

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: 160-4091-1

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:
10/18/2013 2:48:43 PM

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

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

1

2

3

4

5

6

7

8

9

10

11

12



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Chain of Custody	5
Receipt Checklists	6
Definitions/Glossary	7
Method Summary	8
Sample Summary	9
Client Sample Results	10
QC Sample Results	15
QC Association Summary	19
Tracer Carrier Summary	21

Case Narrative

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

TestAmerica Job ID: 160-4091-1

Job ID: 160-4091-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

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

Report Number: 160-4091-1

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 10/11/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.0 C.

TECHNETIUM-99 (ICPMS)

Samples L050343PUB00 (160-4091-1), L050344PUB00 (160-4091-2), L050345PUB00 (160-4091-3), L050346PUB00 (160-4091-4), L050347PUB00 (160-4091-5) and L050348PUB00 (160-4091-6) were analyzed for Technetium-99 (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/15/2013 and 10/16/2013 and analyzed on 10/15/2013 and 10/17/2013.

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

PERCENT SOLIDS

Samples L050343PUB00 (160-4091-1), L050344PUB00 (160-4091-2), L050345PUB00 (160-4091-3), L050346PUB00 (160-4091-4), L050347PUB00 (160-4091-5) and L050348PUB00 (160-4091-6) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 10/14/2013.

Case Narrative

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

TestAmerica Job ID: 160-4091-1

Job ID: 160-4091-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

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

CESIUM-137 & OTHER GAMMA EMITTERS (GS)

Samples L050343PUB00 (160-4091-1), L050344PUB00 (160-4091-2), L050345PUB00 (160-4091-3), L050346PUB00 (160-4091-4), L050347PUB00 (160-4091-5) and L050348PUB00 (160-4091-6) were analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE GA-01-R. The samples were leached on 10/14/2013, and prepared and analyzed on 10/16/2013.

Preparation Batch 79170:

The reporting limit for thorium-234 was not met due to insufficient sample weight available for analysis. Analytical results are reported with the MDC achieved. L050346PUB00 (160-4091-4)

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 a 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. (160-4091-1 DU), (LCS 160-79170/2-A), (MB 160-79170/1-A), L050343PUB00 (160-4091-1), L050344PUB00 (160-4091-2), L050345PUB00 (160-4091-3), L050346PUB00 (160-4091-4), L050347PUB00 (160-4091-5), L050348PUB00 (160-4091-6)

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

Page 1 of 1

Westinghouse Non-Proprietary Class 3

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

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

Chain of Custody ID No. F-101013-01				Page 1/1		Requested Analysis										Laboratory Name: TA-MO				
Project Name: Westinghouse Electric Company						Comp (C) or Grab (G)	Gamma Spec	Isotopic Uranium	Tc-99	Gamma Spec (21 day ingrow for Ra-226)								Total Containers	Laboratory Address: 13715 Rider Trail North	
Contact Person: Gerald Rood																			Phone No. 314-298-8566	
Phone Number: 314-810-3382																			Laboratory Contact Person: Joe Walker	
Sampler Name Andrew Schooley																			Phone No. 708-870-8453	
				Turn Around Time																
				Rush				(7 days)												
				Remarks																
Sample ID	Date	Time	Matrix	Comp (C) or Grab (G)	Gamma Spec	Isotopic Uranium	Tc-99	Gamma Spec (21 day ingrow for Ra-226)												
L050343PUB00	10/9/2013	16:05	S	C	X		X	X										1	LSA-05-03 Bias	
L050344PUB00	10/9/2013	16:15	S	C	X		X	X										1		
L050345PUB00	10/9/2013	16:25	S	C	X		X	X										1		
L050346PUB00	10/9/2013	16:10	S	C	X		X	X										1		
L050347PUB00	10/9/2013	16:20	S	C	X		X	X										1		
L050348PUB00	10/9/2013	16:30	S	C	X		X	X										1	LSA-05-03 Bias	
Relinquished by: <i>[Signature]</i>				Date/Time: 10-11-13 1605		Received by: <i>[Signature]</i>				Date/Time: 10-11 16:05		Total: 6		Cooler Temperature: Ambient						
Company Name: WEL						Company Name: Crossroads						Cooler ID: 1010-01		Shipper and Number:						
Received by: <i>[Signature]</i>				Date/Time: 10-11 17:45		Relinquished by: <i>[Signature]</i>				Date/Time: 10-11 17:45		Comments: Please re-analyze samples after 21-day ingrowth period.								
Company Name: <i>[Signature]</i>						Company Name: Crossroads														
Relinquished by: <i>[Signature]</i>				Date/Time: 10-11-13 17:45		Received by: <i>[Signature]</i>				Date/Time: 10-11-13 17:45		Verified By: <i>[Signature]</i>								
Company Name: T.C. America						Company Name: T.C. America														

4091



Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-4091-1

Login Number: 4091

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.	True	
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 <math><6\text{mm}</math> (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: 160-4091-1

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.
▫	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: 160-4091-1

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: 160-4091-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-4091-1	L050343PUB00	Solid	10/09/13 16:05	10/11/13 17:45
160-4091-2	L050344PUB00	Solid	10/09/13 16:15	10/11/13 17:45
160-4091-3	L050345PUB00	Solid	10/09/13 16:25	10/11/13 17:45
160-4091-4	L050346PUB00	Solid	10/09/13 16:10	10/11/13 17:45
160-4091-5	L050347PUB00	Solid	10/09/13 16:20	10/11/13 17:45
160-4091-6	L050348PUB00	Solid	10/09/13 16:30	10/11/13 17:45

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Client Sample Results

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

TestAmerica Job ID: 160-4091-1

Client Sample ID: L050343PUB00

Lab Sample ID: 160-4091-1

Date Collected: 10/09/13 16:05

Matrix: Solid

Date Received: 10/11/13 17:45

Percent Solids: 85.6

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	☼	10/15/13 09:15	10/15/13 17:56	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	-0.0412	U	-0.0236	0.0275	1.35	0.230	pCi/g	10/15/13 09:15	10/15/13 17:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	87		30 - 110					10/15/13 09:15	10/15/13 17:56	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	1.14		0.140	0.182		0.0839	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Americium 241	0.00335	U	0.0600	0.0600		0.101	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Bismuth 212	0.830		0.320	0.331		0.321	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Bismuth 214	0.704		0.0927	0.118		0.0676	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Lead 212	1.11		0.0712	0.160		0.0534	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Lead 214	0.908		0.0905	0.131		0.0726	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Potassium 40	21.4		1.18	2.49		0.267	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Protactinium 231	0.380	U	0.207	0.211		1.15	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Radium 226	0.704		0.0927	0.118	1.00	0.0676	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Thorium 234	1.71		0.594	0.620	1.00	0.768	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Uranium 235	0.129	U	0.149	0.150		0.244	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Protactinium 234m	2.03	U	2.86	2.87		4.76	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Thorium 232	1.14		0.140	0.182		0.0839	pCi/g	10/16/13 11:32	10/16/13 21:38	1
Other Detected			Count	Total						
Radionuclides	Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.369		0.0418	0.0567		0.0261	pCi/g	10/16/13 11:32	10/16/13 21:38	1

Client Sample ID: L050344PUB00

Lab Sample ID: 160-4091-2

Date Collected: 10/09/13 16:15

Matrix: Solid

Date Received: 10/11/13 17:45

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		0.000069	0.000021	mg/Kg	☼	10/15/13 09:15	10/15/13 18:15	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	-0.0416	U	-0.0629	0.0721	1.39	0.238	pCi/g	10/15/13 09:15	10/15/13 18:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	87		30 - 110					10/15/13 09:15	10/15/13 18:15	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-4091-1

Client Sample ID: L050344PUB00

Lab Sample ID: 160-4091-2

Date Collected: 10/09/13 16:15

Matrix: Solid

Date Received: 10/11/13 17:45

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	1.12		0.109	0.158		0.0836	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Americium 241	-0.0107	U	0.0566	0.0566		0.0951	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Bismuth 212	1.51		0.385	0.415		0.339	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Bismuth 214	0.753		0.0951	0.123		0.0709	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Lead 212	1.11		0.0704	0.160		0.0554	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Lead 214	0.890		0.0690	0.115		0.0660	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Potassium 40	20.2		1.17	2.38		0.377	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Protactinium 231	-0.570	U	0.642	0.645		1.05	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Radium 226	0.753		0.0951	0.123	1.00	0.0709	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Thorium 234	1.91		0.620	0.652	1.00	0.785	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Uranium 235	0.156	U	0.142	0.142		0.182	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Protactinium 234m	1.05	U	2.67	2.67		4.59	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Thorium 232	1.12		0.109	0.158		0.0836	pCi/g	10/16/13 11:32	10/16/13 18:38	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>Tl-208</i>			<i>0.0440</i>	<i>0.0586</i>		<i>0.0294</i>	<i>pCi/g</i>	<i>10/16/13 11:32</i>	<i>10/16/13 18:38</i>	<i>1</i>

Client Sample ID: L050345PUB00

Lab Sample ID: 160-4091-3

Date Collected: 10/09/13 16:25

Matrix: Solid

Date Received: 10/11/13 17:45

Percent Solids: 83.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000074	0.000022	mg/Kg	☼	10/15/13 09:15	10/15/13 18:19	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	-0.0433	U	-0.0492	0.0609	1.48	0.253	pCi/g	10/15/13 09:15	10/15/13 18:19	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
<i>Re</i>			<i>30 - 110</i>					<i>10/15/13 09:15</i>	<i>10/15/13 18:19</i>	<i>1</i>

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		0.144	0.179		0.0917	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Americium 241	0.0326	U	0.0590	0.0591		0.0985	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Bismuth 212	1.35		0.431	0.453		0.403	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Bismuth 214	0.738		0.101	0.127		0.0728	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Lead 212	1.03		0.0734	0.152		0.0576	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Lead 214	0.794		0.0837	0.118		0.0598	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Potassium 40	20.2		1.31	2.45		0.370	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Protactinium 231	0.389	U	0.221	0.225		1.06	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Radium 226	0.738		0.101	0.127	1.00	0.0728	pCi/g	10/16/13 11:32	10/16/13 19:27	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-4091-1

Client Sample ID: L050345PUB00

Lab Sample ID: 160-4091-3

Date Collected: 10/09/13 16:25

Matrix: Solid

Date Received: 10/11/13 17:45

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	1.85		0.699	0.725	1.00	0.888	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Uranium 235	0.204	U	0.150	0.151		0.236	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Protactinium 234m	1.89	U	3.14	3.15		5.30	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Thorium 232	1.04		0.144	0.179		0.0917	pCi/g	10/16/13 11:32	10/16/13 19:27	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
TI-208	0.347		0.0495	0.0612		0.0366	pCi/g	10/16/13 11:32	10/16/13 19:27	1

Client Sample ID: L050346PUB00

Lab Sample ID: 160-4091-4

Date Collected: 10/09/13 16:10

Matrix: Solid

Date Received: 10/11/13 17:45

Percent Solids: 83.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000069	0.000021	mg/Kg	☼	10/15/13 09:15	10/15/13 18:23	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	-0.0392	U	-0.0799	0.0916	1.37	0.235	pCi/g	10/15/13 09:15	10/15/13 18:23	1
Carrier			%Yield	Limits				Prepared	Analyzed	Dil Fac
Re			87	30 - 110				10/15/13 09:15	10/15/13 18:23	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		0.170	0.201		0.212	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Americium 241	0.0239	U	0.0714	0.0715		0.120	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Bismuth 212	1.17		0.463	0.478		0.473	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Bismuth 214	0.764		0.111	0.136		0.0791	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Lead 212	1.06		0.0839	0.161		0.0696	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Lead 214	0.935		0.0973	0.138		0.0870	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Potassium 40	20.4		1.44	2.53		0.306	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Protactinium 231	0.701	U	0.368	0.376		1.35	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Radium 226	0.764		0.111	0.136	1.00	0.0791	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Thorium 234	0.771	U	0.347	0.356	1.00	1.12	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Uranium 235	0.0576	U	0.165	0.165		0.277	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Protactinium 234m	2.18	U	3.74	3.74		6.32	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Thorium 232	1.05		0.170	0.201		0.212	pCi/g	10/16/13 11:32	10/16/13 19:26	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
TI-208	0.342		0.0557	0.0661		0.0427	pCi/g	10/16/13 11:32	10/16/13 19:26	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-4091-1

Client Sample ID: L050347PUB00

Lab Sample ID: 160-4091-5

Date Collected: 10/09/13 16:20

Matrix: Solid

Date Received: 10/11/13 17:45

Percent Solids: 83.6

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99		ND	0.000068	0.000020	mg/Kg	☼	10/15/13 09:15	10/15/13 18:27	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	-0.0294	U	-0.0537	0.0609	1.36	0.233	pCi/g	10/15/13 09:15	10/15/13 18:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	88		30 - 110					10/15/13 09:15	10/15/13 18:27	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	1.11		0.109	0.158		0.0728	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Americium 241	0.00139	U	0.0550	0.0550		0.0928	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Bismuth 212	1.31		0.308	0.337		0.347	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Bismuth 214	0.779		0.0836	0.116		0.0600	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Lead 212	1.10		0.0671	0.157		0.0527	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Lead 214	0.869		0.0704	0.115		0.0662	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Potassium 40	20.6		1.09	2.38		0.199	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Protactinium 231	-0.677	U	0.653	0.657		1.06	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Radium 226	0.779		0.0836	0.116	1.00	0.0600	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Thorium 234	1.42		0.632	0.649	1.00	0.799	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Uranium 235	0.272		0.129	0.132		0.211	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Protactinium 234m	0.777	U	2.79	2.79		4.89	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Thorium 232	1.11		0.109	0.158		0.0728	pCi/g	10/16/13 11:32	10/16/13 19:28	1
Other Detected			Count	Total						
Radionuclides	Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.372		0.0458	0.0599		0.0333	pCi/g	10/16/13 11:32	10/16/13 19:28	1

Client Sample ID: L050348PUB00

Lab Sample ID: 160-4091-6

Date Collected: 10/09/13 16:30

Matrix: Solid

Date Received: 10/11/13 17:45

Percent Solids: 82.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99		ND	0.000068	0.000020	mg/Kg	☼	10/16/13 13:42	10/17/13 11:30	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	0.00487	U	0.0424	0.0472	1.36	0.232	pCi/g	10/16/13 13:42	10/17/13 11:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	90		30 - 110					10/16/13 13:42	10/17/13 11:30	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-4091-1

Client Sample ID: L050348PUB00

Lab Sample ID: 160-4091-6

Date Collected: 10/09/13 16:30

Matrix: Solid

Date Received: 10/11/13 17:45

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	1.01		0.119	0.157		0.113	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Americium 241	-0.00475	U	0.0597	0.0597		0.100	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Bismuth 212	1.49		0.429	0.457		0.351	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Bismuth 214	0.753		0.0891	0.119		0.0661	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Lead 212	0.937		0.0722	0.141		0.0761	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Lead 214	0.845		0.0875	0.124		0.0681	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Potassium 40	20.3		1.14	2.37		0.342	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Protactinium 231	-0.623	U	0.699	0.703		1.15	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Radium 226	0.753		0.0891	0.119	1.00	0.0661	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Thorium 234	1.60		0.690	0.710	1.00	0.865	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Uranium 235	0.229		0.146	0.148		0.207	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Protactinium 234m	1.02	U	1.96	1.97		4.25	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Thorium 232	1.01		0.119	0.157		0.113	pCi/g	10/16/13 11:32	10/16/13 21:36	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.						
	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.317		0.0401	0.0518		0.0278	pCi/g	10/16/13 11:32	10/16/13 21:36	1

QC Sample Results

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

TestAmerica Job ID: 160-4091-1

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

Lab Sample ID: MB 160-79001/1-A
Matrix: Solid
Analysis Batch: 79106

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 79001

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000052	0.000016	mg/Kg		10/15/13 09:15	10/15/13 17:48	1

Lab Sample ID: LCS 160-79001/2-A
Matrix: Solid
Analysis Batch: 79106

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 79001

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	0.00234	0.00222		mg/Kg		95	80 - 120

Lab Sample ID: 160-4091-1 MS
Matrix: Solid
Analysis Batch: 79106

Client Sample ID: L050343PUB00
Prep Type: Total/NA
Prep Batch: 79001

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	ND		0.00272	0.00271		mg/Kg	☼	100	75 - 125

Lab Sample ID: 160-4091-1 MSD
Matrix: Solid
Analysis Batch: 79106

Client Sample ID: L050343PUB00
Prep Type: Total/NA
Prep Batch: 79001

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Technetium 99	ND		0.00272	0.00263		mg/Kg	☼	97	75 - 125	3	30

Lab Sample ID: MB 160-79104/1-A
Matrix: Solid
Analysis Batch: 79515

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 79104

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000051	0.000015	mg/Kg		10/16/13 08:57	10/17/13 09:46	1

Lab Sample ID: LCS 160-79104/2-A
Matrix: Solid
Analysis Batch: 79515

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 79104

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	0.00235	0.00232		mg/Kg		99	80 - 120

Lab Sample ID: 160-4122-A-21-B MS
Matrix: Solid
Analysis Batch: 79515

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 79104

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	0.00025		0.00269	0.00294		mg/Kg	☼	100	75 - 125

Lab Sample ID: 160-4122-A-21-C MSD
Matrix: Solid
Analysis Batch: 79515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 79104

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Technetium 99	0.00025		0.00270	0.00285		mg/Kg	☼	96	75 - 125	3	30

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-4091-1

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

Lab Sample ID: MB 160-79001/1-A
Matrix: Solid
Analysis Batch: 79107

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 79001

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert.	Uncert.						
Technetium 99	-0.03949	U	-0.00540	0.00682	1.05	0.179	pCi/g	10/15/13 09:15	10/15/13 17:48	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Re	%Yield	Qualifier	Limits							
Re	95		30 - 110		10/15/13 09:15	10/15/13 17:48	1			

Lab Sample ID: LCS 160-79001/2-A
Matrix: Solid
Analysis Batch: 79107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 79001

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Technetium 99	40.1	37.96		3.87	1.06	0.182	pCi/g	95	80 - 120
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
Re	%Yield	Qualifier	Limits						
Re	94		30 - 110		10/15/13 09:15	10/15/13 17:48	1		

Lab Sample ID: 160-4091-1 MS
Matrix: Solid
Analysis Batch: 79107

Client Sample ID: L050343PUB00
Prep Type: Total/NA
Prep Batch: 79001

Analyte	Sample Sample		Spike Added	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					
Technetium 99	-0.0412	U	46.5	46.44		5.43	1.39	0.237	pCi/g	100	75 - 125
Carrier	MS MS		Limits		Prepared	Analyzed	Dil Fac				
Re	%Yield	Qualifier	Limits								
Re	84		30 - 110		10/15/13 09:15	10/15/13 17:48	1				

Lab Sample ID: 160-4091-1 MSD
Matrix: Solid
Analysis Batch: 79107

Client Sample ID: L050343PUB00
Prep Type: Total/NA
Prep Batch: 79001

Analyte	Sample Sample		Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual	Uncert. (2σ+/-)							
Technetium 99	-0.0412	U	46.6	45.03		5.00	1.37	0.235	pCi/g	97	75 - 125	0.14	1
Carrier	MSD MSD		Limits		Prepared	Analyzed	Dil Fac						
Re	%Yield	Qualifier	Limits										
Re	85		30 - 110		10/16/13 08:57	10/17/13 09:46	1						

Lab Sample ID: MB 160-79104/1-A
Matrix: Solid
Analysis Batch: 79516

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 79104

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert.	Uncert.						
Technetium 99	0.02084	U	0.0223	0.0225	1.01	0.174	pCi/g	10/16/13 08:57	10/17/13 09:46	1

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-4091-1

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

Lab Sample ID: MB 160-79104/1-A
Matrix: Solid
Analysis Batch: 79516

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 79104

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	99		30 - 110	10/16/13 08:57	10/17/13 09:46	1

Lab Sample ID: LCS 160-79104/2-A
Matrix: Solid
Analysis Batch: 79516

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 79104

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	40.2	39.77		4.25	1.04	0.178	pCi/g	99	80 - 120

Carrier	LCS %Yield	LCS Qualifier	Limits
Re	96		30 - 110

Lab Sample ID: 160-4122-A-21-B MS
Matrix: Solid
Analysis Batch: 79516

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 79104

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	4.35		46.1	50.32		6.36	1.28	0.219	pCi/g	100	75 - 125

Carrier	MS %Yield	MS Qualifier	Limits
Re	90		30 - 110

Lab Sample ID: 160-4122-A-21-C MSD
Matrix: Solid
Analysis Batch: 79516

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 79104

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
Technetium 99	4.35		46.2	48.87		6.94	1.28	0.219	pCi/g	96	75 - 125	0.11	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Re	90		30 - 110

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

Lab Sample ID: MB 160-79170/1-A
Matrix: Solid
Analysis Batch: 79141

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 79170

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.001732	U	0.00331	0.00331		0.0587	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Americium 241	0.006589	U	0.0126	0.0127		0.0216	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Bismuth 212	0.0000	U	0.0707	0.0707		0.160	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Bismuth 214	-0.004299	U	0.0308	0.0308		0.0378	pCi/g	10/16/13 11:32	10/16/13 18:39	1

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-4091-1

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

Lab Sample ID: MB 160-79170/1-A
Matrix: Solid
Analysis Batch: 79141

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 79170

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Lead 212	-0.004602	U	0.0229	0.0229		0.0240	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Lead 214	-0.001444	U	0.0102	0.0102		0.0321	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Potassium 40	-0.08250	U	3.30	3.30		0.190	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Protactinium 231	-0.06497	U	0.175	0.175		0.309	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Radium 226	-0.004299	U	0.0308	0.0308	1.00	0.0378	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Thorium 234	0.003917	U	0.132	0.132	1.00	0.260	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Uranium 235	0.008918	U	0.0240	0.0240		0.0670	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Protactinium 234m	0.1758	U	0.618	0.618		0.888	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Thorium 232	0.001732	U	0.00331	0.00331		0.0587	pCi/g	10/16/13 11:32	10/16/13 18:39	1
Other Detected Radionuclides	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Other Detected Radionuclide	None						pCi/g	10/16/13 11:32	10/16/13 18:39	1

Lab Sample ID: LCS 160-79170/2-A
Matrix: Solid
Analysis Batch: 79152

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 79170

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium 241	97.7	94.24		9.80		0.462	pCi/g	96	87 - 116
Cesium 137	31.6	30.95		3.24	0.200	0.139	pCi/g	98	87 - 120
Cobalt 60	24.3	23.45		2.37		0.0807	pCi/g	96	87 - 115

Lab Sample ID: 160-4091-1 DU
Matrix: Solid
Analysis Batch: 79141

Client Sample ID: L050343PUB00
Prep Type: Total/NA
Prep Batch: 79170

Analyte	Sample		DU		Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					Limit
Actinium 228	1.14		1.132		0.192		0.0912	pCi/g	0.04	1
Americium 241	0.00335	U	-0.01618	U	0.0643		0.108	pCi/g	0.16	1
Bismuth 212	0.830		1.320		0.362		0.288	pCi/g	0.71	1
Bismuth 214	0.704		0.7608		0.121		0.0703	pCi/g	0.24	1
Lead 212	1.11		0.9921		0.148		0.0771	pCi/g	0.38	1
Lead 214	0.908		0.8289		0.131		0.0832	pCi/g	0.30	1
Potassium 40	21.4		21.33		2.50		0.434	pCi/g	0.02	1
Protactinium 231	0.380	U	0.3719	U	0.330		0.864	pCi/g	0.02	1
Radium 226	0.704		0.7608		0.121	1.00	0.0703	pCi/g	0.24	1
Thorium 234	1.71		1.534		0.763	1.00	0.900	pCi/g	0.12	1
Uranium 235	0.129	U	0.07760	U	0.0901		0.168	pCi/g	0.22	1
Protactinium 234m	2.03	U	3.540	U	2.01		4.82	pCi/g	0.31	1
Thorium 232	1.14		1.132		0.192		0.0912	pCi/g	0.04	1

QC Association Summary

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

TestAmerica Job ID: 160-4091-1

Metals

Prep Batch: 79001

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4091-1	L050343PUB00	Total/NA	Solid	None	
160-4091-1 MS	L050343PUB00	Total/NA	Solid	None	
160-4091-1 MSD	L050343PUB00	Total/NA	Solid	None	
160-4091-2	L050344PUB00	Total/NA	Solid	None	
160-4091-3	L050345PUB00	Total/NA	Solid	None	
160-4091-4	L050346PUB00	Total/NA	Solid	None	
160-4091-5	L050347PUB00	Total/NA	Solid	None	
LCS 160-79001/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-79001/1-A	Method Blank	Total/NA	Solid	None	

Prep Batch: 79104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4091-6	L050348PUB00	Total/NA	Solid	None	
160-4122-A-21-B MS	Matrix Spike	Total/NA	Solid	None	
160-4122-A-21-C MSD	Matrix Spike Duplicate	Total/NA	Solid	None	
LCS 160-79104/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-79104/1-A	Method Blank	Total/NA	Solid	None	

Analysis Batch: 79106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4091-1	L050343PUB00	Total/NA	Solid	6020A	79001
160-4091-1 MS	L050343PUB00	Total/NA	Solid	6020A	79001
160-4091-1 MSD	L050343PUB00	Total/NA	Solid	6020A	79001
160-4091-2	L050344PUB00	Total/NA	Solid	6020A	79001
160-4091-3	L050345PUB00	Total/NA	Solid	6020A	79001
160-4091-4	L050346PUB00	Total/NA	Solid	6020A	79001
160-4091-5	L050347PUB00	Total/NA	Solid	6020A	79001
LCS 160-79001/2-A	Lab Control Sample	Total/NA	Solid	6020A	79001
MB 160-79001/1-A	Method Blank	Total/NA	Solid	6020A	79001

Analysis Batch: 79515

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4091-6	L050348PUB00	Total/NA	Solid	6020A	79104
160-4122-A-21-B MS	Matrix Spike	Total/NA	Solid	6020A	79104
160-4122-A-21-C MSD	Matrix Spike Duplicate	Total/NA	Solid	6020A	79104
LCS 160-79104/2-A	Lab Control Sample	Total/NA	Solid	6020A	79104
MB 160-79104/1-A	Method Blank	Total/NA	Solid	6020A	79104

General Chemistry

Analysis Batch: 78648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4086-A-1 DU	Duplicate	Total/NA	Solid	Moisture	
160-4091-1	L050343PUB00	Total/NA	Solid	Moisture	
160-4091-2	L050344PUB00	Total/NA	Solid	Moisture	
160-4091-3	L050345PUB00	Total/NA	Solid	Moisture	
160-4091-4	L050346PUB00	Total/NA	Solid	Moisture	
160-4091-5	L050347PUB00	Total/NA	Solid	Moisture	
160-4091-6	L050348PUB00	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: 160-4091-1

Rad

Leach Batch: 78661

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4091-1	L050343PUB00	Total/NA	Solid	Dry and Grind	
160-4091-1 DU	L050343PUB00	Total/NA	Solid	Dry and Grind	
160-4091-2	L050344PUB00	Total/NA	Solid	Dry and Grind	
160-4091-3	L050345PUB00	Total/NA	Solid	Dry and Grind	
160-4091-4	L050346PUB00	Total/NA	Solid	Dry and Grind	
160-4091-5	L050347PUB00	Total/NA	Solid	Dry and Grind	
160-4091-6	L050348PUB00	Total/NA	Solid	Dry and Grind	

Prep Batch: 79001

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4091-1	L050343PUB00	Total/NA	Solid	None	
160-4091-1 MS	L050343PUB00	Total/NA	Solid	None	
160-4091-1 MSD	L050343PUB00	Total/NA	Solid	None	
160-4091-2	L050344PUB00	Total/NA	Solid	None	
160-4091-3	L050345PUB00	Total/NA	Solid	None	
160-4091-4	L050346PUB00	Total/NA	Solid	None	
160-4091-5	L050347PUB00	Total/NA	Solid	None	
LCS 160-79001/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-79001/1-A	Method Blank	Total/NA	Solid	None	

Prep Batch: 79104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4091-6	L050348PUB00	Total/NA	Solid	None	
160-4122-A-21-B MS	Matrix Spike	Total/NA	Solid	None	
160-4122-A-21-C MSD	Matrix Spike Duplicate	Total/NA	Solid	None	
LCS 160-79104/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-79104/1-A	Method Blank	Total/NA	Solid	None	

Prep Batch: 79170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-4091-1	L050343PUB00	Total/NA	Solid	Fill_Geo-0	78661
160-4091-1 DU	L050343PUB00	Total/NA	Solid	Fill_Geo-0	78661
160-4091-2	L050344PUB00	Total/NA	Solid	Fill_Geo-0	78661
160-4091-3	L050345PUB00	Total/NA	Solid	Fill_Geo-0	78661
160-4091-4	L050346PUB00	Total/NA	Solid	Fill_Geo-0	78661
160-4091-5	L050347PUB00	Total/NA	Solid	Fill_Geo-0	78661
160-4091-6	L050348PUB00	Total/NA	Solid	Fill_Geo-0	78661
LCS 160-79170/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
MB 160-79170/1-A	Method Blank	Total/NA	Solid	Fill_Geo-0	

Tracer/Carrier Summary

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

TestAmerica Job ID: 160-4091-1

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)
160-4091-1	L050343PUB00	87
160-4091-1 MS	L050343PUB00	84
160-4091-1 MSD	L050343PUB00	85
160-4091-2	L050344PUB00	87
160-4091-3	L050345PUB00	81
160-4091-4	L050346PUB00	87
160-4091-5	L050347PUB00	88
160-4091-6	L050348PUB00	90
160-4122-A-21-B MS	Matrix Spike	90
160-4122-A-21-C MSD	Matrix Spike Duplicate	90
LCS 160-79001/2-A	Lab Control Sample	94
LCS 160-79104/2-A	Lab Control Sample	96
MB 160-79001/1-A	Method Blank	95
MB 160-79104/1-A	Method Blank	99

Tracer/Carrier Legend

Re = Re