

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: 160-17506-1

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:
5/31/2016 4:49:03 PM

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

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

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Case Narrative

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

TestAmerica Job ID: 160-17506-1

Job ID: 160-17506-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

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

Report Number: 160-17506-1

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 5/24/2016 12:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 20.0° C and 20.0° C.

TECHNETIUM-99 (ICPMS)

Samples L06-01-01-P-S-S-00 (160-17506-1), L06-01-02-P-R-S-00 (160-17506-2), L06-01-04-P-S-S-00 (160-17506-3), L06-01-05-P-R-S-00 (160-17506-4), L06-01-07-P-S-S-00 (160-17506-5), L06-01-08-P-R-S-00 (160-17506-6), L06-01-08-P-R-Q-00 (160-17506-7), L06-01-10-P-S-S-00 (160-17506-8), L06-01-10-P-S-Q-00 (160-17506-9), L06-01-11-P-R-S-00 (160-17506-10), L06-01-13-P-S-S-00 (160-17506-11), L06-01-14-P-R-S-00 (160-17506-12), L06-01-16-P-S-S-00 (160-17506-13), L06-01-17-P-R-S-00 (160-17506-14), L06-01-19-P-S-S-00 (160-17506-15), L06-01-20-P-R-S-00 (160-17506-16), L06-01-22-P-S-S-00 (160-17506-17) and L06-01-23-P-R-S-00 (160-17506-18) were analyzed for Technetium-99 (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 05/25/2016 and analyzed on 05/27/2016.

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

Case Narrative

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

TestAmerica Job ID: 160-17506-1

Job ID: 160-17506-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

PERCENT SOLIDS

Samples L06-01-01-P-S-S-00 (160-17506-1), L06-01-02-P-R-S-00 (160-17506-2), L06-01-04-P-S-S-00 (160-17506-3), L06-01-05-P-R-S-00 (160-17506-4), L06-01-07-P-S-S-00 (160-17506-5), L06-01-08-P-R-S-00 (160-17506-6), L06-01-08-P-R-Q-00 (160-17506-7), L06-01-10-P-S-S-00 (160-17506-8), L06-01-10-P-S-Q-00 (160-17506-9), L06-01-11-P-R-S-00 (160-17506-10), L06-01-13-P-S-S-00 (160-17506-11), L06-01-14-P-R-S-00 (160-17506-12), L06-01-16-P-S-S-00 (160-17506-13), L06-01-17-P-R-S-00 (160-17506-14), L06-01-19-P-S-S-00 (160-17506-15), L06-01-20-P-R-S-00 (160-17506-16), L06-01-22-P-S-S-00 (160-17506-17) and L06-01-23-P-R-S-00 (160-17506-18) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 05/25/2016.

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 L06-01-01-P-S-S-00 (160-17506-1), L06-01-02-P-R-S-00 (160-17506-2), L06-01-04-P-S-S-00 (160-17506-3), L06-01-05-P-R-S-00 (160-17506-4), L06-01-07-P-S-S-00 (160-17506-5), L06-01-08-P-R-S-00 (160-17506-6), L06-01-08-P-R-Q-00 (160-17506-7), L06-01-10-P-S-S-00 (160-17506-8), L06-01-10-P-S-Q-00 (160-17506-9), L06-01-11-P-R-S-00 (160-17506-10), L06-01-13-P-S-S-00 (160-17506-11), L06-01-14-P-R-S-00 (160-17506-12), L06-01-16-P-S-S-00 (160-17506-13), L06-01-17-P-R-S-00 (160-17506-14), L06-01-19-P-S-S-00 (160-17506-15), L06-01-20-P-R-S-00 (160-17506-16), L06-01-22-P-S-S-00 (160-17506-17) and L06-01-23-P-R-S-00 (160-17506-18) were analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE GA-01-R. The samples were leached on 05/24/2016, prepared on 05/26/2016 and analyzed on 05/27/2016.

Batch 160-253338:

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. L06-01-01-P-S-S-00 (160-17506-1), L06-01-02-P-R-S-00 (160-17506-2), L06-01-04-P-S-S-00 (160-17506-3), L06-01-05-P-R-S-00 (160-17506-4), L06-01-07-P-S-S-00 (160-17506-5), L06-01-08-P-R-S-00 (160-17506-6), L06-01-08-P-R-Q-00 (160-17506-7), L06-01-10-P-S-S-00 (160-17506-8), L06-01-10-P-S-Q-00 (160-17506-9), L06-01-11-P-R-S-00 (160-17506-10), L06-01-13-P-S-S-00 (160-17506-11), L06-01-14-P-R-S-00 (160-17506-12), L06-01-16-P-S-S-00 (160-17506-13), L06-01-17-P-R-S-00 (160-17506-14), L06-01-19-P-S-S-00 (160-17506-15), L06-01-20-P-R-S-00 (160-17506-16), L06-01-22-P-S-S-00 (160-17506-17), L06-01-23-P-R-S-00 (160-17506-18), (LCS 160-253338/2-A), (MB 160-253338/1-A) and (160-17506-A-1-G DU)

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

Hematite Decommissioning Project

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

Revision: 4

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-052416-01 Page 1/2				Requested Analysis										Laboratory Name:			
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	TA-MO	
Contact Person: Clark Evers																Laboratory Address: 13715 Rider Trail North	
Phone Number: 314-810-3336																Phone No. 314-298-8566	
Sampler Name Jahmai Williams																Laboratory Contact Person: Ivan Vania	
				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)									
L06-01-01-P-S-S-00	5/22/2016	9:20	S	G	X		X	X						1	LSA 06-01		
L06-01-02-P-R-S-00	5/22/2016	9:40	S	C	X		X	X						1	LSA 06-01		
L06-01-04-P-S-S-00	5/22/2016	8:40	S	G	X		X	X						1	LSA 06-01		
L06-01-05-P-R-S-00	5/22/2016	9:05	S	C	X		X	X						1	LSA 06-01		
L06-01-07-P-S-S-00	5/21/2016	10:30	S	G	X		X	X						1	LSA 06-01		
L06-01-08-P-R-S-00	5/21/2016	10:45	S	C	X		X	X						1	LSA 06-01		
L06-01-08-P-R-Q-00	5/21/2016	10:45	S	C	X		X	X						1	LSA 06-01		
L06-01-10-P-S-S-00	5/21/2016	11:00	S	G	X		X	X						1	LSA 06-01		
L06-01-10-P-S-Q-00	5/21/2016	11:00	S	G	X		X	X						1	LSA 06-01		
L06-01-11-P-R-S-00	5/21/2016	11:10	S	C	X		X	X						1	LSA 06-01		
L06-01-13-P-S-S-00	5/21/2016	11:30	S	G	X		X	X						1	LSA 06-01		
L06-01-14-P-R-S-00	5/24/2016	8:10	S	C	X		X	X						1	LSA 06-01		
Relinquished by: <i>C. Gorsun</i> <i>Chief</i>		Date/Time: 5-24-16		Received by: <i>1286</i>		Date/Time: 5-24-16		Total: 18		Cooler Temperature: Ambient							
Company Name: WEL		Date/Time: 110		Company Name: CROSSROADS		Date/Time: 1110		Cooler ID: 0523-05/06		Shipper and Number:							
Received by:		Date/Time:		Relinquished by: <i>5/24/16 1245</i>		Date/Time:		Comments: N/A									
Company Name:				Company Name: <i>Richard Allen</i>													
Relinquished by:		Date/Time:		Received by: <i>1245</i>		Date/Time: 5-24-16		Verified By: <i>C. Gorsun</i>									
Company Name:				Company Name: <i>1245</i>				<i>Chief</i> 5-24-16									



160-17506 Chain of Custody

Hematite Decommissioning Project

Procedure HDP-PR-QA-006, Chain of Custody
 Revision: 4
 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-052416-01 Page 2/2				Requested Analysis										Laboratory Name:				
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	TA-MO	
Contact Person: Clark Evers																	Laboratory Address: 13715 Rider Trail North	
Phone Number: 314-810-3336																	Phone No. 314-298-8566	
Sampler Name: Jahmai Williams																	Laboratory Contact Person: Ivan Vania	
				Phone No. 708-870-8453														
				Turn Around Time														
				Rush (7 days)														
				Remarks														
Sample ID	Date	Time	Matrix															
L06-01-16-P-S-S-00	5/21/2016	9:45	S	G	X		X	X									LSA 06-01	
L06-01-17-P-R-S-00	5/21/2016	10:00	S	C	X		X	X									LSA 06-01	
L06-01-19-P-S-S-00	5/21/2016	9:20	S	G	X		X	X									LSA 06-01	
L06-01-20-P-R-S-00	5/21/2016	9:35	S	C	X		X	X									LSA 06-01	
L06-01-22-P-S-S-00	5/21/2016	8:10	S	G	X		X	X									LSA 06-01	
L06-01-23-P-R-S-00	5/21/2016	9:10	S	C	X		X	X									LSA 06-01	
Relinquished by: <i>C. Gorsun</i>				Date/Time 5-24-16		Received by: <i>1286</i>		Date/Time 5-24-16		Total 18		Cooler Temperature: Ambient						
Company Name: WEC				1110		Company Name: CROSSROADS		1110		Cooler ID: 0523-05/06		Shipper and Number:						
Received by:				Date/Time		Relinquished by: <i>5/24/16 1245</i>		Date/Time		Comments: N/A								
Company Name:						Company Name: <i>Richard Allen</i>												
Relinquished by:				Date/Time		Received by: <i>1500</i>		Date/Time		Verified By: <i>C. Gorsun</i> <i>Cliff A 5-24-16</i>								
Company Name:						Company Name: <i>1151</i>		<i>5/24/16 1245</i>										



Login Sample Receipt Checklist

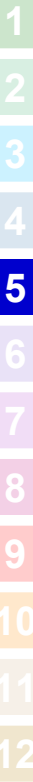
Client: Westinghouse Electric Company LLC

Job Number: 160-17506-1

Login Number: 17506
List Number: 1
Creator: Dedner, Connie L

List Source: TestAmerica St. Louis

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

TestAmerica Job ID: 160-17506-1

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: 160-17506-1

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: 160-17506-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-17506-1	L06-01-01-P-S-S-00	Solid	05/22/16 09:20	05/24/16 12:45
160-17506-2	L06-01-02-P-R-S-00	Solid	05/22/16 09:40	05/24/16 12:45
160-17506-3	L06-01-04-P-S-S-00	Solid	05/22/16 08:40	05/24/16 12:45
160-17506-4	L06-01-05-P-R-S-00	Solid	05/22/16 09:05	05/24/16 12:45
160-17506-5	L06-01-07-P-S-S-00	Solid	05/21/16 10:30	05/24/16 12:45
160-17506-6	L06-01-08-P-R-S-00	Solid	05/21/16 10:45	05/24/16 12:45
160-17506-7	L06-01-08-P-R-Q-00	Solid	05/21/16 10:45	05/24/16 12:45
160-17506-8	L06-01-10-P-S-S-00	Solid	05/21/16 11:00	05/24/16 12:45
160-17506-9	L06-01-10-P-S-Q-00	Solid	05/21/16 11:00	05/24/16 12:45
160-17506-10	L06-01-11-P-R-S-00	Solid	05/21/16 11:10	05/24/16 12:45
160-17506-11	L06-01-13-P-S-S-00	Solid	05/21/16 11:30	05/24/16 12:45
160-17506-12	L06-01-14-P-R-S-00	Solid	05/24/16 08:10	05/24/16 12:45
160-17506-13	L06-01-16-P-S-S-00	Solid	05/21/16 09:45	05/24/16 12:45
160-17506-14	L06-01-17-P-R-S-00	Solid	05/21/16 10:00	05/24/16 12:45
160-17506-15	L06-01-19-P-S-S-00	Solid	05/21/16 09:20	05/24/16 12:45
160-17506-16	L06-01-20-P-R-S-00	Solid	05/21/16 09:35	05/24/16 12:45
160-17506-17	L06-01-22-P-S-S-00	Solid	05/21/16 08:10	05/24/16 12:45
160-17506-18	L06-01-23-P-R-S-00	Solid	05/21/16 09:10	05/24/16 12:45

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-01-P-S-S-00

Lab Sample ID: 160-17506-1

Date Collected: 05/22/16 09:20

Matrix: Solid

Date Received: 05/24/16 12:45

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	1.12		0.121	0.166		0.138	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Americium 241	-0.0326	U	0.0768	0.0768		0.108	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Bismuth 212	1.29		0.401	0.423		0.361	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Bismuth 214	0.747		0.100	0.127		0.0710	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Lead 212	1.04		0.0765	0.155		0.0641	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Lead 214	0.797		0.0825	0.117		0.0767	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Potassium 40	19.5		1.26	2.36		0.242	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Protactinium 231	0.343	U	0.758	0.759		1.72	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Radium 226	0.747		0.100	0.127	1.00	0.0710	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Thorium 234	1.08		0.492	0.504	1.00	0.762	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Uranium 235	0.182	U	0.215	0.216		0.355	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Protactinium 234m	6.63		3.06	3.13		2.90	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Thorium 232	1.12		0.121	0.166		0.138	pCi/g	05/26/16 05:57	05/27/16 16:25	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.						
	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.346		0.0519	0.0631		0.0389	pCi/g	05/26/16 05:57	05/27/16 16:25	1

Client Sample ID: L06-01-01-P-S-S-00

Lab Sample ID: 160-17506-1

Date Collected: 05/22/16 09:20

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 84.6

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000065	0.000019	mg/Kg	☼	05/25/16 15:18	05/27/16 08:26	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	0.0399	U	0.00757	0.00841	1.30	0.222	pCi/g	05/25/16 15:18	05/27/16 08:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	90		30 - 110					05/25/16 15:18	05/27/16 08:26	1

Client Sample ID: L06-01-02-P-R-S-00

Lab Sample ID: 160-17506-2

Date Collected: 05/22/16 09:40

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.994		0.135	0.169		0.0969	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Americium 241	0.000282	U	0.105	0.105		0.175	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Bismuth 212	1.97		0.373	0.425		0.130	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Bismuth 214	0.677		0.101	0.123		0.0744	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Lead 212	0.921		0.0751	0.141		0.0599	pCi/g	05/26/16 05:57	05/27/16 16:26	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-02-P-R-S-00

Lab Sample ID: 160-17506-2

Date Collected: 05/22/16 09:40

Matrix: Solid

Date Received: 05/24/16 12:45

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+/-)						
Lead 214	0.720		0.0934	0.120		0.0732	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Potassium 40	15.1		1.19	1.95		0.174	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Protactinium 231	-0.561	U	1.66	1.67		2.78	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Radium 226	0.677		0.101	0.123	1.00	0.0744	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Thorium 234	0.796	U	0.566	0.572	1.00	0.909	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Uranium 235	-0.140	U	0.197	0.198		0.630	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Protactinium 234m	3.24	U	5.66	5.67		7.16	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Thorium 232	0.994		0.135	0.169		0.0969	pCi/g	05/26/16 05:57	05/27/16 16:26	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.339		0.0563	0.0664		0.0410	pCi/g	05/26/16 05:57	05/27/16 16:26	1

Client Sample ID: L06-01-02-P-R-S-00

Lab Sample ID: 160-17506-2

Date Collected: 05/22/16 09:40

Matrix: Solid

Date Received: 05/24/16 12:45

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		0.000070	0.000021	mg/Kg	☼	05/25/16 15:18	05/27/16 08:39	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	0.0167	U	0.0495	0.0496	1.39	0.238	pCi/g	05/25/16 15:18	05/27/16 08:39	1
Carrier			Limit					Prepared	Analyzed	Dil Fac
Re			88	30 - 110				05/25/16 15:18	05/27/16 08:39	1

Client Sample ID: L06-01-04-P-S-S-00

Lab Sample ID: 160-17506-3

Date Collected: 05/22/16 08:40

Matrix: Solid

Date Received: 05/24/16 12:45

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	1.14		0.164	0.200		0.114	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Americium 241	0.00792	U	0.0833	0.0833		0.139	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Bismuth 212	1.27		0.327	0.352		0.396	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Bismuth 214	0.705		0.0760	0.105		0.0619	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Lead 212	1.03		0.0681	0.150		0.0580	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Lead 214	0.880		0.0749	0.118		0.0687	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Potassium 40	19.9		1.09	2.28		0.260	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Protactinium 231	-0.561	U	1.66	1.66		2.76	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Radium 226	0.705		0.0760	0.105	1.00	0.0619	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Thorium 234	1.21		0.277	0.305	1.00	0.748	pCi/g	05/26/16 05:57	05/27/16 16:27	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-04-P-S-S-00

Lab Sample ID: 160-17506-3

Date Collected: 05/22/16 08:40

Matrix: Solid

Date Received: 05/24/16 12:45

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+/-)						
Uranium 235	0.189		0.147	0.149		0.189	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Protactinium 234m	1.63	U	2.80	2.81		8.73	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Thorium 232	1.14		0.164	0.200		0.114	pCi/g	05/26/16 05:57	05/27/16 16:27	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.						
	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.363		0.0424	0.0565		0.0294	pCi/g	05/26/16 05:57	05/27/16 16:27	1

Client Sample ID: L06-01-04-P-S-S-00

Lab Sample ID: 160-17506-3

Date Collected: 05/22/16 08:40

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 85.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000021	J	0.000068	0.000020	mg/Kg	☼	05/25/16 15:18	05/27/16 08:43	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	0.355		0.0841	0.0902	1.37	0.234	pCi/g	05/25/16 15:18	05/27/16 08:43	1
Carrier			Limit					Prepared	Analyzed	Dil Fac
Re	87		30 - 110					05/25/16 15:18	05/27/16 08:43	1

Client Sample ID: L06-01-05-P-R-S-00

Lab Sample ID: 160-17506-4

Date Collected: 05/22/16 09:05

Matrix: Solid

Date Received: 05/24/16 12:45

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	1.07		0.108	0.153		0.0945	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Americium 241	0.0298	U	0.0854	0.0854		0.142	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Bismuth 212	1.24		0.366	0.388		0.317	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Bismuth 214	0.688		0.0803	0.108		0.0565	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Lead 212	0.963		0.0619	0.139		0.0527	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Lead 214	0.795		0.0643	0.105		0.0477	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Potassium 40	17.2		1.03	2.03		0.388	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Protactinium 231	-0.233	U	1.15	1.15		1.93	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Radium 226	0.688		0.0803	0.108	1.00	0.0565	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Thorium 234	0.943		0.283	0.299	1.00	0.691	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Uranium 235	0.140	U	0.118	0.119		0.149	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Protactinium 234m	2.46	U	3.25	3.26		5.68	pCi/g	05/26/16 05:57	05/27/16 17:01	1
Thorium 232	1.07		0.108	0.153		0.0945	pCi/g	05/26/16 05:57	05/27/16 17:01	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-05-P-R-S-00

Lab Sample ID: 160-17506-4

Date Collected: 05/22/16 09:05

Matrix: Solid

Date Received: 05/24/16 12:45

Other Detected		Count	Total							
Radionuclides		Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
	Result	Qualifier	(2σ+/-)	(2σ+/-)						
Tl-208	0.316		0.0419	0.0532		0.0304	pCi/g	05/26/16 05:57	05/27/16 17:01	1

Client Sample ID: L06-01-05-P-R-S-00

Lab Sample ID: 160-17506-4

Date Collected: 05/22/16 09:05

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 80.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000068	0.000021	mg/Kg	☼	05/25/16 15:18	05/27/16 08:47	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Technetium 99	0.0211	U	0.0536	0.0536	1.37	0.234	pCi/g	05/25/16 15:18	05/27/16 08:47	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	91		30 - 110					05/25/16 15:18	05/27/16 08:47	1

Client Sample ID: L06-01-07-P-S-S-00

Lab Sample ID: 160-17506-5

Date Collected: 05/21/16 10:30

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.865		0.125	0.153		0.105	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Americium 241	0.00393	U	0.0704	0.0704		0.0999	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Bismuth 212	0.191	U	0.370	0.371		0.625	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Bismuth 214	0.693		0.0866	0.113		0.0518	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Lead 212	0.814		0.0682	0.125		0.0613	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Lead 214	0.667		0.0836	0.109		0.0686	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Potassium 40	16.2		1.13	2.01		0.234	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Protactinium 231	-0.296	U	1.09	1.09		1.83	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Radium 226	0.693		0.0866	0.113	1.00	0.0518	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Thorium 234	1.09		0.630	0.640	1.00	0.813	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Uranium 235	0.0608	U	0.164	0.164		0.314	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Protactinium 234m	1.67	U	2.62	2.63		8.43	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Thorium 232	0.865		0.125	0.153		0.105	pCi/g	05/26/16 05:57	05/27/16 17:00	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	(2σ+/-)	(2σ+/-)						
Tl-208	0.311		0.0465	0.0566		0.0329	pCi/g	05/26/16 05:57	05/27/16 17:00	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-07-P-S-S-00

Lab Sample ID: 160-17506-5

Date Collected: 05/21/16 10:30

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 74.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000024	J	0.000076	0.000023	mg/Kg	☼	05/25/16 15:18	05/27/16 08:52	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	0.409		0.134	0.139	1.51	0.259	pCi/g	05/25/16 15:18	05/27/16 08:52	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	87		30 - 110	05/25/16 15:18	05/27/16 08:52	1

Client Sample ID: L06-01-08-P-R-S-00

Lab Sample ID: 160-17506-6

Date Collected: 05/21/16 10:45

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.974		0.127	0.161		0.0989	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Americium 241	-0.0466	U	0.106	0.106		0.177	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Bismuth 212	0.179	U	0.350	0.350		0.593	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Bismuth 214	0.696		0.107	0.129		0.0721	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Lead 212	0.943		0.0747	0.143		0.0608	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Lead 214	0.645		0.0799	0.104		0.0722	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Potassium 40	15.4		1.20	1.99		0.287	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Protactinium 231	0.000	U	1.37	1.37		2.69	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Radium 226	0.696		0.107	0.129	1.00	0.0721	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Thorium 234	1.18		0.497	0.512	1.00	0.764	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Uranium 235	-0.127	U	0.184	0.184		0.601	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Protactinium 234m	2.54	U	4.37	4.38		9.37	pCi/g	05/26/16 05:57	05/27/16 17:02	1
Thorium 232	0.974		0.127	0.161		0.0989	pCi/g	05/26/16 05:57	05/27/16 17:02	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.265		0.0505	0.0575		0.0428	pCi/g	05/26/16 05:57	05/27/16 17:02	1

Client Sample ID: L06-01-08-P-R-S-00

Lab Sample ID: 160-17506-6

Date Collected: 05/21/16 10:45

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 81.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000070	0.000021	mg/Kg	☼	05/25/16 15:18	05/27/16 08:56	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.0674	U	0.0477	0.0481	1.41	0.241	pCi/g	05/25/16 15:18	05/27/16 08:56	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-08-P-R-S-00

Date Collected: 05/21/16 10:45

Date Received: 05/24/16 12:45

Lab Sample ID: 160-17506-6

Matrix: Solid

Percent Solids: 81.9

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	86		30 - 110	05/25/16 15:18	05/27/16 08:56	1

Client Sample ID: L06-01-08-P-R-Q-00

Date Collected: 05/21/16 10:45

Date Received: 05/24/16 12:45

Lab Sample ID: 160-17506-7

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	1.05		0.145	0.180		0.0910	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Americium 241	-0.0433	U	0.0988	0.0989		0.164	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Bismuth 212	1.32		0.467	0.486		0.418	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Bismuth 214	0.623		0.0913	0.112		0.0693	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Lead 212	0.963		0.0726	0.144		0.0560	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Lead 214	0.745		0.0856	0.115		0.0752	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Potassium 40	16.8		1.20	2.10		0.158	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Protactinium 231	-0.435	U	1.45	1.45		2.43	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Radium 226	0.623		0.0913	0.112	1.00	0.0693	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Thorium 234	1.03		0.484	0.496	1.00	0.754	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Uranium 235	0.0498	U	0.150	0.150		0.583	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Protactinium 234m	-3.50	U	7.25	7.26		11.4	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Thorium 232	1.05		0.145	0.180		0.0910	pCi/g	05/26/16 05:57	05/27/16 21:06	1
Other Detected Radionuclides			Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.377		0.0542	0.0669		0.0381	pCi/g	05/26/16 05:57	05/27/16 21:06	1

Client Sample ID: L06-01-08-P-R-Q-00

Date Collected: 05/21/16 10:45

Date Received: 05/24/16 12:45

Lab Sample ID: 160-17506-7

Matrix: Solid

Percent Solids: 81.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000067	0.000020	mg/Kg	☼	05/25/16 15:18	05/27/16 09:13	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	0.145	U	0.0551	0.0567	1.34	0.229	pCi/g	05/25/16 15:18	05/27/16 09:13	1
Carrier			%Yield	Qualifier	Limits					
Re	89		30 - 110							

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-10-P-S-S-00

Lab Sample ID: 160-17506-8

Date Collected: 05/21/16 11:00

Matrix: Solid

Date Received: 05/24/16 12:45

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	1.08		0.141	0.179		0.126	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Americium 241	-0.00356	U	0.0623	0.0623		0.125	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Bismuth 212	1.55		0.407	0.437		0.315	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Bismuth 214	0.816		0.113	0.141		0.0716	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Lead 212	1.02		0.0795	0.154		0.0693	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Lead 214	0.754		0.0880	0.118		0.0801	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Potassium 40	18.6		1.36	2.34		0.408	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Protactinium 231	-0.521	U	1.62	1.62		2.71	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Radium 226	0.816		0.113	0.141	1.00	0.0716	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Thorium 234	1.00		0.310	0.327	1.00	0.858	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Uranium 235	-0.114	U	0.201	0.201		0.569	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Protactinium 234m	-0.223	U	0.332	0.333		10.3	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Thorium 232	1.08		0.141	0.179		0.126	pCi/g	05/26/16 05:57	05/27/16 17:45	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>Tl-208</i>			<i>0.0551</i>	<i>0.0663</i>		<i>0.0409</i>	<i>pCi/g</i>	<i>05/26/16 05:57</i>	<i>05/27/16 17:45</i>	<i>1</i>

Client Sample ID: L06-01-10-P-S-S-00

Lab Sample ID: 160-17506-8

Date Collected: 05/21/16 11:00

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 83.1

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	☼	05/25/16 15:18	05/27/16 09:17	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	0.127	U	0.0549	0.0561	1.33	0.227	pCi/g	05/25/16 15:18	05/27/16 09:17	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
<i>Re</i>			<i>91</i>	<i>30 - 110</i>				<i>05/25/16 15:18</i>	<i>05/27/16 09:17</i>	<i>1</i>

Client Sample ID: L06-01-10-P-S-Q-00

Lab Sample ID: 160-17506-9

Date Collected: 05/21/16 11:00

Matrix: Solid

Date Received: 05/24/16 12:45

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	1.06		0.111	0.155		0.0681	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Americium 241	-0.0394	U	0.0506	0.0508		0.149	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Bismuth 212	1.22		0.318	0.342		0.269	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Bismuth 214	0.664		0.0853	0.110		0.0652	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Lead 212	1.04		0.0635	0.149		0.0502	pCi/g	05/26/16 05:57	05/27/16 17:46	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-10-P-S-Q-00

Lab Sample ID: 160-17506-9

Date Collected: 05/21/16 11:00

Matrix: Solid

Date Received: 05/24/16 12:45

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+/-)						
Lead 214	0.814		0.0807	0.117		0.0593	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Potassium 40	17.1		1.00	2.02		0.354	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Protactinium 231	0.000	U	0.426	0.426		1.78	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Radium 226	0.664		0.0853	0.110	1.00	0.0652	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Thorium 234	1.18		0.461	0.477	1.00	0.716	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Uranium 235	0.169	U	0.146	0.147		0.177	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Protactinium 234m	1.16	U	2.01	2.02		6.79	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Thorium 232	1.06		0.111	0.155		0.0681	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.293		0.0461	0.0552		0.0363	pCi/g	05/26/16 05:57	05/27/16 17:46	1

Client Sample ID: L06-01-10-P-S-Q-00

Lab Sample ID: 160-17506-9

Date Collected: 05/21/16 11:00

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 82.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000073	0.000022	mg/Kg	☼	05/25/16 15:18	05/27/16 09:22	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	0.105	U	0.0561	0.0570	1.47	0.251	pCi/g	05/25/16 15:18	05/27/16 09:22	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Re			83	30 - 110				05/25/16 15:18	05/27/16 09:22	1

Client Sample ID: L06-01-11-P-R-S-00

Lab Sample ID: 160-17506-10

Date Collected: 05/21/16 11:10

Matrix: Solid

Date Received: 05/24/16 12:45

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	1.05		0.117	0.158		0.126	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Americium 241	-0.00793	U	0.0710	0.0710		0.100	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Bismuth 212	1.21		0.377	0.398		0.332	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Bismuth 214	0.739		0.0886	0.117		0.0593	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Lead 212	0.981		0.0701	0.145		0.0609	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Lead 214	0.806		0.0823	0.117		0.0673	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Potassium 40	18.3		1.16	2.20		0.314	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Protactinium 231	-0.382	U	1.15	1.15		1.93	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Radium 226	0.739		0.0886	0.117	1.00	0.0593	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Thorium 234	1.09		0.503	0.516	1.00	0.789	pCi/g	05/26/16 05:57	05/27/16 17:46	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-11-P-R-S-00

Lab Sample ID: 160-17506-10

Date Collected: 05/21/16 11:10

Matrix: Solid

Date Received: 05/24/16 12:45

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+/-)						
Uranium 235	0.0870	U	0.145	0.145		0.322	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Protactinium 234m	1.50	U	2.29	2.29		7.89	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Thorium 232	1.05		0.117	0.158		0.126	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	(2σ+/-)	(2σ+/-)						
Pb-210	1.52		0.511	0.542		0.643	pCi/g	05/26/16 05:57	05/27/16 17:46	1
Tl-208	0.312		0.0553	0.0640		0.0445	pCi/g	05/26/16 05:57	05/27/16 17:46	1

Client Sample ID: L06-01-11-P-R-S-00

Lab Sample ID: 160-17506-10

Date Collected: 05/21/16 11:10

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 80.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99		ND	0.000064	0.000019	mg/Kg	☼	05/25/16 15:18	05/27/16 09:26	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	0.0879	U	0.0542	0.0548	1.28	0.220	pCi/g	05/25/16 15:18	05/27/16 09:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	97		30 - 110					05/25/16 15:18	05/27/16 09:26	1

Client Sample ID: L06-01-13-P-S-S-00

Lab Sample ID: 160-17506-11

Date Collected: 05/21/16 11:30

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.828		0.134	0.158		0.116	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Americium 241	-0.0419	U	0.0925	0.0926		0.154	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Bismuth 212	0.313	U	0.652	0.653		1.09	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Bismuth 214	0.548		0.0781	0.0967		0.0698	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Lead 212	0.910		0.0680	0.136		0.0532	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Lead 214	0.715		0.0746	0.105		0.0627	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Potassium 40	14.6		1.10	1.85		0.266	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Protactinium 231	0.364	U	0.972	0.973		2.08	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Radium 226	0.548		0.0781	0.0967	1.00	0.0698	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Thorium 234	1.14		0.506	0.520	1.00	0.790	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Uranium 235	0.237		0.121	0.123		0.170	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Protactinium 234m	2.48	U	4.82	4.83		7.77	pCi/g	05/26/16 05:57	05/27/16 17:47	1
Thorium 232	0.828		0.134	0.158		0.116	pCi/g	05/26/16 05:57	05/27/16 17:47	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-13-P-S-S-00

Lab Sample ID: 160-17506-11

Date Collected: 05/21/16 11:30

Matrix: Solid

Date Received: 05/24/16 12:45

Other Detected		Count	Total							
Radionuclides	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.295		0.0485	0.0573		0.0374	pCi/g	05/26/16 05:57	05/27/16 17:47	1

Client Sample ID: L06-01-13-P-S-S-00

Lab Sample ID: 160-17506-11

Date Collected: 05/21/16 11:30

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 79.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000070	0.000021	mg/Kg	☼	05/25/16 15:18	05/27/16 09:30	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	0.347		0.108	0.113	1.39	0.238	pCi/g	05/25/16 15:18	05/27/16 09:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	90		30 - 110					05/25/16 15:18	05/27/16 09:30	1

Client Sample ID: L06-01-14-P-R-S-00

Lab Sample ID: 160-17506-12

Date Collected: 05/24/16 08:10

Matrix: Solid

Date Received: 05/24/16 12:45

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	1.21		0.160	0.202		0.143	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Americium 241	0.0450	U	0.100	0.100		0.133	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Bismuth 212	1.46		0.580	0.600		0.530	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Bismuth 214	0.865		0.121	0.151		0.0822	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Lead 212	1.13		0.0855	0.170		0.0641	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Lead 214	0.858		0.0980	0.132		0.0860	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Potassium 40	18.1		1.40	2.32		0.333	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Protactinium 231	0.487	U	1.17	1.17		2.62	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Radium 226	0.865		0.121	0.151	1.00	0.0822	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Thorium 234	1.41		0.615	0.632	1.00	0.954	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Uranium 235	0.156	U	0.193	0.193		0.216	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Protactinium 234m	0.785	U	4.20	4.20		10.2	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Thorium 232	1.21		0.160	0.202		0.143	pCi/g	05/26/16 05:57	05/27/16 21:37	1
Other Detected			Count	Total						
Radionuclides	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.389		0.0609	0.0730		0.0447	pCi/g	05/26/16 05:57	05/27/16 21:37	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-14-P-R-S-00

Lab Sample ID: 160-17506-12

Date Collected: 05/24/16 08:10

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 82.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000070	0.000021	mg/Kg	☼	05/25/16 15:18	05/27/16 09:35	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	0.0716	U	0.0112	0.0130	1.39	0.239	pCi/g	05/25/16 15:18	05/27/16 09:35	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	88		30 - 110	05/25/16 15:18	05/27/16 09:35	1

Client Sample ID: L06-01-16-P-S-S-00

Lab Sample ID: 160-17506-13

Date Collected: 05/21/16 09:45

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.378		0.0861	0.0944		0.0633	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Americium 241	0.0157	U	0.0525	0.0525		0.0704	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Bismuth 212	0.127	U	0.297	0.297		0.507	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Bismuth 214	0.413		0.0669	0.0794		0.0399	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Lead 212	0.397		0.0454	0.0686		0.0401	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Lead 214	0.394		0.0621	0.0744		0.0467	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Potassium 40	7.65		0.785	1.11		0.246	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Protactinium 231	-0.167	U	1.05	1.05		1.77	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Radium 226	0.413		0.0669	0.0794	1.00	0.0399	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Thorium 234	0.927		0.374	0.386	1.00	0.566	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Uranium 235	-0.0828	U	0.127	0.127		0.420	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Protactinium 234m	1.26	U	1.97	1.97		7.09	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Thorium 232	0.378		0.0861	0.0944		0.0633	pCi/g	05/26/16 05:57	05/27/16 18:19	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pb-210	1.40		0.434	0.464		0.517	pCi/g	05/26/16 05:57	05/27/16 18:19	1
Tl-208	0.138		0.0331	0.0361		0.0254	pCi/g	05/26/16 05:57	05/27/16 18:19	1

Client Sample ID: L06-01-16-P-S-S-00

Lab Sample ID: 160-17506-13

Date Collected: 05/21/16 09:45

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 77.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000072	0.000022	mg/Kg	☼	05/25/16 15:18	05/27/16 09:39	1

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-16-P-S-S-00

Lab Sample ID: 160-17506-13

Date Collected: 05/21/16 09:45

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 77.7

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	0.273		0.103	0.106	1.45	0.248	pCi/g	05/25/16 15:18	05/27/16 09:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	88		30 - 110					05/25/16 15:18	05/27/16 09:39	1

Client Sample ID: L06-01-17-P-R-S-00

Lab Sample ID: 160-17506-14

Date Collected: 05/21/16 10:00

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.498		0.0654	0.0828		0.0545	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Americium 241	0.00546	U	0.0543	0.0543		0.0909	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Bismuth 212	0.639		0.210	0.221		0.187	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Bismuth 214	0.398		0.0504	0.0652		0.0358	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Lead 212	0.426		0.0378	0.0669		0.0328	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Lead 214	0.445		0.0564	0.0730		0.0424	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Potassium 40	7.33		0.564	0.938		0.141	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Protactinium 231	-0.228	U	0.859	0.860		1.44	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Radium 226	0.398		0.0504	0.0652	1.00	0.0358	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Thorium 234	0.633		0.305	0.312	1.00	0.476	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Uranium 235	-0.0186	U	0.0411	0.0412		0.334	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Protactinium 234m	1.04	U	1.81	1.81		4.30	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Thorium 232	0.498		0.0654	0.0828		0.0545	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Other Detected Radionuclides			Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)						
Tl-208	0.126		0.0250	0.0282		0.0207	pCi/g	05/26/16 05:57	05/27/16 18:20	1

Client Sample ID: L06-01-17-P-R-S-00

Lab Sample ID: 160-17506-14

Date Collected: 05/21/16 10:00

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 84.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000027	J	0.000066	0.000020	mg/Kg	☼	05/25/16 15:18	05/27/16 09:43	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	0.456		0.169	0.174	1.31	0.224	pCi/g	05/25/16 15:18	05/27/16 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	91		30 - 110					05/25/16 15:18	05/27/16 09:43	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-19-P-S-S-00

Lab Sample ID: 160-17506-15

Date Collected: 05/21/16 09:20

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.840		0.116	0.144		0.0686	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Americium 241	0.0274	U	0.0479	0.0480		0.0694	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Bismuth 212	1.06		0.387	0.402		0.367	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Bismuth 214	0.644		0.0862	0.109		0.0598	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Lead 212	0.804		0.0677	0.124		0.0636	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Lead 214	0.694		0.0742	0.104		0.0652	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Potassium 40	17.8		1.21	2.19		0.390	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Protactinium 231	-0.0762	U	1.11	1.11		1.87	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Radium 226	0.644		0.0862	0.109	1.00	0.0598	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Thorium 234	1.16		0.603	0.615	1.00	0.774	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Uranium 235	0.0114	U	0.0806	0.0806		0.347	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Protactinium 234m	3.23	U	4.73	4.74		9.02	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Thorium 232	0.840		0.116	0.144		0.0686	pCi/g	05/26/16 05:57	05/27/16 18:22	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.229		0.0440	0.0501		0.0354	pCi/g	05/26/16 05:57	05/27/16 18:22	1

Client Sample ID: L06-01-19-P-S-S-00

Lab Sample ID: 160-17506-15

Date Collected: 05/21/16 09:20

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 81.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000020	J	0.000068	0.000020	mg/Kg	☼	05/25/16 15:18	05/27/16 09:48	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	0.336		0.0559	0.0639	1.36	0.234	pCi/g	05/25/16 15:18	05/27/16 09:48	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Re	91		30 - 110					05/25/16 15:18	05/27/16 09:48	1

Client Sample ID: L06-01-20-P-R-S-00

Lab Sample ID: 160-17506-16

Date Collected: 05/21/16 09:35

Matrix: Solid

Date Received: 05/24/16 12:45

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	1.09		0.132	0.171		0.112	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Americium 241	-0.0523	U	0.0626	0.0629		0.151	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Bismuth 212	1.29		0.443	0.463		0.394	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Bismuth 214	0.706		0.0748	0.104		0.0568	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Lead 212	1.07		0.0708	0.156		0.0633	pCi/g	05/26/16 05:57	05/27/16 21:08	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-20-P-R-S-00

Lab Sample ID: 160-17506-16

Date Collected: 05/21/16 09:35

Matrix: Solid

Date Received: 05/24/16 12:45

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+/-)						
Lead 214	0.965		0.0837	0.131		0.0543	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Potassium 40	20.6		1.11	2.35		0.261	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Protactinium 231	-0.447	U	1.31	1.31		2.19	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Radium 226	0.706		0.0748	0.104	1.00	0.0568	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Thorium 234	0.786		0.267	0.279	1.00	0.711	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Uranium 235	-0.0957	U	0.291	0.292		0.484	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Protactinium 234m	2.45	U	3.85	3.86		7.83	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Thorium 232	1.09		0.132	0.171		0.112	pCi/g	05/26/16 05:57	05/27/16 21:08	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.354		0.0536	0.0648		0.0397	pCi/g	05/26/16 05:57	05/27/16 21:08	1

Client Sample ID: L06-01-20-P-R-S-00

Lab Sample ID: 160-17506-16

Date Collected: 05/21/16 09:35

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 81.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000070	0.000021	mg/Kg	☼	05/25/16 15:18	05/27/16 09:52	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	0.0168	U	0.0402	0.0402	1.40	0.240	pCi/g	05/25/16 15:18	05/27/16 09:52	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Re			30 - 110					05/25/16 15:18	05/27/16 09:52	1

Client Sample ID: L06-01-22-P-S-S-00

Lab Sample ID: 160-17506-17

Date Collected: 05/21/16 08:10

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.841		0.0960	0.128		0.0656	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Americium 241	-0.0388	U	0.0455	0.0457		0.152	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Bismuth 212	0.727		0.258	0.269		0.349	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Bismuth 214	0.592		0.0763	0.0976		0.0536	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Lead 212	0.779		0.0552	0.115		0.0481	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Lead 214	0.711		0.0711	0.103		0.0627	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Potassium 40	19.2		0.993	2.18		0.223	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Protactinium 231	-0.371	U	1.13	1.13		1.88	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Radium 226	0.592		0.0763	0.0976	1.00	0.0536	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Thorium 234	0.960		0.407	0.419	1.00	0.635	pCi/g	05/26/16 05:57	05/27/16 18:20	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-22-P-S-S-00

Lab Sample ID: 160-17506-17

Date Collected: 05/21/16 08:10

Matrix: Solid

Date Received: 05/24/16 12:45

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+/-)						
Uranium 235	0.000	U	0.106	0.106		0.450	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Protactinium 234m	6.17		2.52	2.59		2.46	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Thorium 232	0.841		0.0960	0.128		0.0656	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pb-210	1.25		0.465	0.488		0.588	pCi/g	05/26/16 05:57	05/27/16 18:20	1
Tl-208	0.265		0.0352	0.0445		0.0269	pCi/g	05/26/16 05:57	05/27/16 18:20	1

Client Sample ID: L06-01-22-P-S-S-00

Lab Sample ID: 160-17506-17

Date Collected: 05/21/16 08:10

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 80.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99		ND	0.000077	0.000023	mg/Kg	☼	05/25/16 15:18	05/27/16 10:09	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	0.0475	U	0.0436	0.0438	1.54	0.264	pCi/g	05/25/16 15:18	05/27/16 10:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	81		30 - 110					05/25/16 15:18	05/27/16 10:09	1

Client Sample ID: L06-01-23-P-R-S-00

Lab Sample ID: 160-17506-18

Date Collected: 05/21/16 09:10

Matrix: Solid

Date Received: 05/24/16 12:45

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	0.946		0.106	0.142		0.0809	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Americium 241	0.00226	U	0.0765	0.0765		0.128	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Bismuth 212	0.937		0.325	0.338		0.317	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Bismuth 214	0.600		0.0706	0.0938		0.0501	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Lead 212	0.816		0.0572	0.120		0.0479	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Lead 214	0.730		0.0742	0.106		0.0599	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Potassium 40	21.7		1.10	2.44		0.303	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Protactinium 231	0.000	U	0.210	0.210		1.86	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Radium 226	0.600		0.0706	0.0938	1.00	0.0501	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Thorium 234	1.12		0.434	0.450	1.00	0.673	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Uranium 235	-0.0228	U	0.0389	0.0389		0.392	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Protactinium 234m	1.69	U	2.59	2.60		6.71	pCi/g	05/26/16 05:57	05/27/16 18:53	1
Thorium 232	0.946		0.106	0.142		0.0809	pCi/g	05/26/16 05:57	05/27/16 18:53	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17506-1

Client Sample ID: L06-01-23-P-R-S-00

Lab Sample ID: 160-17506-18

Date Collected: 05/21/16 09:10

Matrix: Solid

Date Received: 05/24/16 12:45

<i>Other Detected</i>			<i>Count</i>	<i>Total</i>						
<i>Radionuclides</i>	<i>Result</i>	<i>Qualifier</i>	<i>Uncert.</i>	<i>Uncert.</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
			<i>(2σ+/-)</i>	<i>(2σ+/-)</i>						
Tl-208	0.249		0.0364	0.0445		0.0299	pCi/g	05/26/16 05:57	05/27/16 18:53	1

Client Sample ID: L06-01-23-P-R-S-00

Lab Sample ID: 160-17506-18

Date Collected: 05/21/16 09:10

Matrix: Solid

Date Received: 05/24/16 12:45

Percent Solids: 82.2

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

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Technetium 99	ND		0.000070	0.000021	mg/Kg	☼	05/25/16 15:18	05/27/16 10:13	1

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

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>Count</i>	<i>Total</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
			<i>Uncert.</i>	<i>Uncert.</i>						
			<i>(2σ+/-)</i>	<i>(2σ+/-)</i>						
Technetium 99	0.0287	U	0.0436	0.0437	1.40	0.239	pCi/g	05/25/16 15:18	05/27/16 10:13	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Re	87		30 - 110					05/25/16 15:18	05/27/16 10:13	1

QC Sample Results

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

TestAmerica Job ID: 160-17506-1

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

Lab Sample ID: MB 160-253302/1-A
Matrix: Solid
Analysis Batch: 253615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 253302

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000053	0.000016	mg/Kg		05/25/16 15:18	05/27/16 08:17	1

Lab Sample ID: LCS 160-253302/2-A
Matrix: Solid
Analysis Batch: 253615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253302

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Technetium 99	0.00119	0.00123		mg/Kg		103	80 - 120

Lab Sample ID: 160-17506-1 MS
Matrix: Solid
Analysis Batch: 253615

Client Sample ID: L06-01-01-P-S-S-00
Prep Type: Total/NA
Prep Batch: 253302

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Technetium 99	ND		0.00139	0.00137		mg/Kg	☼	99	75 - 125

Lab Sample ID: 160-17506-1 MSD
Matrix: Solid
Analysis Batch: 253615

Client Sample ID: L06-01-01-P-S-S-00
Prep Type: Total/NA
Prep Batch: 253302

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Technetium 99	ND		0.00139	0.00141		mg/Kg	☼	101	75 - 125	3	30

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

Lab Sample ID: MB 160-253302/1-A
Matrix: Solid
Analysis Batch: 253616

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 253302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.005433	U	0.0330	0.0331	1.06	0.181	pCi/g	05/25/16 15:18	05/27/16 08:17	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	95		30 - 110	05/25/16 15:18	05/27/16 08:17	1

Lab Sample ID: LCS 160-253302/2-A
Matrix: Solid
Analysis Batch: 253616

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits
Technetium 99	20.4	21.03		2.10	0.979	0.168	pCi/g	103	80 - 120

Carrier	LCS %Yield	LCS Qualifier	Limits
Re	102		30 - 110

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-17506-1

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

Lab Sample ID: 160-17506-1 MS
Matrix: Solid
Analysis Batch: 253616

Client Sample ID: L06-01-01-P-S-S-00
Prep Type: Total/NA
Prep Batch: 253302

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	0.0399	U	23.8	23.44		2.33	1.30	0.223	pCi/g	99	75 - 125
Carrier	%Yield	MS Qualifier	MS	Limits							
Re	90			30 - 110							

Lab Sample ID: 160-17506-1 MSD
Matrix: Solid
Analysis Batch: 253616

Client Sample ID: L06-01-01-P-S-S-00
Prep Type: Total/NA
Prep Batch: 253302

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	0.0399	U	23.7	24.06		2.26	1.27	0.217	pCi/g	101	75 - 125	0.14	1
Carrier	%Yield	MSD Qualifier	MSD	Limits									
Re	92			30 - 110									

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

Lab Sample ID: MB 160-253338/1-A
Matrix: Solid
Analysis Batch: 253651

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 253338

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.02294	U	0.0447	0.0447		0.0770	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Americium 241	-0.01009	U	0.0149	0.0149		0.0320	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Bismuth 212	-0.007835	U	0.151	0.151		0.300	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Bismuth 214	-0.02241	U	0.0727	0.0727		0.124	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Lead 212	-0.009792	U	0.0163	0.0164		0.0405	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Lead 214	-0.01896	U	0.0307	0.0307		0.0567	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Potassium 40	0.03776	U	0.157	0.157		0.295	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Protactinium 231	-0.05854	U	0.648	0.648		1.12	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Radium 226	-0.02241	U	0.0727	0.0727	1.00	0.124	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Thorium 234	0.01137	U	0.174	0.174	1.00	0.306	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Uranium 235	0.02434	U	0.0672	0.0672		0.130	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Protactinium 234m	-0.1422	U	2.32	2.32		5.45	pCi/g	05/26/16 05:57	05/27/16 16:23	1
Thorium 232	0.02294	U	0.0447	0.0447		0.0770	pCi/g	05/26/16 05:57	05/27/16 16:23	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	05/26/16 05:57	05/27/16 16:23	1

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-17506-1

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

Lab Sample ID: LCS 160-253338/2-A
Matrix: Solid
Analysis Batch: 253610

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253338

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	101	99.67		10.4		0.531	pCi/g	99	87 - 116
Cesium 137	34.0	32.94		3.45	0.200	0.150	pCi/g	97	87 - 120
Cobalt 60	31.1	29.84		3.01		0.110	pCi/g	96	87 - 115

Lab Sample ID: 160-17506-1 DU
Matrix: Solid
Analysis Batch: 253610

Client Sample ID: L06-01-01-P-S-S-00
Prep Type: Total/NA
Prep Batch: 253338

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	1.12		1.047		0.155		0.0773	pCi/g	0.22	1
Americium 241	-0.0326	U	-0.04234	U	0.0521		0.154	pCi/g	0.08	1
Bismuth 212	1.29		1.546		0.503		0.398	pCi/g	0.28	1
Bismuth 214	0.747		0.7868		0.118		0.0563	pCi/g	0.16	1
Lead 212	1.04		1.058		0.153		0.0509	pCi/g	0.06	1
Lead 214	0.797		0.8868		0.121		0.0614	pCi/g	0.38	1
Potassium 40	19.5		19.06		2.26		0.414	pCi/g	0.1	1
Protactinium 231	0.343	U	-0.4305	U	1.37		2.28	pCi/g	0.36	1
Radium 226	0.747		0.7868		0.118	1.00	0.0563	pCi/g	0.16	1
Thorium 234	1.08		1.069		0.521	1.00	0.802	pCi/g	0.01	1
Uranium 235	0.182	U	-0.03125	U	0.0788		0.544	pCi/g	0.73	1
Protactinium 234m	6.63		2.952	U	4.04		6.41	pCi/g	0.51	1
Thorium 232	1.12		1.047		0.155		0.0773	pCi/g	0.22	1
Other Detected Radionuclides	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Tl-208	0.346		0.3603		0.0564		0.0281	pCi/g	0.12	1

QC Association Summary

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

TestAmerica Job ID: 160-17506-1

Metals

Prep Batch: 253302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17506-1	L06-01-01-P-S-S-00	Total/NA	Solid	None	
160-17506-1 MS	L06-01-01-P-S-S-00	Total/NA	Solid	None	
160-17506-1 MSD	L06-01-01-P-S-S-00	Total/NA	Solid	None	
160-17506-2	L06-01-02-P-R-S-00	Total/NA	Solid	None	
160-17506-3	L06-01-04-P-S-S-00	Total/NA	Solid	None	
160-17506-4	L06-01-05-P-R-S-00	Total/NA	Solid	None	
160-17506-5	L06-01-07-P-S-S-00	Total/NA	Solid	None	
160-17506-6	L06-01-08-P-R-S-00	Total/NA	Solid	None	
160-17506-7	L06-01-08-P-R-Q-00	Total/NA	Solid	None	
160-17506-8	L06-01-10-P-S-S-00	Total/NA	Solid	None	
160-17506-9	L06-01-10-P-S-Q-00	Total/NA	Solid	None	
160-17506-10	L06-01-11-P-R-S-00	Total/NA	Solid	None	
160-17506-11	L06-01-13-P-S-S-00	Total/NA	Solid	None	
160-17506-12	L06-01-14-P-R-S-00	Total/NA	Solid	None	
160-17506-13	L06-01-16-P-S-S-00	Total/NA	Solid	None	
160-17506-14	L06-01-17-P-R-S-00	Total/NA	Solid	None	
160-17506-15	L06-01-19-P-S-S-00	Total/NA	Solid	None	
160-17506-16	L06-01-20-P-R-S-00	Total/NA	Solid	None	
160-17506-17	L06-01-22-P-S-S-00	Total/NA	Solid	None	
160-17506-18	L06-01-23-P-R-S-00	Total/NA	Solid	None	
LCS 160-253302/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-253302/1-A	Method Blank	Total/NA	Solid	None	

Analysis Batch: 253615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17506-1	L06-01-01-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-1 MS	L06-01-01-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-1 MSD	L06-01-01-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-2	L06-01-02-P-R-S-00	Total/NA	Solid	6020A	253302
160-17506-3	L06-01-04-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-4	L06-01-05-P-R-S-00	Total/NA	Solid	6020A	253302
160-17506-5	L06-01-07-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-6	L06-01-08-P-R-S-00	Total/NA	Solid	6020A	253302
160-17506-7	L06-01-08-P-R-Q-00	Total/NA	Solid	6020A	253302
160-17506-8	L06-01-10-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-9	L06-01-10-P-S-Q-00	Total/NA	Solid	6020A	253302
160-17506-10	L06-01-11-P-R-S-00	Total/NA	Solid	6020A	253302
160-17506-11	L06-01-13-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-12	L06-01-14-P-R-S-00	Total/NA	Solid	6020A	253302
160-17506-13	L06-01-16-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-14	L06-01-17-P-R-S-00	Total/NA	Solid	6020A	253302
160-17506-15	L06-01-19-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-16	L06-01-20-P-R-S-00	Total/NA	Solid	6020A	253302
160-17506-17	L06-01-22-P-S-S-00	Total/NA	Solid	6020A	253302
160-17506-18	L06-01-23-P-R-S-00	Total/NA	Solid	6020A	253302
LCS 160-253302/2-A	Lab Control Sample	Total/NA	Solid	6020A	253302
MB 160-253302/1-A	Method Blank	Total/NA	Solid	6020A	253302

QC Association Summary

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

TestAmerica Job ID: 160-17506-1

General Chemistry

Analysis Batch: 252974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17506-1	L06-01-01-P-S-S-00	Total/NA	Solid	Moisture	
160-17506-2	L06-01-02-P-R-S-00	Total/NA	Solid	Moisture	
160-17506-3	L06-01-04-P-S-S-00	Total/NA	Solid	Moisture	
160-17506-4	L06-01-05-P-R-S-00	Total/NA	Solid	Moisture	
160-17506-5	L06-01-07-P-S-S-00	Total/NA	Solid	Moisture	
160-17506-6	L06-01-08-P-R-S-00	Total/NA	Solid	Moisture	
160-17506-7	L06-01-08-P-R-Q-00	Total/NA	Solid	Moisture	
160-17506-8	L06-01-10-P-S-S-00	Total/NA	Solid	Moisture	
160-17506-9	L06-01-10-P-S-Q-00	Total/NA	Solid	Moisture	
160-17506-10	L06-01-11-P-R-S-00	Total/NA	Solid	Moisture	
160-17506-11	L06-01-13-P-S-S-00	Total/NA	Solid	Moisture	
160-17506-12	L06-01-14-P-R-S-00	Total/NA	Solid	Moisture	
160-17506-13	L06-01-16-P-S-S-00	Total/NA	Solid	Moisture	
160-17506-14	L06-01-17-P-R-S-00	Total/NA	Solid	Moisture	
160-17506-15	L06-01-19-P-S-S-00	Total/NA	Solid	Moisture	
160-17506-16	L06-01-20-P-R-S-00	Total/NA	Solid	Moisture	
160-17506-17	L06-01-22-P-S-S-00	Total/NA	Solid	Moisture	
160-17506-18	L06-01-23-P-R-S-00	Total/NA	Solid	Moisture	
160-17506-18 DU	L06-01-23-P-R-S-00	Total/NA	Solid	Moisture	

Rad

Leach Batch: 252884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17506-1	L06-01-01-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-1 DU	L06-01-01-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-2	L06-01-02-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17506-3	L06-01-04-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-4	L06-01-05-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17506-5	L06-01-07-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-6	L06-01-08-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17506-7	L06-01-08-P-R-Q-00	Total/NA	Solid	Dry and Grind	
160-17506-8	L06-01-10-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-9	L06-01-10-P-S-Q-00	Total/NA	Solid	Dry and Grind	
160-17506-10	L06-01-11-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17506-11	L06-01-13-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-12	L06-01-14-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17506-13	L06-01-16-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-14	L06-01-17-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17506-15	L06-01-19-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-16	L06-01-20-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17506-17	L06-01-22-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17506-18	L06-01-23-P-R-S-00	Total/NA	Solid	Dry and Grind	

Prep Batch: 253302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17506-1	L06-01-01-P-S-S-00	Total/NA	Solid	None	
160-17506-1 MS	L06-01-01-P-S-S-00	Total/NA	Solid	None	
160-17506-1 MSD	L06-01-01-P-S-S-00	Total/NA	Solid	None	
160-17506-2	L06-01-02-P-R-S-00	Total/NA	Solid	None	

TestAmerica St. Louis

QC Association Summary

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

TestAmerica Job ID: 160-17506-1

Rad (Continued)

Prep Batch: 253302 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17506-3	L06-01-04-P-S-S-00	Total/NA	Solid	None	
160-17506-4	L06-01-05-P-R-S-00	Total/NA	Solid	None	
160-17506-5	L06-01-07-P-S-S-00	Total/NA	Solid	None	
160-17506-6	L06-01-08-P-R-S-00	Total/NA	Solid	None	
160-17506-7	L06-01-08-P-R-Q-00	Total/NA	Solid	None	
160-17506-8	L06-01-10-P-S-S-00	Total/NA	Solid	None	
160-17506-9	L06-01-10-P-S-Q-00	Total/NA	Solid	None	
160-17506-10	L06-01-11-P-R-S-00	Total/NA	Solid	None	
160-17506-11	L06-01-13-P-S-S-00	Total/NA	Solid	None	
160-17506-12	L06-01-14-P-R-S-00	Total/NA	Solid	None	
160-17506-13	L06-01-16-P-S-S-00	Total/NA	Solid	None	
160-17506-14	L06-01-17-P-R-S-00	Total/NA	Solid	None	
160-17506-15	L06-01-19-P-S-S-00	Total/NA	Solid	None	
160-17506-16	L06-01-20-P-R-S-00	Total/NA	Solid	None	
160-17506-17	L06-01-22-P-S-S-00	Total/NA	Solid	None	
160-17506-18	L06-01-23-P-R-S-00	Total/NA	Solid	None	
LCS 160-253302/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-253302/1-A	Method Blank	Total/NA	Solid	None	

Prep Batch: 253338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17506-1	L06-01-01-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-1 DU	L06-01-01-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-2	L06-01-02-P-R-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-3	L06-01-04-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-4	L06-01-05-P-R-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-5	L06-01-07-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-6	L06-01-08-P-R-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-7	L06-01-08-P-R-Q-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-8	L06-01-10-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-9	L06-01-10-P-S-Q-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-10	L06-01-11-P-R-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-11	L06-01-13-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-12	L06-01-14-P-R-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-13	L06-01-16-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-14	L06-01-17-P-R-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-15	L06-01-19-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-16	L06-01-20-P-R-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-17	L06-01-22-P-S-S-00	Total/NA	Solid	Fill_Geo-0	252884
160-17506-18	L06-01-23-P-R-S-00	Total/NA	Solid	Fill_Geo-0	252884
LCS 160-253338/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
MB 160-253338/1-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: 160-17506-1

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)
160-17506-1	L06-01-01-P-S-S-00	90
160-17506-1 MS	L06-01-01-P-S-S-00	90
160-17506-1 MSD	L06-01-01-P-S-S-00	92
160-17506-2	L06-01-02-P-R-S-00	88
160-17506-3	L06-01-04-P-S-S-00	87
160-17506-4	L06-01-05-P-R-S-00	91
160-17506-5	L06-01-07-P-S-S-00	87
160-17506-6	L06-01-08-P-R-S-00	86
160-17506-7	L06-01-08-P-R-Q-00	89
160-17506-8	L06-01-10-P-S-S-00	91
160-17506-9	L06-01-10-P-S-Q-00	83
160-17506-10	L06-01-11-P-R-S-00	97
160-17506-11	L06-01-13-P-S-S-00	90
160-17506-12	L06-01-14-P-R-S-00	88
160-17506-13	L06-01-16-P-S-S-00	88
160-17506-14	L06-01-17-P-R-S-00	91
160-17506-15	L06-01-19-P-S-S-00	91
160-17506-16	L06-01-20-P-R-S-00	87
160-17506-17	L06-01-22-P-S-S-00	81
160-17506-18	L06-01-23-P-R-S-00	87
LCS 160-253302/2-A	Lab Control Sample	102
MB 160-253302/1-A	Method Blank	95

Tracer/Carrier Legend

Re = Re