95	409.21	0.0000	0.00
22	411.75	412.00	0.0000	0.00
23	459.39	459.59	0.0000	0.00
24	462.86	463.06	0.0000	0.00
25	511.42	511.57	0.0000	0.00
26	583.18	583.26	0.0000	0.00
27	609.42	609.47	0.0000	0.00
28	613.82	613.87	0.0000	0.00
29	646.65	646.67	0.0000	0.00
30	727.66	727.59	0.0000	0.00
31	751.19	751.10	0.0000	0.00
32	755.27	755.17	0.0000	0.00
33	762.44	762.34	0.0000	0.00
34	794.88	794.75	0.0000	0.00
35	856.81	856.61	0.0000	0.00
36	860.77	860.57	0.0000	0.00
37	911.21	910.96	0.0000	0.00
38	933.63	933.36	0.0000	0.00
39	968.62	968.32	0.0000	0.00
40	1024.22	1023.86	0.0000	0.00
41	1120.98	1120.52	0.0000	0.00
42	1208.73	1208.19	0.0000	0.00

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1238.41	1237.83	0.0000	0.00
44	1282.94	1282.32	0.0000	0.00
45	1339.45	1338.77	0.0000	0.00
46	1379.55	1378.83	0.0000	0.00
47	1407.84	1407.09	0.0000	0.00
48	1461.38	1460.58	0.0000	0.00
49	1465.61	1464.81	0.0000	0.00
50	1510.99	1510.14	0.0000	0.00
51	1594.39	1593.47	0.0000	0.00
52	1620.95	1620.00	0.0000	0.00
53	1632.97	1632.01	0.0000	0.00
54	1663.54	1662.54	0.0000	0.00
55	1731.35	1730.29	0.0000	0.00
56	1765.13	1764.04	0.0000	0.00
57	1805.00	1803.87	0.0000	0.00
58	1817.40	1816.26	0.0000	0.00
59	1847.65	1846.47	0.0000	0.00
60	1916.00	1914.76	0.0000	0.00
61	2059.24	2057.86	0.0000	0.00
62	2104.14	2102.72	0.0000	0.00
63	2164.30	2162.82	0.0000	0.00
64	2205.00	2203.48	0.0000	0.00
65	2213.52	2211.99	0.0000	0.00
66	2445.88	2444.13	0.0000	0.00
67	2462.63	2460.87	0.0000	0.00
68	2615.63	2613.72	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 8/23/2017 8:05:21AM

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	46.21	45 -	49	46.84	9.74E+01	67.59	9.39E+02	1.67
	2	63.27	60 -	66	63.88	2.71E+02	114.17	2.18E+03	1.58
	3	76.11	72 -	83	76.70	1.35E+03	192.46	3.93E+03	3.94
M	4	87.57	83 -	97	88.15	2.20E+02	87.10	1.41E+03	1.67
m	5	92.34	83 -	97	92.92	4.41E+02	92.34	1.28E+03	1.67
	6	114.57	112 -	118	115.12	7.65E+01	89.31	1.39E+03	2.22
	7	129.17	127 -	132	129.70	7.44E+01	78.02	1.15E+03	1.32
	8	185.76	182 -	191	186.24	2.59E+02	108.29	1.52E+03	1.84
	9	209.79	207 -	213	210.24	1.26E+02	74.23	8.97E+02	1.60
M	10	238.61	234 -	246	239.04	1.24E+03	85.48	5.61E+02	1.73
m	11	241.74	234 -	246	242.17	2.04E+02	85.31	5.14E+02	1.82
	12	270.48	266 -	273	270.87	7.72E+01	65.15	6.56E+02	2.36
	13	295.01	292 -	298	295.38	2.95E+02	67.04	6.03E+02	2.08
	14	299.99	299 -	303	300.36	7.89E+01	45.43	3.80E+02	1.93
M	15	322.70	320 -	331	323.05	5.29E+01	44.05	3.51E+02	2.76
m	16	328.11	320 -	331	328.44	7.59E+01	50.25	4.03E+02	2.27
	17	338.07	333 -	342	338.39	2.00E+02	76.66	7.26E+02	1.72
M	18	351.93	347 -	359	352.24	5.40E+02	58.29	2.72E+02	1.71
m	19	355.89	347 -	359	356.20	3.83E+01	67.88	4.10E+02	2.54
	20	381.80	379 -	384	382.08	4.00E+01	38.70	2.64E+02	1.76
M	21	408.95	407 -	415	409.21	5.43E+01	28.43	1.56E+02	2.13
m	22	411.75	407 -	415	412.00	2.53E+01	33.41	2.02E+02	1.77
M	23	459.39	458 -	468	459.59	2.61E+01	20.38	1.05E+02	2.39
m	24	462.86	458 -	468	463.06	9.62E+01	42.01	2.42E+02	2.39
	25	511.42	508 -	518	511.57	2.60E+02	57.91	3.11E+02	2.50
	26	583.18	579 -	587	583.26	3.45E+02	59.82	3.40E+02	1.94
M	27	609.42	604 -	621	609.47	4.17E+02	49.82	1.63E+02	1.97
m	28	613.82	604 -	621	613.87	3.54E+01	47.54	1.91E+02	2.74
	29	646.65	644 -	651	646.67	3.33E+01	32.12	1.53E+02	4.61
	30	727.66	723 -	731	727.59	7.40E+01	45.16	2.64E+02	2.37
M	31	751.19	746 -	759	751.10	2.64E+01	31.11	1.30E+02	2.83
m	32	755.27	746 -	759	755.17	3.19E+01	31.62	1.25E+02	2.83
	33	762.44	760 -	766	762.34	2.69E+01	28.80	1.34E+02	2.90
	34	794.88	790 -	797	794.75	4.92E+01	34.00	1.60E+02	1.74
M	35	856.81	855 -	867	856.61	2.24E+01	15.08	4.04E+01	1.79
m	36	860.77	855 -	867	860.57	6.93E+01	32.98	1.21E+02	2.63
	37	911.21	907 -	916	910.96	2.22E+02	52.51	2.71E+02	1.87
	38	933.63	930 -	937	933.36	2.45E+01	30.33	1.39E+02	3.97
	39	968.62	963 -	972	968.32	1.82E+02	46.13	2.00E+02	1.72
	40	1024.22	1019 -	1027	1023.86	2.92E+01	32.43	1.44E+02	3.63

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1120.98	1116 -	1126	1120.52	1.28E+02	42.76	1.74E+02	1.98
	42	1208.73	1203 -	1212	1208.19	3.34E+01	40.89	2.19E+02	1.86
	43	1238.41	1234 -	1242	1237.83	5.01E+01	37.77	1.88E+02	2.24
	44	1282.94	1278 -	1286	1282.32	2.55E+01	28.39	1.09E+02	3.24
	45	1339.45	1336 -	1341	1338.77	1.30E+01	17.09	4.80E+01	1.55
	46	1379.55	1374 -	1385	1378.83	2.97E+01	28.98	9.07E+01	2.15
	47	1407.84	1398 -	1418	1407.09	4.17E+01	38.50	1.07E+02	14.92
M	48	1461.38	1454 -	1472	1460.58	1.43E+03	76.98	2.47E+01	2.25
m	49	1465.61	1454 -	1472	1464.81	5.01E+01	59.23	2.44E+01	2.65
	50	1510.99	1504 -	1517	1510.14	3.40E+01	14.04	5.92E+00	9.79
	51	1594.39	1592 -	1597	1593.47	1.24E+01	13.00	1.93E+01	1.18
	52	1620.95	1618 -	1622	1620.00	1.00E+01	9.22	1.00E+01	2.98
	53	1632.97	1628 -	1636	1632.01	2.06E+01	12.84	1.08E+01	4.57
	54	1663.54	1658 -	1665	1662.54	1.20E+01	12.96	2.00E+01	2.88
	55	1731.35	1726 -	1735	1730.29	1.99E+01	10.63	4.18E+00	6.68
	56	1765.13	1759 -	1768	1764.04	7.95E+01	22.20	2.50E+01	2.47
	57	1805.00	1800 -	1806	1803.87	6.50E+00	8.03	7.00E+00	1.01
	58	1817.40	1814 -	1819	1816.26	7.17E+00	6.71	3.67E+00	1.07
	59	1847.65	1842 -	1850	1846.47	1.69E+01	11.16	8.19E+00	1.52
	60	1916.00	1912 -	1917	1914.76	7.00E+00	7.62	6.00E+00	1.00
	61	2059.24	2054 -	2060	2057.86	8.45E+00	7.23	3.10E+00	2.24
	62	2104.14	2098 -	2107	2102.72	3.44E+01	15.59	1.52E+01	1.75
	63	2164.30	2159 -	2166	2162.82	1.10E+01	6.63	0.00E+00	4.72
	64	2205.00	2199 -	2208	2203.48	2.79E+01	14.53	1.23E+01	1.99
	65	2213.52	2209 -	2215	2211.99	9.05E+00	7.50	3.91E+00	1.17
	66	2445.88	2438 -	2448	2444.13	1.10E+01	9.29	6.00E+00	6.70
	67	2462.63	2457 -	2464	2460.87	8.00E+00	7.48	4.00E+00	2.82
	68	2615.63	2609 -	2621	2613.72	1.36E+02	25.54	1.30E+01	2.74

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 : 8/23/2017 8:05:21AM

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

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	46.21	45 -	49	9.74E+01	67.59	9.39E+02	5.31E+01
	2	63.27	60 -	66	2.71E+02	114.17	2.18E+03	8.99E+01
	3	76.11	72 -	83	1.35E+03	192.46	3.93E+03	1.46E+02
M	4	87.57	83 -	97	2.20E+02	87.10	1.41E+03	6.18E+01
m	5	92.34	83 -	97	4.41E+02	92.34	1.28E+03	5.89E+01
	6	114.57	112 -	118	7.65E+01	89.31	1.39E+03	7.20E+01
	7	129.17	127 -	132	7.44E+01	78.02	1.15E+03	6.25E+01
	8	185.76	182 -	191	2.59E+02	108.29	1.52E+03	8.50E+01
	9	209.79	207 -	213	1.26E+02	74.23	8.97E+02	5.81E+01
M	10	238.61	234 -	246	1.24E+03	85.48	5.61E+02	3.89E+01
m	11	241.74	234 -	246	2.04E+02	85.31	5.14E+02	3.73E+01
	12	270.48	266 -	273	7.72E+01	65.15	6.56E+02	5.16E+01
	13	295.01	292 -	298	2.95E+02	67.04	6.03E+02	4.73E+01
	14	299.99	299 -	303	7.89E+01	45.43	3.80E+02	3.44E+01
M	15	322.70	320 -	331	5.29E+01	44.05	3.51E+02	3.08E+01
m	16	328.11	320 -	331	7.59E+01	50.25	4.03E+02	3.30E+01
	17	338.07	333 -	342	2.00E+02	76.66	7.26E+02	5.86E+01
M	18	351.93	347 -	359	5.40E+02	58.29	2.72E+02	2.71E+01
m	19	355.89	347 -	359	3.83E+01	67.88	4.10E+02	3.33E+01
	20	381.80	379 -	384	4.00E+01	38.70	2.64E+02	3.01E+01
M	21	408.95	407 -	415	5.43E+01	28.43	1.56E+02	2.06E+01
m	22	411.75	407 -	415	2.53E+01	33.41	2.02E+02	2.34E+01
M	23	459.39	458 -	468	2.61E+01	20.38	1.05E+02	1.68E+01
m	24	462.86	458 -	468	9.62E+01	42.01	2.42E+02	2.56E+01
	25	511.42	508 -	518	2.60E+02	57.91	3.11E+02	3.96E+01
	26	583.18	579 -	587	3.45E+02	59.82	3.40E+02	3.85E+01
M	27	609.42	604 -	621	4.17E+02	49.82	1.63E+02	2.10E+01
m	28	613.82	604 -	621	3.54E+01	47.54	1.91E+02	2.27E+01
	29	646.65	644 -	651	3.33E+01	32.12	1.53E+02	2.46E+01
	30	727.66	723 -	731	7.40E+01	45.16	2.64E+02	3.43E+01
M	31	751.19	746 -	759	2.64E+01	31.11	1.30E+02	1.87E+01
m	32	755.27	746 -	759	3.19E+01	31.62	1.25E+02	1.84E+01
	33	762.44	760 -	766	2.69E+01	28.80	1.34E+02	2.21E+01
	34	794.88	790 -	797	4.92E+01	34.00	1.60E+02	2.55E+01
M	35	856.81	855 -	867	2.24E+01	15.08	4.04E+01	1.04E+01
m	36	860.77	855 -	867	6.93E+01	32.98	1.21E+02	1.81E+01
	37	911.21	907 -	916	2.22E+02	52.51	2.71E+02	3.55E+01
	38	933.63	930 -	937	2.45E+01	30.33	1.39E+02	2.36E+01
	39	968.62	963 -	972	1.82E+02	46.13	2.00E+02	3.08E+01
	40	1024.22	1019 -	1027	2.92E+01	32.43	1.44E+02	2.51E+01
	41	1120.98	1116 -	1126	1.28E+02	42.76	1.74E+02	2.98E+01
	42	1208.73	1203 -	1212	3.34E+01	40.89	2.19E+02	3.22E+01
	43	1238.41	1234 -	1242	5.01E+01	37.77	1.88E+02	2.88E+01
	44	1282.94	1278 -	1286	2.55E+01	28.39	1.09E+02	2.18E+01
	45	1339.45	1336 -	1341	1.30E+01	17.09	4.80E+01	1.27E+01
	46	1379.55	1374 -	1385	2.97E+01	28.98	9.07E+01	2.21E+01
	47	1407.84	1398 -	1418	4.17E+01	38.50	1.07E+02	2.98E+01
M	48	1461.38	1454 -	1472	1.43E+03	76.98	2.47E+01	8.17E+00
m	49	1465.61	1454 -	1472	5.01E+01	59.23	2.44E+01	8.11E+00
	50	1510.99	1504 -	1517	3.40E+01	14.04	5.92E+00	6.41E+00
	51	1594.39	1592 -	1597	1.24E+01	13.00	1.93E+01	8.99E+00

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
52	1620.95	1618 -	1622	1.00E+01	9.22	1.00E+01	5.51E+00
53	1632.97	1628 -	1636	2.06E+01	12.84	1.08E+01	7.46E+00
54	1663.54	1658 -	1665	1.20E+01	12.96	2.00E+01	9.00E+00
55	1731.35	1726 -	1735	1.99E+01	10.63	4.18E+00	4.75E+00
56	1765.13	1759 -	1768	7.95E+01	22.20	2.50E+01	1.09E+01
57	1805.00	1800 -	1806	6.50E+00	8.03	7.00E+00	5.10E+00
58	1817.40	1814 -	1819	7.17E+00	6.71	3.67E+00	3.32E+00
59	1847.65	1842 -	1850	1.69E+01	11.16	8.19E+00	6.20E+00
60	1916.00	1912 -	1917	7.00E+00	7.62	6.00E+00	4.50E+00
61	2059.24	2054 -	2060	8.45E+00	7.23	3.10E+00	3.53E+00
62	2104.14	2098 -	2107	3.44E+01	15.59	1.52E+01	8.44E+00
63	2164.30	2159 -	2166	1.10E+01	6.63	0.00E+00	0.00E+00
64	2205.00	2199 -	2208	2.79E+01	14.53	1.23E+01	8.20E+00
65	2213.52	2209 -	2215	9.05E+00	7.50	3.91E+00	3.68E+00
66	2445.88	2438 -	2448	1.10E+01	9.29	6.00E+00	5.34E+00
67	2462.63	2457 -	2464	8.00E+00	7.48	4.00E+00	4.03E+00
68	2615.63	2609 -	2621	1.36E+02	25.54	1.30E+01	8.64E+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 : 8/23/2017 8:05:21AM

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

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

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	46.21	45 -	49	46.84	9.74E+01	67.59	9.39E+02	PB-210
	2	63.27	60 -	66	63.88	2.71E+02	114.17	2.18E+03	TH-234
									TH-230
	3	76.11	72 -	83	76.70	1.35E+03	192.46	3.93E+03	.....
M	4	87.57	83 -	97	88.15	2.20E+02	87.10	1.41E+03	SN-126
									CD-109
									LU-176
m	5	92.34	83 -	97	92.92	4.41E+02	92.34	1.28E+03	GA-67

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	6	114.57	112 -	118	115.12	7.65E+01	89.31	1.39E+03	.....
	7	129.17	127 -	132	129.70	7.44E+01	78.02	1.15E+03	.....
	8	185.76	182 -	191	186.24	2.59E+02	108.29	1.52E+03	RA-226
	9	209.79	207 -	213	210.24	1.26E+02	74.23	8.97E+02	CM-243
									GA-67
M	10	238.61	234 -	246	239.04	1.24E+03	85.48	5.61E+02	PB-212
m	11	241.74	234 -	246	242.17	2.04E+02	85.31	5.14E+02	RA-224
	12	270.48	266 -	273	270.87	7.72E+01	65.15	6.56E+02	.....
	13	295.01	292 -	298	295.38	2.95E+02	67.04	6.03E+02	PB-214
	14	299.99	299 -	303	300.36	7.89E+01	45.43	3.80E+02	BI-210M
									PB-212
									GA-67
M	15	322.70	320 -	331	323.05	5.29E+01	44.05	3.51E+02	.....
m	16	328.11	320 -	331	328.44	7.59E+01	50.25	4.03E+02	LA-140
	17	338.07	333 -	342	338.39	2.00E+02	76.66	7.26E+02	AC-228
M	18	351.93	347 -	359	352.24	5.40E+02	58.29	2.72E+02	PB-214
m	19	355.89	347 -	359	356.20	3.83E+01	67.88	4.10E+02	BA-133
	20	381.80	379 -	384	382.08	4.00E+01	38.70	2.64E+02	.....
M	21	408.95	407 -	415	409.21	5.43E+01	28.43	1.56E+02	.....
m	22	411.75	407 -	415	412.00	2.53E+01	33.41	2.02E+02	HO-166M
M	23	459.39	458 -	468	459.59	2.61E+01	20.38	1.05E+02	.....
m	24	462.86	458 -	468	463.06	9.62E+01	42.01	2.42E+02	SB-125
	25	511.42	508 -	518	511.57	2.60E+02	57.91	3.11E+02	.....
	26	583.18	579 -	587	583.26	3.45E+02	59.82	3.40E+02	TL-208
M	27	609.42	604 -	621	609.47	4.17E+02	49.82	1.63E+02	BI-214
m	28	613.82	604 -	621	613.87	3.54E+01	47.54	1.91E+02	AG-108M
	29	646.65	644 -	651	646.67	3.33E+01	32.12	1.53E+02	SB-124
	30	727.66	723 -	731	727.59	7.40E+01	45.16	2.64E+02	BI-212
M	31	751.19	746 -	759	751.10	2.64E+01	31.11	1.30E+02	.....
m	32	755.27	746 -	759	755.17	3.19E+01	31.62	1.25E+02	.....
	33	762.44	760 -	766	762.34	2.69E+01	28.80	1.34E+02	.....
	34	794.88	790 -	797	794.75	4.92E+01	34.00	1.60E+02	CS-134
M	35	856.81	855 -	867	856.61	2.24E+01	15.08	4.04E+01	.....
m	36	860.77	855 -	867	860.57	6.93E+01	32.98	1.21E+02	TL-208
	37	911.21	907 -	916	910.96	2.22E+02	52.51	2.71E+02	AC-228
									TL-204
	38	933.63	930 -	937	933.36	2.45E+01	30.33	1.39E+02	.....
	39	968.62	963 -	972	968.32	1.82E+02	46.13	2.00E+02	AC-228
	40	1024.22	1019 -	1027	1023.86	2.92E+01	32.43	1.44E+02	.....
	41	1120.98	1116 -	1126	1120.52	1.28E+02	42.76	1.74E+02	TA-182
									SC-46
									BI-214
	42	1208.73	1203 -	1212	1208.19	3.34E+01	40.89	2.19E+02	.....
	43	1238.41	1234 -	1242	1237.83	5.01E+01	37.77	1.88E+02	CO-56
	44	1282.94	1278 -	1286	1282.32	2.55E+01	28.39	1.09E+02	.....
	45	1339.45	1336 -	1341	1338.77	1.30E+01	17.09	4.80E+01	.....
	46	1379.55	1374 -	1385	1378.83	2.97E+01	28.98	9.07E+01	.....
	47	1407.84	1398 -	1418	1407.09	4.17E+01	38.50	1.07E+02	EU-152
M	48	1461.38	1454 -	1472	1460.58	1.43E+03	76.98	2.47E+01	K-40
m	49	1465.61	1454 -	1472	1464.81	5.01E+01	59.23	2.44E+01	.....
	50	1510.99	1504 -	1517	1510.14	3.40E+01	14.04	5.92E+00	.....
	51	1594.39	1592 -	1597	1593.47	1.24E+01	13.00	1.93E+01	.....
	52	1620.95	1618 -	1622	1620.00	1.00E+01	9.22	1.00E+01	BI-212
	53	1632.97	1628 -	1636	1632.01	2.06E+01	12.84	1.08E+01	.....

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
54	1663.54	1658 -	1665	1662.54	1.20E+01	12.96	2.00E+01	.....
55	1731.35	1726 -	1735	1730.29	1.99E+01	10.63	4.18E+00	.....
56	1765.13	1759 -	1768	1764.04	7.95E+01	22.20	2.50E+01	BI-214
57	1805.00	1800 -	1806	1803.87	6.50E+00	8.03	7.00E+00	.....
58	1817.40	1814 -	1819	1816.26	7.17E+00	6.71	3.67E+00	.....
59	1847.65	1842 -	1850	1846.47	1.69E+01	11.16	8.19E+00	.....
60	1916.00	1912 -	1917	1914.76	7.00E+00	7.62	6.00E+00	.....
61	2059.24	2054 -	2060	2057.86	8.45E+00	7.23	3.10E+00	.....
62	2104.14	2098 -	2107	2102.72	3.44E+01	15.59	1.52E+01	.....
63	2164.30	2159 -	2166	2162.82	1.10E+01	6.63	0.00E+00	.....
64	2205.00	2199 -	2208	2203.48	2.79E+01	14.53	1.23E+01	BI-214
65	2213.52	2209 -	2215	2211.99	9.05E+00	7.50	3.91E+00	.....
66	2445.88	2438 -	2448	2444.13	1.10E+01	9.29	6.00E+00	.....
67	2462.63	2457 -	2464	2460.87	8.00E+00	7.48	4.00E+00	.....
68	2615.63	2609 -	2621	2613.72	1.36E+02	25.54	1.30E+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 : 8/23/2017 8:05:21AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.21	9.74E+01	67.59	2.46E-02	2.22E-03
	2	63.27	2.71E+02	114.17	2.70E-02	2.26E-03
	3	76.11	1.35E+03	192.46	2.75E-02	2.39E-03
M	4	87.57	2.20E+02	87.10	2.74E-02	2.52E-03
m	5	92.34	4.41E+02	92.34	2.73E-02	2.45E-03
	6	114.57	7.65E+01	89.31	2.62E-02	2.09E-03
	7	129.17	7.44E+01	78.02	2.53E-02	1.94E-03
	8	185.76	2.59E+02	108.29	2.17E-02	1.68E-03
	9	209.79	1.26E+02	74.23	2.03E-02	1.61E-03
M	10	238.61	1.24E+03	85.48	1.89E-02	1.53E-03
m	11	241.74	2.04E+02	85.31	1.87E-02	1.52E-03
	12	270.48	7.72E+01	65.15	1.74E-02	1.43E-03
	13	295.01	2.95E+02	67.04	1.64E-02	1.37E-03
	14	299.99	7.89E+01	45.43	1.63E-02	1.36E-03
M	15	322.70	5.29E+01	44.05	1.55E-02	1.31E-03

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
m	16	328.11	7.59E+01	50.25	1.53E-02	1.29E-03
	17	338.07	2.00E+02	76.66	1.50E-02	1.27E-03
M	18	351.93	5.40E+02	58.29	1.45E-02	1.24E-03
m	19	355.89	3.83E+01	67.88	1.44E-02	1.23E-03
	20	381.80	4.00E+01	38.70	1.37E-02	1.17E-03
M	21	408.95	5.43E+01	28.43	1.30E-02	1.13E-03
m	22	411.75	2.53E+01	33.41	1.30E-02	1.13E-03
M	23	459.39	2.61E+01	20.38	1.19E-02	1.10E-03
m	24	462.86	9.62E+01	42.01	1.19E-02	1.10E-03
	25	511.42	2.60E+02	57.91	1.10E-02	1.07E-03
	26	583.18	3.45E+02	59.82	9.96E-03	1.02E-03
M	27	609.42	4.17E+02	49.82	9.63E-03	1.01E-03
m	28	613.82	3.54E+01	47.54	9.58E-03	1.00E-03
	29	646.65	3.33E+01	32.12	9.20E-03	9.82E-04
	30	727.66	7.40E+01	45.16	8.41E-03	8.67E-04
M	31	751.19	2.64E+01	31.11	8.21E-03	8.30E-04
m	32	755.27	3.19E+01	31.62	8.17E-03	8.23E-04
	33	762.44	2.69E+01	28.80	8.11E-03	8.12E-04
	34	794.88	4.92E+01	34.00	7.86E-03	7.60E-04
M	35	856.81	2.24E+01	15.08	7.42E-03	6.62E-04
m	36	860.77	6.93E+01	32.98	7.40E-03	6.56E-04
	37	911.21	2.22E+02	52.51	7.09E-03	5.91E-04
	38	933.63	2.45E+01	30.33	6.96E-03	5.83E-04
	39	968.62	1.82E+02	46.13	6.77E-03	5.69E-04
	40	1024.22	2.92E+01	32.43	6.49E-03	5.48E-04
	41	1120.98	1.28E+02	42.76	6.07E-03	5.11E-04
	42	1208.73	3.34E+01	40.89	5.74E-03	4.83E-04
	43	1238.41	5.01E+01	37.77	5.64E-03	4.76E-04
	44	1282.94	2.55E+01	28.39	5.50E-03	4.66E-04
	45	1339.45	1.30E+01	17.09	5.33E-03	4.53E-04
	46	1379.55	2.97E+01	28.98	5.22E-03	4.44E-04
	47	1407.84	4.17E+01	38.50	5.14E-03	4.37E-04
M	48	1461.38	1.43E+03	76.98	5.00E-03	4.25E-04
m	49	1465.61	5.01E+01	59.23	4.99E-03	4.24E-04
	50	1510.99	3.40E+01	14.04	4.89E-03	4.13E-04
	51	1594.39	1.24E+01	13.00	4.70E-03	3.94E-04
	52	1620.95	1.00E+01	9.22	4.65E-03	3.88E-04
	53	1632.97	2.06E+01	12.84	4.62E-03	3.85E-04
	54	1663.54	1.20E+01	12.96	4.56E-03	3.78E-04
	55	1731.35	1.99E+01	10.63	4.43E-03	3.62E-04
	56	1765.13	7.95E+01	22.20	4.37E-03	3.54E-04
	57	1805.00	6.50E+00	8.03	4.31E-03	3.45E-04
	58	1817.40	7.17E+00	6.71	4.28E-03	3.42E-04
	59	1847.65	1.69E+01	11.16	4.23E-03	3.38E-04
	60	1916.00	7.00E+00	7.62	4.13E-03	3.38E-04
	61	2059.24	8.45E+00	7.23	3.92E-03	3.38E-04
	62	2104.14	3.44E+01	15.59	3.86E-03	3.38E-04
	63	2164.30	1.10E+01	6.63	3.79E-03	3.38E-04
	64	2205.00	2.79E+01	14.53	3.74E-03	3.38E-04
	65	2213.52	9.05E+00	7.50	3.73E-03	3.38E-04
	66	2445.88	1.10E+01	9.29	3.47E-03	3.38E-04
	67	2462.63	8.00E+00	7.48	3.45E-03	3.38E-04
	68	2615.63	1.36E+02	25.54	3.30E-03	3.38E-04

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

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 : 8/23/2017 8:05:21AM

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	46.21	9.74E+01	67.59	3.67E+01	8.40E+00	6.07E+01	6.81E+01
	2	63.27	2.71E+02	114.17	8.94E+01	1.41E+01	1.82E+02	1.15E+02
	3	76.11	1.35E+03	192.46			1.35E+03	1.92E+02
M	4	87.57	2.20E+02	87.10			2.20E+02	8.71E+01
m	5	92.34	4.41E+02	92.34	1.38E+02	1.72E+01	3.03E+02	9.39E+01
	6	114.57	7.65E+01	89.31			7.65E+01	8.93E+01
	7	129.17	7.44E+01	78.02			7.44E+01	7.80E+01
	8	185.76	2.59E+02	108.29	5.22E+01	7.59E+00	2.07E+02	1.09E+02
	9	209.79	1.26E+02	74.23			1.26E+02	7.42E+01
M	10	238.61	1.24E+03	85.48	2.13E+01	6.33E+00	1.22E+03	8.57E+01
m	11	241.74	2.04E+02	85.31			2.04E+02	8.53E+01
	12	270.48	7.72E+01	65.15	1.23E+00	4.98E+00	7.60E+01	6.53E+01
	13	295.01	2.95E+02	67.04			2.95E+02	6.70E+01
	14	299.99	7.89E+01	45.43			7.89E+01	4.54E+01
M	15	322.70	5.29E+01	44.05			5.29E+01	4.40E+01
m	16	328.11	7.59E+01	50.25			7.59E+01	5.02E+01
	17	338.07	2.00E+02	76.66			2.00E+02	7.67E+01
M	18	351.93	5.40E+02	58.29	5.79E+00	4.49E+00	5.34E+02	5.85E+01
m	19	355.89	3.83E+01	67.88			3.83E+01	6.79E+01
	20	381.80	4.00E+01	38.70			4.00E+01	3.87E+01
M	21	408.95	5.43E+01	28.43			5.43E+01	2.84E+01
m	22	411.75	2.53E+01	33.41			2.53E+01	3.34E+01
M	23	459.39	2.61E+01	20.38			2.61E+01	2.04E+01
m	24	462.86	9.62E+01	42.01			9.62E+01	4.20E+01
	25	511.42	2.60E+02	57.91	7.28E+01	5.30E+00	1.87E+02	5.82E+01
	26	583.18	3.45E+02	59.82	2.72E+00	3.05E+00	3.42E+02	5.99E+01
M	27	609.42	4.17E+02	49.82	6.35E+00	4.02E+00	4.11E+02	5.00E+01
m	28	613.82	3.54E+01	47.54			3.54E+01	4.75E+01
	29	646.65	3.33E+01	32.12			3.33E+01	3.21E+01
	30	727.66	7.40E+01	45.16			7.40E+01	4.52E+01
M	31	751.19	2.64E+01	31.11			2.64E+01	3.11E+01
m	32	755.27	3.19E+01	31.62			3.19E+01	3.16E+01
	33	762.44	2.69E+01	28.80			2.69E+01	2.88E+01
	34	794.88	4.92E+01	34.00			4.92E+01	3.40E+01
M	35	856.81	2.24E+01	15.08			2.24E+01	1.51E+01

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	36	860.77	6.93E+01	32.98			6.93E+01	3.30E+01
	37	911.21	2.22E+02	52.51	5.31E+00	3.00E+00	2.17E+02	5.26E+01
	38	933.63	2.45E+01	30.33			2.45E+01	3.03E+01
	39	968.62	1.82E+02	46.13			1.82E+02	4.61E+01
	40	1024.22	2.92E+01	32.43			2.92E+01	3.24E+01
	41	1120.98	1.28E+02	42.76			1.28E+02	4.28E+01
	42	1208.73	3.34E+01	40.89			3.34E+01	4.09E+01
	43	1238.41	5.01E+01	37.77			5.01E+01	3.78E+01
	44	1282.94	2.55E+01	28.39			2.55E+01	2.84E+01
	45	1339.45	1.30E+01	17.09			1.30E+01	1.71E+01
	46	1379.55	2.97E+01	28.98			2.97E+01	2.90E+01
	47	1407.84	4.17E+01	38.50			4.17E+01	3.85E+01
M	48	1461.38	1.43E+03	76.98	8.09E+00	2.23E+00	1.42E+03	7.70E+01
m	49	1465.61	5.01E+01	59.23			5.01E+01	5.92E+01
	50	1510.99	3.40E+01	14.04			3.40E+01	1.40E+01
	51	1594.39	1.24E+01	13.00			1.24E+01	1.30E+01
	52	1620.95	1.00E+01	9.22			1.00E+01	9.22E+00
	53	1632.97	2.06E+01	12.84			2.06E+01	1.28E+01
	54	1663.54	1.20E+01	12.96			1.20E+01	1.30E+01
	55	1731.35	1.99E+01	10.63			1.99E+01	1.06E+01
	56	1765.13	7.95E+01	22.20			7.95E+01	2.22E+01
	57	1805.00	6.50E+00	8.03			6.50E+00	8.03E+00
	58	1817.40	7.17E+00	6.71			7.17E+00	6.71E+00
	59	1847.65	1.69E+01	11.16	1.22E+00	1.50E+00	1.57E+01	1.13E+01
	60	1916.00	7.00E+00	7.62			7.00E+00	7.62E+00
	61	2059.24	8.45E+00	7.23			8.45E+00	7.23E+00
	62	2104.14	3.44E+01	15.59			3.44E+01	1.56E+01
	63	2164.30	1.10E+01	6.63			1.10E+01	6.63E+00
	64	2205.00	2.79E+01	14.53			2.79E+01	1.45E+01
	65	2213.52	9.05E+00	7.50			9.05E+00	7.50E+00
	66	2445.88	1.10E+01	9.29			1.10E+01	9.29E+00
	67	2462.63	8.00E+00	7.48			8.00E+00	7.48E+00
	68	2615.63	1.36E+02	25.54	5.63E+00	1.38E+00	1.30E+02	2.56E+01

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

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

AREA CORRECTION REPORT
REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 8/23/2017 8:05:21AM

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	46.21	9.74E+01	67.59	3.67E+01	8.40E+00	6.07E+01	6.81E+01
	2	63.27	2.71E+02	114.17	8.94E+01	1.41E+01	1.82E+02	1.15E+02
	3	76.11	1.35E+03	192.46			1.35E+03	1.92E+02
M	4	87.57	2.20E+02	87.10			2.20E+02	8.71E+01
m	5	92.34	4.41E+02	92.34	1.38E+02	1.72E+01	3.03E+02	9.39E+01
	6	114.57	7.65E+01	89.31			7.65E+01	8.93E+01
	7	129.17	7.44E+01	78.02			7.44E+01	7.80E+01
	8	185.76	2.59E+02	108.29	5.22E+01	7.59E+00	2.07E+02	1.09E+02
	9	209.79	1.26E+02	74.23			1.26E+02	7.42E+01
M	10	238.61	1.24E+03	85.48	2.13E+01	6.33E+00	1.22E+03	8.57E+01
m	11	241.74	2.04E+02	85.31			2.04E+02	8.53E+01
	12	270.48	7.72E+01	65.15	1.23E+00	4.98E+00	7.60E+01	6.53E+01
	13	295.01	2.95E+02	67.04			2.95E+02	6.70E+01
	14	299.99	7.89E+01	45.43			7.89E+01	4.54E+01
M	15	322.70	5.29E+01	44.05			5.29E+01	4.40E+01
m	16	328.11	7.59E+01	50.25			7.59E+01	5.02E+01
	17	338.07	2.00E+02	76.66			2.00E+02	7.67E+01
M	18	351.93	5.40E+02	58.29	5.79E+00	4.49E+00	5.34E+02	5.85E+01
m	19	355.89	3.83E+01	67.88			3.83E+01	6.79E+01
	20	381.80	4.00E+01	38.70			4.00E+01	3.87E+01
M	21	408.95	5.43E+01	28.43			5.43E+01	2.84E+01
m	22	411.75	2.53E+01	33.41			2.53E+01	3.34E+01
M	23	459.39	2.61E+01	20.38			2.61E+01	2.04E+01
m	24	462.86	9.62E+01	42.01			9.62E+01	4.20E+01
	25	511.42	2.60E+02	57.91	7.28E+01	5.30E+00	1.87E+02	5.82E+01
	26	583.18	3.45E+02	59.82	2.72E+00	3.05E+00	3.42E+02	5.99E+01
M	27	609.42	4.17E+02	49.82	6.35E+00	4.02E+00	4.11E+02	5.00E+01
m	28	613.82	3.54E+01	47.54			3.54E+01	4.75E+01
	29	646.65	3.33E+01	32.12			3.33E+01	3.21E+01
	30	727.66	7.40E+01	45.16			7.40E+01	4.52E+01
M	31	751.19	2.64E+01	31.11			2.64E+01	3.11E+01
m	32	755.27	3.19E+01	31.62			3.19E+01	3.16E+01
	33	762.44	2.69E+01	28.80			2.69E+01	2.88E+01
	34	794.88	4.92E+01	34.00			4.92E+01	3.40E+01
M	35	856.81	2.24E+01	15.08			2.24E+01	1.51E+01
m	36	860.77	6.93E+01	32.98			6.93E+01	3.30E+01
	37	911.21	2.22E+02	52.51	5.31E+00	3.00E+00	2.17E+02	5.26E+01
	38	933.63	2.45E+01	30.33			2.45E+01	3.03E+01
	39	968.62	1.82E+02	46.13			1.82E+02	4.61E+01
	40	1024.22	2.92E+01	32.43			2.92E+01	3.24E+01
	41	1120.98	1.28E+02	42.76			1.28E+02	4.28E+01

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	42	1208.73	3.34E+01	40.89			3.34E+01	4.09E+01
	43	1238.41	5.01E+01	37.77			5.01E+01	3.78E+01
	44	1282.94	2.55E+01	28.39			2.55E+01	2.84E+01
	45	1339.45	1.30E+01	17.09			1.30E+01	1.71E+01
	46	1379.55	2.97E+01	28.98			2.97E+01	2.90E+01
	47	1407.84	4.17E+01	38.50			4.17E+01	3.85E+01
M	48	1461.38	1.43E+03	76.98	8.09E+00	2.23E+00	1.42E+03	7.70E+01
m	49	1465.61	5.01E+01	59.23			5.01E+01	5.92E+01
	50	1510.99	3.40E+01	14.04			3.40E+01	1.40E+01
	51	1594.39	1.24E+01	13.00			1.24E+01	1.30E+01
	52	1620.95	1.00E+01	9.22			1.00E+01	9.22E+00
	53	1632.97	2.06E+01	12.84			2.06E+01	1.28E+01
	54	1663.54	1.20E+01	12.96			1.20E+01	1.30E+01
	55	1731.35	1.99E+01	10.63			1.99E+01	1.06E+01
	56	1765.13	7.95E+01	22.20			7.95E+01	2.22E+01
	57	1805.00	6.50E+00	8.03			6.50E+00	8.03E+00
	58	1817.40	7.17E+00	6.71			7.17E+00	6.71E+00
	59	1847.65	1.69E+01	11.16	1.22E+00	1.50E+00	1.57E+01	1.13E+01
	60	1916.00	7.00E+00	7.62			7.00E+00	7.62E+00
	61	2059.24	8.45E+00	7.23			8.45E+00	7.23E+00
	62	2104.14	3.44E+01	15.59			3.44E+01	1.56E+01
	63	2164.30	1.10E+01	6.63			1.10E+01	6.63E+00
	64	2205.00	2.79E+01	14.53			2.79E+01	1.45E+01
	65	2213.52	9.05E+00	7.50			9.05E+00	7.50E+00
	66	2445.88	1.10E+01	9.29			1.10E+01	9.29E+00
	67	2462.63	8.00E+00	7.48			8.00E+00	7.48E+00
	68	2615.63	1.36E+02	25.54	5.63E+00	1.38E+00	1.30E+02	2.56E+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	0.949	1460.81	*	10.67	2.85E+01	2.92E+00
CD-109	0.966	88.03	*	3.72	2.68E+00	1.10E+00
SN-126	1.000	87.57	*	37.00	2.32E-01	9.42E-02
TL-208	0.925	583.14	*	30.22	1.21E+00	2.46E-01

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TL-208	0.925	860.37	*	4.48	2.23E+00	1.08E+00
		2614.66	*	35.85	1.17E+00	2.60E-01
PB-210	0.987	46.50	*	4.25	6.25E-01	7.04E-01
BI-212	0.966	727.17	*	11.80	7.97E-01	4.93E-01
		1620.62	*	2.75	8.36E-01	7.74E-01
PB-212	1.000	238.63	*	44.60	1.54E+00	1.66E-01
		300.09	*	3.41	1.52E+00	8.84E-01
BI-214	0.967	609.31	*	46.30	9.84E-01	1.58E-01
		1120.29	*	15.10	1.49E+00	5.14E-01
		1764.49	*	15.80	1.23E+00	3.57E-01
		2204.22	*	4.98	1.60E+00	8.47E-01
PB-214	0.998	295.21	*	19.19	1.00E+00	2.42E-01
		351.92	*	37.19	1.05E+00	1.46E-01
RA-224	0.911	240.98	*	3.95	2.94E+00	1.26E+00
RA-226	0.968	186.21	*	3.28	3.10E+00	5.90E+00
AC-228	0.985	338.32	*	11.40	1.25E+00	4.92E-01
		911.07	*	27.70	1.18E+00	3.03E-01
		969.11	*	16.60	1.73E+00	4.62E-01
TH-234	1.000	63.29	*	3.80	1.90E+00	1.21E+00

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

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/23/2017 8:05:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	3	76.11	3.73911E-01	7.15		
m	5	92.34	8.41544E-02	15.50	Sum	
	6	114.57	2.12426E-02	58.39		
	7	129.17	2.06682E-02	52.43		
	9	209.79	3.51010E-02	29.37	Tol.	CM-243
	12	270.48	2.11018E-02	43.00		
M	15	322.70	1.47029E-02	41.61		
m	16	328.11	2.10956E-02	33.08	Tol.	LA-140
m	19	355.89	1.06325E-02	88.67	Tol.	BA-133

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	20	381.80	1.11111E-02	48.38	Sum	
M	21	408.95	1.50962E-02	26.15		
m	22	411.75	7.01492E-03	66.14	Tol.	HO-166M
M	23	459.39	7.24597E-03	39.06		
m	24	462.86	2.67272E-02	21.83	Tol.	SB-125
	25	511.42	5.19144E-02	15.56		
m	28	613.82	9.83266E-03	67.15	Tol.	AG-108M
	29	646.65	9.25000E-03	48.24	Sum	
M	31	751.19	7.32938E-03	58.96		
m	32	755.27	8.87187E-03	49.51		
	33	762.44	7.46306E-03	53.59		
	34	794.88	1.36757E-02	34.53	Sum	
M	35	856.81	6.22678E-03	33.64		
	38	933.63	6.79669E-03	61.98		
	40	1024.22	8.11469E-03	55.51		
	42	1208.73	9.26573E-03	61.29	Sum	
	43	1238.41	1.39140E-02	37.70	Tol.	CO-56
	44	1282.94	7.08333E-03	55.67		
	45	1339.45	3.61111E-03	65.72		
	46	1379.55	8.23704E-03	48.87		
	47	1407.84	1.15731E-02	46.21	Tol.	EU-152
m	49	1465.61	1.39198E-02	59.10		
	50	1510.99	9.45571E-03	20.62		
	51	1594.39	3.43434E-03	52.57	D-Esc	
	53	1632.97	5.71581E-03	31.19		
	54	1663.54	3.33333E-03	54.01		
	55	1731.35	5.53030E-03	26.70	Sum	
	57	1805.00	1.80556E-03	61.78		
	58	1817.40	1.99074E-03	46.80		
	59	1847.65	4.35566E-03	35.90	Sum	
	60	1916.00	1.94444E-03	54.40	Sum	
	61	2059.24	2.34722E-03	42.77	Sum	
	62	2104.14	9.55026E-03	22.67	S-Esc	
	63	2164.30	3.05556E-03	30.15		
	65	2213.52	2.51263E-03	41.46		
	66	2445.88	3.05556E-03	42.21	Sum	
	67	2462.63	2.22222E-03	46.77		

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 1707088-20

HTC-A04-S001-1824-01

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	0.94	1460.81	*	10.67	2.85E+01	2.92E+00
CD-109	0.96	88.03	*	3.72	2.68E+00	1.10E+00
SN-126	1.00	87.57	*	37.00	2.32E-01	9.42E-02
TL-208	0.92	583.14	*	30.22	1.21E+00	2.46E-01
		860.37	*	4.48	2.23E+00	1.08E+00
		2614.66	*	35.85	1.17E+00	2.60E-01
PB-210	0.98	46.50	*	4.25	6.25E-01	7.04E-01
BI-212	0.96	727.17	*	11.80	7.97E-01	4.93E-01
		1620.62	*	2.75	8.36E-01	7.74E-01
PB-212	1.00	238.63	*	44.60	1.54E+00	1.66E-01
		300.09	*	3.41	1.52E+00	8.84E-01
BI-214	0.96	609.31	*	46.30	9.84E-01	1.58E-01
		1120.29	*	15.10	1.49E+00	5.14E-01
		1764.49	*	15.80	1.23E+00	3.57E-01
		2204.22	*	4.98	1.60E+00	8.47E-01
PB-214	0.99	295.21	*	19.19	1.00E+00	2.42E-01
		351.92	*	37.19	1.05E+00	1.46E-01
RA-224	0.91	240.98	*	3.95	2.94E+00	1.26E+00
RA-226	0.96	186.21	*	3.28	3.10E+00	5.90E+00
AC-228	0.98	338.32	*	11.40	1.25E+00	4.92E-01
		911.07	*	27.70	1.18E+00	3.03E-01
		969.11	*	16.60	1.73E+00	4.62E-01
TH-234	1.00	63.29	*	3.80	1.90E+00	1.21E+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

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
	K-40	0.949	2.85E+01	2.92E+00	
?	CD-109	0.966	2.68E+00	1.10E+00	
?	SN-126	1.000	2.32E-01	9.42E-02	
	TL-208	0.925	1.22E+00	1.76E-01	
	PB-210	0.987	6.25E-01	7.04E-01	
	BI-212	0.966	8.08E-01	4.16E-01	
	PB-212	1.000	1.54E+00	1.63E-01	
	BI-214	0.967	1.07E+00	1.37E-01	
	PB-214	0.998	1.04E+00	1.25E-01	
	RA-224	0.911	2.94E+00	1.26E+00	
	RA-226	0.968	3.10E+00	5.90E+00	
	AC-228	0.985	1.33E+00	2.25E-01	
	TH-234	1.000	1.90E+00	1.21E+00	

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

Errors quoted at 2.000sigma

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

UNIDENTIFIED PEAKS

Peak Locate Performed on : 8/23/2017 8:05:21AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	3	76.11	3.73911E-01	7.15		
m	5	92.34	8.41544E-02	15.50	Sum	
	6	114.57	2.12426E-02	58.39		
	7	129.17	2.06682E-02	52.43		
	9	209.79	3.51010E-02	29.37	Tol.	CM-243
	12	270.48	2.11018E-02	43.00		
M	15	322.70	1.47029E-02	41.61		
m	16	328.11	2.10956E-02	33.08	Tol.	LA-140
m	19	355.89	1.06325E-02	88.67	Tol.	BA-133
	20	381.80	1.11111E-02	48.38	Sum	
M	21	408.95	1.50962E-02	26.15		
m	22	411.75	7.01492E-03	66.14	Tol.	HO-166M
M	23	459.39	7.24597E-03	39.06		
m	24	462.86	2.67272E-02	21.83	Tol.	SB-125
	25	511.42	5.19144E-02	15.56		
m	28	613.82	9.83266E-03	67.15	Tol.	AG-108M
	29	646.65	9.25000E-03	48.24	Sum	
M	31	751.19	7.32938E-03	58.96		
m	32	755.27	8.87187E-03	49.51		
	33	762.44	7.46306E-03	53.59		
	34	794.88	1.36757E-02	34.53	Sum	
M	35	856.81	6.22678E-03	33.64		
	38	933.63	6.79669E-03	61.98		
	40	1024.22	8.11469E-03	55.51		
	42	1208.73	9.26573E-03	61.29	Sum	
	43	1238.41	1.39140E-02	37.70	Tol.	CO-56
	44	1282.94	7.08333E-03	55.67		
	45	1339.45	3.61111E-03	65.72		
	46	1379.55	8.23704E-03	48.87		
	47	1407.84	1.15731E-02	46.21	Tol.	EU-152
m	49	1465.61	1.39198E-02	59.10		
	50	1510.99	9.45571E-03	20.62		
	51	1594.39	3.43434E-03	52.57	D-Esc	
	53	1632.97	5.71581E-03	31.19		

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
54	1663.54	3.33333E-03	54.01		
55	1731.35	5.53030E-03	26.70	Sum	
57	1805.00	1.80556E-03	61.78		
58	1817.40	1.99074E-03	46.80		
59	1847.65	4.35566E-03	35.90	Sum	
60	1916.00	1.94444E-03	54.40	Sum	
61	2059.24	2.34722E-03	42.77	Sum	
62	2104.14	9.55026E-03	22.67	S-Esc	
63	2164.30	3.05556E-03	30.15		
65	2213.52	2.51263E-03	41.46		
66	2445.88	3.05556E-03	42.21	Sum	
67	2462.63	2.22222E-03	46.77		

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	2.96E-01	1.94E+00	1.94E+00
+	NA-22	1274.54		99.94	-2.26E-02	7.20E-02	7.20E-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	-1.37E-02	3.95E-02	3.95E-02
+	K-40	1460.81	*	10.67	2.85E+01	9.36E-01	9.36E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-1.27E-02	5.69E-02	5.69E-02
		78.34		96.00	1.64E-01		7.56E-02
+	SC-46	889.25		99.98	6.50E-02	1.52E-01	1.52E-01
		1120.51		99.99	4.34E-01		2.62E-01
+	V-48	983.52		99.98	-1.29E+00	4.87E+00	4.87E+00
		1312.10		97.50	2.29E+00		6.09E+00
+	CR-51	320.08		9.83	-5.84E-01	6.39E+00	6.39E+00
+	MN-54	834.83		99.97	1.48E-02	8.07E-02	8.07E-02
+	CO-56	846.75		99.96	-4.66E-02	1.33E-01	1.33E-01

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CO-56	1037.75		14.03	1.43E-01	1.33E-01	1.19E+00
		1238.25		67.00	3.75E-01		3.77E-01
		1771.40		15.51	2.22E-01		6.90E-01
		2598.48		16.90	-2.29E-02		5.51E-01
+	CO-57	122.06		85.51	2.41E-02	6.81E-02	6.81E-02
		136.48		10.60	4.23E-01		5.82E-01
+	CO-58	810.76		99.40	-2.71E-03	1.68E-01	1.68E-01
+	FE-59	1099.22		56.50	-1.88E-01	5.99E-01	5.99E-01
		1291.56		43.20	1.16E-02		7.94E-01
+	CO-60	1173.22		100.00	4.14E-02	6.34E-02	9.15E-02
		1332.49		100.00	-8.05E-03		6.34E-02
+	ZN-65	1115.52		50.75	5.70E-02	2.03E-01	2.03E-01
+	GA-67	93.31		35.70	6.79E+08	2.89E+08	2.89E+08
		208.95		2.24	2.23E+09		3.91E+09
		300.22		16.00	-1.08E+09		6.12E+08
+	SE-75	121.11		16.70	7.96E-02	1.44E-01	4.76E-01
		136.00		59.20	1.04E-01		1.44E-01
		264.65		59.80	-2.79E-03		1.47E-01
		279.53		25.20	2.07E-01		3.97E-01
		400.65		11.40	1.49E-01		8.24E-01
+	RB-82	776.52		13.00	3.02E+00	7.12E+00	7.12E+00
+	RB-83	520.41		46.00	1.43E-01	2.74E-01	2.74E-01
		529.64		30.30	-4.42E-02		3.63E-01
		552.65		16.40	1.66E-01		7.70E-01
+	KR-85	513.99		0.43	3.41E+01	1.91E+01	1.91E+01
+	SR-85	513.99		99.27	4.27E-01	2.38E-01	2.38E-01
+	Y-88	898.02		93.40	3.24E-02	9.43E-02	1.26E-01
		1836.01		99.38	-4.09E-02		9.43E-02
+	MO-93	263.06		56.72	3.68E-03	5.19E-02	8.95E-02
		684.67		99.68	3.71E-02		6.35E-02
		1477.11		99.08	1.62E-02		5.19E-02
+	NB-93M	16.57		9.43	-1.29E-01	4.86E-01	4.86E-01
+	NB-94	702.63		100.00	6.68E-03	6.30E-02	6.74E-02
		871.10		100.00	2.63E-02		6.30E-02
+	NB-95	765.79		99.81	1.47E-01	4.81E-01	4.81E-01
+	NB-95M	235.69		25.00	-4.03E+08	5.27E+07	5.27E+07
+	ZR-95	724.18		43.70	9.53E-02	3.47E-01	5.21E-01
		756.72		55.30	-1.48E-02		3.47E-01
+	MO-99	181.06		6.20	-9.68E+09	4.37E+10	6.35E+10
		739.58		12.80	1.67E+10		4.37E+10
		778.00		4.50	-9.44E+10		1.05E+11
+	RU-103	497.08		89.00	-1.10E-01	3.25E-01	3.25E-01
+	RU-106	621.84		9.80	5.33E-02	7.02E-01	7.02E-01
+	AG-108M	433.93		89.90	-3.52E-02	5.55E-02	5.55E-02
		614.37		90.40	-4.72E-01		7.74E-02
		722.95		90.50	1.91E-02		7.77E-02
+	CD-109	88.03	*	3.72	2.68E+00	3.69E+00	3.69E+00
+	AG-110M	657.75		93.14	-2.88E-02	7.92E-02	7.92E-02

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	AG-110M	677.61		10.53	-2.33E-01	7.92E-02	7.06E-01
		706.67		16.46	4.26E-02		5.24E-01
		763.93		21.98	-3.68E-02		3.88E-01
		884.67		71.63	3.04E-03		1.20E-01
		1384.27		23.94	-4.07E-02		3.33E-01
+	CD-113M	263.70		0.02	-5.12E+01	2.15E+02	2.15E+02
+	SN-113	255.12		1.93	-1.42E+00	1.44E-01	4.16E+00
		391.69		64.90	3.00E-03		1.44E-01
+	TE123M	159.00		84.10	2.82E-02	9.73E-02	9.73E-02
+	SB-124	602.71		97.87	4.08E-02	1.90E-01	1.90E-01
		645.85		7.26	1.15E-01		2.44E+00
		722.78		11.10	4.91E-01		2.00E+00
		1691.02		49.00	-1.60E-02		2.66E-01
+	I-125	35.49		6.49	1.75E+00	2.39E+00	2.39E+00
+	SB-125	176.33		6.89	-1.59E-01	1.93E-01	6.82E-01
		427.89		29.33	-4.98E-02		1.93E-01
		463.38		10.35	7.71E-01		6.69E-01
		600.56		17.80	1.64E-01		3.58E-01
		635.90		11.32	-2.91E-01		5.44E-01
+	SB-126	414.70		83.30	6.05E-01	1.64E+01	1.64E+01
		666.33		99.60	8.51E+00		1.76E+01
		695.00		99.60	5.09E+00		1.79E+01
		720.50		53.80	1.29E+01		3.34E+01
+	SN-126	87.57	*	37.00	2.32E-01	3.20E-01	3.20E-01
+	SB-127	473.00		25.00	8.41E+06	1.13E+07	1.45E+07
		685.20		35.70	6.61E+06		1.13E+07
		783.80		14.70	2.62E+07		2.85E+07
+	I-129	29.78		57.00	-5.67E-03	9.39E-02	9.39E-02
		33.60		13.20	2.53E-01		3.78E-01
		39.58		7.52	3.40E-01		6.36E-01
+	I-131	284.30		6.05	-1.01E+03	3.68E+02	4.76E+03
		364.48		81.20	2.03E+02		3.68E+02
		636.97		7.26	-3.48E+02		4.44E+03
		722.89		1.80	5.28E+03		2.15E+04
+	TE-132	49.72		13.10	7.24E+07	9.05E+07	6.13E+08
		228.16		88.00	1.01E+07		9.05E+07
+	BA-133	81.00		33.00	-5.29E-01	1.21E-01	1.64E-01
		302.84		17.80	5.86E-02		3.33E-01
		356.01		60.00	-7.76E-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	-2.46E+05	7.62E+04	7.62E+04
+	CS-134	563.23		8.38	1.54E-01	7.51E-02	7.56E-01
		569.32		15.43	4.72E-02		4.05E-01
		604.70		97.60	2.28E-03		7.51E-02
		795.84		85.40	2.23E-03		9.70E-02
		801.93		8.73	3.60E-03		8.17E-01
+	CS-135	268.24		16.00	2.53E-01	3.51E-01	3.51E-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

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
@	I-135	1678.03	9.54	1.00E+26	1.00E+26	1.00E+26
+	CS-136	153.22	7.46	4.93E+01	1.15E+01	1.21E+02
		163.89	4.61	-1.06E+01		1.87E+02
		176.55	13.56	-1.46E+01		6.25E+01
		273.65	12.66	-4.00E+01		8.59E+01
		340.57	48.50	2.38E+00		2.89E+01
		818.50	99.70	3.06E+00		1.15E+01
		1048.07	79.60	2.45E+00		1.76E+01
		1235.34	19.70	1.87E+01		1.01E+02
+	CS-137	661.65	85.12	-4.07E-02	6.78E-02	6.78E-02
+	LA-138	788.74	34.00	-1.62E-02	8.58E-02	1.67E-01
		1435.80	66.00	4.11E-02		8.58E-02
+	CE-139	165.85	80.35	2.91E-02	9.31E-02	9.31E-02
+	BA-140	162.64	6.70	2.20E+01	4.66E+01	1.52E+02
		304.84	4.50	1.74E+01		2.56E+02
		423.70	3.20	6.52E+00		3.80E+02
		437.55	2.00	1.79E+02		6.00E+02
		537.32	25.00	-1.17E+01		4.66E+01
+	LA-140	328.77	20.50	1.31E+01	1.29E+01	6.08E+01
		487.03	45.50	-1.41E+01		2.50E+01
		815.85	23.50	-3.98E+01		5.44E+01
		1596.49	95.49	-1.61E+00		1.29E+01
+	CE-141	145.44	48.40	3.63E-01	8.23E-01	8.23E-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	2.49E-01	5.47E-01	5.47E-01
+	PM-144	476.78	42.00	1.65E-02	7.47E-02	1.61E-01
		618.01	98.60	5.79E-03		7.47E-02
		696.49	99.49	-8.89E-03		8.05E-02
+	PM-145	36.85	21.70	-1.52E-01	1.20E-01	2.19E-01
		37.36	39.70	-6.04E-02		1.20E-01
		42.30	15.10	8.81E-02		3.05E-01
		72.40	2.31	-2.53E+00		2.83E+00
+	PM-146	453.90	39.94	2.18E-02	1.42E-01	1.42E-01
		735.90	14.01	2.05E-01		4.98E-01
		747.13	13.10	-2.56E-02		4.95E-01
+	ND-147	91.11	28.90	3.24E+02	1.26E+02	1.26E+02
		531.02	13.10	-5.91E+00		2.10E+02
+	PM-149	285.90	3.10	-3.03E+13	6.68E+13	6.68E+13
+	EU-152	121.78	20.50	3.69E-02	2.21E-01	2.21E-01
		244.69	5.40	-6.59E-01		9.50E-01
		344.27	19.13	-4.57E-03		2.91E-01
		778.89	9.20	-2.07E-01		6.22E-01
		964.01	10.40	7.01E-02		8.16E-01
		1085.78	7.22	-3.82E-01		9.13E-01
		1112.02	9.60	2.98E-01		7.99E-01
		1407.95	14.94	-1.60E-01		4.09E-01
+	GD-153	97.43	31.30	1.11E-01	1.97E-01	1.97E-01

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	GD-153	103.18		22.20	6.27E-02	1.97E-01	2.73E-01
+	EU-154	123.07		40.50	4.91E-02	1.15E-01	1.15E-01
		723.30		19.70	8.95E-02		3.64E-01
		873.19		11.50	-1.04E-01		5.44E-01
		996.32		10.30	-2.16E-01		6.52E-01
		1004.76		17.90	2.67E-01		4.43E-01
		1274.45		35.50	-6.04E-02		1.93E-01
+	EU-155	86.50		30.90	1.05E-01	1.99E-01	1.99E-01
		105.30		20.70	-5.86E-02		2.25E-01
+	EU-156	811.77		10.40	-4.72E+00	5.72E+01	5.72E+01
		1153.47		7.20	-2.74E+01		1.09E+02
		1230.71		8.90	-1.09E+01		9.91E+01
+	HO-166M	184.41		72.60	1.78E-01	8.21E-02	8.21E-02
		280.45		29.60	8.16E-02		1.88E-01
		410.94		11.10	4.92E-01		5.17E-01
		711.69		54.10	-2.57E-02		1.13E-01
+	TM-171	66.72		0.14	1.46E+01	4.36E+01	4.36E+01
+	HF-172	67.35		5.31	-2.49E-01	4.37E-01	1.12E+00
		125.81		11.30	5.78E-03		4.37E-01
+	LU-172	181.53		20.60	-1.05E+03	3.64E+03	6.87E+03
		900.72		29.81	-4.32E+02		6.56E+03
		1093.66		62.50	8.47E+02		3.64E+03
+	LU-173	100.72		5.24	1.32E-03	3.12E-01	1.00E+00
		272.11		21.20	-1.44E-01		3.12E-01
+	HF-175	343.40		84.00	-2.76E-03	1.75E-01	1.75E-01
+	LU-176	88.34		13.30	-4.08E-01	5.53E-02	4.60E-01
		201.83		86.00	-1.89E-02		5.53E-02
		306.78		94.00	4.22E-02		5.68E-02
+	HF-181	133.02		41.70	2.58E-01	3.17E-01	5.68E-01
		345.85		17.20	-2.58E-02		1.62E+00
		482.03		82.80	-2.45E-02		3.17E-01
+	TA-182	67.75		41.20	-5.31E-02	2.38E-01	2.38E-01
		1121.30		34.90	1.30E+00		6.14E-01
		1189.05		16.23	-1.66E-02		9.76E-01
		1221.41		26.98	-2.88E-01		6.02E-01
		1231.02		11.44	-1.63E-01		1.48E+00
+	IR-192	308.46		29.68	-2.62E-02	2.62E-01	4.44E-01
		468.07		48.10	-8.24E-02		2.62E-01
+	HG-203	279.19		77.30	1.67E-01	3.21E-01	3.21E-01
+	TL-204	374.74		94.11	-2.31E-02	5.36E-02	5.36E-02
		899.15		99.16	4.40E-03		6.63E-02
		911.74		91.10	3.72E-01		1.48E-01
+	BI-207	569.67		97.72	1.27E-02	5.91E-02	5.91E-02
		1063.62		74.90	1.65E-03		9.07E-02
+	TL-208	583.14	*	30.22	1.21E+00	1.97E-01	2.84E-01
		860.37	*	4.48	2.23E+00		2.15E+00
		2614.66	*	35.85	1.17E+00		1.97E-01
+	BI-210M	262.00		45.00	2.31E-02	1.12E-01	1.12E-01
		300.00		23.00	-7.76E-01		2.62E-01

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PB-210	46.50	*	4.25	6.25E-01	1.15E+00	1.15E+00
+	PB-211	404.84		2.90	-6.82E-02	1.82E+00	1.82E+00
		831.96		2.90	-4.39E-01		2.16E+00
+	BI-212	727.17	*	11.80	7.97E-01	7.69E-01	7.69E-01
		1620.62	*	2.75	8.36E-01		1.15E+00
+	PB-212	238.63	*	44.60	1.54E+00	2.17E-01	2.17E-01
		300.09	*	3.41	1.52E+00		1.38E+00
+	BI-214	609.31	*	46.30	9.84E-01	2.78E-01	2.78E-01
		1120.29	*	15.10	1.49E+00		7.27E-01
		1764.49	*	15.80	1.23E+00		3.78E-01
		2204.22	*	4.98	1.60E+00		1.10E+00
+	PB-214	295.21	*	19.19	1.00E+00	2.39E-01	3.30E-01
		351.92	*	37.19	1.05E+00		2.39E-01
+	RN-219	401.80		6.50	3.31E-01	8.15E-01	8.15E-01
+	RA-223	323.87		3.88	-1.11E+00	1.38E+00	1.38E+00
+	RA-224	240.98	*	3.95	2.94E+00	2.44E+00	2.44E+00
+	RA-225	40.00		31.00	9.48E-01	1.64E+01	1.64E+01
+	RA-226	186.21	*	3.28	3.10E+00	2.62E+00	2.62E+00
+	TH-227	50.10		8.40	1.76E-01	5.34E-01	5.65E-01
		236.00		11.50	-4.08E+00		5.34E-01
		256.20		6.30	3.44E-01		8.33E-01
+	AC-228	338.32	*	11.40	1.25E+00	4.05E-01	7.51E-01
		911.07	*	27.70	1.18E+00		4.05E-01
		969.11	*	16.60	1.73E+00		6.11E-01
+	TH-230	48.44		16.90	1.68E-02	2.93E-01	2.93E-01
		62.85		4.60	2.61E+00		1.33E+00
		67.67		0.37	-3.23E+00		1.45E+01
+	PA-231	283.67		1.60	-5.69E-01	2.53E+00	3.29E+00
		302.67		2.30	4.45E-01		2.53E+00
+	TH-231	25.64		14.70	-3.50E+00	4.41E-01	4.41E-01
		84.21		6.40	-6.12E-01		8.63E-01
+	PA-233	311.98		38.60	-1.31E-02	1.78E+00	1.78E+00
+	PA-234	131.20		20.40	-3.93E-02	2.29E-01	2.29E-01
		733.99		8.80	1.37E-01		7.42E-01
		946.00		12.00	-1.87E-01		5.38E-01
+	PA-234M	1001.03		0.92	5.71E+00	8.41E+00	8.41E+00
+	TH-234	63.29	*	3.80	1.90E+00	1.94E+00	1.94E+00
+	U-235	143.76		10.50	2.06E-01	4.51E-01	4.51E-01
		163.35		4.70	-5.39E-02		9.49E-01
		205.31		4.70	3.58E-01		1.02E+00
+	NP-237	86.50		12.60	2.47E-01	4.69E-01	4.69E-01
+	NP-239	106.10		22.70	-9.32E+10	1.18E+12	1.18E+12
		228.18		10.70	2.89E+11		2.59E+12
		277.60		14.10	1.87E+12		2.36E+12
+	AM-241	59.54		35.90	-2.98E-03	1.45E-01	1.45E-01
+	AM-243	74.67		66.00	-5.73E-03	1.17E-01	1.17E-01
+	CM-243	209.75		3.29	2.13E+00	4.05E-01	1.63E+00

Analysis Report for 1707088-20

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Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
CM-243	228.14	10.60	4.97E-02	4.05E-01	4.44E-01
	277.60	14.00	3.21E-01		4.05E-01

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction
? = 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	1.94E+00	1.94E+00	2.96E-01	9.26E-01
	NA-22	1274.54		99.94	7.20E-02	7.20E-02	-2.26E-02	3.32E-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	3.95E-02	3.95E-02	-1.37E-02	1.64E-02
+	K-40	1460.81	*	10.67	9.36E-01	9.36E-01	2.85E+01	4.41E-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	5.69E-02	5.69E-02	-1.27E-02	2.79E-02
		78.34		96.00	7.56E-02		1.64E-01	3.73E-02
	SC-46	889.25		99.98	1.52E-01	1.52E-01	6.50E-02	7.17E-02
		1120.51		99.99	2.62E-01		4.34E-01	1.26E-01
	V-48	983.52		99.98	4.87E+00	4.87E+00	-1.29E+00	2.27E+00
		1312.10		97.50	6.09E+00		2.29E+00	2.84E+00
	CR-51	320.08		9.83	6.39E+00	6.39E+00	-5.84E-01	3.08E+00
	MN-54	834.83		99.97	8.07E-02	8.07E-02	1.48E-02	3.80E-02
	CO-56	846.75		99.96	1.33E-01	1.33E-01	-4.66E-02	6.19E-02
		1037.75		14.03	1.19E+00		1.43E-01	5.55E-01
		1238.25		67.00	3.77E-01		3.75E-01	1.79E-01
		1771.40		15.51	6.90E-01		2.22E-01	2.93E-01
		2598.48		16.90	5.51E-01		-2.29E-02	2.13E-01
	CO-57	122.06		85.51	6.81E-02	6.81E-02	2.41E-02	3.32E-02
		136.48		10.60	5.82E-01		4.23E-01	2.84E-01

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	CO-58	810.76		99.40	1.68E-01	1.68E-01	-2.71E-03	7.92E-02
	FE-59	1099.22		56.50	5.99E-01	5.99E-01	-1.88E-01	2.80E-01
		1291.56		43.20	7.94E-01		1.16E-02	3.68E-01
	CO-60	1173.22		100.00	9.15E-02	6.34E-02	4.14E-02	4.32E-02
		1332.49		100.00	6.34E-02		-8.05E-03	2.89E-02
	ZN-65	1115.52		50.75	2.03E-01	2.03E-01	5.70E-02	9.54E-02
	GA-67	93.31		35.70	2.89E+08	2.89E+08	6.79E+08	1.42E+08
		208.95		2.24	3.91E+09		2.23E+09	1.90E+09
		300.22		16.00	6.12E+08		-1.08E+09	2.96E+08
	SE-75	121.11		16.70	4.76E-01	1.44E-01	7.96E-02	2.32E-01
		136.00		59.20	1.44E-01		1.04E-01	7.02E-02
		264.65		59.80	1.47E-01		-2.79E-03	7.11E-02
		279.53		25.20	3.97E-01		2.07E-01	1.93E-01
		400.65		11.40	8.24E-01		1.49E-01	3.95E-01
	RB-82	776.52		13.00	7.12E+00	7.12E+00	3.02E+00	3.35E+00
	RB-83	520.41		46.00	2.74E-01	2.74E-01	1.43E-01	1.30E-01
		529.64		30.30	3.63E-01		-4.42E-02	1.72E-01
		552.65		16.40	7.70E-01		1.66E-01	3.66E-01
	KR-85	513.99		0.43	1.91E+01	1.91E+01	3.41E+01	9.23E+00
	SR-85	513.99		99.27	2.38E-01	2.38E-01	4.27E-01	1.15E-01
	Y-88	898.02		93.40	1.26E-01	9.43E-02	3.24E-02	5.86E-02
		1836.01		99.38	9.43E-02		-4.09E-02	4.06E-02
	MO-93	263.06		56.72	8.95E-02	5.19E-02	3.68E-03	4.33E-02
		684.67		99.68	6.35E-02		3.71E-02	3.01E-02
		1477.11		99.08	5.19E-02		1.62E-02	2.30E-02
	NB-93M	16.57		9.43	4.86E-01	4.86E-01	-1.29E-01	2.29E-01
	NB-94	702.63		100.00	6.74E-02	6.30E-02	6.68E-03	3.20E-02
		871.10		100.00	6.30E-02		2.63E-02	2.95E-02
	NB-95	765.79		99.81	4.81E-01	4.81E-01	1.47E-01	2.27E-01
	NB-95M	235.69		25.00	5.27E+07	5.27E+07	-4.03E+08	2.57E+07
	ZR-95	724.18		43.70	5.21E-01	3.47E-01	9.53E-02	2.49E-01
		756.72		55.30	3.47E-01		-1.48E-02	1.64E-01
	MO-99	181.06		6.20	6.35E+10	4.37E+10	-9.68E+09	3.08E+10
		739.58		12.80	4.37E+10		1.67E+10	2.07E+10
		778.00		4.50	1.05E+11		-9.44E+10	4.90E+10
	RU-103	497.08		89.00	3.25E-01	3.25E-01	-1.10E-01	1.54E-01
	RU-106	621.84		9.80	7.02E-01	7.02E-01	5.33E-02	3.32E-01
	AG-108M	433.93		89.90	5.55E-02	5.55E-02	-3.52E-02	2.64E-02
		614.37		90.40	7.74E-02		-4.72E-01	3.70E-02
		722.95		90.50	7.77E-02		1.91E-02	3.70E-02
+	CD-109	88.03	*	3.72	3.69E+00	3.69E+00	2.68E+00	1.83E+00
	AG-110M	657.75		93.14	7.92E-02	7.92E-02	-2.88E-02	3.74E-02
		677.61		10.53	7.06E-01		-2.33E-01	3.33E-01
		706.67		16.46	5.24E-01		4.26E-02	2.48E-01
		763.93		21.98	3.88E-01		-3.68E-02	1.83E-01
		884.67		71.63	1.20E-01		3.04E-03	5.65E-02
		1384.27		23.94	3.33E-01		-4.07E-02	1.51E-01
	CD-113M	263.70		0.02	2.15E+02	2.15E+02	-5.12E+01	1.04E+02
	SN-113	255.12		1.93	4.16E+00	1.44E-01	-1.42E+00	2.00E+00
		391.69		64.90	1.44E-01		3.00E-03	6.89E-02
	TE123M	159.00		84.10	9.73E-02	9.73E-02	2.82E-02	4.73E-02
	SB-124	602.71		97.87	1.90E-01	1.90E-01	4.08E-02	9.01E-02
		645.85		7.26	2.44E+00		1.15E-01	1.15E+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)
	SB-124	722.78		11.10	2.00E+00	1.90E-01	4.91E-01	9.51E-01
		1691.02		49.00	2.66E-01		-1.60E-02	1.12E-01
	I-125	35.49		6.49	2.39E+00	2.39E+00	1.75E+00	1.16E+00
	SB-125	176.33		6.89	6.82E-01	1.93E-01	-1.59E-01	3.31E-01
		427.89		29.33	1.93E-01		-4.98E-02	9.22E-02
		463.38		10.35	6.69E-01		7.71E-01	3.22E-01
		600.56		17.80	3.58E-01		1.64E-01	1.70E-01
		635.90		11.32	5.44E-01		-2.91E-01	2.57E-01
	SB-126	414.70		83.30	1.64E+01	1.64E+01	6.05E-01	7.87E+00
		666.33		99.60	1.76E+01		8.51E+00	8.36E+00
		695.00		99.60	1.79E+01		5.09E+00	8.50E+00
		720.50		53.80	3.34E+01		1.29E+01	1.58E+01
+	SN-126	87.57	*	37.00	3.20E-01	3.20E-01	2.32E-01	1.58E-01
	SB-127	473.00		25.00	1.45E+07	1.13E+07	8.41E+06	6.94E+06
		685.20		35.70	1.13E+07		6.61E+06	5.36E+06
		783.80		14.70	2.85E+07		2.62E+07	1.35E+07
	I-129	29.78		57.00	9.39E-02	9.39E-02	-5.67E-03	4.56E-02
		33.60		13.20	3.78E-01		2.53E-01	1.84E-01
		39.58		7.52	6.36E-01		3.40E-01	3.09E-01
	I-131	284.30		6.05	4.76E+03	3.68E+02	-1.01E+03	2.30E+03
		364.48		81.20	3.68E+02		2.03E+02	1.77E+02
		636.97		7.26	4.44E+03		-3.48E+02	2.10E+03
		722.89		1.80	2.15E+04		5.28E+03	1.02E+04
	TE-132	49.72		13.10	6.13E+08	9.05E+07	7.24E+07	2.99E+08
		228.16		88.00	9.05E+07		1.01E+07	4.38E+07
	BA-133	81.00		33.00	1.64E-01	1.21E-01	-5.29E-01	8.03E-02
		302.84		17.80	3.33E-01		5.86E-02	1.62E-01
		356.01		60.00	1.21E-01		-7.76E-02	5.89E-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	7.62E+04	7.62E+04	-2.46E+05	3.74E+04
	CS-134	563.23		8.38	7.56E-01	7.51E-02	1.54E-01	3.59E-01
		569.32		15.43	4.05E-01		4.72E-02	1.92E-01
		604.70		97.60	7.51E-02		2.28E-03	3.59E-02
		795.84		85.40	9.70E-02		2.23E-03	4.61E-02
		801.93		8.73	8.17E-01		3.60E-03	3.85E-01
	CS-135	268.24		16.00	3.51E-01	3.51E-01	2.53E-01	1.70E-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	1.21E+02	1.15E+01	4.93E+01	5.89E+01
		163.89		4.61	1.87E+02		-1.06E+01	9.09E+01
		176.55		13.56	6.25E+01		-1.46E+01	3.03E+01
		273.65		12.66	8.59E+01		-4.00E+01	4.17E+01
		340.57		48.50	2.89E+01		2.38E+00	1.41E+01
		818.50		99.70	1.15E+01		3.06E+00	5.38E+00
		1048.07		79.60	1.76E+01		2.45E+00	8.23E+00
		1235.34		19.70	1.01E+02		1.87E+01	4.81E+01
	CS-137	661.65		85.12	6.78E-02	6.78E-02	-4.07E-02	3.20E-02
	LA-138	788.74		34.00	1.67E-01	8.58E-02	-1.62E-02	7.79E-02
		1435.80		66.00	8.58E-02		4.11E-02	3.86E-02
	CE-139	165.85		80.35	9.31E-02	9.31E-02	2.91E-02	4.53E-02
	BA-140	162.64		6.70	1.52E+02	4.66E+01	2.20E+01	7.38E+01
		304.84		4.50	2.56E+02		1.74E+01	1.24E+02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BA-140	423.70	3.20	3.80E+02	4.66E+01	6.52E+00	1.82E+02
	437.55	2.00	6.00E+02		1.79E+02	2.87E+02
	537.32	25.00	4.66E+01		-1.17E+01	2.21E+01
LA-140	328.77	20.50	6.08E+01	1.29E+01	1.31E+01	2.94E+01
	487.03	45.50	2.50E+01		-1.41E+01	1.19E+01
	815.85	23.50	5.44E+01		-3.98E+01	2.54E+01
	1596.49	95.49	1.29E+01		-1.61E+00	5.70E+00
CE-141	145.44	48.40	8.23E-01	8.23E-01	3.63E-01	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	5.47E-01	5.47E-01	2.49E-01	2.67E-01
PM-144	476.78	42.00	1.61E-01	7.47E-02	1.65E-02	7.67E-02
	618.01	98.60	7.47E-02		5.79E-03	3.55E-02
	696.49	99.49	8.05E-02		-8.89E-03	3.82E-02
PM-145	36.85	21.70	2.19E-01	1.20E-01	-1.52E-01	1.06E-01
	37.36	39.70	1.20E-01		-6.04E-02	5.82E-02
	42.30	15.10	3.05E-01		8.81E-02	1.48E-01
	72.40	2.31	2.83E+00		-2.53E+00	1.39E+00
PM-146	453.90	39.94	1.42E-01	1.42E-01	2.18E-02	6.78E-02
	735.90	14.01	4.98E-01		2.05E-01	2.36E-01
	747.13	13.10	4.95E-01		-2.56E-02	2.33E-01
ND-147	91.11	28.90	1.26E+02	1.26E+02	3.24E+02	6.18E+01
	531.02	13.10	2.10E+02		-5.91E+00	9.91E+01
PM-149	285.90	3.10	6.68E+13	6.68E+13	-3.03E+13	3.23E+13
EU-152	121.78	20.50	2.21E-01	2.21E-01	3.69E-02	1.08E-01
	244.69	5.40	9.50E-01		-6.59E-01	4.61E-01
	344.27	19.13	2.91E-01		-4.57E-03	1.40E-01
	778.89	9.20	6.22E-01		-2.07E-01	2.91E-01
	964.01	10.40	8.16E-01		7.01E-02	3.87E-01
	1085.78	7.22	9.13E-01		-3.82E-01	4.24E-01
	1112.02	9.60	7.99E-01		2.98E-01	3.75E-01
	1407.95	14.94	4.09E-01		-1.60E-01	1.86E-01
GD-153	97.43	31.30	1.97E-01	1.97E-01	1.11E-01	9.62E-02
	103.18	22.20	2.73E-01		6.27E-02	1.33E-01
EU-154	123.07	40.50	1.15E-01	1.15E-01	4.91E-02	5.59E-02
	723.30	19.70	3.64E-01		8.95E-02	1.73E-01
	873.19	11.50	5.44E-01		-1.04E-01	2.54E-01
	996.32	10.30	6.52E-01		-2.16E-01	3.04E-01
	1004.76	17.90	4.43E-01		2.67E-01	2.09E-01
	1274.45	35.50	1.93E-01		-6.04E-02	8.87E-02
EU-155	86.50	30.90	1.99E-01	1.99E-01	1.05E-01	9.76E-02
	105.30	20.70	2.25E-01		-5.86E-02	1.10E-01
EU-156	811.77	10.40	5.72E+01	5.72E+01	-4.72E+00	2.69E+01
	1153.47	7.20	1.09E+02		-2.74E+01	5.11E+01
	1230.71	8.90	9.91E+01		-1.09E+01	4.68E+01
HO-166M	184.41	72.60	8.21E-02	8.21E-02	1.78E-01	4.01E-02
	280.45	29.60	1.88E-01		8.16E-02	9.13E-02
	410.94	11.10	5.17E-01		4.92E-01	2.49E-01
	711.69	54.10	1.13E-01		-2.57E-02	5.34E-02
TM-171	66.72	0.14	4.36E+01	4.36E+01	1.46E+01	2.14E+01
HF-172	67.35	5.31	1.12E+00	4.37E-01	-2.49E-01	5.47E-01
	125.81	11.30	4.37E-01		5.78E-03	2.13E-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-172	181.53		20.60	6.87E+03	3.64E+03	-1.05E+03	3.34E+03
		900.72		29.81	6.56E+03		-4.32E+02	3.07E+03
		1093.66		62.50	3.64E+03		8.47E+02	1.71E+03
	LU-173	100.72		5.24	1.00E+00	3.12E-01	1.32E-03	4.89E-01
		272.11		21.20	3.12E-01		-1.44E-01	1.52E-01
	HF-175	343.40		84.00	1.75E-01	1.75E-01	-2.76E-03	8.42E-02
	LU-176	88.34		13.30	4.60E-01	5.53E-02	-4.08E-01	2.26E-01
		201.83		86.00	5.53E-02		-1.89E-02	2.68E-02
		306.78		94.00	5.68E-02		4.22E-02	2.74E-02
	HF-181	133.02		41.70	5.68E-01	3.17E-01	2.58E-01	2.77E-01
		345.85		17.20	1.62E+00		-2.58E-02	7.82E-01
		482.03		82.80	3.17E-01		-2.45E-02	1.51E-01
	TA-182	67.75		41.20	2.38E-01	2.38E-01	-5.31E-02	1.17E-01
		1121.30		34.90	6.14E-01		1.30E+00	2.95E-01
		1189.05		16.23	9.76E-01		-1.66E-02	4.60E-01
		1221.41		26.98	6.02E-01		-2.88E-01	2.84E-01
		1231.02		11.44	1.48E+00		-1.63E-01	6.98E-01
	IR-192	308.46		29.68	4.44E-01	2.62E-01	-2.62E-02	2.14E-01
		468.07		48.10	2.62E-01		-8.24E-02	1.24E-01
	HG-203	279.19		77.30	3.21E-01	3.21E-01	1.67E-01	1.56E-01
	TL-204	374.74		94.11	5.36E-02	5.36E-02	-2.31E-02	2.57E-02
		899.15		99.16	6.63E-02		4.40E-03	3.10E-02
		911.74		91.10	1.48E-01		3.72E-01	7.19E-02
	BI-207	569.67		97.72	5.91E-02	5.91E-02	1.27E-02	2.81E-02
		1063.62		74.90	9.07E-02		1.65E-03	4.23E-02
+	TL-208	583.14	*	30.22	2.84E-01	1.97E-01	1.21E+00	1.37E-01
		860.37	*	4.48	2.15E+00		2.23E+00	1.03E+00
		2614.66	*	35.85	1.97E-01		1.17E+00	8.61E-02
	BI-210M	262.00		45.00	1.12E-01	1.12E-01	2.31E-02	5.44E-02
		300.00		23.00	2.62E-01		-7.76E-01	1.27E-01
+	PB-210	46.50	*	4.25	1.15E+00	1.15E+00	6.25E-01	5.62E-01
	PB-211	404.84		2.90	1.82E+00	1.82E+00	-6.82E-02	8.71E-01
		831.96		2.90	2.16E+00		-4.39E-01	1.02E+00
+	BI-212	727.17	*	11.80	7.69E-01	7.69E-01	7.97E-01	3.70E-01
		1620.62	*	2.75	1.15E+00		8.36E-01	4.61E-01
+	PB-212	238.63	*	44.60	2.17E-01	2.17E-01	1.54E+00	1.07E-01
		300.09	*	3.41	1.38E+00		1.52E+00	6.62E-01
+	BI-214	609.31	*	46.30	2.78E-01	2.78E-01	9.84E-01	1.36E-01
		1120.29	*	15.10	7.27E-01		1.49E+00	3.48E-01
		1764.49	*	15.80	3.78E-01		1.23E+00	1.68E-01
		2204.22	*	4.98	1.10E+00		1.60E+00	4.71E-01
+	PB-214	295.21	*	19.19	3.30E-01	2.39E-01	1.00E+00	1.60E-01
		351.92	*	37.19	2.39E-01		1.05E+00	1.17E-01
	RN-219	401.80		6.50	8.15E-01	8.15E-01	3.31E-01	3.91E-01
	RA-223	323.87		3.88	1.38E+00	1.38E+00	-1.11E+00	6.66E-01
+	RA-224	240.98	*	3.95	2.44E+00	2.44E+00	2.94E+00	1.20E+00
	RA-225	40.00		31.00	1.64E+01	1.64E+01	9.48E-01	7.98E+00
+	RA-226	186.21	*	3.28	2.62E+00	2.62E+00	3.10E+00	1.29E+00
	TH-227	50.10		8.40	5.65E-01	5.34E-01	1.76E-01	2.76E-01
		236.00		11.50	5.34E-01		-4.08E+00	2.60E-01
		256.20		6.30	8.33E-01		3.44E-01	4.04E-01
+	AC-228	338.32	*	11.40	7.51E-01	4.05E-01	1.25E+00	3.67E-01
		911.07	*	27.70	4.05E-01		1.18E+00	1.95E-01

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

	Nuclide Name	Energy (keV)		Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	AC-228	969.11	*	16.60	6.11E-01	4.05E-01	1.73E+00	2.93E-01
	TH-230	48.44		16.90	2.93E-01	2.93E-01	1.68E-02	1.43E-01
		62.85		4.60	1.33E+00		2.61E+00	6.52E-01
		67.67		0.37	1.45E+01		-3.23E+00	7.09E+00
	PA-231	283.67		1.60	3.29E+00	2.53E+00	-5.69E-01	1.59E+00
		302.67		2.30	2.53E+00		4.45E-01	1.23E+00
	TH-231	25.64		14.70	4.41E-01	4.41E-01	-3.50E+00	2.15E-01
		84.21		6.40	8.63E-01		-6.12E-01	4.23E-01
	PA-233	311.98		38.60	1.78E+00	1.78E+00	-1.31E-02	8.57E-01
	PA-234	131.20		20.40	2.29E-01	2.29E-01	-3.93E-02	1.12E-01
		733.99		8.80	7.42E-01		1.37E-01	3.51E-01
		946.00		12.00	5.38E-01		-1.87E-01	2.51E-01
	PA-234M	1001.03		0.92	8.41E+00	8.41E+00	5.71E+00	3.97E+00
+	TH-234	63.29	*	3.80	1.94E+00	1.94E+00	1.90E+00	9.58E-01
	U-235	143.76		10.50	4.51E-01	4.51E-01	2.06E-01	2.20E-01
		163.35		4.70	9.49E-01		-5.39E-02	4.61E-01
		205.31		4.70	1.02E+00		3.58E-01	4.96E-01
	NP-237	86.50		12.60	4.69E-01	4.69E-01	2.47E-01	2.30E-01
	NP-239	106.10		22.70	1.18E+12	1.18E+12	-9.32E+10	5.77E+11
		228.18		10.70	2.59E+12		2.89E+11	1.25E+12
		277.60		14.10	2.36E+12		1.87E+12	1.15E+12
	AM-241	59.54		35.90	1.45E-01	1.45E-01	-2.98E-03	7.09E-02
	AM-243	74.67		66.00	1.17E-01	1.17E-01	-5.73E-03	5.75E-02
	CM-243	209.75		3.29	1.63E+00	4.05E-01	2.13E+00	7.93E-01
		228.14		10.60	4.44E-01		4.97E-02	2.15E-01
		277.60		14.00	4.05E-01		3.21E-01	1.97E-01

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

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User

Analysis Report for 1707088-20

HTC-A04-S001-1824-01

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-A04-S001-1824-01

Elapsed Live time: 3600
Elapsed Real Time: 3602

Channel								
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	1	84	96	94	181	544	147
25:	66	74	95	71	98	86	56	82
33:	70	86	93	76	77	90	70	100
41:	92	105	83	88	76	125	164	115
49:	87	117	112	119	124	123	111	136
57:	119	133	148	150	156	159	217	314
65:	212	152	170	174	173	159	191	159
73:	198	228	460	394	478	535	208	175
81:	162	182	132	179	205	151	230	262
89:	180	222	205	191	391	271	143	111
97:	107	124	121	145	108	107	106	121
105:	116	124	89	106	131	116	116	98
113:	108	125	129	108	102	99	87	93
121:	96	112	109	101	102	103	98	96
129:	122	155	91	89	97	102	116	115
137:	99	98	117	97	80	90	107	124
145:	108	84	92	99	90	86	90	92
153:	86	98	114	85	82	89	97	84
161:	94	78	72	92	84	81	69	87
169:	72	83	65	66	86	81	76	63
177:	75	75	76	65	81	79	85	79
185:	103	216	171	73	79	72	62	84
193:	65	71	76	67	63	79	68	80
201:	60	75	86	72	84	88	62	68
209:	101	132	75	74	63	49	64	74
217:	60	55	70	67	64	63	61	54
225:	54	67	58	58	64	68	64	63
233:	58	62	59	63	76	264	767	316
241:	120	155	121	63	54	59	39	56
249:	53	52	50	53	56	48	45	57
257:	42	46	48	55	37	33	42	47
265:	45	38	41	42	34	72	80	62
273:	36	45	43	44	52	74	49	42
281:	51	48	33	45	41	40	42	45
289:	44	42	47	37	52	75	159	176
297:	62	36	52	76	78	32	31	39
305:	42	39	31	42	54	29	35	26
313:	42	28	49	44	33	38	29	30
321:	31	46	35	45	37	31	32	61
329:	53	37	25	32	33	33	43	38
337:	44	103	145	45	38	41	39	37
345:	31	33	26	40	36	31	97	310
353:	197	44	37	33	41	27	27	23
361:	25	39	25	35	30	30	35	28

369:	30	25	32	15	24	16	39	27

Sample Title: HTC-A04-S001-1824-01

Channel								
377:	21	23	28	25	26	36	40	17
385:	22	31	27	29	20	26	23	31
393:	22	28	26	21	24	28	17	23
401:	35	23	29	26	29	22	16	33
409:	32	41	28	34	19	21	19	23
417:	19	28	25	23	24	15	26	39
425:	21	31	19	27	24	26	16	21
433:	21	20	23	20	21	27	25	25
441:	21	22	19	26	17	27	25	15
449:	22	19	22	20	21	29	29	21
457:	19	16	29	20	33	29	61	38
465:	20	19	21	17	17	15	15	30
473:	15	22	32	29	20	16	22	14
481:	19	22	21	21	9	18	21	22
489:	13	18	28	16	24	17	16	13
497:	23	17	16	12	19	17	24	9
505:	20	27	16	11	22	66	106	81
513:	24	27	27	18	19	14	15	22
521:	18	25	23	21	16	14	15	17
529:	13	13	12	17	14	18	13	18
537:	17	16	14	14	17	21	15	23
545:	17	11	29	19	13	18	25	19
553:	16	23	14	11	20	13	22	15
561:	11	23	25	15	21	18	23	9
569:	22	22	12	16	20	11	16	21
577:	16	19	15	19	23	57	193	143
585:	33	14	18	23	23	17	10	23
593:	13	12	15	18	18	22	18	20
601:	20	11	20	12	12	24	23	53
609:	181	183	46	13	26	19	17	24
617:	21	18	14	18	11	11	16	18
625:	18	16	14	15	16	25	17	17
633:	15	15	19	6	14	20	15	19
641:	21	11	8	6	20	18	17	9
649:	18	13	9	14	12	14	16	16
657:	12	16	12	10	11	19	16	12
665:	17	23	20	22	18	10	18	11
673:	11	18	15	9	12	19	8	13
681:	14	17	14	13	13	15	20	17
689:	10	9	22	21	12	20	21	16
697:	16	18	18	13	18	14	17	21
705:	18	23	15	17	9	12	19	13
713:	10	18	18	9	22	10	17	15
721:	18	23	14	15	21	23	43	38
729:	24	17	11	12	27	12	15	15
737:	16	17	13	17	12	18	13	14
745:	7	10	12	15	17	21	11	17
753:	7	14	24	19	9	21	5	10
761:	13	20	17	16	11	7	15	20
769:	19	17	13	19	19	11	10	15
777:	7	14	11	3	8	14	16	11
785:	19	12	15	9	6	11	9	9
793:	8	23	39	22	8	15	14	13

801:	14	12	17	13	10	12	17	9

Sample Title: HTC-A04-S001-1824-01

Channel								
809:	11	14	12	20	9	10	7	14
817:	10	10	8	15	10	9	8	14
825:	15	11	9	12	14	7	14	13
833:	16	8	9	21	8	11	10	13
841:	15	7	12	7	3	7	13	12
849:	4	14	10	13	13	6	7	18
857:	15	11	18	33	29	21	12	13
865:	13	10	6	11	11	7	13	9
873:	11	14	7	10	13	10	12	7
881:	6	7	12	11	18	15	11	16
889:	10	7	12	12	3	8	7	9
897:	12	8	9	12	11	10	11	12
905:	14	13	9	17	27	51	117	70
913:	19	14	17	17	14	8	7	11
921:	11	8	10	7	12	11	7	11
929:	6	7	12	8	16	18	14	11
937:	8	13	13	8	8	6	11	11
945:	11	8	4	9	16	20	12	12
953:	8	10	11	6	11	8	8	17
961:	16	12	9	14	26	26	15	42
969:	87	42	8	13	6	8	10	12
977:	8	7	6	11	10	10	9	7
985:	5	12	13	14	14	7	14	9
993:	9	7	12	9	7	12	11	7
1001:	16	15	18	15	9	10	11	6
1009:	13	5	11	6	8	4	10	16
1017:	9	6	11	5	9	9	15	16
1025:	16	13	7	8	14	10	9	10
1033:	8	9	9	13	6	13	11	9
1041:	11	8	12	11	6	7	12	13
1049:	10	13	15	9	8	11	14	12
1057:	12	10	13	6	10	11	3	16
1065:	10	8	6	8	13	12	6	4
1073:	9	12	10	8	6	18	9	10
1081:	13	9	7	8	7	5	10	11
1089:	9	10	10	10	11	11	14	8
1097:	7	10	12	8	11	13	10	12
1105:	11	14	6	15	8	10	12	11
1113:	17	7	11	6	8	20	24	58
1121:	37	21	13	15	9	4	11	11
1129:	6	8	9	10	20	12	8	15
1137:	11	6	10	8	5	11	14	11
1145:	6	14	15	11	15	9	10	8
1153:	16	17	9	16	17	12	13	14
1161:	13	8	15	11	9	8	9	11
1169:	11	12	12	13	17	14	14	15
1177:	10	11	11	13	14	10	19	16
1185:	8	15	10	12	9	15	19	11
1193:	16	12	18	10	12	9	17	11
1201:	15	10	13	10	15	12	9	25
1209:	22	14	10	13	8	19	14	9
1217:	13	16	15	15	10	9	14	13
1225:	16	24	12	9	15	16	14	19

1233:	14	8	13	18	23	30	17	13

Sample Title: HTC-A04-S001-1824-01

Channel								
1241:	14	8	12	13	10	15	14	12
1249:	10	14	12	6	7	8	12	9
1257:	12	6	9	9	7	13	19	9
1265:	7	17	13	8	9	13	6	5
1273:	4	9	11	7	5	5	7	6
1281:	12	12	13	9	10	6	8	4
1289:	7	8	6	11	14	5	9	8
1297:	12	10	7	7	5	6	7	5
1305:	4	7	7	6	8	8	8	11
1313:	9	12	4	9	9	10	3	5
1321:	3	5	5	9	5	7	8	8
1329:	2	5	10	6	5	4	4	4
1337:	4	8	12	5	4	4	6	7
1345:	8	6	5	7	2	6	5	7
1353:	11	4	2	2	2	3	2	4
1361:	7	4	2	1	2	5	6	4
1369:	8	4	7	4	3	4	6	5
1377:	11	12	6	3	5	5	7	6
1385:	5	3	2	4	4	5	4	3
1393:	2	4	3	4	2	2	3	3
1401:	8	8	6	4	3	2	7	8
1409:	4	4	4	7	5	1	8	3
1417:	4	1	5	0	2	3	5	2
1425:	1	2	1	3	4	2	3	0
1433:	3	7	3	4	4	6	1	2
1441:	2	2	3	2	5	3	1	2
1449:	2	4	3	3	2	2	2	7
1457:	12	22	152	479	575	191	29	20
1465:	21	7	5	1	3	3	3	0
1473:	3	5	3	1	2	4	2	1
1481:	3	4	3	0	1	1	7	3
1489:	1	0	2	6	1	1	7	5
1497:	4	4	2	1	4	1	0	1
1505:	1	3	4	6	4	5	2	2
1513:	2	2	2	3	0	0	1	1
1521:	3	0	3	2	2	4	1	3
1529:	2	2	1	4	1	2	3	2
1537:	2	1	3	0	1	1	3	2
1545:	2	3	0	3	0	0	1	0
1553:	0	2	2	2	1	2	2	1
1561:	2	2	1	2	1	0	1	1
1569:	3	4	0	3	2	0	1	0
1577:	1	2	1	1	1	2	3	6
1585:	2	4	10	7	12	6	3	4
1593:	10	3	4	1	0	2	1	6
1601:	1	1	2	4	2	0	1	1
1609:	0	4	1	0	1	4	3	2
1617:	1	1	5	3	5	1	1	2
1625:	3	2	2	1	2	5	7	2
1633:	3	4	2	0	0	3	2	4
1641:	0	2	1	1	1	2	2	3
1649:	1	2	1	0	3	4	1	1
1657:	1	2	1	2	3	5	1	7

1665:	1	1	4	5	1	0	1	0

Sample Title: HTC-A04-S001-1824-01

Channel								
1673:	1	1	0	0	3	3	0	2
1681:	1	2	1	1	4	1	1	3
1689:	0	2	2	2	0	1	1	2
1697:	0	1	1	5	0	1	2	1
1705:	1	3	3	1	1	4	1	1
1713:	0	2	1	1	3	0	0	1
1721:	1	3	3	1	1	0	1	5
1729:	4	5	1	1	2	3	0	0
1737:	3	2	1	0	2	2	1	0
1745:	1	4	1	0	1	1	0	3
1753:	0	3	1	4	1	0	2	1
1761:	2	3	18	33	26	5	1	1
1769:	2	5	0	1	1	0	1	1
1777:	1	3	1	0	3	2	0	0
1785:	3	1	1	4	0	1	1	2
1793:	1	0	1	0	1	2	0	1
1801:	0	2	1	1	5	0	1	0
1809:	0	1	1	2	0	0	1	6
1817:	0	2	0	1	3	3	2	3
1825:	0	2	2	1	0	2	1	3
1833:	1	3	1	2	2	1	5	3
1841:	0	2	2	0	3	1	8	4
1849:	1	0	0	0	2	1	0	0
1857:	1	1	1	0	2	3	1	3
1865:	1	1	1	1	3	1	1	1
1873:	3	1	2	0	3	0	2	3
1881:	0	1	0	2	2	1	0	0
1889:	2	3	1	1	1	0	0	2
1897:	1	1	2	2	0	0	1	4
1905:	3	0	0	2	2	1	0	1
1913:	0	1	8	0	0	1	1	2
1921:	0	1	0	1	0	2	1	2
1929:	1	2	0	4	0	1	0	2
1937:	2	2	3	1	1	2	1	1
1945:	2	1	2	1	1	1	1	1
1953:	1	0	0	0	0	2	1	2
1961:	1	1	0	2	1	2	2	1
1969:	0	0	0	0	1	2	1	0
1977:	2	0	0	0	1	1	1	2
1985:	0	0	1	0	1	0	0	0
1993:	2	2	0	2	0	0	0	0
2001:	1	1	0	0	1	2	1	1
2009:	0	0	1	0	3	2	1	2
2017:	1	1	1	1	1	1	3	0
2025:	0	3	1	0	2	1	1	2
2033:	0	2	0	1	0	0	1	0
2041:	1	2	2	2	1	1	0	1
2049:	1	2	0	1	0	0	0	1
2057:	2	4	3	0	1	2	0	0
2065:	1	2	2	2	2	1	0	0
2073:	2	4	0	1	1	1	1	1
2081:	0	1	0	2	2	0	2	2
2089:	1	0	1	0	1	3	1	0

2097:	1	0	1	4	6	12	5	4

Sample Title: HTC-A04-S001-1824-01

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

2529:	1	0	2	1	0	0	0	0

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Channel								
2537:	0	0	0	1	0	2	0	0
2545:	0	0	0	1	1	0	0	1
2553:	1	1	0	1	1	1	1	1
2561:	1	0	0	3	0	0	0	1
2569:	2	0	0	0	0	0	1	0
2577:	1	0	0	0	0	1	0	0
2585:	2	0	0	0	0	1	1	0
2593:	0	0	0	0	1	0	0	2
2601:	1	0	1	0	0	1	0	1
2609:	0	1	4	22	41	42	17	4
2617:	4	3	2	1	1	0	0	0
2625:	1	0	0	1	0	0	0	2
2633:	1	0	0	0	0	1	0	1
2641:	1	0	1	0	0	0	0	0
2649:	0	0	0	1	1	1	1	0
2657:	0	0	0	0	0	1	0	1
2665:	2	0	0	0	0	0	0	0
2673:	2	2	1	0	0	1	0	0
2681:	0	0	0	0	1	1	0	0
2689:	1	0	0	0	1	0	0	0
2697:	0	0	0	1	3	0	0	0
2705:	0	1	1	0	0	0	0	1
2713:	0	1	1	3	0	1	0	2
2721:	1	0	0	0	0	0	0	0
2729:	1	1	0	0	1	1	0	1
2737:	1	0	0	0	0	1	2	0
2745:	0	0	1	0	0	0	1	0
2753:	0	0	0	0	0	2	0	1
2761:	0	0	0	0	0	0	2	0
2769:	0	1	0	0	0	1	0	0
2777:	1	0	0	1	0	0	1	0
2785:	0	1	2	0	0	0	1	0
2793:	1	0	0	1	1	1	0	1
2801:	0	1	0	0	1	1	0	0
2809:	0	0	0	0	0	0	1	0
2817:	0	0	0	0	1	0	0	0
2825:	1	0	0	0	0	1	0	1
2833:	2	0	1	0	0	0	0	0
2841:	1	0	1	0	0	1	0	0
2849:	0	0	1	0	1	1	0	0
2857:	0	0	0	0	0	0	0	0
2865:	0	1	0	0	0	0	0	1
2873:	0	0	0	0	0	0	0	0
2881:	0	0	0	0	0	1	0	0
2889:	0	1	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	1	2	1	0	0	0	0	0
2913:	0	0	1	0	1	1	0	0
2921:	0	0	0	0	1	0	0	0
2929:	1	0	1	0	0	0	0	0
2937:	0	0	1	0	0	0	0	0
2945:	0	0	0	0	0	1	0	0
2953:	0	0	1	0	0	1	0	0

2961:	0	0	0	0	0	0	0	2

Sample Title: HTC-A04-S001-1824-01

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

3393:	0	0	0	0	0	0	0	0

Sample Title: HTC-A04-S001-1824-01

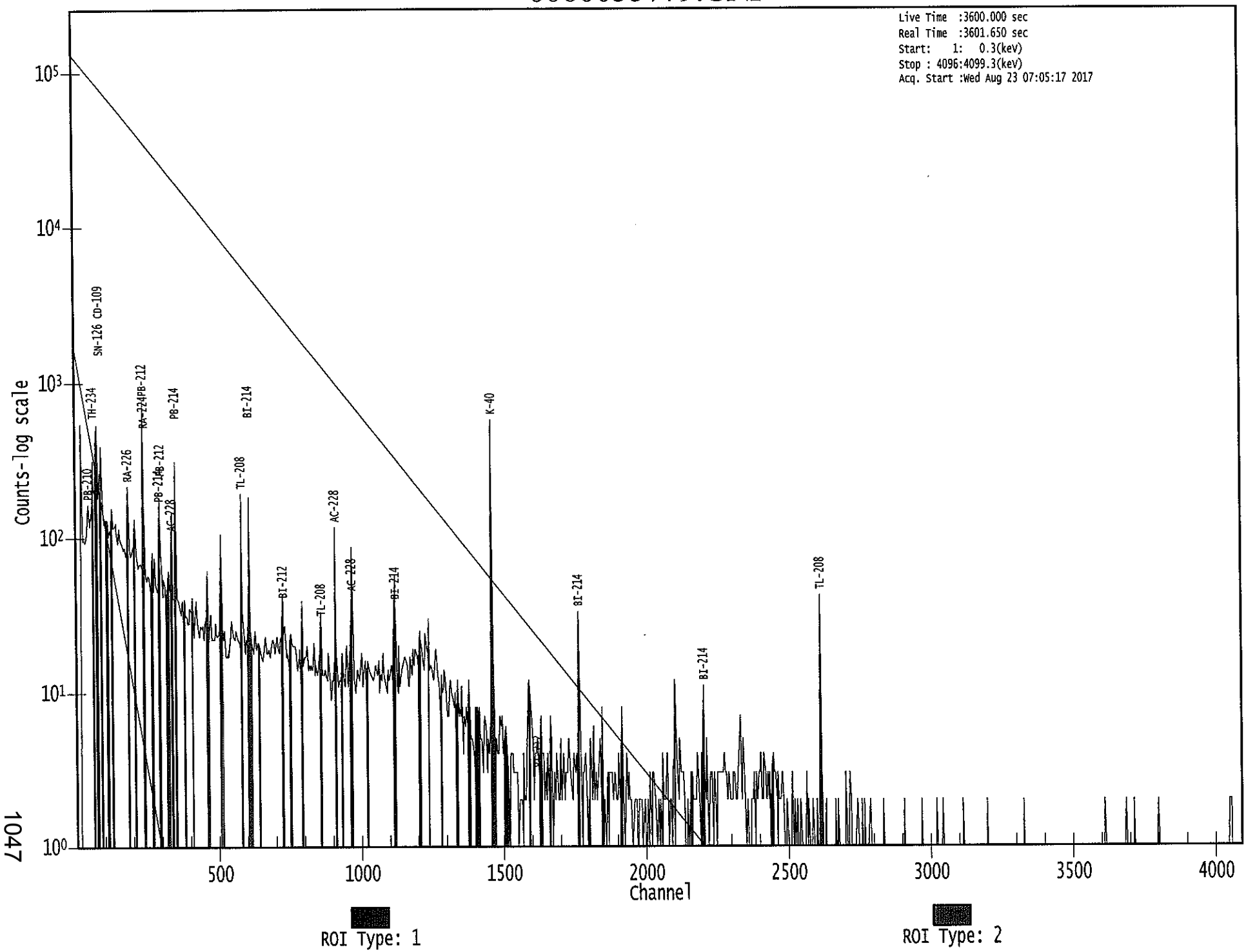
Channel								
3401:	0	0	0	0	0	0	0	0
3409:	0	1	0	0	0	0	1	0
3417:	0	1	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	1	0	0	0	0	0	1	0
3441:	0	0	0	0	1	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	1	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	1	0	0	0	0	0	0
3481:	0	0	1	0	0	0	1	0
3489:	0	0	0	0	1	0	1	0
3497:	0	0	0	0	0	0	0	0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

3825:	0	0	0	0	0	0	0	1

Sample Title: HTC-A04-S001-1824-01

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

0000055779.CNF



1047

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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
8/22/17 5:48:43 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: 8/22/17 5:33:25 AM
Measurement Date: 8/22/17 5:33:27 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.5 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE4 [SD: 7.1365E+000+/-131.19]	1.5622E+000	-4.2490E-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)

C 8/22

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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
8/22/17 5:48:34 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: 8/22/17 5:33:19 AM
Measurement Date: 8/22/17 5:33:20 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 901.7 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE3 [SD: 2.1800E+003+/-1174.9]	1.6740E+003	-4.3066E-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
8/22/17 5:48:25 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: 8/22/17 5:33:09 AM
Measurement Date: 8/22/17 5:33:10 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE2 [SD:-1.7100E+035+/-******]	2.2422E+000	3.1702E-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)

8/22

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

Last Results Report
8/22/17 5:48:15 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: 8/22/17 5:33:01 AM
Measurement Date: 8/22/17 5:33:03 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: 2.2765E+000+/- 1.245]	2.2833E+000	5.5276E-003 < : : : >

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 8/22

Last Results Report
8/22/17 6:06:51 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: 8/22/17 5:50:29 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 968.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.8350E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 kev	6.6065E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1332.49 ke	1.3317E+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	2.0721E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	2.5338E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.6425E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	3.0089E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		<Ab : : : >
Decay corrected activity	1.2611E+005	
Boundary Limits: [1.196E-001, 1.793E-001]		< : : : >
Decay corrected activity	6.0979E+004	
Boundary Limits: [4.890E-002, 7.335E-002]		< : : : >

Decay corrected activity 9.0711E+004
Boundary Limits: [7.743E-002, 1.161E-001] < : : : >
Trend Test: The last 9 samples exhibit a bias trend.

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	1.9318E+005	
Boundary Limits: [1.609E-001, 2.414E-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)

8/22

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

Last Results Report
8/22/17 5:25:57 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: 8/22/17 5:10:06 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 933.5 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.9859E+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]		< : : : >
Peak centroid 1332.49 ke	1.3325E+003	
Boundary Limits: [1.330E+003, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8360E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.9962E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	2.2259E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.7094E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.8712E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.5621E+005	
Boundary Limits: [1.189E-001, 1.784E-001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	5.9948E+004	
Boundary Limits: [4.862E-002, 7.293E-002]		< : : : >

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

Decay corrected activity 9.3867E+004
Boundary Limits: [7.700E-002, 1.155E-001] < : : : >
Trend Test: The last 9 samples exhibit a bias trend.

Decay corrected activity 1.9049E+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      *****
*********************************************************************
```

Last Results Report
8/22/17 5:25:46 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: 8/22/17 5:09:59 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 924.6 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	6.6137E+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, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8351E+003	
Boundary Limits: [1.833E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.2800E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	2.0264E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	2.1169E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Y-88	2.5299E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	1.4598E+005	
Boundary Limits: [1.190E-001, 1.785E-001]		< : : : >

Decay corrected activity 7.2867E+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]	1.0455E+005	< : : : >
Decay corrected activity Boundary Limits: [1.602E-001, 2.403E-001] Trend Test: The last 9 samples exhibit a bias trend.	2.0776E+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
8/22/17 5:25:35 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: 8/22/17 5:09:52 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 928.2 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.9992E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6180E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 1332.49 ke	1.3325E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8357E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	1.4334E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	1.7953E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.1260E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.3962E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.4983E+004	
Boundary Limits: [1.254E-002, 1.881E-002]		< : : : >
Decay corrected activity	6.5758E+003	
Boundary Limits: [5.134E-003, 7.700E-003]		< : : : >

Decay corrected activity 1.0565E+004
Boundary Limits: [8.130E-003, 1.220E-002] < : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity Boundary Limits: [1.690E-002, 2.534E-002]	1.8655E+004	< : : : >

Flags Key:

LU	= Lower/Upper Bounds Test	(Ab = Above, Be = Below)
SD	= Sample Driven N-Sigma Test	(In = Investigate, Ac = Action)
UD	= User Driven N-Sigma Test	(In = Investigate, Ac = Action)
BS	= Measurement Bias Test	(In = Investigate, Ac = Action)

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

8/23

Last Results Report
8/23/17 5:33:45 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: 8/23/17 5:17:24 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 967.6 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.8260E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
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	1.8356E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	2.6577E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	2.5113E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.7734E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	3.0212E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		<Ab Below : : : >
Decay corrected activity	1.3709E+005	
Boundary Limits: [1.196E-001, 1.793E-001]		< : : : >
Decay corrected activity	6.1266E+004	
Boundary Limits: [4.890E-002, 7.335E-002]		< : : : >

Decay corrected activity 9.0189E+004
Boundary Limits: [7.743E-002, 1.161E-001] < : : : >
Trend Test: The last 9 samples exhibit a bias trend.

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	1.8897E+005	
Boundary Limits: [1.609E-001, 2.414E-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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Last Results Report
8/23/17 5:33:10 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: 8/23/17 5:17:19 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 933.8 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	5.9896E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6181E+002	
Boundary Limits: [6.600E+002, 6.630E+002]		< : : : >
Peak centroid 1332.49 ke	1.3325E+003	
Boundary Limits: [1.330E+003, 1.334E+003]		< : : : >
Peak centroid 1836.01 ke	1.8358E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.9554E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	2.2318E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.6359E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.8738E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.5689E+005	
Boundary Limits: [1.189E-001, 1.784E-001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	6.0617E+004	
Boundary Limits: [4.862E-002, 7.293E-002]		< : : : >

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

Decay corrected activity 9.4648E+004
Boundary Limits: [7.700E-002, 1.155E-001] < : : : >
Trend Test: The last 9 samples exhibit a bias trend.

Decay corrected activity 1.8879E+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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Last Results Report
8/23/17 5:32:59 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: 8/23/17 5:17:11 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 923.8 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	6.6141E+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	1.2510E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	2.0919E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	2.3733E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Y-88	2.8236E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Decay corrected activity	1.4208E+005	
Boundary Limits: [1.190E-001, 1.785E-001]		< : : : >

Decay corrected activity 7.2405E+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]	1.0115E+005	< : : : >
Decay corrected activity Boundary Limits: [1.602E-001, 2.403E-001]	2.0672E+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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8/23

Last Results Report
8/23/17 5:32:48 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: 8/23/17 5:17:04 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 928.7 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	6.0012E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6180E+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	1.8356E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	1.4317E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	1.8499E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Co-60	2.2163E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.4394E+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	6.6600E+003	

Boundary Limits: [5.134E-003, 7.700E-003] < : : : >

Decay corrected activity 1.0780E+004
Boundary Limits: [8.130E-003, 1.220E-002] < : : : >

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Decay corrected activity	2.0084E+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)

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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
8/23/17 5:56:57 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: 8/23/17 5:41:38 AM
Measurement Date: 8/23/17 5:41:40 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: 2.1795E+003+/-1174.4]	1.6290E+003	-4.6872E-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)

8/23

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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
8/23/17 5:56:48 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: 8/23/17 5:41:30 AM
Measurement Date: 8/23/17 5:41:32 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE2 [SD:-1.7082E+035+/-******]	2.3456E+000	3.1686E-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)

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

8/23

Last Results Report
8/23/17 5:56:39 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: 8/23/17 5:41:24 AM
Measurement Date: 8/23/17 5:41:26 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: 2.2765E+000+/- 1.244]	2.2578E+000	-1.5013E-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)

C 8/23

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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
8/23/17 5:57:06 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: 8/23/17 5:41:44 AM
Measurement Date: 8/23/17 5:41:46 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.3 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE4 [SD: 7.1308E+000+/-131.12]	1.7211E+000	-4.1256E-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)