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0081385

Analytical Data Package Prepared For  
**Fluor Hanford Inc.**

Radiochemical Analysis By  
**TestAmerica**

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains \_\_\_\_\_ Pages

Report No.: 39267

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W05389	F08-066	B1TFD6	J8D290293-1	KL8EP1AA	9KL8EP10	8121361
		B1TFD6	J8D290293-1	KL8EP1AC	9KL8EP10	8121470
		B1TFD6	J8D290293-1	KL8EP1AD	9KL8EP10	8121471
		B1TFD6	J8D290293-1	KL8EP1AF	9KL8EP10	8121472
		B1TFD6	J8D290293-1	KL8EP1AE	9KL8EP10	8121473

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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## Certificate of Analysis

Fluor Hanford, Inc.  
1200 Jadwin Ave.  
Richland, WA 99352

June 12, 2008

Attention: Steve Trent

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SAF Number	:	F08-066
Date SDG Closed	:	April 29, 2008
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W05389
Data Deliverable	:	45/45 Day

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### CASE NARRATIVE

#### I. Introduction

On April 29, 2008 one sample was received at TestAmerica for radiochemical analysis. Upon receipt, the sample was assigned to lot J8D290293 and assigned the following laboratory ID number to correspond with the Fluor Hanford (FH) specific ID:

<u>FH ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B1TFD6	KL8EP	SOIL	4/29/08

#### II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in.

#### III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

Fluor Hanford, Inc.  
June 12, 2008

The requested analyses were:

**Alpha Spectroscopy**

Thorium-228,230,232 by method RICH-RC-5084

**Liquid Scintillation Counting**

Technetium-99 by method RICH-RC-5078

Tritium by method RICH-RC-5007

Nickel-63 by method RICH-RC-5069

**Chemical Analysis**

Hexavalent Chromium by EPA method 7196A

**IV. Quality Control**

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

**V. Comments**

**Alpha Spectroscopy**

Thorium-228, 230,232 by method RICH-RC-5084:

The LCS, batch blank, sample and sample duplicate (B1TFD6) results are within contractual requirements.

**Liquid Scintillation Counting**

Technetium-99 by method RICH-RC-5078:

The LCS, batch blank, sample, sample duplicate (B1TFD6), and sample matrix spike (B1TFD6) results are within contractual requirements.

Tritium by method RICH-RC-5007:

The LCS yield was low (70%). The LCS was re-counted and the LCS was still low. There was insufficient volume for a reanalysis.

The entire sample from the 120 ml bottle was dried before the tritium aliquot was taken. Therefore the tritium aliquots were taken from the 60 ml hexavalent chromium bottle.

The batch blank, sample and sample duplicate (B1TFD6) results are within contractual requirements.

Nickel-63 by method RICH-RC-5069:

The LCS, batch blank, sample and sample duplicate (B1TFD6) results are within contractual requirements.

**Chemical Analysis**

Hexavalent Chromium by EPA method 7196A

The matrix spike duplicate (B1TFD6) recovery is elevated, but the LCS and insoluble matrix spike recovered within limits. This implies a possible cross contamination from the insoluble matrix spike. Data will be accepted. Except as noted, the LCS, batch blank, sample, sample duplicate (B1TFD6),

Fluor Hanford, Inc.

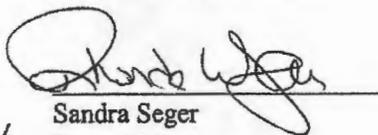
June 12, 2008

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sample matrix spike (B1TFD6), and matrix spike duplicate (B1TFD6) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:



Sandra Seger  
Project Manager

## Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	TestAmerica Richland's SOP No.
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 00-02	Gross Alpha (Coprecipitation)	RICH-RC-5021
EPA 903.0	Total Alpha Radium (Ra-226)	RICH-RC-5027
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr-89/90	RICH-RC-5006
ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007

**Results in this report relate only to the sample(s) analyzed.**

### Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship,  $R = \text{constants} * f(x,y,z,...)$ . The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ( $u_i$ ) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ( $u_c$ ) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ( $S/\sqrt{n}$ ), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

## Report Definitions

<b>Action Lev</b>	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation $(\text{Result}/\text{Expected})-1$ as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or TestAmerica.
<b>Count Error (#s)</b>	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
<b>Total Uncert (#s) <math>u_c</math> - Combined Uncertainty.</b>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, $u_c$ the combined uncertainty. The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor CRDL (RL)</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.  Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
<b>Lc</b>	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \sqrt{2 * (\text{BkgndCnt}/\text{BkgndCntMin}) / \text{SCntMin}}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
<b>Lot-Sample No</b>	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
<b>MDC MDA</b>	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \sqrt{(\text{BkgndCnt}/\text{BkgndCntMin}) / \text{SCntMin}}) + 2.71 / \text{SCntMin} * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
<b>Rst/MDC</b>	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Rst/TotUcert</b>	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D) / [\sqrt{(\text{TPUs}^2 + \text{TPUD}^2)}]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUD is the total uncertainty of the duplicate sample.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

**Sample Results Summary**

Date: 12-Jun-08

**TestAmerica TARL**

Ordered by Method, Batch No., Client Sample ID.

Report No. : 39267

SDG No: W05389

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RPD
8121470 THISO_IE_PRECIP_AEA									
<b>B1TFD6</b>									
	KL8EP1AC	TH-228	6.73E-01 +/- 1.48E-01		pCi/g	83%	1.88E-02	1.00E+00	
		TH-230	5.24E-01 +/- 1.21E-01		pCi/g	83%	2.11E-02	1.00E+00	
		TH-232	6.04E-01 +/- 1.34E-01		pCi/g	83%	1.78E-02	1.00E+00	
<b>B1TFD6 DUP</b>									
	KL8EP1AK	TH-228	7.38E-01 +/- 1.57E-01		pCi/g	87%	2.38E-02	1.00E+00	9.2
		TH-230	5.46E-01 +/- 1.23E-01		pCi/g	87%	1.72E-02	1.00E+00	4.1
		TH-232	6.56E-01 +/- 1.42E-01		pCi/g	87%	1.72E-02	1.00E+00	8.4
8121381 7196_CR6									
<b>B1TFD6</b>									
	KL8EP1AA	HEXCHROME	3.50E-01 +/- 0.00E+00	U	mg/kg	N/A	3.50E-01	3.50E-01	
	KL8EP1AE	HEXCHROME	3.50E-01 +/- 0.00E+00	U	mg/kg	N/A	3.50E-01		0.0
8121471 TC99_ETVDSK_LSC									
<b>B1TFD6</b>									
	KL8EP1AD	TC-99	1.23E-01 +/- 3.67E-01	U	pCi/g	100%	6.16E-01	1.50E+01	
<b>B1TFD6 DUP</b>									
	KL8EP1AM	TC-99	3.20E-01 +/- 3.81E-01	U	pCi/g	100%	6.22E-01	1.50E+01	89.0
8121472 NI63_LSC									
<b>B1TFD6</b>									
	KL8EP1AF	NI-63	4.64E+01 +/- 9.29E+00		pCi/g	57%	9.49E+00	3.00E+01	
<b>B1TFD6 DUP</b>									
	KL8EP1AN	NI-63	4.24E+01 +/- 8.23E+00		pCi/g	63%	8.40E+00	3.00E+01	9.0
8121473 906.0_H3_LSC									
<b>B1TFD6</b>									
	KL8EP1AE	H-3	8.95E-02 +/- 1.66E-02		pCi/g	100%	2.63E-02	4.00E+02	
<b>B1TFD6 DUP</b>									
	KL8EP1AP	H-3	1.70E-01 +/- 2.05E-02		pCi/g	100%	2.77E-02	4.00E+02	61.9
No. of Results: 14									

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mary2 V5.1.6  
A2002

RPD - Relative Percent Difference.  
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

QC Results Summary

Date: 12-Jun-08

TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 39267

SDG No.: W05389

Batch	Work Order	Parameter	Result +- Uncertainty ( 2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC MDA
<b>THISO_IE_PRECIP_AEA</b>									
8121470 BLANK QC,									
	KMA5D1AA	TH-228	7.40E-03 +- 1.06E-02	U	pCi/g	89%			1.77E-02
		TH-230	2.11E-03 +- 7.31E-03	U	pCi/g	89%			1.99E-02
		TH-232	0.00E+00 +- 7.17E-03	U	pCi/g	89%			1.68E-02
8121470 LCS,									
	KMA5D1AC	TH-230	1.30E+00 +- 2.45E-01		pCi/g	89%	113%	0.1	1.70E-02
<b>7196_CR6</b>									
8121361 MATRIX SPIKE, B1TFD6									
	KL8EP1AC	HEXCHROME	1.37E+01 +- 0.00E+00		mg/kg	N/A	131%	0.3	3.50E-01
8121361 LCS,									
	KMACM1AC	HEXCHROME	1.81E+01 +- 0.00E+00		mg/kg	N/A	90%	-0.1	3.50E-01
8121361 BLANK QC,									
	KMACM1AA	HEXCHROME	3.50E-01 +- 0.00E+00	U	mg/kg	N/A			3.50E-01
<b>TC99_ETVDSK_LSC</b>									
8121471 MATRIX SPIKE, B1TFD6									
	KL8EP1AL	TC-99	2.14E+02 +- 1.30E+01		pCi/g	100%	95%	-0.1	6.19E-01
8121471 BLANK QC,									
	KMA5Q1AA	TC-99	1.56E-01 +- 3.74E-01	U	pCi/g	100%			6.25E-01
8121471 LCS,									
	KMA5Q1AC	TC-99	2.09E+02 +- 1.27E+01		pCi/g	100%	91%	-0.1	6.25E-01
<b>NI63_LSC</b>									
8121472 BLANK QC,									
	KMA5W1AA	NI-63	-3.46E+00 +- 4.56E+00	U	pCi/g	77%			7.10E+00
8121472 LCS,									
	KMA5W1AC	NI-63	4.96E+02 +- 4.69E+01		pCi/g	87%	83%	-0.2	6.23E+00
<b>906.0_H3_LSC</b>									
8121473 BLANK QC,									
	KMA511AA	H-3	1.22E-01 +- 1.68E-01	U	pCi/g	100%			3.26E-01
8121473 LCS,									
	KMA511AC	H-3	1.90E+00 +- 2.35E-01		pCi/g	100%	70%	-0.3	3.14E-01
No. of Results: 14									

TestAmerica Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V5.1.6 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 12-Jun-08

SAMPLE RESULTS

Lab Name: TestAmerica  
 Lot-Sample No.: J8D290293-1  
 Client Sample ID: B1TFD6

SDG: W05389  
 Report No.: 39267  
 COC No.: F08-066-027

Collection Date: 4/16/2008 8:55:00 AM  
 Received Date: 4/29/2008 11:45:00 AM  
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 8121361	7196_CR6				Work Order: KL8EP1AA		Report DB ID: 9KL8EP10					
HEXCHROME	<b>3.50E-01</b>	U		0.0E+00	3.50E-01	mg/kg	N/A	(1.)	5/1/08		2.5	
							3.50E-01	N/A			G	
Batch: 8121470	THISO_IE_PRECIP_AEA				Work Order: KL8EP1AC		Report DB ID: 9KL8EP10					
TH-228	<b>6.73E-01</b>		1.0E-01	1.5E-01	1.88E-02	pCi/g	83%	(35.9)	6/6/08 10:32 a		2.02	ALP117
							4.08E-03	1.00E+00			G	
TH-230	<b>5.24E-01</b>		8.9E-02	1.2E-01	2.11E-02	pCi/g	83%	(24.9)	6/6/08 10:32 a		2.02	ALP117
							5.48E-03	1.00E+00			G	
TH-232	<b>6.04E-01</b>		9.5E-02	1.3E-01	1.78E-02	pCi/g	83%	(33.8)	6/6/08 10:32 a		2.02	ALP117
							3.88E-03	1.00E+00			G	
Batch: 8121471	TC99_ETVDSK_LSC				Work Order: KL8EP1AD		Report DB ID: 9KL8EP10					
TC-99	<b>1.23E-01</b>	U	2.6E-01	3.7E-01	6.16E-01	pCi/g	100%	0.2	6/5/08 03:30 a		2.03	LSC7
							2.96E-01	1.50E+01			G	
Batch: 8121472	NI63_LSC				Work Order: KL8EP1AF		Report DB ID: 9KL8EP10					
NI-63	<b>4.64E+01</b>		5.0E+00	9.3E+00	9.49E+00	pCi/g	57%	(4.9)	6/6/08 01:20 a		0.25	LSC8
							4.61E+00	3.00E+01			G	
Batch: 8121473	906.0_H3_LSC				Work Order: KL8EP1AE		Report DB ID: 9KL8EP10					
H-3	<b>8.95E-02</b>		1.4E-02	1.7E-02	2.63E-02	pCi/g	100%	(3.4)	5/7/08 11:37 p		63.2	LSC3
							1.26E-02	4.00E+02			G	

No. of Results: 7      Comments:

TestAmerica      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V5.1.6 A2002

FORM II

Date: 12-Jun-08

DUPLICATE RESULTS

Lab Name: TestAmerica

SDG: W05389

Collection Date: 4/16/2008 8:55:00 AM

Lot-Sample No.: J8D290293-1

Report No. : 39267

Received Date: 4/29/2008 11:45:00 AM

Client Sample ID: B1TFD6

COC No. : F08-066-027

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 8121361	7196_CR6				Work Order: KL8EP1AE	Report DB ID: KL8EP1ER			Orig Sa DB ID: 9KL8EP10			
HEXCHROME	3.50E-01	U		0.0E+00	3.50E-01	mg/kg	N/A	(1.)	5/1/08		2.5	
	3.50E-01	U		RPD 0.0				N/A			G	

No. of Results: 1    Comments:

TestAmerica    RPD - Relative Percent Difference.  
 rptSTLRchDupV5.1    MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 .6 A2002    U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

## FORM II

Date: 12-Jun-08

## DUPLICATE RESULTS

Lab Name: TestAmerica  
 Lot-Sample No.: J8D290293-1  
 Client Sample ID: B1TFD6 DUP

SDG: W05389  
 Report No.: 39267  
 COC No.: F08-066-027

Collection Date: 4/16/2008 8:55:00 AM  
 Received Date: 4/29/2008 11:45:00 AM  
 Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert( 2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 8121470	THISO_IE_PRECIP_AEA		Work Order: KL8EP1AK		Report DB ID: KL8EP1KR		Orig Sa DB ID: 9KL8EP10					
TH-228	7.38E-01		1.1E-01	1.6E-01	2.38E-02	pCi/g	87%	(31.)	6/6/08 10:32 a		2.03	ALP118
	6.73E-01		RPD 9.2			1.00E+00		(9.4)			G	
TH-230	5.46E-01		8.9E-02	1.2E-01	1.72E-02	pCi/g	87%	(31.7)	6/6/08 10:32 a		2.03	ALP118
	5.24E-01		RPD 4.1			1.00E+00		(8.8)			G	
TH-232	6.56E-01		9.7E-02	1.4E-01	1.72E-02	pCi/g	87%	(38.2)	6/6/08 10:32 a		2.03	ALP118
	6.04E-01		RPD 8.4			1.00E+00		(9.3)			G	
<i>Alpha Spec Result Sum = 1.9E+00</i>												
Batch: 8121471	TC99_ETVDSK_LSC		Work Order: KL8EP1AM		Report DB ID: KL8EP1MR		Orig Sa DB ID: 9KL8EP10					
TC-99	3.20E-01	U	2.7E-01	3.8E-01	6.22E-01	pCi/g	100%	0.51	6/5/08 03:30 a		2.01	LSC7
	1.23E-01	U	RPD 89.0			1.50E+01		(1.7)			G	
<i>Alpha Spec Result Sum = 1.9E+00</i>												
Batch: 8121472	NI63_LSC		Work Order: KL8EP1AN		Report DB ID: KL8EP1NR		Orig Sa DB ID: 9KL8EP10					
NI-63	4.24E+01		4.4E+00	8.2E+00	8.40E+00	pCi/g	63%	(5.)	6/6/08 03:03 a		0.26	LSC6
	4.64E+01		RPD 9.0			3.00E+01		(10.3)			G	
<i>Alpha Spec Result Sum = 1.9E+00</i>												
Batch: 8121473	906.0_H3_LSC		Work Order: KL8EP1AP		Report DB ID: KL8EP1PR		Orig Sa DB ID: 9KL8EP10					
H-3	1.70E-01		1.7E-02	2.1E-02	2.77E-02	pCi/g	100%	(6.1)	5/8/08 01:00 a		63.1	LSC3
	8.95E-02		RPD 61.9			4.00E+02		(16.6)			G	
<i>Alpha Spec Result Sum = 1.9E+00</i>												

TestAmerica

RPD - Relative Percent Difference.

rptSTLRchDupV5.1  
.6 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II

Date: 12-Jun-08

DUPLICATE RESULTS

Lab Name: TestAmerica

SDG: W05389

Collection Date: 4/16/2008 8:55:00 AM

Lot-Sample No.: J8D290293-1

Report No. : 39267

Received Date: 4/29/2008 11:45:00 AM

Client Sample ID: B1TFD6 DUP

COC No. : F08-066-027

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
No. of Results: 6    Comments:												

TestAmerica

RPD - Relative Percent Difference.

rptSTLRchDupV5.1  
.6 A2002

MDC|MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

**FORM II**  
**BLANK RESULTS**

Date: 12-Jun-08

Lab Name: TestAmerica

SDG: W05389

Matrix: SOIL

Report No. : 39267

Parameter	Result	Qual	Count Error (2 s)	Total Uncert( 2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Primary Detector
<b>Batch:</b> 8121361	7196_CR6											
HEXCHROME	3.50E-01	U		0.0E+00	3.50E-01	mg/kg	N/A	(1.)	5/1/08		2.5	
						3.50E-01		N/A			G	
<b>Work Order:</b> KMACM1AA												
<b>Report DB ID:</b> KMACM1AB												
<b>Batch:</b> 8121470	THISO_IE_PRECIP_AEA											
TH-228	7.40E-03	U	1.1E-02	1.1E-02	1.77E-02	pCi/g	89%	0.42	6/6/08 02:10 p		2.0	ALP117
					3.85E-03	1.00E+00		(1.4)			G	
TH-230	2.11E-03	U	7.3E-03	7.3E-03	1.99E-02	pCi/g	89%	0.11	6/6/08 02:10 p		2.0	ALP117
					5.17E-03	1.00E+00		0.58			G	
TH-232	0.00E+00	U	0.0E+00	7.2E-03	1.88E-02	pCi/g	89%	0.	6/6/08 02:10 p		2.0	ALP117
					3.66E-03	1.00E+00		0.			G	
<b>Work Order:</b> KMA5D1AA												
<b>Report DB ID:</b> KMA5D1AB												
<b>Batch:</b> 8121472	NI63_LSC											
NI-63	-3.46E+00	U	2.9E+00	4.6E+00	7.10E+00	pCi/g	77%	-0.49	6/6/08 04:45 a		0.25	LSC6
					3.45E+00	3.00E+01		-(1.5)			G	
<b>Work Order:</b> KMA5W1AA												
<b>Report DB ID:</b> KMA5W1AB												
<b>Batch:</b> 8121471	TC99_ETVDSK_LSC											
TC-99	1.56E-01	U	2.6E-01	3.7E-01	6.25E-01	pCi/g	100%	0.25	6/5/08 03:30 a		2.0	LSC7
					3.00E-01	2.00E+01		0.83			G	
<b>Work Order:</b> KMA5Q1AA												
<b>Report DB ID:</b> KMA5Q1AB												
<b>Batch:</b> 8121473	906.0_H3_LSC											
H-3	1.22E-01	U	1.4E-01	1.7E-01	3.26E-01	pCi/g	100%	0.37	5/7/08 08:51 p		5.0	LSC3
					1.56E-01	4.00E+02		(1.4)			G	
<b>Work Order:</b> KMA511AA												
<b>Report DB ID:</b> KMA511AB												

No. of Results: 7

Comments:

TestAmerica  
rptSTLRchBlank  
V5.1.6 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

**FORM II**  
**LCS RESULTS**

Date: 12-Jun-08

Lab Name: TestAmerica

SDG: W05389

Matrix: SOIL

Report No. : 39267

Parameter	Result	Count Qual Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 8121361	7196_CR6				Work Order: KMACM1AC		Report DB ID: KMACM1AS					
HEXCHROME	1.81E+01		0.0E+00	3.50E-01	mg/kg	N/A	2.00E+01		90%	5/1/08	2.5	
						Rec Limits:	80	120	-0.1		G	
Batch: 8121470	THISO_IE_PRECIP_AEA				Work Order: KMA5D1AC		Report DB ID: KMA5D1CS					
TH-230	1.30E+00	1.4E-01	2.4E-01	1.70E-02	pCi/g	89%	1.15E+00	3.44E-02	113%	6/6/08 02:10 p	2.0	ALP118
						Rec Limits:	70	130	0.1		G	
Batch: 8121472	NI63_LSC				Work Order: KMA5W1AC		Report DB ID: KMA5W1CS					
NI-63	4.96E+02	8.5E+00	4.7E+01	6.23E+00	pCi/g	87%	5.98E+02	1.99E+01	83%	6/6/08 06:28 a	0.25	LSC6
						Rec Limits:	70	130	-0.2		G	
Batch: 8121471	TC99_ETVDSK_LSC				Work Order: KMA5Q1AC		Report DB ID: KMA5Q1CS					
TC-99	2.09E+02	2.0E+00	1.3E+01	6.25E-01	pCi/g	100%	2.29E+02	2.28E-01	91%	6/5/08 03:30 a	2.0	LSC7
						Rec Limits:	70	130	-0.1		G	
Batch: 8121473	906.0_H3_LSC				Work Order: KMA511AC		Report DB ID: KMA511CS					
H-3	1.90E+00	1.9E-01	2.3E-01	3.14E-01	pCi/g	100%	2.71E+00	8.14E-02	70%	5/7/08 10:14 p	5.0	LSC3
						Rec Limits:	70	130	-0.3		G	
No. of Results: 5		Comments:										

TestAmerica Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs  
V5.1.6 A2002

FORM II  
MATRIX SPIKE RESULTS

Date: 12-Jun-08

Lab Name: TestAmerica

SDG: W05389

Lot-Sample No.: J8D290293-1, B1TFD6

Report No.: 39267

Matrix: SOIL

Parameter	SpikeResult, Orig Rst	Count Qual Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 8121361 HEXCHROME	Work Order: KL8EP1AC 1.37E+01 3.50E-01	Report DB ID: KL8EP1CW	Orig Sa DB ID: 9KL8EP10	0.0E+00	3.50E-01 mg/kg	N/A	130.81%	1.05E+01	5/1/08		2.5 G	7196_CR6
Batch: 8121471 TC-99	Work Order: KL8EP1AL 2.14E+02 1.23E-01	Report DB ID: KL8EP1LW	Orig Sa DB ID: 9KL8EP10	2.0E+00	1.3E+01	6.19E-01 pCi/g	100%	94.62%	2.26E+02 2.26E-01	6/5/08 03:30 a	2.02 G	TC99_ETVDSK_LSC LSC7

Number of Results: 2

Comments:

TestAmerica RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.  
rptSTLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
V5.1.6 A2002

Lot No., Due Date: J8D290293; 06/13/2008  
 Client, Site: 108302; FLUOR- SOILS Hanford Site  
 QC Batch No., Method Test: 8121470; RTHISO Thlso by ALP  
 SDG, Matrix: W05389; SOIL

**1.0 COC**

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A

**2.0 QC Batch**

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A

2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A

**3.0 QC & Samples**

3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A

3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A

3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A

**4.0 Raw Data**

4.1 Were results calculated in the correct units?  Yes  No  N/A

4.2 Were analysis volumes entered correctly?  Yes  No  N/A

4.3 Were Yields entered correctly?  Yes  No  N/A

4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A

4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A

**5.0 Other**

5.1 Are all nonconformances included and noted?  Yes  No  N/A

5.2 Are all required forms filled out?  Yes  No  N/A

5.3 Was the correct methodology used?  Yes  No  N/A

5.4 Was transcription checked?  Yes  No  N/A

5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A

5.6 Are worksheet entries complete and correct?  Yes  No  N/A

6.0 Comments on any No response:

First Level Review John Horton Date 6-10-8

**Data Review Checklist**  
**RADIOCHEMISTRY**  
Second Level Review

Batch Number: 8121470

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		✓
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			✓
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: Erika Ford Date: 6/10/18

Lot No., Due Date: J8D290293; 06/13/2008  
 Client, Site: 108302; FLUOR- SOILS Hanford Site  
 QC Batch No., Method Test: 8121471; RTC99 Tc-99 by LSC  
 SDG, Matrix: W05389; SOIL

**1.0 COC**

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A

**2.0 QC Batch**

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A

2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A

**3.0 QC & Samples**

3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A

3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A

3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A

**4.0 Raw Data**

4.1 Were results calculated in the correct units?  Yes  No  N/A

4.2 Were analysis volumes entered correctly?  Yes  No  N/A

4.3 Were Yields entered correctly?  Yes  No  N/A

4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A

4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A

**5.0 Other**

5.1 Are all nonconformances included and noted?  Yes  No  N/A

5.2 Are all required forms filled out?  Yes  No  N/A

5.3 Was the correct methodology used?  Yes  No  N/A

5.4 Was transcription checked?  Yes  No  N/A

5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A

5.6 Are worksheet entries complete and correct?  Yes  No  N/A

6.0 Comments on any No response:

First Level Review *John Vortto*

Date 6-5-8



**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 8121471

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			✓
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?	✓		
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: *Ernie Job* Date: 6/6/18

Lot No., Due Date: J8D290293; 06/13/2008  
 Client, Site: 108302; FLUOR- SOILS Hanford Site  
 QC Batch No., Method Test: 8121473; RTRITIUM H-3 by LSC  
 SDG, Matrix: W05389; SOIL

**1.0 COC**

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A

**2.0 QC Batch**

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A

2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A

**3.0 QC & Samples**

3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A

3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A

3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A

**4.0 Raw Data**

4.1 Were results calculated in the correct units?  Yes  No  N/A

4.2 Were analysis volumes entered correctly?  Yes  No  N/A

4.3 Were Yields entered correctly?  Yes  No  N/A

4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A

4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A

**5.0 Other**

5.1 Are all nonconformances included and noted?  Yes  No  N/A

5.2 Are all required forms filled out?  Yes  No  N/A

5.3 Was the correct methodology used?  Yes  No  N/A

5.4 Was transcription checked?  Yes  No  N/A

5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A

5.6 Are worksheet entries complete and correct?  Yes  No  N/A

**6.0 Comments on any No response:**

Please see NCM # 10-12314

First Level Review John Norton Date 5-13-8



**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 8121473

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			✓
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?		✓	
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: See above

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Second Level Review: Eiue Jord Date: 5/13/18

# Clouseau Nonconformance Memo



NCM #: <b>10-12314</b> NCM Initiated By: John Norton Date Opened: 05/13/2008 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Prep Tests: H-3 by LSC Lot #'s (Sample #'s): J8D290293 (1), J8D300000 (473), QC Batches: 8121473,
Nonconformance: LCS result out of limits Subcategory: Analyte was recovered low in the LCS	

### Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
John Norton	05/13/2008	The LCS yield was low at 70%.

### Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
John Norton	05/13/2008	The LCS was re-counted in batch #8129510, however the LCS yield was still unacceptably low.

### Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

### Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

### Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>

Lot No., Due Date: J8D290293; 06/13/2008  
 Client, Site: 108302; FLUOR- SOILS Hanford Site  
 QC Batch No., Method Test: 8121472; RNI63 Ni-63 by LSC  
 SDG, Matrix: W05389; SOIL

**1.0 COC**

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A

**2.0 QC Batch**

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A

2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A

**3.0 QC & Samples**

3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A

3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A

3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A

**4.0 Raw Data**

4.1 Were results calculated in the correct units?  Yes  No  N/A

4.2 Were analysis volumes entered correctly?  Yes  No  N/A

4.3 Were Yields entered correctly?  Yes  No  N/A

4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A

4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A

**5.0 Other**

5.1 Are all nonconformances included and noted?  Yes  No  N/A

5.2 Are all required forms filled out?  Yes  No  N/A

5.3 Was the correct methodology used?  Yes  No  N/A

5.4 Was transcription checked?  Yes  No  N/A

5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A

5.6 Are worksheet entries complete and correct?  Yes  No  N/A

6.0 Comments on any No response:

First Level Review *John W. ...* Date 6-10-8



**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 8121472

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: Eiobe Jord Date: 6/10/8

Batch Number(s): 8121361 <u>J8D290293</u>		<u>Due 6/13</u>		
Lab Sample Numbers or SDG: <u>W05389</u>				
Method/Test/Parameter: <u>Cr+6 in SOLID / RICH-WC-5005, Rev 8</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>A. Initial Calibration</b>				
1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient within QC limits?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			✓
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	✓			✓
<b>B. Continuing Calibration</b>				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			✓
2. CCB analyzed at required frequency and all results ≤ reporting limit?	✓			✓
<b>C. Sample Analysis</b>				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?	✓			✓
2. Were all sample holding times met?	✓			✓
<b>D. QC Samples</b>				
1. All results for the preparation blank below limits?	✓			✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?		✓		✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			✓
4. Analytical spikes within QC limits where applicable?			✓	✓
5. ICP only: One serial dilution performed per SDG?			✓	✓
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	✓
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	✓

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>E. Other</b>	✓			
1. Are all nonconformances included and noted?				✓
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response: \_\_\_\_\_ The MS recovered high at 130.8%. The LCS and the insoluble MS recovered within limits. See NCM

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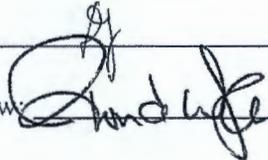
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Analyst: \_\_\_\_\_

Date: 5/1/08

Second-Level Review:  \_\_\_\_\_

Date: 6/11/08

# Clouseau Nonconformance Memo



NCM #: <b>10-12251</b> NCM Initiated By: LIEM DINH Date Opened: 05/01/2008 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Classical Chemistry Tests: 7196A Lot #'s (Sample #'s): J8D290293 (1), QC Batches: 8121361,
Nonconformance: Other (describe in detail) Subcategory: Other (explanation required)	

### Problem Description / Root Cause

Name	Date	Description
LIEM DINH	05/01/2008	The MS recovered high at 130.8%. On the other hand the LCS and insoluble matrix spike recovered within limits. This implies a possible cross contamination from the insoluble matrix spike.
Liem Dinh	05/01/2008	The MS recovered high at 130.8%. On the other hand the LCS and insoluble matrix spike recovered within limits. This implies a possible cross contamination from the insoluble matrix spike.

### Corrective Action

Name	Date	Corrective Action
LIEM DINH	05/01/2008	Report data
Liem Dinh	05/01/2008	Report data

### Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note
			<u>Response</u>		<u>Response Note</u>

### Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

### Approval History

Date Approved	Approved By	Position
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Fluor Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F08-066-027	PAGE 1 OF 1	
COLLECTOR NCO Sampler <i>CONNOR R. ROSANE</i>		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR WIDRIG, DL		PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION C6174, I-004-5P		PROJECT DESIGNATION 216-S-6 Crib Sampling - Soil		SAF NO. F08-066		AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>Test America</i>		FIELD LOGBOOK NO. <i>HNF-N-585-S p926</i>	ACTUAL SAMPLE DEPTH <i>22.7 - 25.2</i>		COA 123210ES20	METHOD OF SHIPMENT FEDERAL EXPRESS		
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. See PTR		BILL OF LADING/AIR BILL NO. See PTR <i>H0033000</i>				
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION None	Cool-4C				
			TYPE OF CONTAINER G/P	G/P				
			NO. OF CONTAINER(S)	1	1			
			VOLUME 120mL	60mL				
	SPECIAL HANDLING AND/OR STORAGE Radioactive tie to B1TFB2	SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196 (Hexavalent Chromium)			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B1TFD6	SOIL	4-16-08	0855	✓	✓			
CHAIN OF POSSESSION		SIGN/ PRINT NAMES			SPECIAL INSTRUCTIONS			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.  ** Analytical batch QC must be run on a sample associated with this SAF. (1) Tritium - H3; Isotopic Thorium {Thorium-232} Technetium-99 {Technetium-99} Nickel-63;  <div style="font-size: 1.2em; font-weight: bold;">J8D290293</div> <div style="font-size: 1.2em; font-weight: bold;">W05389</div> <div style="font-size: 1.2em; font-weight: bold;">DUE 6-13-08</div> <div style="font-size: 1.2em; font-weight: bold;">KL8EP 20 4/29/08</div>				
<i>Larry Rosane</i>	<i>4-16-08/1100</i>	<i>ON Site Ref</i>	<i>4-16-08/1100</i>					
<i>ON Site Ref</i>	<i>4-24-08/1400</i>	<i>Larry Rosane</i>	<i>4-24-08/1400</i>					
<i>Larry Rosane</i>	<i>4-24-08/1520</i>	<i>MO 745 Ref #3</i>	<i>4-24-08/1520</i>					
<i>MO 745 Ref #3</i>	<i>4-29-08/1145</i>	<i>D. Parich O'ary</i>	<i>4-29-08/1145</i>					
<i>D. Parich O'ary</i>	<i>4-29-08/1145</i>	<i>LULANE TAL</i>	<i>4-29-08/1145</i>					
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME					
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME				
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME				

Slc, C6174  
I-004, 22.7-25.2'

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent  
SAF Number: F08-066  
Sample # W08GR01052  
Client ID: B1TFB2

TRENT  
WSCF

Matrix: SOIL

Group #: WSCF20080812  
Department: Radiochemistry  
Sampled: 04/16/08  
Received: 04/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>A/B by Liquid Scintillation</b>											
Gross alpha	12587-46-1	LA-508-421		1.20e+03	pCi/g	+240	pCi/g	1.00	1.9		04/17/08
Gross beta	12587-47-2	LA-508-421		2.80e+03	pCi/g	+560	pCi/g	1.00	2.4		04/17/08
<b>Gamma Energy Analysis-grd H2O</b>											
Americium-241	14596-10-2	LA-508-481	U	-12.4	pCi/g	+21.2	pCi/g	1.00	35		04/17/08
Antimony-125	14234-35-6	LA-508-481	U	-1.30	pCi/g	+7.44	pCi/g	1.00	13		04/17/08
Ba-133 by GEA	13981-41-4	LA-508-481	U	-5.79	pCi/g	+5.79	pCi/g	1.00	6.0		04/17/08
Cerium-144	14762-78-8	LA-508-481	U	16.4	pCi/g	+22.8	pCi/g	1.00	39		04/17/08
Cerium/Praseodymium-144	CE/PR-144	LA-508-481	U	32.7	pCi/g	+45.5	pCi/g	1.00	78		04/17/08
Cobalt-60	10198-40-0	LA-508-481	U	0.532	pCi/g	+2.71	pCi/g	1.00	4.9		04/17/08
Cesium-134	13967-70-9	LA-508-481	U	1.49	pCi/g	+2.81	pCi/g	1.00	5.2		04/17/08
Cesium-137	10045-97-3	LA-508-481	U	-0.955	pCi/g	+2.94	pCi/g	1.00	4.9		04/17/08
Europium-152	14683-23-9	LA-508-481	U	1.71	pCi/g	+7.61	pCi/g	1.00	13		04/17/08
Europium-154	15585-10-1	LA-508-481	U	2.29	pCi/g	+7.65	pCi/g	1.00	14		04/17/08
Europium-155	14391-16-3	LA-508-481	U	3.78	pCi/g	+12.8	pCi/g	1.00	21		04/17/08
Potassium-40	13966-00-2	LA-508-481		113	pCi/g	+55.8	pCi/g	1.00	42		04/17/08
Niobium-94	14681-63-1	LA-508-481	U	0.377	pCi/g	+2.47	pCi/g	1.00	4.3		04/17/08
Radium-226	13982-63-3	LA-508-481	U	13.2	pCi/g	+12.9	pCi/g	1.00	14		04/17/08
Radium-228	15262-20-1	LA-508-481	U	-0.654	pCi/g	+6.54	pCi/g	1.00	18		04/17/08
Ruthenium-106	13967-48-1	LA-508-481	U	-9.84	pCi/g	+25.1	pCi/g	1.00	42		04/17/08
Tin-126	15832-50-5	LA-508-481	U	-4.47	pCi/g	+8.98	pCi/g	1.00	15		04/17/08
Thorium-234	15065-10-8	LA-508-481	U	56.8	pCi/g	+173	pCi/g	1.00	3.0e+02		04/17/08
Uranium-235	15117-96-1	LA-508-481	U	-8.24	pCi/g	+24.0	pCi/g	1.00	39		04/17/08
Zinc-65	13982-39-3	LA-508-481	U	-2.85	pCi/g	+5.67	pCi/g	1.00	9.5		04/17/08
Actinium-228	14331-83-0	LA-508-481	U	-0.654	pCi/g	+6.54	pCi/g	1.00	18		04/17/08

MDL = Minimum Detection Limit U - Analyzed for but not detected above limiting criteria (inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

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

Report WGPP/ver. 5.2

Groundwater Remediation Program

Assume: Alpha = Pu-239  
Beta = Sr-90

# WSCF

## ANALYTICAL RESULTS REPORT

Attention: Steve Trent  
 SAF Number: F08-066  
 Sample #: W08GR01052  
 Client ID: BITFB2

TRENT  
 WSCF

Matrix: SOIL

Group #: WSCF20080812  
 Department: Radiochemistry  
 Sampled: 04/16/08  
 Received: 04/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Bismuth-212	14913-49-6	LA-508-481	U	-17.0	pCi/g	+22.1	pCi/g	1.00	35		04/17/08
Bismuth-214	14733-03-0	LA-508-481		13.2	pCi/g	+12.9	pCi/g	1.00	10		04/17/08
Lead-212	15092-94-1	LA-508-481	U	1.56	pCi/g	+5.81	pCi/g	1.00	9.6		04/17/08
Lead-214	15067-28-4	LA-508-481	U	-4.79	pCi/g	+7.37	pCi/g	1.00	12		04/17/08
Ruthenium-103	13968-53-1	LA-508-481	U	-0.956	pCi/g	+2.67	pCi/g	1.00	4.5		04/17/08
Tin-113	13966-08-8	LA-508-481	U	0.903	pCi/g	+3.28	pCi/g	1.00	5.8		04/17/08
Thallium-208	14913-50-9	LA-508-481	U	2.09	pCi/g	+3.20	pCi/g	1.00	5.5		04/17/08

MDL = Minimum Detection Limit

U - Analyzed for but not detected above limiting criteria (inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

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

Report WGPP/ver. 5.2

Groundwater Remediation Program



## DOMESTIC RADIOACTIVE MATERIAL SHIPMENT BY HIGHWAY CHECKLIST

**Onsite Shipment**  (HNF-RD-7900, One/One not required)      **Offsite Shipment**  (HNF-RD-7900)  
**Date of Shipment:** 04/29/2008      **Originating Facility:** FH Groundwater - MO-745 / 300  
**HAZMAT Shipper:** M. A. Baechler      **Destination:** Severn Trent Lab, Richland  
**Shipment Number:** H0033000      **Requester:** M. A. Baechler

**Description of Hazardous Materials and Packaging (Be specific in numbers and types of packages):**

Environmental sample packaged in polycooler with cushioning material.

*As 4/29/08  
N/A      As 4/29/08  
N/A*

REQUIREMENT	YES		N/A	
	Shipper	One/One	Shipper	One/One
<b>Section A: Shipment Preparations (Subject to One over One Review)</b>				
1. If shipment includes fissile, Type B quantity or gas poisonous by inhalation, consignee notified of: date of shipment, expected date of arrival and any special loading or unloading instructions. (DOE O 460.2)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
2. If material meets definition of Accountable Nuclear Material, Safeguards and Security requirements must be met. (DOE O 5633.3B, HNF-MP-5477, HNF-PRO-156, HNF-PRO-157)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<b>Section B: Characterization Documentation (Subject to One over One Review)</b>				
1. Has the material been reviewed for forbidden materials and packages per 173.21?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Is the radioactive source term data presented in a form that is usable and complete? (HNF-PRO-156, HNF-PRO-157)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Have the class 7 calculations been completed? This can be done via RadCalc. (BMP)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Has the material been evaluated to be solid, liquid/sludge or gas matrix? (171.8)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Does the material exceed ACEM and ALEC (173.403), or not releasable (DOE Order 5400.5)?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Does the material meet special form, is the special form certification available and is the special form certificate current for use? (173.403, 173.435, 173.469, 173.476)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
7. Is the material greater than Type A quantity? (173.403, 173.435)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
8. Does the material meet the definition of LSA? (173.403, 173.427)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
9. Does the material meet the definition of SCO? (173.403, 173.427)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
10. Does the material classify as a Highway Route Controlled Quantity? (173.403)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
11. Is the material <input type="checkbox"/> fissile or <input checked="" type="checkbox"/> fissile excepted (check both if both apply as part of shipment)? (173.403, 173.417, 173.453, 173.457, 173.459)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Does the material meet the definition for RQ for radioactive material? (172.101 Table 2 to App. A)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
13. Does the material meet the definition for RQ for hazardous material? (172.101 Table 1 to App. A)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
14. Is the material specifically listed Uranium shipping name? (172.101)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
15. Does the material meet the definition of another hazard class(es)? (173.2)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
16. Have the primary, secondary and tertiary hazard class(es) been determined? (173.2a)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
17. Do the radiation and contamination levels conform to the PSN and shipping mode selected? (173.441, 173.442, 173.443, 173.448)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Does the material conform to any special permit? (173.22a)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
19. Has the special permit been reviewed for applicability, to verify if it has not expired, to verify that DOT has not cancelled it and if the shipper is authorized to use it? (107.101, 173.22a)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
20. Marking and labeling checklist(s) have been completed for containers on shipment? (HNF-PRO-156, HNF-PRO-157)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Has the CoC been reviewed, is the CoC still current, is the CoC applicable for use and is the CoC being used by the packaging facility to prepare the package for use? (173.413, 173.416, 173.431, 173.467, 173.471, 173.473, 173.474, 173.475)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
22. Has the package manufacturer's SARP or OMM been reviewed, is it the current revision and is it being used by the packaging facility to prepare the package for use? (173.413, 173.416, 173.431, 173.467, 173.471, 173.473, 173.474, 173.475)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
23. Has the Hanford Site PSSD been reviewed, is the PSSD the current revision and is the PSSD being used by the packaging facility to prepare the package for use? (HNF-PRO-156) See PSSD Checklist.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
24. If the PSSD allows deviations or if the packaging facility cannot meet the PSSD, has Packaging Engineering or Shipper evaluated the deviations, as delineated in the PSSD, and has documentation been approved by T&P Program Manager and entered into the shipping file? (HNF-PRO-156, HNF-PRO-157)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

↓      ↓  
A-6003-699 (REV 1)

## DOMESTIC RADIOACTIVE MATERIAL SHIPMENT BY HIGHWAY CHECKLIST (continued)

Shipment Number: H0033000

REQUIREMENT (continued)	YES		N/A	
Section C: Shipping Papers (Subject to One over One Review)	Shipper	One/One	Shipper	One/One
1. Each hazardous material is identified on the shipping paper. (172.200)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Hazardous material descriptions are entered on shipping paper before materials not subject to 49 CFR. (172.201 (a)(1))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
3. Shipping paper pages are numbered consecutively with first page specifying total number of pages. (172.201 (c))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. "RQ" is shown (if applicable) for packages containing RQ of radioactive isotopes. (172.201 (a)(1))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
5. "RQ" is shown (if applicable) with the applicable hazardous substance(s) identified. (172.201 (a)(1))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
6. "X" is shown in HM column before proper shipping name. (172.201 (a)(1))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Proper shipping names for hazardous materials are shown. (172.202 (a)(1))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Hazard class of the material identified is shown (subsidiary class must be entered in parenthesis following the primary hazard class). (172.202 (a)(2))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Identification number of the hazardous material is shown. (172.202 (a)(3))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Applicable radionuclides are shown. (173.433 (f), 173.435, 172.203 (d)(2))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Physical form description is shown. (172.202 (d)(3))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Chemical form description is shown. (172.202 (d)(3))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. The activity contained in each package is shown in terms of SI units (Becquerel, Terabecquerel, etc.). (172.202 (d)(4))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. The category of label applied to each package is shown (if applicable). (172.203 (d)(4))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
15. The transport index (TI) assigned to each package bearing Radioactive Yellow - II or III labels is shown. (172.203 (d)(5))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
16. For a shipment of fissile radioactive materials, the words "Fissile Excepted" is shown if the package is excepted per 173.453. (172.203 (d)(6))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. The criticality safety index (CSI) assigned to each package bearing the fissile label is shown. (172.203 (d)(6))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
18. For a package approved by the U.S. Department of Energy (DOE) or U.S. Nuclear Regulatory Commission (USNRC), a notation of the package identification marking is shown as prescribed in the applicable DOE or USNRC approval. (173.471, 172.203 (d)(7))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
19. An indication that the shipment is consigned as exclusive use is shown. (172.203 (d)(9))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
20. For a shipment of a package containing highway route control quantity the words "Highway Route Control Quantity" or "HRCQ" is shown. (172.203 (d)(10))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
21. "DOT-SP" followed by special permit number noted on shipping paper in association with applicable description. Copy of any/all special permits attached to shipping paper and included in total number of pages. (172.203(a))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
22. The quantity and units of each hazardous material is shown. (172.203 (a)(5))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Individual package weight(s) are shown. (BMP)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Emergency response phone number entered. (172.201 (d))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Placarding shown on shipping paper. (BMP)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
26. All entries on shipping paper are legible on all copies. (172.201 (a)(2))	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. Exclusive Use Instructions are included as part of shipping papers. (173.427 (a)(6)(i)-(vii), 173.441 (c))	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
28. HRCQ Instructions are included as part of shipping papers. (BMP, 397.101)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
29. Emergency Response Guide number(s) entered on shipping paper. (BMP)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
			YES	N/A
Section D: Packages (Not Subject to One over One Review)	Shipper	Shipper		
1. Package is approved for the hazardous material to be shipped in it? (173.3, 173.21, 173.22, 173.24a, 173.24b, 173.25, 173.426, 173.441, 173.442, 173.443, 173.474, 173.475, 172.101 Table - Column 8)	<input checked="" type="radio"/>	<input type="radio"/>		
2. Have special provisions been complied with? (172.101 Table - Column 7)	<input type="radio"/>	<input checked="" type="radio"/>		
3. Are packages free from defects, breaches and bulges? (HNF-PRO-156, HNF-PRO-157, 173.24)	<input checked="" type="radio"/>	<input type="radio"/>		
4. Packages closed per manufacturer's instructions, <input type="radio"/> facility procedure for excepted package, <input checked="" type="radio"/> closed per the Onsite PSSD? <input type="radio"/> (HNF-PRO-156, HNF-PRO-157, PSSD, 173.24)	<input checked="" type="radio"/>	<input type="radio"/>		
5. Is package being shipped under special permit? Package must be marked with special permit number. (172.301 (c))	<input type="radio"/>	<input checked="" type="radio"/>		
6. Is exemption applicable to this shipment as packaged? (173.22a)	<input type="radio"/>	<input checked="" type="radio"/>		
7. Are packages labeled correctly? (172.400, 173.433 (f))	<input checked="" type="radio"/>	<input type="radio"/>		
8. Are packages marked correctly? (172.300, 172.310)	<input checked="" type="radio"/>	<input type="radio"/>		

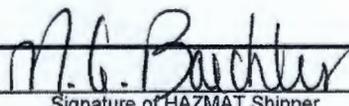
## DOMESTIC RADIOACTIVE MATERIAL SHIPMENT BY HIGHWAY CHECKLIST (continued)

Shipment Number: H0033000

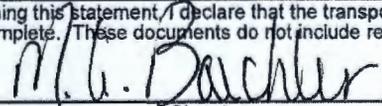
REQUIREMENT (continued)	YES	N/A
<b>Section D: Packages (Not Subject to One over One Review) (continued)</b>		
	Shipper	Shipper
9. Do liquid combination packages have orientation marking applied? (172.312)	<input type="radio"/>	<input checked="" type="radio"/>
10. Containers are sealed with tamper indicating devices? (173.412, 173.413, HNF-MP-5477)	<input checked="" type="radio"/>	<input type="radio"/>
<b>Section E: Vehicle and Driver (Not Subject to One over One Review)</b>		
1. Carrier approved to transport hazardous material. (DOE G 460.2-1 3.1.3, DOE G 460.1-1)	<input checked="" type="radio"/>	<input type="radio"/>
2. Driver has current CDL with correct endorsements (177.816) and current DOT medical Card (391.41).	<input type="radio"/>	<input checked="" type="radio"/>
3. Driver has current version of Emergency Response Guidebook. (172.602)	<input checked="" type="radio"/>	<input type="radio"/>
4. PHMSA Hazardous Materials Registration current and with vehicle. (107.608)	<input type="radio"/>	<input checked="" type="radio"/>
5. Vehicle DOT inspection completed within the past 12 months on power unit. (396.17, 396.23)	<input checked="" type="radio"/>	<input type="radio"/>
6. Vehicle DOT inspection completed within the past 12 months on trailer(s). (396.17, 396.23)	<input type="radio"/>	<input checked="" type="radio"/>
7. Vehicle appears to be in good working order including tire condition, windshield and mirrors. (BMP)	<input checked="" type="radio"/>	<input type="radio"/>
8. Container segregation appropriate for materials as loaded on vehicle. (49 CFR Part 177 Subpart C)	<input type="radio"/>	<input checked="" type="radio"/>
9. Packages loaded properly braced and secured on vehicle. (173.30, 49 CFR 393 Subpart I, 177.834, HNF-PRO-156, HNF-PRO-157)	<input checked="" type="radio"/>	<input type="radio"/>
10. Vehicle Placarded as required. (49 CFR Part 172 Subpart F)	<input type="radio"/>	<input checked="" type="radio"/>
11. Vehicle Marked with "orange panels" or "PCB" markings. (172.332, HNF-PRO-156, HNF-PRO-157, HNF-PRO-3152 3.b.)	<input type="radio"/>	<input checked="" type="radio"/>
12. If shipment is HRCQ, driver must have HRCQ training credentials. (397.101(d))	<input type="radio"/>	<input checked="" type="radio"/>
13. If shipment is truck load quantity or exclusive use, is carrier on approved MCEP list? (DOE O 460.2)	<input type="radio"/>	<input checked="" type="radio"/>
<b>Section F: Shipment Completion (Not Subject to One over One Review)</b>		
1. Shipping papers signed and dated by shipper. (172.204)	<input checked="" type="radio"/>	<input type="radio"/>
2. Shipping papers signed and dated by carrier. (172.205)	<input checked="" type="radio"/>	<input type="radio"/>
3. Special loading or unloading instructions included as part of shipping papers. (HNF-PRO-157)	<input type="radio"/>	<input checked="" type="radio"/>
<b>Section G: Other Shipment Requirements</b>		
1. POC and ONC are notified of shipment. (HNF-PRO-156, HNF-PRO-157)	<input checked="" type="radio"/>	<input type="radio"/>
2. Receiver is notified of shipment date and is authorized to receive the shipment. (HNF-PRO-157)	<input checked="" type="radio"/>	<input type="radio"/>
3. DOE-HQ approval for RAM shipments other than ltd qty, sample, sealed source, empty, and laundry shall be submitted to the FH traffic manager or delegate by C.O.B. Tuesday of the week preceding shipment.	<input type="radio"/>	<input checked="" type="radio"/>

**Comments:**

1. One over one peer review completed on peer reviewers copy for this shipment number

<b>Checklist Completed By:</b>		M. A. Baechler	Date: <u>4/24/08</u>
	Signature of HAZMAT Shipper	Printed Name	
<b>One/One Completed By:</b>	N/A	N/A	Date: <u>N/A</u>
	Signature of HAZMAT Shipper	Printed Name	
<b>1162 Review Completed By:</b>	N/A	N/A	Date: <u>4/24/08</u>
	Signature of HAZMAT Shipper	Printed Name	

By signing this statement, I declare that the transportation documents supplied are original or best available copies and have been submitted as accurate and complete. These documents do not include returned manifest, certificate of destruction, or any other document that may serve as a TSD requirement.

	M. A. Baechler	Date: _____
Signature	Printed Name	

"Peer Review"

EXCEPTED OR EMPTY RADIOACTIVE MATERIAL PACKAGE CHECKLIST

Date of Shipment: \_\_\_\_\_ Originating Facility: MO 745 / 300 Area  
 HAZMAT Shipper: G. Boness Destination: Test America, Richland W. Va.  
 Shipment No.: H0033000 Requester: M. Baccher, Fluor  
 Charge Code for Billing: N/A Charge Code for Labor: 123210 / ES20

Shipment Description (e.g., number of packages and type):  
 Radioactive Material, Excepted Package:

Limited Quantity of Material, UN2910       Instruments, UN2911       Empty Packaging, UN2908

NOTE: Refer to 49 CFR 173 Subpart I for ground shipments or IATA DGRs section 10 for air shipments.       Air       Ground

A. Radioactive Material Characterization (one/one)	YES		N/A	
	Shipper	One/One	Shipper	One/One
1. Verify contents meet activity limits. (173.425, 173.428, 10.5.9)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Verify radiation and contamination levels conform. (173.421, 173.422, 173.424, 173.428, 173.441, 10.5.3.13, 10.5.9)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Is there other hazardous material present? (If yes, then provide description in "comments" below or use checklist 698 or 699.)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
4. Verify the package is fissile excepted. (173.453, 10.3.7.2)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. Shipping Paper (one/one)				
5. Verify that the shipping paper (e.g., RSR) is accurate and complete.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C. Packaging (no one/one)				
6. Verify material is packaged properly. (173.410, 10.5.3, 10.5.9)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. Marking and Labeling (one/one)				
7. Verify the package is marked: "radioactive" (inner for air or outer), "UN #", to/from, gross weight (> 50 kg). (173.421, 173.422, 173.424, 173.428, 10.5.9)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Verify package bears "empty" label or "radioactive material - excepted package" handling label. (173.428, 10.7)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
E. Emergency Response Info (no one/one)				
9. Provide copies of shipping papers to POC and ONC.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments: N/A

Checklist Completed By (Print/Sign/Date): Greg O. Boness, Greg O. Bonen 4/29/08  
 1162 Review (One/One) Completed By (Print/Sign/Date): N/A

By signing this statement I declare that the transportation documents supplied are original or best available copies and have been submitted as accurate and complete. These documents do not include returned manifest, certificate of destruction, or any other document that may serve as a TSD requirement.

Signature: Greg O. Bonen Printed Name: Greg O. Boness Date: 4/29/08

## RAM Marking / Labeling

Shipment Authorization: H0033000

- To (172.301(d))
- From (172.301(d))
- Packed in Wet Ice (BMP)
- Orientation Arrows (172.312(a)(2)) (Liquids Only)
- Gross Weight ( if > 50 kg) (172.310(a))
- Radioactive Material, USA DOT 7A, Type A (178.350(b))
- Type A ( $\frac{1}{2}$ " letters) (172.310(b))  
N/A - N/A 4/24/08
- PSN and UN ID Number (172.301(a))
- Radioactive I Labels (172.403(c)(f))
  - Enter Radioactive Isotopes on Label (172.403(g)(1))
  - Enter Activity on Label (172.403(g)(2))
- Radioactive II Labels (172.403(c)(f))
  - Enter Radioactive Isotopes on Label (172.403(g)(1))
  - Enter Activity on Label (172.403(g)(2))
  - Enter Transport Index on Label (172.403(g)(3))
- Custody Tape (173.412(a))
- IATA Dangerous Goods, Excepted Quantity
- IATA Radioactive Material, Excepted Quantity

**HAZARDOUS MATERIAL SHIPMENT FAX COVER SHEET**

Information Provided To Patrol Operations Center (POC)  
And Occurrence Notification Center (ONC)

Check applicable boxes and complete information, and fax to: POC at 373-1099 and ONC at 376-6379

Inbound Shipment: <input type="checkbox"/>		Outbound Shipment: <input checked="" type="checkbox"/>	
Shipment Date: 04/29/2008			
Shipment Number (Bill of Lading, Air-Bill, Waste Manifest, etc.): H0033000		Carrier: Fluor Hanford, Inc. Carrier Phone #: 509-539-3117 Destination: 1162 / 1100	
<b>COMMODITY</b>			
Proper Shipping Name (For multiple packages, check all applicable Proper Shipping Names): <input checked="" type="checkbox"/> RADIOACTIVE MATERIAL, EXCEPTED PACKAGE – LIMITED QUANTITY OF MATERIAL <input type="checkbox"/> RADIOACTIVE MATERIAL, EXCEPTED PACKAGE – EMPTY PACKAGING <input type="checkbox"/> RADIOACTIVE MATERIAL, TYPE A PACKAGE <input type="checkbox"/> RADIOACTIVE MATERIAL, TYPE A PACKAGE, SPECIAL FORM <input type="checkbox"/> RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-II) <input type="checkbox"/> Dangerous Goods in Excepted Quantities, UN1230			
Hazard Class: 7	UN ID#: 2910	ERG#: 161	Number of Packages: 1
Package Type: <input type="checkbox"/> Fiberboard Box <input type="checkbox"/> Wood Box <input type="checkbox"/> Steel Box <input type="checkbox"/> Drum <input type="checkbox"/> Cask <input checked="" type="checkbox"/> Other			
<b>ONSITE EMERGENCY PREPAREDNESS DATA</b>			
DE-Ci Value for Shipment: N/A		Material Form: <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	
		Certified Type B Package: <input type="checkbox"/>	
<b>ORIGINATOR</b>			
Contractor: Fluor Hanford, Inc. Originating Facility: Groundwater Remediation Building/Area: MO-745 / 300		Facility Point of Contact: M. A. Baechler Work Phone: 509-539-3117	
<b>TRANSPORTATION CONTACTS</b>			
Transportation Services Contact (Field): M. A. Baechler	Work Phone: 509-373-4452	Cell Phone: 509-539-3117	
Transportation Services Contact (Bldg. 1162): G. O. Boness / J. E. Maxwell	Work Phone: 376-7627/ 376-7493	Cell Phone:	

H0033000

Radcalc 4.0  
File Name: B1TFD6\_TAR.rad

4/24/2008 7:51 AM

Performed By: M. A. Baechler  
Checked By:

===== Input Information =====

Source Data:  
Isotope Ci Bq Gm  
Sr-90 6.048E-07 2.238E+04 4.356E-09  
Pu-239 2.592E-07 9.590E+03 4.179E-06

Container Data:  
Container Void Volume: 0 m<sup>3</sup>  
Container Mass: 0.1 gm  
Gamma Abs Curve: DOT Calculations

Waste Data:  
Waste Form: Normal  
Waste State: Solid  
Waste Volume: 180 cm<sup>3</sup>  
Waste Mass: 216 gm  
Mass of beryllium, lead, graphite, and hydrogenous material enriched with deuterium: 0 kg  
Waste Void Volume: 0 m<sup>3</sup>

Decay Time Data:  
Time to decay source before sealing: 30 day

Comments:  
S-6, Interval I-004, sample number B1TFD6, to TAR.

===== Calculated Results =====

Decay Heat:  
Heat Generated at Time Zero: 8.76E-09 W  
Heat Generated When Sealed: 1.21E-08 W

Transportation:  
Note: Calculations are made at the end of the user-specified decay time.

Radioactive Determination:  
Radioactive: Yes (ACEMs and ALECs > 1.0)  
ACEM Limit Fraction: 45.48 ACEMs (Number of ACEMs)  
ALEC Limit Fraction: 3.196 ALECs (Number of ALECs)  
This package is not exempt from the HMR.

Effective A2s for Mixture: 0.08918 Ci

Type Determination:  
Type: A (A2s <= 1.0)  
A2 Limit Fraction: 9.674E-06 A2s (Number of A2s)

Limited Quantity Determination:  
Limited Quantity: Yes (Activity <= 0.001 A2)  
Activity: 9.674E-06 A2  
1.725E-06 Ci  
6.384E-08 TBq  
U-235 Activity: 9.694E-12 gm

The user must check ensure that all other requirements for LQ in 49 CFR 173.421 are met.

LSA Determination:  
LSA-I: No (Fissile excepted, but A2s > 30 x rad limits)  
LSA-II: Yes (A2s/gm <= 0.0001)

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Radcalc 4.0  
File Name: B1TFD6\_TAR.rad

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LSA-III: Yes (A2s/gm <= 0.002)  
Specific Activity: 4.479E-08 A2/gm  
7.988E-09 Ci/gm

The user must check ensure that all other requirements for LSA in 49 CFR 173.403 and 49 CFR 173.427 are met.

HRCQ Determination:  
HRCQ: No  
A2 Limit Fraction: 9.674E-06 A2s  
Activity: 1.725E-06 Ci  
6.384E-08 TBq

Fissile Excepted Determination:  
Fissile Excepted: Yes (Fissile isotopes <= 2 grams)  
Fissile Quantity: 4.179E-06 gm  
Beryllium, lead, graphite, and hydrogenous material enriched with deuterium: 0 gm  
Solid Non-Fissile Quantity: 216.1 gm  
Total Uranium Quantity: 9.702E-12 gm  
U-233 Quantity: 0 gm  
U-235 Quantity: 9.694E-12 gm  
Uranium Enrichment: 99.91 %  
Total Plutonium Quantity: 4.179E-06 gm  
Pu-239 Quantity: 4.179E-06 gm  
Pu-241 Quantity: 0 gm

Container Category Determination:  
Container Category: III

TRU Waste Determination:  
TRU Waste: No (TRU activity <= 100 nCi/gm)  
TRU Activity: 1.2 nCi/g

WIPP Quantities:  
FGE Value: 4.179E-06  
PE-Ci Value: 2.592E-07

Reportable Quantity Determination:  
Reportable Quantity: No (RQs < 1.0)  
RQ Limit Fraction: 3.228E-05 RQs (Number of RQs)

Dose-Equivalent Curies:  
Total ICRP-71/72 DE-Ci: 2.597E-07  
Total FGR-11 DE-Ci: 2.61E-07

Source at the Start of Seal Time:			
Isotope	Ci	Bq	Gm
Sr-90	6.036E-07	2.233E+04	4.347E-09
Y-90	6.035E-07	2.233E+04	1.110E-12
Tl-207	8.553E-28	3.165E-17	4.491E-36
Pb-211	8.586E-28	3.177E-17	3.478E-35
Bi-211	8.583E-28	3.176E-17	2.090E-36
Bi-215	1.092E-32	4.039E-22	9.237E-41
Po-211	2.343E-30	8.670E-20	2.261E-41
Po-215	8.635E-28	3.195E-17	2.929E-41
At-215	3.454E-33	1.278E-22	6.582E-48
At-219	1.126E-32	4.167E-22	1.181E-41
Rn-219	8.635E-28	3.195E-17	6.638E-38
Fr-223	1.877E-28	6.946E-18	4.854E-36
Ra-223	8.635E-28	3.195E-17	1.686E-32
Ac-227	1.363E-26	5.045E-16	1.885E-28
Th-227	2.926E-27	1.083E-16	9.522E-32
Th-231	1.988E-17	7.354E-07	3.740E-23

H0033000

Radcalc 4.0  
File Name: B1TFD6\_TAR.rad

4/24/2008 7:51 AM

Pa-231	1.642E-23	6.076E-13	3.477E-22
U-235	2.095E-17	7.751E-07	9.694E-12
U-235m	2.592E-07	9.589E+03	8.423E-15
Pu-239	2.592E-07	9.590E+03	4.179E-06
Total Activity:	1.725E-06	6.384E+04	
w/o Daughters:	8.628E-07	3.192E+04	

Shipping Papers and Labels:

Isotope	Number of A2s	Fraction of A2s	Cumulative A2s	Cumulative Fraction of A2s
* Pu-239	9.6E-06	0.9923	9.6E-06	0.9923
Sr-90	7.452E-08	0.007703	9.674E-06	1

\* Contains 95% of the total A2s and must be included per 49 CFR 173.433.  
Radionuclides comprising less than 0.1% of the total A2s are not shown in the list.

H0033000

3-6 Samples to TAR

I-004  
BITFD6  
(BITFB2)  
As

$$120\text{ml} + 60\text{ml} = 180\text{ml} \times 1.2\text{g/ml} = 216\text{g}$$

Pu-239

$$1200\text{pCi/g} \times 216\text{g} = 2.592\text{E}5\text{pCi}$$
$$= 2.592\text{E}-7\text{Ci}$$

U-235

$$2800\text{pCi/g} \times 216\text{g} = 6.048\text{E}5\text{pCi}$$
$$= 6.048\text{E}-7\text{Ci}$$

SLC, C6174  
I-004, 22.7-25.2'

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent  
SAF Number: F08-066  
Sample #: W08GR01052  
Client ID: BITFB2

TRENT  
WSCF

Matrix: SOIL

Group #: WSCF20080812  
Department: Radiochemistry  
Sampled: 04/16/08  
Received: 04/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>A/B by Liquid Scintillation</b>											
Gross alpha	12587-46-1	LA-508-421		1.20e+03	pCi/g	+240	pCi/g	1.00	1.9		04/17/08
Gross beta	12587-47-2	LA-508-421		2.80e+03	pCi/g	+560	pCi/g	1.00	2.4		04/17/08
<b>Gamma Energy Analysis-grd H2O</b>											
Americium-241	14596-10-2	LA-508-481	U	-12.4	pCi/g	+21.2	pCi/g	1.00	35		04/17/08
Antimony-125	14234-35-6	LA-508-481	U	-1.30	pCi/g	+7.44	pCi/g	1.00	13		04/17/08
Ba-133 by GEA	13981-41-4	LA-508-481	U	-5.79	pCi/g	+5.79	pCi/g	1.00	6.0		04/17/08
Cerium-144	14762-78-8	LA-508-481	U	16.4	pCi/g	+22.8	pCi/g	1.00	39		04/17/08
Cerium/Praseodymium-144	CE/PR-144	LA-508-481	U	32.7	pCi/g	+45.5	pCi/g	1.00	78		04/17/08
Cobalt-60	10198-40-0	LA-508-481	U	0.532	pCi/g	+2.71	pCi/g	1.00	4.9		04/17/08
Cesium-134	13967-70-9	LA-508-481	U	1.49	pCi/g	+2.81	pCi/g	1.00	5.2		04/17/08
Cesium-137	10045-97-3	LA-508-481	U	-0.955	pCi/g	+2.94	pCi/g	1.00	4.9		04/17/08
Europium-152	14683-23-9	LA-508-481	U	1.71	pCi/g	+7.61	pCi/g	1.00	13		04/17/08
Europium-154	15585-10-1	LA-508-481	U	2.29	pCi/g	+7.65	pCi/g	1.00	14		04/17/08
Europium-155	14391-16-3	LA-508-481	U	3.78	pCi/g	+12.8	pCi/g	1.00	21		04/17/08
Potassium-40	13966-00-2	LA-508-481		113	pCi/g	+55.8	pCi/g	1.00	42		04/17/08
Niobium-94	14681-63-1	LA-508-481	U	0.377	pCi/g	+2.47	pCi/g	1.00	4.3		04/17/08
Radium-226	13982-63-3	LA-508-481	U	13.2	pCi/g	+12.9	pCi/g	1.00	14		04/17/08
Radium-228	15262-20-1	LA-508-481	U	-0.654	pCi/g	+6.54	pCi/g	1.00	18		04/17/08
Ruthenium-106	13967-48-1	LA-508-481	U	-9.84	pCi/g	+25.1	pCi/g	1.00	42		04/17/08
Tin-126	15832-50-5	LA-508-481	U	-4.47	pCi/g	+8.98	pCi/g	1.00	15		04/17/08
Thorium-234	15065-10-8	LA-508-481	U	56.8	pCi/g	+173	pCi/g	1.00	3.0e+02		04/17/08
Uranium-235	15117-96-1	LA-508-481	U	-8.24	pCi/g	+24.0	pCi/g	1.00	39		04/17/08
Zinc-65	13982-39-3	LA-508-481	U	-2.85	pCi/g	+5.67	pCi/g	1.00	9.5		04/17/08
Actinium-228	14331-83-0	LA-508-481	U	-0.654	pCi/g	+8.54	pCi/g	1.00	18		04/17/08

H00533000

Assume: Alpha = Pu-239  
Beta = Sr-90

MDL = Minimum Detection Limit U - Analyzed for but not detected above limiting criteria (inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

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

Report WGPP/ver. 5.2

Groundwater Remediation Program

# WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent  
 SAF Number: F08-066  
 Sample # W08GR01052  
 Client ID: BITFB2

TRENT  
 WSCF

Matrix: SOIL

Group #: WSCF20080812  
 Department: Radiochemistry  
 Sampled: 04/16/08  
 Received: 04/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Bismuth-212	14913-49-6	LA-508-481	U	-17.0	pCi/g	+22.1	pCi/g	1.00	35		04/17/08
Bismuth-214	14733-03-0	LA-508-481		13.2	pCi/g	+12.9	pCi/g	1.00	10		04/17/08
Lead-212	15092-94-1	LA-508-481	U	1.56	pCi/g	+5.81	pCi/g	1.00	9.6		04/17/08
Lead-214	15067-28-4	LA-508-481	U	-4.79	pCi/g	+7.37	pCi/g	1.00	12		04/17/08
Ruthenium-103	13968-53-1	LA-508-481	U	-0.956	pCi/g	+2.67	pCi/g	1.00	4.5		04/17/08
Tin-113	13966-06-8	LA-508-481	U	0.903	pCi/g	+3.28	pCi/g	1.00	5.8		04/17/08
Thallium-208	14913-50-9	LA-508-481	U	2.09	pCi/g	+3.20	pCi/g	1.00	5.5		04/17/08

H0033000

**MDL** = Minimum Detection Limit      U - Analyzed for but not detected above limiting criteria (inorg)  
**RQ** = Result Qualifier  
**TP Err** = Total Propagated Error  
**DF** = Dilution Factor

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

Report WGPP/ver. 5.2  
 Groundwater Remediation Program

## POTENTIAL HAZARDS

### HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Very low levels of contained radioactive materials and low radiation levels outside packages result in low risks to people. Damaged packages may release measurable amounts of radioactive material, but the resulting risks are expected to be low.
- Some radioactive materials cannot be detected by commonly available instruments.
- Packages do not have RADIOACTIVE I, II, or III labels. Some may have EMPTY labels or may have the word "Radioactive" in the package marking.

### FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Many have cardboard outer packaging; content (physically large or small) can be of many different physical forms.
- Radioactivity does not change flammability or other properties of materials.

## PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first.** If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

### PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

### EVACUATION

#### Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

#### Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

## EMERGENCY RESPONSE

### FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

#### Small Fires

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

#### Large Fires

- Water spray, fog (flooding amounts).

### SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

### FIRST AID

- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.



# Sample Check-in List

Date/Time Received: 42908 1145 GM Screen Result O.K

Client: FLH SDG #: W05389 NA [ ] SAF #: F08-066 NA [ ]

Work Order Number: J8D290293 Chain of Custody # F08-066-027

Shipping Container ID: N/A Air Bill # N/A

- 1. Custody Seals on shipping container intact? NA [ ] Yes  No [ ]
- 2. Custody Seals dated and signed? NA [ ] Yes  No [ ]
- 3. Chain of Custody record present? NA [ ] Yes  No [ ]
- 4. Cooler Temperature: \_\_\_\_\_ NA  5. Vermiculite/packing materials is NA  Wet [ ] Dry [ ]

6. Number of samples in shipping container: 1

7. Sample holding times exceeded? NA  Yes [ ] No [ ]

8. Samples have:

<input checked="" type="checkbox"/> Tape	_____ Hazard Labels
<input checked="" type="checkbox"/> Custody Seals	<input checked="" type="checkbox"/> Appropriate Sample Labels

9. Samples are:

<input checked="" type="checkbox"/> In Good Condition	_____ Leaking
_____ Broken	_____ Have Air Bubbles

(Only for samples requiring no head space.)

10. Sample pH taken? NA  pH<2 [ ] pH>2 [ ] pH>9 [ ] Amount HNO<sub>3</sub> Added \_\_\_\_\_

11. Sample Location, Sample Collector Listed? \*  
\*For documentation only. No corrective action needed.

12. Were any anomalies identified in sample receipt? Yes [ ] No

13. Description of anomalies (include sample numbers): \_\_\_\_\_

Sample Custodian: [Signature] Date: 42908

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on \_\_\_\_\_ by \_\_\_\_\_ Person Contacted \_\_\_\_\_

[ ] No action necessary; process as is.

Project Manager \_\_\_\_\_ Date \_\_\_\_\_

TestAmerica

6/4/2008 5:46:55 AM

Sample Preparation/Analysis

Balance Id:1120373922

108302, Fluor Hanford Inc  
Hanford Inc

, Flour

9R Thiso PrpRC5013/RC5019, SepRC5084(5003)  
S1 Thorium-228,230,232 by Alpha Spec

Pipet #: \_\_\_\_\_

AnalyDueDate: 06/13/2008

5I CLIENT: HANFORD

Sep1 DT/Tm Tech:

Batch: 8121470 SOIL pCi/g

PM, Quote: SS, 50639

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: McDowellD,WoodT



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 KL8EP-1-AC J8D290293-1-SAMP 04/16/2008 08:55	2.02g,in	2.02g,in	THTC12638 05/14/08,pd 05/12/08,r	200				
AmtRec: 60G,120G #Containers: 2 Scr: Alpha: Beta:								
2 KL8EP-1-AK-X J8D290293-1-DUP 04/16/2008 08:55	2.03g,in	2.03g,in	THTC12639 05/14/08,pd 05/12/08,r					
AmtRec: 60G,120G #Containers: 2 Scr: Alpha: Beta:								
3 KMA5D-1-AA-B J8D300000-470-BLK 04/16/2008 08:55	2.00g,in	2.00g,in	THTC12640 05/14/08,pd 05/12/08,r					
AmtRec: #Containers: 1 Scr: Alpha: Beta:								
4 KMA5D-1-AC-C J8D300000-470-LCS 04/16/2008 08:55	2.00g,in	2.00g,in	THTC12640 05/14/08,pd 05/12/08,r					
AmtRec: #Containers: 1 Scr: Alpha: Beta:								

Comments: Samples have been bombed 4/16/08 J8D

All Clients for Batch:  
108302, Fluor Hanford Inc Flour Hanford Inc, SS, 50639

KL8EP1AC-SAMP Constituent List:											
Th-228	RDL:1	pCi/g	LCL:	UCL:	RPD:	Th-230	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35
Th-232	RDL:1	pCi/g	LCL:	UCL:	RPD:	Th-234	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
KMA5D1AA-BLK:											
Th-228	RDL:1	pCi/g	LCL:	UCL:	RPD:	Th-230	RDL:1	pCi/g	LCL:	UCL:	RPD:
Th-232	RDL:1	pCi/g	LCL:	UCL:	RPD:	Th-234	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

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TestAmerica

6/4/2008 5:47:01 AM

### Sample Preparation/Analysis

Balance Id:1120373922

9R Thiso PrpRC5013/RC5019, SepRC5084(5003)  
S1 Thorium-228,230,232 by Alpha Spec  
5I CLIENT: HANFORD

Pipet #:

AnalyDueDate: 06/13/2008

Sep1 DT/Tm Tech:

Batch: 8121470

pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WoodT



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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KMA5D1AC-LCS:

Th-230 RDL:1 pCi/g LCL:70 UCL:130 RPD:35 Th-234 RDL: pCi/g LCL:20 UCL:105 RPD:35

KL8EP1AC-SAMP Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

KMA5D1AA-BLK:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

KMA5D1AC-LCS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By \_\_\_\_\_

Date: \_\_\_\_\_

6/10/2008 11:47:45 AM

# ICOC Fraction Transfer/Status Report

ByDate: 6/11/2007, 6/15/2008, Batch: '8121470', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
8121470				
AC	Rev1C	WoodT	5/28/2008 9:41:09	
SC		wagarr	IsBatched	5/1/2008 3:27:27 PM
SC		WoodT	InPrep	5/28/2008 9:41:09 AM
SC		WoodT	Prep1C	6/4/2008 5:47:07 AM
SC		WoodT	InPrep2	6/4/2008 5:47:20 AM
SC		WoodT	Prep2C	6/4/2008 5:47:29 AM
SC		AshworthA	Sep1C	6/4/2008 5:18:08 PM
SC		AshworthA	Sep2C	6/5/2008 3:18:07 PM
SC		BlackCL	InCnt1	6/5/2008 3:22:57 PM
SC		DAWKINSO	CalcC	6/6/2008 8:03:01 PM
SC		nortonj	Rev1C	6/10/2008 11:47:41 AM
AC		WoodT		6/4/2008 5:47:07 AM
AC		WoodT		6/4/2008 5:47:20 AM
AC		WoodT		6/4/2008 5:47:29 AM
AC		AshworthA		6/4/2008 5:18:08 PM
AC		AshworthA		6/5/2008 3:18:07 PM
AC		BlackCL		6/5/2008 3:22:57 PM
AC		DAWKINSO		6/6/2008 8:03:01 PM
AC		nortonj		6/10/2008 11:47:41 AM

AC: Accepting Entry; SC: Status Change

TAL Richland  
Richland Wa.

Res/Chem/IT/CA

5/15/2008 12:22:48 PM

### Sample Preparation/Analysis

Balance Id:1120373922

108302, Fluor Hanford Inc  
Hanford Inc

, Flour

AN Tc-99 Prp/SepRC5013/5078  
S5 Technetium-99 by Liquid Scint  
5I CLIENT: HANFORD

Pipet #: \_\_\_\_\_

AnalyDueDate: 06/13/2008

Sep1 DT/Tm Tech:

Batch: 8121471 SOIL pCi/g PM, Quote: SS, 50639  
SEQ Batch, Test: None All Tests: 8121361 DWEA, 8121470 9RS1, 8121471 ANS5, 8121472 AFS4, 8121473 ATS6, 8133309 ATS6,

Sep2 DT/Tm Tech:

Prep Tech: McDowellD,WoodT



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 KL8EP-1-AD J8D290293-1-SAMP 04/16/2008 08:55	2.03g,in							
2 KL8EP-1-AL-S J8D290293-1-MS 04/16/2008 08:55	2.02g,in							
3 KL8EP-1-AM-X J8D290293-1-DUP 04/16/2008 08:55	2.01g,in							
4 KMA5Q-1-AA-B J8D300000-471-BLK 04/16/2008 08:55	2.00g,in							
5 KMA5Q-1-AC-C J8D300000-471-LCS 04/16/2008 08:55	2.00g,in							
6 KMA5Q-1-AD-BN J8D300000-471-IBLK 04/16/2008 08:55								



6/5/2008 11:33:18 AM

# ICOC Fraction Transfer/Status Report

ByDate: 6/6/2007, 6/10/2008, Batch: '8121471', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>8121471</b>				
AC	Rev1C	WoodT	5/12/2008 6:32:08	
SC		wagarr	IsBatched 5/1/2008 3:27:27 PM	ICOC_RADCALC v4.8.32
SC		WoodT	InPrep 5/12/2008 6:32:08 AM	RICH-RC-5013 Revision 7
SC		WoodT	Prep1C 5/15/2008 12:21:14 PM	RICH-RC-5013 REV7
SC		WoodT	InPrep2 5/15/2008 12:22:00 PM	RICH-RC-5078 REVISION 4
SC		WoodT	Prep2C 5/15/2008 12:22:23 PM	RICH-RC-5078 REVISION 4
SC		Barcotl	InPrep 6/4/2008 2:55:26 PM	RICH-RC-5078 REVISION 4
SC		Barcotl	Prep1C 6/4/2008 2:55:42 PM	RICH-RC-5078 REVISION 4
SC		DAWKINSO	InCnt1 6/4/2008 3:20:51 PM	RICH-RD-0001 REVISION 4
SC		BlackCL	CalcC 6/5/2008 6:58:40 AM	RICH-RD-0001 REVISION 4
SC		nortonj	Rev1C 6/5/2008 11:33:07 AM	RICH-RC-0002 REV 8
AC		WoodT	5/15/2008 12:21:14	
AC		WoodT	5/15/2008 12:22:00	
AC		WoodT	5/15/2008 12:22:23	
AC		Barcotl	6/4/2008 2:55:26 PM	
AC		Barcotl	6/4/2008 2:55:42 PM	
AC		DAWKINSO	6/4/2008 3:20:51 PM	
AC		BlackCL	6/5/2008 6:58:40 AM	
AC		nortonj	6/5/2008 11:33:07	

AC: Accepting Entry; SC: Status Change

TAL Richland  
Richland Wa.

TestAmerica

5/1/2008 3:20:28 PM

Sample Preparation/Analysis

Balance Id: *12445*

108302, Fluor Hanford Inc, Flour  
Hanford Inc

AT H-3 Prp/SepRC5037  
S6 Tritium by Liquid Scint  
51 CLIENT: HANFORD

Pipet #: \_\_\_\_\_

AnalyDueDate: 06/13/2008 *W05389*

Sep1 DT/Tm Tech: *5-7-08 am*

Batch: 8121473 SOIL pCi/g PM, Quote: SS, 50639

Sep2 DT/Tm Tech: \_\_\_\_\_

Prep Tech: \_\_\_\_\_



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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<b>1 KL8EP-1-AE</b>								
J8D290293-1-SAMP								
04/16/2008 08:55		AmtRec: 60G,120G	#Containers: 2			Scr:	Alpha:	Beta:

<b>2 KL8EP-1-AP-X</b>								
J8D290293-1-DUP								
04/16/2008 08:55		AmtRec: 60G,120G	#Containers: 2			Scr:	Alpha:	Beta:

<b>3 KMA51-1-AA-B</b>								
J8D300000-473-BLK								
04/16/2008 08:55		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:

<b>4 KMA51-1-AC-C</b>								
J8D300000-473-LCS								
04/16/2008 08:55		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:

<b>5 KMA51-1-AD-B</b>								
J8D300000-473-BLK								
04/16/2008 08:55		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:

**Comments:**

All Clients for Batch:  
108302, Fluor Hanford Inc Flour Hanford Inc, SS, 50639

KL8EP1AE-SAMP Constituent List:  
H-3 RDL:400 pCi/g LCL:70 UCL:130 RPD:35

TAL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 5  
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added ICOC v4.8.32

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TestAmerica

5/1/2008 3:20:28 PM

**Sample Preparation/Analysis**

Balance Id: 12445

AT H-3 Prp/SepRC5037  
 S6 Tritium by Liquid Scint  
 5I CLIENT: HANFORD

Pipet #: \_\_\_\_\_

AnalyDueDate: 06/13/2008

Sep1 DT/Tm Tech: S-7-08 om

Batch: 8121473 pCi/g  
 SEQ Batch, Test: None

Sep2 DT/Tm Tech: \_\_\_\_\_

Prep Tech: \_\_\_\_\_



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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KMA511AA-BLK:

KMA511AC-LCS:

KMA511AD-BLK:

KL8EP1AE-SAMP Calc Info:

Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
KMA511AA-BLK: Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
KMA511AC-LCS: Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
KMA511AD-BLK: Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B

Approved By \_\_\_\_\_ Date: \_\_\_\_\_



\*\*\*RE-COUNT REQUEST\*\*\*

DUE DATE 6-13

CUSTOMER FLUOR

ANALYSIS H3

MATRIX SOIL

LOT NUMBER 58D 290 293

SAMPLE DELIVERY GROUP W05389

OLD BATCH NUMBER 8121473

NEW BATCH NUMBER 8129510

LAB SAMPLE ID	CLIENT ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1) KMA51AD N	108302	LOW LCS YIELD
2) KMA51ACC		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		
16)		
17)		
18)		
19)		
20)		

RC-126, 12/07, Rev 5

TestAmerica

5/9/2008 7:34:41 AM

### Sample Preparation/Analysis

Balance Id: \_\_\_\_\_

AT H-3 Prp/SepRC5037  
S6 Tritium by Liquid Scint  
5I CLIENT: HANFORD

Pipet #: \_\_\_\_\_

Sep1 DT/Tm Tech: \_\_\_\_\_

Batch: 8129510  
SEQ Batch, Test: None

pCi/g

Sep2 DT/Tm Tech: \_\_\_\_\_

Prep Tech: \_\_\_\_\_



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
--------------------------------------	-------------------	-----------------------------	------------------------	-------------------	----------------	---------------------------------	--------------------------	-----------

1 KMA51-2-AC-C

J8D300000-473-LCS



04/16/2008 08:55

AmtRec:

#Containers: 1

Scr:

Alpha:

Beta:

2 KMA51-2-AD-B

J8D300000-473-BLK



04/16/2008 08:55

AmtRec:

#Containers: 1

Scr:

Alpha:

Beta:

Comments:

All Clients for Batch:

KMA512AC-LCS Constituent List:

KMA512AD-BLK Constituent List:

KMA512AC-LCS Calc Info:

Uncert Level (#s): 4    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B

KMA512AD-BLK Calc Info:

Uncert Level (#s): 4    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B

Approved By \_\_\_\_\_

Date: \_\_\_\_\_

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5/13/2008 11:21:03 AM

# ICOC Fraction Transfer/Status Report

ByDate: 5/14/2007, 5/18/2008, Batch: '8121473', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
8121473				
AC	Rev1C	McDowellD	5/7/2008 10:43:34	
SC		wagarr	IsBatched 5/1/2008 3:27:27 PM	ICOC_RADCALC v4.8.32
SC		McDowellD	Sep1C 5/7/2008 10:43:34 AM	RICH-RC-5037 REVISION 3
SC		BlackCL	InCnt1 5/7/2008 10:47:37 AM	RICH-RD-0001 REVISION 4
SC		BlackCL	CalcC 5/8/2008 7:09:28 AM	RICH-RD-0001 REVISION 4
SC		nortonj	Rev1C 5/13/2008 11:20:56 AM	RICH-RC-0002 REV 8
AC		BlackCL	5/7/2008 10:47:37	
AC		BlackCL	5/8/2008 7:09:28 AM	
AC		nortonj	5/13/2008 11:20:56	

AC: Accepting Entry; SC: Status Change

TAL Richland  
Richland Wa.

TestAmerica

6/3/2008 2:50:07 PM

**Sample Preparation/Analysis**

Balance Id:1120373922

108302, Fluor Hanford Inc  
Hanford Inc

, Flour

AF Ni-63 PrpRC5013/5019, SepRC5069  
S4 Nickel by ICP and Nickel-63 by Liquid Scint  
5I CLIENT: HANFORD

Pipet #:

AnalyDueDate: 06/13/2008

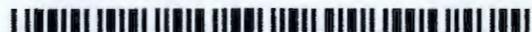
Sep1 DT/Tm Tech:

Batch: 8121472 SOIL pCi/g  
SEQ Batch, Test: None

PM, Quote: SS , 50639

Sep2 DT/Tm Tech:

Prep Tech: McDowellD,WoodT



Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 KL8EP-1-AF J8D290293-1-SAMP 04/16/2008 08:55			0.25g,in	0.25g	NITA2508 05/14/08	100				
<p>AmtRec: 60G,120G #Containers: 2 Scr: Alpha: Beta:</p>										
2 KL8EP-1-AN-X J8D290293-1-DUP 04/16/2008 08:55			0.26g,in	0.26g	NITA2509 05/14/08					
<p>AmtRec: 60G,120G #Containers: 2 Scr: Alpha: Beta:</p>										
3 KMA5W-1-AA-B J8D300000-472-BLK 04/16/2008 08:55			0.25g,in	0.25g	NITA2510 05/14/08					
<p>AmtRec: #Containers: 1 Scr: Alpha: Beta:</p>										
4 KMA5W-1-AC-C J8D300000-472-LCS 04/16/2008 08:55			0.25g,in	0.25g	NISA0801 03/20/08					
<p>AmtRec: #Containers: 1 Scr: Alpha: Beta:</p>										
5 KMA5W-1-AD-BN J8D300000-472-IBLK 04/16/2008 08:55					NITA 2517					
<p>AmtRec: #Containers: 1 Scr: Alpha: Beta:</p>										

Comments: Samples have been bombed 6/3/08 JSW

All Clients for Batch:  
108302, Fluor Hanford Inc Flour Hanford Inc , SS , 50639

KL8EP1AF-SAMP Constituent List:  
Ni-63 RDL:30 pCi/g LCL:70 UCL:130 RPD:35

TAL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1 ISV - Insufficient Volume for Analysis  
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

WO Cnt: 5  
Prep\_SamplePrep v4.8.32

57

TestAmerica

6/3/2008 2:50:09 PM

**Sample Preparation/Analysis**

Balance Id:1120373922

AF Ni-63 PrpRC5013/5019, SepRC5069  
 S4 Nickel by ICP and Nickel-63 by Liquid Scint  
 5I CLIENT: HANFORD

Pipet #: \_\_\_\_\_

AnalyDueDate: 06/13/2008

Sep1 DT/Tm Tech:

Batch: 8121472

pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WoodT



Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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KMA5W1AA-BLK:  
 Ni-63 RDL:30 pCi/g LCL: UCL: RPD:

KMA5W1AC-LCS:  
 Ni-63 RDL:30 pCi/g LCL:70 UCL:130 RPD:35

KMA5W1AD-IBLK:  
 Ni-63 RDL:30 pCi/g LCL: UCL: RPD:

KL8EP1AF-SAMP Calc Info:  
 Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

KMA5W1AA-BLK:  
 Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

KMA5W1AC-LCS:  
 Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

KMA5W1AD-IBLK:  
 Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By \_\_\_\_\_ Date: \_\_\_\_\_

6/10/2008 11:44:42 AM

# ICOC Fraction Transfer/Status Report

ByDate: 6/11/2007, 6/15/2008, Batch: '8121472', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
8121472				
AC	Rev1C	WoodT	5/28/2008 9:44:32	
SC		wagarr	IsBatched	5/1/2008 3:27:27 PM
SC		WoodT	InPrep	5/28/2008 9:44:32 AM
SC		WoodT	Prep1C	6/3/2008 2:47:03 PM
SC		WoodT	InPrep2	6/3/2008 2:47:18 PM
SC		WoodT	Prep2C	6/3/2008 2:47:32 PM
SC		ManisD	InSep1	6/4/2008 7:55:17 AM
SC		ManisD	Sep1C	6/5/2008 4:22:39 PM
SC		DAWKINSO	InCnt1	6/5/2008 5:09:22 PM
SC		BlackCL	CalcC	6/9/2008 1:24:06 PM
SC		nortonj	Rev1C	6/10/2008 11:44:34 AM
AC		WoodT		6/3/2008 2:47:03 PM
AC		WoodT		6/3/2008 2:47:18 PM
AC		WoodT		6/3/2008 2:47:32 PM
AC		ManisD		6/4/2008 7:55:17 AM
AC		ManisD		6/5/2008 4:22:39 PM
AC		DAWKINSO		6/5/2008 5:09:22 PM
AC		BlackCL		6/9/2008 1:24:06 PM
AC		nortonj		6/10/2008 11:44:34

AC: Accepting Entry; SC: Status Change

TAL Richland  
Richland Wa.

TestAmerica

4/30/2008 2:01:38 PM

### Sample Preparation/Analysis

Balance Id: \_\_\_\_\_

108302, Fluor Hanford Inc  
Hanford Inc

, Flour

DW Alkaline Digestion by method 3060A  
EA Chromium, Hexavalent (7196A)

Pipet #: \_\_\_\_\_

AnalyDueDate: 06/13/2008

5I CLIENT: HANFORD

Sep1 DT/Tm Tech: \_\_\_\_\_

Batch: 8121361

SOIL

mg/kg

PM, Quote: SS, 50639

Sep2 DT/Tm Tech: \_\_\_\_\_

SEQ Batch, Test: None

All Tests:

9RS1,

AFS4,

ANS5,

ATS6, 8121361 DWEA,

Prep Tech: \_\_\_\_\_



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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1 KL8EP-1-AA

J8D290293-1-SAMP



04/16/2008 08:55

AmtRec: 60G,120G

#Containers: 2

Scr: \_\_\_\_\_

Alpha: \_\_\_\_\_

Beta: \_\_\_\_\_

2.5038g

2 KL8EP-1-AG-S

J8D290293-1-MS



04/16/2008 08:55

AmtRec: 60G,120G

#Containers: 2

Scr: \_\_\_\_\_

Alpha: \_\_\_\_\_

Beta: \_\_\_\_\_

2.5050g

3 KL8EP-1-AH-D

J8D290293-1-MSD

Pb Cr O4



04/16/2008 08:55

AmtRec: 60G,120G

#Containers: 2

Scr: \_\_\_\_\_

Alpha: \_\_\_\_\_

Beta: \_\_\_\_\_

0.010g

2.5031g

4 KL8EP-1-AJ-X

J8D290293-1-DUP



04/16/2008 08:55

AmtRec: 60G,120G

#Containers: 2

Scr: \_\_\_\_\_

Alpha: \_\_\_\_\_

Beta: \_\_\_\_\_

2.5156g

5 KMACM-1-AA-B

J8D300000-361-BLK



04/16/2008 08:55

AmtRec:

#Containers: 1

Scr: \_\_\_\_\_

Alpha: \_\_\_\_\_

Beta: \_\_\_\_\_

6 KMACM-1-AC-C

J8D300000-361-LCS



04/16/2008 08:55

AmtRec:

#Containers: 1

Scr: \_\_\_\_\_

Alpha: \_\_\_\_\_

Beta: \_\_\_\_\_

TAL Richland

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2

Page 1

ISV - Insufficient Volume for Analysis

WO Cnt: 6

Richland Wa.

pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

ICOC v4.8.32

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