

# 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: 160-16778-1

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

For:

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

Attn: Mr. Martin Swanson



Authorized for release by:

4/11/2016 3:19:44 PM

Ivan Vania, Project Manager II  
(314)298-8566

[ivan.vania@testamericainc.com](mailto: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: HDP RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-16778-1

**Job ID: 160-16778-1**

**Laboratory: TestAmerica St. Louis**

## Narrative

### CASE NARRATIVE

**Client: Westinghouse Electric Company LLC**

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

**Report Number: 160-16778-1**

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 4/4/2016 11:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 20.0° C.

### TECHNETIUM-99 (ICPMS)

Samples L05-04-01-T-S-S-00 (160-16778-1), L05-04-02-T-R-S-00 (160-16778-2), L05-04-02-T-R-Q-00 (160-16778-3), L05-04-04-T-E-S-00 (160-16778-4), L05-04-05-T-S-S-00 (160-16778-5), L05-04-06-T-R-S-00 (160-16778-6), L05-04-08-T-S-S-00 (160-16778-7), L05-04-09-T-R-S-00 (160-16778-8), L05-04-11-T-S-S-00 (160-16778-9) and L05-04-12-T-R-S-00 (160-16778-10) were analyzed for Technetium-99 (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 04/05/2016 and analyzed on 04/07/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### PERCENT SOLIDS

Samples L05-04-01-T-S-S-00 (160-16778-1), L05-04-02-T-R-S-00 (160-16778-2), L05-04-02-T-R-Q-00 (160-16778-3),

## Case Narrative

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

TestAmerica Job ID: 160-16778-1

### Job ID: 160-16778-1 (Continued)

#### Laboratory: TestAmerica St. Louis (Continued)

L05-04-04-T-E-S-00 (160-16778-4), L05-04-05-T-S-S-00 (160-16778-5), L05-04-06-T-R-S-00 (160-16778-6), L05-04-08-T-S-S-00 (160-16778-7), L05-04-09-T-R-S-00 (160-16778-8), L05-04-11-T-S-S-00 (160-16778-9) and L05-04-12-T-R-S-00 (160-16778-10) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 04/05/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### CESIUM-137 & OTHER GAMMA EMITTERS (GS)

Samples L05-04-01-T-S-S-00 (160-16778-1), L05-04-02-T-R-S-00 (160-16778-2), L05-04-02-T-R-Q-00 (160-16778-3), L05-04-04-T-E-S-00 (160-16778-4), L05-04-05-T-S-S-00 (160-16778-5), L05-04-06-T-R-S-00 (160-16778-6), L05-04-08-T-S-S-00 (160-16778-7), L05-04-09-T-R-S-00 (160-16778-8), L05-04-11-T-S-S-00 (160-16778-9) and L05-04-12-T-R-S-00 (160-16778-10) were analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE GA-01-R. The samples were leached on 04/04/2016, prepared on 04/06/2016 and analyzed on 04/07/2016.

Preparation Batch 160-244596:

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-days of 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. The samples are reported with the MDC achieved. L05-04-01-T-S-S-00 (160-16778-1), L05-04-02-T-R-S-00 (160-16778-2), L05-04-02-T-R-Q-00 (160-16778-3), L05-04-04-T-E-S-00 (160-16778-4), L05-04-05-T-S-S-00 (160-16778-5), L05-04-06-T-R-S-00 (160-16778-6), L05-04-08-T-S-S-00 (160-16778-7), L05-04-09-T-R-S-00 (160-16778-8), L05-04-11-T-S-S-00 (160-16778-9), L05-04-12-T-R-S-00 (160-16778-10), (LCS 160-244596/2-A), (MB 160-244596/1-A) and (160-16778-A-1-E DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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-040116-01		Page 1/1																																											
Project Name: Westinghouse Electric Company				<div>Total Containers</div> <table border="1"><thead><tr><th colspan="10">Requested Analysis</th></tr><tr><th>Gamma Spec</th><th>Isotopic Uranium</th><th>Te-99</th><th>Gamma Spec (21 day ingrow for Ra-226)</th><th></th><th></th><th></th><th></th><th></th><th></th></tr></thead><tbody><tr><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>				Requested Analysis										Gamma Spec	Isotopic Uranium	Te-99	Gamma Spec (21 day ingrow for Ra-226)							X	X	X	X							X	X	X	X						
Requested Analysis																																															
Gamma Spec	Isotopic Uranium	Te-99	Gamma Spec (21 day ingrow for Ra-226)																																												
X	X	X	X																																												
X	X	X	X																																												
Contact Person: Clark Evers																																															
Phone Number: 314-810-3336																																															
Sampler Name Mike Dekeyser																																															
Sample ID		Date	Time	Matrix	Comp (C) or Grab (G)																																										
L05-04-01-T-S-S-00	4/1/2016	8:30	S	G	X	X	X	X					1	LSA 05-04																																	
L05-04-02-T-R-S-00	4/1/2016	12:40	S	C	X	X	X	X					1	LSA 05-04																																	
L05-04-02-T-R-Q-00	4/1/2016	12:40	S	C	X	X	X	X					1	LSA 05-04																																	
L05-04-04-T-E-S-00	4/1/2016	8:40	S	G	X	X	X	X					1	LSA 05-04																																	
L05-04-05-T-S-S-00	4/1/2016	8:55	S	G	X	X	X	X					1	LSA 05-04																																	
L05-04-06-T-R-S-00	4/1/2016	12:55	S	C	X	X	X	X					1	LSA 05-04																																	
L05-04-08-T-S-S-00	4/1/2016	9:00	S	G	X	X	X	X					1	LSA 05-04																																	
L05-04-09-T-R-S-00	4/1/2016	10:45	S	C	X	X	X	X					1	LSA 05-04																																	
L05-04-11-T-S-S-00	4/1/2016	9:05	S	G	X	X	X	X					1	LSA 05-04																																	
L05-04-12-T-R-S-00	4/1/2016	13:25	S	C	X	X	X	X					1	LSA 05-04																																	
Relinquished by: M. Delaysa		Date/Time 4-4-16		Received by: K. B. 3815		Date/Time 4-4-16		Total 10		Cooler Temperature: Ambient																																					
Company Name: WBC		0900		Company Name: CROSSROADS		09100		Cooler ID: 0401-01		Shipper and Number:																																					
Received by:		Date/Time		Relinquished by:		Date/Time		Comments: N/A																																							
Company Name:				Company Name:																																											
Relinquished by: K. B. 3815		Date/Time 4-4-16		Received by: K. B. 3815		Date/Time 4-4-16		Verified By: Thomas Yach / C. B. 122																																							
Company Name: CROSSROADS		1100		Company Name: CROSSROADS		1100		4-3-16																																							

## Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-16778-1

**Login Number: 16778**

**List Source: TestAmerica St. Louis**

**List Number: 1**

**Creator: Dedner, Connie L**

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.	N/A	
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Definitions/Glossary

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

TestAmerica Job ID: 160-16778-1

### 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	Result is less than the sample detection 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
CFL	Contains Free Liquid
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: HDP RFP-CBA-022 (7 DAY TAT)

TestAmerica Job ID: 160-16778-1

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

TestAmerica Job ID: 160-16778-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-16778-1	L05-04-01-T-S-S-00	Solid	04/01/16 08:30	04/04/16 11:00
160-16778-2	L05-04-02-T-R-S-00	Solid	04/01/16 12:40	04/04/16 11:00
160-16778-3	L05-04-02-T-R-Q-00	Solid	04/01/16 12:40	04/04/16 11:00
160-16778-4	L05-04-04-T-E-S-00	Solid	04/01/16 08:40	04/04/16 11:00
160-16778-5	L05-04-05-T-S-S-00	Solid	04/01/16 08:55	04/04/16 11:00
160-16778-6	L05-04-06-T-R-S-00	Solid	04/01/16 12:55	04/04/16 11:00
160-16778-7	L05-04-08-T-S-S-00	Solid	04/01/16 09:00	04/04/16 11:00
160-16778-8	L05-04-09-T-R-S-00	Solid	04/01/16 10:45	04/04/16 11:00
160-16778-9	L05-04-11-T-S-S-00	Solid	04/01/16 09:05	04/04/16 11:00
160-16778-10	L05-04-12-T-R-S-00	Solid	04/01/16 13:25	04/04/16 11:00

# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

**Client Sample ID: L05-04-01-T-S-S-00**

**Date Collected: 04/01/16 08:30**

**Date Received: 04/04/16 11:00**

**Lab Sample ID: 160-16778-1**

**Matrix: Solid**

## 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	0.999		0.113	0.152		0.111	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Americium 241	-0.0151	U	0.0557	0.0557		0.0932	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Bismuth 212	1.14		0.444	0.460		0.385	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Bismuth 214	0.666		0.0869	0.111		0.0656	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Lead 212	1.04		0.0653	0.149		0.0514	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Lead 214	0.817		0.0714	0.111		0.0558	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Potassium 40	18.5		1.03	2.16		0.198	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Protactinium 231	0.603	U	0.249	0.257		0.930	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Radium 226	0.666		0.0869	0.111	1.00	0.0656	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Thorium 234	1.38		0.457	0.479	1.00	0.707	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Uranium 235	0.167	U	0.123	0.124		0.206	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Protactinium 234m	1.99	U	2.48	2.49		4.08	pCi/g	04/06/16 10:29	04/07/16 23:40	1
Thorium 232	0.999		0.113	0.152		0.111	pCi/g	04/06/16 10:29	04/07/16 23:40	1
<b>Other Detected Radionuclides</b>			<b>Count Uncert. (2σ+/-)</b>	<b>Total Uncert. (2σ+/-)</b>	<b>RL</b>	<b>MDC</b>	<b>Unit</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Tl-208	0.318		0.0414	0.0530		0.0292	pCi/g	04/06/16 10:29	04/07/16 23:40	1

**Client Sample ID: L05-04-01-T-S-S-00**

**Date Collected: 04/01/16 08:30**

**Date Received: 04/04/16 11:00**

**Lab Sample ID: 160-16778-1**

**Matrix: Solid**

**Percent Solids: 78.6**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000066	0.000020	mg/Kg	☼	04/05/16 02:58	04/07/16 10:09	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	0.00677	U	0.0187	0.0187	1.32	0.226	pCi/g	04/05/16 02:58	04/07/16 10:09	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Re	97		30 - 110					04/05/16 02:58	04/07/16 10:09	1

**Client Sample ID: L05-04-02-T-R-S-00**

**Date Collected: 04/01/16 12:40**

**Date Received: 04/04/16 11:00**

**Lab Sample ID: 160-16778-2**

**Matrix: Solid**

## 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	0.895		0.107	0.141		0.0922	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Americium 241	0.00193	U	0.0401	0.0401		0.0681	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Bismuth 212	0.997		0.297	0.314		0.280	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Bismuth 214	0.698		0.0861	0.113		0.0632	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Lead 212	0.911		0.0756	0.140		0.0639	pCi/g	04/06/16 10:29	04/07/16 19:10	1

TestAmerica St. Louis

# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

**Client Sample ID: L05-04-02-T-R-S-00**

**Lab Sample ID: 160-16778-2**

**Date Collected: 04/01/16 12:40**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Lead 214	0.791		0.0673	0.106		0.0568	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Potassium 40	16.9		0.991	1.99		0.300	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Protactinium 231	-0.587	U	0.609	0.612		0.996	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Radium 226	0.698		0.0861	0.113	1.00	0.0632	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Thorium 234	1.18		0.460	0.476	1.00	0.721	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Uranium 235	0.126	U	0.120	0.121		0.214	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Protactinium 234m	1.16	U	2.48	2.49		4.29	pCi/g	04/06/16 10:29	04/07/16 19:10	1
Thorium 232	0.895		0.107	0.141		0.0922	pCi/g	04/06/16 10:29	04/07/16 19:10	1
<b>Other Detected</b>										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.280		0.0429	0.0518		0.0337	pCi/g	04/06/16 10:29	04/07/16 19:10	1

**Client Sample ID: L05-04-02-T-R-S-00**

**Lab Sample ID: 160-16778-2**

**Date Collected: 04/01/16 12:40**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

**Percent Solids: 78.4**

## 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	☼	04/05/16 02:58	04/07/16 10:14	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	0.0725	U	0.0412	0.0417	1.37	0.234	pCi/g	04/05/16 02:58	04/07/16 10:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	93		30 - 110					04/05/16 02:58	04/07/16 10:14	1

**Client Sample ID: L05-04-02-T-R-Q-00**

**Lab Sample ID: 160-16778-3**

**Date Collected: 04/01/16 12:40**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.03		0.134	0.169		0.119	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Americium 241	0.0181	U	0.0559	0.0559		0.0939	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Bismuth 212	1.33		0.394	0.417		0.345	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Bismuth 214	0.750		0.0874	0.117		0.0641	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Lead 212	1.00		0.0829	0.154		0.0704	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Lead 214	0.855		0.0783	0.119		0.0665	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Potassium 40	20.5		1.13	2.36		0.319	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Protactinium 231	0.574	U	0.256	0.264		1.18	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Radium 226	0.750		0.0874	0.117	1.00	0.0641	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Thorium 234	0.898		0.273	0.289	1.00	0.703	pCi/g	04/06/16 10:29	04/07/16 18:27	1

TestAmerica St. Louis

# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

Client Sample ID: L05-04-02-T-R-Q-00

Lab Sample ID: 160-16778-3

Date Collected: 04/01/16 12:40

Matrix: Solid

Date Received: 04/04/16 11:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium 235	0.257		0.140	0.142		0.176	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Protactinium 234m	-1.56	U	3.00	3.00		5.07	pCi/g	04/06/16 10:29	04/07/16 18:27	1
Thorium 232	1.03		0.134	0.169		0.119	pCi/g	04/06/16 10:29	04/07/16 18:27	1
<b>Other Detected</b>										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.342		0.0483	0.0598		0.0354	pCi/g	04/06/16 10:29	04/07/16 18:27	1

Client Sample ID: L05-04-02-T-R-Q-00

Lab Sample ID: 160-16778-3

Date Collected: 04/01/16 12:40

Matrix: Solid

Date Received: 04/04/16 11:00

Percent Solids: 80.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000066	0.000020	mg/Kg	☼	04/05/16 02:58	04/07/16 10:31	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.0878	U	0.0353	0.0363	1.32	0.225	pCi/g	04/05/16 02:58	04/07/16 10:31	1
<b>Carrier</b>										
Re	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
	95		30 - 110					04/05/16 02:58	04/07/16 10:31	1

Client Sample ID: L05-04-04-T-E-S-00

Lab Sample ID: 160-16778-4

Date Collected: 04/01/16 08:40

Matrix: Solid

Date Received: 04/04/16 11:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.05		0.127	0.166		0.0840	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Americium 241	-0.000951	U	0.0585	0.0585		0.0987	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Bismuth 212	1.42		0.408	0.434		0.330	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Bismuth 214	0.768		0.0852	0.117		0.0580	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Lead 212	0.993		0.0729	0.148		0.0591	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Lead 214	0.880		0.0798	0.121		0.0695	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Potassium 40	19.7		1.11	2.30		0.310	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Protactinium 231	-0.666	U	0.665	0.669		1.09	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Radium 226	0.768		0.0852	0.117	1.00	0.0580	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Thorium 234	0.744		0.265	0.276	1.00	0.713	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Uranium 235	0.211		0.141	0.142		0.171	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Protactinium 234m	3.91	U	2.58	2.61		4.48	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Thorium 232	1.05		0.127	0.166		0.0840	pCi/g	04/06/16 10:29	04/07/16 19:06	1

TestAmerica St. Louis

# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

**Client Sample ID: L05-04-04-T-E-S-00**

**Lab Sample ID: 160-16778-4**

**Date Collected: 04/01/16 08:40**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pb-210	1.55		0.635	0.660		0.768	pCi/g	04/06/16 10:29	04/07/16 19:06	1
Tl-208	0.314		0.0430	0.0540		0.0331	pCi/g	04/06/16 10:29	04/07/16 19:06	1

**Client Sample ID: L05-04-04-T-E-S-00**

**Lab Sample ID: 160-16778-4**

**Date Collected: 04/01/16 08:40**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

**Percent Solids: 66.5**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000082	0.000025	mg/Kg	☼	04/05/16 02:58	04/07/16 10:35	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	0.294		0.0737	0.0785	1.63	0.280	pCi/g	04/05/16 02:58	04/07/16 10:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	92		30 - 110					04/05/16 02:58	04/07/16 10:35	1

**Client Sample ID: L05-04-05-T-S-S-00**

**Lab Sample ID: 160-16778-5**

**Date Collected: 04/01/16 08:55**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

**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	0.932		0.152	0.179		0.0681	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Americium 241	0.00220	U	0.0528	0.0528		0.0897	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Bismuth 212	1.21		0.367	0.388		0.278	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Bismuth 214	0.552		0.0830	0.101		0.0576	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Lead 212	0.730		0.0757	0.121		0.0661	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Lead 214	0.672		0.0775	0.104		0.0650	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Potassium 40	14.1		1.13	1.84		0.233	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Protactinium 231	0.391	U	0.263	0.267		0.965	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Radium 226	0.552		0.0830	0.101	1.00	0.0576	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Thorium 234	0.839		0.268	0.282	1.00	0.743	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Uranium 235	0.161	U	0.124	0.126		0.218	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Protactinium 234m	1.04	U	1.86	1.86		7.08	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Thorium 232	0.932		0.152	0.179		0.0681	pCi/g	04/06/16 10:29	04/07/16 18:30	1
Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.276		0.0466	0.0547		0.0333	pCi/g	04/06/16 10:29	04/07/16 18:30	1

TestAmerica St. Louis

# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

**Client Sample ID: L05-04-05-T-S-S-00**

**Lab Sample ID: 160-16778-5**

**Date Collected: 04/01/16 08:55**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

**Percent Solids: 86.1**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000062	0.000019	mg/Kg	☼	04/05/16 02:58	04/07/16 10:39	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	0.146	U	0.103	0.104	1.24	0.212	pCi/g	04/05/16 02:58	04/07/16 10:39	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	94		30 - 110	04/05/16 02:58	04/07/16 10:39	1

**Client Sample ID: L05-04-06-T-R-S-00**

**Lab Sample ID: 160-16778-6**

**Date Collected: 04/01/16 12:55**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.29		0.128	0.182		0.102	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Americium 241	-0.00661	U	0.285	0.285		0.0783	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Bismuth 212	1.32		0.345	0.371		0.324	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Bismuth 214	0.877		0.0921	0.129		0.0621	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Lead 212	1.17		0.0840	0.174		0.0705	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Lead 214	1.06		0.0895	0.142		0.0791	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Potassium 40	22.0		1.17	2.50		0.327	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Protactinium 231	0.521	U	0.211	0.219		1.16	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Radium 226	0.877		0.0921	0.129	1.00	0.0621	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Thorium 234	1.27		0.514	0.531	1.00	0.814	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Uranium 235	0.0337	U	0.0807	0.0808		0.232	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Protactinium 234m	2.34	U	2.98	2.99		4.91	pCi/g	04/06/16 10:29	04/07/16 19:09	1
Thorium 232	1.29		0.128	0.182		0.102	pCi/g	04/06/16 10:29	04/07/16 19:09	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.410		0.0533	0.0679		0.0375	pCi/g	04/06/16 10:29	04/07/16 19:09	1

**Client Sample ID: L05-04-06-T-R-S-00**

**Lab Sample ID: 160-16778-6**

**Date Collected: 04/01/16 12:55**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

**Percent Solids: 80.5**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000065	0.000020	mg/Kg	☼	04/05/16 02:58	04/07/16 10:44	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	-0.0112	U	0.0452	0.0452	1.31	0.224	pCi/g	04/05/16 02:58	04/07/16 10:44	1

TestAmerica St. Louis

# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

**Client Sample ID: L05-04-06-T-R-S-00**

**Date Collected: 04/01/16 12:55**

**Date Received: 04/04/16 11:00**

**Lab Sample ID: 160-16778-6**

**Matrix: Solid**

**Percent Solids: 80.5**

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	95		30 - 110	04/05/16 02:58	04/07/16 10:44	1

**Client Sample ID: L05-04-08-T-S-S-00**

**Date Collected: 04/01/16 09:00**

**Date Received: 04/04/16 11:00**

**Lab Sample ID: 160-16778-7**

**Matrix: Solid**

## 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	0.863		0.134	0.160		0.107	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Americium 241	-0.00797	U	0.0541	0.0541		0.0917	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Bismuth 212	0.884		0.427	0.437		0.434	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Bismuth 214	0.654		0.107	0.127		0.0770	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Lead 212	0.822		0.0916	0.140		0.0800	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Lead 214	0.751		0.0839	0.115		0.0805	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Potassium 40	14.0		1.18	1.86		0.254	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Protactinium 231	0.505	U	0.234	0.240		1.35	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Radium 226	0.654		0.107	0.127	1.00	0.0770	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Thorium 234	1.78		0.565	0.595	1.00	0.857	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Uranium 235	0.590		0.201	0.210		0.233	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Protactinium 234m	1.54	U	3.12	3.13		6.27	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Thorium 232	0.863		0.134	0.160		0.107	pCi/g	04/06/16 10:29	04/07/16 19:11	1
Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.266		0.0458	0.0534		0.0299	pCi/g	04/06/16 10:29	04/07/16 19:11	1

**Client Sample ID: L05-04-08-T-S-S-00**

**Date Collected: 04/01/16 09:00**

**Date Received: 04/04/16 11:00**

**Lab Sample ID: 160-16778-7**

**Matrix: Solid**

**Percent Solids: 83.1**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.00025		0.000067	0.000020	mg/Kg	☼	04/05/16 02:58	04/07/16 10:48	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	4.20		0.404	0.559	1.34	0.229	pCi/g	04/05/16 02:58	04/07/16 10:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	90		30 - 110					04/05/16 02:58	04/07/16 10:48	1

TestAmerica St. Louis



# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

Client Sample ID: L05-04-09-T-R-S-00

Lab Sample ID: 160-16778-8

Date Collected: 04/01/16 10:45

Matrix: Solid

Date Received: 04/04/16 11:00

## 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	0.956		0.123	0.157		0.125	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Americium 241	0.00457	U	0.0598	0.0598		0.101	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Bismuth 212	0.718		0.351	0.358		0.379	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Bismuth 214	0.861		0.111	0.142		0.0714	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Lead 212	0.782		0.0807	0.129		0.0731	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Lead 214	0.822		0.0861	0.121		0.0780	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Potassium 40	14.3		1.17	1.88		0.362	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Protactinium 231	-0.538	U	0.720	0.722		1.19	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Radium 226	0.861		0.111	0.142	1.00	0.0714	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Thorium 234	0.788	U	0.274	0.286	1.00	0.820	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Uranium 235	0.134	U	0.139	0.139		0.224	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Protactinium 234m	2.02	U	1.88	1.89		6.06	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Thorium 232	0.956		0.123	0.157		0.125	pCi/g	04/06/16 10:29	04/07/16 20:09	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.						
Tl-208	0.282		0.0437	0.0526		0.0293	pCi/g	04/06/16 10:29	04/07/16 20:09	1

Client Sample ID: L05-04-09-T-R-S-00

Lab Sample ID: 160-16778-8

Date Collected: 04/01/16 10:45

Matrix: Solid

Date Received: 04/04/16 11:00

Percent Solids: 79.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000045	J	0.000066	0.000020	mg/Kg	☼	04/05/16 02:58	04/07/16 10:52	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	0.772		0.0298	0.0770	1.33	0.228	pCi/g	04/05/16 02:58	04/07/16 10:52	1
Carrier	%Yield	Qualifier	Limits							
Re	94		30 - 110							
								Prepared	Analyzed	Dil Fac
								04/05/16 02:58	04/07/16 10:52	1

Client Sample ID: L05-04-11-T-S-S-00

Lab Sample ID: 160-16778-9

Date Collected: 04/01/16 09:05

Matrix: Solid

Date Received: 04/04/16 11:00

## 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	0.527		0.0809	0.0972		0.0492	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Americium 241	0.0107	U	0.0474	0.0474		0.0795	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Bismuth 212	0.560		0.208	0.216		0.274	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Bismuth 214	0.511		0.0601	0.0802		0.0421	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Lead 212	0.390		0.0434	0.0665		0.0403	pCi/g	04/06/16 10:29	04/07/16 20:10	1

TestAmerica St. Louis



# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

**Client Sample ID: L05-04-11-T-S-S-00**

**Lab Sample ID: 160-16778-9**

**Date Collected: 04/01/16 09:05**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Lead 214	0.596		0.0629	0.0883		0.0465	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Potassium 40	9.07		0.668	1.14		0.210	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Protactinium 231	0.138	U	0.125	0.126		0.687	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Radium 226	0.511		0.0601	0.0802	1.00	0.0421	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Thorium 234	2.03		0.415	0.466	1.00	0.597	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Uranium 235	0.461		0.0981	0.109		0.129	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Protactinium 234m	1.83	U	1.25	1.26		2.88	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Thorium 232	0.527		0.0809	0.0972		0.0492	pCi/g	04/06/16 10:29	04/07/16 20:10	1
<b>Other Detected</b>										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.170		0.0271	0.0323		0.0193	pCi/g	04/06/16 10:29	04/07/16 20:10	1

**Client Sample ID: L05-04-11-T-S-S-00**

**Lab Sample ID: 160-16778-9**

**Date Collected: 04/01/16 09:05**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

**Percent Solids: 84.5**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.00056		0.000062	0.000019	mg/Kg	☼	04/05/16 02:58	04/07/16 10:57	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	9.62		0.420	0.980	1.24	0.211	pCi/g	04/05/16 02:58	04/07/16 10:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	95		30 - 110					04/05/16 02:58	04/07/16 10:57	1

**Client Sample ID: L05-04-12-T-R-S-00**

**Lab Sample ID: 160-16778-10**

**Date Collected: 04/01/16 13:25**

**Matrix: Solid**

**Date Received: 04/04/16 11:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.05		0.132	0.170		0.0907	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Americium 241	0.00415	U	0.0521	0.0521		0.0882	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Bismuth 212	0.754		0.325	0.335		0.449	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Bismuth 214	0.683		0.0875	0.113		0.0607	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Lead 212	0.902		0.0890	0.147		0.0796	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Lead 214	0.807		0.0837	0.119		0.0653	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Potassium 40	16.8		1.14	2.07		0.247	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Protactinium 231	-0.230	U	0.587	0.588		0.994	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Radium 226	0.683		0.0875	0.113	1.00	0.0607	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Thorium 234	1.18		0.486	0.502	1.00	0.762	pCi/g	04/06/16 10:29	04/07/16 20:10	1

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# Client Sample Results

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

TestAmerica Job ID: 160-16778-1

Client Sample ID: L05-04-12-T-R-S-00

Lab Sample ID: 160-16778-10

Date Collected: 04/01/16 13:25

Matrix: Solid

Date Received: 04/04/16 11:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium 235	0.164	U	0.108	0.109		0.171	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Protactinium 234m	0.628	U	3.05	3.05		5.37	pCi/g	04/06/16 10:29	04/07/16 20:10	1
Thorium 232	1.05		0.132	0.170		0.0907	pCi/g	04/06/16 10:29	04/07/16 20:10	1
<b>Other Detected</b>										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.292		0.0464	0.0554		0.0356	pCi/g	04/06/16 10:29	04/07/16 20:10	1

Client Sample ID: L05-04-12-T-R-S-00

Lab Sample ID: 160-16778-10

Date Collected: 04/01/16 13:25

Matrix: Solid

Date Received: 04/04/16 11:00

Percent Solids: 79.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000024	J	0.000069	0.000021	mg/Kg	☼	04/05/16 02:58	04/07/16 11:01	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	0.416		0.0601	0.0712	1.38	0.236	pCi/g	04/05/16 02:58	04/07/16 11:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	91		30 - 110					04/05/16 02:58	04/07/16 11:01	1

# QC Sample Results

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

TestAmerica Job ID: 160-16778-1

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

Lab Sample ID: MB 160-244121/1-A  
Matrix: Solid  
Analysis Batch: 244891

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 244121

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000051	0.000015	mg/Kg		04/05/16 02:58	04/07/16 09:35	1

Lab Sample ID: LCS 160-244121/2-A  
Matrix: Solid  
Analysis Batch: 244891

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 244121

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	0.00119	0.00118		mg/Kg		99	80 - 120

Lab Sample ID: 160-16777-A-1-D MS  
Matrix: Solid  
Analysis Batch: 244891

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 244121

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Technetium 99	ND		0.00148	0.00150		mg/Kg	✱	102	75 - 125

Lab Sample ID: 160-16777-A-1-E MSD  
Matrix: Solid  
Analysis Batch: 244891

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 244121

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Technetium 99	ND		0.00148	0.00146		mg/Kg	✱	99	75 - 125	3	30

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

Lab Sample ID: MB 160-244121/1-A  
Matrix: Solid  
Analysis Batch: 244892

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 244121

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.03870	U	0.0746	0.0747	1.03	0.176	pCi/g	04/05/16 02:58	04/07/16 09:35	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	97		30 - 110					04/05/16 02:58	04/07/16 09:35	1

Lab Sample ID: LCS 160-244121/2-A  
Matrix: Solid  
Analysis Batch: 244892

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 244121

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	20.4	20.16		1.87	1.01	0.173	pCi/g	99	80 - 120
Carrier	LCS %Yield	LCS Qualifier	Limits						
Re	99		30 - 110						

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# QC Sample Results

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

TestAmerica Job ID: 160-16778-1

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

Lab Sample ID: 160-16777-A-1-D MS

Matrix: Solid

Analysis Batch: 244892

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 244121

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	0.0952	U	25.3	25.72		2.45	1.41	0.241	pCi/g	102	75 - 125
<b>Carrier</b>											
	<b>MS %Yield</b>	<b>MS Qualifier</b>	<b>Limits</b>								
Re	88		30 - 110								

Lab Sample ID: 160-16777-A-1-E MSD

Matrix: Solid

Analysis Batch: 244892

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 244121

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	0.0952	U	25.4	25.05		2.43	1.39	0.238	pCi/g	99	75 - 125	0.14	1
<b>Carrier</b>													
	<b>MSD %Yield</b>	<b>MSD Qualifier</b>	<b>Limits</b>										
Re	90		30 - 110										

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

Lab Sample ID: MB 160-244596/1-A

Matrix: Solid

Analysis Batch: 244918

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 244596

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	-0.009173	U	0.0404	0.0404		0.0774	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Americium 241	0.002315	U	0.0110	0.0110		0.0203	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Bismuth 212	-0.03238	U	0.158	0.158		0.296	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Bismuth 214	-0.002624	U	0.0200	0.0200		0.0513	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Lead 212	0.003367	U	0.0141	0.0141		0.0279	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Lead 214	-0.001690	U	0.0276	0.0276		0.0398	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Potassium 40	-0.06207	U	2.48	2.48		0.547	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Protactinium 231	-0.007936	U	0.159	0.159		0.316	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Radium 226	-0.002624	U	0.0200	0.0200	1.00	0.0513	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Thorium 234	0.08533	U	0.132	0.133	1.00	0.245	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Uranium 235	-0.0005953	U	0.00324	0.00324		0.0673	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Protactinium 234m	-0.1169	U	0.532	0.532		1.90	pCi/g	04/06/16 10:29	04/07/16 17:52	1
Thorium 232	-0.009173	U	0.0404	0.0404		0.0774	pCi/g	04/06/16 10:29	04/07/16 17:52	1
<b>Other Detected Radionuclides</b>										
	<b>MB Result</b>	<b>MB Qualifier</b>	<b>Count Uncert. (2σ+/-)</b>	<b>Total Uncert. (2σ+/-)</b>	<b>RL</b>	<b>MDC</b>	<b>Unit</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Other Detected Radionuclide	None						pCi/g	04/06/16 10:29	04/07/16 17:52	1

TestAmerica St. Louis

# QC Sample Results

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

TestAmerica Job ID: 160-16778-1

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

Lab Sample ID: LCS 160-244596/2-A  
Matrix: Solid  
Analysis Batch: 244920

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 244596

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	101	103.2		10.8		0.522	pCi/g	103	87 - 116
Cesium 137	34.1	37.79		3.90	0.200	0.141	pCi/g	111	87 - 120
Cobalt 60	31.6	34.25		3.40		0.0991	pCi/g	108	87 - 115

Lab Sample ID: 160-16778-1 DU  
Matrix: Solid  
Analysis Batch: 244919

Client Sample ID: L05-04-01-T-S-S-00  
Prep Type: Total/NA  
Prep Batch: 244596

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	0.999		1.097		0.162		0.0786	pCi/g	0.31	1
Americium 241	-0.0151	U	0.01561	U	0.0545		0.0914	pCi/g	0.28	1
Bismuth 212	1.14		1.464		0.475		0.401	pCi/g	0.34	1
Bismuth 214	0.666		0.8268		0.135		0.0750	pCi/g	0.65	1
Lead 212	1.04		0.9966		0.152		0.0694	pCi/g	0.13	1
Lead 214	0.817		0.8406		0.123		0.0600	pCi/g	0.10	1
Potassium 40	18.5		18.58		2.26		0.400	pCi/g	0.01	1
Protactinium 231	0.603	U	0.3956	U	0.207		0.927	pCi/g	0.45	1
Radium 226	0.666		0.8268		0.135	1.00	0.0750	pCi/g	0.65	1
Thorium 234	1.38		0.8684		0.311	1.00	0.793	pCi/g	0.65	1
Uranium 235	0.167	U	0.2754		0.149		0.193	pCi/g	0.40	1
Protactinium 234m	1.99	U	0.0000	U	1.04		3.46	pCi/g	0.56	1
Thorium 232	0.999		1.097		0.162		0.0786	pCi/g	0.31	1
<b>Total</b>										
<b>Other Detected Radionuclides</b>	<b>Sample Result</b>	<b>Sample Qual</b>	<b>DU Result</b>	<b>DU Qual</b>	<b>Uncert. (2σ+/-)</b>	<b>RL</b>	<b>MDC</b>	<b>Unit</b>	<b>RER</b>	<b>RER Limit</b>
Tl-208	0.318		0.3383		0.0585		0.0319	pCi/g	0.18	1

# QC Association Summary

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

TestAmerica Job ID: 160-16778-1

## Metals

### Prep Batch: 244121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16777-A-1-D MS	Matrix Spike	Total/NA	Solid	None	
160-16777-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	None	
160-16778-1	L05-04-01-T-S-S-00	Total/NA	Solid	None	
160-16778-2	L05-04-02-T-R-S-00	Total/NA	Solid	None	
160-16778-3	L05-04-02-T-R-Q-00	Total/NA	Solid	None	
160-16778-4	L05-04-04-T-E-S-00	Total/NA	Solid	None	
160-16778-5	L05-04-05-T-S-S-00	Total/NA	Solid	None	
160-16778-6	L05-04-06-T-R-S-00	Total/NA	Solid	None	
160-16778-7	L05-04-08-T-S-S-00	Total/NA	Solid	None	
160-16778-8	L05-04-09-T-R-S-00	Total/NA	Solid	None	
160-16778-9	L05-04-11-T-S-S-00	Total/NA	Solid	None	
160-16778-10	L05-04-12-T-R-S-00	Total/NA	Solid	None	
LCS 160-244121/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-244121/1-A	Method Blank	Total/NA	Solid	None	

### Analysis Batch: 244891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16777-A-1-D MS	Matrix Spike	Total/NA	Solid	6020A	244121
160-16777-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	6020A	244121
160-16778-1	L05-04-01-T-S-S-00	Total/NA	Solid	6020A	244121
160-16778-2	L05-04-02-T-R-S-00	Total/NA	Solid	6020A	244121
160-16778-3	L05-04-02-T-R-Q-00	Total/NA	Solid	6020A	244121
160-16778-4	L05-04-04-T-E-S-00	Total/NA	Solid	6020A	244121
160-16778-5	L05-04-05-T-S-S-00	Total/NA	Solid	6020A	244121
160-16778-6	L05-04-06-T-R-S-00	Total/NA	Solid	6020A	244121
160-16778-7	L05-04-08-T-S-S-00	Total/NA	Solid	6020A	244121
160-16778-8	L05-04-09-T-R-S-00	Total/NA	Solid	6020A	244121
160-16778-9	L05-04-11-T-S-S-00	Total/NA	Solid	6020A	244121
160-16778-10	L05-04-12-T-R-S-00	Total/NA	Solid	6020A	244121
LCS 160-244121/2-A	Lab Control Sample	Total/NA	Solid	6020A	244121
MB 160-244121/1-A	Method Blank	Total/NA	Solid	6020A	244121

## General Chemistry

### Analysis Batch: 244119

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16768-A-1 DU	Duplicate	Total/NA	Solid	Moisture	
160-16778-1	L05-04-01-T-S-S-00	Total/NA	Solid	Moisture	
160-16778-2	L05-04-02-T-R-S-00	Total/NA	Solid	Moisture	
160-16778-3	L05-04-02-T-R-Q-00	Total/NA	Solid	Moisture	
160-16778-4	L05-04-04-T-E-S-00	Total/NA	Solid	Moisture	
160-16778-5	L05-04-05-T-S-S-00	Total/NA	Solid	Moisture	
160-16778-6	L05-04-06-T-R-S-00	Total/NA	Solid	Moisture	
160-16778-7	L05-04-08-T-S-S-00	Total/NA	Solid	Moisture	
160-16778-8	L05-04-09-T-R-S-00	Total/NA	Solid	Moisture	
160-16778-9	L05-04-11-T-S-S-00	Total/NA	Solid	Moisture	
160-16778-10	L05-04-12-T-R-S-00	Total/NA	Solid	Moisture	

TestAmerica St. Louis

# QC Association Summary

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

TestAmerica Job ID: 160-16778-1

## Rad

### Leach Batch: 244065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16778-1	L05-04-01-T-S-S-00	Total/NA	Solid	Dry and Grind	
160-16778-1 DU	L05-04-01-T-S-S-00	Total/NA	Solid	Dry and Grind	
160-16778-2	L05-04-02-T-R-S-00	Total/NA	Solid	Dry and Grind	
160-16778-3	L05-04-02-T-R-Q-00	Total/NA	Solid	Dry and Grind	
160-16778-4	L05-04-04-T-E-S-00	Total/NA	Solid	Dry and Grind	
160-16778-5	L05-04-05-T-S-S-00	Total/NA	Solid	Dry and Grind	
160-16778-6	L05-04-06-T-R-S-00	Total/NA	Solid	Dry and Grind	
160-16778-7	L05-04-08-T-S-S-00	Total/NA	Solid	Dry and Grind	
160-16778-8	L05-04-09-T-R-S-00	Total/NA	Solid	Dry and Grind	
160-16778-9	L05-04-11-T-S-S-00	Total/NA	Solid	Dry and Grind	
160-16778-10	L05-04-12-T-R-S-00	Total/NA	Solid	Dry and Grind	

### Prep Batch: 244121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16777-A-1-D MS	Matrix Spike	Total/NA	Solid	None	
160-16777-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	None	
160-16778-1	L05-04-01-T-S-S-00	Total/NA	Solid	None	
160-16778-2	L05-04-02-T-R-S-00	Total/NA	Solid	None	
160-16778-3	L05-04-02-T-R-Q-00	Total/NA	Solid	None	
160-16778-4	L05-04-04-T-E-S-00	Total/NA	Solid	None	
160-16778-5	L05-04-05-T-S-S-00	Total/NA	Solid	None	
160-16778-6	L05-04-06-T-R-S-00	Total/NA	Solid	None	
160-16778-7	L05-04-08-T-S-S-00	Total/NA	Solid	None	
160-16778-8	L05-04-09-T-R-S-00	Total/NA	Solid	None	
160-16778-9	L05-04-11-T-S-S-00	Total/NA	Solid	None	
160-16778-10	L05-04-12-T-R-S-00	Total/NA	Solid	None	
LCS 160-244121/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-244121/1-A	Method Blank	Total/NA	Solid	None	

### Prep Batch: 244596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16778-1	L05-04-01-T-S-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-1 DU	L05-04-01-T-S-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-2	L05-04-02-T-R-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-3	L05-04-02-T-R-Q-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-4	L05-04-04-T-E-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-5	L05-04-05-T-S-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-6	L05-04-06-T-R-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-7	L05-04-08-T-S-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-8	L05-04-09-T-R-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-9	L05-04-11-T-S-S-00	Total/NA	Solid	Fill_Geo-0	244065
160-16778-10	L05-04-12-T-R-S-00	Total/NA	Solid	Fill_Geo-0	244065
LCS 160-244596/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
MB 160-244596/1-A	Method Blank	Total/NA	Solid	Fill_Geo-0	

## Tracer/Carrier Summary

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

TestAmerica Job ID: 160-16778-1

**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)
160-16777-A-1-D MS	Matrix Spike	88
160-16777-A-1-E MSD	Matrix Spike Duplicate	90
160-16778-1	L05-04-01-T-S-S-00	97
160-16778-2	L05-04-02-T-R-S-00	93
160-16778-3	L05-04-02-T-R-Q-00	95
160-16778-4	L05-04-04-T-E-S-00	92
160-16778-5	L05-04-05-T-S-S-00	94
160-16778-6	L05-04-06-T-R-S-00	95
160-16778-7	L05-04-08-T-S-S-00	90
160-16778-8	L05-04-09-T-R-S-00	94
160-16778-9	L05-04-11-T-S-S-00	95
160-16778-10	L05-04-12-T-R-S-00	91
LCS 160-244121/2-A	Lab Control Sample	99
MB 160-244121/1-A	Method Blank	97

### Tracer/Carrier Legend

Re = Re