



**W05106**

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Analytical Data Package Prepared For

# Fluor Hanford Inc.

Radiochemical Analysis By

**STL Richland**

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

Assigned Laboratory Code: STLRL

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

Report No.: 34546

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W05106	F07-014	B1LR44	J7A310276-2	JNNQF1AA	9JNNQF10	7031554
		B1LR44	J7A310276-2	JNNQF1AA	9JNNQF10	7033193
		B1LR44	J7A310276-2	JNNQF2AD	9JNNQF20	7033194
		B1LV15	J7A310276-1	JNNPV1AA	9JNNPV10	7031554





**STL**

**STL Richland**  
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## Certificate of Analysis

Fluor Hanford  
P.O. Box 1000, T6-03  
Richland, WA 99352

February 25, 2007

Attention: Steve Trent

SAF Number	:	F07-014
Date SDG Closed	:	January 31, 2007
Number of Samples	:	Two (2)
Sample Type	:	Water
SDG Number	:	W05106
Data Deliverable	:	45/45 Day



### CASE NARRATIVE

#### I. Introduction

On January 31, 2007 two samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned to lot J7A310276 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>
B1LV15	JNNPV	WATER	1/31/07
B1LR44	JNNQF	WATER	1/31/07

#### II. Sample Receipt

The samples were 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.

February 25, 2007

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The requested analyses were:

**Gas Proportional Counting**

Gross Alpha by method RICH-RC-5014

Gross Beta by method RICH-RC-5014

**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**

**Gas Proportional Counting**

Gross Alpha by method RICH-RC-5014:

The LCS, batch blank, sample and sample duplicate (B1LR44) results are within contractual requirements.

Gross Beta by method RICH-RC-5014:

The LCS, batch blank, sample and sample duplicate (B1LR44) results are within contractual requirements.

**Chemical Analysis**

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (B1LR44), sample matrix spike (B1LR44), and matrix spike duplicate results (B1LR44) 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:



Sherryl A. Adam  
Project Manager

### Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

### Uncertainty Estimation

STL 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,  $R = \text{constants} * f(x,y,z,\dots)$ . 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 (Result/Expected)-1 as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or STL Richland.
<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) <i>u<sub>c</sub> - Combined Uncertainty.</i></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, <i>u<sub>c</sub> the combined uncertainty.</i> The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "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%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . 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%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . 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 = $(S-D)/[\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ 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 STL Richland 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: 25-Feb-07

**STL Richland STLRL**

Ordered by Client Sample ID, Batch No.

Report No. : 34546

SDG No: W05106

Client ID	Work Order Number	Parameter	Result ± Uncertainty ( 2s)	Qual	Units	Yield	MDC MDA	RPD
B1LR44	JNNQF1AA	HEXCHROME	2.00E-03 ± 0.00E+00		mg/L	N/A	2.00E-03	
B1LR44	JNNQF1AA	BETA	5.80E+00 ± 1.97E+00		pCi/L	100%	2.71E+00	
B1LR44	JNNQF2AD	ALPHA	9.68E-01 ± 1.34E+00	U	pCi/L	100%	2.71E+00	
B1LR44 DUP	JNNQF1AE	HEXCHROME	2.00E-03 ± 0.00E+00	U	mg/L	N/A	2.00E-03	0.0
B1LR44 DUP	JNNQF1AH	BETA	6.27E+00 ± 1.95E+00		pCi/L	100%	2.82E+00	7.8
B1LR44 DUP	JNNQF2AJ	ALPHA	2.10E+00 ± 1.78E+00	U	pCi/L	100%	3.01E+00	73.8
B1LV15	JNNPV1AA	HEXCHROME	5.00E-03 ± 0.00E+00		mg/L	N/A	2.00E-03	

Number of Results: 7

STL Richland

RPD - Relative Percent Difference.

rptSTLRichSaSum  
V5.1 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.

**QC Results Summary**  
**STL Richland STLRL**  
 Ordered by QC Type, Batch No.

Date: 25-Feb-07

Report No. : 34546

SDG No.: W05106

QC Type	Work Order Number	Parameter	Result ± Uncertainty ( 2σ)	Qual	Units	Yield	Recovery	Bias	MDC MDA
MATRIX SPIK	JNNQF1AC	HEXCHROME	2.76E-01 ± 0.00E+00		mg/L	N/A			2.00E-03
MATRIX SPIK	JNNQF1AD	HEXCHROME	2.76E-01 ± 0.00E+00		mg/L	N/A			2.00E-03
BLANK QC	JNN8C1AA	HEXCHROME	2.00E-03 ± 0.00E+00	U	mg/L	N/A			2.00E-03
LCS	JNN8C1AC	HEXCHROME	5.09E-01 ± 0.00E+00		mg/L	N/A			2.00E-03
BLANK QC	JNTMT1AA	BETA	1.07E+00 ± 1.19E+00	U	pCi/L	100%			2.45E+00
BLANK QC	JNTMW1AA	ALPHA	3.47E-01 ± 5.13E-01	U	pCi/L	100%			1.02E+00
LCS	JNTMT1AC	BETA	2.11E+01 ± 4.39E+00		pCi/L	100%	94%	-0.1	2.73E+00
LCS	JNTMW1AC	ALPHA	3.27E+01 ± 6.02E+00		pCi/L	100%	81%	-0.2	1.03E+00

Number of Results: 8

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSum 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  
 V5.1 A2002 gamma scan software.

**FORM I**  
**SAMPLE RESULTS**

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Collection Date: 1/31/2007 8:46:00 AM

Lot-Sample No.: J7A310276-2

Report No.: 34546

Received Date: 1/31/2007 12:36:00 PM

Client Sample ID: B1LR44

COC No.: F07-014-064

Matrix: WATER

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)	Ret MDC, Ret/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 7031554	Work Order: JNNQF1AA		Report DB ID: 9JNNQF10									
HEXCHROME	2.00E-03			0.0E+00	2.00E-03	mg/L	N/A	1. N/A	1/31/07		100.0 ML	7196_CR6
Batch: 7033193	Work Order: JNNQF1AA		Report DB ID: 9JNNQF10									
BETA	5.80E+00		1.6E+00	2.0E+00	2.71E+00	pCi/L	100%	(2.1) (5.9)	2/22/07 07:04 p		0.2035 L	9310_ALPHABETA_G GPC32A
Batch: 7033194	Work Order: JNNQF2AD		Report DB ID: 9JNNQF20									
ALPHA	9.68E-01	U	1.3E+00	1.3E+00	2.71E+00	pCi/L	100%	0.36 (1.4)	2/23/07 11:21 a		0.2002 L	RICHRC5014 GPC11A

Number of Results: 3

Comments:

STL Richland 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.  
 V6.1 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Collection Date: 1/31/2007 8:46:00 AM

Lot-Sample No.: J7A310276-1

Report No. : 34546

Received Date: 1/31/2007 12:36:00 PM

Client Sample ID: B1LV15

COC No. : F07-014-064

Matrix: WATER

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)	Ret/MDC, Ret/TotUncert	Analysis, Prop Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 7031554	Work Order: JNNPV1AA			Report DB ID: 9JNNPV10								
HEXCHROME	5.00E-03			0.0E+00	2.00E-03	mg/L	N/A	(2.5)	1/31/07		100.0	7196_CR6
								N/A			ML	

Number of Results: 1

Comments:

STL Richland 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 A2002

## FORM II

Date: 25-Feb-07

## DUPLICATE RESULTS

Lab Name: STL Richland

SDG: W05106

Collection Date: 1/31/2007 8:46:00 AM

Lot-Sample No.: J7A310276-2

Report No.: 34548

Received Date: 1/31/2007 12:36:00 PM

Client Sample ID: B1LR44 DUP

COC No.: F07-014-064

Matrix: WATER

Parameter	Result, Orig Rst	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Ret/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 7031554	Work Order: JNNQF1AE		Report DB ID: JNNQF1ER		Orig Sa DB ID: 9JNNQF10							
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	1/31/07		100.0	7196_CR6
	2.00E-03	RPD	0.0					N/A			ML	
Batch: 7033193	Work Order: JNNQF1AH		Report DB ID: JNNQF1HR		Orig Sa DB ID: 9JNNQF10							
BETA	6.27E+00		1.7E+00	1.9E+00	2.82E+00	pCi/L	100%	(2.2)	2/22/07 07:04 p		0.2023	9910_ALPHABETA_G
	5.80E+00	RPD	7.8			4.00E+00		(6.4)			L	GPC32B
Batch: 7033194	Work Order: JNNQF2AJ		Report DB ID: JNNQF2JR		Orig Sa DB ID: 9JNNQF20							
ALPHA	2.10E+00	U	1.7E+00	1.8E+00	3.01E+00	pCi/L	100%	0.7	2/23/07 11:21 a		0.2026	RICHRC5014
	9.68E-01	U RPD	73.8			3.00E+00		(2.4)			L	GPC11B

Number of Results: 3

Comments:

STL Richland RPD - Relative Percent Difference.

rptSTLRichDupV5.1  
A2002MDC|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**  
**BLANK RESULTS**

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Lot-Sample No.: #Error

Report No.: 34546

Matrix: WATER

Parameter	Result	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 7031554	Work Order: JNN8C1AA			Report DB ID: JNN8C1AB								
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1. N/A	1/31/07		100.0 ML	7198_CR6

Number of Results: 1

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on Instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchBlank 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.  
 V6.1 A2002

FORM II  
BLANK RESULTS

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Lot-Sample No.: J7B020000-193

Report No. : 34546

Matrix: WATER

Parameter	Result	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Ret/MDC, Ret/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 7033193	Work Order: JNTMT1AA		Report DB ID: JNTMT1AB									
BETA	1.07E+00	U	1.2E+00	1.2E+00	2.45E+00	pCi/L	100%	0.44	2/22/07 07:04 p		0.1999	9310_ALPHABETA_G
					1.16E+00	4.00E+00		(1.8)			L	GPC32C

Number of Results: 1

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on Instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRichBlank 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 A2002

FORM II  
BLANK RESULTS

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Lot-Sample No.: J7B020000-194

Report No. : 34546

Matrix: WATER

Parameter	Result	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 7033194	Work Order: JNTMW1AA		Report DB ID: JNTMW1AB									
ALPHA	3.47E-01	U	5.1E-01	5.1E-01	1.02E+00	pCi/L	100%	0.34	2/22/07 06:16 p		0.2034	RICHRC5014
					3.59E-01	3.00E+00		(1.4)			L	GPC10B

Number of Results: 1

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchBlank 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 A2002

FORM II  
LCS RESULTS

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Lot-Sample No.: #Error

Report No.: 34546

Matrix: WATER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 7031554	Work Order: JNN8C1AC		Report DB ID: JNN8C1AC										
HEXCHROME	5.09E-01		0.0E+00	2.00E-03	mg/L	N/A	0.00E+00	#Div/0!	1/31/07		100.0	7196_CR6	
						Rec Limits:	85.	115.				ML	

Number of Results: 1

Comments:

FORM II  
LCS RESULTS

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Lot-Sample No.: J7B020000-193

Report No. : 34546

Matrix: WATER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Blas	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 7033193	Work Order: JNTMT1AC		Report DB ID: JNTMT1CS										
BETA	2.11E+01		2.4E+00	4.4E+00	2.73E+00	pCi/L	100.00%	2.25E+01	2.59E-01	94%	2/22/07 07:04 p	0.2004	9310_ALPHABETA_G
							Rec Limits:			-0.1		L	GPC32D

Number of Results: 1

Comments:

FORM II  
LCS RESULTS

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Lot-Sample No.: J7B020000-194

Report No. : 34546

Matrix: WATER

Parameter	Result	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 7033184	Work Order: JNTMW1AC		Report DB ID: JNTMW1CS										
ALPHA	3.27E+01		3.9E+00	6.0E+00	1.03E+00	pCi/L	100.00%	4.06E+01	1.35E+00	81%	2/22/07 06:16 p	0.2019	RICHRCS014
Rec Limits:										-0.2		L	GPC10D

Number of Results: 1

Comments:

FORM II  
MATRIX SPIKE RESULTS

Date: 25-Feb-07

Lab Name: STL Richland

SDG: W05106

Lot-Sample No.: J7A310276-2

Report No.: 34546

Matrix: WATER

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 7031554	Work Order: JNNQF1AC			Report DB ID: JNNQF1CW		Orig Sa DB ID: 9JNNQF10							
HEXCHROME	2.76E-01			0.0E+00	2.00E-03	mg/L	N/A		0.00E+00		1/31/07	100.0	7196_CR6
	2.00E-03											ML	

Number of Results: 1

Comments:

STL Richland RER - Replicate Error Ratio =  $(S-D)/(\sqrt{sq(TPUs)+sq(TPUD)})$  as defined by ICPT BOA.  
 rptSTLRchMs V5.1 Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 A2002



Lot No., Due Date: J7A310276; 03/17/2007  
 Client, Site: 108302; FLH HANFORD  
 QC Batch No., Method Test: 7033194; RALPHATH Alpha by GPC-Th  
 SDG, Matrix: W05106; WATER

**1.0 ICOC**  
 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:  
 NCM 10-C9480

First Level Review Lisa Antonson Date 2/23/07



# STL

## Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 7033194  
W05106

Review Item	Yes (✓)	No (✓)	N/A (✓)
<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?			<i>OK 2-25-07</i> /
5. Is the LCS recovery with contract acceptance criteria?	/		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	/		
8. Do the MS/MSD results and yields meet acceptance criteria?	/		
9. Do the duplicate sample results and yields meet acceptance criteria?		/	
<b>C. Other</b>			
1. Are all Nonconformances 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 NCM

Second Level Review: Sherry A. Adams Date: 2-25-07

# Clouseau Nonconformance Memo



NCM #: <b>10-09480</b> NCM Initiated By: <b>Lisa Antonson</b> Date Opened: <b>02/23/2007</b> Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: <b>Environmental - Prep</b> Tests: <b>Alpha by GPC-Th</b> Lot #'s (Sample #'s): <b>J7A310276 (2), J7B020000 (194),</b> QC Batches: <b>7033194</b>
Nonconformance: <b>Dups not within acceptance limits</b> Subcategory: <b>Other (explanation required)</b>	

### Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Lisa Antonson	02/23/2007	In this Alpha batch the dups didn't agree on the original count. Samples were recounted and meet acceptance criteria. Data accepted.

### Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Lisa Antonson	02/23/2007	NA

### 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>
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Lot No., Due Date: **J7A310276; 03/17/2007**  
 Client, Site: **108302; FLH HANFORD**  
 QC Batch No., Method Test: **7033193; RBETA-SR Beta by GPC-Sr/Y**  
 SDG, Matrix: **W05106; WATER**

1.0 ICOC		
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	Yes <input checked="" type="checkbox"/>	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 <input checked="" type="checkbox"/>	No N/A
2.2 Are the QC appropriate for the analysis included in the batch?	Yes <input checked="" type="checkbox"/>	No N/A
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	Yes <input checked="" type="checkbox"/>	No N/A
2.4 Does the Worksheets include a Tracer Vial label for each sample?	Yes <input checked="" type="checkbox"/>	No N/A
3.0 QC Samples		
3.1 Is the blank results, yield, and MDA within contract limits?	Yes <input checked="" type="checkbox"/>	No N/A
3.2 Is the LCS result, yield, and MDA within contract limits?	Yes <input checked="" type="checkbox"/>	No N/A
3.3 Are the MS/MSD results, yields, and MDA within contract limits?	Yes <input checked="" type="checkbox"/>	No N/A
3.4 Are the duplicate result, yields, and MDAs within contract limits?	Yes <input checked="" type="checkbox"/>	No N/A
3.5 Are the sample yields and MDAs within contract limits?	Yes <input checked="" type="checkbox"/>	No N/A
4.0 Raw Data		
4.1 Were results calculated in the correct units?	Yes <input checked="" type="checkbox"/>	No N/A
4.2 Were analysis volumes entered correctly?	Yes <input checked="" type="checkbox"/>	No N/A
4.3 Were Yields entered correctly?	Yes <input checked="" type="checkbox"/>	No N/A
4.4 Were spectra reviewed/meet contractual requirements?	Yes <input checked="" type="checkbox"/>	No N/A
4.5 Were raw counts reviewed for anomalies?	Yes <input checked="" type="checkbox"/>	No N/A
5.0 Other		
5.1 Are all nonconformances included and noted?	Yes <input checked="" type="checkbox"/>	No N/A
5.2 Are all required forms filled out?	Yes <input checked="" type="checkbox"/>	No N/A
5.3 Was the correct methodology used?	Yes <input checked="" type="checkbox"/>	No N/A
5.4 Was transcription checked?	Yes <input checked="" type="checkbox"/>	No N/A
5.5 Were all calculations checked at a minimum frequency?	Yes <input checked="" type="checkbox"/>	No N/A
5.6 Are worksheet entries complete and correct?	Yes <input checked="" type="checkbox"/>	No N/A
6.0 Comments on any No response:		

First Level Review *Lisa Antonson*

Date 2/23/07



# STL

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

OC Batch Number:

7033193

W05106

Review Item	Yes (✓)	No (✓)	N/A (✓)
<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 with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Nonconformances 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:

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Second Level Review:

Sheryl A. Adams

Date:

2-23-07



STL

Richland Laboratory  
Data Review Check List  
Hexavalent Chromium

Work Order Number(s): JNN8C, JNNPV, JNNQF				
Lab Sample Numbers or SDG: <i>W05/a</i>				
Method/Test/Parameter: Cr+6 in Water / RICH-WC-5003				
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 $\leq$ 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 $\leq$ 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:

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Analyst: *Ann E. Wilson*

Date: *1/31/07*

Second-Level Review: *Sheryl A. Allen*

Date: *2-23-07*

STI, RICHLAND

Fluor Hanford Inc. <i>J7A310276</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F07-014-066	PAGE 1 OF 1	
COLLECTOR POPE/PFISTER/HUGHES/WISE <i>Due 03-17-07</i>		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ		
SAMPLING LOCATION 49-D		PROJECT DESIGNATION AQUIFER TUBE SAMPLING IN THE 100-HR-3 OU (100 H Segment)				SAF NO. F07-014		
ICE CHEST NO.		FIELD LOGBOOK NO. HNF-N-451-1		COA 122543E510		METHOD OF SHIPMENT GOVERNMENT VEHICLE		
SHIPPED TO Severn Trent Incorporated, Richland		OFFSITE PROPERTY NO. N/A				BILL OF LADING/AIR BILL NO. N/A		
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	PRESERVATION		Cool 4C				
		TYPE OF CONTAINER		gG				
		NO. OF CONTAINER(S)		1				
		VOLUME		500mL				
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B1LV15	WATER	1/31/07	1003	✓		JNIPV		
CHAIN OF POSSESSION		SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS		
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	FILTERED 20.45 um		
<i>R. Pfister/ham</i>		<i>1/31/07 1236</i>	<i>Eric Doherty</i>		<i>1/31/07 1240</i>			
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME			
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		

STL RICHLAND

Fluor Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F07-014-064	PAGE 1	OF 1	
COLLECTOR POPE/PFISTER/HUGHES/WISE		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 7N	DATA TURNAROUND	
SAMPLING LOCATION 48-M		PROJECT DESIGNATION AQUIFER TUBE SAMPLING IN THE 100-HR-3 OU (100 H Segment)			SAF NO. F07-014		AIR QUALITY <input type="checkbox"/>	45 Days / 45 Days	
ICE CHEST NO.		FIELD LOGBOOK NO. HNF-N 451-1		COA 122543E510	METHOD OF SHIPMENT GOVERNMENT VEHICLE				
SHIPPED TO Severn Trent Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A				
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid Q=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION		Cool 4C	HN03 to pH <2				
		TYPE OF CONTAINER		aG	P				
		NO. OF CONTAINER(S)		1	1				
		VOLUME		500mL	1000mL				
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196; X	Gross Alpha; Gross Beta;			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B1LR44	WATER	1/31/07	0846	✓	✓			JNNQF	
CHAIN OF POSSESSION		SIGN/ PRINT NAMES			SPECIAL INSTRUCTIONS				
RELINQUISHED BY/ REMOVED FROM	DATE/TIME	RECEIVED BY/ STORED IN	DATE/TIME	* filtered < 0.45µm					
KIPPISER/ [Signature]	1/31/07 1236	[Signature]	1/31/07 1236						
RELINQUISHED BY/ REMOVED FROM	DATE/TIME	RECEIVED BY/ STORED IN	DATE/TIME						
RELINQUISHED BY/ REMOVED FROM	DATE/TIME	RECEIVED BY/ STORED IN	DATE/TIME						
RELINQUISHED BY/ REMOVED FROM	DATE/TIME	RECEIVED BY/ STORED IN	DATE/TIME						
RELINQUISHED BY/ REMOVED FROM	DATE/TIME	RECEIVED BY/ STORED IN	DATE/TIME						
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				



STL

Sample Check-in List

Date/Time Received: 1/31/07 1236

Client: PAUL SDG #: W05106 NA ( ) SAF #: F07-014 NA ( )

Work Order Number: J7A310276 Chain of Custody # F07-014-064, 066

Shipping Container ID: \_\_\_\_\_ Air Bill # \_\_\_\_\_

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? Yes  No ( )
4. Cooler temperature: \_\_\_\_\_ NA ( ) 5. Vermiculite/packing materials is NA ( ) Wet ( ) Dry ( )
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? 2 X LP6 NA ( ) Yes ( ) No ( )  
1 X LP
8. Samples have:  
 \_\_\_\_\_ tape \_\_\_\_\_ hazard labels  
 \_\_\_\_\_ custody seals  appropriate samples labels
9. Samples are:  
 in good condition \_\_\_\_\_ leaking.  
 \_\_\_\_\_ broken \_\_\_\_\_ have air bubbles  
 (Only for samples requiring head space)
10. Sample pH taken? NA ( ) pH < 2  pH > 2  pH > 9 ( )
11. Sample Location, Sample Collector Listed? \* Yes  No ( )  
 \*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: Eric Dooly Date: 1/31/07 1236

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on \_\_\_\_\_ by \_\_\_\_\_ Person contacted \_\_\_\_\_

( ) No action necessary; process as is.

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

2/23/2007 10:21:58 AM

### Sample Preparation/Analysis

Balance Id: 1120482733

108302, Fluor Hanford Inc  
Management Federal Servi

, Waste

AZ Gross Alpha PrpRC5014  
TZ Gross Alpha by GPC using Th-230 curve  
01 STANDARD TEST SET

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

Analysis Due Date: 03/13/2007

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

Batch: 7033194 WATER pCi/L

PM, Quote: SA, 29754

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

SEQ Batch, Test: None

Prep Tech: ,BockJ



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 JNNQF-1-AD J7A310276-2-SAMP 01/31/2007 08:46	200.20g,ln									
AmtRec: 500G,LP			#Containers: 2		Scr:		Alpha: -4.99E-05 uCi/Sa		Beta: -3.55E-05 uCi/Sa	

2 JNNQF-1-AJ-X J7A310276-2-DUP 01/31/2007 08:46	202.60g,ln									
AmtRec: 500G,LP			#Containers: 2		Scr:		Alpha: -4.99E-05 uCi/Sa		Beta: -3.55E-05 uCi/Sa	

3 JNNQF-2-AD J7A310276-2-SAMP 01/31/2007 08:46	200.20g			1.5	40.5	50	11A	1147	2/23/07 R	
AmtRec: 500G,LP			#Containers: 2		Scr:		Alpha: -4.99E-05 uCi/Sa		Beta: -3.55E-05 uCi/Sa	

4 JNNQF-2-AJ-X J7A310276-2-DUP 01/31/2007 08:46	202.60g				38.1		11B			
AmtRec: 500G,LP			#Containers: 2		Scr:		Alpha: -4.99E-05 uCi/Sa		Beta: -3.55E-05 uCi/Sa	

5 JNTMW-1-AA-B J7B020000-194-BLK 01/31/2007 08:46	203.40g,ln									
AmtRec:			#Containers: 1		Scr:		Alpha:		Beta:	

6 JNTMW-1-AC-C J7B020000-194-LCS 01/31/2007 08:46	201.90g,ln		ASH0624 01/23/07, pd 05/31/05, r							
AmtRec:			#Containers: 1		Scr:		Alpha:		Beta:	

STL RICHLAND

2/13/2007 8:26:41 AM **Sample Preparation/Analysis** Balance Id:1120482733  
 108302, Fluor Hanford Inc , Waste AZ Gross Alpha PrpRC5014 Pipet #: 235  
 Management Federal Servi TZ Gross Alpha by GPC using Th-230 curve  
 AnalyDueDate: 03/13/2007 *W05016* 01 STANDARD TEST SET Sep1 DT/Tm Tech:  
 Batch: 7033194 WATER pCi/L PM, Quote: SA , 29754 Sep2 DT/Tm Tech:  
 SEQ Batch, Test: None Prep Tech: ,BockJ /APA



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:
1 JNNQF-1-AD J7A310276-2-SAMP	200.20g,in									
01/31/2007 08:48		AmtRec: 500G,LP	#Containers: 2							
2 JNNQF-1-AJ-X J7A310276-2-DUP	202.60g,in									
01/31/2007 08:46		AmtRec: 500G,LP	#Containers: 2							
3 JNTMW-1-AA-B J7B020000-194-BLK	203.40g,in									
01/31/2007 08:46		AmtRec:	#Containers: 1							
4 JNTMW-1-AC-C J7B020000-194-LCS	201.90g,in									
01/31/2007 08:46		AmtRec:	#Containers: 1							

*Handwritten notes:*  
 1.5 40.5 50 10A 1842 2/22/07 OR  
 36.1 10C  
 0.4 10B  
 1.2 10D

Comments: *PH L2.0 82-13-01*

All Clients for Batch:  
 108302, Fluor Hanford Inc Waste Management Federal Servi, SA , 29754

JNNQF1AD-SAMP Constituent List:

ALPHA	RDL:3	pCi/L	LCL:	UCL:	RPD:
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JNTMW1AA-BLK:

ALPHA	RDL:3	pCi/L	LCL:	UCL:	RPD:
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JNTMW1AC-LCS:

Am-241	RDL:	pCi/L	LCL:70	UCL:130	RPD:20
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JNNQF1AD-SAMP Calc Info:

30

STI RICHLAND

2/13/2007 8:26:46 AM

**Sample Preparation/Analysis**

Balance Id:1120482733

AZ Gross Alpha PrpRC5014  
 TZ Gross Alpha by GPC using Th-230 curve  
 01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 03/13/2007

Sep1 DT/Tm Tech:

Batch: 7033194

pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,BockJ



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prop Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: A					
JNTMW1AA-BLK:										
Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: A					
JNTMW1AC-LCS:										
Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: A					

Approved by \_\_\_\_\_ Date: \_\_\_\_\_

31

STL RICHLAND

2/13/2007 8:23:44 AM **Sample Preparation/Analysis** Balance Id:1120482733  
 108302, Fluor Hanford Inc , Waste BC Gross Beta PrpRC5014 Pipet #: 235  
 Management Federal Servi S8 Gross Beta by GPC using Sr/Y-90 curve  
**AnalyDueDate: 03/13/2007** W05016 51 CLIENT: HANFORD Sep1 DT/Tm Tech:  
**Batch: 7033193** **WATER** **pCi/L** PM, Quote: SA , 29754 Sep2 DT/Tm Tech:  
 SEQ Batch, Test: None Prep Tech: BockJ /APA

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Allquot 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:
1 JNNQF-1-AA J7A310276-2-SAMP 01/31/2007 08:46	203.50g,in									
										
AmtRec: 500G,LP #Containers: 2 Scr: Alpha: -4.99E-05 uCVSa Beta: -3.55E-05 uCVSa										
2 JNNQF-1-AH-X J7A310276-2-DUP 01/31/2007 08:46	202.30g,in									
										
AmtRec: 500G,LP #Containers: 2 Scr: Alpha: -4.99E-05 uCVSa Beta: -3.55E-05 uCVSa										
3 JNTMT-1-AA-B J7B020000-193-BLK 01/31/2007 08:46	199.90g,in									
										
AmtRec: #Containers: 1 Scr: Alpha: Beta:										
4 JNTMT-1-AC-C J7B020000-193-LCS 01/31/2007 08:46	200.40g,in		BESB3001 01/23/07,pd 08/08/08,r							
										
AmtRec: #Containers: 1 Scr: Alpha: Beta:										

**Comments:** PH L2-0 JB 2-13-07

All Clients for Batch:  
 108302, Fluor Hanford Inc Waste Management Federal Servi, SA , 29754

JNNQF1AA-SAMP Constituent List:

BETA	RDL:4	pCi/L	LCL:	UCL:	RPD:
JNTMT1AA-BLK:					
BETA	RDL:4	pCi/L	LCL:	UCL:	RPD:
JNTMT1AC-LCS:					
Sr-90	RDL:	pCi/L	LCL:70	UCL:130	RPD:20

JNNQF1AA-SAMP Calc Info:

32

STL RICHLAND

2/13/2007 8:23:50 AM

### Sample Preparation/Analysis

Balance Id:1120482733

BC Gross Beta PrpRC5014  
S8 Gross Beta by GPC using Sr/Y-90 curve  
51 CLIENT: HANFORD

Pipet #:

AnalyDueDate: 03/13/2007

Sep1 DT/Tm Tech:

Batch: 7033193

pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,BockJ



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:
UNIMT1AA-BLK:	Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
UNIMT1AC-LCS:	Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
	Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					

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

STL RICHLAND

1/31/2007 4:00:54 PM  
 108302, Fluor Hanford Inc, Waste  
 Management Federal Servt  
**Sample Preparation/Analysis**  
 88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION  
 EA Chromium, Hexavalent (7196A)  
 01 STANDARD TEST SET  
 Balance Id: \_\_\_\_\_  
 Pipet #: \_\_\_\_\_  
 Sep1 DT/Tm Tech: \_\_\_\_\_  
 Sep2 DT/Tm Tech: \_\_\_\_\_  
 Prep Tech: \_\_\_\_\_  
 AnalyDueDate: 03/13/2007  
 Batch: 7031554 WATER ug/L PM, Quote: SA, 29754  
 SEQ Batch, Test: None All Tests: 7031554 88EA,

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, Inlt/Date	Comments:
1 JNNPV-1-AA J7A310276-1-SAMP 								
01/31/2007 10:03		AmtRec: 500MLP				Scr:	Alpha:	Beta:
2 JNNQF-1-AC J7A310276-2-SAMP 								
01/31/2007 08:46		AmtRec: 500G,LP				Scr:	Alpha:	Beta:
3 JNNQF-1-AE-S J7A310276-2-MS 								
01/31/2007 08:46		AmtRec: 500G,LP				Scr:	Alpha:	Beta:
4 JNNQF-1-AF-D J7A310276-2-MSD 								
01/31/2007 08:46		AmtRec: 500G,LP				Scr:	Alpha:	Beta:
5 JNNQF-1-AG-X J7A310276-2-DUP 								
01/31/2007 08:46		AmtRec: 500G,LP				Scr:	Alpha:	Beta:
6 JNN8C-1-AA-B J7A310000-554-BLK 								
01/31/2007 08:46		AmtRec:				Scr:	Alpha:	Beta:
7 JNN8C-1-AC-C J7A310000-554-LCS 								
01/31/2007 08:46		AmtRec:				Scr:	Alpha:	Beta:

4

STL RICHLAND

1/31/2007 4:01:03 PM

**Sample Preparation/Analysis**

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

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

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

EA Chromium, Hexavalent (7196A)

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

AnalyDueDate: 03/13/2007

01 STANDARD TEST SET

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

Batch: 7031554

ug/L

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

SEQ Batch, Test: None



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

All Clients for Batch:

108302, Fluor Hanford Inc

Waste Management Federal Servi, SA, 29754

JNNPV1AA-SAMP Constituent List:

HEXCHROME RDL: ug/L LCL:85 UCL:115 RPD:20

JNNQF1AE-MS: HEXCHROME RDL:10 ug/L LCL:85 UCL:115 RPD:20

JNNQF1AF-MSD: HEXCHROME RDL:10 ug/L LCL:85 UCL:115 RPD:20

JNN8C1AA-BLK: HEXCHROME RDL: ug/L LCL: UCL: RPD:

JNN8C1AC-LCS: HEXCHROME RDL:10 ug/L LCL:85 UCL:115 RPD:20

JNNPV1AA-SAMP Calc Info:

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

JNNQF1AE-MS: Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JNNQF1AF-MSD: Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JNN8C1AA-BLK: Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JNN8C1AC-LCS: Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

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

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

2/23/2007 2:08:15 PM

# ICOC Fraction Transfer/Status Report

ByDate: 2/23/2006, 2/28/2007, Batch: '7033194', User: 'ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
7033194				
AC	CalcC	BockJ	2/13/2007 8:24:08	
SC		andersonp	isBatched	2/2/2007 9:40:24 AM
SC		BockJ	InPrep	2/13/2007 8:24:08 AM
SC		BockJ	Prep1C	2/13/2007 8:26:47 AM
SC		AshworthA	InPrep2	2/22/2007 9:03:55 AM
SC		AshworthA	Prep2C	2/22/2007 5:22:10 PM
SC		DAWKINSO	InCnt1	2/22/2007 5:52:28 PM
SC		DAWKINSO	CalcC	2/22/2007 8:21:16 PM
SC		BlackCL	InCnt1	2/23/2007 10:41:58 AM
SC		StringerR	CalcC	2/23/2007 12:03:47 PM
AC		BockJ	2/13/2007 8:26:47	ICOC_RADCALC v4.8.26
AC		AshworthA	2/22/2007 9:03:55	RICH-RC-5014 Revision 6
AC		AshworthA	2/22/2007 5:22:10 PM	RICH-RC-5014 REVISION 6
AC		DAWKINSO	2/22/2007 5:52:28 PM	RICH-RC-5014 REVISION 6
AC		DAWKINSO	2/22/2007 8:21:16 PM	RICH-RD-0003 REVISION 4
AC		BlackCL	2/23/2007 10:41:58	RICH-RD-0003 REVISION 4
AC		StringerR	2/23/2007 12:03:47	RICH-RD-0003 REVISION 4

AC: Accepting Entry, SC: Status Change

STL Richland  
Richland Wa.

2/23/2007 9:48:46 AM

# ICOC Fraction Transfer/Status Report

ByDate: 2/23/2006, 2/28/2007, Batch: 7033193, User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
7033193				
AC	CalcC	BockJ	2/13/2007 8:21:00	
SC		andersonp	IsBatched 2/2/2007 9:40:24 AM	ICOC_RADCALC v4.8.26
SC		BockJ	InPrep 2/13/2007 8:21:00 AM	RICH-RC-5014 Revision 6
SC		BockJ	Prep1C 2/13/2007 8:23:52 AM	RICH-RC-5014 REVISION 6
SC		AshworthA	InPrep2 2/22/2007 9:03:49 AM	RICH-RC-5014 REVISION 6
SC		AshworthA	Prep2C 2/22/2007 5:22:30 PM	RICH-RC-5014 REVISION 6
SC		DAWKINSO	InCnt1 2/22/2007 5:52:50 PM	RICH-RD-0003 REVISION 4
SC		DAWKINSO	CalcC 2/22/2007 8:21:22 PM	RICH-RD-0003 REVISION 4
AC		BockJ	2/13/2007 8:23:52	
AC		AshworthA	2/22/2007 9:03:49	
AC		AshworthA	2/22/2007 5:22:30 PM	
AC		DAWKINSO	2/22/2007 5:52:50 PM	
AC		DAWKINSO	2/22/2007 8:21:22 PM	

AC: Accepting Entry; SC: Status Change

STL Richland  
Richland Wa.