

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: 160-3482-2

Client Project/Site: RFP-CBA-022 (7 DAY TAT)
Revision: 1

For:

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

Attn: Martin Swanson



Authorized for release by:
9/22/2013 7:35:11 PM

Ivan Vania, Project Manager I
ivan.vania@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

1
2
3
4
5
6
7
8
9
10
11



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Chain of Custody	5
Receipt Checklists	8
Definitions/Glossary	9
Method Summary	10
Sample Summary	11
Client Sample Results	12
QC Sample Results	27
QC Association Summary	29

Case Narrative

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Job ID: 160-3482-2

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

Project: RFP-CBA-022 (7 DAY TAT)

Report Number: 160-3482-2

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. This revision contains the case narrative for job 160-3482-2.

RECEIPT

The samples were received on 08/22/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 20.0 C.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples L050301PRS00 (160-3482-1), L050302PES00 (160-3482-2), L050303PRS00 (160-3482-3), L050304PEQ00 (160-3482-4), L050304PES00 (160-3482-5), L050305PRS00 (160-3482-6), L050306PES00 (160-3482-7), L050307PRS00 (160-3482-8), L050308PES00 (160-3482-9), L050309PRS00 (160-3482-10), L050310PES00 (160-3482-11), L050311PRS00 (160-3482-12), L050312PES00 (160-3482-13), L050313PRS00 (160-3482-14), L050314PES00 (160-3482-15), L050315PRS00 (160-3482-16), L050316PES00 (160-3482-17), L050317PRS00 (160-3482-18), L050318PES00 (160-3482-19), L050319PRS00 (160-3482-20), L050320PES00 (160-3482-21), L050321PRS00 (160-3482-22), L050322PES00 (160-3482-23), L050323PUB00 (160-3482-24), L050324PUB00 (160-3482-25), L050325PUB00 (160-3482-26), L050326PUB00 (160-3482-27), L050327PUB00 (160-3482-28), L050328PUB00 (160-3482-29), L050329PUB00 (160-3482-30), L050330PUB00 (160-3482-31), L050331PUB00 (160-3482-32) and L050332PUB00 (160-3482-33) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The

Case Narrative

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Job ID: 160-3482-2 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

samples were leached on 08/23/2013, prepared on 08/28/2013 and analyzed on 09/18/2013.

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

1

2

3

4

5

6

7

8

9

10

11

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 Custody ID No. F-082213-01 Page 1/3				Requested Analysis												Laboratory Name:	
Project Name: Westinghouse Electric Company				Comp (C) or Grab (G)	Gamma Spec	Isotopic Uranium	Tc-99	Gamma Spec (21 day ingrow for Ra-226)							Total Containers	TA-MO	
Contact Person: Gerald Rood																Laboratory Address: 13715 Rider Trail North	
Phone Number: 314-810-3382																Phone No. 314-298-8566	
Sampler Name Scott Jenkins																Laboratory Contact Person: Joe Walker	
																Phone No. 708-870-8453	
																Turn Around Time	
																Rush (7 days)	
																Remarks	
Sample ID	Date	Time	Matrix														
L050301PRS00	8/20/2013	15:24	S	C	X		X	X							1	LSA05-03 Sys	
L050302PES00	8/20/2013	15:30	S	C	X		X	X							1		
L050303PRS00	8/20/2013	15:44	S	C	X		X	X							1		
L050304PEQ00	8/20/2013	15:52	S	C	X		X	X							1		
L050304PES00	8/20/2013	15:52	S	C	X		X	X							1		
L050305PRS00	8/20/2013	17:20	S	C	X		X	X							1		
L050306PES00	8/20/2013	17:30	S	C	X		X	X							1		
L050307PRS00	8/20/2013	16:08	S	C	X		X	X							1		
L050308PES00	8/20/2013	16:13	S	C	X		X	X							1		
L050309PRS00	8/21/2013	9:07	S	C	X		X	X							1		
L050310PES00	8/21/2013	9:19	S	C	X		X	X							1		
L050311PRS00	8/21/2013	9:42	S	C	X		X	X							1		
Relinquished by: <i>[Signature]</i>		Date/Time: 8-22-13 1720		Received by: <i>[Signature]</i>		Date/Time: 8-22-13 1720		Total: 33		Cooler Temperature: Ambient							
Company Name: WEC				Company Name: Crossroads				Cooler ID: 0822-04/05/06		Shipper and Number:							
Received by:		Date/Time:		Relinquished by: <i>[Signature]</i>		Date/Time: 8-22-13 18:47		Comments: Please re-analyze samples after 21-day ingrowth period.									
Company Name:				Company Name: Crossroads													
Relinquished by:		Date/Time:		Received by: <i>[Signature]</i>		Date/Time: 8-22-13 18:50		Verified By:									
Company Name:				Company Name: <i>[Signature]</i>													

3482

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 Custody ID No. F-082213-01 Page 2/3				Requested Analysis										Laboratory Name:		
Project Name:				Comp (C) or Grab (G)	Gamma Spec	Isotopic Uranium	Tc-99	Gamma Spec (21 day ingrow for Ra-226)						Total Containers	TA-MO	
Westinghouse Electric Company															Laboratory Address:	
Contact Person:															13715 Rider Trail North	
Phone Number:															Phone No.	
314-810-3382															314-298-8566	
Sampler Name				Laboratory Contact Person:												
Scott Jenkins				Joe Walker												
Phone No.				708-870-8453												
				Turn Around Time												
				Rush (7 days)												
				Remarks												
Sample ID	Date	Time	Matrix	C	X		X	X						1	LSA 05-03 Sys	
L050312PES00	8/21/2013	10:47	S	C	X		X	X						1		
L050313PRS00	8/21/2013	11:21	S	C	X		X	X						1		
L050314PES00	8/21/2013	11:38	S	C	X		X	X						1		
L050315PRS00	8/21/2013	13:40	S	C	X		X	X						1		
L050316PES00	8/21/2013	13:55	S	C	X		X	X						1		
L050317PRS00	8/21/2013	15:15	S	C	X		X	X						1		
L050318PES00	8/21/2013	15:21	S	C	X		X	X						1		
L050319PRS00	8/21/2013	16:42	S	C	X		X	X						1		
L050320PES00	8/21/2013	16:50	S	C	X		X	X						1		
L050321PRS00	8/21/2013	16:19	S	C	X		X	X						1		
L050322PES00	8/21/2013	16:24	S	C	X		X	X						1	LSA 05-03 Sys	
L050323PUB00	8/19/2013	16:35	S	C	X		X	X						1	LSA 05-03 Bias	
Relinquished by: <i>[Signature]</i>				Date/Time: 8-22-13 1720		Received by: <i>[Signature]</i>		Date/Time: 8-22 1720		Total: 33		Cooler Temperature: Ambient				
Company Name: WEC						Company Name: Crossroads				Cooler ID: 0822-04/05/06		Shipper and Number:				
Received by:				Date/Time:		Relinquished by: <i>[Signature]</i>		Date/Time: 8-22 18:47		Comments: Please re-analyze samples after 21-day ingrowth period.						
Company Name:						Company Name: Crossroads										
Relinquished by:				Date/Time:		Received by: <i>[Signature]</i>		Date/Time: 8-22 18:50		Verified By:						
Company Name:						Company Name: TA										

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 HIDP.

Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-3482-2

Login Number: 3482

List Source: TestAmerica St. Louis

List Number: 1

Creator: Daniels, Brian J

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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	
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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Definitions/Glossary

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
F	Duplicate RPD exceeds the control limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

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 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-3482-1	L050301PRS00	Solid	08/20/13 15:24	08/22/13 16:45
160-3482-2	L050302PES00	Solid	08/20/13 15:30	08/22/13 16:45
160-3482-3	L050303PRS00	Solid	08/20/13 15:44	08/22/13 16:45
160-3482-4	L050304PEQ00	Solid	08/20/13 15:52	08/22/13 16:45
160-3482-5	L050304PES00	Solid	08/20/13 15:52	08/22/13 16:45
160-3482-6	L050305PRS00	Solid	08/20/13 17:20	08/22/13 16:45
160-3482-7	L050306PES00	Solid	08/20/13 17:30	08/22/13 16:45
160-3482-8	L050307PRS00	Solid	08/20/13 16:08	08/22/13 16:45
160-3482-9	L050308PES00	Solid	08/20/13 16:13	08/22/13 16:45
160-3482-10	L050309PRS00	Solid	08/20/13 09:07	08/22/13 16:45
160-3482-11	L050310PES00	Solid	08/21/13 09:19	08/22/13 16:45
160-3482-12	L050311PRS00	Solid	08/21/13 09:42	08/22/13 16:45
160-3482-13	L050312PES00	Solid	08/21/13 10:47	08/22/13 16:45
160-3482-14	L050313PRS00	Solid	08/21/13 11:21	08/22/13 16:45
160-3482-15	L050314PES00	Solid	08/21/13 11:38	08/22/13 16:45
160-3482-16	L050315PRS00	Solid	08/21/13 13:40	08/22/13 16:45
160-3482-17	L050316PES00	Solid	08/21/13 13:55	08/22/13 16:45
160-3482-18	L050317PRS00	Solid	08/21/13 15:15	08/22/13 16:45
160-3482-19	L050318PES00	Solid	08/21/13 15:21	08/22/13 16:45
160-3482-20	L050319PRS00	Solid	08/21/13 16:42	08/22/13 16:45
160-3482-21	L050320PES00	Solid	08/21/13 16:50	08/22/13 16:45
160-3482-22	L050321PRS00	Solid	08/21/13 16:19	08/22/13 16:45
160-3482-23	L050322PES00	Solid	08/21/13 16:24	08/22/13 16:45
160-3482-24	L050323PUB00	Solid	08/19/13 16:35	08/22/13 16:45
160-3482-25	L050324PUB00	Solid	08/19/13 16:45	08/22/13 16:45
160-3482-26	L050325PUB00	Solid	08/19/13 16:55	08/22/13 16:45
160-3482-27	L050326PUB00	Solid	08/20/13 14:55	08/22/13 16:45
160-3482-28	L050327PUB00	Solid	08/21/13 09:15	08/22/13 16:45
160-3482-29	L050328PUB00	Solid	08/21/13 09:45	08/22/13 16:45
160-3482-30	L050329PUB00	Solid	08/21/13 10:50	08/22/13 16:45
160-3482-31	L050330PUB00	Solid	08/21/13 11:10	08/22/13 16:45
160-3482-32	L050331PUB00	Solid	08/21/13 11:20	08/22/13 16:45
160-3482-33	L050332PUB00	Solid	08/21/13 13:40	08/22/13 16:45

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050301PRS00

Lab Sample ID: 160-3482-1

Date Collected: 08/20/13 15:24

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.37		0.172	0.216		0.184	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Bismuth 212	0.928		0.502	0.510		0.732	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Bismuth 214	1.06		0.139	0.173		0.0963	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Lead 212	1.12		0.0995	0.157		0.0913	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Lead 214	1.29		0.115	0.170		0.0915	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Potassium 40	22.0		1.67	2.70		0.381	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Protactinium 231	0.303	U	0.242	0.244		1.68	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Radium 226	1.06		0.139	0.173	1.00	0.0963	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Thorium 232	1.37		0.172	0.216		0.184	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Thorium 234	1.11	U	0.471	0.483		1.24	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Uranium 235	0.140	U	0.189	0.190		0.344	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Americium 241	0.0624	U	0.0806	0.0809		0.133	pCi/g	08/28/13 13:09	09/18/13 08:51	1
Protactinium 234m	2.65	U	4.70	4.70		8.50	pCi/g	08/28/13 13:09	09/18/13 08:51	1

Client Sample ID: L050302PES00

Lab Sample ID: 160-3482-2

Date Collected: 08/20/13 15:30

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.24		0.160	0.204		0.109	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Bismuth 212	1.47		0.380	0.409		0.340	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Bismuth 214	1.24		0.123	0.179		0.0822	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Lead 212	1.19		0.0800	0.173		0.0659	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Lead 214	1.34		0.105	0.174		0.0906	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Potassium 40	22.2		1.30	2.62		0.398	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Protactinium 231	0.387	U	0.207	0.211		1.29	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Radium 226	1.24		0.123	0.179	1.00	0.0822	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Thorium 232	1.24		0.160	0.204		0.109	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Thorium 234	1.50		0.877	0.891		1.05	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Uranium 235	0.138	U	0.153	0.154		0.251	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Americium 241	0.0151	U	0.0644	0.0644		0.108	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Protactinium 234m	1.29	U	3.32	3.32		5.80	pCi/g	08/28/13 13:09	09/18/13 10:32	1

Client Sample ID: L050303PRS00

Lab Sample ID: 160-3482-3

Date Collected: 08/20/13 15:44

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.14		0.137	0.180		0.143	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Bismuth 212	1.77		0.489	0.523		0.424	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Bismuth 214	1.11		0.111	0.160		0.0777	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Lead 212	1.07		0.0787	0.159		0.0785	pCi/g	08/28/13 13:09	09/18/13 10:32	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050303PRS00

Lab Sample ID: 160-3482-3

Date Collected: 08/20/13 15:44

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Lead 214	1.25		0.102	0.165		0.0810	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Potassium 40	21.2		1.23	2.50		0.424	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Protactinium 231	0.407	U	0.266	0.270		1.12	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Radium 226	1.11		0.111	0.160	1.00	0.0777	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Thorium 232	1.14		0.137	0.180		0.143	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Thorium 234	0.926	U	0.378	0.390		0.995	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Uranium 235	0.0539	U	0.155	0.156		0.261	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Americium 241	0.0189	U	0.0691	0.0691		0.116	pCi/g	08/28/13 13:09	09/18/13 10:32	1
Protactinium 234m	6.65		2.90	2.97		4.57	pCi/g	08/28/13 13:09	09/18/13 10:32	1

Client Sample ID: L050304PEQ00

Lab Sample ID: 160-3482-4

Date Collected: 08/20/13 15:52

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.27		0.164	0.205		0.127	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Bismuth 212	1.27		0.455	0.471		0.417	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Bismuth 214	1.26		0.130	0.179		0.0828	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Lead 212	1.17		0.0872	0.153		0.0679	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Lead 214	1.30		0.101	0.162		0.0736	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Potassium 40	21.9		1.51	2.60		0.440	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Protactinium 231	-0.664	U	0.833	0.836		1.37	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Radium 226	1.26		0.130	0.179	1.00	0.0828	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Thorium 232	1.27		0.164	0.205		0.127	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Thorium 234	0.956		0.315	0.328		0.813	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Uranium 235	0.0917	U	0.173	0.174		0.270	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Americium 241	0.00911	U	0.0640	0.0640		0.109	pCi/g	08/28/13 13:09	09/18/13 10:29	1
Protactinium 234m	3.93	U	4.23	4.25		6.07	pCi/g	08/28/13 13:09	09/18/13 10:29	1

Client Sample ID: L050304PES00

Lab Sample ID: 160-3482-5

Date Collected: 08/20/13 15:52

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.18		0.192	0.223		0.180	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Bismuth 212	1.62		0.636	0.655		0.577	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Bismuth 214	1.44		0.161	0.213		0.0964	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Lead 212	1.23		0.101	0.166		0.0824	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Lead 214	1.38		0.134	0.189		0.106	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Potassium 40	22.8		1.75	2.81		0.533	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Protactinium 231	0.632	U	0.468	0.473		1.68	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Radium 226	1.44		0.161	0.213	1.00	0.0964	pCi/g	08/28/13 13:09	09/18/13 10:30	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050304PES00

Lab Sample ID: 160-3482-5

Date Collected: 08/20/13 15:52

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.18		0.192	0.223		0.180	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Thorium 234	2.02		0.901	0.922		1.11	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Uranium 235	0.398		0.230	0.233		0.278	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Americium 241	0.000	U	0.0469	0.0469		0.133	pCi/g	08/28/13 13:09	09/18/13 10:30	1
Protactinium 234m	6.32	U	4.42	4.46		8.99	pCi/g	08/28/13 13:09	09/18/13 10:30	1

Client Sample ID: L050305PRS00

Lab Sample ID: 160-3482-6

Date Collected: 08/20/13 17:20

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.17		0.161	0.197		0.133	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Bismuth 212	1.23		0.462	0.477		0.448	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Bismuth 214	1.06		0.112	0.152		0.0738	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Lead 212	1.21		0.0808	0.153		0.0560	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Lead 214	1.35		0.103	0.166		0.0782	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Potassium 40	21.1		1.35	2.43		0.414	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Protactinium 231	0.497	U	0.359	0.362		1.21	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Radium 226	1.06		0.112	0.152	1.00	0.0738	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Thorium 232	1.17		0.161	0.197		0.133	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Thorium 234	1.62		0.716	0.734		0.903	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Uranium 235	0.170	U	0.145	0.146		0.215	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Americium 241	0.00812	U	0.0475	0.0475		0.0805	pCi/g	08/28/13 13:09	09/18/13 10:31	1
Protactinium 234m	5.78		3.53	3.58		5.78	pCi/g	08/28/13 13:09	09/18/13 10:31	1

Client Sample ID: L050306PES00

Lab Sample ID: 160-3482-7

Date Collected: 08/20/13 17:30

Matrix: Solid

Date Received: 08/22/13 16:45

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		0.112	0.160		0.101	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Bismuth 212	1.22		0.371	0.392		0.316	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Bismuth 214	1.06		0.110	0.156		0.0753	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Lead 212	1.10		0.0743	0.160		0.0590	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Lead 214	1.05		0.0924	0.143		0.0782	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Potassium 40	19.0		1.18	2.28		0.384	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Protactinium 231	0.462	U	0.260	0.265		1.23	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Radium 226	1.06		0.110	0.156	1.00	0.0753	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Thorium 232	1.12		0.112	0.160		0.101	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Thorium 234	1.29		0.662	0.675		0.883	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Uranium 235	0.0368	U	0.0705	0.0706		0.181	pCi/g	08/28/13 13:09	09/18/13 12:54	1
Americium 241	0.0165	U	0.0688	0.0689		0.115	pCi/g	08/28/13 13:09	09/18/13 12:54	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050306PES00

Lab Sample ID: 160-3482-7

Date Collected: 08/20/13 17:30

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Protactinium 234m	3.35	U	1.70	1.73		5.54	pCi/g	08/28/13 13:09	09/18/13 12:54	1

Client Sample ID: L050307PRS00

Lab Sample ID: 160-3482-8

Date Collected: 08/20/13 16:08

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.08		0.155	0.190		0.156	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Bismuth 212	1.15		0.470	0.484		0.463	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Bismuth 214	1.20		0.134	0.183		0.0806	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Lead 212	1.11		0.0888	0.169		0.0745	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Lead 214	1.19		0.120	0.172		0.0771	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Potassium 40	20.7		1.49	2.59		0.324	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Protactinium 231	0.512	U	0.431	0.434		1.35	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Radium 226	1.20		0.134	0.183	1.00	0.0806	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Thorium 232	1.08		0.155	0.190		0.156	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Thorium 234	1.57		0.923	0.938		1.10	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Uranium 235	0.185	U	0.157	0.158		0.236	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Americium 241	0.0270	U	0.0764	0.0765		0.128	pCi/g	08/28/13 13:09	09/18/13 12:52	1
Protactinium 234m	1.93	U	4.36	4.37		7.25	pCi/g	08/28/13 13:09	09/18/13 12:52	1

Client Sample ID: L050308PES00

Lab Sample ID: 160-3482-9

Date Collected: 08/20/13 16:13

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.12		0.174	0.208		0.126	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Bismuth 212	1.42		0.534	0.555		0.465	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Bismuth 214	1.14		0.108	0.161		0.0639	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Lead 212	1.11		0.0746	0.162		0.0581	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Lead 214	1.28		0.0913	0.161		0.0617	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Potassium 40	22.3		1.33	2.64		0.498	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Protactinium 231	-0.379	U	0.707	0.708		1.18	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Radium 226	1.14		0.108	0.161	1.00	0.0639	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Thorium 232	1.12		0.174	0.208		0.126	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Thorium 234	1.32		0.625	0.640		0.853	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Uranium 235	0.107	U	0.142	0.142		0.253	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Americium 241	-0.0406	U	0.0650	0.0652		0.108	pCi/g	08/28/13 13:09	09/18/13 12:53	1
Protactinium 234m	1.30	U	3.25	3.25		5.64	pCi/g	08/28/13 13:09	09/18/13 12:53	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050309PRS00

Lab Sample ID: 160-3482-10

Date Collected: 08/20/13 09:07

Matrix: Solid

Date Received: 08/22/13 16:45

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	0.991		0.167	0.195		0.122	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Bismuth 212	1.17		0.450	0.466		0.408	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Bismuth 214	0.969		0.0989	0.141		0.0668	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Lead 212	1.09		0.0748	0.160		0.0618	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Lead 214	1.21		0.101	0.161		0.0816	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Potassium 40	20.0		1.17	2.36		0.306	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Protactinium 231	0.585	U	0.260	0.268		1.20	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Radium 226	0.969		0.0989	0.141	1.00	0.0668	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Thorium 232	0.991		0.167	0.195		0.122	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Thorium 234	1.44		0.619	0.637		0.818	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Uranium 235	0.0345	U	0.123	0.123		0.266	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Americium 241	0.0187	U	0.0666	0.0666		0.111	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Protactinium 234m	-0.625	U	91.1	91.1		5.93	pCi/g	08/28/13 13:09	09/18/13 13:51	1

Client Sample ID: L050310PES00

Lab Sample ID: 160-3482-11

Date Collected: 08/21/13 09:19

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.08		0.152	0.188		0.130	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Bismuth 212	1.30		0.501	0.519		0.493	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Bismuth 214	1.12		0.143	0.184		0.0963	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Lead 212	1.16		0.0907	0.176		0.0766	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Lead 214	1.10		0.121	0.167		0.0922	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Potassium 40	21.0		1.50	2.62		0.322	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Protactinium 231	-0.634	U	0.883	0.886		1.46	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Radium 226	1.12		0.143	0.184	1.00	0.0963	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Thorium 232	1.08		0.152	0.188		0.130	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Thorium 234	0.869	U	0.381	0.391		1.20	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Uranium 235	0.101	U	0.168	0.169		0.292	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Americium 241	0.00747	U	0.0703	0.0703		0.119	pCi/g	08/28/13 13:09	09/18/13 13:51	1
Protactinium 234m	2.11	U	3.88	3.88		7.31	pCi/g	08/28/13 13:09	09/18/13 13:51	1

Client Sample ID: L050311PRS00

Lab Sample ID: 160-3482-12

Date Collected: 08/21/13 09:42

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.08		0.165	0.195		0.131	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Bismuth 212	1.09		0.562	0.571		0.570	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Bismuth 214	1.15		0.127	0.169		0.0890	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Lead 212	1.15		0.0831	0.149		0.0719	pCi/g	08/28/13 13:09	09/18/13 10:28	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050311PRS00

Lab Sample ID: 160-3482-12

Date Collected: 08/21/13 09:42

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Lead 214	1.36		0.120	0.178		0.0819	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Potassium 40	23.6		1.40	2.68		0.420	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Protactinium 231	0.388	U	0.234	0.237		1.28	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Radium 226	1.15		0.127	0.169	1.00	0.0890	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Thorium 232	1.08		0.165	0.195		0.131	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Thorium 234	0.812	U	0.359	0.368		0.914	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Uranium 235	0.162	U	0.156	0.157		0.263	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Americium 241	-0.0705	U	0.177	0.178		0.117	pCi/g	08/28/13 13:09	09/18/13 10:28	1
Protactinium 234m	0.581	U	3.31	3.31		5.84	pCi/g	08/28/13 13:09	09/18/13 10:28	1

Client Sample ID: L050312PES00

Lab Sample ID: 160-3482-13

Date Collected: 08/21/13 10:47

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.15		0.142	0.184		0.115	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Bismuth 212	1.31		0.469	0.488		0.438	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Bismuth 214	1.10		0.102	0.153		0.0775	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Lead 212	1.21		0.0779	0.175		0.0599	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Lead 214	1.23		0.0908	0.157		0.0721	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Potassium 40	21.9		1.28	2.58		0.367	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Protactinium 231	-0.571	U	0.745	0.748		1.23	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Radium 226	1.10		0.102	0.153	1.00	0.0775	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Thorium 232	1.15		0.142	0.184		0.115	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Thorium 234	1.35		0.723	0.736		0.920	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Uranium 235	0.153	U	0.148	0.149		0.248	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Americium 241	0.00626	U	0.0633	0.0633		0.107	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Protactinium 234m	0.413	U	3.63	3.63		6.41	pCi/g	08/28/13 13:09	09/18/13 13:52	1

Client Sample ID: L050313PRS00

Lab Sample ID: 160-3482-14

Date Collected: 08/21/13 11:21

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.00		0.168	0.194		0.102	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Bismuth 212	1.68		0.497	0.523		0.455	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Bismuth 214	1.16		0.116	0.162		0.0672	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Lead 212	1.28		0.0847	0.162		0.0625	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Lead 214	1.27		0.128	0.177		0.0950	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Potassium 40	22.7		1.42	2.62		0.500	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Protactinium 231	0.529	U	0.267	0.272		1.38	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Radium 226	1.16		0.116	0.162	1.00	0.0672	pCi/g	08/28/13 13:09	09/18/13 12:51	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050313PRS00

Lab Sample ID: 160-3482-14

Date Collected: 08/21/13 11:21

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.00		0.168	0.194		0.102	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Thorium 234	1.33		0.645	0.657		0.859	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Uranium 235	0.167	U	0.162	0.163		0.278	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Americium 241	0.0185	U	0.0675	0.0675		0.115	pCi/g	08/28/13 13:09	09/18/13 12:51	1
Protactinium 234m	5.87		3.38	3.43		5.82	pCi/g	08/28/13 13:09	09/18/13 12:51	1

Client Sample ID: L050314PES00

Lab Sample ID: 160-3482-15

Date Collected: 08/21/13 11:38

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.14		0.187	0.220		0.191	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Bismuth 212	1.15		0.457	0.472		0.449	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Bismuth 214	1.10		0.131	0.174		0.0746	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Lead 212	1.04		0.0892	0.162		0.0755	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Lead 214	1.12		0.122	0.168		0.0792	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Potassium 40	17.1		1.45	2.27		0.364	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Protactinium 231	0.649	U	0.587	0.591		1.36	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Radium 226	1.10		0.131	0.174	1.00	0.0746	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Thorium 232	1.14		0.187	0.220		0.191	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Thorium 234	1.25		0.779	0.790		1.02	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Uranium 235	0.203	U	0.152	0.153		0.224	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Americium 241	0.0146	U	0.0660	0.0660		0.111	pCi/g	08/28/13 13:09	09/18/13 17:43	1
Protactinium 234m	1.54	U	3.05	3.05		7.83	pCi/g	08/28/13 13:09	09/18/13 17:43	1

Client Sample ID: L050315PRS00

Lab Sample ID: 160-3482-16

Date Collected: 08/21/13 13:40

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.17		0.126	0.173		0.107	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Bismuth 212	1.06		0.394	0.410		0.364	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Bismuth 214	1.04		0.102	0.149		0.0627	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Lead 212	1.18		0.0754	0.170		0.0563	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Lead 214	1.16		0.0912	0.152		0.0827	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Potassium 40	18.8		1.16	2.25		0.371	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Protactinium 231	0.718	U	0.326	0.336		0.978	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Radium 226	1.04		0.102	0.149	1.00	0.0627	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Thorium 232	1.17		0.126	0.173		0.107	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Thorium 234	1.47		0.789	0.804		0.960	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Uranium 235	0.123	U	0.159	0.159		0.255	pCi/g	08/28/13 13:09	09/18/13 17:44	1
Americium 241	-0.000676	U	0.0598	0.0598		0.101	pCi/g	08/28/13 13:09	09/18/13 17:44	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050315PRS00

Lab Sample ID: 160-3482-16

Date Collected: 08/21/13 13:40

Matrix: Solid

Date Received: 08/22/13 16:45

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	-1.14	U	9.68	9.68		5.68	pCi/g	08/28/13 13:09	09/18/13 17:44	1

Client Sample ID: L050316PES00

Lab Sample ID: 160-3482-17

Date Collected: 08/21/13 13:55

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.27		0.170	0.209		0.120	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Bismuth 212	1.50		0.485	0.507		0.443	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Bismuth 214	1.13		0.116	0.159		0.0756	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Lead 212	1.24		0.0849	0.159		0.0690	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Lead 214	1.25		0.106	0.161		0.0904	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Potassium 40	20.2		1.36	2.38		0.564	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Protactinium 231	0.535	U	0.545	0.547		0.884	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Radium 226	1.13		0.116	0.159	1.00	0.0756	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Thorium 232	1.27		0.170	0.209		0.120	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Thorium 234	0.894	U	0.387	0.396		1.01	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Uranium 235	0.0279	U	0.133	0.133		0.277	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Americium 241	-0.0314	U	1.25	1.25		0.120	pCi/g	08/28/13 13:09	09/18/13 13:52	1
Protactinium 234m	3.95	U	2.59	2.62		5.71	pCi/g	08/28/13 13:09	09/18/13 13:52	1

Client Sample ID: L050317PRS00

Lab Sample ID: 160-3482-18

Date Collected: 08/21/13 15:15

Matrix: Solid

Date Received: 08/22/13 16:45

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		0.135	0.178		0.0931	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Bismuth 212	0.653		0.395	0.400		0.605	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Bismuth 214	1.14		0.120	0.163		0.0796	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Lead 212	1.03		0.0861	0.141		0.0916	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Lead 214	1.33		0.105	0.166		0.0864	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Potassium 40	22.2		1.35	2.53		0.450	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Protactinium 231	0.829	U	0.388	0.397		1.30	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Radium 226	1.14		0.120	0.163	1.00	0.0796	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Thorium 232	1.21		0.135	0.178		0.0931	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Thorium 234	0.867	U	0.383	0.392		0.977	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Uranium 235	0.0457	U	0.103	0.103		0.305	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Americium 241	-0.0165	U	0.0713	0.0713		0.119	pCi/g	08/28/13 13:09	09/18/13 17:45	1
Protactinium 234m	1.84	U	3.10	3.11		5.23	pCi/g	08/28/13 13:09	09/18/13 17:45	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050318PES00

Lab Sample ID: 160-3482-19

Date Collected: 08/21/13 15:21

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.02		0.125	0.163		0.0910	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Bismuth 212	0.907		0.367	0.379		0.394	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Bismuth 214	1.03		0.101	0.148		0.0611	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Lead 212	1.18		0.0760	0.171		0.0599	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Lead 214	1.24		0.0894	0.157		0.0697	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Potassium 40	21.3		1.22	2.49		0.297	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Protactinium 231	0.512	U	0.266	0.272		1.05	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Radium 226	1.03		0.101	0.148	1.00	0.0611	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Thorium 232	1.02		0.125	0.163		0.0910	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Thorium 234	1.58		0.744	0.762		0.919	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Uranium 235	0.106	U	0.141	0.141		0.240	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Americium 241	-0.00129	U	0.0563	0.0563		0.0953	pCi/g	08/28/13 13:09	09/18/13 08:53	1
Protactinium 234m	2.18	U	3.36	3.36		5.66	pCi/g	08/28/13 13:09	09/18/13 08:53	1

Client Sample ID: L050319PRS00

Lab Sample ID: 160-3482-20

Date Collected: 08/21/13 16:42

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.10		0.139	0.175		0.138	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Bismuth 212	1.75		0.562	0.587		0.478	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Bismuth 214	1.17		0.124	0.168		0.0791	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Lead 212	1.13		0.0841	0.148		0.0738	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Lead 214	1.22		0.101	0.156		0.0868	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Potassium 40	22.7		1.45	2.63		0.533	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Protactinium 231	0.392	U	0.247	0.250		1.45	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Radium 226	1.17		0.124	0.168	1.00	0.0791	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Thorium 232	1.10		0.139	0.175		0.138	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Thorium 234	0.860	U	0.371	0.380		0.961	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Uranium 235	0.0428	U	0.140	0.140		0.290	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Americium 241	0.00222	U	0.0675	0.0675		0.116	pCi/g	08/28/13 13:09	09/18/13 17:46	1
Protactinium 234m	2.82	U	3.61	3.62		5.96	pCi/g	08/28/13 13:09	09/18/13 17:46	1

Client Sample ID: L050320PES00

Lab Sample ID: 160-3482-21

Date Collected: 08/21/13 16:50

Matrix: Solid

Date Received: 08/22/13 16:45

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	0.795		0.253	0.266		0.276	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Bismuth 212	0.554	U	0.633	0.636		1.03	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Bismuth 214	1.27		0.246	0.279		0.194	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Lead 212	0.885		0.139	0.180		0.157	pCi/g	08/28/13 13:20	09/18/13 03:11	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050320PES00

Lab Sample ID: 160-3482-21

Date Collected: 08/21/13 16:50

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Lead 214	1.17		0.190	0.226		0.168	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Potassium 40	17.6		1.94	2.65		0.663	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Protactinium 231	0.734	U	0.827	0.831		1.34	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Radium 226	1.27		0.246	0.279	1.00	0.194	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Thorium 232	0.795		0.253	0.266		0.276	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Thorium 234	2.35		1.74	1.76		2.24	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Uranium 235	0.255	U	0.298	0.299		0.481	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Americium 241	0.000	U	0.0493	0.0493		0.259	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Protactinium 234m	-2.52	U	385	385		14.1	pCi/g	08/28/13 13:20	09/18/13 03:11	1

Client Sample ID: L050321PRS00

Lab Sample ID: 160-3482-22

Date Collected: 08/21/13 16:19

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.01		0.143	0.173		0.156	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Bismuth 212	1.07		0.463	0.475		0.480	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Bismuth 214	1.04		0.129	0.164		0.0806	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Lead 212	0.976		0.0856	0.136		0.0743	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Lead 214	1.15		0.0988	0.149		0.0893	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Potassium 40	18.6		1.46	2.32		0.462	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Protactinium 231	0.593	U	0.303	0.309		1.37	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Radium 226	1.04		0.129	0.164	1.00	0.0806	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Thorium 232	1.01		0.143	0.173		0.156	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Thorium 234	1.54		0.817	0.830		1.03	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Uranium 235	0.0743	U	0.0853	0.0856		0.287	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Americium 241	-0.0114	U	0.482	0.482		0.115	pCi/g	08/28/13 13:20	09/18/13 03:11	1
Protactinium 234m	0.751	U	3.59	3.60		6.94	pCi/g	08/28/13 13:20	09/18/13 03:11	1

Client Sample ID: L050322PES00

Lab Sample ID: 160-3482-23

Date Collected: 08/21/13 16:24

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.07		0.144	0.180		0.0509	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Bismuth 212	2.11		0.483	0.530		0.277	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Bismuth 214	1.08		0.125	0.168		0.0729	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Lead 212	1.03		0.0885	0.160		0.0749	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Lead 214	1.22		0.133	0.184		0.0992	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Potassium 40	19.7		1.55	2.55		0.495	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Protactinium 231	0.479	U	0.342	0.346		1.42	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Radium 226	1.08		0.125	0.168	1.00	0.0729	pCi/g	08/28/13 13:20	09/18/13 03:10	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050322PES00

Lab Sample ID: 160-3482-23

Date Collected: 08/21/13 16:24

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.07		0.144	0.180		0.0509	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Thorium 234	1.36		0.889	0.900		1.11	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Uranium 235	0.0926	U	0.170	0.170		0.269	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Americium 241	0.0279	U	0.0798	0.0798		0.134	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Protactinium 234m	0.675	U	4.39	4.39		7.80	pCi/g	08/28/13 13:20	09/18/13 03:10	1

Client Sample ID: L050323PUB00

Lab Sample ID: 160-3482-24

Date Collected: 08/19/13 16:35

Matrix: Solid

Date Received: 08/22/13 16:45

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		0.148	0.188		0.116	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Bismuth 212	1.09		0.407	0.420		0.546	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Bismuth 214	1.06		0.124	0.161		0.0847	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Lead 212	1.16		0.0840	0.150		0.0650	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Lead 214	1.36		0.127	0.183		0.0875	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Potassium 40	21.0		1.38	2.45		0.392	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Protactinium 231	0.368	U	0.200	0.203		1.24	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Radium 226	1.06		0.124	0.161	1.00	0.0847	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Thorium 232	1.20		0.148	0.188		0.116	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Thorium 234	1.56		0.671	0.688		0.886	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Uranium 235	0.215	U	0.144	0.146		0.216	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Americium 241	0.00369	U	0.0626	0.0626		0.106	pCi/g	08/28/13 13:20	09/18/13 03:12	1
Protactinium 234m	-0.470	U	18.8	18.8		9.73	pCi/g	08/28/13 13:20	09/18/13 03:12	1

Client Sample ID: L050324PUB00

Lab Sample ID: 160-3482-25

Date Collected: 08/19/13 16:45

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.23		0.146	0.188		0.0391	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Bismuth 212	1.96		0.540	0.573		0.431	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Bismuth 214	1.08		0.118	0.158		0.0751	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Lead 212	1.15		0.0876	0.151		0.0788	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Lead 214	1.36		0.130	0.185		0.0927	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Potassium 40	22.8		1.44	2.63		0.455	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Protactinium 231	-0.758	U	0.868	0.872		1.43	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Radium 226	1.08		0.118	0.158	1.00	0.0751	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Thorium 232	1.23		0.146	0.188		0.0391	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Thorium 234	1.29		0.917	0.926		1.11	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Uranium 235	0.0576	U	0.107	0.107		0.276	pCi/g	08/28/13 13:20	09/18/13 03:10	1
Americium 241	-0.0296	U	1.06	1.06		0.126	pCi/g	08/28/13 13:20	09/18/13 03:10	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050324PUB00

Lab Sample ID: 160-3482-25

Date Collected: 08/19/13 16:45

Matrix: Solid

Date Received: 08/22/13 16:45

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	2.21	U	3.86	3.87		6.34	pCi/g	08/28/13 13:20	09/18/13 03:10	1

Client Sample ID: L050325PUB00

Lab Sample ID: 160-3482-26

Date Collected: 08/19/13 16:55

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.19		0.155	0.193		0.125	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Bismuth 212	1.29		0.482	0.498		0.424	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Bismuth 214	1.12		0.124	0.165		0.0873	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Lead 212	1.01		0.0881	0.140		0.0950	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Lead 214	1.26		0.125	0.175		0.0956	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Potassium 40	25.1		1.53	2.86		0.573	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Protactinium 231	0.604	U	0.332	0.337		1.23	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Radium 226	1.12		0.124	0.165	1.00	0.0873	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Thorium 232	1.19		0.155	0.193		0.125	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Thorium 234	1.89		0.799	0.820		0.958	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Uranium 235	0.116	U	0.169	0.169		0.279	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Americium 241	0.0317	U	0.0672	0.0673		0.112	pCi/g	08/28/13 13:20	09/18/13 03:13	1
Protactinium 234m	1.94	U	3.60	3.60		6.09	pCi/g	08/28/13 13:20	09/18/13 03:13	1

Client Sample ID: L050326PUB00

Lab Sample ID: 160-3482-27

Date Collected: 08/20/13 14:55

Matrix: Solid

Date Received: 08/22/13 16:45

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	0.373		0.0961	0.103		0.0934	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Bismuth 212	-0.00340	U	0.289	0.289		0.521	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Bismuth 214	0.522		0.0830	0.0992		0.0795	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Lead 212	0.280		0.0488	0.0607		0.0591	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Lead 214	0.615		0.0810	0.103		0.0677	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Potassium 40	4.73		0.658	0.817		0.168	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Protactinium 231	0.0665	U	0.0885	0.0888		0.881	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Radium 226	0.522		0.0830	0.0992	1.00	0.0795	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Thorium 232	0.373		0.0961	0.103		0.0934	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Thorium 234	35.8		1.21	3.94		2.00	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Uranium 235	8.39		0.391	0.939		0.354	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Americium 241	0.0800	U	0.132	0.132		0.218	pCi/g	08/28/13 13:20	09/18/13 03:56	1
Protactinium 234m	51.3		6.56	8.36		1.51	pCi/g	08/28/13 13:20	09/18/13 03:56	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050327PUB00

Lab Sample ID: 160-3482-28

Date Collected: 08/21/13 09:15

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.15		0.142	0.181		0.152	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Bismuth 212	1.69		0.608	0.630		0.537	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Bismuth 214	1.03		0.110	0.149		0.0943	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Lead 212	1.07		0.0830	0.182		0.0746	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Lead 214	1.23		0.114	0.176		0.0854	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Potassium 40	22.0		1.39	2.53		0.487	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Protactinium 231	0.519	U	0.319	0.325		1.34	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Radium 226	1.03		0.110	0.149	1.00	0.0943	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Thorium 232	1.15		0.142	0.181		0.152	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Thorium 234	20.2		1.52	2.49		1.47	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Uranium 235	4.07		0.315	0.506		0.354	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Americium 241	-0.0171	U	0.105	0.105		0.176	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Protactinium 234m	26.9		6.00	6.54		5.02	pCi/g	08/28/13 13:20	09/18/13 04:04	1

Client Sample ID: L050328PUB00

Lab Sample ID: 160-3482-29

Date Collected: 08/21/13 09:45

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.10		0.125	0.168		0.128	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Bismuth 212	0.885		0.347	0.359		0.483	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Bismuth 214	1.24		0.122	0.177		0.0808	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Lead 212	0.988		0.0784	0.150		0.0811	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Lead 214	1.19		0.109	0.165		0.0868	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Potassium 40	22.1		1.28	2.60		0.417	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Protactinium 231	-0.605	U	0.790	0.793		1.30	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Radium 226	1.24		0.122	0.177	1.00	0.0808	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Thorium 232	1.10		0.125	0.168		0.128	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Thorium 234	35.6		2.11	4.28		2.01	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Uranium 235	6.62		0.362	0.765		0.426	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Americium 241	-0.0910	U	0.135	0.135		0.223	pCi/g	08/28/13 13:20	09/18/13 04:03	1
Protactinium 234m	47.6		6.96	8.46		4.31	pCi/g	08/28/13 13:20	09/18/13 04:03	1

Client Sample ID: L050329PUB00

Lab Sample ID: 160-3482-30

Date Collected: 08/21/13 10:50

Matrix: Solid

Date Received: 08/22/13 16:45

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	0.976		0.161	0.187		0.143	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Bismuth 212	1.82		0.600	0.626		0.515	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Bismuth 214	1.09		0.133	0.170		0.0969	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Lead 212	1.06		0.0928	0.147		0.0850	pCi/g	08/28/13 13:20	09/18/13 04:05	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050329PUB00

Lab Sample ID: 160-3482-30

Date Collected: 08/21/13 10:50

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Lead 214	1.05		0.101	0.143		0.101	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Potassium 40	22.3		1.59	2.68		0.355	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Protactinium 231	0.496	U	0.348	0.351		1.68	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Radium 226	1.09		0.133	0.170	1.00	0.0969	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Thorium 232	0.976		0.161	0.187		0.143	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Thorium 234	45.8		1.44	4.70		2.19	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Uranium 235	10.8		0.511	1.17		0.500	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Americium 241	0.000542	U	0.140	0.140		0.235	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Protactinium 234m	61.1		8.73	10.5		4.35	pCi/g	08/28/13 13:20	09/18/13 04:05	1

Client Sample ID: L050330PUB00

Lab Sample ID: 160-3482-31

Date Collected: 08/21/13 11:10

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.17		0.198	0.231		0.203	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Bismuth 212	1.91		0.673	0.702		0.585	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Bismuth 214	1.15		0.133	0.179		0.0849	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Lead 212	1.14		0.0905	0.173		0.0802	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Lead 214	1.20		0.122	0.175		0.0963	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Potassium 40	19.1		1.45	2.43		0.441	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Protactinium 231	0.317	U	0.343	0.345		1.55	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Radium 226	1.15		0.133	0.179	1.00	0.0849	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Thorium 232	1.17		0.198	0.231		0.203	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Thorium 234	51.5		2.26	5.85		2.04	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Uranium 235	2.36		0.268	0.360		0.345	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Americium 241	-0.0363	U	0.146	0.146		0.243	pCi/g	08/28/13 13:20	09/18/13 04:06	1
Protactinium 234m	62.8		8.83	10.9		5.33	pCi/g	08/28/13 13:20	09/18/13 04:06	1

Client Sample ID: L050331PUB00

Lab Sample ID: 160-3482-32

Date Collected: 08/21/13 11:20

Matrix: Solid

Date Received: 08/22/13 16:45

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.08		0.152	0.188		0.111	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Bismuth 212	1.05		0.401	0.415		0.435	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Bismuth 214	1.11		0.121	0.167		0.0850	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Lead 212	1.15		0.0802	0.170		0.0703	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Lead 214	1.19		0.101	0.159		0.0915	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Potassium 40	20.7		1.25	2.46		0.320	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Protactinium 231	0.566	U	0.334	0.339		1.39	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Radium 226	1.11		0.121	0.167	1.00	0.0850	pCi/g	08/28/13 13:20	09/18/13 04:04	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Client Sample ID: L050331PUB00

Lab Sample ID: 160-3482-32

Date Collected: 08/21/13 11:20

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.08		0.152	0.188		0.111	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Thorium 234	65.2		2.20	7.16		1.92	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Uranium 235	3.30		0.283	0.439		0.383	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Americium 241	0.00134	U	0.140	0.140		0.234	pCi/g	08/28/13 13:20	09/18/13 04:04	1
Protactinium 234m	76.6		7.88	11.0		4.48	pCi/g	08/28/13 13:20	09/18/13 04:04	1

Client Sample ID: L050332PUB00

Lab Sample ID: 160-3482-33

Date Collected: 08/21/13 13:40

Matrix: Solid

Date Received: 08/22/13 16:45

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	1.22		0.142	0.184		0.113	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Bismuth 212	1.56		0.512	0.534		0.454	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Bismuth 214	1.11		0.109	0.154		0.0782	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Lead 212	1.18		0.0842	0.152		0.0673	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Lead 214	1.29		0.101	0.160		0.0689	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Potassium 40	20.8		1.41	2.46		0.575	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Protactinium 231	0.462	U	0.314	0.317		1.37	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Radium 226	1.11		0.109	0.154	1.00	0.0782	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Thorium 232	1.22		0.142	0.184		0.113	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Thorium 234	2.48		0.731	0.770		0.934	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Uranium 235	0.297		0.155	0.157		0.207	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Americium 241	-0.0302	U	1.54	1.54		0.116	pCi/g	08/28/13 13:20	09/18/13 04:05	1
Protactinium 234m	5.92	U	3.35	3.39		6.09	pCi/g	08/28/13 13:20	09/18/13 04:05	1

TestAmerica St. Louis

QC Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

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

Lab Sample ID: MB 160-69124/1-A

Matrix: Solid

Analysis Batch: 73103

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 69124

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.0000	U	0.0112	0.0112		0.128	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Bismuth 212	0.0000	U	0.0352	0.0352		0.130	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Bismuth 214	0.0000	U	0.00492	0.00492		0.0355	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Lead 212	-0.0001895	U	0.0152	0.0152		0.0293	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Lead 214	-0.0000351	U	0.0193	0.0193		0.0388	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Potassium 40	0.0000	U	0.0473	0.0473		0.174	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Protactinium 231	0.06965	U	0.207	0.207		0.375	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Radium 226	0.0000	U	0.00492	0.00492	1.00	0.0355	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Thorium 232	0.0000	U	0.0112	0.0112		0.128	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Thorium 234	0.08212	U	0.0899	0.0903		0.260	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Uranium 235	0.01119	U	0.0308	0.0309		0.0695	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Americium 241	0.0000	U	0.0118	0.0118		0.0334	pCi/g	08/28/13 13:09	09/18/13 20:08	1
Protactinium 234m	-0.2942	U	1.36	1.36		2.66	pCi/g	08/28/13 13:09	09/18/13 20:08	1

Lab Sample ID: LCS 160-69124/2-A

Matrix: Solid

Analysis Batch: 73115

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 69124

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	97.7	94.11		9.79		0.455	pCi/g	96	87 - 116
Cesium 137	31.6	31.33		3.28		0.138	pCi/g	99	87 - 120
Cobalt 60	24.6	24.32		2.46		0.102	pCi/g	99	87 - 115

Lab Sample ID: 160-3482-19 DU

Matrix: Solid

Analysis Batch: 73103

Client Sample ID: L050318PES00

Prep Type: Total/NA

Prep Batch: 69124

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	1.02		1.215		0.217		0.124	pCi/g	0.51	1
Bismuth 212	0.907		1.474		0.638		0.598	pCi/g	0.56	1
Bismuth 214	1.03		1.154		0.176		0.0677	pCi/g	0.38	1
Lead 212	1.18		1.069		0.165		0.0788	pCi/g	0.33	1
Lead 214	1.24		1.236		0.174		0.0963	pCi/g	0.01	1
Potassium 40	21.3		19.33		2.49		0.370	pCi/g	0.39	1
Protactinium 231	0.512	U	0.4096	U	0.300		1.59	pCi/g	0.18	1
Radium 226	1.03		1.154		0.176	1.00	0.0677	pCi/g	0.38	1
Thorium 232	1.02		1.215		0.217		0.124	pCi/g	0.51	1
Thorium 234	1.58		0.7291	U	0.397		1.24	pCi/g	0.73	1
Uranium 235	0.106	U	0.1270	U	0.175		0.281	pCi/g	0.07	1
Americium 241	-0.00129	U	-0.00709	U	0.0607		0.103	pCi/g	0.05	1
Protactinium 234m	2.18	U	0.2020	U	0.787		8.16	pCi/g	0.48	1

TestAmerica St. Louis

QC Sample Results

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

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

Lab Sample ID: MB 160-69138/1-A

Matrix: Solid

Analysis Batch: 73103

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 69138

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.02046	U	0.0284	0.0285		0.0605	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Bismuth 212	0.0000	U	0.0497	0.0497		0.370	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Bismuth 214	0.005487	U	0.0166	0.0166		0.0355	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Lead 212	-0.003830	U	0.0369	0.0369		0.0288	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Lead 214	0.002790	U	0.0159	0.0159		0.0330	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Potassium 40	0.0000	U	0.0473	0.0473		0.512	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Protactinium 231	0.01715	U	0.158	0.158		0.420	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Radium 226	0.005487	U	0.0166	0.0166	1.00	0.0355	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Thorium 232	0.02046	U	0.0284	0.0285		0.0605	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Thorium 234	0.003188	U	0.00607	0.00608		0.298	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Uranium 235	0.01407	U	0.0268	0.0269		0.0599	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Americium 241	0.003036	U	0.0123	0.0124		0.0224	pCi/g	08/28/13 13:20	09/18/13 02:59	1
Protactinium 234m	0.2559	U	1.04	1.04		2.10	pCi/g	08/28/13 13:20	09/18/13 02:59	1

Lab Sample ID: LCS 160-69138/2-A

Matrix: Solid

Analysis Batch: 73104

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 69138

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	97.7	92.95		9.67		0.442	pCi/g	95	87 - 116
Cesium 137	31.6	30.09		3.15		0.116	pCi/g	95	87 - 120
Cobalt 60	24.6	23.20		2.34		0.0752	pCi/g	94	87 - 115

Lab Sample ID: 160-3482-32 DU

Matrix: Solid

Analysis Batch: 73104

Client Sample ID: L050331PUB00

Prep Type: Total/NA

Prep Batch: 69138

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	Limit
Actinium 228	1.08		1.053		0.162		0.108	pCi/g	0.09	1
Bismuth 212	1.05		1.454		0.594		0.534	pCi/g	0.40	1
Bismuth 214	1.11		1.166		0.169		0.0824	pCi/g	0.18	1
Lead 212	1.15		1.098		0.162		0.0695	pCi/g	0.17	1
Lead 214	1.19		1.181		0.164		0.0855	pCi/g	0.02	1
Potassium 40	20.7		20.42		2.42		0.320	pCi/g	0.06	1
Protactinium 231	0.566	U	-0.6573	U F	0.855		1.41	pCi/g	1.02	1
Radium 226	1.11		1.166		0.169	1.00	0.0824	pCi/g	0.18	1
Thorium 232	1.08		1.053		0.162		0.108	pCi/g	0.09	1
Thorium 234	65.2		64.56		7.18		2.13	pCi/g	0.04	1
Uranium 235	3.30		3.139		0.445		0.313	pCi/g	0.18	1
Americium 241	0.00134	U	0.01720	U	0.155		0.258	pCi/g	0.05	1
Protactinium 234m	76.6		78.28		11.8		5.20	pCi/g	0.07	1

TestAmerica St. Louis

QC Association Summary

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Rad

Leach Batch: 68380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3482-1	L050301PRS00	Total/NA	Solid	Dry and Grind	
160-3482-2	L050302PES00	Total/NA	Solid	Dry and Grind	
160-3482-3	L050303PRS00	Total/NA	Solid	Dry and Grind	
160-3482-4	L050304PEQ00	Total/NA	Solid	Dry and Grind	
160-3482-5	L050304PES00	Total/NA	Solid	Dry and Grind	
160-3482-6	L050305PRS00	Total/NA	Solid	Dry and Grind	
160-3482-7	L050306PES00	Total/NA	Solid	Dry and Grind	
160-3482-8	L050307PRS00	Total/NA	Solid	Dry and Grind	
160-3482-9	L050308PES00	Total/NA	Solid	Dry and Grind	
160-3482-10	L050309PRS00	Total/NA	Solid	Dry and Grind	
160-3482-11	L050310PES00	Total/NA	Solid	Dry and Grind	
160-3482-12	L050311PRS00	Total/NA	Solid	Dry and Grind	
160-3482-13	L050312PES00	Total/NA	Solid	Dry and Grind	
160-3482-14	L050313PRS00	Total/NA	Solid	Dry and Grind	
160-3482-15	L050314PES00	Total/NA	Solid	Dry and Grind	
160-3482-16	L050315PRS00	Total/NA	Solid	Dry and Grind	
160-3482-17	L050316PES00	Total/NA	Solid	Dry and Grind	
160-3482-18	L050317PRS00	Total/NA	Solid	Dry and Grind	
160-3482-19	L050318PES00	Total/NA	Solid	Dry and Grind	
160-3482-19 DU	L050318PES00	Total/NA	Solid	Dry and Grind	
160-3482-20	L050319PRS00	Total/NA	Solid	Dry and Grind	
160-3482-21	L050320PES00	Total/NA	Solid	Dry and Grind	
160-3482-22	L050321PRS00	Total/NA	Solid	Dry and Grind	
160-3482-23	L050322PES00	Total/NA	Solid	Dry and Grind	
160-3482-24	L050323PUB00	Total/NA	Solid	Dry and Grind	
160-3482-25	L050324PUB00	Total/NA	Solid	Dry and Grind	
160-3482-26	L050325PUB00	Total/NA	Solid	Dry and Grind	
160-3482-27	L050326PUB00	Total/NA	Solid	Dry and Grind	
160-3482-28	L050327PUB00	Total/NA	Solid	Dry and Grind	
160-3482-29	L050328PUB00	Total/NA	Solid	Dry and Grind	
160-3482-30	L050329PUB00	Total/NA	Solid	Dry and Grind	
160-3482-31	L050330PUB00	Total/NA	Solid	Dry and Grind	
160-3482-32	L050331PUB00	Total/NA	Solid	Dry and Grind	
160-3482-32 DU	L050331PUB00	Total/NA	Solid	Dry and Grind	
160-3482-33	L050332PUB00	Total/NA	Solid	Dry and Grind	

Prep Batch: 69124

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3482-1	L050301PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-2	L050302PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-3	L050303PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-4	L050304PEQ00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-5	L050304PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-6	L050305PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-7	L050306PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-8	L050307PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-9	L050308PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-10	L050309PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-11	L050310PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-12	L050311PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-13	L050312PES00	Total/NA	Solid	Fill_Geo-21	68380

TestAmerica St. Louis

QC Association Summary

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-3482-2

Rad (Continued)

Prep Batch: 69124 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3482-14	L050313PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-15	L050314PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-16	L050315PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-17	L050316PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-18	L050317PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-19	L050318PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-19 DU	L050318PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-20	L050319PRS00	Total/NA	Solid	Fill_Geo-21	68380
LCS 160-69124/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
MB 160-69124/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	

Prep Batch: 69138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3482-21	L050320PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-22	L050321PRS00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-23	L050322PES00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-24	L050323PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-25	L050324PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-26	L050325PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-27	L050326PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-28	L050327PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-29	L050328PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-30	L050329PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-31	L050330PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-32	L050331PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-32 DU	L050331PUB00	Total/NA	Solid	Fill_Geo-21	68380
160-3482-33	L050332PUB00	Total/NA	Solid	Fill_Geo-21	68380
LCS 160-69138/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
MB 160-69138/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	