TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-5313-2
Client Project/Site: RFP-CBA-022 (28 DAY TAT)

For:
Westinghouse Electric Company LLC
3300 State Road P
Festus, Missouri 63028

Attn: Martin Swanson

Authorized for release by:
2/23/2014 10:53:00 PM

Ivan Vania, Project Manager II
(314)298-8566
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Job ID: 160-5313-2

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

Project: RFP-CBA-022 (28 DAY TAT)

Report Number: 160-5313-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 01/27/2014; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 17.0 C.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples L101017BRS00 (160-5313-1), L101018BES00 (160-5313-2), L101019BSS00 (160-5313-3), L101020BRS00 (160-5313-4), L101021BRS00 (160-5313-5), L101023BRS00 (160-5313-6), L101025BRS00 (160-5313-7), L101026BES00 (160-5313-8), L101027BSS00 (160-5313-9), L101028BRQ00 (160-5313-10), L101028BRS00 (160-5313-11), L101029BSS00 (160-5313-12), L101030BRS00 (160-5313-13), L101031BES00 (160-5313-14), L101032BUB00 (160-5313-15) and L101033BUB00 (160-5313-16) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 01/28/2014, prepared on 01/30/2014 and analyzed on 02/20/2014.

No difficulties were encountered during the Radium 226 analysis. All other quality control parameters were within the acceptance limits.

FORM HDP-PR-QA-006-1
CHAIN OF CUSTODY

Instructions: Each time the container is transferred to another organization, a person from each organization should sign the CoC. The Laboratory/End User must verify that the sample is correctly identified before the sample is released for use or analysis and send the completed CoC to HDP.

Chain of Cutody ID No. F-012714-01 **Page** 1/2

Project Name:
Westinghouse Electric Company

Contact Person:
Gerald Rood

Phone Number:
314-810-3382

Sampler Name
Scott Jenkins

Laboratory Name:
TA-MO

Laboratory Address:
13715 Rider Trail North

Phone No.
314-298-8566

Laboratory Contact Person:
Joe Walker

Phone No.
708-870-8453

Turn Around Time
Rush (7 days)

Sample ID	Date	Time	Matrix	Comp (C) or Grab (G)	Requested Analysis: Gamma Spec	Isotopic Uranium	Tc-99	Gamma Spec (21 day ingrow for Ra-226)						Total Containers	Remarks
L101017BRS00	1/25/2014	8:40	S	C			X	X						1	LSA-10-10 Sys. Samples
L101018BES00	1/25/2014	8:45	S	C			X	X						1	LSA-10-10 Sys. Samples
L101019BSS00	1/25/2014	8:50	S	C			X	X						1	LSA-10-10 Sys. Samples
L101020BRS00	1/25/2014	9:00	S	C			X	X						1	LSA-10-10 Sys. Samples
L101021BRS00	1/25/2014	9:20	S	C			X	X						1	LSA-10-10 Sys. Samples
L101023BRS00	1/25/2014	14:30	S	C			X	X						1	LSA-10-10 Sys. Samples
L101025BRS00	1/25/2014	10:00	S	C			X	X						1	LSA-10-10 Sys. Samples
L101026BES00	1/25/2014	10:05	S	C			X	X						1	LSA-10-10 Sys. Samples
L101027BSS00	1/25/2014	10:15	S	C			X	X						1	LSA-10-10 Sys. Samples
L101028BRQ00	1/25/2014	10:25	S	C			X	X						1	LSA-10-10 QC Sample
L101028BRS00	1/25/2014	10:25	S	C			X	X						1	LSA-10-10 Sys. Samples
L101029BSS00	1/25/2014	10:40	S	C			X	X						1	LSA-10-10 Sys. Samples

Relinquished by: [signature]	Date/Time 1-27-14 1630	Received by: [signature]	Date/Time 1-27 1630	Total 16	Cooler Temperature: Ambient
Company Name: WEC		Company Name: Crossroads		Cooler ID: 0127-02	Shipper and Number:
Received by:	Date/Time	Relinquished by: [signature]	Date/Time 1-27 1820	Comments: Please analyze samples for Tc-99 on a 7 day TAT. Please analyze samples for gamma spec after a 21 day in growth period.	
Company Name:		Company Name: Crossroads			
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 1/27/14 1820	Verified By: Curtis Wilder [signature]	
Company Name:		Company Name: TA			

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Hematite Decommissioning Project	Procedure HDP-PR-QA-006, *Chain of Custody*	
	Revision: 3	Page 1 of 1
	Westinghouse Non-Proprietary Class 3	

FORM HDP-PR-QA-006-1
CHAIN OF CUSTODY

Instructions: Each time the container is transferred to another organization, a person from each organization should sign the CoC. The Laboratory/End User must verify that the sample is correctly identified before the sample is released for use or analysis and send the completed CoC to HDP.

Chain of Cutody ID No. F-012714-01 **Page** 2/2

Project Name:
Westinghouse Electric Company

Contact Person:
Gerald Rood

Phone Number:
314-810-3382

Sampler Name
Scott Jenkins

Sample ID	Date	Time	Matrix	Comp (C) or Grab (G)	Requested Analysis: Gamma Spec	Isotopic Uranium	Tc-99	Gamma Spec (21 day ingrow for Ra-226)	Total Containers	Remarks
L101030BRS00	1/25/2014	11:00	S	C			X	X	1	LSA-10-10 Sys. Samples
L101031BES00	1/25/2014	8:30	S	C			X	X	1	LSA-10-10 Sys. Samples
L101032BUB00	1/25/2014	14:00	S	C			X	X	1	LSA-10-10 Bias Samples
L101033BUB00	1/25/2014	14:10	S	C			X	X	1	LSA-10-10 Bias Samples

Laboratory Name:
TA-MO

Laboratory Address:
13715 Rider Trail North

Phone No.
314-298-8566

Laboratory Contact Person:
Joe Walker

Phone No.
708-870-8453

Turn Around Time
Rush (7 days)

Relinquished by:	Date/Time	Received by:	Date/Time	Total	Cooler Temperature:
Company Name: WEC	1-27-14 1636	Company Name: Crossroads	1-27 1630	16	Ambient
Received by:	Date/Time	Relinquished by:	Date/Time	Cooler ID: 0127-02	Shipper and Number:
Company Name:		Company Name: Crossroads	1-27 1900	Comments: Please analyze samples for Tc-99 on a 7 day TAT. Please analyze samples for gamma spec after a 21 day in growth period.	
Relinquished by:	Date/Time	Received by:	Date/Time	Verified By: Curtis Wilder	
Company Name:		Company Name:	1/27/14 1910		

Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-5313-2

Login Number: 5313

List Source: TestAmerica St. Louis

List Number: 1

Creator: Clarke, Jill C

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (28 DAY TAT)

TestAmerica Job ID: 160-5313-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (28 DAY TAT)

TestAmerica Job ID: 160-5313-2

Method	Method Description	Protocol	Laboratory
GA-01-R	Radium-226 & Other Gamma Emitters (GS)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (28 DAY TAT)

TestAmerica Job ID: 160-5313-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-5313-1	L101017BRS00	Solid	01/25/14 08:40	01/27/14 18:00
160-5313-2	L101018BES00	Solid	01/25/14 08:45	01/27/14 18:00
160-5313-3	L101019BSS00	Solid	01/25/14 08:50	01/27/14 18:00
160-5313-4	L101020BRS00	Solid	01/25/14 09:00	01/27/14 18:00
160-5313-5	L101021BRS00	Solid	01/25/14 09:20	01/27/14 18:00
160-5313-6	L101023BRS00	Solid	01/25/14 14:30	01/27/14 18:00
160-5313-7	L101025BRS00	Solid	01/25/14 10:00	01/27/14 18:00
160-5313-8	L101026BES00	Solid	01/25/14 10:05	01/27/14 18:00
160-5313-9	L101027BSS00	Solid	01/25/14 10:15	01/27/14 18:00
160-5313-10	L101028BRQ00	Solid	01/25/14 10:25	01/27/14 18:00
160-5313-11	L101028BRS00	Solid	01/25/14 10:25	01/27/14 18:00
160-5313-12	L101029BSS00	Solid	01/25/14 10:40	01/27/14 18:00
160-5313-13	L101030BRS00	Solid	01/25/14 11:00	01/27/14 18:00
160-5313-14	L101031BES00	Solid	01/25/14 08:30	01/27/14 18:00
160-5313-15	L101032BUB00	Solid	01/25/14 14:00	01/27/14 18:00
160-5313-16	L101033BUB00	Solid	01/25/14 14:10	01/27/14 18:00

Client Sample ID: L101017BRS00

Lab Sample ID: 160-5313-1

Date Collected: 01/25/14 08:40

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.21**		0.171	0.211		0.118	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Bismuth 212	**1.61**		0.549	0.574		0.502	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Bismuth 214	**1.25**		0.139	0.190		0.0895	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Lead 212	**1.17**		0.0907	0.176		0.0838	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Lead 214	**1.39**		0.117	0.186		0.0873	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Potassium 40	**17.0**		1.33	2.19		0.418	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Protactinium 231	-0.830	U	0.964	0.968		1.58	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Radium 226	**1.25**		0.139	0.190	1.00	0.0895	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Thorium 232	**1.21**		0.171	0.211		0.118	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Thorium 234	**1.71**		0.857	0.876		1.06	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Uranium 235	0.189	U	0.177	0.178		0.296	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Americium 241	0.0219	U	0.0781	0.0781		0.131	pCi/g	01/30/14 10:30	02/20/14 01:37	1
Protactinium 234m	0.0119	U	3.75	3.75		6.79	pCi/g	01/30/14 10:30	02/20/14 01:37	1

Client Sample ID: L101018BES00

Lab Sample ID: 160-5313-2

Date Collected: 01/25/14 08:45

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.30**		0.126	0.182		0.137	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Bismuth 212	**1.46**		0.552	0.573		0.512	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Bismuth 214	**1.48**		0.129	0.201		0.0756	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Lead 212	**1.41**		0.0870	0.202		0.0651	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Lead 214	**1.59**		0.102	0.194		0.0801	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Potassium 40	**18.4**		1.24	2.26		0.445	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Protactinium 231	0.698	U	0.386	0.393		1.24	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Radium 226	**1.48**		0.129	0.201	1.00	0.0756	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Thorium 232	**1.30**		0.126	0.182		0.137	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Thorium 234	0.817	U	0.343	0.353		0.936	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Uranium 235	0.152	U	0.161	0.162		0.269	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Americium 241	-0.0114	U	0.0665	0.0665		0.112	pCi/g	01/30/14 10:30	02/20/14 01:38	1
Protactinium 234m	0.826	U	3.36	3.36		5.98	pCi/g	01/30/14 10:30	02/20/14 01:38	1

Client Sample ID: L101019BSS00

Lab Sample ID: 160-5313-3

Date Collected: 01/25/14 08:50

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.05**		0.149	0.184		0.122	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Bismuth 212	**1.30**		0.437	0.457		0.405	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Bismuth 214	**1.17**		0.133	0.180		0.0804	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Lead 212	**1.05**		0.0916	0.164		0.0901	pCi/g	01/30/14 10:30	02/20/14 02:34	1

Client Sample ID: L101019BSS00

Lab Sample ID: 160-5313-3

Date Collected: 01/25/14 08:50

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Lead 214	**1.25**		0.117	0.175		0.0874	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Potassium 40	**16.8**		1.39	2.21		0.467	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Protactinium 231	0.257	U	0.210	0.212		1.49	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Radium 226	**1.17**		0.133	0.180	1.00	0.0804	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Thorium 232	**1.05**		0.149	0.184		0.122	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Thorium 234	**1.70**		0.919	0.936		1.12	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Uranium 235	0.160	U	0.189	0.190		0.269	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Americium 241	0.0522	U	0.0549	0.0552		0.0898	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Protactinium 234m	1.61	U	4.15	4.16		7.77	pCi/g	01/30/14 10:30	02/20/14 02:34	1

Client Sample ID: L101020BRS00

Lab Sample ID: 160-5313-4

Date Collected: 01/25/14 09:00

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.00**		0.128	0.164		0.106	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Bismuth 212	**1.35**		0.525	0.543		0.453	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Bismuth 214	**1.07**		0.0984	0.148		0.0603	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Lead 212	**0.977**		0.0669	0.143		0.0574	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Lead 214	**1.16**		0.0776	0.143		0.0647	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Potassium 40	**18.1**		1.07	2.14		0.281	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Protactinium 231	0.428	U	0.252	0.256		1.03	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Radium 226	**1.07**		0.0984	0.148	1.00	0.0603	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Thorium 232	**1.00**		0.128	0.164		0.106	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Thorium 234	**1.42**		0.628	0.645		0.810	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Uranium 235	0.135	U	0.123	0.124		0.208	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Americium 241	-0.00650	U	0.0537	0.0537		0.0905	pCi/g	01/30/14 10:30	02/20/14 02:34	1
Protactinium 234m	2.93	U	2.74	2.76		4.48	pCi/g	01/30/14 10:30	02/20/14 02:34	1

Client Sample ID: L101021BRS00

Lab Sample ID: 160-5313-5

Date Collected: 01/25/14 09:20

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.30**		0.220	0.257		0.161	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Bismuth 212	0.728	U	0.706	0.710		1.12	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Bismuth 214	**1.14**		0.231	0.260		0.206	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Lead 212	**1.22**		0.154	0.221		0.151	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Lead 214	**1.17**		0.191	0.227		0.190	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Potassium 40	**18.8**		2.02	2.79		0.805	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Protactinium 231	0.598	U	0.452	0.457		2.76	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Radium 226	**1.14**		0.231	0.260	1.00	0.206	pCi/g	01/30/14 10:30	02/20/14 17:22	1

Client Sample ID: L101021BRS00

Lab Sample ID: 160-5313-5

Date Collected: 01/25/14 09:20

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium 232	**1.30**		0.220	0.257		0.161	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Thorium 234	1.03	U	0.713	0.721		2.59	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Uranium 235	0.191	U	0.312	0.313		0.504	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Americium 241	-0.0491	U	0.163	0.163		0.275	pCi/g	01/30/14 10:30	02/20/14 17:22	1
Protactinium 234m	2.08	U	4.28	4.29		8.92	pCi/g	01/30/14 10:30	02/20/14 17:22	1

Client Sample ID: L101023BRS00

Lab Sample ID: 160-5313-6

Date Collected: 01/25/14 14:30

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.21**		0.490	0.505		0.693	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Bismuth 212	0.698	U	1.49	1.49		2.59	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Bismuth 214	**1.32**		0.336	0.363		0.201	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Lead 212	**1.29**		0.248	0.298		0.243	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Lead 214	**1.46**		0.304	0.340		0.236	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Potassium 40	**15.9**		3.28	3.66		1.81	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Protactinium 231	1.60	U	1.83	1.84		3.89	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Radium 226	**1.32**		0.336	0.363	1.00	0.201	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Thorium 232	**1.21**		0.490	0.505		0.693	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Thorium 234	1.39	U	2.48	2.49		4.30	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Uranium 235	0.0985	U	0.153	0.153		0.892	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Americium 241	0.114	U	0.238	0.238		0.402	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Protactinium 234m	3.43	U	14.6	14.6		27.0	pCi/g	01/30/14 10:30	02/20/14 17:21	1

Client Sample ID: L101025BRS00

Lab Sample ID: 160-5313-7

Date Collected: 01/25/14 10:00

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**0.927**		0.170	0.195		0.140	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Bismuth 212	**1.64**		0.552	0.578		0.461	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Bismuth 214	**1.16**		0.146	0.189		0.102	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Lead 212	**1.02**		0.0848	0.157		0.0730	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Lead 214	**1.28**		0.114	0.175		0.0887	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Potassium 40	**16.9**		1.40	2.22		0.487	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Protactinium 231	0.497	U	0.263	0.269		1.47	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Radium 226	**1.16**		0.146	0.189	1.00	0.102	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Thorium 232	**0.927**		0.170	0.195		0.140	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Thorium 234	**1.60**		0.783	0.801		1.01	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Uranium 235	0.0642	U	0.112	0.112		0.286	pCi/g	01/30/14 10:30	02/20/14 17:21	1
Americium 241	0.000765	U	0.0723	0.0723		0.122	pCi/g	01/30/14 10:30	02/20/14 17:21	1

Client Sample ID: L101025BRS00

Lab Sample ID: 160-5313-7

Date Collected: 01/25/14 10:00

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Protactinium 234m	1.46	U	4.04	4.05		7.15	pCi/g	01/30/14 10:30	02/20/14 17:21	1

Client Sample ID: L101026BES00

Lab Sample ID: 160-5313-8

Date Collected: 01/25/14 10:05

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.03**		0.126	0.164		0.0875	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Bismuth 212	**1.63**		0.497	0.526		0.414	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Bismuth 214	**0.959**		0.103	0.143		0.0764	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Lead 212	**1.08**		0.0695	0.156		0.0557	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Lead 214	**1.05**		0.0929	0.143		0.0689	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Potassium 40	**19.0**		1.11	2.24		0.348	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Protactinium 231	-0.541	U	0.726	0.728		1.20	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Radium 226	**0.959**		0.103	0.143	1.00	0.0764	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Thorium 232	**1.03**		0.126	0.164		0.0875	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Thorium 234	**1.66**		0.685	0.707		0.837	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Uranium 235	0.116	U	0.136	0.137		0.224	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Americium 241	-0.0118	U	0.0620	0.0620		0.104	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Protactinium 234m	1.48	U	2.26	2.26		4.86	pCi/g	01/30/14 10:30	02/20/14 17:19	1

Client Sample ID: L101027BSS00

Lab Sample ID: 160-5313-9

Date Collected: 01/25/14 10:15

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.05**		0.139	0.175		0.133	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Bismuth 212	**1.42**		0.408	0.434		0.345	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Bismuth 214	**1.11**		0.108	0.158		0.0684	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Lead 212	**0.951**		0.0735	0.143		0.0758	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Lead 214	**1.13**		0.0983	0.153		0.0811	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Potassium 40	**19.0**		1.09	2.23		0.228	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Protactinium 231	0.274	U	0.183	0.186		1.16	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Radium 226	**1.11**		0.108	0.158	1.00	0.0684	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Thorium 232	**1.05**		0.139	0.175		0.133	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Thorium 234	**1.92**		0.743	0.770		0.887	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Uranium 235	0.121	U	0.139	0.140		0.249	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Americium 241	-0.0302	U	0.0628	0.0629		0.105	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Protactinium 234m	2.88	U	2.83	2.85		4.55	pCi/g	01/30/14 10:30	02/20/14 17:18	1

Client Sample ID: L101028BRQ00 — **Lab Sample ID: 160-5313-10**
Date Collected: 01/25/14 10:25 — **Matrix: Solid**
Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.07		0.145	0.181		0.0968	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Bismuth 212	1.18		0.405	0.423		0.382	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Bismuth 214	1.18		0.124	0.174		0.0820	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Lead 212	1.09		0.0754	0.160		0.0578	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Lead 214	1.05		0.109	0.154		0.0823	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Potassium 40	19.6		1.25	2.36		0.218	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Protactinium 231	-0.677	U	0.817	0.820		1.34	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Radium 226	1.18		0.124	0.174	1.00	0.0820	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Thorium 232	1.07		0.145	0.181		0.0968	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Thorium 234	1.73		0.744	0.766		0.931	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Uranium 235	0.115	U	0.150	0.151		0.253	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Americium 241	-0.0206	U	0.0643	0.0643		0.108	pCi/g	01/30/14 10:30	02/20/14 17:18	1
Protactinium 234m	1.48	U	2.89	2.89		5.67	pCi/g	01/30/14 10:30	02/20/14 17:18	1

Client Sample ID: L101028BRS00 — **Lab Sample ID: 160-5313-11**
Date Collected: 01/25/14 10:25 — **Matrix: Solid**
Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.06		0.192	0.221		0.170	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Bismuth 212	1.61		0.509	0.536		0.406	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Bismuth 214	1.09		0.144	0.183		0.105	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Lead 212	1.04		0.0891	0.161		0.0833	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Lead 214	1.20		0.118	0.171		0.0804	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Potassium 40	19.7		1.50	2.51		0.465	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Protactinium 231	0.364	U	0.249	0.252		1.41	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Radium 226	1.09		0.144	0.183	1.00	0.105	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Thorium 232	1.06		0.192	0.221		0.170	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Thorium 234	2.53		0.923	0.960		1.07	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Uranium 235	0.156	U	0.191	0.192		0.281	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Americium 241	0.00672	U	0.0693	0.0693		0.117	pCi/g	01/30/14 10:30	02/20/14 17:19	1
Protactinium 234m	0.000	U	3.06	3.06		8.94	pCi/g	01/30/14 10:30	02/20/14 17:19	1

Client Sample ID: L101029BSS00 — **Lab Sample ID: 160-5313-12**
Date Collected: 01/25/14 10:40 — **Matrix: Solid**
Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.955		0.132	0.164		0.166	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Bismuth 212	1.74		0.647	0.672		0.568	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Bismuth 214	1.11		0.133	0.176		0.0757	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Lead 212	1.01		0.0864	0.157		0.0764	pCi/g	01/30/14 10:30	02/20/14 18:03	1

Client Sample ID: L101029BSS00 — **Lab Sample ID: 160-5313-12**
Date Collected: 01/25/14 10:40 — **Matrix: Solid**
Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Lead 214	1.20		0.124	0.176		0.0897	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Potassium 40	18.6		1.51	2.43		0.533	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Protactinium 231	0.505	U	0.440	0.444		1.43	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Radium 226	1.11		0.133	0.176	1.00	0.0757	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Thorium 232	0.955		0.132	0.164		0.166	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Thorium 234	2.07		0.773	0.803		1.00	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Uranium 235	0.231	U	0.135	0.137		0.235	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Americium 241	-0.00554	U	0.0763	0.0763		0.129	pCi/g	01/30/14 10:30	02/20/14 18:03	1
Protactinium 234m	-1.33	U	11.2	11.2		7.87	pCi/g	01/30/14 10:30	02/20/14 18:03	1

Client Sample ID: L101030BRS00 — **Lab Sample ID: 160-5313-13**
Date Collected: 01/25/14 11:00 — **Matrix: Solid**
Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.12		0.129	0.172		0.123	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Bismuth 212	1.22		0.370	0.391		0.330	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Bismuth 214	1.20		0.110	0.167		0.0700	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Lead 212	1.13		0.0729	0.163		0.0578	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Lead 214	1.28		0.0993	0.166		0.0720	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Potassium 40	16.9		1.05	2.03		0.295	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Protactinium 231	0.448	U	0.265	0.269		1.06	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Radium 226	1.20		0.110	0.167	1.00	0.0700	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Thorium 232	1.12		0.129	0.172		0.123	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Thorium 234	1.06		0.715	0.724		0.894	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Uranium 235	0.0938	U	0.130	0.130		0.224	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Americium 241	0.00639	U	0.0569	0.0569		0.0959	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Protactinium 234m	1.62	U	3.17	3.18		5.37	pCi/g	01/30/14 10:30	02/20/14 18:04	1

Client Sample ID: L101031BES00 — **Lab Sample ID: 160-5313-14**
Date Collected: 01/25/14 08:30 — **Matrix: Solid**
Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.20		0.138	0.185		0.102	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Bismuth 212	1.18		0.427	0.444		0.395	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Bismuth 214	1.08		0.0995	0.150		0.0619	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Lead 212	1.01		0.0758	0.151		0.0778	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Lead 214	1.39		0.112	0.183		0.0796	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Potassium 40	20.4		1.22	2.42		0.445	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Protactinium 231	0.400	U	0.245	0.249		1.15	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Radium 226	1.08		0.0995	0.150	1.00	0.0619	pCi/g	01/30/14 10:30	02/20/14 18:04	1

Client Sample ID: L101031BES00

Lab Sample ID: 160-5313-14

Date Collected: 01/25/14 08:30

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium 232	**1.20**		0.138	0.185		0.102	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Thorium 234	0.883	U	0.673	0.679		1.10	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Uranium 235	0.129	U	0.163	0.163		0.258	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Americium 241	-0.0313	U	0.0646	0.0647		0.108	pCi/g	01/30/14 10:30	02/20/14 18:04	1
Protactinium 234m	0.646	U	2.95	2.95		5.13	pCi/g	01/30/14 10:30	02/20/14 18:04	1

Client Sample ID: L101032BUB00

Lab Sample ID: 160-5313-15

Date Collected: 01/25/14 14:00

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**1.28**		0.164	0.210		0.137	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Bismuth 212	**1.58**		0.500	0.527		0.432	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Bismuth 214	**1.19**		0.120	0.172		0.0695	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Lead 212	**1.05**		0.0799	0.157		0.0701	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Lead 214	**1.36**		0.107	0.177		0.0772	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Potassium 40	**19.1**		1.31	2.36		0.356	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Protactinium 231	0.458	U	0.304	0.308		1.24	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Radium 226	**1.19**		0.120	0.172	1.00	0.0695	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Thorium 232	**1.28**		0.164	0.210		0.137	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Thorium 234	**1.18**		0.563	0.576		0.808	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Uranium 235	0.170	U	0.166	0.167		0.261	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Americium 241	0.0128	U	0.0637	0.0637		0.107	pCi/g	01/30/14 10:30	02/20/14 18:05	1
Protactinium 234m	2.81	U	3.29	3.30		6.06	pCi/g	01/30/14 10:30	02/20/14 18:05	1

Client Sample ID: L101033BUB00

Lab Sample ID: 160-5313-16

Date Collected: 01/25/14 14:10

Matrix: Solid

Date Received: 01/27/14 18:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	**0.985**		0.157	0.186		0.133	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Bismuth 212	**1.28**		0.490	0.508		0.474	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Bismuth 214	**1.08**		0.118	0.163		0.0734	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Lead 212	**0.957**		0.0799	0.147		0.0760	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Lead 214	**1.16**		0.101	0.158		0.0832	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Potassium 40	**16.9**		1.25	2.14		0.276	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Protactinium 231	-0.814	U	0.828	0.833		1.35	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Radium 226	**1.08**		0.118	0.163	1.00	0.0734	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Thorium 232	**0.985**		0.157	0.186		0.133	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Thorium 234	**1.77**		0.903	0.922		1.07	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Uranium 235	**0.263**		0.139	0.141		0.216	pCi/g	01/30/14 10:30	02/20/14 18:06	1
Americium 241	0.0149	U	0.0698	0.0698		0.117	pCi/g	01/30/14 10:30	02/20/14 18:06	1

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (28 DAY TAT)

TestAmerica Job ID: 160-5313-2

Client Sample ID: L101033BUB00
Date Collected: 01/25/14 14:10
Date Received: 01/27/14 18:00

Lab Sample ID: 160-5313-16
Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Protactinium 234m	1.25	U	2.61	2.62		5.43	pCi/g	01/30/14 10:30	02/20/14 18:06	1

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (28 DAY TAT)

TestAmerica Job ID: 160-5313-2

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-102136/1-A
Matrix: Solid
Analysis Batch: 106633

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 102136

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.0000	U	0.0124	0.0124		0.0968	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Bismuth 212	-0.02722	U	0.120	0.120		0.224	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Bismuth 214	0.001633	U	0.0218	0.0218		0.0446	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Lead 212	-0.006662	U	0.0559	0.0559		0.0267	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Lead 214	0.004932	U	0.0132	0.0132		0.0345	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Potassium 40	-0.05577	U	2.23	2.23		0.198	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Protactinium 231	-0.009007	U	0.0649	0.0650		0.369	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Radium 226	0.001633	U	0.0218	0.0218	1.00	0.0446	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Thorium 232	0.0000	U	0.0124	0.0124		0.0968	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Thorium 234	-0.02623	U	0.160	0.160		0.244	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Uranium 235	0.01582	U	0.0339	0.0340		0.0685	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Americium 241	0.01192	U	0.0120	0.0120		0.0189	pCi/g	01/30/14 10:30	02/20/14 01:36	1
Protactinium 234m	0.4526	U	1.10	1.10		2.45	pCi/g	01/30/14 10:30	02/20/14 01:36	1

Lab Sample ID: LCS 160-102136/2-A
Matrix: Solid
Analysis Batch: 106631

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 102136

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	101	101.5		10.6		0.534	pCi/g	101	87 - 116
Cesium 137	35.8	35.16		3.68		0.166	pCi/g	98	87 - 120
Cobalt 60	41.9	40.51		4.08		0.148	pCi/g	97	87 - 115

Lab Sample ID: 160-5313-1 DU
Matrix: Solid
Analysis Batch: 106633

Client Sample ID: L101017BRS00
Prep Type: Total/NA
Prep Batch: 102136

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	1.21		1.154		0.192		0.129	pCi/g	0.15	1
Bismuth 212	1.61		1.222		0.452		0.438	pCi/g	0.38	1
Bismuth 214	1.25		1.273		0.180		0.0762	pCi/g	0.07	1
Lead 212	1.17		1.291		0.187		0.0623	pCi/g	0.35	1
Lead 214	1.39		1.425		0.191		0.0957	pCi/g	0.09	1
Potassium 40	17.0		18.87		2.31		0.229	pCi/g	0.42	1
Protactinium 231	-0.830	U	0.4877	U	0.257		1.27	pCi/g	1.08	1
Radium 226	1.25		1.273		0.180	1.00	0.0762	pCi/g	0.07	1
Thorium 232	1.21		1.154		0.192		0.129	pCi/g	0.15	1
Thorium 234	1.71		1.649		0.768		0.986	pCi/g	0.04	1
Uranium 235	0.189	U	0.1205	U	0.181		0.283	pCi/g	0.19	1
Americium 241	0.0219	U	-0.01777	U	0.0669		0.112	pCi/g	0.27	1
Protactinium 234m	0.0119	U	1.112	U	3.31		5.74	pCi/g	0.16	1

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (28 DAY TAT)

TestAmerica Job ID: 160-5313-2

Rad

Leach Batch: 101600

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5313-1	L101017BRS00	Total/NA	Solid	Dry and Grind	
160-5313-1 DU	L101017BRS00	Total/NA	Solid	Dry and Grind	
160-5313-2	L101018BES00	Total/NA	Solid	Dry and Grind	
160-5313-3	L101019BSS00	Total/NA	Solid	Dry and Grind	
160-5313-4	L101020BRS00	Total/NA	Solid	Dry and Grind	
160-5313-5	L101021BRS00	Total/NA	Solid	Dry and Grind	
160-5313-6	L101023BRS00	Total/NA	Solid	Dry and Grind	
160-5313-7	L101025BRS00	Total/NA	Solid	Dry and Grind	
160-5313-8	L101026BES00	Total/NA	Solid	Dry and Grind	
160-5313-9	L101027BSS00	Total/NA	Solid	Dry and Grind	
160-5313-10	L101028BRQ00	Total/NA	Solid	Dry and Grind	
160-5313-11	L101028BRS00	Total/NA	Solid	Dry and Grind	
160-5313-12	L101029BSS00	Total/NA	Solid	Dry and Grind	
160-5313-13	L101030BRS00	Total/NA	Solid	Dry and Grind	
160-5313-14	L101031BES00	Total/NA	Solid	Dry and Grind	
160-5313-15	L101032BUB00	Total/NA	Solid	Dry and Grind	
160-5313-16	L101033BUB00	Total/NA	Solid	Dry and Grind	

Prep Batch: 102136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5313-1	L101017BRS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-1 DU	L101017BRS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-2	L101018BES00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-3	L101019BSS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-4	L101020BRS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-5	L101021BRS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-6	L101023BRS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-7	L101025BRS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-8	L101026BES00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-9	L101027BSS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-10	L101028BRQ00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-11	L101028BRS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-12	L101029BSS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-13	L101030BRS00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-14	L101031BES00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-15	L101032BUB00	Total/NA	Solid	Fill_Geo-21	101600
160-5313-16	L101033BUB00	Total/NA	Solid	Fill_Geo-21	101600
LCS 160-102136/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
MB 160-102136/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	