

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: 160-1876-1

Client Project/Site: RFP-CBA-022 (21 DAY TAT)

For:

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

Attn: Martin Swanson



Authorized for release by:
4/23/2013 3:18:23 PM

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

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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 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Job ID: 160-1876-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

Project: RFP-CBA-022 (21 DAY TAT)

Report Number: 160-1876-1

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 03/26/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 18.0 °C.

TECHNETIUM-99 (ICPMS)

Samples L050178TUB00 (160-1876-1), L050178TUQ00 (160-1876-2), L050179TUB00 (160-1876-3), L050180TUB00 (160-1876-4), L050181TUB00 (160-1876-5), L050182TUB00 (160-1876-6), L050183TUB00 (160-1876-7), L050188TUB00 (160-1876-8) and L050189TUB00 (160-1876-9) were analyzed for Technetium-99 (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 04/15/2013 and analyzed on 04/16/2013.

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

PERCENT SOLIDS

Samples L050178TUB00 (160-1876-1), L050178TUQ00 (160-1876-2), L050179TUB00 (160-1876-3), L050180TUB00 (160-1876-4), L050181TUB00 (160-1876-5), L050182TUB00 (160-1876-6), L050183TUB00 (160-1876-7), L050188TUB00 (160-1876-8) and

Case Narrative

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Job ID: 160-1876-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

L050189TUB00 (160-1876-9) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 03/28/2013.

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

CESIUM-137 & OTHER GAMMA EMITTERS (GS)

Samples L050178TUB00 (160-1876-1), L050178TUQ00 (160-1876-2), L050179TUB00 (160-1876-3), L050180TUB00 (160-1876-4), L050181TUB00 (160-1876-5), L050182TUB00 (160-1876-6), L050183TUB00 (160-1876-7), L050188TUB00 (160-1876-8) and L050189TUB00 (160-1876-9) were analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE GA-01-R. The samples were leached on 03/27/2013, prepared on 03/29/2013 and analyzed on 04/03/2013.

Preparation Batch 43097:

Insufficient sample was provided for the following sample to fit the 0.5L marinelli geometry: L050188TUB00 (160-1876-8). The sample was put into a tuna can geometry.

The reporting limit for Thorium-234 was not met due to limited sample weight available for analysis. Analytical results are reported with the MDC achieved. L050188TUB00 (160-1876-8)

Radium-226 is reported in these samples at the client's request. Radium-226 is reported from the 609.31 keV line of Bismuth-214. Because the samples have not had 21-day ingrowth, the activity for Radium-226 is an estimated value and may be biased low. This bias is caused by the disruption of secular equilibrium between Radium-226 and Bismuth-214 by the loss of Radon-222 during sample preparation. L050178TUB00 (160-1876-1), L050178TUQ00 (160-1876-2), L050179TUB00 (160-1876-3), L050180TUB00 (160-1876-4), L050181TUB00 (160-1876-5), L050182TUB00 (160-1876-6), L050183TUB00 (160-1876-7), L050188TUB00 (160-1876-8), L050189TUB00 (160-1876-9)

Cesium 137, Cobalt 60, Protactinium 231, Protactinium 234m and Uranium 235 exceeded the rpd limit for the duplicate of sample 160-1875-21; however, the RER was within QC limits for all nuclides.

Refer to the QC report for details. No other difficulties were encountered during the Gamma spec analyses. All other quality control parameters were within the acceptance limits.

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

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

Chain of Custody ID No. F-032513-01 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	Laboratory Name:												
Contact Person:																Laboratory Address:												
Phone Number:																Phone No.												
Sampler Name																Laboratory Contact Person:												
																Phone No.												
																Turn Around Time												
																Normal (21 days)												
																Remarks												
Sample ID	Date	Time	Matrix																									
L050178TUB00	3/23/2013	16:30	S													G	X		X							1	0" - 0.5"	
L050178TUQ00	3/23/2013	16:30	S	G	X		X							1	0" - 0.5"													
L050179TUB00	3/23/2013	16:35	S	G	X		X							1	0.5" - 1.0"													
L050180TUB00	3/23/2013	16:40	S	G	X		X							1	0" - 0.5"													
L050181TUB00	3/23/2013	16:45	S	G	X		X							1	0.5" - 1.0"													
L050182TUB00	3/23/2013	16:50	S	G	X		X							1	0" - 0.5"													
L050183TUB00	3/23/2013	16:55	S	G	X		X							1	0.5" - 1.0"													
L050188TUB00	3/22/2013	10:10	S	G	X		X							1	3.0" - 3.5"													
L050189TUB00	3/22/2013	10:20	S	G	X		X							1	3.5" - 4.0"													

Relinquished by:	Date/Time: 3-26-13 15:15	Received by:	Date/Time: 3/26/13 15:15	Total: 9	Cooler Temperature: Ambient
Company Name: WEC		Company Name: TA		Cooler ID: 0323-02	Shipper and Number:
Received by:	Date/Time:	Relinquished by:	Date/Time:	0	Verified By:
Company Name:		Company Name:			
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Company Name:		Company Name:			

CAR 227 3-28-13

5061876



Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-1876-1

Login Number: 1876

List Source: TestAmerica St. Louis

List Number: 1

Creator: Daniels, Brian

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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 <6mm (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 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
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)
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 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

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

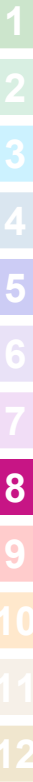


Sample Summary

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-1876-1	L050178TUB00	Solid	03/23/13 16:30	03/26/13 15:15
160-1876-2	L050178TUQ00	Solid	03/23/13 16:30	03/26/13 15:15
160-1876-3	L050179TUB00	Solid	03/23/13 16:35	03/26/13 15:15
160-1876-4	L050180TUB00	Solid	03/23/13 16:40	03/26/13 15:15
160-1876-5	L050181TUB00	Solid	03/23/13 16:45	03/26/13 15:15
160-1876-6	L050182TUB00	Solid	03/23/13 16:50	03/26/13 15:15
160-1876-7	L050183TUB00	Solid	03/23/13 16:55	03/26/13 15:15
160-1876-8	L050188TUB00	Solid	03/23/13 10:10	03/26/13 15:15
160-1876-9	L050189TUB00	Solid	03/23/13 10:20	03/26/13 15:15



Client Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Client Sample ID: L050178TUB00

Lab Sample ID: 160-1876-1

Date Collected: 03/23/13 16:30

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 82.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.00029	J	0.00066	0.000020	mg/Kg	☼	04/15/13 09:45	04/16/13 20:56	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	4.96		0.407	0.666	1.32	0.227	pCi/g	04/15/13 09:45	04/16/13 20:56	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Re	92		30 - 110					04/15/13 09:45	04/16/13 20:56	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	0.781		0.106	0.132		0.0658	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Americium 241	-0.00828	U	10.2	10.2		0.0895	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Bismuth 212	1.14		0.398	0.416		0.354	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Bismuth 214	0.821		0.0981	0.130		0.0603	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Lead 212	0.684		0.0591	0.106		0.0454	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Lead 214	0.883		0.0800	0.122		0.0743	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Potassium 40	13.5		1.04	1.73		0.147	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Protactinium 234m	1.75	U	2.22	2.23		3.65	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Protactinium 231	0.463	U	0.233	0.238		0.920	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Radium 226	0.821		0.0981	0.130	1.00	0.0603	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Thorium 234	0.972		0.560	0.570	1.00	0.748	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Uranium 235	0.0860	U	0.131	0.131		0.201	pCi/g	03/29/13 11:26	04/03/13 11:11	1
Thorium 232	0.781		0.106	0.132		0.0658	pCi/g	03/29/13 11:26	04/03/13 11:11	1
<i>Other Detected</i>			<i>Count</i>	<i>Total</i>						
<i>Radionuclides</i>	<i>Result</i>	<i>Qualifier</i>	<i>Uncert. (2σ+/-)</i>	<i>Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Tl-208	0.240		0.0425	0.0492		0.0352	pCi/g	03/29/13 11:26	04/03/13 11:11	1

Client Sample ID: L050178TUQ00

Lab Sample ID: 160-1876-2

Date Collected: 03/23/13 16:30

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 82.6

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.00023	J	0.00065	0.000019	mg/Kg	☼	04/15/13 09:45	04/16/13 21:03	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	3.90		0.260	0.475	1.29	0.222	pCi/g	04/15/13 09:45	04/16/13 21:03	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Re	93		30 - 110					04/15/13 09:45	04/16/13 21:03	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Client Sample ID: L050178TUQ00

Lab Sample ID: 160-1876-2

Date Collected: 03/23/13 16:30

Matrix: Solid

Date Received: 03/26/13 15:15

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	0.818		0.117	0.143		0.0901	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Americium 241	-0.00498	U	0.121	0.121		0.0936	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Bismuth 212	1.20		0.377	0.397		0.319	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Bismuth 214	0.867		0.0886	0.126		0.0551	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Lead 212	0.758		0.0594	0.115		0.0533	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Lead 214	0.980		0.0891	0.136		0.0792	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Potassium 40	15.1		0.962	1.80		0.295	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Protactinium 234m	1.44	U	2.74	2.74		4.63	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Protactinium 231	0.459	U	0.253	0.258		1.04	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Radium 226	0.867		0.0886	0.126	1.00	0.0551	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Thorium 234	1.02		0.510	0.521	1.00	0.698	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Uranium 235	0.147	U	0.120	0.121		0.221	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Thorium 232	0.818		0.117	0.143		0.0901	pCi/g	03/29/13 11:26	04/03/13 11:12	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.238		0.0409	0.0476		0.0313	pCi/g	03/29/13 11:26	04/03/13 11:12	1

Client Sample ID: L050179TUB00

Lab Sample ID: 160-1876-3

Date Collected: 03/23/13 16:35

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 83.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.00012	J	0.00066	0.000020	mg/Kg	☼	04/15/13 09:45	04/16/13 21:10	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	2.06		0.140	0.261	1.32	0.227	pCi/g	04/15/13 09:45	04/16/13 21:10	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Re	90		30 - 110					04/15/13 09:45	04/16/13 21:10	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	0.917		0.113	0.147		0.0970	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Americium 241	-0.00923	U	0.0601	0.0601		0.101	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Bismuth 212	1.24		0.454	0.472		0.422	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Bismuth 214	0.916		0.102	0.139		0.0695	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Lead 212	0.944		0.0693	0.140		0.0604	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Lead 214	1.13		0.0997	0.154		0.0671	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Potassium 40	17.2		1.07	2.06		0.239	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Protactinium 234m	2.21	U	2.98	2.99		4.94	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Protactinium 231	0.538	U	0.221	0.229		1.03	pCi/g	03/29/13 11:26	04/03/13 11:13	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Client Sample ID: L050179TUB00

Lab Sample ID: 160-1876-3

Date Collected: 03/23/13 16:35

Matrix: Solid

Date Received: 03/26/13 15:15

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+/-)						
Radium 226	0.916		0.102	0.139	1.00	0.0695	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Thorium 234	1.06		0.625	0.635	1.00	0.820	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Uranium 235	0.169	U	0.162	0.163		0.209	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Thorium 232	0.917		0.113	0.147		0.0970	pCi/g	03/29/13 11:26	04/03/13 11:13	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.308		0.0402	0.0514		0.0279	pCi/g	03/29/13 11:26	04/03/13 11:13	1

Client Sample ID: L050180TUB00

Lab Sample ID: 160-1876-4

Date Collected: 03/23/13 16:40

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 80.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000027	J	0.00066	0.000020	mg/Kg	☼	04/15/13 09:45	04/16/13 21:18	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	0.461		0.186	0.202	1.31	0.224	pCi/g	04/15/13 09:45	04/16/13 21:18	1
Carrier			%Yield	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Re	95		30 - 110					04/15/13 09:45	04/16/13 21:18	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	1.05		0.143	0.178		0.0948	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Americium 241	-0.00664	U	0.172	0.172		0.0950	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Bismuth 212	1.54		0.358	0.392		0.286	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Bismuth 214	0.981		0.0931	0.137		0.0560	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Lead 212	0.969		0.0645	0.141		0.0524	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Lead 214	1.08		0.0848	0.141		0.0620	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Potassium 40	18.0		1.07	2.11		0.356	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Protactinium 234m	0.0557	U	2.76	2.76		4.91	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Protactinium 231	0.430	U	0.272	0.276		1.05	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Radium 226	0.981		0.0931	0.137	1.00	0.0560	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Thorium 234	1.44		0.580	0.600	1.00	0.745	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Uranium 235	0.146	U	0.0967	0.0978		0.162	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Thorium 232	1.05		0.143	0.178		0.0948	pCi/g	03/29/13 11:26	04/03/13 20:02	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.292		0.0453	0.0544		0.0351	pCi/g	03/29/13 11:26	04/03/13 20:02	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Client Sample ID: L050181TUB00

Lab Sample ID: 160-1876-5

Date Collected: 03/23/13 16:45

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 82.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000057	J	0.00065	0.000019	mg/Kg	☼	04/15/13 09:45	04/16/13 21:25	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	0.974		0.111	0.154	1.30	0.222	pCi/g	04/15/13 09:45	04/16/13 21:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	93		30 - 110					04/15/13 09:45	04/16/13 21:25	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	0.677		0.117	0.136		0.0514	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Americium 241	0.00816	U	0.0485	0.0485		0.0825	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Bismuth 212	0.469		0.284	0.288		0.420	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Bismuth 214	0.792		0.0987	0.129		0.0678	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Lead 212	0.693		0.0610	0.108		0.0538	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Lead 214	0.905		0.0793	0.123		0.0641	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Potassium 40	13.5		1.02	1.71		0.141	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Protactinium 234m	1.64	U	2.57	2.58		4.32	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Protactinium 231	0.315	U	0.167	0.170		0.921	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Radium 226	0.792		0.0987	0.129	1.00	0.0678	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Thorium 234	0.763		0.255	0.268	1.00	0.673	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Uranium 235	0.108	U	0.125	0.126		0.217	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Thorium 232	0.677		0.117	0.136		0.0514	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Other Detected			Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)						
Radionuclides	Result	Qualifier			RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.266		0.0368	0.0460		0.0228	pCi/g	03/29/13 11:26	04/03/13 20:01	1

Client Sample ID: L050182TUB00

Lab Sample ID: 160-1876-6

Date Collected: 03/23/13 16:50

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 79.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.00060	J	0.00068	0.000020	mg/Kg	☼	04/15/13 09:45	04/16/13 21:33	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	10.2		0.275	1.06	1.35	0.232	pCi/g	04/15/13 09:45	04/16/13 21:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	93		30 - 110					04/15/13 09:45	04/16/13 21:33	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Client Sample ID: L050182TUB00

Lab Sample ID: 160-1876-6

Date Collected: 03/23/13 16:50

Matrix: Solid

Date Received: 03/26/13 15:15

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	1.05		0.120	0.161		0.114	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Americium 241	-0.0229	U	0.0659	0.0659		0.110	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Bismuth 212	1.12		0.367	0.386		0.356	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Bismuth 214	0.957		0.0990	0.140		0.0674	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Lead 212	1.10		0.0750	0.161		0.0607	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Lead 214	1.19		0.0924	0.154		0.0707	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Potassium 40	19.9		1.24	2.38		0.419	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Protactinium 234m	5.98		3.13	3.19		5.16	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Protactinium 231	0.355	U	0.495	0.496		0.820	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Radium 226	0.957		0.0990	0.140	1.00	0.0674	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Thorium 234	0.943	U	0.371	0.384	1.00	0.985	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Uranium 235	0.0567	U	0.0677	0.0680		0.245	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Thorium 232	1.05		0.120	0.161		0.114	pCi/g	03/29/13 11:26	04/03/13 20:01	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.						
	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.332		0.0472	0.0584		0.0372	pCi/g	03/29/13 11:26	04/03/13 20:01	1

Client Sample ID: L050183TUB00

Lab Sample ID: 160-1876-7

Date Collected: 03/23/13 16:55

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 79.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.00096		0.00067	0.000020	mg/Kg	☼	04/15/13 09:45	04/16/13 21:40	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	16.5		0.760	1.79	1.33	0.228	pCi/g	04/15/13 09:45	04/16/13 21:40	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Re	95		30 - 110					04/15/13 09:45	04/16/13 21:40	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		0.110	0.153		0.117	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Americium 241	0.00408	U	0.0643	0.0643		0.109	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Bismuth 212	1.12		0.513	0.526		0.482	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Bismuth 214	1.01		0.103	0.147		0.0619	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Lead 212	1.09		0.0771	0.160		0.0647	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Lead 214	1.11		0.103	0.154		0.0858	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Potassium 40	19.6		1.20	2.34		0.264	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Protactinium 234m	0.000	U	3.29	3.29		5.18	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Protactinium 231	0.391	U	0.298	0.301		1.06	pCi/g	03/29/13 11:26	04/03/13 21:00	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Client Sample ID: L050183TUB00

Lab Sample ID: 160-1876-7

Date Collected: 03/23/13 16:55

Matrix: Solid

Date Received: 03/26/13 15:15

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+/-)						
Radium 226	1.01		0.103	0.147	1.00	0.0619	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Thorium 234	1.49		0.679	0.697	1.00	0.901	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Uranium 235	0.175	U	0.142	0.143		0.229	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Thorium 232	1.04		0.110	0.153		0.117	pCi/g	03/29/13 11:26	04/03/13 21:00	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
TI-208	0.362		0.0511	0.0634		0.0382	pCi/g	03/29/13 11:26	04/03/13 21:00	1

Client Sample ID: L050188TUB00

Lab Sample ID: 160-1876-8

Date Collected: 03/23/13 10:10

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 73.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000049	J	0.00074	0.000022	mg/Kg	☼	04/15/13 09:45	04/16/13 21:47	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	0.839		0.180	0.214	1.47	0.252	pCi/g	04/15/13 09:45	04/16/13 21:47	1
Carrier			%Yield	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Re			91		30 - 110			04/15/13 09:45	04/16/13 21:47	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	1.34		0.205	0.247		0.162	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Americium 241	0.133	U	0.148	0.149		0.209	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Bismuth 212	1.71		0.633	0.658		0.582	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Bismuth 214	1.14		0.182	0.217		0.143	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Lead 212	1.05		0.128	0.260		0.129	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Lead 214	1.13		0.148	0.210		0.134	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Potassium 40	15.6		1.56	2.23		0.943	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Protactinium 234m	3.27	U	4.89	4.90		7.84	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Protactinium 231	0.679	U	0.605	0.615		1.91	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Radium 226	1.14		0.182	0.217	1.00	0.143	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Thorium 234	1.82	U	1.42	1.43	1.00	1.84	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Uranium 235	0.0711	U	0.213	0.214		0.445	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Thorium 232	1.34		0.205	0.247		0.162	pCi/g	03/29/13 11:26	04/03/13 20:00	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
TI-208	0.388		0.0691	0.0800		0.0592	pCi/g	03/29/13 11:26	04/03/13 20:00	1

TestAmerica St. Louis

Client Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Client Sample ID: L050189TUB00

Lab Sample ID: 160-1876-9

Date Collected: 03/23/13 10:20

Matrix: Solid

Date Received: 03/26/13 15:15

Percent Solids: 79.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000020	J	0.00065	0.000020	mg/Kg	☼	04/15/13 09:45	04/16/13 21:55	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	0.334		0.109	0.118	1.30	0.223	pCi/g	04/15/13 09:45	04/16/13 21:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	96		30 - 110					04/15/13 09:45	04/16/13 21:55	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	0.844		0.124	0.149		0.116	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Americium 241	-0.0931	U	0.177	0.177		0.107	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Bismuth 212	1.21		0.461	0.476		0.419	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Bismuth 214	0.741		0.106	0.128		0.0771	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Lead 212	0.858		0.0725	0.117		0.0621	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Lead 214	0.906		0.101	0.134		0.0767	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Potassium 40	22.6		1.39	2.58		0.379	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Protactinium 234m	0.810	U	2.90	2.90		5.93	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Protactinium 231	0.588	U	0.313	0.318		1.15	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Radium 226	0.741		0.106	0.128	1.00	0.0771	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Thorium 234	1.19		0.697	0.707	1.00	0.893	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Uranium 235	0.0753	U	0.161	0.161		0.268	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Thorium 232	0.844		0.124	0.149		0.116	pCi/g	03/29/13 11:26	04/03/13 11:14	1
Other Detected Radionuclides			Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.278		0.0507	0.0575		0.0411	pCi/g	03/29/13 11:26	04/03/13 11:14	1

QC Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

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

Lab Sample ID: MB 160-45835/1-A
Matrix: Solid
Analysis Batch: 46398

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 45835

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.00052	0.000016	mg/Kg		04/15/13 09:45	04/16/13 20:04	1

Lab Sample ID: LCS 160-45835/2-A
Matrix: Solid
Analysis Batch: 46398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 45835

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	0.0119	0.0119		mg/Kg		100	80 - 120

Lab Sample ID: 160-1875-A-21-F MS
Matrix: Solid
Analysis Batch: 46398

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 45835

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	0.000068	J	0.0163	0.0148		mg/Kg	☼	90	75 - 125

Lab Sample ID: 160-1875-A-21-G MSD
Matrix: Solid
Analysis Batch: 46398

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 45835

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Technetium 99	0.000068	J	0.0163	0.0150		mg/Kg	☼	91	75 - 125	1	30

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

Lab Sample ID: MB 160-45835/1-A
Matrix: Solid
Analysis Batch: 46399

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 45835

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.05489	U	-0.0662	0.0682	1.03	0.177	pCi/g	04/15/13 09:45	04/16/13 20:04	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	97		30 - 110					04/15/13 09:45	04/16/13 20:04	1

Lab Sample ID: LCS 160-45835/2-A
Matrix: Solid
Analysis Batch: 46399

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 45835

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	205	204.5		19.9	1.02	0.175	pCi/g	100	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 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

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

Lab Sample ID: 160-1875-A-21-F MS
Matrix: Solid
Analysis Batch: 46399

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 45835

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	1.17		279	253.4		26.4	1.39	0.239	pCi/g	90	75 - 125
Carrier	%Yield	MS Qualifier	Limits								
Re	90		30 - 110								

Lab Sample ID: 160-1875-A-21-G MSD
Matrix: Solid
Analysis Batch: 46399

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 45835

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RPD	RPD Limit
Technetium 99	1.17		280	256.8		27.7	1.40	0.240	pCi/g	91	75 - 125	1	30
Carrier	%Yield	MSD Qualifier	Limits										
Re	90		30 - 110										

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

Lab Sample ID: MB 160-43097/1-A
Matrix: Solid
Analysis Batch: 43940

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 43097

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.0000	U	0.0239	0.0239		0.0278	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Americium 241	-0.003109	U	0.0157	0.0157		0.0278	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Bismuth 212	-0.04630	U	1.85	1.85		0.277	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Bismuth 214	0.004396	U	0.0231	0.0231		0.0446	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Lead 212	-0.003906	U	0.0276	0.0276		0.0321	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Lead 214	-0.0001653	U	0.000635	0.000635		0.0404	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Potassium 40	-0.08589	U	3.44	3.44		0.211	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Protactinium 234m	-0.4082	U	7.15	7.15		2.80	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Protactinium 231	-0.06214	U	0.219	0.219		0.389	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Radium 226	0.004396	U	0.0231	0.0231	1.00	0.0446	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Thorium 234	0.02008	U	0.0346	0.0347	1.00	0.353	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Uranium 235	0.009306	U	0.0350	0.0350		0.0667	pCi/g	03/29/13 11:26	04/03/13 11:09	1
Thorium 232	0.0000	U	0.0239	0.0239		0.0278	pCi/g	03/29/13 11:26	04/03/13 11:09	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	03/29/13 11:26	04/03/13 11:09	1

TestAmerica St. Louis

QC Sample Results

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

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

Lab Sample ID: LCS 160-43097/2-A
Matrix: Solid
Analysis Batch: 43941

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 43097

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	97.8	95.23		9.91		0.490	pCi/g	97	87 - 116
Cesium 137	31.9	31.27		3.27		0.130	pCi/g	98	87 - 120
Cobalt 60	26.1	25.11		2.53		0.0713	pCi/g	96	87 - 115

Lab Sample ID: 160-1875-A-21-D DU
Matrix: Solid
Analysis Batch: 43943

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 43097

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	Limit
Actinium 228	0.972		1.077		0.162		0.0543	pCi/g	10	40
Americium 241	0.0232	U	0.02020	U	0.0608		0.102	pCi/g	14	40
Bismuth 212	0.979		1.081		0.382		0.332	pCi/g	10	40
Bismuth 214	0.963		0.9921		0.145		0.0604	pCi/g	3	40
Lead 212	1.01		0.9484		0.142		0.0608	pCi/g	7	40
Lead 214	1.11		1.037		0.137		0.0693	pCi/g	6	40
Potassium 40	21.2		19.08		2.28		0.327	pCi/g	10	40
Protactinium 234m	1.52	U	6.032	F	2.84		5.55	pCi/g	120	40
Protactinium 231	0.302	U	-0.5433	U F	0.633		1.03	pCi/g	702	40
Radium 226	0.963		0.9921		0.145	1.00	0.0604	pCi/g	3	40
Thorium 234	1.20		1.194		0.664	1.00	0.852	pCi/g	0.8	40
Uranium 235	0.208		0.01608	U F	0.131		0.223	pCi/g	171	40
Thorium 232	0.972		1.077		0.162		0.0543	pCi/g	10	40

QC Association Summary

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Metals

Prep Batch: 45835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-1875-A-21-F MS	Matrix Spike	Total/NA	Solid	None	
160-1875-A-21-G MSD	Matrix Spike Duplicate	Total/NA	Solid	None	
160-1876-1	L050178TUB00	Total/NA	Solid	None	
160-1876-2	L050178TUQ00	Total/NA	Solid	None	
160-1876-3	L050179TUB00	Total/NA	Solid	None	
160-1876-4	L050180TUB00	Total/NA	Solid	None	
160-1876-5	L050181TUB00	Total/NA	Solid	None	
160-1876-6	L050182TUB00	Total/NA	Solid	None	
160-1876-7	L050183TUB00	Total/NA	Solid	None	
160-1876-8	L050188TUB00	Total/NA	Solid	None	
160-1876-9	L050189TUB00	Total/NA	Solid	None	
LCS 160-45835/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-45835/1-A	Method Blank	Total/NA	Solid	None	

Analysis Batch: 46398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-1875-A-21-F MS	Matrix Spike	Total/NA	Solid	6020A	45835
160-1875-A-21-G MSD	Matrix Spike Duplicate	Total/NA	Solid	6020A	45835
160-1876-1	L050178TUB00	Total/NA	Solid	6020A	45835
160-1876-2	L050178TUQ00	Total/NA	Solid	6020A	45835
160-1876-3	L050179TUB00	Total/NA	Solid	6020A	45835
160-1876-4	L050180TUB00	Total/NA	Solid	6020A	45835
160-1876-5	L050181TUB00	Total/NA	Solid	6020A	45835
160-1876-6	L050182TUB00	Total/NA	Solid	6020A	45835
160-1876-7	L050183TUB00	Total/NA	Solid	6020A	45835
160-1876-8	L050188TUB00	Total/NA	Solid	6020A	45835
160-1876-9	L050189TUB00	Total/NA	Solid	6020A	45835
LCS 160-45835/2-A	Lab Control Sample	Total/NA	Solid	6020A	45835
MB 160-45835/1-A	Method Blank	Total/NA	Solid	6020A	45835

General Chemistry

Analysis Batch: 42760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-1876-1	L050178TUB00	Total/NA	Solid	Moisture	
160-1876-2	L050178TUQ00	Total/NA	Solid	Moisture	
160-1876-3	L050179TUB00	Total/NA	Solid	Moisture	
160-1876-4	L050180TUB00	Total/NA	Solid	Moisture	
160-1876-5	L050181TUB00	Total/NA	Solid	Moisture	
160-1876-6	L050182TUB00	Total/NA	Solid	Moisture	
160-1876-7	L050183TUB00	Total/NA	Solid	Moisture	
160-1876-8	L050188TUB00	Total/NA	Solid	Moisture	
160-1876-9	L050189TUB00	Total/NA	Solid	Moisture	
160-1876-9 DU	L050189TUB00	Total/NA	Solid	Moisture	

Rad

Leach Batch: 42314

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-1875-A-21-D DU	Duplicate	Total/NA	Solid	Dry and Grind	

TestAmerica St. Louis

QC Association Summary

Client: Westinghouse Electric Company LLC
 Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

Rad (Continued)

Leach Batch: 42343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-1876-1	L050178TUB00	Total/NA	Solid	Dry and Grind	
160-1876-2	L050178TUQ00	Total/NA	Solid	Dry and Grind	
160-1876-3	L050179TUB00	Total/NA	Solid	Dry and Grind	
160-1876-4	L050180TUB00	Total/NA	Solid	Dry and Grind	
160-1876-5	L050181TUB00	Total/NA	Solid	Dry and Grind	
160-1876-6	L050182TUB00	Total/NA	Solid	Dry and Grind	
160-1876-7	L050183TUB00	Total/NA	Solid	Dry and Grind	
160-1876-8	L050188TUB00	Total/NA	Solid	Dry and Grind	
160-1876-9	L050189TUB00	Total/NA	Solid	Dry and Grind	

Prep Batch: 43097

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-1875-A-21-D DU	Duplicate	Total/NA	Solid	Fill_Geo-0	42314
160-1876-1	L050178TUB00	Total/NA	Solid	Fill_Geo-0	42343
160-1876-2	L050178TUQ00	Total/NA	Solid	Fill_Geo-0	42343
160-1876-3	L050179TUB00	Total/NA	Solid	Fill_Geo-0	42343
160-1876-4	L050180TUB00	Total/NA	Solid	Fill_Geo-0	42343
160-1876-5	L050181TUB00	Total/NA	Solid	Fill_Geo-0	42343
160-1876-6	L050182TUB00	Total/NA	Solid	Fill_Geo-0	42343
160-1876-7	L050183TUB00	Total/NA	Solid	Fill_Geo-0	42343
160-1876-8	L050188TUB00	Total/NA	Solid	Fill_Geo-0	42343
160-1876-9	L050189TUB00	Total/NA	Solid	Fill_Geo-0	42343
LCS 160-43097/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
MB 160-43097/1-A	Method Blank	Total/NA	Solid	Fill_Geo-0	

Prep Batch: 45835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-1875-A-21-F MS	Matrix Spike	Total/NA	Solid	None	
160-1875-A-21-G MSD	Matrix Spike Duplicate	Total/NA	Solid	None	
160-1876-1	L050178TUB00	Total/NA	Solid	None	
160-1876-2	L050178TUQ00	Total/NA	Solid	None	
160-1876-3	L050179TUB00	Total/NA	Solid	None	
160-1876-4	L050180TUB00	Total/NA	Solid	None	
160-1876-5	L050181TUB00	Total/NA	Solid	None	
160-1876-6	L050182TUB00	Total/NA	Solid	None	
160-1876-7	L050183TUB00	Total/NA	Solid	None	
160-1876-8	L050188TUB00	Total/NA	Solid	None	
160-1876-9	L050189TUB00	Total/NA	Solid	None	
LCS 160-45835/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-45835/1-A	Method Blank	Total/NA	Solid	None	

Tracer/Carrier Summary

Client: Westinghouse Electric Company LLC
Project/Site: RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-1876-1

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)
160-1875-A-21-F MS	Matrix Spike	90
160-1875-A-21-G MSD	Matrix Spike Duplicate	90
160-1876-1	L050178TUB00	92
160-1876-2	L050178TUQ00	93
160-1876-3	L050179TUB00	90
160-1876-4	L050180TUB00	95
160-1876-5	L050181TUB00	93
160-1876-6	L050182TUB00	93
160-1876-7	L050183TUB00	95
160-1876-8	L050188TUB00	91
160-1876-9	L050189TUB00	96
LCS 160-45835/2-A	Lab Control Sample	98
MB 160-45835/1-A	Method Blank	97

Tracer/Carrier Legend

Re = Re