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START
0045361

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

160
2

February 16, 1995

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Mr. O. A. Farabee, Acting Director
Transition Program Division
U.S. Department of Energy
Richland Operations Office
Richland, Washington 99352

Dear Mr. Farabee:

TRANSMITTAL OF PLUTONIUM-URANIUM EXTRACTION PLANT G AND R CELL, PART II, LOOP FLUSH ANALYTICAL RESULTS

Attachment 1 is the laboratory analytical and sample results conducted on the final flush for the Plutonium-Uranium Extraciton (PUREX) G and R Cell, Part II, canyon vessels. These results are transmitted in accordance with U.S. Department of Energy, Richland Operations Office/Westinghouse Hanford Company agreement with State of Washington Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA).

Analytical results from future flushes will be transmitted as they are obtained.

A copy of the Predetermination Report, designating the final flush solution based on the analytical results is also included in Attachment 1. The final flush for this cell was designated as non-dangerous waste.

Attachment 2 is a letter for your transmittal to Ecology and the EPA to transmit these results.

9615479.1624

If you have any questions, please contact Mr. G. J. LeBaron (373-1792) of my staff.

Very truly yours,

D. G. Hamrick, Director
PUREX/UO_3 Transition Project
Transition Projects Division

jft

Attachments 2

DOE-HQ - (w/o attachment)
B. K. Nelson
R. Martinez
D. Schmidt

RL - J. E. Mecca
L. D. Romine (w/o attachment)
E. J. Senat
A. H. Wirkkala (w/o attachment)

9613479.0525

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Attachment 1

PUREX G and R Cell, Part II Canyon Loop Flush
Laboratory Analyses and Sample Results

Consisting of 21
including cover page

SAMPLE REPORT DESCRIPTION

PUREX CANYON VESSELS - G AND R CELL PART II LOOP

FLUSH ANALYTICAL RESULTS

SAMPLE NUMBER	SAMPLE REPORT DESCRIPTION
P2847	Screening sample on final flush from PUREX Laboratory. Used to determine if flush solution meets RCRA criteria.
E9288	Screening sample on final flush from 222-S Laboratory tested for total activity. Sample results used to determine if the off-site laboratory criteria for acceptance is met.
R6712 STD	Standard sample results indicating the percent recovery of the analyzed constituents. A tracer was injected to test the instrumentation precision in detecting concentration levels.
R6713 Blank	Blank sample
R6714 (BODG79)	RCRA protocol sample results from 222-S Laboratory
R6715 STD	Standard sample
VOA Data Sheet	Volatile organics analysis results

9613479.0527

WESTINGHOUSE HANFORD COMPANY
GENERATOR & WASTE ACCEPTANCE SERVICES

PREDETERMINATION REPORT

REQUEST #: 25655 **DATE:** February 7, 1995

PRODUCT	PREDETERMINATION OF PUREX G and R CELL VESSEL-PART II FLUSH SOLUTION

TO	Carmen Villalobos	COMPANY	WHC		
PHONE	373-4753	ADDRESS	200E Area		
FACILITY	PUREX	MSIN	S6-19		
ANALYST	K. W. Chang K.W. Chang	MSIN	T3-05	PHONE	372-0679
REVIEWER	Clay V. Hardy	MSIN	T3-05	PHONE	372-0508
cc	File				

According to current state and Federal laws (WAC 173-303 and 40 CFR 261) and based on the lab data attached to the request, it is determined that PUREX G and R CELL VESSEL-PART II FLUSH SOLUTION is not considered as a Washington dangerous or extremely hazardous waste. For questions or comments, please contact the Generator & Waste Acceptance Services analyst above and reference the request #. Thank you.

DISCLAIMER

This predetermination is believed accurate based on the information provided. Predeterminations are performed to assist generators in selecting less hazardous products. Since solid waste regulations are subject to constant revision, waste status may change without notice. *Waste designations must be performed on all wastes* by Generator & Waste Acceptance Services to assure proper disposal in the event products are spilled or contained within a waste matrix.

9615479.0020

SAMPLE STATUS REPORT FOR P 2847. G-8 TIME: 12/28/94 9:41
DISPATCHED: 12/ 7/94 10: 1 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 12/ 7/94 14:39

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
1004	APPR/OTR	20mrad/hr:30%SOLIDS:DARK BROWN:OPAQUE			KP32B
1383	Cr	6.42000E-01 uG/ML	N	Y	KP32B
1482	Cd	< 3.60000E-03 uG/ML	N	Y	KP32B
3203	pH	1.07600E 01 NONE	N	Y	KP32B
4411	U	8.10999E-02 G/L	N	Y	KP32B
6016	Cd-STD	COMPLETED			KP32B
6022	Cr-STD	COMPLETED			KP32B
6170	PH-STD	COMPLETED			KP32B
6524	U-STD	COMPLETED			KP32B

END OF REPORT

9613979149

SAMPLE STATUS REPORT FOR E 9288. E-BLANK BODG80 TIME: 12/15/94 10:30
DISPATCHED: 12/ 8/94 8:56 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 12/12/94 14:42

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
1213	TB-FLTRT	6.28000E 03 uCi/L	N	Y	KP39B
1223	AT-FLTRT	1.75000E 01 uCi/L	N	Y	KP39B
2162	GEA-LIQ	1.48E+2 UCI/L RURH-106 25%ERROR			KP39B
2162	GEA-LIQ	5.64000E 01 uCi/L Sb-125	N	Y	KP39B
2162	GEA-LIQ	6.76000E 01 uCi/L Cs-137	N	Y	KP39B
2162	GEA-LIQ	1.23E+2 UCI/L CE-144			KP39B
2162	GEA-LIQ	1.35E+1 UCI/L CU-154 29%ERROR			KP39B
2162	GEA-LIQ	4.22E+1 UCI/L EU-155 23%ERROR			KP39B

END OF REPORT

9613478 0530

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-365-131	DATE START: 1/25/95	BATCH #5352
PREPARED BY: R.A. Esch	DATE COMPLETE: 1/27/95	

	UNITS:		ug/mL	ug/mL	ug/mL			ug/mL	
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD/44N11E	R6712	Se	0.0942				94.2		
UNDIGESTED									
STD/48N11B	R6712	Se	0.0952				95.2		
DIGESTED									
REAGENT BLK	R6713	Se	< 0.003					0.003	
PREP BLK	R6713	Se	< 0.250					0.250	
PUREX	R6714	Se	< 0.250	< 0.250	N/A	N/A	84.6	0.250	
BODG79									
STD/44N11E	R6715	Se	0.092				92.0		
UNDIGESTED									

NARRATIVE: [ ] NO SPECIAL PROBLEMS/METHOD VARIATIONS IN THIS BATCH
LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

This sample batch was rerun at the request of the customer. The first analysis run of this batch showed some "memory effects" and baseline drift due to an unknown matrix interference. This "memory effect" is the most probable cause of the greater than detection limit results for the prep blank, sample and duplicate sample on the first analysis run. The actual measured peak heights for these samples were approximately the same as the low (detection level) standard.

The sample cell on the instrument was replaced after the first analysis due to the possible problems that might occur with "memory effects" on subsequent batches. The results for the rerun were much better. Little to no "memory effect" or baseline drifting was observed. The results for the prep blank, sample and duplicate sample are all less than the detection limit of 0.250 ug/mL.

1-27-95

SAMPLE STATUS REPORT FOR R 6712. PUREX STD TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15: 7 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 12/12/94 14:10

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
5513	pH	1.01000E 02 NONE	N	Y	KP39B
		5126			
5526	TOC	OUT FOR RERUN			KP39B
		5127			
5526	TOC	9.93000E 01 % RECOVERY	N	Y	KP39B
		5207			
5550	ICP	9.80400E 01 % RECOVERY Zr	N	Y	KP39B
		5128			
5550	ICP	9.67400E 01 % RECOVERY Sr	N	Y	KP39B
		5128			
5550	ICP	9.84200E 01 % RECOVERY Bi	N	Y	KP39B
		5128			
5550	ICP	9.68600E 01 % RECOVERY Si	N	Y	KP39B
		5128			
5550	ICP	9.79400E 01 % RECOVERY Al	N	Y	KP39B
		5128			
5550	ICP	1.02240E 02 % RECOVERY Co	N	Y	KP39B
		5128			
5550	ICP	1.00720E 02 % RECOVERY Cu	N	Y	KP39B
		5128			
5550	ICP	9.90200E 01 % RECOVERY Li	N	Y	KP39B
		5128			
5550	ICP	1.03380E 02 % RECOVERY Zn	N	Y	KP39B
		5128			
5550	ICP	1.00140E 02 % RECOVERY Ni	N	Y	KP39B
		5128			
5550	ICP	9.74800E 01 % RECOVERY La	N	Y	KP39B
		5128			
5550	ICP	9.97400E 01 % RECOVERY Fe	N	Y	KP39B
		5128			
5550	ICP	9.97600E 01 % RECOVERY Ca	N	Y	KP39B
		5128			
5550	ICP	1.00380E 02 % RECOVERY Cr	N	Y	KP39B
		5128			
5550	ICP	9.80000E 01 % RECOVERY Nd	N	Y	KP39B
		5128			
5550	ICP	9.42000E 01 % RECOVERY U	N	Y	KP39B
		5128			
5550	ICP	9.69800E 01 % RECOVERY Ce	N	Y	KP39B
		5128			
5550	ICP	9.70200E 01 % RECOVERY Sm	N	Y	KP39B
		5128			
5550	ICP	9.68400E 01 % RECOVERY Ba	N	Y	KP39B
		5128			
5550	ICP	1.01100E 02 % RECOVERY P	N	Y	KP39B
		5128			
5550	ICP	1.01060E 02 % RECOVERY S	N	Y	KP39B
		5128			
5550	ICP	9.97800E 01 % RECOVERY Mg	N	Y	KP39B
		5128			
5550	ICP	9.83400E 01 % RECOVERY As	N	Y	KP39B
		5128			

REPORT CONTINUED ON NEXT PAGE

SAMPLE STATUS REPORT FOR R 6712. PUREX STD TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15: 7 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
5550	ICP	9.77000E 01 % RECOVERY Na 5128	N	Y	KP39B
5550	ICP	1.01500E 02 % RECOVERY Mo 5128	N	Y	KP39B
5550	ICP	1.09260E 02 % RECOVERY Se 5128	N	Y	KP39B
5550	ICP	9.82000E 01 % RECOVERY Ag 5128	N	Y	KP39B
5550	ICP	1.00200E 02 % RECOVERY Pb 5128	N	Y	KP39B
5550	ICP	9.65200E 01 % RECOVERY Ti 5128	N	Y	KP39B
5550	ICP	1.00460E 02 % RECOVERY Cd 5128	N	Y	KP39B
5550	ICP	9.97600E 01 % RECOVERY B 5128	N	Y	KP39B
5550	ICP	9.81400E 01 % RECOVERY K 5128	N	Y	KP39B
5550	ICP	9.95000E 01 % RECOVERY Mn 5128	N	Y	KP39B
5550	ICP	9.48800E 01 % RECOVERY Sb 5128	N	Y	KP39B
5550	ICP	9.95200E 01 % RECOVERY V 5128	N	Y	KP39B
5550	ICP	1.02140E 02 % RECOVERY Ba 5128	N	Y	KP39B
5550	ICP	9.57200E 01 % RECOVERY Tl 5128	N	Y	KP39B
5595	As	OUT FOR RERUN 5129			KP39B
5595	As	1.03000E 02 % RECOVERY 5212	N	Y	KP39B
5596	Se	OUT FOR RERUN 5213			KP39B
5596	Se	9.42000E 01 % RECOVERY 5352	N	Y	KP39B
5597	Hg	OUT FOR RERUN 5131			KP39B
5597	Hg	1.02000E 02 % RECOVERY 5242	N	Y	KP39B
8505	ACD DGST	47N11A DF=40, 48N11A DF=50, TOT VOL 100mL 5211			KP39B
8595	As	9.53000E 01 % RECOVERY 5212	N	Y	KP39B
8596	Se	OUT FOR RERUN 5213			KP39B
8596	Se	9.52000E 01 % RECOVERY 5352	N	Y	KP39B
8597	Hg	9.34000E 01 % RECOVERY 5242	N	Y	KP39B

END OF REPORT

SAMPLE STATUS REPORT FOR R 6713. PUREX BLANK TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15: 8 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 12/12/94 14:10

EXT.	DETER.	RESULTS OR STATUS		OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********		***	***	******
5626	TOC	OUT FOR RERUN				KP39B
		5127				
5626	TOC	< 5.00000E 00 uG C/ML		N	Y	KP39B
		5207				
5650	ICP	< 1.00000E-02 uG/ML	Zr	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-02 uG/ML	Sr	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-01 uG/ML	Bi	N	Y	KP39B
		5128				
5650	ICP	< 5.00000E-02 uG/ML	Si	N	Y	KP39B
		5128				
5650	ICP	< 5.00000E-02 uG/ML	Al	N	Y	KP39B
		5128				
5650	ICP	< 2.00000E-02 uG/ML	Co	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-02 uG/ML	Cu	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-02 uG/ML	Li	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-02 uG/ML	Zn	N	Y	KP39B
		51^8				
5650	ICP	< 2.00000E-02 uG/ML	Ni	N	Y	KP39B
		5128				
5650	ICP	< 5.00000E-02 uG/ML	La	N	Y	KP39B
		5128				
5650	ICP	< 5.00000E-02 uG/ML	Fe	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-01 uG/ML	Ca	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-02 uG/ML	Cr	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-01 uG/ML	Nd	N	Y	KP39B
		5128				
5650	ICP	< 4.00000E-01 uG/ML	U	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-01 uG/ML	Ce	N	Y	KP39B
		5128				
5650	ICP	< 2.00000E-01 uG/ML	Sm	N	Y	KP39B
		5128				
5650	ICP	< 5.00000E-02 uG/ML	Ba	N	Y	KP39B
		5128				
5650	ICP	< 2.00000E-01 uG/ML	P	N	Y	KP39B
		5128				
5650	ICP	< 5.00000E-02 uG/ML	S	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-01 uG/ML	Mg	N	Y	KP39B
		5128				
5650	ICP	< 5.00000E-02 uG/ML	As	N	Y	KP39B
		5128				
5650	ICP	< 1.00000E-01 uG/ML	Na	N	Y	KP39B
		5128				

REPORT CONTINUED ON NEXT PAGE

SAMPLE STATUS REPORT FOR R 6713. PUREX BLANK TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15: 8 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS		OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********		***	***	******
5650	ICP	< 5.00000E-02 uG/ML 5128	Mo	N	Y	KP39B
5650	ICP	< 1.00000E-01 uG/ML 5128	Se	N	Y	KP39B
5650	ICP	< 1.00000E-02 uG/ML 5128	Ag	N	Y	KP39B
5650	ICP	< 1.00000E-01 uG/ML 5128	Pb	N	Y	KP39B
5650	ICP	< 1.00000E-02 uG/ML 5128	Ti	N	Y	KP39B
5650	ICP	< 1.00000E-02 uG/ML 5128	Cd	N	Y	KP39B
5650	ICP	< 5.00000E-02 uG/ML 5128	B	N	Y	KP39B
5650	ICP	< 3.00000E-01 uG/ML 5128	K	N	Y	KP39B
5650	ICP	< 1.00000E-02 uG/ML 5128	Mn	N	Y	KP39B
5650	ICP	< 2.00000E-01 uG/ML 5128	Sb	N	Y	KP39B
5650	ICP	< 5.00000E-02 uG/ML 5128	V	N	Y	KP39B
5650	ICP	< 5.00000E-03 uG/ML 5128	Be	N	Y	KP39B
5650	ICP	< 2.00000E-01 uG/ML 5128	Tl	N	Y	KP39B
5695	As	OUT FOR RERUN 5129				KP39B
5695	As	< 3.00000E-03 uG/ML 5212		N	Y	KP39B
5696	Se	OUT FOR RERUN 5213				KP39B
5696	Se	< 3.00000E-03 uG/ML 5352		N	Y	KP39B
5697	Hg	OUT FOR RERUN 5131				KP39B
5697	Hg	< 5.00000E-03 uG/ML 5242		N	Y	KP39B
8605	ACD DGST	COMPLETE TOTAL VOLUME 100mL 5211				KP39B
8695	As	< 2.50000E-01 uG/ML 5212		N	Y	KP39B
8696	Se	OUT FOR RERUN 5213				KP39B
8696	Se	< 2.50000E-01 uG/ML 5352		N	Y	KP39B
8697	Hg	< 2.50000E-01 uG/ML 5242		N	Y	KP39B

END OF REPORT

SAMPLE STATUS REPORT FOR R 6714. PUREX BODG79 TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15:12 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 12/12/94 14:10

EXT.	DETER.	RESULTS OR STATUS			OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********			***	***	******
4502	VOA	COMPLETE					KP39B
		5125					
5713	pH	1.06700E 01	NONE		N	Y	KP39B
		5126					
5726	TOC	OUT FOR RERUN					KP39B
		5127					
5726	TOC	2.10000E 03	uG C/ML		N	Y	KP39B
		5207					
5750	ICP-LIQ	< 1.10000E-01	uG/ML	Zr	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 1.10000E-01	uG/ML	Sr	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 1.10000E 00	uG/ML	Bi	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	2.28000E 00	uG/ML	Si	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 5.50000E-01	uG/ML	Al	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 2.20000E-01	uG/ML	Co	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 1.10000E-01	uG/ML	Cu	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 1.10000E-01	uG/ML	Li	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	5.28000E-01	uG/ML	Zn	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 2.20000E-01	uG/ML	Ni	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 5.50000E-01	uG/ML	La	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 5.50000E-01	uG/ML	Fe	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	3.40000E 00	uG/ML	Ca	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	6.16000E-01	uG/ML	Cr	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 1.10000E 00	uG/ML	Nd	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	8.61000E 01	uG/ML	U	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 1.10000E 00	uG/ML	Ce	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 2.20000E 00	uG/ML	Sm	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 5.50000E-01	uG/ML	Ba	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	1.92000E 02	uG/ML	P	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	2.83000E 01	uG/ML	S	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			
5750	ICP-LIQ	< 1.10000E 00	uG/ML	Mg	N	Y	KP39B
		5128	SAMPLE WAS	FILTERED			

REPORT CONTINUED ON NEXT PAGE

9613479.0536

SAMPLE STATUS REPORT FOR R 6714. PUREX BODG79 TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15:12 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
5750	ICP-LIQ	< 5.50000E-01 uG/ML As	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	1.41000E 03 uG/ML Na	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 5.50000E-01 uG/ML Mo	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 1.10000E 00 uG/ML Se	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 1.10000E-01 uG/ML Ag	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 1.10000E 00 uG/ML Pb	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 1.10000E-01 uG/ML Ti	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 1.10000E-01 uG/ML Cd	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 5.50000E-01 uG/ML B	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	2.71000E 01 uG/ML K	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	1.46000E 00 uG/ML Mn	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 2.20000E 00 uG/ML Sb	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 5.50000E-01 uG/ML V	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 5.50000E-02 uG/ML Be	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5750	ICP-LIQ	< 2.20000E 00 uG/ML Tl	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5795	As	OUT FOR RERUN BY ACID DIGEST			KP39B
		5129			
5797	Hg LIQ	OUT FOR RERUN BY ACID DIGEST			KP39B
		5131			
5813	pH	1.06700E 01 NONE	N	Y	KP39B
		5126			
5826	TOC	OUT FOR RERUN			KP39B
		5127			
5826	TOC	1.96000E 03 uG C/ML	N	Y	KP39B
		5207			
5850	ICP-LIQ	< 1.10000E-01 uG/ML Zr	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E-01 uG/ML Sr	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E 00 uG/ML Bi	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	2.43000E 00 uG/ML Si	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 5.50000E-01 uG/ML Al	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 2.20000E-01 uG/ML Co	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			

REPORT CONTINUED ON NEXT PAGE

SAMPLE STATUS REPORT FOR R 6714. PUREX BODG79 TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15:12 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
5850	ICP-LIQ	< 1.10000E-01 uG/ML Cu	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E-01 uG/ML Li	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	1.69000E 00 uG/ML Zn	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 2.20000E-01 uG/ML Ni	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 5.50000E-01 uG/ML La	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP LIQ	< 5.50000E-01 uG/ML Fe	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	3.35000E 00 uG/ML Ca	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	6.27000E-01 uG/ML Cr	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E 00 uG/ML Nd	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	8.82000E 01 uG/ML U	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E 00 uG/ML Ce	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 2.20000E 00 uG/ML Sm	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 5.50000E-01 uG/ML Ba	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	1.96000E 02 uG/ML P	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	2.98000E 01 uG/ML S	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E 00 uG/ML Mg	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 5.50000E-01 uG/ML As	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	1.39000E 03 uG/ML Na	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 5.50000E-01 uG/ML Mo	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E 00 uG/ML Se	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E-01 uG/ML Ag	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E 00 uG/ML Pb	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E-01 uG/ML Ti	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 1.10000E-01 uG/ML Cd	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 5.50000E-01 uG/ML B	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	2.74000E 01 uG/ML K	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			

REPORT CONTINUED ON NEXT PAGE

SAMPLE STATUS REPORT FOR R 6714. PUREX BODG79 TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15:12 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
5850	ICP-LIQ	1.18000E 00 uG/ML Mn	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 2.20000E 00 uG/ML Sb	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 5.50000E-01 uG/ML V	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 5.50000E-02 uG/ML Be	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5850	ICP-LIQ	< 2.20000E 00 uG/ML Tl	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5895	As	OUT FOR RERUN BY ACID DIGEST			KP39B
		5129			
5897	Hg-LIQ	OUT FOR RERUN BY ACID DIGEST			KP39B
		5131			
5926	TOC	OUT FOR RERUN			KP39B
		5127			
5926	TOC	9.22000E 01 % RECOVERY	N	Y	KP39B
		5207			
5950	ICP	9.99900E 01 % RECOVERY Zr	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	9.97700E 01 % RECOVERY Sr	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	9.48200E 01 % RECOVERY Bi	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.01600E 02 % RECOVERY Si	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.04100E 02 % RECOVERY Al	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.02700E 02 % RECOVERY Co	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.04300E 02 % RECOVERY Cu	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.00200E 02 % RECOVERY Li	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	9.66900E 01 % RECOVERY Zn	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.02000E 02 % RECOVERY Ni	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.02300E 02 % RECOVERY Fe	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.02300E 02 % RECOVERY Ca	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.00800E 02 % RECOVERY Cr	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.00400E 02 % RECOVERY Nd	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.13400E 02 % RECOVERY U	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	9.51500E 01 % RECOVERY Ce	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.02200E 02 % RECOVERY Sm	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			

REPORT CONTINUED ON NEXT PAGE

SAMPLE STATUS REPORT FOR R 6714. PUREX BODG79 TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15:12 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
5950	ICP	9.97700E 01 % RECOVERY Ba	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.05400E 02 % RECOVERY S	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.01400E 02 % RECOVERY Mg	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	9.77900E 01 % RECOVERY As	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.01800E 02 % RECOVERY Mo	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.10600E 02 % RECOVERY Se	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	9.71300E 01 % RECOVERY Ag	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.01000E 02 % RECOVERY Pb	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	9.05600E 01 % RECOVERY Ti	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.00100E 02 % RECOVERY Cd	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.01100E 02 % RECOVERY B	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.01600E 02 % RECOVERY K	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.00300E 02 % RECOVERY Mn	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	8.78900E 01 % RECOVERY Sb	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.01100E 02 % RECOVERY V	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	1.03300E 02 % RECOVERY Be	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5950	ICP	9.93300E 01 % RECOVERY Tl	N	Y	KP39B
		5128 SAMPLE WAS FILTERED			
5995	As	OUT FOR RERUN BY ACID DIGEST			KP39B
		5129			
5997	Hg	OUT FOR RERUN BY ACID DIGEST			KP39B
		5131			
8705	ACD DGST	DF = 100, TOTAL VOLUME 100mL			KP39B
		5211			
8795	As	< 2.50000E-01 uG/ML	N	Y	KP39B
		5212			
8796	Se	OUT FOR RERUN			KP39B
		5213			
8796	Se	< 2.50000E-01 uG/ML	N	Y	KP39B
		5352			
8797	Hg	< 2.50000E-01 uG/ML	N	Y	KP39B
		5342			
8805	ACD DGST	DF= 100, TOTAL VOLUME 100mL			KP39B
		5211			
8895	As	< 2.50000E-01 uG/ML	N	Y	KP39B
		5212			

REPORT CONTINUED ON NEXT PAGE

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SAMPLE STATUS REPORT FOR R 6714. PUREX BODG79 TIME: 1/30/95 7:39
DISPATCHED: 12/ 9/94 15:12 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
8896	Se	OUT FOR RERUN 5213			KP39B
8896	Se	< 2.50000E-01 uG/ML 5352	N	Y	KP39B
8897	Hg	< 2.50000E-01 uG/ML 5242	N	Y	KP39B
8905	ACD DGST	Hg DF-40, As/Se DF-50, SAM CALC DF =100, VOL 100mL 5211			KP39B
8995	As	9.58000E 01 % RECOVERY 5212	N	Y	KP39B
8996	Se	OUT FOR RERUN 5213			KP39B
8996	Se	8.46000E 01 % RECOVERY 5352	N	Y	KP39B
8997	Hg	9.31000E 01 % RECOVERY 5242	N	Y	KP39B

END OF REPORT

SAMPLE STATUS REPORT FOR R 6715. PUREX STD TIME: 1/30/95 7:41
DISPATCHED: 12/ 9/94 15:14 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 12/12/94 14:10

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
5513	pH	1.01000E 02 NONE 5126	N	Y	KP39B
5526	TOC	OUT FOR RERUN 5127			KP39B
5526	TOC	1.00300E 02 % RECOVERY 5207	N	Y	KP39B
5550	ICP	1.00560E 02 % RECOVERY Zr 5128	N	Y	KP39B
5550	ICP	9.95000E 01 % RECOVERY Sr 5128	N	Y	KP39B
5550	ICP	9.96200E 01 % RECOVERY Bi 5128	N	Y	KP39B
5550	ICP	9.76800E 01 % RECOVERY Si 5128	N	Y	KP39B
5550	ICP	1.00240E 02 % RECOVERY Al 5128	N	Y	KP39B
5550	ICP	1.03220E 02 % RECOVERY Co 5128	N	Y	KP39B
5550	ICP	1.04060E 02 % RECOVERY Cu 5128	N	Y	KP39B
5550	ICP	1.02040E 02 % RECOVERY Li 5128	N	Y	KP39B
5550	ICP	1.04300E 02 % RECOVERY Zn 5128	N	Y	KP39B
5550	ICP	1.01160E 02 % RECOVERY Ni 5128	N	Y	KP39B
5550	ICP	1.00580E 02 % RECOVERY La 5128	N	Y	KP39B
5550	ICP	1.01800E 02 % RECOVERY Fe 5128	N	Y	KP39B
5550	ICP	1.02880E 02 % RECOVERY Ca 5128	N	Y	KP39B
5550	ICP	1.01560E 02 % RECOVERY Cr 5128	N	Y	KP39B
5550	ICP	1.02960E 02 % RECOVERY Nd 5128	N	Y	KP39B
5550	ICP	9.74200E 01 % RECOVERY U 5128	N	Y	KP39B
5550	ICP	9.83000E 01 % RECOVERY Ce 5128	N	Y	KP39B
5550	ICP	9.91400E 01 % RECOVERY Sm 5128	N	Y	KP39B
5550	ICP	1.00020E 02 % RECOVERY Ba 5128	N	Y	KP39B
5550	ICP	1.06080E 02 % RECOVERY P 5128	N	Y	KP39B
5550	ICP	1.02440E 02 % RECOVERY S 5128	N	Y	KP39B
5550	ICP	1.00840E 02 % RECOVERY Mg 5128	N	Y	KP39B
5550	ICP	9.96800E 01 % RECOVERY As 5128	N	Y	KP39B

REPORT CONTINUED ON NEXT PAGE

SAMPLE STATUS REPORT FOR R 6715. PUREX STD TIME: 1/30/95 7:41
DISPATCHED: 12/ 9/94 15:14 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
5550	ICP	1.00880E 02 % RECOVERY Na 5128	N	Y	KP39B
5550	ICP	1.02240E 02 % RECOVERY Mo 5128	N	Y	KP39B
5550	ICP	1.10700E 02 % RECOVERY Se 5128	N	Y	KP39B
5550	ICP	1.00220E 02 % RECOVERY Ag 5128	N	Y	KP39B
5550	ICP	1.01540E 02 % RECOVERY Pb 5128	N	Y	KP39B
5550	ICP	9.86600E 01 % RECOVERY Ti 5128	N	Y	KP39B
5550	ICP	1.01840E 02 % RECOVERY Cd 5128	N	Y	KP39B
5550	ICP	1.01900E 02 % RECOVERY B 5128	N	Y	KP39B
5550	ICP	1.00760E 02 % RECOVERY K 5128	N	Y	KP39B
5550	ICP	1.01240E 02 % RECOVERY Mn 5128	N	Y	KP39B
5550	ICP	9.60400E 01 % RECOVERY Sb 5128	N	Y	KP39B
5550	ICP	1.01600E 02 % RECOVERY V 5128	N	Y	KP39B
5550	ICP	1.03960E 02 % RECOVERY Be 5128	N	Y	KP39B
5550	ICP	9.69000E 01 % RECOVERY Tl 5128	N	Y	KP39B
5595	As	OUT FOR RERUN 5129			KP39B
5595	As	1.07000E 02 % RECOVERY 5212	N	Y	KP39B
5596	Se	OUT FOR RERUN 5213			KP39B
5596	Se	9.20000E 01 % RECOVERY 5352	N	Y	KP39B
5597	Hg	OUT FOR RERUN 5131			KP39B
5597	Hg	9.87000E 01 % RECOVERY 5242	N	Y	KP39B

END OF REPORT

Westinghouse Hanford Company 9613479.0543

P.O. Box 1970 Richland, WA 99352

SDG NARRATIVE - 340 BLDG
December 22, 1994

VOLATILE ORGANIC ANALYSIS (by GC/MS)

The samples were analyzed by method LA-523-405 A-4, using a Hewlett-Packard 5970 GC/MS (WB92426). Data acquisition and reduction were performed on an H.P.-1000 computer, running RTE-A revision F, which includes Aquarius software from Environmental Testing and Certification Corp.

A 0.1 mL aliquot of the sample was combined with 4.9 mL of lab blank water in the purge vessel. Hanford wastes have historically been difficult to analyze because of the carry-over of foam into the trap from the VOA sparging vessel. As a consequence, the sample aliquot was limited to the largest aliquot (0.1 mL) that did not produce foaming above the vessel during sparging. The method blank used a 5 mL sample size. Holding time was met. The specific holding time for volatile organics analysis is 14 days as found in chapter 4, table 4-1 of SW-846.

The System Monitoring Compounds (SMC) and Internal Standard Compounds 'IS) were the same as those used in LA-523-401 A-1. Acceptance criteria for each is also contained in LA-523-401 A-1. The Matrix Spike Compounds (MS) used and their acceptance criteria were the same as those in LA-523-401 A-1.

LMCS control limits for the VOA compounds were administratively set to the criteria listed in procedure LA-523-401 A-1 for System Monitoring Compounds (SMC). The LMCS standard for VOA is defined as the method blank analyzed at the start of each 12 hour analysis window. The LMCS codes for the SMC's are R256 for 1,2-Dichloroethane-d4, R258 for Toluene-d8, and R260 for Bromofluorobenzene.

INFORMATION	COMMENTS
SMC Recoveries	Meets all requirements
MS/MSD Recoveries	Meets all requirements
Method blank summary	Meets all requirements
Tune/Mass Calibration	Meets all requirements
Initial Calibration	Meets all requirements
Daily Calibration	Meets all requirements
Internal Standards	Meets all requirements

The following is a list of the pertinent GC/MS files, and the sample holding times:

Lab ID	Customer ID	Filename	Holding Time	Comment
R6709	Blank	>AL15E	0	Method blank
R6714	BODG79	>AL15I	4	Sample

Standards preparation data is kept in a controlled notebook, WHC-N-337-1. 1-Butanol was found and quantified as a target. Normal Paraffin Hydrocarbon (NPH) compounds were tentatively identified in the sample.

To enable interpretation of summary data for VOA compounds, the following table defines the qualifiers, called Q-flags, used in Form I.

Q-Flag	Definition
U	Indicates the compound was analyzed for but not detected; the U-flagged concentration number is the quantitation limit.
J	Indicates an estimated value for the target or tentatively identified compounds; spectra meet criteria but response is below the quantitation limit for the target compounds.
B	Compound was found in the blank.
D	Analysis was performed on a diluted sample.
E	Indicates that quantitation was above the calibration range.
N	Indicates the presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search.

D.E. NELSON D E Nelson 12/22/94
J.B DELAROSA-CHANG Julie Rosa-Chang 12/22/94
Organic Chemistry

9613478 0545

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BODG79

Lab Name: WHCWA Contract:

Lab Code: Case No.: SAS No.: SDG No.: 340 BLDG

Matrix: (soil/water) WATER Lab Sample ID: R6714

Sample wt/vol: 0.1 (g/mL) ML Lab File ID: >AL15I

Level: (low/med) LOW Date Received: 12/12/94

% Moisture: not dec. Date Analyzed: 12/15/94

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
75-01-4	Vinyl Chloride	500.	U
75-35-4	1,1-Dichloroethene	500.	U
67-66-3	Chloroform	500.	U
107-02-2	1,2-Dichloroethane	500.	U
78-93-3	2-Butanone	500.	U
56-23-5	Carbon Tetrachloride	500.	U
79-01-6	Trichloroethene	500.	U
71-43-2	Benzene	500	U
127-18-4	Tetrachloroethene	500.	U
108-90-7	Chlorobenzene	500.	U
71-36-3	1-Butanol	24000.	J

FORM I VOA 3/90

9613479.0546

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BODG79

Lab Name: WHCWA Contract:

Lab Code: Case No.: SAS No.: SDG No.: 340 BLDG

Matrix: (soil/water) WATER Lab Sample ID: R6714

Sample wt/vol: 0.1 (g/mL) ML Lab File ID: >AL15I

Level: (low/med) LOW Date Received: 12/12/94

% Moisture: not dec. Date Analyzed: 12/15/94

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	17.89	330.	JN
2.	1120214	Undecane	20.59	3300.	JN
3.	112403	Dodecane	23.19	79000.	JN
4.		Unknown	24.18	250.	J
5.	10042598	1-Heptanol, 2-propyl-	24.42	260.	JN
6.		Unknown	24.85	1300.	J
7.	629505	Tridecane	25.61	130000.	JN
8.	629594	Tetradecane	27.69	17000.	JN
9.		Unknown	29.47	450.	J
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

9613574.0137

Department of Energy
Richland Field Office
P.O. Box 550
Richland, Washington 99352

Mr. Douglas R. Sherwood
Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Boulevard, Suite 5
Richland, Washington 99352

Mr. David Lundstrom
200 Area Section Manager
State of Washington
Department of Ecology
1315 W. 4th Avenue
Kennewick, Washington 99336

Dear Messrs. Sherwood and Lundstrom:

TRANSMITTAL OF PLUTONIUM-URANIUM EXTRACTION PLANT G AND R Cell, PART II, LOOP FLUSH ANALYTICAL RESULTS

The enclosure contains laboratory analytical and sample results conducted on the final flush for the Plutonium-Uranium Extraction Facility G and R Cell, Part II, canyon vessels. These results are transmitted in accordance with U.S. Department of Energy, Richland Operations Office/Westinghouse Hanford Company agreement with State of Washington Department of Ecology and the U.S. Environmental Protection Agency.

Results from the following flushes have been provided:
K-Cell and G & R Cell, Part I in letter #9550164.

Analytical results from future flushes will be transmitted as they are obtained.

9613479.0548

Mr. Douglas R. Sherwood

Mr. David Lundstrom

A copy of the Predetermination Report, designating the final flush solution based on the analytical results are also included in the Enclosure. The final flush was designated as non-dangerous waste.

Sincerely,

O. A. Farabee, Acting Director
Transition Program Division

Enclosures:
PUREX G and R Cells, Part II, Loop Flush Laboratory Analyses and Sample Results

cc: D. L. Duncan, EPA, w/encl.
M. N. Jaraysi, Ecology, w/encl.
D. G. Hamrick, WHC, w/o encl.
G. J. LeBaron, WHC, w/o encl.

9613479.0549

R6714
①

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
C. N. Villalobos, 373-4753	O. A. Farabee, RL	9550910

Subject: TRANSMITTAL OF PLUTONIUM-URANIUM EXTRACTION PLANT AND G AND R CELL, PART II, LOOP FLUSH ANALYTICAL RESULTS

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att
		Correspondence Control	A3-01	X
		R. W. Bailey	S5-66	X
		R. J. Bliss	B3-04	
		D. G. Hamrick	S6-15	X
		D. G. Harlow	S6-19	
		G. J. LeBaron	S6-19	X
		L. F. Perkins	S6-15	
		J. R. Robertson	H6-21	X
		M. J. Stephenson	H6-20	
		J. F. Tea	S6-19	
		C. N. Villalobos	S6-19	X

RECEIVED
MAR 7 1995
CORRESPONDENCE CONTROL

Cont dist 376-375: CNV

54-6000-117 (9/88) WEF008

9613479.0550

R6714 (2)

Westinghouse Hanford Company | **Internal Memo**

From: Program Support
Phone: 373-3683 T6-20
Date: February 7, 1995
Subject: RESULTS FOR G CELL/SAMPLER # G-8

75725-96-007

To: C.N. Villalobos S6-19

cc: M. D. Rollison T6-20
ADR-File/LB

Attached analytical results have been obtained for the indicated sample which was submitted to the 222-S Laboratory.

LABORATORY ID: R6714

CUSTOMER ID: BODG79

LABORATORY SUBMITTAL DATE: December 12, 1994

CHAIN OF CUSTODY No.: 008296

SAMPLE AUTHORIZATION FORM: 94-219

If there are any questions regarding this data, please feel free to reach me at 373-3683.

Sincerely,

Leslie A. Diaz

Leslie A. Diaz for Michelle D. Rollison
Program Support

Attachments
1) Request for Special Analysis
2) Chain of Custody Forms
3) Volatile Organic Analysis
4) Analytical Data

9613479.0551

TABLE OF CONTENTS

Request for Special Analysis - Attachment 1 1

Chain of Custody Forms - Attachment 2 3

Volatile Organic Analysis - Attachment 3 5

Analytical Data - Attachment 4 10

This document consists of pages 1 through 115.

9613479.0552

ATTACHMENT 1

REQUEST FOR SPECIAL ANALYSIS

9613479.0553

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No. 2180

1. Sample Origin: PUREX - cell Flush SAF 94-219
2. Date Submitted: 12-12-94
3. Submitted By: DE Richards
4. Requester Name: mm Gretsinger
5. Requester Phone/MSIN: 3-3680/S6-19
6. Charge Code/Work Package: KP39B (17730)
7. Date Required: 12-30-94

8. Customer ID	Collected Date	Collected Time	9. Laboratory ID
BODG79	12-12-94	0930	R#6714

12. Number of Samples: 1 sample (4 bottles)
13. Volume of Samples: 20ml each.
14. Protocols: ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA

15. Sample Type: ☐ Solid ☐ Soil ☐ Slurry ☐ Gas ☐ Water ☐ Waste ☒ Solution ☐ Sludge ☐ Oil ☐ Other (specify) Nitric + H_2O

16. Storage Requirements: ☒ None ☐ Specify 4°C F ∂

17. Process Knowledge/Known Listed Wastes: ☒ Unknown ☐ Known (Please attach list) ☐ Previously submitted for this Project

18. Survey: Stan Archer (HPT Signature) Dose Rate 2.5

19. Disposition of Waste: ☐ Return to Client/Location ☒ Dispose per 222-S Procedures ☐ Other

10. Determination	11. Expected Range
VOA	
ICP Metals TAL	
As	
Se	
Hg	
TOC	
pH (To Ken Young & Carmen Villalobos) faxed & sent 1-17-95 JKM	
faxed & mailed RR Se 1/30/95 JMR	

20. Additional Information: Fax results to Ken Young at 373-~~3193~~ 7076. Send results to Carmen Villalobos at MSIN S6-19. STD R6712 Blank R6713 Std R6715

21. Chain of Custody: ☐ No ☐ Yes Number: 008296

22. Assigned Custodial Group (select one): ☐ PCL ☐ POSU ☐ ENV ☐ Process

23. Sample Received By: Sandra Cobb Date: 12-12-94 Time: 14:10

24. Laboratory Manager (if required): 2 Date:

BC-6700-181 (11/92)

ATTACHMENT 2

CHAIN OF CUSTODY FORMS

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		008296

Collector D.E. Richards
Company Contact M.M. Gretsinger/L.D. Zuck
Telephone 373-3680/372-3075
SAF No. 94-219
Project Designation Flush PUREX Vessels
Sampling Locations PUREX/200E/G Cell/Sampler # G-8
Ice Chest No. SML-800
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government Vehicle
Field Logbook No.
Shipped to 222-S/200W/Door 13
Possible Sample Hazards/Remarks RADIOACTIVE
Special Handling and/or Storage

SPECIAL INSTRUCTIONS Sample Matrix is Liquid Mixed Waste. VOA analysis has visiable bubbles, analyze anyway.

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
B0DG79 / R6714	O	12-12-94	0930	(1) 20ml aGs	VOA; 8240.	Cool to 4° C
↓	↓	↓	0930	(3) 20ml aGs	ICP Metals TAL, 6010; As, 7060; Se, 7740; Hg, 7470; TOC, 9060; pH, 9040.	Cool to 4° C

DER 12-12-94

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
DE Richards DE Richards	12-12-94	1410	Sandra Cobb

*Matrix
A = Air
DL = Drum Liquids
DS = Drum Solids
L = Liquid
O = Oil
S = Soil
SE = Sediment
SL = Sludge
SO = Solid
T = Tissue
W = Water
WI = Wipe
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

4

9612120555

9613479.0556

ATTACHMENT 3

VOLATILE ORGANIC ANALYSIS

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

SDG NARRATIVE - 340 BLDG
December 22, 1994

VOLATILE ORGANIC ANALYSIS (by GC/MS)

The samples were analyzed by method LA-523-405 A-4, using a Hewlett-Packard 5970 GC/MS (WB92426). Data acquisition and reduction were performed on an H.P.-1000 computer, running RTE-A revision F, which includes Aquarius software from Environmental Testing and Certification Corp.

A 0.1 mL aliquot of the sample was combined with 4.9 mL of lab blank water in the purge vessel. Hanford wastes have historically been difficult to analyze because of the carry-over of foam into the trap from the VOA sparging vessel. As a consequence, the sample aliquot was limited to the largest aliquot (0.1 mL) that did not produce foaming above the vessel during sparging. The method blank used a 5 mL sample size. Holding time was met. The specific holding time for volatile organics analysis is 14 days as found in chapter 4, table 4-1 of SW-846.

The System Monitoring Compounds (SMC) and Internal Standard Compounds (IS) were the same as those used in LA-523-401 A-1. Acceptance criteria for each is also contained in LA-523-401 A-1. The Matrix Spike Compounds (MS) used and their acceptance criteria were the same as those in LA-523-401 A-1.

LMCS control limits for the VOA compounds were administratively set to the criteria listed in procedure LA-523-401 A-1 for System Monitoring Compounds (SMC). The LMCS standard for VOA is defined as the method blank analyzed at the start of each 12 hour analysis window. The LMCS codes for the SMC's are R256 for 1,2-Dichloroethane-d4, R258 for Toluene-d8, and R260 for Bromofluorobenzene.

INFORMATION	COMMENTS
SMC Recoveries	Meets all requirements
MS/MSD Recoveries	Meets all requirements
Method blank summary	Meets all requirements
Tune/Mass Calibration	Meets all requirements
Initial Calibration	Meets all requirements
Daily Calibration	Meets all requirements
Internal Standards	Meets all requirements

Hanford Operations and Engineering Contractor for the US Department of Energy

54 7600-075

The following is a list of the pertinent GC/MS files, and the sample holding times:

Lab ID	Customer ID	Filename	Holding Time	Comment
R6709	Blank	>AL15E	0	Method blank
R6714	BODG79	>AL15I	4	Sample

Standards preparation data is kept in a controlled notebook, WHC-N-337-1. 1-Butanol was found and quantified as a target. Normal Paraffin Hydrocarbon (NPH) compounds were tentatively identified in the sample.

To enable interpretation of summary data for VOA compounds, the following table defines the qualifiers, called Q-flags, used in Form I.

Q-Flag	Definition
U	Indicates the compound was analyzed for but not detected; the U-flagged concentration number is the quantitation limit.
J	Indicates an estimated value for the target or tentatively identified compounds; spectra meet criteria but response is below the quantitation limit for the target compounds.
B	Compound was found in the blank.
D	Analysis was performed on a diluted sample.
E	Indicates that quantitation was above the calibration range.
N	Indicates the presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search.

D.E. NELSON D E Nelson 12/22/94
J.B DELAROSA-CHANG Jade Rosa-Chang 12/22/94
Organic Chemistry

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BODG79

Lab Name: WHCWA Contract:

Lab Code: Case No.: SAS No.: SDG No.: 340 BLDG

Matrix: (soil/water) WATER Lab Sample ID: R6714

Sample wt/vol: 0.1 (g/mL) ML Lab File ID: >AL15I

Level: (low/med) LOW Date Received: 12/12/94

% Moisture: not dec. Date Analyzed: 12/15/94

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
75-01-4	Vinyl Chloride	500.	U
75-35-4	1,1-Dichloroethene	500.	U
67-66-3	Chloroform	500.	U
107-02-2	1,2-Dichloroethane	500.	U
78-93-3	2-Butanone	500.	U
56-23-5	Carbon Tetrachloride	500.	U
79-01-6	Trichloroethene	500.	U
71-43-2	Benzene	500.	U
127-18-4	Tetrachloroethene	500.	U
108-90-7	Chlorobenzene	500.	U
71-36-3	1-Butanol	24000.	J

FORM I VOA 3/90

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BODG79

Lab Name: WHCWA Contract:

Lab Code: Case No.: SAS No.: SDG No.: 340 BLDG

Matrix: (soil/water) WATER Lab Sample ID: R6714

Sample wt/vol: 0.1 (g/mL) ML Lab File ID: >AL15I

Level: (low/med) LOW Date Received: 12/12/94

% Moisture: not dec. Date Analyzed: 12/15/94

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	17.89	330.	JN
2.	1120214	Undecane	20.59	3300.	JN
3.	112403	Dodecane	23.19	79000.	JN
4.		Unknown	24.18	250.	J
5.	10042598	1-Heptanol, 2-propyl-	24.42	260.	JN
6.		Unknown	24.85	1300.	J
7.	629505	Tridecane	25.61	130000.	JN
8.	629594	Tetradecane	27.69	17000.	JN
9.		Unknown	29.47	450.	J
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

ATTACHMENT 4

ANALYTICAL DATA

9613479.0562

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6714	Customer ID: Purex B0DG79
Analysis: PH	Sample Prep: DIRECT

Instrument:	Procedure/ Rev: LA-212-102
Technologist: KRISTIN HIGBEE	Date: 12/14/94
Starting Time: 03:00	Temperature N/A
Ending Time: 03:15	Chemist: JON BALL

Comments:

BATCH 5126

	Description	Lab ID
1	LMCS STD	R6712-5513
2	SAMPLE	R6714-5713
3	DUPLICATE	R6714-5813
4	LMCS STD	R6715-5513
5		
6		
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	18N16-N			

A-6000-881 (03/92)

pH ANALYSIS

Batch 5126

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5513	PUREX	12- 9-94	15: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KP39B	0

Sample Size	Customer ID
?	STD

Remarks, Calculations, Results:

S350 PH MAT.
STD# 18N16-N RESULT
STD VAL 9.94 %REC ~~100.7~~ 101% JWB
S353 NBSPH1
STD# ~~5A1/6-B~~ RESULT
STD VAL 10.01 %REC
12-14-94

~~4.00~~ 10.01 12-14-94

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-14-94	0315	12/14/94	

54-6800-061 (R-10-83)

pH ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5713	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KP39B	0

Sample Size	Customer ID
?	BODG79

Remarks, Calculations, Results: 10.67

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-14-94	0317	12/14/94	

54-6800-061 (R-10-83)

pH ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5813	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KP39B	0

Sample Size	Customer ID
?	BODG79

Remarks, Calculations, Results

DUPLICATE SAMPLE

10.67

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
12-14-94	0318	12/19/94	

54-6800-061 (R-10-83)

pH ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5513	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KP39B	0

Sample Size	Customer ID
?	STD

Remarks, Calculations, Results

~~0250~~ PH MAT.
STD# 18N16-2 RESULT ~~4.00~~
9.94 %REC ~~100.T~~ 101 K.H 10.01
12-14-94
S353 NBSPH1
~~STD# 5N16-B~~ RESULT
STD VAL K.H. %REC
12-14-94

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
~~12-14-94~~	0320	12/14/94	

54-6800-061 (R-10-83)

K.H. 12-14-94

9613479.0567

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6712, R6713, R6714, R6715	Customer ID: BOD479
Analysis: TOC	Sample Prep: DIRECT

Instrument:	Procedure/ Rev: LA-344-105 B-3
Technologist: [illegible]	Date: 12-22-94
Starting Time: 11:00	Temperature N/A
Ending Time:	Chemist: R. SCHROEDER

Comments:

	Description	Lab ID		Description	Lab ID
1	STD	R6712-5526	11		
2	Blank	R6713-5626	12		
3	Sample	R6714-5726	13		
4	Dup	R6714-5826	14		
5	Spike	R6714-5926	15		
6	STD	R6715-5526	16		
7			17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LHCS	10W12-F/.200 ml			

A-6000-881 (03/92)

9613479.0568

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN BATCH 5207

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5526	PUREX	12- 9-94	15: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KP39B	1

Sample Size	Customer ID
? .200 + 2mL - .200	STD

Remarks, Calculations, Results:

S356 CO3TOC

STD#10N12-F RESULT ~~2.71E+3~~ 2.98E+3 RWS 12-28-94

STD VAL 3.00E+3 mg/mL %REC ~~90.2~~ 99.3 RWS 12-28-94

54.1 µg/.200mL = ~~2.71E+3~~ 2.98E+3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 12-28-94	
12-22-94	1200	RW Schroeder	

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

			STD
Sample Volume in mL	(SS)		0.200
H2SO4 Volume in mL	(VR)		2.000
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		11
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		57.5
µg of Carbon in Blank	(C2)		3.4
g of Carbon/L		=	2.98E+00

Type
STD
Work List
5207
Test Code
TOC
Matrix
Liquid
Sample #
R6712-5526
Instrument Code
Analyst
K.Higbee
Date
12/22/94
Time
11:00 AM

$$\text{g of Carbon/L} = \frac{(C1-C2) * DF * DDF}{VI * 1000}$$

$$\text{µg of Carbon/mL} = \text{g of Carbon/L} * 1000000\ \text{µg/g} / 1000\ \text{mL/L}$$

$$\text{Detection Level (µg/mL)} = \frac{1\ \text{µg C} * DF * DDF}{VI}$$

µg Carbon/mL =	2.98E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by:	RW Schroeder	Date:	12/28/94
Approved by:	RW Schroeder	Date:	1/3/~~94~~ 95 RWS

Form 344105_C Rev. 1.1

9613479.0569

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: R 6712 Date: 12/22/94 Time: 12:00:48

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = R 6712
Blank Value = N/A

Analyst : KG HIGBEE
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.60	87.50
3	1.51	23.50	93.19
4	2.00	41.80	43.78
5	2.50	49.90	16.23
6	3.00	52.90	5.67
7	3.50	54.50	2.94
8	4.00	55.30	1.45
9	4.50	55.80	0.90
10	5.00	56.30	0.89
11	5.50	56.60	0.53
12	6.00	56.90	0.53
13	6.50	57.20	0.52
14	7.00	57.50	0.52

BLANK VALUE = 57.5 micrograms carbon
BLANK FACTOR = 57.5 / 7.002014 = +8.21E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: KG HIGBEE 84627

9613479.0570

^^^

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK Date: 12/22/94 Time: 11:48:46

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : KG HIGBEE
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.50	40.00
3	1.51	0.90	44.44
4	2.01	1.10	18.18
5	2.51	1.40	21.43
6	3.01	1.70	17.65
7	3.51	2.00	15.00
8	4.01	2.20	9.09
9	4.50	2.40	8.33
10	5.00	2.60	7.69
11	5.50	2.80	7.14
12	6.00	3.00	6.67
13	6.50	3.20	6.25
14	7.00	3.40	5.88

BLANK VALUE = 3.4 micrograms carbon
BLANK FACTOR = 3.4 / 7.004028 = +4.9E-01 ug/min Carbon

Sample Run By: KG HIGBEE 84627

9613479.0571

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-5626	PUREX	12- 9-94	15: 7	19

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KP39B	1

Sample Size .200 mL Acid direct
? ~~500 mL + 2 ML H2SO4 ~ 200 mL INJECT~~

Customer ID: BLANK

Remarks, Calculations, Results:
REAGENT BLANK * MIX SAMPLE BEFORE SUB SAMPLING *

3.00 - 3.40 = < 5.00 µg/mL

Kristin Higbee

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 12-28-94	
12-22-94	1212	RW Schroeder	

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

				Blank
Type	Sample Volume in mL	(SS)		0.200
Blank	H2SO4 Volume in mL	(VR)		0.200
Work List	Volume Injected in mL	(VI)		0.200
5207	Dilution Factor	(DF)		1
Test Code	Digest Dilution Factor	(DDF)		1
TOC	µg of Carbon in Sample	(C1)		3
Matrix	µg of Carbon in Blank	(C2)		3.4
Liquid	g of Carbon/L	=	<	5.00E-03

Sample #	R6713-5626
Instrument Code	
Analyst	K.Higbee
Date	12/22/94
Time	12:12 PM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{VI}$

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	<	5.00E+00	DETECTION LEVEL in µg/mL
			5.00E+00

Data Entry by:	RW Schroeder	Date:	12/28/94
Approved by:	RW Schroeder	Date:	1/3/95

Form 344105_C Rev. 1.1

9613479.0572

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5726	PUREX	12- 9-94	15: 9	19

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KP39B	1

Sample Size	Customer ID
? 0.500mL + 2mL H_2SO_4 - .200mL INJ. D.F.=5	BODG79

Remarks, Calculations, Results

2.10 E+3 µg/mL

K. Higbee

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 12-29-94	
12-22-94	1318	RW Schroeder	

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

Type			Sample
Sample	Sample Volume in mL	(SS)	0.500
Work List	H2SO4 Volume in mL	(VR)	2.000
5207	Volume Injected in mL	(VI)	0.200
Test Code	Dilution Factor	(DF)	5
TOC	Digest Dilution Factor	(DDF)	1
Matrix	µg of Carbon in Sample	(C1)	87.5
Liquid	µg of Carbon in Blank	(C2)	3.4
Sample #	g of Carbon/L =		2.10E+00
R6714-5726			
Instrument Code			
Analyst			
K.Higbee			
Date			
12/22/94			
Time			
01:18 PM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.10E+03	DETECTION LEVEL in µg/mL
		2.50E+01

Data Entry by:	RW Schroeder	Date:	12/28/94
Approved by:	RW Schroeder	Date:	1/3/95

Form 344105_C Rev. 1.1

9613479.0573

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6714-5726 Date: 12/22/94 Time: 13:18:33

Sample Size = 200 uL
Dil Factor = 5
Blank ID # = R 6713
Blank Value = .4284369 ug/minute C

Analyst : KG HIGBEE
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	11.50	96.52
3	1.50	49.70	76.86
4	2.00	69.30	28.28
5	2.50	77.50	10.58
6	3.00	81.60	5.02
7	3.50	83.30	2.04
8	4.00	84.40	1.30
9	4.50	85.30	1.06
10	5.00	85.90	0.70
11	5.50	86.40	0.58
12	6.00	86.80	0.46
13	6.50	87.20	0.46
14	7.00	87.50	0.34

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.002197 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(87.5 - 2.999922)(5)/(200) = +2.11E+00 g/L Carbon
(87.5 - 2.999922)(5)/(200)(12) = +1.76E-01 Molar Carbon

Sample Run By: KG HIGBEE 84627

9613479.0574

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

BEGIN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5826	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KP39B	1

Sample Size	Customer ID
? 0.500+ 2 mL - .200 D.F.=5	BODG79

Remarks, Calculations, Results:
DUPLICATE SAMPLE

1.96 E+3 ug/mL

Kristin Higbee

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 1-3-95	
12-22-94	1338	RW Schroeder	

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

			Sample
Type	Sample Volume in mL	(SS)	0.500
Sample	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
5207	Dilution Factor	(DF)	5
Test Code	Digest Dilution Factor	(DDF)	1
TOC	µg of Carbon in Sample	(C1)	81.7
Matrix	µg of Carbon in Blank	(C2)	3.4
Liquid	g of Carbon/L	=	1.96E+00

Sample #
R6714-5826
Instrument Code
Analyst
K.Higbee
Date
12/22/94
Time
01:38 PM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{VI}$

µg Carbon/mL =	1.96E+03	DETECTION LEVEL in µg/mL
		2.50E+01

Data Entry by:	RW Schroeder	Date:	12/28/94
Approved by:	RW Schroeder	Date:	1/3/95

Form 344105_C Rev. 1.1

9613479.0575

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6714-5826 Date: 12/22/94 Time: 13:38:08

Sample Size = 200 uL
Dil Factor = 5
Blank ID # = R 6713
Blank Value = .4284369 ug/minute C

Analyst : KG HIGBEE
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	14.60	98.63
3	1.50	48.80	70.08
4	2.01	66.10	26.17
5	2.51	73.00	9.45
6	3.01	76.00	3.95
7	3.50	78.00	2.56
8	4.00	78.90	1.14
9	4.50	79.60	0.88
10	5.00	80.20	0.75
11	5.50	80.60	0.50
12	6.00	81.00	0.49
13	6.50	81.40	0.49
14	7.00	81.70	0.37

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.002197 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(81.7 - 2.999555)(5)/(200) = +1.97E+00 g/L Carbon
(81.7 - 2.999555)(5)/(200)(12) = +1.64E-01 Molar Carbon

Sample Run By: KG HIGBEE 84627

9613479.0576

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

HEHUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5926	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KP39B	1

Sample Size	Customer ID
? .400 sparged sample + .400 spike - .200 D.F. = 2.5	BODG79

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 11N10-E
SPIKE VOLUME .400 ML

92.2% rec

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 1/3/95	
12-22-94	1359	RW Schroeder	

54-6800-061 (R-10-83)

TOC: LA-344-105 SPIKED SAMPLE

SPIKE

Type	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.500	Sample Size in mL (SS)	0.400
Work List	H2S04 Volume in mL	2.000	Spike Volume in mL	0.400
5207	Volume Injected in mL	0.200	H2S04 Volume in mL	0.000
Test Code	µg of Carbon in Sample	87.5	Volume Injected in mL	0.200
TOC	µg of Carbon in Blank	3.4	Sample Pre-Spike Dil. Factor (PDF)	5
Matrix			Spike Value (µg/ml)	700
liquid			µg C in Sample + Spike	110
Sample #			µg C in Blank	3.4
R6714-5926				
Instrument Code				
Analyst				
K.Higbee				
Date				
12/22/94				
Time				
01:59 PM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike – µgC in blank) * (Spike Correction Factor)]
– [(µgC sample – µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 92.2%

Data Entry by:	RW Schroeder	Date: 28-Dec-94
Approved by:	RW Schroeder	Date: 1/3/95

Form X Rev. 1.1

9613479.0577

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6714-5926 Date: 12/22/94 Time: 13:59:03

Sample Size = 200 uL
Dil Factor = 2.5
Blank ID # = R 6713
Blank Value = .4284369 ug/minute C

Analyst : KG HIGBEE
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	24.50	99.18
3	1.51	69.60	64.80
4	2.00	90.00	22.67
5	2.50	99.30	9.37
6	3.00	103.30	3.87
7	3.50	105.50	2.09
8	4.00	106.80	1.22
9	4.50	107.70	0.84
10	5.00	108.30	0.55
11	5.50	108.80	0.46
12	6.00	109.30	0.46
13	6.50	109.60	0.27
14	7.00	110.00	0.36

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.002197 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(110 - 2.999555)(2.5)/(200) = +1.338E+00 g/L Carbon
(110 - 2.999555)(2.5)/(200)(12) = +1.115E-01 Molar Carbon

Sample Run By: KG HIGBEE 84627

9613479.0578

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5526	PUREX	12- 9-94	15:12	19

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KP39B	1

Sample Size	Customer ID
? .200 + 2mL - .200	STD

Remarks, Calculations, Results:
S356 CO3TOC
STD# 10N12-F RESULT 3.01 E+3
STD VAL 3.00 E+3 %REC 100.3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 1/3/95	
12-22-94	1410	RW Schroeder	

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

			Std
Sample Volume in mL	(SS)		0.200
H2SO4 Volume in mL	(VR)		2.000
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		11
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		58.1
µg of Carbon in Blank	(C2)		3.4
g of Carbon/L		=	3.01E+00

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
Std	5207	TOC	Liquid	R6715-5526		K.Higbee	12/22/94	02:10 PM

$$\text{g of Carbon/L} = \frac{(C1-C2) * DF * DDF}{VI * 1000}$$

$$\text{µg of Carbon/mL} = \text{g of Carbon/L} * 1000000\ \text{µg/g} / 1000\ \text{mL/L}$$

$$\text{Detection Level (µg/mL)} = \frac{1\ \text{µg C} * DF * DDF}{VI}$$

µg Carbon/mL =	3.01E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by:	RW Schroeder	Date:	12/28/94
Approved by:	RW Schroeder	Date:	1/3/95

Form 344105_C Rev. 1.1

9613479.0579

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6715 Date: 12/22/94 Time: 14:10:01

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = R 6713
Blank Value = .4284369 ug/minute C

Analyst : KG HIGBEE
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	3.40	94.12
3	1.50	29.70	88.55
4	2.00	42.70	30.44
5	2.50	49.40	13.56
6	3.00	52.60	6.08
7	3.50	54.20	2.95
8	4.00	55.40	2.17
9	4.50	56.10	1.25
10	5.00	56.60	0.88
11	5.50	57.00	0.70
12	6.00	57.40	0.70
13	6.50	57.70	0.52
14	7.00	58.10	0.69

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.002197 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(58.1 - 3.00034)(11)/(200) = +3.03E+00 g/L Carbon
(58.1 - 3.00034)(11)/(200)(12) = +2.53E-01 Molar Carbon

Sample Run By: KG HIGBEE 84627

9613479.0580

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6714	Customer ID: Purex BODG79
Analysis: TOC	Sample Prep: DIRECT

Instrument:	Procedure/ Rev: LA-344-105
Technologist: D GRIFFIN	Date: 12/20/94
Starting Time:	Temperature N/A
Ending Time: 22:15	Chemist: ROB SCHROEDER

Comments: OUT FOR RERUN

BATCH 5127

	Description	Lab ID		Description	Lab ID
1	LMCS STD	R6712-5526	11		
2	BLANK	R6713-5626	12		
3	SAMPLE	R6714-5726	13		
4	DUPLICATE	R6714-5826	14		
5	SAMPLE + SPIKE	R6715-5926	15		
6	LMCS STD	R6715-5526	16		
7			17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	10N12-F			
SPIKE	11N12-E			

A-6000-881 (03/92)

9613479.0581

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5127

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5526	PUREX	12- 9-94	15: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KP39B	0

Sample Size	Customer ID
? .200 + 2ml 0.5M H2SO4 - .200 Inject	STD

Remarks, Calculations, Results:

S356 CO3TOC

STD# 10N12-F RESULT 3.10E+3 OUT FOR RERUN

STD VAL 3.00E+3 %REC 103.33%

WR# 5473

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
D B Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 12-20-94	
12-13-94	2215	RW Schroeder	Steve Peterson

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
5127	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	57.4
Matrix	µg of Carbon in Blank	(C2)	1.100173
LIQUID	g of Carbon/L	=	3.10E+00

Sample #
R6712-5526
Instrument Code
AL-10723
Analyst
D. GRIFFIN
Date
12/13/94
Time
10:15 PM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

BEST AVAILABLE COPY

µg Carbon/mL =	3.10E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by:	Steve Peterson	Date:	12/18/94
Approved by:	RW Schroeder	Date:	12-20-94

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P^

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6712-5526 Date: 12/13/94 Time: 19:48:25

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .157058 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	22.60	97.79
3	1.51	44.70	49.44
4	2.01	49.40	9.51
5	2.51	52.50	5.90
6	3.01	53.70	2.23
7	3.51	54.80	2.01
8	4.01	55.50	1.26
9	4.50	56.00	0.89
10	5.00	56.30	0.53
11	5.50	56.60	0.53
12	6.00	56.90	0.53
13	6.51	57.20	0.52
14	7.00	57.40	0.35

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BLANK VALUE = 1.1 micrograms carbon
BLANK FACTOR = 1.1 / 7.003784 = +1.6E-01 ug/min Carbon

SAMPLE RESULTS:
(57.4 - 1.100173)(11)/(200) = +3.10E+00 g/L Carbon
(57.4 - 1.100173)(11)/(200)(12) = +2.58E-01 Molar Carbon

Sample Run By: DG Griffin
DG GRIFFIN 00000

9613479.0583

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No	Sample Point	Date	Time Issued	Priority
R 6713.-5626	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KP39B	0

Sample Size	Customer ID
? .200 ml of 0.5M H2SO4	BLANK

Remarks, Calculations, Results

REAGENT BLANK

OUT FOR RERUN

1.05E+1 ug C/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
D B Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 12-20-94	
12-13-94	2215	RW Schroeder	

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.200
BLANK	H2SO4 Volume in mL	(VR)	0.200
Work List	Volume Injected in mL	(VI)	0.200
5127	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	3.2
Matrix	µg of Carbon in Blank	(C2)	1.100038
LIQUID	g of Carbon/L	=	1.05E-02
Sample #			
R6713-5626			
Instrument Code			
AL-10723			
Analyst			
D. GRIFFIN			
Date			
12/13/94			
Time			
10:15 PM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

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µg Carbon/mL =	1.05E+01	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:		Date:	12/18/94
Approved by:	RW Schroeder	Date:	12/20/94

Form 344105_C Rev. 1.1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6713-5626 Date: 12/13/94 Time: 19:58:17

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .157058 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.70	85.71
3	1.51	0.90	22.22
4	2.00	1.10	18.18
5	2.50	1.40	21.43
6	3.00	1.60	12.50
7	3.50	1.80	11.11
8	4.00	2.00	10.00
9	4.50	2.20	9.09
10	5.00	2.40	8.33
11	5.50	2.60	7.69
12	6.00	2.80	7.14
13	6.50	3.10	9.68
14	7.00	3.20	3.13

BEST AVAILABLE COPY

BLANK VALUE = 1.1 micrograms carbon
BLANK FACTOR = 1.1 / 7.003784 = +1.6E-01 ug/min Carbon

SAMPLE RESULTS:
(3.2 - 1.100038)(1)/(200) = +1.0E-02 g/L Carbon
(3.2 - 1.100038)(1)/(200)(12) = +8.7E-04 Molar Carbon

Sample Run By: DG Griffin
DG GRIFFIN 00000

9613479.0585

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5726	PUREX	12- 9-94	15: 9	19

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KP39B	0

Sample Size	Customer ID
? 2ml + .200 0.5M H2SO4 — .200 Inject	BODG79

Remarks, Calculations, Results

OUT FOR RERUN

2.10E+3 ug C/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DB Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 12-20-94	
12-13-94	2215	RW Schroeder	Steve Peterson

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

			SAMPLE
Sample Volume in mL	(SS)		2.000
H2SO4 Volume in mL	(VR)		0.200
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		1.1
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		382.4
µg of Carbon in Blank	(C2)		1.1
g of Carbon/L		=	2.10E+00

Type
SAMPLE
Work List
5127
Test Code
Matrix
LIQUID
Sample #
R6714-5726
Instrument Code
AL-10723
Analyst
D. GRIFFIN
Date
12/13/94
Time
10:15 PM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

BEST AVAILABLE COPY

µg Carbon/mL =	2.10E+03	DETECTION LEVEL in µg/mL
		5.50E+00

Data Entry by:	Steve Peterson	Date:	12/19/94
Approved by:	RW Schroeder	Date:	12/20/94

Form 344105_C Rev. 1.1

P

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6714-5726 Date: 12/13/94 Time: 20:10:22

Sample Size = 200 uL
Dil Factor = 1.1
Blank ID # = BLK
Blank Value = .157058 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.40	0.00
2	1.01	229.80	98.52
3	1.50	290.80	20.98
4	2.00	324.10	10.27
5	2.50	345.70	6.25
6	3.01	359.40	3.81
7	3.51	367.40	2.18
8	4.00	372.40	1.34
9	4.50	375.90	0.93
10	5.00	378.20	0.61
11	5.50	379.80	0.42
12	6.00	380.80	0.26
13	6.50	381.70	0.24
14	7.00	382.40	0.18

BEST AVAILABLE COPY

BLANK VALUE = 1.1 micrograms carbon
BLANK FACTOR = 1.1 / 7.003784 = +1.6E-01 ug/min Carbon

SAMPLE RESULTS:
(382.4 - 1.1)(1.1)/(200) = +2.097E+00 g/L Carbon
(382.4 - 1.1)(1.1)/(200)(12) = +1.748E-01 Molar Carbon

Sample Run By: DG GRIFFIN 00000

9613479.0587

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5826	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KP39B	0

Sample Size	Customer ID
?2ml + .200 0.5M H2SO4 — .200 Inject	BODG79

Remarks, Calculations, Results:

DUPLICATE SAMPLE

1.52E+3 ug C/ml

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
D.B. Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 12/20/94	
12-13-94	2215	RW Schroeder	Steve Peters

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	2.000
SAMPLE	H2SO4 Volume in mL	(VR)	0.200
Work List	Volume Injected in mL	(VI)	0.200
5127	Dilution Factor	(DF)	1.1
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	277.7
Matrix	µg of Carbon in Blank	(C2)	1.100153
LIQUID	g of Carbon/L =		1.52E+00
Sample #			
R6714-5826			
Instrument Code			
AL-10723			
Analyst			
D. GRIFFIN			
Date			
12/13/94			
Time			
10:15 PM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{VI}$

BEST AVAILABLE COPY

µg Carbon/mL =	1.52E+03	DETECTION LEVEL in µg/mL
		5.50E+00

Data Entry by:	Steve Peters	Date:	12/18/94
Approved by:	RW Schroeder	Date:	12/20/94

Form 344105_C Rev. 1.1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6714-5826 Date: 12/13/94 Time: 20:24:28

Sample Size = 200 uL
Dil Factor = 1.1
Blank ID # = BLK
Blank Value = .157058 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.70	0.00
2	1.01	176.60	98.47
3	1.51	218.90	19.32
4	2.01	240.50	8.98
5	2.51	253.80	5.24
6	3.01	262.30	3.24
7	3.51	267.20	1.83
8	4.01	270.80	1.33
9	4.51	273.00	0.81
10	5.01	274.50	0.55
11	5.51	275.70	0.44
12	6.01	276.60	0.33
13	6.51	277.20	0.22
14	7.00	277.70	0.18

BEST AVAILABLE COPY

BLANK VALUE = 1.1 micrograms carbon
BLANK FACTOR = 1.1 / 7.003784 = +1.6E-01 ug/min Carbon

SAMPLE RESULTS:
(277.7 - 1.100153)(1.1)/(200) = +1.521E+00 g/L Carbon
(277.7 - 1.100153)(1.1)/(200)(12) = +1.268E-01 Molar Carbon

Sample Run By: DG GRIFFIN 00000

9613479.0589

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Serial No	Sample Point	Date	Time Issued	Priority
R 6714.-5926	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KP39B	0

Sample Size	Customer ID
?.400 +.200 0.5 M H_2SO_4 + .400 spike − .200 Injected	BODG79

Remarks, Calculations, Results:

SAMPLE SPIKED ID R6714
SPIKE ~~[illegible]~~ 11N12.E
SPIKE VOLUME .400 ml

OUT FOR RERUN

94.6%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
D S Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-13-94	2215	12/20/94 RW Schroeder	

64-6E0C-DE1 (R-10-83)

TOC: LA-344-105 SPIKED SAMPLE

SPIKE

Type	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	2.000	Sample Size in mL (SS)	0.400
Work List	H2S04 Volume in mL	0.200	Spike Volume in mL	0.400
5127	Volume Injected in mL	0.200	H2S04 Volume in mL	0.200
Test Code	µg of Carbon in Sample	382.4	Volume Injected in mL	0.200
TOC	µg of Carbon in Blank	1.1	Sample Pre-Spike Dil. Factor (PDF)	1.5
Matrix			Spike Value (µg/ml)	747
LIQUID			µg C in Sample + Spike	169.5
Sample #			µg C in Blank	1.100173
R6714-5926				
Instrument Code				
AL-10723				
Analyst				
D. GRIFFIN				
Date				
12/13/94				
Time				
10:15 PM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike − µgC in blank) * (Spike Correction Factor)]
− [(µgC sample − µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 94.6%

BEST AVAILABLE COPY

Data Entry by: Steve Peterson		Date: 19-Dec-94
Approved by: RW Schroeder		Date: 12/20/94

Form X Rev. 1.1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6714-5926 Date: 12/13/94 Time: 20:48:27

Sample Size = 200 uL
Dil Factor = 2.5
Blank ID # = BLK
Blank Value = .157058 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	4.60	0.00
2	1.01	111.30	95.87
3	1.51	134.40	17.19
4	2.01	146.10	8.01
5	2.51	153.30	4.70
6	3.01	158.10	3.04
7	3.51	161.60	2.17
8	4.00	163.80	1.34
9	4.51	165.40	0.97
10	5.01	166.50	0.66
11	5.51	167.60	0.66
12	6.01	168.40	0.48
13	6.51	169.00	0.36
14	7.00	169.50	0.29

BLANK VALUE = 1.1 micrograms carbon
BLANK FACTOR = 1.1 / 7.003784 = +1.6E-01 ug/min Carbon

SAMPLE RESULTS:
(169.5 - 1.100173)(2.5)/(200) = +2.105E+00 g/L Carbon
(169.5 - 1.100173)(2.5)/(200)(12) = +1.754E-01 Molar Carbon

Sample Run By: DG GRIFFIN 00000

BEST AVAILABLE COPY

9613479.0591

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5526	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KP39B	0

Sample Size	Customer ID
?, 200 + 2ml 0.5M H2SO4 - .200 Inject	STD

Remarks, Calculations, Results:

S356 CO3TOC

STD# 10N12-F RESULT 3.10E+3 OUT FOR RERUN

STD VAL 3.00E+3 %REC 103.33%

WR# 5495

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
D B Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 12/20/94	
12-13-94	2215	RW Schroeder	Steve Peterson

54-6800-061 R 10-83)

TOC : LA-344-105 (B-3) LIQUIDS

Type			STANDARD
STANDARD	Sample Volume in mL	(SS)	0.200
Work List	H2SO4 Volume in mL	(VR)	2.000
5127	Volume Injected in mL	(VI)	0.200
Test Code	Dilution Factor	(DF)	11
	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	57.4
Matrix	µg of Carbon in Blank	(C2)	1.100038
LIQUID	g of Carbon/L	=	3.10E+00

Sample #
R6715-5526
Instrument Code
AL-10723
Analyst
D. GRIFFIN
Date
12/13/94
Time
10:15 PM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

BEST AVAILABLE COPY

µg Carbon/mL =	3.10E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by:	Steve Peterson	Date:	12/19/94
Approved by:	RW Schroeder	Date:	12-20-94

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9613479.0592

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6715-5526 Date: 12/13/94 Time: 22:12:28

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .157058 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	28.00	96.07
3	1.51	44.80	37.50
4	2.00	48.80	8.20
5	2.51	51.10	4.50
6	3.01	52.50	2.67
7	3.51	53.70	2.23
8	4.01	54.60	1.65
9	4.50	55.30	1.27
10	5.00	55.90	1.07
11	5.50	56.30	0.71
12	6.00	56.60	0.53
13	6.50	57.00	0.70
14	7.00	57.40	0.70

BEST AVAILABLE COPY

BLANK VALUE = 1.1 micrograms carbon
BLANK FACTOR = 1.1 / 7.003784 = +1.6E-01 ug/min Carbon

SAMPLE RESULTS:
(57.4 - 1.100038)(11)/(200) = +3.10E+00 g/L Carbon
(57.4 - 1.100038)(11)/(200)(12) = +2.58E-01 Molar Carbon

Sample Run By: DG GRIFFIN 00000

9613479.0593

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6714	Customer ID: Purex BODG79
Analysis: ICP	Sample Prep: DIRECT

Instrument:	Procedure/ Rev: LA-505-151
Technologist: BRAD GOECKE	Date: 12/15/94
Starting Time: 15:00	Temperature N/A
Ending Time: 18:10	Chemist: JON BALL

Comments: BATCH 5128

	Description	Lab ID		Description	Lab ID
1	LMCS CHK STD	R6712-5550	11		
2	REAGENT BLANK	R6713-5650	12		
3	SAMPLE	R6714-5750	13		
4	DUPLICATE	R6714-5850	14		
5	LMCS CHK STD	R6715-5550	15		
6			16		
7			17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	37B48B			

A-6000-881 (03/92)

9613479.0594

INDUCTIVELY COUPLED PLASMA ANALYSIS

Batch 5128

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5550	PUREX	12- 9-94	15: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	KP39B	0

Sample Size	Customer ID
? SST5 376486 Direct	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

ZR 4.902/5(NO) : 98.042
SR 4.837 : 96.74
BI 4.921 : 98.42
SI 4.843 : 96.86
AL 4.897 : 97.94
CO 5.112 : 102.24
CU 5.036 : 100.72
LI 4.951 : 99.02
ZN 5.165 : 103.38
NI 5.007 : 100.14
LA 4.874 : 97.48
FE 4.987 : 99.74
CA 4.588 : 99.76
CR 5.019 : 100.38
ND 4.900 : 98.00

OVER →

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 12-15-94	Time Completed: 17:50	Lab Use Only: 12/20/94		12-15-94

54-6800-061 (R-10-83)

9613479.0595

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-5650	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	uG/ML	KP39B	0

Sample Size	Customer ID
? Direct	BLANK

Remarks, Calculations, Results:

REAGENT BLANK
All metals

ZR <.01	CO <.02	CR <.01	Mg <.10	Ti <.01
SR <.01	CU <.01	Nd <.10	As <.05	Cd <.01
Bi <.10	Li <.01	U <.40	NA <.10	B <.05
Si <.05	ZN <.01	Ce <.10	MO <.05	K <.30
AL <.05	Ni <.02	SM <.20	Se <.10	MN <.01
	LA <.05	BA <.05	Ag <.01	Sb <.20
	Fe <.05	P <.20	Pb <.10	V <.05
	CA <.10	S <.05		Be <.005
				TL <.20

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 12-15-94	Time Completed: 1750	Lab Unit Mgr: 12/20/94		12-15-94

54-6800-061 (R-10-83)

9613479.0596

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5750	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	KP39B	0

Sample Size	Customer ID
? 1 mL - 10 mL "FILTERED"	BODG79

Remarks, Calculations, Results:

ZR <.01 (11) = < 1.10E-1
SR <.01 = < 1.10E-1
BI <.10 = < 1.10
SI .207 = 2.28
AL <.05 = < 5.50E-1
CO <.02 = < 2.20E-1
CU <.01 = < 1.10E-1
LI <.01 = < 1.10E-1

ZN .048 = 5.28E-1
NI <.02 = < 2.20E-1
LA <.05 = < 5.50E-1
FE <.05 = < 5.50E-1
CA .308 = 3.40
CR .056 = 6.16E-1
NA <.10 = < 1.10
U >.83 = 8.61E1

CE <.10 = < 1.10
SM <.20 = < 2.20
BA <.05 = < 5.50E-1
P 17.5 = 1.92E2
S 2.57 = 2.83E1
AG <.10 = < 1.10
AS <.05 = < 5.50E-1

OVER →

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-15-94	1755	12/20/94	12-15-94

54-6800-061 (R-10-83)

R6714 - 5750

NA 128.2 (11) = 1.41E3
MO <.05 = < 5.50E-1
SE <.10 = < 1.10
AG <.01 = < 1.10E-1
PB <.10 = < 1.10
TI <.01 = < 1.10E-1
CD <.01 = < 1.10E-1
B <.05 = < 5.50E-1
K 2.46 = 2.71E1
MN .133 = 1.46
SS <.20 = < 2.20
V <.05 = < 5.50E-1
BE <.005 = < 5.50E-2
TL <.20 = < 2.20

9613479.0597

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5850	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	KP39B	0

Sample Size	Customer ID
? 1µL - 10µL "FILTERED"	BODG79

Remarks. Calculations. Results

DUPLICATE SAMPLE

ZR <.01 (11) = <1.10E-1
SR <.01 = <1.10E-1
BI <.10 = <1.10
SI .221 = 2.43
AL <.05 = <5.50E-1
CO <.02 = <2.20E-1
CD <.01 = <1.10E-1
LI <.01 = <1.10E-1
ZN .154 = 1.69
NI <.02 = <2.20E-1
LA <.05 = <5.50E-1
FE <.05 = <5.50E-1
CA .305 = 3.35
CR .057 = 6.27E-1
ND <.10 = <1.10
U 8.02 = 8.82E1
CE <.10 = <1.10
SM <.10 = <2.20
GD <.05 = <5.50E-1
P 17.8 = 1.96E2
OVEL →

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs
				[signature]

Date	Time Completed	Lab Unit Mgr	
12-15-94	1805	[signature] 12/20/94	12-15-94

S 2.71 (11) = 2.98E1 R6714-5850
MG <.10 = <1.10
AS <.05 = <5.50E-1
NA 126.1 = 1.39E3
MO <.05 = <5.50E-1
SE <.10 = <1.10
AG <.01 = <1.10E-1
PB <.10 = <1.10
TI <.01 = <1.10E-1
CD <.01 = <1.10E-1
B <.05 = <5.50E-1
K 248 = 2.74E1
MN .107 = 1.18
SB <.20 = <2.20
V <.05 = <5.50E-1
BE <.005 = <5.50E-2
TL <.20 = <2.20

9613479.0598

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5550	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	KP39B	0

Sample Size	Customer ID
? SST5 376484 Direct	STD

Remarks, Calculations, Results

LMCS CHECK SAMPLE

ZR 5.028/5(100) = 100.56
SR 4.975 : 99.50
BI 4.901 : 98.02
SI 4.884 : 97.68
AL 5.012 : 100.24
CO 5.161 : 103.22
CU 5.203 = 104.06
LI 5.102 = 102.04
ZN 5.215 : 104.30
NI 5.057 : 101.16
LA 5.029 : 100.58
FE 5.050 : 101.00
CA 5.144 : 102.88
CR 5.074 : 101.56
ND 5.148 : 102.96
U 9.242/10(100) : 92.42
CE 4.915 : 98.30
SM 4.957 : 99.14
BA 5.001 : 100.02
P 5.304 : 106.08 Direct

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs
			[signature]	
Date	Time Completed	Lab Supt Mgr		
12-15-94	1810	[signature] 12/16/94	12-15-94	

54-6800-061 (R-10-83)

R6715 -5550

S 5.122/5(100) : 102.44
MG 5.042 : 100.84
AS 4.884 : 97.68
NA 5.044 : 100.88
MO 5.112 : 102.24
SE 5.535 : 110.70
AG 5.011 : 100.22
B 5.077 : 101.54
TI 4.933 : 98.66
CD 5.082 : 101.64
B 5.095 : 101.90
K 5.038 : 100.76
MN 5.062 : 101.24
SB 4.802 : 96.04
V 5.080 : 101.60
ZR 5.188 : 103.76
TL 4.845 : 96.90

9613479.0599

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6714	Customer ID: PUREX: BODG79
Analysis: Hg	Sample Prep: DIRECT

Instrument: PE2380(Hydride AA) WB26847	Procedure/ Rev: LA 325-104 / B-1
Technologist: Jackie Stelle	Date: 12-29-~~93~~94 LAD 2-5-96
Starting Time: 0830	Temperature 175 C
Ending Time: 1508	Chemist: R.A. Esch

Comments: Batch # 5131

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R6712-5597
2	REAGENT BLANK	R6713-5697
3	SAMPLE	R6714-5797
4	DUPLICATE SAMPLE	R6714-5897
5	SPIKED SAMPLE	R6714-5997
6	ENDING LMCS STD	R6715-5597
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	43N11C .300mL			
SPIKE	43N11C .300mL			

A-6000-881 (03/92)

9613479.0600

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

RUSH RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5597	PUREX	12- 9-94	15: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	% RECOVERY	KP39B	1

Sample Size	Customer ID
.300 ml	STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STD#43N11-E RESULT
STD VAL 0.100ppm %REC 1.02E-01 µg/ml
102.0%

PKHT .326
30.62ng

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs
				R Jones

Date	Time Completed	Lab Unit Mgr	
12-29-94	1410	M.D. Smith	R Jones

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUIDS-DIR

		STANDARD	DUPLICATE
Serial No.	Sample Size in mL SS	0.300	
R6712-5597	Hg ng (Nanograms)	30.62	
Batch ID	Conc Hg µg/mL (or mg/L or PPM)	0.102	ERR
5242	Conc Hg µg/L (PPB)	102.1	ERR
Rerun No.		N/A	N/A
0		N/A	N/A
Instrument ID:		N/A	N/A
WB26847	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)		
Calibration Da	Average Conc.=(Sample + Duplicate)/2		
12/29/94	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Analyst			
J. STEELE			
Date:			
12/29/94			

	STANDARD	DUPLICATE
Conc Hg µg/mL	1.02E-01	ERR
	N/A	N/A
	N/A	N/A

Data Entry by:	R Jones	Date:	05-Jan-95
Approved by:	M.D. Smith	Date:	1-9-95

Form 1 Rev. 1

9613479.0601

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Batch 5131

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5597	PUREX	12- 9-94	15: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	% RECOVERY	KP39B	0

Sample Size	Customer ID
? .300ml	STD

Remarks, Calculations, Results

EDP R716 HG/HYDRD
STD# 43N11-C RESULT 9.98E-2
STD VAL 1.00E-1 %REC 99.8

PLHT .313
29.95ng

OUT FOR REPL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-21-94	1500	R Clark 12/28-94

12-27-94

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUIDS-DIR		STANDARD	DUPLICATE
Serial No.	Sample Size in mL SS	0.300	
R6712-5597	Hg ng (Nanograms)	29.95	
Batch ID	Conc Hg µg/mL (or mg/L or PPM)	0.100	N/A
5131	Conc Hg µg/L (PPB)	99.8	N/A
Rerun No.		N/A	N/A
0		N/A	N/A
Instrument ID:		N/A	N/A
WB26847	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)		
Calibration Da	Average Conc.=(Sample + Duplicate)/2		
12/21/94	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Analyst			
J STEELE			
Date:			
12/21/94			

	STANDARD	DUPLICATE
Conc Hg µg/mL	9.98E-02	
	N/A	N/A
	N/A	N/A

Data Entry by:		Date:	27-Dec-94
Approved by:		Date:	12-28-94

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9613479.0602

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

RUSH [redacted] Batch 5242

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-8597	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	% RECOVERY	KP39B	0

Sample Size	Customer ID
? 2.0 ml Acid dig DF=40	STD

Remarks, Calculations, Results

EDP ~~R718~~ R740 HG/HYDRD PKHT .498

STD# 49N11A RESULT 9.34E-01 ug/ML 46.72ng

STD VAL 1.0ppm %REC 93.4%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J. Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-29-94	1425	

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUID-ACID		STANDARD	DUPLICATE
Serial No.	Sample Size in mL SS	2.000	
R6712-8597	Hg ng (Nanograms)	46.72	
Batch ID	Acid Digest Dilution Factor DF	40.0	
5242	Conc Hg µg/mL (or mg/L or PPM)	0.934	ERR
Rerun No.	Conc Hg µg/L (PPB)	934.4	ERR
0		N/A	N/A
Instrument ID:		N/A	N/A
WB26847		N/A	N/A
Calibration Da	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)*DF		
12/29/94	Average Conc.=(Sample + Duplicate)/2		
Analyst	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
J. STEELE			
Date:			
12/29/94			

	STANDARD	DUPLICATE
Conc Hg (µg/mL)	9.34E-01	ERR
	N/A	N/A
	N/A	N/A

Data Entry by:	R C Jones	Date:	05-Jan-95
Approved by:	MD Smith	Date:	1-9-95

Form 5 Rev. 2

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9613479.0603

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

RUSH RERUN

Serial No.	Sample Name	Date	Time Issued	Priority
R 6713.-5697	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	uG/ML	KP39B	1

Sample Size	Customer ID
? 1.0 ml	BLANK

Remarks, Calculations, Results:
REAGENT BLANK

PKHT .005
.59 ng

<0.005 µg/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-29-94	1415	M.D. Smith	R Jones

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUIDS-DIR		BLANK	DUPLICATE
Serial No.	Sample Size in mL SS	1.000	
R6713-5697	Hg ng (Nanograms)	0.59	
Batch ID	Conc Hg µg/mL (or mg/L or PPM)	0.001	ERR
5242	Conc Hg µg/L (PPB)	0.6	ERR
Rerun No.		N/A	N/A
0		N/A	N/A
Instrument ID:		N/A	N/A
WB26847	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)		
Calibration Da	Average Conc.=(Sample + Duplicate)/2		
12/29/94	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Analyst	Detection Limit = (5 ng/SS)*(1µg/1000ng)		
J. STEELE	Detection Limit is Corrected for Sample Prep/Dilution		
Date:			
12/29/94	Detection Limit (µg/mL) :	0.005	
	Detection Limit (µg/L) =	5.0	

	BLANK	DUPLICATE
Conc Hg µg/mL	<0.005	ERR
	N/A	N/A
	N/A	N/A

ERR

Data Entry by:	R Jones	Date:	05-Jan-95
Approved by:	MD Smith	Date:	1-9-95

Form 1 Rev. 1

9613479.0604

MERCURY ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-5697	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	uG/ML	KP39B	0

Sample Size	Customer ID
? 1.0 ml	BLANK

Remarks, Calculations, Results:
REAGENT BLANK

PKHT -.001
-1.25ng

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J. Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
12-21-94	1500	R. Clark 12-28-94	12-27-94 DK McLaurin

54-6800-061 (R-10-83)

9613479.0605

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

KUSH RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-8697	PUREX -	12- 9-94	15: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	uG/ML	KP39B	0

Sample Size: ? 2.0 ml Acid dig DF=100

Customer ID: BLANK

Remarks, Calculations, Results: REAGENT BLANK to compare with samples. PKHT .013 1.34ng

<0.250ug/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-29-94	1430	

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUID-ACID		BLANK	DUPLICATE
Serial No.	Sample Size in mL SS	2.000	
R6713-8697	Hg ng (Nanograms)	1.34	
Batch ID	Acid Digest Dilution Factor DF	100.0	
5242	Conc Hg µg/mL (or mg/L or PPM)	0.067	ERR
Rerun No.	Conc Hg µg/L (PPB)	67.0	ERR
0		N/A	N/A
Instrument ID:		N/A	N/A
WB26847		N/A	N/A
Calibration Da	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)*DF		
12/29/94	Average Conc.=(Sample + Duplicate)/2		
Analyst	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
J. STEELE	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Date:			
12/29/94	Detection Limit (µg/mL)	0.250	
	Detection Limit (µg/L)	250.00	

	BLANK	DUPLICATE
Conc Hg (µg/mL)	<0.250	ERR
	N/A	N/A
	N/A	N/A

ERR

Data Entry by:		Date:	05-Jan-95
Approved by:	TD Smith	Date:	1-9-95

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9613479.0606

MERCURY ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5797	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg LIQ	LA-325-104	uG/ML	KP39B	0

Sample Size	Customer ID
? 1.0 ml	BODG79

Remarks, Calculations, Results:

PKHT .022
1.04ng

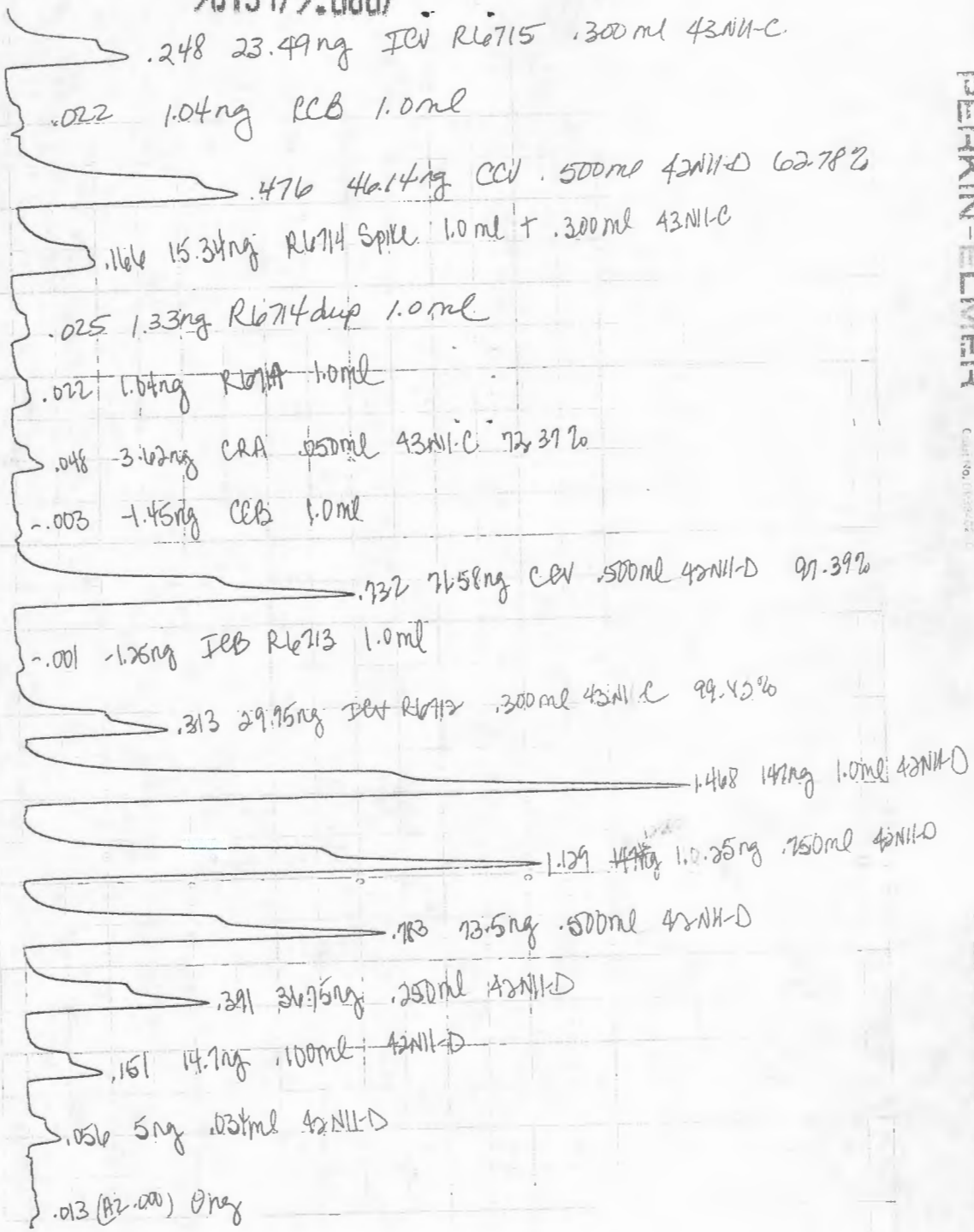
OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Jackie Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
12-21-94	1500	12-28-94	12-27-94

54-6800-061 (R-10-83)

9613479.0607



PERKIN-ELMER

PERKIN-ELMER

Analyte: Hg
Date: 12-21-94

Analyst: Jackie Steele
Start Time: 0830 End Time: 1500

MHS 20 Data:

Signal: Concentration
Mode: PKHT
Recorder: TC3
Time: 55 sec.
Expansion: 1Ω

Purge I: ~~25 sec.~~ 15 40 sec.
Purge II: 87.5 sec.
Reaction: 16 sec.
Temperature: 175 C
EDL Power: 5 Watts

14:	Intercept:	0.0116
13:	Slope:	0.0101
12:		0.9995
11:		29.9490
10:		-1.2502
9:		71.5810
8:		-1.4490
7:		3.6184
6:		1.0351
5:		1.0351
4:		15.9430
3:		46.1447
2:		1.0351
1:		23.4905

Chart Recorder Data:

Chart speed: 5 mm/min Chart full scale: 20 mV

Calibration Data:

Intercept: .0116 absorbance units
Slope: .0101 abs. units / concentration
Correlation: .9995 (unitless)

BEST AVAILABLE COPY

Jackie Steele 12-21-94

9613479.0608

MERCURY ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5897	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg-LIQ	LA-325-104	uG/ML	KP39B	0

Sample Size	Customer ID
? 1.0 ml	BODG79

Remarks, Calculations, Results:

DUPLICATE SAMPLE

PKHT ~~.022~~ 1S 12-21-94
~~1.04mg~~
PKHT .025
1.33mg

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-21-94	1500	R Olsen 12-28-94	12-27-94 BK McFarland

54-6800-061 (R-10-83)

9613479.0609

MERCURY ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5997	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	% RECOVERY	KP39B	0

Sample Size	Customer ID
? 1.0 ml	BODG79

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 43N11-C
SPIKE VOLUME .300 ml

PKHT 4-15
.166
15.34 ng

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-21-94	1500	12-28-94	12-27-94

54-6800-061 (R-10-83)

9613479.0610

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

RUSH RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8897	PUREX	12- 9-94	15: 9	19

Determination	Method Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	uG/ML	KP39B	1

Sample Size: ? 2.0 mL Acid dig DF=100

Customer ID: BODG79

Remarks, Calculations, Results:
DUPLICATE SAMPLE

PKHT .003
.40 ng

<0.250 ug/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-29-94	1435	

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUID-ACID		SAMPLE	DUPLICATE
Serial No.	Sample Size in mL SS	2.000	2.000
R6714-8897	Hg ng (Nanograms)	0.68	0.40
Batch ID	Acid Digest Dilution Factor DF	100.0	100.0
5242	Conc Hg µg/mL (or mg/L or PPM)	0.034	0.020
Rerun No.	Conc Hg µg/L (PPB)	34.0	20.0
0	Average Conc (µg/mL)	N/A	N/A
Instrument ID:	Average Conc (µg/L)	N/A	N/A
WB26847	Relative % Difference	N/A	N/A
Calibration Da	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)*DF		
12/29/94	Average Conc.=(Sample + Duplicate)/2		
Analyst	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
J. STEELE	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Date:			
12/29/94	Detection Limit (µg/mL)	0.250	
	Detection Limit (µg/L)	250.00	

	SAMPLE	DUPLICATE
Conc Hg (µg/mL)	<0.250	<0.250
Average Conc (µg/mL)	N/A	N/A
Relative % Difference	N/A	N/A

Both Results are < Detection Limit

Data Entry by:		Date:	05-Jan-95
Approved by:	MD Smith	Date:	1-9-95

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Atomic Absorption Runlog: Hg Cold Vapor Analysis

Analyst: Jackie Steele Date: 12-29-94
Instrument: PE 2380 Property #: WB26847 Batch#: 5242
Cal. Data: Intercept: -.0013 Slope: .0107 Correlation: .9999

Sample Name (Std. ID#)	Sample Point	Sam. Size, mL	D or A*	PKHT. (Abs.)	ng Result	% Rec.	Time	Comments	CC **
42N11-E	N/A	0.000	D	.000	0	N/A	:	(.005 - AZ)	
STD VAL = 0.147 ppm	"	0.034	D	.055	5	"	:		
	"	0.100	D	.151	14.7	"	:		
"	"	0.250	D	.392	36.75	"	:		
"	"	0.500	D	.774	73.5	"	:		
"	"	0.750	D	1.197	110.25	"	:		
"	"	1.000	D	1.560	147.00	"	:		
R6712 ICV	42N11-E	.300	D	.324	30.62	102.08	:		
R6713 ICB	Blank	1.0	D	.005	.59		:		
CCV	42N11-E	.500	D	.765	71.70	97.56	:		
CCB	Blank	1.0	D	.001	.21		:		
CRA	42N11-E	.050	D	.056	5.36	107.19	:		
R6712	Dig LMCS	2.0	A	.498	46.72	93.44	:		
R6713	Dig BLK	2.0	A	.013	1.34		:		
R6714	Aurex	2.0	A	.006	.68		:		
R6714	dup	2.0	A	.003	.40		:		
R6714	Spike	2.0	A	.496	46.53		:		
S749	S101	2.0	D	.002	.31		:		
S750	S202	2.0	D	.015	1.52		:		
CCV	42N11-E	.500	D	.725	67.96	92.46	:		
CCB	Blank	1.0	D	.005	.59		:		
R6715 ICV	42N11-E	.300	D	.315	29.60	98.65	:		
dig LMCS		2.0	A	.500	46.91		:	extra one	
							:		
							:		
							:		
							:		
							:		
							:		
							:		
							:		

Jackie Steele 12-29-94

* Sample prep. descriptors: D=direct, A=acid digest
** CC=control chart. Check off when control chart entries are made.

9613479.0612

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

RUSH RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8797	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	uG/ML	KP39B	1

Sample Size	Customer ID
? 2.0 ml Acid dig. DF=100	BODG79

Remarks, Calculations, Results:

PKHT .006
.68 ng

<0.250 ug/ML

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-29-94	1430	

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUID-ACID		SAMPLE	DUPLICATE
Serial No.	Sample Size in mL SS	2.000	
R6714-8797	Hg ng (Nanograms)	0.68	
Batch ID	Acid Digest Dilution Factor DF	100.0	
5242	Conc Hg µg/mL (or mg/L or PPM)	0.034	ERR
Rerun No.	Conc Hg µg/L (PPB)	34.0	ERR
0		N/A	N/A
Instrument ID:		N/A	N/A
WB26847		N/A	N/A
Calibration Da	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)*DF		
12/29/94	Average Conc.=(Sample + Duplicate)/2		
Analyst	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
J. STEELE	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Date:			
12/29/94	Detection Limit (µg/mL)	0.250	
	Detection Limit (µg/L)	250.00	

	SAMPLE	DUPLICATE
Conc Hg (µg/mL)	<0.250	ERR
	N/A	N/A
	N/A	N/A

ERR

Data Entry by:		Date:	05-Jan-95
Approved by:		Date:	1-9-95

Form 5 Rev. 2

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9613479.0613

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

RUSH RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8997	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	% RECOVERY	KP39B	1

Sample Size	Customer ID
? 2.0ml Samp. Acid dig DF=100	BODG79

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 47N11A
SPIKE VOLUME 2.5ml → 100ml final vol.
spk acid dig DF = 40
STD val. = 1.0ppm

PkHT .496
46.53ng
93.1 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-29-94	1438		

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUIDS-ACI		SAMPLE	SPIKE
Serial No.	Sample (mL)Vol. Acid Dig. Used SAVOL	2.00	N/A
R6714-8997	Spike Std Volume (mL) SSVOL	N/A	2.500
Batch ID	ng of Spike + Sample ngSSAM	N/A	46.530
5242	ng of Sample ngSAM	0.68	N/A
Rerun No.	Final Acid Digest Vol. (mL) ADVOL	N/A	100.00
1		N/A	N/A
Instrument ID:	Spike Std Dilution Factor SPDF	N/A	40.0
WB26847	Spike Std ID	N/A	47N11A
Calibration Da	Spike Std Value (ppm) SS VAL	N/A	1.000
12/29/94	% Recovery	N/A	93.1
Analyst			
J. STEELE	Sample result is < 5 ng, 0 ng of sample is used in the calculation for		
Date:			
12/29/94	Spike Std. Dilution Factor = ADVOL/SSVOL		

% Recovery {([{(ngSSAM/SAVOL)*(1/1000)}-{(0/SAVOL)*(1/1000)}]*SPDF)/SS VAL}*100

% Recovery =	93.1

Data Entry by:		Date:	05-Jan-95
Approved by:		Date:	1-9-95

Form 6 Rev. 1

9613479.0614

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

KUSHRERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5597	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	% RECOVERY	KP39B	1

Sample Size	Customer ID
? .300ml	STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD 9.87E-02 ug/mL PKHT .315
STD# 43N11-E RESULT
PJ 1-5-95
STD VAL 0.100ppm %REC ~~9.86E-02 ug/mL~~ 29.60ng
98.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-29-94		

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUIDS-DIR		STANDARD	DUPLICATE
Serial No.	Sample Size in mL SS	0.300	
R6715-5597	Hg ng (Nanograms)	29.60	
Batch ID	Conc Hg µg/mL (or mg/L or PPM)	0.099	ERR
5242	Conc Hg µg/L (PPB)	98.7	ERR
Rerun No.		N/A	N/A
0		N/A	N/A
Instrument ID:		N/A	N/A
WB26847	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)		
Calibration Da	Average Conc.=(Sample + Duplicate)/2		
12/29/94	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Analyst			
J. STEELE			
Date:			
12/29/94			

	STANDARD	DUPLICATE
Conc Hg µg/mL	9.87E-02	ERR
	N/A	N/A
	N/A	N/A

Data Entry by:	RS Jones	Date:	05-Jan-95
Approved by:	MD Smith	Date:	1-9-95

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9613479.0615

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5597	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-104	% RECOVERY	KP39B	0

Sample Size	Customer ID
? , 300 ml	STD

Remarks, Calculations, Results:

EDP R716 HG/HYDRD PKHT .248
STD# 43N11-C RESULT 7.83E-2 23.49 ng
STD VAL 1.00E-1 %REC 78.3

OSCR #6861

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Steele				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-21-94	1500	12-28-94	12-27-94

54-6800-061 (R-10-83)

CVAA: LA-325-104 (A-1) Hg LIQUIDS-DIR		STANDARD	DUPLICATE
Serial No.	Sample Size in mL SS	0.300	
R6715-5597	Hg ng (Nanograms)	23.49	
Batch ID	Conc Hg µg/mL (or mg/L or PPM)	0.078	N/A
5131	Conc Hg µg/L (PPB)	78.3	N/A
Rerun No.		N/A	N/A
0		N/A	N/A
Instrument ID:		N/A	N/A
WB26847	Conc Hg µg/mL=(Hg ng/SS)*(1µg/1000ng)		
Calibration Da	Average Conc.=(Sample + Duplicate)/2		
12/21/94	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Analyst			
J STEELE			
Date:			
12/21/94			

	STANDARD	DUPLICATE
Conc Hg µg/mL	7.83E-02	
	N/A	N/A
	N/A	N/A

Data Entry by:		Date:	27-Dec-94
Approved by:		Date:	12-28-94

Form 1 Rev. 1 Page 1 of 1

9613479.0616

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6714	Customer ID: PUREX: BODG79
Analysis: Hg	Sample Prep: DIRECT

Instrument: PE2380(Hydride AA) WB26847	Procedure/ Rev: LA 325-104 / B-1
Technologist: Jackie Stelle	Date: 12/21/94
Starting Time: 0830	Temperature 175 C
Ending Time: 1508	Chemist: R.A. Esch

Comments: Batch # 5131

Rerun by acid digest was requested due to possible matrix interference causing poor spike recovery and low (out-of-control) end std. result [illegible] 12-28-94

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R6712-5597	11		
2	REAGENT BLANK	R6713-5697	12		
3	SAMPLE	R6714-5797	13		
4	DUPLICATE SAMPLE	R6714-5897	14		
5	SPIKED SAMPLE	R6714-5997	15		
6	ENDING LMCS STD	R6715-5597	16		
7			17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	43N11C .300mL			
SPIKE	43N11C .300mL			

A-6000-881 (03/92)

9613479.0617

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5129

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5595	PUREX	12- 9-94	15: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? .250 ml	STD

Remarks, Calculations, Results

EDP R741 AS/HYDRD

STD# 44N11D RESULT 1.05-1

STD VAL .100 ppm %REC 105.0

PKHT= .780
ng= 26.34 ng

OUT FOR RERUN
in acid digest

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie H Massie				
Hrs	Hrs	Hrs	Hrs	Hrs
				RE Jones
Date	Time Completed	Lab Unit Mgr		
12-19-94	13:45	12/28/94	12-21-94	

54-6800-061 (R-10-83)

Arsenic : LA-355-131 (C-0) As LIQUIDS-DIRECT		STANDARD	DUPLICATE
Type	Sample Size in mL SS	0.250	
STANDARD	As ng (Nanograms)	26.34	
Work List	Conc As µg/mL (or mg/L or PPM)	0.105	N/A
5129	Conc As µg/L (PPB)	105.4	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6712-5595	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date			
12/19/94			
Instrument Code			
WB27979			
Analyst			
V. MASSIE			
Date		STANDARD	DUPLICATE
12/19/94	Conc As µg/mL	1.05E-01	
Time		N/A	
01:45 PM		N/A	

Data Entry by:	RE Jones	Date:	12/21/94
Approved by:	EAlish	Date:	12/28/94

Form 355131_1 Rev. 1.2

9613479.0618

ARSENIC ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-5695	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 1.0ml	BLANK

Remarks, Calculations, Results

REAGENT BLANK

PKHT= .155
ng= -2.36ng

OUT FOR RERUN
try acid digest

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-19-94	13:45	R.O. Eph 12/28/94	12-21-94 K.M. Gasel

54-6800-061 (R-10-83)

9613479.0619

ARSENIC ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5795	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 1.0 ml	BODG79

Remarks, Calculations, Results:

PKHT= .033
ng= -7.96

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie			typo acid digest	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-19-94	13:45	Robert 12/28/94	12-21-94 K M Gallend

54-6800-061 (R-10-83)

Atomic Absorption Runlog: As Hydride Analysis

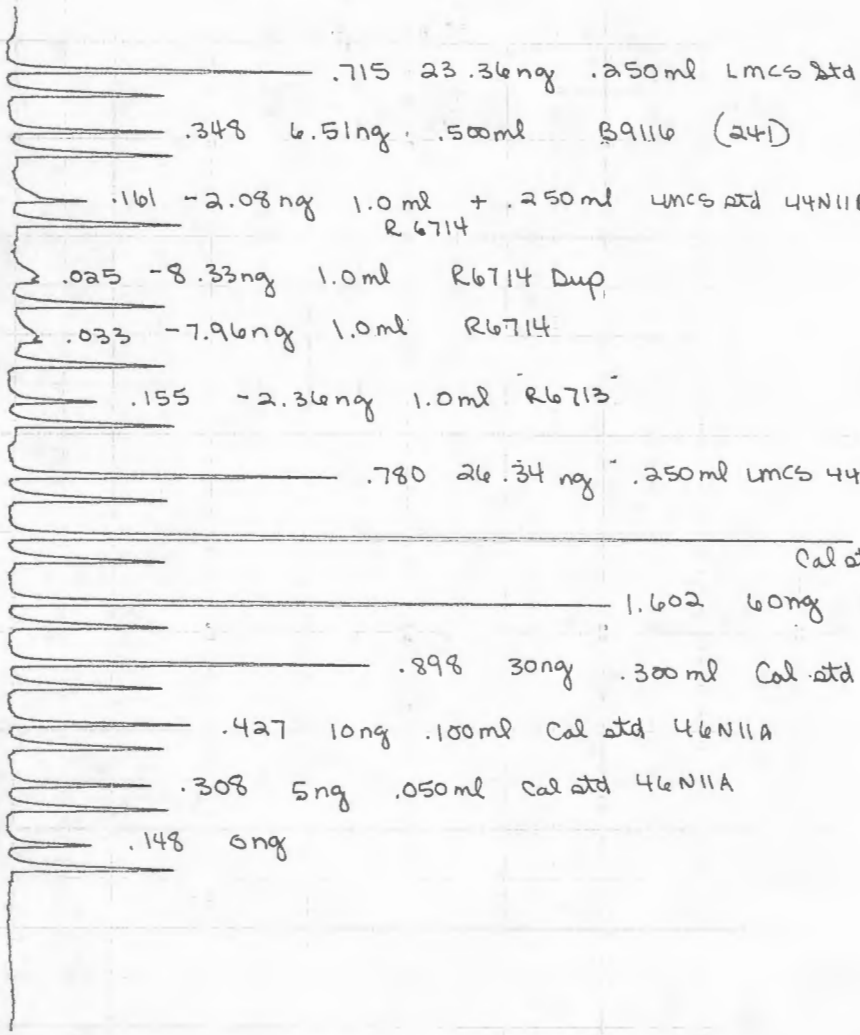
Analyst: Valerie L Massie Date: 12-19-94
Instrument: PE 2280 Property #: WB27979
Analyte: As Batch #: 5129 Start Time: 07:40 End Time: 13:45

Calibration Data: Intercept: 0.2063 absorbance units
Slope: 0.0218 abs. units / concentration
Correlation: 0.9976 (unitless)

Sample Name (Std. ID#)	Sample Point	Sam. Size, mL	D or A*	PKHT (Abs.)	ng result	% Rec.	Comments	CC **
Cal. Std. ID	N/A	0.000	D	.148	0	N/A		
#: 46N11A	"	0.050	D	.308	5	"		
	"	0.100	D	.427	10	"		
	"	0.300	D	.898	30	"		
	"	0.600	D	1.602	60	"		
	"	1.000	D	2.319	100	"		
R6712	LMCS Std 44N11D	.250	D	.780	26.34	105.38		
R6713	Blank	1.0	D	.155	-2.36			
R6714	Purex BOD679	1.0	D	.033	-7.96			
R6714D	Purex BOD679 Dup	1.0	D	.025	-8.33			
R6714S	BOD679 + LMCS Std 44N11D	1.0 + .250	D	.161	-2.08			
B9116	24-1	.500	D	.348	6.51	12-19-94		
R6715	LMCS Std 44N11D	.250	D	.715	23.36	93.44		

* Sample prep. descriptors: D=direct, A=acid digest
** CC=control chart. Check off when control chart entries are made.

9613479.0621.



13:45 12-19-94 As Valerie L Massie

Analyte: As Analyst: Valerie L Massie
Date: 12-19-94 Start Time: 07:40 End Time: 13:45

MHS 20 Data:

Signal: Concentration Purge I: 50 sec.
Mode: PKHT Reaction: 24 sec.
Recorder: TC3 Purge II: 60 sec.
Time: 40 sec. Temperature: 900 C
Expansion: 4 EDL Power: 8 Watts

Chart Recorder Data:

Chart speed: 5 mm/min Chart full scale: 20 mV

Calibration Data:

vm 12-19-94

Intercept: 0.206~~0~~63 absorbance units
Slope: 0.0218 abs. units / concentration
Correlation: 0.9976 (unitless)

10:	Intercept: 0.2063
9:	Slope: 0.0218
8:	0.9976
7:	26.3446
6:	-2.3566
5:	-7.9591
4:	-8.3265
3:	-2.0811
2:	6.5063
1:	23.3597

Valerie L Massie
12-19-94

PERKIN-ELMER

PERKIN-ELMER

BEST AVAILABLE COPY

9613479.0622

ARSENIC ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5895	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 1.0ml	BODG79

Remarks, Calculations, Results:

PK HT= .025
ng= -8.33

OUT FOR RERUN
12 acid digest

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-19-94	13:45	R Oat 12/28/94	12-21-94 K M Larsen

54-6800-061 (R-10-83)

9613479.0623

ARSENIC ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-5995	PUREX	12- 9-94	15: 9	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? 1.0 ml + .250 ml	BODG79

Remarks, Calculations, Results:

SAMPLE SPIKED ID R 6714
SPIKE ID 44N11D
SPIKE VOLUME

PKHT= .161
ng= -2.08 ng

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Mason			Hg acid digest	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-19-94	13:45	Robert 12/28/94	12-21-94 [illegible]

54-6800-061 (R-10-83)

9613479.0624

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5595	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? .250ml	STD

Remarks, Calculations, Results:

EDP R741 AS/HYDRD PKHT= .715

STD# 44N11D RESULT 9.34-2 ug/ml ng= 23.36ng

STD VAL .100 ppm %REC 93.4

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie Massie			ug acid digest	
Hrs	Hrs	Hrs	Hrs	Hrs
				RO Jones
Date	Time Completed	Lab Unit Mgr		
12-19-94	13:45	RO Jones 12/28/94		12-21-94 PK McFarland

54-6800-061 (R-10-83)

Arsenic : LA-355-131 (C-0) As LIQUIDS-DIRECT		STANDARD	DUPLICATE
Type	Sample Size in mL SS	0.250	
STANDARD	As ng (Nanograms)	23.36	
Work List	Conc As µg/mL (or mg/L or PPM)	0.093	N/A
5129	Conc As µg/L (PPB)	93.4	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6715-5595	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date			
12/19/94			
Instrument Code			
WB27979			
Analyst			
V. MASSIE			
Date		STANDARD	DUPLICATE
12/19/94	Conc As µg/mL	9.34E-02	
Time		N/A	
01:45 PM		N/A	

Data Entry by:	RO Jones	Date:	12/21/94
Approved by:	RO Jones	Date:	12/28/94

Form 355131_1 Rev. 1.2

9613479.0625

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6714	Customer ID: Purex BODG79
Analysis: ACID DIGEST	Sample Prep: N/A

Instrument:	Procedure/ Rev: LA-505-158
Technologist: JACK SPELLMAN	Date: 12/22/94
Starting Time:	Temperature N/A
Ending Time: 12:00	Chemist: BERTRAND GRIFFIN II

Comments:

BATCH 5211

	Description	Lab ID		Description	Lab ID
1	LMCS STD	R6712-8505	11		
2	BLANK	R6713-8605	12		
3	SAMPLE	R6714-8705	13		
4	DUPLICATE	R6714-8805	14		
5	SAMPLE + SPIKE	R6715-8905	15		
6			16		
7			17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	47N11-A			
SPIKE	47N11-A			

A-6000-881 (03/92)

9613479.0626

ACID DIGESTION ANALYSIS

RUSH Batch 5211

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-8505	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD DGST	LA-505-158	DF	KP39B	0

Sample Size	Customer ID
? Sample size varies see below	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 47N11-A

2.5ml → 100mL

DF = 100mL / 2.5mL = 40

Tak Sedlar

48N11-A

2 ml → 100mL

100mL / 2mL = 50

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-22-94	1200	Bertrand Griffin II	[signature]

54-6800-061 (R-10-83)

9613479.0627

ACID DIGESTION ANALYSIS

RUSH

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-8605	PUREX	12- 9-94	15: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD DGST	LA-505-158	NONE	KP39B	0

Sample Size	Customer ID
? 100 mL total Vol.	BLANK

Remarks, Calculations, Results:
REAGENT BLANK
VOLUME ON
COMPLETION 100 mL
for As, Se & Hg

JAh Spl

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-22-94	1200	Bertrand Tiffin II	[illegible]

54-6800-061 (R-10-83)

9613479.0628

ACID DIGESTION ANALYSIS

RUSH

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8705	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD DGST	LA-505-158	DF	KP39B	0

Sample Size	Customer ID
? 1ml → 100mL	BODG79

Remarks, Calculations, Results:

$DF \frac{100\,mL}{1\,mL} = 100$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-2-94	1200	Bethard Griffin III	

54-6800-061 (R-10-83)

9613479.0629

ACID DIGESTION ANALYSIS

RUSH

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8805	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD DGST	LA-505-158	DF	KP39B	0

Sample Size	Customer ID
? 1 mL → 100 mL	BODG79

Remarks, Calculations, Results:
DUPLICATE SAMPLE

$DF \frac{100\,mL}{1\,mL} = 100$

JAh Spellman

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-22-94	1200	Bertrand Griffin II [signature]

54-6800-061 (R-10-83)

9613479.0630

ACID DIGESTION ANALYSIS

RUSH

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8905	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD DGST	LA-505-158	DF	KP39B	0

Sample Size	Customer ID
? 1ml → 100ml	BODG79

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 47U11-A Hg
SPIKE VOLUME 2.5 ml

$DF = \frac{100ml}{2.5ml} = 40$

48U11-A As/Se
2 ml

$\frac{100ml}{2ml} = 50$

SAM CALC. → $\frac{100ml}{1ml} = 100$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-22-94	1200	Bertrand Griffith	

54-6800-061 (R-10-83)

9613479.0631

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R 6714	Customer ID: PUREX CELL FLUSH: BODG79
Analysis: Se	Sample Prep: ACID DIGEST

Instrument: PE2280(Hydride) WB27979	Procedure/ Rev: LA 365-131 / C-0
Technologist: Valerie L Massie	Date: 01/25/95
Starting Time: 07:50	Temperature 975 C
Ending Time: 13:50	Chemist: RA Esch

Comments: BATCH # 5352

See chemist comments on Batch Summary Sheet attached.

RAEsch 1/30/95

	Description	Lab ID		Description	Lab ID
1	LMCS STD	R 6712-5596	11		
2	DIGESTED LMCS STD	R 6712-8596	12		
3	REAGENT BLANK	R 6713-5696	13		
4	DIGESTED BLANK	R 6713-8696	14		
5	SAMPLE	R 6714-8796	15		
6	DUPLICATE SAMPLE	R 6714-8896	16		
7	SPIKED SAMPLE	R 6714-8996	17		
8	ENDING LMCS STD	R 6715-5596	18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	44N11E .250mL			
DIGESTED LMCS	48N11B DF = 50			
DIGESTED SPIKE	48N11B DF = 50			

A-6000-881 (03/92)

9613479.0632

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN Batch 5352

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5596	PUREX	12- 9-94	15: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	% RECOVERY	KP39B	1

Sample Size	Customer ID
.500 ML	STD

Remarks. Calculations. Results

EDP R743 SE/HYDRD PKHT= .579

STD# 44N11E RESULT 9.42E-2 ng= 47.10ng

STD VAL 1.000E-1 %REC 94.20 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie Massie				
Hrs	Hrs	Hrs	Hrs	Hrs
				NE Wright

Date	Time Completed	Lab Unit Mgr	
1-25-95	13:50	RDKeyt 1/27/95	NE Wright

54-6800-061 (R-10-83)

Selenium: LA-365-131 (C-0) Se LIQUIDS-DIRECT

		STANDARD	DUPLICATE
Type	Sample Size in mL SS	0.500	
STANDARD	Se ng (Nanograms)	47.10	
Work List	Conc Se µg/mL (or mg/L or PPM)	0.094	N/A
5352	Conc Se µg/L (PPB)	94.2	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6712-5596	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date			
01/25/95			
Instrument Code			
WB27979			
Analyst			
V. MASSIE			
Date		STANDARD	DUPLICATE
01/25/95	Conc Se µg/mL	9.42E-02	
Time		N/A	
07:50 AM		N/A	

Data Entry by: NE Wright Date: 01/26/95

Approved by: RDKeyt Date: 1/27/95

Form 365131_1 Rev. 1.1

9613479.0633

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-8596	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	% RECOVERY	KP39B	1

Sample Size	Customer ID
2 ML	STD

DF=50

Remarks, Calculations, Results

EDP R748 SE/DGST

STD# 48N11A RESULT 9.52E-1

STD VAL 1.000 %REC 95.2%

PKHT= .472

ng= 38.06ng

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-25-95	13:50	1-27-95

54-6800-061 (R-10-83)

Selenium : LA-365-131 (C-0) Se LIQUID-ACID DIGEST		STANDARD	DUPLICATE
Type	Sample Size in mL SS	2.000	
STANDARD	Se ng (Nanograms)	38.06	
Work List	Acid Digest Dilution Factor DF	50.0	
5352	Conc Se µg/mL (or mg/L or PPM)	0.952	ERR
Test Code	Conc Se µg/L (PPB)	951.5	ERR
	Average Conc (µg/mL)	N/A	ERR
Matrix	Average Conc (µg/L)	N/A	ERR
LIQUID	Relative % Difference	N/A	ERR
Sample #	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)*DF		
R6712-8596	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
01/25/95			
Instrument Code			
WB27979			
Analyst			
V. MASSIE			
Date		STANDARD	DUPLICATE
01/25/95	Conc Se (µg/mL)	9.52E-01	ERR
Time	Average Conc (µg/mL)	N/A	ERR
07:50 AM	Relative % Difference	N/A	ERR

Data Entry by:		Date:	01/26/95
Approved by:		Date:	1/27/95

Form 365131_3 Rev. 2.1

9613479.0634

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-5696	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	uG/ML	KP39B	1

Sample Size	Customer ID
2 ML	BLANK

Remarks, Calculations, Results
REAGENT BLANK

PK HT= .048
ng= 2.24ng

< 3.0E-3 ug/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-25-95	13:50	1-27-95	

54-6800-061 (R-10-83)

Selenium: LA-365-131 (C-0) Se LIQUIDS-DIRECT

		BLANK	DUPLICATE
Type	Sample Size in mL SS	2.000	
BLANK	Se ng (Nanograms)	2.24	
Work List	Conc Se µg/mL (or mg/L or PPM)	0.001	N/A
5352	Conc Se µg/L (PPB)	1.1	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6713-5696	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date	Detection Limit = (5 ng/SS)*(1µg/1000ng)		
01/25/95	Detection Limit is Corrected for Sample Prep/Dilution		
Instrument Code			
WB27979	Detection Limit (µg/mL) =	0.003	
Analyst	Detection Limit (µg/L) =	2.5	
V. MASSIE			
Date		BLANK	DUPLICATE
01/25/95	Conc Se µg/mL	<0.003	
Time		N/A	
07:50 AM		N/A	

The Result is < Detection Limit

Data Entry by:	RE Wright	Date:	01/26/95
Approved by:	[illegible]	Date:	1/27/95

Form 365131_1 Rev. 1.1

9613479.0635

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-8696	PUREX	12- 9-94	15: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	uG/ML	KP39B	1

Sample Size	Customer ID
2 ML	BLANK

Df=100

Remarks, Calculations, Results

REAGENT BLANK

PKHT= .054
ng= 2.75ng

<2.50E-1 ug/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.
1-25-95	13:50	1-27-95

54-6800-064 (R-10-83)

Selenium : LA-365-131 (C-0) Se LIQUID-ACID DIGEST

		BLANK	DUPLICATE
Type	Sample Size in mL SS	2.000	
BLANK	Se ng (Nanograms)	2.75	
Work List	Acid Digest Dilution Factor DF	100.0	
5352	Conc Se µg/mL (or mg/L or PPM)	0.138	ERR
Test Code	Conc Se µg/L (PPB)	137.5	ERR
	Average Conc (µg/mL)	N/A	ERR
Matrix	Average Conc (µg/L)	N/A	ERR
LIQUID	Relative % Difference	N/A	ERR
Sample #	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)*DF		
R6713-8696	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
01/25/95	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Instrument Code			
WB27979	Detection Limit (µg/mL)	0.250	
Analyst	Detection Limit (µg/L)	250.00	
V. MASSIE			
Date		BLANK	DUPLICATE
01/25/95	Conc Se (µg/mL)	<0.250	ERR
Time	Average Conc (µg/mL)	N/A	ERR
07:50 AM	Relative % Difference	N/A	ERR

ERR

Data Entry by:		Date:	01/26/95
Approved by:		Date:	1/27/95

Form 365131_3 Rev. 2.1

Page 1 of 1

9613479.0636

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8796	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	uG/ML	KP39B	1

Sample Size	Customer ID
2 ML	BODG79

Remarks, Calculations, Results

PKHT= .058
ng= 3.08ng

<2.50E-1 ug/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-25-95	13:50	1-27-95	

54-6800-001 (R-10-83)

Selenium : LA-365-131 (C-0) Se LIQUID-ACID DIGEST

		SAMPLE	DUPLICATE
Type	Sample Size in mL SS	2.000	2.000
SAMPLE	Se ng (Nanograms)	3.08	2.66
Work List	Acid Digest Dilution Factor DF	100.0	100.0
5352	Conc Se µg/mL (or mg/L or PPM)	0.154	0.133
Test Code	Conc Se µg/L (PPB)	154.0	133.0
	Average Conc (µg/mL)	N/A	N/A
Matrix	Average Conc (µg/L)	N/A	N/A
LIQUID	Relative % Difference	N/A	N/A
Sample #	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)*DF		
R6714-8796	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
01/25/95	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Instrument Code			
WB27979	Detection Limit (µg/mL)	0.250	
Analyst	Detection Limit (µg/L)	250.00	
V. MASSIE			
Date		SAMPLE	DUPLICATE
01/25/95	Conc Se (µg/mL)	<0.250	<0.250
Time	Average Conc (µg/mL)	N/A	N/A
07:50 AM	Relative % Difference	N/A	N/A

Both Results are < Detection Limit

Data Entry by:		Date:	01/26/95
Approved by:		Date:	1/27/95

Form 365131_3 Rev. 2.1

Page 1 of 1

9613479.0637

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

CALIBRATION RECORD

Analyte:	Se		
Procedure:	LA 365-131	Revision:	C-0
Instrument:	PE2280 (Hydride)	Property No.:	WB27979
Technologist	Valerie L Massie	Payroll No.: N/A	Date: 01/25/95

Calibration Standard ID:	45N11D
Analyte Concentration:	.100ppm
Type of Calibration:	LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	.000mL	0 ng	.022
2	.050mL	5 ng	.088
3	.250mL	25 ng	.293
4	.500mL	50 ng	.635
5	1.000mL	100 ng	1.200
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments: r=.9994

Y intercept= .0215

slope= .0118

A-6000-882 (03/92)

9613479.0638

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-365-131	DATE START: 1/25/95	BATCH #5352
PREPARED BY: R.A. Esch	DATE COMPLETE: 1/27/95	

	UNITS:		ug/mL	ug/mL	ug/mL			ug/mL	
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD/44N11E	R6712	Se	0.0942				94.2		
UNDIGESTED									
STD/48N11B	R6712	Se	0.0952				95.2		
DIGESTED									
REAGENT BLK	R6713	Se	< 0.003					0.003	
PREP BLK	R6713	Se	< 0.250					0.250	
PUREX	R6714	Se	< 0.250	< 0.250	N/A	N/A	84.6	0.250	
BODG79									
STD/44N11E	R6715	Se	0.092				92.0		
UNDIGESTED									

NARRATIVE: [ ] NO SPECIAL PROBLEMS/METHOD VARIATIONS IN THIS BATCH
LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

This sample batch was rerun at the request of the customer. The first analysis run of this batch showed some "memory effects" and baseline drift due to an unknown matrix interference. This "memory effect" is the most probable cause of the greater than detection limit results for the prep blank, sample and duplicate sample on the first analysis run. The actual measured peak heights for these samples were approximately the same as the low (detection level) standard.

The sample cell on the instrument was replaced after the first analysis due to the possible problems that might occur with "memory effects" on subsequent batches. The results for the rerun were much better. Little to no "memory effect" or baseline drifting was observed. The results for the prep blank, sample and duplicate sample are all less than the detection limit of 0.250 ug/mL.

RAEsch
1-27-95

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Atomic Absorption Runlog: Se Hydride Analysis

Analyst: Valerie L Massie Date: 1-25-95
Instrument: PE 2280 Property #: WB27979
Analyte: Se Batch #: 5352 Start Time: 07:50 End Time: 13:50

Calibration Data: Intercept: 0.0215 absorbance units
Slope: 0.0118 abs. units / concentration
Correlation: 0.9994 (unitless)

Sample Name (Std. ID#)	Sample Point	Sam. Size, (mL)	D or A*	PKHT (Abs.)	ng result	% Rec.	Comments	CC **
45N11D	N/A	0.000	D	.022	0	N/A		
	"	0.050	D	.088	5	"		
	"	0.250	D	.293	25	"		
	"	0.500	D	.635	50	"		
	"	1.000	D	1.200	100	"		
R6712	direct LMCS std 44N11E	.500	D	.579	47.10	94.20		
R6713	direct Blank	2.0	D	.048	2.24			
R6712	digested std 48N11A	2.0	A	.472	38.06	95.15		
R6713	digested Blank	2.0	A	.054	2.75			
R6714	Purex sample	2.0	A	.058	3.08			
R6714D	Purex dup	2.0	A	.053	2.66			
R6714S	Purex spike	2.0	A	.422	33.84	84.59		
R6715	direct LMCS std 44N11E	.500	D	.566	46.00	92.01		

* Sample prep. descriptors: D=direct, A=acid digest
** CC=control chart. Check off when control chart entries are made.

9613479.0640

.564 46.00ng .500ml direct UMCS 44N11E R6715

.422 33.84ng 2.0ml R6714 spike

.053 2.66ng 2.0ml R6714 dup

.058 3.08ng 2.0ml R6714

.054 2.75ng 2.0ml digested Blank R6713

.472 38.06ng 2.0ml digested std 48N11A R6712

.048 2.24ng 2.0ml direct Blank R6713

.579 47.10ng .500ml direct UMCS std 44N11E R6712

1.200 100ng 1.0ml 45N11D Cal std

.635 50ng .500ml 45N11D Cal std

.293 25ng .250ml 45N11D Cal std

.088 5ng .050ml 45N11D Cal std

.022 0ng

13:50 1-25-95 Se Valerie L Massie

Analyte: Se
Date: 1-25-95

Analyst: Valerie L Massie
Start Time: 07:50 End Time: 13:50

MHS 20 Data:

Signal: Concentration
Mode: PKHT
Recorder: TC3
Time: 30 sec.
Expansion: 10

Purge I: 40 sec.
Reaction: 10 sec.
Purge II: 50 sec.
Temperature: 975 C
EDL Power: 6 Watts

Valerie L Massie
1-25-95

11:	Intercept: 0.0215
10:	Slope: 0.0118
9:	0.9994
8:	47.1016
7:	2.2390
6:	38.0615
5:	2.7459
4:	3.0838
3:	2.6614
2:	33.8371
1:	46.0033

Chart Recorder Data:

Chart speed: 5 mm/min Chart full scale: 20 mV

Calibration Data:

Intercept: 0.0215 absorbance units
Slope: 0.0118 abs. units / concentration
Correlation: 0.9994 (unitless)

PERKIN-ELMER

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9613479.0641

SELENIUM ANALYSIS

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8896	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-885-131	uG/ML	KP39B	1

Sample Size	Customer ID
2 ML	BODG79

Remarks, Calculations, Results:

DUPLICATE SAMPLE

PKHT= .053
ng= 2.66ng

<2.50E-1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie M Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-25-95	13:50	1-27-95	

54-6800-001 (R-10-83)

9613479.0642

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8996	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	% RECOVERY	KP39B	1

Sample Size	Customer ID
2 ML	BODG79

Samp. acid dig DF = 100

Remarks, Calculations, Results

SAMPLE SPIKED ID R6714
SPIKE ID 48N11A
SPIKE VOLUME
2.0 ml → 100 ml final vol.
STD DF = 50
STD Val = 1.0 ppm

PKHT = 422
ng = 33.84 ng

84.6 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-25-95	13:50	1-27-95	RE Wright

54-6800-061 (R-10-83)

Selenium: LA-365-131 (C-0) Se LIQUIDS-ACID DIGEST

Type		SAMPLE	SPIKE
	Sample (mL)Vol. Acid Dig. Used SAVOL	2.00	N/A
SPIKE	Spike Std Volume (mL) SSVOL	N/A	2.000
Work List	ng of Spike + Sample ngSSAM	N/A	33.84
5352	ng of Sample ngSAM	3.08	N/A
Test Code	Final Acid Digest Vol. (mL) ADVOL	N/A	100.00
		N/A	N/A
Matrix	Spike Std Dilution Factor SPDF	N/A	50.0
LIQUID	Spike Std ID	N/A	48N11A
Sample #	Spike Std Value (ppm) SS VAL	N/A	1.000
R6714-8996	% Recovery	N/A	84.6%
Calibration Date			
01/25/95	Sample result is < 5 ng, 0 ng of sample is used in the calculation for % recovery		
Instrument Code			
WB27979	Spike Std. Dilution Factor = ADVOL/SSVOL		
Analyst			
V. MASSIE	% Recovery = {([{(ngSSAM/SAVOL)*(1/1000)}-{(0/SAVOL)*(1/1000)}]*SPDF)/SS VAL}*100		
Date			
01/25/95			
Time	% Recovery =		84.6%
07:50 AM			

Data Entry by:	RE Wright	Date:	01/26/95
Approved by:	RAlch	Date:	1/27/95

Form 365131_4 Rev. 1.1

9613479.0643

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5596	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	% RECOVERY	KP39B	1

Sample Size	Customer ID
.500 ML	STD

Remarks, Calculations, Results:

EDP R743 SE/HYDRD

STD# 44N11E RESULT 9.20E-2

STD VAL 1.00E-1 %REC 92.00%

PKHT= .566

ng= 46.00ng

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie M Massie				
Hrs	Hrs	Hrs	Hrs	Hrs
				NE Wright

Date	Time Completed	Lab Unit Mgr	
1-25-95	13:50	1-27-95	NE Wright

54-6800-051 (R-10-83)

Selenium: LA-365-131 (C-0) Se LIQUIDS-DIRECT		STANDARD	DUPLICATE
Type	Sample Size in mL SS	0.500	
STANDARD	Se ng (Nanograms)	46.00	
Work List	Conc Se µg/mL (or mg/L or PPM)	0.092	N/A
5352	Conc Se µg/L (PPB)	92.0	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6715-5596	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date			
01/25/95			
Instrument Code			
WB27979			
Analyst			
V. MASSIE			
Date		STANDARD	DUPLICATE
01/25/95	Conc Se µg/mL	9.20E-02	
Time		N/A	
07:50 AM		N/A	

Data Entry by:	NE Wright	Date:	01/26/95
Approved by:	[illegible]	Date:	1/27/95

Form 365131_1 Rev. 1.1

9613479.0644

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R 6714, R 6715, R 6716	Customer ID: PUREX CELL FLUSH: BODG79
Analysis: Se	Sample Prep: ACID DIGEST

Instrument: PE2280(Hydride) WB27979	Procedure/ Rev: LA 365-131 / C-0
Technologist:	Date: 01/09/95
Starting Time: 07:45	Temperature 975 C
Ending Time: 14:00	Chemist: RA Esch

Comments: BATCH #5213

Rerun requested by customer due to high digested blank result and sample results higher than expected. [illegible] 1/19/95

	Description	Lab ID		Description	Lab ID
1	LMCS STD	R 6712-5596	11	Rerun data not used	
2	DIGESTED LMCS STD	R 6712-8596	12		
3	REAGENT BLANK	R 6713-5696	13		
4	DIGESTED BLANK	R 6713-8696	14		
5	SAMPLE	R 6714-8796	15		
6	DUPLICATE SAMPLE	R 6714-8896	16		
7	SPIKED SAMPLE	R 6714-8996	17		
8	ENDING LMCS STD	R 6715-8796	18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	44N11D .250mL			
DIGESTED LMCS	48N11A DF = 50			
DIGESTED SPIKE	48N11A DF = 50			

A-6000-881 (03/92)

9613479.0645

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5596	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? .500ml	STD

Remarks. Calculations. Results:
EDP R743 SE/HYDRD
STD# 44W11D RESULT
STD VAL .100ppm %REC
PKHT= .708
ng= 53.94ng
1.08E-01 µg/ml
108%
OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-95	14:00	ND Smith

54-6800-061 (R-10-83)

Selenium: LA-365-131 (C-0) Se LIQUIDS-DIRECT		STANDARD	DUPLICATE
Type	Sample Size in mL SS	0.500	
STANDARD	Se ng (Nanograms)	53.94	
Work List	Conc Se µg/mL (or mg/L or PPM)	0.108	N/A
5213	Conc Se µg/L (PPB)	107.9	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6712-5596	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date			
01/09/95			
Instrument Code			
WB27979			
Analyst			
MASSIE			
Date		STANDARD	DUPLICATE
01/09/95	Conc Se µg/mL	1.08E-01	
Time		N/A	
02:00 PM		N/A	

94

Data Entry by:		Date:	01/16/95
Approved by:		Date:	1/19/95

Form 365131_1 Rev. 1.1

9613479 0646

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5213

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-8596	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? 2.0 ml Acid dig DF = 50	STD

Remarks, Calculations, Results

EDP ~~R74~~ RK 1/16/95 SE/HYDRD (R748)

STD# 48N11A RESULT 8.42 E-1

STD VAL 1.0 ppm · %REC 84.2 %

PKHT= .459

ng = 33.67 ng

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-9-95	14:00	1/19/95	

54-6800-061 (R-10-83)

Selenium : LA-365-131 (C-0) Se LIQUID-ACID DIGEST		STANDARD	DUPLICATE
Type	Sample Size in mL SS	2.000	
STANDARD	Se ng (Nanograms)	33.67	
Work List	Acid Digest Dilution Factor DF	50.0	
5213	Conc Se µg/mL (or mg/L or PPM)	0.842	N/A
Test Code	Conc Se µg/L (PPB)	841.8	N/A
		N/A	
Matrix		N/A	
LIQUID		N/A	
Sample #	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)*DF		
R6712-8596	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
01/09/95			
Instrument Code			
WB27979			
Analyst			
MASSIE			
Date		STANDARD	DUPLICATE
01/09/95	Conc Se (µg/mL)	8.42E-01	
Time		N/A	
02:00 PM		N/A	

95

Data Entry by:		Date:	01/16/95
Approved by:		Date:	1/19/95

9613479 0647

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-5696	PUREX	12- 9-94	15: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 2.0 ml	BLANK

Remarks, Calculations, Results:
REAGENT BLANK

PKHT= ~~0.55~~ .052 1-9-95
ng = 0.55ng

~~<0.003 mg/ml~~

RDE 1/16/95

<.003 mg/m OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
1-9-95	14:00	ND Smith	

54-6800-061 (R-10-83)

Selenium: LA-365-131 (C-0) Se LIQUIDS-DIRECT

		BLANK	DUPLICATE
Type	Sample Size in mL SS	2.000	
BLANK	Se ng (Nanograms)	0.55	
Work List	Conc Se µg/mL (or mg/L or PPM)	0.000	N/A
5213	Conc Se µg/L (PPB)	0.3	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6713-5696	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date	Detection Limit = (5 ng/SS)*(1µg/1000ng)		
01/09/95	Detection Limit is Corrected for Sample Prep/Dilution		
Instrument Code			
WB27979	Detection Limit (µg/mL) =	0.003	
Analyst	Detection Limit (µg/L) =	2.5	
MASSIE			
Date		BLANK	DUPLICATE
01/09/95	Conc Se µg/mL	<0.003	
Time		N/A	
02:00 PM		N/A	

The Result is < Detection Limit

Data Entry by:		Date:	01/16/95
Approved by:		Date:	1/19/95

9613479.0648

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-8696	PUREX	12- 9-94	15: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 2.0 ml Acid dig DF = 100	BLANK

Remarks, Calculations, Results
REAGENT BLANK
PKHT = .194
ng = 12.11ng
DF of 100 used in calculation to compare results w/sample
6.06E-1 µg/ml
OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-95	14:00	1/19/95

54-6800-061 (R-10-83)

Selenium : LA-365-131 (C-0) Se LIQUID-ACID DIGEST		BLANK	DUPLICATE
Type	Sample Size in mL SS	2.000	
BLANK	Se ng (Nanograms)	12.11	
Work List	Acid Digest Dilution Factor DF	100.0	
5213	Conc Se µg/mL (or mg/L or PPM)	0.606	N/A
Test Code	Conc Se µg/L (PPB)	605.5	N/A
		N/A	
Matrix		N/A	
LIQUID		N/A	
Sample #	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)*DF		
R6713-8696	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
01/09/95	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Instrument Code			
WB27979	Detection Limit (µg/mL)	0.250	
Analyst	Detection Limit (µg/L)	250.00	
MASSIE			
Date		BLANK	DUPLICATE
01/09/95	Conc Se (µg/mL)	6.06E-01	
Time		N/A	
02:00 PM		N/A	

Data Entry by:		Date:	01/16/95
Approved by:		Date:	1/19/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8796	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
~~Se~~ Se	LA-365-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 2.0 ml Acid dig DF = 100	BODG79

Remarks, Calculations, Results:

PKHT = .230
ng = 15.04 ng

~~7.52E-03 µg/ml~~

RoE
1/16/95

7.52E-1 µg/ml

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-9-95	14:00	MD Smith	

54-6800-061 (R-10-83)

Selenium : LA-365-131 (C-0) Se LIQUID-ACID DIGEST

		SAMPLE	DUPLICATE
Type	Sample Size in mL SS	2.000	
SAMPLE	Se ng (Nanograms)	15.04	
Work List	Acid Digest Dilution Factor DF	100.0	
5213	Conc Se µg/mL (or mg/L or PPM)	0.752	N/A
Test Code	Conc Se µg/L (PPB)	752.0	N/A
		N/A	
Matrix		N/A	
LIQUID		N/A	

Sample #	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)*DF
R6714-8796	Average Conc.=(Sample + Duplicate)/2
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100
01/09/95	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF
Instrument Code	
WB27979	Detection Limit (µg/mL) 0.250
Analyst	Detection Limit (µg/L) 250.00
MASSIE	

		SAMPLE	DUPLICATE
Date			
01/09/95	Conc Se (µg/mL)	7.52E-01	
Time		N/A	
02:00 PM		N/A	

Data Entry by:		Date:	01/16/95
Approved by:		Date:	1/19/95

Atomic Absorption Runlog: Se Hydride Analysis

Analyst: Valerie L Massey Date: 1-9-95
Instrument: PE 2280 Property #: WB27979
Analyte: Se Batch #: 5213 Start Time: 07:45 End Time: 14:00

Calibration Data: Intercept: 0.0452 absorbance units
Slope: 0.0123 abs. units / concentration
Correlation: 0.9980 (unitless)

Sample Name (Std. ID#)	Sample Point	Sam. Size, (mL)	D or A*	PKHT (Abs.)	ng result	% Rec.	Comments	CC **
45N11C	N/A	0.000	D	.020	0	N/A		
	"	0.050	D	.151	5	"		
	"	0.250	D	.319	25	"		
	"	0.500	D	.676	50	"		
	"	1.000	D	1.272	100	"		
R6712	Direct LMCS Std 44N11E	.500	D	.708	53.94	107.87		
R6713	Direct Blank	2.0	D	.052	0.55			
R6712	Digested LMCS Std 48N11A	2.0	A	.459	33.67	84.18		
R6713	Digested Blank	2.0	A	.194	12.11			
R6714	Purex sample	2.0	A	.230	15.04			
R6714D	Purex Dup	2.0	A	.195	12.19			
R6714S	Purex spike	2.0	A	.586	44.01			
R6715	Direct LMCS Std 44N11E	.500	D	.771	59.06	118.13		

* Sample prep. descriptors: D=direct, A=acid digest
** CC=control chart. Check off when control chart entries are made.

9613479.0651

.771 59.06 ng .500 ml direct CMCS 44N11E R6715

.586 44.01 ng 2.0 ml R6714 spike

.195 12.19 ng 2.0 ml R6714 dup

.230 15.04 ng 2.0 ml R6714

.194 .194 12.11 ng 2.0 ml R6713 digested Blank

.459 33.67 ng 2.0 ml digested CMCS 48N11A R6712 vm 1-9-95

.052 ~~.05~~ vm 1-9-95 0.55 ng direct Blank 2.0 ml R6713

.708 53.94 ng .500 ml direct CMCS std 44N11E R6712

1.272 100 ng 1.0 ml 45N11C Cal std

.676 50 ng .500 ml 45N11C Cal std

.319 25 ng .250 ml 45N11C Cal std

.151 5 ng .050 ml 45N11C Cal std

.020 0 ng

Batch #5213 will rerun at cust. request.

14:00 1-9-95 Valerie L Massie se

PERKIN-ELMER

Analyte: Se
Date: 1-9-95
Analyst: Valerie L Massie
Start Time: 01:45 End Time: 14:00

MHS 20 Data:

Signal: Concentration
Mode: PKHT
Recorder: TC3
Time: 30 sec.
Expansion: 10

Purge I: 40 sec.
Reaction: 10 sec.
Purge II: 50 sec.
Temperature: 975 C
EDL Power: 6 Watts

Valerie L Massie
1-9-95

11:	Intercept: 0.0452
10:	Slope: 0.0123
9:	0.9980
8:	53.9360
7:	0.5512
6:	33.6726
5:	12.1071
4:	15.0367
3:	12.1885
2:	44.0077
1:	59.0629

Chart Recorder Data:

Chart speed: 5 mm/min Chart full scale: 20 mV

Calibration Data:

Intercept: 0.0452 absorbance units
Slope: 0.0123 abs. units / concentration
Correlation: 0.9980 (unitless)

BEST AVAILABLE COPY

9613478 0662

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8896	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 2.0 ml Acid dig DF = 100	BODG79

Remarks, Calculations, Results:
DUPLICATE SAMPLE

PKHT= .195
ng= 12.19ng

~~6.09E-03 ug/mL~~ KOE 1/16/95

OUT FOR RERUN

6.10 E-1 µg/mL RPD = 20.9%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-9-95	14:00	no Smith	

54-6800-061 (R-10-83)

Selenium : LA-365-131 (C-0) Se LIQUID-ACID DIGEST

		DUPLICATE	DUPLICATE
Type	Sample Size in mL SS	2.000	2.000
DUPLICATE	Se ng (Nanograms)	15.04	12.19
Work List	Acid Digest Dilution Factor DF	100.0	100.0
5213	Conc Se µg/mL (or mg/L or PPM)	0.752	0.610
Test Code	Conc Se µg/L (PPB)	752.0	609.5
	Average Conc (µg/mL)	N/A	0.68075
Matrix	Average Conc (µg/L)	N/A	680.75
LIQUID	Relative % Difference	N/A	20.9%
Sample #	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)*DF		
R6714-8896	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
01/09/95	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Instrument Code			
WB27979	Detection Limit (µg/mL)	0.250	
Analyst	Detection Limit (µg/L)	250.00	
MASSIE			
Date		DUPLICATE	DUPLICATE
01/09/95	Conc Se (µg/mL)	7.52E-01	6.10E-01
Time	Average Conc (µg/mL)	N/A	0.68075
02:00 PM	Relative % Difference	N/A	~~2093.3%~~ 20.9% KOE 1/19/95

Data Entry by:		Date:	01/16/95
Approved by:		Date:	1/19/95

Form 365131_3 Rev. 2.1

9613479.0653

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8996	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	% RECOVERY	KP39B	0

Sample Size: ? 2.0 ml sample Acid dig DF=100

Customer ID: BODG79

Remarks, Calculations, Results:
SAMPLE SPIKED ID R6714
SPIKE ID 48N11A
SPIKE VOLUME ~~0.04ml~~ RLE 1/16/95
2.0 ml → 100 ml
DF = 50
STD val = 1.0 ppm

PKHT= .586
ng= 44.01 ng

~~72.4%~~ RLE 1/16/95

72.4% OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-9-95	14:00	MD Smith	

54-6800-061 (R-10-83)

Selenium: LA-365-131 (C-0) Se LIQUIDS-ACID DIGEST

		SAMPLE	SPIKE
Type	Sample (mL)Vol. Acid Dig. Used SAVOL	2.00	N/A
SPIKE	Spike Std Volume (mL) SSVOL	N/A	2.000
Work List	ng of Spike + Sample ngSSAM	N/A	44.01
5213	ng of Sample ngSAM	15.04	N/A
Test Code	Final Acid Digest Vol. (mL) ADVOL	N/A	100.00
		N/A	N/A
Matrix	Spike Std Dilution Factor SPDF	N/A	50.0
LIQUID	Spike Std ID	N/A	48N11A
Sample #	Spike Std Value (ppm) SS VAL	N/A	1.000
R6714-8996	% Recovery	N/A	72.4%
Calibration Date			
01/09/95			
Instrument Code			
WB27979	Spike Std. Dilution Factor = ADVOL/SSVOL		
Analyst			
MASSIE	% Recovery = {([{(ngSSAM/SAVOL)*(1/1000)}-{(0/SAVOL)*(1/1000)}]*SPDF)/SS VAL}*100		
Date			
01/09/95			
Time	% Recovery =		72.4%
02:00 PM			

Data Entry by:		Date:	01/16/95
Approved by:		Date:	1/19/95

Form 365131_4 Rev. 1.1

9613479.0664

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5596	PUREX	12- 9-94	15:14	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-365-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? , 500 ml	STD

Remarks, Calculations, Results:

EDP R743 SE/HYDRD

STD# 44N11D RESULT

STD VAL .100 ppm %REC

1.18E-01 mg/ml

118%

PKHT= .771

ng= 59.06ng

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-95	14:00	ND Smith

54-6800-061 (R-10-83)

Selenium: LA-365-131 (C-0) Se LIQUIDS-DIRECT

		STANDARD	DUPLICATE
Type	Sample Size in mL SS	0.500	
STANDARD	Se ng (Nanograms)	59.06	
Work List	Conc Se µg/mL (or mg/L or PPM)	0.118	N/A
5213	Conc Se µg/L (PPB)	118.1	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc Se µg/mL=(Se ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6715-5596	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date			
01/09/95			
Instrument Code			
WB27979			
Analyst			
MASSIE			
Date		STANDARD	DUPLICATE
01/09/95	Conc Se µg/mL	1.18E-01	
Time		N/A	
02:00 PM		N/A	

Data Entry by:		Date:	01/16/95
Approved by:		Date:	1/19/95

9613479.0655

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6712-R6714	Customer ID: BODG79
Analysis: As	Sample Prep: ACID DIGEST

Instrument: PE2280(Hydride AA) WB27979	Procedure/ Rev: LA 355-131 / C-0
Technologist: Valerie Massie Valerie L Massie	Date: 12/30/94
Starting Time: 07:50	Temperature 900 C
Ending Time: 14:10	Chemist: N.D. SMITH

Comments: Batch #: 5212

	Description	Lab ID		Description	Lab ID
1	LMCS STANDARD	R6712-5595	11		
2	BLANK	R6713-5695	12		
3	DIGESTED STANDARD	R6712-8595	13		
4	DIGESTED BLANK	R6713-8695	14		
5	DIGESTED SAMPLE	R6714-8795	15		
6	DIGESTED DUPLICATE	R6714-8895	16		
7	DIGESTED SPIKE	R6714-8995	17		
8	END STANDARD	R6715-5595	18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	44N11D 0.250mL			
DIGESTED STD	48N11A DF=50 2mL			

A-6000-881 (03/92)

9613479.0656

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5212

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-5595	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? .250ml	STD

Remarks, Calculations, Results

PKHT= .840

EDP R741 AS/HYDRD

STD# 44N11D RESULT 1.03E-01 ug/mL ng= 25.63ng

STD VAL 0.100ppm %REC 103.0

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-30-94	14:10	

54-6800-061 (R-10-83)

Arsenic : LA-355-131 (C-0) As LIQUIDS-DIRECT

		STANDARD	DUPLICATE
Type	Sample Size in mL SS	0.250	
STANDARD	As ng (Nanograms)	25.63	
Work List	Conc As µg/mL (or mg/L or PPM)	0.103	N/A
5212	Conc As µg/L (PPB)	102.5	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6712-5595	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date			
12/30/94			
Instrument Code			
WB27979			
Analyst			
V. MASSIE			
Date		STANDARD	DUPLICATE
12/30/94	Conc As µg/mL	1.03E-01	
Time		N/A	
02:10 PM		N/A	

Data Entry by:		Date:	01/05/95
Approved by:	RD Smith	Date:	01/12/95

Form 355131_1 Rev. 1.2

9613479.0657

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6712.-8595	PUREX	12- 9-94	15: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? 2.0ml (acid digested std)	STD

Remarks. Calculation Results
EDP ~~R742~~ R747AS/HYDRD PKHT= 1.138
STD# 46N11A RESULT 9.53E-01 ug/mL ng= 38.11ng
STD 1.0ppm %REC 95.3%
Acid dig DF = 50

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs
				RS Jones
Date	Time Completed	Lab Unit Mgr		
12-30-94	14:10		RS Jones	

54-6800-061 (R-10-83)

Arsenic: LA-355-131 (C-0) As LIQUID-ACID DIGEST		STANDARD	DUPLICATE
Type	Sample Size in mL SS	2.000	
STANDARD	As ng (Nanograms)	38.11	
Work List	Acid Digest Dilution Factor DF	50.0	
5212	Conc As µg/mL (or mg/L or PPM)	0.953	N/A
Test Code	Conc As µg/L (PPB)	952.8	N/A
		N/A	
Matrix		N/A	
LIQUID		N/A	
Sample #	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)*DF		
R6712-8595	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
12/30/94			
Instrument Code			
WB27979			
Analyst			
V. MASSIE			
Date		STANDARD	DUPLICATE
12/30/94	Conc As (µg/mL)	9.53E-01	
Time		N/A	
02:10 PM		N/A	

Data Entry by:	RS Jones	Date:	01/05/95
Approved by:	TD Smith	Date:	01/12/95

9613479.0658

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No	Sample Point	Date	Time Issued	Priority
R 6713.-5695	PUREX	12- 9-94	15: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 2.0 ml	BLANK

Remarks, Calculations, Results:
REAGENT BLANK

PKHT= .201
ng= -1.11 ng

<0.003 ug/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-30-94	14:10		RJ Jones

54-6800-061 (R-10-83)

Arsenic : LA-355-131 (C-0) As LIQUIDS-DIRECT

		BLANK	DUPLICATE
Type	Sample Size in mL SS	2.000	
BLANK	As ng (Nanograms)	-1.11	
Work List	Conc As µg/mL (or mg/L or PPM)	-0.001	N/A
5212	Conc As µg/L (PPB)	-0.6	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6713-5695	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date	Detection Limit = (5 ng/SS)*(1µg/1000ng)		
12/30/94	Detection Limit is Corrected for Sample Prep/Dilution		
Instrument Code			
WB27979	Detection Limit (µg/mL) =	0.003	
Analyst	Detection Limit (µg/L) =	2.5	
V. MASSIE			
Date		BLANK	DUPLICATE
12/30/94	Conc As µg/mL	<0.003	
Time		N/A	
02:10 PM		N/A	

The Result is < Detection Limit

Data Entry by:	RJ Jones	Date:	01/05/95
Approved by:	MD Smith	Date:	01/17/95

Form 355131_1 Rev. 1.2

9613479.0659

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6713.-8695	PUREX	12- 9-94	15: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 2.0ml acid dig DF = 100	BLANK

Remarks, Calculations, Results
REAGENT BLANK to compare with samples. PKHT= .150
ng= -3.24ng
<0.250 ug/ML

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-30-94	14:10	

54-6800-061 (R-10-83)

Arsenic: LA-355-131 (C-0) As LIQUID-ACID DIGEST

		BLANK	DUPLICATE
Type	Sample Size in mL SS	2.000	
BLANK	As ng (Nanograms)	-3.24	
Work List	Acid Digest Dilution Factor DF	100.0	
5212	Conc As µg/mL (or mg/L or PPM)	-0.162	N/A
Test Code	Conc As µg/L (PPB)	-162.0	N/A
		N/A	
Matrix		N/A	
LIQUID		N/A	
Sample #	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)*DF		
R6713-8695	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
12/30/94	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Instrument Code			
WB27979	Detection Limit (µg/mL)	0.250	
Analyst	Detection Limit (µg/L)	250.00	
V. MASSIE			
Date		BLANK	DUPLICATE
12/30/94	Conc As (µg/mL)	<0.250	
Time		N/A	
02:10 PM		N/A	

The Result is < Detection Limit

Data Entry by:		Date:	01/05/95
Approved by:		Date:	01/12/95

Form 355131_3 Rev. 2.1

9613479.0660

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8795	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	uG/ML	KP39B	0

Sample Size	Customer ID
? 2.0 ml Acid dig DF=100	BODG79

Remarks, Calculations, Results:

PKHT= .162
ng= -2.74ng

L 0.250 ug/ML

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-30-94	14:10	

54-6800-061 (R-10-83)

Arsenic: LA-355-131 (C-0) As LIQUID-ACID DIGEST

		SAMPLE	DUPLICATE
Type	Sample Size in mL SS	2.000	
SAMPLE	As ng (Nanograms)	-2.74	
Work List	Acid Digest Dilution Factor DF	100.0	
5212	Conc As µg/mL (or mg/L or PPM)	-0.137	N/A
Test Code	Conc As µg/L (PPB)	-137.0	N/A
		N/A	
Matrix		N/A	
LIQUID		N/A	

Sample #	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)*DF
R6714-8795	Average Conc.=(Sample + Duplicate)/2
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100
12/30/94	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF
Instrument Code	
WB27979	Detection Limit (µg/mL) 0.250
Analyst	Detection Limit (µg/L) 250.00
V. MASSIE	

Date		SAMPLE	DUPLICATE
12/30/94	Conc As (µg/mL)	<0.250	
Time		N/A	
02:10 PM		N/A	

The Result is < Detection Limit

Data Entry by:		Date:	01/05/95
Approved by:	ND Smith	Date:	01/17/95

9613479.0661

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

CALIBRATION RECORD

Analyte:	As		
Procedure:	LA 355-131	Revision:	C-0
Instrument:	PE2280 (Hydride AA)	Property No.:	WB27979
Technologist	Valerie Massie Valerie L Massie	Payroll No.: XXXXX	Date: 12/30/94

Calibration Standard ID:	46N11A
Analyte Concentration:	.100 ppm
Type of Calibration:	LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	.000 mL	0 ng	.218
2	.050 mL	5 ng	.318
3	.100 mL	10 ng	.486
4	.300 mL	30 ng	.966
5	.600 mL	60 ng	1.672
6	1.000 mL	100 ng	2.604
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments: r=.9998; Y-INTERCEPT=-0.2275; SLOPE=0.0239

A-6000-882 (03/92)

Atomic Absorption Runlog: As Hydride Analysis

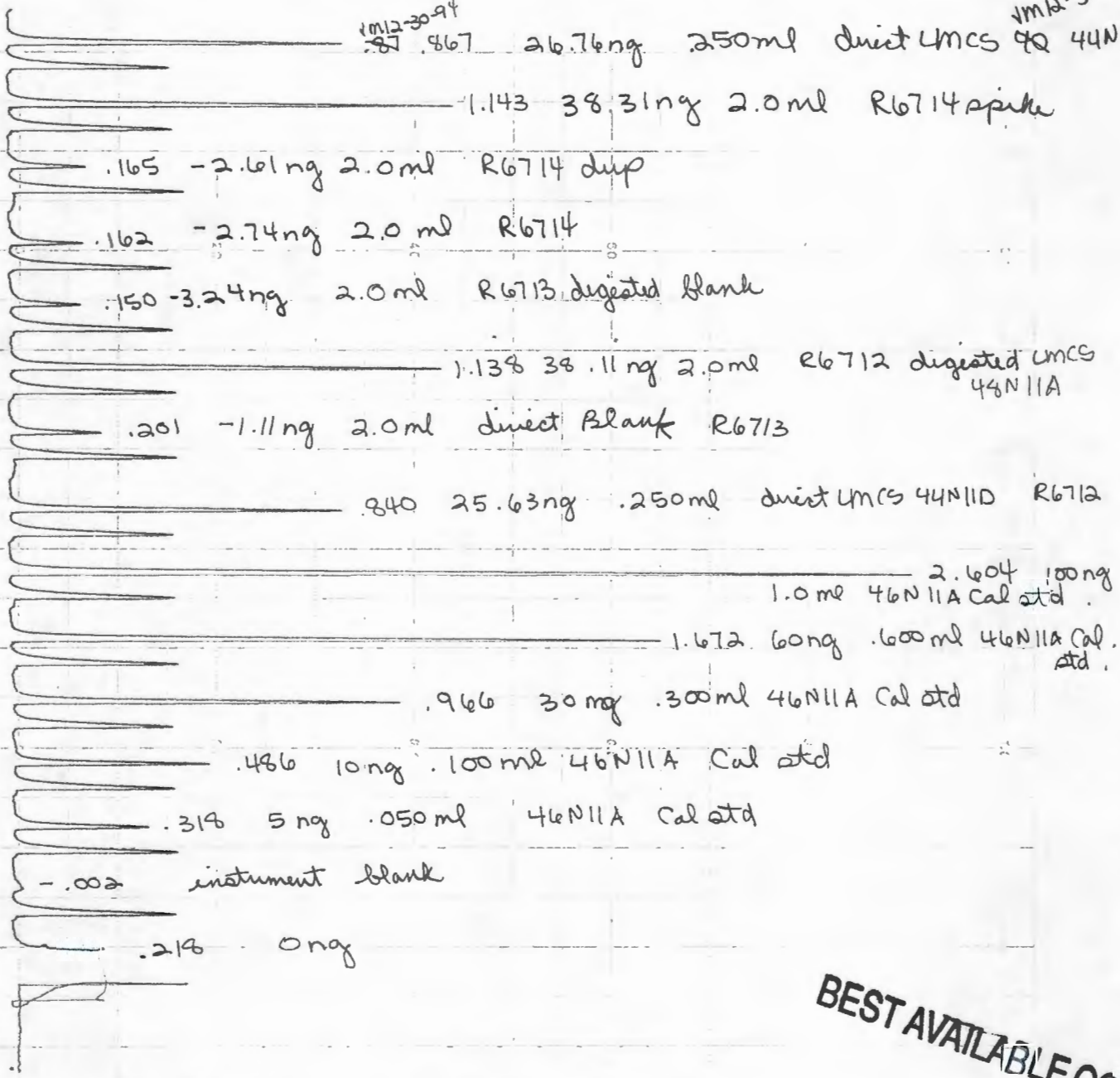
Analyst: Valerie L Massie Date: 12-30-94
Instrument: PE 2280 Property #: WB27979
Analyte: As Batch #: 5212 Start Time: 07:50 End Time: 14:10

Calibration Data: Intercept: 0.2275 absorbance units
Slope: 0.0239 abs. units / concentration
Correlation: 0.9998 (unitless)

Sample Name (Std. ID#)	Sample Point	Sam. Size, mL	D or A*	PKHT (Abs.)	ng result	% Rec.	Comments	CC **
Cal. Std. ID	N/A	0.000		.218 -.002	0	N/A	0ng pendraged ran instrument	
#: 46N11A	"	.050	D	.318	5	"	blank in	
	"	.100	D	.486	10	"	cal curve.	
	"	.300	D	.966	30	"	cal curve	
	"	.600	D	1.672	60	"	calculated	
	"	1.00	D	2.604	100	"	with 0ng	
R6712	44N11D LMCS std direct	.250	D	.840	25.63	102.52	reading	
R6713	direct blank	2.0	D	.201	-1.11		with dragged	
R6712	digested LMCS Std	2.0	A	1.138	38.11	95.25	PKHT.	
R6713	digested Blank	2.0	A	.150	-3.24			
R6714	Purex BOD679	2.0	A	.162	-2.74			
R6714D	BOD679 Dup	2.0	A	.165	-2.61			
R6714S	BOD679 spike	2.0	A	1.143	38.31			
R6715	44N11D direct LMCS Std	.250	D	.867	26.76	107.04		

* Sample prep. descriptors: D=direct, A=acid digest
** CC=control chart. Check off when control chart entries are made

9613479.0663



BEST AVAILABLE COPY

14:10 12-30-94 As Valerie L Massie

Analyte: As Analyst: Valerie L Massie
Date: 12-30-94 Start Time: 07:50 End Time: 14:10

MHS 20 Data:

Signal: Concentration Purge I: 50 sec.
Mode: PKHT Reaction: 24 sec.
Recorder: TC3 Purge II: 60 sec.
Time: 40 sec. Temperature: 900 C
Expansion: 4 EDL Power: 8 Watts

Chart Recorder Data:

Chart speed: 5 mm/min Chart full scale: 20 mV

Calibration Data:

Intercept: 0.2275 absorbance units
Slope: 0.0239 abs. units / concentration
Correlation: 0.9998 (unitless)

11:	Intercept: 0.2275
10:	Slope: 0.0239
9:	0.9998
8:	25.6307
7:	-1.1068
6:	38.0999
5:	-3.2408
4:	-2.7387
3:	-2.6132
2:	38.3091
1:	26.7605

Valerie L Massie 12-30-94

PERKIN-ELMER

PERKIN-ELMER

9613479.0664

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8895	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	uG/ML	KP39B	0

Sample Size: ? 2.0ml acid dig DF=100

Customer ID: BODG79

Remarks, Calculations, Results: DUPLICATE SAMPLE

PRHT= .165
ng= -2.61ng

<0.250 ug/ML

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-30-94	14:10	

54-6800-061 (R-10-83)

Arsenic: LA-355-131 (C-0) As LIQUID-ACID DIGEST

		DUPLICATE	DUPLICATE
Type	Sample Size in mL SS	2.000	2.000
DUPLICATE	As ng (Nanograms)	-2.74	-2.61
Work List	Acid Digest Dilution Factor DF	100.0	100.0
5212	Conc As µg/mL (or mg/L or PPM)	-0.137	-0.131
Test Code	Conc As µg/L (PPB)	-137.0	-130.5
	Average Conc (µg/mL)	N/A	N/A
Matrix	Average Conc (µg/L)	N/A	N/A
LIQUID	Relative % Difference	N/A	N/A
Sample #	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)*DF		
R6714-8895	Average Conc.=(Sample + Duplicate)/2		
Calibration Date	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
12/30/94	Detection Limit = (5 ng/SS)*(1µg/1000ng)*DF		
Instrument Code			
WB27979	Detection Limit (µg/mL)	0.250	
Analyst	Detection Limit (µg/L)	250.00	
V. MASSIE			
Date		DUPLICATE	DUPLICATE
12/30/94	Conc As (µg/mL)	<0.250	<0.250
Time	Average Conc (µg/mL)	N/A	N/A
02:10 PM	Relative % Difference	N/A	N/A

Both Results are < Detection Limit

Data Entry by:	RS Jones	Date:	01/05/95
Approved by:	MD Smith	Date:	01/11/95

Form 355131_3 Rev. 2.1

9613479.0665

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6714.-8995	PUREX	12- 9-94	15:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	% RECOVERY	KP39B	0

Sample Size: ? 2.0 ml Samp. Acid dig DF = 100

Customer ID: BODG79

Remarks, Calculations, Results:
SAMPLE SPIKED ID R6714
SPIKE ID 48N11A
SPIKE VOLUME 2.0 ml → 100 ml total vol.
Acid Dig DF = 50
STD vol = 1.0 ppm

PK HT = 1.143
ng = 38.31 ng

95.8%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-30-94	14:10	R S Jones

54-6800-061 (R-10-83)

Arsenic: LA-355-131 (C-0) As LIQUIDS-ACID DIGEST

		SAMPLE	SPIKE
Type	Sample (mL)Vol. Acid Dig. Used SAVOL	2.00	N/A
SPIKE	Spike Std Volume (mL) SSVOL	N/A	2.000
Work List	ng of Spike + Sample ngSSAM	N/A	38.31
5212	ng of Sample ngSAM	-2.74	N/A
Test Code	Final Acid Digest Vol. (mL) ADVOL	N/A	100.00
		N/A	N/A
Matrix	Spike Std Dilution Factor SPDF	N/A	50.0
LIQUID	Spike Std ID	N/A	48N11A
Sample #	Spike Std Value (ppm) SS VAL	N/A	1.000
R6714-8995	% Recovery	N/A	95.8%
Calibration Date			
12/30/94	Sample result is < 5 ng, 0 ng of sample is used in the calculation for % recovery		
Instrument Code			
WB27979	Spike Std. Dilution Factor = ADVOL/SSVOL		
Analyst			
V. MASSIE	% Recovery = {([{(ngSSAM/SAVOL)*(1/1000)}-{(0/SAVOL)*(1/1000)}]*SPDF)/SS VAL}*100		
Date			
12/30/94			
Time	% Recovery =	95.8%	
02:10 PM			

Data Entry by:	R S Jones	Date:	01/05/95
Approved by:	MD Smith	Date:	01/12/95

Form 355131_4 Rev. 1.1

9613479.0666

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6715.-5595	PUREX	12- 9-94	15:14	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
As	LA-355-131	% RECOVERY	KP39B	0

Sample Size	Customer ID
? .250 ml	STD

Remarks, Calculations, Results:
EDP R741 AS/HYDRD
STD# 44N11D RESULT 1.07E-1 ug/mL
STD VAL 0.100ppm %REC 107.0 %
PKHT= .867
ng = 26.76ng

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Valerie L Massie				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
12-30-94	14:10			

54-6800-061 (R-10-83)

Arsenic : LA-355-131 (C-0) As LIQUIDS-DIRECT		STANDARD	DUPLICATE
Type	Sample Size in mL SS	0.250	
STANDARD	As ng (Nanograms)	26.76	
Work List	Conc As µg/mL (or mg/L or PPM)	0.107	N/A
5212	Conc As µg/L (PPB)	107.0	N/A
Test Code		N/A	
		N/A	
Matrix		N/A	
LIQUID	Conc As µg/mL=(As ng/SS)*(1µg/1000ng)		
Sample #	Average Conc.=(Sample + Duplicate)/2		
R6715-5595	Relative % Difference=((ABS(Sam.-Dup.))/Average Conc.)*100		
Calibration Date			
12/30/94			
Instrument Code			
WB27979			
Analyst			
V. MASSIE			
Date		STANDARD	DUPLICATE
12/30/94	Conc As µg/mL	1.07E-01	
Time		N/A	
02:10 PM		N/A	

Data Entry by:		Date:	01/05/95
Approved by:	RD Smith	Date:	01/12/95

Form 355131_1 Rev. 1.2