

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: 160-3571-2

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

For:

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

Attn: Martin Swanson



Authorized for release by:
9/26/2013 4:30:35 PM

Ivan Vania, Project Manager I
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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.

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Case Narrative

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

TestAmerica Job ID: 160-3571-2

Job ID: 160-3571-2

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

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

Report Number: 160-3571-2

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 08/29/2013; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 20.0° C and 20.0° C.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples L050119TSQ00 (160-3571-1), L050119TSS00 (160-3571-2), L050120TRS00 (160-3571-3), L050121TSS00 (160-3571-4), L050122TRS00 (160-3571-5), L050125TRS00 (160-3571-6), L050127TRS00 (160-3571-7), L050128TES00 (160-3571-8), L050131TRS00 (160-3571-9), L050132TES00 (160-3571-10), L050133TRS00 (160-3571-11), L050139TES00 (160-3571-12), L050140TRS00 (160-3571-13), L050148TRS00 (160-3571-14), L050154TRS00 (160-3571-15), L050155TES00 (160-3571-16), L050156TRS00 (160-3571-17), L050157TES00 (160-3571-18), L050162TRQ00 (160-3571-19), L050162TRS00 (160-3571-20), L050163TES00 (160-3571-21), L050164TRS00 (160-3571-22), L050165TEQ00 (160-3571-23), L050165TES00 (160-3571-24), L050169TSS00 (160-3571-25), L050170TRS00 (160-3571-26), L050171TRS00 (160-3571-27) and L050172TES00 (160-3571-28) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/30/2013, prepared on 09/04/2013 and analyzed on 09/25/2013.

Case Narrative

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

TestAmerica Job ID: 160-3571-2

Job ID: 160-3571-2 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

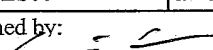

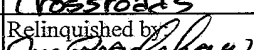
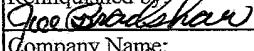
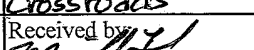

No other difficulties were encountered during the Radium 226 analysis. All other quality control parameters were within the acceptance limits.

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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 Custody ID No. F-082913-02 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													
L050119TSQ00	8/28/2013	8:50	S	C	X		X	X							1	LSA 05-01 Sys
L050119TSS00	8/28/2013	8:50	S	C	X		X	X							1	
L050120TRS00	8/28/2013	10:15	S	C	X		X	X							1	
L050121TSS00	8/28/2013	8:40	S	C	X		X	X							1	
L050122TRS00	8/28/2013	9:15	S	C	X		X	X							1	
L050125TRS00	8/28/2013	10:10	S	C	X		X	X							1	
L050127TRS00	8/28/2013	8:33	S	C	X		X	X							1	
L050128TES00	8/28/2013	8:45	S	C	X		X	X							1	
L050131TRS00	8/28/2013	10:35	S	C	X		X	X							1	
L050132TES00	8/28/2013	10:40	S	C	X		X	X							1	
L050133TRS00	8/28/2013	9:20	S	C	X		X	X							1	
L050139TES00	8/28/2013	10:20	S	C	X		X	X							1	LSA 05-01 Sys
Relinquished by:		Date/Time		Received by:		Date/Time		Total		Cooler Temperature:						
		8/28/13 1600				8-29-13 0616		28		Ambient						
Company Name:				Company Name:				Cooler ID:		Shipper and Number:						
WEC				Crossroads				0829-02/03								
Received by:		Date/Time		Relinquished by:		Date/Time		Comments: Please re-analyze samples after 21 day ingrowth period.								
						8-29-13 1839										
Company Name:				Company Name:		Crossroads										
Relinquished by:		Date/Time		Received by:		Date/Time		Verified By:								
						8-29-13 1838										
Company Name:				Company Name:												
Crossroads				Crossroads												

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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 Custody ID No. F-082913-02 Page 2/3				Requested Analysis												Laboratory Name: TA-MO	
Project Name: Westinghouse Electric Company				Comp (C) or Grab (G)	Gamma Spec	Isotopic Uranium	IC-99	Gamma Spec (21 day ingrow for Ra-226)							Total Containers	Laboratory Address: 13715 Rider Trail North	
Contact Person: Gerald Rood																Phone No. 314-298-8566	
Phone Number: 314-810-3382																Laboratory Contact Person: Joe Walker	
Sampler Name Scott Jenkins																Phone No. 708-870-8453	
																Turn Around Time Rush (7 days)	
																Remarks	
Sample ID	Date	Time	Matrix														
L050140TRS00	8/28/2013	8:35	S	C	X		X	X							1	LSA 05-01 Sys	
L050148TRS00	8/28/2013	16:25	S	C	X		X	X							1		
L050154TRS00	8/28/2013	13:05	S	C	X		X	X							1		
L050155TES00	8/28/2013	13:10	S	C	X		X	X							1		
L050156TRS00	8/28/2013	13:15	S	C	X		X	X							1		
L050157TES00	8/28/2013	13:40	S	C	X		X	X							1		
L050162TRQ00	8/28/2013	11:10	S	C	X		X	X							1		
L050162TRS00	8/28/2013	11:10	S	C	X		X	X							1		
L050163TES00	8/28/2013	14:00	S	C	X		X	X							1		
L050164TRS00	8/28/2013	10:55	S	C	X		X	X							1		
L050165TEQ00	8/28/2013	11:05	S	C	X		X	X							1		
L050165TES00	8/28/2013	11:05	S	C	X		X	X							1	LSA 05-01 Sys	
Relinquished by: C =		Date/Time: 8/28/13 1600		Received by: 		Date/Time: 8-29 1600		Total 28		Cooler Temperature: Ambient							
Company Name: WEC				Company Name: Crossroads				Cooler ID: 0829-02/03		Shipper and Number:							
Received by:		Date/Time:		Relinquished by: 		Date/Time: 8-29 18:30		Comments: Please re-analyze samples after 21 day ingrowth period.									
Company Name:				Company Name: Crossroads													
Relinquished by:		Date/Time:		Received by: 		Date/Time: 8-29 18:38		Verified By: 									
Company Name:				Company Name: TE5 name: ca													

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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.

[illegible]

Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-3571-2

Login Number: 3571

List Source: TestAmerica St. Louis

List Number: 1

Creator: Clarke, Jill C

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: 160-3571-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

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: 160-3571-2

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: 160-3571-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-3571-1	L050119TSQ00	Solid	08/28/13 08:50	08/29/13 18:38
160-3571-2	L050119TSS00	Solid	08/28/13 08:50	08/29/13 18:38
160-3571-3	L050120TRS00	Solid	08/28/13 10:15	08/29/13 18:38
160-3571-4	L050121TSS00	Solid	08/28/13 08:40	08/29/13 18:38
160-3571-5	L050122TRS00	Solid	08/28/13 09:15	08/29/13 18:38
160-3571-6	L050125TRS00	Solid	08/28/13 10:10	08/29/13 18:38
160-3571-7	L050127TRS00	Solid	08/28/13 08:33	08/29/13 18:38
160-3571-8	L050128TES00	Solid	08/28/13 08:45	08/29/13 18:38
160-3571-9	L050131TRS00	Solid	08/28/13 10:35	08/29/13 18:38
160-3571-10	L050132TES00	Solid	08/28/13 10:40	08/29/13 18:38
160-3571-11	L050133TRS00	Solid	08/28/13 09:20	08/29/13 18:38
160-3571-12	L050139TES00	Solid	08/28/13 10:20	08/29/13 18:38
160-3571-13	L050140TRS00	Solid	08/28/13 08:35	08/29/13 18:38
160-3571-14	L050148TRS00	Solid	08/28/13 16:25	08/29/13 18:38
160-3571-15	L050154TRS00	Solid	08/28/13 13:05	08/29/13 18:38
160-3571-16	L050155TES00	Solid	08/28/13 13:10	08/29/13 18:38
160-3571-17	L050156TRS00	Solid	08/28/13 13:15	08/29/13 18:38
160-3571-18	L050157TES00	Solid	08/28/13 13:40	08/29/13 18:38
160-3571-19	L050162TRQ00	Solid	08/28/13 11:10	08/29/13 18:38
160-3571-20	L050162TRS00	Solid	08/28/13 11:10	08/29/13 18:38
160-3571-21	L050163TES00	Solid	08/28/13 14:00	08/29/13 18:38
160-3571-22	L050164TRS00	Solid	08/28/13 10:55	08/29/13 18:38
160-3571-23	L050165TEQ00	Solid	08/28/13 11:05	08/29/13 18:38
160-3571-24	L050165TES00	Solid	08/28/13 11:05	08/29/13 18:38
160-3571-25	L050169TSS00	Solid	08/28/13 13:10	08/29/13 18:38
160-3571-26	L050170TRS00	Solid	08/28/13 13:30	08/29/13 18:38
160-3571-27	L050171TRS00	Solid	08/28/13 11:00	08/29/13 18:38
160-3571-28	L050172TES00	Solid	08/28/13 11:15	08/29/13 18:38

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050119TSQ00

Lab Sample ID: 160-3571-1

Date Collected: 08/28/13 08:50

Matrix: Solid

Date Received: 08/29/13 18:38

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		0.118	0.156		0.100	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Bismuth 212	0.972		0.426	0.438		0.389	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Bismuth 214	0.865		0.0935	0.130		0.0588	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Lead 212	0.922		0.0682	0.137		0.0561	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Lead 214	0.996		0.0854	0.134		0.0706	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Potassium 40	17.6		1.12	2.11		0.294	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Protactinium 231	0.636	U	0.282	0.291		0.984	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Radium 226	0.865		0.0935	0.130	1.00	0.0588	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Thorium 232	1.00		0.118	0.156		0.100	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Thorium 234	1.51		0.657	0.676		0.828	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Uranium 235	0.219		0.149	0.151		0.187	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Americium 241	-0.00808	U	0.0580	0.0580		0.0978	pCi/g	09/04/13 12:59	09/25/13 09:42	1
Protactinium 234m	0.958	U	2.81	2.81		4.83	pCi/g	09/04/13 12:59	09/25/13 09:42	1

Client Sample ID: L050119TSS00

Lab Sample ID: 160-3571-2

Date Collected: 08/28/13 08:50

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.894		0.172	0.195		0.130	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Bismuth 212	1.22		0.351	0.373		0.304	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Bismuth 214	0.971		0.101	0.143		0.0666	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Lead 212	1.00		0.0735	0.149		0.0599	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Lead 214	1.03		0.0964	0.144		0.0713	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Potassium 40	18.5		1.17	2.23		0.329	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Protactinium 231	-0.871	U	0.809	0.814		1.31	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Radium 226	0.971		0.101	0.143	1.00	0.0666	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Thorium 232	0.894		0.172	0.195		0.130	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Thorium 234	1.09		0.362	0.380		0.944	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Uranium 235	0.395		0.194	0.198		0.212	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Americium 241	0.0151	U	0.0678	0.0678		0.114	pCi/g	09/04/13 12:59	09/25/13 11:49	1
Protactinium 234m	3.71	U	1.81	1.85		5.71	pCi/g	09/04/13 12:59	09/25/13 11:49	1

Client Sample ID: L050120TRS00

Lab Sample ID: 160-3571-3

Date Collected: 08/28/13 10:15

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.906		0.104	0.139		0.0990	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Bismuth 212	1.12		0.333	0.353		0.308	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Bismuth 214	0.938		0.0908	0.133		0.0597	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Lead 212	0.798		0.0659	0.122		0.0707	pCi/g	09/04/13 12:59	09/25/13 11:50	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050120TRS00

Lab Sample ID: 160-3571-3

Date Collected: 08/28/13 10:15

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.08		0.0863	0.142		0.0667	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Potassium 40	17.4		1.07	2.07		0.419	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Protactinium 231	0.243	U	0.450	0.451		0.755	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Radium 226	0.938		0.0908	0.133	1.00	0.0597	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Thorium 232	0.906		0.104	0.139		0.0990	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Thorium 234	0.934		0.314	0.329		0.825	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Uranium 235	0.123	U	0.142	0.143		0.229	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Americium 241	0.000300	U	0.0561	0.0561		0.0947	pCi/g	09/04/13 12:59	09/25/13 11:50	1
Protactinium 234m	4.76		2.16	2.21		4.11	pCi/g	09/04/13 12:59	09/25/13 11:50	1

Client Sample ID: L050121TSS00

Lab Sample ID: 160-3571-4

Date Collected: 08/28/13 08:40

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.826		0.122	0.148		0.0923	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Bismuth 212	0.833		0.380	0.390		0.356	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Bismuth 214	0.826		0.108	0.138		0.0753	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Lead 212	0.735		0.0672	0.116		0.0593	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Lead 214	0.892		0.0841	0.125		0.0649	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Potassium 40	11.5		1.01	1.55		0.279	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Protactinium 231	0.462	U	0.207	0.213		0.986	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Radium 226	0.826		0.108	0.138	1.00	0.0753	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Thorium 232	0.826		0.122	0.148		0.0923	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Thorium 234	1.61		0.586	0.610		0.755	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Uranium 235	0.0513	U	0.101	0.101		0.243	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Americium 241	-0.0119	U	0.225	0.225		0.0904	pCi/g	09/04/13 12:59	09/25/13 11:46	1
Protactinium 234m	-0.145	U	3.28	3.28		5.91	pCi/g	09/04/13 12:59	09/25/13 11:46	1

Client Sample ID: L050122TRS00

Lab Sample ID: 160-3571-5

Date Collected: 08/28/13 09:15

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.28		0.206	0.244		0.164	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Bismuth 212	0.846		0.452	0.461		0.659	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Bismuth 214	1.23		0.133	0.184		0.0754	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Lead 212	1.18		0.0931	0.179		0.0775	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Lead 214	1.17		0.119	0.170		0.122	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Potassium 40	17.4		1.45	2.29		0.489	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Protactinium 231	0.634	U	0.323	0.330		1.48	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Radium 226	1.23		0.133	0.184	1.00	0.0754	pCi/g	09/04/13 12:59	09/25/13 11:47	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050122TRS00

Lab Sample ID: 160-3571-5

Date Collected: 08/28/13 09:15

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.28		0.206	0.244		0.164	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Thorium 234	1.50		0.755	0.771		1.00	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Uranium 235	0.0625	U	0.155	0.156		0.329	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Americium 241	-0.000224	U	0.0769	0.0769		0.130	pCi/g	09/04/13 12:59	09/25/13 11:47	1
Protactinium 234m	0.000	U	4.16	4.16		10.5	pCi/g	09/04/13 12:59	09/25/13 11:47	1

Client Sample ID: L050125TRS00

Lab Sample ID: 160-3571-6

Date Collected: 08/28/13 10:10

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.500		0.184	0.191		0.272	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Bismuth 212	0.723	U	0.528	0.533		0.791	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Bismuth 214	1.47		0.180	0.235		0.0977	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Lead 212	0.796		0.120	0.158		0.133	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Lead 214	1.65		0.177	0.246		0.130	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Potassium 40	10.8		1.37	1.76		0.696	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Protactinium 231	0.992	U	0.682	0.691		1.23	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Radium 226	1.47		0.180	0.235	1.00	0.0977	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Thorium 232	0.500		0.184	0.191		0.272	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Thorium 234	0.658	U	0.541	0.545		1.92	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Uranium 235	0.120	U	0.282	0.283		0.462	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Americium 241	0.0502	U	0.124	0.125		0.210	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Protactinium 234m	0.363	U	5.03	5.03		9.27	pCi/g	09/04/13 12:59	09/25/13 11:48	1

Client Sample ID: L050127TRS00

Lab Sample ID: 160-3571-7

Date Collected: 08/28/13 08:33

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.13		0.124	0.169		0.111	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Bismuth 212	1.31		0.398	0.420		0.384	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Bismuth 214	1.07		0.105	0.153		0.0690	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Lead 212	1.08		0.0704	0.157		0.0561	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Lead 214	1.28		0.103	0.168		0.0688	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Potassium 40	18.3		1.11	2.18		0.338	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Protactinium 231	0.397	U	0.232	0.236		1.10	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Radium 226	1.07		0.105	0.153	1.00	0.0690	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Thorium 232	1.13		0.124	0.169		0.111	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Thorium 234	1.03		0.307	0.325		0.769	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Uranium 235	0.107	U	0.113	0.113		0.185	pCi/g	09/04/13 12:59	09/25/13 11:48	1
Americium 241	-0.0104	U	0.0621	0.0622		0.104	pCi/g	09/04/13 12:59	09/25/13 11:48	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050127TRS00

Lab Sample ID: 160-3571-7

Date Collected: 08/28/13 08:33

Matrix: Solid

Date Received: 08/29/13 18:38

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	-0.506	U	14.2	14.2		4.98	pCi/g	09/04/13 12:59	09/25/13 11:48	1

Client Sample ID: L050128TES00

Lab Sample ID: 160-3571-8

Date Collected: 08/28/13 08:45

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.29		0.133	0.187		0.121	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Bismuth 212	1.33		0.453	0.474		0.434	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Bismuth 214	1.04		0.119	0.161		0.0851	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Lead 212	1.28		0.0817	0.185		0.0609	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Lead 214	1.23		0.102	0.163		0.0874	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Potassium 40	20.8		1.28	2.48		0.410	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Protactinium 231	-0.615	U	0.841	0.844		1.39	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Radium 226	1.04		0.119	0.161	1.00	0.0851	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Thorium 232	1.29		0.133	0.187		0.121	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Thorium 234	1.55		0.730	0.747		0.945	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Uranium 235	0.134	U	0.118	0.119		0.191	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Americium 241	-0.00894	U	0.0734	0.0734		0.123	pCi/g	09/04/13 12:59	09/25/13 13:59	1
Protactinium 234m	8.19		2.67	2.79		6.26	pCi/g	09/04/13 12:59	09/25/13 13:59	1

Client Sample ID: L050131TRS00

Lab Sample ID: 160-3571-9

Date Collected: 08/28/13 10:35

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.433		0.0784	0.0900		0.0564	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Bismuth 212	0.559		0.292	0.297		0.286	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Bismuth 214	0.662		0.0812	0.106		0.0561	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Lead 212	0.414		0.0414	0.0677		0.0371	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Lead 214	0.693		0.0719	0.102		0.0525	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Potassium 40	10.3		0.800	1.32		0.252	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Protactinium 231	0.269	U	0.209	0.211		0.696	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Radium 226	0.662		0.0812	0.106	1.00	0.0561	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Thorium 232	0.433		0.0784	0.0900		0.0564	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Thorium 234	0.715		0.202	0.215		0.524	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Uranium 235	0.137		0.0951	0.0961		0.128	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Americium 241	0.0139	U	0.0397	0.0397		0.0668	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Protactinium 234m	3.75		2.06	2.10		2.01	pCi/g	09/04/13 12:59	09/25/13 13:57	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050132TES00

Lab Sample ID: 160-3571-10

Date Collected: 08/28/13 10:40

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.742		0.114	0.136		0.0847	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Bismuth 212	0.613	U	0.449	0.454		0.695	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Bismuth 214	1.18		0.140	0.186		0.0883	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Lead 212	0.613		0.0782	0.111		0.0858	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Lead 214	1.09		0.109	0.158		0.101	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Potassium 40	14.2		1.26	1.93		0.335	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Protactinium 231	-0.653	U	0.859	0.862		1.42	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Radium 226	1.18		0.140	0.186	1.00	0.0883	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Thorium 232	0.742		0.114	0.136		0.0847	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Thorium 234	1.71		0.470	0.503		1.30	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Uranium 235	0.138	U	0.185	0.185		0.326	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Americium 241	-0.0327	U	0.0951	0.0952		0.159	pCi/g	09/04/13 12:59	09/25/13 13:57	1
Protactinium 234m	1.84	U	3.69	3.69		6.33	pCi/g	09/04/13 12:59	09/25/13 13:57	1

Client Sample ID: L050133TRS00

Lab Sample ID: 160-3571-11

Date Collected: 08/28/13 09:20

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.797		0.117	0.143		0.0856	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Bismuth 212	0.730		0.364	0.372		0.381	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Bismuth 214	1.00		0.0951	0.141		0.0531	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Lead 212	0.783		0.0602	0.118		0.0486	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Lead 214	0.948		0.0780	0.126		0.0635	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Potassium 40	13.6		0.957	1.69		0.289	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Protactinium 231	0.311	U	0.214	0.217		0.919	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Radium 226	1.00		0.0951	0.141	1.00	0.0531	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Thorium 232	0.797		0.117	0.143		0.0856	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Thorium 234	0.991		0.538	0.548		0.721	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Uranium 235	0.104	U	0.120	0.120		0.195	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Americium 241	-0.0170	U	0.0496	0.0497		0.0832	pCi/g	09/04/13 12:59	09/25/13 13:58	1
Protactinium 234m	-0.346	U	13.8	13.8		5.07	pCi/g	09/04/13 12:59	09/25/13 13:58	1

Client Sample ID: L050139TES00

Lab Sample ID: 160-3571-12

Date Collected: 08/28/13 10:20

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.374		0.0979	0.105		0.123	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Bismuth 212	0.928		0.296	0.311		0.207	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Bismuth 214	0.717		0.0905	0.117		0.0477	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Lead 212	0.338		0.0501	0.0665		0.0559	pCi/g	09/04/13 12:59	09/25/13 18:31	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050139TES00

Lab Sample ID: 160-3571-12

Date Collected: 08/28/13 10:20

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.842		0.0917	0.127		0.0577	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Potassium 40	9.85		0.947	1.38		0.168	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Protactinium 231	0.200	U	0.399	0.400		0.800	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Radium 226	0.717		0.0905	0.117	1.00	0.0477	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Thorium 232	0.374		0.0979	0.105		0.123	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Thorium 234	1.52		0.318	0.356		0.681	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Uranium 235	0.243		0.112	0.114		0.154	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Americium 241	0.00125	U	0.0580	0.0580		0.0983	pCi/g	09/04/13 12:59	09/25/13 18:31	1
Protactinium 234m	2.98	U	2.78	2.80		4.35	pCi/g	09/04/13 12:59	09/25/13 18:31	1

Client Sample ID: L050140TRS00

Lab Sample ID: 160-3571-13

Date Collected: 08/28/13 08:35

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.430		0.0799	0.0911		0.0499	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Bismuth 212	0.703		0.222	0.233		0.173	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Bismuth 214	0.643		0.0772	0.102		0.0560	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Lead 212	0.462		0.0486	0.0770		0.0491	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Lead 214	0.784		0.0749	0.111		0.0685	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Potassium 40	8.71		0.725	1.15		0.265	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Protactinium 231	0.109	U	0.324	0.324		0.557	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Radium 226	0.643		0.0772	0.102	1.00	0.0560	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Thorium 232	0.430		0.0799	0.0911		0.0499	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Thorium 234	1.13		0.503	0.516		0.622	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Uranium 235	0.0498	U	0.106	0.106		0.178	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Americium 241	0.00136	U	0.0456	0.0456		0.0774	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Protactinium 234m	3.15	U	1.67	1.70		4.16	pCi/g	09/04/13 12:59	09/25/13 18:25	1

Client Sample ID: L050148TRS00

Lab Sample ID: 160-3571-14

Date Collected: 08/28/13 16:25

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.136		0.0529	0.0547		0.0693	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Bismuth 212	0.183	U	0.157	0.158		0.246	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Bismuth 214	0.684		0.0674	0.0980		0.0391	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Lead 212	0.124		0.0289	0.0330		0.0393	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Lead 214	0.762		0.0626	0.101		0.0449	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Potassium 40	2.73		0.399	0.487		0.256	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Protactinium 231	0.0615	U	0.243	0.243		0.568	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Radium 226	0.684		0.0674	0.0980	1.00	0.0391	pCi/g	09/04/13 12:59	09/25/13 18:27	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050148TRS00

Lab Sample ID: 160-3571-14

Date Collected: 08/28/13 16:25

Matrix: Solid

Date Received: 08/29/13 18:38

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+/-)						
Thorium 232	0.136		0.0529	0.0547		0.0693	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Thorium 234	1.99		0.578	0.614		0.614	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Uranium 235	0.220		0.0883	0.0911		0.125	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Americium 241	-0.00937	U	0.0369	0.0369		0.0621	pCi/g	09/04/13 12:59	09/25/13 18:27	1
Protactinium 234m	2.51	U	1.81	1.83		2.56	pCi/g	09/04/13 12:59	09/25/13 18:27	1

Client Sample ID: L050154TRS00

Lab Sample ID: 160-3571-15

Date Collected: 08/28/13 13:05

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.109		0.0486	0.0499		0.0754	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Bismuth 212	-0.0109	U	0.140	0.140		0.258	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Bismuth 214	0.856		0.0808	0.120		0.0442	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Lead 212	0.108		0.0248	0.0285		0.0312	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Lead 214	0.962		0.0622	0.118		0.0365	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Potassium 40	1.45		0.358	0.387		0.287	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Protactinium 231	0.245	U	0.263	0.264		0.656	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Radium 226	0.856		0.0808	0.120	1.00	0.0442	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Thorium 232	0.109		0.0486	0.0499		0.0754	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Thorium 234	1.52		0.241	0.289		0.498	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Uranium 235	0.301		0.0990	0.104		0.134	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Americium 241	0.00475	U	0.0351	0.0351		0.0598	pCi/g	09/04/13 12:59	09/25/13 18:25	1
Protactinium 234m	1.09	U	1.89	1.89		3.12	pCi/g	09/04/13 12:59	09/25/13 18:25	1

Client Sample ID: L050155TES00

Lab Sample ID: 160-3571-16

Date Collected: 08/28/13 13:10

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.153		0.0509	0.0532		0.0320	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Bismuth 212	0.187	U	0.194	0.195		0.310	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Bismuth 214	0.861		0.0842	0.123		0.0362	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Lead 212	0.115		0.0305	0.0339		0.0405	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Lead 214	0.940		0.0768	0.124		0.0515	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Potassium 40	0.851		0.281	0.294		0.296	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Protactinium 231	0.135	U	0.122	0.123		0.648	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Radium 226	0.861		0.0842	0.123	1.00	0.0362	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Thorium 232	0.153		0.0509	0.0532		0.0320	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Thorium 234	1.32		0.291	0.322		0.580	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Uranium 235	0.347		0.126	0.131		0.143	pCi/g	09/04/13 12:59	09/25/13 18:26	1
Americium 241	-0.0113	U	0.0438	0.0438		0.0737	pCi/g	09/04/13 12:59	09/25/13 18:26	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050155TES00

Lab Sample ID: 160-3571-16

Date Collected: 08/28/13 13:10

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.66	U	2.00	2.01		3.26	pCi/g	09/04/13 12:59	09/25/13 18:26	1

Client Sample ID: L050156TRS00

Lab Sample ID: 160-3571-17

Date Collected: 08/28/13 13:15

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.364		0.0599	0.0704		0.0493	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Bismuth 212	0.737		0.208	0.222		0.154	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Bismuth 214	0.479		0.0634	0.0806		0.0428	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Lead 212	0.375		0.0388	0.0621		0.0344	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Lead 214	0.566		0.0620	0.0855		0.0430	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Potassium 40	7.85		0.648	1.03		0.171	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Protactinium 231	0.0956	U	0.0786	0.0793		0.697	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Radium 226	0.479		0.0634	0.0806	1.00	0.0428	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Thorium 232	0.364		0.0599	0.0704		0.0493	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Thorium 234	0.847		0.405	0.415		0.527	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Uranium 235	0.0975	U	0.0814	0.0820		0.114	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Americium 241	0.00136	U	0.0343	0.0343		0.0585	pCi/g	09/04/13 12:59	09/25/13 18:24	1
Protactinium 234m	-0.254	U	31.1	31.1		3.56	pCi/g	09/04/13 12:59	09/25/13 18:24	1

Client Sample ID: L050157TES00

Lab Sample ID: 160-3571-18

Date Collected: 08/28/13 13:40

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.485		0.0739	0.0890		0.0863	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Bismuth 212	0.339		0.216	0.219		0.325	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Bismuth 214	0.596		0.0665	0.0909		0.0452	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Lead 212	0.438		0.0424	0.0708		0.0370	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Lead 214	0.657		0.0646	0.0940		0.0533	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Potassium 40	8.53		0.687	1.11		0.243	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Protactinium 231	0.236	U	0.126	0.129		0.814	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Radium 226	0.596		0.0665	0.0909	1.00	0.0452	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Thorium 232	0.485		0.0739	0.0890		0.0863	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Thorium 234	0.616		0.196	0.207		0.535	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Uranium 235	0.0541	U	0.0970	0.0972		0.161	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Americium 241	0.000	U	0.0244	0.0244		0.0717	pCi/g	09/04/13 12:59	09/25/13 19:45	1
Protactinium 234m	-0.720	U	9.24	9.24		3.79	pCi/g	09/04/13 12:59	09/25/13 19:45	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050162TRQ00

Lab Sample ID: 160-3571-19

Date Collected: 08/28/13 11:10

Matrix: Solid

Date Received: 08/29/13 18:38

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		0.162	0.203		0.109	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Bismuth 212	1.24		0.448	0.466		0.415	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Bismuth 214	1.13		0.112	0.162		0.0720	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Lead 212	1.04		0.0785	0.156		0.0797	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Lead 214	1.34		0.0970	0.170		0.0689	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Potassium 40	21.3		1.20	2.49		0.326	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Protactinium 231	0.313	U	0.214	0.216		1.24	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Radium 226	1.13		0.112	0.162	1.00	0.0720	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Thorium 232	1.19		0.162	0.203		0.109	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Thorium 234	1.22		0.739	0.750		0.943	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Uranium 235	0.162	U	0.154	0.155		0.260	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Americium 241	0.0238	U	0.0650	0.0651		0.109	pCi/g	09/04/13 12:59	09/25/13 19:46	1
Protactinium 234m	5.15		2.99	3.03		4.91	pCi/g	09/04/13 12:59	09/25/13 19:46	1

Client Sample ID: L050162TRS00

Lab Sample ID: 160-3571-20

Date Collected: 08/28/13 11:10

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.13		0.143	0.184		0.0748	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Bismuth 212	1.32		0.440	0.461		0.412	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Bismuth 214	0.969		0.120	0.157		0.0850	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Lead 212	1.07		0.0789	0.160		0.0644	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Lead 214	1.22		0.0961	0.159		0.0880	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Potassium 40	19.8		1.31	2.41		0.273	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Protactinium 231	0.281	U	0.220	0.222		1.15	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Radium 226	0.969		0.120	0.157	1.00	0.0850	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Thorium 232	1.13		0.143	0.184		0.0748	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Thorium 234	1.19		0.377	0.397		0.977	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Uranium 235	0.153	U	0.117	0.118		0.182	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Americium 241	-0.0213	U	0.134	0.134		0.112	pCi/g	09/04/13 12:59	09/25/13 21:23	1
Protactinium 234m	4.85	U	4.01	4.04		5.70	pCi/g	09/04/13 12:59	09/25/13 21:23	1

Client Sample ID: L050163TES00

Lab Sample ID: 160-3571-21

Date Collected: 08/28/13 14:00

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.11		0.135	0.176		0.105	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Bismuth 212	1.36		0.466	0.487		0.436	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Bismuth 214	0.834		0.0951	0.129		0.0682	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Lead 212	0.973		0.0770	0.148		0.0812	pCi/g	09/04/13 14:28	09/25/13 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: 160-3571-2

Client Sample ID: L050163TES00

Lab Sample ID: 160-3571-21

Date Collected: 08/28/13 14:00

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.979		0.0862	0.133		0.0790	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Potassium 40	18.9		1.13	2.24		0.322	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Protactinium 231	0.440	U	0.247	0.251		1.15	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Radium 226	0.834		0.0951	0.129	1.00	0.0682	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Thorium 232	1.11		0.135	0.176		0.105	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Thorium 234	1.62		0.697	0.717		0.855	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Uranium 235	0.0766	U	0.146	0.146		0.254	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Americium 241	0.0316	U	0.0647	0.0648		0.108	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Protactinium 234m	0.420	U	3.11	3.11		5.46	pCi/g	09/04/13 14:28	09/25/13 03:56	1

Client Sample ID: L050164TRS00

Lab Sample ID: 160-3571-22

Date Collected: 08/28/13 10:55

Matrix: Solid

Date Received: 08/29/13 18:38

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		0.173	0.210		0.0972	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Bismuth 212	1.24		0.427	0.446		0.387	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Bismuth 214	0.981		0.105	0.146		0.0654	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Lead 212	1.06		0.0752	0.156		0.0584	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Lead 214	1.06		0.100	0.149		0.0786	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Potassium 40	19.8		1.27	2.39		0.258	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Protactinium 231	0.745	U	0.406	0.414		1.25	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Radium 226	0.981		0.105	0.146	1.00	0.0654	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Thorium 232	1.17		0.173	0.210		0.0972	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Thorium 234	0.886		0.613	0.620		0.849	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Uranium 235	0.176	U	0.120	0.121		0.181	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Americium 241	-0.00292	U	0.153	0.153		0.105	pCi/g	09/04/13 14:28	09/25/13 03:56	1
Protactinium 234m	3.57	U	2.85	2.87		6.65	pCi/g	09/04/13 14:28	09/25/13 03:56	1

Client Sample ID: L050165TEQ00

Lab Sample ID: 160-3571-23

Date Collected: 08/28/13 11:05

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.11		0.168	0.203		0.137	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Bismuth 212	1.54		0.491	0.516		0.441	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Bismuth 214	1.08		0.138	0.178		0.0959	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Lead 212	1.08		0.0887	0.166		0.0741	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Lead 214	1.02		0.112	0.154		0.0983	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Potassium 40	19.1		1.46	2.44		0.334	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Protactinium 231	0.355	U	0.231	0.234		1.52	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Radium 226	1.08		0.138	0.178	1.00	0.0959	pCi/g	09/04/13 14:28	09/25/13 03:57	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050165TEQ00

Lab Sample ID: 160-3571-23

Date Collected: 08/28/13 11:05

Matrix: Solid

Date Received: 08/29/13 18:38

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+/-)						
Thorium 232	1.11		0.168	0.203		0.137	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Thorium 234	0.704	U	0.356	0.363		0.964	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Uranium 235	0.00575	U	0.199	0.199		0.339	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Americium 241	0.0256	U	0.0747	0.0748		0.125	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Protactinium 234m	5.12	U	4.20	4.24		6.13	pCi/g	09/04/13 14:28	09/25/13 03:57	1

Client Sample ID: L050165TES00

Lab Sample ID: 160-3571-24

Date Collected: 08/28/13 11:05

Matrix: Solid

Date Received: 08/29/13 18:38

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		0.169	0.205		0.107	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Bismuth 212	1.80		0.494	0.528		0.400	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Bismuth 214	1.09		0.102	0.152		0.0514	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Lead 212	1.14		0.0797	0.168		0.0667	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Lead 214	1.13		0.0953	0.152		0.0698	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Potassium 40	19.0		1.21	2.29		0.324	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Protactinium 231	-0.658	U	0.780	0.784		1.28	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Radium 226	1.09		0.102	0.152	1.00	0.0514	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Thorium 232	1.15		0.169	0.205		0.107	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Thorium 234	1.37		0.706	0.720		0.920	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Uranium 235	0.0417	U	0.0925	0.0926		0.244	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Americium 241	-0.00888	U	0.0648	0.0648		0.109	pCi/g	09/04/13 14:28	09/25/13 03:57	1
Protactinium 234m	4.94	U	2.65	2.70		4.97	pCi/g	09/04/13 14:28	09/25/13 03:57	1

Client Sample ID: L050169TSS00

Lab Sample ID: 160-3571-25

Date Collected: 08/28/13 13:10

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.243		0.0853	0.0888		0.0851	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Bismuth 212	0.528		0.184	0.192		0.118	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Bismuth 214	0.382		0.0667	0.0776		0.0391	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Lead 212	0.248		0.0377	0.0495		0.0358	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Lead 214	0.440		0.0588	0.0745		0.0428	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Potassium 40	6.74		0.757	1.02		0.157	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Protactinium 231	0.172	U	0.293	0.294		0.634	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Radium 226	0.382		0.0667	0.0776	1.00	0.0391	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Thorium 232	0.243		0.0853	0.0888		0.0851	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Thorium 234	0.330	U	0.219	0.222		0.637	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Uranium 235	0.0709	U	0.0892	0.0895		0.148	pCi/g	09/04/13 14:28	09/25/13 08:40	1
Americium 241	-0.00600	U	0.0472	0.0472		0.0806	pCi/g	09/04/13 14:28	09/25/13 08:40	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050169TSS00

Lab Sample ID: 160-3571-25

Date Collected: 08/28/13 13:10

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.583	U	1.74	1.74		4.00	pCi/g	09/04/13 14:28	09/25/13 08:40	1

Client Sample ID: L050170TRS00

Lab Sample ID: 160-3571-26

Date Collected: 08/28/13 13:30

Matrix: Solid

Date Received: 08/29/13 18:38

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	0.267		0.0529	0.0595		0.0202	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Bismuth 212	0.495		0.154	0.163		0.107	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Bismuth 214	0.291		0.0448	0.0541		0.0341	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Lead 212	0.203		0.0270	0.0377		0.0265	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Lead 214	0.346		0.0381	0.0524		0.0322	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Potassium 40	5.81		0.534	0.799		0.241	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Protactinium 231	0.0448	U	0.0462	0.0464		0.509	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Radium 226	0.291		0.0448	0.0541	1.00	0.0341	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Thorium 232	0.267		0.0529	0.0595		0.0202	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Thorium 234	0.339	U	0.135	0.140		0.438	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Uranium 235	0.0537	U	0.0615	0.0617		0.114	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Americium 241	-0.0117	U	0.0297	0.0297		0.0499	pCi/g	09/04/13 14:28	09/25/13 08:38	1
Protactinium 234m	-0.00934	U	1.29	1.29		2.40	pCi/g	09/04/13 14:28	09/25/13 08:38	1

Client Sample ID: L050171TRS00

Lab Sample ID: 160-3571-27

Date Collected: 08/28/13 11:00

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.26		0.162	0.207		0.117	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Bismuth 212	1.82		0.444	0.482		0.354	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Bismuth 214	1.16		0.119	0.169		0.0813	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Lead 212	1.09		0.0830	0.164		0.0848	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Lead 214	1.23		0.118	0.174		0.0897	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Potassium 40	21.8		1.31	2.59		0.482	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Protactinium 231	0.362	U	0.249	0.252		1.32	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Radium 226	1.16		0.119	0.169	1.00	0.0813	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Thorium 232	1.26		0.162	0.207		0.117	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Thorium 234	1.09		0.779	0.787		1.00	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Uranium 235	0.106	U	0.136	0.136		0.162	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Americium 241	-0.000167	U	0.0623	0.0623		0.105	pCi/g	09/04/13 14:28	09/25/13 08:39	1
Protactinium 234m	0.000	U	1.90	1.90		6.39	pCi/g	09/04/13 14:28	09/25/13 08:39	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3571-2

Client Sample ID: L050172TES00

Lab Sample ID: 160-3571-28

Date Collected: 08/28/13 11:15

Matrix: Solid

Date Received: 08/29/13 18:38

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	1.11		0.167	0.202		0.165	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Bismuth 212	1.45		0.585	0.605		0.534	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Bismuth 214	1.34		0.163	0.215		0.104	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Lead 212	1.13		0.0965	0.175		0.0897	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Lead 214	1.32		0.130	0.189		0.0988	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Potassium 40	22.5		1.64	2.83		0.221	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Protactinium 231	-0.784	U	1.06	1.06		1.75	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Radium 226	1.34		0.163	0.215	1.00	0.104	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Thorium 232	1.11		0.167	0.202		0.165	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Thorium 234	1.60		0.852	0.868		1.11	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Uranium 235	0.152	U	0.174	0.175		0.302	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Americium 241	-0.00837	U	0.0759	0.0759		0.128	pCi/g	09/04/13 14:28	09/25/13 09:36	1
Protactinium 234m	3.67	U	5.16	5.17		8.44	pCi/g	09/04/13 14:28	09/25/13 09:36	1

QC Sample Results

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

TestAmerica Job ID: 160-3571-2

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

Lab Sample ID: MB 160-70595/1-A

Matrix: Solid

Analysis Batch: 74710

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 70595

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.01255	U	0.0199	0.0199		0.0339	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Bismuth 212	0.0000	U	0.0289	0.0289		0.160	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Bismuth 214	-0.007046	U	0.0426	0.0426		0.0371	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Lead 212	0.004529	U	0.0124	0.0124		0.0241	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Lead 214	-0.004110	U	0.0240	0.0240		0.0306	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Potassium 40	-0.1053	U	4.21	4.21		0.210	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Protactinium 231	-0.0005165	U	0.00202	0.00202		0.370	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Radium 226	-0.007046	U	0.0426	0.0426	1.00	0.0371	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Thorium 232	0.01255	U	0.0199	0.0199		0.0339	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Thorium 234	-0.05987	U	0.262	0.262		0.250	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Uranium 235	0.006726	U	0.0348	0.0348		0.0591	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Americium 241	0.007224	U	0.0122	0.0122		0.0206	pCi/g	09/04/13 12:59	09/25/13 22:56	1
Protactinium 234m	0.01125	U	0.592	0.592		1.29	pCi/g	09/04/13 12:59	09/25/13 22:56	1

Lab Sample ID: LCS 160-70595/2-A

Matrix: Solid

Analysis Batch: 74703

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 70595

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	97.7	96.22		10.0		0.556	pCi/g	98	87 - 116
Cesium 137	31.6	31.68		3.33		0.168	pCi/g	100	87 - 120
Cobalt 60	24.5	24.76		2.51		0.101	pCi/g	101	87 - 115

Lab Sample ID: 160-3571-20 DU

Matrix: Solid

Analysis Batch: 74744

Client Sample ID: L050162TRS00

Prep Type: Total/NA

Prep Batch: 70595

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	1.13		1.163		0.206		0.146	pCi/g	0.09	1
Bismuth 212	1.32		1.570		0.484		0.334	pCi/g	0.27	1
Bismuth 214	0.969		1.019		0.163		0.0807	pCi/g	0.16	1
Lead 212	1.07		1.105		0.167		0.0701	pCi/g	0.10	1
Lead 214	1.22		1.173		0.166		0.0773	pCi/g	0.15	1
Potassium 40	19.8		18.52		2.37		0.487	pCi/g	0.27	1
Protactinium 231	0.281	U	0.3655	U	0.277		1.52	pCi/g	0.17	1
Radium 226	0.969		1.019		0.163	1.00	0.0807	pCi/g	0.16	1
Thorium 232	1.13		1.163		0.206		0.146	pCi/g	0.09	1
Thorium 234	1.19		1.414		0.473		1.14	pCi/g	0.26	1
Uranium 235	0.153	U	0.1215	U	0.160		0.295	pCi/g	0.11	1
Americium 241	-0.0213	U	0.02173	U	0.0718		0.120	pCi/g	0.21	1
Protactinium 234m	4.85	U	2.146	U	3.99		6.77	pCi/g	0.34	1

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-3571-2

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

Lab Sample ID: MB 160-70612/1-A

Matrix: Solid

Analysis Batch: 74703

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 70612

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.004445	U	0.00986	0.00987		0.0952	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Bismuth 212	-0.06747	U	0.186	0.186		0.332	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Bismuth 214	0.02140	U	0.0234	0.0235		0.0291	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Lead 212	-0.001932	U	0.0215	0.0215		0.0280	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Lead 214	-0.007306	U	0.292	0.292		0.0302	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Potassium 40	0.0000	U	0.0473	0.0473		0.174	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Protactinium 231	0.08279	U	0.146	0.146		0.339	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Radium 226	0.02140	U	0.0234	0.0235	1.00	0.0291	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Thorium 232	0.004445	U	0.00986	0.00987		0.0952	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Thorium 234	0.03776	U	0.0572	0.0573		0.285	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Uranium 235	0.01283	U	0.0284	0.0284		0.0677	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Americium 241	0.004500	U	0.0117	0.0117		0.0208	pCi/g	09/04/13 14:28	09/25/13 03:49	1
Protactinium 234m	0.5413	U	0.809	0.811		1.56	pCi/g	09/04/13 14:28	09/25/13 03:49	1

Lab Sample ID: LCS 160-70612/2-A

Matrix: Solid

Analysis Batch: 74707

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 70612

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	97.7	92.60		9.63		0.458	pCi/g	95	87 - 116
Cesium 137	31.6	30.41		3.18		0.131	pCi/g	96	87 - 120
Cobalt 60	24.5	22.88		2.31		0.0618	pCi/g	93	87 - 115

Lab Sample ID: 160-3570-A-8-G DU

Matrix: Solid

Analysis Batch: 74707

Client Sample ID: Duplicate

Prep Type: Total/NA

Prep Batch: 70612

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	0.851		0.7913		0.130		0.103	pCi/g	0.21	1
Bismuth 212	1.21		1.043		0.334		0.289	pCi/g	0.23	1
Bismuth 214	0.752		0.8573		0.125		0.0571	pCi/g	0.41	1
Lead 212	0.750		0.7399		0.112		0.0487	pCi/g	0.05	1
Lead 214	0.938		0.8971		0.124		0.0540	pCi/g	0.16	1
Potassium 40	13.5		15.53		1.86		0.270	pCi/g	0.55	1
Protactinium 231	0.196	U	0.3272	U	0.226		0.963	pCi/g	0.22	1
Radium 226	0.752		0.8573		0.125	1.00	0.0571	pCi/g	0.41	1
Thorium 232	0.851		0.7913		0.130		0.103	pCi/g	0.21	1
Thorium 234	2.02		2.480		0.720		0.796	pCi/g	0.28	1
Uranium 235	0.433		0.4744		0.150		0.162	pCi/g	0.13	1
Americium 241	-0.00073	U	-0.00114	U	0.0607		0.102	pCi/g	0	1
Protactinium 234m	1.99	U	0.4194	U	1.11		5.08	pCi/g	0.41	1

TestAmerica St. Louis

QC Association Summary

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

TestAmerica Job ID: 160-3571-2

Rad

Leach Batch: 69978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3570-A-8-G DU	Duplicate	Total/NA	Solid	Dry and Grind	

Leach Batch: 69988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3571-1	L050119TSQ00	Total/NA	Solid	Dry and Grind	
160-3571-2	L050119TSS00	Total/NA	Solid	Dry and Grind	
160-3571-3	L050120TRS00	Total/NA	Solid	Dry and Grind	
160-3571-4	L050121TSS00	Total/NA	Solid	Dry and Grind	
160-3571-5	L050122TRS00	Total/NA	Solid	Dry and Grind	
160-3571-6	L050125TRS00	Total/NA	Solid	Dry and Grind	
160-3571-7	L050127TRS00	Total/NA	Solid	Dry and Grind	
160-3571-8	L050128TES00	Total/NA	Solid	Dry and Grind	
160-3571-9	L050131TRS00	Total/NA	Solid	Dry and Grind	
160-3571-10	L050132TES00	Total/NA	Solid	Dry and Grind	
160-3571-11	L050133TRS00	Total/NA	Solid	Dry and Grind	
160-3571-12	L050139TES00	Total/NA	Solid	Dry and Grind	
160-3571-13	L050140TRS00	Total/NA	Solid	Dry and Grind	
160-3571-14	L050148TRS00	Total/NA	Solid	Dry and Grind	
160-3571-15	L050154TRS00	Total/NA	Solid	Dry and Grind	
160-3571-16	L050155TES00	Total/NA	Solid	Dry and Grind	
160-3571-17	L050156TRS00	Total/NA	Solid	Dry and Grind	
160-3571-18	L050157TES00	Total/NA	Solid	Dry and Grind	
160-3571-19	L050162TRQ00	Total/NA	Solid	Dry and Grind	
160-3571-20	L050162TRS00	Total/NA	Solid	Dry and Grind	
160-3571-20 DU	L050162TRS00	Total/NA	Solid	Dry and Grind	
160-3571-21	L050163TES00	Total/NA	Solid	Dry and Grind	
160-3571-22	L050164TRS00	Total/NA	Solid	Dry and Grind	
160-3571-23	L050165TEQ00	Total/NA	Solid	Dry and Grind	
160-3571-24	L050165TES00	Total/NA	Solid	Dry and Grind	
160-3571-25	L050169TSS00	Total/NA	Solid	Dry and Grind	
160-3571-26	L050170TRS00	Total/NA	Solid	Dry and Grind	
160-3571-27	L050171TRS00	Total/NA	Solid	Dry and Grind	
160-3571-28	L050172TES00	Total/NA	Solid	Dry and Grind	

Prep Batch: 70595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3571-1	L050119TSQ00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-2	L050119TSS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-3	L050120TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-4	L050121TSS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-5	L050122TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-6	L050125TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-7	L050127TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-8	L050128TES00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-9	L050131TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-10	L050132TES00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-11	L050133TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-12	L050139TES00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-13	L050140TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-14	L050148TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-15	L050154TRS00	Total/NA	Solid	Fill_Geo-21	69988

TestAmerica St. Louis

QC Association Summary

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

TestAmerica Job ID: 160-3571-2

Rad (Continued)

Prep Batch: 70595 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3571-16	L050155TES00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-17	L050156TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-18	L050157TES00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-19	L050162TRQ00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-20	L050162TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-20 DU	L050162TRS00	Total/NA	Solid	Fill_Geo-21	69988
LCS 160-70595/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
MB 160-70595/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	

Prep Batch: 70612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3570-A-8-G DU	Duplicate	Total/NA	Solid	Fill_Geo-21	69978
160-3571-21	L050163TES00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-22	L050164TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-23	L050165TEQ00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-24	L050165TES00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-25	L050169TSS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-26	L050170TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-27	L050171TRS00	Total/NA	Solid	Fill_Geo-21	69988
160-3571-28	L050172TES00	Total/NA	Solid	Fill_Geo-21	69988
LCS 160-70612/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
MB 160-70612/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	