

**Project Hanford Management System
COMMENT RESOLUTION SHEET**

Sheet 1 of 1

Document Number: 60704

Revision Number N/A

Date: Aug 24, 2006

Document Title:

Data Validation 200-UW-1 OU, Soil from Trench between 216-U-8 and 216-U-12 Cribs

Reviewer:

Bill Thackaberry

Reviewers, if other than original:

Project/Organization:

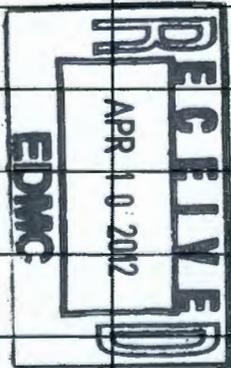
FH/GRP/QA

Responsible Manager:

Dana Farwick

COMMENT(S)

Initials (If other than listed reviewer)	Section/Step	Comments/Discrepancies	Basis	Recommendation	Resolution
	RadChem	pg 10, erroneous SDG number on data summary table.			<i>[Signature]</i>



W S C F 20060704
1213057

The sender of this message has requested a read receipt. [Click here to send a receipt.](#)

Christian, Bruce

From: Lynch, Sherry A [Sherry_A_Lynch@RL.gov]
To: Trent, Stephen J; Christian, Bruce; Christian, Bruce
Cc:
Subject: FH20060704a.doc
Attachments:

Sent: Thu 8/24/2006 2:32 PM

REVIEW COMMENT RECORD (RCR)	1. Date 08/07/06	2. Review No.
	3. Project No. 200-UW-1	4. Page

5. Document Number(s)/Title(s) Validation Package for SDG WSCF20060704	6. Program/Project/Building Number Soil between 216-U-8 & 216-U-12 Cribs	7. Reviewer RL Weiss	8. Organization/Group WCH - S&DM	9. Location/Phone Sigma 1 372-9631
17. Comment Submittal Approval: _____ Organization Manager (Optional)	10. Agreement with indicated comment disposition(s) 08/07/06 _____ Date R. L. Weiss Reviewer/Point of Contract R. L. Weiss Author/Originator	11. Closed _____ Date _____ Reviewer/Point of Contact _____ Author/Originator		

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Radiochemistry – No Comments			

Date: 7 August 2006
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-UW-1 Operable Unit, Soil from Trench Between 216-U-8 and 216-U-12 Cribs
Subject: Radiochemistry - Data Package No. WSCF20060704 (60704)

INTRODUCTION

This memo presents the results of data validation on Data Package No. 60704 prepared by WSCF Analytical Laboratories (WSCF). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
B1J2T3-A	4/11/06	Soil	C	See note 1
B1J373-A	4/11/06	Soil	C	See note 1

1 - Alpha spectroscopy.

Data validation was conducted in accordance with the FHI validation statement of work and the Sampling and Analysis Plan for Support Activities to the 200-UW-1 Operable Unit, DOE/RL-2005-75, Rev. 0. Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

· Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

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· **Laboratory (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the required detection limit (RDL), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the minimum detectable activity (MDA) are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

Due to method blank contamination, the plutonium-239/240 result in sample B1J373-A was qualified as an estimate and flagged "J".

All other laboratory blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

· **Accuracy**

Accuracy is evaluated by analyzing distilled water or field samples spiked with known amounts of radionuclides. The sample activity as determined by analysis is compared to the known activity to assess accuracy. The acceptable laboratory control sample (LCS) and matrix spike (MS) recovery range is either 65-135% or 70-130%, depending on the analyte. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, rejected, or not qualified, depending on the activity of the individual sample.

Due to the lack of an LCS analysis, the plutonium-238, uranium-234 and uranium-235 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

· **Precision**

Analytical precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Precision may also be assessed using unspiked duplicate sample analyses. If both sample and replicate activities are greater than five times the contract required detection limit (CRDL) and the RPD is less than +/- 35 percent, the results are acceptable. If either activities are less than five times the CRDL, a control limit of less than or equal to two times the CRDL is used for soil samples and less than or equal to the CRDL for water samples. If either the original or replicate value is below the CRDL, the applicable control limits are less than or equal to the CRDL for water samples and less than or equal to two times the CRDL for soil samples. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

· **Detection Levels**

Reported analytical detection levels are compared against the required target quantitation limits (RTQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RTQL.

· **Completeness**

Data package SDG No. 60704 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the plutonium-239/240 result in sample B1J373-A was qualified as an estimate and flagged "J".
- Due to the lack of an LCS analysis, the plutonium-238, uranium-234 and uranium-235 results were qualified as estimates and flagged "J".

Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

FHI, Contract #20266, *Validation Statement of Work*, Fluor Hanford Incorporated, July 7, 2003.

DOE/RL-2005-75, Rev. 0, *Sampling and Analysis Plan for Support Activities to the 200-UW-1 Operable Unit*, December 2005.

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Qualifiers which may be applied by data validators in compliance with the FHI statement of work are as follows:

- U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

000006

Appendix 2
Summary of Data Qualification

000007

RADIOCHEMICAL DATA QUALIFICATION SUMMARY*

SDG: 60704	REVIEWER: TLI	Project: 200-UW-1	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Uranium-234 Uranium-235 Plutonium-238	J	All	No LCS
Plutonium-239/240	J	B1J373-A	Blank contamination

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: FLUOR-HANFORD					
Laboratory: WSCF					
SDG: WSCF20060704					
Sample Number		B1J2T3-A		B1J373-A	
Remarks					
Sample Date		4/11/06		4/11/06	
Radiochemistry	RQL	Result	Q	Result	Q
Americium-241	1	-6100.00	U	0.00280	U
Plutonium-238	1	-0.0180	U	-0.001800	U
Plutonium-239/240	1	0.00840	U	0.001800	U
Uranium-234	1	0.500		0.0170	
Uranium-235	1	0.0600		0.00130	U
Uranium-238	1	0.390		0.0230	
Neptunium-237	1	0.0420		0.00820	

000010

* - TDL exceeded
 Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

WSCF ANALYTICAL RESULTS REPORT

Attention: DL Klages

Group #: 20060704

Sample #	Client ID	CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
Radiochemistry													
W060001851	B1J2T3-A	14596-10-2	Am-241 by AEA	SOLID	LA-508-471	U	0.0120	pCi/g	1.00	0.075	07/27/06	04/11/06	07/03/06
W060001851	B1J2T3-A	E.T.C	Am-241 by AEA Total Cntg Error	SOLID	LA-508-471		350	%	1.00	0.0	07/27/06	04/11/06	07/03/06
W060001851	B1J2T3-A	13994-20-2	Np-237 by AEA	SOLID	LA-508-471		0.0820	pCi/g	1.00	6.6e-03	08/03/06	04/11/06	07/03/06
W060001851	B1J2T3-A	E.T.C	Np-237 by AEA Total Cntg Error	SOLID	LA-508-471		22.0	%	1.00	0.0	08/03/06	04/11/06	07/03/06
W060001851	B1J2T3-A	13981-16-3	Pu-238 by AEA	SOLID	LA-508-471	U J	0.0180	pCi/g	1.00	0.083	07/27/06	04/11/06	07/03/06
W060001851	B1J2T3-A	E.T.C	Pu-238 by AEA Total Cntg Error	SOLID	LA-508-471		270	%	1.00	0.0	07/27/06	04/11/06	07/03/06
W060001851	B1J2T3-A	PU-239/240	Pu-239/240 by AEA	SOLID	LA-508-471	U	9.10e-03	pCi/g	1.00	0.024	07/27/06	04/11/06	07/03/06
W060001851	B1J2T3-A	E.T.C	Pu-239/240 AEA Total Cntg Err	SOLID	LA-508-471		160	%	1.00	0.0	07/27/06	04/11/06	07/03/06
W060001851	B1J2T3-A	13966-29-5	U-234 by AEA	SOLID	LA-508-471	J	0.400	pCi/g	1.00	4.9e-03	07/20/06	04/11/06	07/03/06
W060001851	B1J2T3-A	E.T.C	U-233/234 AEA Total Cntg Error	SOLID	LA-508-471		26.0	%	1.00	0.0	07/20/06	04/11/06	07/03/06
W060001851	B1J2T3-A	15117-96-1	U-235 by AEA	SOLID	LA-508-471	J	0.0470	pCi/g	1.00	1.6e-03	07/20/06	04/11/06	07/03/06
W060001851	B1J2T3-A	E.T.C	U-235 by AEA Total Cntg Error	SOLID	LA-508-471		34.0	%	1.00	0.0	07/20/06	04/11/06	07/03/06
W060001851	B1J2T3-A	24678-82-8	U-238 by AEA	SOLID	LA-508-471		0.380	pCi/g	1.00	1.4e-03	07/20/06	04/11/06	07/03/06
W060001851	B1J2T3-A	E.T.C	U-238 by AEA Total Cntg Error	SOLID	LA-508-471		27.0	%	1.00	0.10	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	14596-10-2	Am-241 by AEA	SOLID	LA-508-471	U	2.80e-03	pCi/g	1.00	2.9e-03	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	E.T.C	Am-241 by AEA Total Cntg Error	SOLID	LA-508-471		110	%	1.00	0.0	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	13994-20-2	Np-237 by AEA	SOLID	LA-508-471		0.0130	pCi/g	1.00	2.3e-03	08/03/06	04/11/06	07/03/06
W060001852	B1J373-A	E.T.C	Np-237 by AEA Total Cntg Error	SOLID	LA-508-471		55.0	%	1.00	0.0	08/03/06	04/11/06	07/03/06
W060001852	B1J373-A	13981-16-3	Pu-238 by AEA	SOLID	LA-508-471	U J	-4.40e-04	pCi/g	1.00	3.3e-03	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	E.T.C	Pu-238 by AEA Total Cntg Error	SOLID	LA-508-471		200	%	1.00	0.0	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	PU-239/240	Pu-239/240 by AEA	SOLID	LA-508-471	J	1.30e-03	pCi/g	1.00	1.2e-03	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	E.T.C	Pu-239/240 AEA Total Cntg Err	SOLID	LA-508-471		120	%	1.00	0.0	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	13966-29-5	U-234 by AEA	SOLID	LA-508-471	J	0.0230	pCi/g	1.00	4.6e-03	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	E.T.C	U-233/234 AEA Total Cntg Error	SOLID	LA-508-471		40.0	%	1.00	0.0	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	15117-96-1	U-235 by AEA	SOLID	LA-508-471	U J	2.70e-03	pCi/g	1.00	4.0e-03	07/20/06	04/11/06	07/03/06
W060001852	B1J373-A	E.T.C	U-235 by AEA Total Cntg Error	SOLID	LA-508-471		110	%	1.00	0.0	07/20/06	04/11/06	07/03/06

110000
000011

MDL=Minimum Detection Limit U - Analyzed for but not detected above limiting criteria.
RQ=Result Qualifier

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report W005/ver. 1.2

PROJECT HANFORD MANAGEMENT COMPANY

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8/9/06

WSCF ANALYTICAL RESULTS REPORT

Attention: DL Klages

Group #: 20060704

Sample #	Client ID	CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W06001852	B1J373-A	24678-82-8	U-238 by AEA	SOLID	LA-508-471		0.0200	pCi/g	1.00	1.4e-03	07/20/06	04/11/06	07/03/06
W06001852	B1J373-A	E.T.C	U-238 by AEA Total Cntg Error	SOLID	LA-508-471		41.0	%	1.00	0.10	07/20/06	04/11/06	07/03/06

0000117
 0000117
 0000117

MDL=Minimum Detection Limit U - Analyzed for but not detected above limiting criteria.

RQ=Result Qualifier

DF=Dilution Factor

* - Indicates results that have NOT been validated, + - Indicates more than six qualifier symbols

Report W005/ver. 1.2

PROJECT HANFORD MANAGEMENT COMPANY

W 8/9/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000012

Sample Delivery Group	WSCF20060704
Sample Matrix	SOLID
Sample Visual	N/A
SAF Number	R06-013
Data Deliverable	Summary Report

Introduction

Two (2) soil samples (B1J2T3-A and B1J373-A) from the 200-UW-1 Operable Unit Trench were received at the WSCF Laboratory on July 3, 2006. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *200-UW-1 Operable Unit Letter of Instruction*, referenced in the cover letter.

All samples were taken using the Multi-Increment Sampling Program, which requires the entire sample submitted to be analyzed.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and sample receipt are included as Attachment 3.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report*, pages 12, for a complete listing of approved analytical methods used.

Radiochemistry Comments

There are no holding times associated with WSCF radiochemical methods. For each isotope analyzed the samples and associated QC were all analyzed in the same batch.

Uranium Isotopic – A Blank, Laboratory Control Sample and Sample Duplicate were analyzed with this batch of less than 20 samples. See page 14 for QC details. Analytical Note:

- Duplicate Relative Percent Difference (RPD) results for U-234 and U-238 on sample B1J2T3-A are outside acceptance limits. This is attributed to in homogeneity of the soil matrix.

All other QC controls are within the established limits.

Plutonium Isotopic - A Blank, Laboratory Control Sample and Sample Duplicate were analyzed with this batch of less than 20 samples. See page 15 for QC details. All QC controls are within the established limits.

Americium-241 – A Blank, Laboratory Control Sample and Sample Duplicate were analyzed with this batch of less than 20 samples. See page 16 for QC details. All QC controls are within the established limits.

Neptunium-237 – A Blank, Laboratory Control Sample, Matrix Spike, Matrix Spike Duplicate and Sample Duplicate were analyzed with this batch of less than 20 samples. See page 19 for QC details. Analytical notes:

- Sample Duplicate Relative Percent Difference (RPD) was outside the acceptable range, however the Matrix Spike Duplicate RPD for both samples was well within acceptance limits.

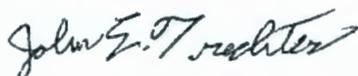
All other QC controls are within the established limits.

Radiochemical Tracer Percent Recovery			
Sample Number	Lab Sample ID	Isotope	Tracer Recovery (Percent)
<u>Americium-243</u>			
BLANK		Am-243	83.57%
LCS		Am-243	88.04%
B1J2T3-A	W060001851	Am-243	86.03%
B1J2T3-A (Dup)	W060001851	Am-243	86.24%
B1J373-A	W060001852	Am-243	81.36%
<u>Plutonium-242</u>			
BLANK		Pu-242	102.38%
LCS		Pu-242	98.87%
B1J2T3-A	W060001851	Pu-242	83.90%
B1J2T3-A (Dup)	W060001851	Pu-242	88.54%
B1J373-A	W060001852	Pu-242	77.49%

Radiochemical Tracer Percent Recovery			
Sample Number	Lab Sample ID	Isotope	Tracer Recovery (Percent)
<u>Uranium-232</u>			
BLANK		U-232	75.85%
LCS		U-232	57.53%
B1J2T3-A	W060001851	U-232	84.16%
B1J2T3-A (Dup)	W060001851	U-232	49.68%
B1J373-A	W060001852	U-232	76.05%

Matrix Spike Percent Recovery and RPD				
Sample Number	Lab Sample ID	Isotope	Matrix Spike Recovery	Relative Percent Difference
B1J2T3-A	W060001851	Np-237	93.1 %	
B1J2T3-A (Dup)	W060001851	Np-237	87.5 %	3.1
B1J373-A	W060001852	Np-237	91.3 %	
B1J373-A (Dup)	W060001852	Np-237	90.4 %	0.5

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.



John E. Trechter
WSCF Client Services

Abbreviations

Hg - mercury
IC - ion chromatography
ICP - inductively coupled plasma
ICP/AES - ICP/atomic emission spectroscopy
ICP/MS - ICP/mass spectrometry
Total U - total uranium
AT/TB - total alpha/total beta
AEA - Alpha Energy Analysis
WTPH-G - Total Hydrocarbons-Gasoline

Am - americium
Cm - curium
Pu - plutonium
Np - neptunium
GEA - gamma energy analysis
H3 - Tritium
Sr - Strontium 89, 90
WTPH-D - Total Hydrocarbons-Diesel
TSS - Total Suspended Solids

COLLECTOR HOGAN, JG	COMPANY CONTACT KLAGES, DL	TELEPHONE NO. 373-6312	PROJECT COORDINATOR TRECHTER, JE	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION U-8 Trench	PROJECT DESIGNATION 200-UW-1 Operable Unit, Soil from Trench between 216-U-8 and 216-U-12		SAF NO. R06-013	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO.	FIELD LOGBOOK NO. DTS-SAWS-H99	COA 121600ES20	METHOD OF SHIPMENT GOVERNMENT VEHICLE		
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A		

MATRIX* OL = OTHER LIQUID OS = OTHER SOLID S = SOIL W = WATER	SPECIAL HANDLING AND/OR STORAGE 20060704	POSSIBLE SAMPLE HAZARDS/ REMARKS
--	--	---

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	PRESERVATION
B1J2T3-A	W060018S1	S	4-11-06	1230	3X60mL G/P	Isotopic Plutonium (Pu-238, Pu-239/240) Isotopic Uranium (U-233/234, U-235, U-238) Americium-241 (Am-241)	None
B1J373-A	W060018S2	S	↓	1140	3X60mL G/P	Isotopic Plutonium (Pu-238, Pu-239/240) Isotopic Uranium (U-233/234, U-235, U-238) Americium-241 (Am-241)	None

000016

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM J. G. HOGAN	DATE/TIME 7-3-06 0715	RECEIVED BY/STORED IN T. A. KLAGES	DATE/TIME 7-3-06 0715		Reporting format the same as GPP, including QC. All samples have been taken using the multiple-increment sampling program. This requires the entire sample provided in each bottle to be used in analysis.
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

RECEIVED BY	TITLE	DATE/TIME
DISPOSAL METHOD	DISPOSED BY	DATE/TIME

20 of 20
LABORATORY SECTION
ANAL SAMPLE DISPOSITION

Appendix 5
Data Validation Supporting Documentation

000017

**APPENDIX A
RADIOCHEMICAL DATA VALIDATION CHECKLIST**

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	200-04-1		DATA PACKAGE:	60704	
VALIDATOR:	TLT	LAB:	WSEF	DATE:	8/6/06
		SDG:	60704		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
B1J273-A		B1J373-A			
					Solid

1. Completeness N/A

Technical verification forms present? Yes No N/A

Comments: _____

2. Initial Calibration (Levels D, E) N/A

Instruments/detectors calibrated? Yes No N/A

Initial calibration acceptable? Yes No N/A

Standards NIST traceable? Yes No N/A

Standards Expired? Yes No N/A

Calculation check acceptable? Yes No N/A

Comments: _____

3. Continuing Calibration (Levels D, E)

N/A

Calibration checked within required frequency? Yes No N/A

Calibration check acceptable? Yes No N/A

Calibration check standards traceable? Yes No N/A

Calibration check standards expired? Yes No N/A

Calculation check acceptable? Yes No N/A

Comments: _____

4. Background Counts (Levels D, E)

N/A

Background Counts checked within required frequency? Yes No N/A

Background Counts acceptable? Yes No N/A

Calculation check acceptable? Yes No N/A

Comments: _____

5. Blanks (Levels B, C, D, E) N/A

Method blank analyzed within required frequency? Yes No N/A

Method blank results acceptable? Yes No N/A

Analytes detected in method blank? Yes No N/A

Field blank(s) analyzed? Yes No N/A

Field blank results acceptable? Yes No N/A

Analytes detected in field blank(s)? Yes No N/A

Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments: _____

pu-239/40 - J - blank container B1J373-A

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) N/A

LCS /BSS analyzed within required frequency? Yes No N/A

LCS/BSS recoveries acceptable? Yes No N/A

LCS/BSS traceable? (Levels D,E) Yes No N/A

LCS/BSS expired? (Levels D,E) Yes No N/A

LCS/BSS levels correct? (Levels D,E) Yes No N/A

Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments: _____

no U235+238 LCS - Tall

no pu-238 LCS - Tall

7. Chemical Carrier Recovery (Levels C, D, E) N/A

Chemical carrier added? Yes No N/A

Chemical recovery acceptable? Yes No N/A

Chemical carrier traceable? (Levels D, E) Yes No N/A

Chemical carrier expired? (Levels D, E)Yes No N/A

Transcription/Calculation errors? (Levels D, E).....Yes No N/A

Comments: _____

8. Tracer Recovery (Levels C, D, E) N/A

Tracer added?.....Yes No N/A

Tracer recovery acceptable?Yes No N/A

Tracer traceable? (Levels D, E)Yes No N/A

Tracer expired? (Levels D, E).....Yes No N/A

Transcription/Calculation errors? (Levels D, E).....Yes No N/A

Comments: _____

9. Matrix Spikes (Levels C, D, E)..... N/A

Matrix spike analyzed?Yes No N/A

Spike recoveries acceptable?Yes No N/A

Spike source traceable? (Levels D, E)Yes No N/A

Spike source expired? Levels D, E).....Yes No N/A

Transcription/Calculation Errors? (Levels D, E)Yes No N/A

Comments: _____

10. Duplicates (Levels C, D, E) N/A

Duplicates Analyzed at required frequency? Yes No N/A

RPD Values Acceptable? Yes No N/A

Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments: _____

11. Field QC Samples (Levels C, D E) N/A

Field duplicate sample(s) analyzed? Yes No N/A

Field duplicate RPD values acceptable? Yes No N/A

Field split sample(s) analyzed? Yes No N/A

Field split RPD values acceptable? Yes No N/A

Performance audit sample(s) analyzed? Yes No N/A

Performance audit sample results acceptable? Yes No N/A

Comments: _____ no Field QC

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments: _____

13. Results and Detection Limits (All Levels)..... N/A

Results reported for all required sample analyses?..... Yes No N/A

Results supported in raw data?(Levels D, E)..... Yes No N/A

Results Acceptable? (Levels D, E) Yes No N/A

Transcription/Calculation errors? (Levels D, E)..... Yes No N/A

MDA's meet required detection limits? Yes No N/A

Transcription/calculation errors? (Levels D, E)..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

000024

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060704
 Matrix: SOLID
 Test: Uranium Isotopics by AEA

SAF Number: R06-013
 Sample Date: 04/11/06
 Receive Date: 07/03/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060001851									
BATCH QC ASSOCIATED WITH SAMPLE									
DUP	U-234 by AEA	13966-29-5	6.0e-01	40.000	RPD	07/20/06	0.000	20.000	•
DUP	U-235 by AEA	15117-96-1	5.5e-02	15.686	RPD	07/20/06	0.000	20.000	
DUP	U-238 by AEA	24678-82-8	5.5e-01	36.559	RPD	07/20/06	0.000	20.000	•
Lab ID: W060001852									
BATCH QC ASSOCIATED WITH SAMPLE									
DUP	U-234 by AEA	13966-29-5	1.5e-02	42.105	RPD	07/20/06	0.000	20.000	•
DUP	U-235 by AEA	15117-96-1	U1.0e-03	n/a	RPD	07/20/06	0.000	20.000	
DUP	U-238 by AEA	24678-82-8	2.0e-02	0.000	RPD	07/20/06	0.000	20.000	
BATCH QC									
BLANK	U-234 by AEA	13966-29-5	3.3e-03	0.003	pCi/g	07/20/06	-10.000	1000.000	
BLANK	U-235 by AEA	15117-96-1	3.6e-03	0.004	pCi/g	07/20/06	-10.000	1000.000	
BLANK	U-238 by AEA	24678-82-8	U5.6e-04	n/a	pCi/g	07/20/06	-10.000	1000.000	
LCS	U-238 by AEA	24678-82-8	7.9e+01	104.194	% Recov	07/20/06	75.000	125.000	

000025

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060704
Matrix: SOLID
Test: Plutonium Isotopics by AEA

SAF Number: R06-013
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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BATCH QC

BLANK	Pu-238 by AEA	13981-16-3	U-5.0e-4	n/a	pCi/g	07/20/06	-10.000	1000.000	
BLANK	Pu-239/240 by AEA	PU-239/240	2.0e-03	0.002	pCi/g	07/20/06	-10.000	1000.000	
LCS	Pu-239/240 by AEA	PU-239/240	2.6e+01	101.207	% Recov	07/21/06	75.000	125.000	

000026

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060704
Matrix: SOLID
Test: Americium by AEA

SAF Number: R06-013
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BATCH QC									
BLANK	Am-241 by AEA	14596-10-2	3.0e-03	0.003	pCi/g	07/20/06	-10.000	1000.000	
LCS	Am-241 by AEA	14596-10-2	2.6e+01	108.108	% Recov	07/20/06	75.000	125.000	

000027

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060704
 Matrix: SOLID
 Test: Plutonium Isotopics by AEA

SAF Number: R06-013
 Sample Date: 04/11/06
 Receive Date: 07/03/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060001851									
BATCH QC ASSOCIATED WITH SAMPLE									
DUP	Pu-238 by AEA	13981-16-3	U4.7e-02	n/a	RPD	07/27/06	0.000	20.000	
DUP	Pu-239/240 by AEA	PU-239/240	U4.7e-03	n/a	RPD	07/27/06	0.000	20.000	
BATCH QC									
BLANK	Pu-238 by AEA	13981-16-3	U-2.9e-02	n/a	pCi/g	07/27/06	-10.000	1000.000	
BLANK	Pu-239/240 by AEA	PU-239/240	1.2e-02	0.012	pCi/g	07/27/06	-10.000	1000.000	
LCS	Pu-239/240 by AEA	PU-239/240	2.6e +01	101.207	% Recov	07/27/06	75.000	125.000	

000028

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060704
 Matrix: SOLID
 Test: Americium by AEA

SAF Number: R06-013
 Sample Date: 04/11/06
 Receive Date: 07/03/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060001851									
BATCH QC ASSOCIATED WITH SAMPLE									
DUP	Am-241 by AEA	14596-10-2	U2.3e-02	n/a	RPD	07/27/06	0.000	20.000	
BATCH QC									
BLANK	Am-241 by AEA	14596-10-2	U3.1e-02	n/a	pCi/g	07/27/06	-10.000	1000.000	
LCS	Am-241 by AEA	14596-10-2	2.4e+01	108.108	% Recov	07/27/06	75.000	125.000	

000029

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060704
 Matrix: SOLID
 Test: Neptunium by AEA

SAF Number: R06-013
 Sample Date: 04/11/06
 Receive Date: 07/03/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060001851 BATCH QC ASSOCIATED WITH SAMPLE									
DUP	Np-237 by AEA	13994-20-2	6.3e-02	26.207	RPD	08/03/06	0.000	25.000	
BATCH QC									
BLANK	Np-237 by AEA	13994-20-2	U9.0e-04	n/a	pCi/g	08/03/06	-10.000	1000.000	
LCS	Np-237 by AEA	13994-20-2	1.7e+01	89.947	% Recov	08/03/06	75.000	125.000	

0000030