

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: 160-17542-1

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:
6/1/2016 12:07:30 PM

Ivan Vania, Project Manager II
(314)298-8566
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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12



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Chain of Custody	5
Receipt Checklists	7
Definitions/Glossary	8
Method Summary	9
Sample Summary	10
Client Sample Results	11
QC Sample Results	26
QC Association Summary	29
Tracer Carrier Summary	32

Case Narrative

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

TestAmerica Job ID: 160-17542-1

Job ID: 160-17542-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

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

Report Number: 160-17542-1

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 5/26/2016 11:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.2° C and 20.0° C.

TECHNETIUM-99 (ICPMS)

Samples L04-05-25-P-S-S-00 (160-17542-1), L04-05-26-P-R-S-00 (160-17542-2), L04-05-28-P-S-S-00 (160-17542-3), L04-05-29-P-R-S-00 (160-17542-4), L04-05-31-P-S-S-00 (160-17542-5), L04-05-32-P-R-S-00 (160-17542-6), L04-05-34-P-S-S-00 (160-17542-7), L04-05-35-P-R-S-00 (160-17542-8), L04-05-37-P-S-S-00 (160-17542-9), L04-05-38-P-R-S-00 (160-17542-10), L04-05-40-P-S-S-00 (160-17542-11), L04-05-40-P-S-Q-00 (160-17542-12), L04-05-41-P-R-S-00 (160-17542-13), L04-05-43-P-S-S-00 (160-17542-14), L04-05-44-P-R-S-00 (160-17542-15), L04-05-46-P-S-S-00 (160-17542-16) and L04-05-47-P-R-S-00 (160-17542-17) were analyzed for Technetium-99 (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 05/31/2016 and analyzed on 06/01/2016.

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: 160-17542-1

Job ID: 160-17542-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

PERCENT SOLIDS

Samples L04-05-25-P-S-S-00 (160-17542-1), L04-05-26-P-R-S-00 (160-17542-2), L04-05-28-P-S-S-00 (160-17542-3), L04-05-29-P-R-S-00 (160-17542-4), L04-05-31-P-S-S-00 (160-17542-5), L04-05-32-P-R-S-00 (160-17542-6), L04-05-34-P-S-S-00 (160-17542-7), L04-05-35-P-R-S-00 (160-17542-8), L04-05-37-P-S-S-00 (160-17542-9), L04-05-38-P-R-S-00 (160-17542-10), L04-05-40-P-S-S-00 (160-17542-11), L04-05-40-P-S-Q-00 (160-17542-12), L04-05-41-P-R-S-00 (160-17542-13), L04-05-43-P-S-S-00 (160-17542-14), L04-05-44-P-R-S-00 (160-17542-15), L04-05-46-P-S-S-00 (160-17542-16) and L04-05-47-P-R-S-00 (160-17542-17) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 05/27/2016.

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 L04-05-25-P-S-S-00 (160-17542-1), L04-05-26-P-R-S-00 (160-17542-2), L04-05-28-P-S-S-00 (160-17542-3), L04-05-29-P-R-S-00 (160-17542-4), L04-05-31-P-S-S-00 (160-17542-5), L04-05-32-P-R-S-00 (160-17542-6), L04-05-34-P-S-S-00 (160-17542-7), L04-05-35-P-R-S-00 (160-17542-8), L04-05-37-P-S-S-00 (160-17542-9), L04-05-38-P-R-S-00 (160-17542-10), L04-05-40-P-S-S-00 (160-17542-11), L04-05-40-P-S-Q-00 (160-17542-12), L04-05-41-P-R-S-00 (160-17542-13), L04-05-43-P-S-S-00 (160-17542-14), L04-05-44-P-R-S-00 (160-17542-15), L04-05-46-P-S-S-00 (160-17542-16) and L04-05-47-P-R-S-00 (160-17542-17) were analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE GA-01-R. The samples were leached on 05/26/2016, and prepared and analyzed on 05/31/2016.

Preparation Batch 160-253834:

Lead-214 analyzed by gamma spectroscopy was detected above the MDC in the method blank. Variations in Compton backgrounds and statistical analyses allow for small area counts in the regions of interest of this nuclide. Other uranium decay chain products are not present in the blank to support lead-214 identification. L04-05-25-P-S-S-00 (160-17542-1), L04-05-26-P-R-S-00 (160-17542-2), L04-05-28-P-S-S-00 (160-17542-3), L04-05-29-P-R-S-00 (160-17542-4), L04-05-31-P-S-S-00 (160-17542-5), L04-05-32-P-R-S-00 (160-17542-6), L04-05-34-P-S-S-00 (160-17542-7), L04-05-35-P-R-S-00 (160-17542-8), L04-05-37-P-S-S-00 (160-17542-9), L04-05-38-P-R-S-00 (160-17542-10), L04-05-40-P-S-S-00 (160-17542-11), L04-05-40-P-S-Q-00 (160-17542-12), L04-05-41-P-R-S-00 (160-17542-13), L04-05-43-P-S-S-00 (160-17542-14), L04-05-44-P-R-S-00 (160-17542-15), L04-05-46-P-S-S-00 (160-17542-16), L04-05-47-P-R-S-00 (160-17542-17), (LCS 160-253834/2-A), (MB 160-253834/1-A) and (160-17542-A-1-G DU)

Radium-226 is reported in these samples at the client's request. Radium-226 is reported from the 609.31 keV line of bismuth-214. Because the samples have not had a 21-day ingrowth, the activity for radium-226 is an estimated value and may be biased low. This bias is caused by the disruption of secular equilibrium between radium-226 and bismuth-214 by the loss of radon-222 during sample preparation. L04-05-25-P-S-S-00 (160-17542-1), L04-05-26-P-R-S-00 (160-17542-2), L04-05-28-P-S-S-00 (160-17542-3), L04-05-29-P-R-S-00 (160-17542-4), L04-05-31-P-S-S-00 (160-17542-5), L04-05-32-P-R-S-00 (160-17542-6), L04-05-34-P-S-S-00 (160-17542-7), L04-05-35-P-R-S-00 (160-17542-8), L04-05-37-P-S-S-00 (160-17542-9), L04-05-38-P-R-S-00 (160-17542-10), L04-05-40-P-S-S-00 (160-17542-11), L04-05-40-P-S-Q-00 (160-17542-12), L04-05-41-P-R-S-00 (160-17542-13), L04-05-43-P-S-S-00 (160-17542-14), L04-05-44-P-R-S-00 (160-17542-15), L04-05-46-P-S-S-00 (160-17542-16), L04-05-47-P-R-S-00 (160-17542-17), (LCS 160-253834/2-A), (MB 160-253834/1-A) and (160-17542-A-1-G 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-052516-01		Page	1/2		Requested Analysis								Laboratory Name:				
Project Name:							Comp (C) or Grab (G)	Gamma Spec	Isotopic Uranium	10-99	Gamma Spec (21 day ingrow for Ra-226)					Total Containers	TA-MO		
Contact Person:																	Laboratory Address:		
Phone Number:																	Phone No.		
Sampler Name																	Laboratory Contact Person:		
Sample ID							Date	Time	Matrix									Laboratory Address:	
											Turn Around Time		Rush (7 days)		Remarks				
Westinghouse Electric Company							13715 Rider Trail North		314-298-8566		Ivan Vania		708-870-8453						
Clark Evers																			
314-810-3336																			
Jahmai Williams																			
L04-05-25-P-S-S-00	5/25/2016	10:40	S		X	X	X							1	LSA 04-05				
L04-05-26-P-R-S-00	5/25/2016	10:45	S		X	X	X							1	LSA 04-05				
L04-05-28-P-S-S-00	5/25/2016	10:15	S		X	X	X							1	LSA 04-05				
L04-05-29-P-R-S-00	5/25/2016	10:25	S		X	X	X							1	LSA 04-05				
L04-05-31-P-S-S-00	5/25/2016	13:05	S		X	X	X							1	LSA 04-05				
L04-05-32-P-R-S-00	5/25/2016	13:10	S		X	X	X							1	LSA 04-05				
L04-05-34-P-S-S-00	5/25/2016	9:50	S		X	X	X							1	LSA 04-05				
L04-05-35-P-R-S-00	5/25/2016	10:05	S		X	X	X							1	LSA 04-05				
L04-05-37-P-S-S-00	5/24/2016	14:35	S		X	X	X							1	LSA 04-05				
L04-05-38-P-R-S-00	5/24/2016	14:50	S		X	X	X							1	LSA 04-05				
L04-05-40-P-S-S-00	5/24/2016	14:10	S		X	X	X							1	LSA 04-05				
L04-05-40-P-S-Q-00	5/24/2016	14:10	S		X	X	X							1	LSA 04-05				
Relinquished by: <i>Goersum</i>		Date/Time: <i>5-26-16</i>		Received by: <i>R. G. Williams</i>		Date/Time: <i>5-26-16</i>		Total: <i>17</i>		Cooler Temperature: <i>Ambient</i>									
Company Name: <i>WEC</i>		Date/Time: <i>0855</i>		Company Name: <i>CROSSROADS</i>		Date/Time: <i>0855</i>		Cooler ID: <i>0525-01/02</i>		Shipper and Number:									
Received by:		Date/Time:		Relinquished by:		Date/Time:		Comments: <i>N/A</i>											
Company Name:				Company Name:															
Relinquished by: <i>W. Williams</i>		Date/Time: <i>5-26-16</i>		Received by: <i>C. Goersum</i>		Date/Time: <i>5-26-16</i>		Verified By: <i>C. Goersum</i>											
Company Name: <i>CROSSROADS</i>		Date/Time: <i>1115</i>		Company Name: <i>W. Williams</i>		Date/Time: <i>1115</i>		Date/Time: <i>5/26/16</i>											



160-17542 Chain of Custody

Page 5 of 32

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-052516-01 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															
L04-05-41-P-R-S-00	5/24/2016	14:25	S	C	X		X	X							1	LSA 04-05		
L04-05-43-P-S-S-00	5/24/2016	13:40	S	G	X		X	X							1	LSA 04-05		
L04-05-44-P-R-S-00	5/24/2016	13:50	S	C	X		X	X							1	LSA 04-05		
L04-05-46-P-S-S-00	5/24/2016	13:20	S	G	X		X	X							1	LSA 04-05		
L04-05-47-P-R-S-00	5/24/2016	13:30	S	C	X		X	X							1	LSA 04-05		
Relinquished by: <i>Gorsun</i>				Date/Time: 5-26-16		Received by: <i>RGMA</i>		Date/Time: 5-26-16		Total: 17		Cooler Temperature: Ambient						
Company Name: <i>WEC</i>				0855		Company Name: <i>CROSSROADS</i>		0855		Cooler ID: 0525-01/02		Shipper and Number:						
Received by:				Date/Time:		Relinquished by:		Date/Time:		Comments: N/A								
Company Name:						Company Name:												
Relinquished by: <i>RGMA</i>				Date/Time: 5-26-16		Received by: <i>RGMA</i>		Date/Time: 5-26-16		Verified By: <i>C. Gorsun</i> <i>Clark Evers</i> 5/26/16								
Company Name: <i>CROSSROADS</i>				11:15		Company Name: <i>CROSSROADS</i>		11:15										



Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-17542-1

Login Number: 17542

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: 160-17542-1

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: 160-17542-1

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

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Sample Summary

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

TestAmerica Job ID: 160-17542-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-17542-1	L04-05-25-P-S-S-00	Solid	05/25/16 10:40	05/26/16 11:15
160-17542-2	L04-05-26-P-R-S-00	Solid	05/25/16 10:45	05/26/16 11:15
160-17542-3	L04-05-28-P-S-S-00	Solid	05/25/16 10:15	05/26/16 11:15
160-17542-4	L04-05-29-P-R-S-00	Solid	05/25/16 10:25	05/26/16 11:15
160-17542-5	L04-05-31-P-S-S-00	Solid	05/25/16 13:05	05/26/16 11:15
160-17542-6	L04-05-32-P-R-S-00	Solid	05/25/16 13:10	05/26/16 11:15
160-17542-7	L04-05-34-P-S-S-00	Solid	05/25/16 09:50	05/26/16 11:15
160-17542-8	L04-05-35-P-R-S-00	Solid	05/25/16 10:05	05/26/16 11:15
160-17542-9	L04-05-37-P-S-S-00	Solid	05/24/16 14:35	05/26/16 11:15
160-17542-10	L04-05-38-P-R-S-00	Solid	05/24/16 14:50	05/26/16 11:15
160-17542-11	L04-05-40-P-S-S-00	Solid	05/24/16 14:10	05/26/16 11:15
160-17542-12	L04-05-40-P-S-Q-00	Solid	05/24/16 14:10	05/26/16 11:15
160-17542-13	L04-05-41-P-R-S-00	Solid	05/24/16 14:25	05/26/16 11:15
160-17542-14	L04-05-43-P-S-S-00	Solid	05/24/16 13:40	05/26/16 11:15
160-17542-15	L04-05-44-P-R-S-00	Solid	05/24/16 13:50	05/26/16 11:15
160-17542-16	L04-05-46-P-S-S-00	Solid	05/24/16 13:20	05/26/16 11:15
160-17542-17	L04-05-47-P-R-S-00	Solid	05/24/16 13:30	05/26/16 11:15

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-25-P-S-S-00

Lab Sample ID: 160-17542-1

Date Collected: 05/25/16 10:40

Matrix: Solid

Date Received: 05/26/16 11:15

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	0.432		0.0699	0.0826		0.0554	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Americium 241	-0.00368	U	0.0467	0.0467		0.0665	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Bismuth 212	0.0683	U	0.302	0.302		0.519	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Bismuth 214	0.550		0.0694	0.0900		0.0458	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Lead 212	0.349		0.0417	0.0615		0.0441	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Lead 214	0.592		0.0581	0.0846		0.0567	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Potassium 40	9.37		0.772	1.23		0.258	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Protactinium 231	-0.254	U	0.805	0.805		1.35	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Radium 226	0.550		0.0694	0.0900	1.00	0.0458	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Thorium 234	0.484	U	0.182	0.189	1.00	0.510	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Uranium 235	-0.0309	U	0.115	0.115		0.235	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Protactinium 234m	0.859	U	1.36	1.36		5.55	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Thorium 232	0.432		0.0699	0.0826		0.0554	pCi/g	05/31/16 13:10	05/31/16 16:29	1
Other Detected Radionuclides			Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>Tl-208</i>	0.127		0.0248	0.0281		0.0198	pCi/g	05/31/16 13:10	05/31/16 16:29	1

Client Sample ID: L04-05-25-P-S-S-00

Lab Sample ID: 160-17542-1

Date Collected: 05/25/16 10:40

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 89.8

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	☼	05/31/16 08:09	06/01/16 08:02	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	0.102	U	0.0633	0.0640	1.24	0.212	pCi/g	05/31/16 08:09	06/01/16 08:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	90		30 - 110					05/31/16 08:09	06/01/16 08:02	1

Client Sample ID: L04-05-26-P-R-S-00

Lab Sample ID: 160-17542-2

Date Collected: 05/25/16 10:45

Matrix: Solid

Date Received: 05/26/16 11:15

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	1.09		0.123	0.166		0.0941	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Americium 241	-0.0436	U	0.0679	0.0681		0.150	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Bismuth 212	1.17		0.350	0.370		0.328	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Bismuth 214	0.850		0.0914	0.127		0.0618	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Lead 212	1.06		0.0694	0.154		0.0534	pCi/g	05/31/16 13:10	05/31/16 21:32	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-26-P-R-S-00

Lab Sample ID: 160-17542-2

Date Collected: 05/25/16 10:45

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Lead 214	1.04		0.0830	0.136		0.0666	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Potassium 40	19.8		1.16	2.33		0.386	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Protactinium 231	0.000	U	0.181	0.181		2.11	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Radium 226	0.850		0.0914	0.127	1.00	0.0618	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Thorium 234	0.815		0.301	0.313	1.00	0.728	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Uranium 235	0.0340	U	0.0517	0.0518		0.576	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Protactinium 234m	-3.56	U	4.57	4.59		8.81	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Thorium 232	1.09		0.123	0.166		0.0941	pCi/g	05/31/16 13:10	05/31/16 21:32	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.326		0.0394	0.0519		0.0254	pCi/g	05/31/16 13:10	05/31/16 21:32	1

Client Sample ID: L04-05-26-P-R-S-00

Lab Sample ID: 160-17542-2

Date Collected: 05/25/16 10:45

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 82.4

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	☼	05/31/16 08:09	06/01/16 08:15	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Technetium 99	0.0144	U	0.0691	0.0691	1.40	0.240	pCi/g	05/31/16 08:09	06/01/16 08:15	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Re			87	30 - 110				05/31/16 08:09	06/01/16 08:15	1

Client Sample ID: L04-05-28-P-S-S-00

Lab Sample ID: 160-17542-3

Date Collected: 05/25/16 10:15

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.708		0.0898	0.114		0.0789	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Americium 241	0.0252	U	0.0320	0.0321		0.0526	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Bismuth 212	0.976		0.320	0.335		0.302	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Bismuth 214	0.675		0.0681	0.0972		0.0452	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Lead 212	0.571		0.0460	0.0872		0.0444	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Lead 214	0.710		0.0594	0.0949		0.0588	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Potassium 40	20.2		0.979	2.26		0.287	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Protactinium 231	0.203	U	0.631	0.631		1.62	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Radium 226	0.675		0.0681	0.0972	1.00	0.0452	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Thorium 234	0.822		0.355	0.365	1.00	0.554	pCi/g	05/31/16 13:10	05/31/16 16:28	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-28-P-S-S-00

Lab Sample ID: 160-17542-3

Date Collected: 05/25/16 10:15

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Uranium 235	0.0600	U	0.150	0.150		0.391	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Protactinium 234m	3.12	U	3.58	3.59		6.22	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Thorium 232	0.708		0.0898	0.114		0.0789	pCi/g	05/31/16 13:10	05/31/16 16:28	1
Other Detected			Count	Total						
Radionuclides	Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>Pb-210</i>	1.12		0.435	0.455		0.529	pCi/g	05/31/16 13:10	05/31/16 16:28	1
<i>Tl-208</i>	0.204		0.0343	0.0402		0.0279	pCi/g	05/31/16 13:10	05/31/16 16:28	1

Client Sample ID: L04-05-28-P-S-S-00

Lab Sample ID: 160-17542-3

Date Collected: 05/25/16 10:15

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 88.5

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	☼	05/31/16 08:09	06/01/16 08:20	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	0.145	U	0.0399	0.0421	1.28	0.219	pCi/g	05/31/16 08:09	06/01/16 08:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	88		30 - 110					05/31/16 08:09	06/01/16 08:20	1

Client Sample ID: L04-05-29-P-R-S-00

Lab Sample ID: 160-17542-4

Date Collected: 05/25/16 10:25

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.957		0.136	0.168		0.147	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Americium 241	0.0438	U	0.0982	0.0983		0.163	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Bismuth 212	0.249	U	0.447	0.448		0.751	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Bismuth 214	0.740		0.104	0.130		0.0789	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Lead 212	0.966		0.0761	0.146		0.0646	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Lead 214	0.883		0.0872	0.127		0.0794	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Potassium 40	15.6		1.21	2.00		0.316	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Protactinium 231	0.471	U	1.05	1.05		2.34	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Radium 226	0.740		0.104	0.130	1.00	0.0789	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Thorium 234	0.898		0.346	0.359	1.00	0.893	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Uranium 235	-0.137	U	0.192	0.193		0.635	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Protactinium 234m	3.30	U	4.71	4.72		8.10	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Thorium 232	0.957		0.136	0.168		0.147	pCi/g	05/31/16 13:10	05/31/16 17:09	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-29-P-R-S-00

Lab Sample ID: 160-17542-4

Date Collected: 05/25/16 10:25

Matrix: Solid

Date Received: 05/26/16 11:15

Other Detected Radionuclides		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208	0.292	0.0496	0.0581		0.0369	pCi/g	05/31/16 13:10	05/31/16 17:09	1

Client Sample ID: L04-05-29-P-R-S-00

Lab Sample ID: 160-17542-4

Date Collected: 05/25/16 10:25

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 81.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000069	0.000021	mg/Kg	☼	05/31/16 08:09	06/01/16 08:24	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	0.0568	U	0.0185	0.0192	1.38	0.236	pCi/g	05/31/16 08:09	06/01/16 08:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	88		30 - 110					05/31/16 08:09	06/01/16 08:24	1

Client Sample ID: L04-05-31-P-S-S-00

Lab Sample ID: 160-17542-5

Date Collected: 05/25/16 13:05

Matrix: Solid

Date Received: 05/26/16 11:15

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	0.579		0.139	0.151		0.116	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Americium 241	-0.0325	U	0.0725	0.0726		0.102	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Bismuth 212	-0.106	U	0.497	0.497		0.848	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Bismuth 214	0.720		0.0892	0.116		0.0594	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Lead 212	0.0139	U	0.102	0.102		0.171	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Lead 214	0.794		0.0825	0.117		0.0750	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Potassium 40	13.8		1.03	1.75		0.227	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Protactinium 231	-0.394	U	1.15	1.15		1.92	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Radium 226	0.720		0.0892	0.116	1.00	0.0594	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Thorium 234	0.920		0.276	0.292	1.00	0.742	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Uranium 235	0.238		0.128	0.130		0.180	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Protactinium 234m	2.72	U	3.42	3.43		5.20	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Thorium 232	0.579		0.139	0.151		0.116	pCi/g	05/31/16 13:10	05/31/16 17:07	1
Other Detected Radionuclides		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
TI-208	0.272	0.0410	0.0498		0.0285	pCi/g	05/31/16 13:10	05/31/16 17:07	1	

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-31-P-S-S-00

Lab Sample ID: 160-17542-5

Date Collected: 05/25/16 13:05

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 85.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000056	J	0.000067	0.000020	mg/Kg	☼	05/31/16 08:09	06/01/16 08:28	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	0.966		0.0213	0.0914	1.35	0.231	pCi/g	05/31/16 08:09	06/01/16 08:28	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	86		30 - 110	05/31/16 08:09	06/01/16 08:28	1

Client Sample ID: L04-05-32-P-R-S-00

Lab Sample ID: 160-17542-6

Date Collected: 05/25/16 13:10

Matrix: Solid

Date Received: 05/26/16 11:15

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	1.06		0.108	0.153		0.0860	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Americium 241	-0.0444	U	0.0555	0.0557		0.161	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Bismuth 212	1.63		0.399	0.433		0.322	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Bismuth 214	0.833		0.0919	0.126		0.0649	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Lead 212	1.13		0.0692	0.161		0.0531	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Lead 214	0.960		0.0794	0.128		0.0592	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Potassium 40	17.0		1.07	2.04		0.386	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Protactinium 231	0.000	U	0.419	0.419		2.09	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Radium 226	0.833		0.0919	0.126	1.00	0.0649	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Thorium 234	1.59		0.691	0.711	1.00	0.843	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Uranium 235	0.142	U	0.104	0.105		0.165	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Protactinium 234m	1.39	U	2.18	2.19		7.45	pCi/g	05/31/16 13:10	05/31/16 17:06	1
Thorium 232	1.06		0.108	0.153		0.0860	pCi/g	05/31/16 13:10	05/31/16 17:06	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.345		0.0470	0.0591		0.0346	pCi/g	05/31/16 13:10	05/31/16 17:06	1

Client Sample ID: L04-05-32-P-R-S-00

Lab Sample ID: 160-17542-6

Date Collected: 05/25/16 13:10

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 81.5

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	☼	05/31/16 08:09	06/01/16 08:33	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.103	U	0.0654	0.0661	1.40	0.240	pCi/g	05/31/16 08:09	06/01/16 08:33	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-32-P-R-S-00

Date Collected: 05/25/16 13:10

Date Received: 05/26/16 11:15

Lab Sample ID: 160-17542-6

Matrix: Solid

Percent Solids: 81.5

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	88		30 - 110	05/31/16 08:09	06/01/16 08:33	1

Client Sample ID: L04-05-34-P-S-S-00

Date Collected: 05/25/16 09:50

Date Received: 05/26/16 11:15

Lab Sample ID: 160-17542-7

Matrix: Solid

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	0.403		0.0825	0.0922		0.0748	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Americium 241	-0.0245	U	0.0409	0.0410		0.0727	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Bismuth 212	0.518		0.195	0.202		0.155	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Bismuth 214	0.580		0.0776	0.0983		0.0758	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Lead 212	0.352		0.0436	0.0630		0.0455	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Lead 214	0.696		0.0610	0.0946		0.0460	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Potassium 40	9.09		0.802	1.23		0.217	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Protactinium 231	0.000	U	0.354	0.354		1.73	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Radium 226	0.580		0.0776	0.0983	1.00	0.0758	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Thorium 234	0.495		0.186	0.193	1.00	0.492	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Uranium 235	0.0906	U	0.174	0.174		0.337	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Protactinium 234m	2.71	U	3.85	3.86		6.55	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Thorium 232	0.403		0.0825	0.0922		0.0748	pCi/g	05/31/16 13:10	05/31/16 17:09	1
Other Detected Radionuclides			Count	Total						
	Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.137		0.0295	0.0327		0.0218	pCi/g	05/31/16 13:10	05/31/16 17:09	1

Client Sample ID: L04-05-34-P-S-S-00

Date Collected: 05/25/16 09:50

Date Received: 05/26/16 11:15

Lab Sample ID: 160-17542-7

Matrix: Solid

Percent Solids: 92.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000032	J	0.000062	0.000018	mg/Kg	☼	05/31/16 08:09	06/01/16 08:50	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	0.545		0.117	0.128	1.23	0.211	pCi/g	05/31/16 08:09	06/01/16 08:50	1
Carrier			Count	Total						
	Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Re	89		30 - 110					05/31/16 08:09	06/01/16 08:50	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-35-P-R-S-00

Lab Sample ID: 160-17542-8

Date Collected: 05/25/16 10:05

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.704		0.139	0.157		0.121	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Americium 241	-0.0169	U	0.0605	0.0605		0.102	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Bismuth 212	1.01		0.317	0.334		0.300	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Bismuth 214	0.796		0.0901	0.122		0.0495	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Lead 212	0.739		0.0641	0.115		0.0602	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Lead 214	0.805		0.0905	0.123		0.0699	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Potassium 40	19.3		1.27	2.34		0.355	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Protactinium 231	0.000	U	0.402	0.402		2.30	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Radium 226	0.796		0.0901	0.122	1.00	0.0495	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Thorium 234	0.945		0.450	0.461	1.00	0.703	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Uranium 235	-0.0978	U	0.143	0.144		0.505	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Protactinium 234m	1.38	U	2.02	2.03		9.99	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Thorium 232	0.704		0.139	0.157		0.121	pCi/g	05/31/16 13:10	05/31/16 17:48	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.257		0.0426	0.0503		0.0314	pCi/g	05/31/16 13:10	05/31/16 17:48	1

Client Sample ID: L04-05-35-P-R-S-00

Lab Sample ID: 160-17542-8

Date Collected: 05/25/16 10:05

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 87.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000033	J	0.000067	0.000020	mg/Kg	☼	05/31/16 08:09	06/01/16 08:54	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	0.558		0.152	0.160	1.34	0.230	pCi/g	05/31/16 08:09	06/01/16 08:54	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Re	86		30 - 110					05/31/16 08:09	06/01/16 08:54	1

Client Sample ID: L04-05-37-P-S-S-00

Lab Sample ID: 160-17542-9

Date Collected: 05/24/16 14:35

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.646		0.118	0.136		0.0864	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Americium 241	-0.0152	U	0.0351	0.0352		0.0951	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Bismuth 212	0.513		0.202	0.209		0.282	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Bismuth 214	0.652		0.0673	0.0955		0.0465	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Lead 212	0.570		0.0435	0.0856		0.0405	pCi/g	05/31/16 13:10	05/31/16 17:43	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-37-P-S-S-00

Lab Sample ID: 160-17542-9

Date Collected: 05/24/16 14:35

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Lead 214	0.571		0.0522	0.0791		0.0462	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Potassium 40	19.5		0.919	2.20		0.265	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Protactinium 231	0.190	U	0.609	0.609		1.50	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Radium 226	0.652		0.0673	0.0955	1.00	0.0465	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Thorium 234	0.574		0.211	0.219	1.00	0.517	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Uranium 235	-0.0159	U	0.0347	0.0347		0.401	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Protactinium 234m	0.522	U	0.845	0.846		6.21	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Thorium 232	0.646		0.118	0.136		0.0864	pCi/g	05/31/16 13:10	05/31/16 17:43	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.190		0.0291	0.0351		0.0232	pCi/g	05/31/16 13:10	05/31/16 17:43	1

Client Sample ID: L04-05-37-P-S-S-00

Lab Sample ID: 160-17542-9

Date Collected: 05/24/16 14:35

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 92.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000034	J	0.000060	0.000018	mg/Kg	☼	05/31/16 08:09	06/01/16 08:58	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	0.583		0.0579	0.0789	1.20	0.205	pCi/g	05/31/16 08:09	06/01/16 08:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	90		30 - 110					05/31/16 08:09	06/01/16 08:58	1

Client Sample ID: L04-05-38-P-R-S-00

Lab Sample ID: 160-17542-10

Date Collected: 05/24/16 14:50

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.880		0.115	0.146		0.121	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Americium 241	0.0454	U	0.0405	0.0408		0.0610	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Bismuth 212	1.08		0.307	0.327		0.351	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Bismuth 214	0.735		0.0853	0.114		0.0731	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Lead 212	0.838		0.0648	0.126		0.0558	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Lead 214	0.918		0.0956	0.135		0.0740	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Potassium 40	16.6		1.09	2.02		0.211	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Protactinium 231	0.127	U	0.548	0.548		1.74	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Radium 226	0.735		0.0853	0.114	1.00	0.0731	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Thorium 234	0.693	U	0.295	0.304	1.00	0.774	pCi/g	05/31/16 13:10	05/31/16 17:44	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-38-P-R-S-00

Lab Sample ID: 160-17542-10

Date Collected: 05/24/16 14:50

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Uranium 235	0.0705	U	0.206	0.206		0.336	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Protactinium 234m	1.44	U	2.26	2.27		7.67	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Thorium 232	0.880		0.115	0.146		0.121	pCi/g	05/31/16 13:10	05/31/16 17:44	1
<i>Other Detected Radionuclides</i>			Count	Total						
	Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.280		0.0396	0.0491		0.0288	pCi/g	05/31/16 13:10	05/31/16 17:44	1

Client Sample ID: L04-05-38-P-R-S-00

Lab Sample ID: 160-17542-10

Date Collected: 05/24/16 14:50

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 82.6

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000069	0.000021	mg/Kg	☼	05/31/16 08:09	06/01/16 09:03	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	0.104	U	0.0142	0.0171	1.38	0.236	pCi/g	05/31/16 08:09	06/01/16 09:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	88		30 - 110					05/31/16 08:09	06/01/16 09:03	1

Client Sample ID: L04-05-40-P-S-S-00

Lab Sample ID: 160-17542-11

Date Collected: 05/24/16 14:10

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.655		0.103	0.123		0.0845	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Americium 241	-0.0361	U	0.0847	0.0848		0.141	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Bismuth 212	0.274	U	0.486	0.487		0.813	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Bismuth 214	0.672		0.0970	0.120		0.0711	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Lead 212	0.635		0.0574	0.100		0.0516	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Lead 214	0.643		0.0828	0.106		0.0699	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Potassium 40	16.3		1.10	2.00		0.136	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Protactinium 231	0.212	U	0.650	0.650		2.07	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Radium 226	0.672		0.0970	0.120	1.00	0.0711	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Thorium 234	1.08		0.424	0.439	1.00	0.649	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Uranium 235	0.207		0.131	0.133		0.173	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Protactinium 234m	1.69	U	2.88	2.88		7.95	pCi/g	05/31/16 13:10	05/31/16 17:44	1
Thorium 232	0.655		0.103	0.123		0.0845	pCi/g	05/31/16 13:10	05/31/16 17:44	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-40-P-S-S-00

Lab Sample ID: 160-17542-11

Date Collected: 05/24/16 14:10

Matrix: Solid

Date Received: 05/26/16 11:15

Other Detected		Count	Total							
Radionuclides		Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
		(2σ+/-)	(2σ+/-)							
TI-208	0.224	0.0445	0.0502		0.0361	pCi/g	05/31/16 13:10	05/31/16 17:44	1	

Client Sample ID: L04-05-40-P-S-S-00

Lab Sample ID: 160-17542-11

Date Collected: 05/24/16 14:10

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 78.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000029	J	0.000070	0.000021	mg/Kg	☼	05/31/16 08:09	06/01/16 09:07	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	0.489		0.238	0.242	1.40	0.240	pCi/g	05/31/16 08:09	06/01/16 09:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	89		30 - 110					05/31/16 08:09	06/01/16 09:07	1

Client Sample ID: L04-05-40-P-S-Q-00

Lab Sample ID: 160-17542-12

Date Collected: 05/24/16 14:10

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.988		0.131	0.165		0.0918	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Americium 241	0.0234	U	0.0727	0.0728		0.121	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Bismuth 212	0.956		0.326	0.340		0.312	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Bismuth 214	0.810		0.0876	0.121		0.0595	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Lead 212	0.767		0.0549	0.114		0.0511	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Lead 214	0.860		0.0710	0.114		0.0502	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Potassium 40	19.6		0.977	2.20		0.212	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Protactinium 231	0.248	U	0.811	0.812		1.80	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Radium 226	0.810		0.0876	0.121	1.00	0.0595	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Thorium 234	1.04		0.419	0.434	1.00	0.655	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Uranium 235	0.0795	U	0.235	0.236		0.391	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Protactinium 234m	2.35	U	3.82	3.83		6.33	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Thorium 232	0.988		0.131	0.165		0.0918	pCi/g	05/31/16 13:10	05/31/16 17:45	1
Other Detected			Count	Total						
Radionuclides		Result	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
		Qualifier	(2σ+/-)	(2σ+/-)						
TI-208	0.263		0.0382	0.0468		0.0304	pCi/g	05/31/16 13:10	05/31/16 17:45	1

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-40-P-S-Q-00

Lab Sample ID: 160-17542-12

Date Collected: 05/24/16 14:10

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 83.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	0.000022	J	0.000067	0.000020	mg/Kg	☼	05/31/16 08:09	06/01/16 09:11	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	0.376		0.142	0.146	1.35	0.231	pCi/g	05/31/16 08:09	06/01/16 09:11	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	91		30 - 110	05/31/16 08:09	06/01/16 09:11	1

Client Sample ID: L04-05-41-P-R-S-00

Lab Sample ID: 160-17542-13

Date Collected: 05/24/16 14:25

Matrix: Solid

Date Received: 05/26/16 11:15

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	1.04		0.160	0.192		0.163	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Americium 241	-0.0162	U	0.0661	0.0662		0.126	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Bismuth 212	1.72		0.451	0.485		0.347	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Bismuth 214	0.943		0.125	0.159		0.0795	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Lead 212	1.04		0.0829	0.158		0.0710	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Lead 214	1.01		0.0975	0.143		0.0772	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Potassium 40	19.2		1.44	2.43		0.448	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Protactinium 231	-0.0292	U	1.60	1.60		2.69	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Radium 226	0.943		0.125	0.159	1.00	0.0795	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Thorium 234	1.43		0.567	0.586	1.00	0.870	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Uranium 235	0.116	U	0.270	0.270		0.602	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Protactinium 234m	2.52	U	3.96	3.97		12.3	pCi/g	05/31/16 13:10	05/31/16 18:29	1
Thorium 232	1.04		0.160	0.192		0.163	pCi/g	05/31/16 13:10	05/31/16 18:29	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.385		0.0586	0.0709		0.0392	pCi/g	05/31/16 13:10	05/31/16 18:29	1

Client Sample ID: L04-05-41-P-R-S-00

Lab Sample ID: 160-17542-13

Date Collected: 05/24/16 14:25

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 77.3

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	☼	05/31/16 08:09	06/01/16 09:16	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	0.0395	U	0.0710	0.0711	1.44	0.247	pCi/g	05/31/16 08:09	06/01/16 09:16	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-41-P-R-S-00

Lab Sample ID: 160-17542-13

Date Collected: 05/24/16 14:25

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 77.3

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Re	91		30 - 110	05/31/16 08:09	06/01/16 09:16	1

Client Sample ID: L04-05-43-P-S-S-00

Lab Sample ID: 160-17542-14

Date Collected: 05/24/16 13:40

Matrix: Solid

Date Received: 05/26/16 11:15

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	0.453		0.0715	0.0851		0.0621	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Americium 241	0.0150	U	0.0257	0.0258		0.0428	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Bismuth 212	0.142	U	0.251	0.251		0.420	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Bismuth 214	0.648		0.0639	0.0928		0.0383	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Lead 212	0.398		0.0376	0.0638		0.0370	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Lead 214	0.679		0.0534	0.0886		0.0451	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Potassium 40	12.6		0.729	1.48		0.183	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Protactinium 231	0.249	U	0.531	0.532		1.19	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Radium 226	0.648		0.0639	0.0928	1.00	0.0383	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Thorium 234	0.504		0.175	0.183	1.00	0.490	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Uranium 235	0.0696	U	0.144	0.144		0.317	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Protactinium 234m	1.22	U	2.14	2.14		4.88	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Thorium 232	0.453		0.0715	0.0851		0.0621	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Other Detected Radionuclides			Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.129		0.0232	0.0268		0.0198	pCi/g	05/31/16 13:10	05/31/16 18:28	1

Client Sample ID: L04-05-43-P-S-S-00

Lab Sample ID: 160-17542-14

Date Collected: 05/24/16 13:40

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 89.4

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	☒	05/31/16 08:09	06/01/16 09:20	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	0.188	U	0.0733	0.0753	1.28	0.218	pCi/g	05/31/16 08:09	06/01/16 09:20	1
Carrier			%Yield	Qualifier	Limits	Prepared			Analyzed	Dil Fac
Re	89		30 - 110					05/31/16 08:09	06/01/16 09:20	1

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-44-P-R-S-00

Lab Sample ID: 160-17542-15

Date Collected: 05/24/16 13:50

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.955		0.177	0.202		0.113	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Americium 241	0.00713	U	0.0827	0.0827		0.117	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Bismuth 212	1.13		0.375	0.392		0.360	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Bismuth 214	0.903		0.115	0.149		0.0800	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Lead 212	1.04		0.0818	0.157		0.0670	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Lead 214	1.08		0.103	0.152		0.0626	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Potassium 40	20.0		1.41	2.49		0.393	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Protactinium 231	-0.156	U	1.27	1.27		2.15	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Radium 226	0.903		0.115	0.149	1.00	0.0800	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Thorium 234	1.12		0.560	0.573	1.00	0.875	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Uranium 235	0.0379	U	0.235	0.235		0.395	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Protactinium 234m	2.02	U	3.10	3.11		9.85	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Thorium 232	0.955		0.177	0.202		0.113	pCi/g	05/31/16 13:10	05/31/16 18:28	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>Tl-208</i>			<i>0.0490</i>	<i>0.0586</i>		<i>0.0364</i>	<i>pCi/g</i>	<i>05/31/16 13:10</i>	<i>05/31/16 18:28</i>	<i>1</i>

Client Sample ID: L04-05-44-P-R-S-00

Lab Sample ID: 160-17542-15

Date Collected: 05/24/16 13:50

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 81.4

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	☼	05/31/16 08:09	06/01/16 09:24	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	0.00477	U	0.0258	0.0258	1.39	0.239	pCi/g	05/31/16 08:09	06/01/16 09:24	1
Carrier			%Yield	Limits				Prepared	Analyzed	Dil Fac
<i>Re</i>			<i>87</i>	<i>30 - 110</i>				<i>05/31/16 08:09</i>	<i>06/01/16 09:24</i>	<i>1</i>

Client Sample ID: L04-05-46-P-S-S-00

Lab Sample ID: 160-17542-16

Date Collected: 05/24/16 13:20

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.375		0.0836	0.0920		0.0915	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Americium 241	-0.0225	U	0.0569	0.0569		0.0947	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Bismuth 212	0.494		0.223	0.229		0.305	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Bismuth 214	0.535		0.0643	0.0850		0.0433	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Lead 212	0.342		0.0404	0.0600		0.0418	pCi/g	05/31/16 13:10	05/31/16 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: 160-17542-1

Client Sample ID: L04-05-46-P-S-S-00

Lab Sample ID: 160-17542-16

Date Collected: 05/24/16 13:20

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Lead 214	0.577		0.0576	0.0832		0.0402	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Potassium 40	13.9		0.924	1.69		0.200	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Protactinium 231	-0.286	U	1.01	1.01		1.69	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Radium 226	0.535		0.0643	0.0850	1.00	0.0433	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Thorium 234	0.274	U	0.166	0.168	1.00	0.839	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Uranium 235	0.0827	U	0.176	0.176		0.375	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Protactinium 234m	1.18	U	1.82	1.83		6.60	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Thorium 232	0.375		0.0836	0.0920		0.0915	pCi/g	05/31/16 13:10	05/31/16 18:27	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.150		0.0254	0.0298		0.0169	pCi/g	05/31/16 13:10	05/31/16 18:27	1

Client Sample ID: L04-05-46-P-S-S-00

Lab Sample ID: 160-17542-16

Date Collected: 05/24/16 13:20

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 94.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000061	0.000018	mg/Kg	☼	05/31/16 08:09	06/01/16 09:29	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	0.137	U	0.0121	0.0175	1.23	0.210	pCi/g	05/31/16 08:09	06/01/16 09:29	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Re			86	30 - 110				05/31/16 08:09	06/01/16 09:29	1

Client Sample ID: L04-05-47-P-R-S-00

Lab Sample ID: 160-17542-17

Date Collected: 05/24/16 13:30

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium 228	1.04		0.120	0.160		0.104	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Americium 241	0.0280	U	0.0731	0.0732		0.122	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Bismuth 212	1.51		0.402	0.432		0.321	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Bismuth 214	0.859		0.112	0.143		0.0809	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Lead 212	0.913		0.0741	0.139		0.0681	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Lead 214	0.959		0.0902	0.134		0.0812	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Potassium 40	17.4		1.19	2.14		0.241	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Protactinium 231	0.379	U	0.864	0.865		1.95	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Radium 226	0.859		0.112	0.143	1.00	0.0809	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Thorium 234	1.15		0.485	0.499	1.00	0.745	pCi/g	05/31/16 13:10	05/31/16 21:36	1

TestAmerica St. Louis

Client Sample Results

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

TestAmerica Job ID: 160-17542-1

Client Sample ID: L04-05-47-P-R-S-00

Lab Sample ID: 160-17542-17

Date Collected: 05/24/16 13:30

Matrix: Solid

Date Received: 05/26/16 11:15

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Uranium 235	0.0473	U	0.104	0.104		0.383	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Protactinium 234m	1.95	U	3.21	3.22		9.68	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Thorium 232	1.04		0.120	0.160		0.104	pCi/g	05/31/16 13:10	05/31/16 21:36	1
Other Detected Radionuclides			Count	Total						
	Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Tl-208	0.330		0.0501	0.0607		0.0337	pCi/g	05/31/16 13:10	05/31/16 21:36	1

Client Sample ID: L04-05-47-P-R-S-00

Lab Sample ID: 160-17542-17

Date Collected: 05/24/16 13:30

Matrix: Solid

Date Received: 05/26/16 11:15

Percent Solids: 80.2

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	☼	05/31/16 08:09	06/01/16 09:46	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	0.0742	U	0.0859	0.0862	1.35	0.232	pCi/g	05/31/16 08:09	06/01/16 09:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Re	91		30 - 110					05/31/16 08:09	06/01/16 09:46	1

QC Sample Results

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

TestAmerica Job ID: 160-17542-1

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

Lab Sample ID: MB 160-253784/1-A
Matrix: Solid
Analysis Batch: 254088

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 253784

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Technetium 99	ND		0.000053	0.000016	mg/Kg		05/31/16 08:09	06/01/16 07:54	1

Lab Sample ID: LCS 160-253784/2-A
Matrix: Solid
Analysis Batch: 254088

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253784

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Technetium 99	0.00119	0.00124		mg/Kg		104	80 - 120

Lab Sample ID: 160-17542-1 MS
Matrix: Solid
Analysis Batch: 254088

Client Sample ID: L04-05-25-P-S-S-00
Prep Type: Total/NA
Prep Batch: 253784

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Technetium 99	ND		0.00132	0.00137		mg/Kg	☼	104	75 - 125

Lab Sample ID: 160-17542-1 MSD
Matrix: Solid
Analysis Batch: 254088

Client Sample ID: L04-05-25-P-S-S-00
Prep Type: Total/NA
Prep Batch: 253784

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Technetium 99	ND		0.00131	0.00136		mg/Kg	☼	104	75 - 125	1	30

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

Lab Sample ID: MB 160-253784/1-A
Matrix: Solid
Analysis Batch: 254089

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 253784

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.04195	U	0.0223	0.0227	1.07	0.182	pCi/g	05/31/16 08:09	06/01/16 07:54	1
Carrier	MB %Yield	MB Qualifier	Limits							
Re	93		30 - 110							
								Prepared	Analyzed	Dil Fac
								05/31/16 08:09	06/01/16 07:54	1

Lab Sample ID: LCS 160-253784/2-A
Matrix: Solid
Analysis Batch: 254089

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253784

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits
Technetium 99	20.4	21.16		1.96	1.08	0.185	pCi/g	104	80 - 120
Carrier	LCS %Yield	LCS Qualifier	Limits						
Re	92		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: 160-17542-1

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

Lab Sample ID: 160-17542-1 MS

Matrix: Solid

Analysis Batch: 254089

Client Sample ID: L04-05-25-P-S-S-00

Prep Type: Total/NA

Prep Batch: 253784

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Technetium 99	0.102	U	22.6	23.42		2.40	1.25	0.214	pCi/g	104	75 - 125
Carrier	%Yield	MS Qualifier	Limits								
Re	89		30 - 110								

Lab Sample ID: 160-17542-1 MSD

Matrix: Solid

Analysis Batch: 254089

Client Sample ID: L04-05-25-P-S-S-00

Prep Type: Total/NA

Prep Batch: 253784

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	0.102	U	22.3	23.30		2.17	1.26	0.215	pCi/g	104	75 - 125	0.03	1
Carrier	%Yield	MSD Qualifier	Limits										
Re	87		30 - 110										

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

Lab Sample ID: MB 160-253834/1-A

Matrix: Solid

Analysis Batch: 253822

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 253834

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	-0.03687	U	0.0382	0.0384		0.100	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Americium 241	-0.0003683	U	0.0254	0.0254		0.0213	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Bismuth 212	-0.007835	U	0.234	0.234		0.400	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Bismuth 214	-0.02947	U	0.0865	0.0866		0.146	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Lead 212	0.01818	U	0.0165	0.0167		0.0223	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Lead 214	0.02860	U	0.0201	0.0203		0.0275	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Potassium 40	-0.1041	U	0.299	0.299		0.295	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Protactinium 231	-0.07995	U	0.650	0.650		1.12	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Radium 226	-0.02947	U	0.0865	0.0866	1.00	0.146	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Thorium 234	0.07633	U	0.150	0.150	1.00	0.245	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Uranium 235	0.01778	U	0.0620	0.0621		0.0899	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Protactinium 234m	-0.1422	U	2.24	2.24		4.36	pCi/g	05/31/16 13:10	05/31/16 16:26	1
Thorium 232	-0.03687	U	0.0382	0.0384		0.100	pCi/g	05/31/16 13:10	05/31/16 16:26	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	05/31/16 13:10	05/31/16 16:26	1

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-17542-1

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

Lab Sample ID: LCS 160-253834/2-A
Matrix: Solid
Analysis Batch: 253819

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253834

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium 241	101	100.3		10.4		0.447	pCi/g	100	87 - 116
Cesium 137	33.9	32.80		3.43	0.200	0.111	pCi/g	97	87 - 120
Cobalt 60	31.0	29.69		3.00		0.121	pCi/g	96	87 - 115

Lab Sample ID: 160-17542-1 DU
Matrix: Solid
Analysis Batch: 253813

Client Sample ID: L04-05-25-P-S-S-00
Prep Type: Total/NA
Prep Batch: 253834

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Actinium 228	0.432		0.4620		0.0795		0.0580	pCi/g	0.18	1
Americium 241	-0.00368	U	0.002821	U	0.0526		0.0882	pCi/g	0.07	1
Bismuth 212	0.0683	U	0.4486		0.223		0.232	pCi/g	0.72	1
Bismuth 214	0.550		0.5961		0.0896		0.0426	pCi/g	0.26	1
Lead 212	0.349		0.3960		0.0637		0.0342	pCi/g	0.37	1
Lead 214	0.592		0.6024		0.0914		0.0516	pCi/g	0.06	1
Potassium 40	9.37		10.97		1.32		0.240	pCi/g	0.63	1
Protactinium 231	-0.254	U	-0.3211	U	0.960		1.60	pCi/g	0.04	1
Radium 226	0.550		0.5961		0.0896	1.00	0.0426	pCi/g	0.26	1
Thorium 234	0.484	U	0.5121		0.189	1.00	0.506	pCi/g	0.07	1
Uranium 235	-0.0309	U	-0.00419	U	0.00750		0.357	pCi/g	0.22	1
Protactinium 234m	0.859	U	2.063	U	3.14		5.50	pCi/g	0.27	1
Thorium 232	0.432		0.4620		0.0795		0.0580	pCi/g	0.18	1
Other Detected Radionuclides	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Tl-208	0.127		0.1364		0.0271		0.0185	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: 160-17542-1

Metals

Prep Batch: 253784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17542-1	L04-05-25-P-S-S-00	Total/NA	Solid	None	
160-17542-1 MS	L04-05-25-P-S-S-00	Total/NA	Solid	None	
160-17542-1 MSD	L04-05-25-P-S-S-00	Total/NA	Solid	None	
160-17542-2	L04-05-26-P-R-S-00	Total/NA	Solid	None	
160-17542-3	L04-05-28-P-S-S-00	Total/NA	Solid	None	
160-17542-4	L04-05-29-P-R-S-00	Total/NA	Solid	None	
160-17542-5	L04-05-31-P-S-S-00	Total/NA	Solid	None	
160-17542-6	L04-05-32-P-R-S-00	Total/NA	Solid	None	
160-17542-7	L04-05-34-P-S-S-00	Total/NA	Solid	None	
160-17542-8	L04-05-35-P-R-S-00	Total/NA	Solid	None	
160-17542-9	L04-05-37-P-S-S-00	Total/NA	Solid	None	
160-17542-10	L04-05-38-P-R-S-00	Total/NA	Solid	None	
160-17542-11	L04-05-40-P-S-S-00	Total/NA	Solid	None	
160-17542-12	L04-05-40-P-S-Q-00	Total/NA	Solid	None	
160-17542-13	L04-05-41-P-R-S-00	Total/NA	Solid	None	
160-17542-14	L04-05-43-P-S-S-00	Total/NA	Solid	None	
160-17542-15	L04-05-44-P-R-S-00	Total/NA	Solid	None	
160-17542-16	L04-05-46-P-S-S-00	Total/NA	Solid	None	
160-17542-17	L04-05-47-P-R-S-00	Total/NA	Solid	None	
LCS 160-253784/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-253784/1-A	Method Blank	Total/NA	Solid	None	

Analysis Batch: 254088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17542-1	L04-05-25-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-1 MS	L04-05-25-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-1 MSD	L04-05-25-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-2	L04-05-26-P-R-S-00	Total/NA	Solid	6020A	253784
160-17542-3	L04-05-28-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-4	L04-05-29-P-R-S-00	Total/NA	Solid	6020A	253784
160-17542-5	L04-05-31-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-6	L04-05-32-P-R-S-00	Total/NA	Solid	6020A	253784
160-17542-7	L04-05-34-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-8	L04-05-35-P-R-S-00	Total/NA	Solid	6020A	253784
160-17542-9	L04-05-37-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-10	L04-05-38-P-R-S-00	Total/NA	Solid	6020A	253784
160-17542-11	L04-05-40-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-12	L04-05-40-P-S-Q-00	Total/NA	Solid	6020A	253784
160-17542-13	L04-05-41-P-R-S-00	Total/NA	Solid	6020A	253784
160-17542-14	L04-05-43-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-15	L04-05-44-P-R-S-00	Total/NA	Solid	6020A	253784
160-17542-16	L04-05-46-P-S-S-00	Total/NA	Solid	6020A	253784
160-17542-17	L04-05-47-P-R-S-00	Total/NA	Solid	6020A	253784
LCS 160-253784/2-A	Lab Control Sample	Total/NA	Solid	6020A	253784
MB 160-253784/1-A	Method Blank	Total/NA	Solid	6020A	253784

QC Association Summary

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

TestAmerica Job ID: 160-17542-1

General Chemistry

Analysis Batch: 253564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17542-1	L04-05-25-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-2	L04-05-26-P-R-S-00	Total/NA	Solid	Moisture	
160-17542-3	L04-05-28-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-4	L04-05-29-P-R-S-00	Total/NA	Solid	Moisture	
160-17542-5	L04-05-31-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-6	L04-05-32-P-R-S-00	Total/NA	Solid	Moisture	
160-17542-7	L04-05-34-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-8	L04-05-35-P-R-S-00	Total/NA	Solid	Moisture	
160-17542-9	L04-05-37-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-10	L04-05-38-P-R-S-00	Total/NA	Solid	Moisture	
160-17542-11	L04-05-40-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-12	L04-05-40-P-S-Q-00	Total/NA	Solid	Moisture	
160-17542-13	L04-05-41-P-R-S-00	Total/NA	Solid	Moisture	
160-17542-14	L04-05-43-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-14 DU	L04-05-43-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-15	L04-05-44-P-R-S-00	Total/NA	Solid	Moisture	
160-17542-16	L04-05-46-P-S-S-00	Total/NA	Solid	Moisture	
160-17542-17	L04-05-47-P-R-S-00	Total/NA	Solid	Moisture	
160-17542-17 DU	L04-05-47-P-R-S-00	Total/NA	Solid	Moisture	

Rad

Leach Batch: 253366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17542-1	L04-05-25-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-1 DU	L04-05-25-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-2	L04-05-26-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17542-3	L04-05-28-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-4	L04-05-29-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17542-5	L04-05-31-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-6	L04-05-32-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17542-7	L04-05-34-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-8	L04-05-35-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17542-9	L04-05-37-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-10	L04-05-38-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17542-11	L04-05-40-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-12	L04-05-40-P-S-Q-00	Total/NA	Solid	Dry and Grind	
160-17542-13	L04-05-41-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17542-14	L04-05-43-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-15	L04-05-44-P-R-S-00	Total/NA	Solid	Dry and Grind	
160-17542-16	L04-05-46-P-S-S-00	Total/NA	Solid	Dry and Grind	
160-17542-17	L04-05-47-P-R-S-00	Total/NA	Solid	Dry and Grind	

Prep Batch: 253784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17542-1	L04-05-25-P-S-S-00	Total/NA	Solid	None	
160-17542-1 MS	L04-05-25-P-S-S-00	Total/NA	Solid	None	
160-17542-1 MSD	L04-05-25-P-S-S-00	Total/NA	Solid	None	
160-17542-2	L04-05-26-P-R-S-00	Total/NA	Solid	None	
160-17542-3	L04-05-28-P-S-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: 160-17542-1

Rad (Continued)

Prep Batch: 253784 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17542-4	L04-05-29-P-R-S-00	Total/NA	Solid	None	
160-17542-5	L04-05-31-P-S-S-00	Total/NA	Solid	None	
160-17542-6	L04-05-32-P-R-S-00	Total/NA	Solid	None	
160-17542-7	L04-05-34-P-S-S-00	Total/NA	Solid	None	
160-17542-8	L04-05-35-P-R-S-00	Total/NA	Solid	None	
160-17542-9	L04-05-37-P-S-S-00	Total/NA	Solid	None	
160-17542-10	L04-05-38-P-R-S-00	Total/NA	Solid	None	
160-17542-11	L04-05-40-P-S-S-00	Total/NA	Solid	None	
160-17542-12	L04-05-40-P-S-Q-00	Total/NA	Solid	None	
160-17542-13	L04-05-41-P-R-S-00	Total/NA	Solid	None	
160-17542-14	L04-05-43-P-S-S-00	Total/NA	Solid	None	
160-17542-15	L04-05-44-P-R-S-00	Total/NA	Solid	None	
160-17542-16	L04-05-46-P-S-S-00	Total/NA	Solid	None	
160-17542-17	L04-05-47-P-R-S-00	Total/NA	Solid	None	
LCS 160-253784/2-A	Lab Control Sample	Total/NA	Solid	None	
MB 160-253784/1-A	Method Blank	Total/NA	Solid	None	

Prep Batch: 253834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17542-1	L04-05-25-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-1 DU	L04-05-25-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-2	L04-05-26-P-R-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-3	L04-05-28-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-4	L04-05-29-P-R-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-5	L04-05-31-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-6	L04-05-32-P-R-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-7	L04-05-34-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-8	L04-05-35-P-R-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-9	L04-05-37-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-10	L04-05-38-P-R-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-11	L04-05-40-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-12	L04-05-40-P-S-Q-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-13	L04-05-41-P-R-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-14	L04-05-43-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-15	L04-05-44-P-R-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-16	L04-05-46-P-S-S-00	Total/NA	Solid	Fill_Geo-0	253366
160-17542-17	L04-05-47-P-R-S-00	Total/NA	Solid	Fill_Geo-0	253366
LCS 160-253834/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
MB 160-253834/1-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: 160-17542-1

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)
160-17542-1	L04-05-25-P-S-S-00	90
160-17542-1 MS	L04-05-25-P-S-S-00	89
160-17542-1 MSD	L04-05-25-P-S-S-00	87
160-17542-2	L04-05-26-P-R-S-00	87
160-17542-3	L04-05-28-P-S-S-00	88
160-17542-4	L04-05-29-P-R-S-00	88
160-17542-5	L04-05-31-P-S-S-00	86
160-17542-6	L04-05-32-P-R-S-00	88
160-17542-7	L04-05-34-P-S-S-00	89
160-17542-8	L04-05-35-P-R-S-00	86
160-17542-9	L04-05-37-P-S-S-00	90
160-17542-10	L04-05-38-P-R-S-00	88
160-17542-11	L04-05-40-P-S-S-00	89
160-17542-12	L04-05-40-P-S-Q-00	91
160-17542-13	L04-05-41-P-R-S-00	91
160-17542-14	L04-05-43-P-S-S-00	89
160-17542-15	L04-05-44-P-R-S-00	87
160-17542-16	L04-05-46-P-S-S-00	86
160-17542-17	L04-05-47-P-R-S-00	91
LCS 160-253784/2-A	Lab Control Sample	92
MB 160-253784/1-A	Method Blank	93

Tracer/Carrier Legend

Re = Re