

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: 160-3891-1

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:
10/2/2013 5:18:55 PM

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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: 160-3891-1

Job ID: 160-3891-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

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

Report Number: 160-3891-1

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 09/25/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 20.0 C.

TECHNETIUM-99 (ICPMS)

Samples L100901BES00 (160-3891-1), L100902BES00 (160-3891-2), L100903BES00 (160-3891-3), L100904BEQ00 (160-3891-4), L100904BES00 (160-3891-5), L100905BES00 (160-3891-6), L100906BES00 (160-3891-7), L100907BES00 (160-3891-8), L100908BUB00 (160-3891-9), L100909BUB00 (160-3891-10) and L100910BUB00 (160-3891-11) were analyzed for Technetium-99 (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 09/26/2013 and analyzed on 09/27/2013.

Preparation Batches 75052 & 75059, Analytical Batch 75298:

The internal standard was outside QC limits in the CCB. All analytes and tracer recoveries were within acceptable limits, showing that there was no bias. Original results will be reported. (CCB 160-75298/81)

Preparation Batch 75052 & 75059, Analytical Batch 75299:

Case Narrative

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

TestAmerica Job ID: 160-3891-1

Job ID: 160-3891-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

The internal standard was outside QC limits in the CCB. All analytes and tracer recoveries were within acceptable limits, showing that there was no bias. Original results will be reported. (CCB 160-75299/81)

No difficulties were encountered during the Tc-99 analysis. All quality control parameters were within the acceptance limits.

PERCENT SOLIDS

Samples L100901BES00 (160-3891-1), L100902BES00 (160-3891-2), L100903BES00 (160-3891-3), L100904BEQ00 (160-3891-4), L100904BES00 (160-3891-5), L100905BES00 (160-3891-6), L100906BES00 (160-3891-7), L100907BES00 (160-3891-8), L100908BUB00 (160-3891-9), L100909BUB00 (160-3891-10) and L100910BUB00 (160-3891-11) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 09/26/2013.

No difficulties were encountered during the % solids analysis. All quality control parameters were within the acceptance limits.

CESIUM-137 & OTHER GAMMA EMITTERS (GS)

Samples L100901BES00 (160-3891-1), L100902BES00 (160-3891-2), L100903BES00 (160-3891-3), L100904BEQ00 (160-3891-4), L100904BES00 (160-3891-5), L100905BES00 (160-3891-6), L100906BES00 (160-3891-7), L100907BES00 (160-3891-8), L100908BUB00 (160-3891-9), L100909BUB00 (160-3891-10) and L100910BUB00 (160-3891-11) were analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE GA-01-R. The samples were leached on 09/26/2013, prepared on 09/30/2013 and analyzed on 09/30/2013 and 10/01/2013.

Preparation Batch 75266:

The blank results for bismuth-214/radium-226 and lead-214 were above the MDC. The blank matrix is clean sodium sulfate that contains low levels of naturally occurring isotopes. The lab does not consider this a reflection of contamination. The results are reported with this narrative. (160-3891-11 DU), (LCS 160-75266/2-A), (MB 160-75266/1-A), L100901BES00 (160-3891-1), L100902BES00 (160-3891-2), L100903BES00 (160-3891-3), L100904BEQ00 (160-3891-4), L100904BES00 (160-3891-5), L100905BES00 (160-3891-6), L100906BES00 (160-3891-7), L100907BES00 (160-3891-8), L100908BUB00 (160-3891-9), L100909BUB00 (160-3891-10), L100910BUB00 (160-3891-11)

The reporting limit for thorium-234 analyzed by gamma spectroscopy was not met due to the reduced sample size. There was not enough sample to fill the client requested marn soil geometry. The tuna can geometry was used instead. The data is reported with the MDC achieved. L100902BES00 (160-3891-2)

Radium 226 was detected in method blank MB 160-75266/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate (see note above).

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

Hematite Decommissioning Project

Procedure HDP-PR-QA-006, Chain of Custody

Revision: 3

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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-092513-01		Page		1/1		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	
Contact Person:																					Laboratory Address:	
Phone Number:																					Phone No.	
Sampler Name																					Laboratory Contact Person:	
																				Turn Around Time		
																				Rush (7 days)		
																				Remarks		
Sample ID	Date	Time	Matrix																			
L100901BES00	9/19/2013	13:20	S	C	X		X	X										1	FSS	10-09 SYS		
L100902BES00	9/19/2013	13:25	S	C	X		X	X										1				
L100903BES00	9/19/2013	13:30	S	C	X		X	X										1				
L100904BEQ00	9/19/2013	14:25	S	C	X		X	X										1				
L100904BES00	9/19/2013	14:20	S	C	X		X	X										1				
L100905BES00	9/19/2013	14:30	S	C	X		X	X										1				
L100906BES00	9/19/2013	15:00	S	C	X		X	X										1				
L100907BES00	9/19/2013	15:05	S	C	X		X	X										1	FSS	10-09 SYS		
L100908BUB00	9/19/2013	15:55	S	C	X		X	X										1	FSS	10-09 Bias		
L100909BUB00	9/19/2013	16:00	S	C	X		X	X										1				
L100910BUB00	9/23/2013	15:40	S	C	X		X	X										1	FSS	10-09 Bias		
Relinquished by:				Date/Time		Received by:				Date/Time		Total		Cooler Temperature:								
Company Name:				9-25-13 1630		Company Name:				9-25 1630		11		Ambient								
Received by:				Date/Time		Relinquished by:				Date/Time		Cooler ID:		Shipper and Number:								
Company Name:						Company Name:				9-25 1830		0924-01										
Relinquished by:				Date/Time		Received by:				Date/Time		Comments: Please re-analyze samples after 21-day ingrowth period.		Verified By:								
Company Name:						Company Name:				9-25-13 1830												

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Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-3891-1

Login Number: 3891

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: 160-3891-1

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: 160-3891-1

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS), Tc-99	SW846	TAL SL
Moisture	Percent Moisture	EPA	TAL SL
6020A	Metals (ICP/MS), Tc-99 in Activity	SW846	TAL SL
GA-01-R	Cesium-137 & Other Gamma Emitters (GS)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

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: 160-3891-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-3891-1	L100901BES00	Solid	09/19/13 13:20	09/25/13 18:30
160-3891-2	L100902BES00	Solid	09/19/13 13:25	09/25/13 18:30
160-3891-3	L100903BES00	Solid	09/19/13 13:30	09/25/13 18:30
160-3891-4	L100904BEQ00	Solid	09/19/13 14:25	09/25/13 18:30
160-3891-5	L100904BES00	Solid	09/19/13 14:20	09/25/13 18:30
160-3891-6	L100905BES00	Solid	09/19/13 14:30	09/25/13 18:30
160-3891-7	L100906BES00	Solid	09/19/13 15:00	09/25/13 18:30
160-3891-8	L100907BES00	Solid	09/19/13 15:05	09/25/13 18:30
160-3891-9	L100908BUB00	Solid	09/19/13 15:55	09/25/13 18:30
160-3891-10	L100909BUB00	Solid	09/19/13 16:00	09/25/13 18:30
160-3891-11	L100910BUB00	Solid	09/23/13 15:40	09/25/13 18:30

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100901BES00

Lab Sample ID: 160-3891-1

Date Collected: 09/19/13 13:20

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 86.6

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000061	0.000018	mg/Kg	☆	09/26/13 14:54	09/27/13 20:04	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.0739	U	0.0467	0.0500	1.23	0.210	pCi/g	09/26/13 14:54	09/27/13 20:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	94		30 - 110					09/26/13 14:54	09/27/13 20:04	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.24		0.163	0.207		0.101	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Americium 241	0.00520	U	0.0580	0.0580		0.0983	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Bismuth 212	1.23		0.446	0.464		0.435	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Bismuth 214	0.799		0.110	0.137		0.0745	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Lead 212	1.12		0.0845	0.167		0.0738	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Lead 214	0.946		0.0926	0.135		0.0785	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Potassium 40	18.8		1.35	2.36		0.179	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Protactinium 231	0.412	U	0.243	0.247		1.38	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Radium 226	0.799		0.110	0.137	1.00	0.0745	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Thorium 234	1.89		0.678	0.706	1.00	0.878	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Uranium 235	0.191	U	0.148	0.149		0.215	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Protactinium 234m	3.94	U	4.25	4.27		6.89	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Thorium 232	1.24		0.163	0.207		0.101	pCi/g	09/30/13 10:22	09/30/13 22:07	1
Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.386		0.0595	0.0717		0.0439	pCi/g	09/30/13 10:22	09/30/13 22:07	1

Client Sample ID: L100902BES00

Lab Sample ID: 160-3891-2

Date Collected: 09/19/13 13:25

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 83.2

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000064	0.000019	mg/Kg	☆	09/26/13 14:54	09/27/13 20:23	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.0250	U	0.0558	0.0600	1.29	0.221	pCi/g	09/26/13 14:54	09/27/13 20:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	93		30 - 110					09/26/13 14:54	09/27/13 20:23	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100902BES00

Lab Sample ID: 160-3891-2

Date Collected: 09/19/13 13:25

Matrix: Solid

Date Received: 09/25/13 18:30

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.835		0.297	0.309		0.388	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Americium 241	-0.0417	U	50.7	50.7		0.314	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Bismuth 212	0.409	U	0.887	0.888		1.55	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Bismuth 214	0.986		0.266	0.285		0.230	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Lead 212	1.26		0.175	0.239		0.128	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Lead 214	0.992		0.205	0.229		0.225	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Potassium 40	19.1		2.75	3.38		1.12	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Protactinium 231	0.429	U	0.410	0.412		3.88	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Radium 226	0.986		0.266	0.285	1.00	0.230	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Thorium 234	1.12	U	0.780	0.789	1.00	2.31	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Uranium 235	0.0795	U	0.116	0.116		0.660	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Protactinium 234m	4.00	U	7.07	7.08		14.7	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Thorium 232	0.835		0.297	0.309		0.388	pCi/g	09/30/13 10:22	09/30/13 22:06	1
Other Detected										
Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Tl-208	0.435		0.110	0.119		0.0784	pCi/g	09/30/13 10:22	09/30/13 22:06	1

Client Sample ID: L100903BES00

Lab Sample ID: 160-3891-3

Date Collected: 09/19/13 13:30

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 80.7

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000064	0.000019	mg/Kg	☼	09/26/13 14:54	09/27/13 20:27	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Technetium 99	0.0207	U	0.0166	0.0173	1.29	0.220	pCi/g	09/26/13 14:54	09/27/13 20:27	1
Carrier										
	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	96		30 - 110					09/26/13 14:54	09/27/13 20:27	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.18		0.152	0.194		0.121	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Americium 241	0.0137	U	0.0537	0.0538		0.0909	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Bismuth 212	1.25		0.427	0.446		0.410	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Bismuth 214	0.875		0.104	0.138		0.0653	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Lead 212	1.10		0.0762	0.162		0.0560	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Lead 214	0.919		0.0900	0.131		0.0918	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Potassium 40	18.8		1.25	2.29		0.262	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Protactinium 231	-0.722	U	0.785	0.789		1.28	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Radium 226	0.875		0.104	0.138	1.00	0.0653	pCi/g	09/30/13 10:22	09/30/13 22:11	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100903BES00

Lab Sample ID: 160-3891-3

Date Collected: 09/19/13 13:30

Matrix: Solid

Date Received: 09/25/13 18:30

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium 234	1.12		0.322	0.343	1.00	0.827	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Uranium 235	0.0941	U	0.131	0.131		0.231	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Protactinium 234m	0.448	U	3.40	3.40		6.03	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Thorium 232	1.18		0.152	0.194		0.121	pCi/g	09/30/13 10:22	09/30/13 22:11	1
Other Detected										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.334		0.0497	0.0606		0.0356	pCi/g	09/30/13 10:22	09/30/13 22:11	1

Client Sample ID: L100904BEQ00

Lab Sample ID: 160-3891-4

Date Collected: 09/19/13 14:25

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 82.2

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000064	0.000019	mg/Kg	☼	09/26/13 14:54	09/27/13 20:31	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.0159	U	0.00846	0.00909	1.29	0.220	pCi/g	09/26/13 14:54	09/27/13 20:31	1
Carrier										
Re	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
	94		30 - 110					09/26/13 14:54	09/27/13 20:31	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.18		0.136	0.182		0.0909	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Americium 241	0.00294	U	0.0739	0.0739		0.125	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Bismuth 212	1.43		0.473	0.495		0.427	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Bismuth 214	0.805		0.103	0.133		0.0730	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Lead 212	1.03		0.0807	0.156		0.0703	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Lead 214	0.953		0.102	0.142		0.0854	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Potassium 40	18.4		1.31	2.29		0.280	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Protactinium 231	0.682	U	0.285	0.295		1.24	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Radium 226	0.805		0.103	0.133	1.00	0.0730	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Thorium 234	1.41		0.770	0.784	1.00	0.977	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Uranium 235	0.0989	U	0.167	0.167		0.278	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Protactinium 234m	1.96	U	3.23	3.23		5.75	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Thorium 232	1.18		0.136	0.182		0.0909	pCi/g	09/30/13 10:22	09/30/13 22:12	1
Other Detected										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.366		0.0522	0.0645		0.0380	pCi/g	09/30/13 10:22	09/30/13 22:12	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100904BES00

Lab Sample ID: 160-3891-5

Date Collected: 09/19/13 14:20

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 82.8

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000066	0.000020	mg/Kg	☼	09/26/13 14:54	09/27/13 20:34	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.00796	U	-0.0320	0.0350	1.33	0.227	pCi/g	09/26/13 14:54	09/27/13 20:34	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	91		30 - 110	09/26/13 14:54	09/27/13 20:34	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.08		0.118	0.162		0.0916	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Americium 241	-0.0162	U	0.0647	0.0648		0.108	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Bismuth 212	1.63		0.520	0.547		0.445	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Bismuth 214	0.935		0.104	0.143		0.0696	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Lead 212	1.22		0.0751	0.174		0.0528	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Lead 214	1.07		0.0955	0.147		0.0748	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Potassium 40	19.1		1.22	2.30		0.465	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Protactinium 231	-0.621	U	0.723	0.726		1.19	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Radium 226	0.935		0.104	0.143	1.00	0.0696	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Thorium 234	1.42		0.685	0.701	1.00	0.888	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Uranium 235	0.112	U	0.142	0.143		0.228	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Protactinium 234m	-0.368	U	14.7	14.7		5.30	pCi/g	09/30/13 10:22	09/30/13 22:13	1
Thorium 232	1.08		0.118	0.162		0.0916	pCi/g	09/30/13 10:22	09/30/13 22:13	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.332		0.0509	0.0614		0.0412	pCi/g	09/30/13 10:22	09/30/13 22:13	1

Client Sample ID: L100905BES00

Lab Sample ID: 160-3891-6

Date Collected: 09/19/13 14:30

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 81.4

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000065	0.000020	mg/Kg	☼	09/26/13 14:54	09/27/13 20:38	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.0206	U	-0.0351	0.0373	1.31	0.224	pCi/g	09/26/13 14:54	09/27/13 20:38	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	94		30 - 110	09/26/13 14:54	09/27/13 20:38	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100905BES00

Lab Sample ID: 160-3891-6

Date Collected: 09/19/13 14:30

Matrix: Solid

Date Received: 09/25/13 18:30

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.03		0.143	0.177		0.128	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Americium 241	-0.0118	U	0.0610	0.0610		0.102	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Bismuth 212	1.79		0.457	0.494		0.358	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Bismuth 214	1.08		0.0957	0.148		0.0531	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Lead 212	0.964		0.0737	0.145		0.0788	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Lead 214	1.18		0.0913	0.152		0.0832	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Potassium 40	19.4		1.15	2.29		0.442	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Protactinium 231	0.336	U	0.327	0.329		0.982	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Radium 226	1.08		0.0957	0.148	1.00	0.0531	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Thorium 234	0.739	U	0.310	0.320	1.00	0.814	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Uranium 235	0.00768	U	0.140	0.140		0.228	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Protactinium 234m	4.53		2.47	2.51		4.36	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Thorium 232	1.03		0.143	0.177		0.128	pCi/g	09/30/13 10:22	09/30/13 22:14	1
Other Detected										
Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Tl-208	0.344		0.0489	0.0606		0.0374	pCi/g	09/30/13 10:22	09/30/13 22:14	1

Client Sample ID: L100906BES00

Lab Sample ID: 160-3891-7

Date Collected: 09/19/13 15:00

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 80.0

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000065	0.000020	mg/Kg	☼	09/26/13 14:54	09/27/13 20:42	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Technetium 99	0.144	U	0.0297	0.0337	1.30	0.223	pCi/g	09/26/13 14:54	09/27/13 20:42	1
Carrier										
	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	96		30 - 110					09/26/13 14:54	09/27/13 20:42	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.04		0.187	0.215		0.119	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Americium 241	-0.0215	U	0.0677	0.0677		0.113	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Bismuth 212	1.73		0.477	0.510		0.341	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Bismuth 214	0.878		0.125	0.154		0.0828	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Lead 212	1.07		0.0842	0.162		0.0705	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Lead 214	0.925		0.102	0.141		0.0945	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Potassium 40	17.5		1.35	2.24		0.191	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Protactinium 231	0.499	U	0.270	0.275		1.37	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Radium 226	0.878		0.125	0.154	1.00	0.0828	pCi/g	09/30/13 10:22	10/01/13 01:33	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100906BES00

Lab Sample ID: 160-3891-7

Date Collected: 09/19/13 15:00

Matrix: Solid

Date Received: 09/25/13 18:30

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium 234	0.676	U	0.367	0.373	1.00	1.13	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Uranium 235	0.104	U	0.164	0.164		0.278	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Protactinium 234m	1.82	U	3.45	3.46		5.90	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Thorium 232	1.04		0.187	0.215		0.119	pCi/g	09/30/13 10:22	10/01/13 01:33	1
Other Detected										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.383		0.0625	0.0741		0.0468	pCi/g	09/30/13 10:22	10/01/13 01:33	1

Client Sample ID: L100907BES00

Lab Sample ID: 160-3891-8

Date Collected: 09/19/13 15:05

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 83.3

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000065	0.000019	mg/Kg	☼	09/26/13 14:54	09/27/13 20:46	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.106	U	0.0377	0.0417	1.29	0.221	pCi/g	09/26/13 14:54	09/27/13 20:46	1
Carrier										
Re	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	93		30 - 110					09/26/13 14:54	09/27/13 20:46	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.06		0.122	0.163		0.121	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Americium 241	-0.00690	U	0.276	0.276		0.110	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Bismuth 212	1.39		0.460	0.482		0.405	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Bismuth 214	0.793		0.0942	0.125		0.0664	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Lead 212	1.10		0.0780	0.162		0.0637	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Lead 214	0.893		0.0785	0.122		0.0756	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Potassium 40	19.3		1.29	2.36		0.363	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Protactinium 231	0.533	U	0.235	0.242		1.23	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Radium 226	0.793		0.0942	0.125	1.00	0.0664	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Thorium 234	0.920		0.308	0.323	1.00	0.769	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Uranium 235	0.132	U	0.140	0.141		0.231	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Protactinium 234m	-0.199	U	3.40	3.40		6.08	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Thorium 232	1.06		0.122	0.163		0.121	pCi/g	09/30/13 10:22	10/01/13 01:34	1
Other Detected										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.310		0.0474	0.0573		0.0386	pCi/g	09/30/13 10:22	10/01/13 01:34	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100908BUB00

Lab Sample ID: 160-3891-9

Date Collected: 09/19/13 15:55

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 83.5

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000065	0.000020	mg/Kg	☼	09/26/13 14:54	09/27/13 20:50	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.0179	U	-0.0174	0.0191	1.31	0.224	pCi/g	09/26/13 14:54	09/27/13 20:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	92		30 - 110					09/26/13 14:54	09/27/13 20:50	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.05		0.139	0.175		0.109	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Americium 241	0.00114	U	0.0702	0.0702		0.119	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Bismuth 212	1.13		0.422	0.438		0.556	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Bismuth 214	0.851		0.118	0.147		0.0852	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Lead 212	1.02		0.0834	0.157		0.0728	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Lead 214	0.926		0.104	0.141		0.0954	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Potassium 40	17.9		1.34	2.27		0.303	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Protactinium 231	0.438	U	0.217	0.222		1.30	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Radium 226	0.851		0.118	0.147	1.00	0.0852	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Thorium 234	1.47		0.782	0.797	1.00	0.969	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Uranium 235	0.163	U	0.177	0.178		0.222	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Protactinium 234m	-0.0649	U	3.58	3.58		6.49	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Thorium 232	1.05		0.139	0.175		0.109	pCi/g	09/30/13 10:22	10/01/13 01:35	1
Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.359		0.0616	0.0720		0.0485	pCi/g	09/30/13 10:22	10/01/13 01:35	1

Client Sample ID: L100909BUB00

Lab Sample ID: 160-3891-10

Date Collected: 09/19/13 16:00

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 81.0

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000067	0.000020	mg/Kg	☼	09/26/13 14:54	09/27/13 20:54	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.0236	U	-0.00733	0.00822	1.34	0.229	pCi/g	09/26/13 14:54	09/27/13 20:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	93		30 - 110					09/26/13 14:54	09/27/13 20:54	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100909BUB00

Lab Sample ID: 160-3891-10

Date Collected: 09/19/13 16:00

Matrix: Solid

Date Received: 09/25/13 18:30

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.20		0.162	0.203		0.111	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Americium 241	-0.0101	U	0.0733	0.0733		0.123	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Bismuth 212	1.13		0.492	0.505		0.466	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Bismuth 214	1.04		0.133	0.172		0.0854	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Lead 212	1.22		0.0910	0.182		0.0738	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Lead 214	0.979		0.118	0.156		0.115	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Potassium 40	19.8		1.54	2.54		0.499	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Protactinium 231	-0.759	U	0.928	0.932		1.53	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Radium 226	1.04		0.133	0.172	1.00	0.0854	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Thorium 234	1.56		0.790	0.806	1.00	1.00	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Uranium 235	0.139	U	0.155	0.155		0.269	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Protactinium 234m	2.88	U	2.32	2.34		8.19	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Thorium 232	1.20		0.162	0.203		0.111	pCi/g	09/30/13 10:22	10/01/13 02:13	1
Other Detected										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.351		0.0516	0.0632		0.0353	pCi/g	09/30/13 10:22	10/01/13 02:13	1

Client Sample ID: L100910BUB00

Lab Sample ID: 160-3891-11

Date Collected: 09/23/13 15:40

Matrix: Solid

Date Received: 09/25/13 18:30

Percent Solids: 81.8

Method: 6020A - Metals (ICP/MS), Tc-99

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000070	0.000021	mg/Kg	☼	09/26/13 14:54	09/27/13 21:05	1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.0259	U	0.0825	0.0942	1.40	0.240	pCi/g	09/26/13 14:54	09/27/13 21:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	88		30 - 110					09/26/13 14:54	09/27/13 21:05	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.06		0.123	0.164		0.0704	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Americium 241	0.0440	U	0.0631	0.0633		0.104	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Bismuth 212	1.03		0.336	0.352		0.434	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Bismuth 214	0.823		0.0935	0.127		0.0692	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Lead 212	1.14		0.0734	0.165		0.0525	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Lead 214	0.964		0.0776	0.127		0.0691	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Potassium 40	18.5		1.16	2.22		0.379	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Protactinium 231	0.339	U	0.197	0.200		1.23	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Radium 226	0.823		0.0935	0.127	1.00	0.0692	pCi/g	09/30/13 10:22	10/01/13 02:15	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-3891-1

Client Sample ID: L100910BUB00

Lab Sample ID: 160-3891-11

Date Collected: 09/23/13 15:40

Matrix: Solid

Date Received: 09/25/13 18:30

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Thorium 234	1.15		0.319	0.341	1.00	0.797	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Uranium 235	0.173		0.138	0.139		0.170	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Protactinium 234m	0.405	U	2.38	2.38		4.39	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Thorium 232	1.06		0.123	0.164		0.0704	pCi/g	09/30/13 10:22	10/01/13 02:15	1
Other Detected										
			Count	Total						
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radionuclides	Result	Qualifier								
Tl-208	0.367		0.0490	0.0621		0.0360	pCi/g	09/30/13 10:22	10/01/13 02:15	1

QC Sample Results

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

TestAmerica Job ID: 160-3891-1

Method: 6020A - Metals (ICP/MS), Tc-99

Lab Sample ID: MB 160-75052/1-A

Matrix: Solid

Analysis Batch: 75298

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 75052

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000049	0.000015	mg/Kg		09/26/13 14:54	09/27/13 19:44	1

Lab Sample ID: LCS 160-75052/2-A

Matrix: Solid

Analysis Batch: 75298

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 75052

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	0.00238	0.00247		mg/Kg		104	80 - 120

Lab Sample ID: 160-3891-1 MS

Matrix: Solid

Analysis Batch: 75298

Client Sample ID: L100901BES00

Prep Type: Total/NA

Prep Batch: 75052

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	ND		0.00290	0.00284		mg/Kg	☼	98	75 - 125

Lab Sample ID: 160-3891-1 MSD

Matrix: Solid

Analysis Batch: 75298

Client Sample ID: L100901BES00

Prep Type: Total/NA

Prep Batch: 75052

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Technetium 99	ND		0.00291	0.00284		mg/Kg	☼	98	75 - 125	0	30

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Lab Sample ID: MB 160-75052/1-A

Matrix: Solid

Analysis Batch: 75299

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 75052

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.005416	U	-0.0430	0.0426	0.989	0.169	pCi/g	09/26/13 14:54	09/27/13 19:44	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	101		30 - 110	09/26/13 14:54	09/27/13 19:44	1

Lab Sample ID: LCS 160-75052/2-A

Matrix: Solid

Analysis Batch: 75299

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 75052

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	40.7	42.23		3.98	1.02	0.174	pCi/g	104	80 - 120

Carrier	LCS %Yield	LCS Qualifier	Limits
Re	98		30 - 110

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-3891-1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity (Continued)

Lab Sample ID: 160-3891-1 MS

Matrix: Solid

Analysis Batch: 75299

Client Sample ID: L100901BES00

Prep Type: Total/NA

Prep Batch: 75052

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	0.0739	U	49.6	48.67		4.87	1.24	0.212	pCi/g	98	75 - 125
Carrier											
	MS %Yield	MS Qualifier	Limits								
Re	93		30 - 110								

Lab Sample ID: 160-3891-1 MSD

Matrix: Solid

Analysis Batch: 75299

Client Sample ID: L100901BES00

Prep Type: Total/NA

Prep Batch: 75052

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Technetium 99	0.0739	U	49.8	48.65		5.22	1.24	0.213	pCi/g	98	75 - 125	0	1
Carrier													
	MSD %Yield	MSD Qualifier	Limits										
Re	93		30 - 110										

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-75266/1-A

Matrix: Solid

Analysis Batch: 75324

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 75266

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.02214	U	0.0289	0.0290		0.0952	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Americium 241	0.003101	U	0.0141	0.0141		0.0253	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Bismuth 212	0.04757	U	0.0630	0.0632		0.130	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Bismuth 214	0.06888		0.0389	0.0396		0.0392	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Lead 212	-0.008303	U	0.332	0.332		0.0434	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Lead 214	0.05394		0.0235	0.0242		0.0265	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Potassium 40	0.0000	U	0.0473	0.0473		0.512	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Protactinium 231	0.08496	U	0.219	0.219		0.391	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Radium 226	0.06888		0.0389	0.0396	1.00	0.0392	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Thorium 234	-0.01325	U	0.177	0.177	1.00	0.321	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Uranium 235	0.03041	U	0.0372	0.0373		0.0670	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Protactinium 234m	0.0000	U	0.424	0.424		3.73	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Thorium 232	0.02214	U	0.0289	0.0290		0.0952	pCi/g	09/30/13 10:22	09/30/13 21:11	1
Other Detected Radionuclides										
	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide	None						pCi/g	09/30/13 10:22	09/30/13 21:11	1

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-3891-1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS) (Continued)

Lab Sample ID: LCS 160-75266/2-A
Matrix: Solid
Analysis Batch: 75333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 75266

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	97.7	94.95		9.88		0.489	pCi/g	97	87 - 116
Cesium 137	31.6	31.42		3.29	0.200	0.128	pCi/g	99	87 - 120
Cobalt 60	24.5	23.71		2.39		0.0737	pCi/g	97	87 - 115

Lab Sample ID: 160-3891-11 DU
Matrix: Solid
Analysis Batch: 75491

Client Sample ID: L100910BUB00
Prep Type: Total/NA
Prep Batch: 75266

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	1.06		1.122		0.194		0.143	pCi/g	0.18	1
Americium 241	0.0440	U	0.04306	U	0.0690		0.114	pCi/g	0.01	1
Bismuth 212	1.03		1.655		0.590		0.477	pCi/g	0.67	1
Bismuth 214	0.823		0.9676		0.161		0.0678	pCi/g	0.50	1
Lead 212	1.14		1.098		0.169		0.0848	pCi/g	0.13	1
Lead 214	0.964		0.9808		0.146		0.100	pCi/g	0.06	1
Potassium 40	18.5		19.64		2.53		0.389	pCi/g	0.24	1
Protactinium 231	0.339	U	0.5126	U	0.261		1.38	pCi/g	0.38	1
Radium 226	0.823		0.9676		0.161	1.00	0.0678	pCi/g	0.50	1
Thorium 234	1.15		1.529		0.853	1.00	1.07	pCi/g	0.32	1
Uranium 235	0.173		0.1349	U	0.156		0.275	pCi/g	0.13	1
Protactinium 234m	0.405	U	0.8615	U	4.06		6.58	pCi/g	0.07	1
Thorium 232	1.06		1.122		0.194		0.143	pCi/g	0.18	1

QC Association Summary

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

TestAmerica Job ID: 160-3891-1

Metals

Prep Batch: 75052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3891-1	L100901BES00	Total/NA	Solid	None	
160-3891-1 MS	L100901BES00	Total/NA	Solid	None	
160-3891-1 MSD	L100901BES00	Total/NA	Solid	None	
160-3891-2	L100902BES00	Total/NA	Solid	None	
160-3891-3	L100903BES00	Total/NA	Solid	None	
160-3891-4	L100904BEQ00	Total/NA	Solid	None	
160-3891-5	L100904BES00	Total/NA	Solid	None	
160-3891-6	L100905BES00	Total/NA	Solid	None	
160-3891-7	L100906BES00	Total/NA	Solid	None	
160-3891-8	L100907BES00	Total/NA	Solid	None	
160-3891-9	L100908BUB00	Total/NA	Solid	None	
160-3891-10	L100909BUB00	Total/NA	Solid	None	
160-3891-11	L100910BUB00	Total/NA	Solid	None	
LCS 160-75052/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-75052/1-A	Method Blank	Total/NA	Solid	None	

Analysis Batch: 75298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3891-1	L100901BES00	Total/NA	Solid	6020A	75052
160-3891-1 MS	L100901BES00	Total/NA	Solid	6020A	75052
160-3891-1 MSD	L100901BES00	Total/NA	Solid	6020A	75052
160-3891-2	L100902BES00	Total/NA	Solid	6020A	75052
160-3891-3	L100903BES00	Total/NA	Solid	6020A	75052
160-3891-4	L100904BEQ00	Total/NA	Solid	6020A	75052
160-3891-5	L100904BES00	Total/NA	Solid	6020A	75052
160-3891-6	L100905BES00	Total/NA	Solid	6020A	75052
160-3891-7	L100906BES00	Total/NA	Solid	6020A	75052
160-3891-8	L100907BES00	Total/NA	Solid	6020A	75052
160-3891-9	L100908BUB00	Total/NA	Solid	6020A	75052
160-3891-10	L100909BUB00	Total/NA	Solid	6020A	75052
160-3891-11	L100910BUB00	Total/NA	Solid	6020A	75052
LCS 160-75052/2-A	Lab Control Sample	Total/NA	Solid	6020A	75052
MB 160-75052/1-A	Method Blank	Total/NA	Solid	6020A	75052

General Chemistry

Analysis Batch: 74867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3889-A-13 DU	Duplicate	Total/NA	Solid	Moisture	
160-3891-1	L100901BES00	Total/NA	Solid	Moisture	
160-3891-2	L100902BES00	Total/NA	Solid	Moisture	
160-3891-3	L100903BES00	Total/NA	Solid	Moisture	
160-3891-4	L100904BEQ00	Total/NA	Solid	Moisture	
160-3891-5	L100904BES00	Total/NA	Solid	Moisture	
160-3891-6	L100905BES00	Total/NA	Solid	Moisture	
160-3891-7	L100906BES00	Total/NA	Solid	Moisture	
160-3891-8	L100907BES00	Total/NA	Solid	Moisture	
160-3891-9	L100908BUB00	Total/NA	Solid	Moisture	
160-3891-10	L100909BUB00	Total/NA	Solid	Moisture	
160-3891-11	L100910BUB00	Total/NA	Solid	Moisture	

TestAmerica St. Louis

QC Association Summary

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

TestAmerica Job ID: 160-3891-1

Rad

Leach Batch: 74888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3891-1	L100901BES00	Total/NA	Solid	Dry and Grind	
160-3891-2	L100902BES00	Total/NA	Solid	Dry and Grind	
160-3891-3	L100903BES00	Total/NA	Solid	Dry and Grind	
160-3891-4	L100904BEQ00	Total/NA	Solid	Dry and Grind	
160-3891-5	L100904BES00	Total/NA	Solid	Dry and Grind	
160-3891-6	L100905BES00	Total/NA	Solid	Dry and Grind	
160-3891-7	L100906BES00	Total/NA	Solid	Dry and Grind	
160-3891-8	L100907BES00	Total/NA	Solid	Dry and Grind	
160-3891-9	L100908BUB00	Total/NA	Solid	Dry and Grind	
160-3891-10	L100909BUB00	Total/NA	Solid	Dry and Grind	
160-3891-11	L100910BUB00	Total/NA	Solid	Dry and Grind	
160-3891-11 DU	L100910BUB00	Total/NA	Solid	Dry and Grind	

Prep Batch: 75052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3891-1	L100901BES00	Total/NA	Solid	None	
160-3891-1 MS	L100901BES00	Total/NA	Solid	None	
160-3891-1 MSD	L100901BES00	Total/NA	Solid	None	
160-3891-2	L100902BES00	Total/NA	Solid	None	
160-3891-3	L100903BES00	Total/NA	Solid	None	
160-3891-4	L100904BEQ00	Total/NA	Solid	None	
160-3891-5	L100904BES00	Total/NA	Solid	None	
160-3891-6	L100905BES00	Total/NA	Solid	None	
160-3891-7	L100906BES00	Total/NA	Solid	None	
160-3891-8	L100907BES00	Total/NA	Solid	None	
160-3891-9	L100908BUB00	Total/NA	Solid	None	
160-3891-10	L100909BUB00	Total/NA	Solid	None	
160-3891-11	L100910BUB00	Total/NA	Solid	None	
LCS 160-75052/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-75052/1-A	Method Blank	Total/NA	Solid	None	

Prep Batch: 75266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3891-1	L100901BES00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-2	L100902BES00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-3	L100903BES00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-4	L100904BEQ00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-5	L100904BES00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-6	L100905BES00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-7	L100906BES00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-8	L100907BES00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-9	L100908BUB00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-10	L100909BUB00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-11	L100910BUB00	Total/NA	Solid	Fill_Geo-0	74888
160-3891-11 DU	L100910BUB00	Total/NA	Solid	Fill_Geo-0	74888
LCS 160-75266/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
MB 160-75266/1-A	Method Blank	Total/NA	Solid	Fill_Geo-0	

TestAmerica St. Louis

Tracer/Carrier Summary

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

TestAmerica Job ID: 160-3891-1

Method: 6020A - Metals (ICP/MS), Tc-99 in Activity

Matrix: Solid

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Re (30-110)	
160-3891-1	L100901BES00	94	
160-3891-1 MS	L100901BES00	93	
160-3891-1 MSD	L100901BES00	93	
160-3891-2	L100902BES00	93	
160-3891-3	L100903BES00	96	
160-3891-4	L100904BEQ00	94	
160-3891-5	L100904BES00	91	
160-3891-6	L100905BES00	94	
160-3891-7	L100906BES00	96	
160-3891-8	L100907BES00	93	
160-3891-9	L100908BUB00	92	
160-3891-10	L100909BUB00	93	
160-3891-11	L100910BUB00	88	
LCS 160-75052/2-A	Lab Control Sample	98	
MB 160-75052/1-A	Method Blank	101	

Tracer/Carrier Legend

Re = Re