

Quanterra  
2800 George Washington Way  
Richland, Washington 99352-1613

**0053537**

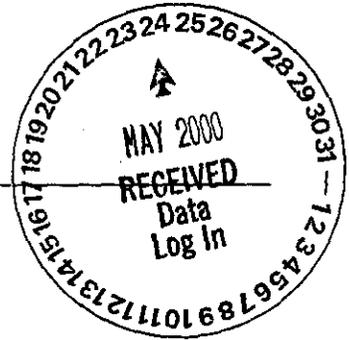
509 375-3131 Telephone  
509 375-5590 Fax

**CERTIFICATE OF ANALYSIS**

Bechtel Hanford, Inc.  
3350 George Washington Way  
Richland, WA 99352

May 22, 2000

Attention: Joan Kessner



SAF Number	:	B00-027
Date SDG Closed	:	May 4, 2000
Number of Samples	:	Five (5)
Sample Type	:	Other
SDG Number	:	W03168
Data Deliverable	:	21 Day / Summary

**I. Introduction**

On May 4, 2000, five other (matrix: solid) samples were received at STL Richland (STLR) for chemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

<u>STLR ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9DCQLC10	B0Y2T7	WATER	5/4/00
9DCQLP10	B0Y2T8	WATER	5/4/00
9DCQLT10	B0Y2T9	WATER	5/4/00
9DCQLW10	B0Y2V0	WATER	5/4/00
9DCQM210	B0Y2V1	WATER	5/4/00

**II. 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.

The requested analysis was:

**Chemical Analyses**  
Chromium Hex by EPA method 7196



**EDMC**

### III. Quality Control

The analytical results for each analysis performed under SDG W03168 include 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.

Quality control sample results are reported in mg/L.

### IV. Comments

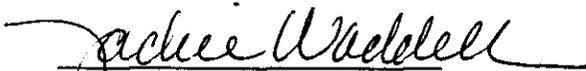
#### **Chemical Analyses**

#### **Chromium Hex by EPA method 7196:**

Samples B0Y2T7, B0Y2T8, B0Y2T9 and B0Y2V0 were analyzed at a dilution due to elevated chromium. The LCS, batch blank, sample, sample duplicate (B0Y2T7) and sample matrix spike/matrix spike duplicate (B0Y2T7) 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:



Jackie Waddell  
Project Manager























Richland Laboratory  
Data Review Check List  
METALS

LOT: JOE040206

Work Order Number(s): DCQLC, DCQLD, DCQLT, DCQLW, DCOM2 Batch: 0126129

Lab Sample Numbers or SDG: W03168

Method/Test/Parameter: CR+6 IN OTHER RICHWC5005 R.4

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:

C1 - Due to the high level of CR+6, samples DCQLC, DCQLP, DCQLT were run at a x20 dilution and DCQLW was run at a x10 dilution. The PbCrO<sub>4</sub> spike was seen at x50 dilution.

Analyst: Rorie Ross

Date: 5/19/00

Second-Level Review: Jackie Waddell

Date: 5/22/00

# CHAIN OF CUSTODY

Q-27038

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				<b>B00-027-07</b>		Page 1 of 2	
Collector Fahlberg		Company Contact J Adler		Telephone No. 373-4316		Project Coordinator TRENT, SJ		Price Code <b>9L</b>	
Project Designation 105F & 105DR ISS Project - Other Solid		Sampling Location 105F		SAF No. B00-027		Air Quality <input type="checkbox"/>		Data Turnaround <b>21 Days</b>	
Ice Chest No. <b>ERC-99-018</b>		Field Logbook No. EL 1381-3		COA R105F2280C		Method of Shipment Hand Delivered			
Shipped To Quanterra Incorporated		Offsite Property No.				Bill of Lading/Air Bill No.			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Coat 4C										
	Type of Container	aG	aG										
	No. of Container(s)	1	1										
	Special Handling and/or Storage	Volume	20mL	60mL									
SDG W03168		SAMPLE ANALYSIS Dhw 5-25 JOE040206		Activity Scan	7196_CR6: Hexavalent Chromium (1)								

Sample No.	Matrix *	Sample Date	Sample Time										
B0Y2T7	DCQLC	5-4-00	0900	X	X								
B0Y2T8	DCQLP	5-4-00	0920	X	X								
B0Y2T9	DCQLT	5-4-00	0928	X	X								
B0Y2V0	DCQLW	5-4-00	0938	X	X								
B0Y2V1	DCQM2	5-4-00	0945	X	X								

<b>CHAIN OF POSSESSION</b>				<b>Sign/Print Names</b>				<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b>	
Relinquished By	Date/Time	Received By	Date/Time										
<i>R. Fahlberg</i>	1200	<i>R. Fahlberg</i>	5-4-00	<i>DPW</i>	5-4-01								
Relinquished By	Date/Time	Received By	Date/Time										
Relinquished By	Date/Time	Received By	Date/Time										
Relinquished By	Date/Time	Received By	Date/Time										
Relinquished By	Date/Time	Received By	Date/Time										
Relinquished By	Date/Time	Received By	Date/Time										

<b>LABORATORY SECTION</b>	Received By	Title	Date/Time
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method	Disposed By	Date/Time

0018

# ERC Radiological Counting Facility Analysis Report

RCF Number RCF6939

17

cc: Bil Jenks

Sample Date & Time 12/29/99

0952

Project ID: 105-F

SAF Number: B00-013

Date Analyzed 12/30/99 9:08:

Sample ID: B0XBFG

### Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	< 1.7E+02		1.7E+02
Co-60	< 1.8E+01		1.8E+01
Cs-137	< 1.8E+01		1.8E+01
Eu-152	< 4.7E+01		4.7E+01
Eu-154	< 4.8E+01		4.8E+01
Eu-155	< 8.0E+01		8.0E+01
Th-232D	< 4.7E+01		4.7E+01
U-235	< 1.6E+02		1.6E+02
U-238	< 3.3E+03		3.3E+03
U-238D	9.4E+01	+/- 4.3E+01	4.9E+01
Am-241	< 4.7E+01		4.7E+01

*Results for sample 001 → ~~002~~ 007*  
*FOA08175*

*B0X 60  
61  
62  
B0X 65  
B0X 66  
63  
64*

Total GEA (pCi/g)	9.8E+01	+/-	4.3E+01
Gross Alpha**	7.6E-01	+/-	6.0E-01
Gross Beta	1.0E+01	+/-	1.2E+00

Alpha MDC (pCi/g)	4.3E-01
Beta MDC (pCi/g)	5.6E+00

### Definitions:

All errors reported at 2 standard deviations.  
 N/A = no result or analysis not requested. <MDC = Less than detection limit.  
 All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.  
 Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

### For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Po-214m.  
 The analysis of Np-237 is based on the activity of Po-233.  
 U-238dpm is the activity of Po-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.  
 Th-232dpm is the activity of Ac-228, Po-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.  
 Other samples, not containing natural materials, may have insignificant results for the Th, U, transuramics and daughter products. The results must then be balanced for the gross alpha analysis.  
 \*\*The gross alpha results are not corrected for mass absorption  
 # No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst



T. J. Smith

12/30/99

Report To  
D. St John

Fax  
372-9487

Report Printed: Thursday, December 30, 1999

000036

0019



25/4/00

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B	
BII	B0Y3V9DCPE3		5/4/2000 1:19:00 PM	QUAD22C	5/8/2000 4:39:26 PM	B0Y3V9DCPE3	30	3	0.005	60	0.94833333	
	DCPE3	LIQUID		Bkg:	5/5/2000 2:44:27 AM	BKG	600	57	0.095	631	1.05166667	
Anl Date:	5/9/00	Tot Sa, Alq:	5.00E-01	1.00E+01	Alp:	(Dpm/ -1.93E-02	(uCi/ -4.36E-07	(pCi/ -8.71E-01	+ 2.1E+01	CAT	5.0E-01	Lab
Ppt mg:	3.7	Units:	L	ml	Bet:	Alq: 1.78E+00	Sa: 4.01E-05	I.g: 8.01E+01	+ 2.2E+01	1	6.2E-01	Alq
												I.g

0021

RQC050

Severn Trent Laboratories, Inc.  
WET CHEM BATCHSHEET

Run Date: 5/05/00  
Time: 7:09:17

PRODUCTION FIGURES - WET CHEM

TOTAL NUMBER	SAMPLE NUMBER	QC	RE-RUN MATRIX	RE-RUN OTHER	MISC NUMBER	TOTAL HOURS	EXPANDED DELIVERABLE
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METHOD:	EA Chromium, Hexavalent (7196A)						
QC BATCH #:	0126129		INITIALS:			DATA ENTRY:	
PREP DATE:	5/05/00		PREP			INITIALS	
USER:	ROSSR		ANAL			DATE	

Work Order	Lab Number	Structured Analysis	Exp. Del.	Analysis Date	Sample ID:
DCQLC-1-01	J-0E040206-001	XX A DW EA 5I			B0Y2T7
DCQLC-1-03	J-0E040206-001-S	XX A DW EA 5I			B0Y2T7
DCQLC-1-05	J-0E040206-001-S	XX A DW EA 5I			B0Y2T7
DCQLC-1-06	J-0E040206-001-S	XX A DW EA 5I			B0Y2T7
DCQLC-1-04	J-0E040206-001-X	XX A DW EA 5I			B0Y2T7 DUP
DCQLP-1-01	J-0E040206-002	XX A DW EA 5I			B0Y2T8
DCQLT-1-01	J-0E040206-003	XX A DW EA 5I			B0Y2T9
DCQLW-1-01	J-0E040206-004	XX A DW EA 5I			B0Y2V0
DCQM2-1-01	J-0E040206-005	XX A DW EA 5I			B0Y2V1
DCRCM-1-01	J-0E050000-129-B	XX A DW EA 5I			INTRA-LAB BLANK
DCRCM-1-02	J-0E050000-129-C	XX A DW EA 5I			INTRA-LAB CHECK

Control Limits

- (75-125)
- (75-125)
- (75-125)
- (80-120)

0022



**COC Signature Page**

Lot or Batch #: 0126129	Initials/Date	Procedure #
Released By	AS 5/5/00	RC00007
Received	(R) 5/5/00	RICHWC5005 R.4
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		