

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: 160-3458-1

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:
8/28/2013 5:26:24 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	11
QC Association Summary	14
Tracer Carrier Summary	15

Case Narrative

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

TestAmerica Job ID: 160-3458-1

Job ID: 160-3458-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

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

Report Number: 160-3458-1

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 08/21/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.4 C.

TECHNETIUM-99 (ICPMS)

Sample L050269PUB00 (160-3458-1) was analyzed for Technetium-99 (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/22/2013 and analyzed on 08/23/2013.

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

PERCENT SOLIDS

Sample L050269PUB00 (160-3458-1) was analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/22/2013.

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

Case Narrative

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

TestAmerica Job ID: 160-3458-1

Job ID: 160-3458-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

CESIUM-137 & OTHER GAMMA EMITTERS (GS)

Sample L050269PUB00 (160-3458-1) was analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE GA-01-R. The samples were leached on 08/22/2013, prepared on 08/23/2013 and analyzed on 08/28/2013.

Preparation Batch 68361:

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. (160-3435-31 DU), (LCS 160-68361/2-A), (MB 160-68361/1-A), L050268PUB00 (160-3435-31), L050269PUB00 (160-3458-1)

Lead-214 analyzed by gamma spectroscopy was detected above the MDC in the method blank. Variations in Compton backgrounds and statistical analyses allow for small area counts in the ROIs of this nuclide. Other Uranium decay chain products are not present in the blank to support Lead-214 identification. The data is reported. (160-3435-31 DU), (LCS 160-68361/2-A), (MB 160-68361/1-A), L050268PUB00 (160-3435-31), L050269PUB00 (160-3458-1)

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. L050269PUB00 (160-3458-1)

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. (160-3435-31 DU), (LCS 160-68361/2-A), (MB 160-68361/1-A), L050268PUB00 (160-3435-31), L050269PUB00 (160-3458-1)

Lead-214 analyzed by gamma spectroscopy was detected above the MDC in the method blank. Variations in Compton backgrounds and statistical analyses allow for small area counts in the ROIs of this nuclide. Other Uranium decay chain products are not present in the blank to support Lead-214 identification. The data is reported. (160-3435-31 DU), (LCS 160-68361/2-A), (MB 160-68361/1-A), L050268PUB00 (160-3435-31), L050269PUB00 (160-3458-1)

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-082113-01 Page 1/1				Requested Analysis								Laboratory Name:			
Project Name: Westinghouse Electric Company Contact Person: Gerald Rood Phone Number: 314-810-3382 Sampler Name: Scott Jenkins				Comp (C) or Grab (G)	Gamma Spec	Isotopic Uranium	Te-99	Gamma Spec (21 day ingrow for Ra-226)					Total Containers	TA-MO	
														Laboratory Address: 13715 Rider Trail North	
														Phone No. 314-298-8566	
														Laboratory Contact Person: Joe Walker	
		Phone No. 708-870-8453													
		Turn Around Time Rush (7 days)													
		Remarks LSA 0502 Bias													
Sample ID	Date	Time	Matrix	C	X	X	X								
L050269PUB00	8/20/2013	14:40	S		X		X	X				1			
Relinquished by: C. J. Company Name: WEC				Date/Time: 8-21-13 1605		Received by: Joe Broadshaw Company Name: Crossroads			Date/Time: 8-21 16:10		Total: 1		Cooler Temperature: Ambient		
Received by: Company Name:				Date/Time:		Relinquished by: Joe Broadshaw Company Name: Crossroads			Date/Time: 8-21 18:45		Comments: Please re-analyze sample after 21 day ingrowth period.				
Relinquished by: Company Name:				Date/Time:		Received by: m... Company Name: TCSTAMERICA			Date/Time: 8-21-13 1848		Verified By: 				

345-8



Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-3458-1

Login Number: 3458

List Source: TestAmerica St. Louis

List Number: 1

Creator: Clarke, Jill C

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.	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 <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 (7 DAY TAT)

TestAmerica Job ID: 160-3458-1

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)
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: 160-3458-1

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: 160-3458-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-3458-1	L050269PUB00	Solid	08/20/13 14:40	08/21/13 18:48

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Client Sample Results

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

TestAmerica Job ID: 160-3458-1

Client Sample ID: L050269PUB00

Lab Sample ID: 160-3458-1

Date Collected: 08/20/13 14:40

Matrix: Solid

Date Received: 08/21/13 18:48

Percent Solids: 66.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.00084	0.000025	mg/Kg	☆	08/22/13 17:17	08/23/13 20:35	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	0.0324	U	0.0586	0.0657	1.69	0.289	pCi/g	08/22/13 17:17	08/23/13 20:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	89		30 - 110					08/22/13 17:17	08/23/13 20:35	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	1.10		0.173	0.206		0.107	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Americium 241	-0.00714	U	0.0710	0.0710		0.120	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Bismuth 212	1.13		0.384	0.402		0.510	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Bismuth 214	0.980		0.124	0.160		0.0928	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Lead 212	1.26		0.0827	0.183		0.0642	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Lead 214	1.23		0.107	0.166		0.0666	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Potassium 40	20.5		1.25	2.44		0.335	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Protactinium 231	1.02	U	0.367	0.384		1.21	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Radium 226	0.980		0.124	0.160	1.00	0.0928	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Thorium 234	0.907		0.332	0.345	1.00	0.888	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Uranium 235	0.0143	U	0.0297	0.0298		0.253	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Protactinium 234m	1.14	U	3.27	3.28		5.66	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Thorium 232	1.10		0.173	0.206		0.107	pCi/g	08/23/13 11:50	08/28/13 11:06	1
Other Detected Radionuclides			Count	Total						
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.380		0.0534	0.0664		0.0419	pCi/g	08/23/13 11:50	08/28/13 11:06	1

QC Sample Results

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

TestAmerica Job ID: 160-3458-1

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

Lab Sample ID: MB 160-67951/1-A
Matrix: Solid
Analysis Batch: 68435

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 67951

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.00053	0.000016	mg/Kg		08/22/13 08:38	08/23/13 19:29	1

Lab Sample ID: LCS 160-67951/2-A
Matrix: Solid
Analysis Batch: 68435

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 67951

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	0.00247	0.00245		mg/Kg		99	80 - 120

Lab Sample ID: 160-3435-A-21-D MS
Matrix: Solid
Analysis Batch: 68435

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 67951

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	ND		0.00321	0.00304		mg/Kg	☼	95	75 - 125

Lab Sample ID: 160-3435-A-21-E MSD
Matrix: Solid
Analysis Batch: 68435

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 67951

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Technetium 99	ND		0.00320	0.00298		mg/Kg	☼	93	75 - 125	2	30

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

Lab Sample ID: MB 160-67951/1-A
Matrix: Solid
Analysis Batch: 68436

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 67951

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.04180	U	0.0131	0.0144	1.06	0.181	pCi/g	08/22/13 08:38	08/23/13 19:29	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	94		30 - 110					08/22/13 08:38	08/23/13 19:29	1

Lab Sample ID: LCS 160-67951/2-A
Matrix: Solid
Analysis Batch: 68436

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 67951

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	42.3	41.92		4.13	1.06	0.181	pCi/g	99	80 - 120
Carrier	LCS %Yield	LCS Qualifier	Limits						
Re	95		30 - 110						

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-3458-1

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

Lab Sample ID: 160-3435-A-21-D MS
Matrix: Solid
Analysis Batch: 68436

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 67951

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	0.112	U	55.0	52.13		5.61	1.37	0.235	pCi/g	95	75 - 125
Carrier	%Yield	MS Qualifier	Limits								
Re	90		30 - 110								

Lab Sample ID: 160-3435-A-21-E MSD
Matrix: Solid
Analysis Batch: 68436

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 67951

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	0.112	U	54.8	50.99		5.39	1.37	0.235	pCi/g	93	75 - 125	0.10	1
Carrier	%Yield	MSD Qualifier	Limits										
Re	90		30 - 110										

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

Lab Sample ID: MB 160-68361/1-A
Matrix: Solid
Analysis Batch: 68418

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68361

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.004165	U	0.00789	0.00790		0.0662	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Americium 241	0.003463	U	0.0147	0.0147		0.0257	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Bismuth 212	0.02943	U	0.0858	0.0859		0.158	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Bismuth 214	-0.001347	U	0.0223	0.0223		0.0401	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Lead 212	0.01034	U	0.0130	0.0131		0.0219	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Lead 214	0.03187	U	0.0168	0.0171		0.0285	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Potassium 40	-0.009079	U	0.158	0.158		0.315	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Protactinium 231	-0.02795	U	0.197	0.197		0.358	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Radium 226	-0.001347	U	0.0223	0.0223	1.00	0.0401	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Thorium 234	0.03659	U	0.144	0.144	1.00	0.278	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Uranium 235	0.004433	U	0.0348	0.0348		0.0627	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Protactinium 234m	0.8453	U	1.05	1.05		1.68	pCi/g	08/23/13 11:49	08/25/13 20:14	1
Thorium 232	0.004165	U	0.00789	0.00790		0.0662	pCi/g	08/23/13 11:49	08/25/13 20:14	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	08/23/13 11:49	08/25/13 20:14	1

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-3458-1

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

Lab Sample ID: LCS 160-68361/2-A
Matrix: Solid
Analysis Batch: 68419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68361

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	97.7	94.58		9.84		0.491	pCi/g	97	87 - 116
Cesium 137	31.7	31.34		3.28	0.200	0.129	pCi/g	99	87 - 120
Cobalt 60	24.8	24.45		2.47		0.109	pCi/g	99	87 - 115

Lab Sample ID: 160-3435-A-31-E DU
Matrix: Solid
Analysis Batch: 68414

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 68361

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	0.207		0.3328		0.0729		0.0386	pCi/g	0.89	1
Americium 241	-0.00170	U	-0.01717	U	0.0401		0.0671	pCi/g	0.19	1
Bismuth 212	0.130	U	0.3056		0.152		0.153	pCi/g	0.50	1
Bismuth 214	0.417		0.5197		0.0835		0.0401	pCi/g	0.62	1
Lead 212	0.269		0.3239		0.0557		0.0346	pCi/g	0.51	1
Lead 214	0.532		0.4982		0.0739		0.0395	pCi/g	0.22	1
Potassium 40	5.35		5.186		0.748		0.187	pCi/g	0.10	1
Protactinium 231	-0.0624	U	0.1583	U	0.121		0.560	pCi/g	0.44	1
Radium 226	0.417		0.5197		0.0835	1.00	0.0401	pCi/g	0.62	1
Thorium 234	0.690		1.292		0.501	1.00	0.576	pCi/g	0.80	1
Uranium 235	0.200		0.2728		0.0966		0.112	pCi/g	0.36	1
Protactinium 234m	1.99	U	0.9806	U	1.56		2.89	pCi/g	0.24	1
Thorium 232	0.207		0.3328		0.0729		0.0386	pCi/g	0.89	1

QC Association Summary

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

TestAmerica Job ID: 160-3458-1

Metals

Prep Batch: 67951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3435-A-21-D MS	Matrix Spike	Total/NA	Solid	None	
160-3435-A-21-E MSD	Matrix Spike Duplicate	Total/NA	Solid	None	
160-3458-1	L050269PUB00	Total/NA	Solid	None	
LCS 160-67951/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-67951/1-A	Method Blank	Total/NA	Solid	None	

Analysis Batch: 68435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3435-A-21-D MS	Matrix Spike	Total/NA	Solid	6020A	67951
160-3435-A-21-E MSD	Matrix Spike Duplicate	Total/NA	Solid	6020A	67951
160-3458-1	L050269PUB00	Total/NA	Solid	6020A	67951
LCS 160-67951/2-A	Lab Control Sample	Total/NA	Solid	6020A	67951
MB 160-67951/1-A	Method Blank	Total/NA	Solid	6020A	67951

General Chemistry

Analysis Batch: 67957

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3448-D-1 DU	Duplicate	Total/NA	Solid	Moisture	
160-3458-1	L050269PUB00	Total/NA	Solid	Moisture	

Rad

Leach Batch: 67776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3435-A-31-E DU	Duplicate	Total/NA	Solid	Dry and Grind	

Prep Batch: 67951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3435-A-21-D MS	Matrix Spike	Total/NA	Solid	None	
160-3435-A-21-E MSD	Matrix Spike Duplicate	Total/NA	Solid	None	
160-3458-1	L050269PUB00	Total/NA	Solid	None	
LCS 160-67951/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-67951/1-A	Method Blank	Total/NA	Solid	None	

Leach Batch: 67978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3458-1	L050269PUB00	Total/NA	Solid	Dry and Grind	

Prep Batch: 68361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-3435-A-31-E DU	Duplicate	Total/NA	Solid	Fill_Geo-0	67776
160-3458-1	L050269PUB00	Total/NA	Solid	Fill_Geo-0	67978
LCS 160-68361/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
MB 160-68361/1-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: 160-3458-1

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)
160-3435-A-21-D MS	Matrix Spike	90
160-3435-A-21-E MSD	Matrix Spike Duplicate	90
160-3458-1	L050269PUB00	89
LCS 160-67951/2-A	Lab Control Sample	95
MB 160-67951/1-A	Method Blank	94

Tracer/Carrier Legend

Re = Re