9613492.0362

0045426
2 of 42

E-93-22/2978-62
WESTINGHOUSE HANFORD COMPANY
241-T-106 DATA VALIDATION
DISTRIBUTION FORM

SDG: B07JZ4
Case #: B07JZ4
Fraction: Wet Chem

Document Title Final QA Record

Document Number: _____ Date: 4/15/94

DISTRIBUTION					
M. Baker (HCRL)		D. Mantooth (ERL)		D. Wiley (ERL)	
P. Bartley (ERL)		T. McDonald (HCRL)		N. Wold (ERL)	
Y. Chun (HCSEA)		R. Potter (HCRL)		ERL Project File/J. Pawlowski	
B. Downs (HCSEA)		K. Rolla (HCSEA)		Project File/D. Simpson (HCRL)	
M. Gerboth (HCRL)		C. Sater (ERL)		Duplicate Project File/T. Trevino (HCSEA)	
J. Grover (ERL)		M. Schwarz (ERL)		Westinghouse EDMC	X
L. Hammerle (HCSEA)		A. Shen (HCSEA)			
K. Pool (WHC)					

Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1 File Index		1.6.6.3 Plans Doc. Log		3.4 Original Chemical Data	
1.2 Distribution Lists		1.6.6.4 Deliverables Doc. Log		3.5 Original Radiochemical Data	
1.3 Project Procedures		1.7 Budget			
1.4 Project Modifications		1.7.1 Downloads		4.1 Task Plan	
1.5 Staff		1.7.2 M-113s			
1.5.1 Staff Resumes		1.7.3 A-208s		4.2 Data Pkg. Completeness Verif. Checklist	
1.5.2 Staff Training		1.7.4 Budget Status		4.3 Data Valididation Calcs./Annotated DP	X
1.5.3 Auth. Former Site Employee		1.7.5 Invoices		4.4 Prelim. QA Records	
1.6 QA		1.8 Requisitions			
1.6.1 QA Manual		1.9 Meeting Minutes		4.5 Data Valid. & Qual. Summary Rpts.	
1.6.2 QA Implementation		1.10 Record of Telecon		4.5.1 Internal Drafts/Comments/Resol.	
1.6.3.1 QA Audits-Deliverables		1.11 Progress Reports		4.5.2 WHC Review Draft Comments/Resol.	
1.6.3.2 QA Audits-Files		1.12 Subcontractor (HC)		4.5.3 Final Report	
1.6.4.1 Audit Resps. - Deliverables				4.6 Weekly Status Reports	
1.6.4.2 Audit Resps. - Files		2.1 Incoming Correspondence		4.7 Weekly Management Reports	
1.6.5 QA Training		2.2 Outgoing Correspondence			
1.6.6.1 QA Manual Document Log		2.3 Internal Correspondence			
1.6.6.2 Procedure Document Log					
		3.1 Task Order			
		3.2 Sample Lists			
		3.3 Data Validation Procedures			

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 241-T-106		REVIEWER: AS	DATE: 10/22/93
LABORATORY: PNL		CASE:	SDG: B07JZ4
SAMPLES/MATRIX:	B07JZ4	B07K00	
	B07JZ5	~~B08GY2~~	B08GV2
	B07JZ6	B07JZ8	
	B07JZ7		
	B07JZ9		Soil

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	—	—	—
Cover Page	—	—	—
Traffic Reports/Chain-of-Custody	—	—	—
Sample Analysis Data Report Forms	—	—	—
Standards Data	—	—	—
QC Summary			
Blanks Summary Report Forms	—	—	—
Spike Sample Recovery Report Forms	—	—	—
Duplicate Sample Analysis Report Forms	—	—	—
Laboratory Control Sample Report Forms	—	—	—
Raw Data			
Ion Chromatograph Chromatograms	—	—	—
TOC and TOX Instrument Printouts	—	—	—
Laboratory Bench Sheets	—	—	—
Additional Data			
Laboratory Sample Preparation Logs	—	—	—
Instrument Run Logs	—	—	—
Internal Laboratory Chain-of-Custory	—	—	—
Percent Solids Analysis Records	—	—	—
Reduction Formulae	—	—	—
Chemist Notebook Pages	—	—	—

See attached verification sheet

2. HOLDING TIMES

Were all samples analyzed within holding times? (Yes) No N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R < 50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

THIS PAGE INTENTIONALLY LEFT BLANK

9613492.0366

APPENDIX B

DATA SUMMARY FORMS

REPORT GENERATION FOR SOLID SAMPLES

This compiled data sheet may be used for report generation. DIL(EX) = EXTRACTION DILUTION & DIL(AN) = ANALYTICAL DILUTION.

Divide ug/g values in this table by the product, DIL(EX) * DIL(AN), to obtain the concentrations (ug/ml) in the analyzed solutions.

Approx. DL values (ug/g, solids) may be found by multiplying DIL(EX) * DIL(AN) by 0.25 and 0.5 for halides and oxy-anions, respectively.

M&TE ID: WA83665 METHOD: PNL-MA599-ALO-212, 100 uL LOOP.

!!! NOTE: LINES WITH 0.00% SOLIDS & 0.0000 FOR SMP WT ARE LIQUID SAMPLES (USUALLY VERIFICATION STDS.) AND THE UNITS ARE ug/ml !!!

Analyst MCBurt 12/23/92 Reviewer Kenneletteul 4/5/93

Units of measurement: ug/g (ppm)

INJ	SAMPLE ID	DIL(EX)	% SOLID	SMP WT	DIL VOL	DIL(AN)	F	Cl	NO2	Br	NO3	PO4	SO4
12/22 d12	93-02239/BO7JZ4	10.6	93.70	2.0107	20.00	50.0							
12/22 d27	93-02239/BO7JZ4	10.6	93.70	2.0107	20.00	1.0	2.5	3.4			4.1		9.7
12/22 d14	93-02240/BO7JZ5	10.4	95.40	2.0119	20.00	50.0							
12/22 d28	93-02240/BO7JZ5	10.4	95.40	2.0119	20.00	1.0	2.9	3.0			4.8	7.7	12.3
12/22 d15	93-02241/BO7JZ6	10.2	97.20	2.0178	20.00	50.0			122.3				
12/22 d29	93-02241/BO7JZ6	10.2	97.20	2.0178	20.00	1.0	4.6	3.5	27.0		52.0	19.1	21.2
12/22 d16	93-02351/BO7JZ7	10.2	97.40	2.0190	20.00	50.0					160.9		
12/22 d30	93-02351/BO7JZ7	10.2	97.40	2.0190	20.00	1.0	2.8	4.8	3.0		57.9	12.2	14.8
12/22 d17	93-02437/BO7JZ8	10.3	96.20	2.0191	20.00	50.0							
12/22 d18	93-02437D/BO7JZ8	10.4	96.20	2.0069	20.00	50.0					155.7		
12/22 d31	93-02437/BO7JZ8	10.3	96.20	2.0191	20.00	1.0	3.9	4.7	9.2		54.7	8.5	15.7
12/22 d32	93-02437D/BO7JZ8	10.4	96.20	2.0069	20.00	1.0	4.4	4.4	9.8		61.2	11.8	19.0
12/22 d19	93-02438/BO7JZ9	10.2	96.40	2.0402	20.00	1.0	16.4	2.4	9.8		66.7	10.7	19.0
12/22 d20	93-02438MS/BO7JZ9	10.1	96.40	2.0548	20.00	1.0	53.8	21.5	59.1	19.9	124.9	53.1	72.7
12/22 d21	93-02438MSD/BO7JZ9	9.9	96.40	2.0946	20.00	1.0	70.2	22.1	57.9	19.3	120.6	51.0	70.2
12/22 d26	93-02451/BO7K[illegible]	10.2	93.50	2.0927	20.00	1.0	26.8	3.1	2.5		175.5	11.5	77.9
12/22 d33	PREP BLANK (PB)	1.0	0.00	0.0000	0.00	1.0		0.1					
12/22 d34	BLANK SPIKE (BS)	1.0	0.00	0.0000	0.00	1.0	2.8	1.9	5.0	2.0	5.0	4.6	4.9

SAMPLES ANALYZED USING SYSTEM IC-325-400-SYS3 (DATA ARCHIVAL LOCATOR)

AS 10/22/97

9613492.0367

007-045

HOLDING TIME SUMMARY

SDG: B07JZ4	VALIDATOR: AS	DATE: 10/19/93	PAGE ____ OF ____
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07JZ4	Anions	12/7/92	12/21/92	12/22/92	14	1	— J
B07JZ5		12/7/92			14		— J
B07JZ6		12/8/92			13		— J
B07JZ7		12/11/92			10		— J
B07JZ8		12/15/92			6		— J
B07JZ9		12/15/92			6		— J
B07K00		12/16/92			5		— J
B086V2		3/17/93	3/18/93	3/18/93	1	—	—
B07JZ4	PO_4	"					J
B07JZ5							
B07JZ6							
B07JZ7							
B07JZ8							
B07JZ9							
B07K00							

AS 1/26/94

Qualify for PO_4, NO2/NO3 only

AS 11/12/93

9613192.0368 WHC-SD-EN-SPP-002, Rev. 2

CALIBRATION DATA SUMMARY

SDG: B07JZ4	VALIDATOR: AS	DATE: 10/19/93	PAGE ____ OF ____
COMMENTS:			
CALIB. TYPE:	INITIAL	CONTINUING	INSTRUMENT:

	CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
Ical	12/22/92	Autocal 1-6 F =	.9998 ✓		—	—
	10:35	Cl =	.9998 ✓		—	—
		NO_2 =	.9997 ✓		—	—
		NO_3 =	.9997 ✓		—	—
		PO_4 =	.9994 ✓		—	—
		SO_4 =	.9995 ✓		—	—
Cont		Auto cal 6 was run				
		after the 10-mi-high and				
		blank samples. ok ✓				
		No qual required				
		Samples B07JZ4-8 were run at a 50x dilution.				
		They were rerun at 1x* following the			ccal run.	
Ccal	12/22/92	Low = F, Cl, NO_2, NO_3, PO_4, SO_4	= 93-99%		—	—
	9:42	Med = F, Cl, NO_2, NO_3, PO_4, SO_4	= 98-102%		—	—
		High = F, Cl, NO_2, NO_3, PO_4, SO_4	= 96-101%		—	—
Ccal	12/22/92	Low = " "	= 93-99%		—	—
	12:10	Med = " "	= 98-101%		—	—
		High = " "	95-101%		—	—

96113492.0369
WHC-SD-EN-SPP-002, Rev. 2

CALIBRATION DATA SUMMARY - FORM B-2

SDG: B07J24	REVIEWER: AS	DATE: 10/22/93	PAGE____OF____
COMMENTS: B086V2			
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT:	

CALIB. DATE	COMPOUND	Med	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
Ccal 3/18/93		F =		96%	—	
		Cl =		95%	—	
		NO_2 =		98%	—	
		NO_3 =		101%	—	
		~~Ex~~ PO_4 =		101%	—	
		SO_4 =		100%	—	
3/18/93		F =		98%	—	
		Cl =		97%	—	
		NO_2 =		98%	—	
		NO_3 =		101%	—	
		PO_4 =		101%	—	
		SO_4 =		101%	—	

9613492.0370

BLANK AND SAMPLE DATA SUMMARY

SDG: B07JZ4	VALIDATOR: AS	DATE: 10/29/93	PAGE ____ OF ____
COMMENTS:			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
A9212223B1	Non-detect						—	—	—
A9212223B2	Non-detect						—	—	—
Prep blank	Cl	.08				.40	—	None	—
~~A9212223B3~~	~~Non-detect~~							followed all	samples
A9212223B3	Non-detect						—	—	—
~~B07MK0~~ *									
~~B07MK1~~ *									
~~B07MK3~~ *									
~~B07MK4~~ *									

9613492.0371

ACCURACY DATA SUMMARY

SDG: B07JZ4	VALIDATOR: AS	DATE: 10/20/93	PAGE ____ OF ____	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B07JZ9	F	190% / 270%	All samples B07JZ9	J
B086V2	F	152% / 50%	B086V2	J
B07JZ9	Cl	110% / 110%	—	—
	NO_2	98% / 96%	—	—
	NO_3	116% / 108%	—	—
	PO_4	84% / 80%	—	—
	SO_4	108% / 102%	—	—
	CN spiked at the D.L.	72% / 64%	All samples except B086V2	J/UJ
B086V2	Cl	90 / 81%	—	—
	NO_2	96 / 90%	—	—
	NO_3	92 / 87%	—	—
	PO_4	77 / 79%	—	—
	SO_4	92 / 85%	—	—
	~~CN~~	~~72 / 64%~~	~~B086V2~~	~~J~~
BS/B086V2	F, Cl, NO_2, NO_3, PO_4, SO_4, CN			
	115%, 95%, 92%, 94%, 96%, 96%, 102%		—	—
BS/B07K00	140%, 95, 100%, 100%, 92%, 99%		—	—
	high Blank spike recovery.		—	—

PRECISION DATA SUMMARY

SDG: B07JZ4	VALIDATOR: AS	DATE: 10/22/93	PAGE ____ OF ____
COMMENTS:			

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
lab dup	B07JZ9	B07JZ9			
F	54	70	26	—	—
Cl	2	2	0	—	—
NO_2	59	58	1	—	—
NO_3	125	121	3	—	—
PO_4	40	41	2	—	—
SO_4	73	70	4	—	—
CN	ND	ND	—	—	—
lab dup	B086U2	B086U2 Dup			
F	54	32	28	—	—
Cl	24	22	9	—	—
NO_2	50	47	6	—	—
NO_3	64	61	5	—	—
PO_4	40	41	3	—	—
SO_4	58	54	7	—	—
CN					
Field dup	B07JZ9	B07JZ8			
F	.61	.38	122%	—	—
Cl	.23	.46	66%	—	—
NO_2	.96	.89	8%	—	—
NO_3	6.56	5.31	21%	—	
PO_4	1.05	.83	23%	—	—
SO_4	1.87	1.53	20%	—	—
CN	ND	ND	—		

9613492.0373

CALCULATION SUMMARY

SDG: B07J24	REVIEWER: AS	DATE: 10/19/93	PAGE ____ OF ____

COMMENTS:

Ical 12/22/93

F	Area	Cl	Area	NO_2	Area
.25	10520	.25	9850	.5	10551
.50	23535	~~5.0~~ .50	19568	1.0	21484
1.0	54639	1.0	39432	5.0	121186
2.5	141926	2.5	103207	10.0	247324
5.0	300113	5.0	220872	20.0	493046
7.5	440184	7.5	334909	30.0	713230
R = .9998		R = .9998		R = .9997	

NO_3		PO_4		SO_4	
.5	9037	.50	3671	.50	11843
1.0	18812	1.0	8076	1.0	24486
5.0	103383	5.0	49816	5.0	133709
10.0	218961	10.0	108568	10.0	283248
20.0	465449	20.0	240925	20.0	615853
30.0	708728	30.0	365629	30.0	945873
R = .9997		R = .9994		R = .9995	

Spike Check 12/92	12/22 9:42 Lo	Mid	High
F = 1.96/2.0 = 98%	1.45/1.5 = 97%	4.08/4.0 = 102%	5.88/6.0 = 98%
Cl = 1.9/2.0 = 95%	1.40/1.5 = 93%	3.95/4.0 = 99%	5.75/6.0 = 96%
NO_2 = 4.93/5.0 = 99%	4.95/5.0 = 99%	15.10/15.0 = 101%	24.77/25.0 = 99%
NO_3 = ~~2.04~~ ~~4.99~~ 4.99/5.0 = 100%	~~1.56~~ 4.99/5.0 = 99%	15.30/15.0 = 102%	25.27/25.0 = 101%
PO_4 = ~~4.99~~ 4.74/5.0 = 95%	~~4.9~~ 4.74/5.0 = 95%	14.69/15.0 = 98%	24.98/25.0 = 99%
SO_4 = 4.94/5.0 = 99%	4.94/5.0 = 99%	15.07/15.0 = 100%	25.04/25.0 = 100%

12/22 12:10

Lo	Med	High	Lo	Mid	High
1.43/1.5 = 95%	3.95/4.0 = 99%	5.98/6.0 = 99%	1.44/1.5 = 96%	3.99/4.0 = 98%	5.83/6.0 = 97%
1.40/1.5 = 93%	3.91/4.0 = 98%	5.68/6.0 = 95%	1.38/1.5 = 92%	3.89/4.0 = 97%	5.69/6.0 = 94%
4.82/5.0 = 96%	15.07/15.0 = 100%	24.77/25.0 = 99%	4.72/5.0 = 95%	14.91/15.0 = 99%	24.62/25.0 = 98%
4.95/5.0 = 99%	15.22/15.0 = 101%	25.33/25.0 = 101%	~~1.50~~	15.16/15.0 = 101%	25.25/25.0 = 100
4.68/5.0 = 94%	14.63/15.0 = 98%	24.89/25.0 = 99%	4.85/5.0 = 97%	14.55/15.0 = 97%	24.91/25.0 = 100%
4.81/5.0 = 96%	15.01/15.0 = 100%	25.00/25.0 = 100%	4.63/5.0 = 93%	14.89/15.0 = 99%	24.99/25.0 = 100%
			4.77/5.0 = 95%		

9613492.0375

Calculations

HARTCROWSER

Page 1 of 1

Job No. 2978-62

Project WHC

Date 10/22/93

Calculations for RPD

Made by AS

	B07J79	B07J79 dup	RPD	B086U2	B086U2 Dup	RPD
F	54	70	26%	54	32	28%
Cl	2	2	0	24	22	9%
NO_2	59	58	1%	50	47	6.1%
NO_3	125	121	3%	64	61	4.8%
PO_4	40	41	2.4%	~~58~~ 40	~~54~~ 41	2.5%
SO_4	73	70	4.2%	58	54	7.1%
CN	—	—		—	—	

CN Ical 10/22/92 12:06

5	95238
10	158830
25	472652
50	990234
75	1496524
100	2141150

r = .9987 ✓ ok

Recycled Paper

DATA QUALIFICATION SUMMARY

SDG: B07JZ4/JZ8	VALIDATOR: AS	DATE: 10/22/93	PAGE____OF____
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
F	J	B07JZ4	High MS recovery
		B07JZ5	
		B07JZ6	
		B07JZ7	
		B07JZ8	
		B07JZ9	
		B07K00	
		B07 86 V7	
CN	J/UJ	B07JZ4	Spiked the samples with 50ppb std. which is the D.L
		B07JZ5	
		B07JZ6	
		B07JZ7	
		B07JZ8	
		B07K00	
		B07JZ9	
PO4	J/UJ	" "	Exceeded Holding time
~~Cl, F, SO4, NO2, NO3~~ AS 1/26/94			

AS 11/12/93

TELEPHONE CONTACT SUMMARY

VALIDATOR:	DATE:	TIME:	PAGE____OF____
COMPANY:			
ADDRESS:			
PERSON CONTACTED:			
TELEPHONE:		FAX:	
PROJECT/CASE/SDG:			
REMARKS:			
ACTION:			

9613492.0378

D7 - ANION ANALYSIS

CURRENT DATE: April 7, 1993

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - IC & FREE CYANIDE (INCLUDES IC EMERGENCY SAMPLE, 93-05190)

Data Package/Report - T-106

ALO Numbers - 93-02239, 93-02240, 93-02241, 93-02351, 93-02437, 93-02438, 93-02451, 93-05190

Thomas H Walker 4/22/93

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

Date

Ion Chromatography

The samples from Project 20070, PNL 241-T-106 were extracted using procedure PNL-ALO-103 and were analyzed using procedure PNL-ALO-212 for anions, in accord with EPA Method 300.0. The extracts from Procedure 103 were also analyzed according to procedure PNL-ALO-271 for free CN as per TI-T106-1. The sample preparation and extraction were performed on 12/21/92 and all analyses were performed on 12/22/92. Sample 93-05190/BO86V2 was submitted separately and extracted and analyzed on 3/18/93.

Data presentation (see Tables and the notes below)

Results for each anion have been listed on a separate page and includes data for all of the samples. Sample results are rounded to the nearest whole integer.

All quality control data, including RPD values for samples analyzed in duplicate, spike recoveries for spiked samples, and control standard recoveries have been included with the analyte results. For soil samples, all analyte values, spike levels, and recoveries are based on dry weights.

Accuracy and Precision in IC results

The IC anions analysis system for procedure ALO-212 has been calibrated with six calibration standards ranging from 0.25-7.5 ppm for halides (F, Cl) and 0.5 - 30 ppm for the oxy-anions (NO2, NO3, PO4, SO4). The accuracy of the calibration was checked by analyzing three independently derived verification standards at 17%, 50%, and 83% of the calibration range. Unless noted otherwise, spike levels in the samples or extracts were nominally at 2 ppm for halides and 5 ppm for all oxyanions at the time of injection.

The accuracy of reported values between 20-80% of the calibration maximum has been estimated to be $\pm$10%, unless otherwise noted in the Problems section of this report. The accuracy decreases and errors increase for lower analyte levels and may be 100% at the instrument detection limit.

The lowest calibration standard value for all analytes has been defined as the method detection limit. Sample detection limit is defined as the method detection limit multiplied by the analytical dilution and the extraction dilution.

The Free CN analysis system is for Procedure ALO-271 has been calibrated with six calibration standards ranging from 5-100 pp. The accuracy of the calibration was checked by analyzing the 66.6 ppb standard prepared from the stock standard. An additional standard, ICV-6 at 375 ppb, was also analyzed to check the accuracy of the system calibration. Satisfactory results were obtained on both standards. Further details of standard prepartion are presented separately in this narrative.

The initial calibration run was not acceptable due to lack of quantitation of CAL 1 and CAL 2. A second calibration run was acceptable.

Hold Times

Hold times for soil samples do not apply for anion analyses, however the analyses were completed within 24 hours after extraction.

Quality Control

The criterion for the acceptance of anion data, that the spiked blank values for the anions of interest are quantitated within $\pm$ 20%, has been met with one exception (see below). The retention time (R.T.) window for the anions of interest, set at $\pm$10%, has been met.

Sample 93-02437/BO7JZ8 (and separately, sample 93-05190/BO86V2 for anions only) were analyzed in duplicate for anions and free cyanide. The variation in RPD values for Cl, PO4, and SO4 could be the result of three factors; the coarseness of the samples and resulting non-homogeneity, the possible complexing of analyte spikes with the sample material or cations present in the extract, and the fact that quantitation levels are less than 5 times the stated detection level and are thus subject to large percent variations. RPD values are calculated using reported sample data. No Free CN was found and thus RPD values are not calculated.

Spike recoveries on Blank Spikes were acceptable for all analytes with the exception of fluoride on the run of 12/22/92, which was high. As indicated by a higher than normal Area/Height ratio, an interferent, possibly an organic of unknown origin, biased quantitation high. Also, toward the end of the peak tail something (possibly a particle) caused the cell output to momentarily drop to baseline. While this did not appear to affect quantitation it should be noted.

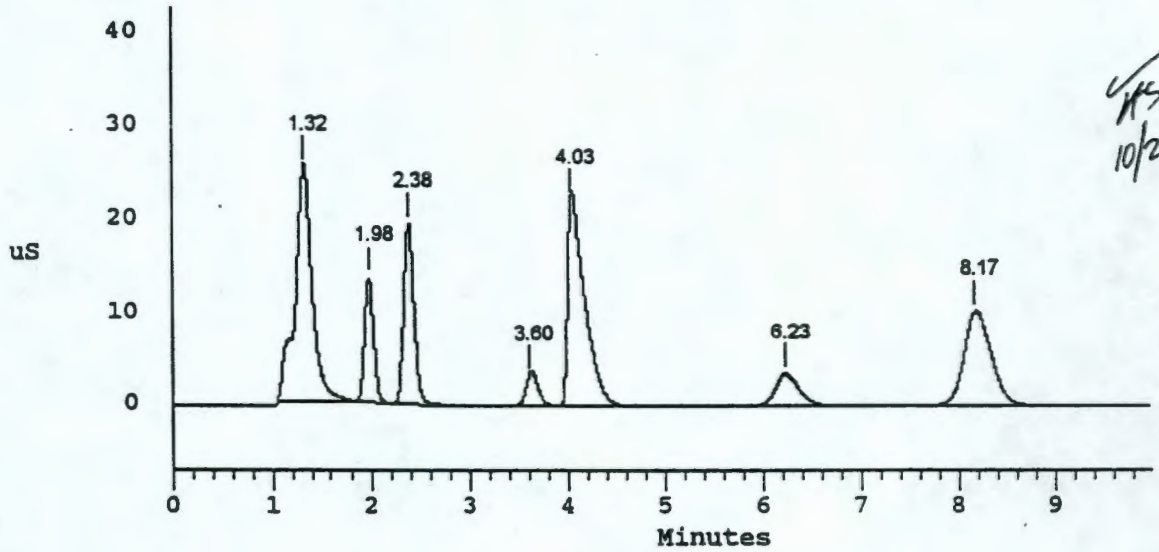
Sample Name: 93-02438MS/BO7JZ9 Date: 12/22/1992 11:49:29
Data File : C:\DX\DATA\9212223\92122231.D20
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 20 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	5.325	25236	314995	1	0.84
2	1.98	CHLORIDE	2.125	13535	89265	1	0.00
3	2.38	NITRITE	5.850	19445	146039	1	-1.23
4	3.60	BROMIDE	1.971	3143	30686	1	1.78
5	4.03	NITRATE	12.375	22086	277668	1	0.00
6	6.23	PHOSPHATE	5.263	3447	56112	1	0.20
7	8.17	SULFATE	7.196	10314	204734	1	-0.45
		Totals	40.105	97206	1119498		

File: 92122231.D20 Sample: 93-02438MS/BO7JZ9



HS 10/29/93

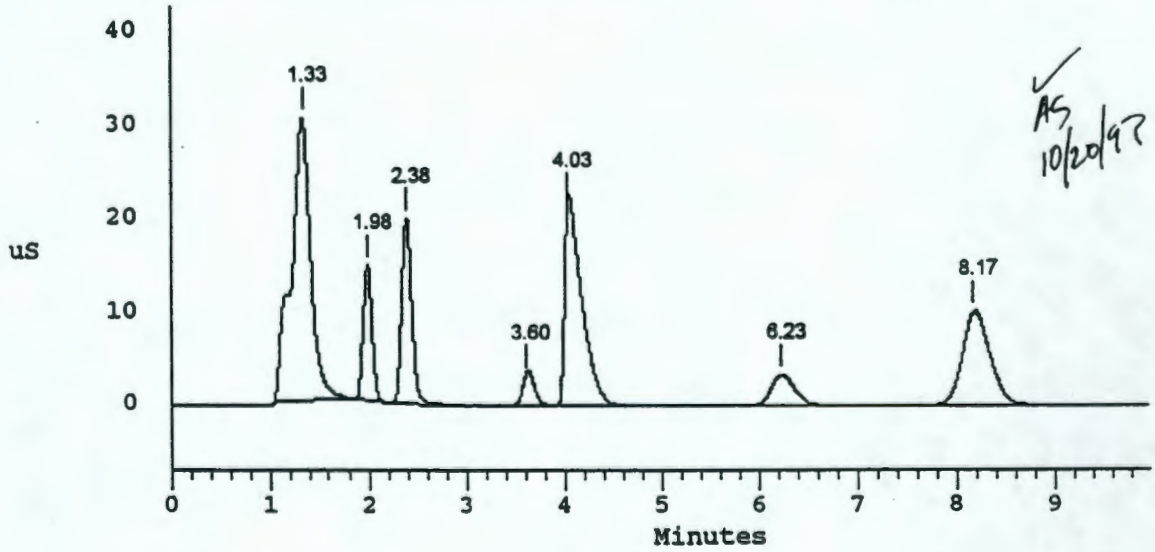
Sample Name: 93-02438MSD/BO7JZ9 Date: 12/22/1992 12:00:09
Data File : C:\DX\DATA\9212223\92122231.D21
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 21 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.33	FLUORIDE	7.090	30313	418007	1	2.12
2	1.98	CHLORIDE	2.231	14602	93912	1	0.00
3	2.38	NITRITE	5.848	19816	145976	1	-1.23
4	3.60	BROMIDE	1.952	3194	30365	1	1.78
5	4.03	NITRATE	12.178	21691	273042	1	0.00
6	6.23	PHOSPHATE	5.152	3361	54814	1	0.20
7	8.17	SULFATE	7.086	10160	201439	1	-0.45
		Totals	41.537	103137	1217554		

File: 92122231.D21 Sample: 93-02438MSD/BO7JZ9



AS 10/20/97

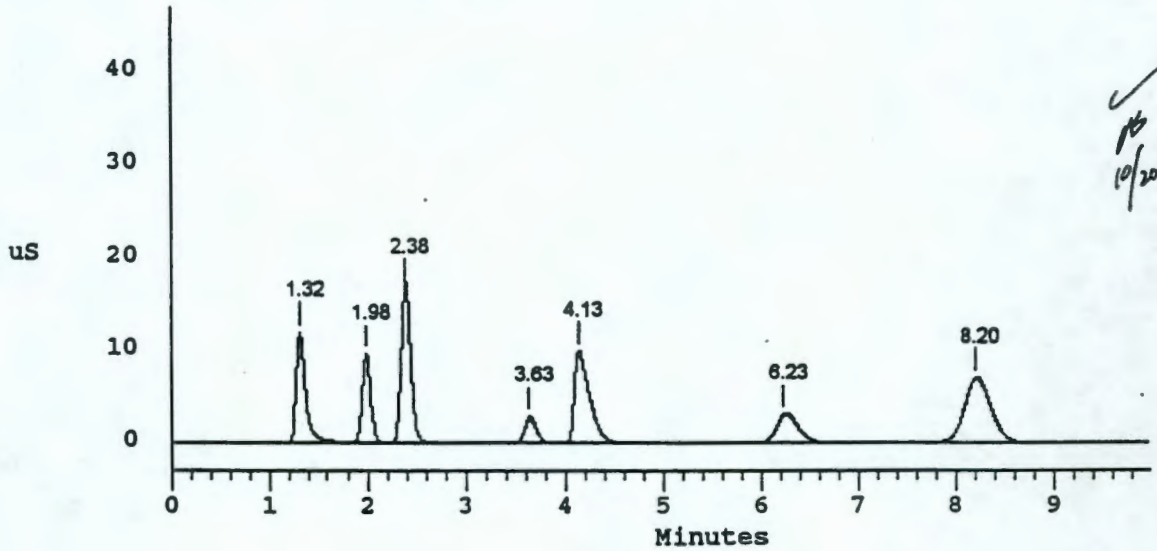
Sample Name: A9212153V1/LO Date: 12/22/1992 12:10:41
Data File : C:\DX\DATA\9212223\92122231.D22
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 22 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	1.435	11875	81482	1	0.84
2	1.98	CHLORIDE	1.401	9451	57781	1	0.00
3	2.38	NITRITE	4.821	16524	119871	1	-1.23
4	3.63	BROMIDE	1.517	2742	23326	1	2.73
5	4.13	NITRATE	4.952	9808	106380	1	0.00
6	6.23	PHOSPHATE	4.688	2977	49410	1	-2.22
7	8.20	SULFATE	4.818	6960	133866	1	-2.46
		Totals	23.632	60336	572116		

File: 92122231.D22 Sample: A9212153V1/LO



PB 10/20/93

AS 10/20/93

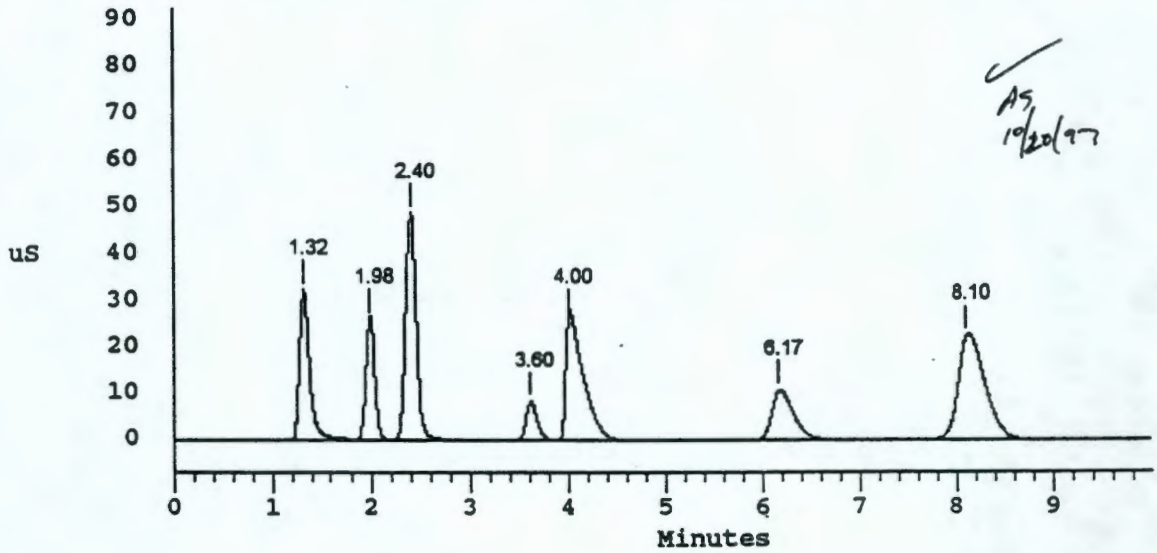
Sample Name: A9212153V2/MID Date: 12/22/1992 12:21:12
Data File : C:\DX\DATA\9212223\92122231.D23
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 23 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	3.950	32046	233515	1	0.84
2	1.98	CHLORIDE	3.918	26035	168870	1	0.00
3	2.40	NITRITE	15.078	48532	372981	1	-0.54
4	3.60	BROMIDE	4.111	8101	66645	1	1.78
5	4.00	NITRATE	15.223	26080	344996	1	0.00
6	6.17	PHOSPHATE	14.634	10679	168451	1	-0.05
7	8.10	SULFATE	15.011	22656	445669	1	-0.44
		Totals	71.924	174129	1801127		

File: 92122231.D23 Sample: A9212153V2/MID



AS 10/20/97

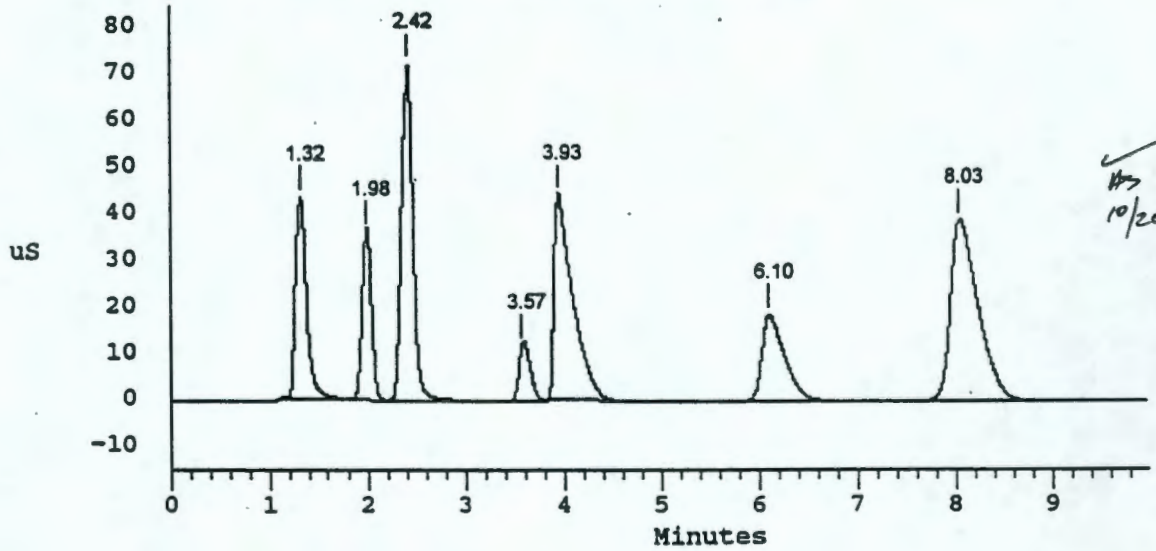
Sample Name: A9212153V3/HI	Date: 12/22/1992 12:31:45
Data File : C:\DX\DATA\9212223\92122231.D24	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 24 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	5.982	43365	353571	1	0.84
2	1.98	CHLORIDE	5.683	35996	249782	1	0.00
3	2.42	NITRITE	24.737	72007	597412	1	0.15
4	3.57	BROMIDE	6.021	12053	100870	1	0.84
5	3.93	NITRATE	25.339	43775	592197	1	0.00
6	6.10	PHOSPHATE	24.899	18638	299151	1	0.55
7	8.03	SULFATE	25.005	38850	774546	1	0.42
		Totals	117.667	264683	2967528		

File: 92122231.D24 Sample: A9212153V3/HI



10/20/93

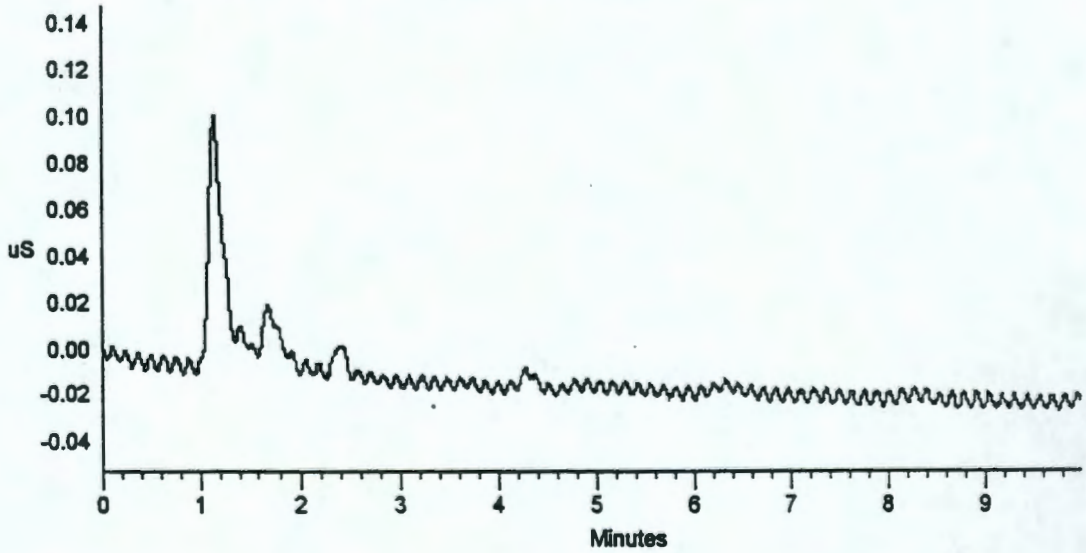
Sample Name: A9212223B2 Date: 12/22/1992 12:42:19
Data File : C:\DX\DATA\9212223\92122231.D25
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 25 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	1000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122231.D25 Sample: A9212223B2



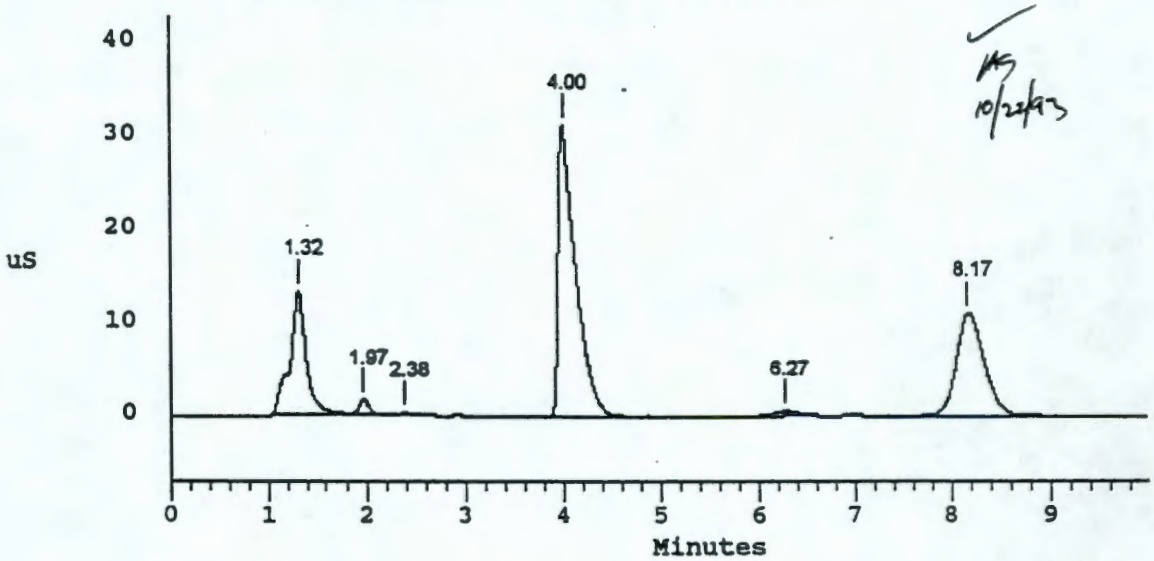
Sample Name: 93-02451/BO7K00 OS mcb 3/21/93 Date: 12/22/1992 12:52:56
Data File : C:\DX\DATA\9212223\92122231.D26
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 26 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	2.623	13215	153771	1	1.69
2	1.97	CHLORIDE	0.300	1518	10595	1	0.00
3	2.38	NITRITE	0.249	201	1308	1	-0.39
4	4.00	NITRATE	17.165	31106	391472	1	0.00
5	6.27	PHOSPHATE	1.128	510	8385	1	1.58
6	8.17	SULFATE	7.620	11148	217492	1	0.38
		Totals	29.085	57697	783022		

File: 92122231.D26 Sample: 93-02451/BO7K0O



KS 10/22/93

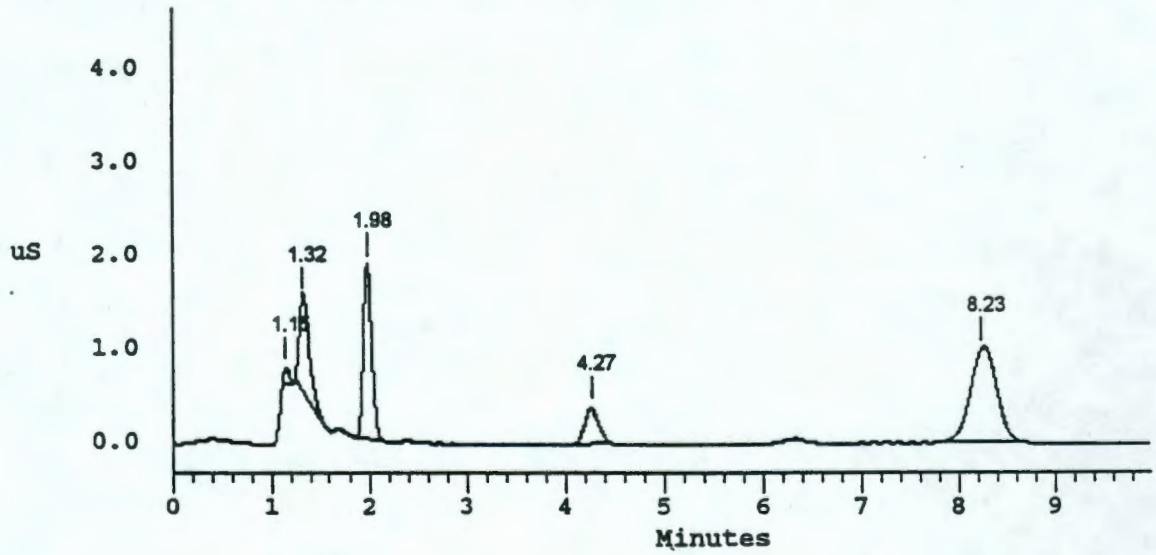
Sample Name: 93-02239/BO7JZ4 Date: 12/22/1992 13:03:35
Data File : C:\DX\DATA\9212223\92122231.D27
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 27 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
2	1.32	FLUORIDE	0.235	976	7469	1	0.84
3	1.98	CHLORIDE	0.322	1881	11557	1	0.00
4	4.27	NITRATE	0.389	398	3896	1	0.00
5	8.23	SULFATE	0.914	1013	19787	1	-5.12
		Totals	1.860	4267	42708		

File: 92122231.D27 Sample: 93-02239/BO7JZ4



✓ 15 12/22/93

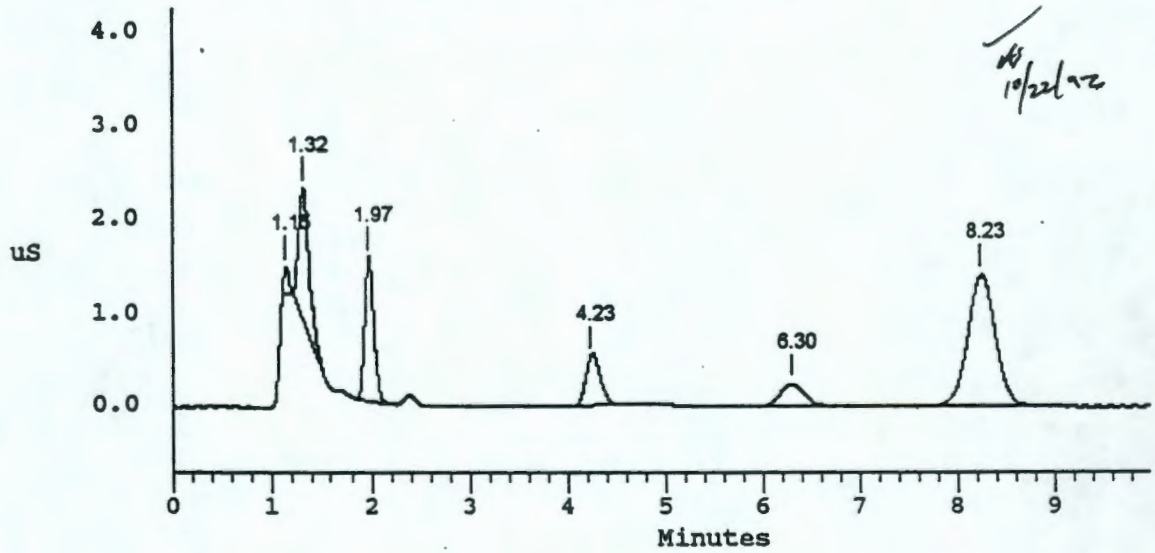
Sample Name: 93-02240/BO7JZ5 Date: 12/22/1992 13:14:16
Data File : C:\DX\DATA\9212223\92122231.D28
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 28 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.15		0.000	287	1053	1	
2	1.32	FLUORIDE	0.279	1362	10216	1	1.69
3	1.97	CHLORIDE	0.291	1530	10227	1	0.00
4	4.23	NITRATE	0.463	528	5555	1	0.00
5	6.30	PHOSPHATE	0.738	239	3934	1	-3.51
6	8.23	SULFATE	1.177	1400	27385	1	-4.38
		Totals	2.949	5346	58371		

File: 92122231.D28 Sample: 93-02240/BO7JZ5



10/22/92

9613492.0391

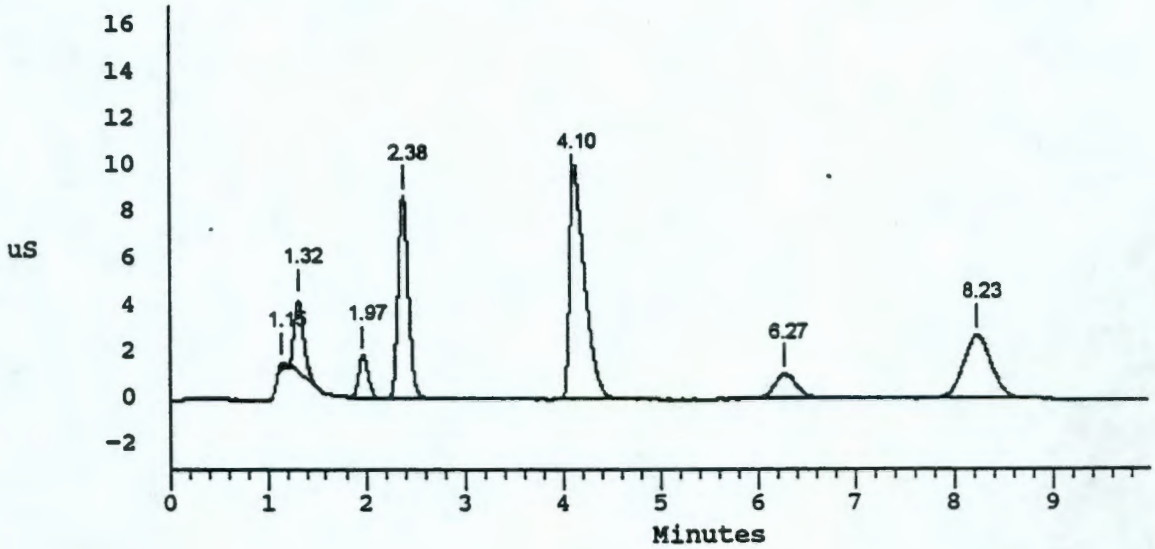
Sample Name: 93-02241/BO7JZ6 Date: 12/22/1992 13:24:54
Data File : C:\DX\DATA\9212223\92122231.D29
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 29 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
2	1.32	FLUORIDE	0.452	3053	20915	1	1.69
3	1.97	CHLORIDE	0.342	1796	12391	1	0.00
4	2.38	NITRITE	2.647	8705	63980	1	-0.39
5	4.10	NITRATE	5.098	9221	109687	1	0.00
6	6.27	PHOSPHATE	1.874	1028	16912	1	-0.90
7	8.23	SULFATE	2.080	2749	53587	1	-1.27
		Totals	12.493	26551	277471		

File: 92122231.D29 Sample: 93-02241/BO7JZ6



AS 12/22/92

D07-072

9613492.0392

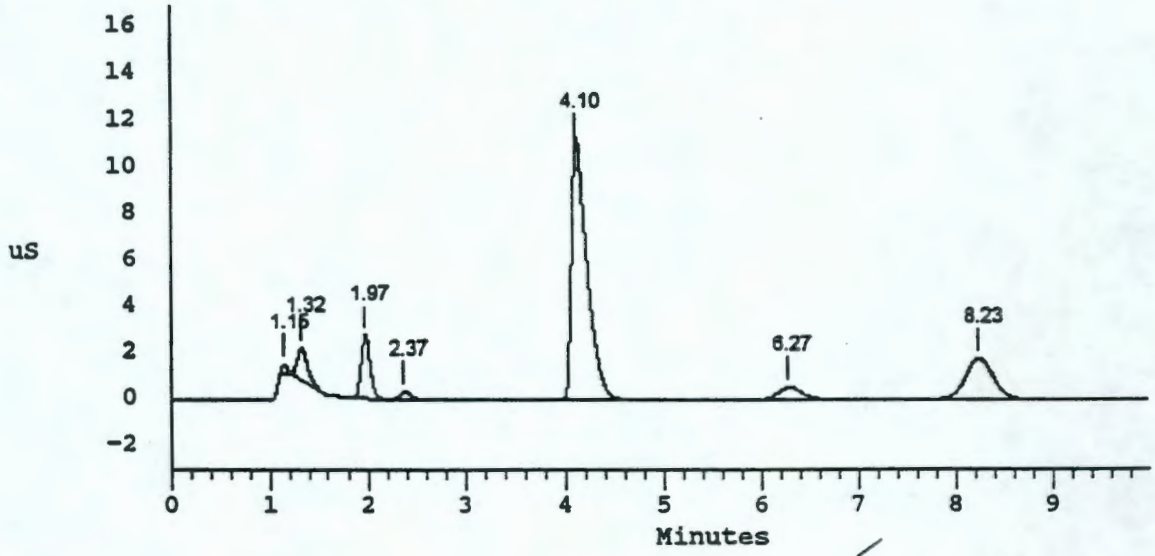
Sample Name: 93-02351/BO7JZ7 Date: 12/22/1992 13:35:31
Data File : C:\DX\DATA\9212223\92122231.D30
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 30 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.15		0.000	386	1517	1	
2	1.32	FLUORIDE	0.279	1331	10209	1	1.69
3	1.97	CHLORIDE	0.473	2676	17942	1	0.00
4	2.37	NITRITE	0.293	334	2474	1	-1.09
5	4.10	NITRATE	5.698	11021	123314	1	0.00
6	6.27	PHOSPHATE	1.200	542	9203	1	-0.90
7	8.23	SULFATE	1.453	1753	35380	1	-1.27
		Totals	9.396	18043	200039		

File: 92122231.D30 Sample: 93-02351/BO7JZ7



AS 10/22/93

D07-073

Data Reprocessed On 03/23/1993 08:32:36

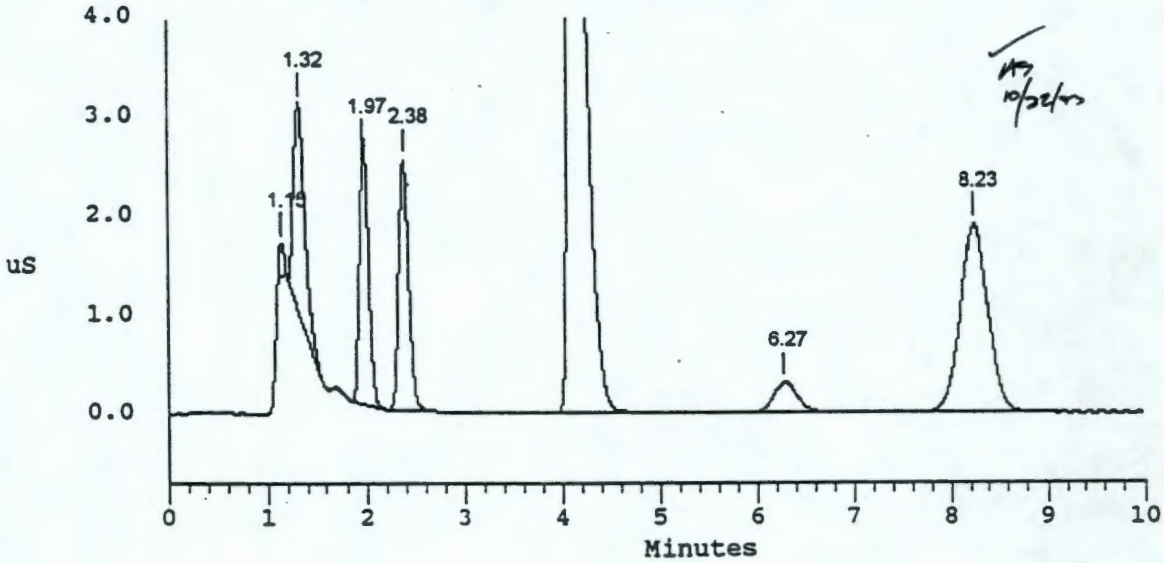
Sample Name: 93-02437/BO7JZ8 Date: 12/22/1992 13:46:05
Data File : C:\FY93DATA\DATA\DEC_92\9212223\92122231.D31
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 31 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.15		0.000	331	1156	1	
2	1.32	FLUORIDE	0.379	2071	16394	1	1.69
3	1.97	CHLORIDE	0.459	2569	17357	1	0.00
4	2.38	NITRITE	0.891	2530	18181	1	-0.39
5	4.10	NITRATE	5.309	9472	114481	1	0.00
6	6.27	PHOSPHATE	0.829	291	4971	1	-0.90
7	8.23	SULFATE	1.528	1897	37540	1	-1.27
		Totals	9.394	19160	210079		

File: 92122231.D31 Sample: 93-02437/BO7JZ8



9613492.0394

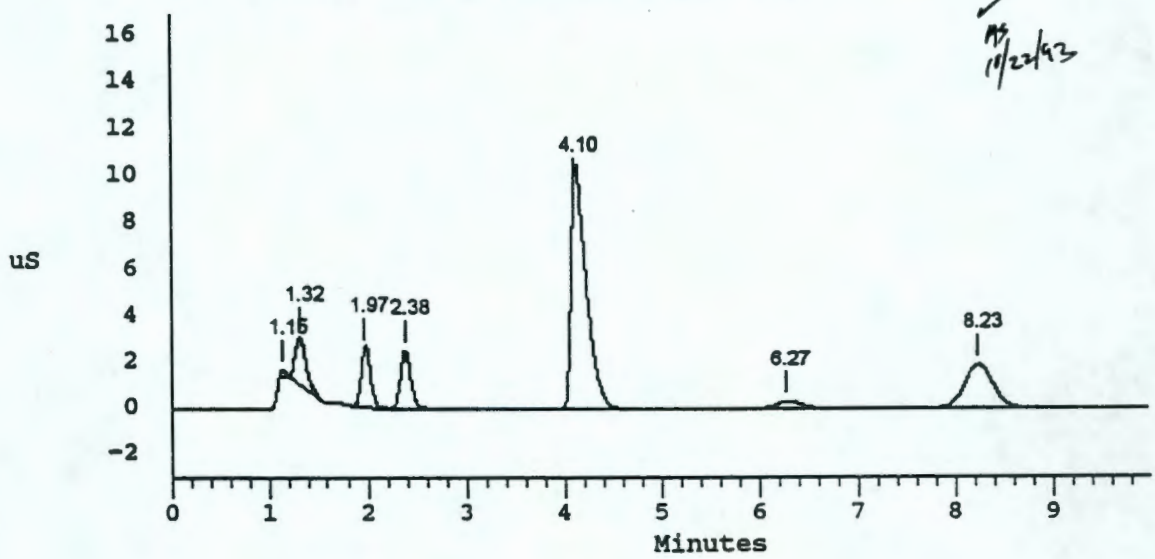
Sample Name:	93-02437/BO7JZ8	Date:	12/22/1992 13:46:05
Data File :	C:\DX\DATA\9212223\92122231.D31		
Method :	C:\DX\METHOD\3ANIONS2.met		
ACI Address:	2 System: 1 Inject#: 31 Vial:	Detector:	CDM-1
Analyst :	PKM / MCB Column: AG4A / AS4A		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.15		0.000	331	1156	1	
2	1.32	FLUORIDE	0.379	2071	16394	1	1.69
3	1.97	CHLORIDE	0.459	2569	17357	1	0.00
4	2.38	NITRITE	0.891	2530	18181	1	-0.39
5	4.10	NITRATE	5.309	9472	114481	1	0.00
6	6.27	PHOSPHATE	0.829	291	4971	1	-0.90
7	8.23	SULFATE	1.528	1897	37540	1	-1.27
		Totals	9.394	19160	210079		

File: 92122231.D31 Sample: 93-02437/BO7JZ8



AS 12/22/93

D07-075

Data Reprocessed On 03/23/1993 08:34:44

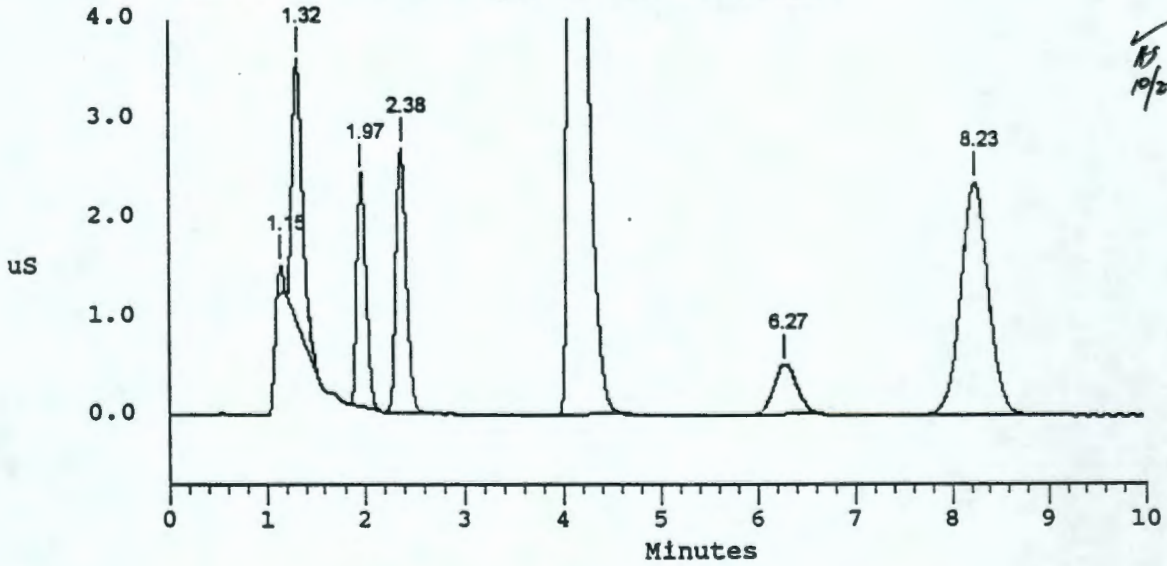
Sample Name: 93-02437D/BO7JZ8 Date: 12/22/1992 13:56:45
Data File : C:\FY93DATA\DATA\DEC_92\9212223\92122231.D32
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 32 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
2	1.32	FLUORIDE	0.429	2641	19516	1	1.69
3	1.97	CHLORIDE	0.422	2353	15782	1	0.00
4	2.38	NITRITE	0.944	2660	19574	1	-0.39
5	4.10	NITRATE	5.906	11463	128071	1	0.00
6	6.27	PHOSPHATE	1.138	504	8498	1	-0.90
7	8.23	SULFATE	1.831	2346	46351	1	-1.27
		Totals	10.671	21966	237793		

File: 92122231.D32 Sample: 93-02437D/BO7JZ8



10/20/93

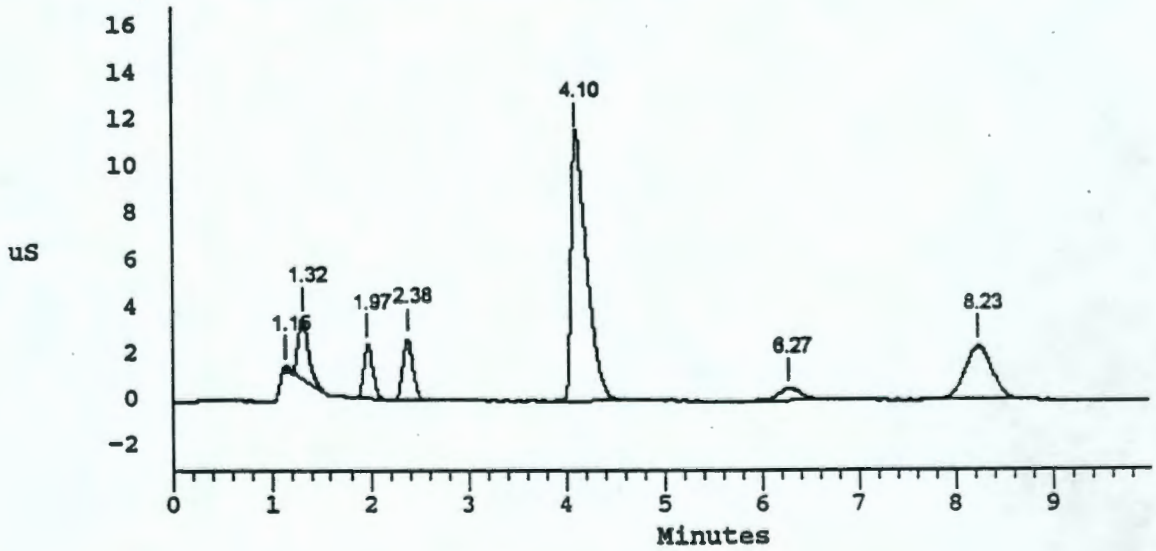
Sample Name: 93-02437D/BO7JZ8	Date: 12/22/1992 13:56:45
Data File : C:\DX\DATA\9212223\92122231.D32	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 32 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
2	1.32	FLUORIDE	0.429	2641	19516	1	1.69
3	1.97	CHLORIDE	0.422	2353	15782	1	0.00
4	2.38	NITRITE	0.944	2660	19574	1	-0.39
5	4.10	NITRATE	5.906	11463	128071	1	0.00
6	6.27	PHOSPHATE	1.138	504	8498	1	-0.90
7	8.23	SULFATE	1.831	2346	46351	1	-1.27
		Totals	10.671	21966	237793		

File: 92122231.D32 Sample: 93-02437D/BO7JZ8



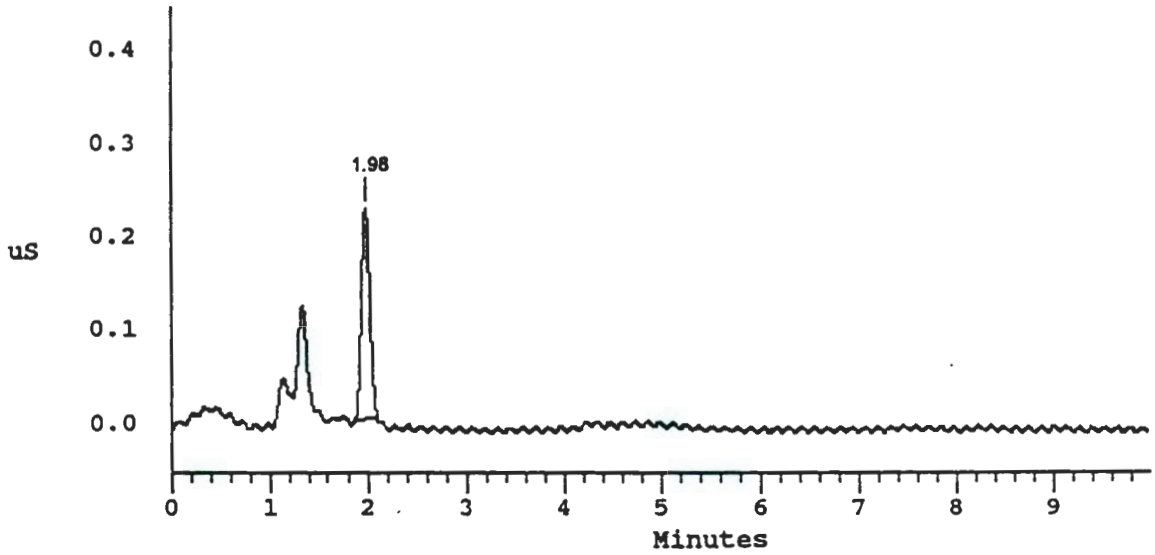
Sample Name: PREP BLANK (PB) Date: 12/22/1992 14:07:24
Data File : C:\DX\DATA\9212223\92122231.D33
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 33 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.98	CHLORIDE	0.082	226	1360	1	0.00
		Totals	0.082	226	1360		

File: 92122231.D33 Sample: PREP BLANK (PB)



AS
10/22/97

Data Reprocessed On 03/23/1993 08:44:38

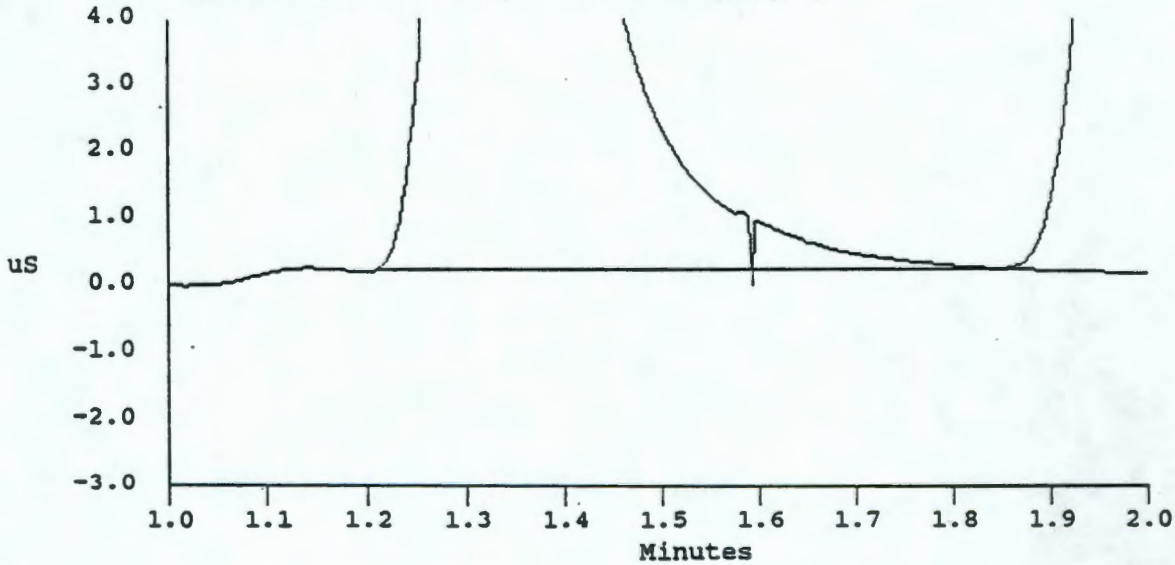
Sample Name: BLANK SPIKE (BS)	Date: 12/22/1992 14:17:56
Data File : C:\FY93DATA\DATA\DEC_92\9212223\92122231.D34	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 34 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	1.00	2.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.33	FLUORIDE	2.807	18763	164898	1	2.12
2	1.98	CHLORIDE	1.881	12737	78614	1	0.00
		Totals	4.688	31500	243512		

File: 92122231.D34 Sample: BLANK SPIKE (BS)



AS 10/22/92

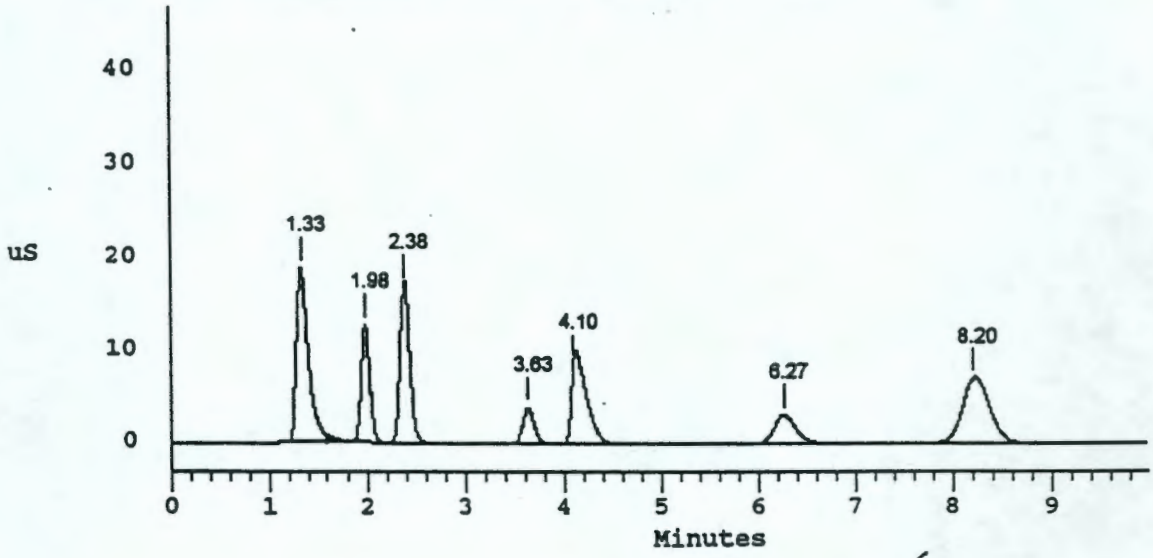
Sample Name: BLANK SPIKE (BS) Date: 12/22/1992 14:17:56
Data File : C:\DX\DATA\9212223\92122231.D34
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 34 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.33	FLUORIDE	2.807	18763	164898	1	2.12
2	1.98	CHLORIDE	1.881	12737	78614	1	0.00
3	2.38	NITRITE	4.970	17087	123676	1	-1.23
4	3.63	BROMIDE	2.039	3854	31784	1	2.73
5	4.10	NITRATE	4.987	8543	107174	1	0.00
6	6.27	PHOSPHATE	4.647	3107	48935	1	-0.90
7	8.20	SULFATE	4.921	6982	136912	1	-1.67
		Totals	26.252	71073	691993		

File: 92122231.D34 Sample: BLANK SPIKE (BS)



✓ AS 10/22/93

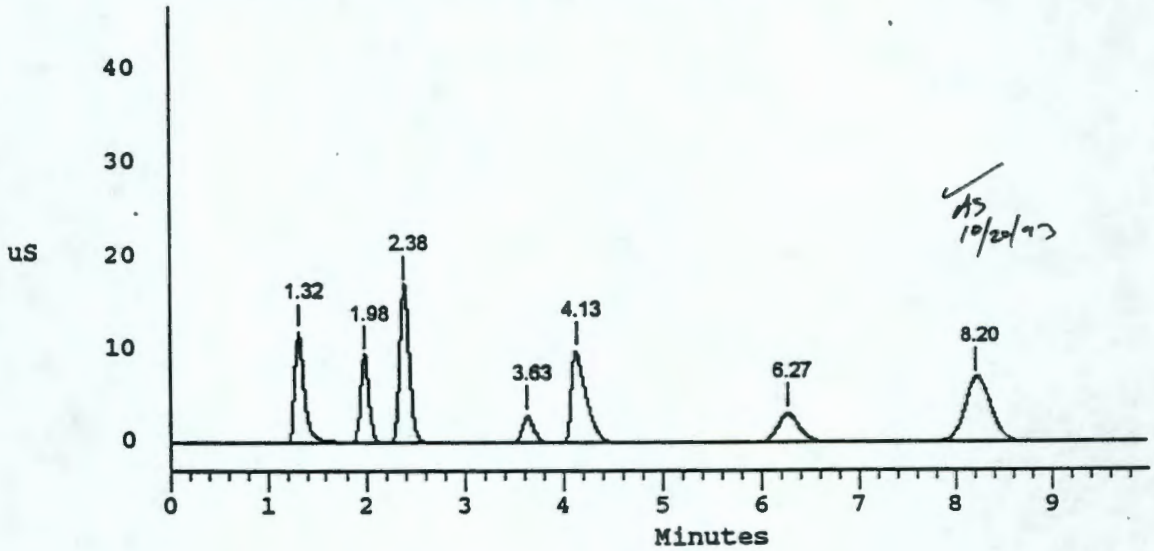
Sample Name: A9212153V1/LO Date: 12/22/1992 14:28:26
Data File : C:\DX\DATA\9212223\92122231.D35
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 35 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	1.443	11722	81956	1	0.84
2	1.98	CHLORIDE	1.381	9357	56919	1	0.00
3	2.38	NITRITE	4.725	16831	117404	1	-1.23
4	3.63	BROMIDE	1.504	2829	23127	1	2.73
5	4.13	NITRATE	4.850	9886	104052	1	0.00
6	6.27	PHOSPHATE	4.636	3097	48812	1	-1.70
7	8.20	SULFATE	4.776	6874	132619	1	-2.46
		Totals	23.315	60596	564889		

File: 92122231.D35 Sample: A9212153V1/LO



AS 10/20/93

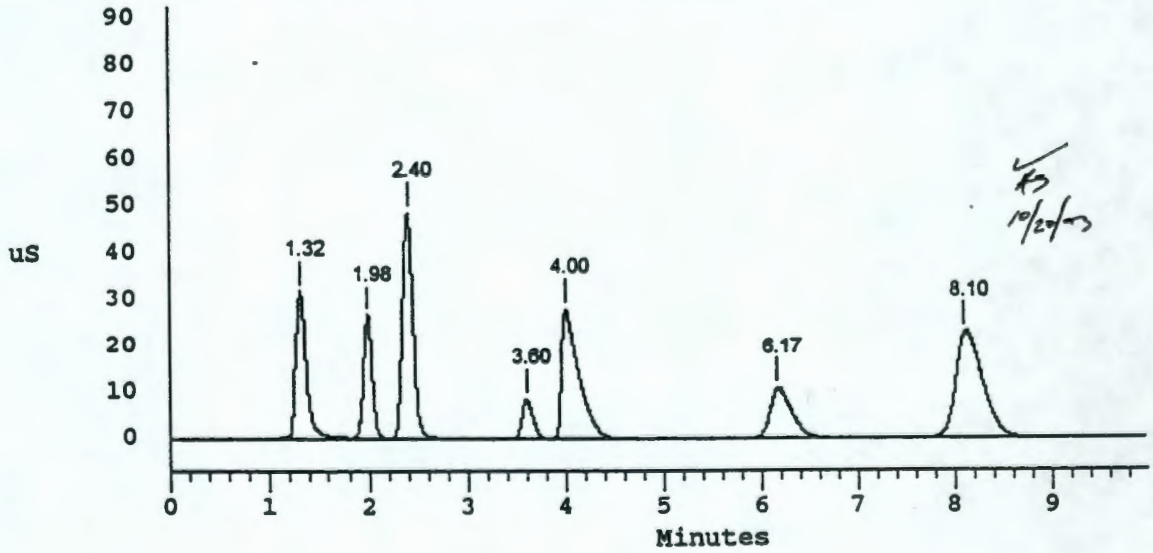
Sample Name: A9212153V2/MID	Date: 12/22/1992 14:38:57
Data File : C:\DX\DATA\9212223\92122231.D36	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 36 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	3.997	31660	236330	1	0.84
2	1.98	CHLORIDE	3.899	26274	168018	1	0.00
3	2.40	NITRITE	14.912	48518	369010	1	-0.54
4	3.60	BROMIDE	4.091	8428	66304	1	1.78
5	4.00	NITRATE	15.162	28030	343560	1	0.00
6	6.17	PHOSPHATE	14.557	10699	167500	1	-0.05
7	8.10	SULFATE	14.894	22834	441961	1	-0.44
		Totals	71.511	176444	1792683		

File: 92122231.D36 Sample: A9212153V2/MID



KB 10/20/93

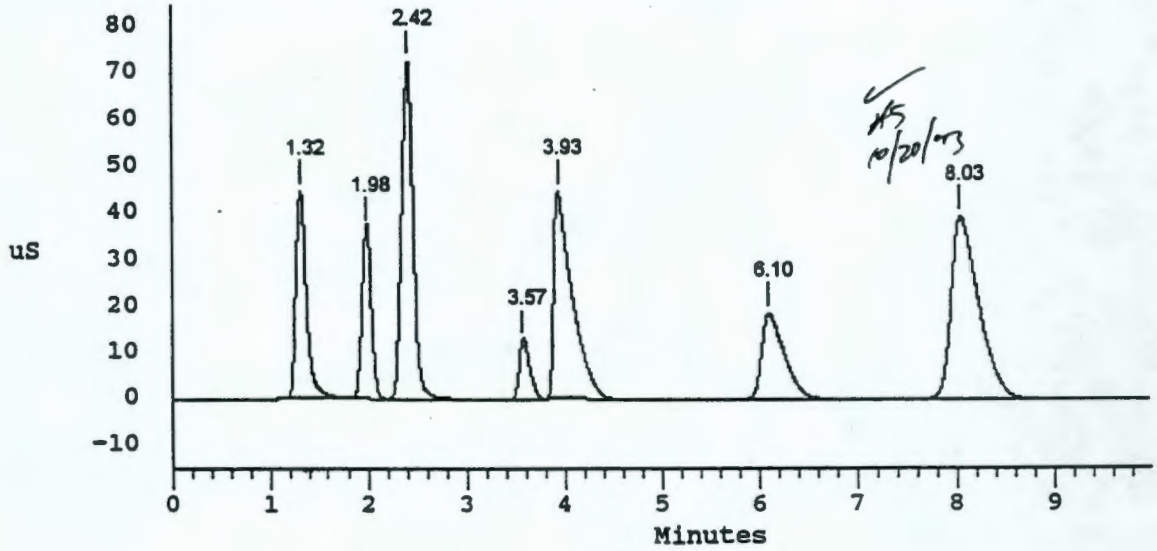
Sample Name: A9212153V3/HI Date: 12/22/1992 14:49:29
Data File : C:\DX\DATA\9212223\92122231.D37
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 37 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	1000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	5.834	44421	344875	1	0.84
2	1.98	CHLORIDE	5.699	36524	250525	1	0.00
3	2.42	NITRITE	24.629	72488	594972	1	0.15
4	3.57	BROMIDE	5.923	12760	99056	1	0.84
5	3.93	NITRATE	25.152	44483	587519	1	0.00
6	6.10	PHOSPHATE	24.912	18738	299325	1	0.55
7	8.03	SULFATE	24.993	39031	774126	1	0.42
		Totals	117.143	268447	2950399		

File: 92122231.D37 Sample: A9212153V3/HI



HS 10/20/93

FOR DATA REVIEW ***FOR DATA REVIEW***

This compiled data sheet is for data review and spike recovery calculations. Verification data is included.

All values are in ug/ml and are derived by dividing system quantitated values by the dilution factors.

100% ANALYTE LEVELS (HALIDES/OXYANIONS) : V1/LO - 1.50/5.00, V2/MID - 4.00/15.00, V3/HI - 6.00/25.00, SPIKE - 2.00/5.00 .

M&TE ID: P/N WM00474, P/N F02993, P/N B11620, WA83665 METHOD: PNL-MA599-ALO-212, 100 uL LOOP.

Analyst MCBent 12/23/92 Reviewer pkewebtul 4/5/93

INJ	SAMPLE ID	DIL	F	Cl	NO2	Br	NO3	PO4	SO4
12/22.d01	AUTOCAL1	1	0.25	0.25	0.50	0.25	0.50	0.50	0.50
12/22.d02	AUTOCAL2	1	0.50	0.50	1.00	0.50	1.00	1.00	1.00
12/22.d03	AUTOCAL3	1	1.00	1.00	5.00	1.00	5.00	5.00	5.00
12/22.d04	AUTOCAL4	1	2.50	2.50	10.00	2.50	10.00	10.00	10.00
12/22.d05	AUTOCAL5	1	5.00	5.00	20.00	5.00	20.00	20.00	20.00
12/22.d06	AUTOCAL6	1		7.50	30.00		30.00	30.00	30.00
12/22.d07	SPIKE CHECK (12/92)	1	1.96	1.90	4.93	2.04	4.99	4.74	4.94
12/22.d08	A9212153V1/LO	1	1.45	1.40	4.95	1.56	4.95	4.64	4.86
12/22.d09	A9212153V2/MID	1	4.08	3.95	15.10	4.13	15.29	14.69	15.03
12/22.d10	A9212153V3/HI	1	5.88	5.75	24.77	5.91	25.27	24.98	25.04
12/22.d11	A9212223B1	1							
12/22.d12	93-02239/BO7JZ4	50							
12/22.d13	AUTOCAL6	1	7.50	7.50	30.00	7.50	30.00	30.00	30.00
12/22.d14	93-02240/BO7JZ5	50							
12/22.d15	93-02241/BO7JZ6	50			0.24				
12/22.d16	93-02351/BO7JZ7	50					0.32		
12/22.d17	93-02437/BO7JZ8	50							
12/22.d18	93-02437D/BO7JZ8	50					0.30		
12/22.d19	93-02438/BO7JZ9	1	1.61	0.23	0.96		6.56	1.05	1.87
12/22.d20	93-02438MS/BO7JZ9	1	5.32	2.13	5.85	1.97	12.38	5.26	7.20
12/22.d21	93-02438MSD/BO7JZ9	1	7.09	2.23	5.85	1.95	12.18	5.15	7.09
12/22.d22	A9212153V1/LO	1	1.44	1.40	4.82	1.52	4.95	4.69	4.82
12/22.d23	A9212153V2/MID	1	3.95	3.92	15.08	4.11	15.22	14.63	15.01
12/22.d24	A9212153V3/HI	1	5.98	5.68	24.74	6.02	25.34	24.90	25.01
12/22.d25	A9212223B2	1							

SAMPLES ANALYZED ON: 12 / 22 / 92 USING SYSTEM IC-325-400-SYS3 (DATA ARCHIVAL LOCATOR)

9613492.0403

FOR DATA REVIEW ***FOR DATA REVIEW***

This compiled data sheet is for data review and spike recovery calculations. Verification data is included.

All values are in ug/ml and are derived by dividing system quantitated values by the dilution factors.

100% ANALYTE LEVELS (HALIDES/OXYANIONS) : V1/LO - 1.50/5.00, V2/MID - 4.00/15.00, V3/HI - 6.00/25.00, SPIKE - 2.00/5.00 .

M&TE ID: P/N WM00474, P/N F02993, P/N B11620, WA83665 METHOD: PNL-MA599-ALO-212, 100 uL LOOP.

Analyst McBurt 12/23/92 Reviewer Pamela Ettel 4/5/93

INJ	SAMPLE ID	DIL	F	Cl	NO2	Br	NO3	PO4	SO4
12/22.d26	93-02451/BO7K0O	1	2.62	0.30	0.25		17.17	1.13	7.62
12/22.d27	93-02239/BO7JZ4	1	0.24	0.32			0.39		0.91
12/22.d28	93-02240/BO7JZ5	1	0.28	0.29			0.46	0.74	1.18
12/22.d29	93-02241/BO7JZ6	1	0.45	0.34	2.65		5.10	1.87	2.08
12/22.d30	93-02351/BO7JZ7	1	0.28	0.47	0.29		5.70	1.20	1.45
12/22.d31	93-02437/BO7JZ8	1	0.38	0.46	0.89		5.31	0.83	1.53
12/22.d32	93-02437D/BO7JZ8	1	0.43	0.42	0.94		5.91	1.14	1.83
12/22.d33	PREP BLANK (PB)	1		0.08					
12/22.d34	BLANK SPIKE (BS)	1	2.81	1.88	4.97	2.04	4.99	4.65	4.92
12/22.d35	A9212153V1/LO	1	1.44	1.38	4.72	1.50	4.85	4.64	4.78
12/22.d36	A9212153V2/MID	1	4.00	3.90	14.91	4.09	15.16	14.56	14.89
12/22.d37	A9212153V3/HI	1	5.83	5.70	24.63	5.92	25.15	24.91	24.99
12/22.d38	A9212223B3	1							

SAMPLES ANALYZED ON: 12 / 22 / 92 USING SYSTEM IC-325-400-SYS3 (DATA ARCHIVAL LOCATOR)

D07-037

1040-26461196

Sample 93-02438/BO7JZ9 (and separately, sample 93-05190/BO86V2 for anions only) were spiked in duplicate for anions and free cyanide. Spike recoveries on the samples were also within acceptable limits with the exception of fluoride. Fluoride quantitation was affected by the presence of an interference, probably carbonate contributed by the sample, which resulted in biased results. Depending on the degree of interference, the baseline as drawn by the analytical system yielded slightly low biased results for samples 93-02239/BO7JZ4, 93-02240/BO7JZ5, 93-02241/BO7JZ6, 93-02351/BO7JZ7, and 93-02437/BO7JZ8. Samples 93-02438/BO7JZ9, 93-02438/BO7JZ9, 93-02451/BO7KO0, and 93-05190/BO86V2 were affected such that baselines drawn caused variable high bias, resulting in erratic spike recoveries. Spike recoveries are calculated using reported analyte values. Where less than values are reported, zero is subtracted from the sample plus spike values in calculating spike recoveries.

Process Blanks were also analyzed with each sample group. All analytes were less than detection level with the exception of fluoride on the blank run with sample 93-05190/BO86V2 and which had the same interferent as the sample. Based on examination of peak height and shape it is estimated that the fluoride contribution is one half or less of the quantified amount and the value reported is less than sample detection limit.

The criteria for acceptance of Free CN data is that verification standard values are quantitated within $\pm$ 10%. Normally, all of the verification/check standards are recovered within $\pm$10% of nominal values. Occasionally, the recovery is lower than 10% but within 15%. The retention time window is nominally set at $\pm$10%. The cognizant scientist may use values found to be outside of these windows if operating conditions warrant it.

A spike at 50 ppb Free CN in the Spiked Blank used for both anions and Free CN was prepared by including 0.010 mls of 100 ppm CN in the 20 ml of water used as extractant. Based on a 2g sample, this is a 0.50 Mg/Kg spike. Recovery of this spike was acceptable. The solid samples were spiked to a level of 50 ppb in the solid, which is, unfortunately the detection level of the system (5 ng/ml) or 0.05 Mg/Kg after correcting for extraction dilution. Recoveries were low at 72 and 64%. The use of water as extractant (TI-106-1) rather than the basic eluant normally used may have been a factor in the low recoveries in that undetectable species may have been formed with cations in the extracted solutions.

Standards Preparation and Use For Free CN (ALO-271)

The stock standard used for total cyanide analyses and which has been standardized on a weekly basis by titration is used to prepare intermediate and working calibration and verification standards. The free cyanide analysis system is calibrated with six calibration standards ranging from 5 - 100 ppb. The accuracy of the calibration is checked by analyzing a 66.6 ppb std prepared from the source used for the calibration standards. When possible, another standard derived from the total cyanide control sample is used for checking the accuracy of the quantitation.

STOCK CN STD LEVEL.....986 ug/ml;

checked by the total CN group on 12/10/92 .

1.015 mls of Stock CN std has been diluted to 10 mls with eluant to prepare a 100 ppm Spike standard.

0.102 mls of Stock CN std has been diluted to 10 mls with eluant to prepare a 10 ppm Intermediate CN std.

This 10 ppm standard was used for spikes and to prepare a 1 ppm CN std in eluant. This standard was diluted with eluant to prepare the six working calibration standards.

0.025, 0.050, 0.125, 0.250, 0.375, and 0.500 mls of the 1 ppm standard and 0.333 mls of the same standard are used to prepare calibration standards at 5, 10, 25, 50, 75, and 100 ppb and a verification standard at 66.6 ppb.

Saved as 9212223.wri by mc burt

MCBurt
4/5/93

Pamela Ethel (Reviewer)
4/5/93

FOR DATA REVIEW ***FOR DATA REVIEW***

This compiled data sheet is for data review and spike recovery calculations. Verification data is included.

All values are in ug/ml and are derived by dividing system quantitated values by the dilution factors.

100% ANALYTE LEVELS (HALIDES/OXYANIONS) : V1/LO - 1.50/5.00, V2/MID - 4.00/15.00, V3/HI - 6.00/25.00, SPIKE - 2.00/5.00 .

M&TE ID: P/N WM00474, P/N F02993, P/N B11620, WA83665 METHOD: PNL-MA599-ALO-212, 100 uL LOOP.

Analyst MCBent 3/22/93 Reviewer pkuehlthau 4/5/93

INJ	SAMPLE ID	DIL	F	Cl	NO2	Br	NO3	PO4	SO4
03/18.d23	A9302113V1/LO	1	2.41	1.38	4.54	1.30	32.82	4.75	4.78
03/18.d24	A9302113V2/MID	1	3.93	3.86	14.70	3.86	15.15	15.20	15.16
03/18.d25	A9302113V3/HI	1	6.00	5.78	24.76	5.91	25.19	25.53	25.45
03/18.d26	A9303183B2	1							
03/18.d31	93-05190/BO86V2	1	2.10	0.47	0.24		1.52		0.98
03/18.d32	93-05190D/BO86V2	1	2.25	0.33	0.25		1.39		0.60
03/18.d33	93-05190MS/BO86V2	1	5.20	2.33	4.83	1.93	6.13	3.89	5.62
03/18.d34	93-05190MSD/BO86V2	1	3.11	2.12	4.48	1.83	5.85	3.96	5.18
03/18.d35	93-05190/PROC. BLANK (	1	0.51						
03/18.d36	93-05190/BLANK SPIKE (B	1	2.30	1.90	4.65	1.91	4.70	4.76	4.78
03/18.d37	A9302113V1/LO	1	1.42	1.41	4.56	1.41	4.96	4.91	4.84
03/18.d38	A9302113V2/MID	1	3.87	3.79	14.78	3.78	15.29	15.13	15.06
03/18.d39	A9302113V3/HI	1	5.85	5.75	24.64	5.74	25.30	25.50	25.21
03/18.d40	A9303183B3	1							

Notes below not applicable to T-106

Injection 23 is affected by high concentration in injection 22; compare injection 22 and 57.

Injection 24 used as Laboratory Control Sample (LCS)

SAMPLES ANALYZED ON: 03 / 18 / 93 USING SYSTEM IC-325-400-SYS3 (DATA ARCHIVAL LOCATOR)

10/22/93

9613492.0407

007-056

BATTELLE, PNL

******ION CHROMATOGRAPHY DATA******

FREE CYANIDE

SAMPLES ANALYZED AT BATTELLE-PNL, ACL INORGANIC IC LAB, ROOM 400,325 BLDG.
M&TE ID: WA83665, P/NF02993, P/N B11260, P/N 900905 (for PNL-ALO-212), P/N 900903 (for PNL-ALO-271)

EXTRACTION DATE: 12/21/92 ANALYSIS DATE: 12/22/92 PNL 241-T-106 PROJECT 20070

THIS SHEET IS INCOMPLETE WITHOUT THE RUN NARRATIVE

Results in Mg/Kg; Dry Wght Basis

SAMPLE ID	PNL ALO NUMB.	SAMPLE	SAMPLE DUP	RPD	SPIKE + SAMPLE	SPIKE	DUP SPIKE + SAMPLE	SPIKE	% REC SPIKE	% REC DUP SPIKE	% REC CONTROL	FLAG
BO7JZ4	93-02239	<.05 (1)										N
BO7JZ5	93-02240	<.05 (1)										N
BO7JZ6	93-02241	<.05 (1)										N
BO7JZ7	93-02351	<.05 (1)										N
BO7JZ8	93-02437	<.05 (1)	<.05	0								N
BO7JZ9	93-02438	<.05 (1)			<.05(.036)	0.05	<.05(.032)	0.05	72	64		N
BO7KO0	93-02451	<.05 (1)										
PB		<.05										
BS		0.51				0.50					102	

Notes:

1. Blank Spike and Process Blank based on 2g sample, 100% solids.
2. See narrative for information on spike recovery.

FLAGS

N: Sample spike recovery outside limits.

C: Blank Spike or Laboratory Control Sample outside of limits.

*: RPD values outside of limits.

ANALYST: MC BURT

DS 12/24/92

007-013

9613492.0408

BATTELLE, PNL

******ION CHROMATOGRAPHY DATA******

FLUORIDE

SAMPLES ANALYZED AT BATTELLE-PNL, ACL INORGANIC IC LAB, ROOM 400, 325 BLDG.
M&TE ID: WA83665, P/NF02993, P/N B11280, P/N 900905 (for PNL-ALO-212), P/N 900903 (for PNL-ALO-271)

EXTRACTION DATE: 12/21/92 ANALYSIS DATE: 12/22/92 PNL 241-T-106 PROJECT 20070

THIS SHEET IS INCOMPLETE WITHOUT THE RUN NARRATIVE

Results in Mg/Kg: Dry wght Basis

SAMPLE ID	PNL ALO NUMB.	SAMPLE	SAMPLE DUP	RPD	SPIKE+ SAMPLE	SPIKE	DUP SPIKE + SAMPLE	SPIKE	% REC SPIKE	% REC DUP SPIKE	% REC CONTROL	FLAG
BO7JZ4	93-02239	<3										N
BO7JZ5	93-02240	<3										N
BO7JZ6	93-02241	5										N
BO7JZ7	93-02351	<3										N
BO7JZ8	93-02437	4	4	0								N
BO7JZ9	93-02438	16			54	20	70	20	190	270		N
BO7KO0	93-02451	27										N
PB		<3										
BS		28				20					140	C
BO86V2	93-05190	22	23	4	54	21	32	21	152	50		N
PB		<3										
BS		23				20					115	

Notes:

1. Blank Spike and Process Blank based on 2g sample, 100% solids.
2. See narrative for additional information on fluoride/matrix interference.
3. Sample 93-05190 extracted/analyzed on 3/18/93.

FLAGS:

N: Sample spike recovery outside limits.

C: Blank Spike or Laboratory Control Sample outside of limits.

*: RPD values outside of limits.

ANALYST: MC BURT

D07-C07

9613492.0409

BATTELLE, PNL

******ION CHROMATOGRAPHY DATA******

CHLORIDE

SAMPLES ANALYZED AT BATTELLE-PNL, ACL INORGANIC IC LAB, ROOM 400, 325 BLDG.
M&TE ID: WA83665, P/NF02993, P/N B11260, P/N 900905 (for PNL-ALO-212), P/N 900903 (for PNL-ALO-271)

EXTRACTION DATE: 12/21/92 ANALYSIS DATE: 12/22/92 PNL 241-T-106 PROJECT 20070

THIS SHEET IS INCOMPLETE WITHOUT THE RUN NARRATIVE

Results in Mg/Kg: Dry wght Basis

SAMPLE ID	PNL ALO NUMB.	SAMPLE	SAMPLE DUP	RPD	SPIKE + SMPLE	SPIKE	DUP SPIKE + SAMPLE	SPIKE	% REC SPIKE	%REC DUP SPIKE	% REC CONTROL	FLAG
BO7JZ4	93-02239	3										
BO7JZ5	93-02240	3										
BO7JZ6	93-02241	4										
BO7JZ7	93-02351	5										
BO7JZ8	93-02437	5	4	22								
BO7JZ9	93-02438	<3			22	20	22	20	110	110		
BO7KO0	93-02451	3										
PB		<3										
BS		19				20					95	
BO86V2	93-05190	5	3	50	24	21	22	21	90	81		
PB		<3										
BS		19				20					95	

Notes:

1 Blank Spike and Process Blank based on 2g sample, 100% solids.
2. Sample 93-05190 extracted/analyzed on 3/18/93.

FLAGS:

N: Sample spike recover outside limits.

C: Blank Spike or Laboratory Control Sample

*: RPD Values outside of limits.

ANALYST: MC BURT

9613492.0410

D07-C08

BATTELLE, PNL

******ION CHROMATOGRAPHY DATA******

NITRITE

SAMPLES ANALYZED AT BATTELLE-PNL, ACL INORGANIC IC LAB, ROOM 400,325 BLDG.
M&TE ID: WA83665, P/NF02993, P/N B11280, P/N 900905 (for PNL-ALO-212), P/N 900903 (for PNL-ALO-271)

EXTRACTION DATE: 12/21/92 ANALYSIS DATE; 12/22/92 PNL 241-T-106 PROJECT 20070

THIS SHEET IS INCOMPLETE WITHOUT THE RUN NARRATIVE

Results in Mg/Kg; Dry Wght Basis

SAMPLE ID	PNL ALO NUMB.	SAMPLE	SAMPLE DUP	RPD	SPIKE + SAMPLE	SPIKE	DUP SPIKE + SAMPLE	SPIKE	% REC SPIKE	% REC DUP SPIKE	% REC CONTROL	FLAG
BO7JZ4	93-02239	<5										
BO7JZ5	93-02240	<5										
BO7JZ6	93-02241	27										
BO7JZ7	93-02351	<5										
BO7JZ8	93-02437	9	10	11								
BO7JZ9	93-02438	10			59	50	58	50	98	96		
BO7KO0	93-02451	<5										
PB		<5										
BS		50				50					100	
BO86V2	93-05190	<5	<5	0	50	52	47	52	96	90		
PB		<5										
BS		46				50					92	

Notes:

1. Blank Spike and Process Blank based on 2g sample, 100% solids.
2. Sample 93-05190 extracted/analyzed on 3/18/93.

FLAGS:

N: Sample spike recovery outside limits.

C: Blank Spike or Laboratory Control Sample

*: RPD Values outside of limits.

ANALYST: MC BURT

9613492.0411

607-003

BATTELLE, PNL

******ION CHROMATOGRAPHY DATA******

NITRATE

SAMPLES ANALYZED AT BATTELLE-PNL, ACL INORGANIC IC LAB, ROOM 400, 325 BLDG.
M&TE ID: WA83665, P/NF02993, P/N B11260, P/N 900905 (for PNL-ALO-212), P/N 900903 (for PNL-ALO-271)

EXTRACTION DATE: 12/21/92 ANALYSIS DATE: 12/22/92 PNL 241-T-106 PROJECT 20070

THIS SHEET IS INCOMPLETE WITHOUT THE RUN NARRATIVE

Results in Mg/Kg; Dry Wght Basis

SAMPLE ID	PNL ALO NUMB.	SAMPLE	SAMPLE DUP	RPD	SPIKE + SAMPLE	SPIKE	DUP SPIKE + SAMPLE	SPIKE	% REC SPIKE	%REC DUP SPIKE	% REC CONTROL	FLAG
BO7JZ4	93-02239	<5										
BO7JZ5	93-02240	<5										
BO7JZ6	93-02241	52										
BO7JZ7	93-02351	58										
BO7JZ8	93-02437	55	61	10								
BO7JZ9	93-02438	67			125	50	121	50	118	108		
BO7KO0	93-02451	176										
PB		<5										
BS		50				50					100	
BO86V2	93-05190	16	14	13	64	52	61	52	92	87		
PB		<5										
BS		47				50					94	

Notes:

1 Blank Spike and Process Blank based on 2g sample, 100% solids.
2. Sample 93-05190 extracted/analyzed on 3/18/93.

FLAGS

N: Sample spike recovery outside limits.

C: Blank spike or Laboratory Control Sample outside of limits.

*: RPD values outside of limits.

ANALYST: MC BURT

D07-C10

9613492.0412

BATTELLE, PNL

******ION CHROMATOGRAPHY DATA******

PHOSPHATE

SAMPLES ANALYZED AT BATTELLE-PNL, ACL INORGANIC IC LAB, ROOM 400, 325 BLDG.
M&TE ID: WA83665, P/NF02993, P/N B11260, P/N 900905 (for PNL-ALO-212), P/N 900903 (for PNL-ALO-271)

EXTRACTION DATE: 12/21/92 ANALYSIS DATE; 12/22/92 PNL 241-T-108 PROJECT 20070

THIS SHEET IS INCOMPLETE WITHOUT THE RUN NARRATIVE

Results in Mg/Kg; Dry Wght Basis

SAMPLE ID	PNL ALO NUMB.	SAMPLE	SAMPLE DUP	RPD	SPIKE + SAMPLE	SPIKE	DUP SAMPLE + SPIKE	SPIKE	% REC SPIKE	% REC DUP SPIKE	% REC CONTROL	FLAG
BO7JZ4	93-02239	<5										
BO7JZ5	93-02240	8										
BO7JZ6	93-02241	19										
BO7JZ7	93-02351	12										
BO7JZ8	93-02437	8	12	40								
BO7JZ9	93-02438	11			53	50	51	50	84	80		
BO7KO0	93-02451	12										
PB		<5										
BS		46				50					92	
BO86V2	93-05190	<5	<5	0	40	52	41	52	77	79		
PB		<5										
BS		48				50					96	

Notes:

1. Blank Spike and Process Blank based on 2g sample, 100% solids.
2. Sample 93-05190 extracted/analyzed on 3/18/93.

FLAGS

N: Sample spike recovery outside limits.

C: Blank Spike or Laboratory Control Sample outside of limits.

*: RPD values outside of limits.

ANALYST: MC BURT

D02-C41

9613492.0413

BATTELLE, PNL

******ION CHROMATOGRAPHY DATA******

SULPHATE

SAMPLES ANALYZED AT BATTELLE-PNL, ACL INORGANIC IC LAB, ROOM 400, 325 BLDG.
M&TE ID: WA83665, P/NF02993, P/N B11260, P/N 900905 (for PNL-ALO-212), P/N 900903 (for PNL-ALO-271)

EXTRACTION DATE: 12/21/92 ANALYSIS DATE; 12/22/92 PNL 241-T-106 PROJECT 20070

THIS SHEET IS INCOMPLETE WITHOUT THE RUN NARRATIVE

Results in Mg/Kg; Dry Wght Basis

SAMPLE ID	PNL ALO NUMB.	SAMPLE	SAMPLE DUP	RPD	SPIKE + SAMPLE	SPIKE	DUP SPIKE + SAMPLE	SPIKE	% REC SPIKE	% REC DUP SPIKE	% REC CONTROL	FLAG
BO7JZ4	93-02239	10										
BO7JZ5	93-02240	12										
BO7JZ6	93-02241	21										
BO7JZ7	93-02351	15										
BO7JZ8	93-02437	16	19	17								
BO7JZ9	93-02438	19			73	50	70	50	108	102		
BO7KO0	93-02451	78										
PB		<5										
BS		49				50					98	
BO86V2	93-05190	10	6	50	58	52	54	52	92	85		
PB		<5										
BS		48				50					96	

Notes:

1. Blank Spike and Process Blank based on 2g sample, 100% solids.
2. Sample 93-05190 extracted/analyzed on 3/18/93.

FLAGS

N: Sample spike recovery outside limits.

C: Blank Spike or Laboratory Control Sample outside of limits.

*: RPD values outside of limits.

ANALYST: MC BURT

9613492.0414

D07-012

T-106 ANIONS LEACH (PNL-ALO-103) DATA ENTRY FORM

SAMPLE ID ALO/CUSTOMER	% SOLIDS	SAMPLE WT.(gm)	DILUENT VOL.(ml)	COMMENTS Label as below per TI
93-02239/(SA) BØ7JZ4		2.0107	20	93-02239
93-02240/(SA) BØ7JZ5		2.0119	20	93-02240
93-02241/(SA) BØ7JZ6		2.0178	20	93-02241
Process blank			20	PB
Blank spiked			19.8+0.2 ml SPIKE	BS
93-02351/(SA) BØ7JZ7		2.0190	20	93-02351
93-02437/(SA) BØ7JZ8		2.0191	20	93-02437
93-02437/(D) BØ7JZ8		2.0069	20	93-02437 D
93-02438/(SA) BØ7JZ9		2.0402	20	93-02438
93-02438/(MS) BØ7JZ9		2.0548	19.8+0.2 ml SPIKE	93-02438 MS
93-02438/(DMS) BØ7JZ9		2.0946	19.8+0.2 ml SPIKE	93-02438 DMS
93-02451/(SA) ~~BØ7MK0~~ BØ7KOØ 12/21/92		2.0927	20	93-02451
Blank SPIKED INCLUDES	0.010 ml	100 ppm	CN STD.	WHICH = 50 ppb IN LIQUID
SAMPLE 93-02438 MS & MSD	INCLUDE (EACH)	0.010 ml	10 ppm CN STD	WHICH = 50 mg CN/g SOLID

Notes: SPIKE SOLUTION - 200 ppm HALIDES; 500 PPM OXY-ANIONS.
DILUENT - DI H_2O. EXTRACT STARTED 2:15 PM 12/21/92
Balance WB80669 STOPPED 3:15 PM 12/21/92
Notebook number 3720-508 - performance check MCS

Prepared by: 12-21-92 Date/time: 12/21/92 / 2:15 PM

D07-014

9613492.0415

DIONEX SCHEDULE - C:\DX\SCHEDULE\12223SCH.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
1	AUTOCAL1	..\3ANIONS2	..\92122231	1	1	1
2	AUTOCAL2	..\3ANIONS2	..\92122231	1	1	1
3	AUTOCAL3	..\3ANIONS2	..\92122231	1	1	1
4	AUTOCAL4	..\3ANIONS2	..\92122231	1	1	1
5	AUTOCAL5	..\3ANIONS2	..\92122231	1	1	1
6	AUTOCAL6	..\3ANIONS2	..\92122231	1	1	1
7	SPIKE CHECK (12/92)	..\3ANIONS2	..\92122231	1	1	1
8	A9212153V1/LO	..\3ANIONS2	..\92122231	1	1	1
9	A9212153V2/MID	..\3ANIONS2	..\92122231	1	1	1
10	A9212153V3/HI	..\3ANIONS2	..\92122231	1	1	1
11	A9212223B1	..\3ANIONS2	..\92122231	1	1	1
12	93-02239/BO7JZ4	..\3ANIONS2	..\92122231	1	50	1
13	AUTOCAL6	..\3ANIONS2	..\92122231	1	1	1
14	93-02240/BO7JZ5	..\3ANIONS2	..\92122231	1	50	1
15	93-02241/BO7JZ6	..\3ANIONS2	..\92122231	1	50	1
16	93-02351/BO7JZ7	..\3ANIONS2	..\92122231	1	50	1
17	93-02437/BO7JZ8	..\3ANIONS2	..\92122231	1	50	1
18	93-02437D/BO7JZ8	..\3ANIONS2	..\92122231	1	50	1
19	93-02438/BO7JZ9	..\3ANIONS2	..\92122231	1	1	1
20	93-02438MS/BO7JZ9	..\3ANIONS2	..\92122231	1	1	1
21	93-02438MSD/BO7JZ9	..\3ANIONS2	..\92122231	1	1	1
22	A9212153V1/LO	..\3ANIONS2	..\92122231	1	1	1
23	A9212153V2/MID	..\3ANIONS2	..\92122231	1	1	1
24	A9212153V3/HI	..\3ANIONS2	..\92122231	1	1	1
25	A9212223B2	..\3ANIONS2	..\92122231	1	1	1
26	93-02451/BO7K00	..\3ANIONS2	..\92122231	1	1	1
27	93-02239/BO7JZ4	..\3ANIONS2	..\92122231	1	1	1
28	93-02240/BO7JZ5.	..\3ANIONS2	..\92122231	1	1	1
29	93-02241/BO7JZ6	..\3ANIONS2	..\92122231	1	1	1
30	93-02351/BO7JZ7	..\3ANIONS2	..\92122231	1	1	1
31	93-02437/BO7JZ8	..\3ANIONS2	..\92122231	1	1	1
32	93-02437D/BO7JZ8	..\3ANIONS2	..\92122231	1	1	1
33	PREP BLANK (PB)	..\3ANIONS2	..\92122231	1	1	1
34	BLANK SPIKE (BS)	..\3ANIONS2	..\92122231	1	1	1
35	A9212153V1/LO	..\3ANIONS2	..\92122231	1	1	1
36	A9212153V2/MID	..\3ANIONS2	..\92122231	1	1	1
37	A9212153V3/HI	..\3ANIONS2	..\92122231	1	1	1
38	A9212223B3	..\3ANIONS2	..\92122231	1	1	1
39	NO RUN	..\3SHUTDN.	..\92122231	1	1	1

Comment:
Calibrated with stds. prepared on 12/21/92. Prepared new Int. OXY Std and new Cal 6 on 12/22/92

DIONEX METHOD PARAMETERS - 3ANIONS2.MET

Method Comment: CALIBRATED ON 12/22/92; STDS PREPARED ON 12/21/92;
NEW I-OXY, CAL 6 PREP 12/22/92 FLOW 1.5 ml/min;
Column ID: AG4A / AS4A
Analyst ID: PKM / MCB

System Parameters

System Name: ANIONS 2

Number of Detectors	1
Run Time (minutes)	10.00
Sampling Rate (seconds)	0.20
Detector 1 Type	CDM-1
Detector 1 real time plot scale maximum (uS)	10.0
minimum	-1.0
Save Data File	Yes

Data File Name: C:\DX\DATA\3ANION.Dxx

-- DETECTOR 1 PARAMETERS --

Report Options

Create ASCII Report File	No
Print Report	Yes
Print All Components	No
Print Components Found	No
Print Missing Components	No
Print All Peaks	Yes
Print Unknown Peaks	No
Print Chromatogram	Yes
Autoscale Chromatogram Maximum	Yes
Autoscale Maximum Value Delay (minutes)	0.0
Autoscale Chromatogram Minimum	Yes
Autoscale Minimum Value Delay (minutes)	0.0
Fill Peaks with Color	No
Draw Grid Lines on Chromatogram	No
Show Component Fraction Numbers	No
Label with Peak Number	No
Label with Retention Times on Chromatogram	Yes
Label with Component Name	No

Format File Name: C:\DX\METHOD\default.prf

Integration Parameters

Starting Peak Width (seconds)	10.0
Peak Threshold	0.500
Peak Area Reject	1000
Area Reject for Reference Peaks	1000

Data Events

Time	Description
0.01	Stop peak detection
0.91	Start peak detection
0.91	Force baseline at start of all peaks
1.19	Void volume treatment for this peak
3.20	Double bunching factor

Calibration Parameters

Number Of Levels for Calibration	6
Force Calibration Curve Through Origin	No
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calculate Unknowns by Area or Height	Area
Default Sample Volume	1.0
Default Dilution Factor	1.0
Default Response Factor for Unknown Peaks	0.0
Calibration Standard Volume	1.0
Internal Standard Amount in Samples	1.0
Amount Units	PPM

Component Table -- Last Modified: 10:35 on Tue, 22 Dec 1992

Component # 1 FLUORIDE Retention Time 1.32
Reference Comp. CHLORIDE Window Size 10.00 %
Amount = K0 + K1*Area + K2*Area**2
K0 = 1.14926E-001
K1 = 1.60871E-005
K2 = 1.43436E-012

Level	Amount	Area	Height
1	2.50000E-001	10520	1475
2	5.00000E-001	23535	3230
3	1.00000E+000	54639	7081
4	2.50000E+000	141926	19974
5	5.00000E+000	300113	38343
6	7.50000E+000	440184	53651

Component # 2 CHLORIDE Retention Time 2.00
Reference Comp. CHLORIDE Window Size 9.00 %
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.98800E-002
K1 = 2.36335E-005
K2 = -4.32308E-012

Level	Amount	Area	Height
1	2.50000E-001	9850	1533
2	5.00000E-001	19568	3000
3	1.00000E+000	39432	6030
4	2.50000E+000	103207	15499
5	5.00000E+000	220872	32899
6	7.50000E+000	334909	46511

Component # 3 NITRITE Retention Time 2.43
Reference Comp. CHLORIDE Window Size 9.00 %
Amount = K0 + K1*Area + K2*Area**2
K0 = 1.99242E-001
K1 = 3.79260E-005
K2 = 5.26941E-012

Level	Amount	Area	Height
1	5.00000E-001	10551	1487
2	1.00000E+000	21484	3105
3	5.00000E+000	121186	16858
4	1.00000E+001	247324	33016
5	2.00000E+001	493046	61409
6	3.00000E+001	713230	82912

VAS
10/19/93

Component # 4 BROMIDE Retention Time 3.57
Reference Comp. CHLORIDE Window Size 8.00 %
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.85831E-002
K1 = 6.45961E-005
K2 = -5.24221E-011

Level	Amount	Area	Height
1	2.50000E-001	3570	391
2	5.00000E-001	7322	850
3	1.00000E+000	14945	1624
4	2.50000E+000	38519	4808
5	5.00000E+000	83126	10643
6	7.50000E+000	128732	14168

Component # 5 NITRATE Retention Time 3.93
Reference Comp. NITRATE Window Size 10.00 %
Amount = K0 + K1*Area + K2*Area**2
K0 = 2.13414E-001
K1 = 4.50108E-005
K2 = -4.36198E-012

Level	Amount	Area	Height
1	5.00000E-001	9037	829
2	1.00000E+000	18812	1665
3	5.00000E+000	103383	8505
4	1.00000E+001	218961	18154
5	2.00000E+001	465449	34127
6	3.00000E+001	708728	50994

Component # 6 PHOSPHATE Retention Time 6.07
Reference Comp. NITRATE Window Size 10.00 %
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.92360E-001
K1 = 8.79272E-005
K2 = -2.00810E-011

Level	Amount	Area	Height
1	5.00000E-001	3671	228
2	1.00000E+000	8076	509
3	5.00000E+000	49816	2983
4	1.00000E+001	108568	6859
5	2.00000E+001	240825	15248
6	3.00000E+001	365629	22230

MS
10/18/93

Component # 7 SULFATE Retention Time 8.00
Reference Comp. NITRATE Window Size 10.00 %
Amount = K0 + K1*Area + K2*Area**2
K0 = 2.27460E-001
K1 = 3.47714E-005
K2 = -3.59090E-012

Level	Amount	Area	Height
1	5.00000E-001	11843	620
2	1.00000E+000	24486	1254
3	5.00000E+000	133709	6851
4	1.00000E+001	283248	14882
5	2.00000E+001	615853	31166
6	3.00000E+001	945873	46164

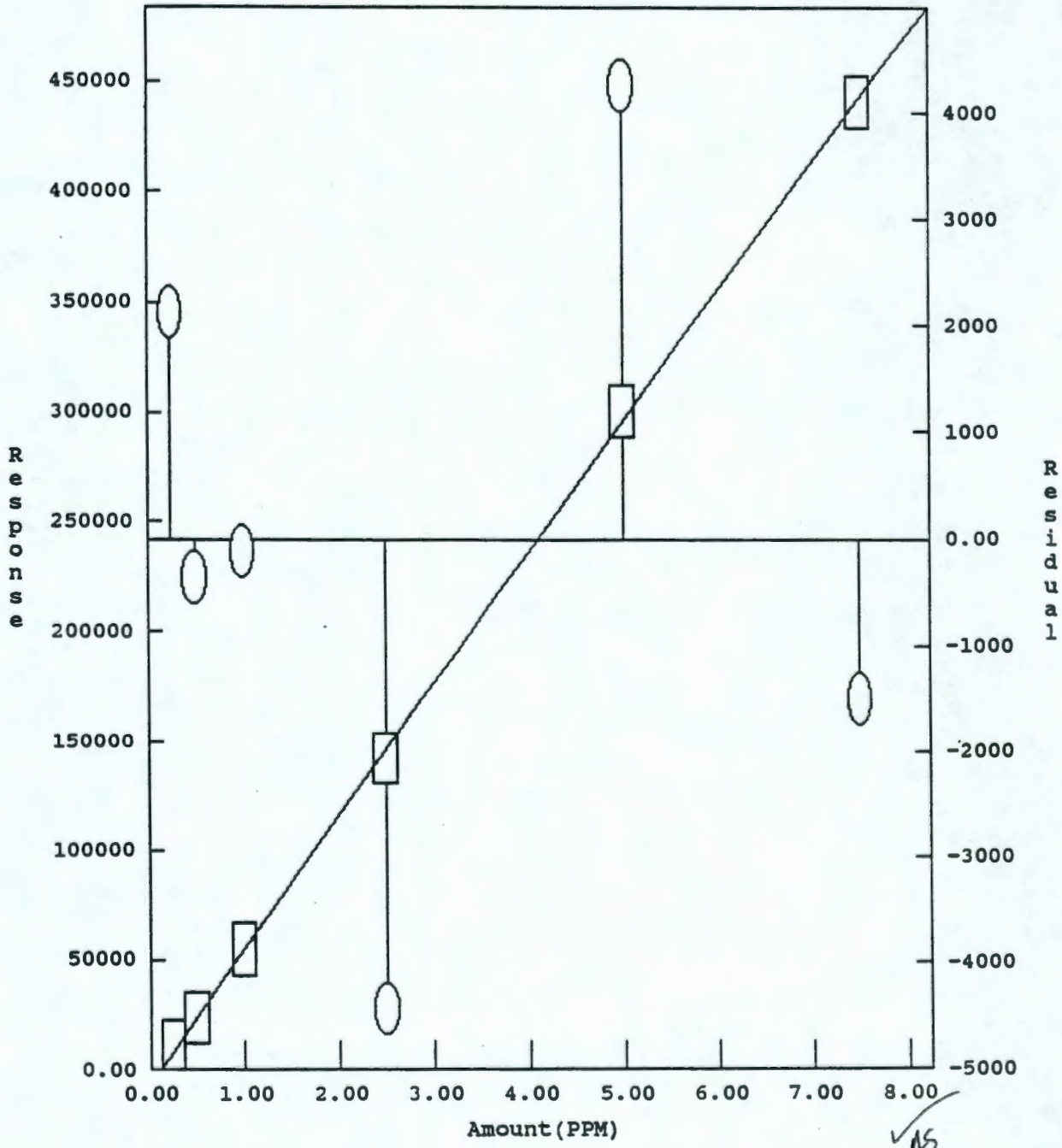
Timed Events File: C:\DX\METHOD\3ANIONS2.TE

Step	Time	Description
Init		APM Flow = 1.5 mL/min
Init		Eluant 1 ON
Init		Eluant 2 OFF
Init		Eluant 3 OFF
Init		Eluant 4 OFF
Init		Eluant 5 OFF
Init		Eluant 6 OFF
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 100.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 22 Deg. C
Init		Valve A OFF
Init		Valve B OFF
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI Regen ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	CDM-1 Recorder Range = 10.0 uS
2	0.1	CDM-1 Recorder Range = 100.0 uS
2	0.1	Inject Valve ON
2	0.1	Start Sampling
3	1.0	Inject Valve OFF
4	8.0	ACI Autosmp ON
5	8.5	ACI Autosmp OFF

KS
10/19/93

-Method Updated: 10:35 on Tue, 22 Dec 1992

Component: FLUORIDE
Fit Type: Quadratic
r^2 = 0.999705 Sum(abs(Residuals)) = 12761
Amt = (1.434360e-012 * $Resp^2$)
(1.608709e-005 * Resp)+ 0.114
Standardization: External
Calibration: Area

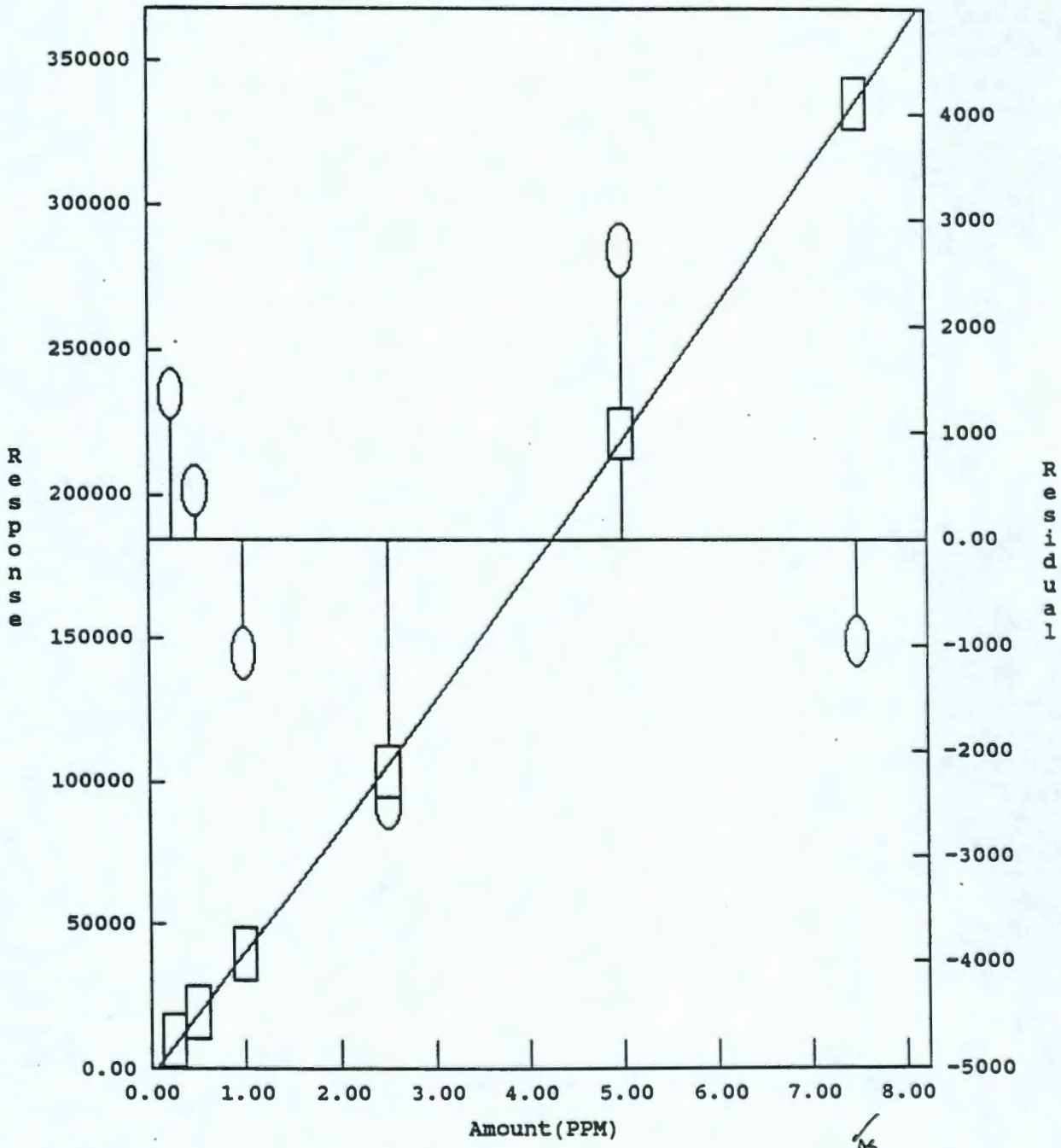


AS 19/1/93

9613492.0423

Method: C:\DX\METHOD\3ANIONS2.MET

Component: CHLORIDE
Fit Type: Quadratic
r^2 = 0.999788 Sum(abs(Residuals)) = 9079.4
Amt = (-4.323085e-012 * $Resp^2$)+
(2.363347e-005 * Resp)+ 0.0499
Standardization: External
Calibration: Area



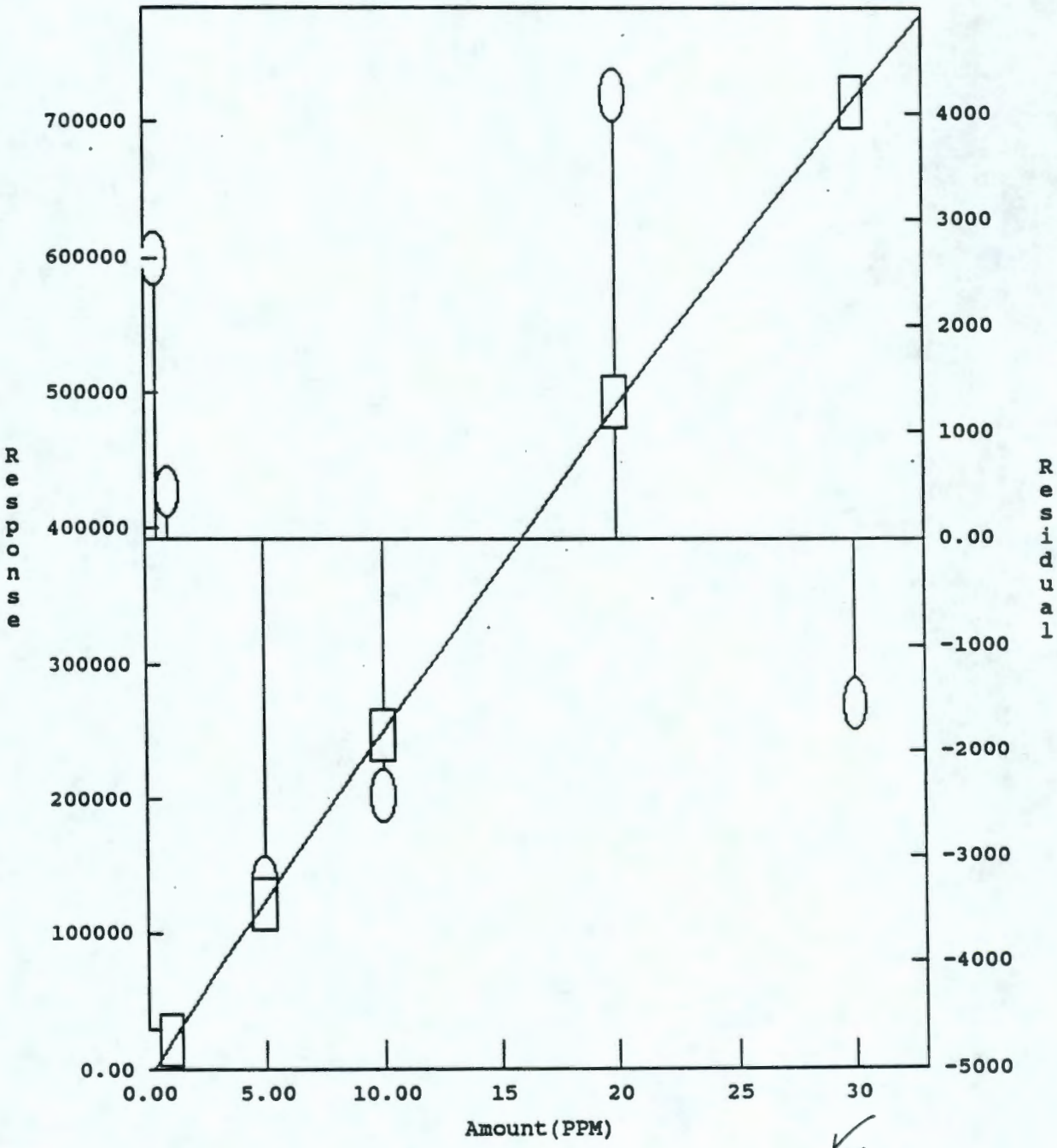
BS
10/19/97

D07-025

9613492.0424

Method: C:\DX\METHOD\3ANIONS2.MET

Component: NITRITE
Fit Type: Quadratic
r^2 = 0.999894 Sum(abs(Residuals)) = 14445
Amt = (5.269407e-012 * $Resp^2$)
(3.792598e-005 * Resp)+ 0.199
Standardization: External
Calibration: Area



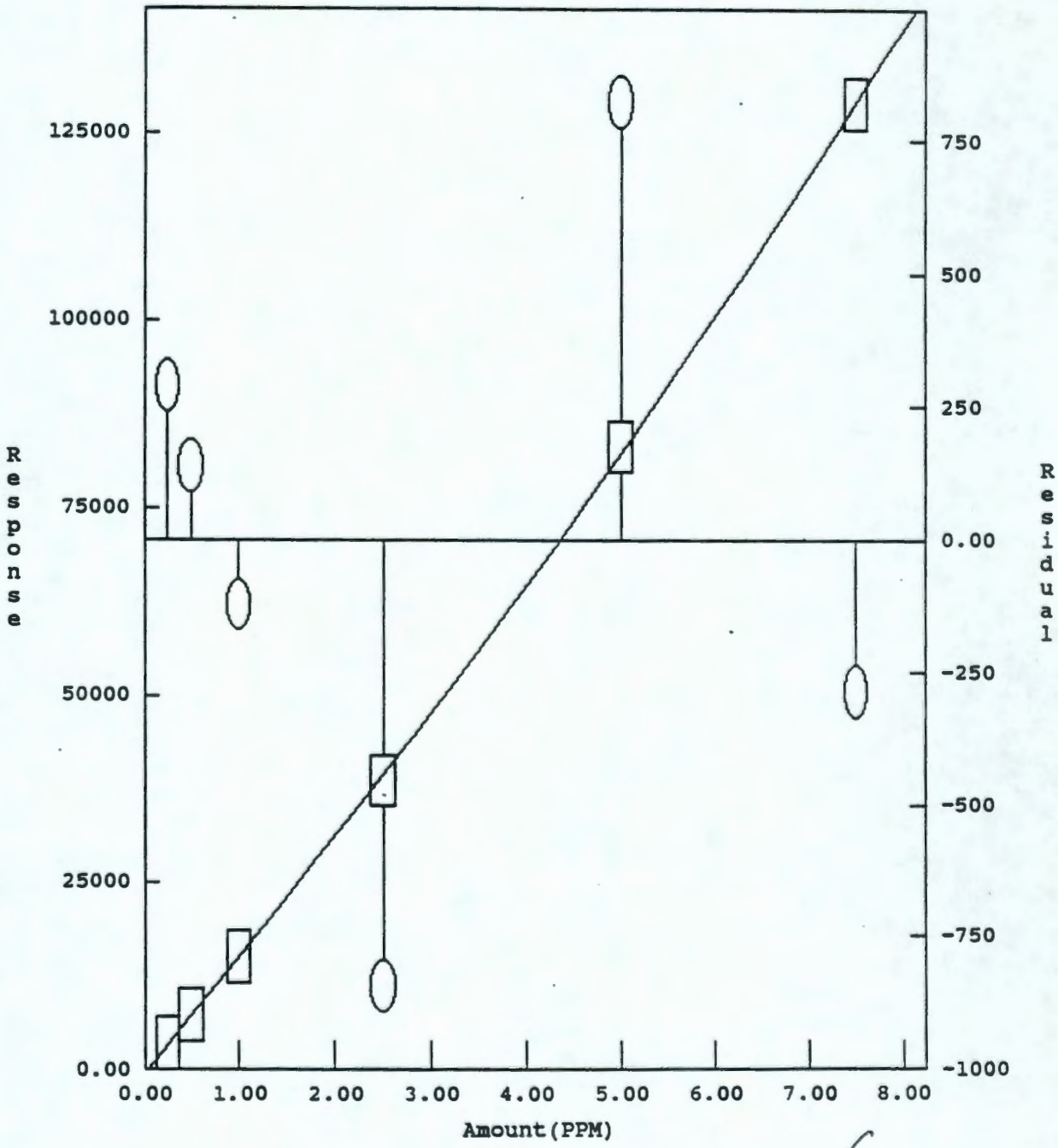
AS 10/19/93

D07-C26

9613492.0425

Method: C:\DX\METHOD\3ANIONS2.MET

Component: BROMIDE
Fit Type: Quadratic
r^2 = 0.999871 Sum(abs(Residuals)) = 2498.1
Amt = (-5.242211e-011 * $Resp^2$)+
(6.459613e-005 * Resp)+ 0.0386
Standardization: External
Calibration: Area

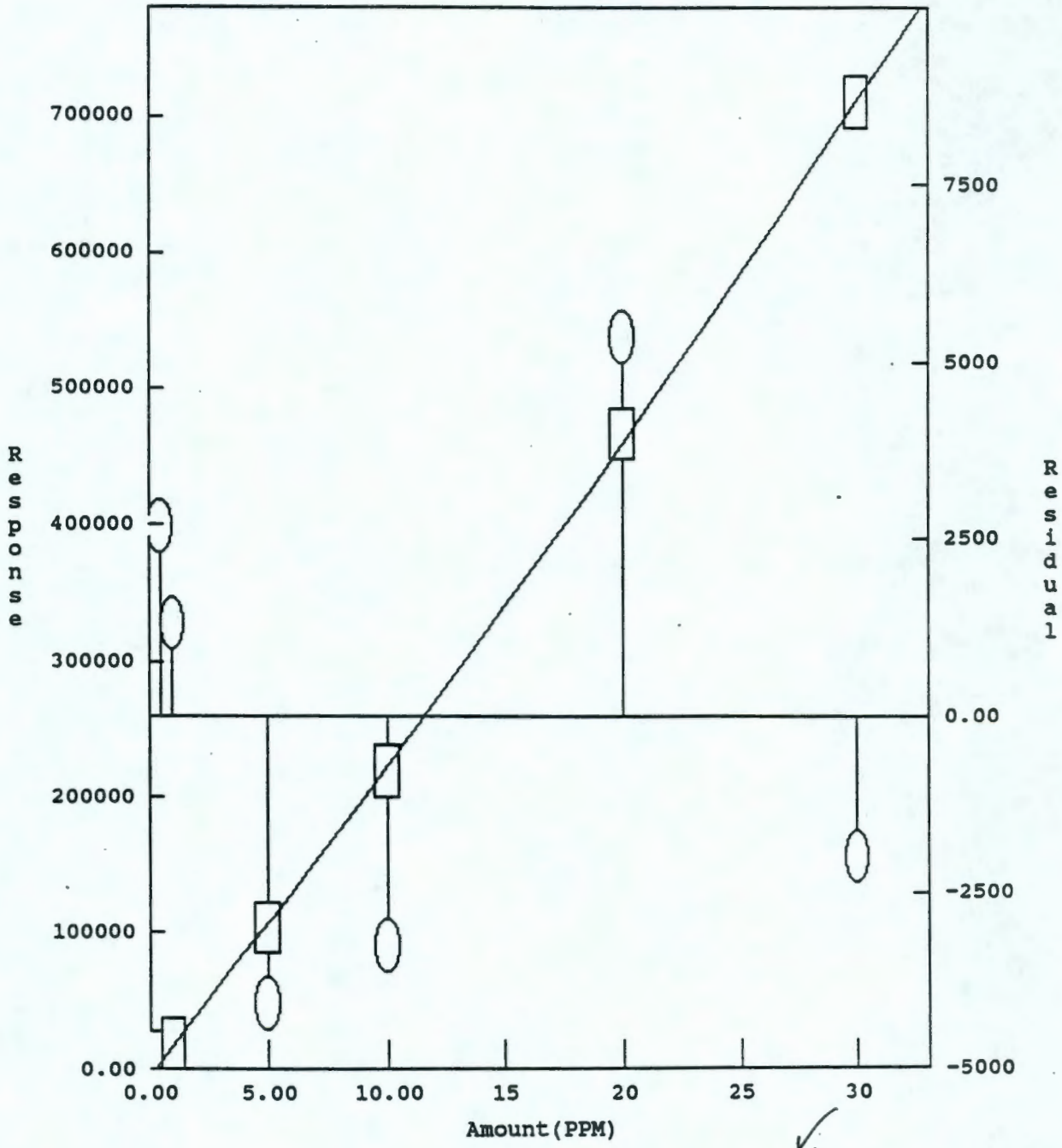


D07-C27

AS 10/19/93

Method: C:\DX\METHOD\3ANIONS2.MET

Component: NITRATE
Fit Type: Quadratic
r^2 = 0.999821 Sum(abs(Residuals)) = 18628
Amt = (-4.361976e-012 * Resp^2)+
(4.501079e-005 * Resp)+ 0.2134
Standardization: External
Calibration: Area

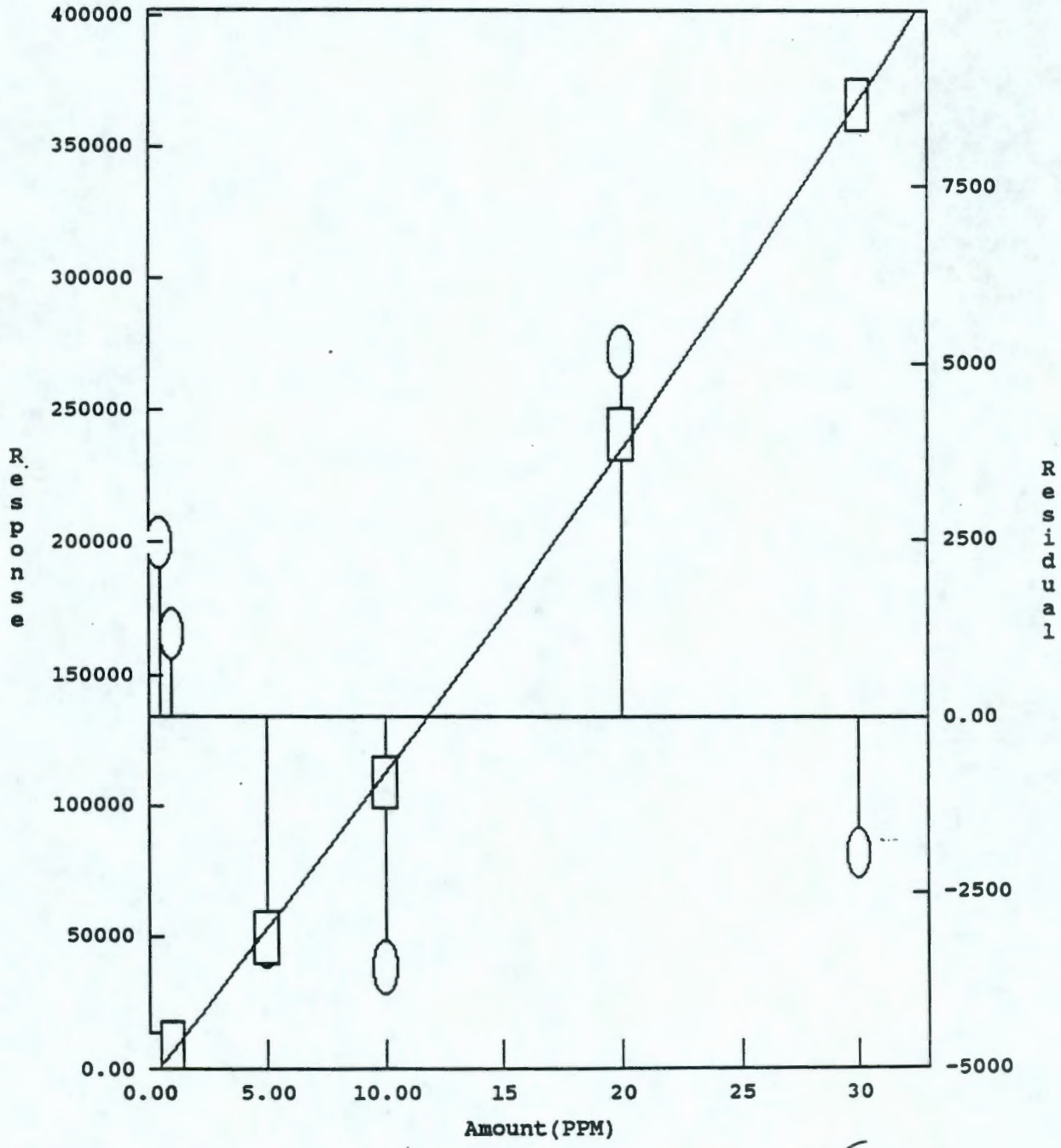


AS 10/4/93

9613492.0427

Method: C:\DX\METHOD\3ANIONS2.MET

Component: PHOSPHATE
Fit Type: Quadratic
r^2 = 0.999412 Sum(abs(Residuals)) = 17502
Amt = (-2.008104e-011 * Resp^2)+
(8.792724e-005 * Resp)+ 0.3924
Standardization: External
Calibration: Area



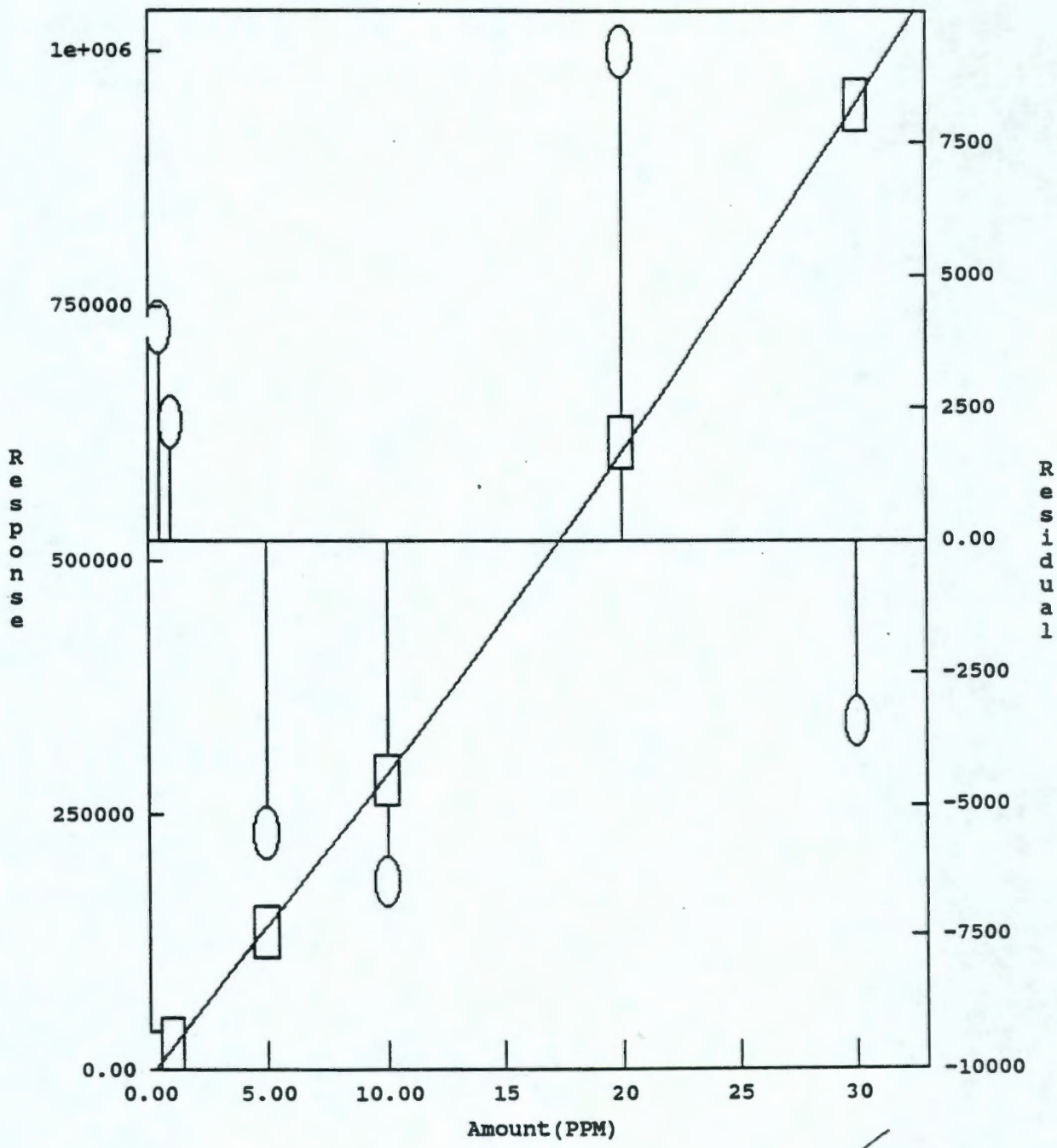
AS 10/19/93

D07-029

9613492.0428

Method: C:\DX\METHOD\3ANIONS2.MET

Component: SULFATE
Fit Type: Quadratic
r^2 = 0.999721 Sum(abs(Residuals)) = 30866
Amt = (-3.590898e-012 * Resp^2)+
(3.477142e-005 * Resp)+ 0.2275
Standardization: External
Calibration: Area



AS 10/19/92

D07-030

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL1 Date: Tue Dec 22 08:27:02 1992
Raw File : C:\DX\DATA\9212223\92122231.D01
Method : C:\DX\METHOD\3ANIONS2.met Calibration Level: 1
ACI Address: 2 System : 1 Inject#: 1 Detector: CDM-1

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	FLUORIDE	1.32	1.32	1.32	1.060e+004	1.052e+004	1.052e+004
2	CHLORIDE	2.00	1.98	1.98	1.052e+004	9.850e+003	9.850e+003
3	NITRITE	2.43	2.40	2.40	1.077e+004	1.055e+004	1.055e+004
4	BROMIDE	3.60	3.70	3.70	3.853e+003	3.570e+003	3.570e+003
5	NITRATE	3.93	4.30	4.30	9.466e+003	9.037e+003	9.037e+003
6	PHOSPHATE	6.03	6.30	6.30	2.692e+003	3.671e+003	3.671e+003
7	SULFATE	7.97	8.27	8.27	1.223e+004	1.184e+004	1.184e+004

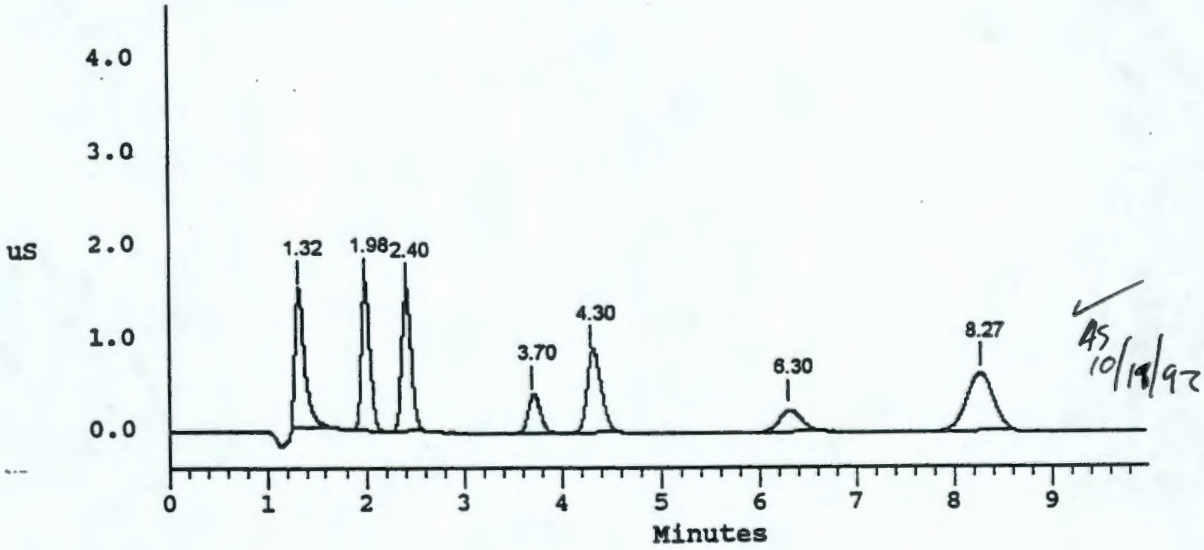
Sample Name: AUTOCAL1 Date: 12/22/1992 08:27:02
Data File : C:\DX\DATA\9212223\92122231.D01
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 1 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	0.250	1475	10520	1	0.84
2	1.98	CHLORIDE	0.250	1533	9850	1	0.00
3	2.40	NITRITE	0.500	1487	10551	1	-0.54
4	3.70	BROMIDE	0.250	391	3570	1	3.64
5	4.30	NITRATE	0.500	829	9037	1	0.00
6	6.30	PHOSPHATE	0.500	228	3671	1	-4.48
7	8.27	SULFATE	0.500	620	11843	1	-5.08
		Totals	2.750	6563	59042		

File: 92122231.D01 Sample: AUTOCAL1



AS 10/19/92

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL2 Date: Tue Dec 22 08:37:41 1992
Raw File : C:\DX\DATA\9212223\92122231.D02
Method : C:\DX\METHOD\3ANIONS2.met Calibration Level: 2
ACI Address: 2 System : 1 Inject#: 2 Detector: CDM-1

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	FLUORIDE	1.32	1.32	1.32	2.581e+004	2.353e+004	2.353e+004
2	CHLORIDE	1.98	1.98	1.98	1.812e+004	1.957e+004	1.957e+004
3	NITRITE	2.40	2.40	2.40	2.242e+004	2.148e+004	2.148e+004
4	BROMIDE	3.70	3.70	3.70	7.097e+003	7.322e+003	7.322e+003
5	NITRATE	4.30	4.27	4.27	1.857e+004	1.881e+004	1.881e+004
6	PHOSPHATE	6.30	6.30	6.30	7.342e+003	8.076e+003	8.076e+003
7	SULFATE	8.27	8.23	8.23	2.492e+004	2.449e+004	2.449e+004

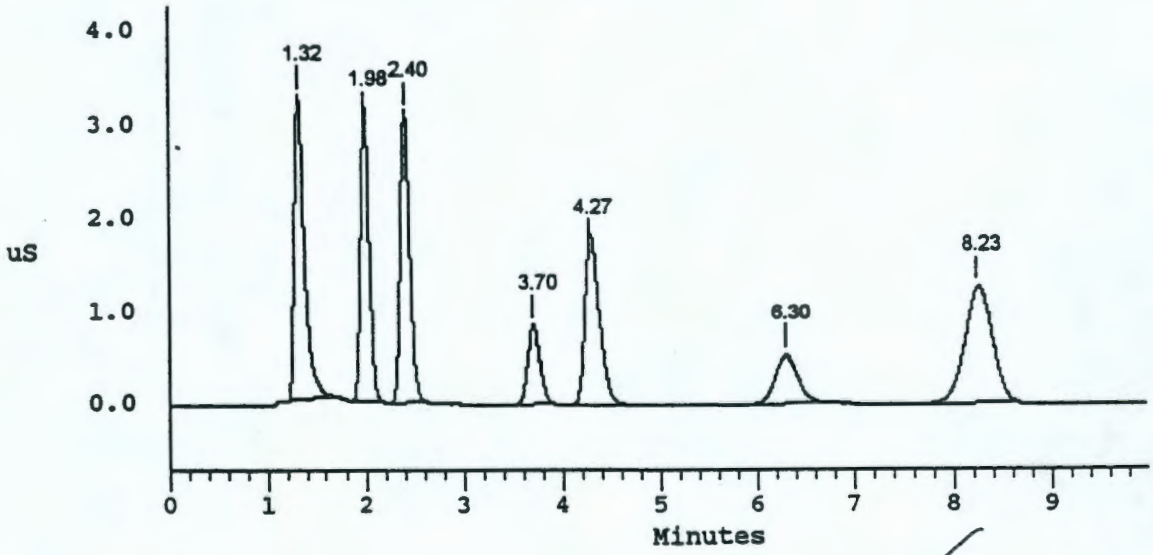
Sample Name: AUTOCAL2 Date: 12/22/1992 08:37:41
Data File : C:\DX\DATA\9212223\92122231.D02
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 2 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	0.500	3230	23535	1	0.00
2	1.98	CHLORIDE	0.500	3000	19568	1	0.00
3	2.40	NITRITE	1.000	3105	21484	1	0.00
4	3.70	BROMIDE	0.500	850	7322	1	0.00
5	4.27	NITRATE	1.000	1665	18812	1	0.00
6	6.30	PHOSPHATE	1.000	509	8076	1	0.78
7	8.23	SULFATE	1.000	1254	24486	1	0.37
		Totals	5.500	13612	123284		

File: 92122231.D02 Sample: AUTOCAL2



AS 10/19/93

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL3 Date: Tue Dec 22 08:48:20 1992
Raw File : C:\DX\DATA\9212223\92122231.D03
Method : C:\DX\METHOD\3ANIONS2.met Calibration Level: 3
ACI Address: 2 System : 1 Inject#: 3 Detector: CDM-1

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	FLUORIDE	1.32	1.32	1.32	5.093e+004	5.464e+004	5.464e+004
2	CHLORIDE	1.98	1.98	1.98	3.760e+004	3.943e+004	3.943e+004
3	NITRITE	2.40	2.40	2.40	1.282e+005	1.212e+005	1.212e+005
4	BROMIDE	3.70	3.67	3.67	1.531e+004	1.495e+004	1.495e+004
5	NITRATE	4.27	4.17	4.17	1.070e+005	1.034e+005	1.034e+005
6	PHOSPHATE	6.30	6.23	6.23	4.688e+004	4.982e+004	4.982e+004
7	SULFATE	8.23	8.20	8.20	1.337e+005	1.337e+005	1.337e+005

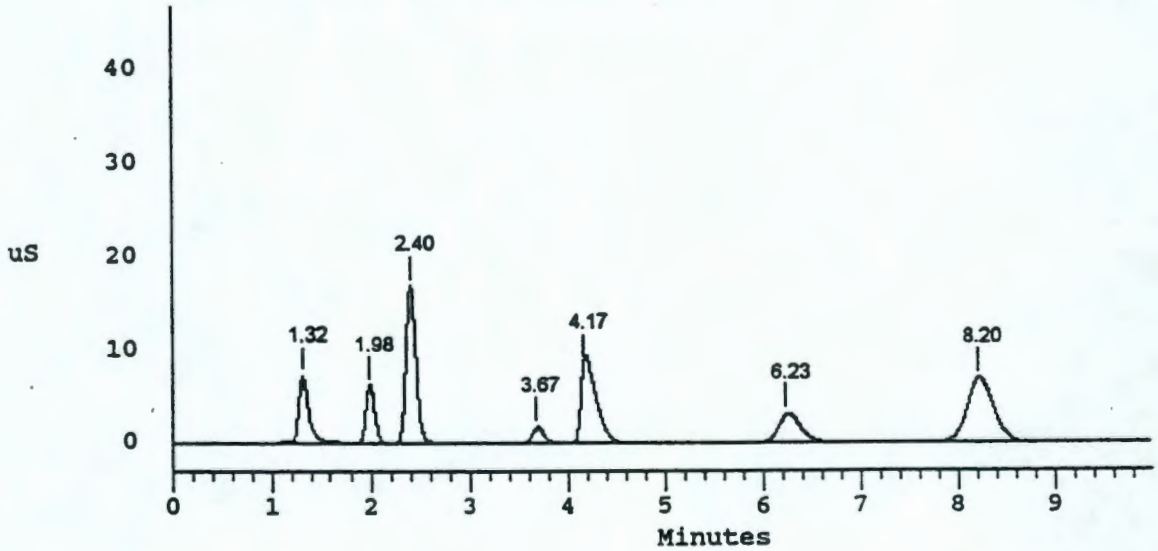
Sample Name: AUTOCAL3	Date: 12/22/1992 08:48:20
Data File : C:\DX\DATA\9212223\92122231.D03	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 3 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	1.000	7081	54639	1	0.00
2	1.98	CHLORIDE	1.000	6030	39432	1	0.00
3	2.40	NITRITE	5.000	16858	121186	1	0.00
4	3.67	BROMIDE	1.000	1624	14945	1	-0.90
5	4.17	NITRATE	5.000	8505	103383	1	0.00
6	6.23	PHOSPHATE	5.000	2983	49816	1	1.32
7	8.20	SULFATE	5.000	6851	133709	1	1.99
		Totals	23.000	49932	517111		

File: 92122231.D03 Sample: AUTOCAL3



AS
10/20/93

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL4 Date: Tue Dec 22 08:59:30 1992
Raw File : C:\DX\DATA\9212223\92122231.D04
Method : C:\DX\METHOD\3ANIONS2.met Calibration Level: 4
ACI Address: 2 System : 1 Inject#: 4 Detector: CDM-1

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	FLUORIDE	1.32	1.32	1.32	1.487e+005	1.419e+005	1.419e+005
2	CHLORIDE	1.98	1.98	1.98	1.021e+005	1.032e+005	1.032e+005
3	NITRITE	2.40	2.40	2.40	2.625e+005	2.473e+005	2.473e+005
4	BROMIDE	3.67	3.67	3.67	4.084e+004	3.852e+004	3.852e+004
5	NITRATE	4.17	4.10	4.10	2.240e+005	2.190e+005	2.190e+005
6	PHOSPHATE	6.23	6.20	6.20	1.038e+005	1.086e+005	1.086e+005
7	SULFATE	8.20	8.17	8.17	2.847e+005	2.832e+005	2.832e+005

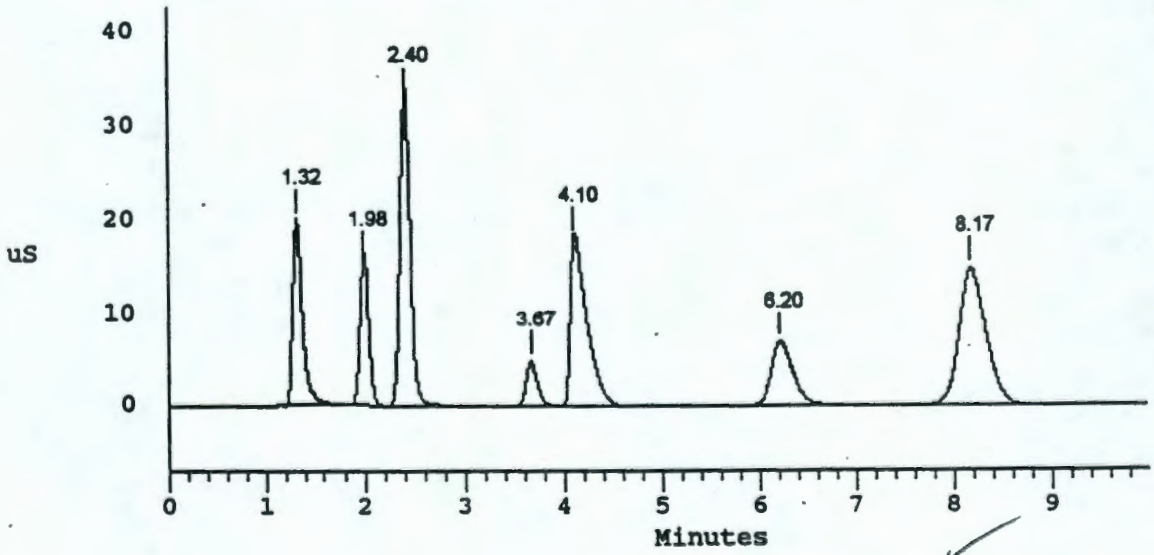
Sample Name: AUTOCAL4 Date: 12/22/1992 08:59:30
Data File : C:\DX\DATA\9212223\92122231.D04
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 4 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	2.500	19974	141926	1	0.00
2	1.98	CHLORIDE	2.500	15499	103207	1	0.00
3	2.40	NITRITE	10.000	33016	247324	1	0.00
4	3.67	BROMIDE	2.500	4808	38519	1	0.00
5	4.10	NITRATE	10.000	18154	218961	1	0.00
6	6.20	PHOSPHATE	10.000	6859	108568	1	1.08
7	8.17	SULFATE	10.000	14882	283248	1	1.21
		Totals	47.500	113192	1141754		

File: 92122231.D04 Sample: AUTOCAL4



AS
10/20/93

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL5 Date: Tue Dec 22 09:10:12 1992
Raw File : C:\DX\DATA\9212223\92122231.D05
Method : C:\DX\METHOD\3ANIONS2.met Calibration Level: 5
ACI Address: 2 System : 1 Inject#: 5 Detector: CDM-1

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	FLUORIDE	1.32	1.32	1.32	3.215e+005	3.001e+005	3.001e+005
2	CHLORIDE	1.98	2.00	2.00	2.238e+005	2.209e+005	2.209e+005
3	NITRITE	2.40	2.42	2.42	5.193e+005	4.930e+005	4.930e+005
4	BROMIDE	3.67	3.63	3.63	8.484e+004	8.313e+004	8.313e+004
5	NITRATE	4.10	4.00	4.00	4.806e+005	4.654e+005	4.654e+005
6	PHOSPHATE	6.20	6.13	6.13	2.330e+005	2.408e+005	2.408e+005
7	SULFATE	8.17	8.07	8.07	6.195e+005	6.159e+005	6.159e+005

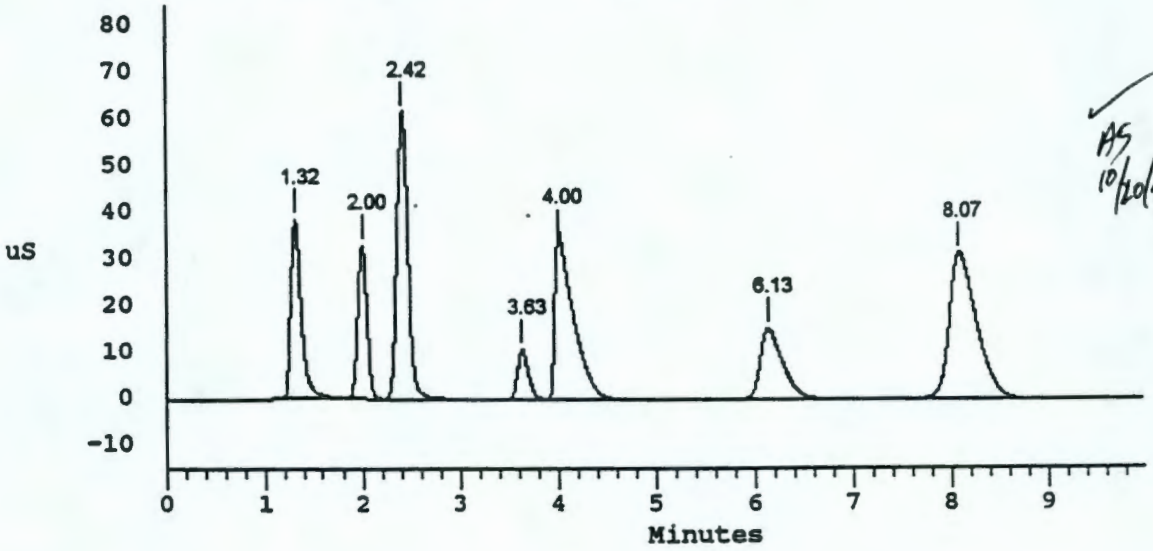
Sample Name: AUTOCAL5 Date: 12/22/1992 09:10:12
Data File : C:\DX\DATA\9212223\92122231.D05
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 5 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	5.000	38343	300113	1	-0.83
2	2.00	CHLORIDE	5.000	32899	220872	1	0.00
3	2.42	NITRITE	20.000	61409	493046	1	-0.14
4	3.63	BROMIDE	5.000	10643	83126	1	-1.73
5	4.00	NITRATE	20.000	34127	465449	1	0.00
6	6.13	PHOSPHATE	20.000	15248	240825	1	1.40
7	8.07	SULFATE	20.000	31166	615853	1	1.24
		Totals	95.000	223836	2419285		

File: 92122231.D05 Sample: AUTOCAL5



AS 10/20/93

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL6 Date: Tue Dec 22 09:20:55 1992
Raw File : C:\DX\DATA\9212223\92122231.D06
Method : C:\DX\METHOD\3ANIONS2.met Calibration Level: 6
ACI Address: 2 System : 1 Inject#: 6 Detector: CDM-1

********** Components Not Found In This Run **********

Name	Adjusted Ret Time	Reference Peak
FLUORIDE	1.31	2
BROMIDE	3.60	2

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
2	CHLORIDE	2.00	1.98	1.98	3.423e+005	1.673e+003	1.673e+003
3	NITRITE	2.42	2.43	2.43	7.499e+005	7.229e+005	7.229e+005
5	NITRATE	4.00	3.93	3.93	7.389e+005	7.259e+005	7.259e+005
6	PHOSPHATE	6.13	6.07	6.07	3.682e+005	3.836e+005	3.836e+005
7	SULFATE	8.07	8.00	8.00	9.538e+005	9.587e+005	9.587e+005

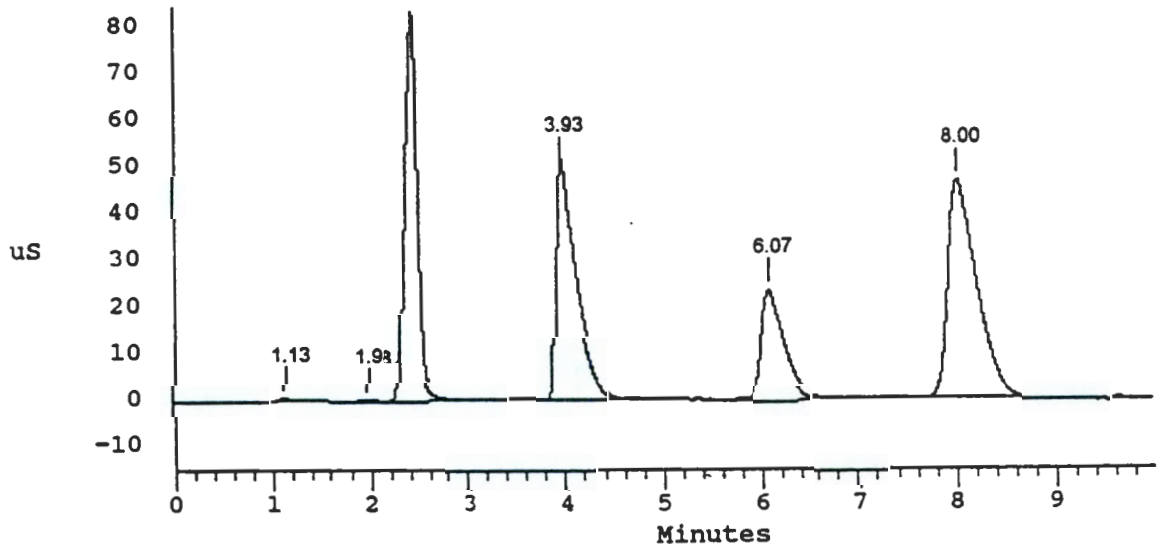
Sample Name: AUTOCAL6		Date: 12/22/1992 09:20:55	
Data File : C:\DX\DATA\9212223\92122231.D06			
Method : C:\DX\METHOD\3ANIONS2.met			
ACI Address: 2 System: 1 Inject#: 6 Vial:			Detector:CDM-1
Analyst : PKM / MCB	Column: AG4A / AS4A		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	1000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.13		0.000	254	1456	1	
2	1.98	CHLORIDE	7.500	239	1673	1	0.00
3	2.43	NITRITE	30.000	82979	722910	1	1.54
4	3.93	NITRATE	30.000	49743	725862	1	0.00
5	6.07	PHOSPHATE	30.000	23398	383584	1	0.59
6	8.00	SULFATE	30.000	46848	958675	1	0.85
		Totals	127.500	203461	2794158		

File: 92122231.D06 Sample: AUTOCAL6



Data Reprocessed On 12/23/1992 07:43:44

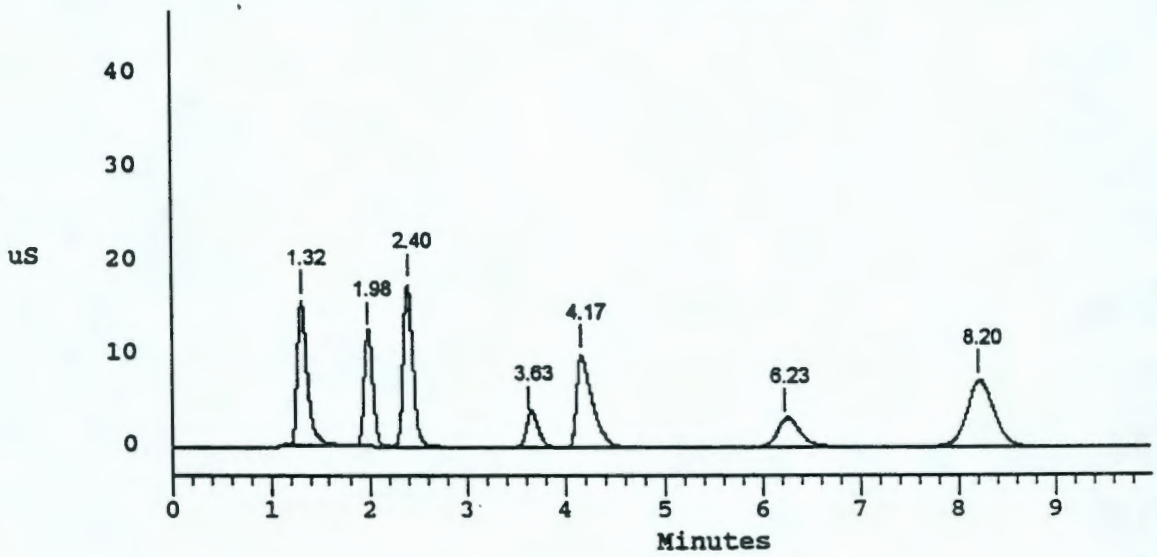
Sample Name: SPIKE CHECK (12/92) Date: 12/22/1992 09:31:34
Data File : C:\DX\DATA\9212223\92122231.d07
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 7 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	1.960	15631	113565	1	0.84
2	1.98	CHLORIDE	1.900	12338	79432	1	0.00
3	2.40	NITRITE	4.933	17489	122726	1	-0.54
4	3.63	BROMIDE	2.042	3220	31832	1	2.73
5	4.17	NITRATE	4.990	9948	107234	1	0.00
6	6.23	PHOSPHATE	4.742	2975	50046	1	-3.01
7	8.20	SULFATE	4.937	7094	137382	1	-3.24
		Totals	25.504	68695	642216		

File: 92122231.d07 Sample: SPIKE CHECK (12/92)



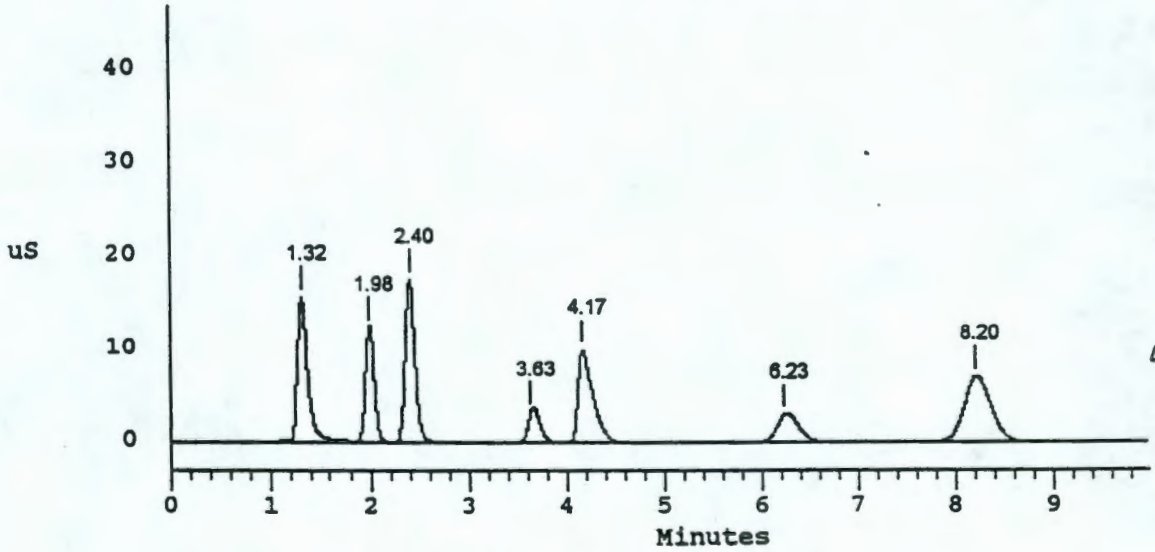
Sample Name: SPIKE CHECK (12/92) Date: 12/22/1992 09:31:34
Data File : C:\DX\DATA\9212223\92122231.D07
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 7 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	2.025	15631	113565	1	0.00
2	1.98	CHLORIDE	1.090	12338	79432	1	0.00
3	2.40	NITRITE	4.971	17489	122726	1	-1.37
4	3.63	BROMIDE	2.045	3220	31832	1	0.00
5	4.17	NITRATE	5.036	9948	107234	1	0.00
6	6.23	PHOSPHATE	4.819	2975	50046	1	-3.01
7	8.20	SULFATE	4.961	7094	137382	1	-3.24
		Totals	24.948	68695	642216		

File: 92122231.D07 Sample: SPIKE CHECK (12/92)



HS 10/20/92

Data Reprocessed On 12/23/1992 07:43:52

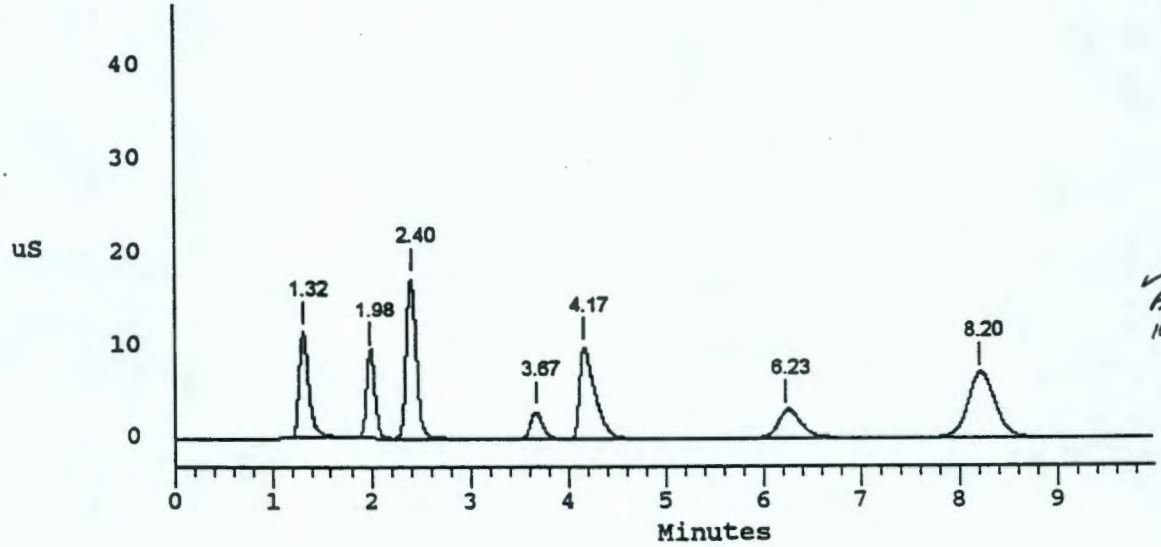
Sample Name: A9212153V1/LO Date: 12/22/1992 09:42:06
Data File : C:\DX\DATA\9212223\92122231.d08
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 8 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	1.450	11500	82382	1	0.84
2	1.98	CHLORIDE	1.399	9238	57696	1	0.00
3	2.40	NITRITE	4.945	17272	123033	1	-0.54
4	3.67	BROMIDE	1.556	2817	23950	1	3.67
5	4.17	NITRATE	4.954	9858	106416	1	0.00
6	6.23	PHOSPHATE	4.644	2974	48902	1	-3.01
7	8.20	SULFATE	4.860	6998	135102	1	-3.24
		Totals	23.807	60658	577480		

File: 92122231.d08 Sample: A9212153V1/LO



AS 10/20/93

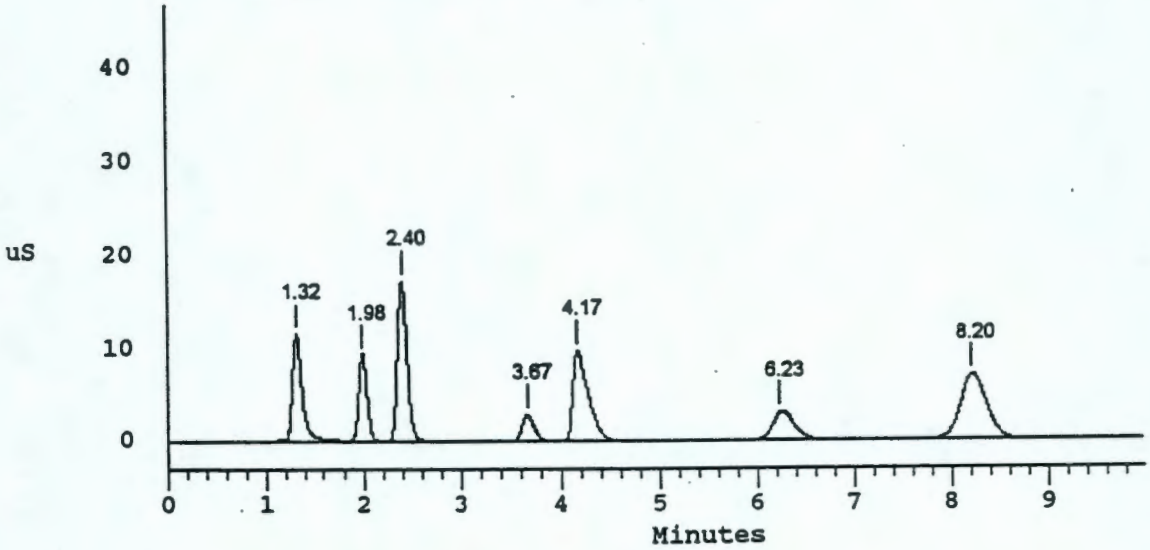
Sample Name: A9212153V1/LO Date: 12/22/1992 09:42:06
Data File : C:\DX\DATA\9212223\92122231.D08
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 8 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	1.499	11500	82382	1	0.00
2	1.98	CHLORIDE	1.377	9238	57696	1	0.00
3	2.40	NITRITE	4.983	17272	123033	1	-1.37
4	3.67	BROMIDE	1.558	2817	23950	1	0.92
5	4.17	NITRATE	5.000	9858	106416	1	0.00
6	6.23	PHOSPHATE	4.718	2974	48902	1	-3.01
7	8.20	SULFATE	4.883	6998	135102	1	-3.24
		Totals	24.018	60658	577480		

File: 92122231.D08 Sample: A9212153V1/LO



Data Reprocessed On 12/23/1992 07:44:00

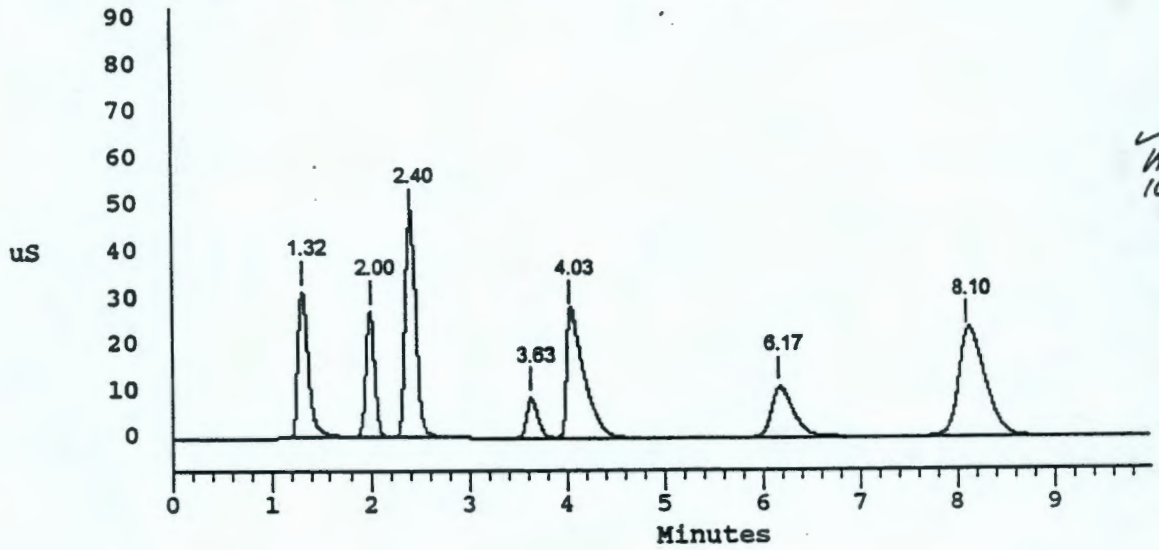
Sample Name: A9212153V2/MID Date: 12/22/1992 09:52:45
Data File : C:\DX\DATA\9212223\92122231.d09
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 9 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	4.084	31380	241547	1	0.00
2	2.00	CHLORIDE	3.945	27228	170112	1	0.00
3	2.40	NITRITE	15.096	46960	373406	1	-1.37
4	3.63	BROMIDE	4.128	8453	66951	1	1.87
5	4.03	NITRATE	15.289	27277	346572	1	0.00
6	6.17	PHOSPHATE	14.693	10719	169174	1	-0.87
7	8.10	SULFATE	15.025	22696	446109	1	-1.26
		Totals	72.260	174714	1813871		

File: 92122231.d09 Sample: A9212153V2/MID



MS 10/29/93

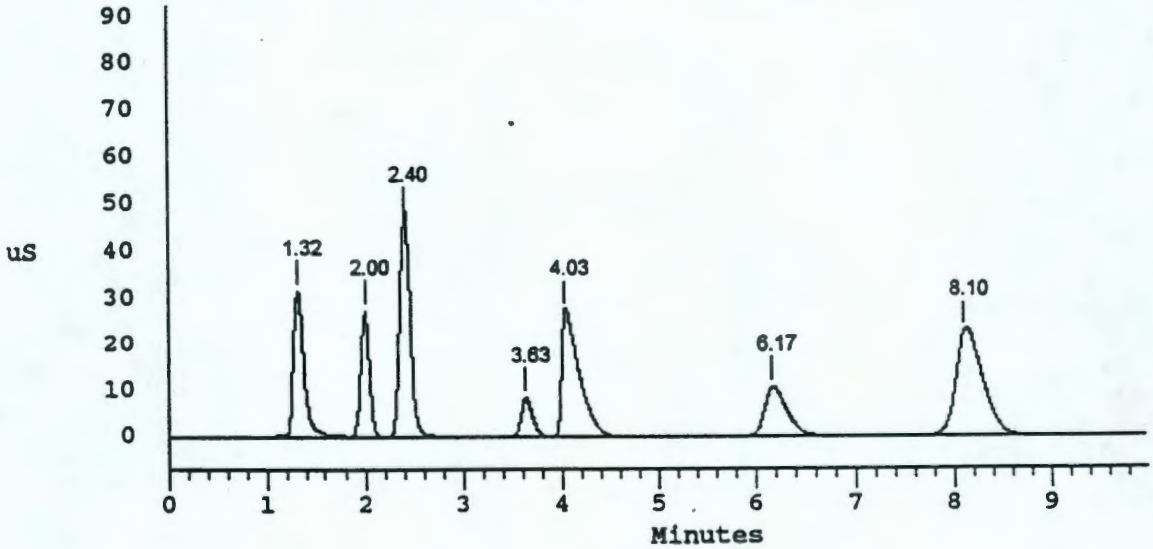
Sample Name: A9212153V2/MID Date: 12/22/1992 09:52:45
Data File : C:\DX\DATA\9212223\92122231.D09
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 9 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	4.097	31380	241547	1	-0.83
2	2.00	CHLORIDE	2.564	27228	170112	1	0.00
3	2.40	NITRITE	15.109	46960	373406	1	-2.19
4	3.63	BROMIDE	4.129	8453	66951	1	-0.83
5	4.03	NITRATE	15.316	27277	346572	1	0.00
6	6.17	PHOSPHATE	14.765	10719	169174	1	-0.87
7	8.10	SULFATE	15.043	22696	446109	1	-1.26
		Totals	71.023	174714	1813871		

File: 92122231.D09 Sample: A9212153V2/MID



Data Reprocessed On 12/23/1992 07:44:08

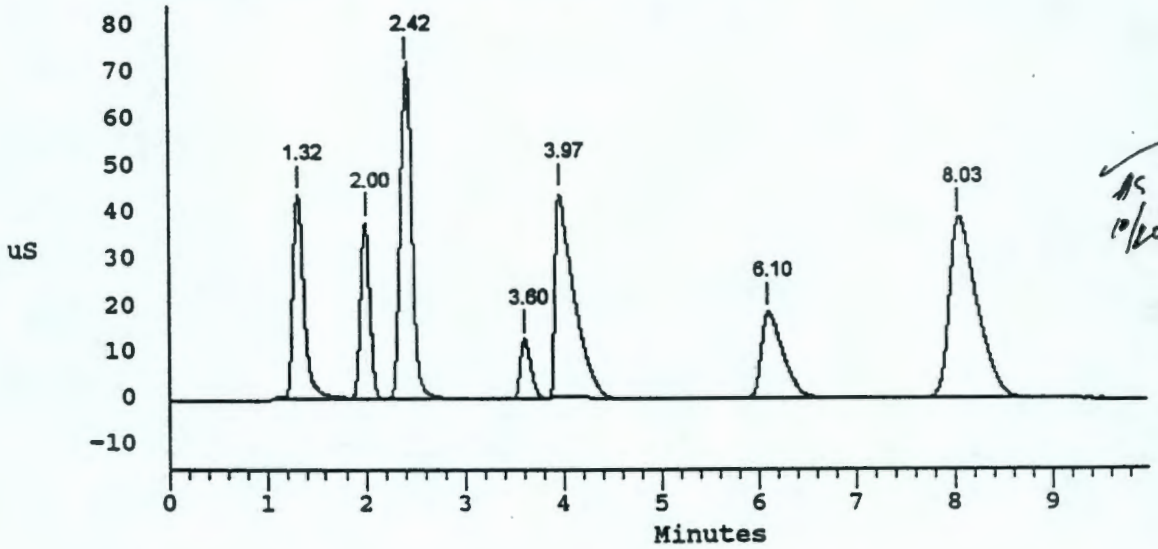
Sample Name: A9212153V3/HI	Date: 12/22/1992 10:03:21
Data File : C:\DX\DATA\9212223\92122231.d10	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 10 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	5.885	43446	347858	1	0.00
2	2.00	CHLORIDE	5.751	37655	252920	1	0.00
3	2.42	NITRITE	24.766	71301	598049	1	-0.68
4	3.60	BROMIDE	5.906	12814	98745	1	0.93
5	3.97	NITRATE	25.269	43833	590433	1	0.00
6	6.10	PHOSPHATE	24.984	18652	300269	1	-0.30
7	8.03	SULFATE	25.038	38605	775669	1	-0.43
		Totals	117.597	266305	2963943		

File: 92122231.d10 Sample: A9212153V3/HI



AS 10/20/17

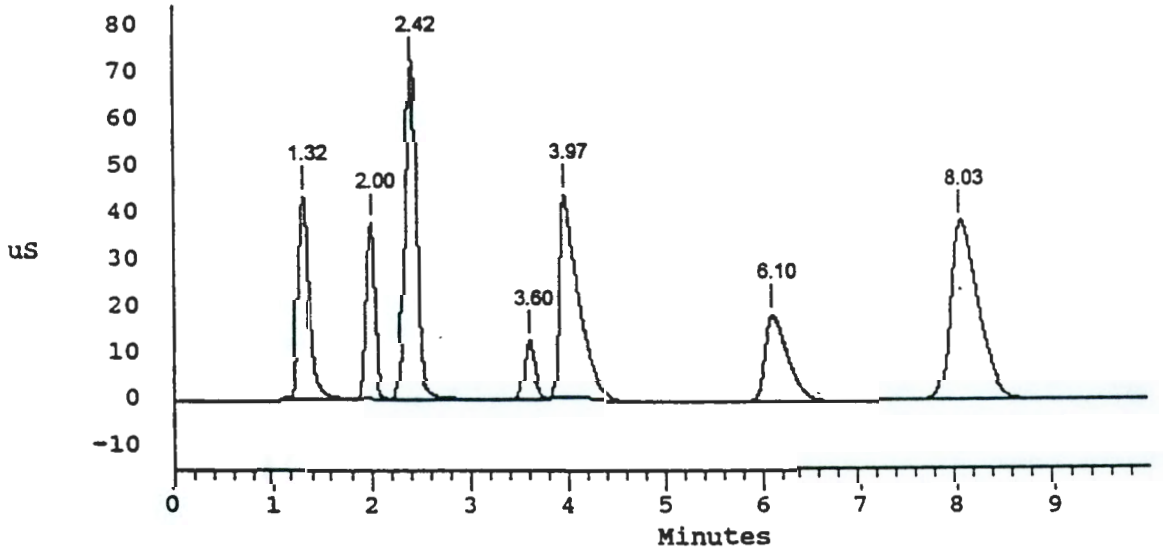
Sample Name: A9212153V3/HI Date: 12/22/1992 10:03:21
Data File : C:\DX\DATA\9212223\92122231.D10
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 10 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	5.707	43446	347858	1	-0.83
2	2.00	CHLORIDE	7.670	37655	252920	1	0.00
3	2.42	NITRITE	24.559	71301	598049	1	-1.51
4	3.60	BROMIDE	5.895	12814	98745	1	-1.74
5	3.97	NITRATE	24.962	43833	590433	1	0.00
6	6.10	PHOSPHATE	24.454	18652	300269	1	-0.30
7	8.03	SULFATE	24.877	38605	775669	1	-0.43
		Totals	118.125	266305	2963943		

File: 92122231.D10 Sample: A9212153V3/HI



Data Reprocessed On 12/23/1992 07:44:15

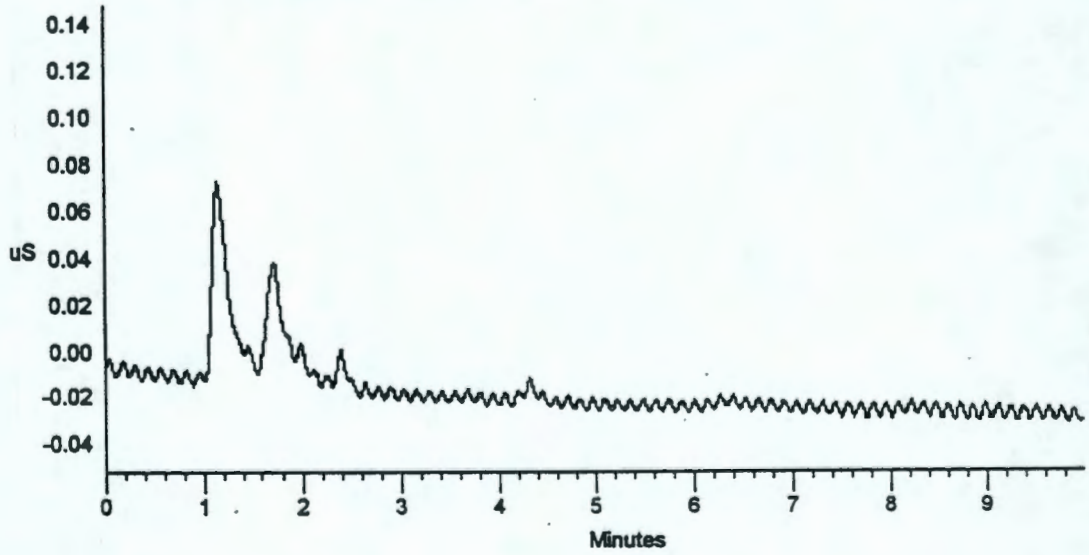
Sample Name: A9212223B1 Date: 12/22/1992 10:14:01
Data File : C:\DX\DATA\9212223\92122231.d11
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 11 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122231.d11 Sample: A9212223B1



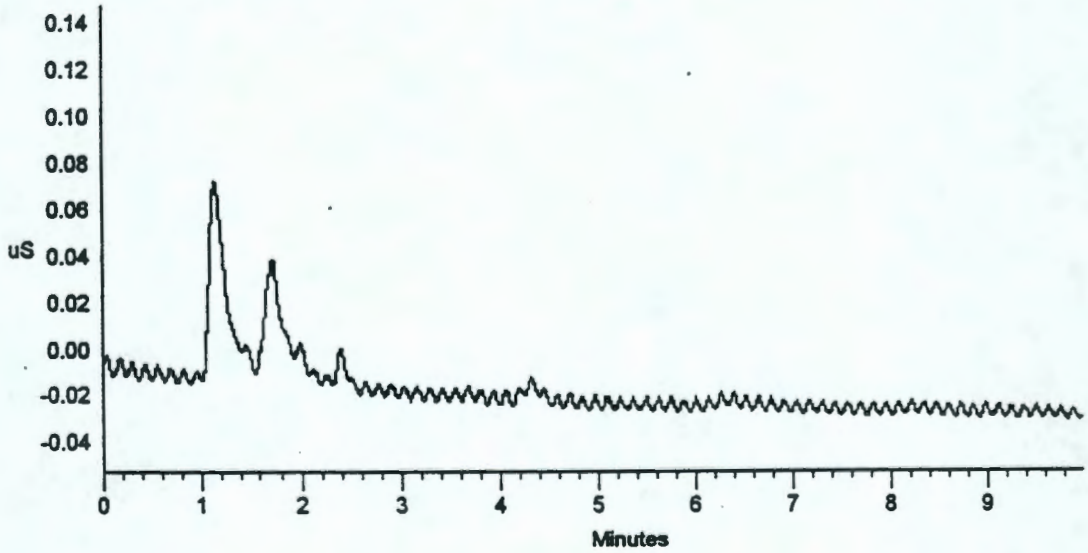
Sample Name: A9212223B1	Date: 12/22/1992 10:14:01
Data File : C:\DX\DATA\9212223\92122231.D11	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 11 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122231.D11 Sample: A9212223B1



TS
10/20/93

Data Reprocessed On 12/23/1992 07:44:22

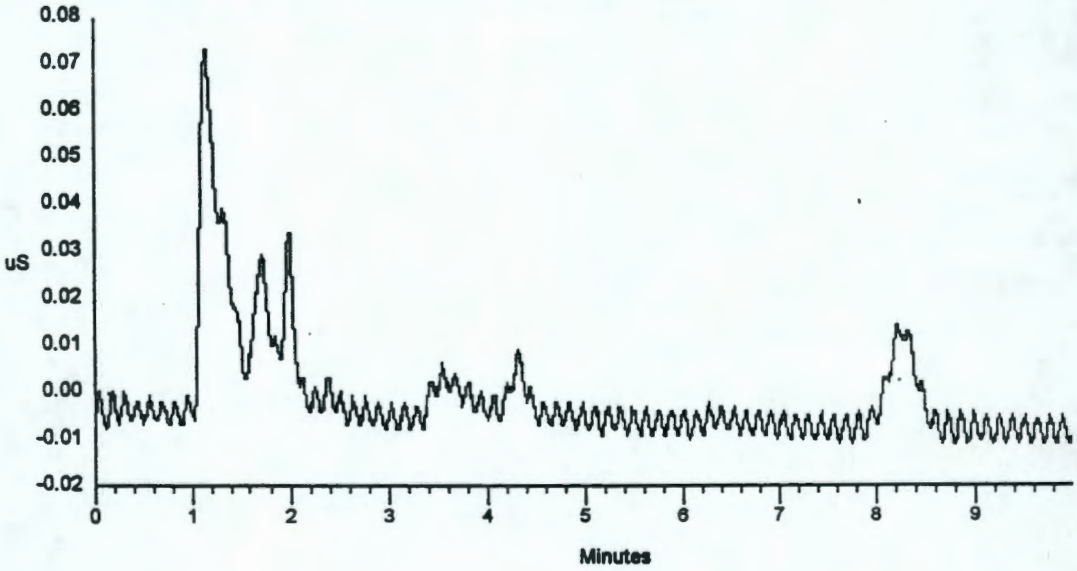
Sample Name: 93-02239/BO7JZ4 Date: 12/22/1992 10:24:33
Data File : C:\DX\DATA\9212223\92122231.d12
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 12 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	50	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122231.d12 Sample: 93-02239/BO7JZ4



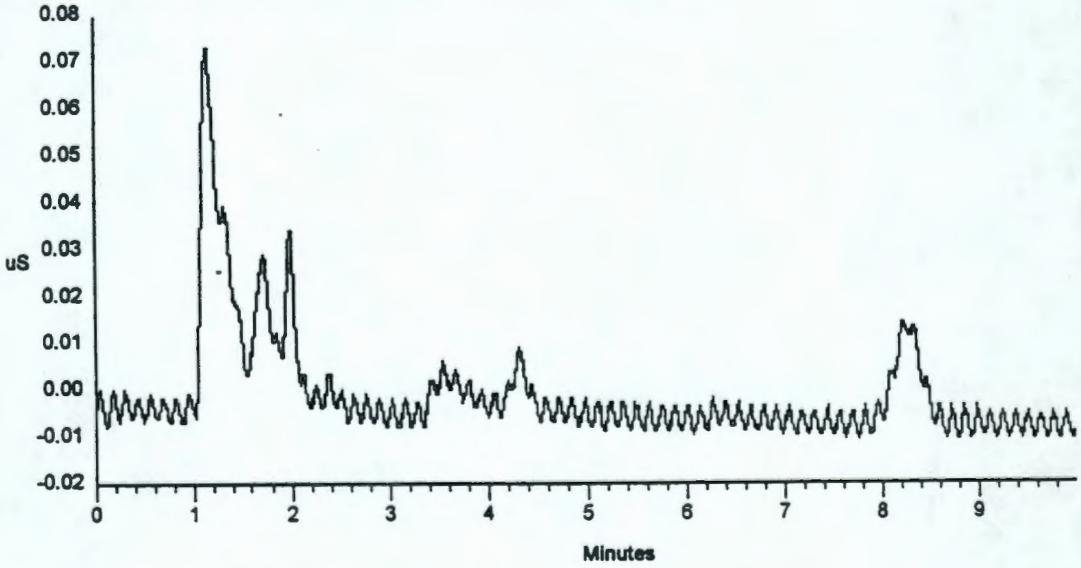
Sample Name: 93-02239/BO7JZ4	Date: 12/22/1992 10:24:33
Data File : C:\DX\DATA\9212223\92122231.D12	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 12 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	50	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122231.D12 Sample: 93-02239/BO7JZ4



********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL6 Date: Tue Dec 22 10:35:29 1992
Raw File : C:\DX\DATA\9212223\92122231.D13
Method : C:\DX\METHOD\3ANIONS2.met Calibration Level: 6
ACI Address: 2 System : 1 Inject#: 13 Detector: CDM-1

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	FLUORIDE	1.32	1.32	1.32	4.751e+005	4.402e+005	4.402e+005
2	CHLORIDE	1.98	2.00	2.00	1.673e+003	3.349e+005	3.349e+005
3	NITRITE	2.43	2.43	2.43	7.229e+005	7.132e+005	7.132e+005
4	BROMIDE	3.63	3.57	3.57	1.294e+005	1.287e+005	1.287e+005
5	NITRATE	3.93	3.93	3.93	7.259e+005	7.087e+005	7.087e+005
6	PHOSPHATE	6.07	6.07	6.07	3.836e+005	3.656e+005	3.656e+005
7	SULFATE	8.00	8.00	8.00	9.587e+005	9.459e+005	9.459e+005

9613492.0454

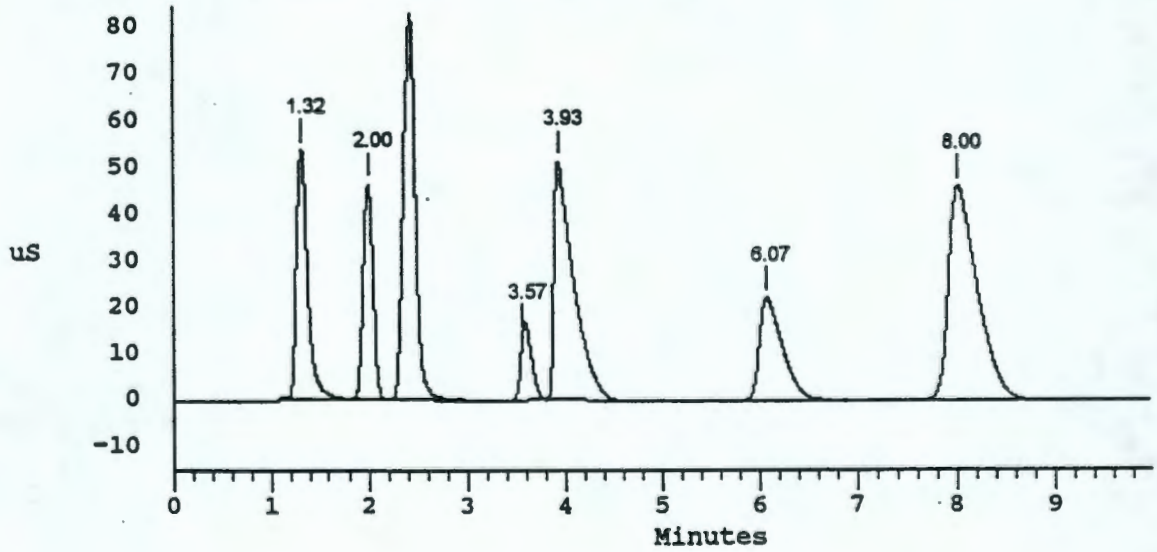
Sample Name: AUTOCAL6 Date: 12/22/1992 10:35:29
Data File : C:\DX\DATA\9212223\92122231.D13
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 13 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	1000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	7.500	53651	440184	1	-0.83
2	2.00	CHLORIDE	7.500	46511	334909	1	0.00
3	2.43	NITRITE	30.000	82912	713230	1	-0.83
4	3.57	BROMIDE	7.500	14168	128732	1	-2.65
5	3.93	NITRATE	30.000	50994	708728	1	0.00
6	6.07	PHOSPHATE	30.000	22230	365629	1	0.00
7	8.00	SULFATE	30.000	46164	945873	1	0.00
		Totals	142.500	316630	3637285		

File: 92122231.D13 Sample: AUTOCAL6



D07-056

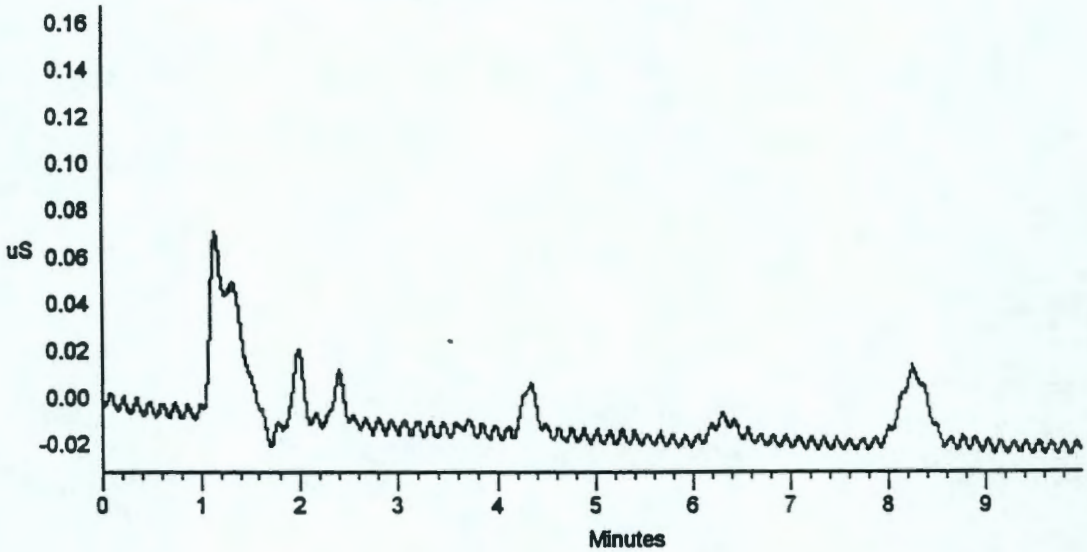
Sample Name: 93-02240/BO7JZ5		Date: 12/22/1992 10:46:07	
Data File : C:\DX\DATA\9212223\92122231.D14			
Method : C:\DX\METHOD\3ANIONS2.met			
ACI Address: 2 System: 1 Inject#: 14 Vial:			Detector:CDM-1
Analyst : PKM / MCB	Column: AG4A / AS4A		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	50	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122231.D14 Sample: 93-02240/BO7JZ5



~~D07-056~~ KK 5/1/93

D07-057

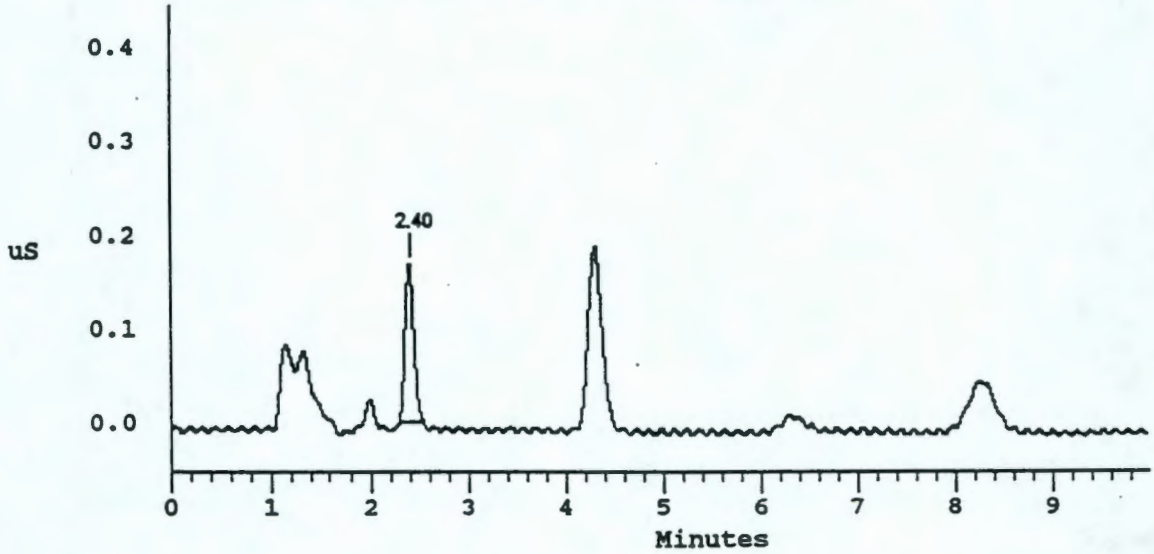
Sample Name: 93-02241/BO7JZ6 Date: 12/22/1992 10:56:42
Data File : C:\DX\DATA\9212223\92122231.D15
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 15 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	50	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	2.40	NITRITE	11.993	167	1071	1	-1.37
		Totals	11.993	167	1071		

File: 92122231.D15 Sample: 93-02241/BO7JZ6



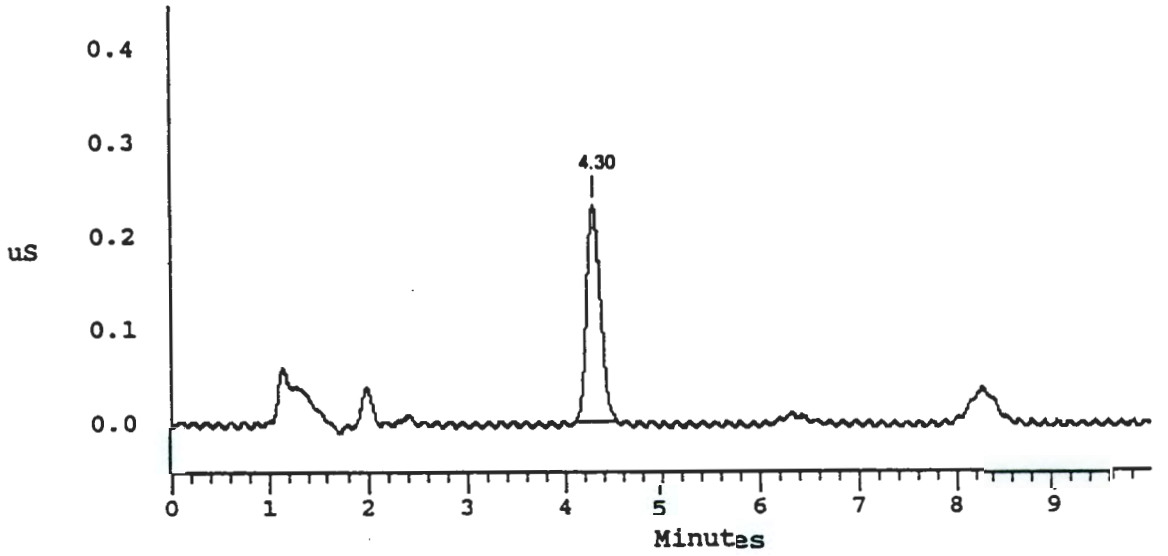
Sample Name: 93-02351/BO7JZ7	Date: 12/22/1992 11:07:10
Data File : C:\DX\DATA\9212223\92122231.D16	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 16 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	50	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	4.30	NITRATE	15.821	229	2289	1	0.00
		Totals	15.821	229	2289		

File: 92122231.D16 Sample: 93-02351/BO7JZ7



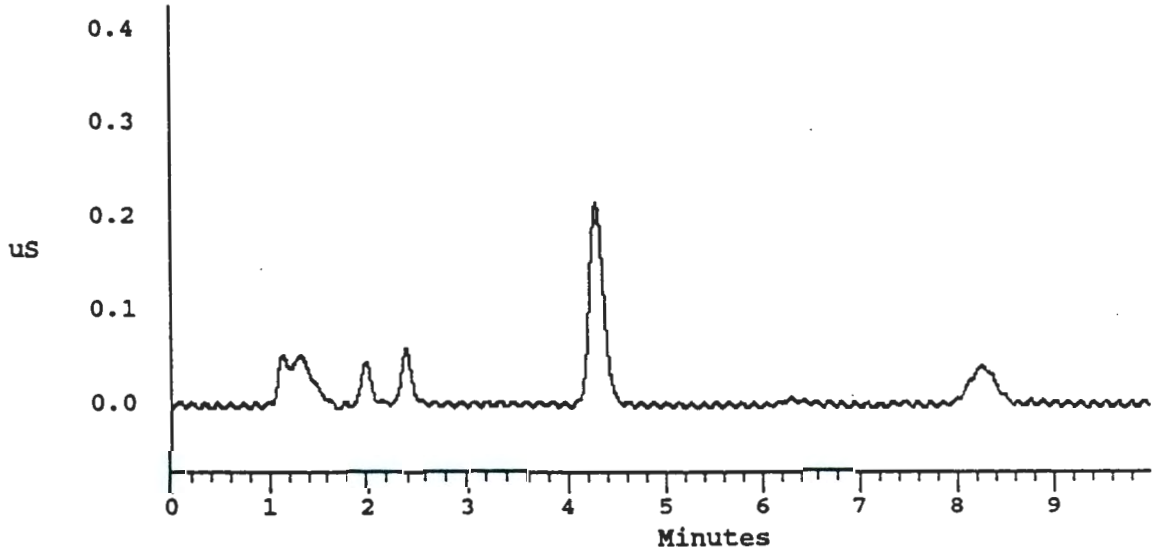
Sample Name: 93-02437/BO7JZ8	Date: 12/22/1992 11:17:46
Data File : C:\DX\DATA\9212223\92122231.D17	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 17 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	50	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122231.D17 Sample: 93-02437/BO7JZ8



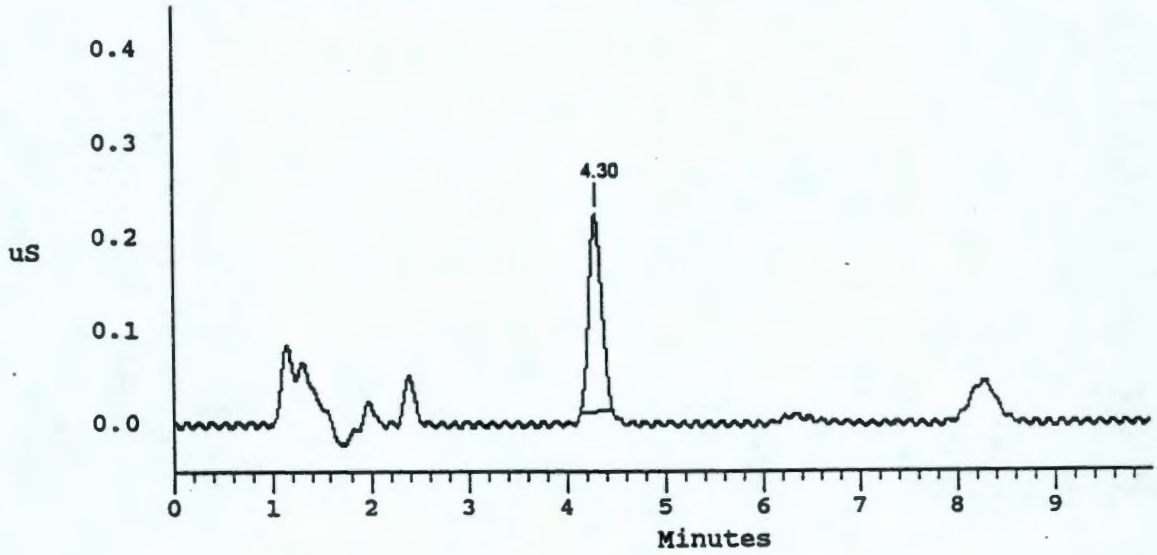
Sample Name: 93-02437D/BO7JZ8 Date: 12/22/1992 11:28:22
Data File : C:\DX\DATA\9212223\92122231.D18
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 18 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	50	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	4.30	NITRATE	15.034	211	1939	1	0.00
		Totals	15.034	211	1939		

File: 92122231.D18 Sample: 93-02437D/BO7JZ8



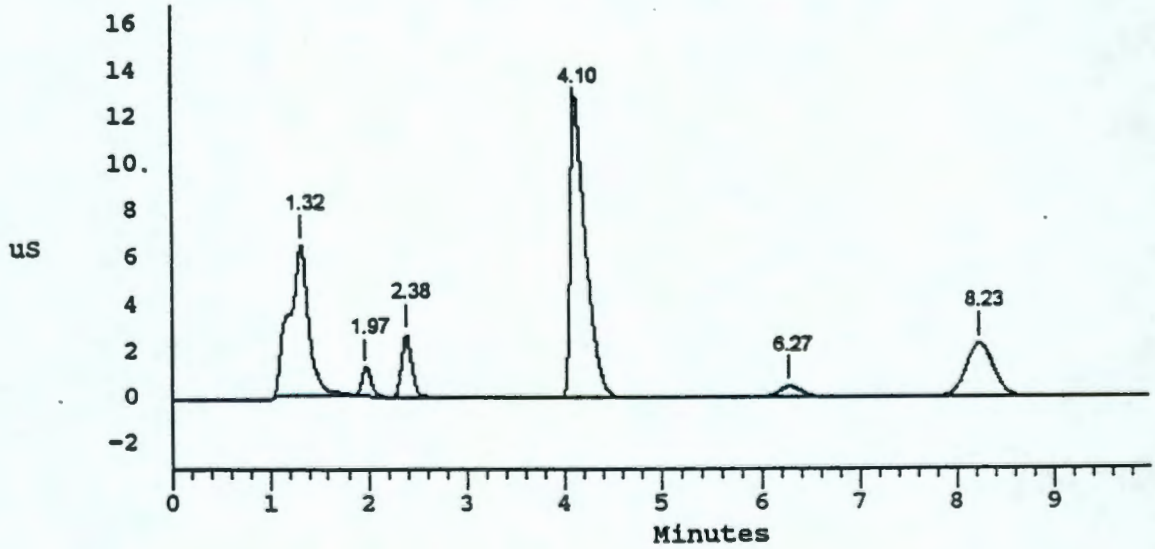
Sample Name: 93-02438/BO7JZ9 Date: 12/22/1992 11:38:52
Data File : C:\DX\DATA\9212223\92122231.D19
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 19 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	1.614	6406	92435	1	1.69
2	1.97	CHLORIDE	0.235	1162	7830	1	0.00
3	2.38	NITRITE	0.959	2718	19990	1	-0.39
4	4.10	NITRATE	6.557	11954	142918	1	0.00
5	6.27	PHOSPHATE	1.055	444	7548	1	-0.90
6	8.23	SULFATE	1.873	2355	47557	1	-1.27
		Totals	12.293	25040	318279		

File: 92122231.D19 Sample: 93-02438/BO7JZ9



HS 12/24/92

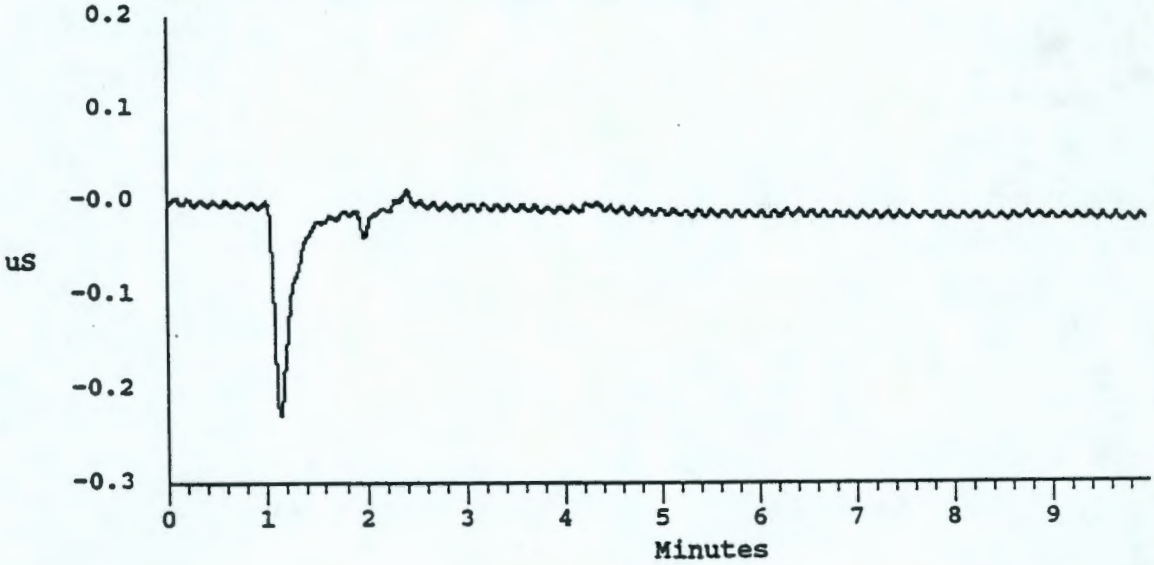
Sample Name: A9212223B3	Date: 12/22/1992 15:00:04
Data File : C:\DX\DATA\9212223\92122231.D38	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 38 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122231.D38 Sample: A9212223B3



T-106 ANIONS LEACH (PNL-ALO-103) DATA ENTRY FORM

SAMPLE ID ALO/CUSTOMER	% SOLIDS	SAMPLE WT.(gm)	DILUENT VOL.(ml)	COMMENTS
93-05190/B086V2	95.5	2.0080	20	
93-05190D/B086V2	95.5	2.0421	20	
93-05190MS/B086V2	95.5	2.0167	19.8 +	0.2 ml SPIKE SOLUTION
93-05190MSD/B086V2	95.5	2.0087	19.8 +	0.2 ml SPIKE SOLUTION
PB			20	
BS			19.8 +	0.2 ml SPIKE SOLUTION

Notes: SPIKE SOLUTION - 200 PPM HALIDES & 500 PPM OXY ANIONS
ULTRASONIC BATH 60 MINUTES
BALANCE WA83665 PERFORMANCE CHECK RECORD IN RM 400
WEIGHT RECORD BOOK

Prepared by: MCBurt

Date/time: 3/8/93 10:10AM

9613492.0462

287-087

REPORT GENERATION FOR SOLID SAMPLES

This compiled data sheet may be used for report generation. DIL(EX)= EXTRACTION DILUTION & DIL(AN) = ANALYTICAL DILUTION.

Divide ug/g values in this table by the product, DIL(EX) * DIL(AN), to obtain the concentrations (ug/ml) in the analyzed solutions.

Approx. DL values (ug/g, solids) may be found by multiplying DIL(EX) * DIL(AN) by 0.25 and 0.5 for halides and oxy-anions, respectively.

M&TE ID: WA83665 METHOD: PNL-MA599-ALO-212, 100 uL LOOP.

!!! NOTE: LINES WITH 0.00% SOLIDS & 0.0000 FOR SMP WT ARE LIQUID SAMPLES (USUALLY VERIFICATION STDS.) AND THE UNITS ARE ug/ml !!!

Analyst McBurt 3/22/93 Reviewer MWhu 3-22-93

Units of measurement: ug/g (ppm)

INJ	SAMPLE ID	DIL(EX)	% SOLID	SMP WT	DIL VOL	DIL(AN)	F	Cl	NO2	Br	NO3	PO4	SO4
03/18 d31	93-05190/BO86V2	10.4	95.50	2.0080	20.00	1.0	21.9	4.9	2.5		15.9		10.2
03/18 d32	93-05190D/BO86V2	10.3	95.50	2.0421	20.00	1.0	23.1	3.4	2.6		14.2		6.1
03/18 d33	93-05190MS/BO86V2	10.4	95.50	2.0167	20.00	1.0	54.0	24.2	50.1	20.0	63.7	40.4	58.4
03/18 d34	93-05190MSD/BO86V2	10.4	95.50	2.0087	20.00	1.0	32.5	22.1	46.7	19.0	61.0	41.3	54.0
03/18 d35	93-05190/PROC. BLANK (PB)	1.0	0.00	0.0000	0.00	1.0	0.5						
03/18 d36	93-05190/BLANK SPIKE (BS)	1.0	0.00	0.0000	0.00	1.0	2.3	1.9	4.6	1.9	4.7	4.8	4.8

SAMPLES ANALYZED USING SYSTEM IC-325-400-SYS3 (DATA ARCHIVAL LOCATOR)

9613492.0463

DIONEX SCHEDULE - C:\DX\SCHEDULE\03183SCH.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
1	A9302113V2/MID	..\3ANIONS2	..\93031831	1	1	1
2	AUTOCAL1	..\3ANIONS2	..\93031831	1	1	1
3	AUTOCAL2	..\3ANIONS2	..\93031831	1	1	1
4	AUTOCAL3	..\3ANIONS2	..\93031831	1	1	1
5	AUTOCAL4	..\3ANIONS2	..\93031831	1	1	1
6	AUTOCAL5	..\3ANIONS2	..\93031831	1	1	1
7	AUTOCAL6	..\3ANIONS2	..\93031831	1	1	1
8	SPIKE CHECK	..\3ANIONS2	..\93031831	1	1	1
9	A9302113V1/LO	..\3ANIONS2	..\93031831	1	1	1
10	A9302113V2/MID	..\3ANIONS2	..\93031831	1	1	1
11	A9302113V3/HI	..\3ANIONS2	..\93031831	1	1	1
12	A9303183B1	..\3ANIONS2	..\93031831	1	1	1
13	93-05039/ACID WASTE (CO	..\3ANIONS2	..\93031831	1	100	1
14	93-05191/RAILCAR 1-1	..\3ANIONS2	..\93031831	1	100	1
15	93-04915/B110-4-1A	..\3ANIONS2	..\93031831	1	100	1
16	93-04916/B110-4-2A	..\3ANIONS2	..\93031831	1	5	1
17	93-04917/B110-4-5A	..\3ANIONS2	..\93031831	1	5	1
18	93-04918/B110-4-8A	..\3ANIONS2	..\93031831	1	5	1
19	93-04919/B110-4-9A	..\3ANIONS2	..\93031831	1	50	1
20	93-04920/B110-4-10A	..\3ANIONS2	..\93031831	1	100	1
21	93-04921/B110-4-11A	..\3ANIONS2	..\93031831	1	100	1
22	93-04922/B110-4-12A	..\3ANIONS2	..\93031831	1	50	1
23	A9302113V1/LO	..\3ANIONS2	..\93031831	1	1	1
24	A9302113V2/MID	..\3ANIONS2	..\93031831	1	1	1
25	A9302113V3/HI	..\3ANIONS2	..\93031831	1	1	1
26	A9303183B2	..\3ANIONS2	..\93031831	1	1	1
27	93-04923/511-33A	..\3ANIONS2	..\93031831	1	50	1
28	93-05039/ACID WASTE (CO	..\3ANIONS2	..\93031831	1	1000	1
29	93-05039/ACID WASTE (CO	..\3ANIONS2	..\93031831	1	500	1
30	93-05191/RAILCAR 1-1	..\3ANIONS2	..\93031831	1	200	1
31	93-05190/BO86V2	..\3ANIONS2	..\93031831	1	1	1
32	93-05190D/BO86V2	..\3ANIONS2	..\93031831	1	1	1
33	93-05190MS/BO86V2	..\3ANIONS2	..\93031831	1	1	1
34	93-05190MSD/BO86V2	..\3ANIONS2	..\93031831	1	1	1
35	93-05190/PROC. BLANK (P	..\3ANIONS2	..\93031831	1	1	1
36	93-05190/BLANK SPIKE (B	..\3ANIONS2	..\93031831	1	1	1
37	A9302113V1/LO	..\3ANIONS2	..\93031831	1	1	1
38	A9302113V2/MID	..\3ANIONS2	..\93031831	1	1	1
39	A9302113V3/HI	..\3ANIONS2	..\93031831	1	1	1
40	A9303183B3	..\3ANIONS2	..\93031831	1	1	1
41	93-04924/300 AREA PROC	..\3ANIONS2	..\93031831	1	10	1
42	93-04924/300 AREA PROC	..\3ANIONS2	..\93031831	1	1	1
43	MS93-04924/300 AREA PRO	..\3ANIONS2	..\93031831	1	10	1
44	DMS93-04924/300 AREA PR	..\3ANIONS2	..\93031831	1	10	1
45	93-05191/RAILCAR 1-1	..\3ANIONS2	..\93031831	1	10	1
46	93-04915/B110-4-1A	..\3ANIONS2	..\93031831	1	5	1
47	93-04916/B110-4-2A	..\3ANIONS2	..\93031831	1	1	1
48	93-04917/B110-4-5A	..\3ANIONS2	..\93031831	1	1	1
49	93-04918/B110-4-8A	..\3ANIONS2	..\93031831	1	1	1
50	93-04919/B110-4-9A	..\3ANIONS2	..\93031831	1	1	1
51	A9302113V1/LO	..\3ANIONS2	..\93031831	1	1	1
52	A9302113V2/MID	..\3ANIONS2	..\93031831	1	1	1
53	A9302113V3/HI	..\3ANIONS2	..\93031831	1	1	1
54	A9303183B4	..\3ANIONS2	..\93031831	1	1	1
55	93-04920/B110-4-10A	..\3ANIONS2	..\93031831	1	5	1
56	93-04921/B110-4-11A	..\3ANIONS2	..\93031831	1	1	1
57	93-04922/B110-4-12A	..\3ANIONS2	..\93031831	1	1	1
58	A9302113V1/LO	..\3ANIONS2	..\93031831	1	1	1

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
59	A9302113V2/MID	..\3ANIONS2	..\93031831	1	1	1
60	A9302113V3/HI	..\3ANIONS2	..\93031831	1	1	1
61	A9303183B5	..\3ANIONS2	..\93031831	1	1	1
62	NO RUN	..\3SHUTDN.	..\93031831	1	1	1

Comment:

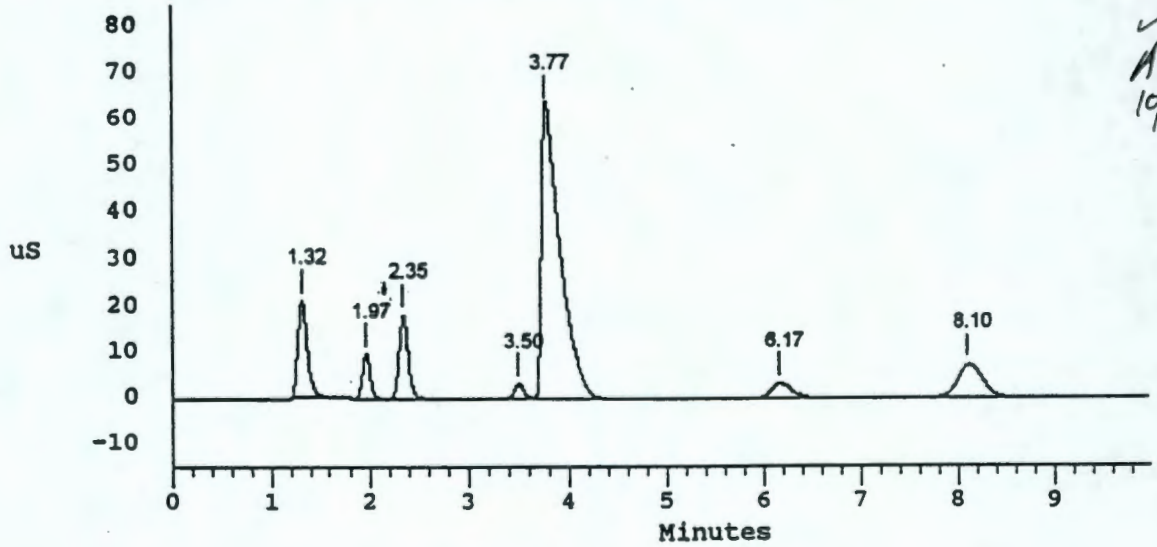
Sample Name: A9302113V1/LO	Date: 03/18/1993 13:02:14
Data File : c:\DX\DATA\9303183\93031831.D23	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 23 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	2.406	21113	143518	1	0.00
2	1.97	CHLORIDE	1.377	9729	52797	1	0.00
3	2.35	NITRITE	4.544	18332	118592	1	-1.40
4	3.50	BROMIDE	1.300	3042	20267	1	0.96
5	3.77	NITRATE	32.817	62959	827553	1	0.00
6	6.17	PHOSPHATE	4.751	3175	47584	1	4.27
7	8.10	SULFATE	4.784	7153	131957	1	3.44
		Totals	51.979	125503	1342269		

File: 93031831.D23 Sample: A9302113V1/LO



AS 10/22/93

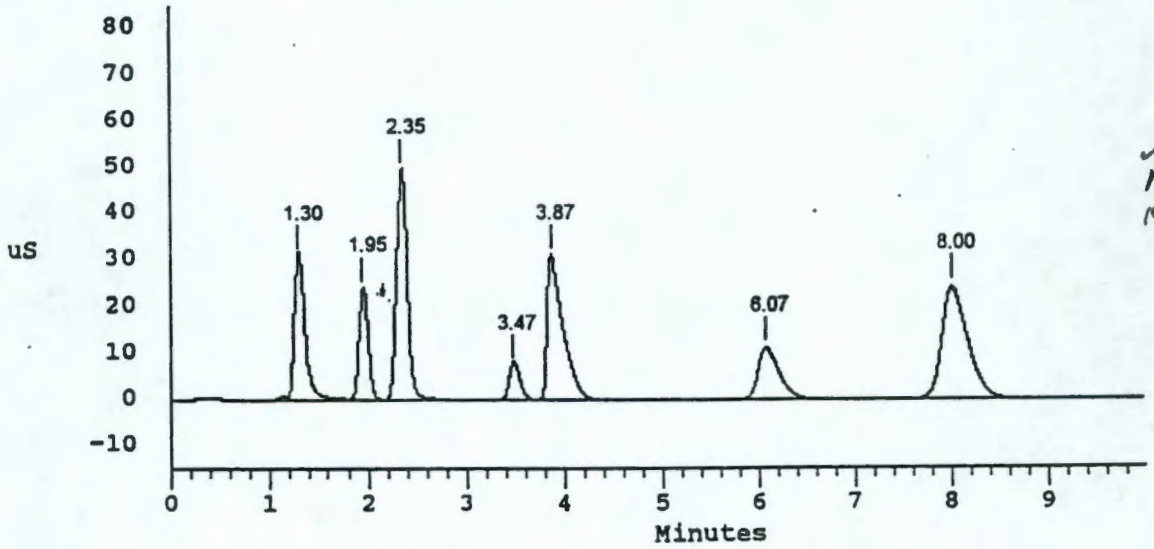
Sample Name: A9302113V2/MID	Date: 03/18/1993 13:12:50
Data File : c:\DX\DATA\9303183\93031831.D24	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 24 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.30	FLUORIDE	3.928	30491	239156	1	-0.42
2	1.95	CHLORIDE	3.863	23710	159899	1	0.00
3	2.35	NITRITE	14.703	49504	384276	1	-0.56
4	3.47	BROMIDE	3.856	7409	63535	1	0.85
5	3.87	NITRATE	15.150	30799	348625	1	0.00
6	6.07	PHOSPHATE	15.195	11132	168974	1	-0.08
7	8.00	SULFATE	15.161	24115	448872	1	-0.48
		Totals	71.856	177159	1813337		

File: 93031831.D24 Sample: A9302113V2/MID



AS 10/22/93

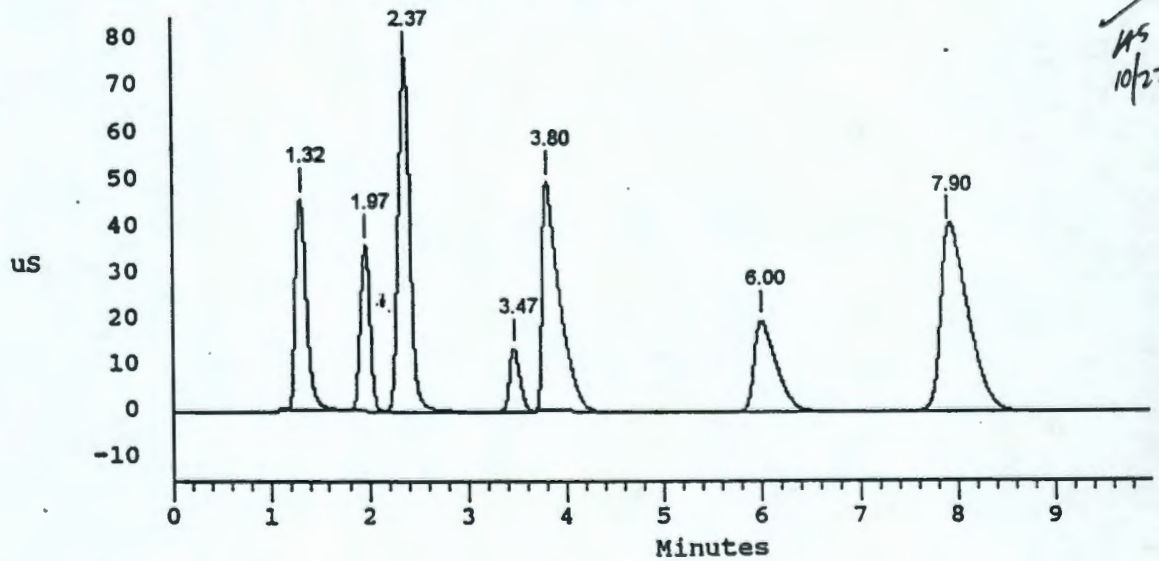
Sample Name: A9302113V3/HI Date: 03/18/1993 13:23:27
Data File : c:\DX\DATA\9303183\93031831.D25
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 25 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	1000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	5.995	45969	371085	1	0.00
2	1.97	CHLORIDE	5.779	36100	249782	1	0.00
3	2.37	NITRITE	24.755	74985	634231	1	-0.70
4	3.47	BROMIDE	5.914	13572	100715	1	0.00
5	3.80	NITRATE	25.195	49442	609510	1	0.00
6	6.00	PHOSPHATE	25.528	19737	307469	1	0.56
7	7.90	SULFATE	25.450	39928	795419	1	0.00
		Totals	118.616	279732	3068211		

File: 93031831.D25 Sample: A9302113V3/HI



MS 10/22/97

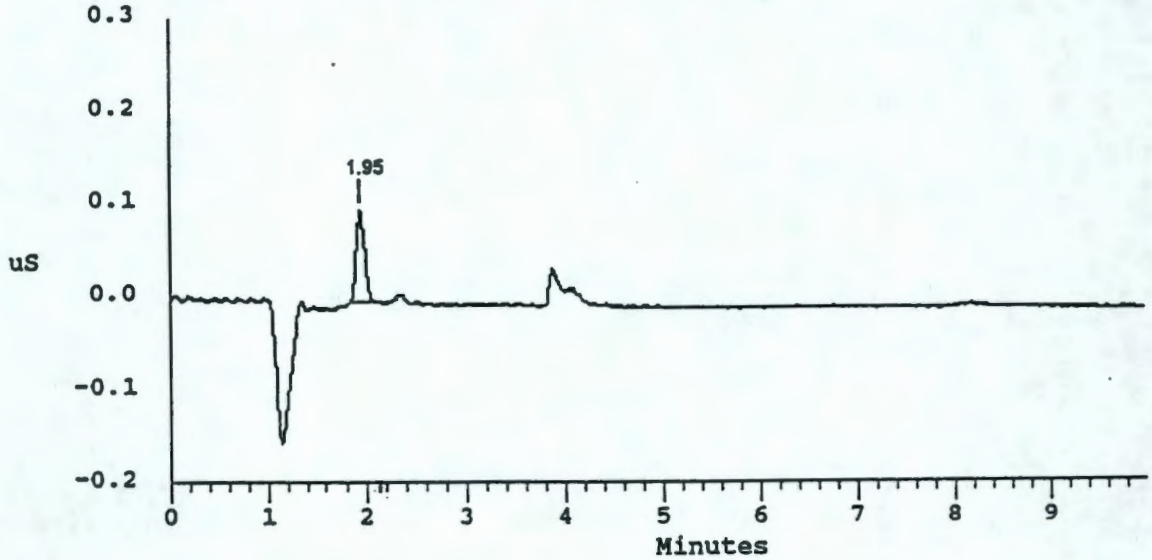
Sample Name: A9303183B2	Date: 03/18/1993 13:33:58
Data File : c:\DX\DATA\9303183\93031831.D26	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 26 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 93031831.D26 Sample: A9303183B2



Data Reprocessed On 03/22/1993 08:01:47

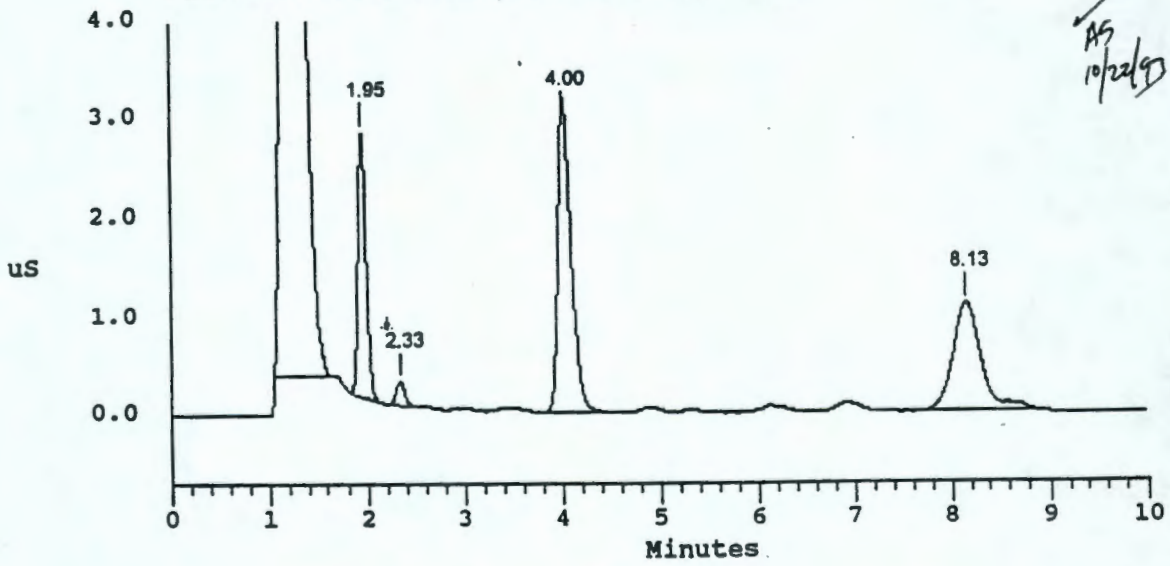
Sample Name: 93-05190/BO86V2 Date: 03/18/1993 14:26:50
Data File : C:\DX\DATA\9303183\93031831.D31
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 31 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	2.104	8312	124701	1	0.85
2	1.95	CHLORIDE	0.467	2667	15789	1	0.00
3	2.33	NITRITE	0.238	239	1482	1	-1.26
4	4.00	NITRATE	1.525	2945	30134	1	0.00
5	8.13	SULFATE	0.976	1101	22263	1	-2.19
		Totals	5.310	15264	194368		

File: 93031831.D31 Sample: 93-05190/BO86V2



AS 10/22/93

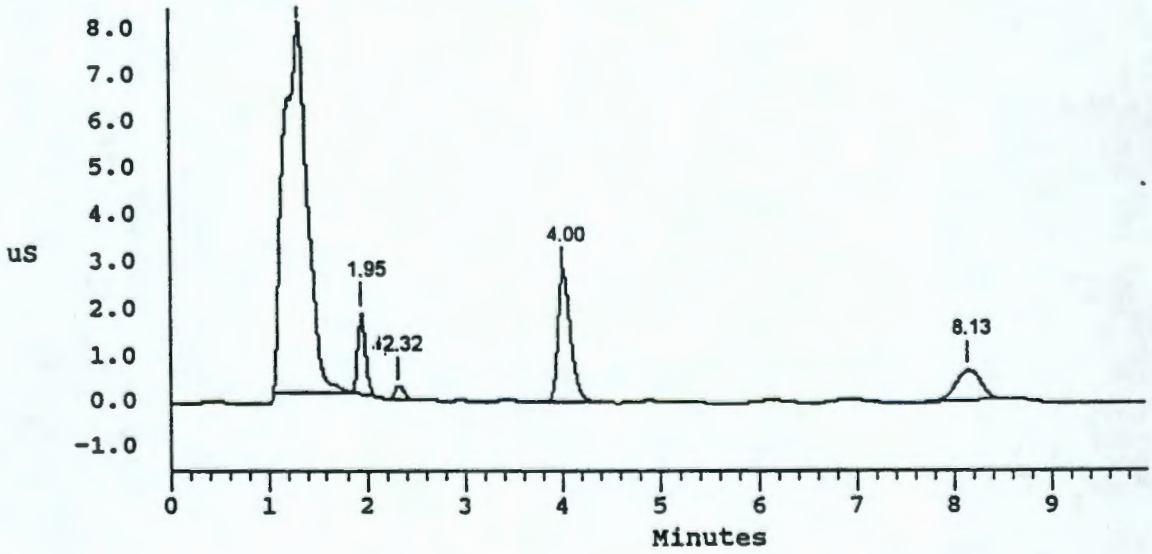
Sample Name: 93-05190D/BO86V2 Date: 03/18/1993 14:37:23
Data File : c:\DX\DATA\9303183\93031831.D32
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 32 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	2.254	7896	134046	1	0.85
2	1.95	CHLORIDE	0.328	1771	10224	1	0.00
3	2.32	NITRITE	0.255	285	1938	1	-1.97
4	4.00	NITRATE	1.387	2671	27093	1	0.00
5	8.13	SULFATE	0.599	653	11578	1	-2.19
		Totals	4.824	13276	184878		

File: 93031831.D32 Sample: 93-05190D/BO86V2



AS 10/22/93

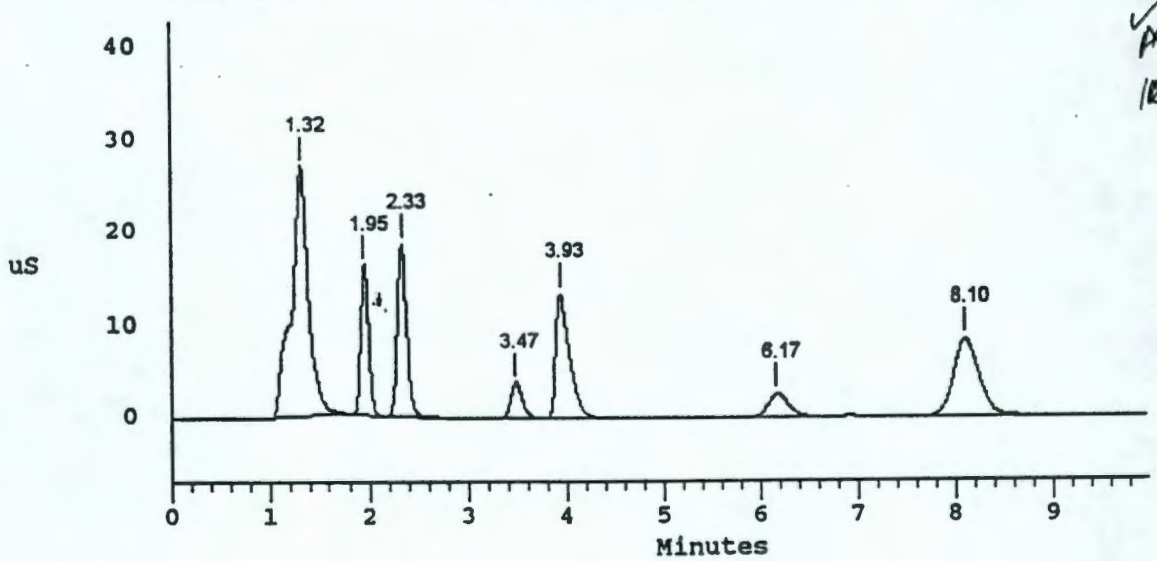
Sample Name: 93-05190MS/BO86V2 Date: 03/18/1993 14:47:55
Data File : c:\DX\DATA\9303183\93031831.D33
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 33 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	1000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	5.200	26769	320049	1	0.85
2	1.95	CHLORIDE	2.334	15909	92928	1	0.00
3	2.33	NITRITE	4.828	18520	126217	1	-1.26
4	3.47	BROMIDE	1.930	3627	30675	1	0.85
5	3.93	NITRATE	6.135	13355	134036	1	0.00
6	6.17	PHOSPHATE	3.890	2498	38215	1	-0.15
7	8.10	SULFATE	5.621	8417	156533	1	-0.94
		Totals	29.939	89095	898653		

File: 93031831.D33 Sample: 93-05190MS/BO86V2



AG 10/22/93

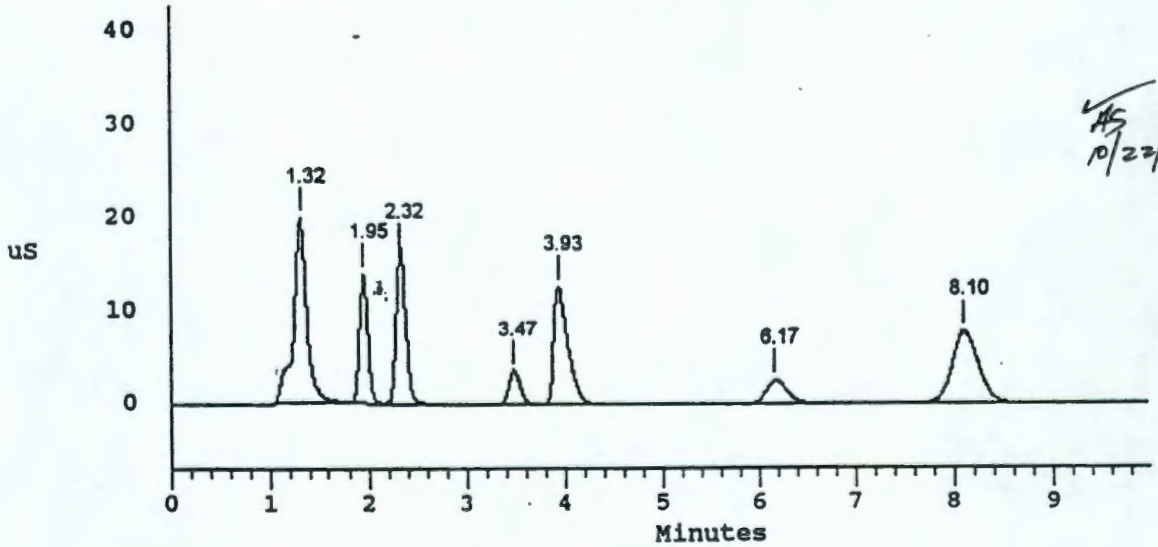
Sample Name: 93-05190MSD/BO86V2 Date: 03/18/1993 14:58:31
Data File : c:\DX\DATA\9303183\93031831.D34
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 34 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	3.114	19799	187863	1	0.85
2	1.95	CHLORIDE	2.122	13774	83901	1	0.00
3	2.32	NITRITE	4.482	16016	116916	1	-1.97
4	3.47	BROMIDE	1.827	3478	28954	1	0.85
5	3.93	NITRATE	5.848	12645	127468	1	0.00
6	6.17	PHOSPHATE	3.958	2536	38948	1	-0.15
7	8.10	SULFATE	5.182	7773	143609	1	-0.94
		Totals	26.532	76021	727657		

File: 93031831.D34 Sample: 93-05190MSD/BO86V2



AS 10/22/93

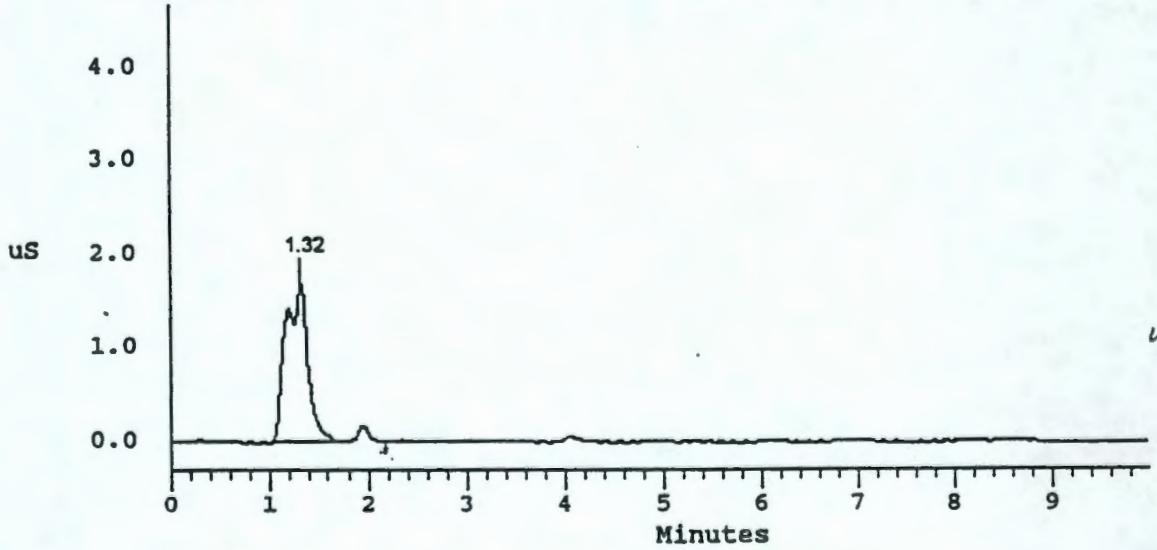
Sample Name: 93-05190/PROC. BLANK (PB)	Date: 03/18/1993 15:09:03
Data File : c:\DX\DATA\9303183\93031831.D35	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 35 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	0.510	1629	25967	1	0.00
		Totals	0.510	1629	25967		

File: 93031831.D35 Sample: 93-05190/PROC. BLANK (PB)



AS 10/22/93

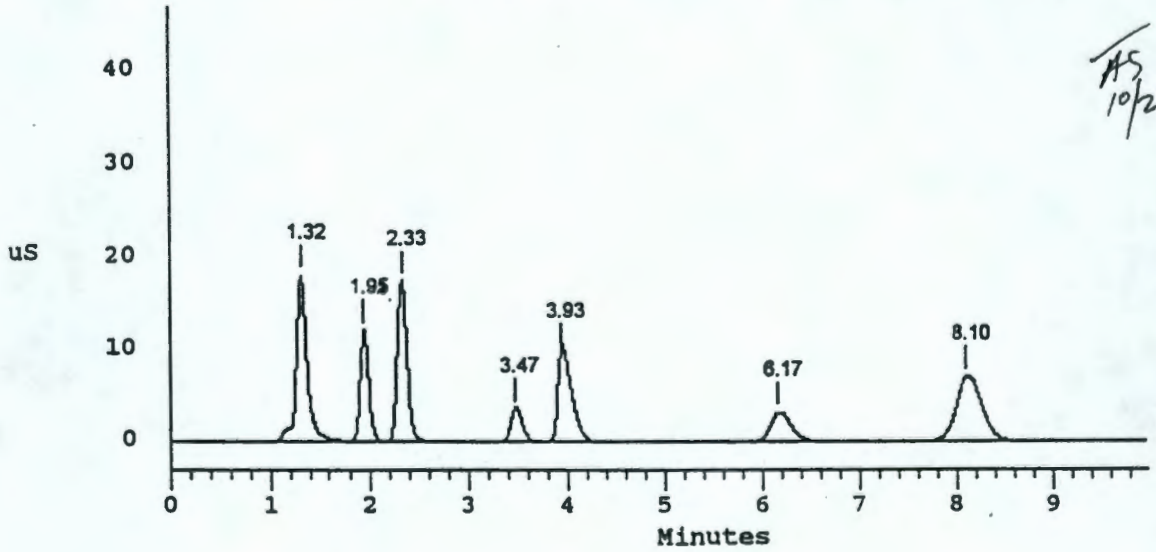
Sample Name: 93-05190/BLANK SPIKE (BS) Date: 03/18/1993 15:19:33
Data File : c:\DX\DATA\9303183\93031831.D36
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 36 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	2.303	18001	137068	1	0.85
2	1.95	CHLORIDE	1.895	12144	74369	1	0.00
3	2.33	NITRITE	4.649	17380	121398	1	-1.26
4	3.47	BROMIDE	1.906	3590	30268	1	0.85
5	3.93	NITRATE	4.696	9652	101231	1	0.00
6	6.17	PHOSPHATE	4.758	3148	47664	1	-0.15
7	8.10	SULFATE	4.776	7030	131729	1	-0.94
		Totals	24.983	70944	643726		

File: 93031831.D36 Sample: 93-05190/BLANK SPIKE (BS)



AS 10/27/93

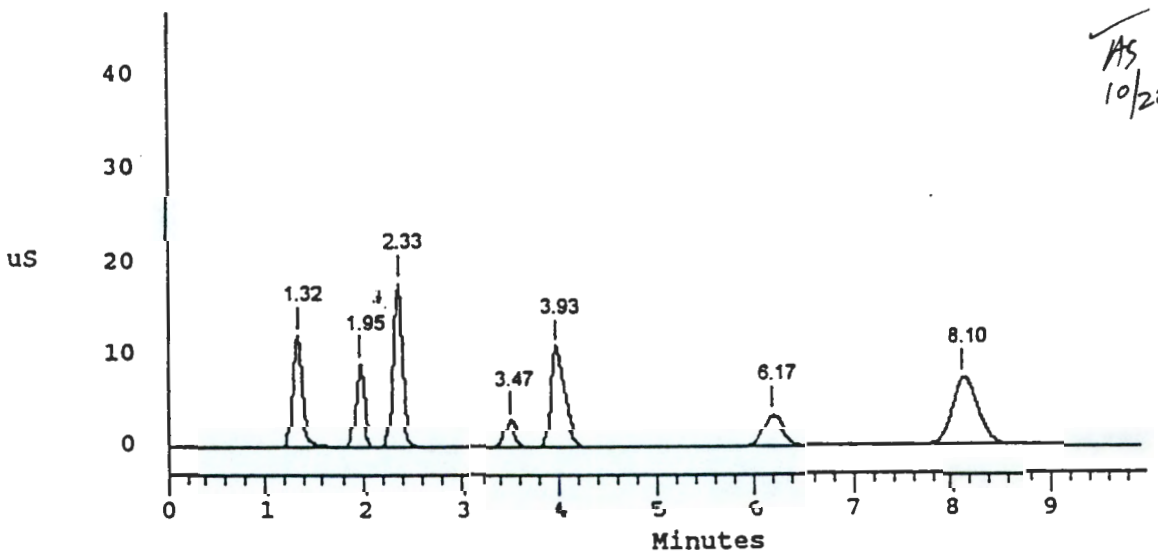
Sample Name: A9302113V1/LO Date: 03/18/1993 15:30:10
Data File : c:\DX\DATA\9303183\93031831.D37
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 37 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.32	FLUORIDE	1.424	12003	82394	1	0.85
2	1.95	CHLORIDE	1.413	8858	54278	1	0.00
3	2.33	NITRITE	4.559	17640	118990	1	-1.26
4	3.47	BROMIDE	1.411	2589	22086	1	0.85
5	3.93	NITRATE	4.961	10660	107245	1	0.00
6	6.17	PHOSPHATE	4.907	3195	49296	1	-0.15
7	8.10	SULFATE	4.840	7190	133615	1	-0.94
		Totals	23.515	62135	567903		

File: 93031831.D37 Sample: A9302113V1/LO



AS 10/22/93

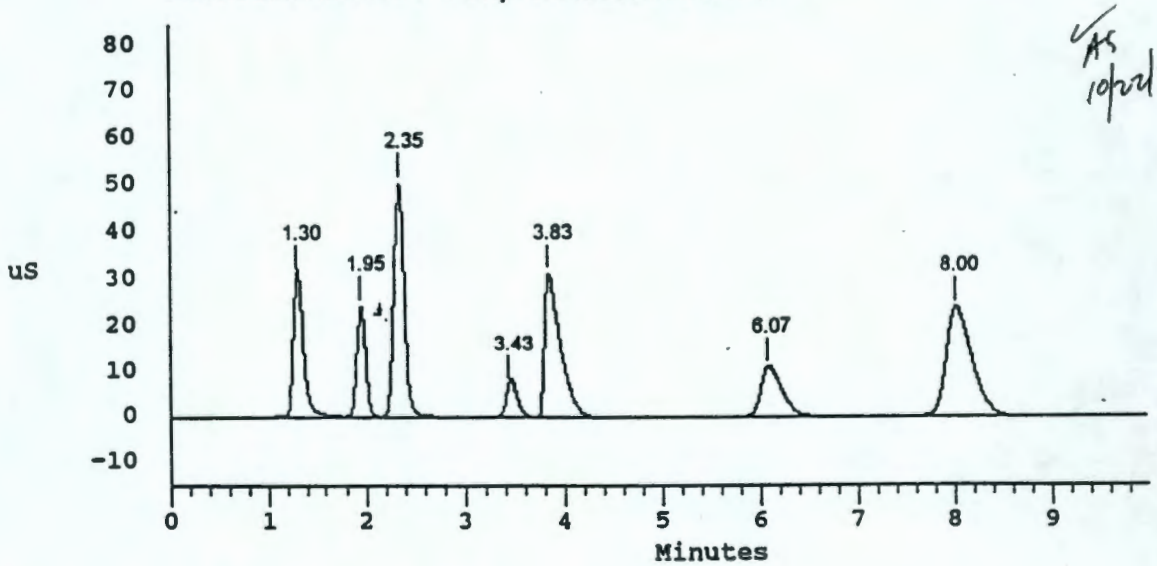
Sample Name: A9302113V2/MID	Date: 03/18/1993 15:40:47
Data File : c:\DX\DATA\9303183\93031831.D38	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 38 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.30	FLUORIDE	3.873	30593	235697	1	-0.42
2	1.95	CHLORIDE	3.791	24056	156692	1	0.00
3	2.35	NITRITE	14.777	50219	386160	1	-0.56
4	3.43	BROMIDE	3.783	6908	62269	1	-0.12
5	3.83	NITRATE	15.295	30914	352198	1	0.00
6	6.07	PHOSPHATE	15.134	10819	168207	1	0.79
7	8.00	SULFATE	15.064	23831	445779	1	0.39
		Totals	71.717	177340	1807001		

File: 93031831.D38 Sample: A9302113V2/MID



AS 10/22/93

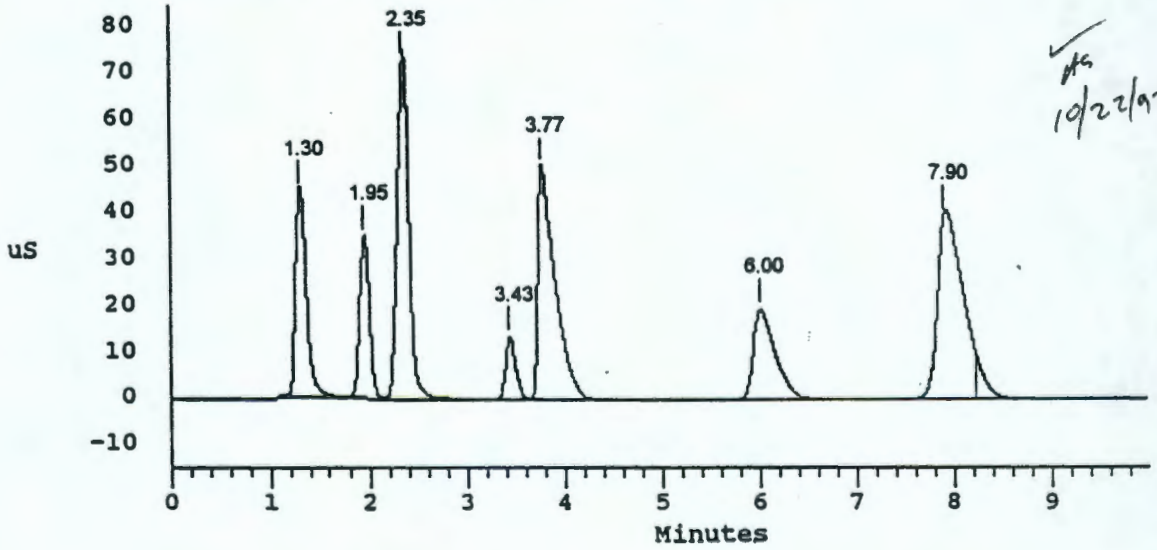
Sample Name: A9302113V3/HI Date: 03/18/1993 15:51:26
Data File : c:\DX\DATA\9303183\93031831.D39
Method : C:\DX\METHOD\3ANIONS2.met
ACI Address: 2 System: 1 Inject#: 39 Vial: Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
1	1.30	FLUORIDE	5.851	44358	361771	1	-0.42
2	1.95	CHLORIDE	5.748	34824	248261	1	0.00
3	2.35	NITRITE	24.637	72321	631367	1	-0.56
4	3.43	BROMIDE	5.736	13249	97420	1	-0.12
5	3.77	NITRATE	25.303	49516	612489	1	0.00
6	6.00	PHOSPHATE	25.498	19485	307043	1	1.45
7	7.90	SULFATE	25.215	39277	787058	1	0.88
		Totals	117.989	273030	3045409		

File: 93031831.D39 Sample: A9302113V3/HI



✓ 10/22/93

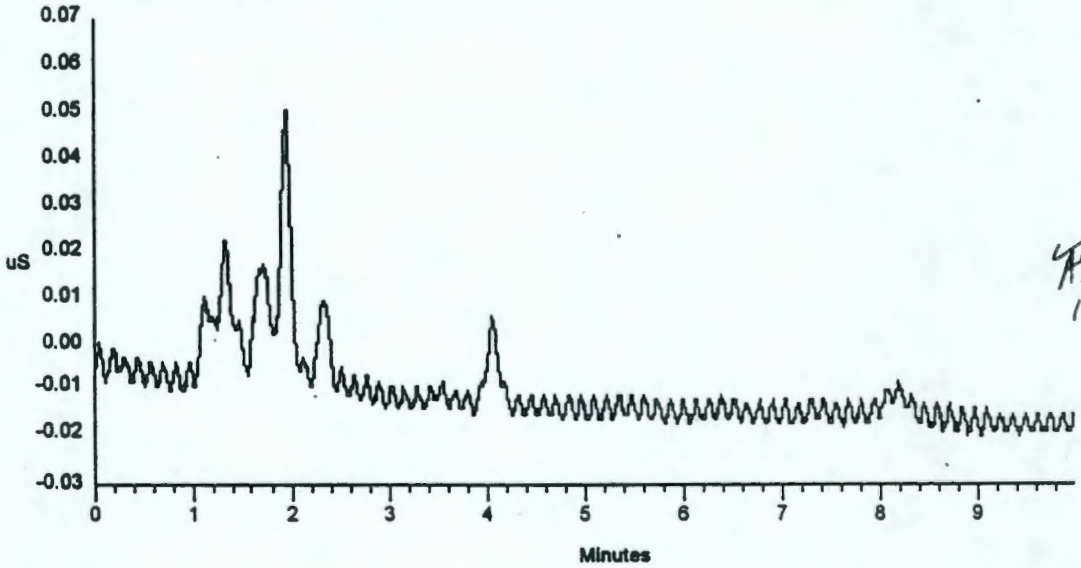
Sample Name: A9303183B3	Date: 03/18/1993 16:02:03
Data File : c:\DX\DATA\9303183\93031831.D40	
Method : C:\DX\METHOD\3ANIONS2.met	
ACI Address: 2 System: 1 Inject#: 40 Vial:	Detector:CDM-1
Analyst : PKM / MCB Column: AG4A / AS4A	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	1000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration PPM	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 93031831.D40 Sample: A9303183B3



AS 10/22/03

T-106 ANIONS LEACH (PNL-ALO-103) DATA ENTRY FORM

SAMPLE ID ALO/CUSTOMER	% SOLIDS	SAMPLE WT.(gm)	DILUENT VOL.(ml)	COMMENTS Lebel as below per TI
93-02239/(SA) BØ7JZ4		2.0107	20	93-02239
93-02240/(SA) BØ7JZ5		2.0119	20	93-02240
93-02241/(SA) BØ7JZ6		2.0178	20	93-02241
Process blank			20	PB
Blank spiked			19.8+0.2 ml SPIKE	BS
93-02351/(SA) BØ7JZ7		2.0190	20	93-02351
93-02437/(SA) BØ7JZ8		2.0191	20	93-02437
93-02437/(D) BØ7JZ8		2.0069	20	93-02437 D
93-02438/(SA) BØ7JZ9 12-21-92		2.0402	20	93-02438
93-02438/(MS) BØ7JZ9		2.0548	19.8+0.2 ml SPIKE	93-02438 MS
93-02438/(DMS) BØ7JZ9		2.0946	19.8+0.2 ml SPIKE	93-02438 DMS
93-02451/(SA) ~~BØ7M10~~ 12/21		2.0927	20	93-02451
BØ7K0Ø 12/21/92				
Blank SPIKED INCLUDES	0.010 ml	100 ppm	CN STD. WHICH = 50 ppb IN LIQUID	
SAMPLE 93-02438 MS & MSD INCLUDE (EACH)		0.010 ml	10 ppm CN STD WHICH = 50 mg CN/g SOLID	

Notes: SPIKE SOLUTION - 200 ppm HALIDES; 500 PPM OXY-ANIONS.
DILUENT - DI H_2O. EXTRACT STARTED 2:15 PM 12/21/92
STOPPED 3:15 PM 12/21/92
MCB

Prepared by: [illegible] 12-21-92

Date/time: 12/21/92 / 2:15 PM

9613492.0480

107-106

*** FREE CN DATA REVIEW & REPORT GENERATION DATA SHEET FOR SOLID & LIQUID SAMPLES ***
DIL(EX)= EXTRACTION DILUTION & DIL(AN) = ANALYTICAL DILUTION.
Divide ug/L or mg/kg values in this table by the product, DIL(EX) * DIL(AN), to obtain ug/L values in the analyzed solutions.
Approx. DL values in ug/L for liquids may be computed by multiplying DIL(AN) by 5.
Approx. DL values in mg/kg for solids may be computed by multiplying DIL(EX) * DIL(AN) by 0.005.
M&TE ID: P/N 900903, P/N F02993, P/N B11620, WA83665 METHOD: PNL-MA599-ALO-271, 200 uL LOOP.

Analyst MCBurt 12/23/92 Reviewer Hinelettel 4/5/93

IN	SAMPLE ID	DIL(EX)	% SOLID	SMP WT	DIL VOL	DIL(AN)	CN, ug/L in soln	CN, mg/kg in solid
d01	AUTOCAL1	1.0	0.00	0.0000	0.00	1.0	5.0	
d02	AUTOCAL2	1.0	0.00	0.0000	0.00	1.0		
d03	AUTOCAL3	1.0	0.00	0.0000	0.00	1.0	25.0	
d04	AUTOCAL4	1.0	0.00	0.0000	0.00	1.0	50.0	
d05	AUTOCAL5	1.0	0.00	0.0000	0.00	1.0	75.0	
d06	AUTOCAL6	1.0	0.00	0.0000	0.00	1.0	100.0	
d07	AUTOCAL1	1.0	0.00	0.0000	0.00	1.0	5.0	
d08	AUTOCAL2	1.0	0.00	0.0000	0.00	1.0	10.0	
d09	ICV-6 (375 PPB)	1.0	0.00	0.0000	0.00	5.0	355.6	
d10	200 PPB STD CHECK	1.0	0.00	0.0000	0.00	1.0	167.2	
d11	66.6 PPB VERIF. STD	1.0	0.00	0.0000	0.00	1.0	64.3	
d12	A9212222B1 ELUANT	1.0	0.00	0.0000	0.00	1.0		
d13	A9212222B2 WATER	1.0	0.00	0.0000	0.00	1.0		
d14	93-02239/BO7JZ4	10.6	93.70	2.0107	20.00	100.0	98.4	1.04
d15	AUTOCAL1	1.0	0.00	0.0000	0.00	1.0	5.0	
d16	AUTOCAL2	1.0	0.00	0.0000	0.00	1.0	10.0	
d17	AUTOCAL3	1.0	0.00	0.0000	0.00	1.0	25.0	
d18	AUTOCAL4	1.0	0.00	0.0000	0.00	1.0	50.0	
d19	AUTOCAL5	1.0	0.00	0.0000	0.00	1.0	75.0	
d20	AUTOCAL6	1.0	0.00	0.0000	0.00	1.0	100.0	
d21	66.6 PPB VERIF. STD	1.0	0.00	0.0000	0.00	1.0	64.4	
d22	200 PPB CAL CHECK	1.0	0.00	0.0000	0.00	1.0	168.3	
d23	A9212222B1 ELUANT	1.0	0.00	0.0000	0.00	1.0		
d24	93-02240/BO7JZ5	10.4	95.40	2.0119	20.00	100.0		0.00
d25	93-02241/BO7JZ6	10.2	97.20	2.0178	20.00	100.0		0.00

SAMPLES ANALYZED ON: 12/22/92 USING SYSTEM IC-400-325-SYS2 (DATA ARCHIVAL LOCATOR)

AS 10/22/93

9613492.0481

007-104

*** FREE CN DATA REVIEW & REPORT GENERATION DATA SHEET FOR SOLID & LIQUID SAMPLES ***
DIL(EX)= EXTRACTION DILUTION & DIL(AN) = ANALYTICAL DILUTION.
Divide ug/L or mg/kg values in this table by the product, DIL(EX) * DIL(AN), to obtain ug/L values in the analyzed solutions.
Approx. DL values in ug/L for liquids may be computed by multiplying DIL(AN) by 5.
Approx. DL values in mg/kg for solids may be computed by multiplying DIL(EX) * DIL(AN) by 0.005.
M&TE ID: P/N 900903, P/N F02993, P/N B11620, WA83665 METHOD: PNL-MA599-ALO-271, 200 uL LOOP.

Analyst MCBurt 12/23/92 Reviewer Phuelettul 9/5/93

IN	SAMPLE ID	DIL(EX)	% SOLID	SMP WT	DIL VOL	DIL(AN)	CN, ug/L in soln	CN, mg/kg in solid
d26	93-02351/BO7JZ7	10.2	97.40	2.0190	20.00	100.0		0.00
d27	93-02437/BO7JZ8	10.3	96.20	2.0191	20.00	100.0		0.00
d28	93-02437/BO7JZ8	10.3	96.20	2.0191	20.00	5.0		0.00
d29	PREP BLANK (PB)	1.0	0.00	0.0000	0.00	1.0		
d30	BLANK SPIKE (BS)	1.0	0.00	0.0000	0.00	1.0	51.2	
d31	93-02437D/BO7JZ8	10.4	96.20	2.0069	20.00	5.0		0.00
d32	66.6 PPB VERIF. STD.	1.0	0.00	0.0000	0.00	1.0	67.1	
d33	A9212222B3 ELUANT	1.0	0.00	0.0000	0.00	1.0		
d34	93-02239/BO7JZ4	10.6	93.70	2.0107	20.00	1.0		0.00
d35	93-02240/BO7JZ5	10.4	95.40	2.0119	20.00	1.0		0.00
d36	93-02241/BO7JZ6	10.2	97.20	2.0178	20.00	1.0		0.00
d37	93-02351/BO7JZ7	10.2	97.40	2.0190	20.00	1.0		0.00
d38	93-02437/BO7JZ8	10.3	96.20	2.0191	20.00	1.0		0.00
d39	93-02437D/BO7JZ8	10.4	96.20	2.0069	20.00	1.0		0.00
d40	93-02438/BO7JZ9	10.2	96.40	2.0402	20.00	1.0		0.00
d41	93-02438MS/BO7JZ9	10.1	96.40	2.0548	20.00	1.0	3.6	0.04
d42	93-02438MSD/BO7JZ9	9.9	96.40	2.0946	20.00	1.0	3.2	0.03
d43	93-02451/BO7K~~00~~ 00 Null 3/23/93	10.2	93.50	2.0927	20.00	1.0		0.00
d44	66.6 PPB VERIF. STD	1.0	0.00	0.0000	0.00	1.0	66.3	
d45	A9212222B3 ELUANT	1.0	0.00	0.0000	0.00	1.0		
d46	ICV-6 (375 PPB)	1.0	0.00	0.0000	0.00	5.0	361.2	
d47	WATER BLANK	1.0	0.00	0.0000	0.00	1.0	2.1	

SAMPLES ANALYZED ON: 12/22/92 USING SYSTEM IC-400-325-SYS2 (DATA ARCHIVAL LOCATOR)

HJ 10/22/97

007-405

2840.2.96.3196

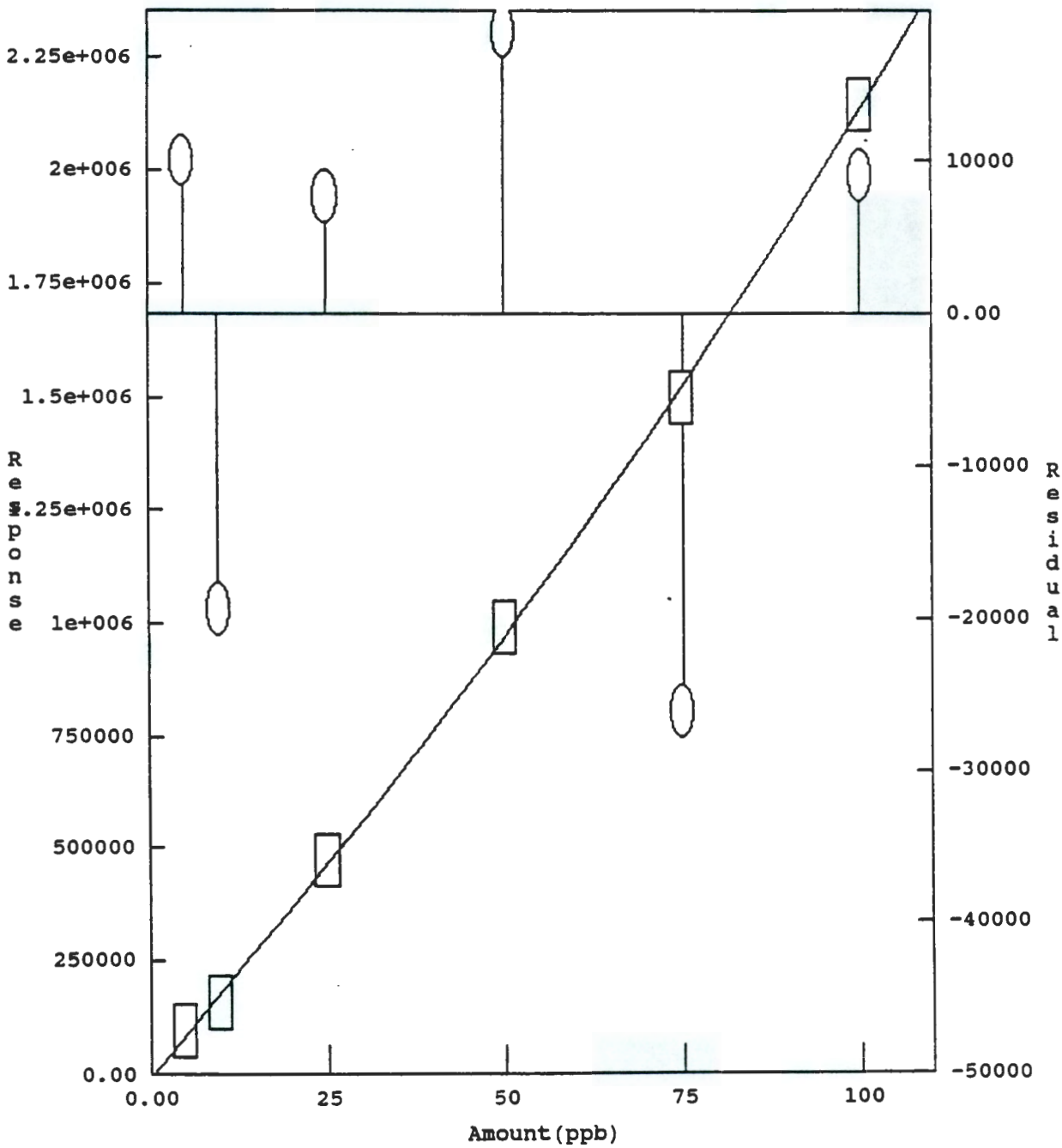
DIONEX SCHEDULE - C:\DX\SCHEDULE\12222SCH.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
1	AUTOCAL1	..\2CYANIDE	..\92122221	1	1	1
2	AUTOCAL2	..\2CYANIDE	..\92122221	1	1	1
3	AUTOCAL3	..\2CYANIDE	..\92122221	1	1	1
4	AUTOCAL4	..\2CYANIDE	..\92122221	1	1	1
5	AUTOCAL5	..\2CYANIDE	..\92122221	1	1	1
6	AUTOCAL6	..\2CYANIDE	..\92122221	1	1	1
7	AUTOCAL1	..\2CYANIDE	..\92122221	1	1	1
8	AUTOCAL2	..\2CYANIDE	..\92122221	1	1	1
9	ICV-6 (375 PPB)	..\2CYANIDE	..\92122221	1	5	1
10	200 PPB STD CHECK	..\2CYANIDE	..\92122221	1	1	1
11	66.6 PPB VERIF. STD	..\2CYANIDE	..\92122221	1	1	1
12	A9212222B1 ELUANT	..\2CYANIDE	..\92122221	1	1	1
13	A9212222B2 WATER	..\2CYANIDE	..\92122221	1	1	1
14	93-02239/BO7JZ4	..\2CYANIDE	..\92122221	1	100	1
15	AUTOCAL1	..\2CYANIDE	..\92122221	1	1	1
16	AUTOCAL2	..\2CYANIDE	..\92122221	1	1	1
17	AUTOCAL3	..\2CYANIDE	..\92122221	1	1	1
18	AUTOCAL4	..\2CYANIDE	..\92122221	1	1	1
19	AUTOCAL5	..\2CYANIDE	..\92122221	1	1	1
20	AUTOCAL6	..\2CYANIDE	..\92122221	1	1	1
21	66.6 PPB VERIF. STD	..\2CYANIDE	..\92122221	1	1	1
22	200 PPB CAL CHECK	..\2CYANIDE	..\92122221	1	1	1
23	A9212222B2 ELUANT	..\2CYANIDE	..\92122221	1	1	1
24	93-02240/BO7JZ5	..\2CYANIDE	..\92122221	1	100	1
25	93-02241/BO7JZ6	..\2CYANIDE	..\92122221	1	100	1
26	93-02351/BO7JZ7	..\2CYANIDE	..\92122221	1	100	1
27	93-02437/BO7JZ8	..\2CYANIDE	..\92122221	1	100	1
28	93-02437/BO7JZ8	..\2CYANIDE	..\92122221	1	5	1
29	PREP BLANK (PB)	..\2CYANIDE	..\92122221	1	1	1
30	BLANK SPIKE (BS)	..\2CYANIDE	..\92122221	1	1	1
31	93-02437D/BO7JZ8	..\2CYANIDE	..\92122221	1	5	1
32	66.6 PPB VERIF. STD.	..\2CYANIDE	..\92122221	1	1	1
33	A9212222B3 ELUANT	..\2CYANIDE	..\92122221	1	1	1
34	93-02239/BO7JZ4	..\2CYANIDE	..\92122221	1	1	1
35	93-02240/BO7JZ5	..\2CYANIDE	..\92122221	1	1	1
36	93-02241/BO7JZ6	..\2CYANIDE	..\92122221	1	1	1
37	93-02351/BO7JZ7	..\2CYANIDE	..\92122221	1	1	1
38	93-02437/BO7JZ8	..\2CYANIDE	..\92122221	1	1	1
39	93-02437D/BO7JZ8	..\2CYANIDE	..\92122221	1	1	1
40	93-02438/BO7JZ9	..\2CYANIDE	..\92122221	1	1	1
41	93-02438MS/BO7JZ9	..\2CYANIDE	..\92122221	1	1	1
42	93-02438MSD/BO7JZ9	..\2CYANIDE	..\92122221	1	1	1
43	93-02451/BO7K00	..\2CYANIDE	..\92122221	1	1	1
44	66.6 PPB VERIF. STD	..\2CYANIDE	..\92122221	1	1	1
45	A9212222B3 ELUANT	..\2CYANIDE	..\92122221	1	1	1
46	ICV-6 (375 PPB)	..\2CYANIDE	..\92122221	1	5	1
47	WATER BLANK	..\2CYANIDE	..\92122221	1	1	1
48	NO RUN	..\2SHUTDN.	..\92122221	1	1	1

Comment:
STD CHECKED ON 12/10/92 BY INORGANIC GROUP. CALIBRATION STDS.
PREPARED ON 12/22/92.

-Method Updated: 12:59 on Tue, 22 Dec 1992

Component: cyanide
Fit Type: Quadratic
r^2 = 0.999483 Sum(abs(Residuals)) = 90933
Amt = (-3.749146e-012 * Resp²)+
(5.472412e-005 * Resp)+ 0.3666
Standardization: External
Calibration: Area



DIONEX METHOD PARAMETERS - 2CYANIDE.MET

Method Comment:
Column ID:
Analyst ID:

System Parameters

System Name: CYANIDE

Number of Detectors	1
Run Time (minutes)	10.00
Sampling Rate (seconds)	0.20
Detector 1 Type	PED-AMP
Detector 1 real time plot scale maximum (uA)	10.000
minimum	-1.000
Save Data File	Yes

Data File Name: C:\DX\DATA\2CNDATA.Dxx

-- DETECTOR 1 PARAMETERS --

Report Options

Create ASCII Report File	No
Print Report	Yes
Print All Components	No
Print Components Found	No
Print Missing Components	No
Print All Peaks	Yes
Print Unknown Peaks	No
Print Chromatogram	Yes
Autoscale Chromatogram Maximum	Yes
Autoscale Maximum Value Delay (minutes)	0.0
Autoscale Chromatogram Minimum	Yes
Autoscale Minimum Value Delay (minutes)	0.0
Fill Peaks with Color	No
Draw Grid Lines on Chromatogram	No
Show Component Fraction Numbers	No
Label with Peak Number	No
Label with Retention Times on Chromatogram	Yes
Label with Component Name	No

Format File Name: C:\DX\METHOD\DEFAULT.PRF

Integration Parameters

Starting Peak Width (seconds)	10.0
Peak Threshold	0.500
Peak Area Reject	10000
Area Reject for Reference Peaks	10000

Data Events

Time	Description
0.00	Stop peak detection
3.50	Start peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Force Calibration Curve Through Origin	No
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calculate Unknowns by Area or Height	Area
Default Sample Volume	1.0
Default Dilution Factor	1.0
Default Response Factor for Unknown Peaks	0.0
Calibration Standard Volume	1.0
Internal Standard Amount in Samples	1.0
Amount Units	ppb

Component Table -- Last Modified: 12:59 on Tue, 22 Dec 1992

Component # 1 cyanide Retention Time 6.68
Reference Comp. none Window Size 10.00 %
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.66617E-001
K1 = 5.47241E-005
K2 = -3.74915E-012

Level	Amount	Area	Height
1	5.00000E+000	95238	4729
2	1.00000E+001	158830	9180
3	2.50000E+001	472652	25321
4	5.00000E+001	990234	54078
5	7.50000E+001	1496524	84104
6	1.00000E+002	2141150	116738

Timed Events File: C:\DX\METHOD\2CYANIDE.TE

Step	Time	Description
Init		PED AutoOffset Off
Init		PED Cell ON
Init		PED Recorder Mark OFF
Init		PED Recorder Range = 0.100 uA
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI RLY 3 OFF
Init		ACI RLY 4 OFF
Init		ACI TTL 3 OFF
Init		ACI TTL 4 OFF
Init		ACI AC 2 OFF
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset OFF
1	0.0	PED AutoOffset ON
2	0.1	PED AutoOffset Off
2	0.1	Start Sampling
2	0.1	GPM Run Gradient Clock
3	6.0	PED AutoOffset ON
4	6.3	PED AutoOffset Off
5	8.0	ACI Autosmp ON
6	8.3	ACI Autosmp OFF
7	10.1	GPM Hold Gradient Clock
7	10.1	GPM Reset ON

Gradient File: C:\DX\METHOD\2CYANIDE.GPM

AS 10/22/93

Lo Pressure Limit = 0
Hi Pressure Limit = 2000
Eluent 1 - NaOAc, NaOH, en
Eluent 2 - Eluant 2
Eluent 3 - Eluant 3
Eluent 4 - Eluant 4
V5 Off - Off
V5 On - On
V6 Off - Off
V6 On -

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	1.0	100	0	0	0	0	0	0.5 M NaOAc, 0.1 M NaOH, .5%
0.1	1.0	100	0	0	0	1	0	
1.0	1.0	100	0	0	0	0	0	

PED file: C:\DX\METHOD\2CYANIDE.PDA
Potential: 0.00 Volts

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL1 Date: Tue Dec 22 09:06:23 1992
Raw File : C:\DX\DATA\9212222\92122221.D01
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 1
ACI Address: 1 System : 2 Inject#: 1 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL1 Date: Tue Dec 22 09:37:21 1992
Raw File : C:\DX\DATA\9212222\92122221.D01
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 1
ACI Address: 1 System : 2 Inject#: 1 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	7.90	8.30	8.30	5.571e+004	8.002e+005	8.002e+005

9613492.0491

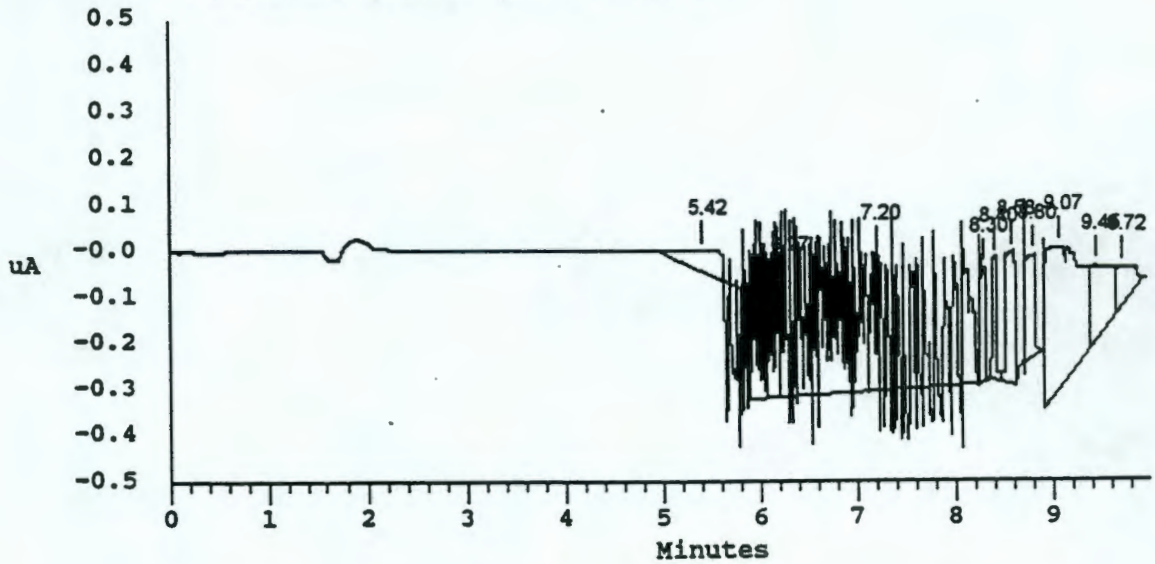
Sample Name: AUTOCAL1		Date: 12/22/1992 09:37:21	
Data File : C:\DX\DATA\9212222\92122221.D01			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2	Inject#: 1	Vial:	Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	5.42		0.000	47763	373443	1	
2	5.93		0.000	141765	3809313	2	
3	6.27		0.000	238884	9859164	2	
4	7.20		0.000	292579	7428578	2	
5	8.30	cyanide	5.000	246285	800246	1	5.06
6	8.40		0.000	264669	949972	2	
7	8.58		0.000	286695	1919931	2	
8	8.80		0.000	220506	1514305	1	
9	9.07		0.000	309351	7394564	2	
10	9.45		0.000	160526	2094579	2	
11	9.72		0.000	83453	885729	2	
		Totals	5.000	2292475	37029823		

File: 92122221.D01 Sample: AUTOCAL1



D07-115

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL2	Date: Tue Dec 22 09:48:03 1992
Raw File : C:\DX\DATA\9212222\92122221.D02	
Method : C:\DX\METHOD\2CYANIDE.met	Calibration Level: 2
ACI Address: 1 System : 2 Inject#: 2	Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE

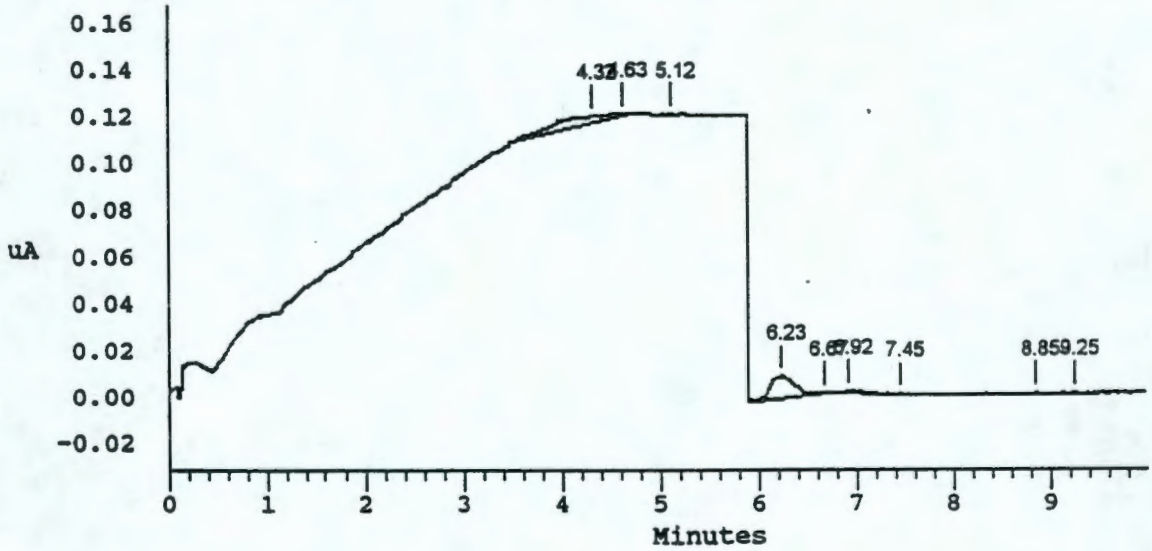
Sample Name: AUTOCAL2			Date: 12/22/1992 09:48:03
Data File : C:\DX\DATA\9212222\92122221.D02			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2	Inject#: 2	Vial:	Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.32		0.000	3351	149889	2	
2	4.63		0.000	1397	30968	2	
4	6.23		0.000	9394	165205	3	
6	6.92		0.000	982	13341	1	
		Totals	0.000	15125	359403		

File: 92122221.D02 Sample: AUTOCAL2



********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL3	Date: Tue Dec 22 09:58:47 1992
Raw File : C:\DX\DATA\9212222\92122221.D03	
Method : C:\DX\METHOD\2CYANIDE.met	Calibration Level: 3
ACI Address: 1 System : 2 Inject#: 3	Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE

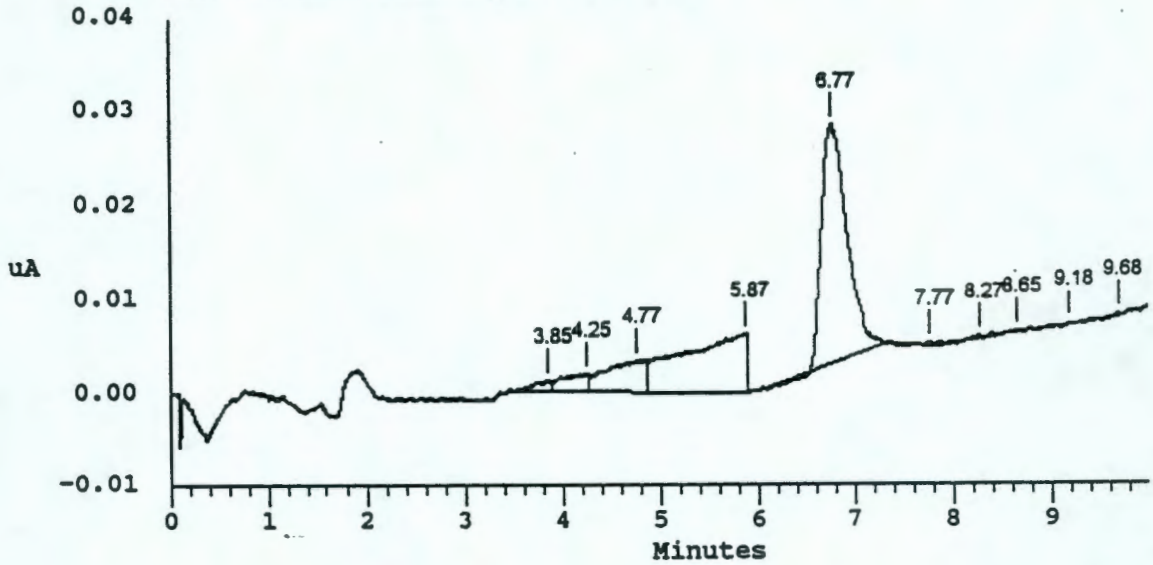
Sample Name: AUTOCAL3 Date: 12/22/1992 09:58:47
Data File : C:\DX\DATA\9212222\92122221.D03
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 3 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	3.85		0.000	1235	15421	2	
2	4.25		0.000	1937	36064	2	
3	4.77		0.000	3460	97027	2	
4	5.87		0.000	6286	281983	2	
5	6.77		0.000	25342	465216	1	
		Totals	0.000	38259	895711		

File: 92122221.D03 Sample: AUTOCAL3



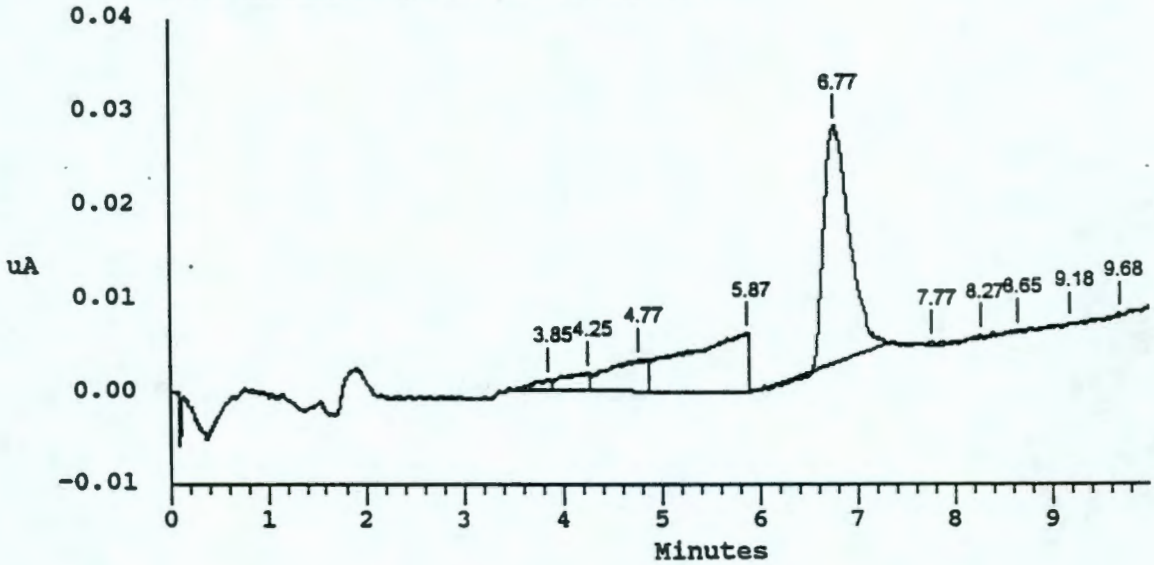
Sample Name: AUTOCAL3 Date: 12/22/1992 09:58:47
Data File : C:\DX\DATA\9212222\92122221.D03
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 3 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	3.85		0.000	1235	15421	2	
2	4.25		0.000	1937	36064	2	
3	4.77		0.000	3460	97027	2	
4	5.87		0.000	6286	281983	2	
5	6.77	cyanide	25.000	25342	465216	1	-1.36
		Totals	25.000	38259	895711		

File: 92122221.D03 Sample: AUTOCAL3



********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL4	Date: Tue Dec 22 10:09:25 1992
Raw File : C:\DX\DATA\9212222\92122221.D04	
Method : C:\DX\METHOD\2CYANIDE.met	Calibration Level: 4
ACI Address: 1 System : 2 Inject#: 4	Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE

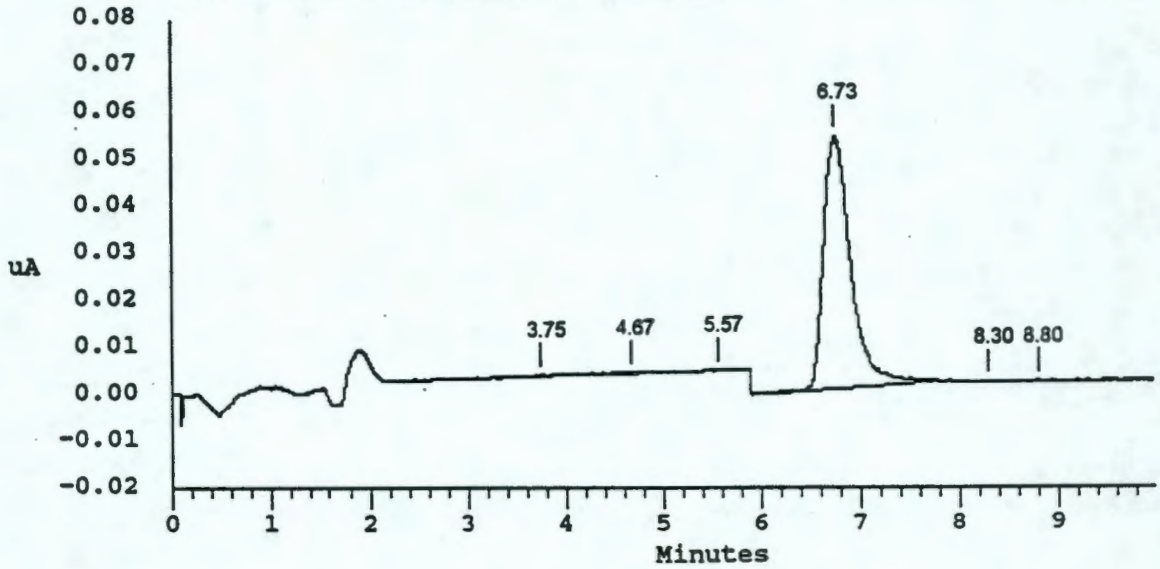
Sample Name: AUTOCAL4		Date: 12/22/1992 10:09:25	
Data File : C:\DX\DATA\9212222\92122221.D04			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2 Inject#: 4 Vial:			Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	6.73		0.000	53912	1020026	1	
		Totals	0.000	53912	1020026		

File: 92122221.D04 Sample: AUTOCAL4



Data Reprocessed On 12/22/1992 10:25:31

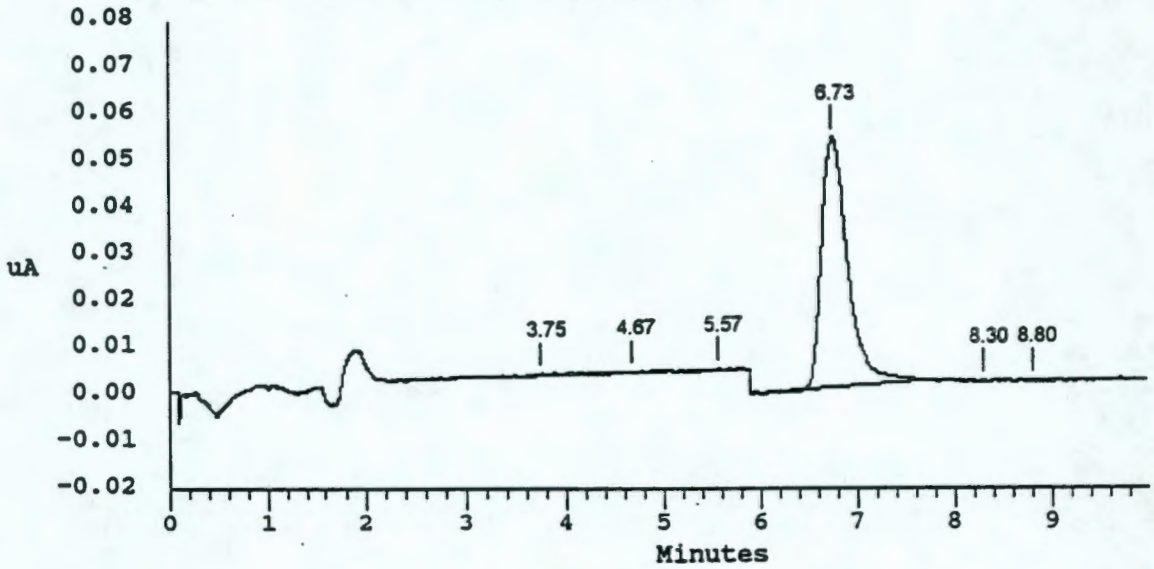
Sample Name: AUTOCAL4 Date: 12/22/1992 10:09:25
Data File : C:\DX\DATA\9212222\92122221.D04
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 4 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	10000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	6.73	cyanide	50.000	53912	1020026	1	0.50
		Totals	50.000	53912	1020026		

File: 92122221.D04 Sample: AUTOCAL4



********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL5 Date: Tue Dec 22 10:20:10 1992
Raw File : C:\DX\DATA\9212222\92122221.D05
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 5
ACI Address: 1 System : 2 Inject#: 5 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE

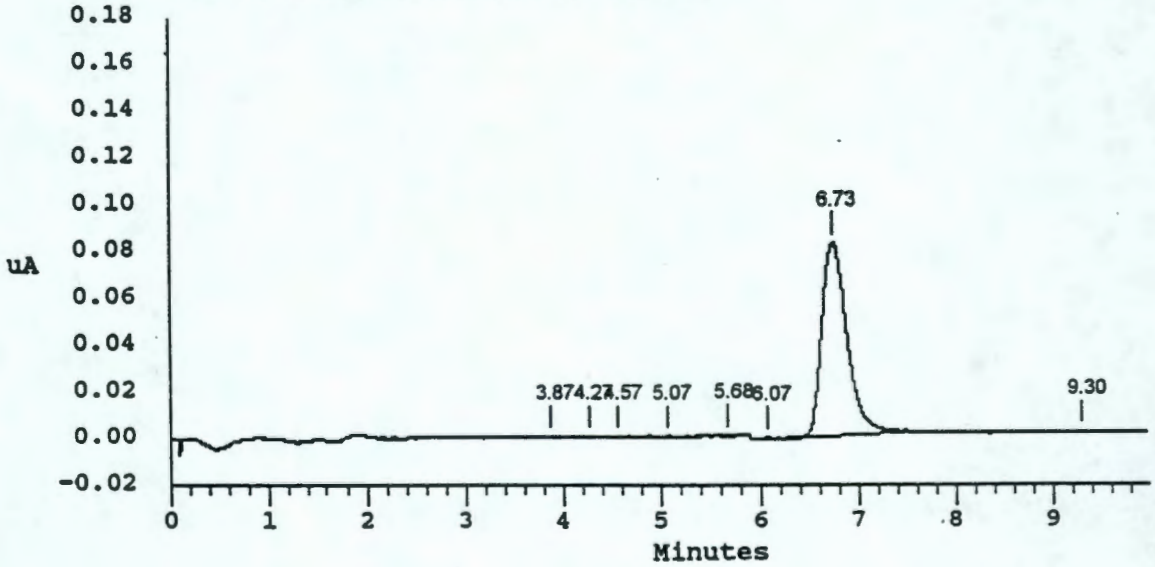
Sample Name: AUTOCAL5		Date: 12/22/1992 10:20:10	
Data File : C:\DX\DATA\9212222\92122221.D05			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2	Inject#: 5	Vial:	Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	10000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
7	6.73		0.000	82388	1479006	1	
		Totals	0.000	82388	1479006		

File: 92122221.D05 Sample: AUTOCAL5



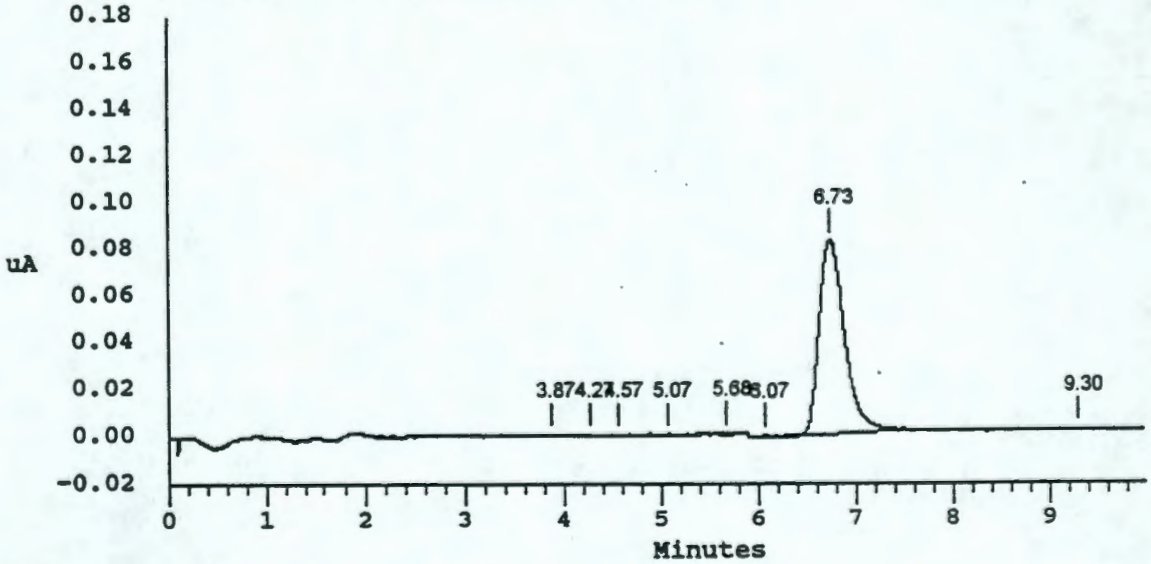
Sample Name: AUTOCAL5	Date: 12/22/1992 10:20:10
Data File : C:\DX\DATA\9212222\92122221.D05	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 5 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
7	6.73	cyanide	75.000	82388	1479006	1	0.50
		Totals	75.000	82388	1479006		

File: 92122221.D05 Sample: AUTOCAL5



********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL6 Date: Tue Dec 22 10:30:52 1992
Raw File : C:\DX\DATA\9212222\92122221.D06
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 6
ACI Address: 1 System : 2 Inject#: 6 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.70	6.73	6.73	1.593e+006	2.128e+006	2.128e+006

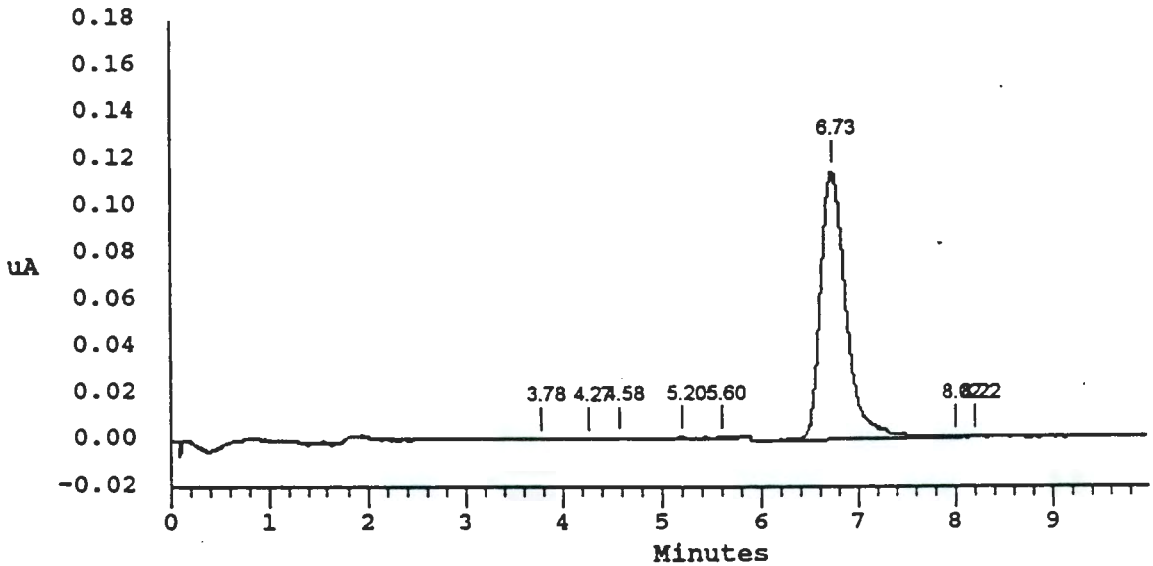
Sample Name: AUTOCAL6	Date: 12/22/1992 10:30:52
Data File : C:\DX\DATA\9212222\92122221.D06	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 6 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
6	6.73	cyanide	100.000	114744	2127715	3	0.50
		Totals	100.000	114744	2127715		

File: 92122221.D06 Sample: AUTOCAL6



********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL1 Date: Tue Dec 22 10:41:35 1992
Raw File : C:\DX\DATA\9212222\92122221.D07
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 1
ACI Address: 1 System : 2 Inject#: 7 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.73	6.77	6.77	8.002e+005	8.873e+004	8.873e+004

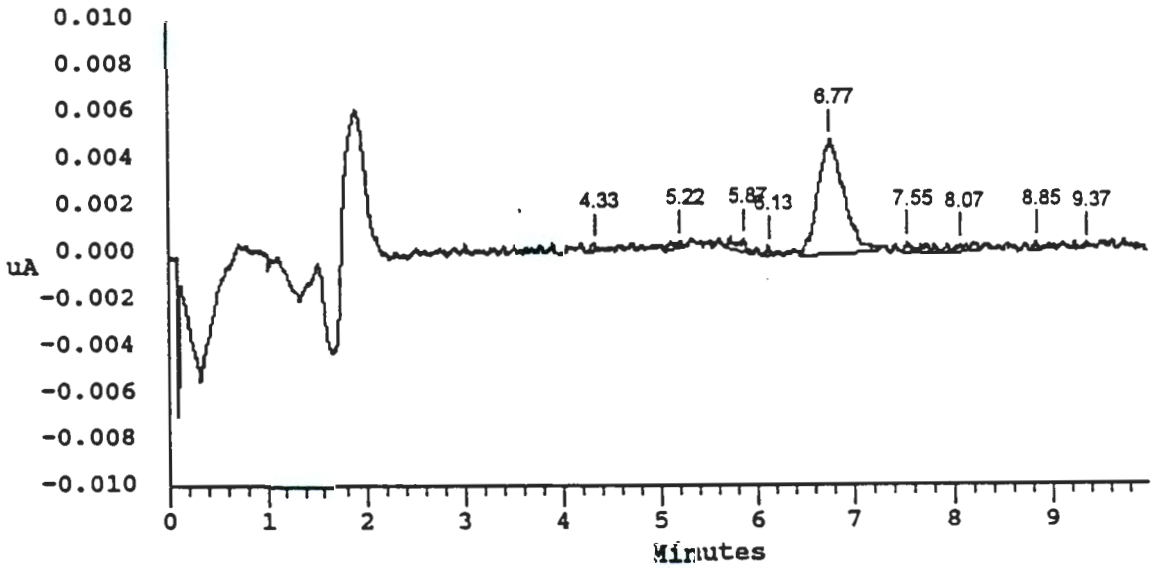
Sample Name: AUTOCAL1	Date: 12/22/1992 10:41:35
Data File : C:\DX\DATA\9212222\92122221.D07	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 7 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.77	cyanide	5.000	4816	88728	1	0.50
		Totals	5.000	4816	88728		

File: 92122221.D07 Sample: AUTOCAL1



********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL2 Date: Tue Dec 22 10:52:12 1992
Raw File : C:\DX\DATA\9212222\92122221.D08
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 2
ACI Address: 1 System : 2 Inject#: 8 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.77	6.73	6.73	1.103e+005	1.750e+005	1.750e+005

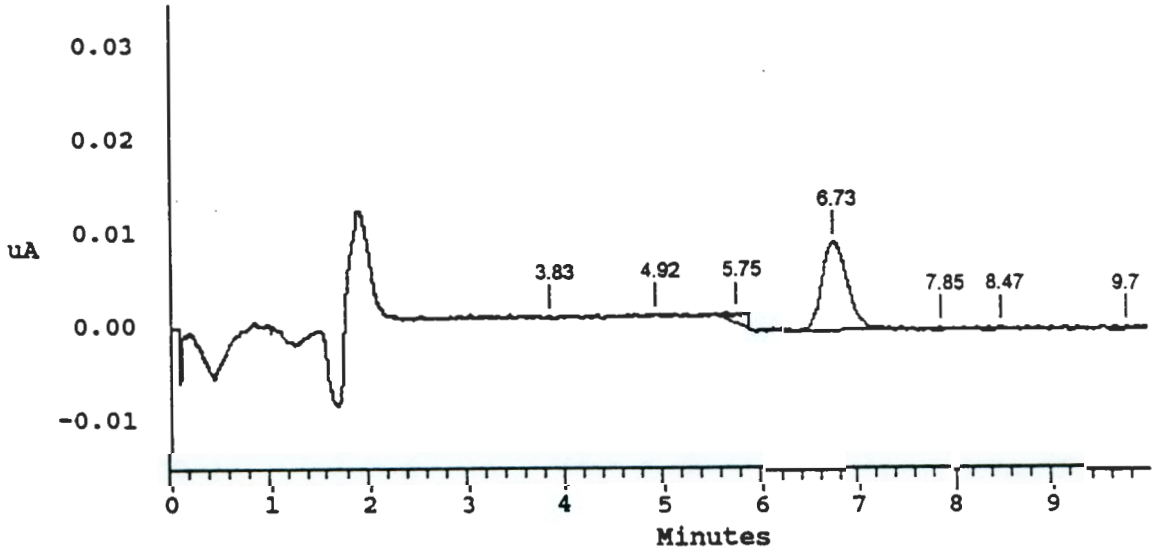
Sample Name: AUTOCAL2		Date: 12/22/1992 10:52:12	
Data File : C:\DX\DATA\9212222\92122221.D08			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2 Inject#: 8 Vial:			Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
3	5.75		0.000	1060	16080	1	
4	6.73	cyanide	10.000	9467	174978	1	-0.49
		Totals	10.000	10527	191058		

File: 92122221.D08 Sample: AUTOCAL2



Data Reprocessed On 12/23/1992 08:02:14

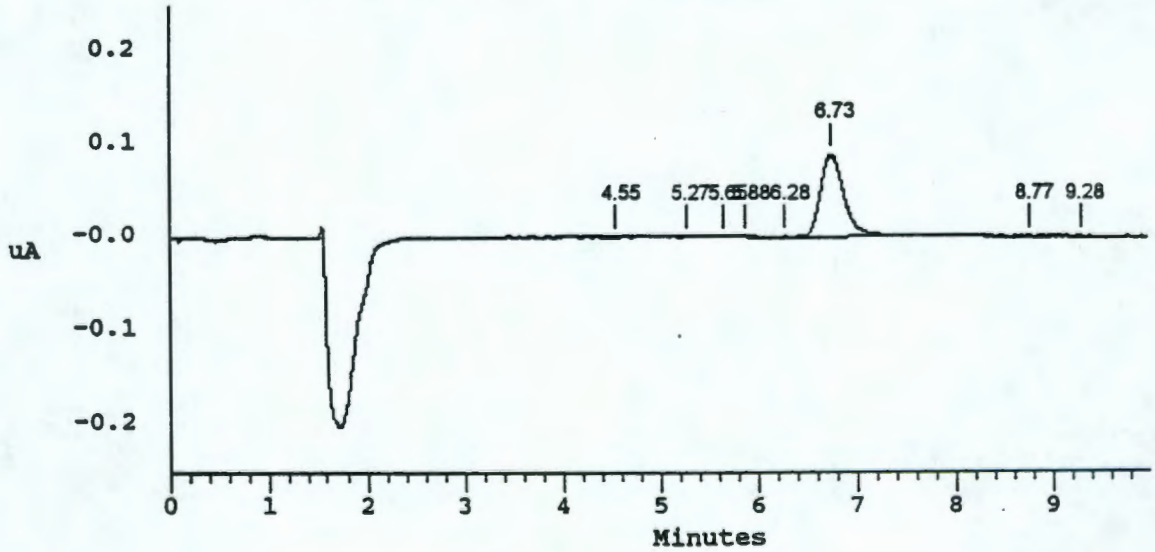
Sample Name: ICV-6 (375 PPB)	Date: 12/22/1992 11:02:46
Data File : C:\DX\DATA\9212222\92122221.d09	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 9 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	5	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
6	6.73	cyanide	355.593	88083	1433706	1	0.75
		Totals	355.593	88083	1433706		

File: 92122221.d09 Sample: ICV-6 (375 PPB)



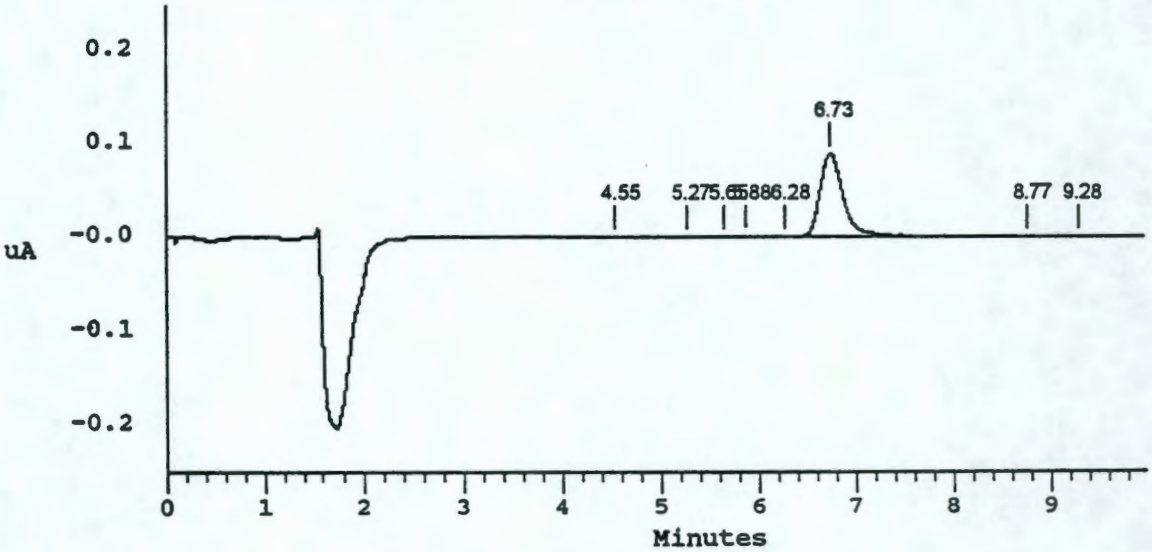
Sample Name: ICV-6 (375 PPB)	Date: 12/22/1992 11:02:46
Data File : C:\DX\DATA\9212222\92122221.D09	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 9 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
6	6.73	cyanide	446.565	88083	1433706	1	0.00
		Totals	446.565	88083	1433706		

File: 92122221.D09 Sample: ICV-6 (375 PPB)



Data Reprocessed On 12/23/1992 08:02:23

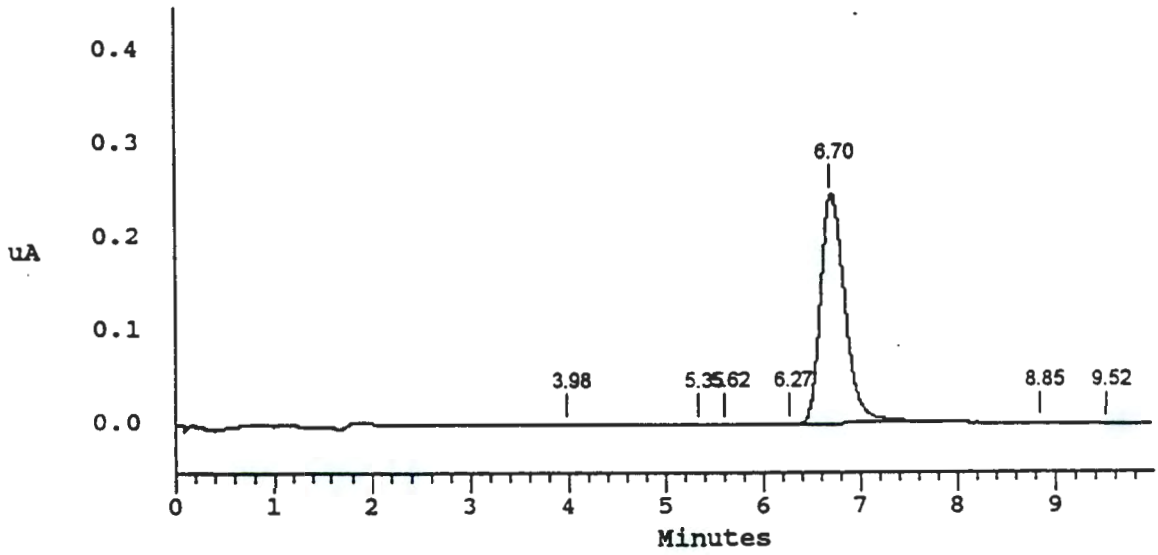
Sample Name: 200 PPB STD CHECK	Date: 12/22/1992 11:13:22
Data File : C:\DX\DATA\9212222\92122221.d10	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 10 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.70	cyanide	167.233	244574	4339144	2	0.25
		Totals	167.233	244574	4339144		

File: 92122221.d10 Sample: 200 PPB STD CHECK



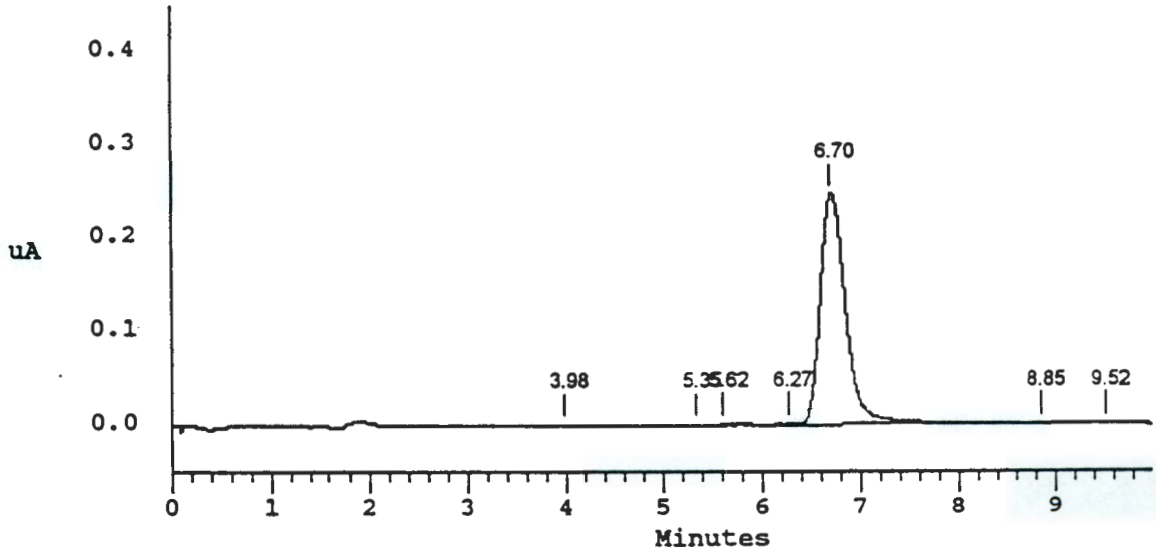
Sample Name: 200 PPB STD CHECK	Date: 12/22/1992 11:13:22
Data File : C:\DX\DATA\9212222\92122221.D10	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 10 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.70	cyanide	-15.717	244574	4339144	2	-0.50
		Totals	-15.717	244574	4339144		

File: 92122221.D10 Sample: 200 PPB STD CHECK



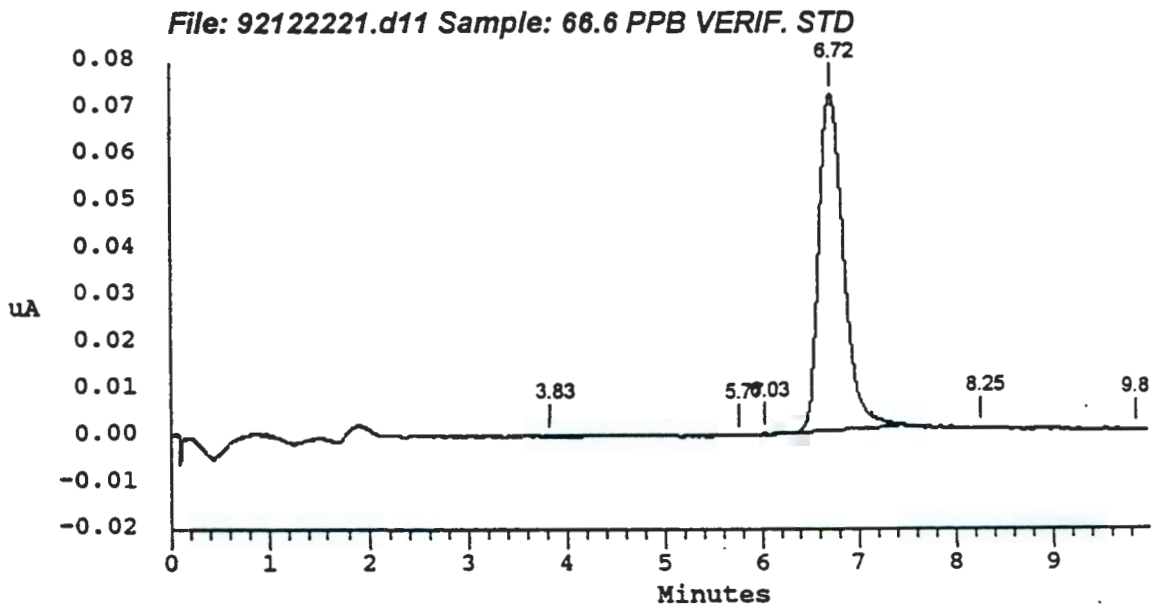
Data Reprocessed On 12/23/1992 08:02:31

Sample Name: 66.6 PPB VERIF. STD	Date: 12/22/1992 11:23:53
Data File : C:\DX\DATA\9212222\92122221.d11	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 11 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	6.72	cyanide	64.331	71752	1281338	1	0.50
		Totals	64.331	71752	1281338		



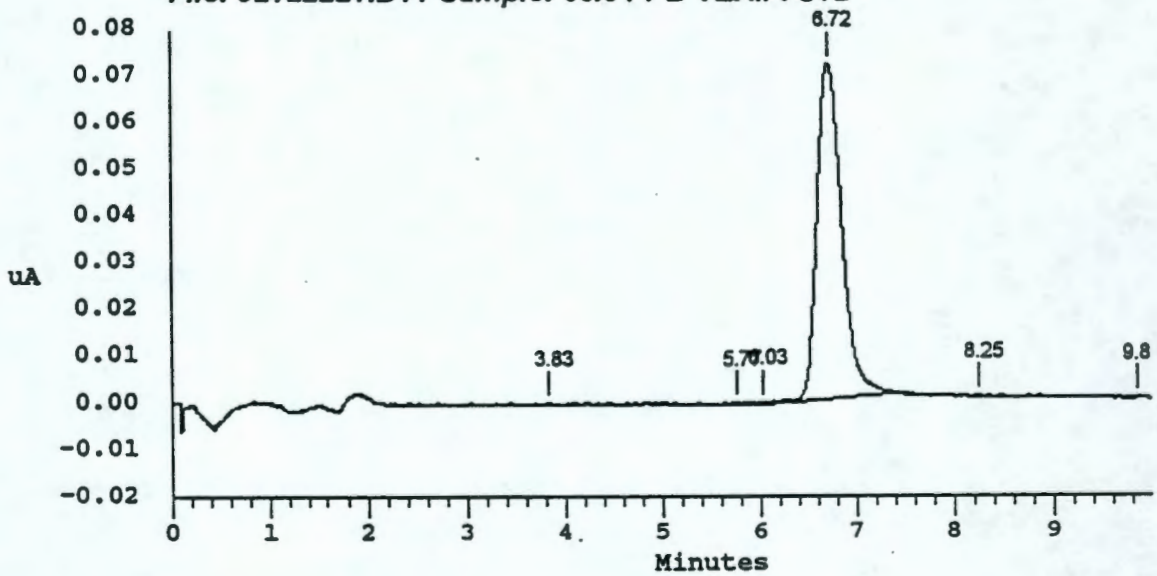
Sample Name: 66.6 PPB VERIF. STD	Date: 12/22/1992 11:23:53
Data File : C:\DX\DATA\9212222\92122221.D11	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 11 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	6.72	cyanide	83.920	71752	1281338	1	-0.25
		Totals	83.920	71752	1281338		

File: 92122221.D11 Sample: 66.6 PPB VERIF. STD



Data Reprocessed On 12/23/1992 08:02:38

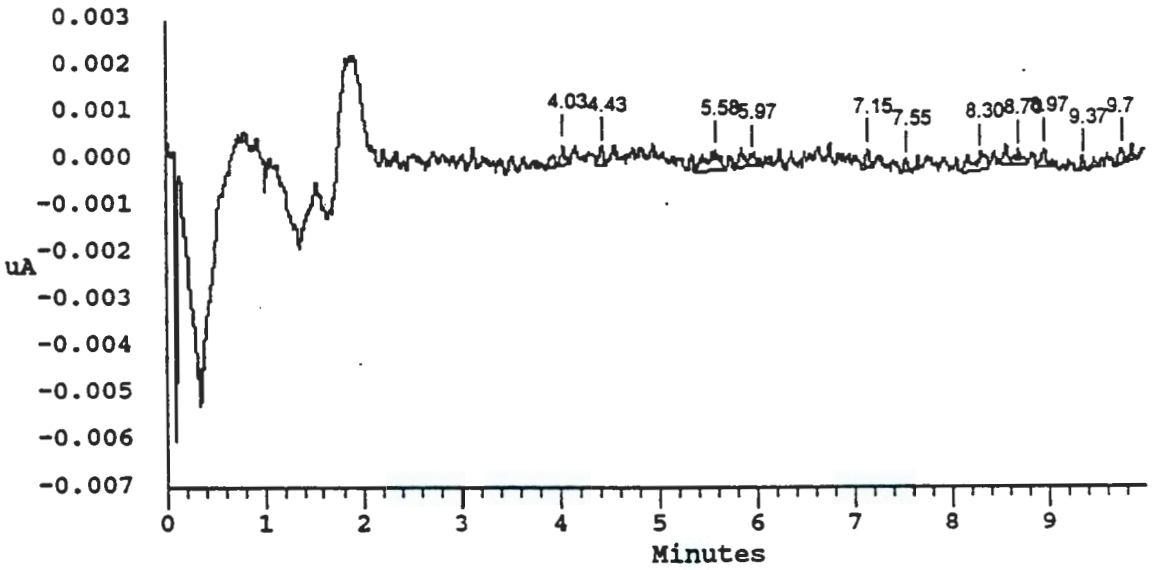
Sample Name: A9212222B1 ELUANT	Date: 12/22/1992 11:34:30
Data File : C:\DX\DATA\9212222\92122221.d12	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 12 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.d12 Sample: A9212222B1 ELUANT



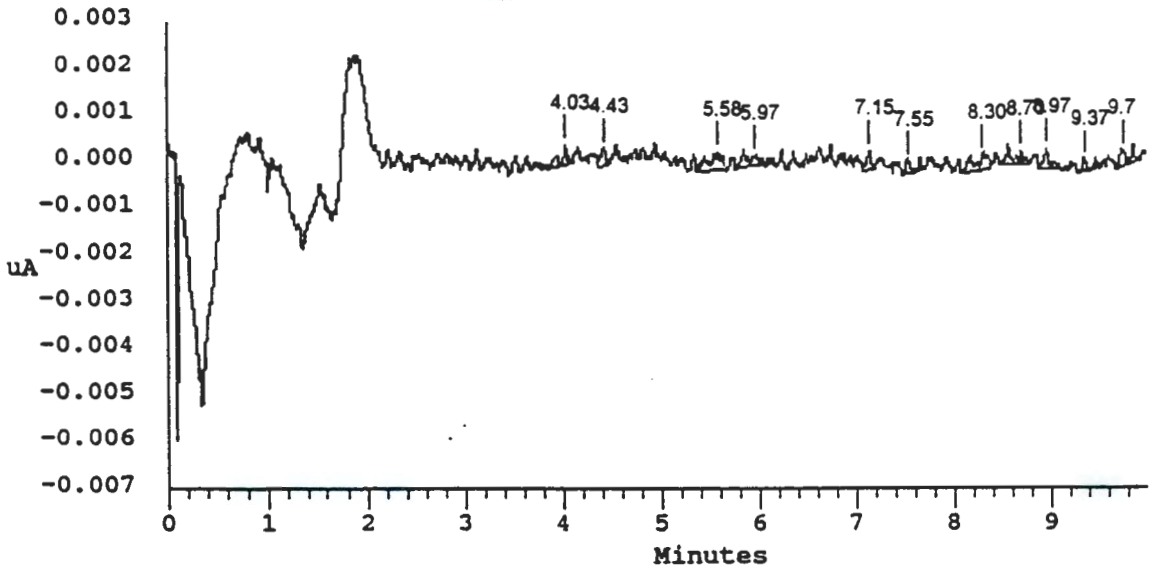
Sample Name: A9212222B1 ELUANT	Date: 12/22/1992 11:34:30
Data File : C:\DX\DATA\9212222\92122221.D12	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 12 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D12 Sample: A9212222B1 ELUANT



Data Reprocessed On 12/23/1992 08:02:46

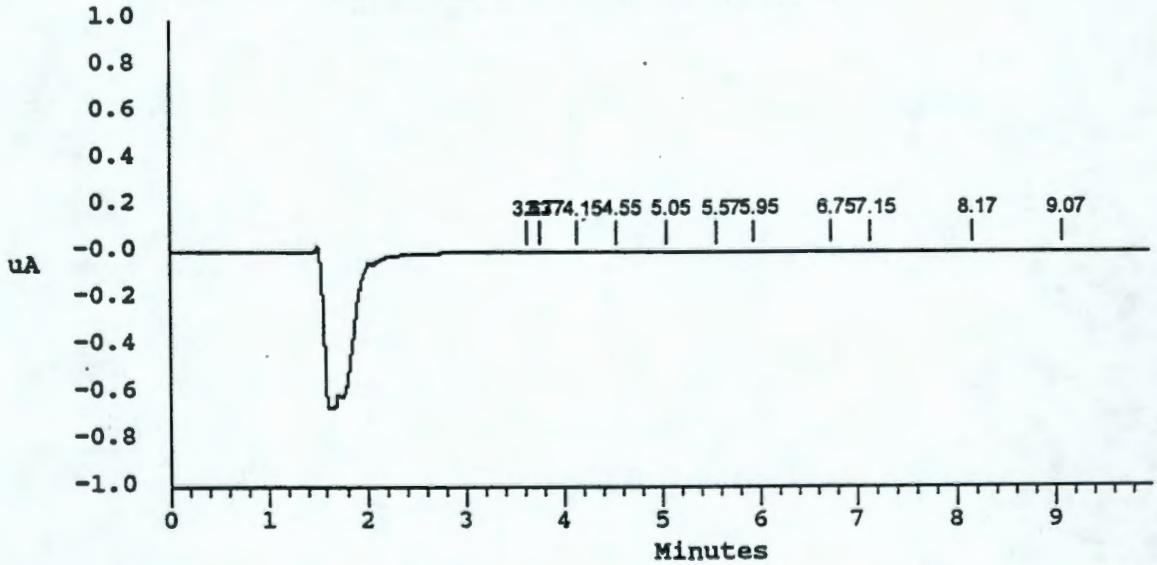
Sample Name: A9212222B2 WATER	Date: 12/22/1992 11:45:03
Data File : C:\DX\DATA\9212222\92122221.d13	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 13 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
7	5.95		0.000	1767	17803	1	
		Totals	0.000	1767	17803		

File: 92122221.d13 Sample: A9212222B2 WATER



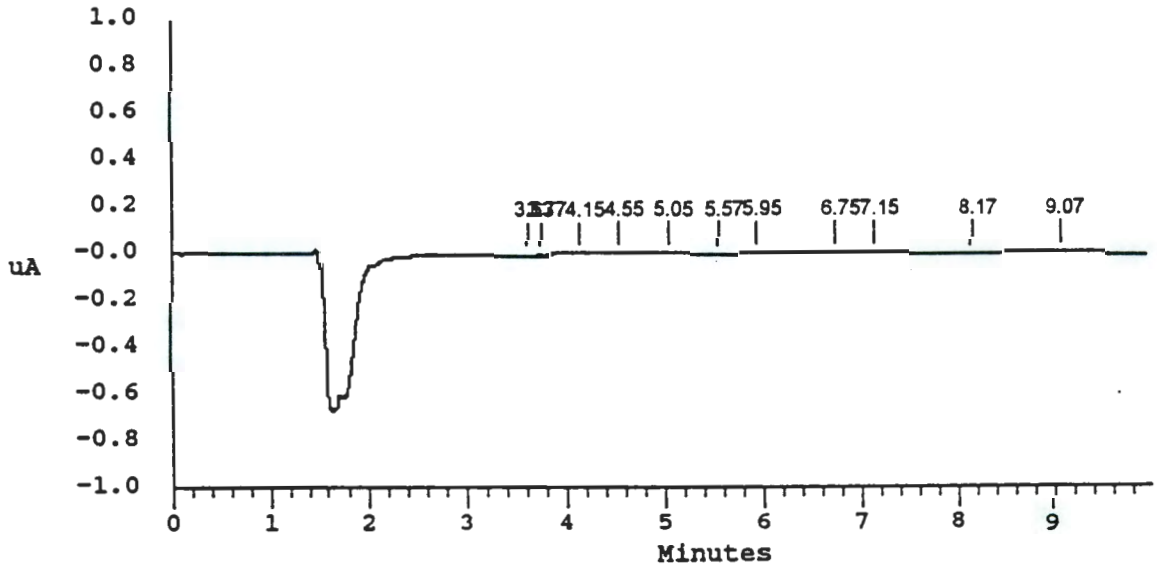
Sample Name: A9212222B2 WATER	Date: 12/22/1992 11:45:03
Data File : C:\DX\DATA\9212222\92122221.D13	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 13 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
7	5.95		0.000	1767	17803	1	
		Totals	0.000	1767	17803		

File: 92122221.D13 Sample: A9212222B2 WATER



Data Reprocessed On 12/23/1992 08:09:21

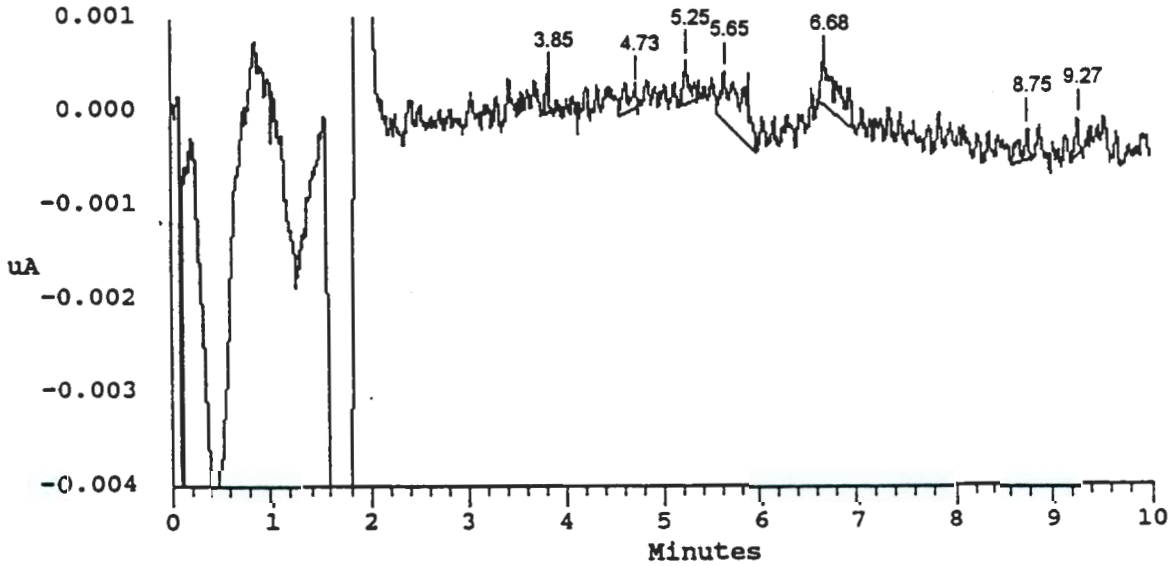
Sample Name: 93-02239/BO7JZ4	Date: 12/22/1992 11:55:43
Data File : C:\DX\DATA\9212222\92122221.D14	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 14 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	100	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D14 Sample: 93-02239/BO7JZ4



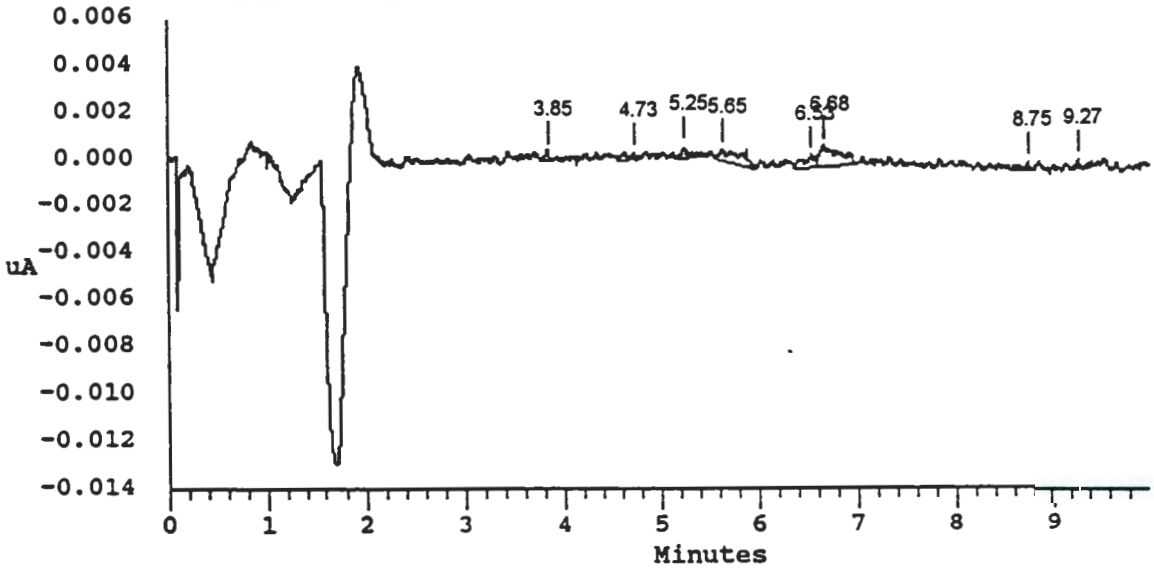
Sample Name: 93-02239/B07JZ4	Date: 12/22/1992 11:55:43
Data File : C:\DX\DATA\9212222\92122221.D14	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 14 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	100	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
6	6.68	cyanide	-329.818	783	11297	2	-0.74
		Totals	-329.818	783	11297		

File: 92122221.D14 Sample: 93-02239/B07JZ4



********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL1 Date: Tue Dec 22 12:06:20 1992
Raw File : C:\DX\DATA\9212222\92122221.D15
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 1
ACI Address: 1 System : 2 Inject#: 15 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.73	6.72	6.72	8.873e+004	9.524e+004	9.524e+004

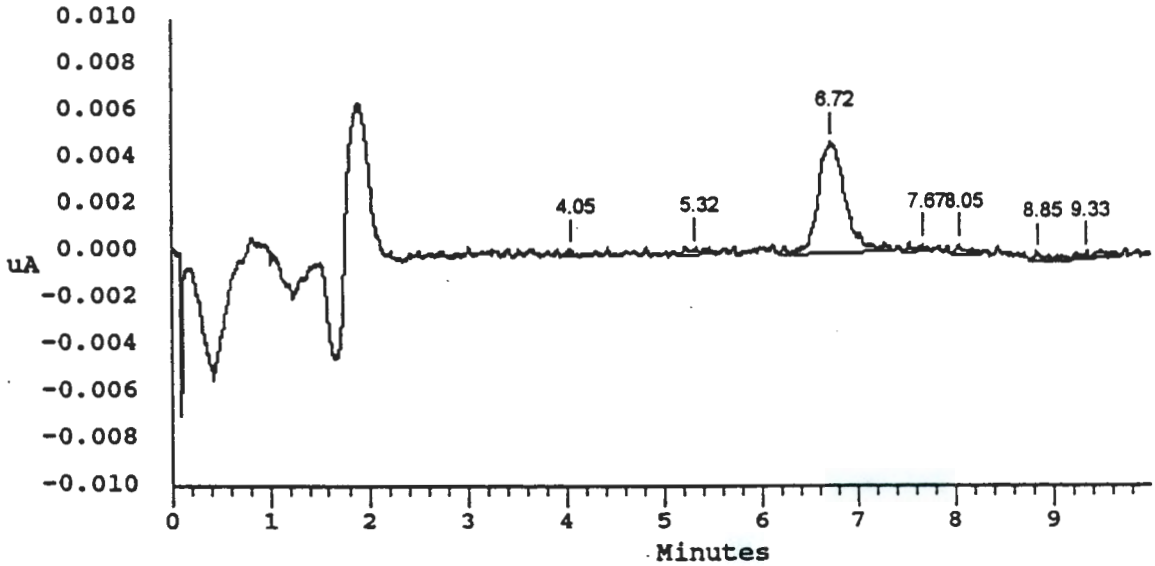
Sample Name: AUTOCAL1	Date: 12/22/1992 12:06:20
Data File : C:\DX\DATA\9212222\92122221.D15	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 15 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	10000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
3	6.72	cyanide	5.000	4729	95238	1	-0.25
		Totals	5.000	4729	95238		

File: 92122221.D15 Sample: AUTOCAL1



AB
10/22/92

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL2 Date: Tue Dec 22 12:16:59 1992
Raw File : C:\DX\DATA\9212222\92122221.D16
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 2
ACI Address: 1 System : 2 Inject#: 16 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.72	6.72	6.72	1.750e+005	1.588e+005	1.588e+005

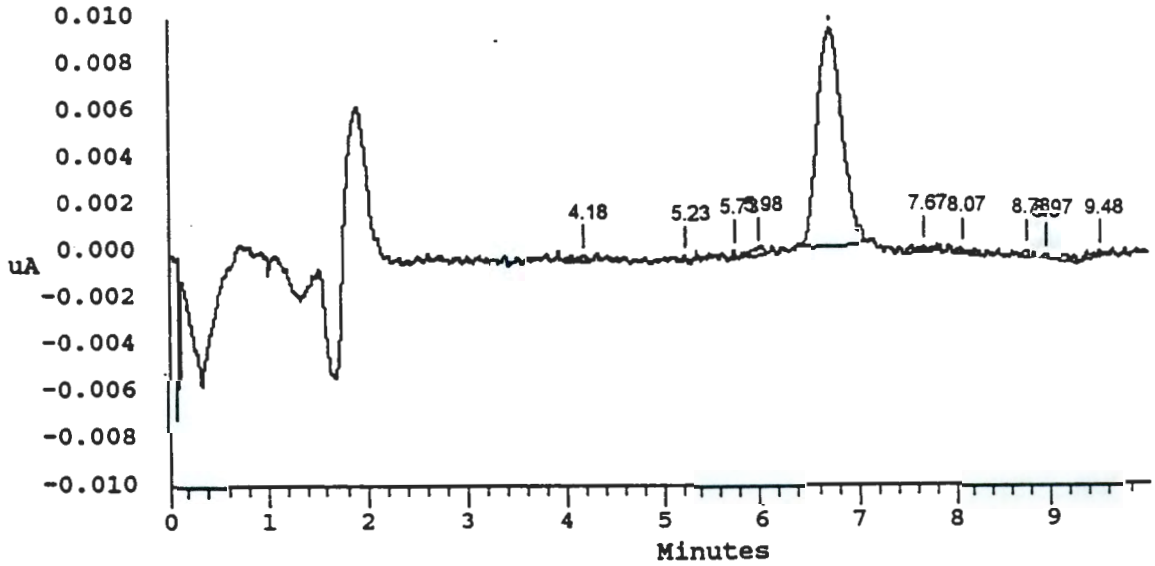
Sample Name: AUTOCAL2	Date: 12/22/1992 12:16:59
Data File : C:\DX\DATA\9212222\92122221.D16	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 16 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.72	cyanide	10.000	9180	158830	1	0.00
		Totals	10.000	9180	158830		

File: 92122221.D16 Sample: AUTOCAL2



✓
AS
10/22/93

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL3 Date: Tue Dec 22 12:27:40 1992
Raw File : C:\DX\DATA\9212222\92122221.D17
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 3
ACI Address: 1 System : 2 Inject#: 17 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.72	6.70	6.70	2.935e+005	4.727e+005	4.727e+005

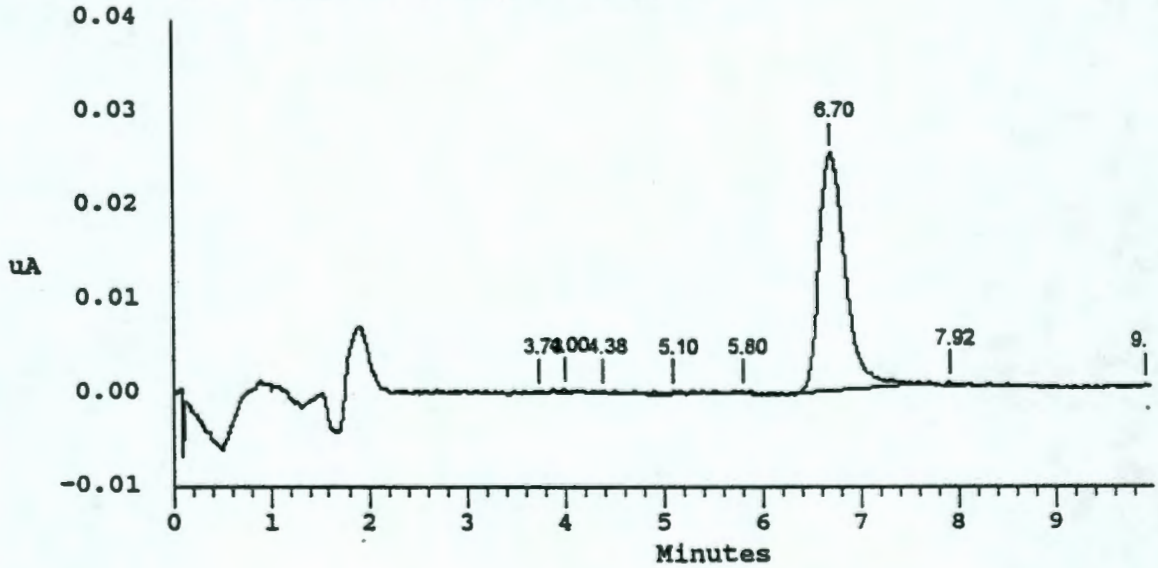
Sample Name: AUTOCAL3	Date: 12/22/1992 12:27:40
Data File : C:\DX\DATA\9212222\92122221.D17	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 17 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
6	6.70	cyanide	25.000	25321	472652	1	-0.25
		Totals	25.000	25321	472652		

File: 92122221.D17 Sample: AUTOCAL3



RS
10/22/93

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL4 Date: Tue Dec 22 12:38:18 1992
Raw File : C:\DX\DATA\9212222\92122221.D18
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 4
ACI Address: 1 System : 2 Inject#: 18 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.70	6.68	6.68	6.840e+005	9.902e+005	9.902e+005

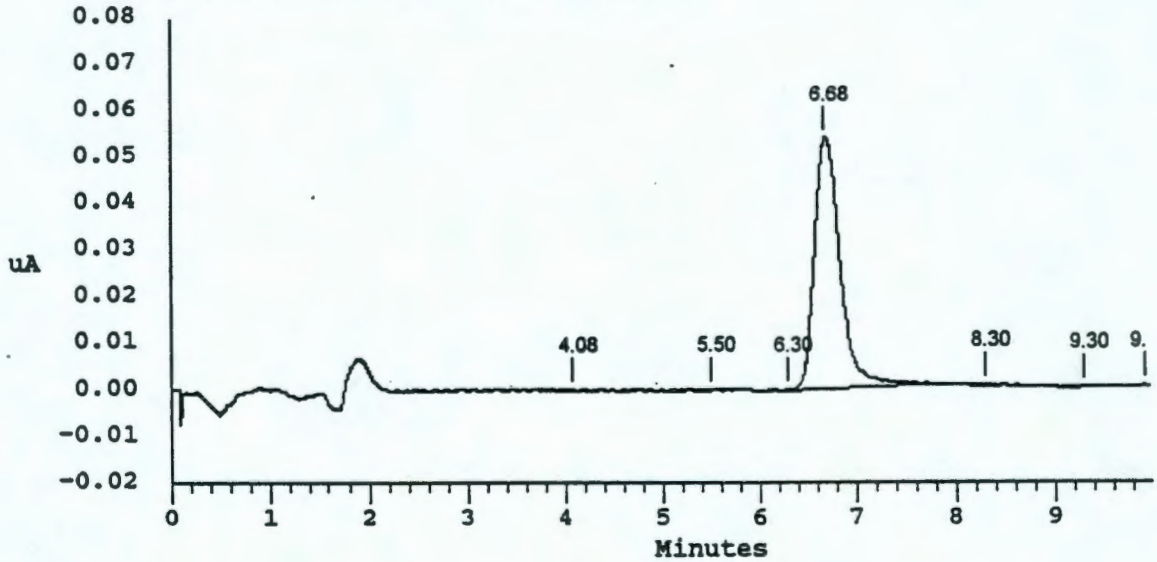
Sample Name: AUTOCAL4 Date: 12/22/1992 12:38:18
Data File : C:\DX\DATA\9212222\92122221.D18
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 18 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	6.68	cyanide	50.000	54078	990234	2	-0.25
		Totals	50.000	54078	990234		

File: 92122221.D18 Sample: AUTOCAL4



AS 10/22/93

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL5 Date: Tue Dec 22 12:48:57 1992
Raw File : C:\DX\DATA\9212222\92122221.D19
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 5
ACI Address: 1 System : 2 Inject#: 19 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.68	6.68	6.68	1.049e+006	1.497e+006	1.497e+006

9613492.0530

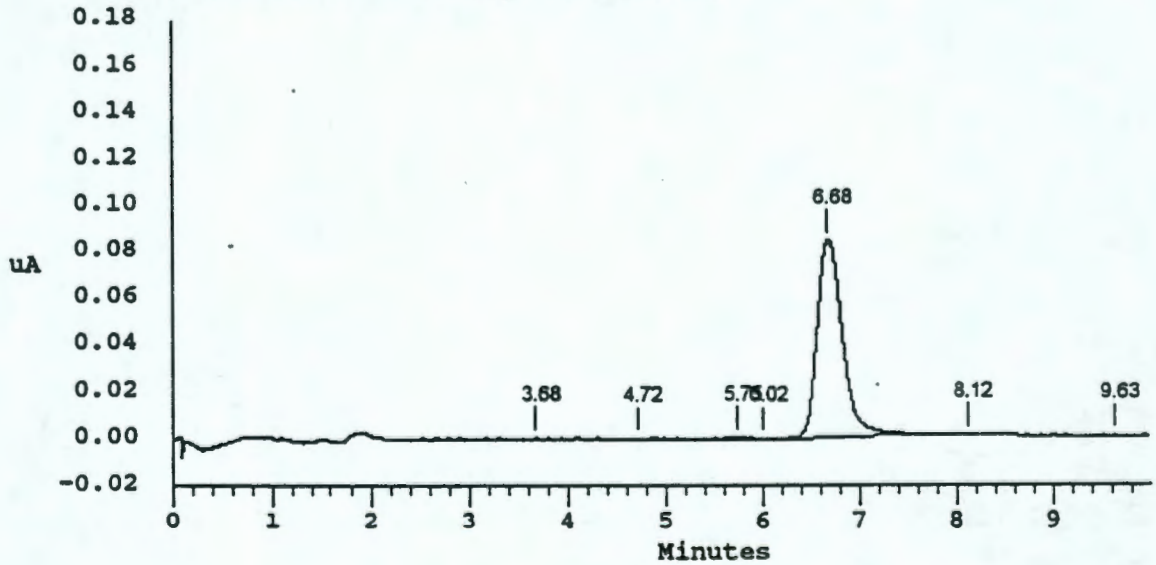
Sample Name: AUTOCAL5	Date: 12/22/1992 12:48:57
Data File : C:\DX\DATA\9212222\92122221.D19	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 19 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.68	cyanide	75.000	84104	1496524	1	0.00
		Totals	75.000	84104	1496524		

File: 92122221.D19 Sample: AUTOCAL5



✓ AS 10/22/93

D07-154

********** AUTOMATIC CALIBRATION UPDATE **********

Sample Name: AUTOCAL6 Date: Tue Dec 22 12:59:37 1992
Raw File : C:\DX\DATA\9212222\92122221.D20
Method : C:\DX\METHOD\2CYANIDE.met Calibration Level: 6
ACI Address: 1 System : 2 Inject#: 20 Detector: PED-AMP

********** COMPONENTS FOUND IN THIS RUN **********

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD RESPONSE	MEASURED RESPONSE	NEW RESPONSE
1	cyanide	6.68	6.68	6.68	2.128e+006	2.141e+006	2.141e+006

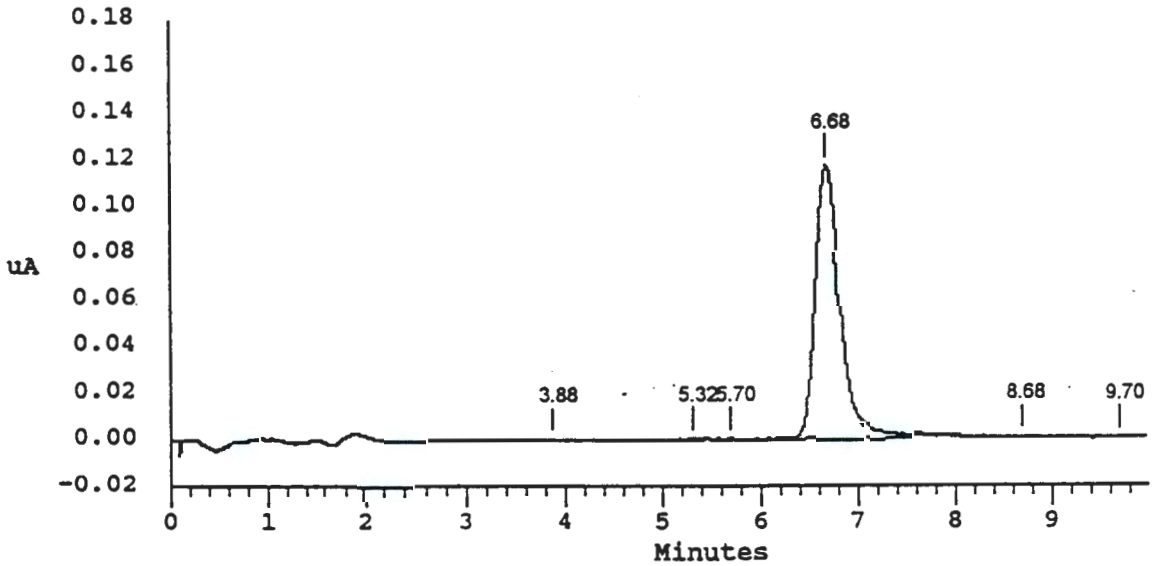
Sample Name: AUTOCAL6	Date: 12/22/1992 12:59:37
Data File : C:\DX\DATA\9212222\92122221.D20	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 20 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	6.68	cyanide	100.000	116738	2141150	1	0.00
		Totals	100.000	116738	2141150		

File: 92122221.D20 Sample: AUTOCAL6



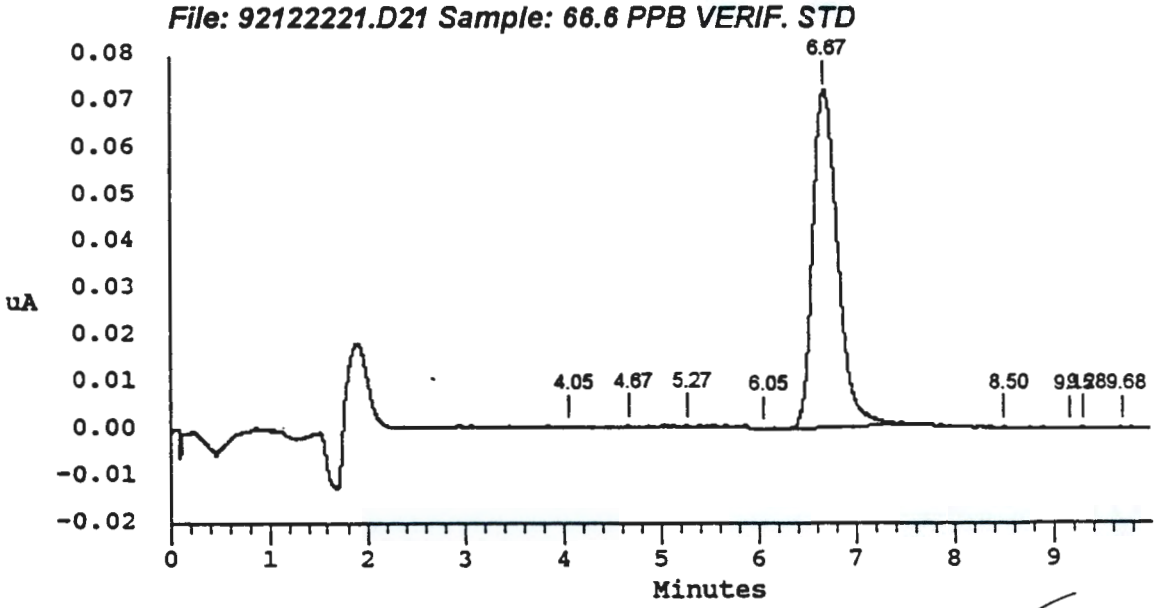
AS 10/22/93

Sample Name: 66.6 PPB VERIF. STD	Date: 12/22/1992 13:10:22
Data File : C:\DX\DATA\9212222\92122221.D21	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 21 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.67	cyanide	64.411	71538	1283096	1	-0.25
		Totals	64.411	71538	1283096		



AS
10/22/93

9613492.0534

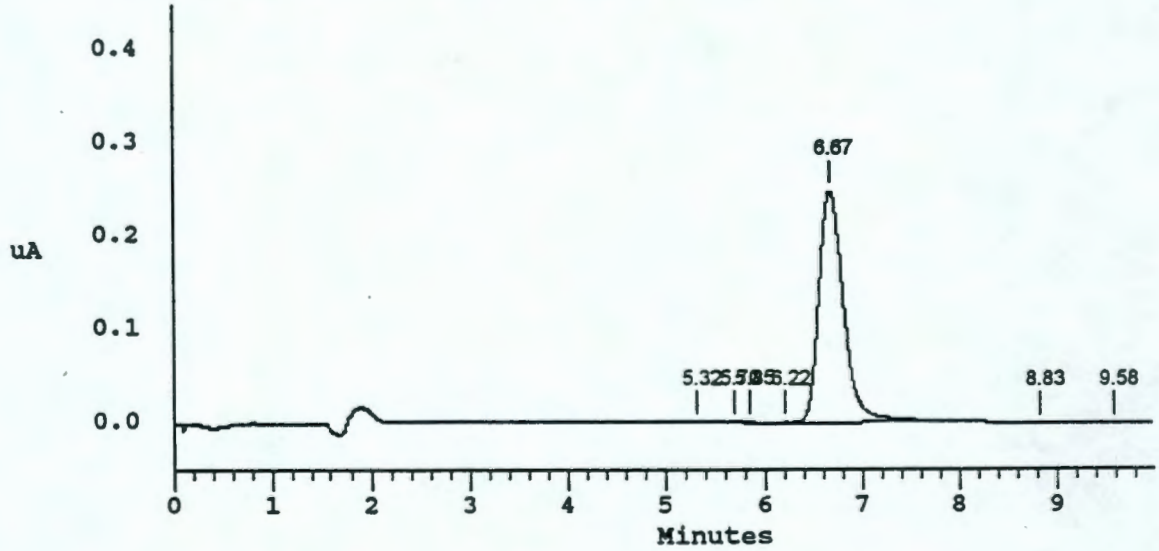
Sample Name: 200 PPB CAL CHECK	Date: 12/22/1992 13:20:59
Data File : C:\DX\DATA\9212222\92122221.D22	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 22 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.67	cyanide	168.273	247035	4386380	2	-0.25
		Totals	168.273	247035	4386380		

File: 92122221.D22 Sample: 200 PPB CAL CHECK



VAS
12/22/92

D07-158

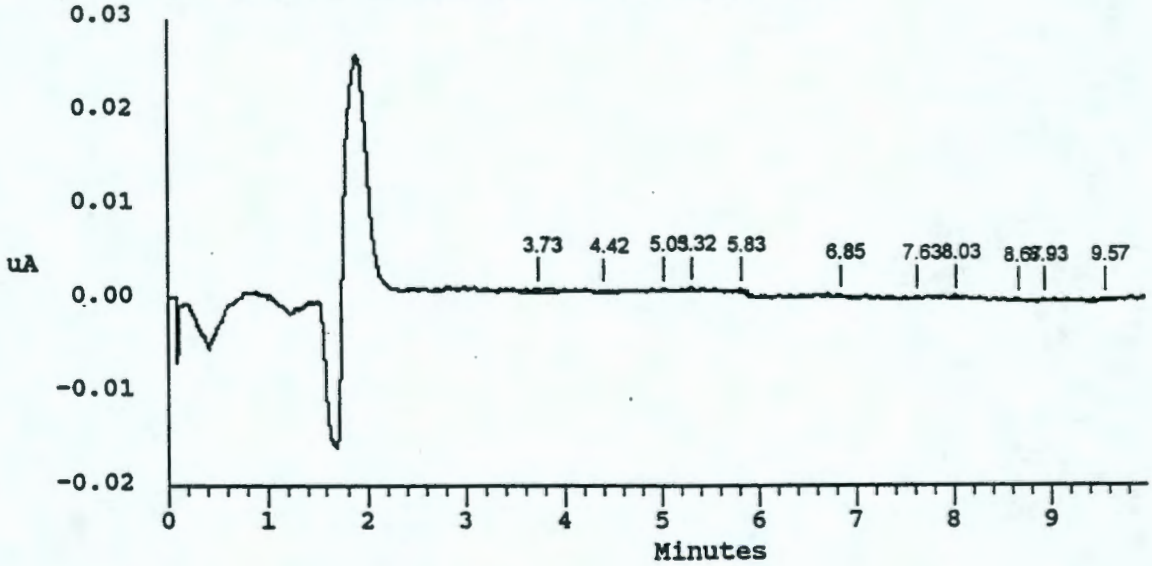
Sample Name: A9212222B1 ELUANT	Date: 12/22/1992 13:31:36
Data File : C:\DX\DATA\9212222\92122221.D23	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 23 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D23 Sample: A9212222B1 ELUANT



MS
10/22/93

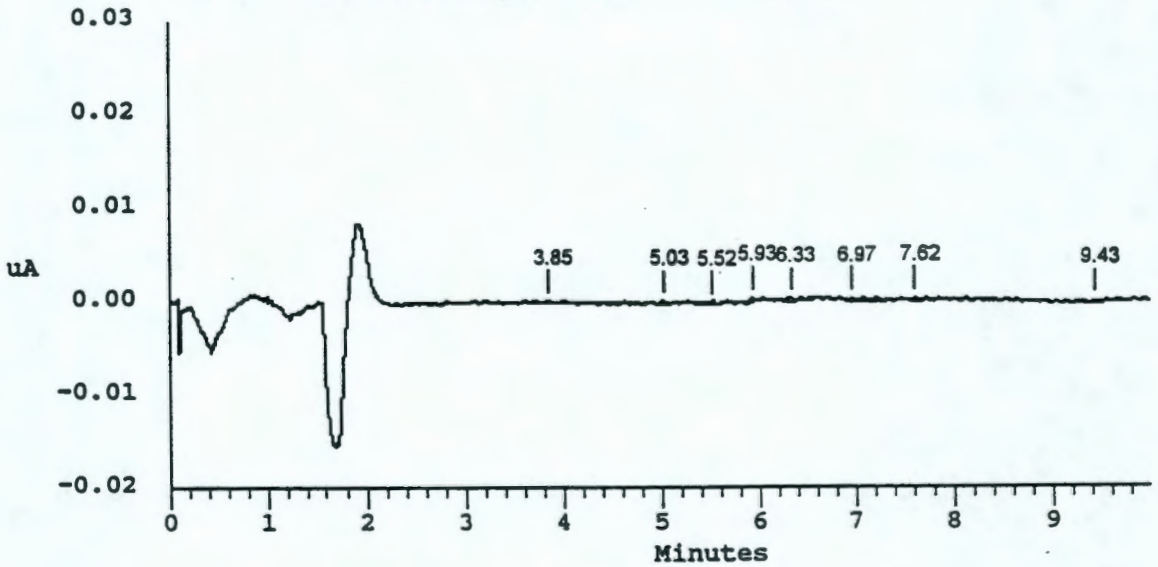
Sample Name: 93-02240/BO7JZ5	Date: 12/22/1992 13:42:11
Data File : C:\DX\DATA\9212222\92122221.D24	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 24 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	100	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D24 Sample: 93-02240/BO7JZ5



AS
10/28/92

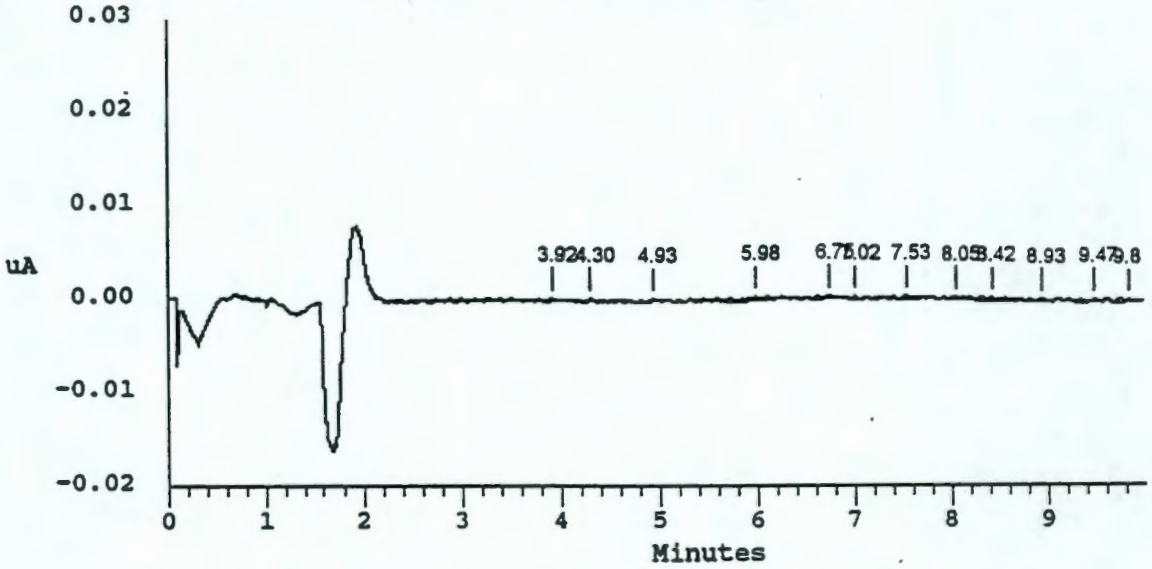
Sample Name: 93-02241/BO7JZ6		Date: 12/22/1992 13:52:54	
Data File : C:\DX\DATA\9212222\92122221.D25			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2	Inject#: 25	Vial:	Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	100	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D25 Sample: 93-02241/BO7JZ6



AS
10/22/93

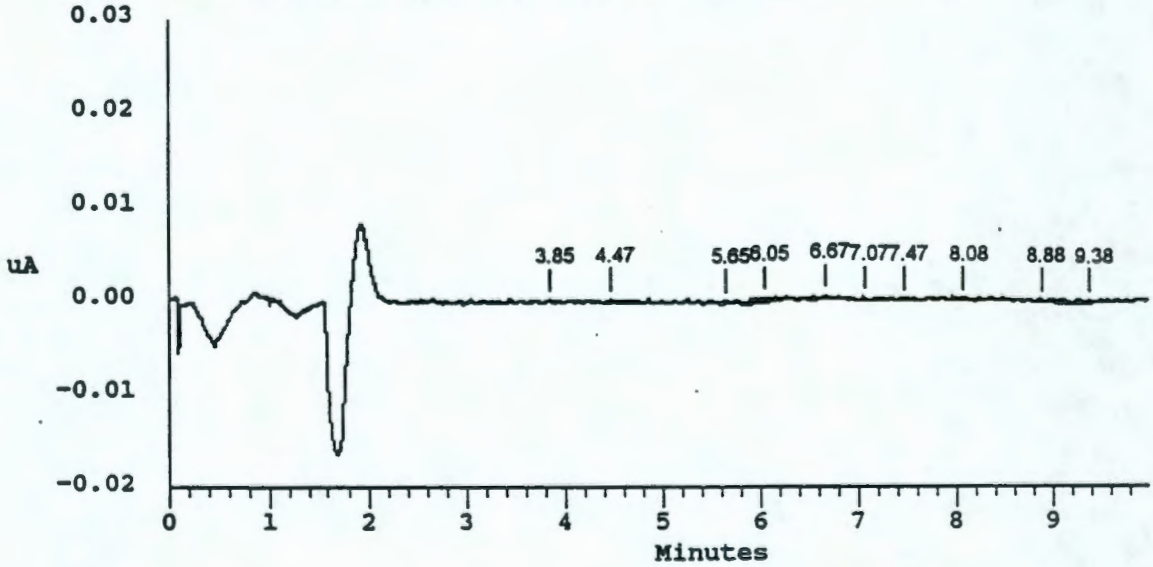
Sample Name: 93-02351/BO7JZ7		Date: 12/22/1992 14:03:29	
Data File : C:\DX\DATA\9212222\92122221.D26			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2 Inject#: 26 Vial:			Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	100	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D26 Sample: 93-02351/BO7JZ7



AS
10/22/93

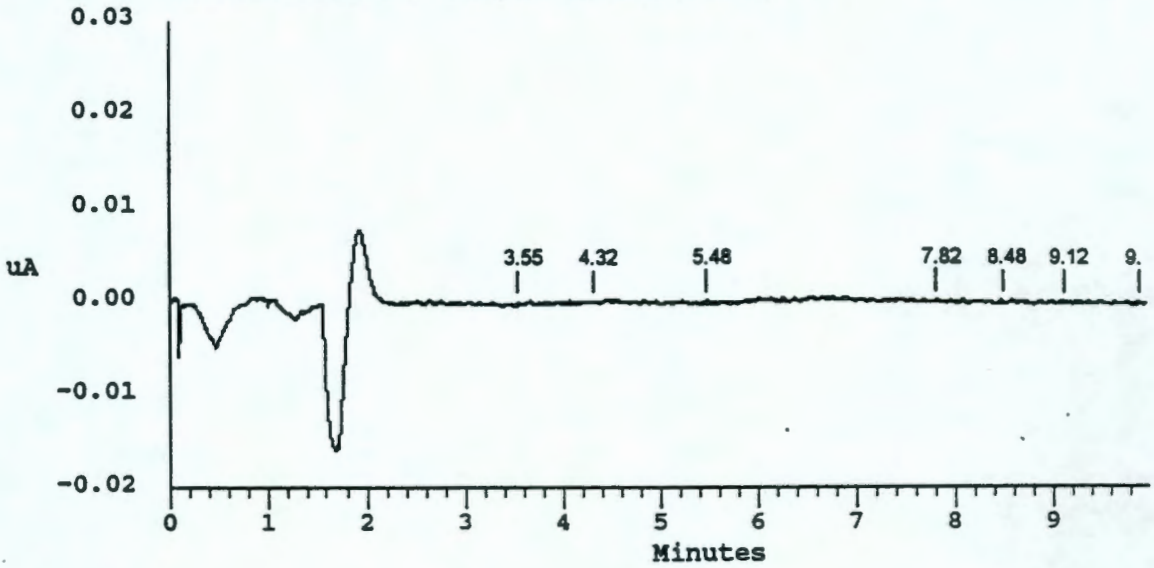
Sample Name: 93-02437/BO7JZ8 Date: 12/22/1992 14:14:00
Data File : C:\DX\DATA\9212222\92122221.D27
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 27 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	100	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D27 Sample: 93-02437/BO7JZ8



AJ
10/22/93

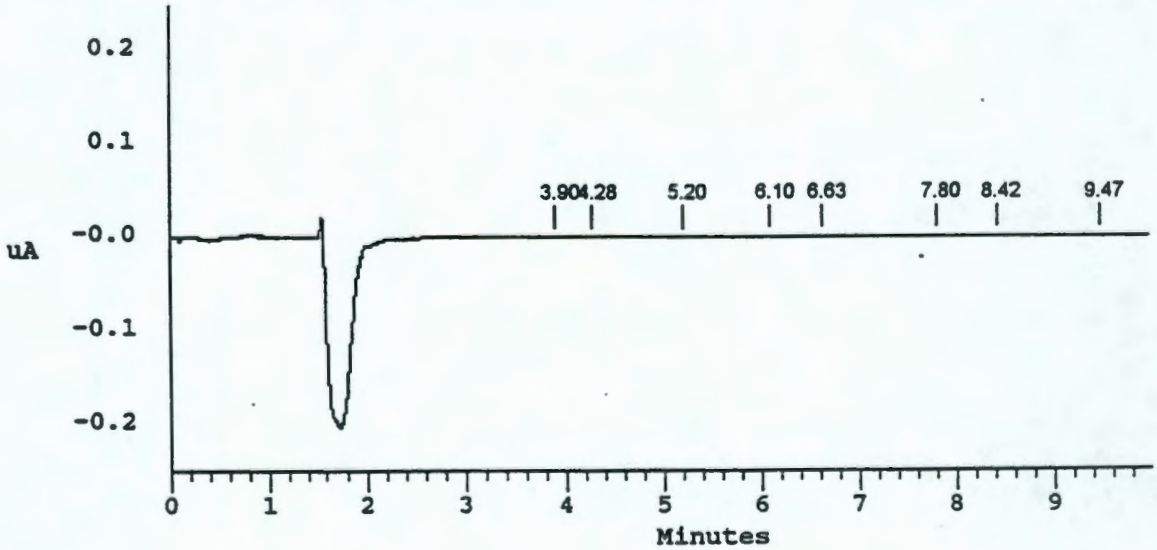
Sample Name: 93-02437/BO7JZ8	Date: 12/22/1992 14:24:31
Data File : C:\DX\DATA\9212222\92122221.D28	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 28 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D28 Sample: 93-02437/BO7JZ8



AS 10/22/92

Data Reprocessed On 03/24/1993 10:29:58

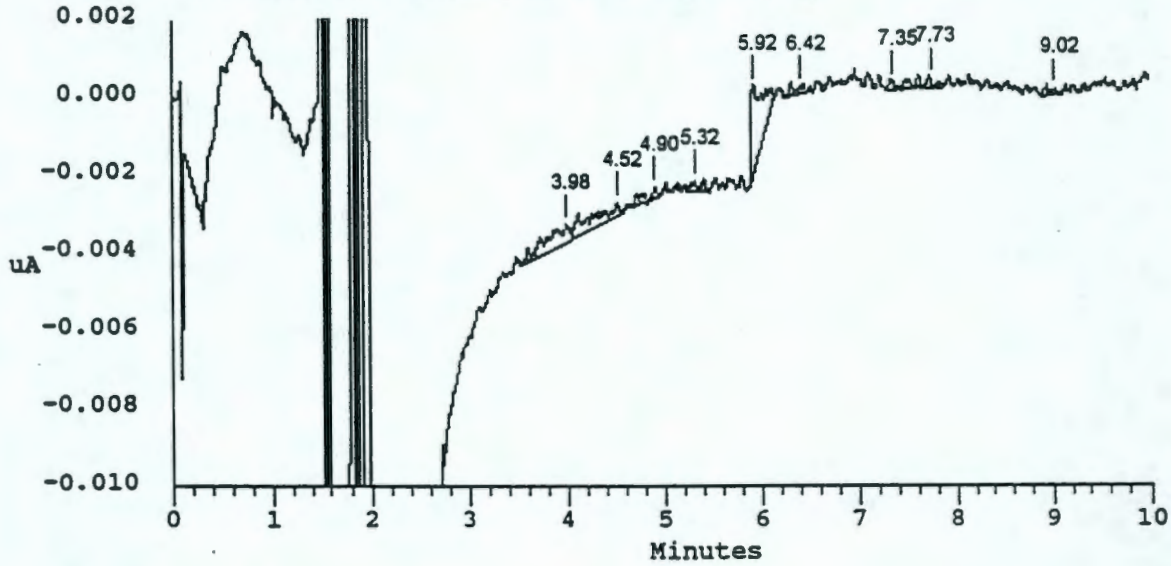
Sample Name: PREP BLANK (PB)	Date: 12/22/1992 14:35:10
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D29	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 29 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	5.92		0.000	2308	17183	1	
		Totals	0.000	2308	17183		

File: 92122221.D29 Sample: PREP BLANK (PB)



AS
10/22/93

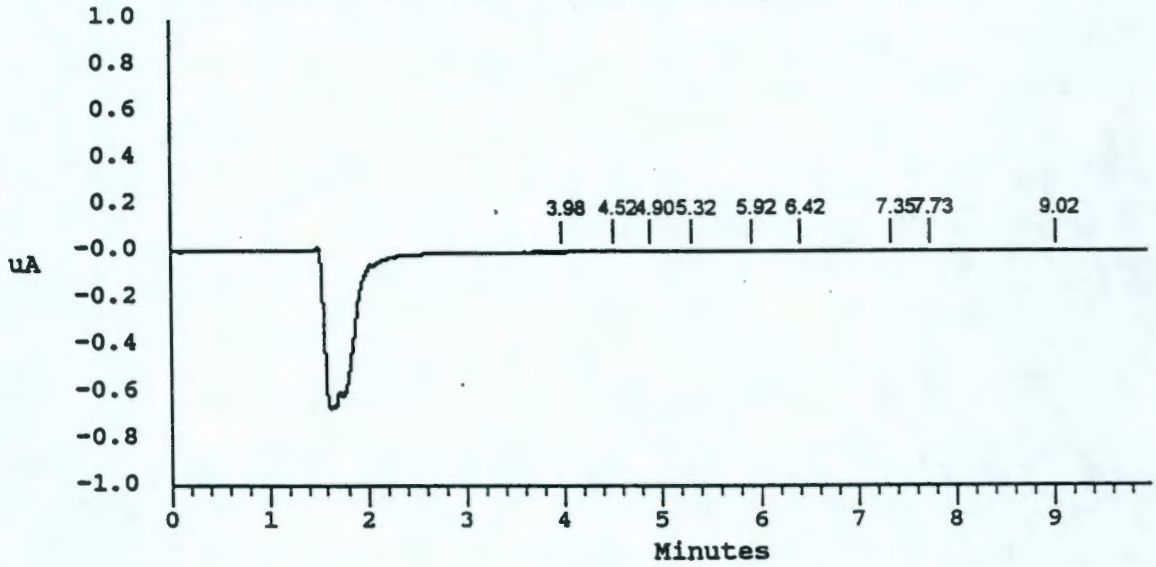
Sample Name: PREP BLANK (PB)	Date: 12/22/1992 14:35:10
Data File : C:\DX\DATA\9212222\92122221.D29	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 29 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	5.92		0.000	2308	17183	1	
		Totals	0.000	2308	17183		

File: 92122221.D29 Sample: PREP BLANK (PB)



HS
10/22/93

Data Reprocessed On 12/22/1992 15:12:18

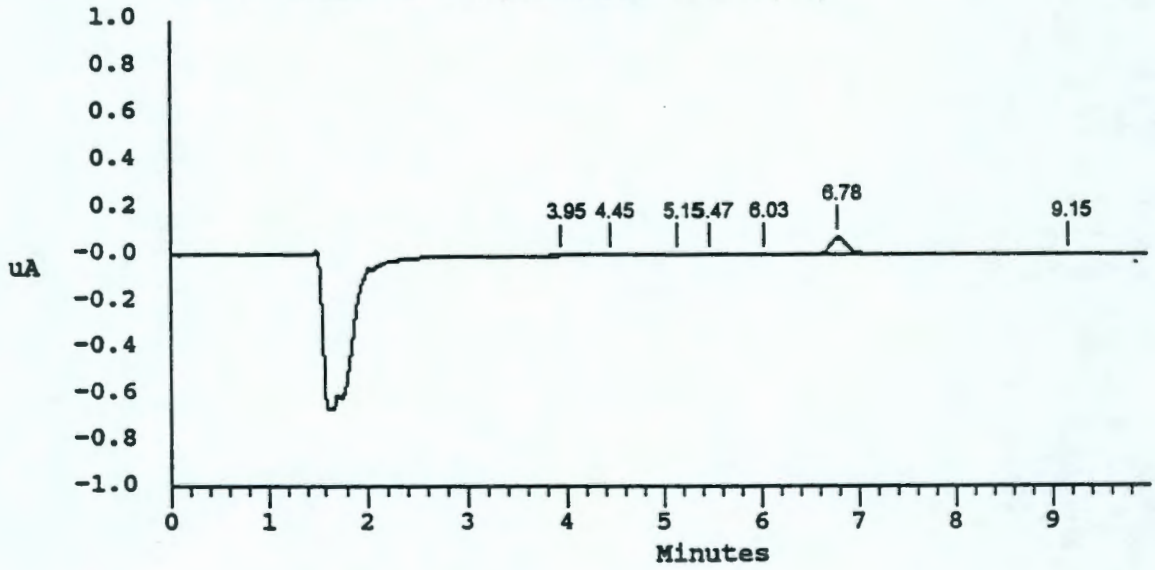
Sample Name: BLANK SPIKE (BS)	Date: 12/22/1992 14:45:51
Data File : C:\DX\DATA\9212222\92122221.D30	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 30 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.03		0.000	1432	18760	1	
6	6.78	cyanide	51.199	74290	996984	1	1.50
		Totals	51.199	75722	1015744		

File: 92122221.D30 Sample: BLANK SPIKE (BS)



KS/12/22/92

9613492.0544

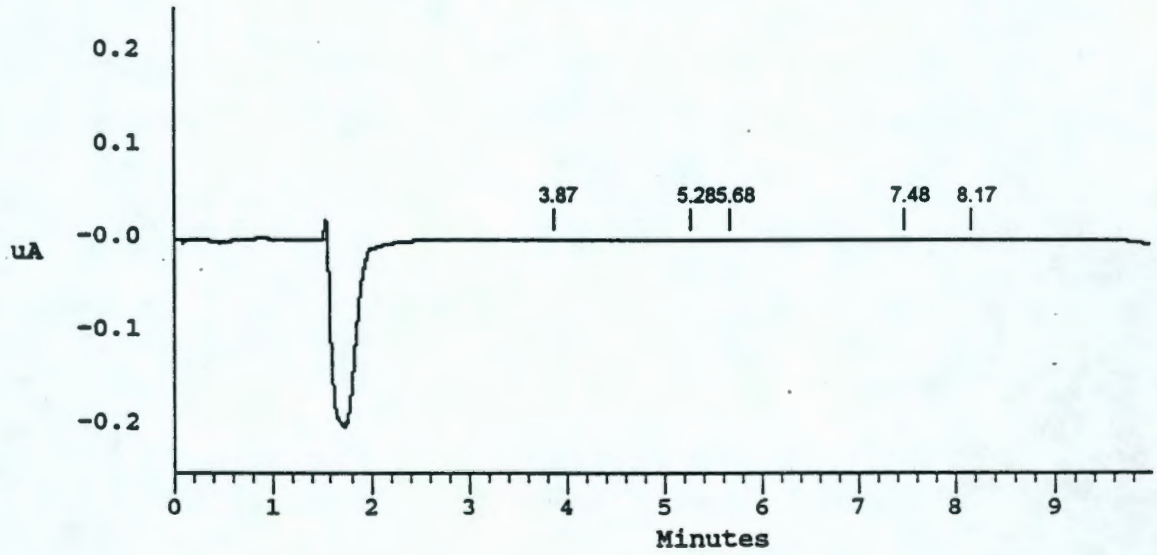
Sample Name: 93-02437D/BO7JZ8	Date: 12/22/1992 14:56:21
Data File : C:\DX\DATA\9212222\92122221.D31	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 31 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D31 Sample: 93-02437D/BO7JZ8



LAS 12/22/92

D07-168

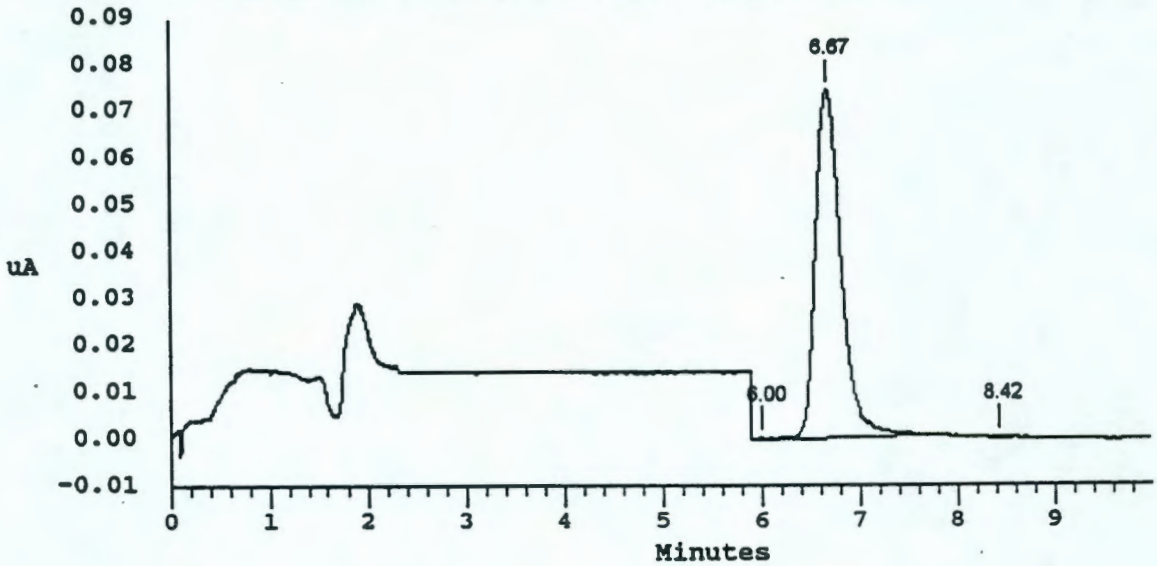
Sample Name: 66.6 PPB VERIF. STD. Date: 12/22/1992 15:06:54
Data File : C:\DX\DATA\9212222\92122221.D32
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 32 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
2	6.67	cyanide	67.147	74087	1344077	1	-0.25
		Totals	67.147	74087	1344077		

File: 92122221.D32 Sample: 66.6 PPB VERIF. STD.



10/22/93

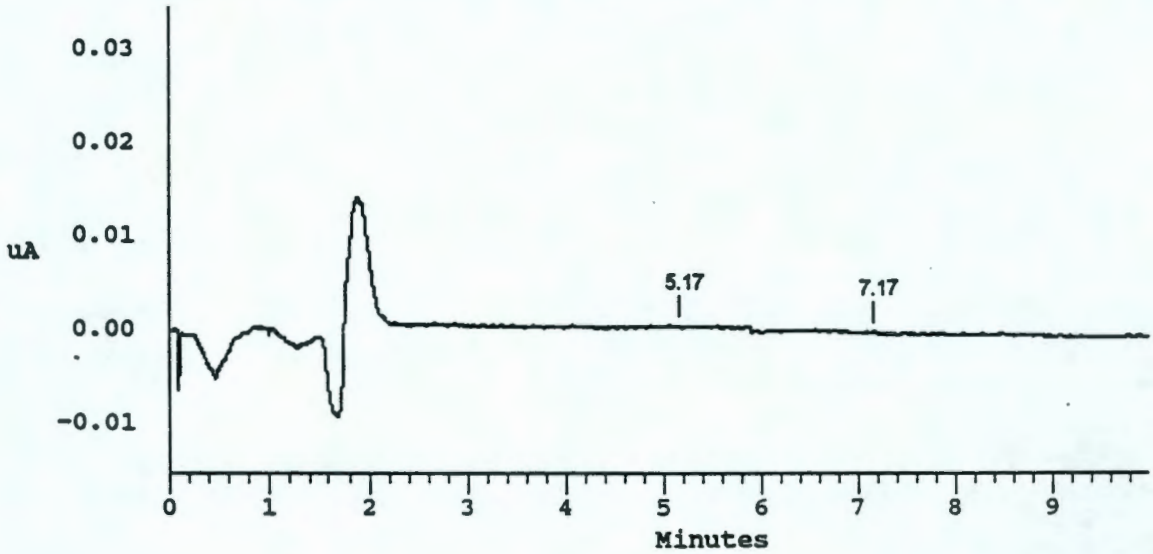
Sample Name: A9212222B3 ELUANT	Date: 12/22/1992 15:17:31
Data File : C:\DX\DATA\9212222\92122221.D33	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 33 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D33 Sample: A9212222B3 ELUANT



BS 10/22/92

Data Reprocessed On 03/24/1993 10:33:34

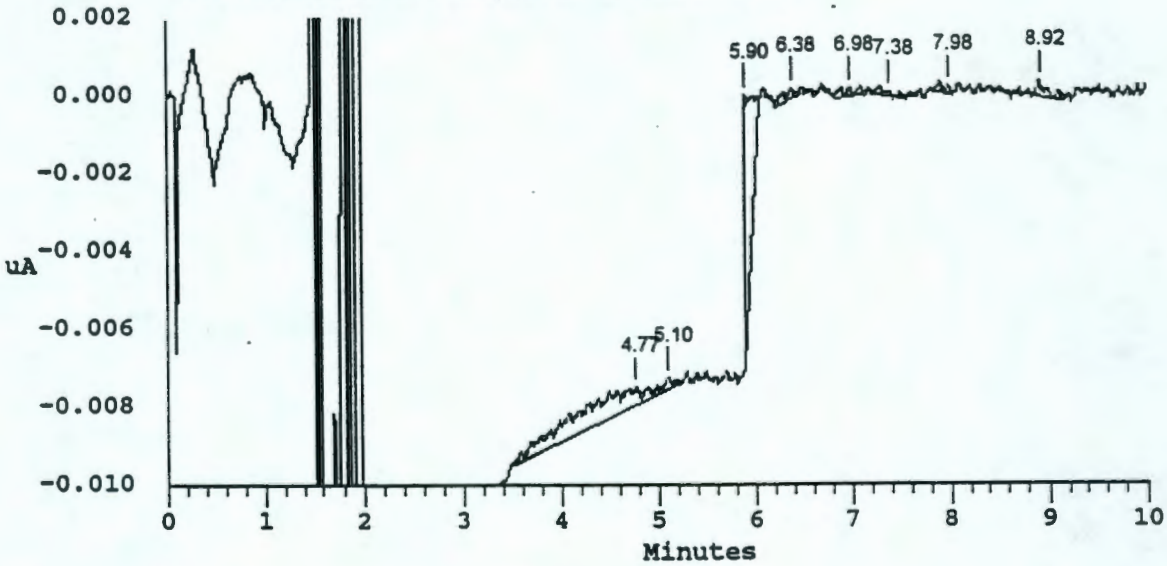
Sample Name: 93-02239/BO7JZ4	Date: 12/22/1992 15:28:09
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D34	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 34 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.77		0.000	441	33346	2	
3	5.90		0.000	6755	32361	1	
		Totals	0.000	7196	65707		

File: 92122221.D34 Sample: 93-02239/BO7JZ4



AS 10/22/93

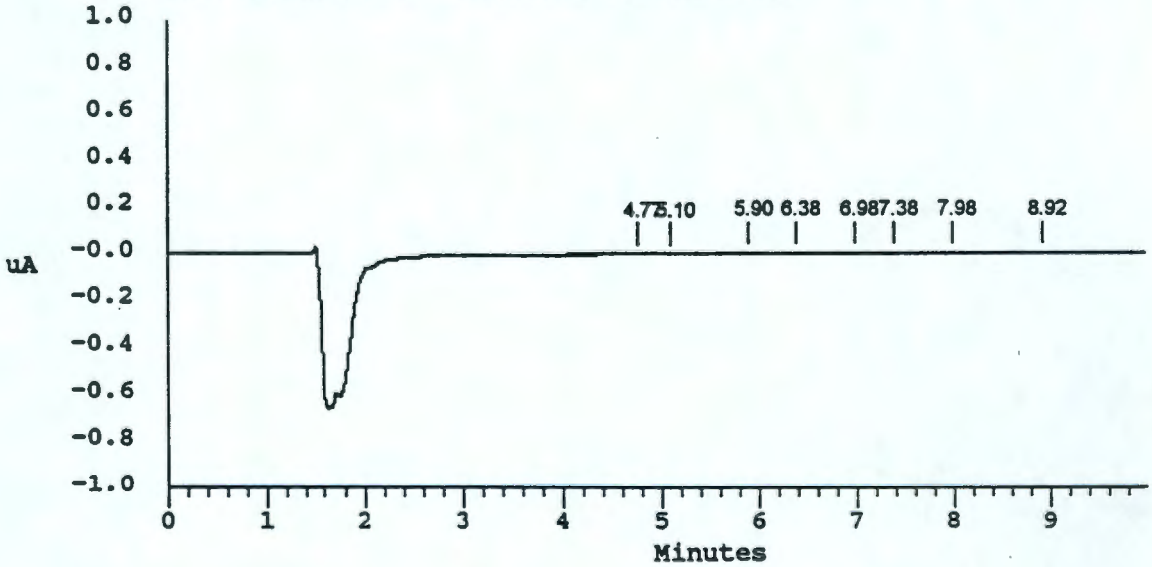
Sample Name: 93-02239/BO7JZ4	Date: 12/22/1992 15:28:09
Data File : C:\DX\DATA\9212222\92122221.D34	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 34 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.77		0.000	441	33346	2	
3	5.90		0.000	6755	32361	1	
		Totals	0.000	7196	65707		

File: 92122221.D34 Sample: 93-02239/BO7JZ4



AS 10/22/93

9613492.0549

Data Reprocessed On 03/24/1993 10:36:45

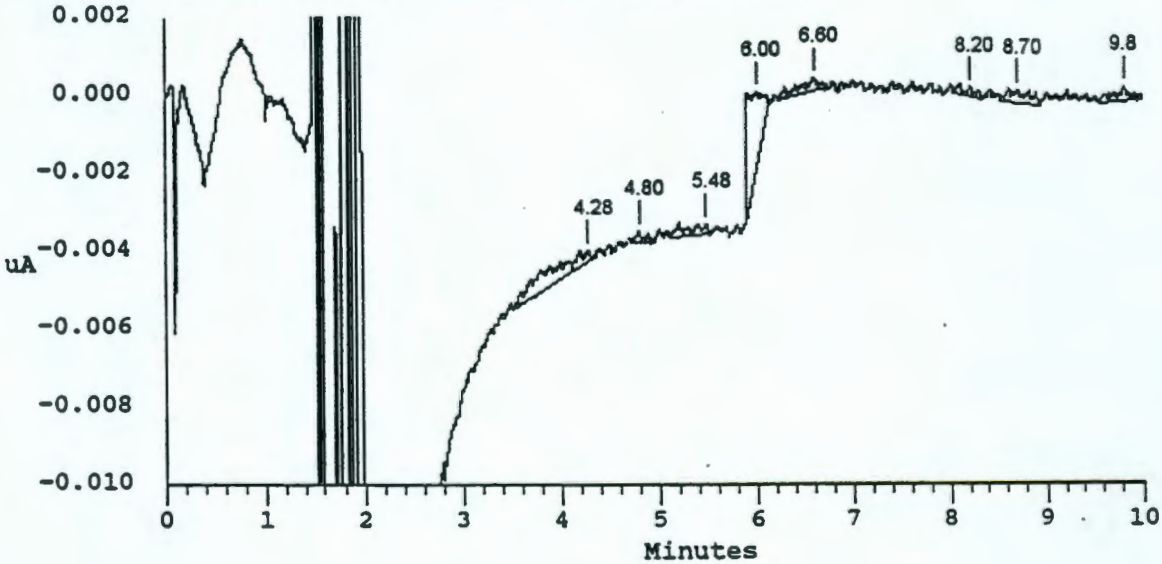
Sample Name: 93-02240/BO7JZ5 Date: 12/22/1992 15:38:51
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D35
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 35 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	10000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.28		0.000	263	15532	1	
4	6.00		0.000	2058	25854	1	
		Totals	0.000	2321	41386		

File: 92122221.D35 Sample: 93-02240/BO7JZ5



KS 12/22/92

D07-173

9613492.0550

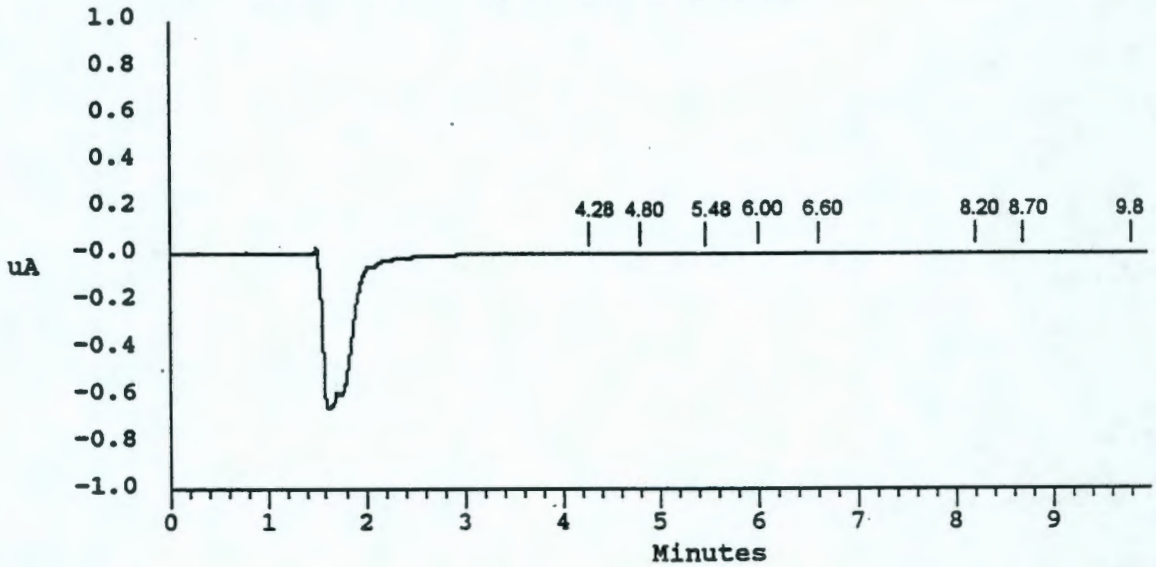
Sample Name: 93-02240/BO7JZ5	Date: 12/22/1992 15:38:51
Data File : C:\DX\DATA\9212222\92122221.D35	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 35 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.28		0.000	263	15532	1	
4	6.00		0.000	2058	25854	1	
		Totals	0.000	2321	41386		

File: 92122221.D35 Sample: 93-02240/BO7JZ5



AS
12/22/92

007-174

Data Reprocessed On 03/24/1993 10:38:20

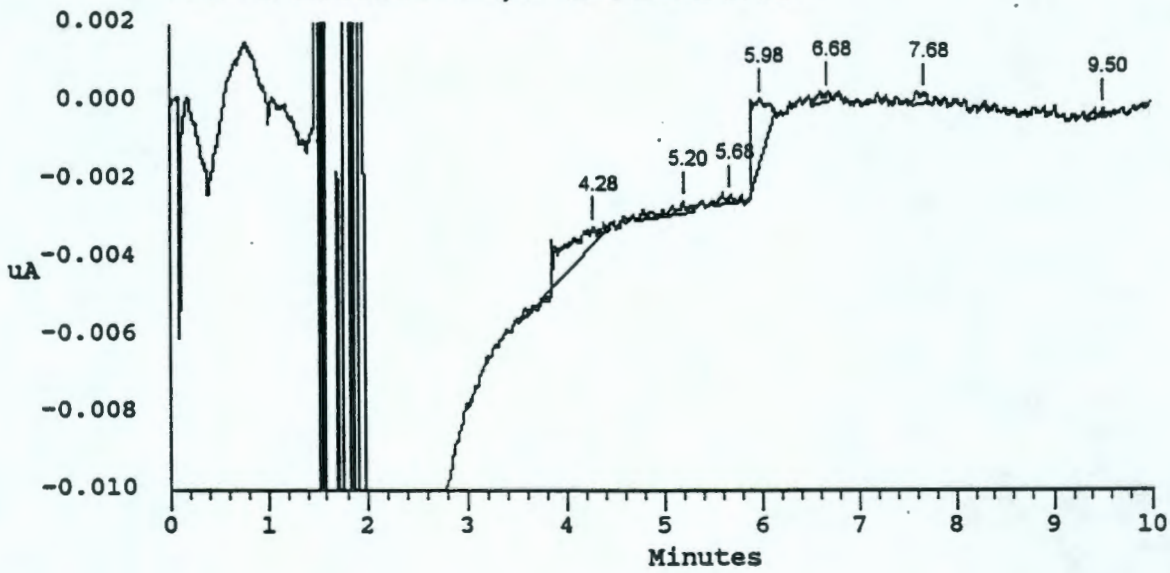
Sample Name: 93-02241/BO7JZ6	Date: 12/22/1992 15:49:25
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D36	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 36 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.28		0.000	446	17310	1	
4	5.98		0.000	1738	19549	1	
		Totals	0.000	2184	36859		

File: 92122221.D36 Sample: 93-02241/BO7JZ6



HS
10/22/97

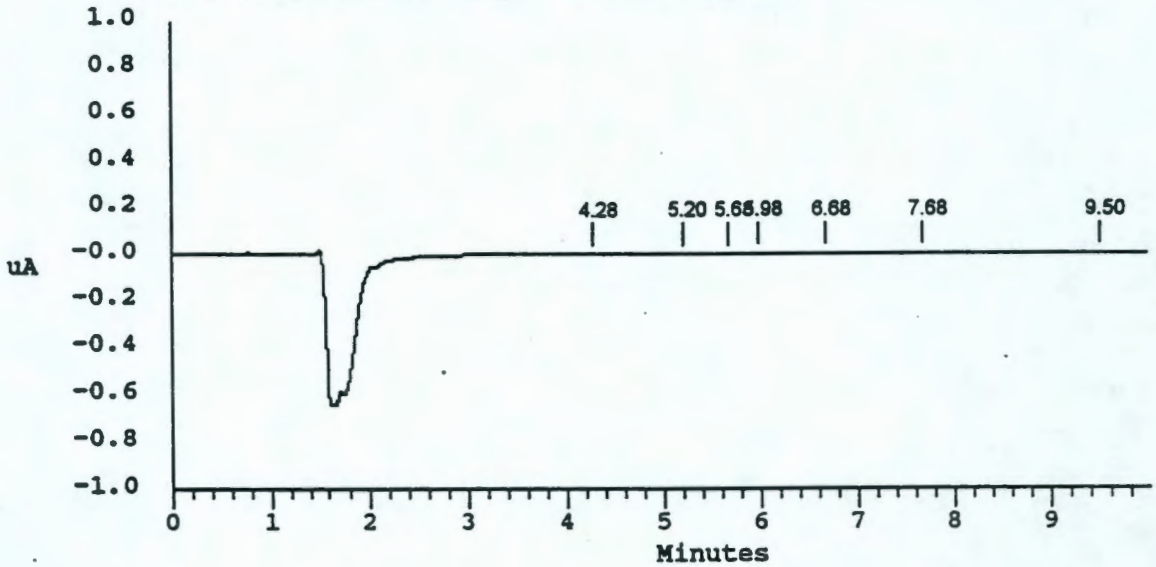
Sample Name: 93-02241/BO7JZ6		Date: 12/22/1992 15:49:25	
Data File : C:\DX\DATA\9212222\92122221.D36			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2	Inject#: 36	Vial:	Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.28		0.000	446	17310	1	
4	5.98		0.000	1738	19549	1	
		Totals	0.000	2184	36859		

File: 92122221.D36 Sample: 93-02241/BO7JZ6



Data Reprocessed On 03/24/1993 10:39:55

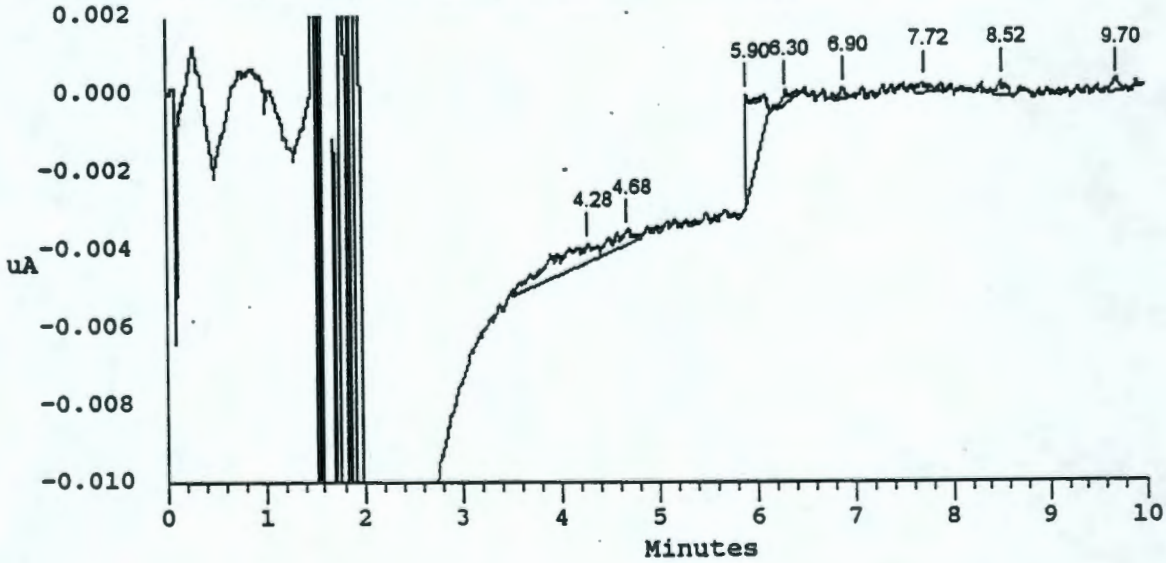
Sample Name: 93-02351/BO7JZ7	Date: 12/22/1992 16:00:02
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D37	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 37 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.28		0.000	462	18460	2	
3	5.90		0.000	2852	23286	1	
		Totals	0.000	3314	41746		

File: 92122221.D37 Sample: 93-02351/BO7JZ7



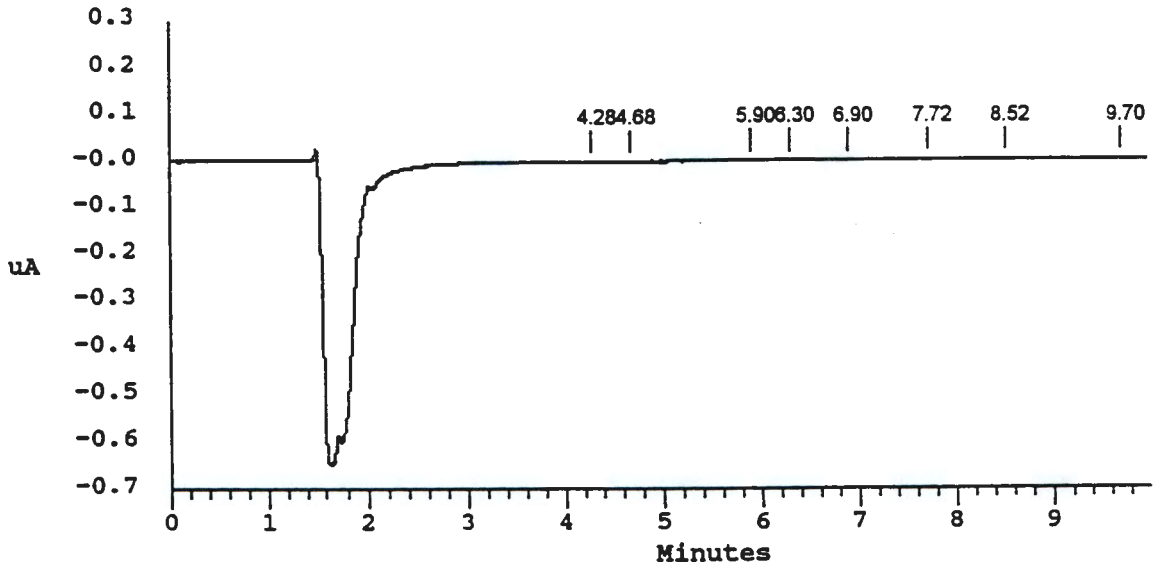
Sample Name: 93-02351/BO7JZ7	Date: 12/22/1992 16:00:02
Data File : C:\DX\DATA\9212222\92122221.D37	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 37 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.28		0.000	462	18460	2	
3	5.90		0.000	2852	23286	1	
		Totals	0.000	3314	41746		

File: 92122221.D37 Sample: 93-02351/BO7JZ7



Data Reprocessed On 03/24/1993 10:43:59

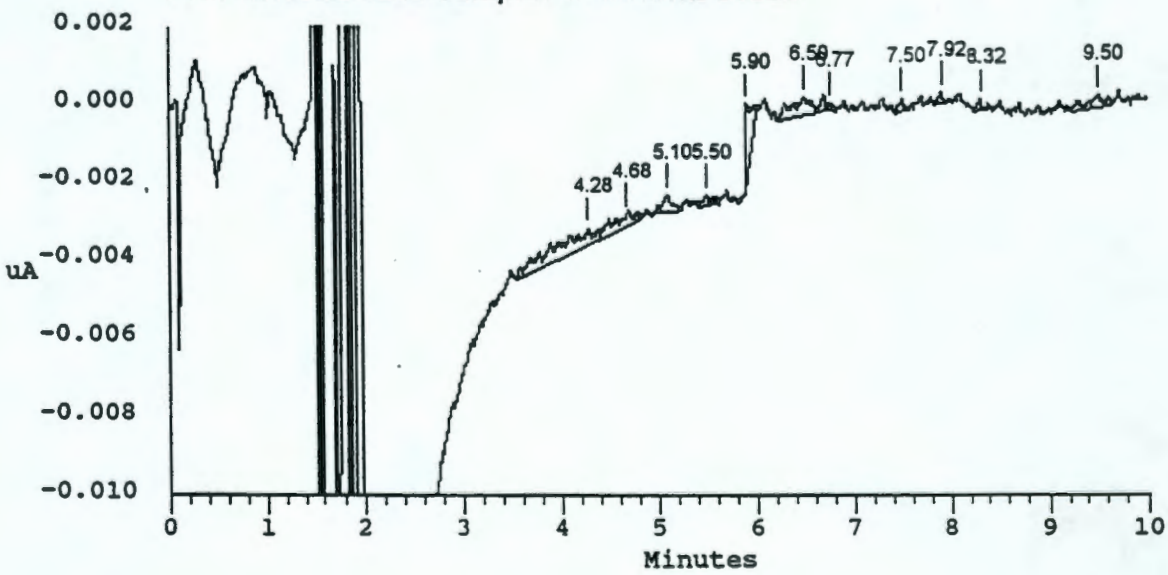
Sample Name: 93-02437/BO7JZ8	Date: 12/22/1992 16:10:36
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D38	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 38 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.28		0.000	419	15648	2	
		Totals	0.000	419	15648		

File: 92122221.D38 Sample: 93-02437/BO7JZ8



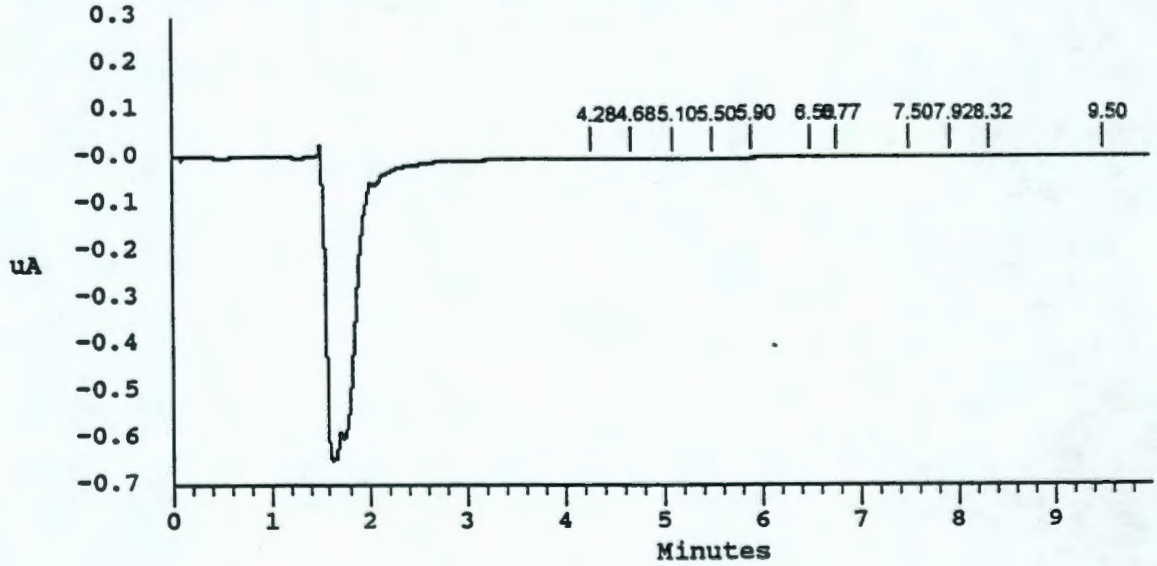
Sample Name: 93-02437/BO7JZ8	Date: 12/22/1992 16:10:36
Data File : C:\DX\DATA\9212222\92122221.D38	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 38 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.28		0.000	419	15648	2	
		Totals	0.000	419	15648		

File: 92122221.D38 Sample: 93-02437/BO7JZ8



Data Reprocessed On 03/24/1993 10:41:26

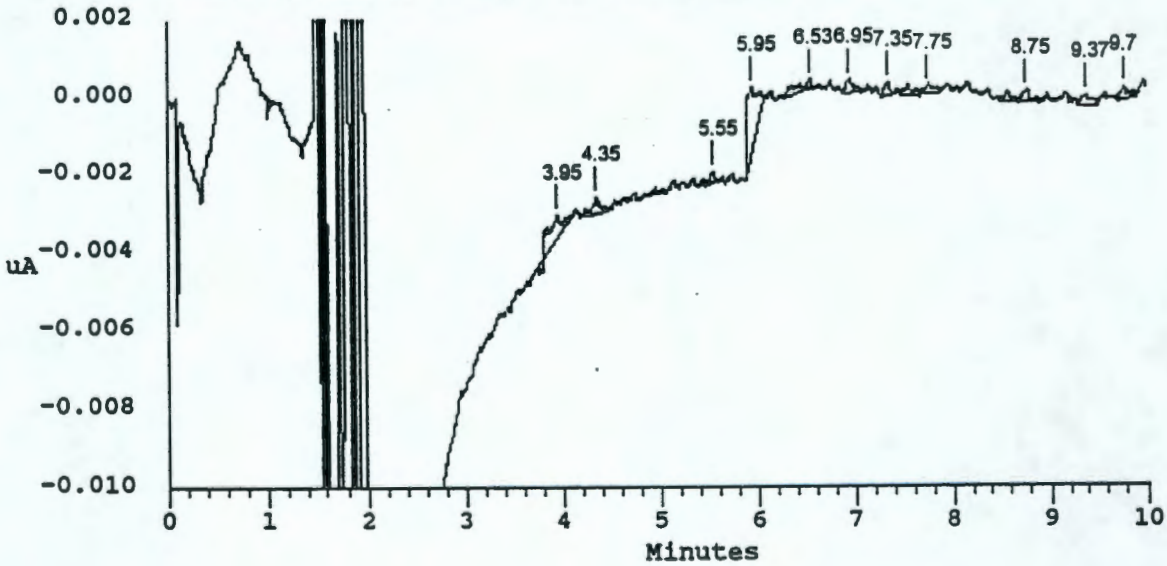
Sample Name: 93-02437D/BO7JZ8	Date: 12/22/1992 16:21:16
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D39	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 39 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	10000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	5.95		0.000	1661	11775	1	
		Totals	0.000	1661	11775		

File: 92122221.D39 Sample: 93-02437D/BO7JZ8



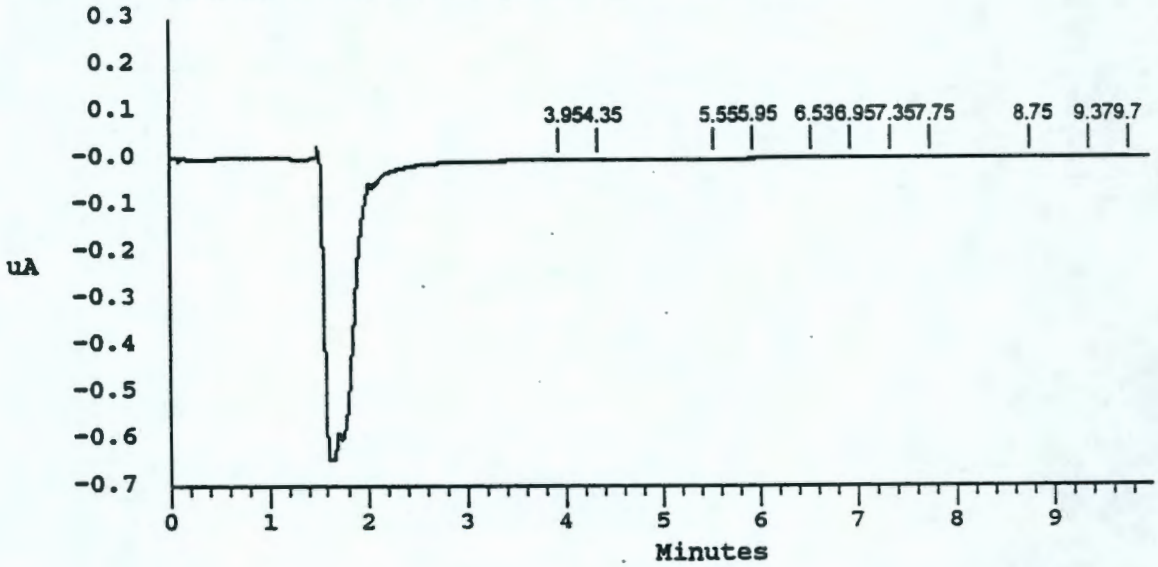
Sample Name: 93-02437D/BO7JZ8		Date: 12/22/1992 16:21:16	
Data File : C:\DX\DATA\9212222\92122221.D39			
Method : C:\DX\METHOD\2CYANIDE.met			
ACI Address: 1 System: 2	Inject#: 39	Vial:	Detector:PED-AMP
Analyst :	Column:		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	5.95		0.000	1661	11775	1	
		Totals	0.000	1661	11775		

File: 92122221.D39 Sample: 93-02437D/BO7JZ8



Data Reprocessed On 03/24/1993 10:45:56

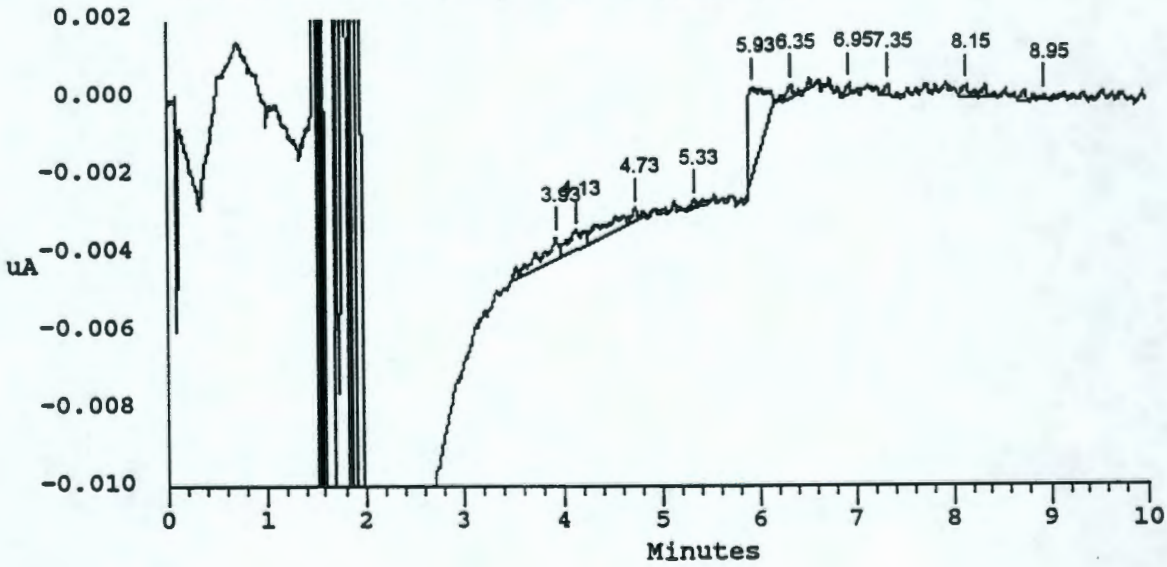
Sample Name: 93-02438/BO7JZ9	Date: 12/22/1992 16:31:49
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D40	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 40 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	10000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	5.93		0.000	2393	24205	1	
		Totals	0.000	2393	24205		

File: 92122221.D40 Sample: 93-02438/BO7JZ9



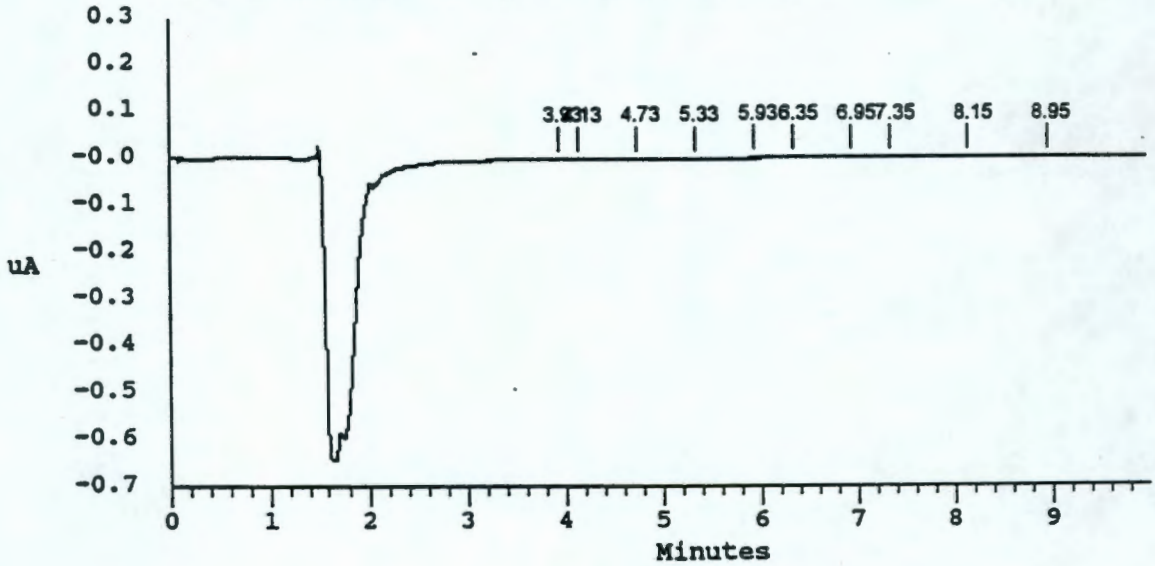
Sample Name: 93-02438/BO7JZ9	Date: 12/22/1992 16:31:49
Data File : C:\DX\DATA\9212222\92122221.D40	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 40 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	5.93		0.000	2393	24205	1	
		Totals	0.000	2393	24205		

File: 92122221.D40 Sample: 93-02438/BO7JZ9



Data Reprocessed On 12/23/1992 07:55:41

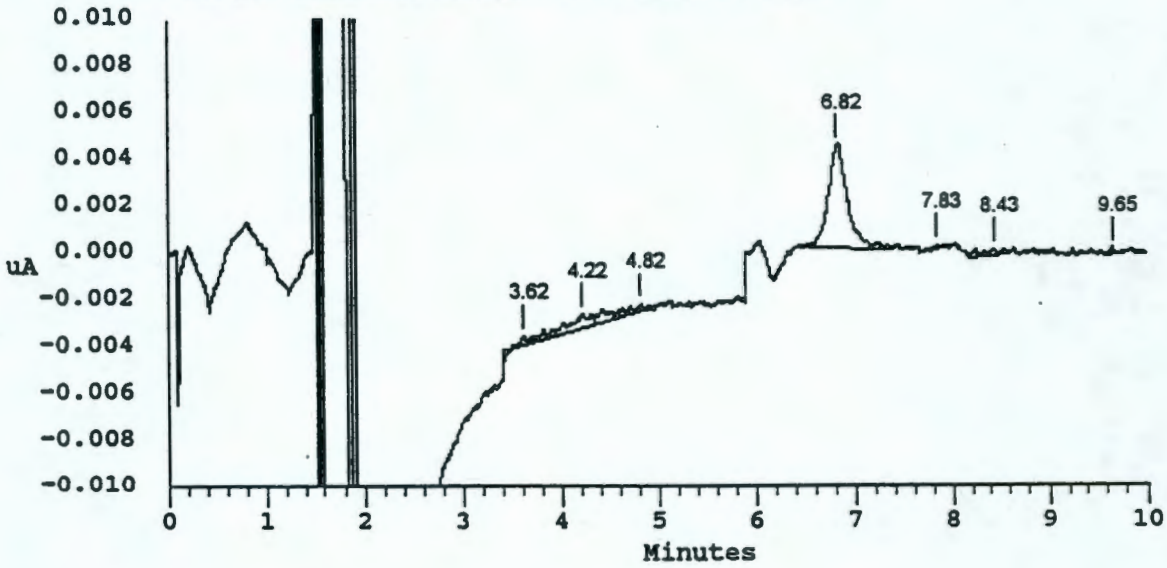
Sample Name: 93-02438MS/BO7JZ9 Date: 12/22/1992 16:42:20
Data File : C:\DX\DATA\9212222\92122221.D41
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 41 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
2	4.22		0.000	524	10040	2	
4	6.82	cyanide	3.627	4385	59815	1	2.00
		Totals	3.627	4909	69855		

File: 92122221.D41 Sample: 93-02438MS/BO7JZ9



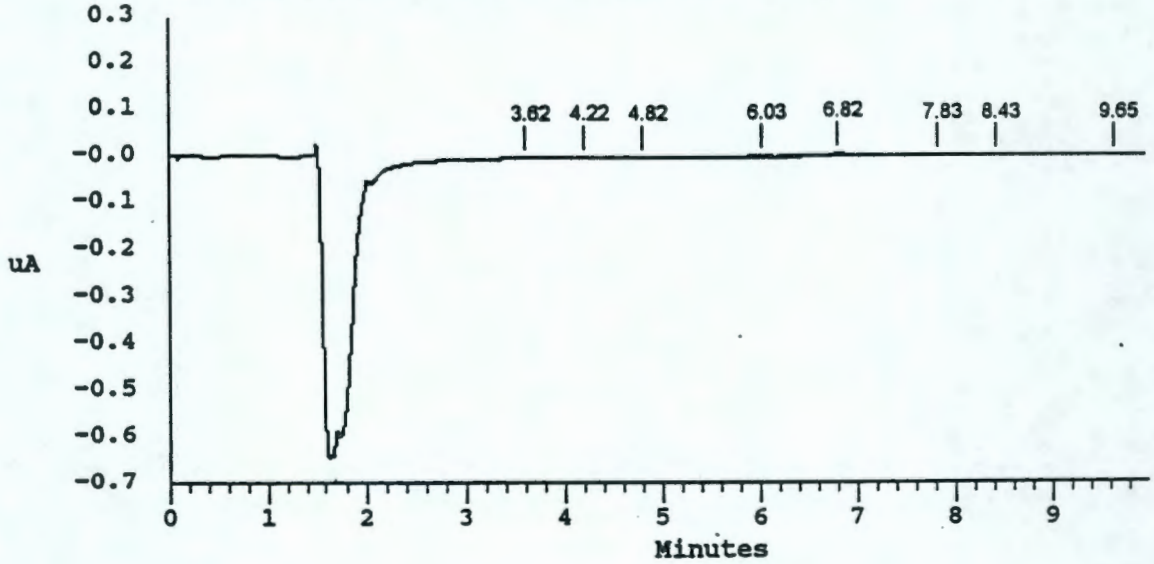
Sample Name: 93-02438MS/BO7JZ9	Date: 12/22/1992 16:42:20
Data File : C:\DX\DATA\9212222\92122221.D41	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 41 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	10000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
2	4.22		0.000	524	10040	2	
4	6.03		0.000	2126	27712	2	
5	6.82	cyanide	6.409	5156	111259	2	2.00
		Totals	6.409	7806	149012		

File: 92122221.D41 Sample: 93-02438MS/BO7JZ9



Data Reprocessed On 12/23/1992 07:59:05

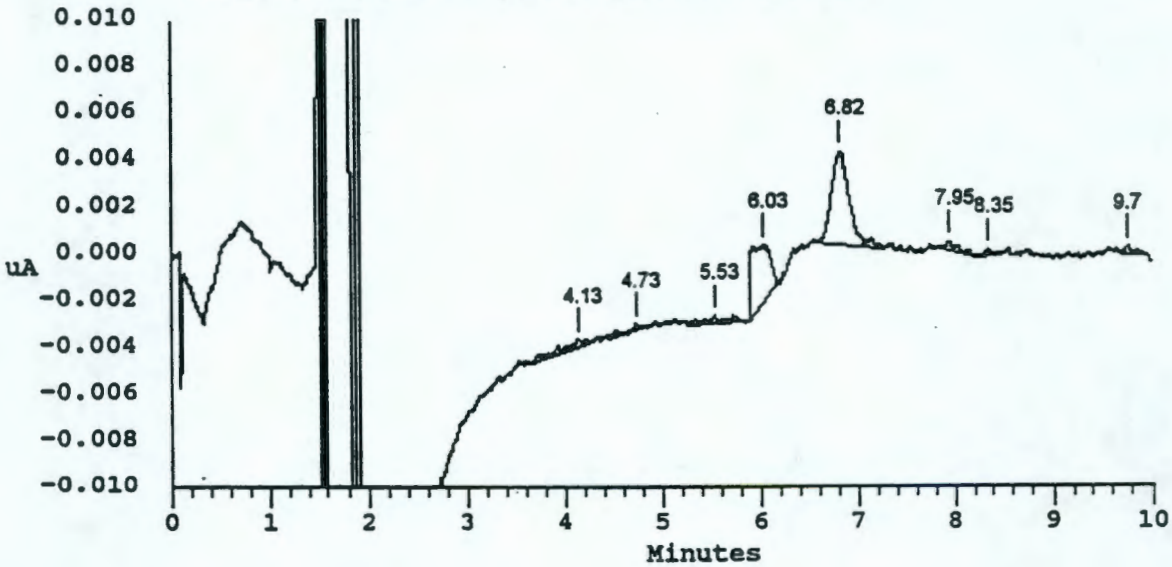
Sample Name: 93-02438MSD/BO7JZ9	Date: 12/22/1992 16:52:53
Data File : C:\DX\DATA\9212222\92122221.D42	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 42 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	6.03		0.000	2465	34393	1	
5	6.82	cyanide	3.195	3983	51867	1	2.00
		Totals	3.195	6448	86260		

File: 92122221.D42 Sample: 93-02438MSD/BO7JZ9



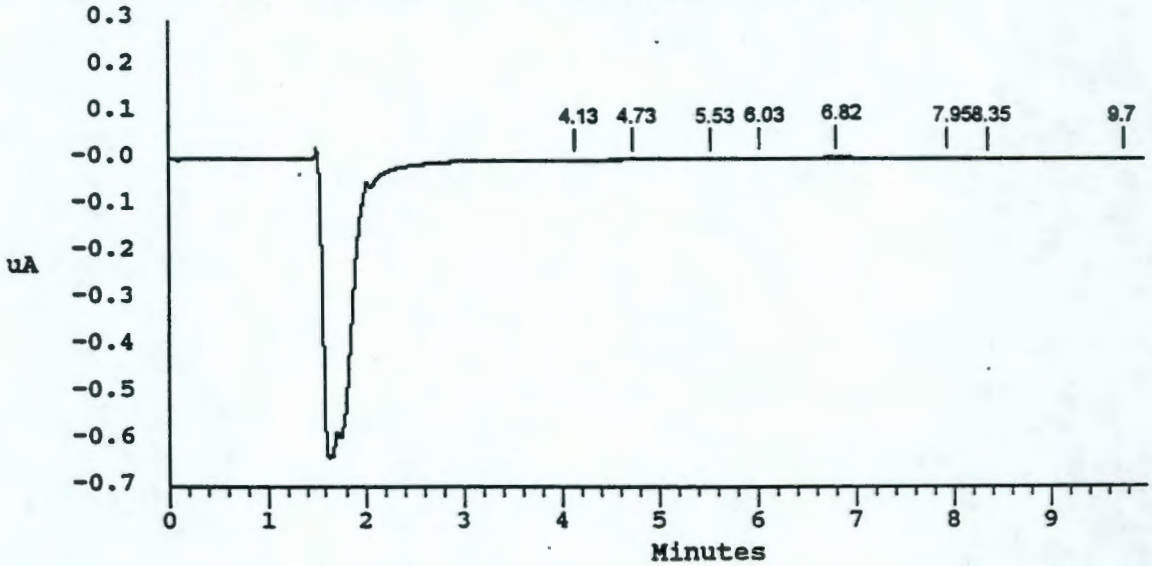
Sample Name: 93-02438MSD/BO7JZ9 Date: 12/22/1992 16:52:53
Data File : C:\DX\DATA\9212222\92122221.D42
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 42 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
4	6.03		0.000	2465	34393	1	
5	6.82	cyanide	5.244	4648	89680	1	2.00
		Totals	5.244	7113	124073		

File: 92122221.D42 Sample: 93-02438MSD/BO7JZ9



9613492.0565

Data Reprocessed On 03/24/1993 10:47:56

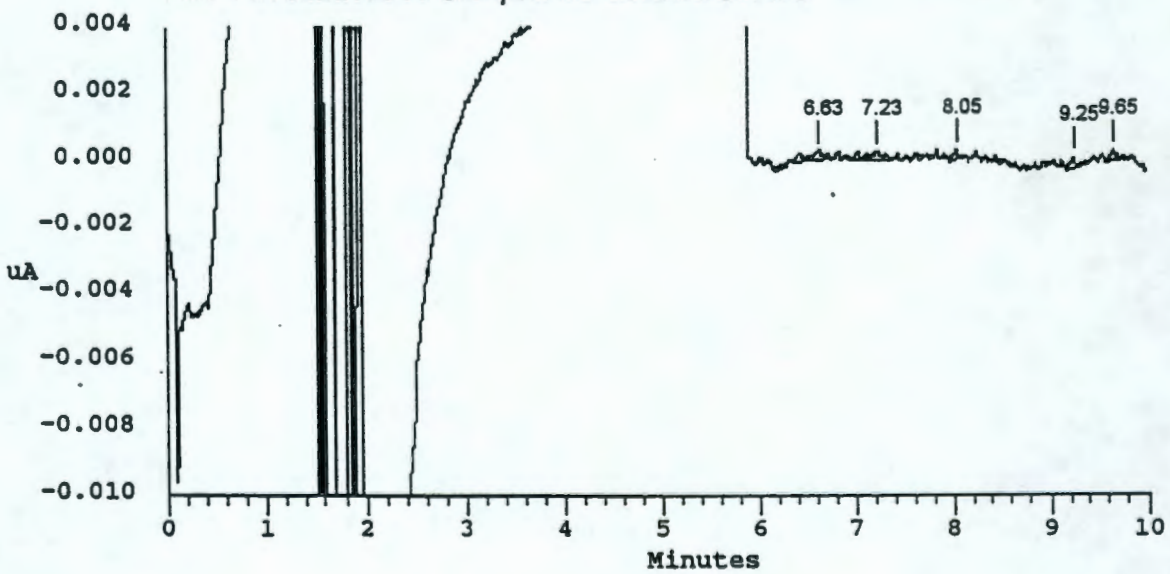
Sample Name: 93-02451/BO7K~~OO~~ 0a mcb 3/24/93 Date: 12/22/1992 17:03:24
Data File : C:\FY93DATA\DATA\DEC_92\9212222\92122221.D43
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 43 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.22		0.000	244	11100	1	
		Totals	0.000	244	11100		

File: 92122221.D43 Sample: 93-02451/BO7K0O



D07-189

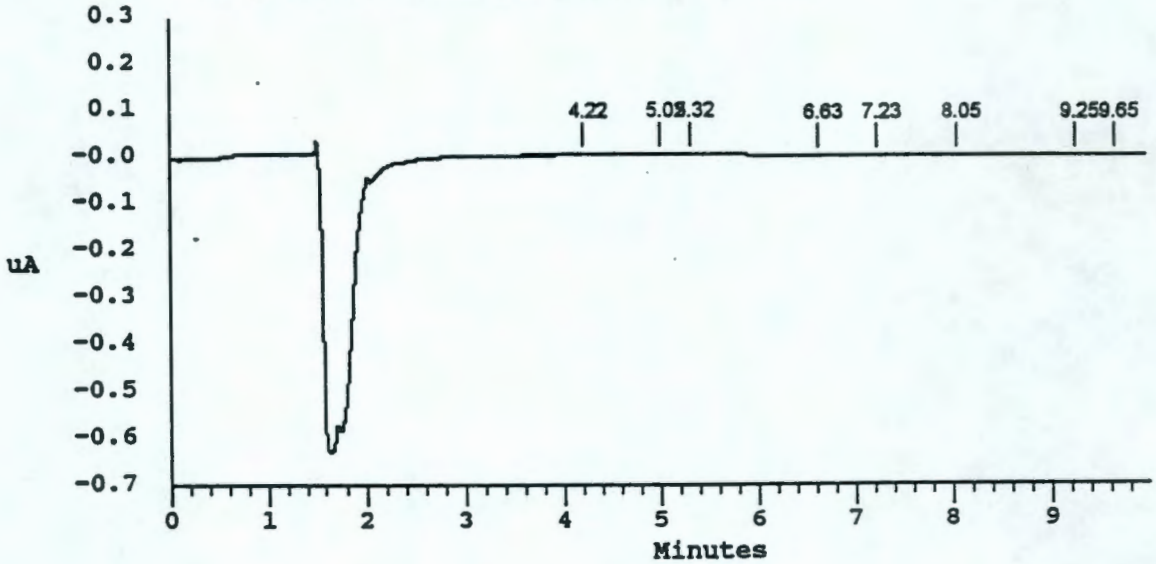
Sample Name: 93-02451/BO7K~~00~~ 00 mcd 3/24/93 Date: 12/22/1992 17:03:24
Data File : C:\DX\DATA\9212222\92122221.D43
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 43 Vial: Detector:PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	4.22		0.000	244	11100	1	
		Totals	0.000	244	11100		

File: 92122221.D43 Sample: 93-02451/BO7K0O



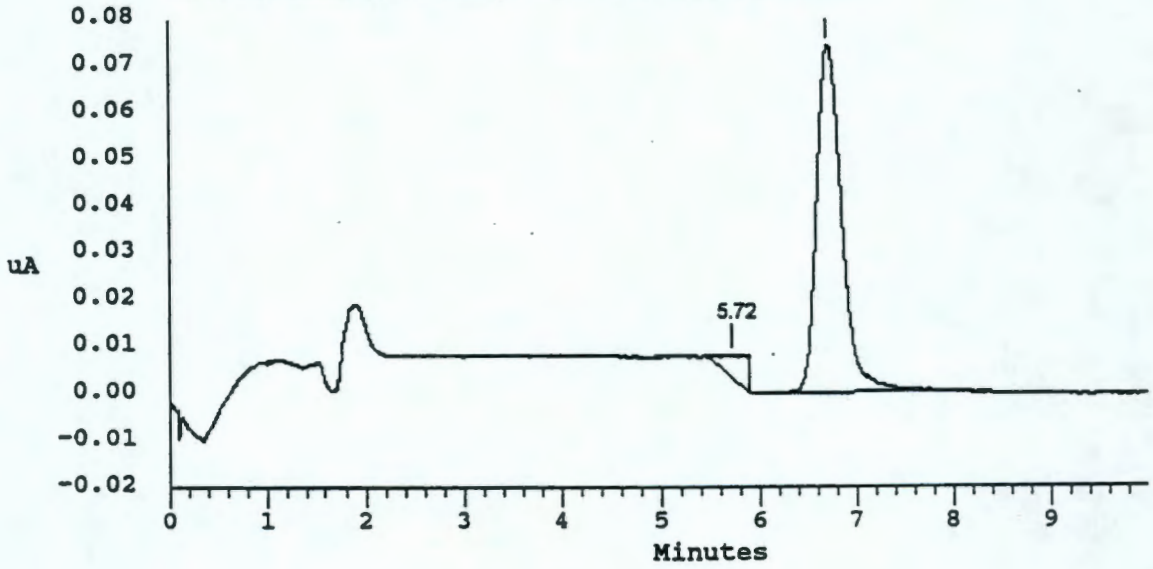
Sample Name: 66.6 PPB VERIF. STD Date: 12/22/1992 17:13:58
Data File : C:\DX\DATA\9212222\92122221.D44
Method : C:\DX\METHOD\2CYANIDE.met
ACI Address: 1 System: 2 Inject#: 44 Vial: Detector: PED-AMP
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
1	5.72		0.000	4582	100110	1	
2	6.70	cyanide	66.347	73796	1326179	1	0.25
		Totals	66.347	78378	1426288		

File: 92122221.D44 Sample: 66.6 PPB VERIF. STD



9613492.0568

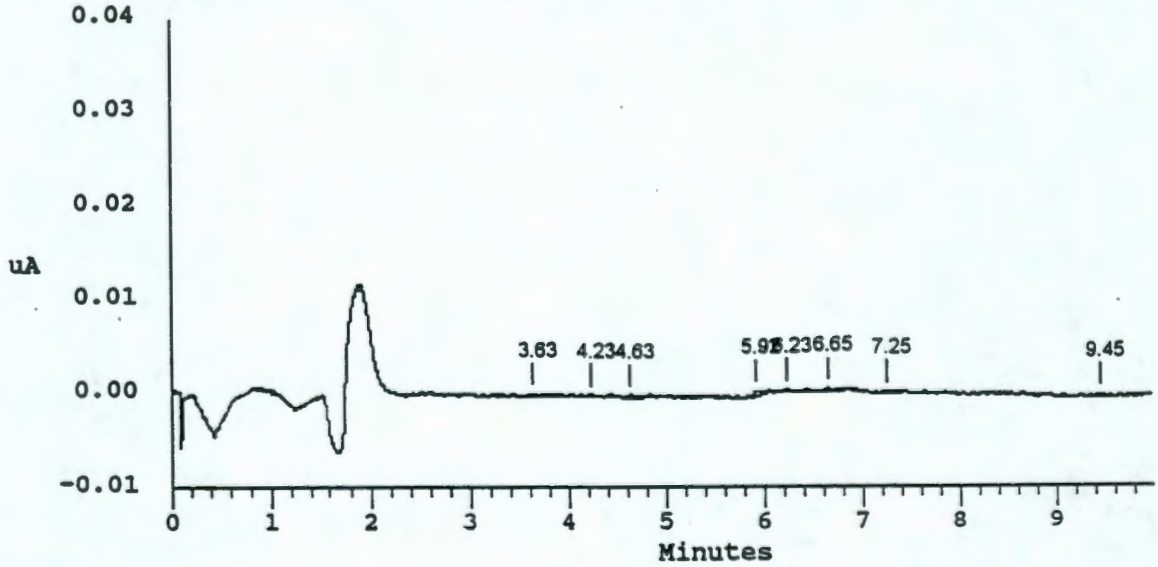
Sample Name: A9212222B3 ELUANT	Date: 12/22/1992 17:24:28
Data File : C:\DX\DATA\9212222\92122221.D45	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 45 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 92122221.D45 Sample: A9212222B3 ELUANT



D07-192

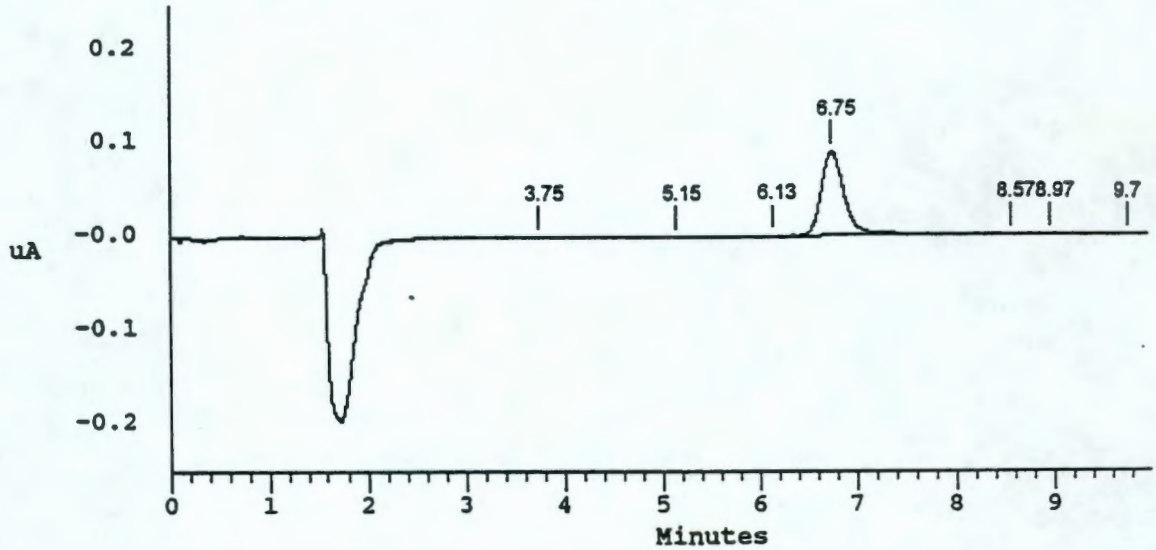
Sample Name: ICV-6 (375 PPB)	Date: 12/22/1992 17:35:00
Data File : C:\DX\DATA\9212222\92122221.D46	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 46 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	5	3000	5Hz	0.00	10.00	10000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
3	6.13		0.000	977	21061	2	
4	6.75	cyanide	361.188	89179	1459209	2	1.00
		Totals	361.188	90156	1480269		

File: 92122221.D46 Sample: ICV-6 (375 PPB)



9613492.0570

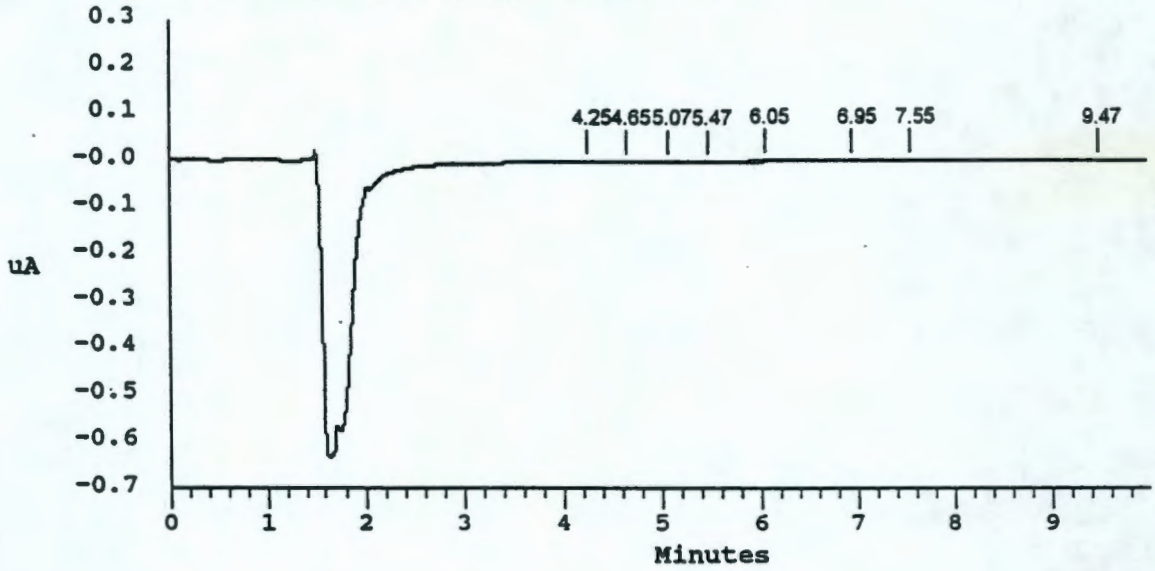
Sample Name: WATER BLANK	Date: 12/22/1992 17:45:32
Data File : C:\DX\DATA\9212222\92122221.D47	
Method : C:\DX\METHOD\2CYANIDE.met	
ACI Address: 1 System: 2 Inject#: 47 Vial:	Detector:PED-AMP
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00	10000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ppb	Height	Area	Bl. Code	%Delta
5	6.05	cyanide	2.077	1747	31316	1	-9.48
		Totals	2.077	1747	31316		

File: 92122221.D47 Sample: WATER BLANK



D07-194

9613492.0571

0045426

3 of 42

E-93-22/2978-62

WESTINGHOUSE HANFORD COMPANY
241-T-106 DATA VALIDATION
DISTRIBUTION FORM

SDG: B07JZ4

Document Title Final QA Record Case #: B07JZ4

Fraction: Metals

Document Number: _____ Date: 4/15/94

		DISTRIBUTION			
M. Baker (HCRL)		D. Mantooth (ERL)		D. Wiley (ERL)	
P. Bartley (ERL)		T. McDonald (HCRL)		N. Wold (ERL)	
Y. Chun (HCSEA)		R. Potter (HCRL)		ERL Project File/J. Pawlowski	
B. Downs (HCSEA)		K. Rolla (HCSEA)		Project File/D. Simpson (HCRL)	
M. Gerboth (HCRL)		C. Sater (ERL)		Duplicate Project File/T. Trevino (HCSEA)	
J. Grover (ERL)		M. Schwarz (ERL)		Westinghouse EDMC	X
L. Hammerle (HCSEA)		A. Shen (HCSEA)			
K. Pool (WHC)					

Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		1.6.6.3	Plans Doc. Log		3.4	Original Chemical Data
1.2	Distribution Lists		1.6.6.4	Deliverables Doc. Log		3.5	Original Radiochemical Data
1.3	Project Procedures		1.7	Budget			
1.4	Project Modifications		1.7.1	Downloads		4.1	Task Plan
1.5	Staff		1.7.2	M-113s			
1.5.1	Staff Resumes		1.7.3	A-208s		4.2	Data Pkg. Completeness Verif. Checklist
1.5.2	Staff Training		1.7.4	Budget Status		4.3	Data Valididation Calcs./Annotated DP X
1.5.3	Auth. Former Site Employee		1.7.5	Invoices		4.4	Prelim. QA Records
1.6	QA		1.8	Requisitions			
1.6.1	QA Manual		1.9	Meeting Minutes		4.5	Data Valid. & Qual. Summary Rpts.
1.6.2	QA Implementation		1.10	Record of Telecon		4.5.1	Internal Drafts/Comments/Resol.
1.6.3.1	QA Audits-Deliverables		1.11	Progress Reports		4.5.2	WHC Review Draft Comments/Resol.
1.6.3.2	QA Audits-Files		1.12	Subcontractor (HC)		4.5.3	Final Report
1.6.4.1	Audit Resps. - Deliverables					4.6	Weekly Status Reports
1.6.4.2	Audit Resps. - Files		2.1	Incoming Correspondence		4.7	Weekly Management Reports
1.6.5	QA Training		2.2	Outgoing Correspondence			
1.6.6.1	QA Manual Document Log		2.3	Internal Correspondence			
1.6.6.2	Procedure Document Log						
			3.1	Task Order			
			3.2	Sample Lists			
			3.3	Data Validation Procedures			

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 241-T-106	REVIEWER: KR	DATE: 10/19/93
LABORATORY: PNL	CASE:	SDG: B07JZ4
SAMPLES/MATRIX: 2239 B07JZ4 Soil 2451 B07K00 Soil		
2240 B07JZ5	~~B08LV2~~ KR	
2241 B07JZ6	2437 B07JZ8 Water	
2351 B07JZ7		
2438 B07JZ9		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	X		
Cover Page	X		
Traffic Reports	X		
Sample Data			
Inorganic Analysis Data Sheets	X		
Standards Data			
Initial and Continuing Calibration Verification	X		
CRDL Standard for AA and ICP	X	X	
QC Summary			
Blanks	X		
ICP Interference Check Summary	X		
Spike Sample Recovery	X		
Post-Digestion Spike Sample Recovery			X
Duplicate	X		
Laboratory Control Sample	X		
Standard Addition Results			X
ICP Serial Dilutions	X		
Instrument Detection Limits	X		
ICP Interelement Correction Factors	X		
ICP Linear Ranges	X		
Preparation Log	X		
Analysis Run Log	X		
Raw Data			
ICP Raw Data	X		
Furnace AA Raw Data	X		
Mercury Raw Data	X		
Cyanide Raw Data	X		
Additional Data			
Internal laboratory chain-of-custody	X		
Laboratory Sample Preparation Records	X		

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations < 10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

If no, were MSA analyses performed when required?	Yes	No	N/A
Are MSA correlation coefficients $\geq$0.995?	Yes	No	N/A
If no, was a second MSA analysis performed?	Yes	No	N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is $\geq$10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

need to check

Have results been reported and calculated correctly?	Yes	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	Yes	No	N/A
Are all detection limits below the CRQL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	~~Yes~~	No	N/A
Were project specific data quality objectives met for this analysis?	~~Yes~~	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

HOLDING TIME SUMMARY - FORM B-1

SDG: B07JZ4	REVIEWER: Kristine Rolla	DATE: 10/19/93	PAGE 1 OF 1
COMMENTS: Cyanide was prepared and analyzed past the recommended holding time			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07JZ4, JZ5	ICP CV CA	12/7/92	ICP 1/13 CV 1/4 CA 1/5	ICP 1/13 CV 1/5 CA 1/6	ICP 37 CV 28 CA 29	ICP 0 CV 1 CA 1	CN = J
JZ4, JZ5	As Pb Tl	↓	As 1/13 Pb 1/13 Tl 1/13	As 3/25 Pb 3/24 Tl 3/10	37	As 71 Pb 70 Tl 66	—
JZ4, JZ5	Ag Se Bi	↓	Ag 1/13 Se 1/13 Bi 1/13	Ag 2/3 Se 3/15 Bi 1/22	37	Ag 21 Se 61 Bi 9	—
B07JZ6	ICP CV CA	12/8/92	1/13 1/4 1/5	1/13 1/5 1/6	36 27 28	0 1 1	CN = J
B07JZ6	As Pb Tl	↓	1/13 1/13 1/13	3/25 3/24 3/10	36	71 70 66	—
B07JZ6	Ag Se Bi	↓	1/13 1/13 1/13	2/3 3/15 1/22	36	21 61 9	—
B07JZ7	ICP CV CA	12/11/92	1/13 1/4 1/5	1/13 1/5 1/6	33 24 25	0 1 1	CN = J
B07JZ7	As Pb Tl	↓	1/13 1/13 1/13	3/25 3/24 3/10	33	71 70 66	—
B07JZ7	Ag Se Bi	↓	1/13 1/13 1/13	2/3 3/15 1/22	33	21 61 9	—
B07JZ8, JZ9	ICP, CV CA	12/15/92	1/13 1/4 1/5	1/13 1/5 1/6	29 20 21	0 1 1	CN = J
JZ8, JZ9	As Pb Tl	↓	1/13 1/13 1/13	3/25 3/24 3/10	29	71 70 66	—
JZ8, JZ9	Ag Se Bi	↓	1/13 1/13 1/13	2/3 3/15 1/22	29	21 61 9	—
B07K00	ICP CV CA	12/16/92	↓	↓	28 19 20	0 1 1	CN = J
↓	As Pb Tl	↓	↓	↓	28	71 70 66	—
↓	Ag Se Bi	↓	↓	↓	28	21 61 9	—

CALIBRATION DATA SUMMARY

SDG: B07JZ4	VALIDATOR: Kristine Rolla	DATE: 10/19	PAGE 1 OF ___
COMMENTS:			
CALIB. TYPE:	INITIAL	CONTINUING	INSTRUMENT:

CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
ICV & CCV	% Recoveries were within	control	limits for	the ICP data	
CCV2	Thallium		%R = 112%		NONE
CCV3	thallium		%R = 111%		NONE
	thallium r = 0.983			all	UJ
all other correlation coefficients		r > 0.995.			
Aluminum, calcium & chromium		above	ICS levels. No qualifiers		

96134926.DOC
WAC-SD-EN-SPP-002, Rev. 2

BLANK AND SAMPLE DATA SUMMARY

SDG: B07BZ4 (T-106) VALIDATOR: Kristine R. DATE: 10/19/93 PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
PB	Barium <0.414 mg/kg	~~10.7~~ 2.1	B		ug/L				
ICB	Calcium	7.1	B		ug/L				
CCB1	↓	51.6	B		↓				
CCB3	↓	20.8	B		↓				
PB	↓	3.154	B		↓				
PB	Cobalt (-3.9) ug/L	-0.778	B		mg/kg		39	B07J24, J25, J26, J27, J28, J29, K00	J
CCB3	Copper	4.4	B		ug/L				
CCB2	Iron	-2.5	B		↓				
CCB4	↓	-2.3	B		↓				
PB	Potassium (-1,438) ug/L	-287.626	B		mg/kg		K380	B07J24, J25, J26, J27, J28, J29, K00	J
↓	Sodium (61.1) ug/L	12,224	B		↓	305.5			
↓	(-4.0) ug/L Vanadium	-.802	B		↓		40		
↓	Zinc (4.1 ug/L)	8.20	B		↓	20.5			
CCV3	Silver	0.3			ug/L	1.5		B07J24, J25, J26, J27, J28, J29, K00	UL
CCV4		0.2			ug/L				
~~PB~~	~~Sb~~	~~3.6~~			~~mg/kg~~				

IDL
3.0

ACCURACY DATA SUMMARY

SDG: B07JZ4	VALIDATOR: Kristine Rolla	DATE: 10/19/93	PAGE 1 OF ____
COMMENTS:			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B07JZ6S	Antimony	42.3	all	UJ
B07JZ6S	Arsenic	128 %	all	J
LCS	Aluminum (out of limits)	0, 19.9	all	J
LCS	Thallium	141 %	all	UJ

9613492.0578

PRECISION DATA SUMMARY

SDG: B07J74	VALIDATOR: Kristine Rolla	DATE: 10/19/93	PAGE 1 OF 1

COMMENTS:

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
ICP Duplicate % RPD	are within	Control limits.			
GFAA Duplicate % RPD	are within	Control limits			
ICP Serial dilution	results were	acceptable.			
Graphite Furnace QC					
Lead	B07J75	Analytical Spike	%R= 80%	B07J75	J
all other analytical	spikes are	within control	limits		

9613492.0579

CALCULATION SUMMARY

SDG: BC7J2A	REVIEWER: Kristine Rolla	DATE: 10/22/93	PAGE 1 OF 1

COMMENTS:

See Attached Sheets!

Westinghouse 9613492.0581

Calculations

HARTCROWSER

Correlation Coefficients

Page 1 of 1

Job No. 2978-62

Project Westinghouse/Hanford

Date 10/20/93

Calculations for 241-T-106 Data Validation

Made by KRolla

Se 3/15/93

0	-0.58
10	8.59
20	20.18
30	31.60
40	41.58

r= 0.999

Tl 3/10/93

0	-0.07
10	15.77
20	18.65
30	28.84
40	38.59

r= 0.983

Bi 1/22/93

0	-0.98
10	11.04
25	24.82
35	35.01
50	46.90

r= 0.998

Ag 2/3/93

0	-0.02
5	5.19
10	9.86
15	14.78
20	19.82

r= 0.999

As 3/26/93

0	-0.44
10	10.62
20	18.30
30	29.24
40	39.31
50	48.35

r= 0.999

Pb 3/24/93

0	0.84
10	10.37
20	22.56
30	30.37
40	40.38
50	48.66

r= 0.998

CN 1/4/93

0	0
10	9.8
25	24.5
50	48.9
100	97.8
200	195.6

r= 0.999

Hg 1/5/93

0	0.005
0.1	0.092
0.5	0.397
1.0	0.795
1.5	1.232
2.0	1.555

r=0.999

Recycled Paper

9613492.0582

Calculations

HARTCROWSER

ICP interference Checksample / ICP Serial Dilution

Page 1 of 1

Job No. 2978.62

Project Westinghouse/Hanford

Date 10/21/93

Calculations for 241-T-106 Data Validation

Made by KRoila

	Initial 9:18	Final 11:41	
Al	543721.7/5364.72=101.4	545309/5364.72	101.7
Ba	495.6/502 = 98.7	493.8/502	98.4
Be	491.7/4.80 = 54.2	491.5/4.80	102.4
Cd	948.7/9.07 = 104.6	949.9/9.07	104.7
Ca	500855.2/5122.28 = 97.8	495402.8/4935.56	100.3
Cr	570.9/5.29 = 107.9	553.3/5.29	104.7
Co	485.9/4.77 = 96.2	483.8/4.77	101.4
Cu	511.2/5.43 = 94.1	522.4/5.43	96.2
Fe	~~197911~~ 197604.7/1998.45	195983.4/1998.45	98.8
Mg	488194.7/5275.30 = 92.5	487020.4/5275.30	92.3
Mn	496.4/4.96 = 100.1	495/4.96	99.8
Ni	974.8/9.40 = 103.7	969.3/9.40	103.1
~~K~~			
V	529.9/5.09 = 104.1	529.6/5.09	104.0
Zn	1256.6/12.08 104.0	1261.1/12.08	104.4

ICP Serial Dilution

Al (29672.15 - 30350.2)/2967.215 = 2.3 ✓

Ba (366.31 - 385)/3.6631 = 5.1 ✓

Ca (48955.09 - 50353.8)/489.5509 = 2.9 ✓

Fe (87438.43 - 88649.7)/874.3843 = 1.4 ✓

Mg (21723.51 - 22381.6)/217.2351 = 3.0 ✓

Mn (1708.43 - 1738.9)/17.0843 = 1.8 ✓

~~K (45.66~~

Na (2346.67 - 2535.8)/23.4667 = 8.1 ✓

V (181.16 - 188.2)/181.16 = 3.9 ✓

Zn (208.7 - 216)/20.87 = 3.5 ✓

Recycled Paper

9613492.0583

Calculations

HARTCROWSER

Westinghouse PNL ICV/CCV Calcs.

Page 1 of 2

Job No. 2978-62

Project Westinghouse/Hanford

Date 10/21/93

Calculations for 241-T-106 Data Validation

Made by KRolla

	ICV	~~CCV1~~ MCV1	~~CCV2~~ MCV2	~~CCV3~~ MCV3
Al	1840.9/19.58 = 94.0			
Sb		2354.08/25 = 94.2		
Ba			502.67/5 = 100.5	
Be				102/1 = 102
Cd				
Ca	48550.77/513.82 = 94.5			
Cr		989.72/10 = 99.0		
Co			1012.12/10 = 101.2	
Cu				998.6/10 = 99.8
Fe	1915.06/19.81 = 96.7			
Mg		24236.48/250 = 96.9		
Mn			500.87/5 = 100.2	
Ni				996.59/10 = 99.7
K				
Na	50932.06/523.48 = 97.3			
V		1000.71/10 = 100		
Zn			1029.39/10 = 102.9	

	~~CCV4~~ MCV4	~~CCV5~~ CCV1
Al		2083.83/19.58 = 106.4%
Sb		
Ba		
Be		
Cd	485.05/5 = 97.0	494.35/5.16 = 95.8
Ca		
Cr		
Co		
Cu	193.95/10 = 101.4	511.7/5.25 = ~~96.9~~ 97.5 KR
Fe		
Mg		
Mn		
Ni		499.31/5.04 = 99.1
K	23868.92/250 = 95.5	
Na		
V		
Zn		3066.96/30.52 = 100.5

Recycled Paper

9613492.0584

Calculations

HARTCROWSER

ICV & CCV Calcs for GFAA, Hg & CN

Page 2 of 2

Job No. 2978-62

Project Westinghouse/Hanford

Date 10/21/93

Calculations for 241-T-106 Data Validation

Made by K Rollo

	ICV		CCV 1	
Se	1021.2/10.06	= 101.5	1012.8/10.06	= 100.7
Tl	985.5/10.07	= 97.9	1037.5/10.07	= 103.0
Bi	47.8/.05	= 95.6	50.5/.05	= 101
Ag	1039/10.16	= 102.3	1070/10.16	= 105.3
As	~~1018.8/10.08~~ 956.8/10.08	= 94.9	1057.2/10.08	= 104.9
Pb	970.0/9.84	= 98.6	1024/9.84	= 104.1
Hg	126/1.25	= 100.8	118/1.25	= 94.4
CN	8999/94.00	= 96	5078/50	= 102

	CCV 2		CCV 3	
Se	1012.8/10.06	100.7	1110.0/10.06	110.3
Tl	1130/10.07	112.2	1119.5/10.07	111.2
Bi	49.8/.5	99.6	54.3/.5	108.6
Ag	1097/10.16	108	1098/10.16	108.1
As	1060.8/10.08	105.2	1065.6/10.08	105.7
Pb	1033/9.84	105	1059.5/9.84	107.7
Hg	128/1.25	102.4	—	
CN	4934/50 99	98.68	—	

Recycled Paper

HARTCROWSER

Calculations

Spike Sample Recovery / ~~LCS~~ / Duplicates

Page 1 of 2

Job No. 2978-62

Project Westinghouse Hanford

Date 10/21/93

Calculations for 241-T-106 Data Validation

Made by KRolle

Sb	43.5617/102.88 =	42.3	.2117(.2)/(1.00137)(.972) = 43.9
Ba	(463.1543 − 59.3836)/411.52 =	98.1	461.4
Be	(10.6543 − 0.2109)/10.29 =	101.5	10.619
Cd	9.3889/10.29 100 =	91.2	9.345
Cr	(53.2140 − 11.7765)/41.15 · 100 =	100.7	53.0
Co	(103.7840 − 4.2279)/102.88 · 100 =	96.8	103.4
Cu	(58.2819 − 9.2257)/51.44 100 =	95.4	58.07
~~Hg~~ Mn	(351.2881 − 261.0306)/102.88 100 =	87.7	350
Ni	(109.3786 − 9.3956)/102.88 · 100 =	97.2	109
V	(125.2305 − 25.6420)/102.88 · 100 =	96.8	125
Zn	(129.3642 − 31.3993)/102.88 · 100 =	95.2	129

LCS (No calculations for LCS since value compared to limits not recovery)

~~Al~~

Duplicates

Al $\frac{6280.78 - 6347.29}{(6280.78 + 6347.29)/2} \cdot 100 = 1.0$

AVG = Average of two numerator Hs.

Ca = $\frac{6608.21 - 6650.12}{\text{AVG}} \cdot 100 = \cancel{2.0}\ 1.9$

Cr = $\frac{(11.78 - 12.58)}{\text{AVG}} \cdot 100 = 6.6$

Fe $\frac{(13698.6 - 13589.6)}{\text{AVG}} \cdot 100 = 1.1$

Mg $\frac{(261.0306 - 243.1288)}{\text{AVG}} \cdot 100$ 7.1

Zn $\frac{(31.3993 - 31.2778)}{\text{AVG}} \cdot 100$ 0.4

Recycled Paper

Calculations

HARTCROWSER

Spikes, Duplicates for GFAA, Hg, CN

Page 2 of 2

Job No. 2978-62

Project Westinghouse / Hanford

Date 10/21/93

Calculations for 241-T-106 Dewatering.

Made by KRella

SPIKE

Se SPIKE NOT RECOVERED
Tl ~~[illegible]~~ = (11.92 - 0.33)/10.27 = 113% ✓
Bi 4.18 - 0.93/4.11 = 79.1%
Ag 2.51 - 0.07/2.05 = 119%
As (15.01 - 4.49)/8.19 = 128%
Pb (16.46 - 11.84)/4.13 = 117%

Duplicate

As (4.5 - 5.8)/[(4.5+5.8)/2] · 100 = 25%
Pb (13.4 - 11.8)/[(13.4+11.8)/2] · 100 = 13%
Ag (0.08 - 0.07)/[(.08+.07)/2] · 100 = 13%

SPIKE

→ Hg ~~(0.07 - 0.04)/0.057 = KR~~

→ CN

9613492.0587

HARTCROWSER

Calculations

Sample Calculations

Page 1 of ~~2~~ 3

Job No. 0978-02

Project Westinghouse Hanford

Date 10/22/93

Calculations for 241-T-106 data validation

Made by KRISTINE R.

	B07JZ4		B07JZ5 (0.9971)	
Al	29.67 (.2)/.0010189 (.937)	= 6215.5	32.58(.2)/.0010029 (.954)	= 68
Sb	ND		ND	
Ba	.3663 (.2)/.0010189(.937)	= 76.73	.3444	71.99
Be	.0014 (.2)/.0010189(.937)	= 0.293	.0013	0.2717
Cd	ND		ND	
Ca	48.96 (.2)/.0010189(.937)	= 10,256	38.87	8,125.3
Cr	.0586 (.2)/.0010189(.937)	= 12.28	.0489	10.22
Co	.0342 (.2)/.0010189(.937)	= 7.16	.0227	4.745
Cu	.0609 (.2)/.0010189(.937)	= 12.76	.0655	13.69
Fe	87.44 (.2)/.0010189(.937)	= 18,317	66.99	14,000
Mg	21.72 (.2)/.0010189(.937)	= 4,550	20.70	~~4,330~~ 4.327
Mn	1.708 "	= 357.8	1.336	279.3
Ni	.0457 "	= 9.57	.0413	8.633
K	4.085 "	= 856	5.476	1,144.6
V	.1812 "	= 37.9	.1233	25.77
Zn	.2087 "	= 43.7	.1755	36.7
Bi	ND		ND	
As	24.36 (.2003)/(.0010051)(.937)(1000)	= 5.2	26.27 (.2003)/(.0010008)(.954)	= 5.5
Pb	12.55 "	2.7	9.55 "	= 2.0
Se	ND		ND	
Tl	ND		ND	
Ag	0.29 "	0.06	0.25 (.2003)/.0010008(.954)	
Hg	ND		ND	4 = 0.05
Cn	ND		ND	
			~~ND~~	

Recycled Paper

9613492.0588

Calculations

HARTCROWSER

Sample Calculations

Page 2 of 3

Job No. 2978 62

Project Huntington Harford.

Date 10/22/93

Calculations for 241-T-106 data validation

Made by Kristine Reile

	B07JZ6 raw res	reported	B07JZ7 raw res.	reported res.	B07JZ8 raw res.	reported res.
Al	30.68	6,203	28.71	5,696.0	27.83	5,749
Sb	ND		ND	50.93	ND	
Ba	.2900	59.2	0.2567		0.2774	57.3
Be	.0010	.020	0.0011	0.2182	.0591	12.21
Cd	.0020	0.405	.0014	0.278	.0009	0.186
Ca	33.25	6,158	26.86	5,328.9	32.81	6,648
Cr	.0575	11.74	.0576	11.428	.0602	12.44
Co	.0207	4.23	.0218	4.325	.0234	4.834
Cu	.0451	9.21	.0473	9.38	.0478	9.87
Fe	66.91	13,659	64.10	12,717	62.60	12,932
Mg	18.82 38.42	~~41,676~~ KR	18.31	3,632.6	18.23	3,766
Mn	1.275	260.3	1.221	242.2	1.267	261.7
Ni	.0459	9.37	.0508	10.08	.0489	10.10
K	3.829	781.6	3.471	688.6	4.133	853.5
V	.1252	25.6	.1236	24.5	0.1229	25.39
Zn	.1534	31.32	.1552	30.80	0.1467	30.31
Bi	ND		ND		ND	
As	21.45	4.5	23.13	4.8 KR	.2058	4.3
Pb	11.31	2.4 x5=12	14.46	~~2.3~~ ~~3~~ 3.0 x2 6.0	12.04	2.5
Se	ND		ND		ND	
Tl	ND		ND		ND	
Ag	.33	0.07	0.61	0.125=0.13	0.34	0.07
Hg	ND		ND		ND	
Cr	ND		ND		ND	

ICP = $\frac{\text{Res}(.2)}{(.0010079)(.972)}$ = $\frac{\text{res}(.2)}{(.001035)(.974)}$ = $\frac{\text{res}(.2)}{(.0010064)(.962)}$ =

GFAA = $\frac{\text{res}(.2004)}{(.0010022)(.972)(1000)}$ = $\frac{\text{res}(.2002)}{.0010024(.974)(1000)}$ = $\frac{\text{res}(.2001)}{(.0010059)(.962)(1000)}$ =

Recycled Paper

9613492.0589

HARTCROWSER Calculations

Sample Calculations * Results taken off of Summary Sheet, NOT raw data

Page 3 of 3

Job No. 2978-62

Project Westinghouse Hanford

Date 10/27/93

Calculations for 241-T-106 Data Validation

Made by Kristine Bolk

	B07JZ9 raw res	B07JZ9 rep res.	B07K00 raw res.	B07K00 rep res.
Al	29.01	5,870	27.25	5,991
Sb	ND		ND	
Ba	.2990	60.5	.3715	81.67
Be	.0011	0.22	.0013	0.286
Cd	.0018	0.364	.0001	0.0219
Ca	31.08	6,289	41.88	9,206
Cr	.0645	13.05	.0639	14.04
Co	.0253	5.12	.0248	5.45
Cu	.0497	10.1	.0546	12.0
Fe	68.25	13,810	78.19	17,189
Mg	20.28	4,104	17.68	3,887
Mn	1.323	267.7	1.244	273.5
Ni	.0489	9.895	.0328	7.21
K	4.507	912	3.453	759.1
V	.1309	26.49	.1579	34.71
Zn	.1577	31.9	.1508	33.15
Bi	ND	~~2.6~~	ND	
As	22.10	~~4.6~~ 2.6	25.66	5.5
Pb	11.49	4.6	11.24	2.4
Se	ND		ND	
Tl	ND		ND	
Ag	.33	0.07	.28	0.06
Hg	ND		ND	
CN	ND		ND	

These results are close but NOT exactly like what was reported.

ICP = $\frac{\text{res}(.2)}{(.0010253)(96.4)}$ $\frac{\text{res}(.2)}{(.000973)(.935)}$

GFAA $\frac{\text{res}(.2002)}{(.0010051)(.964)}$ $\frac{\text{res}(.2003)}{(.0010036)(.935)}$

Recycled Paper

Actual ⊕ Sample Result:

$$\frac{0.027\ \mu g\ Hg}{10\ ml\ aliquot\ analyzed} = 0.0027\ \mu g/ml$$

$$\frac{(0.0027\ \mu g/ml)(25\ ml)}{(0.0010565\ kg)(0.964)} = 66.27\ \mu g/kg$$

$$= 0.06627$$

$$= 0.07\ mg/kg \quad \text{reported} \checkmark$$

Theoretical ⊕ Sample Result:

Sample spiked with 0.5 ml of 0.125 µg stock soln
(also means $\frac{0.025\ \mu g\ Hg}{10\ ml\ of\ soln}$

$$\frac{\left(\frac{0.025\ \mu g}{10\ ml}\right)(25\ ml)}{(0.0010565\ kg)(0.964)} = 0.0614\ mg/kg$$

The reported theoretical value of 0.057 mg/kg is incorrect, as are the calculated %R

The correct %R should be:

$$\frac{0.06627}{0.0614} = 108\%$$

∴ MS % R for Hg is acceptable.

TELEPHONE CONTACT SUMMARY

VALIDATOR: Kristine B.	DATE:	TIME:	PAGE____OF____
COMPANY:			
ADDRESS:			
PERSON CONTACTED:			
TELEPHONE:		FAX:	
PROJECT/CASE/SDG:			
REMARKS:			
No Phone Contact Made			
ACTION:			

DATA QUALIFICATION SUMMARY

SDG: B07JZ4	VALIDATOR: Kristine Rolla	DATE: 10/22/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Cyanide	J	B07JZ4, JZ5	Analyzed past
		JZ6, JZ7, JZ8	holding time)
		JZ9, B07KC0	
Thallium	UJ	B07JZ4 JZ5	Correlation
		JZ6, JZ7 JZ8	Coefficients
		JZ9, B07KC0	
Co, K	J	↓ all	Blank (negative)
Silver	U	all	Blank Contam.
Sb	UJ	all	Spike % R = 42.3%
As	J	all	Spike % R = 128%
Se	UJ	all	Spike % R - Diluted out
Aluminum	J	all	LCS recovery (20%)
thallium	UJ	all	LCS recovery (141%)
Lead	J	B07JZ5	Analytical Spike)
11/14 ALL ICP compounds	J	B07K00	illegible Raw Data
↳	↳	B07JZ9	Illegible Raw Data

Blank spike in % R = 98

All ana spikes in ∴ accept w/ J.

9613492.0593

D3 - INDUCTIVELY COUPLED PLASMA EMISSION SPECTROPHOTOMETRY ANALYSIS

D03-001

CURRENT DATE: March 2, 1993

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - ICP

Data Package/Report - T-106

ALO Numbers - 93-02239 93-02240 93-02241 93-02351 93-02437 93-02438 93-02451

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

4/01/93
Date

Jerry Wagner 4/16/93

INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPECTROPHOTOMETRIC ANALYSIS RESULTS

Samples and their accompanying quality control samples were prepared following acid digestion by procedure PNL-ALO-101, Acid Digestion for Metal Analysis. The methodology is consistent with the CLP procedure for the acid digestion of waters and sediments (soil). Digestates were then analyzed by Inductively Coupled Plasma Atomic Emission Spectrophotometry (ICP-AES) following procedure PNL-ALO-211. This method is comparable to EPA method 200.7 CLP-M. The analysis was performed in ICP lab 405, building 325 in the 300 area.

The data is presented following U.S. EPA - CLP reporting format according to the SOW 788 protocol. Analyte concentrations are reported as dry weight corrected concentrations on "FORM I - IN, INORGANIC ANALYSES DATA SHEET". Duplicates and RPD's (Relative Percent Differences) are reported on "FORM VI - IN, DUPLICATES". Laboratory quality control sample results are reported on "FORM VII - IN, LABORATORY CONTROL SAMPLE". CRDL (Contract Required Detection Limits) are reported on "FORM II (PART 2) - IN", CRDL STANDARD FOR AA AND ICP", and IDL (Instrument Detection Limits) are reported on "FORM X - IN, INSTRUMENT DETECTION LIMITS (QUARTERLY)" (see appendix C10).

This report contains the results for the following samples: ALO# 93-02239 through and including 93-02241, 93-02351, 93-02437, 93-02438, and 93-02451 (a total of 7 samples).

Spike sample recovery was within limits for all analytes except antimony (Sb). This same type of failure has been observed before when the EPA Leach procedure was used. Recovery of antimony for sample 93-02241s was approximately 42%. Spike blank recovery was greater than 93% for all analytes measured including antimony. A post digestion spike for antimony was not performed since the pre-digestion spike blank was within acceptable limits indicating that antimony solubility was affected by the sample matrix.

Percent recovery of the Solid Laboratory Control Standard (SLCS) was within control limits for all analytes except aluminum (Al). The minimum acceptable level is 225 to 424 mg/Kg. The measured value was under 20 mg/Kg. This discrepancy should not impact the analyses for aluminum because the concentrations found in the actual samples were at least thirty times higher than the SLCS (approximately 6000 mg/Kg).

All RPD's (relative percent difference) for the duplicate sample for all analytes were within control limits.

The ICP serial dilution was within acceptance limits.

The contract required detection limit for ICP (CRI) was accidently over looked and not analyzed. The omission of the CRI should not significantly affect the results since most of the analytes measured were either substantially above the CRI level or below the detection limit. Also, the initial and continuing calibration verification measurements demonstrated good precision, were well within limits and the blank measurements were all below detection limits or substantially below CRI limits.

Jerry Wagner
4/12/93

While examining the raw date it was noted that two of the samples (ALO# 93-02451 and 93-02239) displayed concentrations of lanthanum (La), titanium (Ti), and zirconium (Zr) that were about twice that of the remaining samples. Other analytes such as phosphorous (P), vanadium (V) and yttrium (Y) showed similar trends but were only about fifty percent higher than the rest. It should be noted that the actual concentrations measured may be slightly biased (for the six analytes mentioned above) since these analytes were not included in the quality control standards required for this project nor were they requested.

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:T106__

SOW No.: 7/88_

EPA Sample No.	Lab Sample ID
_BO7JZ4_____	__93-02239____
_BO7JZ5_____	__93-02240____
_BO7JZ6_____	__93-02241____
_BO7JZ6D_____	__93-02241D___
_BO7JZ6S_____	__93-02241S___
_BO7JZ7_____	__93-02351____
_BO7JZ8_____	__93-02437____
_BO7JZ9_____	__93-02438____
_BO7KO0_____	__93-02451____
_PROBLKS_____	__BS_____

Were ICP interelement corrections applied ? Yes/No NO_

Were ICP background corrections applied ? Yes/No NO_
If yes - were raw data generated before application of background corrections ? Yes/No

Comments:
____PROJECT_20070_("T106")_____
____SOIL_SAMPLES_____
____ICP1-325-405_(M&TE_WB73520),_BALANCE_(M&TE_360-06-01-029)_____
____SAMPLES_ANALYZED_01/13/93_____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: MWUrie Name: M W URIE

Date: 4/19/93 Title: Inorganic TGL

COVER PAGE - IN 3/90

Jerry Wagner 4/16/93

9613492.0598

Non-diluted

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B07JZ4

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix (soil/water): SOIL_ Lab Sample ID: 93-02239__

Level (low/med): LOW__ Date Received: 12/11/92

% Solids: _93.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6210		J	P	LCS
7440-36-0	Antimony	3.8	U	~~J~~ N	P	MS
7440-39-3	Barium	76.7			P	
7440-41-7	Beryllium	0.29	B		P	
7440-43-9	Cadmium	0.63	U		P	
7440-70-2	Calcium	10200			P	
7440-47-3	Chromium	12.3			P	
7440-48-4	Cobalt	7.2	~~B~~	~~N~~ J	P	Neg PB.
7440-50-8	Copper	12.7			P	
7439-89-6	Iron	18300			P	
7439-95-4	Magnesium	4550			P	
7439-96-5	Manganese	358			P	
7440-02-0	Nickel	9.6			P	
7440-09-7	Potassium	855	~~B~~	J	P	Neg PB
7440-23-5	Sodium	491	B		P	
7440-62-2	Vanadium	37.9			P	
7440-66-6	Zinc	43.7			P	

KR 10/22/93

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
ORIGINAL_SAMPLE

FORM I - IN

3/90

D03-006

9613492.0599

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B07JZ5

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix (soil/water): SOIL_ Lab Sample ID: 93-02240__

Level (low/med): LOW__ Date Received: 12/11/92

% Solids: _95.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6830		J	P	LCS
7440-36-0	Antimony	3.8	U	J N	P	MS
7440-39-3	Barium	72.2			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	0.63	U		P	
7440-70-2	Calcium	8150			P	
7440-47-3	Chromium	10.3			P	
7440-48-4	Cobalt	4.7	B	J	P	neg PB
7440-50-8	Copper	13.7			P	
7439-89-6	Iron	14000			P	
7439-95-4	Magnesium	4340			P	
7439-96-5	Manganese	280			P	
7440-02-0	Nickel	8.7			P	
7440-09-7	Potassium	1150		J	P	neg PB
7440-23-5	Sodium	1180			P	
7440-62-2	Vanadium	25.8			P	
7440-66-6	Zinc	36.8			P	

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
ORIGINAL_SAMPLE
1

FORM I - IN

3/90

D03-007

9613492.0600

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B07JZ6

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix (soil/water): SOIL_ Lab Sample ID: 93-02241__

Level (low/med): LOW__ Date Received: 12/11/92

% Solids: _97.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6280		J	P	LCS
7440-36-0	Antimony	3.7	U	J N	P	MS
7440-39-3	Barium	59.4			P	
7440-41-7	Beryllium	0.21	B		P	
7440-43-9	Cadmium	0.61	U		P	
7440-70-2	Calcium	6810			P	
7440-47-3	Chromium	11.8			P	
7440-48-4	Cobalt	4.2	B	J	P	neg PB
7440-50-8	Copper	9.2			P	
7439-89-6	Iron	13700			P	
7439-95-4	Magnesium	3850			P	
7439-96-5	Manganese	261			P	
7440-02-0	Nickel	9.4			P	
7440-09-7	Potassium	784	B	J	P	neg PB
7440-23-5	Sodium	1960			P	
7440-62-2	Vanadium	25.6			P	
7440-66-6	Zinc	31.4			P	

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
ORIGINAL_SAMPLE

FORM I - IN

3/90

D03-008

9613492.0601

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B07JZ7

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix (soil/water): SOIL_ Lab Sample ID: 93-02351__

Level (low/med): LOW__ Date Received: 12/11/92

% Solids: _97.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum_	5670		J	P_	LCS
7440-36-0	Antimony_	3.6	U	J N	P_	MS
7440-39-3	Barium___	50.7			P_	
7440-41-7	Beryllium	0.21	B		P_	
7440-43-9	Cadmium__	0.59	U		P_	
7440-70-2	Calcium__	5300			P_	
7440-47-3	Chromium_	11.4			P_	
7440-48-4	Cobalt___	4.3	B	J	P_	neg PB
7440-50-8	Copper___	9.3			P_	
7439-89-6	Iron____	12700			P_	
7439-95-4	Magnesium	3620			P_	
7439-96-5	Manganese	241			P_	
7440-02-0	Nickel___	10.0			P_	
7440-09-7	Potassium	685	B	J	P_	neg PB
7440-23-5	Sodium___	1560			P_	
7440-62-2	Vanadium_	24.4			P_	
7440-66-6	Zinc____	30.7			P_	

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
ORIGINAL_SAMPLE

FORM I - IN

3/90

D03-009

9613492.0602

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B07JZ8

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix (soil/water): SOIL_ Lab Sample ID: 93-02437__

Level (low/med): LOW__ Date Received: 12/11/92

% Solids: _96.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5760		J	P	LCS
7440-36-0	Antimony	3.7	U	J N	P	MS
7440-39-3	Barium	57.4			P	
7440-41-7	Beryllium	0.21	U		P	
7440-43-9	Cadmium	0.62	U		P	
7440-70-2	Calcium	6790			P	
7440-47-3	Chromium	12.5			P	
7440-48-4	Cobalt	4.8	B	J	P	neg PB
7440-50-8	Copper	9.9			P	
7439-89-6	Iron	12900			P	
7439-95-4	Magnesium	3770			P	
7439-96-5	Manganese	262			P	
7440-02-0	Nickel	10.1			P	
7440-09-7	Potassium	855	B	J	P	neg PB
7440-23-5	Sodium	1620			P	
7440-62-2	Vanadium	25.4			P	
7440-66-6	Zinc	30.3			P	

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
ORIGINAL_SAMPLE

FORM I - IN

3/90

9613492.0603

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B07JZ9

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix (soil/water): SOIL_ Lab Sample ID: 93-02438__

Level (low/med): LOW__ Date Received: 12/11/92

% Solids: _96.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum_	5900		J	P_	LCS
7440-36-0	Antimony_	3.7	U	J N	P_	MS
7440-39-3	Barium___	60.8		J	P_	
7440-41-7	Beryllium	0.22	B	J	P_	
7440-43-9	Cadmium__	0.61	U	J	P_	
7440-70-2	Calcium__	6320		J	P_	
7440-47-3	Chromium_	13.1		J	P_	
7440-48-4	Cobalt___	5.1	B	J	P_	neg PB
7440-50-8	Copper___	10.1		J	P_	
7439-89-6	Iron____	13900		J	P_	
7439-95-4	Magnesium	4130		J	P_	
7439-96-5	Manganese	269		J	P_	
7440-02-0	Nickel___	10		J	P_	
7440-09-7	Potassium	917	B	J	P_	neg PB
7440-23-5	Sodium___	1680		J	P_	
7440-62-2	Vanadium_	26.6		J	P_	
7440-66-6	Zinc_____	32.1		J	P_	

No ok AS 12/15/93
11/14 KR
all results J
illegible raw Data

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
ORIGINAL_SAMPLE

FORM I - IN

3/90

9613492.0604

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B07K00

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix (soil/water): SOIL_ Lab Sample ID: 93-02451__

Level (low/med): LOW__ Date Received: 12/11/92

% Solids: _93.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

No, ok AS 12/15/93

11/14/92 all results J due to illegible raw Data

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6010		J	P	LCS
7440-36-0	Antimony	4.0	U	J N	P	MS
7440-39-3	Barium	81.9		J	P	
7440-41-7	Beryllium	0.28	B	J	P	
7440-43-9	Cadmium	0.66	U	J	P	
7440-70-2	Calcium	9240		J	P	
7440-47-3	Chromium	14.1		J	P	
7440-48-4	Cobalt	5.5	B	J	P	neg. PB
7440-50-8	Copper	12.0		J	P	
7439-89-6	Iron	17200		J	P	
7439-95-4	Magnesium	3900		J	P	
7439-96-5	Manganese	274		J	P	
7440-02-0	Nickel	7.2	B	J	P	
7440-09-7	Potassium	762	B	J	P	neg. PB
7440-23-5	Sodium	2170		J	P	
7440-62-2	Vanadium	34.8		J	P	
7440-66-6	Zinc	33.3		J	P	

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
ORIGINAL SAMPLE

FORM I - IN

3/90

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Initial Calibration Source: 921116I1____

Continuing Calibration Source: 921116I1____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	1958.0	1840.90	94.0	25000.0	24810.45	99.2	25015.49	100.1	P
Antimony	2500.0	2402.53	96.1	2500.0	2354.08	94.2	2380.96	95.2	P
Barium	2078.0	1999.31	96.2	500.0	498.22	99.6	502.67	100.5	P
Beryllium	508.0	500.93	98.6	100.0	101.82	101.8	102.93	102.9	P
Cadmium	516.0	499.70	96.8	500.0	486.30	97.3	486.85	97.4	P
Calcium	51382.0	48550.77	94.5	25000.0	24409.28	97.6	24777.00	99.1	P
Chromium	514.0	510.92	99.4	1000.0	989.72	99.0	1002.82	100.3	P
Cobalt	499.0	491.65	98.5	1000.0	998.48	99.8	1012.12	101.2	P
Copper	525.0	510.93	97.3	1000.0	1004.08	100.4	1033.04	103.3	P
Iron	1981.0	1915.06	96.7	20000.0	19385.59	96.9	19495.37	97.5	P
Magnesium	25587.0	24321.59	95.1	25000.0	24236.48	96.9	24548.48	98.2	P
Manganese	509.0	491.05	96.5	500.0	495.50	99.1	500.87	100.2	P
Nickel	504.0	501.94	99.6	1000.0	1003.97	100.4	1002.98	100.3	P
Potassium	50563.0	50070.21	99.0	25000.0	24311.52	97.2	24248.42	97.0	P
Sodium	52348.0	50932.06	97.3	10000.0	10033.32	100.3	10098.80	101.0	P
Vanadium	517.0	498.63	96.4	1000.0	1000.71	100.1	1009.95	101.0	P
Zinc	3052.0	3065.98	100.5	1000.0	1019.43	101.9	1029.39	102.9	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

KR 10/19

FORM II (PART 1) - IN

3/90

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Initial Calibration Source: 921116I1____

Continuing Calibration Source: 921116I1____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found 3	Continuing Calibration %R(1)	Continuing Calibration Found 4	Continuing Calibration %R(1)	M
Aluminum				25000.0	24859.64	99.4	24887.10	99.5	P
Antimony				2500.0	2348.46	93.9	2354.47	94.2	P
Barium				500.0	498.43	99.7	500.53	100.1	P
Beryllium				100.0	102.00	102.0	102.64	102.6	P
Cadmium				500.0	486.89	97.4	485.05	97.0	P
Calcium				25000.0	25036.52	100.1	24258.32	97.0	P
Chromium				1000.0	982.49	98.2	986.84	98.7	P
Cobalt				1000.0	998.60	99.9	998.92	99.9	P
Copper				1000.0	1052.46	105.2	1013.95	101.4	P
Iron				20000.0	19393.01	97.0	19304.32	96.5	P
Magnesium				25000.0	24691.73	98.8	24211.74	96.8	P
Manganese				500.0	497.22	99.4	496.54	99.3	P
Nickel				1000.0	996.59	99.7	1000.29	100.0	P
Potassium				25000.0	23975.68	95.9	23868.92	95.5	P
Sodium				10000.0	10082.32	100.8	10107.00	101.1	P
Vanadium				1000.0	1000.84	100.1	1001.31	100.1	P
Zinc				1000.0	1018.33	101.8	1023.67	102.4	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

KR 10/1

FORM II (PART 1) - IN

3/90

9613492.0607

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Initial Calibration Source: 921116I1____

Continuing Calibration Source: 921116I1____

Concentration Units: ug/L -CCV1

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum				1958.0	2083.83	106.4			P
Antimony									NR
Barium				2078.0	1976.16	95.1			P
Beryllium				508.0	495.75	97.6			P
Cadmium				516.0	494.35	95.8			P
Calcium				51382.0	47688.32	92.8			P
Chromium				514.0	502.11	97.7			P
Cobalt				499.0	489.27	98.1			P
Copper				525.0	511.70	97.5			P
Iron				1981.0	1956.51	98.8			P
Magnesium				25587.0	24142.10	94.4			P
Manganese				509.0	485.53	95.4			P
Nickel				504.0	499.31	99.1			P
Potassium				50563.0	49434.54	97.8			P
Sodium				52348.0	50610.50	96.7			P
Vanadium				517.0	492.29	95.2			P
Zinc				3052.0	3066.96	100.5			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

KR 10/19

FORM II (PART 1) - IN

3/90

U.S. EPA - CLP

3
BLANKS

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	mg/Kg Prepa-ration Blank	C	M
Aluminum	21.0	U	21.0	U	21.0	U	21.0	U	4.200	U	P
Antimony	18.0	U	18.0	U	18.0	U	18.0	U	3.600	U	P
Barium	1.0	U	1.0	U	1.0	U	1.0	U	0.414	B	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	P
Calcium	7.1	B	51.6	B	4.0	U	20.8	B	3.154	B	P
Chromium	4.0	U	4.0	U	4.0	U	4.0	U	0.800	U	P
Cobalt	3.0	U	3.0	U	3.0	U	3.0	U	-0.778	B	P
Copper	3.0	U	3.0	U	3.0	U	4.4	B	0.600	U	P
Iron	2.0	U	2.0	U	-2.5	B	2.0	U	0.400	U	P
Magnesium	14.0	U	14.0	U	14.0	U	14.0	U	2.800	U	P
Manganese	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Nickel	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Potassium	674.0	U	674.0	U	674.0	U	674.0	U	-287.626	B	P
Sodium	51.0	U	51.0	U	51.0	U	51.0	U	12.224	B	P
Vanadium	3.0	U	3.0	U	3.0	U	3.0	U	-0.802	B	P
Zinc	2.0	U	2.0	U	2.0	U	2.0	U	0.820	B	P

FORM III - IN

3/90

U.S. EPA - CLP

3
BLANKS

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			21.0	U							P
Antimony			18.0	U							P
Barium			1.0	U							P
Beryllium			1.0	U							P
Cadmium			3.0	U							P
Calcium			4.0	U							P
Chromium			4.0	U							P
Cobalt			3.0	U							P
Copper			3.0	U							P
Iron			-2.3	B							P
Magnesium			14.0	U							P
Manganese			1.0	U							P
Nickel			6.0	U							P
Potassium			674.0	U							P
Sodium			51.0	U							P
Vanadium			3.0	U							P
Zinc			2.0	U							P

FORM III - IN

3/90

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No: _____ SDG No.: T106__

ICP ID Number: TJA/WB73520_ ICS Source: 921008E3____

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	%R	Final Found Sol. A	Final Found Sol. AB	%R
Aluminum	540055	536472	546653	543721.7	101.4	543025	545309.0	101.6
Antimony								
Barium		502		495.6	98.7		493.8	98.4
Beryllium		480		491.7	102.4		491.5	102.4
Cadmium		907		948.7	104.6		949.9	104.7
Calcium	494040	512228	503942	500855.2	97.8	493956	495402.8	96.7
Chromium	21	529	45	570.9	107.9	48	553.8	104.7
Cobalt		477		485.9	101.9		483.8	101.4
Copper		543		511.2	94.1		522.4	96.2
Iron	206236	199845	198911	197604.7	98.9	195284	195983.4	98.1
Magnesium	531358	527530	491585	488194.7	92.5	485520	487020.4	92.3
Manganese	34	496	27	496.4	100.1	27	495.0	99.8
Nickel		940		974.8	103.7		969.3	103.1
Potassium								
Sodium								
Vanadium		509		529.9	104.1		529.6	104.0
Zinc		1208		1256.6	104.0		1261.1	104.4

KR 10/19/93

FORM IV - IN

3/90

9613492.0611

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: BATTELLE_PNL_____ Contract:_____ B07JZ6S

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix: __SOIL_____ Level (low/med): _LOW____

% Solids for Sample: _97.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	43.5617		3.6854	U	102.88	42.3	N	P
Barium	75-125	463.1543		59.3836		411.52	98.1		P
Beryllium	75-125	10.6543		0.2109	B	10.29	101.5		P
Cadmium	75-125	9.3889		0.6142	U	10.29	91.2		P
Calcium									NR
Chromium	75-125	53.2140		11.7768		41.15	100.7		P
Cobalt	75-125	103.7840		4.2279	B	102.88	96.8		P
Copper	75-125	58.2819		9.2257		51.44	95.4		P
Iron									NR
Magnesium									NR
Manganese	75-125	351.2881		261.0306		102.88	87.7		P
Nickel	75-125	109.3786		9.3956		102.88	97.2		P
Potassium									NR
Sodium									NR
Vanadium	75-125	125.2305		25.6420		102.88	96.8		P
Zinc	75-125	129.3642		31.3993		102.88	95.2		P

Comments:
PRE-DIGESTION_SPIKED_SAMPLE
(2ML_CLP_SPIKE#1_PLUS_1ML_10,000PPM_BISMUTH_SPIKE_SOLUTION)

KR 10/19/0

FORM V (Part 1) - IN 3/90

D03-019

9613492.0612

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

SPKBLKS

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix: __SOIL_____ Level (low/med): _LOW____

% Solids for Sample: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	96.2860		3.6000	U	100.00	96.3		P
Barium	75-125	405.9200		0.4140	B	400.00	101.4		P
Beryllium	75-125	9.9820		0.2000	U	10.00	99.8		P
Cadmium	75-125	9.3380		0.6000	U	10.00	93.4		P
Calcium									NR
Chromium	75-125	40.3100		0.8000	U	40.00	100.8		P
Cobalt	75-125	97.3260		0.6000	U	100.00	97.3		P
Copper	75-125	48.3020		0.6000	U	50.00	96.6		P
Iron									NR
Magnesium									NR
Manganese	75-125	98.8060		0.2000	U	100.00	98.8		P
Nickel	75-125	97.9700		1.2000	U	100.00	98.0		P
Potassium									NR
Sodium									NR
Vanadium	75-125	98.5800		0.6000	U	100.00	98.6		P
Zinc	75-125	99.4460		0.8200	B	100.00	98.6		P

Comments:
SPIKED_BLANK:2ML_CLP_SPIKE#1_PLUS_1ML_10,000PPM_BISMUTH_SPIKE_SOLUTION

KR 10/19/90

FORM V (Part 1) - IN 3/90

D03-020

9613492.0613

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Solid LCS Source: 01/11/93 PL_

Aqueous LCS Source: _____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum				325.0	20.2	U	225.0	424.0	0.0
Antimony				211.0	227.0		127.0	294.0	107.6
Barium				4.8	5.3	B		40.0	110.0
Beryllium				19.4	21.4		16.5	22.3	110.2
Cadmium				45.4	44.0		35.7	55.1	96.9
Calcium				196200.0	192380.6		166800.0	225600.0	98.1
Chromium				99.6	115.6		79.2	120.0	116.0
Cobalt				144.0	154.8		125.0	162.0	107.5
Copper				6910.0	7391.0		6006.0	7820.0	107.0
Iron				22430.0	20931.7		17770.0	27080.0	93.3
Magnesium				118100.0	115338.7		100400.0	129900.0	97.7
Manganese				208.0	221.8		177.0	239.0	106.6
Nickel				60.9	66.2		49.2	72.6	108.7
Potassium				50.0	648.1	U		1000.0	0.0
Sodium				50.0	413.1	B		1000.0	826.2
Vanadium				65.8	83.5		51.7	79.9	126.9
Zinc				187.0	173.0		138.0	236.0	92.5

FORM VII - IN

3/90

D03-022

9613492.0614

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Solid LCS Source: 01/11/93 PL_

Aqueous LCS Source: _____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum				325.0	64.7	B	225.0	424.0	19.9
Antimony				211.0	223.8		127.0	294.0	106.1
Barium				4.8	5.4	B		40.0	112.1
Beryllium				19.4	20.4		16.5	22.3	105.1
Cadmium				45.4	43.3		35.7	55.1	95.4
Calcium				196200.0	188237.1		166800.0	225600.0	95.9
Chromium				99.6	111.2		79.2	120.0	111.6
Cobalt				144.0	149.3		125.0	162.0	103.7
Copper				6910.0	7162.8		6006.0	7820.0	103.7
Iron				22430.0	20150.9		17770.0	27080.0	89.8
Magnesium				118100.0	113074.1		100400.0	129900.0	95.7
Manganese				208.0	213.2		177.0	239.0	102.5
Nickel				60.9	61.0		49.2	72.6	100.1
Potassium				50.0	259.2	U		1000.0	0.0
Sodium				50.0	314.3	B		1000.0	628.7
Vanadium				65.8	78.4		51.7	79.9	119.1
Zinc				187.0	166.3		138.0	236.0	88.9

FORM VII - IN

3/90

D03-023

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B07JZ6D

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

Matrix (soil/water): SOIL_ Level (low/med): _LOW__

% Solids for Sample: _97.2 % Solids for Duplicate: __97.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

DUP Rec	Rec	CRDL	Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
30,540	30,680	200	Aluminum		6280.7832		6347.2918		1.1		P
		—	Antimony		3.6854	U	3.7411	U			P
286.6	289 ±	200	Barium	40.9	59.3836		59.5669		0.3		P
1.1	1.0 ±	5	Beryllium		0.2109	B	0.2182	B	3.4		P
		—	Cadmium		0.6142	U	0.6235	U			P
32,140	33,250	5000	Calcium		6808.2065		6680.1201		1.9		P
60.5	57.5	10	Chromium		11.7768		12.5805		6.6		P
21.4	20.7	50	Cobalt		4.2279	B	4.4478	B	5.1		P
50.5	45.1	25	Copper	5.1	9.2257		10.4980		12.9		P
65,190	66,910	100	Iron		13698.6438		13549.5947		1.1		P
18,600	18,800	5000	Magnesium	1023.7	3853.7326		3865.4383		0.3		P
11,700	12,750	15	Manganese		261.0306		243.1288		7.1		P
40.8	45.9	40	Nickel	8.2	9.3956		8.4861		10.2		P
4,632	3,929	5000	Potassium		783.9864	B	962.8029	B	20.5		P
9,267	9,588	5000	Sodium	1023.7	1963.0812		1926.0319		1.9		P
125.6	125.2	50	Vanadium	10.2	25.6420		26.1130		1.8		P
150.5	153.4	20	Zinc		31.3993		31.2778		0.4		P

FORM VI - IN

3/90

U.S. EPA - CLP

8
STANDARD ADDITION RESULTS

Lab Name: BATTELLE_PNL_____ Contract:_____

Lab Code: _____ Case No.: _____ SAS No.:_____ SDG No.:T106__

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q

FORM VIII - IN 3/90

9613492.0617

U.S. EPA - CLP

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

B07JZ4L

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	29672.15		30350.20		2.3		P
Antimony	18.00	U	180.00	U			P
Barium	366.31		385.00	B	5.1		P
Beryllium	1.39	B	10.00	U	~~100.0~~		P
Cadmium	3.00	U	30.00	U	—		P
Calcium	48955.09		50353.80		2.9		P
Chromium	58.59		75.40	B	~~28.7~~		P
Cobalt	34.17	B	40.90	B	~~19.7~~		P
Copper	60.92		77.40	B	~~27.1~~		P
Iron	87438.43		88649.70		1.4		P
Magnesium	21723.51		22381.60	B	3.0		P
Manganese	1708.43		1738.90		1.8		P
Nickel	45.66		60.00	U	~~100.0~~		P
Potassium	4085.45	B	6740.00	U	~~100.0~~		P
Sodium	2346.67	B	2535.80	B	8.1		P
Vanadium	181.16		188.20	B	3.9		P
Zinc	208.70		216.00		3.5		P

IDL
21
18
1
1
34
43
32
14
1
64
67
532

KR 10/20/93

FORM IX - IN

3/90

D03-025

U.S. EPA - CLP

10
Instrument Detection Limits (Quarterly)

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

ICP ID Number: TJA/WB73520_ Date: 11/04/92

Flame AA ID Number : _____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.22		200	21.0	P
Antimony	206.84		60	18.0	P
Barium	493.40		200	1.0	P
Beryllium	313.04		5	1.0	P
Cadmium	228.80		5	3.0	P
Calcium	317.90		5000	4.0	P
Chromium	205.50		10	4.0	P
Cobalt	228.60		50	3.0	P
Copper	324.70		25	3.0	P
Iron	259.90		100	2.0	P
Magnesium	279.08		5000	14.0	P
Manganese	257.60		15	1.0	P
Nickel	231.60		40	6.0	P
Potassium	766.50		5000	674.0	P
Sodium	588.90		5000	51.0	P
Vanadium	292.40		50	3.0	P
Zinc	213.80		20	2.0	P

Comments:

FORM X - IN 3/90

U.S. EPA - CLP

11A
ICP Interelement Correction Factors (Annually)

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

ICP ID Number: TJA/WB73520_ Date: 11/04/92

Analyte	Wave-length (nm)	Interelement Correction Factors for : Al	Ca	Fe	Mg	___
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0001800	
Antimony	206.84	0.0028700	0.0000000	0.0002600	0.0000000	
Barium	493.40	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	
Cadmium	228.80	0.0000000	0.0000000	0.0000700	0.0000400	
Calcium	317.90	0.0000000	0.0000000	0.0000000	0.0000000	
Chromium	205.50	0.0002400	0.0000000	0.0000700	0.0001000	
Cobalt	228.60	0.0000000	0.0000000	0.0000900	0.0000000	
Copper	324.70	0.0000000	0.0000000	0.0000500	0.0000200	
Iron	259.90	0.0000000	0.0000000	0.0000000	0.0000600	
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.60	0.0000300	0.0000000	0.0000000	0.0000500	
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0001200	
Potassium	766.50	0.0000000	0.0000000	0.0000000	0.0000000	
Sodium	588.90	0.0000000	0.0000000	0.0000000	0.0005300	
Vanadium	292.40	0.0000000	0.0000000	0.0001400	0.0001800	
Zinc	213.80	0.0000200	0.0000000	0.0001100	0.0000600	

Comments:

FORM XI (Part 1) - IN 3/90

U.S. EPA - CLP

12
ICP Linear Ranges (Quarterly)

Lab Name: BATTELLE_PNL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: T106__

ICP ID Number: TJA/WB73520_ Date: 11/17/92

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Aluminum	10.00	500000.0	
Antimony	10.00	50000.0	
Barium	10.00	10000.0	
Beryllium	10.00	1000.0	
Cadmium	10.00	10000.0	
Calcium	10.00	500000.0	
Chromium	10.00	20000.0	
Cobalt	10.00	20000.0	
Copper	10.00	20000.0	
Iron	10.00	200000.0	
Magnesium	10.00	500000.0	
Manganese	10.00	10000.0	
Nickel	10.00	20000.0	
Potassium	10.00	500000.0	
Sodium	10.00	250000.0	
Vanadium	10.00	20000.0	
Zinc	10.00	20000.0	

Comments:

FORM XII - IN 3/90

9613492.0621

U.S. EPA - CLP

13
PREPARATION LOG

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.:_____ SAS No.: _____ SDG No.:T106__

Method: P_

93-0224/D
93-0224/S
4/14/93

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
BO7JZ4	01/13/93	1.02	200
BO7JZ5	01/13/93	1.00	200
BO7JZ6	01/13/93	1.01	201
BO7JZ6D	01/13/93	0.99	200
BO7JZ6S	01/13/93	1.00	200
BO7JZ7	01/13/93	1.04	200
BO7JZ8	01/13/93	1.01	201
BO7JZ9	01/13/93	1.02	200
BO7KO0	01/13/93	0.97	200
LCS	01/13/93	1.01	200
LCS	01/13/93	1.01	200
LCS+BI@	01/13/93	1.04	200
LCS+BI@	01/13/93	1.04	200
PROBLK	01/13/93	1.00	200
SPKBLKS	01/13/93	1.00	200

FORM XIII - IN 3/90

9613492.0622

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:T106__

Instrument ID Number: TJA/WB73520__ Method: P_

Start Date: 01/13/93 End Date: 01/13/93

LAB Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	BA	BE	CD	CA	CR	CO	CU	FE	MG	MN	NI	K	NA	V	ZN							
ZZZZZ		0616		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0618		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0746		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0749		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0753		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0758		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0803		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0807		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0811		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0816		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0822		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		0837		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ICV1	1.00	0842		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
IMCVA	1.00	0847		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
ZZZZZ	1.00	0853		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
ICB	1.00	0903		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
ICSA-0	1.00	0907		X					X	X			X	X	X					X	-	-	-	-	-	-	-
ICSAB-0	1.00	0913		X	-	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	-	-	-	-	-	-	-
ZZZZZ		0922																			-	-	-	-	-	-	-
PROBLK	1.00	0925		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
SPKBLK	1.00	0929		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
~~BO7JZ4@10~~	~~1.00~~	~~0933~~		~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	-	-	-	-	-	-	-
BO7JZ4	1.00	0937		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
~~ZZZZZ~~		~~0943~~																			-	-	-	-	-	-	-
BO7JZ5	1.00	0947		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
MCVA-1	1.00	0952		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
ZZZZZ	1.00	0957		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
CCB-1	1.00	1005		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
BO7JZ6	1.00	1008		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
BO7JZ6 D	1.00	1013		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
BO7JZ6 S	1.00	1017		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
BO7JZ7	1.00	1023		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-

Did NOT Present results from This Run.

The two initialled inserts above were done on 04/16/93 JCLegan

FORM XIV - IN 3/90

D03-030

9613492.0623

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: BATTELLE_PNL_____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:T106__

Instrument ID Number: TJA/WB73520__ Method: P_

Start Date: 01/13/93 End Date: 01/13/93

LAB Sample No.	D/F	Time	% R	Analytes																						
				AL	SB	BA	BE	CD	CA	CR	CO	CU	FE	MG	MN	NI	K	NA	V	ZN						
B07JZ8	1.00	1027		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
B07JZ9	1.00	1032		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
B07K00	1.00	1037		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
ZZZZZ	1.00	1041		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
ZZZZZ	1.00	1045		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
MCVA-2	1.00	1051		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
ZZZZZ	1.00	1101		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
CCB-2	1.00	1111		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
LCS+BI@5	1.00	1116		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
LCS+BI@2	1.00	1120		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
MCVA-3	1.00	1124		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
ZZZZZ	1.00	1129		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
CCB-3	1.00	1133		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
ICSA-1	1.00	1136		X					X	X			X	X	X					X	-	-	-	-	-	-
ICSAB-1	1.00	1141		X	-	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	-	-	-	-	-	-
CCV1-1	1.00	1146		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
MCVA-4	1.00	1150		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
ZZZZZ	1.00	1156		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
CCB-4	1.00	1201		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
ZZZZZ		1327		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		1332		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		1337		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		1341		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		1345		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		1349		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		1351		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZ		1353		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

this had a 2x dilution factor!

FORM XIV - IN 3/90

Battelle/PNL/Inorganic Analysis Group

HNO3-HCl DIGEST Nitric and Hydrochloric Acid Digestion Worksheet

PREP 4/16/93

Client: W. Thompson Work Order: M99282 Date: 1-11-93

Sample matrix and observations: Radioactive soil samples in good condition

Balance M&TE #: 354-06-01-2014 S Weight (certified): 1.0g S Weight (found): 0.9998g

#	ALO Sample #	Client ID	Weight (g) Bottle	Bottle + Sample (g)	Initial Weight Sample	Sample + Bottle (g)	Percent Solids	Process Factor
1	93-02239	BO7JZ4	36.0720	37.0909	1.0189	200.2614	93.7	196.55
2	93-02240	BO7JZ5	37.9517	38.9546	1.0029	200.0040	95.4	199.43
3	93-02241	BO7JZ6	38.6070	39.6149	1.0079	200.9835	97.2	199.41
4	93-02241D	BO7JZ6	35.8546	36.8448	0.9902	200.0515	97.2	202.03
5	93-02241S	BO7JZ6	37.6784	38.6821	1.0037	199.9648	97.2	199.23
6	LCS-0287	LCS 4/16/93	37.7791	38.7889	1.0098	199.9998	100	198.06
7	PBS PB 4/16/93	Process Blank	37.8733	47.8206	~~9.9473~~ 4/16/93	200.0302	NA	20.11
8	Spike Blank BS 4/16/93	Spike Blank	38.0872	48.0844	~~0.9972~~ 4/16/93	200.0319	NA	20.01
9	93-02351	BO7JZ7	38.0205	39.0555	1.0350	200.3000	97.4	193.53
10	93-02437	BO7JZ8	38.7923	39.7987	1.0064	201.1322	96.2	199.85
11	93-02438	BO7JZ9	37.9990	39.0243	1.0253	199.9988	96.4	195.06
12	93-02451	BO7KO0	35.9282	36.9012	0.9730	200.0089	93.5	205.56
13	LCS-0287 + Bi	LCS + Bi 4/16/93	38.6802	39.7191	1.0389	200.0739	100	192.58

Comments: BLK - 10 ml DDW, Spk process blk - 10 ml DDW + 2 ml CLP spk 1 + 1 ml 1000 mg/ml Bi spike sol.
Spk - 1g sampl + spike matrix and LCS-0287 + Bi spiking solution. Also a small amount of undissolved L.C.S. remained

1. The digestion was performed using 1 g of sample, 1:1 (10 mL) and concentrated HNO3 (5 mL), 3 mL H2O2, 5 mL 1:1 HCl heated at 95 C for 1 hour unless otherwise noted.
2. Blank fields are permitted in this worksheet and they do not require a crossout or comment.

Analyst/date: A Ha 1-11-93 Reviewer/date: Arpad Bryson 1-12-93

Filtered thru 45 micron syringe filter in 4/19 prep lab

D03-022

9613492-0624

Battelle/PNL/Inorganic Analysis Group

% SOLIDS PERCENT SOLIDS FOR T-106 SAMPLES

Client: Wendy Thompson
Analyst: S. Homi

Date Ran: 12/14/92
Time Dried: 22 hours

Preparer: I. E. Burgeson

#	ALQ Sample #	Client ID	Wet wt. Sample	Dry wt. Sample	Percent Solids	Average % Solids	Deviation from Average (%)
1	93-02239	BO7JZ4	10.006	9.317	93.1	93.7	0.61
2	93-02239	BO7JZ4	10.091	9.511	94.3		0.61
3	93-02240	BO7JZ5	10.010	9.547	95.4	95.4	0.04
4	93-02240	BO7JZ5	9.964	9.510	95.4		0.04
5	93-02241	BO7JZ6	10.042	9.769	97.3	97.2	0.04
6	93-02241	BO7JZ6	10.206	9.920	97.2		0.04
7	93-02351	BO7JZ7	9.933	9.671	97.4	97.4	0.08
8	93-02351	BO7JZ7	9.997	9.749	97.5		0.08
9	93-02437	BO7JZ8	10.029	9.653	96.3	96.2	0.10
10	93-02437	BO7JZ8	10.003	9.609	96.1		0.10
11	93-02438	BO7JZ9	9.971	9.619	96.5	96.4	0.04
12	93-02438	BO7JZ9	9.935	9.577	96.4		0.04
13	93-02451	BO7KO0	9.948	9.301	93.5	93.5	0.02
14	93-02451	BO7KO0	9.837	9.194	93.5		0.02

Comments this is not the reported % solids worksheet. This is for analyst's use only. JB 8/28-93

1. Oven temperature is 105 C 5 C
2. % Solids = (Dry wt. sample/Wet wt. Sample)*100%

9613492.0625

T106 project notes
2-26-93 Jerry Wagner
Jerry Wagner 2-26-93

ICP1-326-405 file
Date Analyzed 13 Jan. 1993 (93D013A)

PF		ID		ANALYTE La	CONC.(mg/Kg)		ANALYTE P	CONC.(mg/Kg)		ANALYTE Sr	CONC.(mg/Kg)		ANALYTE Tl	CONC.(mg/K
20.11		PB		-0.0083	-0.17		-0.017	-0.34		-0.0002	-0.00		-0.0022	-0.04
196.55		93-02239		0.0644	12.66		4.085	802.91		0.1621	31.86		6.274	1233.15
199.43		93-2240		0.0486	9.69		2.442	487.01		0.1962	39.13		3.514	700.80
199.41		93-02241		0.0463	9.23		2.942	586.66		0.1414	28.20		3.4578	689.52
193.53		93-02351		0.0359	6.95		2.674	517.50		0.1084	20.98		3.478	673.10
199.85		93-02437		0.0425	8.49		2.524	504.42		0.1209	24.16		3.234	646.31
195.06		93-02438		0.0427	8.33		2.699	526.47		0.1147	22.37		3.449	672.76
205.56		93-02451		0.103	21.17		3.469	713.09		0.1559	32.05		4.876	1002.31

PF		ID		ANALYTE V	CONC.(mg/Kg)		ANALYTE Y	CONC.(mg/Kg)		ANALYTE Zr	CONC.(mg/Kg)
20.11		PB		-0.004	-0.08		-0.0019	-0.04		-0.0052	-0.10
196.55		93-02239		0.1812	35.61		0.0451	8.86		0.0780	15.33
199.43		93-2240		0.1233	24.59		0.0266	5.30		0.0333	6.64
199.41		93-02241		0.1252	24.97		0.0282	5.62		0.0412	8.22
193.53		93-02351		0.1236	23.92		0.0243	4.70		0.0470	9.10
199.85		93-02437		0.1229	24.56		0.0243	4.86		0.0329	6.58
195.06		93-02438		0.1309	25.53		0.028	5.46		0.0357	6.96
205.56		93-02451		0.1579	32.46		0.0399	8.20		0.0699	14.37

D03-034

9613492.0626

Note: Blank spaces or lines are permitted.

ICP-AES RUN LOG (TJA)

	Mode (C/I)	Calibration/QC Check Stds. [P]	[SP]	[C]	[S]	[B]	[V]	[M]	ALO Log #	Sample Identification	Client Name	Client WO#	ICP DF	Data File Name	[X]	ICP Method	Date/ Analyst
1	I/C		✓			✓				SPC-BLK 59225	S.A. McKinley	M82227		93D012A		CLP	1-12-93
2	I/C		✓							SPC-STD 921208 I11	↓	↓		↓		↓	↓
3	I	✓								Profile 921208I1	~~W. Thompson~~	M99282		93D093A		CLP	~~1-12-93~~ 1-13-93
4	I/C		✓			✓				SPC-BLK 59225	K. Kuhl-Klinger						1-13-93
5	I/C		✓							SPC-STD 921208I11	(TJA Project)						
6	I				✓	✓				STD1-Blank 59225							
7	I				✓					STD2 Hi 921208I2							
8	I				✓					STD3 Hi " 3							
9	I				✓					STD4 Hi " 4							
10	I				✓					STD5 Hi " 5							
11	I				✓					STD6 Hi " 6							
12	I				✓					STD7 Hi " 7							
13	I				✓					STD8 Hi " 8							
14	I				✓					STD9 Hi " 9							
15	C					✓				STD1-Blank 59225							
16	C						✓		PASS	ICV1 93010CE1							
17	C							✓	PASS	MCVA 921116E1							
18	C							✓	PASS	MCVB 921208I10							
19	C					✓				STD1-Blank 59225							
20	C									ICSA 921008E3			2X				
21	C									ICSAB 921008E4			2X				
22	C					✓				STD1-Blank 59225							
23	C									HNO3-HCl Process Blank							
24	C									Process Blank - Spiked							
25	C								93-02239	B07JZ4 1.0189g/200ml							

[SP] System Performance [S]tandardize [C]alibration Initial or Continuing Calibration [B]lank Initial or Continuing Calibration [V]erification Standard

[M]id-range Calibration Verif. [P]rofile (2 ppm Co) [X] A solid vertical line denotes contiguous data. "ICP DF" = Analytical Dilution Factor (other than 1x).

"Mode (C or I)" = [C]oncentration, [I]ntensity M & TE # WB73520 file: RUNLOG.TJA (11-26-91) 910917.7

Pneumatic Uptake: 1.02 ml/min DKS 1/13/93

Nebulizer: V.Gr

D03-035

9613492.0627

Note: Blank spaces or lines are permitted.

ICP-AES RUN LOG (TJA)

	Mode	Calibration/QC Check Stds.							ALO	Sample	Client		ICP	Data File		ICP	Date/
	(C/I)	(P)	(SP)	(C)	(S)	(B)	(V)	(M)	Log #	Identification	Name	WO#	DF	Name	(X)	Method	Analyst
1	C								93-02239	B07JZ4 1.0189g/200ml	W.Thompson	M99282		93P0139		CLP	1-13-93 DKS
2	C								93-02239	" " " Replicate Blank							
3	C								93-02240	B07JZ5 1.0029g/ "							
4	C							✓	PASS	MCVA 92111621							
5	C							✓	PASS	MCVB 921208I10							
6	C					✓				STD1-Blank 59225							
7	C								93-02241	B07JZ6 1.0079g/200ml							
8	C								93-02241D	" 0.9902g/ " Duplicate							
9	C								93-02241S	" 1.0037g/200ml SPIKE							
10	C								93-02351	B07JZ7 1.0350g/ "							
11	C								93-02437	B07JZ8 1.0064g/ "							
12	C								93-02438	B07JZ9 1.0252g/ "							
13	C								93-02451	B07K00 0.9130g/ "							
14	C									LCS-0287 1.0048g/200ml			5X				
15	C									" " " "			2X				
16	C							✓	PASS	MCVA 92111621							
17	C							✓	PASS	MCVB 921208I10							
18	C					✓				STD1-Blank 59225							
19	C									LCS+Bi 1.0389g/200ml			5X				
20	C									" " " "			2X				
21	C							✓	PASS	MCVA 92111621							
22	C							✓	PASS	MCVB 921208I10							
23	C					✓				STD1-Blank 59225							
24	C									ICSA 921008E3			2X				
25	C									ICSAB 921008E4			2X				

[SP] System Performa [S]tandardize [C]alibration Initial or Continuing Calibration [B]lank Initial or Continuing Calibration [V]erification Standard

[M]id-range Calibration Verifi [P]rofile (2 ppm Co) [X] A solid vertical line denotes contiguous data. "ICP DF" = Analytical Dilution Factor (other than 1x).

"Mode (C or I)" = [C]oncentration, [I]ntensity M & T E # WB73520 file: RUNLOG.TJA (11-26-91) 910917.7

D03-036

96134926.0628

ICP-AES RUN LOG (TJA)

Note: Blank spaces or lines are permitted.

	Mode	Calibration/QC Check Stds.							ALO	Sample	Client		ICP	Data File		ICP	Date/
	(C/I)	(P)	(SP)	(C)	(S)	(B)	(V)	(M)	Log #	Identification	Name	WO#	DF	Name	[X]	Method	Analyst
1	C						✓		PASS	ICVI 92C106E1	W. Thompson	M99282		92P013A		CLP	[illegible]
2	C							✓	PASS	MCVA 921116E1							
3	C							✓	PASS	MCVB 921208E10							
4	C					✓				STDI-Blank							
5	C								93-03320	300 from Monthly Process Sewer	T. Perry	EP3018	10X				
6	C								93-03320	" " " " "							
7	C								93-03320	" " " " " - Replicate							
8	C							✓	PASS	MCVA 921116E1							
9	C							✓	PASS	MCVB 921208E10							
10	C					✓				STDI-BLK 59225							
11	I/C		✓			✓				SPC-BLK 59225							
12	I/C		✓							SPC-STD 921208E11							
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
24																	
25																	

[SP] System Performa [S]tandardize [C]alibration Initial or Continuing Calibration [B]lank Initial or Continuing Calibration [V]erification Standard

[M]id-range Calibration Verifi [P]rofile (2 ppm Co) [X] A solid vertical line denotes contiguous data. "ICP DF" = Analytical Dilution Factor (other than 1x).

"Mode (C or I)" = [C]oncentration, [I]ntensity M & T E # W B 7 3 5 2 File: RUNLOG.TJA (11-26-91) 910917.7

D03-037

9613492.0629

filename: SPC_TA.BLE (910512) / FD# 891224.6

#	Date	Time	Day of Yr	Filename	SPC BLANK Zn	SPC BLANK Li	SPC BLANK Cu	SPC BLANK Mn	SPC STANDARD Zn	SPC STANDARD Li	SPC STANDARD Cu	SPC STANDARD Mn	Mn/Cu RATIO	
1	12-11-92	1447	346	920346A	508	441	1318	214	123300	23200	64570 1.050	54240 1.025	0.855	DKS
2	12-14-92	0712	349	920349A	516	447	1337	215	121100	23170	64010 1.038	54020 1.028	0.859	DKS
3	12-14-92	0922	349	920349A	563	457	1378	220	23190	129000	64430 1.048	54320 1.028	0.858	DKS
4	12-14-92	1506	349	920349A	524	445	1309	212	23350	130000	64510 1.047	54430 1.025	0.852	DKS
5	12-15-92	0617	350	920350A	518	449	1333	216	22360	122100	61910 1.035	52670 1.030	0.866	DKS
6	12-15-92	1410	350	920350A	603	512	1495	254	135500	23150	65940 1.033	57040 1.022	0.871	DKS
7	12-16-92	0807	351	920351A	543	459	1324	222	127600	23100	64140 1.043	55560 1.030	0.865	DKS
8	12-17-92	1207	352	920352A	568	436	1285	210	126500	22530	62360 1.024	52510 1.026	0.856	DKS
9	12-17-92	1438	352	920352A	511	438	1298	210	126940	22890	63250 1.065	52640 1.037	0.853	DKS
10	12-18-92	0120	353	920353A	500	453	1327	216	124800	22820	63020 1.061	53210 1.092	0.861	DKS
11	12-18-92	1303	353	920353A	522	460	1357	221	127200	23060	64480 1.039	54560 1.027	0.861	DKS
12	12-21-92	1007	356	920356A	487	479	1382	224	134200	24450	64240 1.085	53360 1.031	0.839	DKS
13	12-21-92	1450	356	920356A	427	420	1213	193	119160	24110	62060 1.043	47840 1.044	0.798	DKS
14	12-22-92	0628	357	920357A	438	446	1293	205	118820	23370	60630 1.039	49260 1.020	0.827	DKS
15	12-22-92	1454	357	920357A	427	428	1239	195	118100	23900	61840 1.030	49880 1.028	0.803	DKS
16	1/4/93	0633	004	930004A	401	399	1153	187	106600	21390	55250 .942	44810 .930	0.825	DKS
17	1/4/93	1007	004	930004A	399	412	1191	193	112000	22330	57650 1.063	46680 1.052	0.824	DKS
18	1/6/93	0601	006	930006A	454	452	1262	213	113000	22020	57920 1.069	48530 1.139	0.852	DKS
19	1/6/93	0727	006	930006A	497	485	1470	223	130200	23040	62400 1.070	52260 1.122	0.854	DKS
20	1/6/93	1221	006	930006A	482	451	1320	212	125400	23730	62350 1.054	50520 1.019	0.824	DKS
21	1/7/93	0618	007	930007A	469	447	1303	206	126000	23990	61520 1.057	50120 1.063	0.815	DKS
22	1/7/93	1354	007	930007A	455	430	1269	200	124400	22940	60640	47530	0.797	DKS
23	1/8/93	0618	008	930008A	437	427	1255	199	127200	23940	62650 1.032	49700 1.054	0.807	DKS
24	1/8/93	1237	008	930008A	432	409	1248	189	126500	24560	64210 1.038	49880 1.056	0.789	DKS
25	1/11/93	0627	011	930011A	454	442	1289	204	123600	23450	60830 .999	48800 1.061	0.817	DKS
26	1/11/93	1131	011	930011A	479	453	1329	212	126400	23710	62660 1.058	50500 1.077	0.821	DKS
27	1/12/93	0634	012	930012A	509	453	1332	212	123100	23430	61580 1.020	49700 1.049	0.821	DKS
28	1/12/93	1328	012	930012A	423	457	1357	217	126200	23380	62450 1.035	50450 1.068	0.822	DKS
29	1/13/93	0618	013	930013A	523	457	1317	211	121400	22750	59350 1.035	47940 1.038	0.826	DKS
30	1/13/93	1353	013	930013A	436	437	1293	202	123600	23090	61110 1.030	48180 1.069	0.802	DKS
31														
32														
33														

Note: All ICP data are in raw intensities. [Zn(I)=213.800nm] [Li(I)=670.700nm] [Cu(I)=324.700nm] [Mn(II)=257.600nm]

D03-038

9613492.0630

ICP-325-405

Performance Check Data on Balance and Pipettes

arformance checks of analytical balance and pipettes in support of the sample preparation data.

Balance performance check results

Analyst initials /date DKJ 1-13-93 S weight (certified) 1.0000

Anal. balance M&TE# L81287 S weight (found) 1.0000

Pipette performance check results

Pipet serial#	K59263 Eppendorf	M83-12444 Dil. Pump	N58243 Eppendorf		
pipet volume (ml)	.3	2.7	1.0		
Performance check#1	0.2999	2.7054	0.9993		
Performance check#2					
Performance check#3					
mean volume (ml)					
%pipetting error	0.03	0.20	0.07		

Not adjusted for density.

Performance checks of analytical balance and pipettes in support of the nalysis results if analysis not done on same day as sample preparation.

Balance performance check results

Analyst initials /date DKJ 1/13/93 S weight (certified) 1.0000

Anal. balance M&TE# L81287 S weight (found) 1.0000

Pipette performance check results

Pipet serial#	K59263 Eppendorf	M83-12444 Dil. Pump	N58243 Eppendorf		
pipet volume (ml)	.3	2.7	1.0		
Performance check#1	0.2991	2.7080	0.9989		
Performance check#2					
Performance check#3					
mean volume (ml)					
%pipetting error	0.30	0.30	0.11		

Analyst: Danny Sander Date: 1/13/93

9615492.0632

Analysis Report Summary Thu 01-14-93 10:53:29 AM page 1

Mn/Cu Ratio
START 0.820
END 0.802
J Wagner 1-14-93

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	SPC-BLK 59225	93D013A	CLP	01/13/93	06:16	DRS	S	INT
2	SPC-BLK 59225	93D013A	CLP	01/13/93	06:16	DRS	S	CONC
3	SPC-STD 921208I11	93D013A	CLP	01/13/93	06:18	DRS	S	INT
4	SPC-STD 921208I11	93D013A	CLP	01/13/93	06:18	DRS	S	CONC
5	STD1-Blank	93D013A	CLP	01/13/93	07:46		X	IR
6	STD2HI	93D013A	CLP	01/13/93	07:49		X	IR
7	STD3HI	93D013A	CLP	01/13/93	07:53		X	IR
8	STD4HI	93D013A	CLP	01/13/93	07:58		X	IR
9	STD5HI	93D013A	CLP	01/13/93	08:03		X	IR
10	STD6HI	93D013A	CLP	01/13/93	08:07		X	IR
11	STD7HI	93D013A	CLP	01/13/93	08:11		X	IR
12	STD8HI	93D013A	CLP	01/13/93	08:16		X	IR
13	STD9HI	93D013A	CLP	01/13/93	08:22		X	IR
14	STD1-Blank 59225	93D013A	CLP	01/13/93	08:37	DRS	S	CONC
15	ICV1 930106E1	93D013A	CLP	01/13/93	08:42	DRS	Q	CONC
16	MCVA 921116I1	93D013A	CLP	01/13/93	08:47	DRS	Q	CONC
17	MCVB 921208I10	93D013A	CLP	01/13/93	08:53	DRS	Q	CONC
18	STD1-Blank	93D013A	CLP	01/13/93	09:03	DRS	S	CONC
19	ICSA 921008E3 @2	93D013A	CLP	01/13/93	09:07	DRS	S	CONC
20	ICSAB 921008E4@2	93D013A	CLP	01/13/93	09:13	DRS	S	CONC
21	STD1-Blank J Wagner 1-14-93	93D013A	CLP	01/13/93	09:22	DRS	S	CONC
22	PB	93D013A	CLP	01/13/93	09:25	DRS	S	CONC
23	BS	93D013A	CLP	01/13/93	09:29	DRS	S	CONC
24	93-02239 @10	93D013A	CLP	01/13/93	09:33	DRS	S	CONC
25	93-02239	93D013A	CLP	01/13/93	09:37	DRS	S	CONC
26	93-~~0230~~ 02239 REP RUN J Wagner 1-14-93	93D013A	CLP	01/13/93	09:43	DRS	S	CONC
27	93-02240	93D013A	CLP	01/13/93	09:47	DRS	S	CONC
28	MCVA	93D013A	CLP	01/13/93	09:52	DRS	Q	CONC
29	MCVB	93D013A	CLP	01/13/93	09:57	DRS	Q	CONC
30	STD1-Blank	93D013A	CLP	01/13/93	10:05	DRS	S	CONC
31	93-02241	93D013A	CLP	01/13/93	10:08	DRS	S	CONC
32	93-02241D	93D013A	CLP	01/13/93	10:13	DRS	S	CONC
33	93-02241S	93D013A	CLP	01/13/93	10:17	DRS	S	CONC
34	93-02351	93D013A	CLP	01/13/93	10:23	DRS	S	CONC
35	93-02437	93D013A	CLP	01/13/93	10:27	DRS	S	CONC
36	93-02438	93D013A	CLP	01/13/93	10:32	DRS	S	CONC
37	93-02451	93D013A	CLP	01/13/93	10:37	DRS	S	CONC
38	LCS @5	93D013A	CLP	01/13/93	10:41	DRS	S	CONC
39	LCS @2	93D013A	CLP	01/13/93	10:45	DRS	S	CONC
40	MCVA	93D013A	CLP	01/13/93	10:51	DRS	Q	CONC
41	~~MCVA~~ MCVB J Wagner 1-14-93	93D013A	CLP	01/13/93	11:01	DRS	Q	CONC
42	STD1-Blank	93D013A	CLP	01/13/93	11:11	DRS	S	CONC
43	LCS+Bi @5	93D013A	CLP	01/13/93	11:16	DRS	S	CONC
44	LCS+Bi @2	93D013A	CLP	01/13/93	11:20	DRS	S	CONC
45	MCVA	93D013A	CLP	01/13/93	11:24	DRS	Q	CONC
46	MCVB	93D013A	CLP	01/13/93	11:29	DRS	Q	CONC
47	STD1-Blank	93D013A	CLP	01/13/93	11:33	DRS	S	CONC
48	ICSA 921008E3 @2	93D013A	CLP	01/13/93	11:36	DRS	S	CONC
49	ICSAB 921008E4 @2	93D013A	CLP	01/13/93	11:41	DRS	S	CONC
50	ICV1	93D013A	CLP	01/13/93	11:46	DRS	Q	CONC
51	MCVA	93D013A	CLP	01/13/93	11:50	DRS	Q	CONC
52	MCVB	93D013A	CLP	01/13/93	11:56	DRS	Q	CONC
53	STD1-Blank	93D013A	CLP	01/13/93	12:01	DRS	S	CONC

Analysis Report Summary Thu 01-14-93 10:53:29 AM page 2

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
54	93-03320 @10	93D013A	CLP	01/13/93	13:27	DRS	S	CONC
55	93-03320	93D013A	CLP	01/13/93	13:32	DRS	S	CONC
56	93-03320 REP RUN	93D013A	CLP	01/13/93	13:37	DRS	S	CONC
57	MCVA	93D013A	CLP	01/13/93	13:41	DRS	Q	CONC
58	MCVB	93D013A	CLP	01/13/93	13:45	DRS	Q	CONC
59	STD1-Blank	93D013A	CLP	01/13/93	13:49	DRS	S	CONC
60	SPC-BLK	93D013A	CLP	01/13/93	13:51	DRS	S	INT
61	SPC-BLK	93D013A	CLP	01/13/93	13:51	DRS	S	CONC
62	SPC-STD	93D013A	CLP	01/13/93	13:53	DRS	S	INT
63	SPC-STD	93D013A	CLP	01/13/93	13:53	DRS	S	CONC

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 3

#	Element	1 SPC'9225	2 SPC'9225	3 SPC'8I11	4 SPC'8I11	5 STD'lank	6 STD2HI
1	Ag	5913.33	-.0015	5969.33	-.0002	.57639	
2	Al	2182.67	-.0032	2204.67	-.0041	.21483	
3	As	2329.67	-.0330	2354	-.0246	.23023	
4	B	1117	.0063	1138.33	.0100	.10123	
5	Ba	255.667	-.0013	257	-.0012	.02513	4.9709
6	Be	211	-.0006	211.333	-.0006	.02109	
7	Bi	1431.67	-.0177	1630	-.0097	.13889	
8	Ca	1421.33	.1917	1051.33	.0162	.0979	
9	Cd	114	-.0009	117	.0001	.01106	
10	Ce	5451	-.0244	5457	-.0238	.53253	
11	Co	1510.33	-.0017	1503.67	-.0032	.14576	12.7863
12	Cr	483.667	-.0021	491.333	-.0013	.04699	8.45259
13	Cu	1317	-.0033	59551.7	10.05	.12956	11.7204
14	Dy	1875.67	-.0047	2053.33	.0002	.18379	
15	Eu	298.333	-.0014	299	-.0012	.02913	
16	Fe	568	.0066	588.667	.0005	.05306	51.2607
17	Gd	1041	-.0180	1058	.0098	.1008	
18	K	5142.33	.4625	5148	.5256	.50286	
19	La	838.667	-.0067	842	-.0050	.08223	
20	Li	451.333	-.0016	22749.3	9.015	.04413	
21	Mg	2235	-.0136	2302.33	-.0207	.21989	59.6834
22	Mn	211	-.0000	47944.7	10.38	.02053	
23	Mo	918.333	-.0073	937.667	-.0030	.09106	8.48053
24	Na	323.667	.0192	325.333	.0307	.03173	3.51906
25	Nd	3106	-.0323	3126.33	-.0244	.30493	
26	Ni	523	-.0012	527.333	.0006	.0505	4.14169
27	P	1671.33	-.0269	1819.67	-.0133	.16236	
28	Pb	15390.3	-.0423	15564	-.0388	1.51499	50.4985
29	Pd	13271.3	-.0769	13360.3	-.0540	1.30506	
30	Rh	13689.7	-.0367	13775	-.0264	1.34406	
31	Ru	4002.33	-.0172	4025.33	-.0131	.39309	
32	Sb	6780.33	-.0276	6946	-.0279	.66276	
33	Se	1475.33	-.0593	1518.67	-.0386	.1453	
34	Si	3621	.0135	3589.67	.0021	.34383	
35	Sn	7421	-.0685	7520.67	.0036	.72543	
36	Sr	136.667	.0006	136	.0005	.01323	5.78806
37	Te	11820.7	-.0468	12422.7	-.0356	1.1667	
38	Th	2365.67	-.0086	2371.67	-.0123	.23203	
39	Ti	566.667	-.0014	570.333	-.0012	.05526	8.6
40	Tl	528.333	-.0281	542.667	-.0224	.05176	
41	U	14926.7	-.5980	15009	-.4795	1.46626	
42	V	842	-.0056	848.333	-.0041	.08246	
43	W	424	-.0279	431.667	-.0314	.04206	
44	Y	223.333	-.0007	224.333	-.0003	.0218	
45	Zn	522.667	.0043	121413	10.07	.04633	23.3973
46	Zr	732	-.0049	735.333	-.0039	.0719	17.3425
47	N+1	16.6667	.0597	26.6667	.0598	.00166	

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 4

#	Element	7 STD3HI	8 STD4HI	9 STD5HI	10 STD6HI	11 STD7HI	12 STD8HI
1	Ag						24.3143
2	Al	50.9228					
3	As			13.1424			
4	B	28.298					
5	Ba						
6	Be			.9714			
7	Bi						20.9967
8	Ca	97.9089					
9	Cd	2.04583					
10	Ce			15.3143			
11	Co						
12	Cr						
13	Cu						
14	Dy		31.1258				
15	Eu		7.08629				
16	Fe						
17	Gd			2.81426			
18	K	4.7485					
19	La		3.6875				
20	Li	12.2108					
21	Mg						
22	Mn	4.53246					
23	Mo						
24	Na						
25	Nd		9.78733				
26	Ni						
27	P	11.0364					
28	Pb						
29	Pd						
30	Rh						
31	Ru		24.8679				
32	Sb			40.6321			
33	Se						2.75099
34	Si					57.093	
35	Sn						
36	Sr						
37	Te					38.0512	
38	Th		9.48069				
39	Ti						
40	Tl						1.12779
41	U				31.8622		
42	V			7.565			
43	W						
44	Y			2.15076			
45	Zn						
46	Zr						
47	N+1						

Analysis Report Averages ICV Thu 01-14-93 10:53:29 AM page 5

#	Element	13 STD9HI	14 STD'9225	15 ICV'06E1	16 MCV'16I1	17 MCV'8I10	18 STD'lank
1	Ag		.0040	.4930	.5000	-.0061	-.0003
2	Al		.0002	1.841	25.12	-.6482	.0019
3	As		-.0017	-.0086	2.445	-.0808	-.0081
4	B		.0284	.0267	1.976	.0159	.0081
5	Ba		-.0003	1.999	.5061	.0009	-.0001
6	Be		-.0001	.5009	.1039	.0013	.0000
7	Bi		-.0051	.0039	24.69	.0429	-.0010
8	Ca		.0024	48.55	24.82	.0027	.0071
9	Cd		.0008	.4997	.4942	.0044	.0015
10	Ce		-.0071	-.0154	.0019	4.923	.0023
11	Co		.0002	.4917	1.016	-.0005	.0002
12	Cr		-.0003	.5109	1.014	.0021	-.0016
13	Cu		.0008	.5109	1.020	-.0009	.0015
14	Dy		-.0008	-.0023	-.0005	4.780	-.0006
15	Eu		.0001	.0011	-.0003	1.942	.0004
16	Fe		-.0008	1.915	19.74	.0090	-.0006
17	Gd		.0192	.1686	.0922	4.981	.0185
18	K		-.2129	50.07	24.13	-.3242	.1007
19	La		-.0012	.0228	.0110	1.927	.0014
20	Li		.0007	.0027	2.160	.0024	.0003
21	Mg		-.0052	24.32	24.61	-.0421	-.0040
22	Mn		-.0001	.4911	.5036	.0005	-.0001
23	Mo		-.0014	-.0024	1.004	.0050	-.0011
24	Na		-.0100	50.93	10.16	.1284	.0206
25	Nd		-.0048	-.0117	-.0082	4.821	.0030
26	Ni		-.0002	.5019	1.012	.0051	.0019
27	P		.0100	.0366	20.24	.0278	.0215
28	Pb		-.0021	4.951	2.479	-.0267	.0012
29	Pd	16.1348	.0019	-.0411	-.0336	-1.343	.0104
30	Rh	38.6556	-.0000	-.0158	-.0116	-.0154	.0017
31	Ru		.0010	.0011	-.0116	4.790	.0046
32	Sb		.0084	-.0007	2.403	.0125	.0117
33	Se		.0128	.0050	2.525	.0271	.0097
34	Si		.2144	.1543	19.04	-.0190	.0109
35	Sn	7.84579	-.0217	-.0735	-.0144	-.0269	-.0130
36	Sr		-.0000	.0176	.5125	.0009	.0001
37	Te		-.0022	-.0360	.0023	4.853	-.0061
38	Th		.0054	.0400	.0644	4.777	-.0046
39	Ti		-.0001	.0004	1.001	.0042	-.0000
40	Tl		.0076	.0096	2.553	.0311	-.0001
41	U		-.1374	-.0550	-.1300	10.27	.0125
42	V		-.0008	.4986	1.013	.0042	-.0000
43	W	2.27996	.0061	-.0044	.0032	.0116	.0030
44	Y		-.0001	.0004	.0004	.9942	.0005
45	Zn		-.0000	3.066	1.029	.0020	-.0006
46	Zr		-.0016	-.0054	2.035	.0206	-.0010
47	N+1		.0597	.0597	.0598	.0597	.0597

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 6

#	Element	19 ICS'3 @2	20 ICS'08E4	21 STD'lank	22 PB	23 BS	24 93-' @10
1	Ag	-.0003	.4779	.0008	.0007	.0475	.0007
2	Al	273.3	271.9	.0490	.0074	.0067	3.035
3	As	-.3567	-.3583	-.0080	-.0100	1.946	-.0057
4	B	.0468	.0475	.0091	.0107	.0109	.0017
5	Ba	.0053	.2478	.0005	.0021	2.030	.0385
6	Be	-.0000	.2458	-.0001	-.0003	.0499	.0001
7	Bi	.0542	.0517	.0024	.0023	48.28	.0544
8	Ca	252.0	250.4	.0850	.0158	.0119	5.035
9	Cd	.0054	.4743	.0013	-.0003	.0467	.0001
10	Ce	-.0290	-.0219	.0024	-.0459	-.0517	.0044
11	Co	.0044	.2430	.0012	-.0039	.4866	.0041
12	Cr	.0223	.2855	.0024	-.0015	.2016	.0075
13	Cu	.0001	.2556	.0018	.0008	.2415	.0077
14	Dy	-.0034	-.0026	.0005	-.0055	-.0061	.0007
15	Eu	.0004	.0005	.0004	-.0014	-.0017	.0000
16	Fe	99.46	98.80	.0194	.0016	-.0004	8.865
17	Gd	.6559	.6649	.0218	.0007	-.0036	.0313
18	K	-1.816	-1.656	.1086	-1.438	-1.590	.4689
19	La	.0785	.0802	.0020	-.0083	-.0108	.0076
20	Li	.0079	.0067	.0032	-.0033	-.0041	.0036
21	Mg	245.8	244.1	.0441	-.0073	-.0066	2.238
22	Mn	.0137	.2482	.0003	-.0003	.4940	.1739
23	Mo	.0086	.0086	-.0030	-.0044	.0008	-.0019
24	Na	1.360	1.362	-.0001	.0611	.1107	.2536
25	Nd	-.0198	-.0187	.0066	-.0305	-.0421	.0079
26	Ni	.0186	.4874	.0032	.0006	.4899	.0048
27	P	.2824	.2961	.0305	-.0170	.0373	.4533
28	Pb	-.0180	2.335	-.0091	-.0269	.4570	.0012
29	Pd	-.0871	-.0893	.0174	-.0670	-.0847	-.0029
30	Rh	-.0136	-.0091	.0028	-.0389	-.0452	-.0019
31	Ru	-.0947	-.0948	.0030	-.0096	-.0123	-.0089
32	Sb	-.0883	-.0979	.0040	-.0074	.4814	-.0073
33	Se	-.0069	-.0033	.0014	-.0148	1.961	.0235
34	Si	.0455	.0456	.0134	.0146	.0097	.1397
35	Sn	-.1868	-.1697	.0060	-.1051	-.0745	-.0126
36	Sr	.2522	.2515	.0002	-.0002	.0007	.0166
37	Te	-.0089	-.0206	-.0114	-.0365	-.0164	-.0173
38	Th	.2307	.2277	-.0021	.0039	.0140	.0074
39	Ti	.0060	.0061	.0005	-.0022	-.0021	.6402
40	Tl	.1526	.1482	-.0038	-.0032	1.874	.0053
41	U	.0901	.1327	-.0035	-.5482	-.7004	-.0347
42	V	.0215	.2650	.0005	-.0040	.4929	.0188
43	W	.0085	-.0139	-.0031	-.0207	-.0239	.0035
44	Y	.0043	.0045	.0003	-.0019	-.0023	.0048
45	Zn	.1040	.6283	.0006	.0041	.4972	.0216
46	Zr	-.0146	-.0142	-.0003	-.0052	-.0072	.0071
47	N+1	.0597	.0597	.0597	.0597	.0599	.0597

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 7

#	Element	25 93-02239	26 93-' RUN	27 93-02240	28 MCVA	29 MCVB	30 STD'lank
1	Ag	-.0008	-.0009	-.0013	.4947	-.0046	-.0006
2	Al	29.67	29.62	32.58	24.81	-.5369	-.0023
3	As	-.0224	-.0318	-.0375	2.398	-.0815	-.0067
4	B	-.0310	-.0319	-.0187	1.941	.0138	.0005
5	Ba	.3663	.3653	.3444	.4982	.0015	.0001
6	Be	.0014	.0013	.0013	.1018	.0015	-.0001
7	Bi	.0855	.0644	.0362	24.34	.0805	.0008
8	Ca	48.96	48.87	38.87	24.41	.0332	.0516
9	Cd	-.0005	.0009	-.0002	.4863	.0029	-.0001
10	Ce	.0628	.0670	.0420	.0139	4.926	-.0062
11	Co	.0342	.0338	.0227	.9985	.0013	-.0005
12	Cr	.0586	.0583	.0489	.9897	.0058	.0021
13	Cu	.0609	.0609	.0655	1.004	.0004	.0005
14	Dy	.0042	.0044	.0004	.0012	4.766	.0004
15	Eu	-.0022	-.0020	-.0022	.0005	1.937	.0009
16	Fe	87.44	87.12	66.99	19.39	.0368	-.0013
17	Gd	.2174	.2104	.1588	.1199	4.942	.0235
18	K	4.085	4.370	5.476	24.31	-.2442	-.3274
19	La	.0644	.0653	.0486	.0144	1.930	-.0007
20	Li	.0315	.0316	.0397	2.123	.0047	.0011
21	Mg	21.72	21.68	20.70	24.24	-.0133	-.0061
22	Mn	1.708	1.706	1.336	.4955	.0012	.0001
23	Mo	.0058	.0065	.0022	.9870	.0065	-.0032
24	Na	2.347	2.337	5.626	10.03	.1595	-.0190
25	Nd	.0189	.0239	.0055	.0017	4.813	.0010
26	Ni	.0457	.0495	.0413	1.004	.0071	.0030
27	P	4.085	4.107	2.442	19.95	.0258	.0138
28	Pb	.0412	.0435	-.0061	2.441	-.0217	-.0178
29	Pd	-.1117	-.1049	-.0969	-.0026	-1.309	-.0022
30	Rh	-.0334	-.0280	-.0302	.0003	-.0077	-.0021
31	Ru	-.0977	-.0966	-.0712	-.0075	4.785	.0029
32	Sb	-.0154	-.0192	-.0230	2.354	.0295	.0027
33	Se	.0243	.0227	.0088	2.476	.0417	.0017
34	Si	1.266	1.268	4.339	18.76	-.0156	.0046
35	Sn	-.1241	-.0835	-.0896	.0125	.0051	-.0241
36	Sr	.1621	.1613	.1962	.5052	.0014	.0000
37	Te	-.0302	-.0342	-.0442	-.0107	4.853	-.0155
38	Th	.0751	.0723	.0658	.0550	4.767	.0002
39	Ti	6.274	6.250	3.514	.9888	.0060	-.0002
40	Tl	.0321	.0193	.0231	2.515	.0197	-.0098
41	U	-.5237	-.4060	-.4975	.0694	10.25	-.0530
42	V	.1812	.1821	.1233	1.001	.0053	-.0014
43	W	-.0159	-.0174	-.0230	-.0042	.0024	-.0036
44	Y	.0451	.0447	.0266	.0006	.9871	-.0001
45	Zn	.2087	.2073	.1755	1.019	.0028	-.0001
46	Zr	.0780	.0785	.0333	2.012	.0225	-.0014
47	N+1	.0597	.0597	.0597	.0598	.0597	.0597

Spike sample

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 8

#	Element	31 93-02241	32 93-'241D	33 93-'241S	34 93-02351	35 93-02437	36 93-02438
1	Ag	-.0020	-.0015	.0467	-.0024	-.0024	-.0019
2	Al	30.68	30.54	28.29	28.71	27.83	29.01
3	As	-.0372	-.0370	1.910	-.0298	-.0365	-.0266
4	B	-.0188	-.0190	-.0147	-.0179	-.0159	-.0181
5	Ba	.2900	.2866	2.251	.2567	.2774	.2990
6	Be	.0010	.0011	.0518	.0011	.0009	.0011
7	Bi	.0384	.0339	47.91	.1310	.0591	.0369
8	Ca	33.25	32.14	34.74	26.86	32.81	31.08
9	Cd	.0020	.0005	.0456	.0014	.0009	.0018
10	Ce	.0317	.0356	.0589	.0171	.0267	.0412
11	Co	.0207	.0214	.5044	.0217	.0234	.0253
12	Cr	.0575	.0605	.2586	.0576	.0602	.0645
13	Cu	.0451	.0505	.2833	.0473	.0478	.0497
14	Dy	.0001	-.0002	.0008	-.0007	-.0001	.0007
15	Eu	-.0021	-.0023	-.0018	-.0025	-.0022	-.0024
16	Fe	66.91	65.19	59.31	64.10	62.60	68.25
17	Gd	.1333	.1411	.1393	.1189	.1515	.1536
18	K	3.829	4.632	3.805	3.471	4.133	4.507
19	La	.0463	.0419	.0447	.0359	.0425	.0427
20	Li	.0340	.0344	.0326	.0319	.0330	.0378
21	Mg	18.82	18.60	18.29	18.31	18.23	20.28
22	Mn	1.275	1.170	1.707	1.221	1.267	1.323
23	Mo	.0027	.0030	.0099	.0028	.0023	.0048
24	Na	9.588	9.267	8.922	7.923	7.851	8.246
25	Nd	.0061	.0021	.0071	-.0079	-.0001	.0028
26	Ni	.0459	.0408	.5316	.0508	.0489	.0489
27	P	2.942	2.670	2.520	2.674	2.524	2.699
28	Pb	.0276	.0331	.5180	.0031	-.0104	-.0099
29	Pd	-.0980	-.0934	-.0917	-.0933	-.0829	-.0875
30	Rh	-.0395	-.0375	-.0345	-.0393	-.0317	-.0298
31	Ru	-.0695	-.0676	-.0568	-.0645	-.0608	-.0676
32	Sb	-.0152	-.0124	.2117	-.0204	-.0186	-.0102
33	Se	-.0042	-.0011	1.956	.0093	.0130	.0117
34	Si	3.050	2.481	3.226	2.115	2.319	2.438
35	Sn	-.1213	-.1283	-.0660	-.1034	-.1015	-.0797
36	Sr	.1414	.1227	.1262	.1084	.1209	.1147
37	Te	-.0344	-.0397	-.0189	-.0356	-.0405	-.0274
38	Th	.0720	.0683	.0672	.0637	.0544	.0719
39	Ti	3.457	3.513	3.172	3.478	3.234	3.449
40	Tl	.0156	.0178	1.863	.0050	.0166	.0273
41	U	-.6225	-.5295	-.4829	-.5942	-.4576	-.5187
42	V	.1252	.1256	.6086	.1236	.1229	.1309
43	W	-.0005	-.0239	-.0078	-.0218	-.0261	-.0201
44	Y	.0283	.0279	.0266	.0243	.0243	.0280
45	Zn	.1534	.1505	.6287	.1552	.1467	.1577
46	Zr	.0412	.0426	.0397	.0402	.0329	.0357
47	N+1	.0597	.0597	.0599	.0597	.0597	.0597

9613492.0640

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 9

#	Element	37 93-02451	38 LCS @5	39 LCS @2	40 MCVA	41 MCVA	42 STD'lank
1	Ag	-.0023	.0198	.0530	.4971	-.0050	.0001
2	Al	27.25	-.0228	.1760	25.02	-.5003	.0045
3	As	-.0314	.9798	2.444	2.429	-.0850	-.0105
4	B	-.0217	.0109	.0302	1.958	.0077	.0006
5	Ba	.3715	.0056	.0134	.5027	.0013	-.0002
6	Be	.0013	.0217	.0519	.1029	.0012	.0000
7	Bi	.0499	.1002	.2199	24.61	.0274	.0176
8	Ca	41.88	195.6	479.3	24.78	.0150	-.0033
9	Cd	.0001	.0480	.1115	.4869	.0023	.0015
10	Ce	.1357	-.0154	-.0233	.0039	4.943	-.0053
11	Co	.0248	.1650	.3955	1.012	.0012	.0001
12	Cr	.0639	.1220	.2846	1.003	.0010	.0006
13	Cu	.0546	7.532	18.33	1.033	.0026	.0030
14	Dy	.0034	-.0019	-.0026	.0004	4.768	.0009
15	Eu	-.0020	.0030	.0053	.0003	1.940	.0009
16	Fe	78.19	22.22	53.46	19.50	.0064	-.0025
17	Gd	.1983	.4823	.7377	.1305	4.921	.0188
18	K	3.453	-1.160	-2.579	24.25	-.1843	-.0875
19	La	.1030	.0700	.0758	.0130	1.936	.0012
20	Li	.0278	.0063	.0099	2.143	.0027	.0007
21	Mg	17.68	117.1	287.2	24.55	-.0373	-.0074
22	Mn	1.244	.2275	.5429	.5009	.0004	-.0000
23	Mo	.0033	.0501	.1308	.9967	.0037	-.0039
24	Na	9.819	.4334	.7870	10.10	.1239	-.0045
25	Nd	.0303	-.0147	-.0301	-.0023	4.825	.0020
26	Ni	.0328	.0691	.1589	1.003	.0053	.0028
27	P	3.469	.2389	.3612	20.25	-.0097	.0314
28	Pb	-.0172	.2197	.5485	2.462	-.0310	-.0112
29	Pd	-.0923	-.1168	-.1545	-.0146	-1.283	.0146
30	Rh	-.0322	-.0160	-.0196	-.0000	-.0047	-.0002
31	Ru	-.0730	-.0100	-.0209	-.0058	4.794	.0016
32	Sb	-.0206	.2402	.5955	2.381	.0082	.0030
33	Se	.0050	.0507	.1218	2.519	.0357	-.0206
34	Si	1.524	.2942	.5680	18.92	-.0407	.0089
35	Sn	-.0913	-.1097	-.1744	.0059	-.0328	-.0038
36	Sr	.1559	.0627	.1529	.5112	.0009	.0001
37	Te	-.0351	-.0204	-.0211	-.0066	4.821	-.0164
38	Th	.0793	.1612	.2172	.0594	4.765	-.0003
39	Ti	4.876	.0281	.0533	.9965	.0044	-.0001
40	Tl	.0124	.0545	.1454	2.523	.0103	-.0128
41	U	-.5385	.1028	.0003	.0021	10.29	-.0410
42	V	.1579	.0863	.2024	1.010	.0041	-.0002
43	W	-.0080	-.0011	-.0067	.0129	.0053	-.0127
44	Y	.0399	.0075	.0188	.0006	.9855	-.0005
45	Zn	.1508	.1801	.4482	1.029	.0016	-.0012
46	Zr	.0699	-.0104	-.0100	2.034	.0199	-.0003
47	N+1	.0597	.0598	.0599	.0598	.0597	.0597

D03-048

CCV8

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 10

#	Element	43 LCS'i @5	44 LCS'i @2	45 MCVA	46 MCVB	47 STD'lank	48 ICS'3 @2
1	Ag	.0190	.0499	.4940	-.0053	-.0012	-.0011
2	Al	-.0565	.1683	24.86	-.4374	.0080	271.5
3	As	.9686	2.384	2.401	-.0905	-.0080	-.3795
4	B	.0110	.0308	1.943	.0097	.0005	.0371
5	Ba	.0055	.0140	.4984	.0010	-.0005	.0052
6	Be	.0222	.0530	.1020	.0013	.0000	.0000
7	Bi	9.766	23.97	24.39	.0674	.0071	.0668
8	Ca	200.1	489.4	25.04	.0510	.0208	247.0
9	Cd	.0458	.1126	.4869	.0019	.0006	.0036
10	Ce	-.0208	-.0202	-.0034	4.904	-.0108	-.0268
11	Co	.1610	.3881	.9986	.0005	-.0018	.0037
12	Cr	.1202	.2890	.9825	.0030	.0011	.0239
13	Cu	7.687	18.62	1.052	.0081	.0044	.0044
14	Dy	-.0021	-.0029	-.0007	4.745	.0065	-.0022
15	Eu	.0032	.0059	.0000	1.932	.0033	.0009
16	Fe	21.77	52.39	19.39	.0191	.0019	97.64
17	Gd	.4885	.7594	.1251	4.885	.0269	.6641
18	K	-1.362	-2.568	23.98	-.3807	-.5441	-2.002
19	La	.0695	.0730	.0129	1.923	.0016	.0807
20	Li	.0071	.0122	2.133	.0025	-.0007	.0064
21	Mg	120.0	294.0	24.69	-.0079	.0092	242.8
22	Mn	.2307	.5542	.4972	.0005	.0002	.0137
23	Mo	.0498	.1269	.9850	.0049	-.0025	.0067
24	Na	.4296	.8173	10.08	.1386	-.0191	1.353
25	Nd	-.0132	-.0265	-.0067	4.798	-.0045	-.0272
26	Ni	.0689	.1586	.9966	.0034	.0023	.0182
27	P	.2221	.3593	19.97	.0033	.0182	.2543
28	Pb	.2175	.5422	2.435	-.0340	-.0187	-.0395
29	Pd	-.1212	-.1462	-.0243	-1.286	-.0143	-.1016
30	Rh	-.0172	-.0225	-.0053	-.0077	-.0108	-.0192
31	Ru	-.0108	-.0162	-.0069	4.765	.0026	-.0571
32	Sb	.2361	.5819	2.348	.0116	.0024	-.0841
33	Se	.0469	.1216	2.489	.0329	.0020	-.0075
34	Si	.2923	.5692	18.76	-.0237	.0012	.0490
35	Sn	-.0917	-.1597	-.0240	-.0434	-.0535	-.1674
36	Sr	.0641	.1565	.5073	.0011	.0000	.2506
37	Te	-.0259	-.0254	-.0302	4.775	-.0111	-.0230
38	Th	.1641	.2076	.0577	4.751	.0090	.2341
39	Ti	.0206	.0533	.9876	.0045	-.0005	.0052
40	Tl	.0112	.0296	2.481	.0059	-.0078	.1361
41	U	.0937	-.0151	-.1367	10.09	-.2356	-.0013
42	V	.0868	.2039	1.001	.0046	-.0013	.0216
43	W	-.0021	-.0119	-.0054	-.0108	-.0008	-.0191
44	Y	.0072	.0193	.0004	.9795	.0009	.0042
45	Zn	.1800	.4325	1.018	.0018	-.0013	.1040
46	Zr	-.0111	-.0087	2.018	.0195	-.0017	-.0149
47	N+1	.0598	.0600	.0598	.0597	.0597	.0597

9615492.0642

(CCV5 in my calculations and on the ICV FORMS)

CCV1 CCV4

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 11

#	Element	49 ICS'4 @2	50 ICV1	51 MCVA	52 MCVB	53 STD'lank	54 93-' @10
1	Ag	.4755	.4865	.4931	-.0051	-.0004	-.0027
2	Al	272.7	2.0846	24.89	-.4282	.0006	.0133
3	As	-.3768	-.0175	2.387	-.0877	-.0085	-.0155
4	B	.0401	.0056	1.942	.0079	.0018	-.0040
5	Ba	.2469	1.976	.5005	.0011	-.0000	.0015
6	Be	.2457	.4958	.1026	.0014	-.0001	-.0000
7	Bi	.0691	.0067	24.36	.0661	.0105	-.0013
8	Ca	247.7	47.69	24.26	.0171	-.0008	1.898
9	Cd	.4750	.4944	.4851	.0033	.0012	.0002
10	Ce	-.0366	-.0264	-.0112	4.873	-.0040	-.0264
11	Co	.2419	.4893	.9989	-.0003	-.0021	-.0025
12	Cr	.2769	.5021	.9868	.0027	-.0003	.0005
13	Cu	.2612	.5117	1.014	.0017	.0022	.0026
14	Dy	-.0039	-.0028	-.0014	4.726	.0026	-.0034
15	Eu	.0004	.0009	-.0003	1.924	.0018	-.0007
16	Fe	97.99	1.957	19.30	.0186	-.0023	.0110
17	Gd	.6360	.1465	.1073	4.867	.0317	.0119
18	K	-2.105	49.43	23.87	-.4144	-.2255	-.5816
19	La	.0813	.0230	.0117	1.914	.0003	-.0041
20	Li	.0068	.0010	2.130	.0035	.0007	-.0003
21	Mg	243.5	24.14	24.21	-.0237	-.0100	.4736
22	Mn	.2475	.4855	.4965	.0005	-.0003	-.0001
23	Mo	.0086	-.0036	.9876	.0033	-.0046	-.0039
24	Na	1.357	50.61	10.11	.1408	-.0087	1.047
25	Nd	-.0279	-.0144	-.0121	4.768	.0048	-.0189
26	Ni	.4846	.4993	1.000	.0054	.0000	-.0016
27	P	.2646	.0530	19.87	.0080	.0171	.0262
28	Pb	2.321	4.888	2.436	-.0370	-.0240	-.0286
29	Pd	-.0908	-.0433	-.0290	-1.281	.0008	-.0461
30	Rh	-.0197	-.0140	-.0105	-.0126	-.0045	-.0226
31	Ru	-.0593	-.0035	-.0050	4.736	.0017	-.0089
32	Sb	-.0845	-.0002	2.354	.0138	-.0019	-.0112
33	Se	-.0046	-.0135	2.471	.0284	-.0042	-.0149
34	Si	.0451	.0327	18.75	-.0230	.0160	.2283
35	Sn	-.1353	-.0760	.0188	-.0565	-.0524	-.0901
36	Sr	.2519	.0176	.5078	.0011	.0001	.0092
37	Te	-.0393	-.0468	-.0200	4.790	-.0398	-.0295
38	Th	.2358	.0424	.0623	4.737	.0079	.0035
39	Ti	.0056	.0001	.9891	.0044	-.0005	-.0017
40	Tl	.1397	-.0014	2.495	.0180	-.0265	-.0008
41	U	.0307	-.0902	-.1437	9.990	-.1623	-.3935
42	V	.2648	.4923	1.001	.0039	-.0005	-.0026
43	W	-.0229	-.0002	-.0004	-.0037	-.0267	-.0131
44	Y	.0036	-.0004	-.0004	.9734	.0004	-.0010
45	Zn	.6306	3.067	1.024	.0025	-.0010	.0000
46	Zr	-.0155	-.0059	2.020	.0178	-.0021	-.0032
47	N+1	.0597	.0597	.0598	.0597	.0597	.0597

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 12

#	Element	55 93-03320	56 93-' RUN	57 MCVA	58 MCVB	59 STD'lank	60 SPC-BLK
1	Ag	-.0039	-.0032	.4904	-.0075	-.0032	5660.67
2	Al	.0306	.0360	24.98	-.3624	.0125	2151.33
3	As	-.0070	.0004	2.397	-.0999	-.0199	2247.67
4	B	.0004	-.0012	1.950	.0050	-.0019	993.333
5	Ba	.0191	.0193	.4990	.0010	-.0010	248.333
6	Be	-.0002	-.0001	.1021	.0013	-.0001	210.333
7	Bi	-.0139	-.0010	24.31	.0817	.0010	1388.67
8	Ca	19.39	19.41	24.29	.0280	-.0059	970.667
9	Cd	.0010	.0014	.4817	.0036	-.0003	112
10	Ce	-.0351	-.0284	-.0286	4.882	-.0258	5228.67
11	Co	-.0043	-.0028	.9945	-.0006	-.0040	1437.67
12	Cr	.0011	.0003	.9833	.0027	-.0007	465
13	Cu	.0298	.0304	1.013	-.0006	-.0000	1290.67
14	Dy	-.0046	-.0039	-.0039	4.742	.0030	1823.67
15	Eu	-.0007	-.0001	-.0010	1.931	.0020	291
16	Fe	.1432	.1434	19.36	.0300	-.0016	521.667
17	Gd	.0622	.0580	.1063	4.852	.0044	1000.67
18	K	-.0482	.3554	23.20	-.6924	-.8253	4964.33
19	La	.0023	.0059	.0061	1.914	-.0035	813
20	Li	.0006	.0000	2.139	.0030	-.0015	437
21	Mg	4.905	4.890	24.33	-.0189	-.0171	2161.33
22	Mn	.0036	.0037	.4953	.0005	-.0001	201.667
23	Mo	-.0059	-.0041	.9853	.0056	-.0047	889
24	Na	11.41	11.32	10.13	.1099	-.0207	314
25	Nd	-.0294	-.0237	-.0266	4.775	-.0138	3002.67
26	Ni	.0010	.0006	.9897	.0023	-.0041	497.333
27	P	.0954	.1012	19.91	.0114	.0051	1642
28	Pb	-.0349	-.0361	2.399	-.0478	-.0351	14754
29	Pd	-.0672	-.0530	-.0750	-1.291	-.0559	12853.3
30	Rh	-.0325	-.0240	-.0256	-.0280	-.0238	13229.7
31	Ru	-.0131	-.0098	-.0141	4.736	-.0066	3887
32	Sb	-.0086	-.0127	2.322	.0117	-.0054	6572.33
33	Se	-.0171	-.0004	2.486	.0407	-.0177	1428.33
34	Si	2.403	2.398	18.74	-.0272	.0063	3389.33
35	Sn	-.1106	-.1060	-.0927	-.1177	-.0971	7129.33
36	Sr	.0950	.0950	.5092	.0011	-.0002	131
37	Te	-.0454	-.0368	-.0397	4.779	-.0311	11379
38	Th	.0114	.0134	.0563	4.725	.0153	2288.67
39	Ti	-.0008	-.0008	.9895	.0041	-.0014	545.333
40	Tl	-.0054	-.0072	2.489	.0013	-.0311	508.667
41	U	-.4899	-.3553	-.4617	9.886	-.4386	14390.3
42	V	-.0027	-.0014	.9978	.0024	-.0031	810
43	W	-.0276	-.0032	-.0024	.0014	-.0256	419.333
44	Y	-.0014	-.0007	-.0009	.9748	.0001	215.333
45	Zn	.0181	.0191	1.028	.0022	-.0009	439.333
46	Zr	-.0053	-.0045	2.027	.0191	-.0043	706.333
47	N+1	.0597	.0597	.0598	.0597	.0597	16.6667

Analysis Report Averages Thu 01-14-93 10:53:29 AM page 13

#	Element	61 SPC-BLK	62 SPC-STD	63 SPC-STD			
1	Ag	-.0029	5732.33	-.0009			
2	Al	.0164	2178	.0185			
3	As	-.0196	2257	-.0164			
4	B	-.0027	1018	.0016			
5	Ba	-.0006	249	-.0006			
6	Be	-.0000	209	-.0002			
7	Bi	.0005	1586.33	.0066			
8	Ca	-.0020	1010	.0169			
9	Cd	.0009	114.667	.0019			
10	Ce	-.0307	5246.67	-.0257			
11	Co	-.0028	1442	-.0026			
12	Cr	-.0011	481.667	.0019			
13	Cu	-.0001	61107	10.50			
14	Dy	-.0017	1971.67	-.0017			
15	Eu	.0001	289.667	-.0003			
16	Fe	-.0026	569.667	.0013			
17	Gd	-.0004	1019.33	.0322			
18	K	-.7338	4970.33	-.6655			
19	La	-.0042	814	-.0038			
20	Li	-.0018	23094	9.309			
21	Mg	-.0102	2235.33	-.0109			
22	Mn	-.0006	48179.3	10.69			
23	Mo	-.0049	915.667	.0013			
24	Na	-.0239	316	-.0092			
25	Nd	-.0222	3019	-.0161			
26	Ni	-.0034	503	-.0008			
27	P	.0167	1773.33	.0152			
28	Pb	-.0367	14915	-.0341			
29	Pd	-.0485	12925	-.0288			
30	Rh	-.0252	13280	-.0190			
31	Ru	-.0072	3925.67	.0001			
32	Sb	-.0063	6736.33	-.0067			
33	Se	-.0172	1459.33	-.0047			
34	Si	-.0075	3461.67	.0181			
35	Sn	-.0869	7211.33	-.0270			
36	Sr	-.0002	131.667	-.0001			
37	Te	-.0373	11920.3	-.0340			
38	Th	.0083	2285.67	.0020			
39	Ti	-.0014	549	-.0012			
40	Tl	-.0161	523.333	-.0091			
41	U	-.4374	14447	-.3569			
42	V	-.0034	818.333	-.0012			
43	W	-.0014	424	-.0119			
44	Y	-.0010	216	-.0007			
45	Zn	-.0020	123628	10.57			
46	Zr	-.0039	708.333	-.0030			
47	N+1	.0597	26.6667	.0598			

9613492.0645

Analysis Report Summary Wed 01-13-93 02:01:39 PM page 1

Danny Sanders 93D013A 1/14/93 M992892/20070 E03018/20063 Begin: 0820 End: 0902

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	SPC-BLK 59225	93D013A	CLP	01/13/93	06:16	DRS	S	INT
2	SPC-BLK 59225	93D013A	CLP	01/13/93	06:16	DRS	S	CONC
3	SPC-STD 921208I11	93D013A	CLP	01/13/93	06:18	DRS	S	INT
4	SPC-STD 921208I11	93D013A	CLP	01/13/93	06:18	DRS	S	CONC
5	STD1-Blank	93D013A	CLP	01/13/93	07:46		X	IR
6	STD2HI	93D013A	CLP	01/13/93	07:49		X	IR
7	STD3HI	93D013A	CLP	01/13/93	07:53		X	IR
8	STD4HI	93D013A	CLP	01/13/93	07:58		X	IR
9	STD5HI	93D013A	CLP	01/13/93	08:03		X	IR
10	STD6HI	93D013A	CLP	01/13/93	08:07		X	IR
11	STD7HI	93D013A	CLP	01/13/93	08:11		X	IR
12	STD8HI	93D013A	CLP	01/13/93	08:16		X	IR
13	STD9HI	93D013A	CLP	01/13/93	08:22		X	IR
14	STD1-Blank 59225	93D013A	CLP	01/13/93	08:37	DRS	S	CONC
15	ICV1 930106E1	93D013A	CLP	01/13/93	08:42	DRS	Q	CONC
16	MCVA 921116I1	93D013A	CLP	01/13/93	08:47	DRS	Q	CONC
17	MCVB 921208I10	93D013A	CLP	01/13/93	08:53	DRS	Q	CONC
18	STD1-Blank	93D013A	CLP	01/13/93	09:03	DRS	S	CONC
19	ICSA 921008E3 @2	93D013A	CLP	01/13/93	09:07	DRS	S	CONC
20	ICSAB 921008E4 @2 DRS 1/14/93	93D013A	CLP	01/13/93	09:13	DRS	S	CONC
21	STD1-Blank	93D013A	CLP	01/13/93	09:22	DRS	S	CONC
22	PB	93D013A	CLP	01/13/93	09:25	DRS	S	CONC
23	BS	93D013A	CLP	01/13/93	09:29	DRS	S	CONC
24	93-02239 @10	93D013A	CLP	01/13/93	09:33	DRS	S	CONC
25	93-02239	93D013A	CLP	01/13/93	09:37	DRS	S	CONC
26	93-~~02239~~ 02239 REP RUN	93D013A	CLP	01/13/93	09:43	DRS	S	CONC
27	93-02240	93D013A	CLP	01/13/93	09:47	DRS	S	CONC
28	MCVA	93D013A	CLP	01/13/93	09:52	DRS	Q	CONC
29	MCVB	93D013A	CLP	01/13/93	09:57	DRS	Q	CONC
30	STD1-Blank	93D013A	CLP	01/13/93	10:05	DRS	S	CONC
31	93-02241	93D013A	CLP	01/13/93	10:08	DRS	S	CONC
32	93-02241D	93D013A	CLP	01/13/93	10:13	DRS	S	CONC
33	93-02241S	93D013A	CLP	01/13/93	10:17	DRS	S	CONC
34	93-02351	93D013A	CLP	01/13/93	10:23	DRS	S	CONC
35	93-02437	93D013A	CLP	01/13/93	10:27	DRS	S	CONC
36	93-02438	93D013A	CLP	01/13/93	10:32	DRS	S	CONC
37	93-02451	93D013A	CLP	01/13/93	10:37	DRS	S	CONC
38	LCS @5	93D013A	CLP	01/13/93	10:41	DRS	S	CONC
39	LCS @2	93D013A	CLP	01/13/93	10:45	DRS	S	CONC
CCV2 40	MCVA	93D013A	CLP	01/13/93	10:51	DRS	Q	CONC
41	~~MCVA~~ MCVB DRS 1/13/93	93D013A	CLP	01/13/93	11:01	DRS	Q	CONC
42	STD1-Blank	93D013A	CLP	01/13/93	11:11	DRS	S	CONC
43	LCS+Bi @5	93D013A	CLP	01/13/93	11:16	DRS	S	CONC
44	LCS+Bi @2	93D013A	CLP	01/13/93	11:20	DRS	S	CONC
CCV3 45	MCVA	93D013A	CLP	01/13/93	11:24	DRS	Q	CONC
46	MCVB	93D013A	CLP	01/13/93	11:29	DRS	Q	CONC
47	STD1-Blank	93D013A	CLP	01/13/93	11:33	DRS	S	CONC
48	ICSA 921008E3 @2	93D013A	CLP	01/13/93	11:36	DRS	S	CONC
49	ICSAB 921008E4 @2	93D013A	CLP	01/13/93	11:41	DRS	S	CONC
50	ICV1	93D013A	CLP	01/13/93	11:46	DRS	Q	CONC
CCV4 51	MCVA	93D013A	CLP	01/13/93	11:50	DRS	Q	CONC
52	MCVB	93D013A	CLP	01/13/93	11:56	DRS	Q	CONC
53	STD1-Blank	93D013A	CLP	01/13/93	12:01	DRS	S	CONC

Analysis Report Summary Wed 01-13-93 02:01:39 PM page 2

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
54	93-03320 @10	93D013A	CLP	01/13/93	13:27	DRS	S	CONC
55	93-03320	93D013A	CLP	01/13/93	13:32	DRS	S	CONC
56	93-03320 REP RUN	93D013A	CLP	01/13/93	13:37	DRS	S	CONC
CLVS 57	MCVA	93D013A	CLP	01/13/93	13:41	DRS	Q	CONC
58	MCVB	93D013A	CLP	01/13/93	13:45	DRS	Q	CONC
59	STD1-Blank	93D013A	CLP	01/13/93	13:49	DRS	S	CONC
60	SPC-BLK	93D013A	CLP	01/13/93	13:51	DRS	S	INT
61	SPC-BLK	93D013A	CLP	01/13/93	13:51	DRS	S	CONC
62	SPC-STD	93D013A	CLP	01/13/93	13:53	DRS	S	INT
63	SPC-STD	93D013A	CLP	01/13/93	13:53	DRS	S	CONC

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 3

#	Sample Name	Ag	Al	As	B	Ba	Be
1	SPC-BLK 59225	5913.33	2182.67	2329.67	1117	255.667	211
2	SPC-BLK 59225	-.0015	-.0032	-.0330	.0063	-.0013	-.0006
3	SPC-STD 921208I11	5969.33	2204.67	2354	1138.33	257	211.333
4	SPC-STD 921208I11	-.0002	-.0041	-.0246	.0100	-.0012	-.0006
5	STD1-Blank	.57639	.21483	.23023	.10123	.02513	.02109
6	STD2HI					4.9709	
7	STD3HI		50.9228		28.298		
8	STD4HI						
9	STD5HI			13.1424			.9714
10	STD6HI						
11	STD7HI						
12	STD8HI	24.3143					
13	STD9HI						
14	STD1-Blank 59225	.0040	.0002	-.0017	.0284	-.0003	-.0001
15	ICV1 930106E1	.4930	1.841	-.0086	.0267	1.999	.5009
16	MCVA 921116I1	.5000	25.12	2.445	1.976	.5061	.1039
17	MCVB 921208I10	-.0061	-.6482	-.0808	.0159	.0009	.0013
18	STD1-Blank	-.0003	.0019	-.0081	.0081	-.0001	.0000
19	ICSA 921008E3 @2	-.0003	273.3	-.3567	.0468	.0053	-.0000
20	ICSAB 921008E4	.4779	271.9	-.3583	.0475	.2478	.2458
21	STD1-Blank	.0008	.0490	-.0080	.0091	.0005	-.0001
22	PB	.0007	.0074	-.0100	.0107	.0021	-.0003
23	BS	.0475	.0067	1.946	.0109	2.030	.0499
24	93-02239 @10	.0007	3.035	-.0057	.0017	.0385	.0001
25	93-02239	-.0008	29.67	-.0224	-.0310	.3663	.0014
26	93-0239 REP RUN	-.0009	29.62	-.0318	-.0319	.3653	.0013
27	93-02240	-.0013	32.58	-.0375	-.0187	.3444	.0013
28	MCVA	.4947	24.81	2.398	1.941	.4982	.1018
29	MCVB	-.0046	-.5369	-.0815	.0138	.0015	.0015
30	STD1-Blank	-.0006	-.0023	-.0067	.0005	.0001	-.0001
31	93-02241	-.0020	30.68	-.0372	-.0188	.2900	.0010
32	93-02241D	-.0015	30.54	-.0370	-.0190	.2866	.0011
33	93-02241S	.0467	28.29	1.910	-.0147	2.251	.0518
34	93-02351	-.0024	28.71	-.0298	-.0179	.2567	.0011
35	93-02437	-.0024	27.83	-.0365	-.0159	.2774	.0009
36	93-02438	-.0019	29.01	-.0266	-.0181	.2990	.0011
37	93-02451	-.0023	27.25	-.0314	-.0217	.3715	.0013
38	LCS @5	.0198	-.0228	.9798	.0109	.0056	.0217
39	LCS @2	.0530	.1760	2.444	.0302	.0134	.0519
40	MCVA	.4971	25.02	2.429	1.958	.5027	.1029
41	MCVA	-.0050	-.5003	-.0850	.0077	.0013	.0012
42	STD1-Blank	.0001	.0045	-.0105	.0006	-.0002	.0000
43	LCS+Bi @5	.0190	-.0565	.9686	.0110	.0055	.0222
44	LCS+Bi @2	.0499	.1683	2.384	.0308	.0140	.0530
45	MCVA	.4940	24.86	2.401	1.943	.4984	.1020
46	MCVB	-.0053	-.4374	-.0905	.0097	.0010	.0013
47	STD1-Blank	-.0012	.0080	-.0080	.0005	-.0005	.0000
48	ICSA 921008E3 @2	-.0011	271.5	-.3795	.0371	.0052	.0000
49	ICSAB 921008E4 @2	.4755	272.7	-.3768	.0401	.2469	.2457
50	ICV1	.4865	2.084	-.0175	.0056	1.976	.4958
51	MCVA	.4931	24.89	2.387	1.942	.5005	.1026
52	MCVB	-.0051	-.4282	-.0877	.0079	.0011	.0014
53	STD1-Blank	-.0004	.0006	-.0085	.0018	-.0000	-.0001

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 4

#	Sample Name	Ag	Al	As	B	Ba	Be
54	93-03320 @10	-.0027	.0133	-.0155	-.0040	.0015	-.0000
55	93-03320	-.0039	.0306	-.0070	.0004	.0191	-.0002
56	93-03320 REP RUN	-.0032	.0360	.0004	-.0012	.0193	-.0001
57	MCVA	.4904	24.98	2.397	1.950	.4990	.1021
58	MCVB	-.0075	-.3624	-.0999	.0050	.0010	.0013
59	STD1-Blank	-.0032	.0125	-.0199	-.0019	-.0010	-.0001
60	SPC-BLK	5660.67	2151.33	2247.67	993.333	248.333	210.333
61	SPC-BLK	-.0029	.0164	-.0196	-.0027	-.0006	-.0000
62	SPC-STD	5732.33	2178	2257	1018	249	209
63	SPC-STD	-.0009	.0185	-.0164	.0016	-.0006	-.0002

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	SPC-BLK 59225	1431.67	1421.33	114	5451	1510.33	483.667
2	SPC-BLK 59225	-.0177	.1917	-.0009	-.0244	-.0017	-.0021
3	SPC-STD 921208I11	1630	1051.33	117	5457	1503.67	491.333
4	SPC-STD 921208I11	-.0097	.0162	.0001	-.0238	-.0032	-.0013
5	STD1-Blank	.13889	.0979	.01106	.53253	.14576	.04699
6	STD2HI					12.7863	8.45259
7	STD3HI		97.9089	2.04583			
8	STD4HI						
9	STD5HI				15.3143		
10	STD6HI						
11	STD7HI						
12	STD8HI	20.9967					
13	STD9HI						
14	STD1-Blank 59225	-.0051	.0024	.0008	-.0071	.0002	-.0003
15	ICV1 930106E1	.0039	48.55	.4997	-.0154	.4917	.5109
16	MCVA 921116I1	24.69	24.82	.4942	.0019	1.016	1.014
17	MCVB 921208I10	.0429	.0027	.0044	4.923	-.0005	.0021
18	STD1-Blank	-.0010	.0071	.0015	.0023	.0002	-.0016
19	ICSA 921008E3 @2	.0542	252.0	.0054	-.0290	.0044	.0223
20	ICSAB 921008E4	.0517	250.4	.4743	-.0219	.2430	.2855
21	STD1-Blank	.0024	.0850	.0013	.0024	.0012	.0024
22	PB	.0023	.0158	-.0003	-.0459	-.0039	-.0015
23	BS	48.28	.0119	.0467	-.0517	.4866	.2016
24	93-02239 @10	.0544	5.035	.0001	.0044	.0041	.0075
25	93-02239	.0855	48.96	-.0005	.0628	.0342	.0586
26	93-0239 REP RUN	.0644	48.87	.0009	.0670	.0338	.0583
27	93-02240	.0362	38.87	-.0002	.0420	.0227	.0489
28	MCVA	24.34	24.41	.4863	.0139	.9985	.9897
29	MCVB	.0805	.0332	.0029	4.926	.0013	.0058
30	STD1-Blank	.0008	.0516	-.0001	-.0062	-.0005	.0021
31	93-02241	.0384	33.25	.0020	.0317	.0207	.0575
32	93-02241D	.0339	32.14	.0005	.0356	.0214	.0605
33	93-02241S	47.91	34.74	.0456	.0589	.5044	.2586
34	93-02351	.1310	26.86	.0014	.0171	.0217	.0576
35	93-02437	.0591	32.81	.0009	.0267	.0234	.0602
36	93-02438	.0369	31.08	.0018	.0412	.0253	.0645
37	93-02451	.0499	41.88	.0001	.1357	.0248	.0639
38	LCS @5	.1002	195.6	.0480	-.0154	.1650	.1220
39	LCS @2	.2199	479.3	.1115	-.0233	.3955	.2846
40	MCVA	24.61	24.78	.4869	.0039	1.012	1.003

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 5

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
41	MCVA	.0274	.0150	.0023	4.943	.0012	.0010
42	STD1-Blank	.0176	-.0033	.0015	-.0053	.0001	.0006
43	LCS+Bi @5	9.766	200.1	.0458	-.0208	.1610	.1202
44	LCS+Bi @2	23.97	489.4	.1126	-.0202	.3881	.2890
45	MCVA	24.39	25.04	.4869	-.0034	.9986	.9825
46	MCVB	.0674	.0510	.0019	4.904	.0005	.0030
47	STD1-Blank	.0071	.0208	.0006	-.0108	-.0018	.0011
48	ICSA 921008E3 @2	.0668	247.0	.0036	-.0268	.0037	.0239
49	ICSAB 921008E4 @2	.0691	247.7	.4750	-.0366	.2419	.2769
50	ICV1	.0067	47.69	.4944	-.0264	.4893	.5021
51	MCVA	24.36	24.26	.4851	-.0112	.9989	.9868
52	MCVB	.0661	.0171	.0033	4.873	-.0003	.0027
53	STD1-Blank	.0105	-.0008	.0012	-.0040	-.0021	-.0003
54	93-03320 @10	-.0013	1.898	.0002	-.0264	-.0025	.0005
55	93-03320	-.0139	19.39	.0010	-.0351	-.0043	.0011
56	93-03320 REP RUN	-.0010	19.41	.0014	-.0284	-.0028	.0003
57	MCVA	24.31	24.29	.4817	-.0286	.9945	.9833
58	MCVB	.0817	.0280	.0036	4.882	-.0006	.0027
59	STD1-Blank	.0010	-.0059	-.0003	-.0258	-.0040	-.0007
60	SPC-BLK	1388.67	970.667	112	5228.67	1437.67	465
61	SPC-BLK	.0005	-.0020	.0009	-.0307	-.0028	-.0011
62	SPC-STD	1586.33	1010	114.667	5246.67	1442	481.667
63	SPC-STD	.0066	.0169	.0019	-.0257	-.0026	.0019

#	Sample Name	Cu	Dy	Eu	Fe	Gd	K
1	SPC-BLK 59225	1317	1875.67	298.333	568	1041	5142.33
2	SPC-BLK 59225	-.0033	-.0047	-.0014	.0066	-.0180	.4625
3	SPC-STD 921208I11	59551.7	2053.33	299	588.667	1058	5148
4	SPC-STD 921208I11	10.05	.0002	-.0012	.0005	.0098	.5256
5	STD1-Blank	.12956	.18379	.02913	.05306	.1008	.50286
6	STD2HI	11.7204			51.2607		
7	STD3HI						4.7485
8	STD4HI		31.1258	7.08629			
9	STD5HI					2.81426	
10	STD6HI						
11	STD7HI						
12	STD8HI						
13	STD9HI						
14	STD1-Blank 59225	.0008	-.0008	.0001	-.0008	.0192	-.2129
15	ICV1 930106E1	.5109	-.0023	.0011	1.915	.1686	50.07
16	MCVA 921116I1	1.020	-.0005	-.0003	19.74	.0922	24.13
17	MCVB 921208I10	-.0009	4.780	1.942	.0090	4.981	-.3242
18	STD1-Blank	.0015	-.0006	.0004	-.0006	.0185	.1007
19	ICSA 921008E3 @2	.0001	-.0034	.0004	99.46	.6559	-1.816
20	ICSAB 921008E4	.2556	-.0026	.0005	98.80	.6649	-1.656
21	STD1-Blank	.0018	.0005	.0004	.0194	.0218	.1086
22	PB	.0008	-.0055	-.0014	.0016	.0007	-1.438
23	BS	.2415	-.0061	-.0017	-.0004	-.0036	-1.590
24	93-02239 @10	.0077	.0007	.0000	8.865	.0313	.4689
25	93-02239	.0609	.0042	-.0022	87.44	.2174	4.085
26	93-0239 REP RUN	.0609	.0044	-.0020	87.12	.2104	4.370
27	93-02240	.0655	.0004	-.0022	66.99	.1588	5.476

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 6

#	Sample Name	Cu	Dy	Eu	Fe	Gd	K
28	MCVA	1.004	.0012	.0005	19.39	.1199	24.31
29	MCVB	.0004	4.766	1.937	.0368	4.942	-.2442
30	STD1-Blank	.0005	.0004	.0009	-.0013	.0235	-.3274
31	93-02241	.0451	.0001	-.0021	66.91	.1333	3.829
32	93-02241D	.0505	-.0002	-.0023	65.19	.1411	4.632
33	93-02241S	.2833	.0008	-.0018	59.31	.1393	3.805
34	93-02351	.0473	-.0007	-.0025	64.10	.1189	3.471
35	93-02437	.0478	-.0001	-.0022	62.60	.1515	4.133
36	93-02438	.0497	.0007	-.0024	68.25	.1534	4.507
37	93-02451	.0546	.0034	-.0020	78.19	.1983	3.453
38	LCS @5	7.532	-.0019	.0030	22.22	.4823	-1.160
39	LCS @2	18.33	-.0026	.0053	53.46	.7377	-2.579
40	MCVA	1.033	.0004	.0003	19.50	.1305	24.25
41	MCVA	.0026	4.768	1.940	.0064	4.921	-.1843
42	STD1-Blank	.0030	.0009	.0009	-.0025	.0188	-.0875
43	LCS+Bi @5	7.687	-.0021	.0032	21.77	.4885	-1.362
44	LCS+Bi @2	18.62	-.0029	.0059	52.39	.7594	-2.568
45	MCVA	1.052	-.0007	.0000	19.39	.1251	23.98
46	MCVB	.0081	4.745	1.932	.0191	4.885	-.3807
47	STD1-Blank	.0044	.0065	.0033	.0019	.0269	-.5441
48	ICSA 921008E3 @2	.0044	-.0022	.0009	97.64	.6641	-2.002
49	ICSAB 921008E4 @2	.2612	-.0039	.0004	97.99	.6360	-2.105
50	ICV1	.5117	-.0028	.0009	1.957	.1465	49.43
51	MCVA	1.014	-.0014	-.0003	19.30	.1073	23.87
52	MCVB	.0017	4.726	1.924	.0186	4.867	-.4144
53	STD1-Blank	.0022	.0026	.0018	-.0023	.0317	-.2255
54	93-03320 @10	.0026	-.0034	-.0007	.0110	.0119	-.5816
55	93-03320	.0298	-.0046	-.0007	.1432	.0622	-.0482
56	93-03320 REP RUN	.0304	-.0039	-.0001	.1434	.0580	.3554
57	MCVA	1.013	-.0039	-.0010	19.36	.1063	23.20
58	MCVB	-.0006	4.742	1.931	.0300	4.852	-.6924
59	STD1-Blank	-.0000	.0030	.0020	-.0016	.0044	-.8253
60	SPC-BLK	1290.67	1823.67	291	521.667	1000.67	4964.33
61	SPC-BLK	-.0001	-.0017	.0001	-.0026	-.0004	-.7338
62	SPC-STD	61107	1971.67	289.667	569.667	1019.33	4970.33
63	SPC-STD	10.50	-.0017	-.0003	.0013	.0322	-.6655

#	Sample Name	La	Li	Mg	Mn	Mo	Na
1	SPC-BLK 59225	838.667	451.333	2235	211	918.333	323.667
2	SPC-BLK 59225	-.0067	-.0016	-.0136	-.0000	-.0073	.0192
3	SPC-STD 921208I11	842	22749.3	2302.33	47944.7	937.667	325.333
4	SPC-STD 921208I11	-.0050	9.015	-.0207	10.38	-.0030	.0307
5	STD1-Blank	.08223	.04413	.21989	.02053	.09106	.03173
6	STD2HI			59.6834		8.48053	3.51906
7	STD3HI		12.2108		4.53246		
8	STD4HI	3.6875					
9	STD5HI						
10	STD6HI						
11	STD7HI						
12	STD8HI						
13	STD9HI						
14	STD1-Blank 59225	-.0012	.0007	-.0052	-.0001	-.0014	-.0100

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 7

#	Sample Name	La	Li	Mg	Mn	Mo	Na
15	ICV1 930106E1	.0228	.0027	24.32	.4911	-.0024	50.93
16	MCVA 921116I1	.0110	2.160	24.61	.5036	1.004	10.16
17	MCVB 921208I10	1.927	.0024	-.0421	.0005	.0050	.1284
18	STD1-Blank	.0014	.0003	-.0040	-.0001	-.0011	.0206
19	ICSA 921008E3 @2	.0785	.0079	245.8	.0137	.0086	1.360
20	ICSAB 921008E4	.0802	.0067	244.1	.2482	.0086	1.362
21	STD1-Blank	.0020	.0032	.0441	.0003	-.0030	-.0001
22	PB	-.0083	-.0033	-.0073	-.0003	-.0044	.0611
23	BS	-.0108	-.0041	-.0066	.4940	.0008	.1107
24	93-02239 @10	.0076	.0036	2.238	.1739	-.0019	.2536
25	93-02239	.0644	.0315	21.72	1.708	.0058	2.347
26	93-0239 REP RUN	.0653	.0316	21.68	1.706	.0065	2.337
27	93-02240	.0486	.0397	20.70	1.336	.0022	5.626
28	MCVA	.0144	2.123	24.24	.4955	.9870	10.03
29	MCVB	1.930	.0047	-.0133	.0012	.0065	.1595
30	STD1-Blank	-.0007	.0011	-.0061	.0001	-.0032	-.0190
31	93-02241	.0463	.0340	18.82	1.275	.0027	9.588
32	93-02241D	.0419	.0344	18.60	1.170	.0030	9.267
33	93-02241S	.0447	.0326	18.29	1.707	.0099	8.922
34	93-02351	.0359	.0319	18.31	1.221	.0028	7.923
35	93-02437	.0425	.0330	18.23	1.267	.0023	7.851
36	93-02438	.0427	.0378	20.28	1.323	.0048	8.246
37	93-02451	.1030	.0278	17.68	1.244	.0033	9.819
38	LCS @5	.0700	.0063	117.1	.2275	.0501	.4334
39	LCS @2	.0758	.0099	287.2	.5429	.1308	.7870
40	MCVA	.0130	2.143	24.55	.5009	.9967	10.10
41	MCVA	1.936	.0027	-.0373	.0004	.0037	.1239
42	STD1-Blank	.0012	.0007	-.0074	-.0000	-.0039	-.0045
43	LCS+Bi @5	.0695	.0071	120.0	.2307	.0498	.4296
44	LCS+Bi @2	.0730	.0122	294.0	.5542	.1269	.8173
45	MCVA	.0129	2.133	24.69	.4972	.9850	10.08
46	MCVB	1.923	.0025	-.0079	.0005	.0049	.1386
47	STD1-Blank	.0016	-.0007	.0092	.0002	-.0025	-.0191
48	ICSA 921008E3 @2	.0807	.0064	242.8	.0137	.0067	1.353
49	ICSAB 921008E4 @2	.0813	.0068	243.5	.2475	.0086	1.357
50	ICV1	.0230	.0010	24.14	.4855	-.0036	50.61
51	MCVA	.0117	2.130	24.21	.4965	.9876	10.11
52	MCVB	1.914	.0035	-.0237	.0005	.0033	.1408
53	STD1-Blank	.0003	.0007	-.0100	-.0003	-.0046	-.0087
54	93-03320 @10	-.0041	-.0003	.4736	-.0001	-.0039	1.047
55	93-03320	.0023	.0006	4.905	.0036	-.0059	11.41
56	93-03320 REP RUN	.0059	.0000	4.890	.0037	-.0041	11.32
57	MCVA	.0061	2.139	24.33	.4953	.9853	10.13
58	MCVB	1.914	.0030	-.0189	.0005	.0056	.1099
59	STD1-Blank	-.0035	-.0015	-.0171	-.0001	-.0047	-.0207
60	SPC-BLK	813	437	2161.33	201.667	889	314
61	SPC-BLK	-.0042	-.0018	-.0102	-.0006	-.0049	-.0239
62	SPC-STD	814	23094	2235.33	48179.3	915.667	316
63	SPC-STD	-.0038	9.309	-.0109	10.69	.0013	-.0092

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 8

#	Sample Name	Nd	Ni	P	Pb	Pd	Rh
1	SPC-BLK 59225	3106	523	1671.33	15390.3	13271.3	13689.7
2	SPC-BLK 59225	-.0323	-.0012	-.0269	-.0423	-.0769	-.0367
3	SPC-STD 921208I11	3126.33	527.333	1819.67	15564	13360.3	13775
4	SPC-STD 921208I11	-.0244	.0006	-.0133	-.0388	-.0540	-.0264
5	STD1-Blank	.30493	.0505	.16236	1.51499	1.30506	1.34406
6	STD2HI		4.14169		50.4985		
7	STD3HI			11.0364			
8	STD4HI	9.78733					
9	STD5HI						
10	STD6HI						
11	STD7HI						
12	STD8HI						
13	STD9HI					16.1348	38.6556
14	STD1-Blank 59225	-.0048	-.0002	.0100	-.0021	.0019	-.0000
15	ICV1 930106E1	-.0117	.5019	.0366	4.951	-.0411	-.0158
16	MCVA 921116I1	-.0082	1.012	20.24	2.479	-.0336	-.0116
17	MCVB 921208I10	4.821	.0051	.0278	-.0267	-1.343	-.0154
18	STD1-Blank	.0030	.0019	.0215	.0012	.0104	.0017
19	ICSA 921008E3 @2	-.0198	.0186	.2824	-.0180	-.0871	-.0136
20	ICSAB 921008E4	-.0187	.4874	.2961	2.335	-.0893	-.0091
21	STD1-Blank	.0066	.0032	.0305	-.0091	.0174	.0028
22	PB	-.0305	.0006	-.0170	-.0269	-.0670	-.0389
23	BS	-.0421	.4899	.0373	.4570	-.0847	-.0452
24	93-02239 @10	.0079	.0048	.4533	.0012	-.0029	-.0019
25	93-02239	.0189	.0457	4.085	.0412	-.1117	-.0334
26	93-0239 REP RUN	.0239	.0495	4.107	.0435	-.1049	-.0280
27	93-02240	.0055	.0413	2.442	-.0061	-.0969	-.0302
28	MCVA	.0017	1.004	19.95	2.441	-.0026	.0003
29	MCVB	4.813	.0071	.0258	-.0217	-1.309	-.0077
30	STD1-Blank	.0010	.0030	.0138	-.0178	-.0022	-.0021
31	93-02241	.0061	.0459	2.942	.0276	-.0980	-.0395
32	93-02241D	.0021	.0408	2.670	.0331	-.0934	-.0375
33	93-02241S	.0071	.5316	2.520	.5180	-.0917	-.0345
34	93-02351	-.0079	.0508	2.674	.0031	-.0933	-.0393
35	93-02437	-.0001	.0489	2.524	-.0104	-.0829	-.0317
36	93-02438	.0028	.0489	2.699	-.0099	-.0875	-.0298
37	93-02451	.0303	.0328	3.469	-.0172	-.0923	-.0322
38	LCS @5	-.0147	.0691	.2389	.2197	-.1168	-.0160
39	LCS @2	-.0301	.1589	.3612	.5485	-.1545	-.0196
40	MCVA	-.0023	1.003	20.25	2.462	-.0146	-.0000
41	MCVA	4.825	.0053	-.0097	-.0310	-1.283	-.0047
42	STD1-Blank	.0020	.0028	.0314	-.0112	.0146	-.0002
43	LCS+Bi @5	-.0132	.0689	.2221	.2175	-.1212	-.0172
44	LCS+Bi @2	-.0265	.1586	.3593	.5422	-.1462	-.0225
45	MCVA	-.0067	.9966	19.97	2.435	-.0243	-.0053
46	MCVB	4.798	.0034	.0033	-.0340	-1.286	-.0077
47	STD1-Blank	-.0045	.0023	.0182	-.0187	-.0143	-.0108
48	ICSA 921008E3 @2	-.0272	.0182	.2543	-.0395	-.1016	-.0192
49	ICSAB 921008E4 @2	-.0279	.4846	.2646	2.321	-.0908	-.0197
50	ICV1	-.0144	.4993	.0530	4.888	-.0433	-.0140
51	MCVA	-.0121	1.000	19.87	2.436	-.0290	-.0105
52	MCVB	4.768	.0054	.0080	-.0370	-1.281	-.0126
53	STD1-Blank	.0048	.0000	.0171	-.0240	.0008	-.0045

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 9

#	Sample Name	Nd	Ni	P	Pb	Pd	Rh
54	93-03320 @10	-.0189	-.0016	.0262	-.0286	-.0461	-.0226
55	93-03320	-.0294	.0010	.0954	-.0349	-.0672	-.0325
56	93-03320 REP RUN	-.0237	.0006	.1012	-.0361	-.0530	-.0240
57	MCVA	-.0266	.9897	19.91	2.399	-.0750	-.0256
58	MCVB	4.775	.0023	.0114	-.0478	-1.291	-.0280
59	STD1-Blank	-.0138	-.0041	.0051	-.0351	-.0559	-.0238
60	SPC-BLK	3002.67	497.333	1642	14754	12853.3	13229.7
61	SPC-BLK	-.0222	-.0034	.0167	-.0367	-.0485	-.0252
62	SPC-STD	3019	503	1773.33	14915	12925	13280
63	SPC-STD	-.0161	-.0008	.0152	-.0341	-.0288	-.0190

#	Sample Name	Ru	Sb	Se	Si	Sn	Sr
1	SPC-BLK 59225	4002.33	6780.33	1475.33	3621	7421	136.667
2	SPC-BLK 59225	-.0172	-.0276	-.0593	.0135	-.0685	.0006
3	SPC-STD 921208I11	4025.33	6946	1518.67	3589.67	7520.67	136
4	SPC-STD 921208I11	-.0131	-.0279	-.0386	.0021	.0036	.0005
5	STD1-Blank	.39309	.66276	.1453	.34383	.72543	.01323
6	STD2HI						5.78806
7	STD3HI						
8	STD4HI	24.8679					
9	STD5HI		40.6321				
10	STD6HI						
11	STD7HI				57.093		
12	STD8HI			2.75099			
13	STD9HI					7.84579	
14	STD1-Blank 59225	.0010	.0084	.0128	.2144	-.0217	-.0000
15	ICV1 930106E1	.0011	-.0007	.0050	.1543	-.0735	.0176
16	MCVA 921116I1	-.0116	2.403	2.525	19.04	-.0144	.5125
17	MCVB 921208I10	4.790	.0125	.0271	-.0190	-.0269	.0009
18	STD1-Blank	.0046	.0117	.0097	.0109	-.0130	.0001
19	ICSA 921008E3 @2	-.0947	-.0883	-.0069	.0455	-.1868	.2522
20	ICSAB 921008E4	-.0948	-.0979	-.0033	.0456	-.1697	.2515
21	STD1-Blank	.0030	.0040	.0014	.0134	.0060	.0002
22	PB	-.0096	-.0074	-.0148	.0146	-.1051	-.0002
23	BS	-.0123	.4814	1.961	.0097	-.0745	.0007
24	93-02239 @10	-.0089	-.0073	.0235	.1397	-.0126	.0166
25	93-02239	-.0977	-.0154	.0243	1.266	-.1241	.1621
26	93-0239 REP RUN	-.0966	-.0192	.0227	1.268	-.0835	.1613
27	93-02240	-.0712	-.0230	.0088	4.339	-.0896	.1962
28	MCVA	-.0075	2.354	2.476	18.76	.0125	.5052
29	MCVB	4.785	.0295	.0417	-.0156	.0051	.0014
30	STD1-Blank	.0029	.0027	.0017	.0046	-.0241	.0000
31	93-02241	-.0695	-.0152	-.0042	3.050	-.1213	.1414
32	93-02241D	-.0676	-.0124	-.0011	2.481	-.1283	.1227
33	93-02241S	-.0568	.2117	1.956	3.226	-.0660	.1262
34	93-02351	-.0645	-.0204	.0093	2.115	-.1034	.1084
35	93-02437	-.0608	-.0186	.0130	2.319	-.1015	.1209
36	93-02438	-.0676	-.0102	.0117	2.438	-.0797	.1147
37	93-02451	-.0730	-.0206	.0050	1.524	-.0913	.1559
38	LCS @5	-.0100	.2402	.0507	.2942	-.1097	.0627
39	LCS @2	-.0209	.5955	.1218	.5680	-.1744	.1529
40	MCVA	-.0058	2.381	2.519	18.92	.0059	.5112

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 10

#	Sample Name	Ru	Sb	Se	Si	Sn	Sr
41	MCVA	4.794	.0082	.0357	-.0407	-.0328	.0009
42	STD1-Blank	.0016	.0030	-.0206	.0089	-.0038	.0001
43	LCS+Bi @5	-.0108	.2361	.0469	.2923	-.0917	.0641
44	LCS+Bi @2	-.0162	.5819	.1216	.5692	-.1597	.1565
45	MCVA	-.0069	2.348	2.489	18.76	-.0240	.5073
46	MCVB	4.765	.0116	.0329	-.0237	-.0434	.0011
47	STD1-Blank	.0026	.0024	.0020	.0012	-.0535	.0000
48	ICSA 921008E3 @2	-.0571	-.0841	-.0075	.0490	-.1674	.2506
49	ICSAB 921008E4 @2	-.0593	-.0845	-.0046	.0451	-.1353	.2519
50	ICV1	-.0035	-.0002	-.0135	.0327	-.0760	.0176
51	MCVA	-.0050	2.354	2.471	18.75	.0188	.5078
52	MCVB	4.736	.0138	.0284	-.0230	-.0565	.0011
53	STD1-Blank	.0017	-.0019	-.0042	.0160	-.0524	.0001
54	93-03320 @10	-.0089	-.0112	-.0149	.2283	-.0901	.0092
55	93-03320	-.0131	-.0086	-.0171	2.403	-.1106	.0950
56	93-03320 REP RUN	-.0098	-.0127	-.0004	2.398	-.1060	.0950
57	MCVA	-.0141	2.322	2.486	18.74	-.0927	.5092
58	MCVB	4.736	.0117	.0407	-.0272	-.1177	.0011
59	STD1-Blank	-.0066	-.0054	-.0177	.0063	-.0971	-.0002
60	SPC-BLK	3887	6572.33	1428.33	3389.33	7129.33	131
61	SPC-BLK	-.0072	-.0063	-.0172	-.0075	-.0869	-.0002
62	SPC-STD	3925.67	6736.33	1459.33	3461.67	7211.33	131.667
63	SPC-STD	.0001	-.0067	-.0047	.0181	-.0270	-.0001

#	Sample Name	Te	Th	Ti	Tl	U	V
1	SPC-BLK 59225	11820.7	2365.67	566.667	528.333	14926.7	842
2	SPC-BLK 59225	-.0468	-.0086	-.0014	-.0281	-.5980	-.0056
3	SPC-STD 921208I11	12422.7	2371.67	570.333	542.667	15009	848.333
4	SPC-STD 921208I11	-.0356	-.0123	-.0012	-.0224	-.4795	-.0041
5	STD1-Blank	1.1667	.23203	.05526	.05176	1.46626	.08246
6	STD2HI			8.6			
7	STD3HI						
8	STD4HI		9.48069				
9	STD5HI						7.565
10	STD6HI					31.8622	
11	STD7HI	38.0512					
12	STD8HI				1.12779		
13	STD9HI						
14	STD1-Blank 59225	-.0022	.0054	-.0001	.0076	-.1374	-.0008
15	ICV1 930106E1	-.0360	.0400	.0004	.0096	-.0550	.4986
16	MCVA 921116I1	.0023	.0644	1.001	2.553	-.1300	1.013
17	MCVB 921208I10	4.853	4.777	.0042	.0311	10.27	.0042
18	STD1-Blank	-.0061	-.0046	-.0000	-.0001	.0125	-.0000
19	ICSA 921008E3 @2	-.0089	.2307	.0060	.1526	.0901	.0215
20	ICSAB 921008E4	-.0206	.2277	.0061	.1482	.1327	.2650
21	STD1-Blank	-.0114	-.0021	.0005	-.0038	-.0035	.0005
22	PB	-.0365	.0039	-.0022	-.0032	-.5482	-.0040
23	BS	-.0164	.0140	-.0021	1.874	-.7004	.4929
24	93-02239 @10	-.0173	.0074	.6402	.0053	-.0347	.0188
25	93-02239	-.0302	.0751	6.274	.0321	-.5237	.1812
26	93-0239 REP RUN	-.0342	.0723	6.250	.0193	-.4060	.1821
27	93-02240	-.0442	.0658	3.514	.0231	-.4975	.1233

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 11

#	Sample Name	Te	Th	Ti	Tl	U	V
28	MCVA	-.0107	.0550	.9888	2.515	.0694	1.001
29	MCVB	4.853	4.767	.0060	.0197	10.25	.0053
30	STD1-Blank	-.0155	.0002	-.0002	-.0098	-.0530	-.0014
31	93-02241	-.0344	.0720	3.457	.0156	-.6225	.1252
32	93-02241D	-.0397	.0683	3.513	.0178	-.5295	.1256
33	93-02241S	-.0189	.0672	3.172	1.863	-.4829	.6086
34	93-02351	-.0356	.0637	3.478	.0050	-.5942	.1236
35	93-02437	-.0405	.0544	3.234	.0166	-.4576	.1229
36	93-02438	-.0274	.0719	3.449	.0273	-.5187	.1309
37	93-02451	-.0351	.0793	4.876	.0124	-.5385	.1579
38	LCS @5	-.0204	.1622	.0281	.0545	.1028	.0863
39	LCS @2	-.0211	.2172	.0533	.1454	.0003	.2024
40	MCVA	-.0066	.0594	.9965	2.523	.0021	1.010
41	MCVA	4.821	4.765	.0044	.0103	10.29	.0041
42	STD1-Blank	-.0164	-.0003	-.0001	-.0128	-.0410	-.0002
43	LCS+Bi @5	-.0259	.1641	.0206	.0112	.0937	.0868
44	LCS+Bi @2	-.0254	.2076	.0533	.0296	-.0151	.2039
45	MCVA	-.0302	.0577	.9876	2.481	-.1367	1.001
46	MCVB	4.775	4.751	.0045	.0059	10.09	.0046
47	STD1-Blank	-.0111	.0090	-.0005	-.0078	-.2356	-.0013
48	ICSA 921008E3 @2	-.0230	.2341	.0052	.1361	-.0013	.0216
49	ICSAB 921008E4 @2	-.0393	.2358	.0056	.1397	.0307	.2648
50	ICV1	-.0468	.0424	.0001	-.0014	-.0902	.4923
51	MCVA	-.0200	.0623	.9891	2.495	-.1437	1.001
52	MCVB	4.790	4.737	.0044	.0180	9.990	.0039
53	STD1-Blank	-.0398	.0079	-.0005	-.0265	-.1623	-.0005
54	93-03320 @10	-.0295	.0035	-.0017	-.0008	-.3935	-.0026
55	93-03320	-.0454	.0114	-.0008	-.0054	-.4899	-.0027
56	93-03320 REP RUN	-.0368	.0134	-.0008	-.0072	-.3553	-.0014
57	MCVA	-.0397	.0563	.9895	2.489	-.4617	.9978
58	MCVB	4.779	4.725	.0041	.0013	9.886	.0024
59	STD1-Blank	-.0311	.0153	-.0014	-.0311	-.4386	-.0031
60	SPC-BLK	11379	2288.67	545.333	508.667	14390.3	810
61	SPC-BLK	-.0373	.0083	-.0014	-.0161	-.4374	-.0034
62	SPC-STD	11920.3	2285.67	549	523.333	14447	818.333
63	SPC-STD	-.0340	.0020	-.0012	-.0091	-.3569	-.0012

#	Sample Name	W	Y	Zn	Zr	N+1
1	SPC-BLK 59225	424	223.333	522.667	732	16.6667
2	SPC-BLK 59225	-.0279	-.0007	.0043	-.0049	.0597
3	SPC-STD 921208I11	431.667	224.333	121413	735.333	26.6667
4	SPC-STD 921208I11	-.0314	-.0003	10.07	-.0039	.0598
5	STD1-Blank	.04206	.0218	.04633	.0719	.00166
6	STD2HI			23.3973	17.3425	
7	STD3HI					
8	STD4HI					
9	STD5HI		2.15076			
10	STD6HI					
11	STD7HI					
12	STD8HI					
13	STD9HI	2.27996				
14	STD1-Blank 59225	.0061	-.0001	-.0000	-.0016	.0597

Analysis Report Averages Wed 01-13-93 02:01:39 PM page 12

Danny Sanders 930013A 1-14-93

#	Sample Name	W	Y	Zn	Zr	N+1
15	ICV1 930106E1	-.0044	.0004	3.066	-.0054	.0597
16	MCVA 921116I1	.0032	.0004	1.029	2.035	.0598
17	MCVB 921208I10	.0116	.9942	.0020	.0206	.0597
18	STD1-Blank	.0030	.0005	-.0006	-.0010	.0597
19	ICSA 921008E3 @2	.0085	.0043	.1040	-.0146	.0597
20	ICSAB 921008E4	-.0139	.0045	.6283	-.0142	.0597
21	STD1-Blank	-.0031	.0003	.0006	-.0003	.0597
22	PB	-.0207	-.0019	.0041	-.0052	.0597
23	BS	-.0239	-.0023	.4972	-.0072	.0599
24	93-02239 @10	.0035	.0048	.0216	.0071	.0597
25	93-02239	-.0159	.0451	.2087	.0780	.0597
26	93-0239 REP RUN	-.0174	.0447	.2073	.0785	.0597
27	93-02240	-.0230	.0266	.1755	.0333	.0597
28	MCVA	-.0042	.0006	1.019	2.012	.0598
29	MCVB	.0024	.9871	.0028	.0225	.0597
30	STD1-Blank	-.0036	-.0001	-.0001	-.0014	.0597
31	93-02241	-.0005	.0283	.1534	.0412	.0597
32	93-02241D	-.0239	.0279	.1505	.0426	.0597
33	93-02241S	-.0078	.0266	.6287	.0397	.0599
34	93-02351	-.0218	.0243	.1552	.0402	.0597
35	93-02437	-.0261	.0243	.1467	.0329	.0597
36	93-02438	-.0201	.0280	.1577	.0357	.0597
37	93-02451	-.0080	.0399	.1508	.0699	.0597
38	LCS @5	-.0011	.0075	.1801	-.0104	.0598
39	LCS @2	-.0067	.0188	.4482	-.0100	.0599
40	MCVA	.0129	.0006	1.029	2.034	.0598
41	MCVA	.0053	.9855	.0016	.0199	.0597
42	STD1-Blank	-.0127	-.0005	-.0012	-.0003	.0597
43	LCS+Bi @5	-.0021	.0072	.1800	-.0111	.0598
44	LCS+Bi @2	-.0119	.0193	.4325	-.0087	.0600
45	MCVA	-.0054	.0004	1.018	2.018	.0598
46	MCVB	-.0108	.9795	.0018	.0195	.0597
47	STD1-Blank	-.0008	.0009	-.0013	-.0017	.0597
48	ICSA 921008E3 @2	-.0191	.0042	.1040	-.0149	.0597
49	ICSAB 921008E4 @2	-.0229	.0036	.6306	-.0155	.0597
50	ICV1	-.0002	-.0004	3.067	-.0059	.0597
51	MCVA	-.0004	-.0004	1.024	2.020	.0598
52	MCVB	-.0037	.9734	.0025	.0178	.0597
53	STD1-Blank	-.0267	.0004	-.0010	-.0021	.0597
54	93-03320 @10	-.0131	-.0010	.0000	-.0032	.0597
55	93-03320	-.0276	-.0014	.0181	-.0053	.0597
56	93-03320 REP RUN	-.0032	-.0007	.0191	-.0045	.0597
57	MCVA	-.0024	-.0009	1.028	2.027	.0598
58	MCVB	.0014	.9748	.0022	.0191	.0597
59	STD1-Blank	-.0256	.0001	-.0009	-.0043	.0597
60	SPC-BLK	419.333	215.333	439.333	706.333	16.6667
61	SPC-BLK	-.0014	-.0010	-.0020	-.0039	.0597
62	SPC-STD	424	216	123628	708.333	26.6667
63	SPC-STD	-.0119	-.0007	10.57	-.0030	.0598

Analysis Report Wed 01-13-93 06:18:02 AM page 1

Method: CLP Sample Name: SPC-BLK 59225 Operator: DRS
Run Time: 01/13/93 06:16:18 93001 13A
Comment: SPC-BLK FPR Mn/Cu RATIO @1X W.THOMPSON
Mode: INT Corr. Factor: 1 M99252/20070

Danny Sanders 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Avge	5913	2183	2330	1117	256	211	1432
SDev	52	7	17	16	1	0	8
%RSD	.8732	.2981	.7110	1.466	.4516	.0000	.5289
#1	5864	2183	2328	1135	255	211	1423
#2	5967	2189	2347	1113	255	211	1435
#3	5909	2176	2314	1103	257	211	1437

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Avge	1421	114	5451	1510	484	1317	1876
SDev	5	2	23	12	5	7	4
%RSD	.3325	1.519	.4231	.8279	.9550	.4979	.1872
#1	1416	115	5425	1519	489	1311	1876
#2	1425	112	5469	1516	481	1316	1872
#3	1423	115	5459	1496	481	1324	1879

Elem	Eu	Fe	Gd	K	La	Li	Mg
Avge	298	568	1041	5142	839	451	2235
SDev	1	5	14	21	3	1	5
%RSD	.3871	.9316	1.385	.4154	.3833	.2558	.2325
#1	297	572	1029	5118	835	450	2232
#2	299	562	1057	5158	841	452	2241
#3	299	570	1037	5151	840	452	2232

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Avge	211	918	324	3106	523	1671	15390
SDev	0	7	3	13	2	33	57
%RSD	.0000	.7648	.7775	.4210	.3312	1.963	.3736
#1	211	925	324	3097	524	1709	15460
#2	211	911	321	3100	524	1649	15350
#3	211	919	326	3121	521	1656	15370

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Avge	13270	13690	4002	6780	1475	3621	7421
SDev	30	57	26	57	24	49	5
%RSD	.2248	.4169	.6622	.8403	1.610	1.353	.0618
#1	13240	13630	4021	6846	1487	3600	7426
#2	13290	13730	4014	6751	1448	3586	7420
#3	13290	13710	3972	6744	1491	3677	7417

Elem	Sr	Te	Th	Ti	Tl	U	V
Avge	137	11820	2366	567	528	14930	842
SDev	1	44	4	1	[illegible]	[illegible]	1
%RSD	.4225	.3730	.1760	[illegible]	[illegible]	[illegible]	.1657
#1	136	11860	2367	[illegible]	[illegible]	[illegible]	[illegible]
#2	137	11830	2369	[illegible]	[illegible]	[illegible]	[illegible]
#3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Elem	W	Y	Zn	Zr	N+1
Avge	424	223	523	732	17
SDev	2	1	16	4	1
%RSD	.4085	.2585	3.978	.4926	3.464
#1	422	223	521	728	17
#2	425	224	539	733	16
#3	425	223	508	735	17

Analysis Report Wed 01-13-93 06:18:26 AM page 1

Method: CLP Sample Name: SPC-BLK 59225 Operator: DRS
Run Time: 01/13/93 06:16:18
Comment: SPC-BLK FPR Mn/Cu RATIO D1X W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0015	-.0032	-.0330	.0063	-.0013	-.0006	-.0177
SDev	.0019	.0150	.0061	.0031	.0002	.0000	.0033
%RSD	122.6	468.1	18.51	48.35	17.86	1.803	18.87
#1	-.0033	.0124	-.0334	.0097	-.0014	-.0006	-.0215
#2	.0004	-.0175	-.0267	.0055	-.0014	-.0006	-.0163
#3	-.0017	-.0044	-.0389	.0038	-.0010	-.0006	-.0152

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1917	-.0009	-.0244	-.0017	-.0021	-.0033	-.0047
SDev	.0019	.0009	.0070	.0019	.0010	.0011	.0006
%RSD	.9950	94.18	28.54	109.7	50.37	32.99	12.80
#1	.1895	-.0004	-.0324	-.0004	-.0009	-.0042	-.0045
#2	.1930	-.0019	-.0193	-.0009	-.0027	-.0036	-.0053
#3	.1926	-.0004	-.0216	-.0038	-.0027	-.0021	-.0042

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0014	.0066	-.0180	.4625	-.0067	-.0016	-.0136
SDev	.0003	.0020	.0241	.2396	.0016	.0005	.0014
%RSD	21.23	30.57	133.7	51.81	23.74	29.28	10.68
#1	-.0017	.0082	-.0379	.1896	-.0086	-.0021	-.0128
#2	-.0012	.0043	.0088	.6384	-.0056	-.0013	-.0126
#3	-.0012	.0074	-.0250	.5597	-.0060	-.0013	-.0132

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0000	-.0073	.0192	-.0323	-.0012	-.0269	-.0423
SDev	.0000	.0016	.0173	.0068	.0008	.0280	.0057
%RSD	80.05	21.54	90.30	20.93	64.85	104.1	13.50
#1	-.0000	-.0058	.0215	-.0363	-.0007	.0052	-.0359
#2	-.0001	-.0089	.0008	-.0362	-.0008	-.0460	-.0469
#3	-.0000	-.0071	.0352	-.0245	-.0021	-.0399	-.0441

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0769	-.0367	-.0172	-.0276	-.0593	.0135	-.0685
SDev	.0084	.0071	.0050	.0068	.0173	.0157	.0054
%RSD	10.97	19.29	29.29	24.63	29.18	116.8	7.829
#1	-.0865	-.0447	-.0135	-.0198	-.0507	.0096	-.0623
#2	-.0732	-.0315	-.0152	-.0311	-.0793	.0000	-.0714
#3	-.0709	-.0338	-.0230	-.0317	-.0461	.0308	-.0717

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	[illegible]	-.0462	-.0086	-.0014	-.0261	-.0789	[illegible]
SDev	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

%RSD	16.93	12.18	48.86	44.92	78.52	13.17	8.760
#1	.0005	-.0413	-.0038	-.0010	-.0066	-.6688	-.0058
#2	.0006	-.0465	-.0117	-.0021	-.0507	-.5131	-.0060
#3	.0006	-.0527	-.0102	-.0011	-.0270	-.6120	-.0051

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0279	-.0007	.0043	-.0049	.0597
SDev	.0035	.0002	.0012	.0012	.0000
%RSD	12.44	31.70	28.28	24.99	.0097
#1	-.0320	-.0009	.0042	-.0063	.0597
#2	-.0261	-.0005	.0056	-.0045	.0597
#3	-.0258	-.0009	.0031	-.0039	.0597

9613492.0661

Analysis Report Wed 01-13-93 06:20:36 AM page 1

Method: CLP Sample Name: SPC-STD 921208I11 Operator: DRS
Run Time: 01/13/93 06:18:57
Comment: SPC-STD FPR Mn/Cu RATIO @1X W.THOMPSON
Mode: INT Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Avge	5969	2205	2354	1138	257	211	1630
SDev	6	4	16	14	0	1	15
%RSD	.0953	.1833	.6837	1.218	.0000	.2732	.9037
#1	5971	2207	2356	1150	257	211	1613
#2	5974	2207	2369	1123	257	212	1639
#3	5963	2200	2337	1142	257	211	1638

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Avge	1051	117	5457	1504	491	59550	2053
SDev	3	4	10	6	4	470	1
%RSD	.2394	3.419	.1748	.3663	.7148	.7885	.0562
#1	1054	113	5463	1500	488	59160	2054
#2	1049	121	5462	1510	495	59430	2054
#3	1051	117	5446	1501	491	60070	2052

Elem	Eu	Fe	Gd	K	La	Li	Mg
Avge	299	589	1058	5148	842	22750	2302
SDev	0	2	4	9	2	188	12
%RSD	.0000	.2595	.4120	.1660	.2057	.8250	.5034
#1	299	590	1056	5156	843	22580	2313
#2	299	587	1063	5149	843	22730	2304
#3	299	589	1055	5139	840	22950	2290

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Avge	47940	938	325	3126	527	1820	15560
SDev	327	8	4	2	3	9	108
%RSD	.6827	.9070	1.242	.0666	.5474	.4926	.6940
#1	47680	941	329	3128	529	1830	15560
#2	47840	944	326	3127	524	1815	15670
#3	48310	928	321	3124	529	1814	15460

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Avge	13360	13770	4025	6946	1519	3590	7521
SDev	27	22	3	26	11	4	17
%RSD	.1984	.1605	.0759	.3676	.7401	.1160	.2312
#1	13390	13760	4028	6974	1531	3593	7527
#2	13340	13800	4026	6940	1509	3591	7534
#3	13350	13770	4022	6924	1516	3585	7501

Elem	Sr	Te	Th	Ti	Tl	U	V
Avge	136	12420	2372	570	543	15010	848
SDev	0	127	9	1	3	18	1
%RSD	.0000	1.023	.3779	.2025	.4637	.1167	.1361
#1	136	12460	2382	571	540	15010	847
#2	136	12330	2367	571	545	14990	849
#3	136	12280	2366	569	547	15030	849

D03-069

Elem	W	Y	Zn	Zr	N+1
Avge	432	224	121400	735	27
SDev	6	1	1097	1	1
%RSD	1.415	.2574	.9033	.1570	2.165
#1	437	224	120800	736	27
#2	433	224	120800	736	26
#3	425	225	122700	734	27

Analysis Report Wed 01-13-93 06:20:50 AM page 1

Method: CLP Sample Name: SPC-STD 921208I11 Operator: DRS
Run Time: 01/13/93 06:18:57
Comment: SPC-STD FPR Mn/Cu RATIO ⑤1X W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0002	-.0041	-.0246	.0100	-.0012	-.0006	-.0097
SDev	.0003	.0038	.0060	.0024	.0000	.0001	.0063
%RSD	131.6	93.02	24.46	23.92	1.201	11.58	64.50
#1	-.0001	-.0001	-.0240	.0115	-.0012	-.0006	-.0170
#2	.0000	-.0078	-.0189	.0073	-.0012	-.0005	-.0054
#3	-.0006	-.0044	-.0309	.0114	-.0012	-.0006	-.0068

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0162	.0001	-.0238	-.0032	-.0013	10.05	.0002
SDev	.0011	.0018	.0033	.0008	.0008	.08	.0003
%RSD	6.967	1263.	13.87	26.18	60.15	.7986	201.4
#1	.0175	-.0017	-.0217	-.0037	-.0021	9.986	.0004
#2	.0153	.0019	-.0222	-.0022	-.0005	10.03	.0003
#3	.0160	.0002	-.0276	-.0036	-.0014	10.14	-.0002

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0012	.0005	.0098	.5256	-.0050	9.015	-.0207
SDev	.0000	.0005	.0088	.0962	.0010	.076	.0098
%RSD	.6000	108.5	89.06	18.31	19.40	.8419	47.43
#1	-.0012	.0011	.0062	.6157	-.0045	8.945	-.0124
#2	-.0012	-.0000	.0198	.5369	-.0044	9.005	-.0182
#3	-.0012	.0005	.0035	.4242	-.0062	9.095	-.0316

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	10.38	-.0030	.0307	-.0244	.0006	-.0133	-.0388
SDev	.08	.0019	.0272	.0011	.0013	.0080	.0103
%RSD	.7328	62.23	88.73	4.616	192.7	60.21	26.41
#1	10.32	-.0023	.0553	-.0234	.0014	-.0041	-.0390
#2	10.36	-.0016	.0353	-.0240	-.0008	-.0170	-.0285
#3	10.47	-.0052	.0014	-.0256	.0014	-.0187	-.0490

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0540	-.0264	-.0131	-.0279	-.0386	.0021	.0036
SDev	.0069	.0031	.0006	.0031	.0080	.0043	.0134
%RSD	12.84	11.58	4.831	11.22	20.71	202.1	373.2
#1	-.0463	-.0287	-.0126	-.0245	-.0298	-.0018	.0080
#2	-.0597	-.0229	-.0129	-.0285	-.0455	.0015	.0142
#3	-.0581	-.0275	-.0133	-.0307	-.0405	.0067	-.0115

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SDev	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

%RSD	.4396	47.14	41.65	22.87	21.12	6.282	7.652
#1	.0005	-.0307	-.0068	-.0011	-.0275	-.4831	-.0045
#2	.0005	-.0218	-.0131	-.0011	-.0182	-.5078	-.0039
#3	.0004	-.0543	-.0170	-.0015	-.0214	-.4478	-.0040

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0314	-.0003	10.07	-.0039	.0598
SDev	.0136	.0003	.09	.0002	.0000
%RSD	43.22	76.06	.9139	5.817	.0097
#1	-.0196	-.0005	10.02	-.0041	.0598
#2	-.0285	-.0005	10.02	-.0036	.0598
#3	-.0463	-.0000	10.18	-.0039	.0598

Standardization Rpt. Wed 01-13-93 07:48:30 AM page 1

Method: CLP Standard: STD1-Blank

Elem	Ag	Al	As	B	Ba	Be	Bi
Avge	.5764	.2148	.2302	.1012	.0251	.0211	.1389
SDev	.0023	.0005	.0025	.0018	.0001	.0000	.0016
%RSD	.3990	.2200	1.090	1.782	.2297	.0000	1.143
#1	.5764	.2152	.2330	.0995	.0252	.0211	.1371
#2	.5787	.2143	.2281	.1011	.0251	.0211	.1395
#3	.5741	.2150	.2296	.1031	.0251	.0211	.1401

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Avge	.0979	.0111	.5325	.1458	.0470	.1296	.1838
SDev	.0003	.0004	.0021	.0009	.0002	.0002	.0007
%RSD	.3064	3.421	.3904	.6374	.4255	.1607	.3809
#1	.0979	.0109	.5310	.1462	.0472	.1295	.1843
#2	.0982	.0115	.5349	.1464	.0470	.1298	.1841
#3	.0976	.0108	.5317	.1447	.0468	.1294	.1830

Elem	Eu	Fe	Gd	K	La	Li	Mg
Avge	.0291	.0531	.1008	.5029	.0822	.0441	.2199
SDev	.0001	.0003	.0011	.0024	.0004	.0002	.0015
%RSD	.1982	.6618	1.050	.4766	.4604	.5233	.7001
#1	.0291	.0531	.1004	.5042	.0825	.0440	.2203
#2	.0292	.0534	.1000	.5043	.0824	.0444	.2212
#3	.0291	.0527	.1020	.5001	.0818	.0440	.2182

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Avge	.0205	.0911	.0317	.3049	.0505	.1624	1.515
SDev	.0001	.0003	.0003	.0024	.0008	.0027	.013
%RSD	.7439	.2763	1.013	.7804	1.584	1.696	.8779
#1	.0204	.0913	.0315	.3045	.0497	.1592	1.525
#2	.0207	.0911	.0321	.3075	.0513	.1642	1.521
#3	.0205	.0908	.0316	.3028	.0505	.1637	1.500

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Avge	1.305	1.344	.3931	.6628	.1453	.3438	.7254
SDev	.005	.005	.0009	.0042	.0009	.0009	.0031
%RSD	.3939	.3773	.2427	.6316	.6000	.2639	.4263
#1	1.303	1.342	.3926	.6603	.1447	.3448	.7220
#2	1.311	1.350	.3942	.6676	.1463	.3437	.7263
#3	1.301	1.341	.3925	.6604	.1449	.3430	.7280

Elem	Sr	Te	Th	Ti	Tl	U	V
Avge	.0132	1.167	.2320	.0553	.0518	1.466	.0825
SDev	.0001	.004	.0008	.0001	.0002	.003	.0003
%RSD	.4363	.3832	.3235	.1045	.4021	.2030	.3052
#1	.0132	1.171	.2328	.0552	.0520	1.464	.0822
#2	.0133	1.163	.2320	.0553	.0516	1.470	.0827
#3	.0132	1.166	.2313	.0553	.0517	1.465	.0825

Elem	W	Y	Zn	Zr	W+1
Avge	.0421	.0218	.0463	[illegible]	[illegible]
SDev	.0006	.0002	[illegible]	[illegible]	[illegible]

%RSD	1.309	.7945	2.930	.0000	3.464
#1	.0418	.0217	.0465	.0719	.0016
#2	.0427	.0220	.0476	.0719	.0017
#3	.0417	.0217	.0449	.0719	.0017

Standardization Rpt. Wed 01-13-93 07:50:46 AM page 1

Method: CLP Standard: STD2HI

Elem	Ba	Co	Cr	Cu	Fe	Mg	Mo
Avge	4.971	12.79	8.453	11.72	51.26	59.68	8.481
SDev	.019	.03	.029	.05	.13	.17	.033
%RSD	.3793	.2515	.3376	.3976	.2607	.2765	.3878
#1	4.965	12.78	8.454	11.71	51.29	59.74	8.461
#2	4.956	12.76	8.423	11.68	51.12	59.50	8.462
#3	4.992	12.82	8.480	11.77	51.38	59.82	8.519

Elem	Na	Ni	Pb	Sr	Ti	Zn	Zr
Avge	3.519	4.142	50.50	5.788	8.600	23.40	17.34
SDev	.010	.012	.13	.020	.029	.09	.05
%RSD	.2888	.2790	.2563	.3514	.3349	.3764	.2858
#1	3.513	4.138	50.49	5.781	8.592	23.31	17.35
#2	3.513	4.132	50.37	5.772	8.576	23.40	17.29
#3	3.531	4.155	50.63	5.811	8.632	23.48	17.39

Standardization Rpt. Wed 01-13-93 07:55:04 AM page 1

Method: CLP Standard: STD3HI

Elem	Al	B	Ca	Cd	K	Li	Mn
Avge	50.92	28.30	97.91	2.046	4.749	12.21	4.532
SDev	.25	.07	.58	.006	.023	.07	.030
%RSD	.4940	.2408	.5956	.2982	.4776	.5450	.6610
#1	50.85	28.26	97.89	2.046	4.739	12.15	4.528
#2	51.20	28.38	98.50	2.052	4.774	12.28	4.565
#3	50.71	28.25	97.33	2.040	4.732	12.20	4.505

Elem	P
Avge	11.04
SDev	.03
%RSD	.2682
#1	11.06
#2	11.04
#3	11.00

Standardization Rpt. Wed 01-13-93 08:00:18 AM page 1

Method: CLP Standard: STD4HI

Elem	Dy	Eu	La	Nd	Ru	Th
Avge	31.13	7.086	3.688	9.787	24.87	9.481
SDev	.20	.053	.024	.067	.17	.061
%RSD	.6310	.7450	.6499	.6842	.6643	.6398
#1	30.94	7.035	3.665	9.727	24.71	9.421
#2	31.11	7.083	3.685	9.776	24.85	9.479
#3	31.33	7.141	3.713	9.859	25.04	9.542

Standardization Rpt. Wed 01-13-93 08:04:46 AM page 1

Method: CLP Standard: STD5HI

Elem	As	Be	Ca	Gd	Sb	V	Y
Avge	13.14	.9714	15.31	2.814	40.63	7.565	2.151
SDev	.05	.0049	.10	.012	.21	.039	.010
%RSD	.3746	.5060	.6502	.4351	.5127	.5131	.4516
#1	13.14	.9734	15.35	2.818	40.53	7.580	2.153
#2	13.10	.9658	15.20	2.801	40.49	7.521	2.140
#3	13.19	.9750	15.39	2.825	40.87	7.594	2.159

Standardization Rpt. Wed 01-13-93 08:09:05 AM page 1

Method: CLP Standard: STD6HI

Elem	U
Avge	31.86
SDev	.05
%RSD	.1481
#1	31.91
#2	31.82
#3	31.85

Standardization Rpt. Wed 01-13-93 08:13:17 AM page 1

Method: CLP Standard: STD7HI

Elem	Si	Te
Avge	57.09	38.05
SDev	.36	.27
%RSD	.6335	.7106
#1	56.68	37.74
#2	57.30	38.25
#3	57.30	38.16

Standardization Rpt. Wed 01-13-93 08:18:29 AM page 1

Method: CLP Standard: STD8HI

Elem	Ag	Bi	Se	Tl
Avge	24.31	21.00	2.751	1.128
SDev	.14	.15	.020	.011
%RSD	.5846	.7361	.7161	1.013
#1	24.18	20.84	2.731	1.116
#2	24.30	21.00	2.751	1.129
#3	24.46	21.15	2.771	1.138

9615492.0674

Standardization Rpt. Wed 01-13-93 08:24:30 AM page 1

Method: CLP Standard: STD9HI

Elem	Pd	Rh	Sn	W
Avge	16.13	38.66	7.846	2.280
SDev	.07	.18	.029	.012
%RSD	.4224	.4736	.3682	.5473
#1	16.08	38.51	7.822	2.268
#2	16.21	38.86	7.878	2.293
#3	16.12	38.60	7.838	2.279

Standardization Report Wed 01-13-93 08:26:51 AM page 1

Method: CLP Slope = Conc(SIR)/IR

Element	Wavelen	High std	Low std	Slope	Y-intercept	Date Standardized
Ag	328.068	STD8HI	STD1-Blank	1.21090	-.029228	01/13/93 08:22:52
Al	308.215	STD3HI	STD1-Blank	1.29811	-.033710	01/13/93 08:22:52
As	193.600	STD5HI	STD1-Blank	1.42304	-.053864	01/13/93 08:22:52
B	249.600	STD3HI	STD1-Blank	1.33440	-.017119	01/13/93 08:22:52
Ba	493.400	STD2HI	STD1-Blank	1.42930	-.007423	01/13/93 08:22:52
Be	313.042	STD5HI	STD1-Blank	1.63152	-.010825	01/13/93 08:22:52
Bi	223.061	STD8HI	STD1-Blank	1.34594	-.016318	01/13/93 08:22:52
Ca	317.900	STD3HI	STD1-Blank	1.37594	-.026238	01/13/93 08:22:52
Cd	228.800	STD3HI	STD1-Blank	1.25788	-.000954	01/13/93 08:22:52
Ce	418.659	STD5HI	STD1-Blank	1.43625	-.163220	01/13/93 08:22:52
Co	228.600	STD2HI	STD1-Blank	1.50468	-.046833	01/13/93 08:22:52
Cr	205.500	STD2HI	STD1-Blank	1.61156	-.018044	01/13/93 08:22:52
Cu	324.700	STD2HI	STD1-Blank	1.29874	-.018640	01/13/93 08:22:52
Dy	353.170	STD4HI	STD1-Blank	1.49009	-.058946	01/13/93 08:22:52
Eu	381.900	STD4HI	STD1-Blank	1.44058	-.008802	01/13/93 08:22:52
Fe	259.900	STD2HI	STD1-Blank	1.49054	-.016965	01/13/93 08:22:52
Gd	302.761	STD5HI	STD1-Blank	1.41515	-.025381	01/13/93 08:22:52
K	766.500	STD3HI	STD1-Blank	1.15454	-.016477	01/13/93 08:22:52
La	398.852	STD4HI	STD1-Blank	1.48878	-.030928	01/13/93 08:22:52
Li	670.700	STD3HI	STD1-Blank	1.09062	-.001533	01/13/93 08:22:52
Mg	279.078	STD2HI	STD1-Blank	1.39858	-.040849	01/13/93 08:22:52
Mn	257.600	STD3HI	STD1-Blank	1.48799	-.006953	01/13/93 08:22:52
Mo	202.000	STD2HI	STD1-Blank	1.52521	-.030562	01/13/93 08:22:52
Na	588.900	STD2HI	STD1-Blank	1.17271	-.005714	01/13/93 08:22:52
Nd	406.106	STD4HI	STD1-Blank	1.46930	-.102039	01/13/93 08:22:52
Ni	231.600	STD2HI	STD1-Blank	1.56868	-.021551	01/13/93 08:22:52
P	214.900	STD3HI	STD1-Blank	1.41884	-.035905	01/13/93 08:22:52
Pb	220.300	STD2HI	STD1-Blank	1.43201	-.397834	01/13/93 08:22:52
Pd	360.959	STD9HI	STD1-Blank	1.33774	-.190005	01/13/93 08:22:52
Rh	343.489	STD9HI	STD1-Blank	1.21964	-.075512	01/13/93 08:22:52
Ru	240.271	STD4HI	STD1-Blank	1.57201	-.148857	01/13/93 08:22:52
Sb	206.838	STD5HI	STD1-Blank	1.33819	-.056376	01/13/93 08:22:52
Se	196.026	STD8HI	STD1-Blank	1.41636	-.015497	01/13/93 08:22:52
Si	288.100	STD7HI	STD1-Blank	1.30797	.109642	01/13/93 08:22:52
Sn	242.950	STD9HI	STD1-Blank	1.23306	-.047002	01/13/93 08:22:52
Sr	421.500	STD2HI	STD1-Blank	1.39165	-.003883	01/13/93 08:22:52
Te	214.275	STD7HI	STD1-Blank	1.38493	-.310236	01/13/93 08:22:52
Th	283.730	STD4HI	STD1-Blank	1.53824	-.080157	01/13/93 08:22:52
Ti	334.900	STD2HI	STD1-Blank	1.50653	-.019761	01/13/93 08:22:52
Tl	190.864	STD8HI	STD1-Blank	1.57672	-.023321	01/13/93 08:22:52
U	378.280	STD6HI	STD1-Blank	1.48898	-.444035	01/13/93 08:22:52
V	292.402	STD5HI	STD1-Blank	1.43975	-.024598	01/13/93 08:22:52
W	224.875	STD9HI	STD1-Blank	1.44287	-.015463	01/13/93 08:22:52
Y	371.030	STD5HI	STD1-Blank	1.43617	-.006075	01/13/93 08:22:52
Zn	213.800	STD2HI	STD1-Blank	1.42077	-.013096	01/13/93 08:22:52
Zr	339.100	STD2HI	STD1-Blank	1.47599	-.021391	01/13/93 08:22:52
N+1	100.000	STD-Extra	STD1-Blank	.100056	.059500	01/13/93 08:22:52

Standardization Report Wed 01-13-93 08:28:34 AM page 1

Method: CLP Slope = IR/Conc(SIR)

Element	Wavelen	High std	Low std	Slope	BEC	Date Standardized
Ag	328.068	STD8HI	STD1-Blank	.825834	.217339	01/13/93 08:22:52
Al	308.215	STD3HI	STD1-Blank	.770352	1.59651	01/13/93 08:22:52
As	193.600	STD5HI	STD1-Blank	.702721	.601806	01/13/93 08:22:52
B	249.600	STD3HI	STD1-Blank	.749401	.127793	01/13/93 08:22:52
Ba	493.400	STD2HI	STD1-Blank	.699642	.029998	01/13/93 08:22:52
Be	313.042	STD5HI	STD1-Blank	.612925	.009379	01/13/93 08:22:52
Bi	223.061	STD8HI	STD1-Blank	.742975	.535019	01/13/93 08:22:52
Ca	317.900	STD3HI	STD1-Blank	.726775	.291437	01/13/93 08:22:52
Cd	228.800	STD3HI	STD1-Blank	.794986	.044496	01/13/93 08:22:52
Ce	418.659	STD5HI	STD1-Blank	.696255	1.06493	01/13/93 08:22:52
Co	228.600	STD2HI	STD1-Blank	.664592	.128112	01/13/93 08:22:52
Cr	205.500	STD2HI	STD1-Blank	.620515	.056878	01/13/93 08:22:52
Cu	324.700	STD2HI	STD1-Blank	.769976	.174533	01/13/93 08:22:52
Dy	353.170	STD4HI	STD1-Blank	.671099	.165596	01/13/93 08:22:52
Eu	381.900	STD4HI	STD1-Blank	.694163	.047360	01/13/93 08:22:52
Fe	259.900	STD2HI	STD1-Blank	.670896	.112489	01/13/93 08:22:52
Gd	302.761	STD5HI	STD1-Blank	.706638	1.22147	01/13/93 08:22:52
K	766.500	STD3HI	STD1-Blank	.866149	54.4050	01/13/93 08:22:52
La	398.852	STD4HI	STD1-Blank	.671689	.224485	01/13/93 08:22:52
Li	670.700	STD3HI	STD1-Blank	.916906	.169818	01/13/93 08:22:52
Mg	279.078	STD2HI	STD1-Blank	.715008	1.23000	01/13/93 08:22:52
Mn	257.600	STD3HI	STD1-Blank	.672045	.023376	01/13/93 08:22:52
Mo	202.000	STD2HI	STD1-Blank	.655649	.118058	01/13/93 08:22:52
Na	588.900	STD2HI	STD1-Blank	.852725	1.57752	01/13/93 08:22:52
Nd	406.106	STD4HI	STD1-Blank	.680596	.862401	01/13/93 08:22:52
Ni	231.600	STD2HI	STD1-Blank	.637480	.107936	01/13/93 08:22:52
P	214.900	STD3HI	STD1-Blank	.704802	.987033	01/13/93 08:22:52
Pb	220.300	STD2HI	STD1-Blank	.698317	.935438	01/13/93 08:22:52
Pd	360.959	STD9HI	STD1-Blank	.747530	3.45093	01/13/93 08:22:52
Rh	343.489	STD9HI	STD1-Blank	.819914	1.63071	01/13/93 08:22:52
Ru	240.271	STD4HI	STD1-Blank	.636128	.400818	01/13/93 08:22:52
Sb	206.838	STD5HI	STD1-Blank	.747277	.722917	01/13/93 08:22:52
Se	196.026	STD8HI	STD1-Blank	.706037	.931711	01/13/93 08:22:52
Si	288.100	STD7HI	STD1-Blank	.764541	1.12468	01/13/93 08:22:52
Sn	242.950	STD9HI	STD1-Blank	.810991	5.15723	01/13/93 08:22:52
Sr	421.500	STD2HI	STD1-Blank	.718573	.013430	01/13/93 08:22:52
Te	214.275	STD7HI	STD1-Blank	.722056	.956447	01/13/93 08:22:52
Th	283.730	STD4HI	STD1-Blank	.650092	.681890	01/13/93 08:22:52
Ti	334.900	STD2HI	STD1-Blank	.663777	.068819	01/13/93 08:22:52
Tl	190.864	STD8HI	STD1-Blank	.634229	.419783	01/13/93 08:22:52
U	378.280	STD6HI	STD1-Blank	.671603	14.2933	01/13/93 08:22:52
V	292.402	STD5HI	STD1-Blank	.694564	.132904	01/13/93 08:22:52
W	224.875	STD9HI	STD1-Blank	.693063	.466547	01/13/93 08:22:52
Y	371.030	STD5HI	STD1-Blank	.696294	.064029	01/13/93 08:22:52
Zn	213.800	STD2HI	STD1-Blank	.703844	.023474	01/13/93 08:22:52
Zr	339.100	STD2HI	STD1-Blank	.677510	.123419	01/13/93 08:22:52
N+1	100.000	STD-Extra	STD1-Blank	9.99417	.059500	01/13/93 08:22:52

Standardization Readback Report Wed 01-13-93 08:30:14 AM page 1

Method: CLP

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Ag	328.068	STD1-Blank	.668733	.576400	.092333
		STD8HI	29.4129	24.3143	5.09860

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Al	308.215	STD1-Blank	.245167	.214833	.030333
		STD3HI	66.0696	50.9228	15.1468

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
As	193.600	STD1-Blank	.273767	.230233	.043533
		STD5HI	18.6483	13.1424	5.50590

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
B	249.600	STD1-Blank	.117967	.101233	.016733
		STD3HI	37.7437	28.2980	9.44570

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Ba	493.400	STD1-Blank	.028500	.025133	.003367
		STD2HI	7.09750	4.97090	2.12660

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Be	313.042	STD1-Blank	.023600	.021100	.002500
		STD5HI	1.57403	.971400	.602633

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Bi	223.061	STD1-Blank	.170633	.138900	.031733
		STD8HI	28.2440	20.9967	7.24730

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Ca	317.900	STD1-Blank	.108467	.097900	.010567
		STD3HI	134.691	97.9089	36.7818

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Cd	228.800	STD1-Blank	.012967	.011067	.001900
		STD3HI	2.57247	2.04583	.526633

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Ce	418.659	STD1-Blank	.601633	.532533	.069100
		STD5HI	21.8321	15.3143	6.51773

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Co	228.600	STD1-Blank	.172500	.145767	.026733
		STD2HI	19.1925	12.7863	6.40620

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Cr	205.500	STD1-Blank	.057700	.047000	.010700
		STD2HI	13.6039	8.45260	5.15127

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Cu	324.700	STD1-Blank	.149633	.129567	.020067
		STD2HI	15.2032	11.7204	3.48273

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Dy	353.170	STD1-Blank	.214933	.183800	.031133
		STD4HI	46.3213	31.1258	15.1956

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Eu	381.900	STD1-Blank	.033167	.029133	.004033
		STD4HI	10.1996	7.08630	3.11330

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Fe	259.900	STD1-Blank	.062133	.053067	.009067
		STD2HI	76.3893	51.2607	25.1286

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Gd	302.761	STD1-Blank	.117267	.100800	.016467
		STD3HI	3.95723	2.81427	1.14297

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
K	766.500	STD1-Blank	.564100	.502867	.061233
		STD3HI	5.46583	4.74850	.717333

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
La	398.852	STD1-Blank	.091500	.082233	.009267
		STD4HI	5.45897	3.68750	1.77147

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Li	670.700	STD1-Blank	.046600	.044133	.002467
		STD3HI	13.3158	12.2108	1.10507

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Mg	279.078	STD1-Blank	.266700	.219900	.046800
		STD2HI	83.4315	59.6834	23.7481

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Mn	257.600	STD1-Blank	.023600	.020533	.003067
		STD3HI	6.73733	4.53247	2.20487

Standardization Readback Report Wed 01-13-93 08:30:14 AM page 3

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Mo	202.000	STD1-Blank	.108333	.091067	.017267
		STD2HI	12.9040	8.48053	4.42347

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Na	588.900	STD1-Blank	.031500	.031733	-.000233
		STD2HI	4.12113	3.51907	.602067

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Nd	406.106	STD1-Blank	.346000	.304933	.041067
		STD4HI	14.2785	9.78733	4.49117

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Ni	231.600	STD1-Blank	.057667	.050500	.007167
		STD2HI	6.47543	4.14170	2.33373

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
P	214.900	STD1-Blank	.194467	.162367	.032100
		STD3HI	15.6230	11.0364	4.58657

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Pb	220.300	STD1-Blank	1.77167	1.51500	.256667
		STD2HI	71.9167	50.4985	21.4182

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Pd	360.959	STD1-Blank	1.55583	1.30507	.250767
		STD9HI	21.3941	16.1348	5.25933

Element	Wavelength	Standard	Known Signal.	Measured Signal	Residual Signal
Rh	343.489	STD1-Blank	1.56377	1.34407	.219700
		STD9HI	47.0705	38.6556	8.41484

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Ru	240.271	STD1-Blank	.469100	.393100	.076000
		STD4HI	38.9438	24.8679	14.0759

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Sb	206.838	STD1-Blank	.830533	.662767	.167767
		STD5HI	54.3172	40.6321	13.6851

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Se	196.026	STD1-Blank	.190300	.145300	.045000
		STD8HI	3.88090	2.75100	1.12990

Standardization Readback Report Wed 01-13-93 08:30:14 AM page 4

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Si	288.100	STD1-Blank	.559367	.343833	.215533
		STD7HI	74.7859	57.0930	17.6928

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Sn	242.950	STD1-Blank	.847500	.725433	.122067
		STD9HI	9.62733	7.84580	1.78153

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Sr	421.500	STD1-Blank	.014533	.013233	.001300
		STD2HI	8.05107	5.78807	2.26300

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Te	214.275	STD1-Blank	1.30557	1.16670	.138867
		STD7HI	52.3882	38.0512	14.3370

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Th	283.730	STD1-Blank	.276767	.232033	.044733
		STD4HI	14.5035	9.48070	5.02277

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Ti	334.900	STD1-Blank	.063500	.055267	.008233
		STD2HI	12.9364	8.60000	4.33640

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Tl	190.864	STD1-Blank	.058300	.051767	.006533
		STD8HI	1.75490	1.12780	.627100

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
U	378.280	STD1-Blank	1.73920	1.46627	.272933
		STD6HI	46.9980	31.8622	15.1358

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
V	292.402	STD1-Blank	.094133	.082467	.011667
		STD5HI	10.8671	7.56500	3.30213

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
W	224.875	STD1-Blank	.045233	.042067	.003167
		STD9HI	3.27423	2.27997	.994267

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Y	371.030	STD1-Blank	.025233	.021800	.003433
		STD5HI	3.08280	2.15077	.932033

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Zn	213.800	STD1-Blank	.052733	.046333	.006400
		STD2HI	33.2291	23.3973	9.83177

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
Zr	339.100	STD1-Blank	.084733	.071900	.012833
		STD2HI	25.5760	17.3425	8.23350

Element	Wavelength	Standard	Known Signal	Measured Signal	Residual Signal
N+1	100.000	STD1-Blank	.059667	.001667	.058000
		STD-Extra	.099667	.401433	-.301767

9613492.0082

Analysis Report Wed 01-13-93 08:39:35 AM page 1

Method: CLP Sample Name: STD1-Blank 59225 Operator: DRS
Run Time: 01/13/93 08:37:54
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0040	.0002	-.0017	.0284	-.0003	-.0001	-.0051
SDev	.0002	.0059	.0071	.0017	.0002	.0001	.0067
%RSD	6.002	2368.	425.7	5.904	65.87	240.4	131.1
#1	.0038	.0059	.0028	.0285	-.0005	.0000	-.0059
#2	.0039	-.0058	.0021	.0300	-.0001	.0000	-.0115
#3	.0043	.0006	-.0098	.0267	-.0005	-.0002	.0019

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0024	.0008	-.0071	.0002	-.0003	.0008	-.0008
SDev	.0015	.0014	.0089	.0002	.0029	.0004	.0002
%RSD	64.25	176.3	125.3	92.09	908.9	56.85	26.61
#1	.0006	.0020	-.0063	.0003	.0027	.0003	-.0006
#2	.0033	-.0008	-.0165	-.0000	-.0030	.0009	-.0007
#3	.0033	.0012	.0013	.0002	-.0007	.0011	-.0010

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0002	-.0008	.0192	-.2129	-.0012	.0007	-.0052
SDev	.0001	.0006	.0103	.1238	.0007	.0025	.0032
%RSD	91.52	81.96	53.43	58.16	62.38	355.4	62.26
#1	.0003	-.0015	.0101	-.1786	-.0015	-.0018	-.0083
#2	-.0000	-.0003	.0303	-.1098	-.0003	.0007	-.0018
#3	.0002	-.0005	.0171	-.3503	-.0017	.0032	-.0055

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0001	-.0014	-.0100	-.0048	-.0002	.0100	-.0021
SDev	.0001	.0010	.0074	.0033	.0039	.0460	.0077
%RSD	148.1	76.30	74.80	68.61	2439.	457.9	366.2
#1	-.0000	-.0024	-.0099	-.0059	.0001	.0131	.0061
#2	-.0000	-.0013	-.0174	-.0075	.0036	.0544	-.0033
#3	-.0003	-.0004	-.0025	-.0011	-.0042	-.0374	-.0092

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0019	-.0000	.0010	.0084	.0128	.2144	-.0217
SDev	.0106	.0069	.0018	.0012	.0116	.0107	.0182
%RSD	549.0	44470.	190.8	14.88	90.79	4.975	83.67
#1	.0070	.0063	.0027	.0075	-.0006	.2267	-.0008
#2	-.0102	-.0074	-.0010	.0078	.0200	.2086	-.0365
#3	.0090	.0011	.0012	.0098	.0190	.2079	-.0377

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0000	-.0022	.0054	-.0001	.0076	-.1374	[illegible]
SDev	.0000	.0107	.0099	.0004	.0134	.0656	[illegible]

9613492.0683

%RSD	9.997	493.3	182.3	433.5	176.4	47.73	107.7
#1	-.0000	.0079	.0101	.0002	.0064	-.1517	-.0003
#2	-.0000	-.0011	.0122	-.0005	-.0052	-.1945	-.0019
#3	-.0001	-.0133	-.0060	.0001	.0216	-.0658	-.0004

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0061	-.0001	-.0000	-.0016	.0597
SDev	.0082	.0006	.0009	.0009	.0000
%RSD	133.4	707.2	2010.	55.26	.0000
#1	.0053	.0006	.0010	-.0017	.0597
#2	.0147	-.0004	-.0005	-.0025	.0597
#3	-.0016	-.0004	-.0006	-.0007	.0597

Analysis Report QC Standard Wed 01-13-93 08:43:44 AM page 1

Method: CLP Sample Name: ICV1 930106E1 Operator: DRS
Run Time: 01/13/93 08:42:01
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

PASS DM 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4930	1.841	-.0086	.0267	1.999	.5009	.0039
SDev	.0019	.010	.0066	.0035	.008	.0021	.0038
%RSD	.3896	.5362	77.20	13.26	.3769	.4106	97.20
#1	.4908	1.842	-.0099	.0294	1.991	.4986	.0037
#2	.4944	1.850	-.0144	.0279	2.006	.5025	.0079
#3	.4938	1.831	-.0014	.0227	2.001	.5018	.0002
Errors	QC Pass	QC Pass	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK
Value	.5170	1.958			2.078	.5080	
Range	10.00	10.00			10.00	10.00	

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	48.55	.4997	-.0154	.4917	.5109	.5109	-.0023
SDev	.19	.0025	.0064	.0051	.0020	.0017	.0013
%RSD	.3935	.5056	41.45	1.035	.3914	.3410	55.54
#1	48.33	.4971	-.0180	.4870	.5113	.5089	-.0016
#2	48.68	.4999	-.0200	.4910	.5127	.5120	-.0038
#3	48.65	.5021	-.0081	.4971	.5088	.5119	-.0014
Errors	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value	51.38	.5160		.4990	.5140	.5250	
Range	10.00	10.00		10.00	10.00	10.00	

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0011	1.915	.1686	50.07	.0228	.0027	24.32
SDev	.0001	.010	.0116	.10	.0007	.0004	.11
%RSD	12.74	.5414	6.884	.2051	2.901	14.92	.4375
#1	.0012	1.903	.1680	49.96	.0235	.0027	24.20
#2	.0009	1.919	.1573	50.09	.0222	.0023	24.39
#3	.0011	1.923	.1805	50.16	.0226	.0031	24.37
Errors	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	NOCHECK	QC Pass
Value		1.981		50.56			25.59
Range		10.00		10.00			10.00

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4911	-.0024	50.93	-.0117	.5019	.0366	4.951
SDev	.0026	.0011	.24	.0035	.0075	.0272	.020
%RSD	.5256	47.11	.4661	30.11	1.485	74.39	.4093
#1	.4881	-.0030	50.66	-.0111	.4955	.0233	4.927
#2	.4930	-.0022	51.09	-.0155	.5101	.0186	4.953
#3	.4921	-.0011	51.04	-.0085	.5002	.0679	4.963
Errors	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass
Value	5.00		51.00		5.00		5.00

Range	10.00		10.00		10.00		10.00
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0411	-.0158	.0011	-.0007	.0050	.1543	-.0733
SDev	.0022	.0078	.0063	.0049	.0123	.0022	.0129
%RSD	5.316	49.66	559.0	660.4	244.4	1.403	17.52
#1	-.0393	-.0144	.0027	-.0060	.0106	.1565	-.0657
#2	-.0435	-.0242	-.0058	.0002	-.0090	.1521	-.0884
#3	-.0406	-.0087	.0064	.0036	.0135	.1542	-.0664
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0176	-.0360	.0400	.0004	.0096	-.0550	.4986
SDev	.0001	.0044	.0040	.0005	.0211	.0517	.0027
%RSD	.5762	12.37	9.971	140.0	220.2	93.99	.5310
#1	.0175	-.0367	.0356	.0005	-.0093	-.0545	.4958
#2	.0177	-.0400	.0433	-.0002	.0057	-.1069	.5011
#3	.0177	-.0312	.0412	.0009	.0324	-.0035	.4990
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	QC Pass
Value							.5170
Range							10.00

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0044	.0004	3.066	-.0054	.0597
SDev	.0055	.0007	.001	.0016	.0000
%RSD	125.0	187.7	.0482	29.26	.0000
#1	-.0012	.0010	3.066	-.0047	.0597
#2	-.0012	-.0004	3.067	-.0072	.0597
#3	-.0108	.0005	3.064	-.0043	.0597
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK
Value			3.052		
Range			10.00		

Analysis Report QC Standard Wed 01-13-93 08:49:07 AM page 1

Method: CLP Sample Name: MCVA 921116I1 Operator: DRS
Run Time: 01/13/93 08:47:24
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

PASS DN 1/13/92

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5000	25.12	2.445	1.976	.5061	.1039	24.69
SDev	.0014	.06	.022	.008	.0019	.0003	.02
%RSD	.2880	.2544	.8818	.3871	.3736	.2841	.0995
#1	.5012	25.19	2.424	1.985	.5083	.1042	24.70
#2	.4984	25.06	2.444	1.974	.5053	.1036	24.72
#3	.5003	25.10	2.467	1.970	.5049	.1039	24.67
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	.5000	25.00	2.500	2.000	.5000	.1000	25.00
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	24.82	.4942	.0019	1.016	1.014	1.020	-.0005
SDev	.06	.0041	.0039	.001	.005	.005	.0009
%RSD	.2352	.8355	204.5	.0605	.4604	.4502	178.3
#1	24.89	.4939	-.0024	1.016	1.016	1.025	-.0013
#2	24.78	.4984	.0030	1.016	1.018	1.016	-.0008
#3	24.80	.4901	.0051	1.015	1.009	1.018	.0005
Errors	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value	25.00	.5000		1.000	1.000	1.000	
Range	10.00	10.00		10.00	10.00	10.00	

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0003	19.74	.0922	24.13	.0110	2.160	24.61
SDev	.0000	.05	.0040	.05	.0013	.009	.08
%RSD	12.42	.2717	4.392	.2136	11.99	.4240	.3068
#1	-.0003	19.80	.0887	24.10	.0114	2.171	24.70
#2	-.0003	19.71	.0913	24.11	.0096	2.155	24.55
#3	-.0004	19.71	.0967	24.19	.0121	2.156	24.60
Errors	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	QC Pass
Value		20.00		25.00		2.000	25.00
Range		10.00		10.00		10.00	10.00

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5036	1.004	10.16	-.0082	1.012	20.24	2.479
SDev	.0026	.004	.08	.0047	.004	.03	.013
%RSD	.5196	.4269	.8077	57.69	.4008	.1411	.5246
#1	.5063	.9990	10.23	-.0107	1.008	20.27	2.493
#2	.5029	1.007	10.07	-.0112	1.011	20.23	2.477
#3	[illegible]	1.005	10.17	-.0027	1.016	20.22	2.466
Errors	QC Pass	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass
Value	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	2.500

Range	10.00	10.00	10.00		10.00	10.00	10.00
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0336	-.0116	-.0116	2.403	2.525	19.04	-.0144
SDev	.0103	.0036	.0043	.039	.010	.04	.0244
%RSD	30.72	31.18	37.05	1.634	.3892	.1877	169.6
#1	-.0257	-.0086	-.0087	2.367	2.518	19.07	-.0348
#2	-.0453	-.0157	-.0095	2.396	2.521	19.00	-.0210
#3	-.0298	-.0107	-.0165	2.444	2.537	19.05	.0126
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value				2.500	2.500	20.00	
Range				10.00	10.00	10.00	

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5125	.0023	.0644	1.001	2.553	-.1300	1.013
SDev	.0015	.0121	.0013	.002	.010	.0945	.003
%RSD	.2921	516.1	2.032	.1995	.4061	72.66	.2717
#1	.5142	.0146	.0659	1.004	2.563	-.2316	1.017
#2	.5119	.0020	.0641	1.000	2.542	-.1136	1.012
#3	.5114	-.0096	.0633	1.000	2.554	-.0449	1.011
Errors	QC Pass	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK	QC Pass
Value	.5000			1.000	2.500		1.000
Range	10.00			10.00	10.00		10.00

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0032	.0004	1.029	2.035	.0598
SDev	.0026	.0002	.001	.006	.0000
%RSD	81.73	64.32	.1106	.2745	.0097
#1	.0062	.0003	1.031	2.042	.0598
#2	.0019	.0002	1.028	2.032	.0598
#3	.0015	.0006	1.029	2.033	.0598
Errors	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK
Value			1.000	2.000	
Range			10.00	10.00	

Analysis Report QC Standard Wed 01-13-93 08:55:01 AM page 1

Method: CLP Sample Name: MCVB 921208I10 Operator: DRS
Run Time: 01/13/93 08:53:16
Comment: T-106 SOIL SAMPLES. PASS DJG 1/13/93 W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0061	-.6482	-.0808	.0159	.0009	.0013	.0429
SDev	.0003	.0182	.0110	.0021	.0001	.0002	.0067
%RSD	4.215	2.813	13.62	13.31	12.38	14.24	15.62
#1	-.0059	-.6678	-.0693	.0183	.0008	.0014	.0485
#2	-.0064	-.6451	-.0912	.0143	.0010	.0011	.0448
#3	-.0059	-.6318	-.0818	.0152	.0010	.0015	.0355
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0027	.0044	4.923	-.0005	.0021	-.0009	4.780
SDev	.0032	.0003	.019	.0011	.0032	.0006	.023
%RSD	117.4	6.877	.3768	241.5	149.7	69.39	.4897
#1	.0049	.0041	4.913	-.0018	.0050	-.0014	4.784
#2	.0042	.0044	4.944	.0003	-.0013	-.0010	4.801
#3	-.0009	.0047	4.911	.0000	.0028	-.0002	4.755
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	QC Pass
Value			5.000				5.000
Range			10.00				10.00

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.942	.0090	4.981	-.3242	1.927	.0024	-.0421
SDev	.010	.0033	.051	.2227	.009	.0013	.0077
%RSD	.5131	36.28	1.018	68.70	.4466	55.03	18.38
#1	1.944	.0126	5.011	-.5793	1.925	.0009	-.0500
#2	1.950	.0081	5.010	-.1683	1.936	.0029	-.0418
#3	1.931	.0063	4.922	-.2251	1.919	.0034	-.0345
Errors	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	NOCHECK
Value	2.000		5.000		2.000		
Range	10.00		10.00		10.00		

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0005	.0050	.1284	4.821	.0051	.0278	-.0267
SDev	.0003	.0022	.0110	.024	.0010	.0176	.0099
%RSD	64.79	45.04	8.598	.4897	20.10	63.19	37.11
#1	.0009	.0053	.1330	4.825	.0039	.0480	-.0373
#2	.0002	.0026	.1309	4.843	.0057	.0191	-.0257
#3	.0004	.0070	.1164	4.796	.0057	.0163	-.0175
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value				5.000			

Range				10.00			
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-1.343	-.0154	4.790	.0125	.0271	-.0190	-.0269
SDev	.012	.0039	.022	.0057	.0082	.0026	.0230
%RSD	.8958	25.11	.4667	45.77	30.18	13.59	85.66
#1	-1.355	-.0182	4.781	.0167	.0290	-.0168	-.0311
#2	-1.344	-.0171	4.815	.0060	.0341	-.0184	-.0475
#3	-1.331	-.0110	4.773	.0148	.0181	-.0219	-.0020
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value			5.000				
Range			10.00				

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0009	4.853	4.777	.0042	.0311	10.27	.0042
SDev	.0001	.019	.027	.0006	.0060	.03	.0008
%RSD	11.89	.3886	.5577	14.54	19.32	.2580	20.24
#1	.0010	4.836	4.784	.0035	.0339	10.25	.0037
#2	.0008	4.873	4.799	.0044	.0242	10.25	.0037
#3	.0008	4.851	4.747	.0046	.0353	10.30	.0052
Errors	NOCHECK	QC Pass	QC Pass	NOCHECK	NOCHECK	QC Pass	NOCHECK
Value		5.000	5.000			10.00	
Range		10.00	10.00			10.00	

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0116	.9942	.0020	.0206	.0597
SDev	.0064	.0040	.0008	.0010	.0000
%RSD	54.83	.4028	42.72	4.682	.0000
#1	.0080	.9958	.0010	.0206	.0597
#2	.0080	.9972	.0024	.0196	.0597
#3	.0190	.9897	.0025	.0215	.0597
Errors	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value		1.000			
Range		10.00			

Analysis Report Wed 01-13-93 09:05:16 AM page 1

Method: CLP Sample Name: STD1-Blank Operator: DRS
Run Time: 01/13/93 09:03:34
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0003	.0019	-.0081	.0081	-.0001	-.0000	-.0010
SDev	.0011	.0079	.0106	.0023	.0003	.0000	.0025
%RSD	355.7	406.4	131.4	28.47	224.8	340.9	254.9
#1	-.0009	-.0069	-.0127	.0063	.0001	-.0000	-.0026
#2	-.0010	.0082	.0041	.0107	-.0005	.0000	-.0023
#3	.0010	.0045	-.0155	.0074	-.0001	.0000	.0019

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0071	.0015	.0023	.0002	-.0016	.0015	-.0006
SDev	.0019	.0012	.0078	.0003	.0013	.0005	.0003
%RSD	26.62	80.38	342.7	168.2	84.22	33.81	41.78
#1	.0082	.0022	.0108	.0001	-.0005	.0020	-.0005
#2	.0049	.0001	-.0046	-.0001	-.0030	.0010	-.0005
#3	.0081	.0022	.0007	.0006	-.0012	.0015	-.0009

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0004	-.0006	.0185	.1007	.0014	.0003	-.0040
SDev	.0004	.0011	.0103	.0763	.0004	.0011	.0058
%RSD	118.2	172.2	55.43	75.82	29.63	396.1	145.2
#1	.0004	-.0012	.0284	.1604	.0018	.0015	-.0035
#2	-.0001	-.0013	.0079	.0147	.0010	-.0005	-.0101
#3	.0008	.0006	.0192	.1270	.0016	-.0001	.0016

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0001	-.0011	.0206	.0030	.0019	.0215	.0012
SDev	.0007	.0019	.0175	.0028	.0015	.0212	.0091
%RSD	954.5	168.7	84.72	94.49	76.68	98.38	784.2
#1	.0003	-.0020	.0392	.0051	.0013	.0135	-.0093
#2	-.0009	.0011	.0191	-.0002	.0009	.0455	.0050
#3	.0004	-.0025	.0045	.0041	.0036	.0055	.0078

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0104	.0017	.0046	.0117	.0097	.0109	-.0130
SDev	.0095	.0099	.0028	.0053	.0094	.0033	.0216
%RSD	91.04	573.0	60.18	45.52	96.85	30.37	165.7
#1	.0128	.0088	.0051	.0056	.0057	.0127	-.0378
#2	-.0000	-.0096	.0016	.0140	.0204	.0071	-.0029
#3	.0185	.0061	.0071	.0155	.0030	.0129	.0016

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0001	-.0061	-.0046	-.0000	[illegible]	[illegible]	[illegible]
SDev	.0002	.0142	.0053	[illegible]	[illegible]	[illegible]	[illegible]

%RSD	147.4	240.7	115.3	292.1	3015.	795.0	1198.
#1	.0003	-.0214	-.0071	-.0001	-.0015	.1205	-.0001
#2	-.0001	.0081	-.0081	-.0002	.0042	-.0080	-.0001
#3	.0001	-.0052	.0015	.0001	-.0030	-.0750	.0002

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0030	.0005	-.0006	-.0010	.0597
SDev	.0047	.0001	.0013	.0005	.0000
%RSD	156.9	12.13	215.9	49.99	.0097
#1	.0026	.0004	-.0005	-.0005	.0597
#2	.0078	.0005	.0007	-.0014	.0597
#3	-.0015	.0005	-.0020	-.0009	.0597

Analysis Report Wed 01-13-93 09:09:32 AM page 1

Method: CLP Sample Name: ICSA 921008E3 02 Operator: DRS
Run Time: 01/13/93 09:07:47
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0003	273.3	-.3567	.0468	.0053	-.0000	.0542
SDev	.0009	.5	.0115	.0036	.0004	.0001	.0057
%RSD	319.8	.1928	3.217	7.595	7.842	558.2	10.47
#1	.0007	273.2	-.3547	.0485	.0052	-.0001	.0595
#2	-.0010	273.9	-.3691	.0428	.0050	.0001	.0482
#3	-.0005	272.8	-.3464	.0493	.0058	-.0001	.0548

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	252.0	.0054	-.0290	.0044	.0223	.0001	-.0034
SDev	.8	.0011	.0043	.0003	.0021	.0009	.0005
%RSD	.3065	21.15	14.67	6.323	9.559	576.1	14.65
#1	252.0	.0043	-.0282	.0043	.0242	.0001	-.0032
#2	252.7	.0054	-.0336	.0047	.0200	-.0007	-.0040
#3	251.2	.0066	-.0252	.0042	.0227	.0010	-.0031

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0004	99.46	.6559	-1.816	.0785	.0079	245.8
SDev	.0004	.32	.0172	.325	.0015	.0018	.4
%RSD	127.9	.3214	2.623	17.91	1.964	23.22	.1808
#1	.0006	99.46	.6738	-1.530	.0795	.0097	245.8
#2	-.0002	99.77	.6546	-2.170	.0768	.0060	246.2
#3	.0007	99.14	.6394	-1.747	.0793	.0081	245.3

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0137	.0086	1.360	-.0198	.0186	.2824	-.0180
SDev	.0003	.0019	.011	.0051	.0026	.0558	.0072
%RSD	2.091	22.41	.8091	25.83	13.76	19.77	39.81
#1	.0135	.0078	1.348	-.0168	.0215	.2252	-.0229
#2	.0136	.0109	1.370	-.0258	.0171	.3367	-.0213
#3	.0140	.0073	1.362	-.0169	.0171	.2852	-.0098

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0871	-.0136	-.0947	-.0883	-.0069	.0455	-.1868
SDev	.0186	.0059	.0085	.0028	.0074	.0005	.0156
%RSD	21.40	43.25	8.979	3.222	106.6	1.179	8.376
#1	-.0705	-.0135	-.1045	-.0853	-.0149	.0451	-.1955
#2	-.1073	-.0195	-.0911	-.0885	-.0005	.0461	-.1962
#3	-.0835	-.0078	-.0887	-.0910	-.0053	.0453	-.1687

Elem	Sr	Te	Th	Ti	Tl	U	[illegible]
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1523	-.0089	.2307	.0060	.1526	[illegible]	[illegible]
SDev	.0010	.0129	.0136	.0001	.0086	.1583	[illegible]

%RSD	.4108	144.0	5.912	1.771	5.649	175.7	2.543
#1	.2518	-.0229	.2151	.0060	.1502	.2536	.0221
#2	.2534	.0024	.2404	.0058	.1455	-.0625	.0210
#3	.2515	-.0063	.2366	.0060	.1622	.0793	.0216

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0085	.0043	.1040	-.0146	.0597
SDev	.0089	.0008	.0023	.0018	.0000
%RSD	104.8	17.49	2.170	12.22	.0000
#1	.0043	.0047	.1025	-.0127	.0597
#2	.0024	.0035	.1029	-.0162	.0597
#3	.0187	.0048	.1066	-.0149	.0597

9613492.0694

Analysis Report Wed 01-13-93 09:15:39 AM page 1

Method: CLP Sample Name: ICSAB 921008E4 @2 Operator: DRS
Run Time: 01/13/93 09:13:54
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4779	271.9	-.3583	.0475	.2478	.2458	.0517
SDev	.0005	.8	.0142	.0018	.0014	.0004	.0108
%RSD	.1119	.2847	3.969	3.862	.5724	.1731	20.87
#1	.4780	272.3	-.3668	.0488	.2488	.2462	.0400
#2	.4773	271.0	-.3419	.0454	.2462	.2454	.0613
#3	.4784	272.3	-.3662	.0484	.2485	.2459	.0539

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	250.4	.4743	-.0219	.2430	.2855	.2556	-.0026
SDev	.7	.0048	.0137	.0019	.0040	.0004	.0015
%RSD	.2618	1.019	62.36	.7662	1.416	.1611	60.11
#1	250.9	.4725	-.0341	.2408	.2901	.2552	-.0042
#2	249.7	.4798	-.0072	.2440	.2836	.2561	-.0011
#3	250.7	.4707	-.0245	.2440	.2827	.2555	-.0025

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0005	98.80	.6649	-1.656	.0802	.0067	244.1
SDev	.0001	.31	.0094	.172	.0020	.0012	.6
%RSD	30.99	.3111	1.418	10.40	2.449	17.65	.2580
#1	.0004	99.01	.6720	-1.815	.0786	.0060	244.4
#2	.0007	98.45	.6542	-1.473	.0797	.0081	243.4
#3	.0004	98.95	.6685	-1.679	.0824	.0060	244.5

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.2482	.0086	1.362	-.0187	.4874	.2961	2.335
SDev	.0011	.0018	.016	.0083	.0024	.0294	.005
%RSD	.4448	20.73	1.154	44.27	.4944	9.937	.2268
#1	.2487	.0076	1.348	-.0271	.4850	.3097	2.337
#2	.2469	.0107	1.357	-.0105	.4899	.3162	2.340
#3	.2489	.0076	1.379	-.0185	.4874	.2623	2.329

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0893	-.0091	-.0948	-.0979	-.0033	.0456	-.1697
SDev	.0126	.0036	.0060	.0092	.0142	.0100	.0238
%RSD	14.13	39.32	6.326	9.364	429.2	22.03	14.01
#1	-.1031	-.0093	-.0982	-.1044	-.0002	.0340	-.1965
#2	-.0782	-.0055	-.0879	-.0874	-.0188	.0509	-.1511
#3	-.0867	-.0126	-.0984	-.1020	.0091	.0519	-.1615

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.2515	-.0206	.2277	.0061	.1482	.1327	.2657
SDev	.0010	.0133	.0095	.0006	.0161	.0632	.0001

%RSD	.3858	65.48	4.295	9.232	10.84	47.58	.0382
#1	.2522	-.0055	.2286	.0055	.1585	.0673	.2649
#2	.2504	-.0247	.2370	.0066	.1564	.1933	.2650
#3	.2520	-.0316	.2175	.0061	.1297	.1377	.2651

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0139	.0045	.6283	-.0142	.0597
SDev	.0229	.0002	.0032	.0002	.0000
%RSD	165.2	5.198	.5077	1.602	.0000
#1	.0108	.0043	.6254	-.0144	.0597
#2	-.0179	.0047	.6279	-.0139	.0597
#3	-.0345	.0043	.6317	-.0142	.0597

Analysis Report Wed 01-13-93 09:23:50 AM page 1

Method: CLP Sample Name: STD1-Blank Operator: DRS
Run Time: 01/13/93 09:22:08
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0008	.0490	-.0080	.0091	.0005	-.0001	.0024
SDev	.0007	.0223	.0029	.0007	.0002	.0002	.0072
%RSD	95.74	45.57	36.33	7.792	39.45	185.6	294.8
#1	-.0001	.0740	-.0083	.0087	.0005	.0000	-.0058
#2	.0013	.0415	-.0108	.0088	.0003	-.0000	.0069
#3	.0010	.0313	-.0050	.0099	.0008	-.0003	.0062

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0850	.0013	.0024	.0012	.0024	.0018	.0005
SDev	.0066	.0015	.0099	.0016	.0019	.0008	.0014
%RSD	7.815	113.3	408.6	133.8	77.70	47.39	292.0
#1	.0882	.0031	-.0070	-.0000	.0015	.0012	-.0008
#2	.0896	.0003	.0015	.0031	.0046	.0014	.0002
#3	.0774	.0007	.0128	.0006	.0012	.0027	.0020

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0004	.0194	.0218	.1086	.0020	.0032	.0441
SDev	.0005	.0022	.0212	.1948	.0017	.0011	.0062
%RSD	114.3	11.27	97.02	179.4	89.28	34.24	14.11
#1	-.0001	.0201	-.0024	-.0643	.0001	.0023	.0502
#2	.0004	.0212	.0307	.0704	.0035	.0027	.0443
#3	.0010	.0170	.0370	.3196	.0022	.0044	.0377

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0003	-.0030	-.0001	.0066	.0032	.0305	-.0091
SDev	.0001	.0015	.0110	.0028	.0032	.0072	.0029
%RSD	15.81	52.08	8621.	42.40	97.13	23.53	31.90
#1	.0004	-.0013	-.0024	.0079	-.0004	.0388	-.0088
#2	.0003	-.0032	-.0099	.0034	.0049	.0262	-.0063
#3	.0003	-.0044	.0119	.0086	.0053	.0266	-.0121

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0174	.0028	.0030	.0040	.0014	.0134	.0060
SDev	.0201	.0098	.0039	.0053	.0077	.0078	.0239
%RSD	115.7	347.0	127.4	132.3	532.8	58.57	396.1
#1	.0010	-.0066	-.0013	-.0021	-.0014	.0111	-.0111
#2	.0114	.0020	.0060	.0064	.0102	.0069	-.0041
#3	.0399	.0130	.0044	.0078	-.0044	.0221	.0337

Elem	Sr	Ta	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0002	-.0114	[illegible]	.0005	-.0036	-.0035	.0005
SDev	.0001	.0119	[illegible]	[illegible]	.0124	.1604	.0007

%RSD	39.04	104.0	313.3	50.90	326.8	4626.	136.5
#1	.0001	-.0018	.0040	.0002	.0103	-.1789	-.0002
#2	.0003	-.0078	-.0012	.0007	-.0131	.0328	.0006
#3	.0003	-.0247	-.0092	.0006	-.0086	.1357	.0013

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0031	.0003	.0006	-.0003	.0597
SDev	.0116	.0006	.0011	.0013	.0000
%RSD	370.2	204.0	182.7	394.4	.0000
#1	-.0011	-.0004	.0008	-.0013	.0597
#2	.0073	.0005	.0016	-.0008	.0597
#3	-.0157	.0009	-.0006	.0011	.0597

Analysis Report Wed 01-13-93 09:27:00 AM page 1

Method: CLP Sample Name: PB Operator: DRS
Run Time: 01/13/93 09:25:17
Comment: HNO3-HCL DIGEST PROCESS BLANK. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0007	.0074	-.0100	.0107	.0021	-.0003	.0023
SDev	.0006	.0112	.0026	.0009	.0003	.0001	.0085
%RSD	77.39	150.2	26.09	8.743	14.86	46.33	375.7
#1	.0014	.0070	-.0127	.0096	.0024	-.0004	.0115
#2	.0005	.0188	-.0075	.0114	.0020	-.0001	.0005
#3	.0003	-.0035	-.0099	.0109	.0018	-.0003	-.0052

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0158	-.0003	-.0459	-.0039	-.0015	.0008	-.0055
SDev	.0042	.0014	.0067	.0008	.0025	.0005	.0011
%RSD	26.64	494.9	14.65	20.20	162.4	70.03	19.36
#1	.0206	-.0006	-.0385	-.0035	-.0043	.0010	-.0046
#2	.0137	-.0016	-.0477	-.0034	-.0010	.0001	-.0054
#3	.0130	.0013	-.0516	-.0048	.0007	.0011	-.0067

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0014	.0016	.0007	-1.438	-.0083	-.0033	-.0073
SDev	.0001	.0004	.0096	.222	.0006	.0023	.0047
%RSD	9.858	22.92	1450.	15.43	7.435	69.47	64.51
#1	-.0012	.0021	.0025	-1.195	-.0085	-.0034	-.0072
#2	-.0015	.0015	-.0097	-1.628	-.0077	-.0054	-.0027
#3	-.0015	.0014	.0092	-1.491	-.0089	-.0009	-.0121

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0003	-.0044	.0611	-.0305	.0006	-.0170	-.0269
SDev	.0003	.0008	.0117	.0044	.0037	.0232	.0071
%RSD	92.56	18.03	19.19	14.43	571.5	136.4	26.34
#1	-.0003	-.0035	.0542	-.0259	.0038	.0098	-.0267
#2	-.0001	-.0048	.0747	-.0310	-.0034	-.0308	-.0200
#3	-.0007	-.0048	.0545	-.0347	.0016	-.0299	-.0342

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0670	-.0389	-.0096	-.0074	-.0148	.0146	-.1051
SDev	.0045	.0028	.0017	.0062	.0087	.0096	.0124
%RSD	6.654	7.202	17.39	83.08	58.80	65.83	11.76
#1	-.0638	-.0363	-.0082	-.0003	-.0207	.0211	-.0962
#2	-.0721	-.0419	-.0091	-.0116	-.0048	.0036	-.0998
#3	-.0651	-.0386	-.0114	-.0104	-.0190	.0190	-.1192

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0002	-.0355	.0039	-.0022	-.0035	-.5482	-.0040
SDev	.0000	.0056	.0042	.0005	.0094	.0452	.0007

%RSD	1.771	15.21	109.4	21.82	291.0	8.252	18.13
#1	-.0002	-.0333	.0085	-.0017	-.0070	-.5102	-.0035
#2	-.0002	-.0333	.0001	-.0023	.0075	-.5983	-.0037
#3	-.0002	-.0430	.0030	-.0026	-.0102	-.5362	-.0049

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0207	-.0019	.0041	-.0052	.0597
SDev	.0174	.0003	.0007	.0007	.0000
%RSD	83.89	13.30	16.67	13.30	.0097
#1	-.0247	-.0016	.0046	-.0045	.0597
#2	-.0017	-.0020	.0044	-.0058	.0597
#3	-.0358	-.0020	.0033	-.0055	.0597

Analysis Report Wed 01-13-93 09:31:11 AM page 1

Method: CLP Sample Name: BS Operator: DRS
Run Time: 01/13/93 09:29:29
Comment: SPIKED PROCESS BLANK. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0475	.0067	1.946	.0109	2.030	.0499	48.28
SDev	.0003	.0116	.012	.0030	.011	.0002	.24
%RSD	.5181	174.2	.6297	27.41	.5412	.3335	.4939
#1	.0476	.0187	1.944	.0140	2.020	.0498	48.02
#2	.0472	.0057	1.960	.0080	2.041	.0501	48.49
#3	.0476	-.0044	1.936	.0108	2.028	.0499	48.33

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0119	.0467	-.0517	.4866	.2016	.2415	-.0061
SDev	.0002	.0018	.0077	.0029	.0015	.0011	.0005
%RSD	1.440	3.899	14.83	.5886	.7640	.4746	8.041
#1	.0121	.0452	-.0476	.4836	.2013	.2406	-.0056
#2	.0120	.0487	-.0469	.4893	.2002	.2428	-.0066
#3	.0118	.0462	-.0605	.4871	.2032	.2412	-.0061

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0017	-.0004	-.0036	-1.590	-.0108	-.0041	-.0066
SDev	.0002	.0004	.0218	.320	.0017	.0014	.0076
%RSD	14.48	83.78	612.3	20.13	15.51	35.46	116.6
#1	-.0017	-.0008	-.0212	-1.491	-.0092	-.0054	-.0016
#2	-.0014	-.0000	-.0103	-1.331	-.0126	-.0026	-.0027
#3	-.0019	-.0005	.0208	-1.948	-.0106	-.0042	-.0154

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4940	.0008	.1107	-.0421	.4899	.0373	.4570
SDev	.0032	.0017	.0143	.0044	.0022	.0358	.0018
%RSD	.6468	205.1	12.91	10.44	.4383	95.98	.3974
#1	.4904	.0028	.0964	-.0395	.4886	.0443	.4582
#2	.4963	-.0002	.1250	-.0397	.4923	-.0015	.4549
#3	.4955	-.0001	.1106	-.0472	.4886	.0691	.4577

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0847	-.0452	-.0123	.4814	1.961	.0097	-.0745
SDev	.0090	.0052	.0019	.0154	.004	.0009	.0339
%RSD	10.60	11.58	15.15	3.201	.2111	8.928	45.45
#1	-.0747	-.0400	-.0118	.4689	1.956	.0099	-.0514
#2	-.0874	-.0450	-.0144	.4986	1.962	.0105	-.0588
#3	-.0920	-.0505	-.0108	.4768	1.964	[illegible]	-.1134

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0007	-.0164	.0140	-.0021	1.374	[illegible]	.4909
SDev	.0000	.0117	[illegible]	.0007	[illegible]	[illegible]	.0017

%RSD	.9157	71.22	25.33	35.89	.7564	12.01	.5402
#1	.0007	-.0129	.0179	-.0015	1.857	-.6574	.4910
#2	.0007	-.0294	.0130	-.0018	1.881	-.6465	.4959
#3	.0007	-.0068	.0110	-.0029	1.882	-.7974	.4918

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0239	-.0023	.4972	-.0072	.0599
SDev	.0040	.0003	.0042	.0002	.0000
%RSD	16.79	11.14	.8459	2.224	.0096
#1	-.0219	-.0025	.4936	-.0070	.0599
#2	-.0286	-.0020	.5018	-.0072	.0599
#3	-.0214	-.0024	.4963	-.0073	.0599

Analysis Report Wed 01-13-93 09:35:33 AM page 1

Method: CLP Sample Name: 93-02239 @10 Operator: DRS
Run Time: 01/13/93 09:33:50
Comment: B07JZ4 1.0189g/200ml @10X DIL W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0007	3.035	-.0057	.0017	.0385	.0002	.0544
SDev	.0004	.020	.0043	.0018	.0005	.0001	.0184
%RSD	55.98	.6639	76.37	109.8	1.313	42.01	33.77
#1	.0007	3.016	-.0018	.0016	.0390	.0002	.0743
#2	.0011	3.034	-.0104	.0035	.0386	.0001	.0509
#3	.0003	3.056	-.0048	-.0001	.0380	.0001	.0380

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	5.035	.0001	.0044	.0041	.0075	.0077	.0007
SDev	.025	.0005	.0101	.0024	.0006	.0008	.0003
%RSD	.5025	365.4	227.5	59.33	8.479	10.11	37.71
#1	5.006	.0004	.0082	.0065	.0068	.0083	.0010
#2	5.047	-.0004	.0121	.0041	.0078	.0081	.0006
#3	5.053	.0004	-.0070	.0017	.0080	.0069	.0005

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0000	8.865	.0313	.4689	.0076	.0036	2.238
SDev	.0004	.036	.0105	.1909	.0021	.0007	.018
%RSD	1226.	.4068	33.58	40.71	27.85	19.95	.7955
#1	.0001	8.824	.0325	.5029	.0063	.0044	2.218
#2	.0004	8.882	.0411	.6405	.0101	.0031	2.243
#3	-.0004	8.889	.0202	.2633	.0065	.0032	2.253

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1739	-.0019	.2536	.0079	.0048	.4533	.0012
SDev	.0008	.0011	.0144	.0038	.0014	.0408	.0071
%RSD	.4402	56.39	5.682	48.60	28.66	8.989	567.5
#1	.1730	-.0015	.2391	.0088	.0034	.4828	.0094
#2	.1741	-.0011	.2680	.0112	.0048	.4703	-.0027
#3	.1745	-.0031	.2536	.0037	.0062	.4068	-.0030

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0029	-.0019	-.0089	-.0073	.0235	.1397	-.0126
SDev	.0142	.0071	.0032	.0043	.0203	.0080	.0344
%RSD	486.2	385.3	35.42	58.96	86.33	5.757	273.3
#1	.0029	.0030	-.0119	-.0102	.0411	.1331	.0206
#2	.0074	.0015	-.0056	-.0024	.0281	.1487	-.0102
#3	-.0190	-.0101	-.0091	-.0093	.0013	.1373	-.0481

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0166	-.0173	.0074	.6402	.0053	-.0347	.0128
SDev	.0000	.0117	.0046	.0033	.0178	.0601	.0010

%RSD	.0351	67.68	62.76	.5148	338.3	173.5	5.094
#1	.0166	-.0040	.0023	.6364	.0233	-.0092	.0195
#2	.0166	-.0220	.0113	.6418	-.0124	.0086	.0192
#3	.0166	-.0259	.0086	.6424	.0049	-.1033	.0177

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0035	.0048	.0216	.0071	.0597
SDev	.0051	.0000	.0011	.0006	.0000
%RSD	146.4	.9123	5.055	8.991	.0097
#1	.0094	.0048	.0222	.0077	.0597
#2	.0003	.0048	.0203	.0070	.0597
#3	.0008	.0049	.0223	.0064	.0597

Analysis Report Wed 01-13-93 09:39:35 AM page 1

Method: CLP Sample Name: 93-02239 Operator: DRS
Run Time: 01/13/93 09:37:52
Comment: B07JZ4 1.0189g/200ml W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0008	29.67	-.0224	-.0310	.3663	.0014	.0855
SDev	.0009	.17	.0092	.0025	.0019	.0001	.0086
%RSD	116.2	.5586	41.09	8.162	.5196	5.584	10.11
#1	-.0018	29.67	-.0326	-.0296	.3669	.0014	.0879
#2	-.0003	29.51	-.0197	-.0295	.3642	.0013	.0760
#3	-.0002	29.84	-.0148	-.0339	.3679	.0014	.0928

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	48.96	-.0005	.0628	.0342	.0586	.0609	.0042
SDev	.28	.0018	.0079	.0008	.0047	.0006	.0008
%RSD	.5727	373.7	12.51	2.354	7.990	.9220	18.64
#1	48.95	.0001	.0540	.0338	.0622	.0603	.0037
#2	48.68	.0009	.0690	.0351	.0533	.0614	.0051
#3	49.24	-.0025	.0655	.0336	.0602	.0610	.0037

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0022	87.44	.2174	4.085	.0644	.0315	21.72
SDev	.0003	.53	.0137	.133	.0016	.0012	.11
%RSD	13.39	.6035	6.287	3.255	2.497	3.899	.5074
#1	-.0025	87.54	.2041	3.977	.0636	.0315	21.72
#2	-.0020	86.87	.2314	4.046	.0662	.0327	21.61
#3	-.0020	87.91	.2167	4.234	.0632	.0303	21.83

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.708	.0058	2.347	.0189	.0457	4.085	.0412
SDev	.011	.0008	.034	.0058	.0012	.024	.0096
%RSD	.6398	14.53	1.466	30.60	2.565	.5824	23.21
#1	1.711	.0066	2.335	.0124	.0469	4.058	.0523
#2	1.696	.0049	2.385	.0233	.0446	4.093	.0360
#3	1.718	.0060	2.320	.0212	.0455	4.103	.0354

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.1117	-.0334	-.0977	-.0154	.0243	1.266	-.1241
SDev	.0178	.0073	.0048	.0087	.0156	.008	.0275
%RSD	15.94	21.85	4.907	56.83	64.06	.6501	22.15
#1	-.1282	-.0397	-.1031	-.0053	.0420	1.264	-.1472
#2	-.0928	-.0254	-.0962	-.0195	.0181	1.258	-.0937
#3	-.1140	-.0351	-.0939	-.0213	.0128	1.274	-.1314

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1621	-.0302	.0751	6.274	[illegible]	[illegible]	[illegible]
SDev	[illegible]	.0081	.0047	[illegible]	[illegible]	[illegible]	[illegible]

%RSD	.7130	26.80	6.229	.5884	16.14	17.72	.5900
#1	.1622	-.0218	.0761	6.281	.0357	-.5994	.1804
#2	.1608	-.0380	.0700	6.234	.0262	-.4202	.1808
#3	.1631	-.0308	.0792	6.306	.0346	-.5516	.1824

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0159	.0451	.2087	.0780	.0597
SDev	.0129	.0008	.0034	.0003	.0000
%RSD	81.58	1.727	1.628	.3732	.0097
#1	-.0262	.0453	.2101	.0780	.0597
#2	-.0013	.0443	.2111	.0777	.0597
#3	-.0200	.0458	.2048	.0783	.0597

Analysis Report Wed 01-13-93 09:44:51 AM page 1

Method: CLP Sample Name: 93-~~0237~~ 02239 REP RUN Operator: DRS
Run Time: 01/13/93 09:43:07 SWagner 1-14-93
Comment: B07JZ4 1.0189g/200ml REPLICATE RUN W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0009	29.62	-.0318	-.0319	.3653	.0013	.0644
SDev	.0004	.06	.0021	.0003	.0014	.0001	.0067
%RSD	50.96	.1889	6.564	1.039	.3696	4.900	10.39
#1	-.0004	29.57	-.0299	-.0315	.3646	.0013	.0606
#2	-.0012	29.62	-.0340	-.0319	.3644	.0013	.0722
#3	-.0010	29.68	-.0316	-.0322	.3668	.0014	.0606

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	48.87	.0009	.0670	.0338	.0583	.0609	.0044
SDev	.13	.0012	.0014	.0003	.0015	.0003	.0006
%RSD	.2560	131.8	2.132	.8904	2.633	.5635	13.79
#1	48.74	.0020	.0658	.0337	.0590	.0610	.0037
#2	48.88	.0011	.0666	.0335	.0594	.0606	.0046
#3	48.99	-.0004	.0685	.0341	.0565	.0612	.0049

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0020	87.12	.2104	4.370	.0653	.0316	21.68
SDev	.0000	.19	.0171	.070	.0017	.0014	.05
%RSD	.2516	.2163	8.119	1.613	2.540	4.564	.2456
#1	-.0020	86.92	.2146	4.444	.0649	.0303	21.62
#2	-.0020	87.14	.2249	4.362	.0638	.0332	21.71
#3	-.0020	87.29	.1916	4.304	.0671	.0315	21.72

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.706	.0065	2.337	.0239	.0495	4.107	.0435
SDev	.003	.0010	.042	.0030	.0016	.018	.0056
%RSD	.1890	15.80	1.789	12.51	3.254	.4458	12.90
#1	1.702	.0053	2.314	.0274	.0478	4.128	.0370
#2	1.706	.0070	2.312	.0222	.0496	4.102	.0465
#3	1.708	.0072	2.385	.0222	.0510	4.092	.0469

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.1049	-.0280	-.0966	-.0192	.0227	1.268	-.0835
SDev	.0089	.0029	.0058	.0050	.0123	.007	.0015
%RSD	8.454	10.30	5.964	26.19	54.39	.5562	1.761
#1	-.0991	-.0253	-.1032	-.0148	.0294	1.264	-.0837
#2	-.1005	-.0310	-.0927	-.0247	.0085	1.264	-.0820
#3	-.1151	-.0278	-.0939	-.0182	.0302	1.276	-.0849

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1613	-.0342	.0727	0.250	.0193	-.4060	.1321
SDev	.0005	.0105	.0075	.017	.0112	.0405	[illegible]

%RSD	.3280	30.56	10.36	.2736	58.18	9.978	.7962
#1	.1608	-.0425	.0672	6.233	.0065	-.3638	.1815
#2	.1613	-.0378	.0688	6.250	.0276	-.4096	.1810
#3	.1619	-.0225	.0809	6.267	.0238	-.4446	.1837

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0174	.0447	.2073	.0785	.0597
SDev	.0179	.0005	.0015	.0003	.0000
%RSD	103.1	1.116	.7184	.3432	.0097
#1	-.0377	.0442	.2075	.0785	.0597
#2	-.0038	.0447	.2087	.0787	.0597
#3	-.0107	.0452	.2057	.0782	.0597

Analysis Report Wed 01-13-93 09:49:31 AM page 1

Method: CLP Samole Name: 93-02240 Operator: DRS
Run Time: 01/13/93 09:47:47
Comment: B07JZ5 1.0029g/200ml W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0013	32.58	-.0375	-.0187	.3444	.0013	.0362
SDev	.0002	.04	.0078	.0021	.0014	.0000	.0024
%RSD	12.86	.1190	20.85	11.04	.4151	.4081	6.754
#1	-.0015	32.59	-.0365	-.0193	.3447	.0013	.0334
#2	-.0011	32.54	-.0302	-.0204	.3429	.0013	.0369
#3	-.0014	32.62	-.0457	-.0164	.3457	.0013	.0382

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	38.87	-.0002	.0420	.0227	.0489	.0655	.0004
SDev	.09	.0019	.0059	.0007	.0017	.0010	.0005
%RSD	.2254	880.1	14.13	3.074	3.474	1.606	142.4
#1	38.91	-.0002	.0416	.0229	.0492	.0666	.0008
#2	38.77	-.0022	.0481	.0232	.0504	.0645	.0004
#3	38.93	.0017	.0363	.0219	.0471	.0654	-.0002

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0022	66.99	.1588	5.476	.0486	.0397	20.70
SDev	.0000	.16	.0215	.100	.0003	.0004	.04
%RSD	1.003	.2436	13.51	1.830	.6870	1.033	.2072
#1	-.0022	67.09	.1835	5.371	.0488	.0397	20.70
#2	-.0021	66.80	.1446	5.570	.0489	.0402	20.66
#3	-.0022	67.09	.1483	5.488	.0483	.0393	20.75

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.336	.0022	5.626	.0055	.0413	2.442	-.0061
SDev	.003	.0011	.038	.0032	.0023	.055	.0057
%RSD	.1906	51.65	.6783	57.05	5.492	2.235	93.58
#1	1.338	.0035	5.636	.0089	.0428	2.481	-.0035
#2	1.333	.0013	5.658	.0049	.0424	2.466	-.0021
#3	1.335	.0018	5.584	.0027	.0387	2.380	-.0126

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0969	-.0302	-.0712	-.0230	.0088	4.339	-.0896
SDev	.0014	.0017	.0023	.0048	.0195	.012	.0369
%RSD	1.396	5.686	3.207	20.76	221.2	.2724	41.14
#1	-.0983	-.0283	-.0738	-.0184	.0295	4.335	-.1167
#2	-.0968	-.0306	-.0696	-.0279	-.0091	4.331	-.0476
#3	-.0956	-.0317	-.0702	-.0227	.0060	4.353	-.1044

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1962	-.0442	[illegible]	3.514	.0231	-.4973	.1233
SDev	.0004	.0036	[illegible]	.009	.0056	.0076	.0005

%RSD	.2252	8.038	4.728	.2649	24.22	1.529	.3880
#1	.1963	-.0455	.0691	3.517	.0191	-.4905	.1235
#2	.1957	-.0402	.0655	3.503	.0295	-.4965	.1236
#3	.1966	-.0469	.0629	3.521	.0207	-.5056	.1228

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0230	.0266	.1755	.0333	.0597
SDev	.0115	.0000	.0009	.0001	.0000
%RSD	49.79	.0421	.5042	.1894	.0000
#1	-.0201	.0266	.1752	.0333	.0597
#2	-.0356	.0266	.1765	.0333	.0597
#3	-.0133	.0266	.1748	.0332	.0597

9613492.0710

Analysis Report QC Standard Wed 01-13-93 09:54:37 AM page 1

Method: CLP Sample Name: MCVA Operator: DRS
Run Time: 01/13/93 09:52:53
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

PASS DRS 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4947	24.81	2.398	1.941	.4982	.1018	24.34
SDev	.0025	.11	.018	.005	.0033	.0005	.09
%RSD	.5056	.4561	.7716	.2471	.6603	.4568	.3660
#1	.4933	24.79	2.377	1.935	.4966	.1014	24.35
#2	.4975	24.93	2.411	1.944	.5020	.1023	24.42
#3	.4931	24.71	2.406	1.943	.4961	.1018	24.24
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	.5000	25.00	2.500	2.000	.5000	.1000	25.00
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	24.41	.4863	.0139	.9985	.9897	1.004	.0012
SDev	.09	.0028	.0042	.0015	.0034	.005	.0004
%RSD	.3859	.5816	30.46	.1461	.3390	.4533	32.43
#1	24.36	.4856	.0142	.9976	.9878	1.000	.0014
#2	24.52	.4894	.0180	1.000	.9877	1.009	.0007
#3	24.35	.4839	.0095	.9977	.9936	1.003	.0013
Errors	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value	25.00	.5000		1.000	1.000	1.000	
Range	10.00	10.00		10.00	10.00	10.00	

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0005	19.39	.1199	24.31	.0144	2.123	24.24
SDev	.0000	.10	.0148	.25	.0024	.006	.14
%RSD	4.355	.4907	12.33	1.040	16.79	.2924	.5953
#1	.0004	19.34	.1062	24.36	.0154	2.118	24.17
#2	.0005	19.50	.1180	24.54	.0117	2.130	24.40
#3	.0005	19.33	.1356	24.04	.0162	2.122	24.14
Errors	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	QC Pass
Value		20.00		25.00		2.000	25.00
Range		10.00		10.00		10.00	10.00

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4955	.9870	10.03	.0017	1.004	19.95	2.441
SDev	.0015	.0063	.12	.0018	.006	.01	.015
%RSD	.2974	.6430	1.221	100.3	.6394	.0548	.6180
#1	.4940	.9797	9.936	.0032	1.003	19.95	2.424
#2	.4970	.9912	10.17	-.0002	1.011	19.97	2.454
#3	.4955	.9901	9.994	.0022	.9980	19.95	2.444
Errors	QC Pass	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass
Value	.5000	1.000	10.00		1.000	20.00	2.500

Range	10.00	10.00	10.00		10.00	10.00	10.00
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0026	.0003	-.0075	2.354	2.476	18.76	.0125
SDev	.0052	.0039	.0037	.052	.046	.08	.0206
%RSD	199.8	1208.	49.21	2.221	1.861	.4451	163.9
#1	.0020	.0025	-.0047	2.296	2.432	18.73	.0135
#2	-.0016	-.0041	-.0116	2.368	2.524	18.85	-.0085
#3	-.0083	.0026	-.0061	2.398	2.473	18.69	.0326
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value				2.500	2.500	20.00	
Range				10.00	10.00	10.00	

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5052	-.0107	.0550	.9888	2.515	.0694	1.001
SDev	.0021	.0237	.0059	.0041	.019	.0598	.004
%RSD	.4114	222.5	10.79	.4109	.7471	86.14	.4293
#1	.5039	-.0080	.0521	.9865	2.531	.1385	.9985
#2	.5076	-.0356	.0511	.9935	2.521	.0341	1.006
#3	.5041	.0116	.0618	.9863	2.494	.0357	.9980
Errors	QC Pass	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK	QC Pass
Value	.5000			1.000	2.500		1.000
Range	10.00			10.00	10.00		10.00

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0042	.0006	1.019	2.012	.0598
SDev	.0129	.0000	.004	.010	.0000
%RSD	310.0	5.627	.4361	.4878	.0097
#1	-.0185	.0005	1.023	2.008	.0598
#2	-.0006	.0006	1.020	2.023	.0598
#3	.0066	.0006	1.015	2.005	.0598
Errors	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK
Value			1.000	2.000	
Range			10.00	10.00	

Analysis Report QC Standard Wed 01-13-93 09:59:05 AM page 1

Method: CLP Sample Name: MCVB PASS DRS 1/13/94 Operator: DRS
Run Time: 01/13/93 09:57:20
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0046	-.5369	-.0815	.0138	.0015	.0015	.0805
SDev	.0011	.0180	.0083	.0056	.0005	.0000	.0127
%RSD	23.53	3.357	10.20	40.22	31.62	1.735	15.77
#1	-.0034	-.5478	-.0747	.0174	.0020	.0015	.0951
#2	-.0054	-.5161	-.0791	.0074	.0012	.0015	.0719
#3	-.0051	-.5468	-.0908	.0167	.0012	.0014	.0745
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0332	.0029	4.926	.0013	.0058	.0004	4.766
SDev	.0120	.0004	.045	.0010	.0015	.0015	.051
%RSD	35.95	15.72	.9236	77.91	26.83	360.4	1.062
#1	.0469	.0033	4.874	.0025	.0048	.0022	4.707
#2	.0284	.0024	4.955	.0009	.0049	-.0007	4.799
#3	.0245	.0030	4.950	.0006	.0075	-.0002	4.790
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	QC Pass
Value			5.000				5.000
Range			10.00				10.00

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.937	.0368	4.942	-.2442	1.930	.0047	-.0133
SDev	.021	.0102	.034	.3310	.021	.0006	.0100
%RSD	1.078	27.72	.6892	135.5	1.084	13.47	75.62
#1	1.913	.0482	4.904	-.0300	1.906	.0054	-.0082
#2	1.949	.0334	4.952	-.6254	1.943	.0046	-.0068
#3	1.949	.0287	4.970	-.0772	1.941	.0042	-.0248
Errors	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	NOCHECK
Value	2.000		5.000		2.000		
Range	10.00		10.00		10.00		

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0012	.0065	.1595	4.813	.0071	.0258	-.0218
SDev	.0007	.0033	.0122	.055	.0039	.0105	.0106
%RSD	58.57	50.33	7.659	1.149	55.43	40.77	48.80
#1	.0020	.0102	.1736	4.749	.0112	.0159	-.0100
#2	.0006	.0054	.1523	4.846	.0066	.0247	-.0306
#3	.0010	.0040	.1526	4.844	.0034	.0368	-.0247
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value				5.000			

Range 10.00

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-1.309	-.0077	4.785	.0295	.0417	-.0156	.0051
SDev	.027	.0063	.047	.0130	.0127	.0097	.0199
%RSD	2.062	82.34	.9721	44.14	30.51	61.84	391.5
#1	-1.279	-.0053	4.731	.0438	.0453	-.0049	.0274
#2	-1.331	-.0149	4.815	.0183	.0275	-.0236	-.0015
#3	-1.318	-.0029	4.807	.0264	.0522	-.0183	-.0107
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value			5.000				
Range			10.00				

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0014	4.853	4.767	.0060	.0197	10.25	.0053
SDev	.0002	.032	.040	.0007	.0079	.15	.0013
%RSD	15.09	.6509	.8447	11.97	40.05	1.508	23.89
#1	.0017	4.817	4.722	.0067	.0281	10.10	.0067
#2	.0013	4.865	4.781	.0060	.0125	10.24	.0043
#3	.0013	4.876	4.798	.0053	.0184	10.41	.0048
Errors	NOCHECK	QC Pass	QC Pass	NOCHECK	NOCHECK	QC Pass	NOCHECK
Value		5.000	5.000			10.00	
Range		10.00	10.00			10.00	

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0024	.9871	.0028	.0225	.0597
SDev	.0056	.0109	.0014	.0010	.0000
%RSD	234.5	1.103	49.90	4.399	.0000
#1	.0056	.9747	.0043	.0234	.0597
#2	.0056	.9948	.0015	.0225	.0597
#3	-.0040	.9919	.0026	.0215	.0597
Errors	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value		1.000			
Range		10.00			

Analysis Report Wed 01-13-93 10:06:47 AM page 1

Method: CLP Sample Name: STD1-Blank Operator: DRS
Run Time: 01/13/93 10:05:05
Comment: B07JZ5 1.0029g/200ml W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0006	-.0023	-.0067	.0005	.0001	-.0001	.0008
SDev	.0002	.0022	.0069	.0032	.0000	.0001	.0119
%RSD	28.99	95.83	102.9	662.1	1.051	89.74	1457.
#1	-.0005	-.0043	-.0146	.0030	.0001	-.0002	.0145
#2	-.0008	-.0028	-.0042	-.0031	.0001	-.0002	-.0073
#3	-.0005	.0001	-.0014	.0016	.0001	.0000	-.0047

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0516	-.0001	-.0062	-.0005	.0021	.0005	.0004
SDev	.0072	.0012	.0033	.0003	.0011	.0001	.0002
%RSD	13.90	1653.	53.13	59.89	55.39	25.53	46.82
#1	.0435	.0013	-.0035	-.0002	.0027	.0007	.0003
#2	.0542	-.0007	-.0098	-.0008	.0027	.0004	.0003
#3	.0572	-.0008	-.0052	-.0004	.0007	.0005	.0006

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0009	-.0013	.0235	-.3274	-.0007	.0011	-.0061
SDev	.0002	.0007	.0061	.1385	.0022	.0015	.0043
%RSD	18.51	58.87	26.12	42.29	331.6	134.6	71.00
#1	.0010	-.0021	.0211	-.4075	.0015	.0027	-.0069
#2	.0008	-.0012	.0189	-.4072	-.0005	-.0001	-.0014
#3	.0007	-.0006	.0304	-.1675	-.0030	.0007	-.0100

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0001	-.0032	-.0190	.0010	.0030	.0138	-.0178
SDev	.0002	.0000	.0181	.0018	.0037	.0118	.0022
%RSD	258.4	.5423	94.91	191.4	122.6	85.66	12.35
#1	.0004	-.0032	-.0166	-.0009	-.0009	.0097	-.0154
#2	-.0000	-.0031	-.0023	.0027	.0063	.027[illegible]	-.0197
#3	-.0001	-.0032	-.0381	.0010	.0036	.0045	-.0184

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0022	-.0021	.0029	.0027	.0017	.0046	-.0241
SDev	.0033	.0033	.0050	.0061	.0089	.0019	.0123
%RSD	151.5	155.6	174.3	222.6	536.7	42.58	51.24
#1	-.0056	-.0059	-.0011	.0032	.0115	.0028	-.0126
#2	-.0018	-.0010	.0012	.0086	-.0058	.0043	-.0226
#3	.0009	.0004	.0085	-.0036	-.0009	.0066	-.037[illegible]

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0000	-.0155	.0002	-.0002	-.0098	-.0550	-.0018
SDev	.0001	.0032	.0027	.0007	[illegible]	.0248	[illegible]

%RSD	2945.	20.63	1122.	125.0	111.1	122.2	24.94
#1	.0001	-.0158	.0013	-.0002	-.0163	-.0155	-.0015
#2	-.0001	-.0122	-.0025	-.0006	-.0160	-.1278	-.0016
#3	-.0001	-.0185	.0018	.0000	.0028	-.0158	-.0010

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0036	-.0001	-.0001	-.0014	.0597
SDev	.0001	.0006	.0004	.0004	.0000
%RSD	3.632	458.2	336.7	28.10	.0097
#1	-.0036	-.0005	.0001	-.0018	.0597
#2	-.0035	.0006	.0001	-.0015	.0597
#3	-.0037	-.0005	-.0006	-.0010	.0597

Analysis Report Wed 01-13-93 10:10:24 AM page 1

Method: CLP Sample Name: 93-02241 Operator: DRS
Run Time: 01/13/93 10:08:40
Comment: B07JZ6 1.0079g/200ml W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0020	30.68	-.0372	-.0188	.2900	.0010	.0384
SDev	.0008	.10	.0015	.0044	.0019	.0001	.0103
%RSD	38.64	.3392	4.106	23.23	.6511	11.87	26.89
#1	-.0020	30.61	-.0365	-.0184	.2888	.0009	.0291
#2	-.0012	30.63	-.0363	-.0233	.2891	.0010	.0496
#3	-.0027	30.80	-.0390	-.0146	.2922	.0012	.0366

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	33.25	.0020	.0317	.0207	.0575	.0451	.0001
SDev	.13	.0012	.0085	.0004	.0046	.0006	.0003
%RSD	.3977	57.50	26.88	1.835	7.946	1.336	460.2
#1	33.16	.0031	.0389	.0204	.0575	.0446	-.0002
#2	33.19	.0022	.0338	.0205	.0530	.0458	.0003
#3	33.40	.0008	.0223	.0211	.0621	.0448	.0001

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0021	66.91	.1333	3.829	.0463	.0340	18.82
SDev	.0000	.27	.0179	.373	.0001	.0000	.05
%RSD	1.623	.4034	13.45	9.733	.0994	.0066	.2784
#1	-.0021	66.73	.1272	3.930	.0464	.0340	18.78
#2	-.0021	66.77	.1535	4.141	.0463	.0340	18.81
#3	-.0022	67.22	.1192	3.416	.0463	.0340	18.88

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.275	.0027	9.588	.0061	.0459	2.942	.0276
SDev	.005	.0014	.044	.0069	.0024	.028	.0032
%RSD	.3945	53.32	.4590	112.8	5.278	.9355	11.47
#1	1.272	.0039	9.542	-.0015	.0432	2.940	.0240
#2	1.272	.0031	9.630	.0080	.0477	2.916	.0289
#3	1.281	.0011	9.593	.0118	.0468	2.970	.0300

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0980	-.0395	-.0695	-.0152	-.0042	3.050	-.1213
SDev	.0089	.0041	.0021	.0040	.0146	.020	.0123
%RSD	9.085	10.31	3.014	26.54	346.8	.6553	10.15
#1	-.1026	-.0430	-.0717	-.0120	.0059	3.031	-.1296
#2	-.0878	-.0350	-.0675	-.0198	.0024	3.048	-.1282
#3	-.1037	-.0407	-.0691	-.0138	-.0209	3.071	[illegible]

Elem	Sr	Ta	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1414	-.0344	.0720	3.457	.0156	[illegible]	[illegible]
SDev	.0005	.0110	.0033	.011	.0069	[illegible]	[illegible]

%RSD	.3297	31.87	4.567	.3235	44.43	6.146	.6440
#1	.1410	-.0471	.0682	3.450	.0183	-.5988	.1244
#2	.1412	-.0270	.0743	3.452	.0077	-.6022	.1261
#3	.1419	-.0292	.0735	3.470	.0208	-.6667	.1252

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0005	.0283	.1534	.0412	.0597
SDev	.0124	.0003	.0023	.0001	.0000
%RSD	2748.	1.067	1.485	.1977	.0000
#1	-.0138	.0281	.1513	.0412	.0597
#2	.0108	.0281	.1530	.0413	.0597
#3	.0016	.0286	.1558	.0411	.0597

Analysis Report Wed 01-13-93 10:15:01 AM page 1

Method: CLP Sample Name: 93-02241D Operator: DRS
Run Time: 01/13/93 10:13:18
Comment: B07JZ6 0.9902g/200ml DUPLICATE W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0015	30.54	-.0370	-.0190	.2866	.0011	.0339
SDev	.0005	.12	.0106	.0013	.0009	.0001	.0034
%RSD	35.20	.3949	28.61	6.796	.3252	13.23	9.969
#1	-.0018	30.43	-.0414	-.0203	.2857	.0012	.0352
#2	-.0018	30.52	-.0446	-.0177	.2865	.0009	.0364
#3	-.0009	30.67	-.0249	-.0190	.2876	.0011	.0301

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	32.14	.0005	.0356	.0214	.0605	.0505	-.0002
SDev	.15	.0008	.0062	.0008	.0030	.0008	.0008
%RSD	.4746	165.2	17.53	3.592	4.904	1.686	387.4
#1	32.01	-.0004	.0284	.0220	.0593	.0496	-.0011
#2	32.10	.0010	.0388	.0205	.0583	.0508	-.0001
#3	32.31	.0007	.0395	.0217	.0639	.0512	.0006

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0023	65.19	.1411	4.632	.0419	.0344	18.60
SDev	.0003	.25	.0166	.286	.0010	.0007	.05
%RSD	11.68	.3770	11.74	6.170	2.301	2.053	.2946
#1	-.0025	65.00	.1514	4.305	.0408	.0340	18.55
#2	-.0025	65.11	.1220	4.831	.0426	.0352	18.58
#3	-.0020	65.47	.1498	4.761	.0422	.0340	18.66

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.170	.0030	9.267	.0021	.0408	2.670	.0331
SDev	.006	.0014	.022	.0029	.0042	.054	.0058
%RSD	.4728	47.06	.2334	140.5	10.18	2.026	17.43
#1	1.165	.0028	9.254	.0037	.0360	2.607	.0360
#2	1.169	.0017	9.255	.0039	.0433	2.701	.0264
#3	1.176	.0045	9.292	-.0013	.0432	2.700	.0368

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0934	-.0375	-.0676	-.0124	-.0011	2.481	-.1283
SDev	.0043	.0075	.0058	.0033	.0147	.029	.0268
%RSD	4.633	19.99	8.597	26.71	1352.	1.169	20.90
#1	-.0979	-.0455	-.0732	-.0099	.0138	2.457	-.1381
#2	-.0931	-.0362	-.0680	-.0112	-.0156	2.473	-.1488
#3	-.0893	-.0307	-.0616	-.0162	-.0014	2.513	-.0975

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1027	-.0397	.0683	3.313	.0178	-.0295	.1256
SDev	.0006	.0168	.0076	.016	.0192	.1394	.0071

%RSD	.4448	42.35	11.12	.4432	107.8	26.32	.9015
#1	.1223	-.0219	.0756	3.502	.0040	-.6748	.1245
#2	.1224	-.0553	.0690	3.508	.0097	-.5167	.1256
#3	.1233	-.0420	.0604	3.531	.0398	-.3970	.1268

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0239	.0279	.1505	.0426	.0597
SDev	.0165	.0005	.0008	.0016	.0000
%RSD	69.18	1.772	.5584	3.864	.0000
#1	-.0074	.0277	.1498	.0412	.0597
#2	-.0238	.0276	.1503	.0422	.0597
#3	-.0404	.0285	.1514	.0445	.0597

Analysis Report Wed 01-13-93 10:19:10 AM page 1

Method: CLP Sample Name: 93-02241S Operator: DRS
Run Time: 01/13/93 10:17:27
Comment: B07JZ6 1.0037g/200ml SPIKE W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0467	28.29	1.910	-.0147	2.251	.0518	47.91
SDev	.0004	.06	.010	.0035	.009	.0001	.22
%RSD	.8098	.2229	.5117	23.62	.3805	.2649	.4651
#1	.0464	28.34	1.908	-.0154	2.257	.0519	48.15
#2	.0466	28.30	1.920	-.0110	2.254	.0517	47.87
#3	.0471	28.22	1.901	-.0179	2.241	.0517	47.71

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	34.74	.0456	.0589	.5044	.2586	.2833	.0008
SDev	.07	.0013	.0023	.0006	.0006	.0008	.0007
%RSD	.1894	2.946	3.945	.1256	.2357	.2914	94.18
#1	34.80	.0444	.0562	.5040	.2580	.2840	.0003
#2	34.75	.0471	.0603	.5051	.2592	.2824	.0004
#3	34.67	.0454	.0603	.5040	.2587	.2834	.0016

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0018	59.31	.1393	3.805	.0447	.0326	18.29
SDev	.0003	.15	.0157	.135	.0008	.0013	.03
%RSD	18.14	.2584	11.26	3.561	1.831	3.847	.1653
#1	-.0020	59.45	.1497	3.649	.0448	.0340	18.32
#2	-.0014	59.33	.1468	3.895	.0438	.0315	18.28
#3	-.0019	59.15	.1212	3.871	.0454	.0323	18.26

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.707	.0099	8.922	.0071	.5316	2.520	.5180
SDev	.002	.0031	.081	.0023	.0041	.036	.0030
%RSD	.1134	31.72	.9107	32.47	.7724	1.446	.5804
#1	1.708	.0123	9.005	.0078	.5350	2.562	.5188
#2	1.709	.0063	8.917	.0090	.5327	2.493	.5205
#3	1.705	.0109	8.843	.0045	.5270	2.506	.5147

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0917	-.0345	-.0568	.2117	1.956	3.226	-.0660
SDev	.0061	.0058	.0013	.0083	.023	.001	.0168
%RSD	6.703	16.74	2.301	3.909	1.182	.0463	25.37
#1	-.0896	-.0389	-.0555	.2022	1.929	3.225	-.0522
#2	-.0986	-.0366	-.0569	.2159	1.968	3.228	-.0847
#3	-.0869	-.0279	-.0581	.2171	1.971	3.226	-.0617

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1262	-.0189	[illegible]	1.172	1.863	-.4829	[illegible]
SDev	.0004	.0071	[illegible]	.009	.019	[illegible]	[illegible]

%RSD	.2923	37.37	7.372	.2992	.9943	4.334	.0723
#1	.1265	-.0155	.0701	3.178	1.882	-.4821	.6087
#2	.1263	-.0270	.0615	3.176	1.862	-.5043	.6090
#3	.1258	-.0142	.0699	3.161	1.845	-.4624	.6082

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0078	.0266	.6287	.0397	.0599
SDev	.0115	.0000	.0037	.0003	.0000
%RSD	148.3	.0409	.5847	.6971	.0000
#1	-.0048	.0266	.6299	.0400	.0599
#2	-.0205	.0266	.6246	.0397	.0599
#3	.0020	.0266	.6317	.0394	.0599

Analysis Report Wed 01-13-93 10:24:47 AM page 1

Method: CLP Sample Name: 93-02351 Operator: DRS
Run Time: 01/13/93 10:23:03
Comment: B07JZ7 1.0350g/200ml W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0024	28.71	-.0298	-.0179	.2567	.0011	.1310
SDev	.0009	.11	.0099	.0005	.0011	.0001	.0217
%RSD	39.71	.3689	33.04	2.979	.4434	11.27	16.54
#1	-.0033	28.82	-.0372	-.0185	.2575	.0009	.1517
#2	-.0025	28.72	-.0337	-.0175	.2573	.0012	.1328
#3	-.0014	28.61	-.0186	-.0178	.2554	.0012	.1085

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	26.86	.0014	.0171	.0218	.0576	.0473	-.0007
SDev	.05	.0005	.0057	.0009	.0063	.0006	.0011
%RSD	.1879	32.67	33.53	4.169	10.94	1.257	165.2
#1	26.89	.0010	.0107	.0208	.0648	.0468	-.0018
#2	26.89	.0019	.0218	.0226	.0528	.0479	-.0008
#3	26.80	.0013	.0189	.0219	.0554	.0471	.0005

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0025	64.10	.1189	3.471	.0359	.0319	18.31
SDev	.0003	.19	.0176	.229	.0023	.0007	.07
%RSD	11.22	.3004	14.82	6.603	6.509	2.177	.3871
#1	-.0029	64.27	.1094	3.207	.0340	.0311	18.36
#2	-.0024	64.15	.1392	3.591	.0352	.0323	18.35
#3	-.0024	63.89	.1080	3.615	.0385	.0323	18.23

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.221	.0028	7.923	-.0079	.0508	2.674	.0031
SDev	.003	.0008	.060	.0034	.0008	.029	.0085
%RSD	.2820	29.71	.7576	42.94	1.533	1.094	275.9
#1	1.225	.0037	7.957	-.0119	.0504	2.657	-.0004
#2	1.221	.0023	7.959	-.0059	.0503	2.658	-.0031
#3	1.218	.0023	7.854	-.0061	.0517	2.708	.0128

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0933	-.0393	-.0645	-.0204	.0093	2.115	-.1034
SDev	.0034	.0069	.0042	.0039	.0054	.013	.0308
%RSD	3.666	17.49	6.470	19.03	58.19	.6266	29.74
#1	-.0959	-.0466	-.0666	-.0241	.0106	2.105	-.1369
#2	-.0946	-.0383	-.0673	-.0205	.0034	2.130	-.0971
#3	-.0894	-.0330	-.0597	-.0164	.0140	2.109	-.0764

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1084	-.0356	.0637	3.476	.0050	-.5942	.1236
SDev	.0003	.0111	.0028	.011	.0048	.1260	.0004

%RSD	.2858	31.15	4.123	.3158	96.53	21.21	.3371
#1	.1086	-.0471	.0610	3.488	-.0005	-.7374	.1231
#2	.1086	-.0347	.0663	3.481	.0083	-.5449	.1240
#3	.1081	-.0250	.0637	3.466	.0072	-.5003	.1237

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0218	.0243	.1552	.0402	.0597
SDev	.0233	.0001	.0010	.0013	.0000
%RSD	106.8	.3051	.6539	3.225	.0000
#1	-.0155	.0244	.1544	.0395	.0597
#2	-.0476	.0243	.1549	.0395	.0597
#3	-.0023	.0242	.1564	.0417	.0597

Analysis Report Wed 01-13-93 10:29:25 AM page 1

Method: CLP Sample Name: 93-02437 Operator: DRS
Run Time: 01/13/93 10:27:42
Comment: B07JZ8 1.0064g/200ml W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0024	27.83	-.0365	-.0159	.2774	.0009	.0591
SDev	.0005	.09	.0104	.0029	.0017	.0000	.0110
%RSD	22.48	.3398	28.45	17.99	.5996	1.764	18.56
#1	-.0028	27.79	-.0428	-.0140	.2778	.0009	.0717
#2	-.0018	27.77	-.0245	-.0191	.2756	.0009	.0537
#3	-.0025	27.94	-.0422	-.0144	.2788	.0009	.0519

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	32.81	.0009	.0267	.0234	.0602	.0478	-.0001
SDev	.11	.0006	.0083	.0010	.0025	.0003	.0011
%RSD	.3401	67.94	31.14	4.132	4.211	.6493	781.3
#1	32.76	.0012	.0194	.0224	.0607	.0481	-.0013
#2	32.74	.0014	.0357	.0243	.0625	.0475	.0008
#3	32.94	.0002	.0249	.0236	.0575	.0479	.0001

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0022	62.60	.1515	4.133	.0425	.0330	18.23
SDev	.0001	.21	.0126	.322	.0024	.0005	.05
%RSD	6.224	.3426	8.311	7.789	5.578	1.423	.2987
#1	-.0022	62.54	.1384	3.802	.0406	.0328	18.21
#2	-.0020	62.41	.1635	4.445	.0452	.0336	18.18
#3	-.0023	62.83	.1526	4.152	.0419	.0328	18.29

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.267	.0023	7.851	-.0001	.0489	2.524	-.0105
SDev	.005	.0004	.030	.0086	.0003	.019	.0113
%RSD	.3698	19.25	.3855	6851.	.5896	.7478	108.5
#1	1.266	.0018	7.886	-.0089	.0491	2.539	-.0180
#2	1.263	.0025	7.834	.0082	.0485	2.530	.0026
#3	1.272	.0027	7.834	.0003	.0490	2.503	-.0160

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0829	-.0317	-.0608	-.0186	.0130	2.319	-.1015
SDev	.0246	.0107	.0035	.0054	.0039	.003	.0483
%RSD	29.68	33.69	5.771	28.89	29.99	.1393	47.54
#1	-.1035	-.0410	-.0633	-.0156	.0087	2.317	-.1451
#2	-.0556	-.0200	-.0568	-.0154	.0162	2.323	-.0497
#3	-.0896	-.0341	-.0623	-.0248	.0141	2.317	[illegible]

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1209	-.0405	.0544	3.234	.0166	-.4576	[illegible]
SDev	.0005	.0050	.0061	.017	.0120	.0829	[illegible]

%RSD	.3909	12.24	11.30	.4021	72.02	18.13	.8453
#1	.1207	-.0373	.0583	3.231	.0187	-.5364	.1224
#2	.1205	-.0380	.0473	3.222	.0275	-.3711	.1241
#3	.1214	-.0462	.0576	3.248	.0038	-.4652	.1223

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0261	.0243	.1467	.0329	.0597
SDev	.0145	.0003	.0030	.0016	.0000
%RSD	55.64	1.415	2.017	4.744	.0000
#1	-.0415	.0243	.1479	.0321	.0597
#2	-.0240	.0240	.1489	.0347	.0597
#3	-.0127	.0247	.1433	.0320	.0597

Analysis Report Wed 01-13-93 10:34:31 AM page 1

Method: CLP Sample Name: 93-02438 Operator: DRS
Run Time: 01/13/93 10:32:48
Comment: B07JZ9 1.0253g/200ml W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0019	29.01	-.0266	-.0181	.2990	.0011	.0369
SDev	.0006	.11	.0119	.0034	.0015	.0000	.0113
%RSD	32.29	.3654	44.63	18.85	.5126	2.376	30.67
#1	-.0022	28.98	-.0135	-.0144	.2981	.0011	.0360
#2	-.0012	28.93	-.0298	-.0187	.2981	.0011	.0487
#3	-.0022	29.13	-.0366	-.0211	.3008	.0011	.0261

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	31.08	.0018	.0412	.0253	.0645	.0497	.0007
SDev	.11	.0006	.0156	.0009	.0037	.0010	.0013
%RSD	.3459	32.87	37.88	3.726	5.654	2.115	[illegible]
#1	31.00	.0013	.0268	.0246	.0687	.0487	.0002
#2	31.05	.0024	.0578	.0249	.0613	[illegible]	[illegible]

Ribbon on printer broke.
DRS
1/14/93

See result summary report for missing data on next pages. (D03-134 through 140).
JNC 4/29/93

93-0245
B071K0Ø Ø.9730g/200ml

%RSD	.4082	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0034	[illegible]
#2	41.84	-.0018	.1129	[illegible]	[illegible]	[illegible]	[illegible]
#3	42.77	.0020	.1231	.0250	.0082	.0842	.0042

Elem	Su	Fe	Ga	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0021	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]					

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.244	.0033	[illegible]	[illegible]	[illegible]	[illegible]	.0172
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
#1	1.239	.0028	9.817	.0358	.0303	3.440	-.0264
#2	1.243	.0035	9.806	.0319	[illegible]	[illegible]	-.0061
#3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.0172

Elem	Pd	Rh	Ru	Sb	Sn	Sr	Ti
Units	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ppm	ppm
Avge	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
%RSD	11.13	5.140	[illegible]	57.14	[illegible]	.4476	14.46
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.0075
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BEST AVAILABLE COPY

D03-125

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0068
#1	.1552	-.0365	.0796	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1064
#3	.1567	-.0312	.0777	[illegible]	[illegible]	[illegible]	[illegible]
Units	ppm	ppm	ppm	ppm	ppm		
Avg	[illegible]	[illegible]	[illegible]	[illegible]	.0597		
Sdev	.0244	.0004	.0003	[illegible]	.0000		
[illegible]	[illegible]	[illegible]	.4382	.5446	.0097		
#1	-.0359	.0403	[illegible]	[illegible]	.0597		
#2	[illegible]	[illegible]	[illegible]	[illegible]	.0597		
#3	.0093	.0395	.1516	.0703	[illegible]		

BEST AVAILABLE COPY

9613492.0729

LCS 05

LCS-0287 1.0098g/200ml 25X Dil.

			-.0134	.1650	.1220	7.55%	
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm

BEST AVAILABLE COPY

D03-137

9613492.0730

BEST AVAILABLE
COPY

LCS 02

LCS-0287 1.0098g/200ml @2X DIL

BEST AVAILABLE
COPY

MCVA

Good print
Next page
DWS
1/13/93

SDev	.0012	.08	[illegible]	.006	.0033	.0003	.11
	[illegible]	[illegible]	[illegible]	[illegible]	.0033	.1031	24.71
	.4782	[illegible]	[illegible]	[illegible]	.0038	.1031	24.60
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SDev	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	.0005	17.39	.1234	24.37	.0146	[illegible]	[illegible]
	[illegible]	[illegible]	.1028	[illegible]	[illegible]	[illegible]	[illegible]
Value		[illegible]					[illegible]
							[illegible]
	[illegible]						[illegible]

D03-140

BEST AVAILABLE
COPY

9613492.0733

Analysis Report QC Standard Wed 01-13-93 11:00:16 AM page 1

Method: CLP Sample Name: MCVA PASS DM 1/13/93 Operator: DRS
Run Time: 01/13/93 10:51:42
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4971	25.02	2.429	1.958	.5027	.1029	24.61
SDev	.0012	.08	.011	.006	.0035	.0003	.11
%RSD	.2454	.3324	.4688	.3312	.6999	.3050	.4291
#1	.4972	25.08	2.435	1.964	.5055	.1031	24.71
#2	.4958	24.92	2.415	1.951	.4987	.1026	24.50
#3	.4982	25.05	2.436	1.959	.5038	.1031	24.60
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	.5000	25.00	2.500	2.000	.5000	.1000	25.00
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	24.78	.4869	.0039	1.012	1.003	1.033	.0004
SDev	.14	.0005	.0029	.005	.007	.004	.0001
%RSD	.5650	.1011	73.46	.4490	.7445	.3591	34.22
#1	24.92	.4872	.0011	1.016	1.003	1.037	.0003
#2	24.64	.4870	.0039	1.007	.9951	1.030	.0005
#3	24.77	.4863	.0068	1.013	1.010	1.032	.0003
Errors	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value	25.00	.5000		1.000	1.000	1.000	
Range	10.00	10.00		10.00	10.00	10.00	

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0003	19.50	.1305	24.25	.0130	2.143	24.55
SDev	.0003	.11	.0044	.11	.0017	.005	.12
%RSD	105.8	.5607	3.386	.4706	13.37	.2259	.4969
#1	.0005	19.59	.1254	24.37	.0146	2.145	24.67
#2	.0005	19.38	.1333	24.23	.0112	2.138	24.43
#3	-.0001	19.52	.1328	24.15	.0132	2.148	24.55
Errors	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	QC Pass
Value		20.00		25.00		2.000	25.00
Range		10.00		10.00		10.00	10.00

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5009	.9967	10.10	-.0023	1.003	20.25	2.462
SDev	.0019	.0042	.05	.0046	.013	.01	.010
%RSD	.3765	.4198	.5272	196.6	1.281	.0580	.4061
#1	.5026	.9959	10.04	-.0020	1.005	20.24	2.473
#2	.4989	.9930	10.13	.0021	.9894	20.27	2.455
#3	.5012	1.001	10.13	-.0071	1.015	20.25	2.457
Errors	QC Pass	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass
Value	.5000	1.000	10.00		1.000	20.00	2.500

Range	10.00	10.00	10.00		10.00	10.00	10.00
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0146	-.0000	-.0058	2.381	2.519	18.92	.0059
SDev	.0013	.0030	.0019	.043	.011	.06	.0226
%RSD	8.592	12810.	32.08	1.785	.4254	.3003	385.6
#1	-.0131	.0031	-.0062	2.332	2.511	18.94	-.0024
#2	-.0150	-.0028	-.0038	2.400	2.514	18.85	.0314
#3	-.0155	-.0004	-.0074	2.411	2.531	18.95	-.0115
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value				2.500	2.500	20.00	
Range				10.00	10.00	10.00	

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5112	-.0066	.0594	.9965	2.523	.0021	1.010
SDev	.0024	.0093	.0050	.0058	.029	.0502	.005
%RSD	.4649	140.0	8.360	.5812	1.148	2347.	.4824
#1	.5127	-.0167	.0604	1.001	2.553	.0493	1.014
#2	.5085	.0015	.0638	.9899	2.495	-.0506	1.004
#3	.5125	-.0047	.0540	.9984	2.522	.0077	1.012
Errors	QC Pass	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK	QC Pass
Value	.5000			1.000	2.500		1.000
Range	10.00			10.00	10.00		10.00

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0129	.0006	1.029	2.034	.0598
SDev	.0204	.0000	.002	.011	.0000
%RSD	158.8	3.993	.2153	.5239	.0097
#1	.0057	.0006	1.032	2.040	.0598
#2	.0359	.0006	1.028	2.022	.0598
#3	-.0031	.0006	1.028	2.040	.0598
Errors	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK
Value			1.000	2.000	
Range			10.00	10.00	

9613492.0735

Analysis Report QC Standard Wed 01-13-93 11:03:25 AM page 1

Method: CLP Sample Name: ~~MCVA~~ MCUB PASS Operator: DRS
Run Time: 01/13/93 11:01:40 AM 1/13/93
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0050	-.5003	-.0850	.0077	.0013	.0012	.0274
SDev	.0010	.0178	.0043	.0026	.0005	.0000	.0129
%RSD	20.71	3.558	5.071	33.69	40.56	1.004	46.98
#1	-.0038	-.5004	-.0899	.0065	.0018	.0012	.0365
#2	-.0057	-.5181	-.0817	.0106	.0012	.0012	.0331
#3	-.0055	-.4825	-.0834	.0059	.0008	.0012	.0127
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0150	.0023	4.943	.0012	.0010	.0026	4.768
SDev	.0279	.0003	.032	.0005	.0009	.0020	.036
%RSD	186.2	12.45	.6434	39.94	91.02	77.97	.7477
#1	.0471	.0025	4.908	.0015	.0004	.0049	4.727
#2	.0007	.0024	4.971	.0014	.0005	.0018	4.788
#3	-.0029	.0020	4.948	.0006	.0020	.0011	4.790
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	QC Pass
Value			5.000				5.000
Range			10.00				10.00

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.940	.0064	4.921	-.1843	1.936	.0027	-.0373
SDev	.014	.0080	.048	.2479	.012	.0016	.0214
%RSD	.7462	125.4	.9677	134.5	.6317	58.30	57.23
#1	1.924	.0156	4.869	.0927	1.922	.0038	-.0127
#2	1.949	.0025	4.963	-.2601	1.942	.0009	-.0493
#3	1.949	.0011	4.930	-.3854	1.945	.0034	-.0500
Errors	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	NOCHECK
Value	2.000		5.000		2.000		
Range	10.00		10.00		10.00		

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0004	.0037	.1239	4.825	.0053	-.0097	-.0310
SDev	.0003	.0005	.0255	.040	.0021	.0117	.0082
%RSD	73.15	12.91	20.61	.8319	39.05	119.9	26.39
#1	.0007	.0031	.1524	4.779	.0075	-.0100	-.0315
#2	.0002	.0040	.1030	4.849	.0048	.0021	-.0226
#3	.0002	.0039	.1165	4.848	.0035	-.0213	-.0389
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value				5.000			

Range 10.00

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-1.283	-.0047	4.794	.0082	.0357	-.0407	-.0328
SDev	.025	.0103	.024	.0053	.0085	.0136	.0115
%RSD	1.940	217.9	.4970	64.61	23.88	33.41	35.21
#1	-1.258	.0058	4.766	.0134	.0430	-.0265	-.0274
#2	-1.283	-.0051	4.805	.0028	.0263	-.0418	-.0460
#3	-1.308	-.0147	4.810	.0083	.0377	-.0536	-.0249
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value			5.000				
Range			10.00				

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0009	4.821	4.765	.0044	.0103	10.29	.0041
SDev	.0004	.035	.021	.0007	.0042	.04	.0013
%RSD	47.98	.7334	.4490	15.75	40.73	.3438	31.66
#1	.0013	4.783	4.740	.0050	.0055	10.28	.0055
#2	.0006	4.853	4.781	.0044	.0130	10.32	.0039
#3	.0006	4.826	4.773	.0036	.0125	10.25	.0029
Errors	NOCHECK	QC Pass	QC Pass	NOCHECK	NOCHECK	QC Pass	NOCHECK
Value		5.000	5.000			10.00	
Range		10.00	10.00			10.00	

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0053	.9855	.0016	.0199	.0597
SDev	.0106	.0066	.0017	.0008	.0000
%RSD	199.8	.6733	102.5	4.266	.0000
#1	.0027	.9778	-.0003	.0191	.0597
#2	-.0038	.9895	.0026	.0199	.0597
#3	.0169	.9891	.0026	.0208	.0597
Errors	NOCHECK	QC Pass	NOCHECK.	NOCHECK	NOCHECK
Value		1.000			
Range		10.00			

Analysis Report Wed 01-13-93 11:13:06 AM page 1

Method: CLP Sample Name: STD1-Blank Operator: DRS
Run Time: 01/13/93 11:11:25
Comment: LCS-0287 1.0098g/200ml @2X DIL. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0001	.0045	-.0105	.0006	-.0002	.0000	.0176
SDev	.0007	.0110	.0040	.0006	.0002	.0001	.0025
%RSD	866.5	242.6	38.26	96.87	131.9	152.3	14.10
#1	-.0006	-.0032	-.0060	.0013	-.0005	.0000	.0160
#2	.0008	.0171	-.0118	.0005	-.0000	.0001	.0163
#3	.0001	-.0003	-.0137	.0001	-.0000	.0000	.0205

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0033	.0015	-.0053	.0001	.0006	.0030	.0009
SDev	.0006	.0011	.0005	.0004	.0027	.0006	.0000
%RSD	19.56	73.10	9.380	434.3	442.6	20.26	3.340
#1	-.0033	.0002	-.0058	-.0003	.0037	.0029	.0009
#2	-.0027	.0022	-.0048	.0002	-.0002	.0036	.0010
#3	-.0040	.0022	-.0052	.0004	-.0016	.0025	.0009

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0009	-.0025	.0188	-.0875	.0012	.0007	-.0074
SDev	.0002	.0012	.0067	.0410	.0015	.0014	.0092
%RSD	20.06	48.76	35.65	46.89	128.1	207.1	124.7
#1	.0011	-.0037	.0265	-.1215	-.0005	-.0001	.0001
#2	.0010	-.0013	.0161	-.0989	.0015	.0023	-.0046
#3	.0007	-.0025	.0139	-.0420	.0025	-.0001	-.0177

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0000	-.0039	-.0045	.0020	.0028	.0314	-.0112
SDev	.0000	.0015	.0077	.0022	.0037	.0118	.0047
%RSD	49.45	37.95	173.6	111.7	131.3	37.59	41.65
#1	-.0000	-.0027	.0045	-.0005	.0045	.0390	-.0068
#2	-.0000	-.0034	-.0090	.0039	.0054	.0375	-.0161
#3	-.0001	-.0055	-.0088	.0026	-.0014	.0178	-.0106

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0146	-.0002	.0016	.0030	-.0206	.0089	-.0038
SDev	.0063	.0024	.0031	.0139	.0218	.0045	.0301
%RSD	43.13	1042.	200.6	462.7	105.7	50.27	791.2
#1	.0085	-.0025	.0013	.0123	-.0346	.0048	-.0051
#2	.0211	-.0005	-.0014	.0097	.0045	.0138	.0270
#3	.0143	.0023	.0048	-.0129	-.0317	.0082	-.0333

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0001	-.0164	-.0003	-.0001	-.0128	-.0410	-.0002
SDev	.0001	.0120	.0099	.0001	.0145	.0881	.0007

%RSD	156.6	73.01	3281.	168.0	113.2	214.7	331.4
#1	-.0000	-.0171	.0062	-.0001	-.0163	-.1316	.0003
#2	.0001	-.0041	.0046	.0001	.0031	-.0359	.0001
#3	.0001	-.0280	-.0117	-.0002	-.0252	.0444	-.0010

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0127	-.0005	-.0012	-.0003	.0597
SDev	.0122	.0000	.0007	.0006	.0000
%RSD	95.85	10.12	59.78	169.4	.0097
#1	.0011	-.0004	-.0011	-.0010	.0597
#2	-.0173	-.0005	-.0006	-.0003	.0597
#3	-.0220	-.0005	-.0020	.0002	.0597

Analysis Report Wed 01-13-93 11:17:50 AM page 1

Method: CLP Sample Name: LCS+Bi @5 Operator: DRS
Run Time: 01/13/93 11:16:06
Comment: LCS-0287+Bi 1.0389g/200ml @5X DIL. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0190	-.0565	.9686	.0110	.0055	.0222	9.766
SDev	.0005	.0029	.0115	.0028	.0002	.0001	.040
%RSD	2.583	5.075	1.186	25.45	4.426	.4893	.4120
#1	.0185	-.0582	.9625	.0090	.0054	.0221	9.723
#2	.0190	-.0581	.9818	.0098	.0053	.0222	9.771
#3	.0195	-.0532	.9614	.0141	.0058	.0223	9.803

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	200.1	.0458	-.0208	.1610	.1202	7.687	-.0021
SDev	.5	.0007	.0078	.0011	.0033	.021	.0005
%RSD	.2494	1.612	37.75	.6623	2.729	.2719	23.52
#1	199.6	.0452	-.0295	.1598	.1164	7.664	-.0025
#2	200.1	.0454	-.0185	.1619	.1224	7.690	-.0023
#3	200.6	.0466	-.0144	.1613	.1217	7.706	-.0015

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0032	21.77	.4885	-1.362	.0695	.0071	120.0
SDev	.0001	.05	.0051	.070	.0017	.0006	.3
%RSD	4.208	.2232	1.051	5.143	2.495	8.775	.2372
#1	.0031	21.72	.4849	-1.301	.0702	.0064	119.7
#2	.0031	21.76	.4944	-1.347	.0707	.0073	119.9
#3	.0033	21.82	.4862	-1.438	.0675	.0077	120.2

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.2307	.0498	.4296	-.0132	.0689	.2221	.2175
SDev	.0012	.0016	.0163	.0048	.0041	.0383	.0041
%RSD	.5336	3.122	3.803	36.69	5.913	17.26	1.881
#1	.2295	.0481	.4107	-.0183	.0642	.1840	.2219
#2	.2320	.0512	.4387	-.0126	.0710	.2607	.2138
#3	.2307	.0502	.4393	-.0086	.0714	.2215	.2168

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.1212	-.0172	-.0108	.2361	.0469	.2923	-.0917
SDev	.0076	.0046	.0046	.0050	.0060	.0035	.0164
%RSD	6.231	26.57	42.76	2.123	12.85	1.208	17.94
#1	-.1298	-.0218	-.0159	.2402	.0523	.2925	-.1107
#2	-.1159	-.0127	-.0072	.2376	.0404	.2887	-.0817
#3	-.1177	-.0170	-.0092	.2305	.0479	.2958	-.0826

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0641	-.0259	.1641	.0206	.0112	.0937	.0868
SDev	.0002	.0048	.0028	.0004	.0076	.0551	.0008

%RSD	.3109	18.52	1.689	2.074	67.89	58.78	.8747
#1	.0640	-.0218	.1647	.0202	.0150	.0337	.0863
#2	.0640	-.0248	.1611	.0206	.0024	.1055	.0864
#3	.0643	-.0312	.1665	.0211	.0161	.1420	.0877

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0021	.0072	.1800	-.0111	.0598
SDev	.0119	.0000	.0017	.0011	.0000
%RSD	564.6	.5600	.9526	9.617	.0000
#1	-.0062	.0072	.1780	-.0123	.0598
#2	.0113	.0072	.1812	-.0104	.0598
#3	-.0115	.0072	.1807	-.0105	.0598

Analysis Report Wed 01-13-93 11:21:56 AM page 1

Method: CLP Sample Name: LCS+Bi @2 Operator: DRS
Run Time: 01/13/93 11:20:11
Comment: LCS-0287+Bi 1.0389g/200ml @2X DIL. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0499	.1683	2.384	.0308	.0140	.0530	23.97
SDev	.0003	.0178	.019	.0017	.0001	.0004	.18
%RSD	.5321	10.59	.7797	5.530	.7820	.7623	.7431
#1	.0496	.1724	2.370	.0309	.0139	.0526	23.79
#2	.0501	.1488	2.377	.0291	.0141	.0531	23.96
#3	.0501	.1837	2.405	.0325	.0140	.0534	24.15

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	489.4	.1126	-.0202	.3881	.2890	18.62	-.0029
SDev	3.1	.0019	.0029	.0019	.0048	.11	.0003
%RSD	.6237	1.670	14.15	.4828	1.673	.5861	9.013
#1	485.9	.1117	-.0224	.3859	.2836	18.50	-.0031
#2	490.6	.1114	-.0213	.3888	.2905	18.66	-.0028
#3	491.7	.1148	-.0170	.3895	.2929	18.71	-.0026

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0059	52.39	.7594	-2.568	.0730	.0122	294.0
SDev	.0004	.30	.0234	.143	.0025	.0014	1.7
%RSD	6.390	.5800	3.085	5.563	3.419	11.66	.5767
#1	.0055	52.05	.7498	-2.709	.0753	.0106	292.1
#2	.0059	52.52	.7861	-2.423	.0704	.0130	294.7
#3	.0062	52.61	.7423	-2.572	.0733	.0130	295.2

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5542	.1269	.8173	-.0265	.1586	.3593	.5422
SDev	.0028	.0021	.0167	.0024	.0026	.0368	.0201
%RSD	.4972	1.657	2.045	8.971	1.624	10.25	3.703
#1	.5514	.1250	.8089	-.0291	.1556	.3757	.5224
#2	.5569	.1266	.8365	-.0257	.1599	.3850	.5417
#3	.5545	.1291	.8064	-.0246	.1602	.3171	.5626

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.1462	-.0225	-.0162	.5819	.1216	.5692	-.1597
SDev	.0077	.0021	.0032	.0146	.0100	.0034	.0172
%RSD	5.285	9.136	19.81	2.515	8.223	.5912	10.79
#1	-.1542	-.0249	-.0196	.5660	.1301	.5684	-.1399
#2	-.1388	-.0212	-.0132	.5947	.1241	.5729	-.1710
#3	-.1456	-.0214	-.0158	.5850	.1106	.5663	-.1683

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.1565	-.0254	.2076	.0533	.0296	-.0151	.2039
SDev	.0010	.0052	.0128	.0003	.0023	.0485	.0020

%RSD	.6152	20.61	6.152	.5670	7.898	321.0	.9705
#1	.1554	-.0281	.1986	.0531	.0286	-.0613	.2017
#2	.1570	-.0286	.2222	.0537	.0322	-.0194	.2043
#3	.1571	-.0193	.2020	.0533	.0279	.0353	.2056

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0119	.0193	.4325	-.0087	.0600
SDev	.0156	.0004	.0043	.0008	.0000
%RSD	131.1	2.340	1.002	8.624	.0096
#1	-.0187	.0188	.4277	-.0090	.0600
#2	-.0230	.0193	.4361	-.0093	.0600
#3	.0059	.0197	.4337	-.0079	.0600

Analysis Report QC Standard Wed 01-13-93 11:25:53 AM page 1

Method: CLP Sample Name: MCVA Operator: DRS
Run Time: 01/13/93 11:24:10
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

PASS DRS 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4940	24.86	2.401	1.943	.4984	.1020	24.39
SDev	.0017	.13	.008	.011	.0031	.0007	.07
%RSD	.3474	.5348	.3313	.5642	.6141	.7168	.2792
#1	.4946	25.01	2.394	1.955	.5016	.1028	24.44
#2	.4921	24.76	2.400	1.935	.4955	.1014	24.32
#3	.4954	24.81	2.410	1.938	.4982	.1018	24.43
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	.5000	25.00	2.500	2.000	.5000	.1000	25.00
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	25.04	.4869	-.0034	.9986	.9825	1.052	-.0007
SDev	.20	.0027	.0055	.0041	.0054	.007	.0009
%RSD	.7821	.5658	163.3	.4124	.5533	.6698	124.0
#1	25.26	.4892	-.0058	1.002	.9762	1.061	-.0018
#2	24.96	.4877	.0029	.9943	.9853	1.049	-.0001
#3	24.89	.4838	-.0073	.9990	.9860	1.048	-.0004
Errors	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value	25.00	.5000		1.000	1.000	1.000	
Range	10.00	10.00		10.00	10.00	10.00	

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0000	19.39	.1251	23.98	.0129	2.133	24.69
SDev	.0004	.10	.0099	.23	.0008	.010	.18
%RSD	7280.	.4939	7.921	.9765	6.529	.4739	.7240
#1	-.0005	19.50	.1241	23.71	.0128	2.145	24.89
#2	.0003	19.31	.1157	24.09	.0138	2.127	24.63
#3	.0002	19.38	.1354	24.13	.0121	2.128	24.55
Errors	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	QC Pass
Value		20.00		25.00		2.000	25.00
Range		10.00		10.00		10.00	10.00

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4972	.9850	10.08	-.0067	.9966	19.97	2.435
SDev	.0022	.0023	.10	.0073	.0060	.12	.013
%RSD	.4420	.2346	.9888	109.1	.5976	.6119	.5287
#1	.4998	.9841	10.18	-.0148	.9971	20.11	2.450
#2	.4960	.9832	9.979	-.0006	1.002	19.92	2.427
#3	.4959	.9876	10.09	-.0046	.9904	19.88	2.428
Errors	QC Pass	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass
Value	.5000	1.000	10.00		1.000	20.00	2.500

Range	10.00	10.00	10.00		10.00	10.00	10.00
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0243	-.0053	-.0069	2.348	2.489	18.76	-.0241
SDev	.0184	.0098	.0028	.043	.021	.08	.0351
%RSD	75.97	183.7	41.01	1.812	.8604	.4502	145.8
#1	-.0452	-.0164	-.0102	2.316	2.477	18.85	-.0646
#2	-.0105	.0022	-.0058	2.333	2.514	18.69	-.0048
#3	-.0170	-.0018	-.0049	2.397	2.476	18.72	-.0028
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value				2.500	2.500	20.00	
Range				10.00	10.00	10.00	

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5073	-.0302	.0577	.9876	2.481	-.1367	1.001
SDev	.0032	.0040	.0026	.0053	.011	.0859	.004
%RSD	.6242	13.24	4.498	.5323	.4406	62.84	.4143
#1	.5106	-.0318	.0580	.9927	2.488	-.2342	1.005
#2	.5042	-.0256	.0549	.9822	2.468	-.1034	.9973
#3	.5070	-.0331	.0601	.9878	2.486	-.0724	.9998
Errors	QC Pass	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK	QC Pass
Value	.5000			1.000	2.500		1.000
Range	10.00			10.00	10.00		10.00

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0054	.0004	1.018	2.018	.0598
SDev	.0011	.0003	.007	.009	.0000
%RSD	21.22	67.61	.7090	.4697	.0000
#1	-.0067	.0003	1.026	2.027	.0598
#2	-.0047	.0002	1.017	2.008	.0598
#3	-.0048	.0007	1.012	2.019	.0598
Errors	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK
Value			1.000	2.000	
Range			10.00	10.00	

Analysis Report QC Standard Wed 01-13-93 11:31:25 AM page 1

Method: CLP Sample Name: MCVB Operator: DRS
Run Time: 01/13/93 11:29:39
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

PASS DRB 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0053	-.4374	-.0905	.0097	.0010	.0013	.0674
SDev	.0008	.0321	.0054	.0011	.0001	.0001	.0075
%RSD	15.83	7.345	6.015	11.30	12.39	10.40	11.16
#1	-.0046	-.4661	-.0848	.0107	.0010	.0012	.0757
#2	-.0063	-.4434	-.0957	.0098	.0010	.0013	.0611
#3	-.0051	-.4027	-.0909	.0085	.0008	.0015	.0654
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0510	.0019	4.904	.0005	.0030	.0081	4.745
SDev	.0102	.0008	.014	.0009	.0005	.0017	.019
%RSD	19.99	40.77	.2883	179.2	17.35	20.85	.3948
#1	.0596	.0011	4.898	.0016	.0036	.0101	4.724
#2	.0536	.0026	4.895	.0001	.0029	.0069	4.751
#3	.0398	.0021	4.921	-.0001	.0026	.0074	4.760
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	QC Pass
Value			5.000				5.000
Range			10.00				10.00

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.932	.0191	4.885	-.3807	1.923	.0025	-.0079
SDev	.008	.0042	.033	.2554	.006	.0000	.0137
%RSD	.4129	21.92	.6814	67.09	.3347	.1903	172.0
#1	1.924	.0232	4.923	-.1561	1.916	.0025	.0078
#2	1.932	.0193	4.873	-.6586	1.925	.0025	-.0159
#3	1.940	.0148	4.860	-.3275	1.928	.0025	-.0158
Errors	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	NOCHECK
Value	2.000		5.000		2.000		
Range	10.00		10.00		10.00		

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0005	.0049	.1386	4.798	.0034	.0033	-.0340
SDev	.0009	.0019	.0247	.019	.0019	.0263	.0138
%RSD	170.5	38.13	17.84	.3992	55.76	791.1	40.42
#1	.0011	.0068	.1530	4.777	.0013	.0311	-.0244
#2	-.0005	.0048	.1528	4.803	.0040	-.0213	-.0498
#3	.0009	.0031	.1101	4.814	.0049	.0002	-.0279
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value				5.000			

Range 10.00

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-1.286	-.0077	4.765	.0116	.0329	-.0237	-.0434
SDev	.023	.0060	.021	.0035	.0013	.0089	.0296
%RSD	1.778	77.34	.4395	30.04	3.802	37.49	68.13
#1	-1.262	-.0008	4.749	.0122	.0320	-.0143	-.0121
#2	-1.306	-.0114	4.759	.0148	.0324	-.0246	-.0708
#3	-1.291	-.0110	4.789	.0079	.0344	-.0320	-.0474
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value			5.000				
Range			10.00				

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0011	4.775	4.751	.0045	.0059	10.09	.0046
SDev	.0002	.008	.024	.0003	.0149	.08	.0011
%RSD	18.01	.1694	.4972	6.357	252.0	.8007	24.07
#1	.0013	4.773	4.725	.0047	.0231	10.18	.0054
#2	.0010	4.784	4.758	.0046	-.0015	10.05	.0033
#3	.0010	4.769	4.771	.0042	-.0038	10.04	.0049
Errors	NOCHECK	QC Pass	QC Pass	NOCHECK	NOCHECK	QC Pass	NOCHECK
Value		5.000	5.000			10.00	
Range		10.00	10.00			10.00	

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0108	.9795	.0018	.0195	.0597
SDev	.0060	.0048	.0003	.0004	.0000
%RSD	55.19	.4871	13.32	1.983	.0000
#1	-.0173	.9741	.0018	.0200	.0597
#2	-.0099	.9812	.0021	.0192	.0597
#3	-.0054	.9831	.0016	.0194	.0597
Errors	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value		1.000			
Range		10.00			

Analysis Report Wed 01-13-93 11:35:23 AM page 1

Method: CLP Sample Name: STD1-Blank Operator: DRS
Run Time: 01/13/93 11:33:41
Comment: LCS-0287+Bi 1.0389g/200ml @2X DIL. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0012	.0080	-.0080	.0005	-.0005	.0000	.0071
SDev	.0003	.0067	.0018	.0003	.0000	.0000	.0112
%RSD	26.08	84.84	22.13	54.44	2.429	17.10	157.4
#1	-.0016	.0008	-.0060	.0005	-.0005	.0000	.0143
#2	-.0011	.0142	-.0094	.0008	-.0005	.0000	.0128
#3	-.0010	.0090	-.0086	.0002	-.0005	.0000	-.0058

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0208	.0006	-.0108	-.0018	.0011	.0044	.0065
SDev	.0061	.0020	.0032	.0004	.0045	.0003	.0022
%RSD	29.18	335.8	29.86	20.87	427.9	6.953	34.45
#1	.0275	-.0016	-.0071	-.0013	.0061	.0044	.0088
#2	.0193	.0021	-.0126	-.0020	-.0004	.0047	.0064
#3	.0156	.0012	-.0127	-.0020	-.0025	.0041	.0043

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0033	.0019	.0269	-.5441	.0016	-.0007	.0092
SDev	.0007	.0019	.0085	.2135	.0018	.0006	.0014
%RSD	21.86	104.0	31.50	39.25	112.4	93.75	15.37
#1	.0039	.0035	.0365	-.5783	.0031	-.0001	.0088
#2	.0033	.0023	.0207	-.7384	-.0003	-.0005	.0081
#3	.0025	-.0003	.0234	-.3155	.0019	-.0014	.0108

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0002	-.0025	-.0191	-.0045	.0023	.0182	-.0187
SDev	.0004	.0019	.0166	.0007	.0008	.0141	.0045
%RSD	164.0	74.49	86.86	15.30	34.04	77.87	23.89
#1	.0004	-.0006	-.0099	-.0051	.0028	.0329	-.0173
#2	.0004	-.0027	-.0383	-.0038	.0014	.0046	-.0237
#3	-.0002	-.0043	-.0092	-.0047	.0028	.0170	-.0151

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0143	-.0108	.0026	.0024	.0020	.0012	-.0535
SDev	.0044	.0030	.0055	.0009	.0040	.0075	.0206
%RSD	30.51	27.58	209.3	39.59	199.3	625.3	38.61
#1	-.0187	-.0141	.0083	.0023	-.0009	-.0035	-.0772
#2	-.0100	-.0098	.0021	.0015	.0004	-.0027	-.0432
#3	-.0142	-.0084	-.0026	.0034	.0067	.0098	-.0399

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0000	-.0111	.0090	-.0005	-.0078	-.2356	-.0013
SDev	.0001	.0058	.0073	.0002	.0092	.0505	.0004

%RSD	604.8	52.11	80.81	44.23	117.0	21.43	27.71
#1	-.0000	-.0055	.0127	-.0007	-.0182	-.2908	-.0017
#2	-.0000	-.0107	.0006	-.0005	-.0010	-.1917	-.0013
#3	.0001	-.0170	.0138	-.0003	-.0042	-.2243	-.0010

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0008	.0009	-.0013	-.0017	.0597
SDev	.0105	.0003	.0006	.0009	.0000
%RSD	1367.	29.99	42.42	51.40	.0097
#1	.0085	.0011	-.0010	-.0017	.0597
#2	.0014	.0011	-.0010	-.0008	.0597
#3	-.0122	.0006	-.0020	-.0026	.0597

Analysis Report Wed 01-13-93 11:38:01 AM page 1

Method: CLP Sample Name: ICSA 921008E3 @2 Operator: DRS
Run Time: 01/13/93 11:36:17
Comment: LCS-0287+Bi 1.0389g/200ml @2X DIL. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0011	271.5	-.3795	.0371	.0052	-.0000	.0668
SDev	.0007	1.3	.0191	.0022	.0002	.0001	.0052
%RSD	67.51	.4619	5.026	6.059	4.132	746.1	7.782
#1	-.0014	271.3	-.3949	.0345	.0052	-.0000	.0659
#2	-.0016	272.9	-.3855	.0386	.0050	-.0000	.0724
#3	-.0003	270.4	-.3582	.0382	.0054	.0001	.0621

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	247.0	.0036	-.0268	.0037	.0239	.0044	-.0022
SDev	1.0	.0013	.0054	.0010	.0065	.0007	.0006
%RSD	.4243	34.71	20.22	26.90	27.30	15.27	25.90
#1	246.7	.0051	-.0206	.0026	.0245	.0051	-.0018
#2	248.1	.0030	-.0305	.0039	.0171	.0038	-.0029
#3	246.1	.0028	-.0293	.0046	.0300	.0042	-.0020

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0009	97.64	.6641	-2.002	.0807	.0064	242.8
SDev	.0000	.45	.0310	.286	.0009	.0004	1.1
%RSD	3.026	.4596	4.663	14.27	1.157	6.456	.4332
#1	.0009	97.53	.6575	-1.804	.0799	.0069	242.5
#2	.0008	98.13	.6369	-2.330	.0804	.0064	243.9
#3	.0009	97.26	.6978	-1.873	.0817	.0060	241.8

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0137	.0067	1.353	-.0272	.0182	.2543	-.0395
SDev	.0002	.0025	.030	.0011	.0013	.0164	.0127
%RSD	1.787	37.71	2.234	4.100	6.939	6.435	32.20
#1	.0135	.0053	1.336	-.0268	.0168	.2724	-.0437
#2	.0136	.0052	1.335	-.0285	.0188	.2501	-.0496
#3	.0140	.0096	1.388	-.0263	.0191	.2405	-.0252

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.1016	-.0192	-.0571	-.0841	-.0075	.0490	-.1674
SDev	.0073	.0051	.0018	.0096	.0140	.0099	.0155
%RSD	7.193	26.56	3.108	11.39	187.3	20.13	9.248
#1	-.0999	-.0196	-.0551	-.0854	-.0039	.0479	-.1582
#2	-.1096	-.0240	-.0586	-.0740	.0044	.0397	-.1853
#3	-.0953	-.0139	-.0576	-.0930	-.0229	.0594	-.1587

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.2506	-.0230	.2341	.0052	.1361	-.0013	.0216
SDev	.0012	.0128	.0036	.0001	.0036	.0928	.0003

%RSD	.4680	55.74	1.533	2.805	2.616	7088.	1.468
#1	.2503	-.0335	.2314	.0051	.1360	-.0516	.0219
#2	.2519	-.0268	.2382	.0052	.1397	-.0581	.0216
#3	.2496	-.0087	.2327	.0054	.1325	.1058	.0213

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0191	.0042	.1040	-.0149	.0597
SDev	.0143	.0007	.0023	.0005	.0000
%RSD	75.03	16.73	2.248	3.567	.0097
#1	-.0165	.0034	.1063	-.0145	.0597
#2	-.0062	.0044	.1016	-.0155	.0597
#3	-.0345	.0048	.1041	-.0147	.0597

Analysis Report Wed 01-13-93 11:42:45 AM page 1

Method: CLP Sample Name: ICSAB 921008E4 @2 Operator: DRS
Run Time: 01/13/93 11:41:01
Comment: LCS-0287+Bi 1.0389g/200ml @2X DIL. W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4755	272.7	-.3768	.0401	.2469	.2457	.0691
SDev	.0011	.7	.0099	.0016	.0013	.0006	.0059
%RSD	.2291	.2715	2.626	3.960	.5352	.2491	8.509
#1	.4744	272.2	-.3720	.0388	.2468	.2457	.0636
#2	.4765	273.5	-.3882	.0418	.2482	.2464	.0683
#3	.4757	272.2	-.3703	.0396	.2456	.2452	.0753

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	247.7	.4750	-.0366	.2419	.2769	.2612	-.0039
SDev	.5	.0039	.0041	.0011	.0093	.0004	.0008
%RSD	.2072	.8134	11.33	.4485	3.359	.1634	20.94
#1	247.8	.4756	-.0377	.2412	.2876	.2614	-.0046
#2	248.2	.4785	-.0400	.2431	.2725	.2615	-.0042
#3	247.1	.4708	-.0320	.2413	.2706	.2607	-.0030

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0004	97.99	.6360	-2.105	.0813	.0068	243.5
SDev	.0001	.26	.0122	.257	.0009	.0014	.6
%RSD	31.07	.2622	1.924	12.20	1.157	20.71	.2310
#1	.0003	98.03	.6375	-2.192	.0813	.0052	243.1
#2	.0003	98.23	.6474	-2.307	.0804	.0077	244.2
#3	.0005	97.72	.6230	-1.816	.0823	.0077	243.2

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.2475	.0086	1.357	-.0279	.4846	.2646	2.321
SDev	.0015	.0007	.026	.0063	.0030	.0281	.009
%RSD	.6138	8.624	1.909	22.65	.6167	10.61	.4002
#1	.2491	.0094	1.329	-.0294	.4835	.2783	2.327
#2	.2473	.0080	1.379	-.0333	.4880	.2323	2.310
#3	.2461	.0083	1.365	-.0209	.4824	.2832	2.326

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0908	-.0197	-.0593	-.0845	-.0046	.0451	-.1353
SDev	.0149	.0081	.0082	.0075	.0223	.0048	.0292
%RSD	16.45	41.23	13.84	8.879	481.4	10.65	21.57
#1	-.0955	-.0192	-.0558	-.0836	.0096	.0476	-.1239
#2	-.1028	-.0281	-.0687	-.0775	-.0303	.0396	-.1685
#3	-.0741	-.0119	-.0535	-.0925	.0068	.0482	-.1136

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.2519	-.0393	.2358	.0056	.1397	.0307	.2648
SDev	.0008	.0125	.0068	.0005	.0204	.1642	.0008

%RSD	.3179	31.83	2.879	9.516	14.59	534.4	.3165
#1	.2519	-.0250	.2339	.0054	.1609	-.0698	.2657
#2	.2527	-.0448	.2434	.0051	.1202	-.0582	.2641
#3	.2511	-.0481	.2302	.0062	.1379	.2202	.2645

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0229	.0036	.6306	-.0155	.0597
SDev	.0034	.0003	.0030	.0009	.0000
%RSD	14.83	9.332	.4776	6.081	.0097
#1	-.0233	.0035	.6319	-.0155	.0597
#2	-.0193	.0039	.6271	-.0164	.0597
#3	-.0261	.0033	.6327	-.0146	.0597

Analysis Report QC Standard Wed 01-13-93 11:47:53 AM page 1

Method: CLP Sample Name: ICV1 Operator: DRS
Run Time: 01/13/93 11:46:10
Comment: T-106 SOIL SAMPLES. PASS DMB 1/14/93 W.THOMPSON
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4865	2.084	-.0175	.0056	1.976	.4958	.0067
SDev	.0024	.013	.0069	.0016	.009	.0023	.0012
%RSD	.5006	.6040	39.76	29.41	.4471	.4687	17.97
#1	.4843	2.098	-.0095	.0056	1.966	.4932	.0058
#2	.4861	2.075	-.0205	.0040	1.980	.4963	.0064
#3	.4891	2.079	-.0224	.0072	1.983	.4978	.0081
Errors	QC Pass	QC Pass	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK
Value	.5170	1.958			2.078	.5080	
Range	10.00	10.00			10.00	10.00	

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	47.69	.4944	-.0264	.4893	.5021	.5117	-.0028
SDev	.20	.0025	.0031	.0006	.0027	.0026	.0005
%RSD	.4238	.5075	11.92	.1141	.5324	.5133	18.04
#1	47.47	.4915	-.0299	.4887	.5016	.5091	-.0023
#2	47.73	.4958	-.0238	.4894	.5050	.5118	-.0031
#3	47.87	.4958	-.0255	.4898	.4997	.5143	-.0032
Errors	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value	51.38	.5160		.4990	.5140	.5250	
Range	10.00	10.00		10.00	10.00	10.00	

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0009	1.957	.1465	49.43	.0230	.0010	24.14
SDev	.0003	.002	.0135	.27	.0007	.0009	.10
%RSD	27.07	.0966	9.206	.5434	3.230	99.16	.4047
#1	.0006	1.954	.1463	49.12	.0221	.0015	24.03
#2	.0011	1.958	.1601	49.58	.0233	.0015	24.19
#3	.0009	1.957	.1331	49.60	.0235	-.0001	24.21
Errors	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	NOCHECK	QC Pass
Value		1.981		50.56			25.59
Range		10.00		10.00			10.00

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4855	-.0036	50.61	-.0144	.4993	.0530	4.888
SDev	.0027	.0011	.22	.0035	.0032	.0191	.026
%RSD	.5611	29.72	.4308	24.11	.6491	35.97	.5355
#1	.4833	-.0024	50.40	-.0176	.4970	.0710	4.864
#2	.4847	-.0043	50.59	-.0107	.5030	.0549	4.885
#3	.4886	-.0042	50.84	-.0147	.4979	.0331	4.916
Errors	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass
Value	.5090		52.35		.5040		5.203

Analysis Report QC Standard Wed 01-13-93 11:47:53 AM page 2

Range	10.00		10.00		10.00		10.00
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0433	-.0140	-.0035	-.0002	-.0135	.0327	-.0760
SDev	.0122	.0033	.0007	.0010	.0063	.0085	.0147
%RSD	28.09	23.60	19.63	544.9	46.50	25.86	19.32
#1	-.0446	-.0107	-.0030	-.0010	-.0203	.0305	-.0770
#2	-.0306	-.0173	-.0043	.0009	-.0079	.0256	-.0608
#3	-.0549	-.0140	-.0033	-.0005	-.0124	.0421	-.0902
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0176	-.0468	.0424	.0001	-.0015	-.0902	.4923
SDev	.0001	.0224	.0108	.0003	.0110	.0993	.0029
%RSD	.5731	47.85	25.44	554.8	753.8	110.1	.5838
#1	.0177	-.0255	.0419	-.0002	.0111	-.1248	.4891
#2	.0177	-.0702	.0319	.0004	-.0062	.0217	.4933
#3	.0175	-.0447	.0534	-.0001	-.0093	-.1675	.4946
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	QC Pass
Value							.5170
Range							10.00

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0002	-.0004	3.067	-.0059	.0597
SDev	.0086	.0001	.009	.0007	.0000
%RSD	3495.	15.53	.2775	12.07	.0097
#1	.0060	-.0005	3.057	-.0056	.0597
#2	.0034	-.0005	3.071	-.0053	.0597
#3	-.0101	-.0004	3.073	-.0067	.0597
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK
Value			3.052		
Range			10.00		

Analysis Report QC Standard Wed 01-13-93 11:52:40 AM page 1

Method: CLP Sample Name: MCVA Operator: DRS
Run Time: 01/13/93 11:50:57
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

PASS DM 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4931	24.89	2.387	1.942	.5005	.1026	24.36
SDev	.0025	.18	.019	.011	.0038	.0008	.14
%RSD	.5036	.7243	.7845	.5920	.7614	.8270	.5669
#1	.4935	24.97	2.384	1.938	.5026	.1029	24.35
#2	.4905	24.68	2.371	1.933	.4961	.1017	24.22
#3	.4954	25.01	2.408	1.955	.5028	.1033	24.50
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	.5000	25.00	2.500	2.000	.5000	.1000	25.00
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	24.26	.4851	-.0112	.9989	.9868	1.014	-.0014
SDev	.18	.0042	.0029	.0086	.0095	.007	.0009
%RSD	.7405	.8599	25.62	.8640	.9680	.7393	67.11
#1	24.34	.4888	-.0137	1.001	.9908	1.016	-.0024
#2	24.05	.4806	-.0081	.9894	.9759	1.006	-.0010
#3	24.38	.4857	-.0117	1.006	.9938	1.020	-.0007
Errors	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value	25.00	.5000		1.000	1.000	1.000	
Range	10.00	10.00		10.00	10.00	10.00	

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0003	19.30	.1073	23.87	.0117	2.130	24.21
SDev	.0002	.15	.0165	.11	.0010	.010	.16
%RSD	95.45	.7648	15.36	.4525	8.972	.4784	.6411
#1	-.0002	19.37	.0894	23.88	.0117	2.135	24.29
#2	-.0000	19.14	.1219	23.75	.0127	2.119	24.03
#3	-.0005	19.41	.1106	23.97	.0106	2.138	24.31
Errors	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	QC Pass
Value		20.00		25.00		2.000	25.00
Range		10.00		10.00		10.00	10.00

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4965	.9876	10.11	-.0121	1.000	19.87	2.436
SDev	.0037	.0086	.05	.0060	.014	.09	.018
%RSD	.7374	.8702	.5338	49.57	1.376	.4633	.7351
#1	.4979	.9818	10.13	-.0137	1.014	19.94	2.451
#2	.4924	.9835	10.05	-.0054	.9867	19.76	2.416
#3	.4994	.9974	10.15	-.0171	1.0000	19.89	2.440
Errors	QC Pass	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass
Value	.5000	1.000	10.00		1.000	20.00	2.500

Analysis Report QC Standard Wed 01-13-93 11:52:40 AM page 2

Range	10.00	10.00	10.00		10.00	10.00	10.00
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0290	-.0105	-.0050	2.354	2.471	18.75	.0188
SDev	.0205	.0071	.0010	.042	.016	.12	.0069
%RSD	70.58	67.94	20.16	1.777	.6356	.6211	36.68
#1	-.0412	-.0164	-.0061	2.319	2.468	18.79	.0231
#2	-.0054	-.0026	-.0046	2.344	2.457	18.61	.0109
#3	-.0405	-.0125	-.0042	2.401	2.488	18.83	.0226
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value				2.500	2.500	20.00	
Range				10.00	10.00	10.00	

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5078	-.0200	.0623	.9891	2.495	-.1437	1.001
SDev	.0041	.0038	.0054	.0082	.028	.0962	.008
%RSD	.8134	19.06	8.753	.8325	1.122	66.91	.7720
#1	.5095	-.0200	.0586	.9913	2.507	-.1842	1.005
#2	.5030	-.0238	.0597	.9800	2.463	-.0339	.9924
#3	.5107	-.0162	.0685	.9960	2.515	-.2131	1.007
Errors	QC Pass	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK	QC Pass
Value	.5000			1.000	2.500		1.000
Range	10.00			10.00	10.00		10.00

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0004	-.0004	1.024	2.020	.0598
SDev	.0068	.0005	.011	.015	.0000
%RSD	1872.	122.7	1.044	.7501	.0097
#1	-.0018	-.0007	1.030	2.027	.0598
#2	-.0064	.0002	1.011	2.003	.0598
#3	.0071	-.0007	1.030	2.030	.0598
Errors	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK
Value			1.000	2.000	
Range			10.00	10.00	

Analysis Report QC Standard Wed 01-13-93 11:57:53 AM page 1

Method: CLP Sample Name: MCVB Operator: DRS
Run Time: 01/13/93 11:56:07
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1

PASS RW 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0051	-.4282	-.0877	.0079	.0011	.0014	.0661
SDev	.0002	.0180	.0026	.0031	.0001	.0001	.0089
%RSD	3.694	4.199	2.930	39.43	11.24	7.871	13.50
#1	-.0050	-.4210	-.0894	.0113	.0010	.0013	.0744
#2	-.0054	-.4150	-.0890	.0074	.0011	.0015	.0672
#3	-.0051	-.4487	-.0847	.0051	.0012	.0014	.0566
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0171	.0033	4.873	-.0003	.0027	.0017	4.726
SDev	.0052	.0012	.023	.0005	.0034	.0008	.016
%RSD	30.47	35.27	.4793	141.7	126.2	47.80	.3489
#1	.0225	.0021	4.848	-.0008	-.0002	.0009	4.711
#2	.0167	.0044	4.876	-.0004	.0019	.0017	4.722
#3	.0121	.0034	4.894	.0002	.0065	.0025	4.744
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	QC Pass
Value			5.000				5.000
Range			10.00				10.00

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.924	.0186	4.867	-.4144	1.914	.0035	-.0237
SDev	.009	.0028	.040	.0435	.009	.0017	.0030
%RSD	.4628	14.95	.8235	10.50	.4671	48.74	12.46
#1	1.916	.0214	4.856	-.3950	1.907	.0054	-.0271
#2	1.923	.0185	4.834	-.4643	1.910	.0030	-.0217
#3	1.934	.0158	4.912	-.3840	1.924	.0021	-.0224
Errors	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	NOCHECK
Value	2.000		5.000		2.000		
Range	10.00		10.00		10.00		

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0005	.0033	.1408	4.768	.0054	.0080	-.0370
SDev	.0003	.0010	.0113	.022	.0039	.0143	.0042
%RSD	51.48	31.21	8.021	.4685	71.35	177.9	11.26
#1	.0008	.0042	.1305	4.745	.0018	.0233	-.0397
#2	.0003	.0022	.1389	4.770	.0049	.0057	-.0391
#3	.0004	.0034	.1529	4.790	.0095	-.0049	-.0322
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value				5.000			

Range 10.00

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-1.281	-.0126	4.736	.0138	.0284	-.0230	-.0565
SDev	.015	.0031	.025	.0126	.0215	.0107	.0272
%RSD	1.190	24.31	.5280	91.51	75.65	46.64	48.21
#1	-1.267	-.0135	4.712	.0283	.0163	-.0334	-.0681
#2	-1.279	-.0152	4.734	.0051	.0156	-.0120	-.0760
#3	-1.297	-.0092	4.762	.0080	.0531	-.0237	-.0254
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value			5.000				
Range			10.00				

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0011	4.790	4.737	.0044	.0180	9.990	.0039
SDev	.0001	.033	.043	.0002	.0053	.110	.0003
%RSD	10.02	.6883	.9015	3.776	29.39	1.098	7.421
#1	.0012	4.775	4.711	.0046	.0128	9.954	.0042
#2	.0010	4.767	4.714	.0043	.0234	10.11	.0037
#3	.0010	4.828	4.787	.0044	.0177	9.904	.0037
Errors	NOCHECK	QC Pass	QC Pass	NOCHECK	NOCHECK	QC Pass	NOCHECK
Value		5.000	5.000			10.00	
Range		10.00	10.00			10.00	

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0037	.9734	.0025	.0178	.0597
SDev	.0206	.0041	.0009	.0017	.0000
%RSD	550.0	.4246	37.79	9.484	.0000
#1	.0197	.9700	.0034	.0178	.0597
#2	-.0190	.9722	.0016	.0195	.0597
#3	-.0119	.9780	.0024	.0161	.0597
Errors	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value		1.000			
Range		10.00			

Analysis Report Wed 01-13-93 12:02:53 PM page 1

Method: CLP Sample Name: STD1-Blank Operator: DRS
Run Time: 01/13/93 12:01:11 93D093A
Comment: T-106 SOIL SAMPLES. W.THOMPSON
Mode: CONC Corr. Factor: 1 199282/20070

Danny Sanders 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0004	.0006	-.0085	.0018	-.0000	-.0001	.0105
SDev	.0008	.0089	.0073	.0023	.0005	.0002	.0054
%RSD	186.7	1412.	85.90	126.2	1537.	258.0	51.69
#1	-.0013	.0048	-.0058	.0036	-.0006	.0000	.0075
#2	.0004	-.0096	-.0030	.0025	.0002	-.0003	.0167
#3	-.0005	.0066	-.0168	-.0007	.0004	.0000	.0072

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0008	.0012	-.0040	-.0021	-.0003	.0022	.0026
SDev	.0029	.0010	.0122	.0011	.0009	.0003	.0004
%RSD	341.1	80.26	309.2	53.21	259.4	15.11	15.47
#1	-.0032	.0021	-.0162	-.0031	.0006	.0018	.0024
#2	.0024	.0002	.0082	-.0022	-.0012	.0024	.0030
#3	-.0017	.0013	-.0038	-.0009	-.0004	.0023	.0023

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0018	-.0023	.0317	-.2255	.0003	.0007	-.0100
SDev	.0003	.0004	.0130	.3839	.0027	.0024	.0081
%RSD	14.47	18.46	41.04	170.3	873.4	353.6	80.88
#1	.0017	-.0027	.0273	-.4638	-.0022	-.0018	-.0182
#2	.0021	-.0025	.0463	.2174	.0030	.0031	-.0098
#3	.0016	-.0018	.0215	-.4301	.0001	.0007	-.0020

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0003	-.0046	-.0087	.0048	.0000	.0171	-.0240
SDev	.0002	.0006	.0070	.0047	.0019	.0259	.0047
%RSD	63.48	12.31	80.10	97.58	4036.	151.8	19.77
#1	-.0001	-.0043	-.0017	.0010	.0019	.0323	-.0220
#2	-.0005	-.0053	-.0157	.0100	-.0000	.0318	-.0294
#3	-.0002	-.0043	-.0087	.0033	-.0018	-.0129	-.0206

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0008	-.0045	.0017	-.0019	-.0042	.0160	-.0524
SDev	.0268	.0117	.0015	.0006	.0173	.0054	.0261
%RSD	3280.	261.7	87.70	32.64	409.2	33.83	49.71
#1	-.0256	-.0179	-.0000	-.0012	-.0238	.0115	-.0820
#2	.0281	.0036	.0026	-.0024	.0091	.0221	-.0426
#3	.0000	.0009	.0025	-.0020	.0020	.0145	-.0327

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0001	-.0398	.0079	-.0005	-.0265	-.1623	-.0005
SDev	.0002	.0080	.0045	.0006	.0066	.1800	.0011

%RSD	277.5	20.12	56.88	114.6	24.93	110.9	211.8
#1	-.0000	-.0339	.0107	-.0011	-.0226	-.3469	-.0016
#2	.0003	-.0489	.0104	-.0000	-.0342	.0127	.0006
#3	-.0000	-.0367	.0027	-.0003	-.0228	-.1527	-.0005

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0267	.0004	-.0010	-.0021	.0597
SDev	.0063	.0006	.0006	.0012	.0000
%RSD	23.61	158.6	59.23	55.80	.0097
#1	-.0207	-.0003	-.0005	-.0034	.0597
#2	-.0333	.0009	-.0017	-.0011	.0597
#3	-.0261	.0006	-.0009	-.0018	.0597

9613492.0761

Analysis Report Wed 01-13-93 01:29:36 PM page 1

Method: CLP Sample Name: 93-03320 @10 Operator: DRS
Run Time: 01/13/93 13:27:54 93D013A
Comment: 300 AREA MONTHLY PROCESS SEWER @10X DIL. J.PERRY
Mode: CONC Corr. Factor: 1 ED3018/20063 Danny Sanders 1/12/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0027	.0133	-.0155	-.0040	.0015	-.0000	-.0013
SDev	.0013	.0096	.0012	.0028	.0003	.0001	.0091
%RSD	48.69	71.93	7.939	69.91	20.23	420.9	687.7
#1	-.0042	.0191	-.0167	-.0069	.0012	.0001	.0016
#2	-.0020	.0186	-.0142	-.0038	.0016	-.0001	-.0115
#3	-.0018	.0023	-.0157	-.0013	.0018	-.0001	.0059

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.898	.0002	-.0264	-.0025	.0005	.0026	-.0034
SDev	.002	.0012	.0080	.0012	.0025	.0013	.0008
%RSD	.1202	578.7	30.24	49.33	499.2	48.27	25.08
#1	1.897	.0004	-.0315	-.0034	.0025	.0014	-.0041
#2	1.896	-.0011	-.0172	-.0029	-.0023	.0025	-.0036
#3	1.901	.0013	-.0304	-.0011	.0013	.0039	-.0024

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0007	.0110	.0119	-.5816	-.0041	-.0003	.4736
SDev	.0003	.0017	.0198	.2873	.0017	.0013	.0044
%RSD	39.17	15.35	165.8	49.40	41.32	524.3	.9381
#1	-.0009	.0103	-.0035	-.8859	-.0060	-.0017	.4712
#2	-.0005	.0098	.0051	-.5439	-.0027	.0003	.4709
#3	-.0005	.0130	.0342	-.3150	-.0037	.0007	.4787

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0002	-.0039	1.047	-.0189	-.0016	.0262	-.0286
SDev	.0002	.0005	.040	.0079	.0025	.0129	.0017
%RSD	102.9	12.91	3.839	41.94	159.2	49.39	5.934
#1	-.0003	-.0035	1.074	-.0271	-.0045	.0129	-.0267
#2	.0000	-.0038	1.001	-.0181	-.0004	.0387	-.0292
#3	-.0002	-.0045	1.067	-.0113	.0001	.0270	-.0299

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0461	-.0226	-.0089	-.0112	-.0149	.2283	-.0901
SDev	.0260	.0080	.0062	.0019	.0216	.0066	.0291
%RSD	56.38	35.56	70.33	17.38	145.4	2.896	32.35
#1	-.0758	-.0317	-.0161	-.0113	-.0321	.2244	-.1235
#2	-.0351	-.0165	-.0054	-.0130	-.0219	.2246	-.0764
#3	-.0274	-.0197	-.0051	-.0092	.0094	.2359	-.0703

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0092	-.0295	.0035	-.0017	-.0008	-.3935	-.0026
SDev	.0001	.0056	.0112	.0008	.0025	.1427	.0010

%RSD	.9925	18.93	323.9	49.83	295.7	36.27	36.93
#1	.0091	-.0350	.0132	-.0026	-.0036	-.5479	-.0036
#2	.0093	-.0296	-.0088	-.0016	.0012	-.2665	-.0026
#3	.0093	-.0239	.0059	-.0009	-.0001	-.3661	-.0017

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0131	-.0010	.0000	-.0032	.0597
SDev	.0088	.0009	.0011	.0015	.0000
%RSD	66.87	89.85	7640.	48.14	.0097
#1	-.0178	-.0021	.0010	-.0048	.0597
#2	-.0030	-.0008	-.0012	-.0017	.0597
#3	-.0186	-.0003	.0003	-.0030	.0597

Analysis Report Wed 01-13-93 01:33:44 PM page 1

Method: CLP Sample Name: 93-03320 Operator: DRS
Run Time: 01/13/93 13:32:02
Comment: 300 AREA MONTHLY PROCESS SEWER. J.PERRY
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0039	.0306	-.0070	.0004	.0191	-.0002	-.0139
SDev	.0004	.0077	.0071	.0034	.0003	.0000	.0065
%RSD	10.69	25.10	102.1	806.8	1.844	7.863	46.50
#1	-.0035	.0352	-.0117	.0015	.0189	-.0002	-.0134
#2	-.0037	.0350	.0012	.0032	.0195	-.0002	-.0077
#3	-.0043	.0218	-.0105	-.0034	.0189	-.0002	-.0205

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	19.39	.0010	-.0351	-.0043	.0011	.0298	-.0046
SDev	.06	.0001	.0030	.0002	.0016	.0006	.0004
%RSD	.3227	8.885	8.519	4.339	150.0	1.986	9.284
#1	19.42	.0011	-.0321	-.0045	-.0004	.0291	-.0050
#2	19.44	.0009	-.0352	-.0042	.0008	.0303	-.0046
#3	19.32	.0011	-.0381	-.0042	.0028	.0300	-.0042

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0007	.1432	.0622	-.0482	.0023	.0006	4.905
SDev	.0003	.0010	.0069	.0285	.0015	.0012	.013
%RSD	37.02	.6949	11.14	59.28	62.83	205.7	.2732
#1	-.0006	.1426	.0565	-.0747	.0006	-.0001	4.903
#2	-.0005	.1427	.0601	-.0179	.0030	-.0001	4.919
#3	-.0010	.1443	.0699	-.0519	.0033	.0019	4.893

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0036	-.0059	11.41	-.0294	.0010	.0954	-.0349
SDev	.0003	.0009	.06	.0062	.0032	.0121	.0047
%RSD	9.254	15.44	.5268	21.10	332.4	12.65	13.56
#1	.0032	-.0067	11.48	-.0362	.0010	.0855	-.0295
#2	.0038	-.0049	11.37	-.0241	-.0023	.0920	-.0382
#3	.0038	-.0060	11.38	-.0278	.0041	.1089	-.0370

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0672	-.0325	-.0131	-.0086	-.0171	2.403	-.1106
SDev	.0009	.0044	.0028	.0070	.0145	.013	.0143
%RSD	1.326	13.51	21.59	81.39	84.67	.5551	12.91
#1	-.0678	-.0357	-.0164	-.0119	-.0222	2.394	-.1256
#2	-.0676	-.0275	-.0113	-.0006	-.0008	2.418	-.0971
#3	-.0661	-.0342	-.0117	-.0133	-.0284	2.396	-.1091

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0950	-.0454	.0114	-.0008	-.0054	-.4899	-.0027
SDev	.0005	.0085	.0032	.0003	.0105	.0975	.0007

%RSD	.5321	18.81	28.02	40.61	193.7	19.90	26.03
#1	.0953	-.0549	.0113	-.0010	-.0085	-.5742	-.0033
#2	.0952	-.0431	.0083	-.0005	.0063	-.3831	-.0019
#3	.0944	-.0383	.0147	-.0011	-.0142	-.5123	-.0028

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0276	-.0014	.0181	-.0053	.0597
SDev	.0016	.0007	.0006	.0006	.0000
%RSD	5.744	47.85	3.051	11.89	.0000
#1	-.0266	-.0016	.0185	-.0058	.0597
#2	-.0294	-.0007	.0174	-.0046	.0597
#3	-.0268	-.0021	.0182	-.0056	.0597

Analysis Report Wed 01-13-93 01:38:54 PM page 1

Method: CLP Sample Name: 93-03320 REP RUN Operator: DRS
Run Time: 01/13/93 13:37:11
Comment: 300 AREA MONTHLY PROCESS SEWER, REPLICATE RUN J.PERRY
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0032	.0360	.0004	-.0012	.0193	-.0002	-.0010
SDev	.0002	.0174	.0090	.0050	.0002	.0001	.0070
%RSD	7.040	48.15	2264.	398.2	1.250	48.58	675.2
#1	-.0031	.0460	-.0050	-.0040	.0191	-.0002	-.0091
#2	-.0035	.0160	-.0047	.0045	.0195	-.0002	.0019
#3	-.0031	.0461	.0108	-.0042	.0195	-.0001	.0040

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	19.41	.0014	-.0284	-.0028	.0003	.0304	-.0039
SDev	.12	.0009	.0062	.0011	.0010	.0005	.0007
%RSD	.6097	61.96	21.77	37.96	339.8	1.627	18.40
#1	19.50	.0010	-.0337	-.0037	.0003	.0303	-.0047
#2	19.46	.0024	-.0298	-.0016	-.0007	.0300	-.0034
#3	19.28	.0008	-.0216	-.0031	.0013	.0310	-.0037

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0001	.1434	.0580	.3554	.0059	.0000	4.890
SDev	.0003	.0014	.0177	.0932	.0011	.0015	.028
%RSD	294.7	.9453	30.57	26.24	19.39	7735.	.5784
#1	-.0004	.1423	.0474	.2528	.0057	-.0018	4.913
#2	.0000	.1449	.0784	.4351	.0071	.0011	4.898
#3	.0001	.1431	.0481	.3782	.0048	.0007	4.859

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0037	-.0041	11.32	-.0237	.0006	.1012	-.0361
SDev	.0002	.0023	.03	.0036	.0016	.0336	.0059
%RSD	5.826	57.23	.2710	15.26	261.2	33.23	16.28
#1	.0036	-.0014	11.35	-.0275	.0005	.0685	-.0350
#2	.0040	-.0059	11.31	-.0203	-.0009	.0993	-.0425
#3	.0036	-.0049	11.29	-.0233	.0023	.1357	-.0309

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0530	-.0240	-.0098	-.0127	-.0004	2.398	-.1060
SDev	.0048	.0055	.0040	.0049	.0079	.015	.0143
%RSD	9.039	22.68	40.94	38.65	1766.	.6310	13.51
#1	-.0550	-.0303	-.0053	-.0130	.0041	2.402	-.1160
#2	-.0565	-.0206	-.0131	-.0076	.0041	2.411	-.1125
#3	-.0476	-.0212	-.0109	-.0174	-.0096	2.382	-.0896

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0950	-.0368	.0134	-.0008	-.0072	-.3553	-.0014
SDev	.0006	.0103	.0039	.0003	.0130	.0910	.0006

9613492.0766

%RSD	.5912	28.11	29.10	43.05	180.2	25.60	41.88
#1	.0954	-.0467	.0133	-.0004	.0053	-.4045	-.0019
#2	.0952	-.0377	.0173	-.0011	-.0207	-.2503	-.0008
#3	.0944	-.0261	.0095	-.0009	-.0063	-.4110	-.0016

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0032	-.0007	.0191	-.0045	.0597
SDev	.0135	.0000	.0012	.0007	.0000
%RSD	419.8	6.694	6.415	15.68	.0097
#1	.0023	-.0007	.0181	-.0052	.0597
#2	-.0186	-.0008	.0205	-.0045	.0597
#3	.0067	-.0007	.0187	-.0038	.0597

DCC-171

9613492.0767

Analysis Report QC Standard Wed 01-13-93 01:42:59 PM page 1

Method: CLP Sample Name: MCVA PASS Operator: DRS
Run Time: 01/13/93 13:41:15
Comment: 300 AREA MONTHLY PROCESS SEWER. DIV 1/13/93 J.PERRY
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4904	24.98	2.397	1.950	.4990	.1021	24.31
SDev	.0024	.15	.020	.023	.0044	.0006	.18
%RSD	.4807	.5972	.8421	1.185	.8797	.5640	.7483
#1	.4878	24.82	2.392	1.923	.4941	.1015	24.12
#2	.4910	25.11	2.419	1.963	.5026	.1026	24.48
#3	.4924	25.03	2.379	1.964	.5002	.1023	24.32
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	.5000	25.00	2.500	2.000	.5000	.1000	25.00
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	24.29	.4817	-.0286	.9945	.9833	1.013	-.0039
SDev	.14	.0064	.0066	.0048	.0158	.005	.0011
%RSD	.5668	1.335	23.20	.4838	1.605	.4727	27.20
#1	24.15	.4743	-.0237	.9893	.9730	1.008	-.0031
#2	24.42	.4852	-.0361	.9988	.9754	1.017	-.0051
#3	24.31	.4856	-.0259	.9954	1.001	1.015	-.0036
Errors	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value	25.00	.5000		1.000	1.000	1.000	
Range	10.00	10.00		10.00	10.00	10.00	

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0010	19.36	.1063	23.20	.0061	2.139	24.33
SDev	.0004	.12	.0198	.11	.0018	.014	.16
%RSD	37.42	.6067	18.64	.4758	29.88	.6346	.6610
#1	-.0010	19.24	.1234	23.08	.0064	2.125	24.16
#2	-.0015	19.47	.0846	23.28	.0042	2.152	24.48
#3	-.0007	19.37	.1110	23.26	.0078	2.139	24.34
Errors	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	QC Pass
Value		20.00		25.00		2.000	25.00
Range		10.00		10.00		10.00	10.00

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.4953	.9853	10.13	-.0266	.9897	19.91	2.399
SDev	.0037	.0115	.04	.0081	.0081	.16	.007
%RSD	.7426	1.167	.3970	30.64	.8145	.7790	.2716
#1	.4915	.9743	10.13	-.0196	.9807	19.78	2.399
#2	.4988	.9973	10.17	-.0355	.9963	20.08	2.406
#3	.4957	.9843	10.09	-.0245	.9920	19.86	2.393
Errors	QC Pass	QC Pass	QC Pass	NOCHECK	QC Pass	QC Pass	QC Pass
Value	.5000	1.000	10.00		1.000	20.00	2.500

Range	10.00	10.00	10.00		10.00	10.00	10.00
Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0750	-.0256	-.0141	2.322	2.486	18.74	-.0927
SDev	.0218	.0096	.0031	.060	.018	.09	.0300
%RSD	29.07	37.34	22.20	2.601	.7302	.4851	32.34
#1	-.0733	-.0223	-.0143	2.259	2.476	18.64	-.0594
#2	-.0975	-.0364	-.0171	2.329	2.507	18.82	-.1174
#3	-.0540	-.0182	-.0109	2.379	2.476	18.77	-.1013
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	QC Pass	QC Pass	NOCHECK
Value				2.500	2.500	20.00	
Range				10.00	10.00	10.00	

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5092	-.0397	.0563	.9895	2.489	-.4617	.9978
SDev	.0040	.0104	.0071	.0068	.017	.0705	.0075
%RSD	.7960	26.19	12.54	.6848	.6874	15.27	.7535
#1	.5050	-.0280	.0637	.9822	2.489	-.4680	.9895
#2	.5130	-.0433	.0557	.9956	2.506	-.5287	1.004
#3	.5097	-.0479	.0496	.9907	2.472	-.3882	1.000
Errors	QC Pass	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK	QC Pass
Value	.5000			1.000	2.500		1.000
Range	10.00			10.00	10.00		10.00

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0024	-.0009	1.028	2.027	.0598
SDev	.0105	.0002	.004	.014	.0000
%RSD	438.3	28.26	.3718	.6985	.0097
#1	-.0029	-.0010	1.024	2.012	.0598
#2	.0083	-.0010	1.028	2.040	.0598
#3	-.0126	-.0006	1.032	2.030	.0598
Errors	NOCHECK	NOCHECK	QC Pass	QC Pass	NOCHECK
Value			1.000	2.000	
Range			10.00	10.00	

Analysis Report QC Standard Wed 01-13-93 01:47:11 PM page 1

Method: CLP Sample Name: MCVB Operator: DRS
Run Time: 01/13/93 13:45:26
Comment: 300 AREA MONTHLY PROCESS SEWER J.PERRY
Mode: CONC Corr. Factor: 1

PASS DJM 1/14/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0075	-.3624	-.0999	.0050	.0010	.0013	.0817
SDev	.0005	.0269	.0041	.0027	.0000	.0002	.0132
%RSD	6.735	7.426	4.070	53.21	.6516	12.63	16.19
#1	-.0075	-.3483	-.0971	.0022	.0010	.0012	.0942
#2	-.0080	-.3454	-.1045	.0075	.0010	.0013	.0830
#3	-.0070	-.3934	-.0979	.0053	.0010	.0015	.0678
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0280	.0036	4.882	-.0006	.0027	-.0006	4.742
SDev	.0060	.0005	.023	.0005	.0039	.0007	.010
%RSD	21.60	14.13	.4716	85.88	142.7	120.6	.2196
#1	.0349	.0036	4.858	-.0012	.0041	-.0013	4.730
#2	.0251	.0041	4.883	-.0003	-.0017	-.0006	4.747
#3	.0239	.0031	4.904	-.0003	.0058	.0001	4.749
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	QC Pass
Value			5.000				5.000
Range			10.00				10.00

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.931	.0300	4.852	-.6924	1.914	.0030	-.0189
SDev	.004	.0036	.049	.0803	.006	.0007	.0013
%RSD	.2218	11.93	1.011	11.60	.3046	23.91	6.895
#1	1.926	.0341	4.831	-.6121	1.910	.0026	-.0177
#2	1.933	.0282	4.816	-.6923	1.911	.0026	-.0203
#3	1.934	.0277	4.908	-.7727	1.921	.0038	-.0187
Errors	QC Pass	NOCHECK	QC Pass	NOCHECK	QC Pass	NOCHECK	NOCHECK
Value	2.000		5.000		2.000		
Range	10.00		10.00		10.00		

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0005	.0056	.1099	4.775	.0023	.0114	-.0479
SDev	.0001	.0009	.0123	.011	.0021	.0090	.0052
%RSD	20.57	15.96	11.16	.2365	88.47	78.90	10.92
#1	.0006	.0065	.1027	4.763	.0046	.0095	-.0522
#2	.0004	.0048	.1029	4.778	.0019	.0035	-.0493
#3	.0006	.0053	.1240	4.785	.0005	.0211	-.0421
Errors	NOCHECK	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value				5.000			

Range 10.00

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-1.291	-.0280	4.736	.0117	.0407	-.0272	-.1177
SDev	.009	.0057	.017	.0095	.0161	.0018	.0113
%RSD	.6598	20.29	.3672	80.63	39.51	6.490	9.592
#1	-1.282	-.0342	4.720	.0161	.0286	-.0260	-.1247
#2	-1.299	-.0265	4.732	.0009	.0589	-.0264	-.1237
#3	-1.292	-.0232	4.755	.0183	.0346	-.0292	-.1047
Errors	NOCHECK	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value			5.000				
Range			10.00				

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0011	4.779	4.725	.0041	.0013	9.886	.0024
SDev	.0002	.011	.016	.0005	.0140	.033	.0003
%RSD	18.22	.2351	.3332	11.63	1088.	.3339	13.12
#1	.0014	4.766	4.713	.0047	-.0095	9.876	.0021
#2	.0010	4.782	4.720	.0038	-.0036	9.859	.0024
#3	.0010	4.788	4.743	.0040	.0170	9.923	.0027
Errors	NOCHECK	QC Pass	QC Pass	NOCHECK	NOCHECK	QC Pass	NOCHECK
Value		5.000	5.000			10.00	
Range		10.00	10.00			10.00	

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	.0014	.9748	.0022	.0191	.0597
SDev	.0035	.0035	.0009	.0012	.0000
%RSD	247.6	.3569	39.86	6.243	.0097
#1	.0046	.9709	.0012	.0199	.0597
#2	-.0023	.9775	.0027	.0196	.0597
#3	.0020	.9760	.0026	.0177	.0597
Errors	NOCHECK	QC Pass	NOCHECK	NOCHECK	NOCHECK
Value		1.000			
Range		10.00			

Analysis Report Wed 01-13-93 01:51:18 PM page 1

Method: CLP Sample Name: STD1-Blank Operator: DRS
Run Time: 01/13/93 13:49:36
Comment: 300 AREA MONTHLY PROCESS SEWER. J.PERRY
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0032	.0125	-.0199	-.0019	-.0010	-.0001	.0010
SDev	.0005	.0062	.0066	.0024	.0004	.0001	.0085
%RSD	16.60	49.33	32.85	126.8	39.05	75.07	845.1
#1	-.0037	.0079	-.0263	-.0007	-.0015	-.0002	.0077
#2	-.0026	.0195	-.0132	-.0003	-.0010	-.0001	.0040
#3	-.0032	.0102	-.0203	-.0046	-.0006	-.0001	-.0086

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0059	-.0003	-.0258	-.0040	-.0007	-.0000	.0030
SDev	.0006	.0008	.0019	.0011	.0019	.0004	.0010
%RSD	10.88	233.9	7.236	27.15	262.1	742.9	34.47
#1	-.0058	.0005	-.0279	-.0052	.0001	-.0001	.0040
#2	-.0053	-.0010	-.0243	-.0032	.0006	-.0004	.0030
#3	-.0066	-.0005	-.0253	-.0035	-.0029	.0003	.0019

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0020	-.0016	.0044	-.8253	-.0035	-.0015	-.0171
SDev	.0006	.0002	.0100	.1151	.0004	.0005	.0119
%RSD	30.08	12.66	228.6	13.94	10.40	32.11	69.35
#1	.0026	-.0014	.0054	-.9320	-.0037	-.0018	-.0253
#2	.0018	-.0018	-.0061	-.8406	-.0037	-.0018	-.0035
#3	.0015	-.0017	.0139	-.7034	-.0031	-.0009	-.0225

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0001	-.0047	-.0207	-.0138	-.0041	.0051	-.0351
SDev	.0002	.0014	.0083	.0033	.0018	.0165	.0024
%RSD	183.0	29.29	40.14	23.61	42.60	324.6	6.963
#1	.0001	-.0049	-.0303	-.0175	-.0049	-.0140	-.0340
#2	-.0001	-.0033	-.0159	-.0127	-.0021	.0153	-.0334
#3	-.0003	-.0061	-.0158	-.0113	-.0054	.0139	-.0379

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0559	-.0238	-.0066	-.0054	-.0177	.0063	-.0971
SDev	.0132	.0017	.0020	.0045	.0142	.0010	.0304
%RSD	23.65	7.322	29.90	83.04	80.24	15.68	31.35
#1	-.0709	-.0227	-.0053	-.0105	-.0239	.0072	-.0781
#2	-.0510	-.0229	-.0057	-.0021	-.0015	.0064	-.0809
#3	-.0459	-.0258	-.0089	-.0036	-.0278	.0053	-.1322

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0002	-.0311	.0153	-.0014	-.0311	-.4386	-.0031
SDev	.0000	.0152	.0058	.0004	.0080	.0172	.0005

%RSD	.5167	48.91	38.09	25.30	25.74	3.913	16.03
#1	-.0002	-.0429	.0195	-.0015	-.0374	-.4331	-.0029
#2	-.0002	-.0139	.0178	-.0017	-.0337	-.4249	-.0037
#3	-.0002	-.0365	.0086	-.0010	-.0221	-.4579	-.0028

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0256	.0001	-.0009	-.0043	.0597
SDev	.0012	.0006	.0007	.0004	.0000
%RSD	4.830	591.7	86.73	10.07	.0000
#1	-.0248	.0007	-.0012	-.0048	.0597
#2	-.0249	-.0002	-.0000	-.0041	.0597
#3	-.0270	-.0002	-.0013	-.0040	.0597

Analysis Report Wed 01-13-93 01:53:30 PM page 1

Method: CLP Sample Name: SPC-BLK Operator: DRS
Run Time: 01/13/93 13:51:51
Comment: SPC-BLK FOR Mn/Cu RATIO @1X J.PERRY
Mode: INT Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Avge	5661	2151	2248	993	248	210	1389
SDev	34	9	9	2	1	1	22
%RSD	.6043	.4192	.3784	.1538	.2325	.5490	1.611
#1	5673	2160	2256	993	248	211	1413
#2	5622	2142	2239	992	248	209	1384
#3	5687	2152	2248	995	249	211	1369

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Avge	971	112	5229	1438	465	1291	1824
SDev	20	2	26	3	4	3	7
%RSD	2.084	1.546	.4959	.2125	.8602	.1950	.3651
#1	960	113	5240	1437	465	1291	1828
#2	958	113	5199	1435	469	1288	1816
#3	994	110	5247	1441	461	1293	1827

Elem	Eu	Fe	Gd	K	La	Li	Mg
Avge	291	522	1001	4964	813	437	2161
SDev	0	2	7	12	2	3	5
%RSD	.0000	.2928	.7366	.2317	.2460	.6054	.2187
#1	291	523	1009	4976	813	436	2163
#2	291	520	998	4953	811	435	2156
#3	291	522	995	4964	815	440	2165

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Avge	202	889	314	3003	497	1642	14750
SDev	1	10	2	9	7	14	67
%RSD	.5726	1.125	.5516	.2985	1.308	.8591	.4548
#1	203	899	312	2997	504	1655	14830
#2	201	879	315	2998	491	1627	14720
#3	201	889	315	3013	497	1644	14710

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Avge	12850	13230	3887	6572	1428	3389	7129
SDev	54	51	25	135	14	23	51
%RSD	.4197	.3857	.6317	2.047	.9531	.6858	.7180
#1	12840	13270	3893	6634	1439	3407	7142
#2	12810	13170	3860	6418	1413	3363	7073
#3	12910	13250	3908	6665	1433	3398	7173

Elem	Sr	Te	Th	Ti	Tl	U	V
Avge	131	11380	2289	545	509	14390	810
SDev	0	88	13	2	5	40	5
%RSD	.0000	.7724	.5868	.4235	.8865	.2785	.6533
#1	131	11480	2283	544	509	14420	812
#2	131	11310	2279	544	504	14350	804
#3	131	11340	2304	548	513	14400	814

Elem	W	Y	Zn	Zr	N+1
Avge	419	215	439	706	17
SDev	4	1	8	4	1
%RSD	.9638	.5362	1.936	.5722	3.464
#1	424	216	449	707	17
#2	417	214	436	702	17
#3	417	216	433	710	16

Analysis Report Wed 01-13-93 01:53:40 PM page 1

Method: CLP Sample Name: SPC-BLK Operator: DRS
Run Time: 01/13/93 13:51:51
Comment: SPC-BLK FOR Mn/Cu RATIO @1X J.PERRY
Mode: CONC Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0029	.0164	-.0196	-.0027	-.0006	-.0000	.0005
SDev	.0012	.0061	.0030	.0006	.0001	.0001	.0104
%RSD	41.74	37.45	15.43	20.56	20.46	1132.	1957.
#1	-.0026	.0141	-.0165	-.0033	-.0007	.0001	.0118
#2	-.0043	.0117	-.0225	-.0026	-.0007	-.0002	-.0015
#3	-.0019	.0233	-.0197	-.0022	-.0005	.0001	-.0086

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0020	.0009	-.0307	-.0028	-.0011	-.0001	-.0017
SDev	.0098	.0008	.0086	.0005	.0009	.0003	.0010
%RSD	500.1	89.99	28.12	16.06	88.52	478.3	56.57
#1	-.0075	.0013	-.0274	-.0030	-.0011	-.0001	-.0011
#2	-.0077	.0014	-.0405	-.0032	-.0001	-.0004	-.0028
#3	.0093	-.0000	-.0242	-.0023	-.0020	.0003	-.0012

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0001	-.0026	-.0004	-.7338	-.0042	-.0018	-.0102
SDev	.0000	.0005	.0129	.1312	.0010	.0011	.0018
%RSD	21.60	17.44	3106.	17.89	23.61	61.87	18.06
#1	.0001	-.0022	.0136	-.6007	-.0043	-.0022	-.0112
#2	.0002	-.0031	-.0032	-.8631	-.0051	-.0026	-.0112
#3	.0001	-.0025	-.0117	-.7377	-.0032	-.0005	-.0081

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0006	-.0049	-.0239	-.0222	-.0034	.0167	-.0367
SDev	.0002	.0023	.0127	.0048	.0030	.0117	.0063
%RSD	36.61	46.85	53.28	21.44	89.51	70.20	17.23
#1	-.0004	-.0026	-.0386	-.0256	-.0003	.0274	-.0295
#2	-.0007	-.0072	-.0165	-.0243	-.0063	.0042	-.0393
#3	-.0008	-.0049	-.0165	-.0168	-.0035	.0184	-.0413

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0485	-.0252	-.0072	-.0063	-.0172	-.0075	-.0869
SDev	.0126	.0063	.0047	.0167	.0100	.0050	.0389
%RSD	25.97	25.24	64.71	265.7	58.20	66.74	44.74
#1	-.0536	-.0202	-.0062	.0013	-.0093	-.0073	-.0790
#2	-.0577	-.0323	-.0123	-.0254	-.0285	-.0126	-.1290
#3	-.0341	-.0230	-.0031	.0052	-.0139	-.0026	-.0525

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0002	-.0373	.0083	-.0014	-.0161	-.4374	-.0034
SDev	.0000	.0115	.0069	.0006	.0084	.0638	.0014

%RSD	2.469	30.83	83.18	39.88	52.24	14.58	40.19
#1	-.0002	-.0242	.0021	-.0018	-.0160	-.3812	-.0029
#2	-.0002	-.0458	.0071	-.0017	-.0246	-.5067	-.0049
#3	-.0002	-.0420	.0157	-.0008	-.0078	-.4243	-.0023

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0015	-.0010	-.0020	-.0039	.0597
SDev	.0089	.0005	.0007	.0009	.0000
%RSD	614.4	50.82	35.47	24.47	.0097
#1	.0089	-.0007	-.0012	-.0033	.0597
#2	-.0064	-.0016	-.0023	-.0050	.0597
#3	-.0069	-.0007	-.0025	-.0033	.0597

9613492.0777

Analysis Report Wed 01-13-93 01:55:37 PM page 1

Method: CLP Sample Name: SPC-STD Operator: DRS
Run Time: 01/13/93 13:53:58
Comment: SPC-STD FOR Mn/Cu RATIO @1X J.PERRY
Mode: INT Corr. Factor: 1

Elem	Ag	Al	As	B	Ba	Be	Bi
Avge	5732	2178	2257	1018	249	209	1586
SDev	8	4	24	11	0	0	23
%RSD	.1421	.1655	1.074	1.063	.0000	.0000	1.424
#1	5736	2177	2229	1030	249	209	1584
#2	5723	2182	2271	1015	249	209	1610
#3	5738	2175	2271	1009	249	209	1565

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Avge	1010	115	5247	1442	482	61110	1972
SDev	1	3	24	3	7	289	7
%RSD	.0990	2.803	.4658	.1835	1.382	.4736	.3377
#1	1009	116	5252	1440	480	60850	1976
#2	1011	117	5268	1445	476	61420	1975
#3	1010	111	5220	1441	489	61050	1964

Elem	Eu	Fe	Gd	K	La	Li	Mg
Avge	290	570	1019	4970	814	23090	2235
SDev	1	1	10	15	2	93	10
%RSD	.3986	.2027	.9427	.2932	.2457	.4042	.4481
#1	291	569	1009	4984	814	22990	2224
#2	289	569	1021	4972	816	23120	2243
#3	289	571	1028	4955	812	23170	2239

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Avge	48180	916	316	3019	503	1773	14920
SDev	298	4	1	12	5	23	5
%RSD	.6185	.4414	.3165	.4070	.9110	1.281	.0348
#1	47980	920	317	3024	499	1749	14920
#2	48520	915	316	3028	502	1794	14910
#3	48040	912	315	3005	508	1777	14920

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Avge	12930	13280	3926	6736	1459	3462	7211
SDev	38	50	7	39	9	13	4
%RSD	.2921	.3794	.1843	.5790	.5987	.3669	.0560
#1	12890	13310	3921	6737	1452	3469	7209
#2	12960	13310	3922	6775	1457	3469	7209
#3	12920	13220	3934	6697	1469	3447	7216

Elem	Sr	Te	Th	Ti	Tl	U	V
Avge	132	11920	2286	549	523	14450	818
SDev	1	52	3	3	6	17	1
%RSD	.4385	.4395	.1337	.4819	1.152	.1177	.1411
#1	132	11870	2285	548	517	14450	817
#2	132	11910	2283	552	529	14460	819
#3	131	11980	2289	547	524	14430	819

Elem	W	Y	Zn	Zr	N+1
Avge	424	216	123600	708	27
SDev	1	0	565	2	1
%RSD	.2358	.0000	.4574	.2157	2.165
#1	425	216	123100	708	27
#2	423	216	124200	710	27
#3	424	216	123500	707	26

Analysis Report Wed 01-13-93 01:56:05 PM page 1

Method: CLP Sample Name: SPC-STD Operator: DRS
Run Time: 01/13/93 13:53:58
Comment: SPC-STD FOR Mn/Cu RATIO @1X
Mode: CONC Corr. Factor: 1

93D0138 J.PERRY
FD3018/20063 Danny Sander 1/13/93

Elem	Ag	Al	As	B	Ba	Be	Bi
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0009	.0185	-.0164	.0016	-.0006	-.0002	.0066
SDev	.0004	.0132	.0095	.0020	.0000	.0000	.0102
%RSD	50.01	71.53	57.81	127.0	.2871	2.335	154.5
#1	-.0007	.0307	-.0274	.0040	-.0006	-.0002	.0059
#2	-.0013	.0203	-.0112	.0005	-.0006	-.0002	.0172
#3	-.0005	.0044	-.0107	.0004	-.0006	-.0002	-.0032

Elem	Ca	Cd	Ce	Co	Cr	Cu	Dy
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0169	.0019	-.0257	-.0026	.0019	10.50	-.0017
SDev	.0004	.0015	.0085	.0004	.0016	.05	.0010
%RSD	2.675	81.77	33.04	15.09	84.32	.4782	56.12
#1	.0164	.0026	-.0234	-.0029	.0015	10.46	-.0009
#2	.0173	.0029	-.0185	-.0022	.0005	10.55	-.0014
#3	.0170	.0001	-.0351	-.0027	.0037	10.49	-.0028

Elem	Eu	Fe	Gd	K	La	Li	Mg
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0003	.0013	.0322	-.6655	-.0038	9.309	-.0109
SDev	.0003	.0005	.0184	.1664	.0010	.038	.0073
%RSD	106.5	40.33	57.14	25.01	27.09	.4121	66.96
#1	.0001	.0011	.0128	-.5094	-.0038	9.267	-.0193
#2	-.0005	.0009	.0346	-.6466	-.0028	9.319	-.0066
#3	-.0005	.0019	.0494	-.8406	-.0049	9.342	-.0068

Elem	Mn	Mo	Na	Nd	Ni	P	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	10.69	.0013	-.0092	-.0161	-.0008	.0152	-.0341
SDev	.07	.0010	.0071	.0064	.0021	.0190	.0007
%RSD	.6651	72.60	77.68	40.01	268.9	125.5	2.108
#1	10.64	.0024	-.0021	-.0132	-.0026	-.0053	-.0338
#2	10.77	.0012	-.0091	-.0116	-.0012	.0323	-.0350
#3	10.65	.0005	-.0164	-.0235	.0015	.0185	-.0336

Elem	Pd	Rh	Ru	Sb	Se	Si	Sn
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0288	-.0190	.0001	-.0067	-.0047	.0181	-.0270
SDev	.0125	.0066	.0015	.0048	.0067	.0040	.0042
%RSD	43.42	34.80	1618.	70.97	143.2	21.83	15.70
#1	-.0406	-.0157	-.0008	-.0066	-.0101	.0197	-.0292
#2	-.0157	-.0147	-.0007	-.0020	-.0067	.0210	-.0298
#3	-.0300	-.0266	.0018	-.0116	.0028	.0136	-.0222

Elem	Sr	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0001	-.0340	.0020	-.0012	-.0091	-.3569	-.0012
SDev	.0001	.0071	.0031	.0006	.0113	.0263	.0003

%RSD	109.8	20.77	153.1	51.61	124.8	7.371	26.32
#1	-.0000	-.0402	.0017	-.0014	-.0211	-.3565	-.0016
#2	-.0000	-.0354	-.0009	-.0005	.0014	-.3308	-.0011
#3	-.0002	-.0263	.0053	-.0017	-.0076	-.3834	-.0010

Elem	W	Y	Zn	Zr	N+1
Units	ppm	ppm	ppm	ppm	ppm
Avge	-.0119	-.0007	10.57	-.0030	.0598
SDev	.0024	.0000	.05	.0006	.0000
%RSD	20.04	3.766	.4625	21.44	.0097
#1	-.0097	-.0007	10.53	-.0030	.0598
#2	-.0144	-.0008	10.62	-.0023	.0598
#3	-.0117	-.0007	10.56	-.0036	.0598

CURRENT DATE: March 29, 1993

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - ICP - Emergency Sample

Data Package/Report - T-106

ALO Numbers - 93-05190

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

4/21/93
Date

9613492.0702

D4 - GRAPHITE FURNACE ANALYSIS

CURRENT DATE: April 1, 1993

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - GFAA

Data Package/Report - T-106

ALO Numbers - 93-02239, 93-02240, 93-02241, 93-02351, 93-02437, 93-02438, 93-02451, 93-02241D

Thomas J Walker
Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

4/16/93
Date

9613492.0784

Battelle
Pacific Northwest Laboratories

Project Number _____

Internal Distribution

Date March 30, 1993

To KJ Klinger

From MW Urie

Subject GFAA (As, Se, Tl, Bi, Pb, Ag) Analytical Results for T106

Graphite Furnace Atomic Absorption analyses were performed Jan 22 through Mar 25 on the T106 samples following procedures PNL-ALO-214 (As), -215 (Se), -220 Tl, -216 (Bi), -217 (Pb), and -221 (Ag). The results are summarized, along with the corresponding QC results, in the attached table. The digestions were performed according to PNL-ALO-101 and the analytical work was conducted using a P-E 5100 AA system (WB76757) with deuterium background correction. Results and all supporting data are archived in GFAA File: GF012293.

The ICV/CCV analytical control standards for all analytes, except Tl, were recovered within the 90% to 110% acceptance criteria. Thallium recovery for the ICV/CCV demonstrated a slightly high bias (e.g. 112% recovery); however, this is not considered critical since all sample results were <IDL.

The pre-digestion blank spikes also recovered within the 90% to 110% window, with the exception of Bi which recovered at 89%. The 89% recovery of the Bi is not significant since the CRDL is very high and all sample results are less than the IDL. Most pre-digestion sample spikes recovered within the 75% to 125% acceptance criteria, except for As and Se. A 100x dilution was required to reduce matrix interferences during the Se analysis and therefore the selenium spike was diluted to a level below the IDL. The 128% recovery of the As is most likely bias by the poor RPD demonstrated by the sample and duplicate.

The samples contained quantifiable levels of As and Pb and detectable levels of Ag. The RPDs for As, Pb, and Ag are 25%, 13% and 9%, respectively. Considering the level of the analysis, all replicates meet the RPD acceptance criteria.

Two samples of the LCS (LCS-0287) were prepared and analyzed. Except for one sample analysis of Thallium, the LCS analyses fell within acceptance limits. Difficulties in the initial As and Pb analyses required reanalysis of these analytes; reruns were successful.

All analytical post-spikes were within the 85% to 115% acceptance criteria, except B07JZ5 for Pb (81%) and the LCS for Bi (117%). The low Pb recovery was obtained on both analytical runs for Pb; the reason for the low recovery is unknown and a small negative bias in the results is probable. The reason for the high Bi recovery of the LCS is unknown, but is not considered significant.

Concur: _____

D04-003

TABLE: T-106 GFAA SUMMARY RESULTS

Samples		Arsenic (3/25)		Selenium (3/15)		Thallium (3/10)		Bismuth (1/22)		Lead (3/24)		Silver (2/3)	
		Results											
		mg/Kg	C Flg	mg/Kg	C Flg	mg/Kg	C Flg	mg/Kg	C Flg	mg/Kg	C Flg	mg/Kg	C Flg
PS	Proc Blank	0.44	U	0.24	U	0.32	U J	0.89	U	0.34	U	0.03	U
93-02239	BO7JZ4	5.2	J	26	U J	0.34	U	0.94	U	10.7		0.06	~~B~~ U
93-02240	BO7JZ5	5.5	J	26	U	0.33	U	0.93	U	4.0	J	0.05	~~B~~ U
93-02241	BO7JZ6	4.5	J	26	U	0.33	U	0.93	U	11.8		0.07	~~B~~ U
93-02241D	BO7JZ6 Dup	5.8	J	25	U	0.33	U	0.91	U	13.4		0.08	~~B~~ U
93-02351	BO7JZ7	4.8	J	25	U	0.33	U	0.91	U	5.9		0.13	~~B~~ U
93-02437	BO7JZ8	4.3	J	25	U	0.33	U	0.92	U	2.5		0.07	~~B~~ U
93-02438	BO7JZ9	4.6	J	25	U	0.33	U	0.92	U	2.4		0.07	~~B~~ U
93-02451	BO7KO0	5.5	J	26	U	0.34	U	0.95	U	2.4		0.06	~~B~~ U

MS: R > 125%

QC Samples		% Recovery					
BS	Blank Spk	96%	98%	106%	89%	94%	107%
93-02241S	BO7JZ6 Spk	128%	n/a	113%	79%	117%	119%
LCS	LCS287	100%	84%	141%	---	111%	104%
LCS	LCS287+Bi	---	84%	124%	---	96%	99%
LCS Acceptable Range>>		69-131%	48-152%	63-137%	n/a	80-121%	70-131%

Notes:
a) 93-02241S Se spike: Sample diluted below measurable quantity.
b) Selenium results based on 100x dilution to reduce matrix interference.
c) Tl LCS initial analysis failed (141%), second LCS acceptable (124%).
d) Blank spike Bi <90%; results accepted since all were <IDL.
e) RPD: As = 25% Pb = 13% Ag = 9%

13%

Matrix ~~Blank~~ Spike diluted out

KR 10/20/93

D04-004

9613492.0785

GRAPHITE FURNACE ATOMIC ABSORPTION ANALYSIS **REVIEW** REPORT — Project: T106

Archive File: GF012293

Procedures: PNL-ALO-214 (As), PNL-ALO-215 (Se), PNL-ALO-217 (Pb), PNL-ALO-220 (Tl), PNL-ALO-216 (Bi), PNL-ALO-221 (Ag)

Analyst/date: Dennis Finkle 3/30/93

Reviewer/date: M Wilson 3/30/93

M&TE: ~~HA93267~~ WB76757, P-E 5100 AAS; 384-06-01-004, Balance

Disk File: GF-t106a

page 1of5

Lab ID	Client ID	Liquid Sample Vol (ml)	Solid Sample Wt (g)	% solids	Process Final Vol (ml)	PDF	1/26/93 As ADF	1/26/93 As meas. (µg/L)	3/15/93 Se ADF	3/15/93 Se meas. (µg/L)	3/10/93 Tl ADF	3/10/93 Tl meas. (µg/L)	1/22/93 Bi ADF	1/22/93 Bi meas. (µg/L)	2/03/93 Pb ADF	2/03/93 Pb meas. (µg/L)	2/03/93 Ag ADF	2/03/93 Ag meas. (µg/L)
ICV	EPA sample						40	23.38	40	25.53	50	19.71	1	47.84	50	19.19	50	20.78
ICB							1	0.16	1	-0.14	1	0.45	1	-1.33	1	0.66	1	0.04
CRA	CRDL STD						1	9.95	1	5.18	1	10.14	1	9.54	1	2.37	1	5.05
CCB1							1	0.05	1	-0.36	1	0.34	1	-1.81	1	-0.32	1	0.06
PB	Process blk		1.0000	100.0	200.4	200.4	1	0.11	1	-0.03	1	0.33	1	-3.00	1	-0.69	1	0.03
PB+A.S.							1	18.16	1	9.39	1	19.85	1	18.31	1	6.05	1	9.82
BS	Blank spike	199.7			200.4	1.0	1	42.48	1	9.91	4	13.38	1	18.72	1	19.57	1	10.65
93-02339	B07JZ4		1.0059	93.7	200.3	212.5	1	31.64	100	-0.23	1	0.95	1	-1.38	2	25.46	1	0.29
2339+A.S.							1	52.08	100	10.05	1	20.64	1	18.20	2	32.91	1	10.45
93-02340	B07JZ5		1.0008	95.4	200.3	209.8	1	34.74	100	-0.80	1	0.86	1	-1.68	1	22.81	1	0.25
2340+A.S.							1	54.78	100	9.85	1	20.68	1	18.01	1	27.69	1	10.37
CCV1							40	23.83	40	25.32	50	20.75	1	50.46	50	20.77	50	21.40
CCB2							1	0.10	1	-0.29	1	0.67	1	-2.89	1	-2.23	1	0.14
93-02341	B07JZ6		1.0022	97.2	204.0	209.4	1	29.11	100	-1.10	1	0.78	1	-2.11	5	13.80	1	0.33
2341+A.S.							1	50.46	100	9.18	1	20.90	1	19.03	5	20.26	1	10.68
93-02341D	B07JZ6 Dup		1.0041	97.2	200.3	205.2	1	33.71	100	-0.47	1	0.77	1	-1.90	5	14.60	1	0.37
2341D+A.S.							1	55.80	100	10.08	1	21.11	1	19.45	5	21.54	1	10.86
93-02341S	B07JZ6 Spk		1.0051	97.2	200.6	205.3	4	18.80	100	-0.90	4	14.51	1	20.38	5	17.53	1	12.23
LCS	LCS-287		1.0008	100.0	215.1	214.9	200	26.25	10	15.39	10	25.51	20	19.89	100	11.30	5	21.55
LCS+A.S.							200	44.80	10	25.50	10	45.07	20	43.22	100	18.68	5	31.01
93-02351	B07JZ7		1.0024	97.4	200.2	205.1	1	30.47	100	-0.10	1	0.69	1	-1.95	1	32.16	1	0.61
2351+A.S.							1	52.41	100	9.78	1	21.63	1	18.20	1	39.81	1	10.92
CCV2							40	25.38	40	27.14	50	22.60	1	49.76	50	21.30	50	21.94
CCB3							1	-0.14	1	-0.55	1	0.53	1	-3.96	1	1.07	1	0.29
93-02437	B07JZ8		1.0059	96.2	200.1	206.8	1	28.97	100	-0.50	1	1.14	1	-3.14	1	16.58	1	0.34
2437+A.S.							1	49.71	100	10.16	1	18.83	1	19.57	1	23.18	1	10.70
93-02438	B07JZ9		1.0051	96.4	200.2	206.6	1	29.90	100	-0.82	1	0.82	1	-3.91	1	16.07	1	0.33
2438+A.S.							1	52.29	100	10.34	1	18.81	1	18.58	1	23.26	1	10.74
93-02451	B07K00		1.0036	93.5	200.3	213.4	1	37.13	100	-0.57	1	0.86	1	-3.08	1	14.73	1	0.28
2451+A.S.							1	62.28	100	10.01	1	19.48	1	17.8	1	21.86	1	10.73
LCS +Bi	LCS-287 +Bi		1.0020	100.0	200.1	199.7	200	27.34	10	16.41	10	24.15	20	22.85	100	11.39	20	5.50
+A.S							200	46.27	10	27.63	10	42.36	20	45.47	100	18.51	20	15.93
CCV3							40	25.31	40	27.75	50	22.39	1	54.30	50	20.00	50	21.96
CCB4							1	0.80	1	-0.57	1	0.33	1	-3.54	1	0.66	1	0.18

1) * Samples 93-02339, 02340, 02341 are mislabeled, should be 93-02239, ~~0228~~ 02240, & 02241, respectively
mwl 4/1/93 mwl 4/1/93

KR 10/20/93

D04-005

9613492.0786

GRAPHITE FURNACE ATOMIC ABSORPTION ANALYSIS **REVIEW** REPORT

Disk File: GF-t106a page 2of5

Archive File: GF012293

Cal Range to 40 ug/L — ARSENIC

Lab ID	Meas. (µg/L)	Sample Solution Results (µg/L)	A.S. Abs.	% Rec EPA	C	ARSENIC RESULTS	Predigest Spike Add	Predigest Spike Rec	ICV LCS Rec
V ICV	23.4	935.2							93%
Q ICB	0.2	0.2							
Q CRA	10.0	10.0							
Q CCB1	0.1	0.1							
S PB	0.1	0.1			U	0.44 mg/Kg			
X PB+A.S.	18.2		90%	91%					
A BS	42.5	42.5				42.63 µg/L	40.04	106%	
S 93-02339	31.6	31.6				6.72 mg/Kg			
X 2339+A.S.	52.1		102%	102%					
S 93-02340	34.7	34.7				7.29 mg/Kg			
X 2340+A.S.	54.8		100%	100%					
V CCV1	23.8	953.2							95%
Q CCB2	0.1	0.1							
S 93-02341	29.1	29.1				6.10 mg/Kg			
X 2341+A.S.	50.5		107%	107%					
S 93-02341D	33.7	33.7				6.92 mg/Kg			
X 2341D+A.S.	55.8		110%	110%					
A 93-02341S	18.8	75.2				15.44 mg/Kg	8.19	116%	
C LCS	26.3	5250.0				1128.38 mg/Kg			123%
X LCS+A.S.	44.8		93%	93%					
S 93-02351	30.5	30.5				6.25 mg/Kg			
X 2351+A.S.	52.4		110%	110%					
V CCV2	25.4	1015.2							101%
Q CCB3	-0.1	-0.1							
S 93-02437	29.0	29.0				5.99 mg/Kg			
X 2437+A.S.	49.7		104%	104%					
S 93-02438	29.9	29.9				6.18 mg/Kg			
X 2438+A.S.	52.3		112%	112%					
S 93-02451	37.1	37.1				7.92 mg/Kg			
X 2451+A.S.	62.3		126%	126%					
C LCS +Bi	27.3	5468.0				1092.07 mg/Kg			119%
X +A.S	46.3		95%	95%					
V CCV3	25.3	1012.4							100%
Q CCB4	0.8	0.8							

As 93-02341 RPD= 12.6%
As CRA Recovery= 99.5%

see note 1 page 1

average Mell 3/24/93

Cal Range to 40 ug/L — SELENIUM

Lab ID	Meas. (µg/L)	Sample Solution Results (µg/L)	A.S. Abs.	% Rec EPA	C	SELENIUM RESULTS	Predigest Spike Add	Predigest Spike Rec	ICV LCS Rec
V ICV	25.5	1021.2							102%
Q ICB	-0.1	-0.1							
Q CRA	5.2	5.2							
Q CCB1	-0.4	-0.4							
S PB	-0.0	-0.0			U	0.24 mg/Kg			
X PB+A.S.	9.4		94%	94%					
A BS	9.9	9.9				9.94 µg/L	10.13	98%	
S 93-02339	-0.2	-23.0			U	25.92 mg/Kg			
X 2339+A.S.	10.1		103%	101%					
S 93-02340	-0.8	-80.0			U	25.59 mg/Kg			
X 2340+A.S.	9.9		107%	99%					
V CCV1	25.3	1012.8							101%
Q CCB2	-0.3	-0.3							
S 93-02341	-1.1	-110.0			U	25.55 mg/Kg			
X 2341+A.S.	9.2		103%	92%					
S 93-02341D	-0.5	-47.0			U	25.04 mg/Kg			
X 2341D+A.S.	10.1		106%	101%					
A 93-02341S	-0.9	-90.0			U	25.05 mg/Kg	2.07	n/a	
C LCS	15.4	153.9				33.08 mg/Kg			84%
X LCS+A.S.	25.5		101%	101%					
S 93-02351	-0.1	-10.0			U	25.02 mg/Kg			
X 2351+A.S.	9.8		99%	98%					
V CCV2	27.1	1085.6							108%
Q CCB3	-0.6	-0.6							
S 93-02437	-0.5	-50.0			U	25.23 mg/Kg			
X 2437+A.S.	10.2		107%	102%					
S 93-02438	-0.8	-82.0			U	25.21 mg/Kg			
X 2438+A.S.	10.3		112%	103%					
S 93-02451	-0.6	-57.0			U	26.04 mg/Kg			
X 2451+A.S.	10.0		106%	100%					
C LCS +Bi	16.4	164.1				32.77 mg/Kg			84%
X +A.S	27.6		112%	112%					
V CCV3	27.8	1110.0							110%
Q CCB4	-0.6	-0.6							

Se Sample spike non recoverable (100x dilution)
Se 93-02341 RPD= n/a (Results < 10Lx100)
Se CRA Recovery= 103.6%

IDI = 1.22

KR 10/19/93

D04-006

96135492.0787

GRAPHITE FURNACE ATOMIC ABSORPTION ANALYSIS **REVIEW** REPORT

Disk File: GF-t106a page 3of5

Archive File: GF012293

101 = 1.59

IDL = 4.43

See note 1 page 1

Cal Range to 40 ug/L — THALLIUM

	Meas. (µg/L)	Sample Solution Results (µg/L)	A.S. % Rec Abs.	A.S. % Rec EPA	C	THALLIUM RESULTS	Quality Control: Predigest Spike Add	Predigest Spike Rec	ICV LCS Rec
ICV	19.7	985.5							98%
ICB	0.5	0.5							
CRA	10.1	10.1							
CCB1	0.3	0.3							
PB	0.3	0.3			U	0.32 mg/Kg			
PB+A.S.	19.9		98%	99%					
BS	13.4	53.5				53.70 µg/L	50.17	106%	
93-02339	1.0	1.0			U	0.34 mg/Kg			
2339+A.S.	20.6		98%	103%					
93-02340	0.9	0.9			U	0.33 mg/Kg			
2340+A.S.	20.7		99%	103%					
CCV1	20.8	1037.5							103% *
CCB2	0.7	0.7							
93-02341	0.8	0.8			U	0.33 mg/Kg			
2341+A.S.	20.9		101%	104%					
93-02341D	0.8	0.8			U	0.33 mg/Kg			
2341D+A.S.	21.1		102%	106%					
93-02341S	14.5	58.0				11.92 mg/Kg	10.27	113%	
LCS	25.5	255.1				54.83 mg/Kg			141%
LCS+A.S.	* 45.1		98%	98%					
93-02351	0.7	0.7			U	0.33 mg/Kg			
2351+A.S.	21.6		105%	108%					
CCV2	22.6	1130.0							112%
CCB3	0.5	0.5							
93-02437	1.1	1.1			U	0.33 mg/Kg			
2437+A.S.	18.8		88%	94%					
93-02438	0.8	0.8			U	0.33 mg/Kg			
2438+A.S.	18.8		90%	94%					
93-02451	0.9	0.9			U	0.34 mg/Kg			
2451+A.S.	19.5		93%	97%					
LCS +Bi	24.2	241.5				48.23 mg/Kg			124%
+A.S	* 42.4		91%	91%					
CCV3	22.4	1119.5							111% *
CCB4	0.3	0.3							

Tl 93-02341 RPD= n/a (Results < IDL)
Tl CRA Recovery= 101.4%

Cal Range to 50 ug/L — BISMUTH

	Meas. (µg/L)	Sample Solution Results (µg/L)	A.S. % Rec Abs.	A.S. % Rec EPA	C	BISMUTH RESULTS	Quality Control: Predigest Spike Add	Predigest Spike Rec	ICV LCS Rec
ICV	47.8	47.8							96%
ICB	-1.3	-1.3							
CRA	9.5	9.5							
CCB1	-1.8	-1.8							
PB	-3.0	-3.0			U	0.89 mg/Kg			
PB+A.S.	18.3		107%	92%					
BS	18.7	18.7				18.78 µg/L	20.07	89%	
93-02339	-1.4	-1.4			U	0.94 mg/Kg			
2339+A.S.	18.2		98%	91%					
93-02340	-1.7	-1.7			U	0.93 mg/Kg			
2340+A.S.	18.0		98%	90%					
CCV1	50.5	50.5							101%
CCB2	-2.9	-2.9							
93-02341	-2.1	-2.1			U	0.93 mg/Kg			
2341+A.S.	19.0		106%	95%					
93-02341D	-1.9	-1.9			U	0.91 mg/Kg			
2341D+A.S.	19.5		107%	97%					
93-02341S	20.4	20.4				4.18 mg/Kg	4.11	79%	
LCS	19.9	397.8				85.50 mg/Kg			N/A
LCS+A.S.	43.2		117%	117%					
93-02351	-2.0	-2.0			U	0.91 mg/Kg			
2351+A.S.	18.2		101%	91%					
CCV2	49.8	49.8							100%
CCB3	-4.0	-4.0							
93-02437	-3.1	-3.1			U	0.92 mg/Kg			
2437+A.S.	19.6		114%	98%					
93-02438	-3.9	-3.9			U	0.92 mg/Kg			
2438+A.S.	18.6		112%	93%					
93-02451	-3.1	-3.1			U	0.95 mg/Kg			
2451+A.S.	17.8		104%	89%					
LCS +Bi	22.9	457.0				91.27 mg/Kg			N/A
+A.S	45.5		113%	113%					
CCV3	54.3	54.3							109%
CCB4	-3.5	-3.5							

Bi 93-02341 RPD= n/a (Results <IDL)
Bi CRA Recovery= 95.4%

Coverage mill 3/29/93

KR 10/19/93

DOD-2613492.0780

D04-007

GRAPHITE FURNACE ATOMIC ABSORPTION ANALYSIS **REVIEW** REPORT

Disk File: GF-t106a page 4of5

Archive File: GF012293

Cal Range to 40 ug/L — LEAD

Row	Sample	Meas. (µg/L)	Sample Solution Results (µg/L)	A.S. % Rec Abs.	A.S. % Rec EPA	C	LEAD RESULTS	Predigest Spike Add	Predigest Spike Rec	ICV LCS Rec
13	ICV	19.2	959.5							98%
14	ICB	0.7	0.7							
15	CRA	2.4	2.4							
16	CCB1	-0.3	-0.3							
17	PB	-0.7	-0.7			U	0.34 mg/Kg			
18	PB+A.S.	6.1		112%	101%					
19	BS	19.6	19.6				19.64 µg/L	20.17	96%	
20	93-02339	25.5	50.9				10.82 mg/Kg			
21	2339+A.S.	32.9		124%	124%					
22	93-02340	22.8	22.8				4.79 mg/Kg			
23	2340+A.S.	27.7		81%	81%					
24	CCV1	20.8	1038.5							106%
25	CCB2	-2.2	-2.2							
26	93-02341	13.8	69.0				14.45 mg/Kg			
27	2341+A.S.	20.3		108%	108%					
28	93-02341D	14.6	73.0				14.98 mg/Kg			
29	2341D+A.S.	21.5		116%	116%					
30	93-02341S	17.5	87.7				18.00 mg/Kg	4.13	86%	
31	LCS	11.3	1130.0				242.87 mg/Kg			103%
32	LCS+A.S.	18.7		123%	123%					
33	93-02351	32.2	32.2				6.60 mg/Kg			
34	2351+A.S.	39.8		128%	128%					
35	CCV2	21.3	1065.0							108%
36	CCB3	1.1	1.1							
37	93-02437	16.6	16.6				3.43 mg/Kg			
38	2437+A.S.	23.2		110%	110%					
39	93-02438	16.1	16.1				3.32 mg/Kg			
40	2438+A.S.	23.3		120%	120%					
41	93-02451	14.7	14.7				3.14 mg/Kg			
42	2451+A.S.	21.9		119%	119%					
43	LCS +Bi	11.4	1139.0				227.48 mg/Kg			96%
44	+A.S	18.5		119%	119%					
45	CCV3	20.0	1000.0							102%
46	CCB4	0.7	0.7							

Pb 93-02341 RPD= 3.6%
Pb CRA Recovery= 79.0%

Cal Range to 20 ug/L — SILVER

Row	Sample	Meas. (µg/L)	Sample Solution Results (µg/L)	A.S. % Rec Abs.	A.S. % Rec EPA	C	SILVER RESULTS	Predigest Spike Add	Predigest Spike Rec	ICV LCS Rec
13	ICV	20.8	1039.0							102%
14	ICB	0.0	0.0							
15	CRA	5.1	5.1							
16	CCB1	0.1	0.1							
17	PB	0.0	0.0			U	0.03 mg/Kg			
18	PB+A.S.	9.8		98%	98%					
19	BS	10.7	10.7				10.69 µg/L	10.02	107%	
20	93-02339	0.3	0.3			B	0.06 mg/Kg			
21	2339+A.S.	10.5		102%	102%					
22	93-02340	0.3	0.3			B	0.05 mg/Kg			
23	2340+A.S.	10.4		101%	101%					
24	CCV1	21.4	1070.0							105%
25	CCB2	0.1	0.1							
26	93-02341	0.3	0.3			B	0.07 mg/Kg			
27	2341+A.S.	10.7		104%	104%					
28	93-02341D	0.4	0.4			B	0.08 mg/Kg			
29	2341D+A.S.	10.9		105%	105%					
30	93-02341S	12.2	12.2				2.51 mg/Kg	2.05	119%	
31	LCS	* 21.6	107.8				23.16 mg/Kg			104%
32	LCS+A.S.	* 31.0		95%	95%					
33	93-02351	0.6	0.6			B	0.13 mg/Kg			
34	2351+A.S.	10.9		103%	103%					
35	CCV2	* 21.9	1097.0							108%
36	CCB3	0.3	0.3							
37	93-02437	0.3	0.3			B	0.07 mg/Kg			
38	2437+A.S.	10.7		104%	104%					
39	93-02438	0.3	0.3			B	0.07 mg/Kg			
40	2438+A.S.	10.7		104%	104%					
41	93-02451	0.3	0.3			B	0.06 mg/Kg			
42	2451+A.S.	10.7		104%	104%					
43	LCS +Bi	5.5	110.0				21.97 mg/Kg			99%
44	+A.S	15.9		104%	104%					
45	CCV3	* 22.0	1098.0							108%
46	CCB4	0.2	0.2							

Ag 93-02341 RPD= 9.4% (Results <CRDL)
Ag CRA Recovery= 101.0%

* Overrange MyH 3/24/93

IDL = 0.15

See note 1 page

KR 10/12/93

DO4-008

9613492.0789

A CS CT C CV CW CX CY CZ DA DB DC DD DE DF DG DH

GRAPHITE FURNACE ATOMIC ABSORPTION ANALYSIS **REVIEW** REPORT

Disk File: GF-t106 page 5of5

Archive File: GF012293

QUALITY CONTROL STANDARD AND LIMIT INFORMATION

	As	Se	Tl	Bi	Pb	Ag
Analytical Spike (ug/L) (A.S.)	20.0	10.0	20.0	20.0	6.0	10.0
LCS-0287 (mg/Kg) Average	917.0	39.2	39.0	(1)	236.0	22.2
Low	635.0	19.1	24.6		188.0	15.5
High	1199.0	59.4	53.5		285.0	29.0
ICV (ug/L)	1008.0	1006.0	1007.0	50.0	984.0	1016.0
CRDL (ug/L)	10.0	5.0	10.0	10.0	3.0	5.0
IDL (ug/L)	2.22	1.22	1.59	4.43	1.72	0.15
Digestion spike (ug/L) (D.S.)	39.9	10.1	50.0	20.0	20.1	10.0
CRA (ug/L)	10.0	5.0	10.0	10.0	3.0	5.0

A.S. = Analytical Spike D.S. = Digestion Spike

NOTES:
1. The EPA ICV solutions do not contain Bi. The Bi ICV solution is an Inorganic Ventures Bi Standard (Lot# G-BI0114, exp 7/1/93)
2. Where the analytical spike recovery is less than 40% a 10x dilution is performed and the samples rerun.
3. The working standards (See std prep sheet) are used to prepare both the calibration solution and the spiking solutions. The ICV/CCV is used as the independent calibration verification.
4. The PE-5100 utilizes deuterium background correction.

V=Verify Std, Q=QC Info Only, S=Sample, X=Analytical Spike, A=Process Spike

********** EQUATIONS **********

Process Dilution Factor (PDF):	Liquids = [Final Vol / Sample Vol]
:	Solids = [Final Vol / (Weight * %Solids)]
Sample Solution Result :	[Measured concentration * ADF]
Absolute A.S. Recovery :	[(A.S. Sample Result - Sample Result) / Spike Value]
EPA A.S. Recovery, Sample>IDL:	[(A.S. Sample Result - Sample Result) / Spike Value]
Sample <=IDL:	[A.S. Sample Result / Spike Value]
ANALYTE RESULTS :	Liquids = [Measured ug/L * ADF * PDF]
:	Solids = [(Measured ug/L * ADF * PDF) / 1000]
Predigestion Spike Added :	Liquids = [D.S. Concentration * PDF]
Added :	Solids = [(D.S. Concentration * PDF) / 1000]
% Recovery :	[D.S. Sample Results - Sample Results / D.S. Value]
ICV % Recovery :	[Sample Solution Results / ICV Value]
LCS % Recovery :	[Sample Results / LCS Value]

D04-009

96135492.0790

Element File: ASDEF.GEL Element: As Wavelength: 193.7
Date: 01/26/93 Time: 11:43 Slit: 0.70
Data File: T_106.DAT ID/Wt File: DF.IDW Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 62
Remark 1: AA3100, ~~MA93267~~ ~~WB#76757~~ WB 76757 mmm 1/10/93
Remark 2: Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
Remark 3: locations:S1 (34 w/dil),S2(34 w/dil), S3(34) , sod(35), blk0
Remark 4: procedure: PNL-ALO-214, rev.1
Remark 5: T-106 C-109 & C-112 hot cell blanks Darrin Faulk 1/27/93

As ID: Blank Seq. No.: 00009 A/S Pos.: 0 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 11:46
Peak Area (A-s): -0.002 Peak Height (A): 0.010
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.36

uL dispensed: 8 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 11:48
Peak Area (A-s): -0.001 Peak Height (A): 0.009
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.094
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.01

Mean Conc (ug/L): -0.19 SD: 0.247 RSD(%): 131.33

Auto-zero performed.

As ID: Standard 1 Seq. No.: 00010 A/S Pos.: 34 Date: 01/26/93

uL dispensed: 24 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 11:51
Peak Area (A-s): 0.055 Peak Height (A): 0.121
Background Pk Area (A-s): 0.126 Background Pk Height (A): 0.097
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L): 14.99

uL dispensed: 24 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 11:54
Peak Area (A-s): 0.056 Peak Height (A): 0.128
Background Pk Area (A-s): 0.128 Background Pk Height (A): 0.101
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 15.29

Mean Conc (ug/L): 15.14 SD: 0.211 RSD(%): 1.39

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0058

As ID: Standard 2 Seq. No.: 00011 A/S Pos.: 34 Date: 01/26/93

uL dispensed: 20 from 0, 5 from 35, 8 from 34
Replicate 1 Time: 11:56

Peak Area (A-s): 0.100 Peak Height (A): 0.246
Background Pk Area (A-s): 0.130 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.101
Concentration (ug/L): 17.62

uL dispensed: 20 from 0, 5 from 35, 8 from 34
Replicate 2 Time: 11:59
Peak Area (A-s): 0.109 Peak Height (A): 0.243
Background Pk Area (A-s): 0.126 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): 0.111
Concentration (ug/L): 19.24

Mean Conc (ug/L): 18.43 SD: 1.147 RSD(%): 6.22

Standard number 2 applied. [20.00]
Correlation coefficient: 0.99440 Slope: 0.0054

****

As ID: Standard 3 Seq. No.: 00012 A/S Pos.: 34 Date: 01/26/93

uL dispensed: 16 from 0, 5 from 35, 12 from 34
Replicate 1 Time: 12:01
Peak Area (A-s): 0.153 Peak Height (A): 0.363
Background Pk Area (A-s): 0.120 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.155
Concentration (ug/L): 28.64

uL dispensed: 16 from 0, 5 from 35, 12 from 34
Replicate 2 Time: 12:04
Peak Area (A-s): 0.154 Peak Height (A): 0.389
Background Pk Area (A-s): 0.121 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.155
Concentration (ug/L): 28.78

Mean Conc (ug/L): 28.71 SD: 0.103 RSD(%): 0.36

Standard number 3 applied. [30.00]
Correlation coefficient: 0.99703 Slope: 0.0053

****

As ID: Standard 4 Seq. No.: 00013 A/S Pos.: 34 Date: 01/26/93

uL dispensed: 12 from 0, 5 from 35, 16 from 34
Replicate 1 Time: 12:07
Peak Area (A-s): 0.208 Peak Height (A): 0.498
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): 0.210
Concentration (ug/L): 39.98

uL dispensed: 12 from 0, 5 from 35, 16 from 34
Replicate 2 Time: 12:09
Peak Area (A-s): 0.208 Peak Height (A): 0.501
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.210
Concentration (ug/L): 39.98

Mean Conc (ug/L): 39.98 SD: 0.002 RSD(%): 0.00

Standard number 4 applied. [40.00]

Correlation coefficient: 0.99881 Slope: 0.0053

****

As ID: 10 ppb As std Seq. No.: 00014 A/S Pos.: 1 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 12:12
Peak Area (A-s): 0.057 Peak Height (A): 0.134
Background Pk Area (A-s): 0.112 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 11.10

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 2 Time: 12:15
Peak Area (A-s): 0.053 Peak Height (A): 0.118
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.055
Concentration (ug/L): 10.51

Mean Conc (ug/L): 10.81 SD: 0.415 RSD(%): 3.84

****

As ID: ICV-2 40x Seq. No.: 00015 A/S Pos.: 2 Date: 01/26/93
(1290) ICF 1008 ug/L DP 1/27/93

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 12:17
Peak Area (A-s): 0.119 Peak Height (A): 0.304
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.121
Concentration (ug/L): 23.08

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 2 Time: 12:20
Peak Area (A-s): 0.123 Peak Height (A): 0.305
Background Pk Area (A-s): 0.111 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.124
Concentration (ug/L): 23.68

Mean Conc (ug/L): 23.38 SD: 0.422 RSD(%): 1.81

****

As ID: ICB Seq. No.: 00016 A/S Pos.: 3 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 1 Time: 12:23
Peak Area (A-s): 0.001 Peak Height (A): 0.009
Background Pk Area (A-s): 0.109 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.52

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 2 Time: 12:25
Peak Area (A-s): -0.003 Peak Height (A): 0.010
Background Pk Area (A-s): 0.111 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.20

Mean Conc (ug/L): 0.16 SD: 0.506 RSD(%): 318.55

```
**********************************************************************
As    ID: CRA 10 ppb          Seq. No.: 00017    A/S Pos.: 4     Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate  1                          Time: 12:28
Peak Area (A-s): 0.050                Peak Height (A): 0.124
Background Pk Area (A-s): 0.112       Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.052
Concentration (ug/L  ): 9.83

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate  2                          Time: 12:31
Peak Area (A-s): 0.051                Peak Height (A): 0.123
Background Pk Area (A-s): 0.109       Background Pk Height (A): 0.094
Blank Corrected Pk Area (A-s): 0.053
Concentration (ug/L  ): 10.08

Mean Conc  (ug/L  ):       9.95       SD: 0.180              RSD(%): 1.81
**********************************************************************
As    ID: CCB 1               Seq. No.: 00018    A/S Pos.: 5     Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate  1                          Time: 12:33
Peak Area (A-s): 0.002                Peak Height (A): 0.010
Background Pk Area (A-s): 0.107       Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L  ): 0.75

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate  2                          Time: 12:36
Peak Area (A-s): -0.003               Peak Height (A): 0.008
Background Pk Area (A-s): 0.112       Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L  ): -0.66

Mean Conc  (ug/L  ):       0.05       SD: 0.999              RSD(%): 2155.34
**********************************************************************
As    ID: PBS                 Seq. No.: 00019    A/S Pos.: 6     Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate  1                          Time: 12:39
Peak Area (A-s): -0.001               Peak Height (A): 0.009
Background Pk Area (A-s): 0.110       Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L  ): 0.07

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate  2                          Time: 12:42
Peak Area (A-s): -0.001               Peak Height (A): 0.010
Background Pk Area (A-s): 0.113       Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L  ): 0.14

Mean Conc  (ug/L  ):       0.11       SD: 0.048              RSD(%): 44.22
**********************************************************************
As    ID: PBS                 Seq. No.: 00020    A/S Pos.: 6     Date: 01/26/93
```

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 1 Time: 12:44
Peak Area (A-s): 0.090 Peak Height (A): 0.183
Background Pk Area (A-s): 0.092 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 17.38

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 2 Time: 12:47
Peak Area (A-s): 0.098 Peak Height (A): 0.185
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.099
Concentration (ug/L): 18.94

Mean Conc (ug/L): 18.16 SD: 1.102 RSD(%): 6.07

Recovery is 90.3%

****

As ID: spk blk Seq. No.: 00021 A/S Pos.: 7 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 12:50
Peak Area (A-s): 0.217 Peak Height (A): 0.376
Background Pk Area (A-s): 0.109 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.219
Concentration (ug/L): 41.72

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 12:53
Peak Area (A-s): 0.225 Peak Height (A): 0.393
Background Pk Area (A-s): 0.110 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): 0.227
Concentration (ug/L): 43.24

Mean Conc (ug/L): 42.48 SD: 1.073 RSD(%): 2.52

****

As ID: 93-02239 Seq. No.: 00022 A/S Pos.: 8 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 12:55
Peak Area (A-s): 0.164 Peak Height (A): 0.105
Background Pk Area (A-s): 0.513 Background Pk Height (A): 0.269
Blank Corrected Pk Area (A-s): 0.166
Concentration (ug/L): 31.63

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 12:58
Peak Area (A-s): 0.164 Peak Height (A): 0.105
Background Pk Area (A-s): 0.530 Background Pk Height (A): 0.267
Blank Corrected Pk Area (A-s): 0.166
Concentration (ug/L): 31.64

Mean Conc (ug/L): 31.64 SD: 0.004 RSD(%): 0.01

****

As ID: 93-02239 Seq. No.: 00023 A/S Pos.: 8 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 13:01
Peak Area (A-s): 0.273 Peak Height (A): 0.149
Background Pk Area (A-s): 0.541 Background Pk Height (A): 0.282
Blank Corrected Pk Area (A-s): 0.275
Concentration (ug/L): 52.29

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 13:04
Peak Area (A-s): 0.271 Peak Height (A): 0.146
Background Pk Area (A-s): 0.537 Background Pk Height (A): 0.276
Blank Corrected Pk Area (A-s): 0.272
Concentration (ug/L): 51.88

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 52.08 SD: 0.295 RSD(%): 0.57

Recovery is 102.2%

****

As ID: 93-02240 Seq. No.: 00024 A/S Pos.: 9 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 13:07
Peak Area (A-s): 0.182 Peak Height (A): 0.099
Background Pk Area (A-s): 0.546 Background Pk Height (A): 0.250
Blank Corrected Pk Area (A-s): 0.184
Concentration (ug/L): 34.98

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 13:09
Peak Area (A-s): 0.179 Peak Height (A): 0.102
Background Pk Area (A-s): 0.547 Background Pk Height (A): 0.257
Blank Corrected Pk Area (A-s): 0.181
Concentration (ug/L): 34.51

Mean Conc (ug/L): 34.74 SD: 0.331 RSD(%): 0.95

****

As ID: 93-02240 Seq. No.: 00025 A/S Pos.: 9 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 13:12
Peak Area (A-s): 0.286 Peak Height (A): 0.140
Background Pk Area (A-s): 0.557 Background Pk Height (A): 0.267
Blank Corrected Pk Area (A-s): 0.287
Concentration (ug/L): 54.76

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 13:15
Peak Area (A-s): 0.286 Peak Height (A): 0.142
Background Pk Area (A-s): 0.562 Background Pk Height (A): 0.268
Blank Corrected Pk Area (A-s): 0.288
Concentration (ug/L): 54.80

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 54.78 SD: 0.031 RSD(%): 0.06

Recovery is 100.2%

****

As ID: CCV1 ICV-2 40x Seq. No.: 00026 A/S Pos.: 10 Date: 01/26/93
(1296) ICF 1002 ug/L DF 1/27/93
uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 1 Time: 13:18
Peak Area (A-s): 0.124 Peak Height (A): 0.226
Background Pk Area (A-s): 0.132 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.126
Concentration (ug/L): 23.91

uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 2 Time: 13:21
Peak Area (A-s): 0.123 Peak Height (A): 0.264
Background Pk Area (A-s): 0.109 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.125
Concentration (ug/L): 23.75

Mean Conc (ug/L): 23.83 SD: 0.110 RSD(%): 0.46

****

As ID: CCB 2 Seq. No.: 00027 A/S Pos.: 11 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 1 Time: 13:23
Peak Area (A-s): -0.003 Peak Height (A): 0.007
Background Pk Area (A-s): 0.105 Background Pk Height (A): 0.094
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.23

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 2 Time: 13:26
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.105 Background Pk Height (A): 0.085
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.43

Mean Conc (ug/L): 0.10 SD: 0.470 RSD(%): 466.71

****

As ID: 93-02241 Seq. No.: 00028 A/S Pos.: 12 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 1 Time: 13:29
Peak Area (A-s): 0.147 Peak Height (A): 0.091
Background Pk Area (A-s): 0.511 Background Pk Height (A): 0.238
Blank Corrected Pk Area (A-s): 0.148
Concentration (ug/L): 28.27

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 2 Time: 13:32
Peak Area (A-s): 0.156 Peak Height (A): 0.095
Background Pk Area (A-s): 0.528 Background Pk Height (A): 0.240
Blank Corrected Pk Area (A-s): 0.157
Concentration (ug/L): 29.95

Mean Conc (ug/L): 29.11 SD: 1.184 RSD(%): 4.07

****

As ID: 93-02241 Seq. No.: 00029 A/S Pos.: 12 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 13:35
Peak Area (A-s): 0.267 Peak Height (A): 0.138
Background Pk Area (A-s): 0.535 Background Pk Height (A): 0.256
Blank Corrected Pk Area (A-s): 0.269
Concentration (ug/L): 51.21

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 13:38
Peak Area (A-s): 0.259 Peak Height (A): 0.138
Background Pk Area (A-s): 0.526 Background Pk Height (A): 0.258
Blank Corrected Pk Area (A-s): 0.261
Concentration (ug/L): 49.71

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 50.46 SD: 1.067 RSD(%): 2.11

Recovery is 106.8%

****

As ID: 93-02241 D Seq. No.: 00030 A/S Pos.: 13 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 13:40
Peak Area (A-s): 0.167 Peak Height (A): 0.091
Background Pk Area (A-s): 0.524 Background Pk Height (A): 0.238
Blank Corrected Pk Area (A-s): 0.169
Concentration (ug/L): 32.10

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 13:43
Peak Area (A-s): 0.184 Peak Height (A): 0.102
Background Pk Area (A-s): 0.554 Background Pk Height (A): 0.245
Blank Corrected Pk Area (A-s): 0.185
Concentration (ug/L): 35.33

Mean Conc (ug/L): 33.71 SD: 2.285 RSD(%): 6.78

****

As ID: 93-02241 D Seq. No.: 00031 A/S Pos.: 13 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 13:46
Peak Area (A-s): 0.294 Peak Height (A): 0.147
Background Pk Area (A-s): 0.577 Background Pk Height (A): 0.274
Blank Corrected Pk Area (A-s): 0.295
Concentration (ug/L): 56.25

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 13:49

Peak Area (A-s): 0.289 Peak Height (A): 0.137
Background Pk Area (A-s): 0.575 Background Pk Height (A): 0.270
Blank Corrected Pk Area (A-s): 0.291
Concentration (ug/L): 55.36

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 55.80 SD: 0.630 RSD(%): 1.13

Recovery is 110.4%

****

As ID: 93-02241 S Seq. No.: 00032 A/S Pos.: 14 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 13:51
Peak Area (A-s): 0.356 Peak Height (A): 0.192
Background Pk Area (A-s): 0.533 Background Pk Height (A): 0.238
Blank Corrected Pk Area (A-s): 0.358
Concentration (ug/L): 68.21

****

As ID: 93-02241 S Seq. No.: 00033 A/S Pos.: 14 Date: 01/26/93

uL dispensed: 23 from 0, 5 from 35, 5 from 14
Replicate 1 Time: 13:54
Peak Area (A-s): 0.096 Peak Height (A): 0.079
Background Pk Area (A-s): 0.273 Background Pk Height (A): 0.156
Blank Corrected Pk Area (A-s): 0.098
Concentration (ug/L): 18.66 Corrected Conc (ug/L): 74.62

uL dispensed: 23 from 0, 5 from 35, 5 from 14
Replicate 2 Time: 13:57
Peak Area (A-s): 0.098 Peak Height (A): 0.084
Background Pk Area (A-s): 0.259 Background Pk Height (A): 0.158
Blank Corrected Pk Area (A-s): 0.099
Concentration (ug/L): 18.94 Corrected Conc (ug/L): 75.76

Mean Conc (ug/L): 18.80 SD: 0.201 RSD(%): 1.07
Corrected Conc (ug/L): 75.19

****

As ID: LCS 200x Seq. No.: 00034 A/S Pos.: 15 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 13:59
Peak Area (A-s): 0.134 Peak Height (A): 0.232
Background Pk Area (A-s): 0.107 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.136
Concentration (ug/L): 25.91

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 14:02
Peak Area (A-s): 0.138 Peak Height (A): 0.242
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.140
Concentration (ug/L): 26.60

Mean Conc (ug/L): 26.25 SD: 0.491 RSD(%): 1.87

```
*****************************************************************************
As    ID: LCS 200x          Seq. No.: 00035    A/S Pos.: 15    Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Sample abs. is greater than that of the largest standard.
Replicate  1                          Time: 14:05
Peak Area (A-s): 0.234                Peak Height (A): 0.492
Background Pk Area (A-s): 0.083       Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): 0.235
Concentration (ug/L  ): 44.84

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Sample abs. is greater than that of the largest standard.
Replicate  2                          Time: 14:07
Peak Area (A-s): 0.233                Peak Height (A): 0.492
Background Pk Area (A-s): 0.083       Background Pk Height (A): 0.086
Blank Corrected Pk Area (A-s): 0.235
Concentration (ug/L  ): 44.76

Sample abs. is greater than that of the largest standard.
Mean Conc  (ug/L  ):      44.80       SD: 0.056              RSD(%): 0.13

Recovery is 92.7%

*****************************************************************************
As    ID: 93-02351          Seq. No.: 00036    A/S Pos.: 16    Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate  1                          Time: 14:10
Peak Area (A-s): 0.154                Peak Height (A): 0.088
Background Pk Area (A-s): 0.500       Background Pk Height (A): 0.234
Blank Corrected Pk Area (A-s): 0.156
Concentration (ug/L  ): 29.69

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate  2                          Time: 14:13
Peak Area (A-s): 0.162                Peak Height (A): 0.094
Background Pk Area (A-s): 0.529       Background Pk Height (A): 0.249
Blank Corrected Pk Area (A-s): 0.164
Concentration (ug/L  ): 31.24

Mean Conc  (ug/L  ):      30.47       SD: 1.095              RSD(%): 3.59

*****************************************************************************
As    ID: 93-02351          Seq. No.: 00037    A/S Pos.: 16    Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Sample abs. is greater than that of the largest standard.
Replicate  1                          Time: 14:16
Peak Area (A-s): 0.269                Peak Height (A): 0.149
Background Pk Area (A-s): 0.531       Background Pk Height (A): 0.260
Blank Corrected Pk Area (A-s): 0.271
Concentration (ug/L  ): 51.54

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Sample abs. is greater than that of the largest standard.
Replicate  2                          Time: 14:18
Peak Area (A-s): 0.278                Peak Height (A): 0.147
Background Pk Area (A-s): 0.534       Background Pk Height (A): 0.266
```

Blank Corrected Pk Area (A-s): 0.280
Concentration (ug/L): 53.28

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 52.41 SD: 1.231 RSD(%): 2.35

Recovery is 109.7%

****

As ID: CCV2 ICV-2 40x Seq. No.: 00038 A/S Pos.: 17 Date: 01/26/93
(1290) ICF 1008 ug/L DF 1/27/93
uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 14:21
Peak Area (A-s): 0.136 Peak Height (A): 0.226
Background Pk Area (A-s): 0.123 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.138
Concentration (ug/L): 26.19

uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 2 Time: 14:24
Peak Area (A-s): 0.127 Peak Height (A): 0.245
Background Pk Area (A-s): 0.097 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.129
Concentration (ug/L): 24.56

Mean Conc (ug/L): 25.38 SD: 1.156 RSD(%): 4.56

****

As ID: CCB 3 Seq. No.: 00039 A/S Pos.: 18 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 1 Time: 14:26
Peak Area (A-s): -0.000 Peak Height (A): 0.010
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.097
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.31

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 2 Time: 14:29
Peak Area (A-s): -0.005 Peak Height (A): 0.008
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.088
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -0.60

Mean Conc (ug/L): -0.14 SD: 0.640 RSD(%): 443.93

****

As ID: 93-02437 Seq. No.: 00040 A/S Pos.: 19 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 1 Time: 14:31
Peak Area (A-s): 0.146 Peak Height (A): 0.086
Background Pk Area (A-s): 0.499 Background Pk Height (A): 0.236
Blank Corrected Pk Area (A-s): 0.148
Concentration (ug/L): 28.13

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 2 Time: 14:34
Peak Area (A-s): 0.155 Peak Height (A): 0.093

Background Pk Area (A-s): 0.518 Background Pk Height (A): 0.235
Blank Corrected Pk Area (A-s): 0.157
Concentration (ug/L): 29.81

Mean Conc (ug/L): 28.97 SD: 1.193 RSD(%): 4.12

****

As ID: 93-02437 Seq. No.: 00041 A/S Pos.: 19 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 14:37
Peak Area (A-s): 0.259 Peak Height (A): 0.137
Background Pk Area (A-s): 0.524 Background Pk Height (A): 0.258
Blank Corrected Pk Area (A-s): 0.261
Concentration (ug/L): 49.73

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 14:39
Peak Area (A-s): 0.259 Peak Height (A): 0.136
Background Pk Area (A-s): 0.529 Background Pk Height (A): 0.262
Blank Corrected Pk Area (A-s): 0.261
Concentration (ug/L): 49.68

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 49.71 SD: 0.034 RSD(%): 0.07

Recovery is 103.7%

****

As ID: 93-02438 Seq. No.: 00042 A/S Pos.: 20 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 14:42
Peak Area (A-s): 0.157 Peak Height (A): 0.085
Background Pk Area (A-s): 0.510 Background Pk Height (A): 0.228
Blank Corrected Pk Area (A-s): 0.159
Concentration (ug/L): 30.22

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 14:45
Peak Area (A-s): 0.154 Peak Height (A): 0.088
Background Pk Area (A-s): 0.516 Background Pk Height (A): 0.231
Blank Corrected Pk Area (A-s): 0.155
Concentration (ug/L): 29.58

Mean Conc (ug/L): 29.90 SD: 0.453 RSD(%): 1.52

****

As ID: 93-02438 Seq. No.: 00043 A/S Pos.: 20 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 14:47
Peak Area (A-s): 0.272 Peak Height (A): 0.150
Background Pk Area (A-s): 0.529 Background Pk Height (A): 0.264
Blank Corrected Pk Area (A-s): 0.274
Concentration (ug/L): 52.17

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 14:50
Peak Area (A-s): 0.273 Peak Height (A): 0.146
Background Pk Area (A-s): 0.530 Background Pk Height (A): 0.263
Blank Corrected Pk Area (A-s): 0.275
Concentration (ug/L): 52.42

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 52.29 SD: 0.173 RSD(%): 0.33

Recovery is 112.0%

****

As ID: 93-02451 Seq. No.: 00044 A/S Pos.: 21 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 14:52
Peak Area (A-s): 0.182 Peak Height (A): 0.098
Background Pk Area (A-s): 0.587 Background Pk Height (A): 0.248
Blank Corrected Pk Area (A-s): 0.184
Concentration (ug/L): 35.08

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 14:55
Peak Area (A-s): 0.204 Peak Height (A): 0.107
Background Pk Area (A-s): 0.612 Background Pk Height (A): 0.266
Blank Corrected Pk Area (A-s): 0.206
Concentration (ug/L): 39.18

Mean Conc (ug/L): 37.13 SD: 2.897 RSD(%): 7.80

****

As ID: 93-02451 Seq. No.: 00045 A/S Pos.: 21 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 14:58
Peak Area (A-s): 0.329 Peak Height (A): 0.169
Background Pk Area (A-s): 0.646 Background Pk Height (A): 0.308
Blank Corrected Pk Area (A-s): 0.331
Concentration (ug/L): 62.97

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 15:00
Peak Area (A-s): 0.322 Peak Height (A): 0.156
Background Pk Area (A-s): 0.645 Background Pk Height (A): 0.300
Blank Corrected Pk Area (A-s): 0.323
Concentration (ug/L): 61.58

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 62.28 SD: 0.979 RSD(%): 1.57

Recovery is 125.7%

****

As ID: LCS + Bi 20x Seq. No.: 00046 A/S Pos.: 22 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 22
Replicate 1 Time: 15:03
Peak Area (A-s): 0.143 Peak Height (A): 0.236
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.144
Concentration (ug/L): 27.49

uL dispensed: 8 from 0, 5 from 35, 20 from 22
Replicate 2 Time: 15:06
Peak Area (A-s): 0.141 Peak Height (A): 0.262
Background Pk Area (A-s): 0.083 Background Pk Height (A): 0.085
Blank Corrected Pk Area (A-s): 0.143
Concentration (ug/L): 27.19

Mean Conc (ug/L): 27.34 SD: 0.209 RSD(%): 0.76

****

As ID: LCS + Bi 20x Seq. No.: 00047 A/S Pos.: 22 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 22
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 15:08
Peak Area (A-s): 0.240 Peak Height (A): 0.522
Background Pk Area (A-s): 0.069 Background Pk Height (A): 0.081
Blank Corrected Pk Area (A-s): 0.242
Concentration (ug/L): 46.00

uL dispensed: 5 from 35, 8 from 34, 20 from 22
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 15:11
Peak Area (A-s): 0.243 Peak Height (A): 0.536
Background Pk Area (A-s): 0.062 Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): 0.244
Concentration (ug/L): 46.54

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 46.27 SD: 0.385 RSD(%): 0.83

Recovery is 94.7%

****

As ID: 93-1326-G1 Seq. No.: 00048 A/S Pos.: 23 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 23
Replicate 1 Time: 15:14
Peak Area (A-s): 0.006 Peak Height (A): 0.011
Background Pk Area (A-s): 0.073 Background Pk Height (A): 0.088
Blank Corrected Pk Area (A-s): 0.007
Concentration (ug/L): 1.39

uL dispensed: 8 from 0, 5 from 35, 20 from 23
Replicate 2 Time: 15:16
Peak Area (A-s): 0.004 Peak Height (A): 0.009
Background Pk Area (A-s): 0.076 Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 1.12

Mean Conc (ug/L): 1.26 SD: 0.191 RSD(%): 15.22

```
*****************************************************************************
As    ID: 93-1326-61          Seq. No.: 00049    A/S Pos.: 23    Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 23
Replicate  1                          Time: 15:19
Peak Area (A-s): 0.112                Peak Height (A): 0.246
Background Pk Area (A-s): 0.058       Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.114
Concentration (ug/L  ): 21.68

uL dispensed: 5 from 35, 8 from 34, 20 from 23
Replicate  2                          Time: 15:22
Peak Area (A-s): 0.112                Peak Height (A): 0.238
Background Pk Area (A-s): 0.059       Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.114
Concentration (ug/L  ): 21.71

Mean Conc  (ug/L  ):      21.70       SD: 0.022              RSD(%): 0.10

Recovery is 102.2%

*****************************************************************************
As    ID: CCV3 ICV-2 40x     Seq. No.: 00050    A/S Pos.: 24    Date: 01/26/93
        (1240) DF 1008 ug/L DF 1/2/93
uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate  1                          Time: 15:25
Peak Area (A-s): 0.129                Peak Height (A): 0.290
Background Pk Area (A-s): 0.072       Background Pk Height (A): 0.086
Blank Corrected Pk Area (A-s): 0.131
Concentration (ug/L  ): 24.91

uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate  2                          Time: 15:27
Peak Area (A-s): 0.133                Peak Height (A): 0.291
Background Pk Area (A-s): 0.070       Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.135
Concentration (ug/L  ): 25.70

Mean Conc  (ug/L  ):      25.31       SD: 0.561              RSD(%): 2.22

*****************************************************************************
As    ID: CCB4                Seq. No.: 00051    A/S Pos.: 25    Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 25
Replicate  1                          Time: 15:30
Peak Area (A-s): 0.004                Peak Height (A): 0.012
Background Pk Area (A-s): 0.070       Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L  ): 1.04

uL dispensed: 8 from 0, 5 from 35, 20 from 25
Replicate  2                          Time: 15:33
Peak Area (A-s): 0.001                Peak Height (A): 0.008
Background Pk Area (A-s): 0.070       Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L  ): 0.56

Mean Conc  (ug/L  ):       0.80       SD: 0.336              RSD(%): 41.33
```

As ID: 93-1326-G2 Seq. No.: 00052 A/S Pos.: 26 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 26
Replicate 1 Time: 15:36
Peak Area (A-s): 0.003 Peak Height (A): 0.009
Background Pk Area (A-s): 0.072 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.83

uL dispensed: 8 from 0, 5 from 35, 20 from 26
Replicate 2 Time: 15:38
Peak Area (A-s): -0.002 Peak Height (A): 0.011
Background Pk Area (A-s): 0.074 Background Pk Height (A): 0.088
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.03

Mean Conc (ug/L): 0.43 SD: 0.563 RSD(%): 131.04

As ID: 93-1326-G2 Seq. No.: 00053 A/S Pos.: 26 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 26
Replicate 1 Time: 15:41
Peak Area (A-s): 0.106 Peak Height (A): 0.247
Background Pk Area (A-s): 0.063 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.107
Concentration (ug/L): 20.45

uL dispensed: 5 from 35, 8 from 34, 20 from 26
Replicate 2 Time: 15:44
Peak Area (A-s): 0.111 Peak Height (A): 0.241
Background Pk Area (A-s): 0.059 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.113
Concentration (ug/L): 21.46

Mean Conc (ug/L): 20.95 SD: 0.714 RSD(%): 3.41

Recovery is 102.6%

As ID: 93-1372-G Seq. No.: 00054 A/S Pos.: 27 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 27
Replicate 1 Time: 15:47
Peak Area (A-s): -0.000 Peak Height (A): 0.012
Background Pk Area (A-s): 0.070 Background Pk Height (A): 0.087
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.28

uL dispensed: 8 from 0, 5 from 35, 20 from 27
Replicate 2 Time: 15:49
Peak Area (A-s): 0.000 Peak Height (A): 0.007
Background Pk Area (A-s): 0.073 Background Pk Height (A): 0.085
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.42

Mean Conc (ug/L): 0.35 SD: 0.104 RSD(%): 29.57

As ID: 93-1372-6 Seq. No.: 00055 A/S Pos.: 27 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 27
Replicate 1 Time: 15:52
Peak Area (A-s): 0.108 Peak Height (A): 0.260
Background Pk Area (A-s): 0.057 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.110
Concentration (ug/L): 20.94

uL dispensed: 5 from 35, 8 from 34, 20 from 27
Replicate 2 Time: 15:55
Peak Area (A-s): 0.110 Peak Height (A): 0.265
Background Pk Area (A-s): 0.059 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.112
Concentration (ug/L): 21.30

Mean Conc (ug/L): 21.12 SD: 0.255 RSD(%): 1.21

Recovery is 103.8%

As ID: 93-1327-61 Seq. No.: 00056 A/S Pos.: 28 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 28
Replicate 1 Time: 15:58
Peak Area (A-s): 0.004 Peak Height (A): 0.011
Background Pk Area (A-s): 0.067 Background Pk Height (A): 0.087
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 1.01

uL dispensed: 8 from 0, 5 from 35, 20 from 28
Replicate 2 Time: 16:01
Peak Area (A-s): -0.000 Peak Height (A): 0.010
Background Pk Area (A-s): 0.076 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.29

Mean Conc (ug/L): 0.65 SD: 0.505 RSD(%): 77.43

As ID: 93-1327-61 Seq. No.: 00057 A/S Pos.: 28 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 28
Replicate 1 Time: 16:03
Peak Area (A-s): 0.112 Peak Height (A): 0.257
Background Pk Area (A-s): 0.059 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): 0.113
Concentration (ug/L): 21.61

uL dispensed: 5 from 35, 8 from 34, 20 from 28
Replicate 2 Time: 16:06
Peak Area (A-s): 0.111 Peak Height (A): 0.271
Background Pk Area (A-s): 0.055 Background Pk Height (A): 0.076
Blank Corrected Pk Area (A-s): 0.113
Concentration (ug/L): 21.51

Mean Conc (ug/L): 21.56 SD: 0.071 RSD(%): 0.33

Recovery is 104.6%

As ID: 93-1327-G2 Seq. No.: 00058 A/S Pos.: 29 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 29
Replicate 1 Time: 16:09
Peak Area (A-s): -0.001 Peak Height (A): 0.009
Background Pk Area (A-s): 0.070 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.10

uL dispensed: 8 from 0, 5 from 35, 20 from 29
Replicate 2 Time: 16:12
Peak Area (A-s): 0.003 Peak Height (A): 0.007
Background Pk Area (A-s): 0.069 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 0.92

Mean Conc (ug/L): 0.51 SD: 0.578 RSD(%): 112.83

As ID: 93-1327-G2 Seq. No.: 00059 A/S Pos.: 29 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 29
Replicate 1 Time: 16:15
Peak Area (A-s): 0.109 Peak Height (A): 0.260
Background Pk Area (A-s): 0.058 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.111
Concentration (ug/L): 21.09

uL dispensed: 5 from 35, 8 from 34, 20 from 29
Replicate 2 Time: 16:17
Peak Area (A-s): 0.115 Peak Height (A): 0.264
Background Pk Area (A-s): 0.059 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): 0.117
Concentration (ug/L): 22.23

Mean Conc (ug/L): 21.66 SD: 0.805 RSD(%): 3.72

Recovery is 105.7%

As ID: 93-1372-G Seq. No.: 00060 A/S Pos.: 30 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 30
Replicate 1 Time: 16:20
Peak Area (A-s): 0.002 Peak Height (A): 0.010
Background Pk Area (A-s): 0.064 Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.70

uL dispensed: 8 from 0, 5 from 35, 20 from 30
Replicate 2 Time: 16:23
Peak Area (A-s): 0.007 Peak Height (A): 0.009
Background Pk Area (A-s): 0.062 Background Pk Height (A): 0.081
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 1.73

Mean Conc (ug/L): 1.21 SD: 0.728 RSD(%): 60.00

****

As ID: 93-1372-6 Seq. No.: 00061 A/S Pos.: 30 Date: 01/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 30
Replicate 1 Time: 16:26
Peak Area (A-s): 0.113 Peak Height (A): 0.290
Background Pk Area (A-s): 0.056 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.115
Concentration (ug/L): 21.82

uL dispensed: 5 from 35, 8 from 34, 20 from 30
Replicate 2 Time: 16:28
Peak Area (A-s): 0.112 Peak Height (A): 0.283
Background Pk Area (A-s): 0.055 Background Pk Height (A): 0.081
Blank Corrected Pk Area (A-s): 0.114
Concentration (ug/L): 21.63

Mean Conc (ug/L): 21.73 SD: 0.135 RSD(%): 0.62

Recovery is 102.6%

****

As ID: CCV4 ICV-2 40x Seq. No.: 00062 A/S Pos.: 31 Date: 01/26/93
(1290) ICF 1008 ug/L DF 1/27/93

uL dispensed: 8 from 0, 5 from 35, 20 from 31
Replicate 1 Time: 16:31
Peak Area (A-s): 0.136 Peak Height (A): 0.297
Background Pk Area (A-s): 0.064 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.138
Concentration (ug/L): 26.21

uL dispensed: 8 from 0, 5 from 35, 20 from 31
Replicate 2 Time: 16:34
Peak Area (A-s): 0.133 Peak Height (A): 0.288
Background Pk Area (A-s): 0.064 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.135
Concentration (ug/L): 25.73

Mean Conc (ug/L): 25.97 SD: 0.344 RSD(%): 1.32

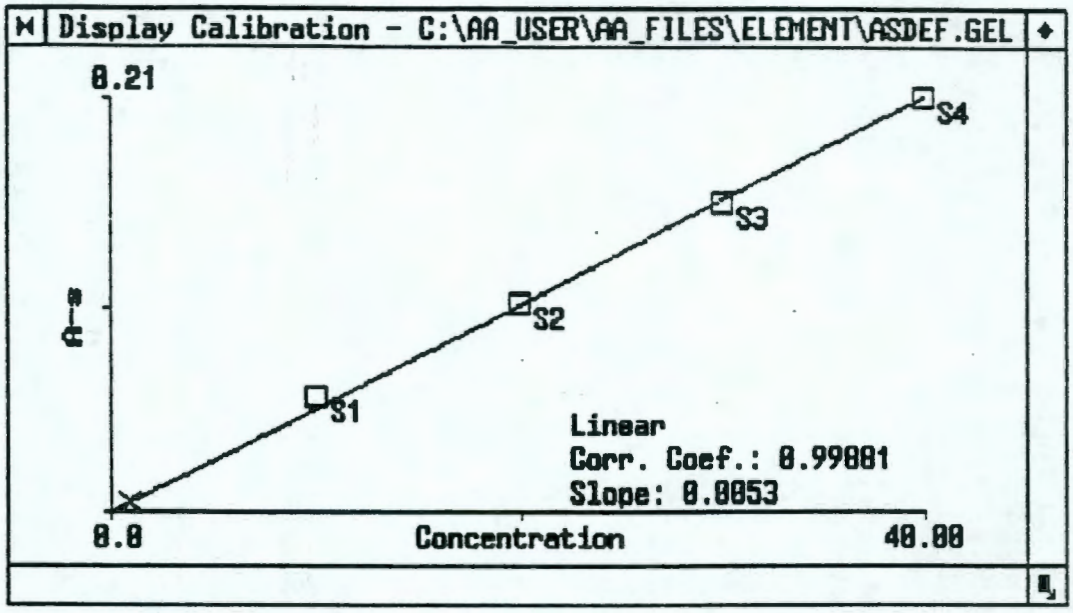
****

As ID: CCB5 Seq. No.: 00063 A/S Pos.: 32 Date: 01/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 32
Replicate 1 Time: 16:36
Peak Area (A-s): 0.005 Peak Height (A): 0.009
Background Pk Area (A-s): 0.063 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 1.21

uL dispensed: 8 from 0, 5 from 35, 20 from 32
Replicate 2 Time: 16:39
Peak Area (A-s): 0.001 Peak Height (A): 0.011
Background Pk Area (A-s): 0.062 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.60

9613492.0810



ID/Weight File Name: DF.IDW

Analyst: DE Faulk

Sample Volume: 1 L

Sample Weight: 1.0 ug

Autosampler Type:

Last Stored: 93/01/25, at 07:13:47

Loc.	Sample ID	Weight	Dilution
1	10 ppb As std		
2	ICV-2 40x		
3	ICB		
4	CRA 10 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-02239		
9	93-02240		
10	CCV1 ICV-2 40x		
11	CCB 2		
12	93-02241		
13	93-02241 D		
14	93-02241 S		
15	LCS 200x		
16	93-02351		
17	CCV2 ICV-2 40x		
18	CCB 3		
19	93-02437		
20	93-02438		
21	93-02451		
22	LCS + Bi 20x		
23	93-1326-G1		
24	CCV3 ICV-2 40x		
25	CCB4		
26	93-1326-G2		
27	93-1372-G		
28	93-1327-G1		
29	93-1327-G2		
30	93-1372-G		
31	CCV4 ICV-2 40x		
32	CCB5		

D04-028

Element File: ASDEF.GEL Last Stored: 93/01/27 06:52:58
Element: As Wavelength: 193.7 Peak Slit: 0.70 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100, ~~MA93267~~ WB 76757 mwll 4/16/93
Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
locations:S1 (34 w/dil),S2(34 w/dil), S3(34) , mod(35), blk0
procedure: PML-ALO-214, rev.1
T-106 C-109 & C-112 hot cell blanks

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 10.00 S2: 20.00 S3: 30.00
S4: 40.00 S5: S6:
S7: S8: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 2

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
90	10	15	300		Norm	
130	5	15	300		Norm	
1100	10	25	300		Norm	
20	1	15	300		Norm	
2300	0	5	30	*	Norm	
2600	1	2	300		Norm	
20	1	10	300		Norm	

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 8 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

Spike Recovery: Frequency: 12,13,15,16,19-23,26-30
Location: 34 Volume: 8 uL Concentration: 50.00 ug/L

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	8	5	
Standard 1	34	4	24	5	
Standard 2	34	8	20	5	
Standard 3	34	12	16	5	
Standard 4	34	16	12	5	
Standard 5					
Standard 6					
Standard 7					
Standard 8					
Reslope					

Sample Blank Location: Automated Additions

Element File: SEDEF.GEL Element: Se Wavelength: 196.0
Date: 03/15/93 Time: 08:06 Slit: 2.0
Data File: T_106.DAT ID/Wt File: DF.IDW Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 72
Remark 1: AA5100.~~WA73267~~ WB76757 mwl 4/16/93
Remark 2: Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
Remark 3: locations:S1 S2 S3 S4 (34 w/dil), mod(35),blk(0)
Remark 4: procedure: PML-ALO-215, rev.1
Remark 5: T-106 100x

Darrin Faulk 3/15/93

Se ID: Blank Seq. No.: 00087 A/S Pos.: 0 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 08:09
Peak Area (A-s): 0.006 Peak Height (A): 0.006
Background Pk Area (A-s): 0.145 Background Pk Height (A): 0.115
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.72

uL dispensed: 4 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 08:12
Peak Area (A-s): 0.007 Peak Height (A): 0.007
Background Pk Area (A-s): 0.160 Background Pk Height (A): 0.137
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.44

Mean Conc (ug/L): -0.58 SD: 0.200 RSD(%): 34.54

Auto-zero performed.

Se ID: Standard 1 Seq. No.: 00088 A/S Pos.: 34 Date: 03/15/93

uL dispensed: 20 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 08:15
Peak Area (A-s): 0.034 Peak Height (A): 0.029
Background Pk Area (A-s): 0.150 Background Pk Height (A): 0.124
Blank Corrected Pk Area (A-s): 0.028
Concentration (ug/L): 8.44

uL dispensed: 20 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 08:18
Peak Area (A-s): 0.035 Peak Height (A): 0.030
Background Pk Area (A-s): 0.166 Background Pk Height (A): 0.132
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 8.73

Mean Conc (ug/L): 8.59 SD: 0.204 RSD(%): 2.38

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0028

Se ID: Standard 2 Seq. No.: 00089 A/S Pos.: 34 Date: 03/15/93

uL dispensed: 10 from 0, 5 from 35, 8 from 34
Replicate Time:

Peak Area (A-s): 0.062 Peak Height (A): 0.054
Background Pk Area (A-s): 0.164 Background Pk Height (A): 0.129
Blank Corrected Pk Area (A-s): 0.056
Concentration (ug/L): 19.80

uL dispensed: 16 from 0. 5 from 35. 8 from 34
Replicate 2 Time: 08:24
Peak Area (A-s): 0.064 Peak Height (A): 0.058
Background Pk Area (A-s): 0.159 Background Pk Height (A): 0.127
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 20.57

Mean Conc (ug/L): 20.18 SD: 0.543 RSD(%): 2.69

Standard number 2 applied. [20.00]
Correlation coefficient: 0.99993 Slope: 0.0028

****

Se ID: Standard 3 Seq. No.: 00090 A/S Pos.: 34 Date: 03/15/93

uL dispensed: 12 from 0. 5 from 35. 12 from 34
Replicate 1 Time: 08:27
Peak Area (A-s): 0.095 Peak Height (A): 0.084
Background Pk Area (A-s): 0.165 Background Pk Height (A): 0.125
Blank Corrected Pk Area (A-s): 0.089
Concentration (ug/L): 31.43

uL dispensed: 12 from 0. 5 from 35. 12 from 34
Replicate 2 Time: 08:30
Peak Area (A-s): 0.096 Peak Height (A): 0.086
Background Pk Area (A-s): 0.168 Background Pk Height (A): 0.127
Blank Corrected Pk Area (A-s): 0.090
Concentration (ug/L): 31.76

Mean Conc (ug/L): 31.60 SD: 0.235 RSD(%): 0.74

Standard number 3 applied. [30.00]
Correlation coefficient: 0.99786 Slope: 0.0029

****

Se ID: Standard 4 Seq. No.: 00091 A/S Pos.: 34 Date: 03/15/93

uL dispensed: 8 from 0. 5 from 35. 16 from 34
Replicate 1 Time: 08:33
Peak Area (A-s): 0.128 Peak Height (A): 0.116
Background Pk Area (A-s): 0.168 Background Pk Height (A): 0.128
Blank Corrected Pk Area (A-s): 0.122
Concentration (ug/L): 41.68

uL dispensed: 8 from 0. 5 from 35. 16 from 34
Replicate 2 Time: 08:36
Peak Area (A-s): 0.129 Peak Height (A): 0.115
Background Pk Area (A-s): 0.160 Background Pk Height (A): 0.125
Blank Corrected Pk Area (A-s): 0.122
Concentration (ug/L): 41.49

Mean Conc (ug/L): 41.58 SD: 0.134 RSD(%): 0.32

Standard number 4 applied. [40.00]

r=0.999 KR 10/20/93

Correlation coefficient: 0.99802 Slope: 0.0030

****

Se ID: 5 ppb Se Seq. No.: 00092 A/S Pos.: 1 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 08:40
Peak Area (A-s): 0.024 Peak Height (A): 0.021
Background Pk Area (A-s): 0.155 Background Pk Height (A): 0.119
Blank Corrected Pk Area (A-s): 0.017
Concentration (ug/L): 5.78

uL dispensed: 4 from 0, 5 from 35, 20 from 1
Replicate 2 Time: 08:43
Peak Area (A-s): 0.022 Peak Height (A): 0.020
Background Pk Area (A-s): 0.153 Background Pk Height (A): 0.121
Blank Corrected Pk Area (A-s): 0.016
Concentration (ug/L): 5.30

Mean Conc (ug/L): 5.54 SD: 0.338 RSD(%): 6.09

****

Se ID: ICV-2 40x Seq. No.: 00093 A/S Pos.: 2 Date: 03/15/93
(1000) ICF 1006 mg/L DF 3/16/93
uL dispensed: 4 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 08:46
Peak Area (A-s): 0.083 Peak Height (A): 0.077
Background Pk Area (A-s): 0.152 Background Pk Height (A): 0.121
Blank Corrected Pk Area (A-s): 0.077
Concentration (ug/L): 25.57

uL dispensed: 4 from 0, 5 from 35, 20 from 2
Replicate 2 Time: 08:49
Peak Area (A-s): 0.083 Peak Height (A): 0.076
Background Pk Area (A-s): 0.155 Background Pk Height (A): 0.119
Blank Corrected Pk Area (A-s): 0.076
Concentration (ug/L): 25.49

Mean Conc (ug/L): 25.53 SD: 0.054 RSD(%): 0.21

****

Se ID: ICB Seq. No.: 00094 A/S Pos.: 3 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 3
Replicate 1 Time: 08:52
Peak Area (A-s): 0.006 Peak Height (A): 0.007
Background Pk Area (A-s): 0.149 Background Pk Height (A): 0.119
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.06

uL dispensed: 4 from 0, 5 from 35, 20 from 3
Replicate 2 Time: 08:55
Peak Area (A-s): 0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.159 Background Pk Height (A): 0.119
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.34

Mean Conc (ug/L): -0.14 SD: 0.277 RSD(%): [illegible]

Se ID: CRA 5 ppb Seq. No.: 00095 A/S Pos.: 4 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 4
Replicate 1 Time: 08:58
Peak Area (A-s): 0.022 Peak Height (A): 0.019
Background Pk Area (A-s): 0.148 Background Pk Height (A): 0.113
Blank Corrected Pk Area (A-s): 0.016
Concentration (ug/L): 5.32

uL dispensed: 4 from 0, 5 from 35, 20 from 4
Replicate 2 Time: 09:02
Peak Area (A-s): 0.021 Peak Height (A): 0.018
Background Pk Area (A-s): 0.149 Background Pk Height (A): 0.112
Blank Corrected Pk Area (A-s): 0.015
Concentration (ug/L): 5.04

Mean Conc (ug/L): 5.18 SD: 0.198 RSD(%): 3.83

Se ID: CCB 1 Seq. No.: 00096 A/S Pos.: 5 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 5
Replicate 1 Time: 09:05
Peak Area (A-s): 0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.139 Background Pk Height (A): 0.113
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.46

uL dispensed: 4 from 0, 5 from 35, 20 from 5
Replicate 2 Time: 09:08
Peak Area (A-s): 0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.153 Background Pk Height (A): 0.113
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.26

Mean Conc (ug/L): -0.36 SD: 0.138 RSD(%): 38.13

Se ID: PBS Seq. No.: 00097 A/S Pos.: 6 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 6
Replicate 1 Time: 09:11
Peak Area (A-s): 0.007 Peak Height (A): 0.005
Background Pk Area (A-s): 0.141 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.23

uL dispensed: 4 from 0, 5 from 35, 20 from 6
Replicate 2 Time: 09:14
Peak Area (A-s): 0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.146 Background Pk Height (A): 0.112
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.28

Mean Conc (ug/L): -0.03 SD: 0.361 RSD(%): 1278.39

Se ID: PBS Seq. No.: 00098 A/S Pos.: 6 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 6
Replicate 1 Time: 09:18
Peak Area (A-s): 0.033 Peak Height (A): 0.035
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.027
Concentration (ug/L): 9.08

uL dispensed: 5 from 35, 4 from 34, 20 from 6
Replicate 2 Time: 09:21
Peak Area (A-s): 0.035 Peak Height (A): 0.038
Background Pk Area (A-s): 0.112 Background Pk Height (A): 0.094
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.70

Mean Conc (ug/L): 9.39 SD: 0.433 RSD(%): 4.61

Recovery is 94.2%

~~~~~~

Se ID: spk blk Seq. No.: 00099 A/S Pos.: 7 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 09:24
Peak Area (A-s): 0.035 Peak Height (A): 0.033
Background Pk Area (A-s): 0.150 Background Pk Height (A): 0.112
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.63

uL dispensed: 4 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 09:27
Peak Area (A-s): 0.037 Peak Height (A): 0.032
Background Pk Area (A-s): 0.145 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.031
Concentration (ug/L): 10.19

Mean Conc (ug/L): 9.91 SD: 0.398 RSD(%): 4.01

~~~~~~

Se ID: 93-2239 100x Seq. No.: 00100 A/S Pos.: 8 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 09:30
Peak Area (A-s): 0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.112
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.31

uL dispensed: 4 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 09:34
Peak Area (A-s): 0.006 Peak Height (A): 0.005
Background Pk Area (A-s): 0.153 Background Pk Height (A): 0.111
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.14

Mean Conc (ug/L): -0.23 SD: 0.121 RSD(%): 53.03

~~~~~~

Se ID: 93-2239 100x Seq. No.: 00101 A/S Pos.: 8 Date: 03/15/93
~~~~~~

uL dispensed: 5 from 35, 4 from 34, 20 from 8
Replicate 1 Time: 09:37
Peak Area (A-s): 0.035 Peak Height (A): 0.036
Background Pk Area (A-s): 0.123 Background Pk Height (A): 0.094
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.63

uL dispensed: 5 from 35, 4 from 34, 20 from 8
Replicate 2 Time: 09:40
Peak Area (A-s): 0.038 Peak Height (A): 0.037
Background Pk Area (A-s): 0.124 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.031
Concentration (ug/L): 10.47

Mean Conc (ug/L): 10.05 SD: 0.594 RSD(%): 5.91

Recovery is 102.8%

Se ID: 93-2240 100x Seq. No.: 00102 A/S Pos.: 9 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 09:43
Peak Area (A-s): 0.003 Peak Height (A): 0.004
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.111
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -0.97

uL dispensed: 4 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 09:47
Peak Area (A-s): 0.004 Peak Height (A): 0.005
Background Pk Area (A-s): 0.155 Background Pk Height (A): 0.113
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.63

Mean Conc (ug/L): -0.80 SD: 0.246 RSD(%): 30.74

Se ID: 93-2240 100x Seq. No.: 00103 A/S Pos.: 9 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 9
Replicate 1 Time: 09:50
Peak Area (A-s): 0.038 Peak Height (A): 0.036
Background Pk Area (A-s): 0.123 Background Pk Height (A): 0.094
Blank Corrected Pk Area (A-s): 0.031
Concentration (ug/L): 10.49

uL dispensed: 5 from 35, 4 from 34, 20 from 9
Replicate 2 Time: 09:53
Peak Area (A-s): 0.034 Peak Height (A): 0.035
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.028
Concentration (ug/L): 9.21

Mean Conc (ug/L): 9.85 SD: 0.908 RSD(%): 9.22

Recovery is 106.5%

Se ID: CCV1 ICV-2 40x Seq. No.: 00104 A/S Pos.: 10 Date: 03/15/93
(1240) ICV = 1006 ug/L DF 3/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 10
Replicate 1 Time: 09:56
Peak Area (A-s): 0.081 Peak Height (A): 0.076
Background Pk Area (A-s): 0.156 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.075
Concentration (ug/L): 24.91

uL dispensed: 4 from 0, 5 from 35, 20 from 10
Replicate 2 Time: 10:00
Peak Area (A-s): 0.083 Peak Height (A): 0.076
Background Pk Area (A-s): 0.160 Background Pk Height (A): 0.110
Blank Corrected Pk Area (A-s): 0.077
Concentration (ug/L): 25.73

Mean Conc (ug/L): 25.32 SD: 0.582 RSD(%): 2.30

Se ID: CCB 2 Seq. No.: 00105 A/S Pos.: 11 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 11
Replicate 1 Time: 10:03
Peak Area (A-s): 0.006 Peak Height (A): 0.006
Background Pk Area (A-s): 0.158 Background Pk Height (A): 0.111
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.20

uL dispensed: 4 from 0, 5 from 35, 20 from 11
Replicate 2 Time: 10:06
Peak Area (A-s): 0.005 Peak Height (A): 0.006
Background Pk Area (A-s): 0.156 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.38

Mean Conc (ug/L): -0.29 SD: 0.128 RSD(%): 44.05

Se ID: 93-2241 100x Seq. No.: 00106 A/S Pos.: 12 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 12
Replicate 1 Time: 10:09
Peak Area (A-s): 0.004 Peak Height (A): 0.004
Background Pk Area (A-s): 0.155 Background Pk Height (A): 0.110
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.69

uL dispensed: 4 from 0, 5 from 35, 20 from 12
Replicate 2 Time: 10:13
Peak Area (A-s): 0.002 Peak Height (A): 0.005
Background Pk Area (A-s): 0.158 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L): -1.51

Mean Conc (ug/L): -1.10 SD: 0.578 RSD(%): 52.69

Se ID: 93-2241 [illegible] Seq. No.: 00107 A/S Pos.: 12 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 12
Replicate 1 Time: 10:16
Peak Area (A-s): 0.032 Peak Height (A): 0.034
Background Pk Area (A-s): 0.128 Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 8.74

uL dispensed: 5 from 35, 4 from 34, 20 from 12
Replicate 2 Time: 10:19
Peak Area (A-s): 0.035 Peak Height (A): 0.035
Background Pk Area (A-s): 0.128 Background Pk Height (A): 0.097
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.62

Mean Conc (ug/L): 9.18 SD: 0.619 RSD(%): 6.74

Recovery is 102.8%

****

Se ID: 93-2241 D 100x Seq. No.: 00108 A/S Pos.: 13 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 10:22
Peak Area (A-s): 0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.159 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.51

uL dispensed: 4 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 10:26
Peak Area (A-s): 0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.110
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.42

Mean Conc (ug/L): -0.47 SD: 0.062 RSD(%): 13.33

****

Se ID: 93-2241 D 100x Seq. No.: 00109 A/S Pos.: 13 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 13
Replicate 1 Time: 10:29
Peak Area (A-s): 0.036 Peak Height (A): 0.035
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.81

uL dispensed: 5 from 35, 4 from 34, 20 from 13
Replicate 2 Time: 10:32
Peak Area (A-s): 0.037 Peak Height (A): 0.037
Background Pk Area (A-s): 0.124 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.031
Concentration (ug/L): 10.35

Mean Conc (ug/L): 10.08 SD: 0.379 RSD(%): 3.77

Recovery is 105.4%

Se ID: 93-2241 S 100x Seq. No.: 00110 A/S Pos.: 14 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 14
Replicate 1 Time: 10:35
Peak Area (A-s): 0.003 Peak Height (A): 0.004
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.107
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -1.10

uL dispensed: 4 from 0, 5 from 35, 20 from 14
Replicate 2 Time: 10:38
Peak Area (A-s): 0.004 Peak Height (A): 0.005
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.104
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.70

Mean Conc (ug/L): -0.90 SD: 0.284 RSD(%): 31.64

Se ID: LCS 10x Seq. No.: 00111 A/S Pos.: 15 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 10:41
Peak Area (A-s): 0.052 Peak Height (A): 0.048
Background Pk Area (A-s): 0.163 Background Pk Height (A): 0.117
Blank Corrected Pk Area (A-s): 0.045
Concentration (ug/L): 15.14

uL dispensed: 4 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 10:45
Peak Area (A-s): 0.053 Peak Height (A): 0.045
Background Pk Area (A-s): 0.164 Background Pk Height (A): 0.118
Blank Corrected Pk Area (A-s): 0.047
Concentration (ug/L): 15.65

Mean Conc (ug/L): 15.39 SD: 0.365 RSD(%): 2.37

Se ID: LCS 10x Seq. No.: 00112 A/S Pos.: 15 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 15
Replicate 1 Time: 10:48
Peak Area (A-s): 0.082 Peak Height (A): 0.077
Background Pk Area (A-s): 0.133 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.076
Concentration (ug/L): 25.35

uL dispensed: 5 from 35, 4 from 34, 20 from 15
Replicate 2 Time: 10:51
Peak Area (A-s): 0.083 Peak Height (A): 0.080
Background Pk Area (A-s): 0.132 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.077
Concentration (ug/L): 25.64

Mean Conc (ug/L): 25.50 SD: 0.205 RSD(%): 0.81

Recovery is 101.0%

Se ID: 93-2751 100x Seq. No.: 00113 A/S Pos.: 16 Date: 03/15/93
3 mwk 4/16/93
uL dispensed: 4 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 10:54
Peak Area (A-s): 0.006 Peak Height (A): 0.006
Background Pk Area (A-s): 0.148 Background Pk Height (A): 0.105
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.01

uL dispensed: 4 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 10:57
Peak Area (A-s): 0.006 Peak Height (A): 0.005
Background Pk Area (A-s): 0.147 Background Pk Height (A): 0.104
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.22

Mean Conc (ug/L): -0.10 SD: 0.162 RSD(%): 160.23

Se ID: 93-2751 100x Seq. No.: 00114 A/S Pos.: 16 Date: 03/15/93
3 mwk 4/16/93
uL dispensed: 5 from 35, 4 from 34, 20 from 16
Replicate 1 Time: 11:00
Peak Area (A-s): 0.036 Peak Height (A): 0.034
Background Pk Area (A-s): 0.123 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.81

uL dispensed: 5 from 35, 4 from 34, 20 from 16
Replicate 2 Time: 11:03
Peak Area (A-s): 0.035 Peak Height (A): 0.036
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.75

Mean Conc (ug/L): 9.78 SD: 0.038 RSD(%): 0.39

Recovery is 98.8%

Se ID: CCV2 ICV-2 40x Seq. No.: 00115 A/S Pos.: 17 Date: 03/15/93
(290) ICP 1006 mg/L DF 3/15/93
uL dispensed: 4 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 11:07
Peak Area (A-s): 0.088 Peak Height (A): 0.077
Background Pk Area (A-s): 0.150 Background Pk Height (A): 0.101
Blank Corrected Pk Area (A-s): 0.081
Concentration (ug/L): 27.13

uL dispensed: 4 from 0, 5 from 35, 20 from 17
Replicate 2 Time: 11:10
Peak Area (A-s): 0.088 Peak Height (A): 0.076
Background Pk Area (A-s): 0.152 Background Pk Height (A): 0.103
Blank Corrected Pk Area (A-s): 0.081
Concentration (ug/L): 27.15

Mean Conc (ug/L): 27.14 SD: 0.011 RSD(%): 0.04

Se ID: CCB 3 Seq. No.: 00116 A/S Pos.: 18 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 18
Replicate 1 Time: 11:13
Peak Area (A-s): 0.006 Peak Height (A): 0.007
Background Pk Area (A-s): 0.148 Background Pk Height (A): 0.101
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.04

uL dispensed: 4 from 0, 5 from 35, 20 from 18
Replicate 2 Time: 11:16
Peak Area (A-s): 0.003 Peak Height (A): 0.005
Background Pk Area (A-s): 0.152 Background Pk Height (A): 0.102
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -1.14

Mean Conc (ug/L): -0.55 SD: 0.834 RSD(%): 152.85

Se ID: 93-2437 100x Seq. No.: 00117 A/S Pos.: 19 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 19
Replicate 1 Time: 11:19
Peak Area (A-s): 0.005 Peak Height (A): 0.004
Background Pk Area (A-s): 0.149 Background Pk Height (A): 0.101
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.28

uL dispensed: 4 from 0, 5 from 35, 20 from 19
Replicate 2 Time: 11:22
Peak Area (A-s): 0.004 Peak Height (A): 0.006
Background Pk Area (A-s): 0.147 Background Pk Height (A): 0.100
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.71

Mean Conc (ug/L): -0.50 SD: 0.302 RSD(%): 60.63

Se ID: 93-2437 100x Seq. No.: 00118 A/S Pos.: 19 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 19
Replicate 1 Time: 11:25
Peak Area (A-s): 0.035 Peak Height (A): 0.035
Background Pk Area (A-s): 0.124 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.63

uL dispensed: 5 from 35, 4 from 34, 20 from 19
Replicate 2 Time: 11:28
Peak Area (A-s): 0.038 Peak Height (A): 0.037
Background Pk Area (A-s): 0.121 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.032
Concentration (ug/L): 10.69

Mean Conc (ug/L): 10.16 SD: 0.749 RSD(%): 7.38

Recovery is 106.5%

****

Se ID: 93-2438 100x Seq. No.: 00119 A/S Pos.: 20 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 11:31
Peak Area (A-s): 0.004 Peak Height (A): 0.005
Background Pk Area (A-s): 0.144 Background Pk Height (A): 0.098
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.70

uL dispensed: 4 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 11:34
Peak Area (A-s): 0.003 Peak Height (A): 0.004
Background Pk Area (A-s): 0.144 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -0.93

Mean Conc (ug/L): -0.82 SD: 0.169 RSD(%): 20.69

****

Se ID: 93-2438 100x Seq. No.: 00120 A/S Pos.: 20 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 20
Replicate 1 Time: 11:37
Peak Area (A-s): 0.036 Peak Height (A): 0.035
Background Pk Area (A-s): 0.122 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.030
Concentration (ug/L): 9.86

uL dispensed: 5 from 35, 4 from 34, 20 from 20
Replicate 2 Time: 11:40
Peak Area (A-s): 0.039 Peak Height (A): 0.036
Background Pk Area (A-s): 0.119 Background Pk Height (A): 0.085
Blank Corrected Pk Area (A-s): 0.032
Concentration (ug/L): 10.81

Mean Conc (ug/L): 10.34 SD: 0.673 RSD(%): 6.50 ✓

Recovery is 111.5% ✓

****

Se ID: 93-2451 100x Seq. No.: 00121 A/S Pos.: 21 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 11:44
Peak Area (A-s): 0.006 Peak Height (A): 0.005
Background Pk Area (A-s): 0.143 Background Pk Height (A): 0.098
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.24

uL dispensed: 4 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 11:47
Peak Area (A-s): 0.004 Peak Height (A): 0.005
Background Pk Area (A-s): 0.145 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -0.91

Mean Conc (ug/L): -0.57 SD: 0.472 RSD(%): 82.45

****

Se ID: 93-2451 100x Seq. No.: 00122 A/S Pos.: 21 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 21
Replicate 1 Time: 11:50
Peak Area (A-s): 0.037 Peak Height (A): 0.036
Background Pk Area (A-s): 0.119 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.031
Concentration (ug/L): 10.25

uL dispensed: 5 from 35, 4 from 34, 20 from 21
Replicate 2 Time: 11:53
Peak Area (A-s): 0.036 Peak Height (A): 0.035
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 9.77

Mean Conc (ug/L): 10.01 SD: 0.338 RSD(%): 3.38

Recovery is 105.8%

****

Se ID: LCS + Bi 10x Seq. No.: 00123 A/S Pos.: 22 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 22
Replicate 1 Time: 11:56
Peak Area (A-s): 0.056 Peak Height (A): 0.048
Background Pk Area (A-s): 0.153 Background Pk Height (A): 0.107
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 16.72

uL dispensed: 4 from 0, 5 from 35, 20 from 22
Replicate 2 Time: 11:59
Peak Area (A-s): 0.054 Peak Height (A): 0.047
Background Pk Area (A-s): 0.155 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): 0.048
Concentration (ug/L): 16.10

Mean Conc (ug/L): 16.41 SD: 0.438 RSD(%): 2.67

****

Se ID: LCS + Bi 10x Seq. No.: 00124 A/S Pos.: 22 Date: 03/15/93

uL dispensed: 5 from 35, 4 from 34, 20 from 22
Replicate 1 Time: 12:02
Peak Area (A-s): 0.087 Peak Height (A): 0.079
Background Pk Area (A-s): 0.129 Background Pk Height (A): 0.099
Blank Corrected Pk Area (A-s): 0.081
Concentration (ug/L): 27.08

uL dispensed: 5 from 35, 4 from 34, 20 from 22
Replicate 2 Time: 12:05
Peak Area (A-s): 0.091 Peak Height (A): 0.082
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.099
Blank Corrected Pk Area (A-s): 0.084
Concentration (ug/L): 28.17

Mean Conc (ug/L): 27.63 SD: 0.770 RSD(%): 2.79

Recovery is 112.2%

****

Se ID: CCV3 ICV-2 40x Seq. No.: 00125 A/S Pos.: 23 Date: 03/15/93

(1000) ICP 1006 ug/L DF 3/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 23
Replicate 1 Time: 12:09
Peak Area (A-s): 0.090 Peak Height (A): 0.074
Background Pk Area (A-s): 0.136 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.084
Concentration (ug/L): 27.93

uL dispensed: 4 from 0, 5 from 35, 20 from 23
Replicate 2 Time: 12:12
Peak Area (A-s): 0.089 Peak Height (A): 0.074
Background Pk Area (A-s): 0.136 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): 0.083
Concentration (ug/L): 27.57

Mean Conc (ug/L): 27.75 SD: 0.255 RSD(%): 0.92

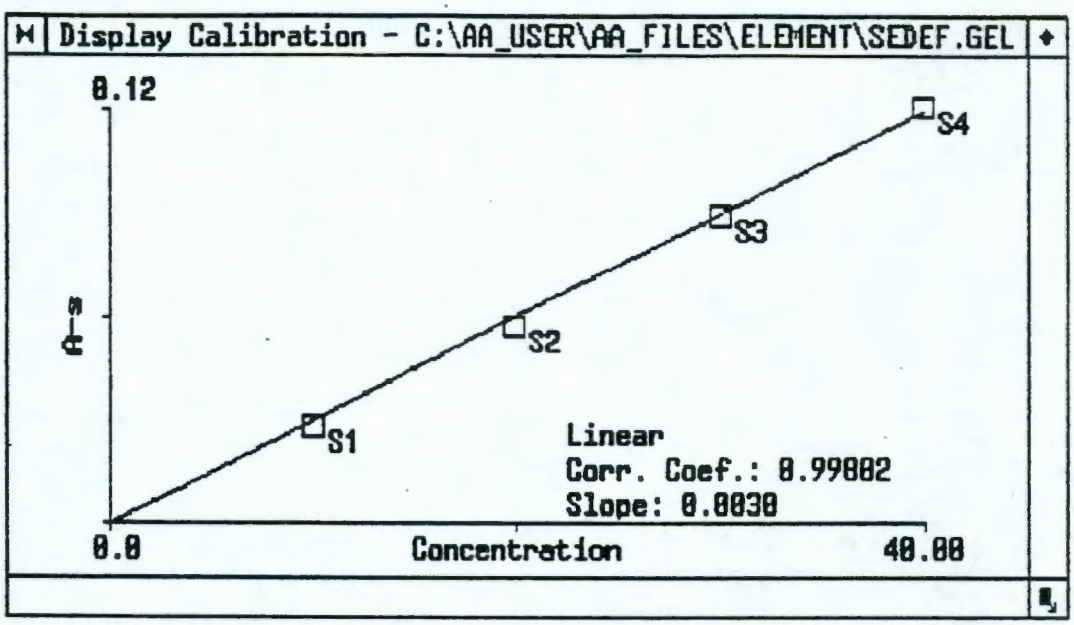
****

Se ID: CCB4 Seq. No.: 00126 A/S Pos.: 24 Date: 03/15/93

uL dispensed: 4 from 0, 5 from 35, 20 from 24
Replicate 1 Time: 12:15
Peak Area (A-s): 0.005 Peak Height (A): 0.006
Background Pk Area (A-s): 0.136 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.43

uL dispensed: 4 from 0, 5 from 35, 20 from 24
Replicate 2 Time: 12:18
Peak Area (A-s): 0.004 Peak Height (A): 0.004
Background Pk Area (A-s): 0.131 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.70

Mean Conc (ug/L): -0.57 SD: 0.188 RSD(%): 33.28



ID/Weight File Name: DF.IDW

Analyst: DE Faulk

Sample Volume: 1 L

Sample Weight: 1.0 ug

Autosampler Type:

Last Stored: 93/03/15, at 08:05:38

Loc.	Sample ID	Weight	Dilution
1	5 ppb Se		
2	ICV-2 40x		
3	ICB		
4	CRA 5 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-2239 100x		
9	93-2240 100x		
10	CCV1 ICV-2 40x		
11	CCB 2		
12	93-2241 100x		
13	93-2241 D 100x		
14	93-2241 S 100x		
15	LCS 10x		
16	93-2251 100x		
17	CCV2 ICV-2 40x		
18	CCB 3		
19	93-2437 100x		
20	93-2438 100x		
21	93-2451 100x		
22	LCS + Bi 10x		
23	CCV3 ICV-2 40x		
24	CCB4		

9613492.0827

Element File: SEDEF.SEL Last Stored: 93/03/15 12:20:13
Element: Se Wavelength: 196.0 Peak Slit: 2.0 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100,~~WA93267~~ WB76157 mwr 4/16/93
Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
locations:S1 S2 S3 S4 (34 w/dil), mod(35),blk(0)
procedure: PML-ALO-215, rev.1
T-106 100x

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 10.00 S2: 20.00 S3: 30.00
S4: 40.00 S5: S6:
S7: S8: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 2

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
90	5	30	300		Norm	
130	10	20	300		Norm	
1000	10	35	300		Norm	
30	1	15	300		Norm	
2100	0	5	30	*	Norm	
2600	1	4	300		Norm	
30	2	5	300		Norm	

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 4 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

Spike Recovery: Frequency: 6,8,9,12,13,15,16,19-22
Location: 34 Volume: 4 uL Concentration: 50.00 ug/L

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	4	5	
Standard 1	34	4	20	5	
Standard 2	34	8	16	5	
Standard 3	34	12	12	5	
Standard 4	34	16	8	5	
Standard 5					
Standard 6					
Standard 7					
Standard 8					
Reslope					

D04-046

This is original, 10-fold dilution, Selenium run. Not used for reporting as all analytical spikes failed. Support data only
KJK 4/23/93

Element File: SEDEF.GEL Element: Se Wavelength: 196.0
Date: 03/12/93 Time: 09:33 Slit: 2.0
Data File: T_106.DAT ID/Wt File: DF.IDW Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 72
Remark 1: AA3100.WA93267
Remark 2: Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
Remark 3: locations:S1 S2 S3 S4 (34 w/dil), mod(35),blk(0)
Remark 4: procedure: PNL-AL0-215, rev.1
Remark 5: T-106 10x

Darrin Faulk 3/12/93

Se ID: Blank Seq. No.: 00087 A/S Pos.: 0 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 09:37
Peak Area (A-s): 0.009 Peak Height (A): 0.006
Background Pk Area (A-s): 0.180 Background Pk Height (A): 0.131
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 2.64

uL dispensed: 4 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 09:40
Peak Area (A-s): 0.007 Peak Height (A): 0.005
Background Pk Area (A-s): 0.179 Background Pk Height (A): 0.131
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 1.86

Mean Conc (ug/L): 2.25 SD: 0.557 RSD(%): 24.77

Auto-zero performed.

Se ID: Standard 1 Seq. No.: 00088 A/S Pos.: 34 Date: 03/12/93

uL dispensed: 20 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 09:43
Peak Area (A-s): 0.039 Peak Height (A): 0.039
Background Pk Area (A-s): 0.217 Background Pk Height (A): 0.129
Blank Corrected Pk Area (A-s): 0.030
Concentration (ug/L): 9.06

uL dispensed: 20 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 09:46
Peak Area (A-s): 0.039 Peak Height (A): 0.038
Background Pk Area (A-s): 0.210 Background Pk Height (A): 0.126
Blank Corrected Pk Area (A-s): 0.031
Concentration (ug/L): 9.07

Mean Conc (ug/L): 9.07 SD: 0.011 RSD(%): 0.12

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0031

Se ID: Standard 2 Seq. No.: 00089 A/S Pos.: 34 Date: 03/12/93

uL dispensed: 16 from 0, 5 from 35, 8 from 34
Replicate 1 Time: 09:49

Peak Area (A-s): 0.073 Peak Height (A): 0.073
Background Pk Area (A-s): 0.213 Background Pk Height (A): 0.128
Blank Corrected Pk Area (A-s): 0.065
Concentration (ug/L): 21.24

uL dispensed: 16 from 0, 5 from 35, 8 from 34
Replicate 2 Time: 09:52
Peak Area (A-s): 0.074 Peak Height (A): 0.073
Background Pk Area (A-s): 0.211 Background Pk Height (A): 0.129
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 21.63

Mean Conc (ug/L): 21.44 SD: 0.279 RSD(%): 1.30

Standard number 2 applied. [20.00]
Correlation coefficient: 0.99631 Slope: 0.0032

****

Se ID: Standard 3 Seq. No.: 00090 A/S Pos.: 34 Date: 03/12/93

uL dispensed: 12 from 0, 5 from 35, 12 from 34
Replicate 1 Time: 09:55
Peak Area (A-s): 0.105 Peak Height (A): 0.103
Background Pk Area (A-s): 0.214 Background Pk Height (A): 0.128
Blank Corrected Pk Area (A-s): 0.096
Concentration (ug/L): 29.88

uL dispensed: 12 from 0, 5 from 35, 12 from 34
Replicate 2 Time: 09:58
Peak Area (A-s): 0.106 Peak Height (A): 0.100
Background Pk Area (A-s): 0.201 Background Pk Height (A): 0.129
Blank Corrected Pk Area (A-s): 0.098
Concentration (ug/L): 30.41

Mean Conc (ug/L): 30.14 SD: 0.373 RSD(%): 1.24

Standard number 3 applied. [30.00]
Correlation coefficient: 0.99906 Slope: 0.0032

****

Se ID: Standard 4 Seq. No.: 00091 A/S Pos.: 34 Date: 03/12/93

uL dispensed: 8 from 0, 5 from 35, 16 from 34
Replicate 1 Time: 10:01
Peak Area (A-s): 0.140 Peak Height (A): 0.129
Background Pk Area (A-s): 0.192 Background Pk Height (A): 0.128
Blank Corrected Pk Area (A-s): 0.132
Concentration (ug/L): 40.62

uL dispensed: 8 from 0, 5 from 35, 16 from 34
Replicate 2 Time: 10:05
Peak Area (A-s): 0.141 Peak Height (A): 0.126
Background Pk Area (A-s): 0.196 Background Pk Height (A): 0.125
Blank Corrected Pk Area (A-s): 0.133
Concentration (ug/L): 41.03

Mean Conc (ug/L): 40.83 SD: 0.287 RSD(%): 0.70

Standard number 4 applied. [40.00]

Correlation coefficient: 0.99931 Slope: 0.0033

****

Se ID: 5 ppb Se Seq. No.: 00092 A/S Pos.: 1 Date: 03/12/93

uL dispensed: 4 from 0. 5 from 35. 20 from 1
Replicate 1 Time: 10:08
Peak Area (A-s): 0.024 Peak Height (A): 0.022
Background Pk Area (A-s): 0.188 Background Pk Height (A): 0.124
Blank Corrected Pk Area (A-s): 0.016
Concentration (ug/L): 4.84

uL dispensed: 4 from 0. 5 from 35. 20 from 1
Replicate 2 Time: 10:11
Peak Area (A-s): 0.023 Peak Height (A): 0.022
Background Pk Area (A-s): 0.189 Background Pk Height (A): 0.122
Blank Corrected Pk Area (A-s): 0.015
Concentration (ug/L): 4.46

Mean Conc (ug/L): 4.65 SD: 0.265 RSD(%): 5.69

****

Se ID: ICV-2 40x Seq. No.: 00093 A/S Pos.: 2 Date: 03/12/93
(1298) ICP 1206 mg/L DP 3/12/93

uL dispensed: 4 from 0. 5 from 35. 20 from 2
Replicate 1 Time: 10:14
Peak Area (A-s): 0.093 Peak Height (A): 0.086
Background Pk Area (A-s): 0.187 Background Pk Height (A): 0.123
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 26.02

uL dispensed: 4 from 0. 5 from 35. 20 from 2
Replicate 2 Time: 10:17
Peak Area (A-s): 0.093 Peak Height (A): 0.086
Background Pk Area (A-s): 0.191 Background Pk Height (A): 0.121
Blank Corrected Pk Area (A-s): 0.084
Concentration (ug/L): 25.77

Mean Conc (ug/L): 25.90 SD: 0.177 RSD(%): 0.68

****

Se ID: ICB Seq. No.: 00094 A/S Pos.: 3 Date: 03/12/93

uL dispensed: 4 from 0. 5 from 35. 20 from 3
Replicate 1 Time: 10:20
Peak Area (A-s): 0.007 Peak Height (A): 0.007
Background Pk Area (A-s): 0.187 Background Pk Height (A): 0.122
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.28

uL dispensed: 4 from 0. 5 from 35. 20 from 3
Replicate 2 Time: 10:23
Peak Area (A-s): 0.007 Peak Height (A): 0.005
Background Pk Area (A-s): 0.182 Background Pk Height (A): 0.120
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.50

Mean Conc (ug/L): -0.39 SD: 0.156 RSD(%): 40.25

****

Se ID: CRA 5 ppb Seq. No.: 00095 A/S Pos.: 4 Date: 03/12/93

uL dispensed: 4 from 0. 5 from 35. 20 from 4
Replicate 1 Time: 10:26
Peak Area (A-s): 0.022 Peak Height (A): 0.020
Background Pk Area (A-s): 0.182 Background Pk Height (A): 0.120
Blank Corrected Pk Area (A-s): 0.014
Concentration (ug/L): 4.22

uL dispensed: 4 from 0. 5 from 35. 20 from 4
Replicate 2 Time: 10:30
Peak Area (A-s): 0.021 Peak Height (A): 0.020
Background Pk Area (A-s): 0.183 Background Pk Height (A): 0.116
Blank Corrected Pk Area (A-s): 0.013
Concentration (ug/L): 3.90

Mean Conc (ug/L): 4.06 SD: 0.227 RSD(%): 5.59

****

Se ID: CCB 1 Seq. No.: 00096 A/S Pos.: 5 Date: 03/12/93

uL dispensed: 4 from 0. 5 from 35. 20 from 5
Replicate 1 Time: 10:33
Peak Area (A-s): 0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.179 Background Pk Height (A): 0.116
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -0.98

uL dispensed: 4 from 0. 5 from 35. 20 from 5
Replicate 2 Time: 10:36
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.185 Background Pk Height (A): 0.120
Blank Corrected Pk Area (A-s): -0.007
Concentration (ug/L): -2.07

Mean Conc (ug/L): -1.53 SD: 0.770 RSD(%): 50.44

****

Se ID: PBS Seq. No.: 00097 A/S Pos.: 6 Date: 03/12/93

uL dispensed: 4 from 0. 5 from 35. 20 from 6
Replicate 1 Time: 10:39
Peak Area (A-s): 0.003 Peak Height (A): 0.004
Background Pk Area (A-s): 0.181 Background Pk Height (A): 0.115
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L): -1.67

uL dispensed: 4 from 0. 5 from 35. 20 from 6
Replicate 2 Time: 10:42
Peak Area (A-s): 0.004 Peak Height (A): 0.005
Background Pk Area (A-s): 0.177 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): -0.004
Concentration (ug/L): -1.26

Mean Conc (ug/L): -1.47 SD: 0.288 RSD(%): 19.63

****

Se ID: PBS Seq. No.: 00098 A/S Pos.: 6 Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 6
Replicate 1 Time: 10:46
Peak Area (A-s): 0.037 Peak Height (A): 0.043
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.107
Blank Corrected Pk Area (A-s): 0.028
Concentration (ug/L): 8.67

uL dispensed: 5 from 35, 4 from 34, 20 from 6
Replicate 2 Time: 10:49
Peak Area (A-s): 0.037 Peak Height (A): 0.042
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.106
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 8.93

Mean Conc (ug/L): 8.80 SD: 0.185 RSD(%): 2.10

Recovery is 102.7%

****

Se ID: sok blk Seq. No.: 00099 A/S Pos.: 7 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 10:52
Peak Area (A-s): 0.040 Peak Height (A): 0.039
Background Pk Area (A-s): 0.186 Background Pk Height (A): 0.110
Blank Corrected Pk Area (A-s): 0.032
Concentration (ug/L): 9.70

uL dispensed: 4 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 10:55
Peak Area (A-s): 0.042 Peak Height (A): 0.039
Background Pk Area (A-s): 0.189 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.034
Concentration (ug/L): 10.30

Mean Conc (ug/L): 10.00 SD: 0.427 RSD(%): 4.27

****

Se ID: 93-2239 10x Seq. No.: 00100 A/S Pos.: 8 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 10:59
Peak Area (A-s): -0.006 Peak Height (A): 0.005
Background Pk Area (A-s): 0.198 Background Pk Height (A): 0.112
Blank Corrected Pk Area (A-s): -0.014
Concentration (ug/L): -4.26

uL dispensed: 4 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 11:02
Peak Area (A-s): -0.005 Peak Height (A): 0.004
Background Pk Area (A-s): 0.187 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L): -3.95

Mean Conc (ug/L): -4.11 SD: 0.224 RSD(%): 5.46

****

Se ID: 93-2239 10x Seq. No.: 00101 A/S Pos.: 8 Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 8
Replicate 1 Time: 11:05
Peak Area (A-s): 0.031 Peak Height (A): 0.038
Background Pk Area (A-s): 0.167 Background Pk Height (A): 0.107
Blank Corrected Pk Area (A-s): 0.023
Concentration (ug/L): 7.08

uL dispensed: 5 from 35, 4 from 34, 20 from 8
Replicate 2 Time: 11:08
Peak Area (A-s): 0.030 Peak Height (A): 0.039
Background Pk Area (A-s): 0.159 Background Pk Height (A): 0.103
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L): 6.72

Mean Conc (ug/L): 6.90 SD: 0.253 RSD(%): 3.67

Recovery is 110.0%

****

Se ID: 93-2240 10x Seq. No.: 00102 A/S Pos.: 9 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 11:12
Peak Area (A-s): -0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.199 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L): -4.08

uL dispensed: 4 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 11:15
Peak Area (A-s): -0.004 Peak Height (A): 0.004
Background Pk Area (A-s): 0.188 Background Pk Height (A): 0.106
Blank Corrected Pk Area (A-s): -0.012
Concentration (ug/L): -3.64

Mean Conc (ug/L): -3.86 SD: 0.308 RSD(%): 7.97

****

Se ID: 93-2240 10x Seq. No.: 00103 A/S Pos.: 9 Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 9
Replicate 1 Time: 11:18
Peak Area (A-s): 0.030 Peak Height (A): 0.039
Background Pk Area (A-s): 0.161 Background Pk Height (A): 0.105
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L): 6.61

uL dispensed: 5 from 35, 4 from 34, 20 from 9
Replicate 2 Time: 11:21
Peak Area (A-s): 0.032 Peak Height (A): 0.040
Background Pk Area (A-s): 0.159 Background Pk Height (A): 0.100
Blank Corrected Pk Area (A-s): 0.024
Concentration (ug/L): 7.33

Mean Conc (ug/L): 6.97 SD: 0.511 RSD(%): 7.34

Recovery is 108.3%

```
*****************************************************************************
Se    ID: CCV1 ICV-2 40x     Seq. No.: 00104    A/S Pos.: 10    Date: 03/12/93
      (1249) ICF 1006 ug/L  AP 3/12/93
uL dispensed: 4 from 0, 5 from 35, 20 from 10
Replicate  1                          Time: 11:25
Peak Area (A-s): 0.096                Peak Height (A): 0.087
Background Pk Area (A-s): 0.182       Background Pk Height (A): 0.111
Blank Corrected Pk Area (A-s): 0.088
Concentration (ug/L  ): 26.73

uL dispensed: 4 from 0, 5 from 35, 20 from 10
Replicate  2                          Time: 11:28
Peak Area (A-s): 0.099                Peak Height (A): 0.089
Background Pk Area (A-s): 0.173       Background Pk Height (A): 0.106
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L  ): 27.72

Mean Conc  (ug/L  ):      27.23       SD: 0.701              RSD(%): 2.58

*****************************************************************************
Se    ID: CCB 2              Seq. No.: 00105    A/S Pos.: 11    Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 11
Replicate  1                          Time: 11:31
Peak Area (A-s): 0.006                Peak Height (A): 0.007
Background Pk Area (A-s): 0.183       Background Pk Height (A): 0.103
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L  ): -0.62

uL dispensed: 4 from 0, 5 from 35, 20 from 11
Replicate  2                          Time: 11:34
Peak Area (A-s): 0.002                Peak Height (A): 0.004
Background Pk Area (A-s): 0.187       Background Pk Height (A): 0.105
Blank Corrected Pk Area (A-s): -0.006
Concentration (ug/L  ): -1.93

Mean Conc  (ug/L  ):      -1.28       SD: 0.927              RSD(%): 72.49

*****************************************************************************
Se    ID: 93-2241 10x        Seq. No.: 00106    A/S Pos.: 12    Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 12
Replicate  1                          Time: 11:38
Peak Area (A-s): -0.003               Peak Height (A): 0.005
Background Pk Area (A-s): 0.180       Background Pk Height (A): 0.105
Blank Corrected Pk Area (A-s): -0.012
Concentration (ug/L  ): -3.54

uL dispensed: 4 from 0, 5 from 35, 20 from 12
Replicate  2                          Time: 11:41
Peak Area (A-s): -0.002               Peak Height (A): 0.005
Background Pk Area (A-s): 0.184       Background Pk Height (A): 0.104
Blank Corrected Pk Area (A-s): -0.010
Concentration (ug/L  ): -3.03

Mean Conc  (ug/L  ):      -3.28       SD: 0.360              RSD(%): 10.97

*****************************************************************************
Se    ID: 93-2241 10x        Seq. No.: 00107    A/S Pos.: 12    Date: 03/12/93
```

uL dispensed: 5 from 35, 4 from 34, 20 from 12
Replicate 1 Time: 11:44
Peak Area (A-s): 0.030 Peak Height (A): 0.039
Background Pk Area (A-s): 0.164 Background Pk Height (A): 0.100
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L): 6.78

uL dispensed: 5 from 35, 4 from 34, 20 from 12
Replicate 2 Time: 11:47
Peak Area (A-s): 0.033 Peak Height (A): 0.038
Background Pk Area (A-s): 0.166 Background Pk Height (A): 0.100
Blank Corrected Pk Area (A-s): 0.025
Concentration (ug/L): 7.67

Mean Conc (ug/L): 7.22 SD: 0.631 RSD(%): 8.74

Recovery is 105.1%

****

Se ID: 93-2241D 10x Seq. No.: 00108 A/S Pos.: 13 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 11:50
Peak Area (A-s): -0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.179 Background Pk Height (A): 0.099
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L): -3.94

uL dispensed: 4 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 11:54
Peak Area (A-s): -0.004 Peak Height (A): 0.004
Background Pk Area (A-s): 0.191 Background Pk Height (A): 0.100
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L): -3.82

Mean Conc (ug/L): -3.88 SD: 0.084 RSD(%): 2.17

****

Se ID: 93-2241D 10x Seq. No.: 00109 A/S Pos.: 13 Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 13
Replicate 1 Time: 11:57
Peak Area (A-s): 0.030 Peak Height (A): 0.036
Background Pk Area (A-s): 0.166 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.021
Concentration (ug/L): 6.53

uL dispensed: 5 from 35, 4 from 34, 20 from 13
Replicate 2 Time: 12:00
Peak Area (A-s): 0.033 Peak Height (A): 0.037
Background Pk Area (A-s): 0.162 Background Pk Height (A): 0.100
Blank Corrected Pk Area (A-s): 0.024
Concentration (ug/L): 7.47

Mean Conc (ug/L): 7.00 SD: 0.661 RSD(%): 9.44

Recovery is 108.8%

****

Se ID: 93-2241S 10x Seq. No.: 00110 A/S Pos.: 14 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 14
Replicate 1 Time: 12:03
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.182 Background Pk Height (A): 0.097
Blank Corrected Pk Area (A-s): -0.007
Concentration (ug/L): -2.24

uL dispensed: 4 from 0, 5 from 35, 20 from 14
Replicate 2 Time: 12:06
Peak Area (A-s): 0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.184 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): -0.008
Concentration (ug/L): -2.49

Mean Conc (ug/L): -2.36 SD: 0.173 RSD(%): 7.32

****

Se ID: LCS 10x Seq. No.: 00111 A/S Pos.: 15 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 12:10
Peak Area (A-s): 0.055 Peak Height (A): 0.059
Background Pk Area (A-s): 0.188 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): 0.047
Concentration (ug/L): 14.35

uL dispensed: 4 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 12:13
Peak Area (A-s): 0.058 Peak Height (A): 0.061
Background Pk Area (A-s): 0.190 Background Pk Height (A): 0.097
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 15.22

Mean Conc (ug/L): 14.79 SD: 0.616 RSD(%): 4.16

****

Se ID: LCS 10x Seq. No.: 00112 A/S Pos.: 15 Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 15
Replicate 1 Time: 12:16
Peak Area (A-s): 0.098 Peak Height (A): 0.101
Background Pk Area (A-s): 0.170 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): 0.090
Concentration (ug/L): 27.54

uL dispensed: 5 from 35, 4 from 34, 20 from 15
Replicate 2 Time: 12:19
Peak Area (A-s): 0.099 Peak Height (A): 0.099
Background Pk Area (A-s): 0.169 Background Pk Height (A): 0.099
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 27.79

Mean Conc (ug/L): 27.66 SD: 0.175 RSD(%): 0.63

Recovery is 128.8%

****

Se ID: 93-2251 10x Seq. No.: 00113 A/S Pos.: 16 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 12:22
Peak Area (A-s): 0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.185 Background Pk Height (A): 0.099
Blank Corrected Pk Area (A-s): -0.008
Concentration (ug/L): -2.41

uL dispensed: 4 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 12:25
Peak Area (A-s): -0.005 Peak Height (A): 0.005
Background Pk Area (A-s): 0.183 Background Pk Height (A): 0.098
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L): -4.05

Mean Conc (ug/L): -3.23 SD: 1.158 RSD(%): 35.90

****

Se ID: 93-2251 10x Seq. No.: 00114 A/S Pos.: 16 Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 16
Replicate 1 Time: 12:28
Peak Area (A-s): 0.031 Peak Height (A): 0.038
Background Pk Area (A-s): 0.159 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.023
Concentration (ug/L): 7.03

uL dispensed: 5 from 35, 4 from 34, 20 from 16
Replicate 2 Time: 12:32
Peak Area (A-s): 0.037 Peak Height (A): 0.040
Background Pk Area (A-s): 0.160 Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 8.90

Mean Conc (ug/L): 7.97 SD: 1.322 RSD(%): 16.59

Recovery is 112.0%

****

Se ID: CCV7 ICV-2 40x Seq. No.: 00115 A/S Pos.: 17 Date: 03/12/93
(1290) ICIF 100% ug/L SF 3/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 12:35
Peak Area (A-s): 0.103 Peak Height (A): 0.090
Background Pk Area (A-s): 0.172 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): 0.095
Concentration (ug/L): 28.91

uL dispensed: 4 from 0, 5 from 35, 20 from 17
Replicate 2 Time: 12:38
Peak Area (A-s): 0.103 Peak Height (A): 0.085
Background Pk Area (A-s): 0.179 Background Pk Height (A): 0.098
Blank Corrected Pk Area (A-s): 0.095
Concentration (ug/L): 28.97

Mean Conc (ug/L): 28.94 SD: 0.039 RSD(%): 0.13

```
*****************************************************************************
Se    ID: CCB 3              Seq. No.: 00116    A/S Pos.: 18    Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 18
Replicate  1                          Time: 12:41
Peak Area (A-s): 0.006                Peak Height (A): 0.007
Background Pk Area (A-s): 0.175       Background Pk Height (A): 0.099
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L  ): -0.74

uL dispensed: 4 from 0, 5 from 35, 20 from 18
Replicate  2                          Time: 12:44
Peak Area (A-s): 0.006                Peak Height (A): 0.006
Background Pk Area (A-s): 0.171       Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L  ): -0.75

Mean Conc  (ug/L  ):      -0.74       SD: 0.005              RSD(%): 0.68

*****************************************************************************
Se    ID: 93-2437 10x        Seq. No.: 00117    A/S Pos.: 19    Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 19
Replicate  1                          Time: 12:47
Peak Area (A-s): -0.004               Peak Height (A): 0.004
Background Pk Area (A-s): 0.179       Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L  ): -3.83

uL dispensed: 4 from 0, 5 from 35, 20 from 19
Replicate  2                          Time: 12:50
Peak Area (A-s): -0.005               Peak Height (A): 0.004
Background Pk Area (A-s): 0.174       Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L  ): -3.96

Mean Conc  (ug/L  ):      -3.89       SD: 0.089              RSD(%): 2.29

*****************************************************************************
Se    ID: 93-2437 10x        Seq. No.: 00118    A/S Pos.: 19    Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 19
Replicate  1                          Time: 12:53
Peak Area (A-s): 0.031                Peak Height (A): 0.038
Background Pk Area (A-s): 0.147       Background Pk Height (A): 0.088
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L  ): 6.82

uL dispensed: 5 from 35, 4 from 34, 20 from 19
Replicate  2                          Time: 12:56
Peak Area (A-s): 0.035                Peak Height (A): 0.040
Background Pk Area (A-s): 0.147       Background Pk Height (A): 0.088
Blank Corrected Pk Area (A-s): 0.027
Concentration (ug/L  ): 8.21

Mean Conc  (ug/L  ):       7.51       SD: 0.979              RSD(%): 13.02

Recovery is 114.12
```

****

Se ID: 93-2438 10x Seq. No.: 00119 A/S Pos.: 20 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 12:59
Peak Area (A-s): -0.004 Peak Height (A): 0.004
Background Pk Area (A-s): 0.177 Background Pk Height (A): 0.093
Blank Corrected Pk Area (A-s): -0.012
Concentration (ug/L): -3.58

uL dispensed: 4 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 13:03
Peak Area (A-s): -0.004 Peak Height (A): 0.005
Background Pk Area (A-s): 0.177 Background Pk Height (A): 0.094
Blank Corrected Pk Area (A-s): -0.012
Concentration (ug/L): -3.62

Mean Conc (ug/L): -3.60 SD: 0.029 RSD(%): 0.79

****

Se ID: 93-2438 10x Seq. No.: 00120 A/S Pos.: 20 Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 20
Replicate 1 Time: 13:06
Peak Area (A-s): 0.032 Peak Height (A): 0.041
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.024
Concentration (ug/L): 7.26

uL dispensed: 5 from 35, 4 from 34, 20 from 20
Replicate 2 Time: 13:09
Peak Area (A-s): 0.031 Peak Height (A): 0.037
Background Pk Area (A-s): 0.160 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.023
Concentration (ug/L): 7.00

Mean Conc (ug/L): 7.13 SD: 0.181 RSD(%): 2.54

Recovery is 107.4%

****

Se ID: 93-2451 10x Seq. No.: 00121 A/S Pos.: 21 Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 13:12
Peak Area (A-s): -0.006 Peak Height (A): 0.005
Background Pk Area (A-s): 0.178 Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): -0.014
Concentration (ug/L): -4.42

uL dispensed: 4 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 13:15
Peak Area (A-s): -0.007 Peak Height (A): 0.005
Background Pk Area (A-s): 0.181 Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): -0.015
Concentration (ug/L): -4.59

Mean Conc (ug/L): -4.51 SD: 0.119 RSD(%): 2.64

```
*****************************************************************************
Se    ID: 93-2451 10x        Seq. No.: 00122    A/S Pos.: 21    Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 21
Replicate  1                          Time: 13:18
Peak Area (A-s): 0.030                Peak Height (A): 0.039
Background Pk Area (A-s): 0.160       Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.021
Concentration (ug/L  ): 6.55

uL dispensed: 5 from 35, 4 from 34, 20 from 21
Replicate  2                          Time: 13:21
Peak Area (A-s): 0.031                Peak Height (A): 0.039
Background Pk Area (A-s): 0.158       Background Pk Height (A): 0.088
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L  ): 6.84

Mean Conc  (ug/L  ):       6.69       SD: 0.205              RSD(%): 3.06

Recovery is 112.0%

*****************************************************************************
Se    ID: LCS + Bi 10x       Seq. No.: 00123    A/S Pos.: 22    Date: 03/12/93

uL dispensed: 4 from 0, 5 from 35, 20 from 22
Replicate  1                          Time: 13:24
Peak Area (A-s): 0.065                Peak Height (A): 0.068
Background Pk Area (A-s): 0.179       Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L  ): 17.26

uL dispensed: 4 from 0, 5 from 35, 20 from 22
Replicate  2                          Time: 13:27
Peak Area (A-s): 0.065                Peak Height (A): 0.064
Background Pk Area (A-s): 0.184       Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L  ): 17.35

Mean Conc  (ug/L  ):      17.31       SD: 0.066              RSD(%): 0.38

*****************************************************************************
Se    ID: LCS + Bi 10x       Seq. No.: 00124    A/S Pos.: 22    Date: 03/12/93

uL dispensed: 5 from 35, 4 from 34, 20 from 22
Replicate  1                          Time: 13:30
Peak Area (A-s): 0.102                Peak Height (A): 0.112
Background Pk Area (A-s): 0.160       Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.094
Concentration (ug/L  ): 28.68

uL dispensed: 5 from 35, 4 from 34, 20 from 22
Replicate  2                          Time: 13:34
Peak Area (A-s): 0.106                Peak Height (A): 0.111
Background Pk Area (A-s): 0.162       Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.098
Concentration (ug/L  ): 30.03

Mean Conc  (ug/L  ):      29.35       SD: 0.955              RSD(%): 3.25
```

Recovery is 120.4%

****

Se ID: CCV3 ICV-2 40x Seq. No.: 00125 A/S Pos.: 23 Date: 03/12/93
ICF (1200) 100% ug/L LP 3/12/93

uL dispensed: 4 from 0. 5 from 35. 20 from 23
Replicate 1 Time: 13:37
Peak Area (A-s): 0.105 Peak Height (A): 0.095
Background Pk Area (A-s): 0.173 Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.097
Concentration (ug/L): 29.70

uL dispensed: 4 from 0. 5 from 35. 20 from 23
Replicate 2 Time: 13:40
Peak Area (A-s): 0.104 Peak Height (A): 0.089
Background Pk Area (A-s): 0.173 Background Pk Height (A): 0.092
Blank Corrected Pk Area (A-s): 0.096
Concentration (ug/L): 29.20

Mean Conc (ug/L): 29.45 SD: 0.357 RSD(%): 1.21

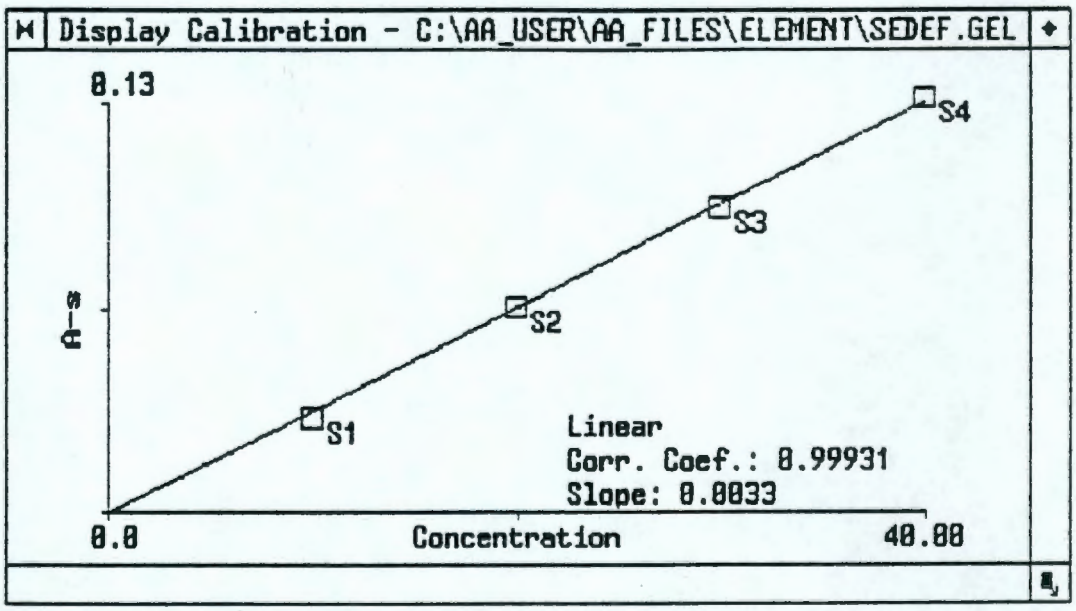
****

Se ID: CCB4 Seq. No.: 00126 A/S Pos.: 24 Date: 03/12/93

uL dispensed: 4 from 0. 5 from 35. 20 from 24
Replicate 1 Time: 13:43
Peak Area (A-s): 0.005 Peak Height (A): 0.007
Background Pk Area (A-s): 0.169 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -0.83

uL dispensed: 4 from 0. 5 from 35. 20 from 24
Replicate 2 Time: 13:46
Peak Area (A-s): 0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.168 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): -0.008
Concentration (ug/L): -2.43

Mean Conc (ug/L): -1.63 SD: 1.129 RSD(%): 69.16



ID/Weight File Name: DF.IDW Analyst: DE Faulk

Sample Volume: 1 L Sample Weight: 1.0 ug
Autosampler Type: Last Stored: 93/03/12. at 08:39:14

Loc.	Sample ID	Weight	Dilution
1	5 ppb Se		
2	ICV-2 40x		
3	ICB		
4	CRA 5 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-2239 10x		
9	93-2240 10x		
10	CCV1 ICV-2 40x		
11	CCB 2		
12	93-2241 10x		
13	93-2241D 10x		
14	93-2241S 10x		
15	LCS 10x		
16	93-2251 10x		
17	CCV2 ICV-2 40x		
18	CCB 3		
19	93-2437 10x		
20	93-2438 10x		
21	93-2451 10x		
22	LCS + Bi 10x		
23	CCV3 ICV-2 40x		

Element File: SEDEF.GEL Last Stored: 93/03/12 10:30:18
Element: Se Wavelength: 196.0 Peak Slit: 2.0 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100,WA93267
Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
locations:S1 S2 S3 S4 (34 w/dil), mod(35),blk(0)
procedure: PNL-ALO-215, rev.1
T-106 10x

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 10.00 S2: 20.00 S3: 30.00
S4: 40.00 S5: S6:
S7: S8: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 2

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
90	5	30	300		Norm	
130	10	20	300		Norm	
1000	10	35	300		Norm	
30	1	15	300		Norm	
2100	0	5	30	*	Norm	
2600	1	4	300		Norm	
30	2	5	300		Norm	

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 4 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

Spike Recovery: Frequency: 6,8,9,12,13,15,16,19-22
Location: 34 Volume: 4 uL Concentration: 50.00 ug/L

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	4	5	
Standard 1	34	4	20	5	
Standard 2	34	8	16	5	
Standard 3	34	12	12	5	
Standard 4	34	16	8	5	
Standard 5					
Standard 6					
Standard 7					
Standard 8					
Reslope					

Element File: TLDEF.GEL Element: Tl Wavelength: 276.8
Date: 03/10/93 Time: 12:20 Slit: 0.7
Data File: T_106.DAT ID/Wt File: DF.IDW Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 69
Remark 1: AA5100. ~~MA95267~~ WB76751 mwl 4/16/93
Remark 2: Matrix Modifier - Palladium Nitrate & Magesium Nitrate
Remark 3: procedure PML-ALO-220
Remark 4: locations:standards(34 w/dil), mod(35), blk(0).
Remark 5: T-106

Dawn Faulk 3-11-93

Tl ID: Blank Seq. No.: 00045 A/S Pos.: 0 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 12:23
Peak Area (A-s): -0.004 Peak Height (A): 0.003
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.18

uL dispensed: 8 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 12:26
Peak Area (A-s): -0.003 Peak Height (A): 0.003
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.04

Mean Conc (ug/L): -0.07 SD: 0.151 RSD(%): 214.07

Auto-zero performed.

Tl ID: Standard 1 Seq. No.: 00046 A/S Pos.: 34 Date: 03/10/93

uL dispensed: 24 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 12:28
Peak Area (A-s): 0.044 Peak Height (A): 0.053
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.048
Concentration (ug/L): 15.74

uL dispensed: 24 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 12:31
Peak Area (A-s): 0.044 Peak Height (A): 0.054
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.048
Concentration (ug/L): 15.80

Mean Conc (ug/L): 15.77 SD: 0.046 RSD(%): 0.29

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0048

Tl ID: Standard 2 Seq. No.: 00047 A/S Pos.: 34 Date: 03/10/93

uL dispensed: 20 from 0, 5 from 35, 8 from 34
Replicate 1 Time: 12:34

Peak Area (A-s): 0.083 Peak Height (A): 0.096
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.087
Concentration (ug/L): 18.18

uL dispensed: 20 from 0, 5 from 35, 9 from 34
Replicate 2 Time: 12:37
Peak Area (A-s): 0.087 Peak Height (A): 0.097
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 19.12

Mean Conc (ug/L): 18.65 SD: 0.661 RSD(%): 3.54

Standard number 2 applied. [20.00]
Correlation coefficient: 0.99591 Slope: 0.0045

****

T1 ID: Standard 3 Seq. No.: 00048 A/S Pos.: 34 Date: 03/10/93

uL dispensed: 16 from 0, 5 from 35, 12 from 34
Replicate 1 Time: 12:39
Peak Area (A-s): 0.127 Peak Height (A): 0.138
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.131
Concentration (ug/L): 28.89

uL dispensed: 16 from 0, 5 from 35, 12 from 34
Replicate 2 Time: 12:42
Peak Area (A-s): 0.126 Peak Height (A): 0.134
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.130
Concentration (ug/L): 28.79

Mean Conc (ug/L): 28.84 SD: 0.073 RSD(%): 0.25

Standard number 3 applied. [30.00]
Correlation coefficient: 0.99772 Slope: 0.0044

****

T1 ID: Standard 4 Seq. No.: 00049 A/S Pos.: 34 Date: 03/10/93

uL dispensed: 12 from 0, 5 from 35, 16 from 34
Replicate 1 Time: 12:45
Peak Area (A-s): 0.166 Peak Height (A): 0.183
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.170
Concentration (ug/L): 38.58

uL dispensed: 12 from 0, 5 from 35, 16 from 34
Replicate 2 Time: 12:47
Peak Area (A-s): 0.166 Peak Height (A): 0.184
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.170
Concentration (ug/L): 38.59

Mean Conc (ug/L): 38.59 SD: 0.007 RSD(%): 0.02

Standard number 4 applied. [40.00]

Correlation coefficient: 0.99812 Slope: 0.0043

****

Tl ID: 10 ppb Tl Seq. No.: 00050 A/S Pos.: 1 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 12:50
Peak Area (A-s): 0.039 Peak Height (A): 0.049
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.043
Concentration (ug/L): 9.93

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 2 Time: 12:53
Peak Area (A-s): 0.041 Peak Height (A): 0.049
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.005
Blank Corrected Pk Area (A-s): 0.045
Concentration (ug/L): 10.42

Mean Conc (ug/L): 10.18 SD: 0.344 RSD(%): 3.38

****

Tl ID: ICV-4 50x Seq. No.: 00051 A/S Pos.: 2 Date: 03/10/93
1cP (240) 1007 mg/L DF 3-mg3

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 12:56
Peak Area (A-s): 0.081 Peak Height (A): 0.095
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 19.69

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 2 Time: 12:59
Peak Area (A-s): 0.082 Peak Height (A): 0.095
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 19.74

Mean Conc (ug/L): 19.71 SD: 0.037 RSD(%): 0.19

****

Tl ID: ICB Seq. No.: 00052 A/S Pos.: 3 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 1 Time: 13:01
Peak Area (A-s): -0.002 Peak Height (A): 0.004
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.41

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 2 Time: 13:04
Peak Area (A-s): -0.002 Peak Height (A): 0.003
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.49

Mean Conc (ug/L): 0.45 SD: 0.056 RSD(%): 12.50

****

T1 ID: CRA 10 ppb Seq. No.: 00053 A/S Pos.: 4 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate 1 Time: 13:07
Peak Area (A-s): 0.040 Peak Height (A): 0.050
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.005
Blank Corrected Pk Area (A-s): 0.044
Concentration (ug/L): 10.06

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate 2 Time: 13:10
Peak Area (A-s): 0.040 Peak Height (A): 0.050
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.005
Blank Corrected Pk Area (A-s): 0.044
Concentration (ug/L): 10.22

Mean Conc (ug/L): 10.14 SD: 0.116 RSD(%): 1.14

****

T1 ID: CCB 1 Seq. No.: 00054 A/S Pos.: 5 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate 1 Time: 13:13
Peak Area (A-s): -0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.52

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate 2 Time: 13:15
Peak Area (A-s): -0.003 Peak Height (A): 0.004
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.15

Mean Conc (ug/L): 0.34 SD: 0.263 RSD(%): 78.31

****

T1 ID: PBS Seq. No.: 00055 A/S Pos.: 6 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 1 Time: 13:18
Peak Area (A-s): -0.003 Peak Height (A): 0.003
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.19

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 2 Time: 13:21
Peak Area (A-s): -0.002 Peak Height (A): 0.003
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.46

Mean Conc (ug/L): 0.33 SD: 0.190 RSD(%): 57.71

****

T1 ID: FBS Seq. No.: 00056 A/S Pos.: 6 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 1 Time: 13:24
Peak Area (A-s): 0.083 Peak Height (A): 0.109
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.086
Concentration (ug/L): 19.98

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 2 Time: 13:27
Peak Area (A-s): 0.082 Peak Height (A): 0.103
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 19.73

Mean Conc (ug/L): 19.85 SD: 0.175 RSD(%): 0.88

Recovery is 97.6%

****

T1 ID: spk blk Seq. No.: 00057 A/S Pos.: 7 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 13:30
Peak Area (A-s): 0.206 Peak Height (A): 0.254
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.210
Concentration (ug/L): 48.54

****

T1 ID: spk blk Seq. No.: 00058 A/S Pos.: 7 Date: 03/10/93

uL dispensed: 23 from 0, 5 from 35, 5 from 7
Replicate 1 Time: 13:32
Peak Area (A-s): 0.054 Peak Height (A): 0.062
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 13.37 Corrected Conc (ug/L): 53.48

uL dispensed: 23 from 0, 5 from 35, 5 from 7
Replicate 2 Time: 13:35
Peak Area (A-s): 0.054 Peak Height (A): 0.064
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 13.39 Corrected Conc (ug/L): 53.55

Mean Conc (ug/L): 13.38 SD: 0.013 RSD(%): 0.09
Corrected Conc (ug/L): 53.52

****

T1 ID: 93-2239 Seq. No.: 00059 A/S Pos.: 8 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 13:38
Peak Area (A-s): -0.000 Peak Height (A): 0.007
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.85

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 13:41
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 1.04

Mean Conc (ug/L): 0.95 SD: 0.135 RSD(%): 14.21

****

TI ID: 93-2239 Seq. No.: 00060 A/S Pos.: 8 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 1 Time: 13:44
Peak Area (A-s): 0.088 Peak Height (A): 0.157
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 21.14

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 2 Time: 13:47
Peak Area (A-s): 0.083 Peak Height (A): 0.159
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.087
Concentration (ug/L): 20.13

Mean Conc (ug/L): 20.64 SD: 0.720 RSD(%): 3.49

Recovery is 98.4%

****

TI ID: 93-2240 Seq. No.: 00061 A/S Pos.: 9 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 13:50
Peak Area (A-s): -0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.67

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 13:53
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 1.06

Mean Conc (ug/L): 0.86 SD: 0.271 RSD(%): 31.36

****

TI ID: 93-2240 Seq. No.: 00062 A/S Pos.: 9 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 1 Time: 13:55
Peak Area (A-s): 0.086 Peak Height (A): 0.154
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.090
Concentration (ug/L): 20.75

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 2 Time: 13:58
Peak Area (A-s): 0.085 Peak Height (A): 0.160
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.089
Concentration (ug/L): 20.61

Mean Conc (ug/L): 20.68 SD: 0.101 RSD(%): 0.49

Recovery is 99.1%

****

T1 ID: CCV1 ICV-4 50x Seq. No.: 00063 A/S Pos.: 10 Date: 03/10/93
(1220) ICP 1007 mg/L DF 3/11/93
uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 1 Time: 14:01
Peak Area (A-s): 0.085 Peak Height (A): 0.097
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.005
Blank Corrected Pk Area (A-s): 0.088
Concentration (ug/L): 20.41

uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 2 Time: 14:04
Peak Area (A-s): 0.088 Peak Height (A): 0.096
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.005
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 21.10

Mean Conc (ug/L): 20.75 SD: 0.485 RSD(%): 2.34

****

T1 ID: CCB 2 Seq. No.: 00064 A/S Pos.: 11 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 1 Time: 14:07
Peak Area (A-s): -0.000 Peak Height (A): 0.003
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.84

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 2 Time: 14:10
Peak Area (A-s): -0.002 Peak Height (A): 0.005
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.50

Mean Conc (ug/L): 0.67 SD: 0.242 RSD(%): 36.07

****

T1 ID: 93-2241 Seq. No.: 00065 A/S Pos.: 12 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 1 Time: 14:13
Peak Area (A-s): -0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.53

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 2 Time: 14:16
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.03

Mean Conc (ug/L): 0.78 SD: 0.349 RSD(%): 44.80

****

T1 ID: 93-2241 Seq. No.: 00066 A/S Pos.: 12 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 1 Time: 14:18
Peak Area (A-s): 0.087 Peak Height (A): 0.154
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 21.03

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 2 Time: 14:21
Peak Area (A-s): 0.086 Peak Height (A): 0.161
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.090
Concentration (ug/L): 20.77

Mean Conc (ug/L): 20.90 SD: 0.182 RSD(%): 0.87

Recovery is 100.6%

****

T1 ID: 93-2241d Seq. No.: 00067 A/S Pos.: 13 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 14:24
Peak Area (A-s): 0.000 Peak Height (A): 0.007
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.87

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 14:27
Peak Area (A-s): -0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.67

Mean Conc (ug/L): 0.77 SD: 0.138 RSD(%): 17.93

****

T1 ID: 93-2241d Seq. No.: 00068 A/S Pos.: 13 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 1 Time: 14:30
Peak Area (A-s): 0.086 Peak Height (A): 0.157
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.089
Concentration (ug/L): 20.65

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 2 Time: 14:33
Peak Area (A-s): 0.090 Peak Height (A): 0.166
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.093
Concentration (ug/L): 21.57

Mean Conc (ug/L): 21.11 SD: 0.648 RSD(%): 3.07

Recovery is 101.7%

****

T1 ID: 93-2241s Seq. No.: 00069 A/S Pos.: 14 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 14:35
Peak Area (A-s): 0.211 Peak Height (A): 0.361
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.215
Concentration (ug/L): 49.65

****

T1 ID: 93-2241s Seq. No.: 00070 A/S Pos.: 14 Date: 03/10/93

uL dispensed: 23 from 0, 5 from 35, 5 from 14
Replicate 1 Time: 14:38
Peak Area (A-s): 0.061 Peak Height (A): 0.082
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.064
Concentration (ug/L): 14.86 Corrected Conc (ug/L): 59.43

uL dispensed: 23 from 0, 5 from 35, 5 from 14
Replicate 2 Time: 14:41
Peak Area (A-s): 0.058 Peak Height (A): 0.085
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.061
Concentration (ug/L): 14.17 Corrected Conc (ug/L): 56.68

Mean Conc (ug/L): 14.51 SD: 0.486 RSD(%): 3.35
Corrected Conc (ug/L): 58.05

****

T1 ID: LCS 10x Seq. No.: 00071 A/S Pos.: 15 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 14:44
Peak Area (A-s): 0.106 Peak Height (A): 0.142
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): 0.110
Concentration (ug/L): 25.39

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 14:47
Peak Area (A-s): 0.107 Peak Height (A): 0.140
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): 0.111
Concentration (ug/L): 25.64

Mean Conc (ug/L): 25.51 SD: 0.180 RSD(%): 0.70

****

T1 ID: LCS 10x Seq. No.: 00072 A/S Pos.: 15 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 14:49
Peak Area (A-s): 0.191 Peak Height (A): 0.241
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.195
Concentration (ug/L): 45.10

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 14:52
Peak Area (A-s): 0.191 Peak Height (A): 0.244
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.195
Concentration (ug/L): 45.04

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 45.07 SD: 0.038 RSD(%): 0.08

Recovery is 97.8%

****

T1 ID: 93-2751 Seq. No.: 00073 A/S Pos.: 16 Date: 03/10/93
3 mell 4/16/93

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 14:55
Peak Area (A-s): -0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.019 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.76

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 14:58
Peak Area (A-s): -0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.63

Mean Conc (ug/L): 0.69 SD: 0.089 RSD(%): 12.81

****

T1 ID: 93-2751 Seq. No.: 00074 A/S Pos.: 16 Date: 03/10/93
3 mell 4/16/93

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 1 Time: 15:01
Peak Area (A-s): 0.089 Peak Height (A): 0.156
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.093
Concentration (ug/L): 21.51

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 2 Time: 15:03
Peak Area (A-s): 0.090 Peak Height (A): 0.157
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.007

Blank Corrected Pk Area (A-s): 0.094
Concentration (ug/L): 21.75

Mean Conc (ug/L): 21.63 SD: 0.169 RSD(%): 0.78

Recovery is 104.7%

****

T1 ID: CCV2 ICV-4 50x Seq. No.: 00075 A/S Pos.: 17 Date: 03/10/93
(1200) ICP 1007 mg/L DF 3-4-93

uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 15:06
Peak Area (A-s): 0.095 Peak Height (A): 0.108
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.099
Concentration (ug/L): 22.77

uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 2 Time: 15:09
Peak Area (A-s): 0.093 Peak Height (A): 0.108
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.097
Concentration (ug/L): 22.44

Mean Conc (ug/L): 22.60 SD: 0.238 RSD(%): 1.05

****

T1 ID: CCB 3 Seq. No.: 00076 A/S Pos.: 18 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 1 Time: 15:12
Peak Area (A-s): -0.003 Peak Height (A): 0.004
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.12

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 2 Time: 15:14
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.95

Mean Conc (ug/L): 0.53 SD: 0.587 RSD(%): 110.29

****

T1 ID: 93-2437 Seq. No.: 00077 A/S Pos.: 19 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 1 Time: 15:17
Peak Area (A-s): 0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 1.27

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 2 Time: 15:20
Peak Area (A-s): 0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.011

Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.01

Mean Conc (ug/L): 1.14 SD: 0.183 RSD(%): 16.05

****

T1 ID: 93-2437 Seq. No.: 00078 A/S Pos.: 19 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Replicate 1 Time: 15:22
Peak Area (A-s): 0.079 Peak Height (A): 0.136
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.082
Concentration (ug/L): 19.04

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Replicate 2 Time: 15:25
Peak Area (A-s): 0.077 Peak Height (A): 0.139
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.081
Concentration (ug/L): 18.63

Mean Conc (ug/L): 18.83 SD: 0.288 RSD(%): 1.53

Recovery is 88.5%

****

T1 ID: 93-2438 Seq. No.: 00079 A/S Pos.: 20 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 15:28
Peak Area (A-s): 0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.96

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 15:30
Peak Area (A-s): -0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.68

Mean Conc (ug/L): 0.82 SD: 0.205 RSD(%): 24.96

****

T1 ID: 93-2438 Seq. No.: 00080 A/S Pos.: 20 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Replicate 1 Time: 15:33
Peak Area (A-s): 0.076 Peak Height (A): 0.137
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.080
Concentration (ug/L): 18.49

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Replicate 2 Time: 15:36
Peak Area (A-s): 0.079 Peak Height (A): 0.141
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.007

Blank Corrected Pk Area (A-s): 0.083
Concentration (ug/L): 19.13

Mean Conc (ug/L): 18.81 SD: 0.449 RSD(%): 2.39

Recovery is 90.0%

****

T1 ID: 93-2451 Seq. No.: 00081 A/S Pos.: 21 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 15:39
Peak Area (A-s): -0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.49

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 15:41
Peak Area (A-s): 0.002 Peak Height (A): 0.008
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 1.23

Mean Conc (ug/L): 0.86 SD: 0.523 RSD(%): 61.00

****

T1 ID: 93-2451 Seq. No.: 00082 A/S Pos.: 21 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 1 Time: 15:44
Peak Area (A-s): 0.080 Peak Height (A): 0.141
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.084
Concentration (ug/L): 19.42

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 2 Time: 15:47
Peak Area (A-s): 0.081 Peak Height (A): 0.147
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 19.54

Mean Conc (ug/L): 19.48 SD: 0.084 RSD(%): 0.43

Recovery is 93.1%

****

T1 ID: LCS + Bi 10x Seq. No.: 00083 A/S Pos.: 22 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 22
Replicate 1 Time: 15:50
Peak Area (A-s): 0.101 Peak Height (A): 0.123
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.014
Blank Corrected Pk Area (A-s): 0.105
Concentration (ug/L): 24.30

uL dispensed: 8 from 0, 5 from 35, 20 from 22
Replicate 2 Time: 15:52

Peak Area (A-s): 0.100 Peak Height (A): 0.128
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.016
Blank Corrected Pk Area (A-s): 0.104
Concentration (ug/L): 24.00

Mean Conc (ug/L): 24.15 SD: 0.209 RSD(%): 0.87

****

T1 ID: LCS + Bi 10x Seq. No.: 00084 A/S Pos.: 22 Date: 03/10/93

uL dispensed: 5 from 35, 8 from 34, 20 from 22
Replicate 1 Time: 15:55
Peak Area (A-s): 0.177 Peak Height (A): 0.222
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.181
Concentration (ug/L): 41.77

uL dispensed: 5 from 35, 8 from 34, 20 from 22
Replicate 2 Time: 15:58
Peak Area (A-s): 0.182 Peak Height (A): 0.223
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.186
Concentration (ug/L): 42.95

Mean Conc (ug/L): 42.36 SD: 0.833 RSD(%): 1.97

Recovery is 91.0%

****

T1 ID: CCV3 ICV-4 50x Seq. No.: 00085 A/S Pos.: 23 Date: 03/10/93
(1250) ICP 1027 mg/L DF 3/11/93

uL dispensed: 8 from 0, 5 from 35, 20 from 23
Replicate 1 Time: 16:01
Peak Area (A-s): 0.091 Peak Height (A): 0.109
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.095
Concentration (ug/L): 21.97

uL dispensed: 8 from 0, 5 from 35, 20 from 23
Replicate 2 Time: 16:03
Peak Area (A-s): 0.095 Peak Height (A): 0.107
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.099
Concentration (ug/L): 22.81

Mean Conc (ug/L): 22.39 SD: 0.598 RSD(%): 2.67

****

T1 ID: CCB4 Seq. No.: 00086 A/S Pos.: 24 Date: 03/10/93

uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate 1 Time: 16:06
Peak Area (A-s): -0.002 Peak Height (A): 0.005
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.50

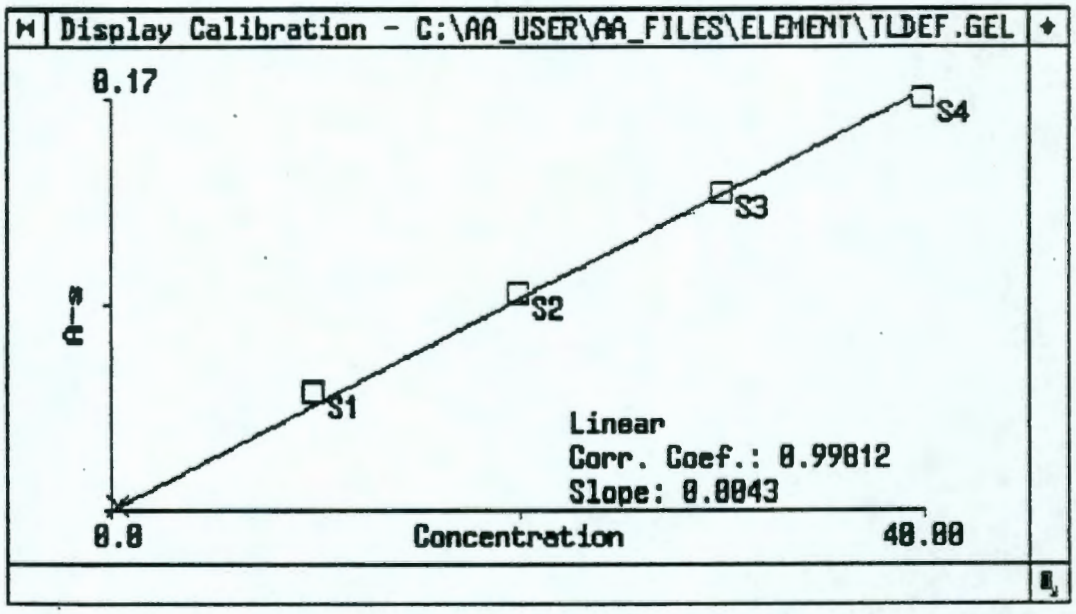
uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate 2 Time: 16:09

9613492.0858

Peak Area (A-s): -0.003
Background Pk Area (A-s): 0.012
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.17

Peak Height (A): 0.003
Background Pk Height (A): 0.006

Mean Conc (ug/L): 0.33 SD: 0.231 RSD(%): 69.52



ID/Weight File Name: DF.IDW
Analyst: DE Faulk

Sample Volume: 1 L
Autosampler Type:

Sample Weight: 1.0 ug
Last Stored: 93/03/10, at 11:30:59

Loc.	Sample ID	Weight	Dilution
1	10 ppb Tl		
2	ICV-4 50x		
3	ICB		
4	CRA 10 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-2239		
9	93-2240		
10	CCV1 ICV-4 50x		
11	CCB 2		
12	93-2241		
13	93-2241d		
14	93-2241s		
15	LCS 10x		
16	93-2251		
17	CCV2 ICV-4 50x		
18	CCB 3		
19	93-2437		
20	93-2438		
21	93-2451		
22	LCS + Bi 10x		
23	CCV3 ICV-4 50x		
24	CCB4		

D04-077

Element File: TLDEF.GEL Last Stored: 93/03/11 07:33:30
Element: Tl Wavelength: 276.8 Peak Slit: 0.7 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100, ~~MA93262~~ WB76757 mwll 4/16/93
Matrix Modifier - Palladium Nitrate & Magesium Nitrate
procedure PML-ALO-220
locations:standards(34 w/dil), mod(35), blk(0).
T-106

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 10.00 S2: 20.00 S3: 30.00
S4: 40.00 S5: S6:
S7: S8: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 2

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
90	10	20	300		Norm	
130	10	20	300		Norm	
1000	10	25	300		Norm	
20	1	10	300		Norm	
1600	0	5	30	*	Norm	
2600	1	3	300		Norm	
20	1	5	300		Norm	

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 8 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

Spike Recovery: Frequency: 6,8,9,12,13,15,16,19-22
Location: 34 Volume: 8 uL Concentration: 50.00 ug/L

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	8	5	
Standard 1	34	4	24	5	
Standard 2	34	8	20	5	
Standard 3	34	12	16	5	
Standard 4	34	16	12	5	
Standard 5					
Standard 6					
Standard 7					
Standard 8					
Reslope					

Sample Blank Location: Automated Additions

Element File: BIDEF.GEL Element: Bi Wavelength: 223.1
Date: 01/22/93 Time: 08:53 Slit: 0.20
Data File: T_106.DAT ID/Mt File: DF.IDM Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 63
Remark 1: AA5100, ~~AA73267~~ UU76757 mwl 4/16/93
Remark 2: Matrix Mdifier - Palladium Nitrate & Magnesium Nitrate
Remark 3: procedure PNL-ALO 221, rev 0
Remark 4: locations S1,S2,S3(34 w/dil), S4 (34), mod (35), blank (0)
Remark 5: T-106

Damian Faulk 1/22/93

Bi ID: Blank Seq. No.: 00009 A/S Pos.: 0 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 08:56
Peak Area (A-s): 0.043 Peak Height (A): 0.076
Background Pk Area (A-s): 0.086 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L): -1.80

uL dispensed: 8 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 08:58
Peak Area (A-s): 0.047 Peak Height (A): 0.077
Background Pk Area (A-s): 0.083 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.16

Mean Conc (ug/L): -0.98 SD: 1.157 RSD(%): 117.89

Auto-zero performed.

Bi ID: Standard 1 Seq. No.: 00010 A/S Pos.: 34 Date: 01/22/93

uL dispensed: 24 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 09:01
Peak Area (A-s): 0.078 Peak Height (A): 0.081
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.033
Concentration (ug/L): 11.75

uL dispensed: 24 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 09:04
Peak Area (A-s): 0.074 Peak Height (A): 0.078
Background Pk Area (A-s): 0.107 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 10.32

Mean Conc (ug/L): 11.04 SD: 1.006 RSD(%): 9.12

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0031

Bi ID: Standard 2 Seq. No.: 00011 A/S Pos.: 34 Date: 01/22/93

uL dispensed: 18 from 0, 5 from 35, 10 from 34
Replicate 1 Time: 09:06

Peak Area (A-s): 0.125 Peak Height (A): 0.136
Background Pk Area (A-s): 0.098 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.080
Concentration (ug/L): 25.66

uL dispensed: 18 from 0, 5 from 35, 10 from 34
Replicate 2 Time: 09:09
Peak Area (A-s): 0.120 Peak Height (A): 0.138
Background Pk Area (A-s): 0.097 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.075
Concentration (ug/L): 23.98

Mean Conc (ug/L): 24.82 SD: 1.194 RSD(%): 4.81

Standard number 2 applied. [25.00]
Correlation coefficient: 0.99998 Slope: 0.0031

****

Bi ID: Standard 3 Seq. No.: 00012 A/S Pos.: 34 Date: 01/22/93

uL dispensed: 14 from 0, 5 from 35, 14 from 34
Replicate 1 Time: 09:11
Peak Area (A-s): 0.155 Peak Height (A): 0.174
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): 0.110
Concentration (ug/L): 35.22

uL dispensed: 14 from 0, 5 from 35, 14 from 34
Replicate 2 Time: 09:14
Peak Area (A-s): 0.153 Peak Height (A): 0.177
Background Pk Area (A-s): 0.092 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.108
Concentration (ug/L): 34.80

Mean Conc (ug/L): 35.01 SD: 0.292 RSD(%): 0.83

Standard number 3 applied. [35.00]
Correlation coefficient: 0.99999 Slope: 0.0031

****

Bi ID: Standard 4 Seq. No.: 00013 A/S Pos.: 34 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 34
Replicate 1 Time: 09:17
Peak Area (A-s): 0.195 Peak Height (A): 0.235
Background Pk Area (A-s): 0.091 Background Pk Height (A): 0.076
Blank Corrected Pk Area (A-s): 0.150
Concentration (ug/L): 48.32

uL dispensed: 8 from 0, 5 from 35, 20 from 34
Replicate 2 Time: 09:19
Peak Area (A-s): 0.187 Peak Height (A): 0.228
Background Pk Area (A-s): 0.098 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.142
Concentration (ug/L): 45.49

Mean Conc (ug/L): 46.90 SD: 1.997 RSD(%): 4.26

Standard number 4 applied. [50.00]

Correlation coefficient: 0.99735 Slope: 0.0030

****

Bi ID: 10 ppb Bi std Seq. No.: 00014 A/S Pos.: 1 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 09:22
Peak Area (A-s): 0.081 Peak Height (A): 0.082
Background Pk Area (A-s): 0.088 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): 0.036
Concentration (ug/L): 11.91

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 2 Time: 09:25
Peak Area (A-s): 0.084 Peak Height (A): 0.083
Background Pk Area (A-s): 0.088 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): 0.039
Concentration (ug/L): 13.10

Mean Conc (ug/L): 12.50 SD: 0.841 RSD(%): 6.73

****

Bi ID: ICV 50 ppb Seq. No.: 00015 A/S Pos.: 2 Date: 01/22/93
50ppb DM lot 94216 exp 7/12/93 DF 1/25/93

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 09:27
Peak Area (A-s): 0.190 Peak Height (A): 0.227
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.145
Concentration (ug/L): 48.34

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 2 Time: 09:30
Peak Area (A-s): 0.187 Peak Height (A): 0.226
Background Pk Area (A-s): 0.090 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.142
Concentration (ug/L): 47.34

Mean Conc (ug/L): 47.84 SD: 0.709 RSD(%): 1.48

****

Bi ID: ICB Seq. No.: 00016 A/S Pos.: 3 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 1 Time: 09:33
Peak Area (A-s): 0.042 Peak Height (A): 0.072
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -1.11

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 2 Time: 09:35
Peak Area (A-s): 0.040 Peak Height (A): 0.074
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L): -1.54

Mean Conc (ug/L): -1.33 SD: 0.302 RSD(%): 22.76

****

Bi ID: CRA 10 ppb Seq. No.: 00017 A/S Pos.: 4 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate 1 Time: 09:38
Peak Area (A-s): 0.072 Peak Height (A): 0.076
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.027
Concentration (ug/L): 8.98

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate 2 Time: 09:41
Peak Area (A-s): 0.075 Peak Height (A): 0.074
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.030
Concentration (ug/L): 10.11

Mean Conc (ug/L): 9.54 SD: 0.800 RSD(%): 8.38

****

Bi ID: CCB 1 Seq. No.: 00018 A/S Pos.: 5 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate 1 Time: 09:44
Peak Area (A-s): 0.040 Peak Height (A): 0.071
Background Pk Area (A-s): 0.088 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L): -1.78

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate 2 Time: 09:46
Peak Area (A-s): 0.039 Peak Height (A): 0.072
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): -0.006
Concentration (ug/L): -1.85

Mean Conc (ug/L): -1.81 SD: 0.053 RSD(%): 2.95

****

Bi ID: PBS Seq. No.: 00019 A/S Pos.: 6 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 1 Time: 09:49
Peak Area (A-s): 0.038 Peak Height (A): 0.071
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): -0.007
Concentration (ug/L): -2.29

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 2 Time: 09:52
Peak Area (A-s): 0.034 Peak Height (A): 0.068
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): -0.011
Concentration (ug/L): -3.71

Mean Conc (ug/L): -3.00 SD: 1.004 RSD(%): 33.45

****

Si ID: PBS Seq. No.: 00020 A/S Pos.: 6 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 1 Time: 09:55
Peak Area (A-s): 0.098 Peak Height (A): 0.098
Background Pk Area (A-s): 0.070 Background Pk Height (A): 0.051
Blank Corrected Pk Area (A-s): 0.054
Concentration (ug/L): 17.80

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 2 Time: 09:57
Peak Area (A-s): 0.102 Peak Height (A): 0.105
Background Pk Area (A-s): 0.070 Background Pk Height (A): 0.051
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L): 18.82

Mean Conc (ug/L): 18.31 SD: 0.717 RSD(%): 3.91

Recovery is 106.6%

****

Bi ID: spk blk Seq. No.: 00021 A/S Pos.: 7 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 10:00
Peak Area (A-s): 0.103 Peak Height (A): 0.107
Background Pk Area (A-s): 0.091 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 19.36

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 10:03
Peak Area (A-s): 0.099 Peak Height (A): 0.099
Background Pk Area (A-s): 0.088 Background Pk Height (A): 0.060
Blank Corrected Pk Area (A-s): 0.054
Concentration (ug/L): 18.08

Mean Conc (ug/L): 18.72 SD: 0.901 RSD(%): 4.81

****

Bi ID: 93-02239 Seq. No.: 00022 A/S Pos.: 8 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 10:06
Peak Area (A-s): 0.041 Peak Height (A): 0.064
Background Pk Area (A-s): 0.082 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -1.15

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 10:09
Peak Area (A-s): 0.040 Peak Height (A): 0.063
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.085
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L): -1.61

Mean Conc (ug/L): -1.38 SD: 0.322 RSD(%): 23.32

****

Bi ID: 93-02239 Seq. No.: 00023 A/S Pos.: 3 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 1 Time: 10:11
Peak Area (A-s): 0.096 Peak Height (A): 0.143
Background Pk Area (A-s): 0.065 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): 0.051
Concentration (ug/L): 16.99

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 2 Time: 10:14
Peak Area (A-s): 0.103 Peak Height (A): 0.142
Background Pk Area (A-s): 0.060 Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 19.41

Mean Conc (ug/L): 18.20 SD: 1.714 RSD(%): 9.42

Recovery is 97.9%

****

Bi ID: 93-02240 Seq. No.: 00024 A/S Pos.: 9 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 10:17
Peak Area (A-s): 0.043 Peak Height (A): 0.067
Background Pk Area (A-s): 0.073 Background Pk Height (A): 0.081
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.72

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 10:20
Peak Area (A-s): 0.037 Peak Height (A): 0.065
Background Pk Area (A-s): 0.073 Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): -0.008
Concentration (ug/L): -2.64

Mean Conc (ug/L): -1.68 SD: 1.359 RSD(%): 80.82

****

Bi ID: 93-02240 Seq. No.: 00025 A/S Pos.: 9 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 1 Time: 10:23
Peak Area (A-s): 0.095 Peak Height (A): 0.143
Background Pk Area (A-s): 0.061 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 16.71

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 2 Time: 10:25
Peak Area (A-s): 0.103 Peak Height (A): 0.154
Background Pk Area (A-s): 0.061 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 19.31

Mean Conc (ug/L): 18.01 SD: 1.837 RSD(%): 10.20

Recovery is 98.5%

```
**********************************************************************
Bi    ID: CCV 1 50 ppb        Seq. No.: 00026    A/S Pos.: 10    Date: 01/22/93
   50 ppb  J.M. 59268  ejp 5/12/93  DF 1/26/93
uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate  1                          Time: 10:28
Peak Area (A-s): 0.196                Peak Height (A): 0.225
Background Pk Area (A-s): 0.092       Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.151
Concentration (ug/L  ): 50.31

uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate  2                          Time: 10:31
Peak Area (A-s): 0.197                Peak Height (A): 0.230
Background Pk Area (A-s): 0.088       Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.152
Concentration (ug/L  ): 50.62

Mean Conc  (ug/L  ):      50.46       SD: 0.213              RSD(%): 0.42

**********************************************************************
Bi    ID: CCB 2               Seq. No.: 00027    A/S Pos.: 11    Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate  1                          Time: 10:34
Peak Area (A-s): 0.036                Peak Height (A): 0.064
Background Pk Area (A-s): 0.086       Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): -0.009
Concentration (ug/L  ): -3.00

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate  2                          Time: 10:37
Peak Area (A-s): 0.037                Peak Height (A): 0.063
Background Pk Area (A-s): 0.087       Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): -0.008
Concentration (ug/L  ): -2.78

Mean Conc  (ug/L  ):      -2.89       SD: 0.156              RSD(%): 5.40

**********************************************************************
Bi    ID: 93-02241            Seq. No.: 00028    A/S Pos.: 12    Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate  1                          Time: 10:39
Peak Area (A-s): 0.036                Peak Height (A): 0.057
Background Pk Area (A-s): 0.076       Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): -0.009
Concentration (ug/L  ): -2.89

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate  2                          Time: 10:42
Peak Area (A-s): 0.041                Peak Height (A): 0.062
Background Pk Area (A-s): 0.075       Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): -0.004
Concentration (ug/L  ): -1.33

Mean Conc  (ug/L  ):      -2.11       SD: 1.104              RSD(%): 52.26

**********************************************************************
Bi    ID: 93-02241            Seq. No.: 00029    A/S Pos.: 12    Date: 01/22/93
```

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 1 Time: 10:45
Peak Area (A-s): 0.103 Peak Height (A): 0.143
Background Pk Area (A-s): 0.059 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 19.44

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 2 Time: 10:48
Peak Area (A-s): 0.101 Peak Height (A): 0.140
Background Pk Area (A-s): 0.058 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): 0.056
Concentration (ug/L): 18.62

Mean Conc (ug/L): 19.03 SD: 0.581 RSD(%): 3.05

Recovery is 105.7%

****

Bi ID: 93-02241 D Seq. No.: 00030 A/S Pos.: 13 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 10:50
Peak Area (A-s): 0.038 Peak Height (A): 0.058
Background Pk Area (A-s): 0.072 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): -0.007
Concentration (ug/L): -2.25

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 10:53
Peak Area (A-s): 0.040 Peak Height (A): 0.059
Background Pk Area (A-s): 0.073 Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L): -1.56

Mean Conc (ug/L): -1.90 SD: 0.485 RSD(%): 25.49

****

Bi ID: 93-02241 D Seq. No.: 00031 A/S Pos.: 13 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 1 Time: 10:56
Peak Area (A-s): 0.104 Peak Height (A): 0.149
Background Pk Area (A-s): 0.054 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): 0.059
Concentration (ug/L): 19.72

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 2 Time: 10:59
Peak Area (A-s): 0.103 Peak Height (A): 0.150
Background Pk Area (A-s): 0.056 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 19.18

Mean Conc (ug/L): 19.45 SD: 0.387 RSD(%): 1.99

Recovery is 106.8%

****

Bi ID: 93-02241 S Seq. No.: 00032 A/S Pos.: 14 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Replicate 1 Time: 11:01
Peak Area (A-s): 0.106 Peak Height (A): 0.141
Background Pk Area (A-s): 0.069 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.061
Concentration (ug/L): 20.25

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Replicate 2 Time: 11:04
Peak Area (A-s): 0.107 Peak Height (A): 0.150
Background Pk Area (A-s): 0.073 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 20.51

Mean Conc (ug/L): 20.38 SD: 0.185 RSD(%): 0.91

****

Bi ID: LCS 20x Seq. No.: 00033 A/S Pos.: 15 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 11:07
Peak Area (A-s): 0.107 Peak Height (A): 0.120
Background Pk Area (A-s): 0.086 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 20.64

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 11:10
Peak Area (A-s): 0.102 Peak Height (A): 0.115
Background Pk Area (A-s): 0.085 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L): 19.14

Mean Conc (ug/L): 19.89 SD: 1.064 RSD(%): 5.35

****

Bi ID: LCS 20x Seq. No.: 00034 A/S Pos.: 15 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Replicate 1 Time: 11:12
Peak Area (A-s): 0.171 Peak Height (A): 0.219
Background Pk Area (A-s): 0.069 Background Pk Height (A): 0.066
Blank Corrected Pk Area (A-s): 0.126
Concentration (ug/L): 41.79

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Replicate 2 Time: 11:15
Peak Area (A-s): 0.179 Peak Height (A): 0.223
Background Pk Area (A-s): 0.064 Background Pk Height (A): 0.062
Blank Corrected Pk Area (A-s): 0.134
Concentration (ug/L): 44.66

Mean Conc (ug/L): 43.22 SD: 2.032 RSD(%): 4.70

Recovery is 116.7%

Bi ID: 93-02351 Seq. No.: 00035 A/S Pos.: 16 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 11:18
Peak Area (A-s): 0.040 Peak Height (A): 0.061
Background Pk Area (A-s): 0.067 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L): -1.66

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 11:20
Peak Area (A-s): 0.038 Peak Height (A): 0.061
Background Pk Area (A-s): 0.068 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): -0.007
Concentration (ug/L): -2.23

Mean Conc (ug/L): -1.95 SD: 0.406 RSD(%): 20.86

Bi ID: 93-02351 Seq. No.: 00036 A/S Pos.: 16 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 1 Time: 11:23
Peak Area (A-s): 0.097 Peak Height (A): 0.140
Background Pk Area (A-s): 0.059 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.052
Concentration (ug/L): 17.44

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 2 Time: 11:26
Peak Area (A-s): 0.102 Peak Height (A): 0.150
Background Pk Area (A-s): 0.053 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L): 18.97

Mean Conc (ug/L): 18.20 SD: 1.080 RSD(%): 5.93

Recovery is 100.8%

Bi ID: CCV 2 50 ppb Seq. No.: 00037 A/S Pos.: 17 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 17
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:28
Peak Area (A-s): 0.207 Peak Height (A): 0.246
Background Pk Area (A-s): 0.091 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.162
Concentration (ug/L): 53.81

Bi ID: CCV 2 50 ppb Seq. No.: 00038 A/S Pos.: 17 Date: 01/22/93
50 ppb J.M. 59268 and Chem 3 OF 42743

uL dispensed: 23 from 0, 5 from 35, 5 from 17
Replicate 1 Time: 11:31
Peak Area (A-s): 0.082 Peak Height (A): 0.082
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): 0.037

9613492.0870

Concentration (ug/L): 12.46 Corrected Conc (ug/L): 49.84

uL dispensed: 23 from 0, 5 from 35, 5 from 17
Replicate 2 Time: 11:34
Peak Area (A-s): 0.082 Peak Height (A): 0.085
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): 0.037
Concentration (ug/L): 12.42 Corrected Conc (ug/L): 49.69

Mean Conc (ug/L): 12.44 SD: 0.026 RSD(%): 0.21
Corrected Conc (ug/L): 49.76

****

Bi ID: CCB 3 Seq. No.: 00039 A/S Pos.: 18 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 1 Time: 11:36
Peak Area (A-s): 0.032 Peak Height (A): 0.055
Background Pk Area (A-s): 0.088 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L): -4.25

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 2 Time: 11:39
Peak Area (A-s): 0.034 Peak Height (A): 0.051
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): -0.011
Concentration (ug/L): -3.66

Mean Conc (ug/L): -3.96 SD: 0.424 RSD(%): 10.72

****

Bi ID: 93-02437 Seq. No.: 00040 A/S Pos.: 19 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 1 Time: 11:42
Peak Area (A-s): 0.038 Peak Height (A): 0.062
Background Pk Area (A-s): 0.068 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): -0.007
Concentration (ug/L): -2.46

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 2 Time: 11:44
Peak Area (A-s): 0.033 Peak Height (A): 0.055
Background Pk Area (A-s): 0.070 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): -0.012
Concentration (ug/L): -3.83

Mean Conc (ug/L): -3.14 SD: 0.969 RSD(%): 30.83

****

Bi ID: 93-02437 Seq. No.: 00041 A/S Pos.: 19 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Replicate 1 Time: 11:47
Peak Area (A-s): 0.097 Peak Height (A): 0.139
Background Pk Area (A-s): 0.057 Background Pk Height (A): 0.064
Blank Corrected Pk Area (A-s): 0.052
Concentration (ug/L): 17.23

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Replicate 2 Time: 11:50
Peak Area (A-s): 0.111 Peak Height (A): 0.144
Background Pk Area (A-s): 0.071 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 21.92

Mean Conc (ug/L): 19.57 SD: 3.316 RSD(%): 16.94

Recovery is 113.6%

****

Bi ID: 93-02438 Seq. No.: 00042 A/S Pos.: 20 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 11:52
Peak Area (A-s): 0.032 Peak Height (A): 0.059
Background Pk Area (A-s): 0.071 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L): -4.26

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 11:55
Peak Area (A-s): 0.034 Peak Height (A): 0.060
Background Pk Area (A-s): 0.069 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): -0.011
Concentration (ug/L): -3.56

Mean Conc (ug/L): -3.91 SD: 0.494 RSD(%): 12.61

****

Bi ID: 93-02438 Seq. No.: 00043 A/S Pos.: 20 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Replicate 1 Time: 11:58
Peak Area (A-s): 0.104 Peak Height (A): 0.144
Background Pk Area (A-s): 0.053 Background Pk Height (A): 0.062
Blank Corrected Pk Area (A-s): 0.059
Concentration (ug/L): 19.64

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Replicate 2 Time: 12:00
Peak Area (A-s): 0.098 Peak Height (A): 0.147
Background Pk Area (A-s): 0.060 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.053
Concentration (ug/L): 17.51

Mean Conc (ug/L): 18.58 SD: 1.502 RSD(%): 8.09

Recovery is 112.4%

****

Bi ID: 93-02451 Seq. No.: 00044 A/S Pos.: 21 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 12:03
Peak Area (A-s): 0.038 Peak Height (A): 0.057
Background Pk Area (A-s): 0.071 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): -0.007

Concentration (ug/L): -2.19

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 12:06
Peak Area (A-s): 0.033 Peak Height (A): 0.058
Background Pk Area (A-s): 0.067 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): -0.012
Concentration (ug/L): -3.97

Mean Conc (ug/L): -3.08 SD: 1.264 RSD(%): 41.05

****

Bi ID: 93-02451 Seq. No.: 00045 A/S Pos.: 21 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 1 Time: 12:08
Peak Area (A-s): 0.102 Peak Height (A): 0.158
Background Pk Area (A-s): 0.057 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L): 18.95

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 2 Time: 12:11
Peak Area (A-s): 0.095 Peak Height (A): 0.165
Background Pk Area (A-s): 0.057 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 16.65

Mean Conc (ug/L): 17.80 SD: 1.624 RSD(%): 9.13

Recovery is 104.4%

****

Bi ID: LCS + Bi 20x Seq. No.: 00046 A/S Pos.: 22 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 22
Replicate 1 Time: 12:14
Peak Area (A-s): 0.113 Peak Height (A): 0.133
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.068
Concentration (ug/L): 22.52

uL dispensed: 8 from 0, 5 from 35, 20 from 22
Replicate 2 Time: 12:16
Peak Area (A-s): 0.115 Peak Height (A): 0.137
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.070
Concentration (ug/L): 23.17

Mean Conc (ug/L): 22.85 SD: 0.465 RSD(%): 2.04

****

Bi ID: LCS + Bi 20x Seq. No.: 00047 A/S Pos.: 22 Date: 01/22/93

uL dispensed: 5 from 35, 8 from 34, 20 from 22
Replicate 1 Time: 12:19
Peak Area (A-s): 0.183 Peak Height (A): 0.236
Background Pk Area (A-s): 0.067 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.138

Concentration (ug/L): 45.79

uL dispensed: 5 from 35, 8 from 34, 20 from 22
Replicate 2 Time: 12:22
Peak Area (A-s): 0.181 Peak Height (A): 0.237
Background Pk Area (A-s): 0.064 Background Pk Height (A): 0.057
Blank Corrected Pk Area (A-s): 0.136
Concentration (ug/L): 45.16

Mean Conc (ug/L): 45.47 SD: 0.440 RSD(%): 0.97

Recovery is 113.1%

****

Bi ID: CCV 3 50 ppb Seq. No.: 00048 A/S Pos.: 23 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 23
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 12:24
Peak Area (A-s): 0.216 Peak Height (A): 0.255
Background Pk Area (A-s): 0.085 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.171
Concentration (ug/L): 57.01

****

Bi ID: CCV 3 50 ppb Seq. No.: 00049 A/S Pos.: 23 Date: 01/22/93
50 ppb J.M. 59369 opp 5/12/93 AP 1/25/93

uL dispensed: 23 from 0, 5 from 35, 5 from 23
Replicate 1 Time: 12:27
Peak Area (A-s): 0.085 Peak Height (A): 0.088
Background Pk Area (A-s): 0.097 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.040
Concentration (ug/L): 13.33 Corrected Conc (ug/L): 53.31

uL dispensed: 23 from 0, 5 from 35, 5 from 23
Replicate 2 Time: 12:30
Peak Area (A-s): 0.087 Peak Height (A): 0.085
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.042
Concentration (ug/L): 13.82 Corrected Conc (ug/L): 55.29

Mean Conc (ug/L): 13.58 SD: 0.350 RSD(%): 2.58
Corrected Conc (ug/L): 54.30

****

Bi ID: CCB 4 Seq. No.: 00050 A/S Pos.: 24 Date: 01/22/93

uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate 1 Time: 12:32
Peak Area (A-s): 0.034 Peak Height (A): 0.060
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.060
Blank Corrected Pk Area (A-s): -0.011
Concentration (ug/L): -3.77

uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate 2 Time: 12:35
Peak Area (A-s): 0.035 Peak Height (A): 0.056
Background Pk Area (A-s): 0.078 Background Pk Height (A): 0.055
Blank Corrected Pk Area (A-s): -0.010

Concentration (ug/L): -3.30

Mean Conc (ug/L): -3.54 SD: 0.335 RSD(%): 9.46

ID/Weight File Name: DF.IDW

Analyst: DE Faulk

Sample Volume: 1 L

Sample Weight: 1.0 ug

Autosampler Type:

Last Stored: 93/01/22, at 07:38:57

Loc.	Sample ID	Weight	Dilution
1	10 ppb Bi std		
2	ICV 50 ppb		
3	ICB		
4	CRA 10 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-02239		
9	93-02240		
10	CCV 1 50 ppb		
11	CCB 2		
12	93-02241		
13	93-02241 D		
14	93-02241 S		
15	LCS 20x		
16	93-02351		
17	CCV 2 50 ppb		
18	CCB 3		
19	93-02437		
20	93-02438		
21	93-02451		
22	LCS + Bi 20x		
23	CCV 3 50 ppb		
24	CCB 4		

Element File: BIDEF.GEL Last Stored: 93/01/22 08:10:46
Element: Bi Wavelength: 223.1 Peak Slit: 0.20 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100, ~~AA9726~~ OB 76757 mwy 4/16/93
Matrix Mdifier - Palladium Nitrate & Magnesium Nitrate
procedure PNL-ALO 221, rev 0
locations S1,S2,S3(34 w/dil), S4 (34), aod (35), blank (0)
T-106

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 10.00 S2: 25.00 S3: 35.00
S4: 50.00 S5: S6:
S7: S8: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 2

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
130	10	35	300		Norm	
1000	10	30	300		Norm	
20	1	15	300		Norm	
2100	0	5	30	*	Norm	
2600	1	3	300		Norm	
20	1	5	300		Norm	

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 8 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

Spike Recovery: Frequency: 6,8,9,12,13,15,16,19-22
Location: 34 Volume: 8 uL Concentration: 50.00 ug/L

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	8	5	
Standard 1	34	4	24	5	
Standard 2	34	10	18	5	
Standard 3	34	14	14	5	
Standard 4	34	20	8	5	
Standard 5					
Standard 6					
Standard 7					
Standard 8					
Reslope					

Sample Blank Location: Automated Additions

Element File: PBDEF.GEL Element: Pb Wavelength: 283.3
Date: 02/03/93 Time: 13:01 Slit: 0.7
Data File: T_106.DAT ID/Wt File: DF.IDW Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 73
Remark 1: AA5100, ~~AA93267~~ WO 76757 MCL 4/16/93
Remark 2: Matrix Modifier - Palladium Nitrate
Remark 3: procedure PNL-ALD-217
Remark 4: locations: S1,S2,S3,S4(34 w/dil),dil(0),mod(35)
Remark 5: T-106
Darrin Faulk 3/4/93

Pb ID: Blank Seq. No.: 00161 A/S Pos.: 0 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 13:03
Peak Area (A-s): 0.024 Peak Height (A): 0.043
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.107
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.12

uL dispensed: 6 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 13:05
Peak Area (A-s): 0.023 Peak Height (A): 0.044
Background Pk Area (A-s): 0.086 Background Pk Height (A): 0.114
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.29

Mean Conc (ug/L): -0.08 SD: 0.283 RSD(%): 334.82

Auto-zero performed.

Pb ID: Standard 1 Seq. No.: 00162 A/S Pos.: 34 Date: 02/03/93

uL dispensed: 22 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 13:08
Peak Area (A-s): 0.061 Peak Height (A): 0.097
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.113
Blank Corrected Pk Area (A-s): 0.037
Concentration (ug/L): 10.67

uL dispensed: 22 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 13:10
Peak Area (A-s): 0.058 Peak Height (A): 0.097
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.115
Blank Corrected Pk Area (A-s): 0.034
Concentration (ug/L): 9.95

Mean Conc (ug/L): 10.31 SD: 0.513 RSD(%): 4.97

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0036

Pb ID: Standard 2 Seq. No.: 00163 A/S Pos.: 34 Date: 02/03/93

uL dispensed: 18 from 0, 5 from 35, 8 from 34
Replicate 1 Time: 13:12

Peak Area (A-s): 0.091 Peak Height (A): 0.141
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.068
Concentration (ug/L): 18.99

uL dispensed: 18 from 0, 5 from 35, 8 from 34
Replicate 2 Time: 13:14
Peak Area (A-s): 0.090 Peak Height (A): 0.106
Background Pk Area (A-s): 0.077 Background Pk Height (A): 0.086
Blank Corrected Pk Area (A-s): 0.067
Concentration (ug/L): 18.68

Mean Conc (ug/L): 18.83 SD: 0.222 RSD(%): 1.18

Standard number 2 applied. [20.00]
Correlation coefficient: 0.99699 Slope: 0.0034

****

Pb ID: Standard 3 Seq. No.: 00164 A/S Pos.: 34 Date: 02/03/93

uL dispensed: 14 from 0, 5 from 35, 12 from 34
Replicate 1 Time: 13:17
Peak Area (A-s): 0.127 Peak Height (A): 0.206
Background Pk Area (A-s): 0.090 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): 0.104
Concentration (ug/L): 30.41

uL dispensed: 14 from 0, 5 from 35, 12 from 34
Replicate 2 Time: 13:19
Peak Area (A-s): 0.130 Peak Height (A): 0.209
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): 0.106
Concentration (ug/L): 31.12

Mean Conc (ug/L): 30.77 SD: 0.504 RSD(%): 1.64

Standard number 3 applied. [30.00]
Correlation coefficient: 0.99874 Slope: 0.0035

****

Pb ID: Standard 4 Seq. No.: 00165 A/S Pos.: 34 Date: 02/03/93

uL dispensed: 10 from 0, 5 from 35, 16 from 34
Replicate 1 Time: 13:21
Peak Area (A-s): 0.164 Peak Height (A): 0.263
Background Pk Area (A-s): 0.088 Background Pk Height (A): 0.106
Blank Corrected Pk Area (A-s): 0.140
Concentration (ug/L): 40.53

uL dispensed: 10 from 0, 5 from 35, 16 from 34
Replicate 2 Time: 13:24
Peak Area (A-s): 0.166 Peak Height (A): 0.288
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.135
Blank Corrected Pk Area (A-s): 0.142
Concentration (ug/L): 41.02

Mean Conc (ug/L): 40.78 SD: 0.345 RSD(%): 0.85

Standard number 4 applied. [40.00]

Correlation coefficient: 0.99922 Slope: 0.0035

****

Pb ID: 3 ppb Pb std Seq. No.: 00166 A/S Pos.: 1 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 13:26
Peak Area (A-s): 0.033 Peak Height (A): 0.056
Background Pk Area (A-s): 0.078 Background Pk Height (A): 0.101
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 2.61

uL dispensed: 6 from 0, 5 from 35, 20 from 1
Replicate 2 Time: 13:28
Peak Area (A-s): 0.032 Peak Height (A): 0.055
Background Pk Area (A-s): 0.085 Background Pk Height (A): 0.104
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 2.51

Mean Conc (ug/L): 2.56 SD: 0.069 RSD(%): 2.70

****

Pb ID: ICV-4 50x Seq. No.: 00167 A/S Pos.: 2 Date: 02/03/93
(1290) 98.4 ug/L ✓ 2/4/93
TCF
uL dispensed: 6 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 13:31
Peak Area (A-s): 0.089 Peak Height (A): 0.118
Background Pk Area (A-s): 0.077 Background Pk Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.065
Concentration (ug/L): 18.65

uL dispensed: 6 from 0, 5 from 35, 20 from 2
Replicate 2 Time: 13:33
Peak Area (A-s): 0.093 Peak Height (A): 0.151
Background Pk Area (A-s): 0.085 Background Pk Height (A): 0.097
Blank Corrected Pk Area (A-s): 0.069
Concentration (ug/L): 19.72

Mean Conc (ug/L): 19.19 SD: 0.758 RSD(%): 3.95

****

Pb ID: ICB Seq. No.: 00168 A/S Pos.: 3 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 3
Replicate 1 Time: 13:35
Peak Area (A-s): 0.026 Peak Height (A): 0.045
Background Pk Area (A-s): 0.086 Background Pk Height (A): 0.104
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.60

uL dispensed: 6 from 0, 5 from 35, 20 from 3
Replicate 2 Time: 13:38
Peak Area (A-s): 0.026 Peak Height (A): 0.044
Background Pk Area (A-s): 0.084 Background Pk Height (A): 0.102
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.71

Mean Conc (ug/L): 0.66 SD: 0.075 RSD(%): 11.35

****

Pb ID: CRA 3 ppb Seq. No.: 00169 A/S Pos.: 4 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 4
Replicate 1 Time: 13:40
Peak Area (A-s): 0.032 Peak Height (A): 0.055
Background Pk Area (A-s): 0.083 Background Pk Height (A): 0.098
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 2.48

uL dispensed: 6 from 0, 5 from 35, 20 from 4
Replicate 2 Time: 13:42
Peak Area (A-s): 0.031 Peak Height (A): 0.048
Background Pk Area (A-s): 0.078 Background Pk Height (A): 0.097
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 2.26

Mean Conc (ug/L): 2.37 SD: 0.160 RSD(%): 6.77

****

Pb ID: CCB 1 Seq. No.: 00170 A/S Pos.: 5 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 5
Replicate 1 Time: 13:45
Peak Area (A-s): 0.022 Peak Height (A): 0.041
Background Pk Area (A-s): 0.083 Background Pk Height (A): 0.102
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.47

uL dispensed: 6 from 0, 5 from 35, 20 from 5
Replicate 2 Time: 13:47
Peak Area (A-s): 0.023 Peak Height (A): 0.032
Background Pk Area (A-s): 0.078 Background Pk Height (A): 0.086
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.17

Mean Conc (ug/L): -0.32 SD: 0.214 RSD(%): 67.21

****

Pb ID: PBS Seq. No.: 00171 A/S Pos.: 6 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 6
Replicate 1 Time: 13:50
Peak Area (A-s): 0.021 Peak Height (A): 0.038
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.102
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.61

uL dispensed: 6 from 0, 5 from 35, 20 from 6
Replicate 2 Time: 13:52
Peak Area (A-s): 0.021 Peak Height (A): 0.039
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.106
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -0.77

Mean Conc (ug/L): -0.69 SD: 0.110 RSD(%): 15.95

****

Pb ID: PBS Seq. No.: 00172 A/S Pos.: 6 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 6
Replicate 1 Time: 13:54
Peak Area (A-s): 0.044 Peak Height (A): 0.066
Background Pk Area (A-s): 0.060 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): 0.021
Concentration (ug/L): 5.96

uL dispensed: 5 from 35, 6 from 33, 20 from 6
Replicate 2 Time: 13:57
Peak Area (A-s): 0.045 Peak Height (A): 0.060
Background Pk Area (A-s): 0.059 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L): 6.15

Mean Conc (ug/L): 6.05 SD: 0.133 RSD(%): 2.20

Recovery is 112.4%

****

Pb ID: spk blk Seq. No.: 00173 A/S Pos.: 7 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 13:59
Peak Area (A-s): 0.092 Peak Height (A): 0.143
Background Pk Area (A-s): 0.074 Background Pk Height (A): 0.098
Blank Corrected Pk Area (A-s): 0.068
Concentration (ug/L): 19.46

uL dispensed: 6 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 14:02
Peak Area (A-s): 0.092 Peak Height (A): 0.141
Background Pk Area (A-s): 0.078 Background Pk Height (A): 0.098
Blank Corrected Pk Area (A-s): 0.069
Concentration (ug/L): 19.68

Mean Conc (ug/L): 19.57 SD: 0.155 RSD(%): 0.79

****

Pb ID: 93-2239 2x Seq. No.: 00174 A/S Pos.: 8 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 14:04
Peak Area (A-s): 0.111 Peak Height (A): 0.200
Background Pk Area (A-s): 0.076 Background Pk Height (A): 0.137
Blank Corrected Pk Area (A-s): 0.087
Concentration (ug/L): 24.90

uL dispensed: 6 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 14:07
Peak Area (A-s): 0.115 Peak Height (A): 0.227
Background Pk Area (A-s): 0.084 Background Pk Height (A): 0.140
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 26.02

Mean Conc (ug/L): 25.46 SD: 0.792 RSD(%): 3.11

****

Pb ID: 93-2239 2x Seq. No.: 00175 A/S Pos.: 8 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 8
Replicate 1 Time: 14:09
Peak Area (A-s): 0.137 Peak Height (A): 0.312
Background Pk Area (A-s): 0.075 Background Pk Height (A): 0.120
Blank Corrected Pk Area (A-s): 0.114
Concentration (ug/L): 32.55

uL dispensed: 5 from 35, 6 from 33, 20 from 8
Replicate 2 Time: 14:12
Peak Area (A-s): 0.140 Peak Height (A): 0.317
Background Pk Area (A-s): 0.071 Background Pk Height (A): 0.115
Blank Corrected Pk Area (A-s): 0.117
Concentration (ug/L): 33.28

Mean Conc (ug/L): 32.91 SD: 0.515 RSD(%): 1.57

Recovery is 124.2%

Pb ID: 93-2240 Seq. No.: 00176 A/S Pos.: 9 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 14:14
Peak Area (A-s): 0.103 Peak Height (A): 0.231
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.147
Blank Corrected Pk Area (A-s): 0.079
Concentration (ug/L): 22.59

uL dispensed: 6 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 14:17
Peak Area (A-s): 0.104 Peak Height (A): 0.236
Background Pk Area (A-s): 0.086 Background Pk Height (A): 0.150
Blank Corrected Pk Area (A-s): 0.081
Concentration (ug/L): 23.04

Mean Conc (ug/L): 22.81 SD: 0.318 RSD(%): 1.39

Pb ID: 93-2240 Seq. No.: 00177 A/S Pos.: 9 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 9
Replicate 1 Time: 14:19
Peak Area (A-s): 0.118 Peak Height (A): 0.307
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.151
Blank Corrected Pk Area (A-s): 0.094
Concentration (ug/L): 26.91

uL dispensed: 5 from 35, 6 from 33, 20 from 9
Replicate 2 Time: 14:21
Peak Area (A-s): 0.123 Peak Height (A): 0.326
Background Pk Area (A-s): 0.092 Background Pk Height (A): 0.135
Blank Corrected Pk Area (A-s): 0.100
Concentration (ug/L): 28.47

Mean Conc (ug/L): 27.69 SD: 1.103 RSD(%): 3.98

Recovery is 81.3%

Pb ID: CCV1 ICV-4 50x Seq. No.: 00178 A/S Pos.: 10 Date: 02/03/93
(290) ICF 994 ug/L ICF 3/4/93

uL dispensed: 6 from 0, 5 from 35, 20 from 10
Replicate 1 Time: 14:24
Peak Area (A-s): 0.096 Peak Height (A): 0.154
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.105
Blank Corrected Pk Area (A-s): 0.072
Concentration (ug/L): 20.64

uL dispensed: 6 from 0, 5 from 35, 20 from 10
Replicate 2 Time: 14:26
Peak Area (A-s): 0.097 Peak Height (A): 0.143
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.073
Concentration (ug/L): 20.90

Mean Conc (ug/L): 20.77 SD: 0.181 RSD(%): 0.87

Pb ID: CCB 2 Seq. No.: 00179 A/S Pos.: 11 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 11
Replicate 1 Time: 14:29
Peak Area (A-s): 0.024 Peak Height (A): 0.033
Background Pk Area (A-s): 0.084 Background Pk Height (A): 0.085
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.02

uL dispensed: 6 from 0, 5 from 35, 20 from 11
Replicate 2 Time: 14:31
Peak Area (A-s): 0.008 Peak Height (A): 0.036
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.110
Blank Corrected Pk Area (A-s): -0.016
Concentration (ug/L): -4.48

Mean Conc (ug/L): -2.23 SD: 3.186 RSD(%): 142.77

Pb ID: 93-2241 5x Seq. No.: 00180 A/S Pos.: 12 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 12
Replicate 1 Time: 14:34
Peak Area (A-s): 0.074 Peak Height (A): 0.125
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.125
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 14.39

uL dispensed: 6 from 0, 5 from 35, 20 from 12
Replicate 2 Time: 14:36
Peak Area (A-s): 0.070 Peak Height (A): 0.123
Background Pk Area (A-s): 0.098 Background Pk Height (A): 0.122
Blank Corrected Pk Area (A-s): 0.046
Concentration (ug/L): 13.21

Mean Conc (ug/L): 13.80 SD: 0.831 RSD(%): 6.02

Pb ID: 93-2241 5x Seq. No.: 00181 A/S Pos.: 12 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 12
Replicate 1 Time: 14:39
Peak Area (A-s): 0.095 Peak Height (A): 0.177
Background Pk Area (A-s): 0.080 Background Pk Height (A): 0.099
Blank Corrected Pk Area (A-s): 0.071
Concentration (ug/L): 20.35

uL dispensed: 5 from 35, 6 from 33, 20 from 12
Replicate 2 Time: 14:41
Peak Area (A-s): 0.094 Peak Height (A): 0.175
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.105
Blank Corrected Pk Area (A-s): 0.071
Concentration (ug/L): 20.16

Mean Conc (ug/L): 20.26 SD: 0.138 RSD(%): 0.68

Recovery is 107.6%

****

Pb ID: 93-2241D 5x Seq. No.: 00182 A/S Pos.: 13 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 14:44
Peak Area (A-s): 0.074 Peak Height (A): 0.127
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.123
Blank Corrected Pk Area (A-s): 0.051
Concentration (ug/L): 14.48

uL dispensed: 6 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 14:46
Peak Area (A-s): 0.075 Peak Height (A): 0.130
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.117
Blank Corrected Pk Area (A-s): 0.052
Concentration (ug/L): 14.72

Mean Conc (ug/L): 14.60 SD: 0.170 RSD(%): 1.17

****

Pb ID: 93-2241D 5x Seq. No.: 00183 A/S Pos.: 13 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 13
Replicate 1 Time: 14:48
Peak Area (A-s): 0.098 Peak Height (A): 0.182
Background Pk Area (A-s): 0.080 Background Pk Height (A): 0.102
Blank Corrected Pk Area (A-s): 0.074
Concentration (ug/L): 21.20

uL dispensed: 5 from 35, 6 from 33, 20 from 13
Replicate 2 Time: 14:51
Peak Area (A-s): 0.100 Peak Height (A): 0.187
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.102
Blank Corrected Pk Area (A-s): 0.077
Concentration (ug/L): 21.88

Mean Conc (ug/L): 21.54 SD: 0.480 RSD(%): 2.23

Recovery is 115.6%

Pb ID: 93-2241S 5x Seq. No.: 00184 A/S Pos.: 14 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 14
Replicate 1 Time: 14:53
Peak Area (A-s): 0.086 Peak Height (A): 0.143
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.122
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 17.76

uL dispensed: 6 from 0, 5 from 35, 20 from 14
Replicate 2 Time: 14:56
Peak Area (A-s): 0.084 Peak Height (A): 0.139
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.120
Blank Corrected Pk Area (A-s): 0.061
Concentration (ug/L): 17.29

Mean Conc (ug/L): 17.53 SD: 0.332 RSD(%): 1.90

Pb ID: LCS 100x Seq. No.: 00185 A/S Pos.: 15 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 14:58
Peak Area (A-s): 0.062 Peak Height (A): 0.086
Background Pk Area (A-s): 0.095 Background Pk Height (A): 0.104
Blank Corrected Pk Area (A-s): 0.039
Concentration (ug/L): 11.11

uL dispensed: 6 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 15:00
Peak Area (A-s): 0.064 Peak Height (A): 0.085
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.104
Blank Corrected Pk Area (A-s): 0.040
Concentration (ug/L): 11.49

Mean Conc (ug/L): 11.30 SD: 0.269 RSD(%): 2.38

Pb ID: LCS 100x Seq. No.: 00186 A/S Pos.: 15 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 15
Replicate 1 Time: 15:03
Peak Area (A-s): 0.089 Peak Height (A): 0.146
Background Pk Area (A-s): 0.080 Background Pk Height (A): 0.103
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 18.71

uL dispensed: 5 from 35, 6 from 33, 20 from 15
Replicate 2 Time: 15:05
Peak Area (A-s): 0.089 Peak Height (A): 0.122
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.065
Concentration (ug/L): 18.65

Mean Conc (ug/L): 18.68 SD: 0.042 RSD(%): 0.22

Recovery is 123.0%

****

Pb ID: 93-2351 Seq. No.: 00187 A/S Pos.: 16 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 15:07
Peak Area (A-s): 0.136 Peak Height (A): 0.265
Background Pk Area (A-s): 0.090 Background Pk Height (A): 0.148
Blank Corrected Pk Area (A-s): 0.112
Concentration (ug/L): 32.08

uL dispensed: 6 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 15:10
Peak Area (A-s): 0.136 Peak Height (A): 0.281
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.151
Blank Corrected Pk Area (A-s): 0.113
Concentration (ug/L): 32.24

Mean Conc (ug/L): 32.16 SD: 0.118 RSD(%): 0.37

****

Pb ID: 93-2351 Seq. No.: 00188 A/S Pos.: 16 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 16
Replicate 1 Time: 15:12
Peak Area (A-s): 0.161 Peak Height (A): 0.365
Background Pk Area (A-s): 0.084 Background Pk Height (A): 0.131
Blank Corrected Pk Area (A-s): 0.138
Concentration (ug/L): 39.38

uL dispensed: 5 from 35, 6 from 33, 20 from 16
Replicate 2 Time: 15:14
Peak Area (A-s): 0.164 Peak Height (A): 0.375
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.126
Blank Corrected Pk Area (A-s): 0.141
Concentration (ug/L): 40.24

Mean Conc (ug/L): 39.81 SD: 0.609 RSD(%): 1.53

Recovery is 127.5%

****

Pb ID: CCV2 ICV-4 50x Seq. No.: 00189 A/S Pos.: 17 Date: 02/03/93
(1290) ICP 964 mg/L DF 2/4/93
uL dispensed: 6 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 15:17
Peak Area (A-s): 0.099 Peak Height (A): 0.167
Background Pk Area (A-s): 0.095 Background Pk Height (A): 0.117
Blank Corrected Pk Area (A-s): 0.075
Concentration (ug/L): 21.55

uL dispensed: 6 from 0, 5 from 35, 20 from 17
Replicate 2 Time: 15:19
Peak Area (A-s): 0.097 Peak Height (A): 0.143
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.074
Concentration (ug/L): 21.06

Mean Conc (ug/L): 21.30 SD: 0.344 RSD(%): 1.61

```
*****************************************************************************
Pb    ID: CCB 3              Seq. No.: 00190    A/S Pos.: 18    Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 18
Replicate  1                          Time: 15:21
Peak Area (A-s): 0.027                Peak Height (A): 0.045
Background Pk Area (A-s): 0.093       Background Pk Height (A): 0.114
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L  ): 0.95

uL dispensed: 6 from 0, 5 from 35, 20 from 18
Replicate  2                          Time: 15:24
Peak Area (A-s): 0.028                Peak Height (A): 0.045
Background Pk Area (A-s): 0.092       Background Pk Height (A): 0.115
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L  ): 1.18

Mean Conc  (ug/L  ):       1.07       SD: 0.162              RSD(%): 15.23

*****************************************************************************
Pb    ID: 93-2437            Seq. No.: 00191    A/S Pos.: 19    Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 19
Replicate  1                          Time: 15:26
Peak Area (A-s): 0.081                Peak Height (A): 0.172
Background Pk Area (A-s): 0.090       Background Pk Height (A): 0.150
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L  ): 16.55

uL dispensed: 6 from 0, 5 from 35, 20 from 19
Replicate  2                          Time: 15:28
Peak Area (A-s): 0.082                Peak Height (A): 0.181
Background Pk Area (A-s): 0.093       Background Pk Height (A): 0.151
Blank Corrected Pk Area (A-s): 0.058
Concentration (ug/L  ): 16.62

Mean Conc  (ug/L  ):      16.58       SD: 0.049              RSD(%): 0.30

*****************************************************************************
Pb    ID: 93-2437            Seq. No.: 00192    A/S Pos.: 19    Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 19
Replicate  1                          Time: 15:31
Peak Area (A-s): 0.105                Peak Height (A): 0.248
Background Pk Area (A-s): 0.078       Background Pk Height (A): 0.138
Blank Corrected Pk Area (A-s): 0.081
Concentration (ug/L  ): 23.27

uL dispensed: 5 from 35, 6 from 33, 20 from 19
Replicate  2                          Time: 15:33
Peak Area (A-s): 0.104                Peak Height (A): 0.256
Background Pk Area (A-s): 0.079       Background Pk Height (A): 0.137
Blank Corrected Pk Area (A-s): 0.081
Concentration (ug/L  ): 23.09

Mean Conc  (ug/L  ):      23.18       SD: 0.124              RSD(%): 0.53

Recovery is 110.0%
```

Pb ID: 93-2438 Seq. No.: 00193 A/S Pos.: 20 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 15:35
Peak Area (A-s): 0.080 Peak Height (A): 0.180
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.150
Blank Corrected Pk Area (A-s): 0.056
Concentration (ug/L): 16.00

uL dispensed: 6 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 15:38
Peak Area (A-s): 0.080 Peak Height (A): 0.182
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.151
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L): 16.15

Mean Conc (ug/L): 16.07 SD: 0.108 RSD(%): 0.67

Pb ID: 93-2438 Seq. No.: 00194 A/S Pos.: 20 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 20
Replicate 1 Time: 15:40
Peak Area (A-s): 0.105 Peak Height (A): 0.246
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.140
Blank Corrected Pk Area (A-s): 0.081
Concentration (ug/L): 23.16

uL dispensed: 5 from 35, 6 from 33, 20 from 20
Replicate 2 Time: 15:42
Peak Area (A-s): 0.105 Peak Height (A): 0.251
Background Pk Area (A-s): 0.080 Background Pk Height (A): 0.141
Blank Corrected Pk Area (A-s): 0.082
Concentration (ug/L): 23.35

Mean Conc (ug/L): 23.26 SD: 0.134 RSD(%): 0.58

Recovery is 119.7%

Pb ID: 93-2451 Seq. No.: 00195 A/S Pos.: 21 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 15:44
Peak Area (A-s): 0.075 Peak Height (A): 0.177
Background Pk Area (A-s): 0.090 Background Pk Height (A): 0.163
Blank Corrected Pk Area (A-s): 0.051
Concentration (ug/L): 14.68

uL dispensed: 6 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 15:47
Peak Area (A-s): 0.075 Peak Height (A): 0.165
Background Pk Area (A-s): 0.091 Background Pk Height (A): 0.161
Blank Corrected Pk Area (A-s): 0.052
Concentration (ug/L): 14.79

Mean Conc (ug/L): 14.73 SD: 0.076 RSD(%): 0.52

Pb ID: 93-2451 Seq. No.: 00196 A/S Pos.: 21 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 21
Replicate 1 Time: 15:49
Peak Area (A-s): 0.100 Peak Height (A): 0.236
Background Pk Area (A-s): 0.080 Background Pk Height (A): 0.148
Blank Corrected Pk Area (A-s): 0.077
Concentration (ug/L): 21.88

uL dispensed: 5 from 35, 6 from 33, 20 from 21
Replicate 2 Time: 15:51
Peak Area (A-s): 0.100 Peak Height (A): 0.234
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.153
Blank Corrected Pk Area (A-s): 0.077
Concentration (ug/L): 21.85

Mean Conc (ug/L): 21.86 SD: 0.021 RSD(%): 0.10

Recovery is 118.8%

Pb ID: LCS + Bi 100x Seq. No.: 00197 A/S Pos.: 22 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 22
Replicate 1 Time: 15:54
Peak Area (A-s): 0.065 Peak Height (A): 0.104
Background Pk Area (A-s): 0.095 Background Pk Height (A): 0.123
Blank Corrected Pk Area (A-s): 0.042
Concentration (ug/L): 11.95

uL dispensed: 6 from 0, 5 from 35, 20 from 22
Replicate 2 Time: 15:56
Peak Area (A-s): 0.061 Peak Height (A): 0.093
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.121
Blank Corrected Pk Area (A-s): 0.038
Concentration (ug/L): 10.84

Mean Conc (ug/L): 11.39 SD: 0.788 RSD(%): 6.92

Pb ID: LCS + Bi 100x Seq. No.: 00198 A/S Pos.: 22 Date: 02/03/93

uL dispensed: 5 from 35, 6 from 33, 20 from 22
Replicate 1 Time: 15:59
Peak Area (A-s): 0.088 Peak Height (A): 0.141
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.110
Blank Corrected Pk Area (A-s): 0.064
Concentration (ug/L): 18.38

uL dispensed: 5 from 35, 6 from 33, 20 from 22
Replicate 2 Time: 16:01
Peak Area (A-s): 0.089 Peak Height (A): 0.136
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): 0.065
Concentration (ug/L): 18.64

Mean Conc (ug/L): 18.51 SD: 0.190 RSD(%): 1.03

Recovery is 118.6%

****

Pb ID: CCV3 ICV-4 50x Seq. No.: 00199 A/S Pos.: 23 Date: 02/03/93
(1240) ICF 984 ug/L DF 3/4/93

uL dispensed: 6 from 0, 5 from 35, 20 from 23
Replicate 1 Time: 16:03
Peak Area (A-s): 0.093 Peak Height (A): 0.125
Background Pk Area (A-s): 0.086 Background Pk Height (A): 0.104
Blank Corrected Pk Area (A-s): 0.070
Concentration (ug/L): 19.95

uL dispensed: 6 from 0, 5 from 35, 20 from 23
Replicate 2 Time: 16:06
Peak Area (A-s): 0.094 Peak Height (A): 0.123
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.105
Blank Corrected Pk Area (A-s): 0.070
Concentration (ug/L): 20.04

Mean Conc (ug/L): 20.00 SD: 0.064 RSD(%): 0.32

****

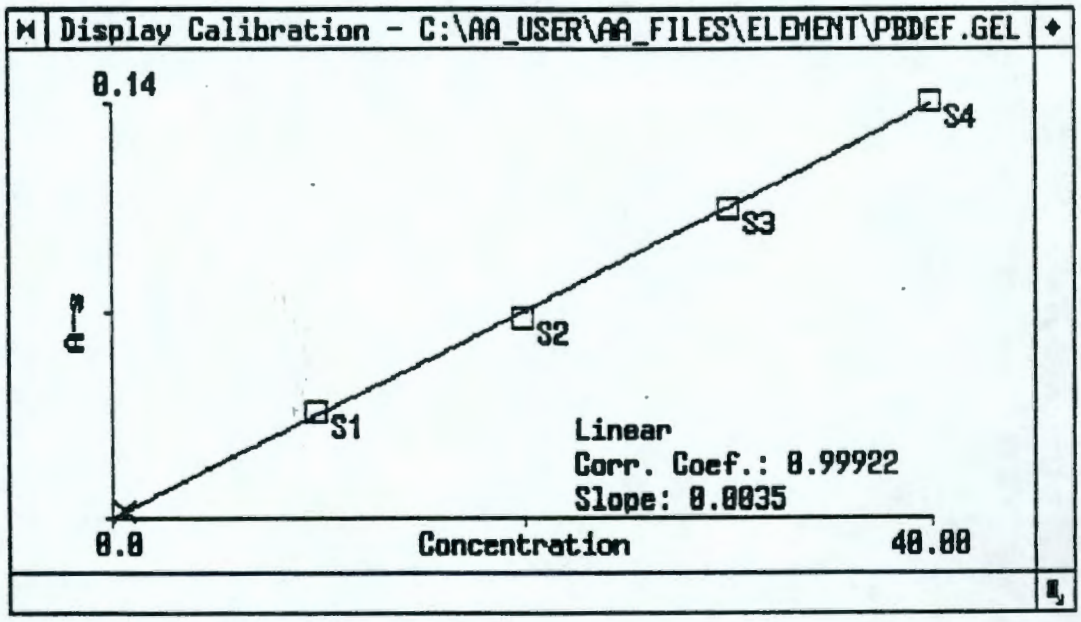
Pb ID: CCB4 Seq. No.: 00200 A/S Pos.: 24 Date: 02/03/93

uL dispensed: 6 from 0, 5 from 35, 20 from 24
Replicate 1 Time: 16:08
Peak Area (A-s): 0.026 Peak Height (A): 0.039
Background Pk Area (A-s): 0.090 Background Pk Height (A): 0.112
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.71

uL dispensed: 6 from 0, 5 from 35, 20 from 24
Replicate 2 Time: 16:10
Peak Area (A-s): 0.026 Peak Height (A): 0.038
Background Pk Area (A-s): 0.091 Background Pk Height (A): 0.111
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.61

Mean Conc (ug/L): 0.66 SD: 0.069 RSD(%): 10.50

9613492.0890



Element File: PBDEF.GEL Last Stored: 93/02/04 07:39:41
Element: Pb Wavelength: 283.3 Peak Slit: 0.7 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100, ~~AA93267~~ W976757 MWK 4/16/93
Matrix Modifier - Palladium Nitrate
procedure PNL-ALO-217
locations: S1,S2,S3,S4(34 w/dil),dil(0),mod(35)
T-106

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 10.00 S2: 20.00 S3: 30.00
S4: 40.00 S5: S6:
S7: S8: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 2

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
90	1	15	300		Norm	
130	10	10	300		Norm	
1100	10	20	300		Norm	
20	1	15	300		Norm	
2150	0	5	30	*	Norm	
2600	1	2	300		Norm	
20	1	5	300		Norm	

D04-109

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 6 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

Spike Recovery: Frequency: 6,8,9,12,13,15,16,19-22
Location: 33 Volume: 6 uL Concentration: 20.00 ug/L

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	6	5	
Standard 1	34	4	22	5	
Standard 2	34	8	18	5	
Standard 3	34	12	14	5	
Standard 4	34	16	10	5	
Standard 5					
Standard 6					
Standard 7					
Standard 8					
Reslope					

Sample Blank Location: Automated Additions

ID/Weight File Name: DF.IDW Analyst: DE Faulk

Sample Volume: 1 L Sample Weight: 1.0 ug
Autosampler Type: Last Stored: 93/02/03, at 12:27:34

Loc.	Sample ID	Weight	Dilution
1	3 ppb Pb std		
2	ICV-4 50x		
3	ICB		
4	CRA 3 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-2239 2x		
9	93-2240		
10	CCV1 ICV-4 50x		
11	CCB 2		
12	93-2241 5x		
13	93-2241D 5x		
14	93-2241S 5x		
15	LCS 100x		
16	93-2351		
17	CCV2 ICV-4 50x		
18	CCB 3		
19	93-2437		
20	93-2438		
21	93-2451		
22	LCS + Bi 100x		
23	CCV3 ICV-4 50x		
24	CCB4		

Element File: AGDEF.GEL Element: Ag Wavelength: 328.1
Date: 02/03/93 Time: 08:25 Slit: 0.7
Data File: T_106.DAT ID/Wt File: DF.IDW5 Lamp Current: 7
Technique: HGA Calib. Type: Linear Energy: 71
Remark 1: AA5100, ~~WA93267~~ WB-76751 MW 4/16/93
Remark 2: Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
Remark 3: procedure PML-ALO-221
Remark 4: locations: Standards (34 w/dil), mod(35), blank (0)
Remark 5: T-106

Dawn Faulk 2/3/93

Ag ID: Blank Seq. No.: 00119 A/S Pos.: 0 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 08:27
Peak Area (A-s): 0.034 Peak Height (A): 0.039
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.05

uL dispensed: 4 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 08:29
Peak Area (A-s): 0.036 Peak Height (A): 0.038
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.02

Mean Conc (ug/L): -0.02 SD: 0.045 RSD(%): 274.72

Auto-zero performed.

Ag ID: Standard 1 Seq. No.: 00120 A/S Pos.: 34 Date: 02/03/93

uL dispensed: 22 from 0, 5 from 35, 2 from 34
Replicate 1 Time: 08:31
Peak Area (A-s): 0.175 Peak Height (A): 0.180
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.140
Concentration (ug/L): 5.26

uL dispensed: 22 from 0, 5 from 35, 2 from 34
Replicate 2 Time: 08:34
Peak Area (A-s): 0.172 Peak Height (A): 0.178
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.136
Concentration (ug/L): 5.13

Mean Conc (ug/L): 5.19 SD: 0.091 RSD(%): 1.76

Standard number 1 applied. [5.00]
Correlation coefficient: 1.00000 Slope: 0.0276

r=0.999 KR 10/20

Ag ID: Standard 2 Seq. No.: 00121 A/S Pos.: 34 Date: 02/03/93

uL dispensed: 20 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 08:36

Peak Area (A-s): 0.311 Peak Height (A): 0.316
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.275
Concentration (ug/L): 9.98

uL dispensed: 20 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 08:38
Peak Area (A-s): 0.304 Peak Height (A): 0.322
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.269
Concentration (ug/L): 9.74

Mean Conc (ug/L): 9.86 SD: 0.171 RSD(%): 1.73

Standard number 2 applied. [10.00]
Correlation coefficient: 0.99984 Slope: 0.0273

****

Ag ID: Standard 3 Seq. No.: 00122 A/S Pos.: 34 Date: 02/03/93

uL dispensed: 18 from 0, 5 from 35, 6 from 34
Replicate 1 Time: 08:40
Peak Area (A-s): 0.437 Peak Height (A): 0.447
Background Pk Area (A-s): 0.022 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.402
Concentration (ug/L): 14.73

uL dispensed: 18 from 0, 5 from 35, 6 from 34
Replicate 2 Time: 08:42
Peak Area (A-s): 0.440 Peak Height (A): 0.448
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.405
Concentration (ug/L): 14.83

Mean Conc (ug/L): 14.78 SD: 0.071 RSD(%): 0.48

Standard number 3 applied. [15.00]
Correlation coefficient: 0.99979 Slope: 0.0270

****

Ag ID: Standard 4 Seq. No.: 00123 A/S Pos.: 34 Date: 02/03/93

uL dispensed: 16 from 0, 5 from 35, 8 from 34
Replicate 1 Time: 08:45
Peak Area (A-s): 0.571 Peak Height (A): 0.576
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.535
Concentration (ug/L): 19.81

uL dispensed: 16 from 0, 5 from 35, 8 from 34
Replicate 2 Time: 08:47
Peak Area (A-s): 0.571 Peak Height (A): 0.583
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.536
Concentration (ug/L): 19.83

Mean Conc (ug/L): 19.82 SD: 0.013 RSD(%): 0.07

Standard number 4 applied. [20.00]

Correlation coefficient: 0.99985 Slope: 0.0269

****

Ag ID: 5 ppb Ag std Seq. No.: 00124 A/S Pos.: 1 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 08:49
Peak Area (A-s): 0.178 Peak Height (A): 0.186
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.143
Concentration (ug/L): 5.32

uL dispensed: 4 from 0, 5 from 35, 20 from 1
Replicate 2 Time: 08:51
Peak Area (A-s): 0.175 Peak Height (A): 0.184
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.140
Concentration (ug/L): 5.20

Mean Conc (ug/L): 5.26 SD: 0.083 RSD(%): 1.58

****

Ag ID: ICV-4 50x Seq. No.: 00125 A/S Pos.: 2 Date: 02/03/93
(1290) ICF 1016 ug/L OF 2/3/93

uL dispensed: 4 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 08:53
Peak Area (A-s): 0.594 Peak Height (A): 0.611
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.559
Concentration (ug/L): 20.79

uL dispensed: 4 from 0, 5 from 35, 20 from 2
Replicate 2 Time: 08:56
Peak Area (A-s): 0.594 Peak Height (A): 0.607
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.558
Concentration (ug/L): 20.76

Mean Conc (ug/L): 20.78 SD: 0.017 RSD(%): 0.08

****

Ag ID: ICB Seq. No.: 00126 A/S Pos.: 3 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 3
Replicate 1 Time: 08:58
Peak Area (A-s): 0.036 Peak Height (A): 0.039
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.03

uL dispensed: 4 from 0, 5 from 35, 20 from 3
Replicate 2 Time: 09:00
Peak Area (A-s): 0.037 Peak Height (A): 0.039
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.05

Mean Conc (ug/L): 0.04 SD: 0.015 RSD(%): 37.86

Ag ID: CRA 5 ppb Seq. No.: 00127 A/S Pos.: 4 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 4
Replicate 1 Time: 09:02
Peak Area (A-s): 0.171 Peak Height (A): 0.180
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.136
Concentration (ug/L): 5.05

uL dispensed: 4 from 0, 5 from 35, 20 from 4
Replicate 2 Time: 09:05
Peak Area (A-s): 0.171 Peak Height (A): 0.177
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.136
Concentration (ug/L): 5.05

Mean Conc (ug/L): 5.05 SD: 0.002 RSD(%): 0.04

Ag ID: CCB 1 Seq. No.: 00128 A/S Pos.: 5 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 5
Replicate 1 Time: 09:07
Peak Area (A-s): 0.037 Peak Height (A): 0.039
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.07

uL dispensed: 4 from 0, 5 from 35, 20 from 5
Replicate 2 Time: 09:09
Peak Area (A-s): 0.037 Peak Height (A): 0.039
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.05

Mean Conc (ug/L): 0.06 SD: 0.009 RSD(%): 14.33

Ag ID: PBS Seq. No.: 00129 A/S Pos.: 6 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 6
Replicate 1 Time: 09:12
Peak Area (A-s): 0.035 Peak Height (A): 0.040
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.01

uL dispensed: 4 from 0, 5 from 35, 20 from 6
Replicate 2 Time: 09:14
Peak Area (A-s): 0.037 Peak Height (A): 0.037
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.07

Mean Conc (ug/L): 0.03 SD: 0.055 RSD(%): 211.13

Ag ID: PBS Seq. No.: 00130 A/S Pos.: 5 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 6
Replicate 1 Time: 09:16
Peak Area (A-s): 0.298 Peak Height (A): 0.307
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.263
Concentration (ug/L): 9.77

uL dispensed: 5 from 35, 4 from 34, 20 from 6
Replicate 2 Time: 09:19
Peak Area (A-s): 0.301 Peak Height (A): 0.318
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.266
Concentration (ug/L): 9.88

Mean Conc (ug/L): 9.82 SD: 0.071 RSD(%): 0.73

Recovery is 98.0%

****

Ag ID: spk blk Seq. No.: 00131 A/S Pos.: 7 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 09:21
Peak Area (A-s): 0.319 Peak Height (A): 0.328
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.284
Concentration (ug/L): 10.56

uL dispensed: 4 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 09:23
Peak Area (A-s): 0.324 Peak Height (A): 0.332
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.289
Concentration (ug/L): 10.75

Mean Conc (ug/L): 10.65 SD: 0.134 RSD(%): 1.26

****

Ag ID: 93-2239 Seq. No.: 00132 A/S Pos.: 8 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 09:26
Peak Area (A-s): 0.043 Peak Height (A): 0.054
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 0.29

uL dispensed: 4 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 09:28
Peak Area (A-s): 0.043 Peak Height (A): 0.053
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 0.28

Mean Conc (ug/L): 0.29 SD: 0.003 RSD(%): 0.92

****

Ag ID: 93-2239 Seq. No.: 00133 A/S Pos.: 8 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 8
Replicate 1 Time: 09:30
Peak Area (A-s): 0.317 Peak Height (A): 0.389
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.282
Concentration (ug/L): 10.49

uL dispensed: 5 from 35, 4 from 34, 20 from 8
Replicate 2 Time: 09:33
Peak Area (A-s): 0.315 Peak Height (A): 0.400
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.280
Concentration (ug/L): 10.41

Mean Conc (ug/L): 10.45 SD: 0.061 RSD(%): 0.59

Recovery is 101.6%

****

Ag ID: 93-2240 Seq. No.: 00134 A/S Pos.: 9 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 09:35
Peak Area (A-s): 0.042 Peak Height (A): 0.050
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 0.24

uL dispensed: 4 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 09:37
Peak Area (A-s): 0.042 Peak Height (A): 0.052
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.007
Concentration (ug/L): 0.26

Mean Conc (ug/L): 0.25 SD: 0.016 RSD(%): 6.43

****

Ag ID: 93-2240 Seq. No.: 00135 A/S Pos.: 9 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 9
Replicate 1 Time: 09:40
Peak Area (A-s): 0.310 Peak Height (A): 0.392
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.275
Concentration (ug/L): 10.21

uL dispensed: 5 from 35, 4 from 34, 20 from 9
Replicate 2 Time: 09:42
Peak Area (A-s): 0.319 Peak Height (A): 0.395
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.283
Concentration (ug/L): 10.53

Mean Conc (ug/L): 10.37 SD: 0.228 RSD(%): 2.20

Recovery is 101.2%

Ag ID: CCV1 ICV-4 50x Seq. No.: 00136 A/S Pos.: 10 Date: 02/03/93
(290) IC = 1016 ug/L DF 2/3/93

uL dispensed: 4 from 0, 5 from 35, 20 from 10
Replicate 1 Time: 09:44
Peak Area (A-s): 0.602 Peak Height (A): 0.611
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.567
Concentration (ug/L): 21.09

uL dispensed: 4 from 0, 5 from 35, 20 from 10
Replicate 2 Time: 09:47
Peak Area (A-s): 0.619 Peak Height (A): 0.626
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.584
Concentration (ug/L): 21.71

Mean Conc (ug/L): 21.40 SD: 0.436 RSD(%): 2.04

Ag ID: CCB 2 Seq. No.: 00137 A/S Pos.: 11 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 11
Replicate 1 Time: 09:49
Peak Area (A-s): 0.039 Peak Height (A): 0.041
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.15

uL dispensed: 4 from 0, 5 from 35, 20 from 11
Replicate 2 Time: 09:52
Peak Area (A-s): 0.039 Peak Height (A): 0.039
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 0.13

Mean Conc (ug/L): 0.14 SD: 0.014 RSD(%): 9.98

Ag ID: 93-2241 Seq. No.: 00138 A/S Pos.: 12 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 12
Replicate 1 Time: 09:54
Peak Area (A-s): 0.044 Peak Height (A): 0.051
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 0.31

uL dispensed: 4 from 0, 5 from 35, 20 from 12
Replicate 2 Time: 09:56
Peak Area (A-s): 0.045 Peak Height (A): 0.050
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 0.35

Mean Conc (ug/L): 0.33 SD: 0.029 RSD(%): 8.68

Ag ID: 93-2241 Seq. No.: 00139 A/S Pos.: 12 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 12
Replicate 1 Time: 09:59
Peak Area (A-s): 0.320 Peak Height (A): 0.391
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.285
Concentration (ug/L): 10.60

uL dispensed: 5 from 35, 4 from 34, 20 from 12
Replicate 2 Time: 10:01
Peak Area (A-s): 0.325 Peak Height (A): 0.389
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.289
Concentration (ug/L): 10.76

Mean Conc (ug/L): 10.68 SD: 0.117 RSD(%): 1.10

Recovery is 103.3%

****

Ag ID: 93-2241D Seq. No.: 00140 A/S Pos.: 13 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 10:03
Peak Area (A-s): 0.045 Peak Height (A): 0.052
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.010
Concentration (ug/L): 0.36

uL dispensed: 4 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 10:06
Peak Area (A-s): 0.045 Peak Height (A): 0.055
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.010
Concentration (ug/L): 0.37

Mean Conc (ug/L): 0.37 SD: 0.010 RSD(%): 2.69

****

Ag ID: 93-2241D Seq. No.: 00141 A/S Pos.: 13 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 13
Replicate 1 Time: 10:08
Peak Area (A-s): 0.329 Peak Height (A): 0.398
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.294
Concentration (ug/L): 10.94

uL dispensed: 5 from 35, 4 from 34, 20 from 13
Replicate 2 Time: 10:10
Peak Area (A-s): 0.325 Peak Height (A): 0.397
Background Pk Area (A-s): 0.133 Background Pk Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.290
Concentration (ug/L): 10.78

Mean Conc (ug/L): 10.86 SD: 0.106 RSD(%): 0.98

Recovery is 104.9%

Ag ID: 93-2241S Seq. No.: 00142 A/S Pos.: 14 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 14
Replicate 1 Time: 10:12
Peak Area (A-s): 0.365 Peak Height (A): 0.405
Background Pk Area (A-s): 0.154 Background Pk Height (A): 0.048
Blank Corrected Pk Area (A-s): 0.329
Concentration (ug/L): 12.25

uL dispensed: 4 from 0, 5 from 35, 20 from 14
Replicate 2 Time: 10:15
Peak Area (A-s): 0.364 Peak Height (A): 0.408
Background Pk Area (A-s): 0.100 Background Pk Height (A): 0.033
Blank Corrected Pk Area (A-s): 0.328
Concentration (ug/L): 12.21

Mean Conc (ug/L): 12.23 SD: 0.030 RSD(%): 0.24

Ag ID: LCS 5x Seq. No.: 00143 A/S Pos.: 15 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 10:17
Peak Area (A-s): 0.616 Peak Height (A): 0.578
Background Pk Area (A-s): 0.060 Background Pk Height (A): 0.027
Blank Corrected Pk Area (A-s): 0.580
Concentration (ug/L): 21.58

uL dispensed: 4 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 10:19
Peak Area (A-s): 0.614 Peak Height (A): 0.580
Background Pk Area (A-s): 0.049 Background Pk Height (A): 0.023
Blank Corrected Pk Area (A-s): 0.578
Concentration (ug/L): 21.51

Mean Conc (ug/L): 21.55 SD: 0.054 RSD(%): 0.25

Ag ID: LCS 5x Seq. No.: 00144 A/S Pos.: 15 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 15
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 10:21
Peak Area (A-s): 0.870 Peak Height (A): 0.839
Background Pk Area (A-s): 0.043 Background Pk Height (A): 0.022
Blank Corrected Pk Area (A-s): 0.835
Concentration (ug/L): 31.05

uL dispensed: 5 from 35, 4 from 34, 20 from 15
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 10:24
Peak Area (A-s): 0.868 Peak Height (A): 0.836
Background Pk Area (A-s): 0.040 Background Pk Height (A): 0.021
Blank Corrected Pk Area (A-s): 0.833
Concentration (ug/L): 30.97

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 31.01 SD: 0.054 RSD(%): 0.18

Recovery is 94.6%

****

Ag ID: 93-2351 Seq. No.: 00145 A/S Pos.: 16 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 10:26
Peak Area (A-s): 0.053 Peak Height (A): 0.055
Background Pk Area (A-s): 0.031 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): 0.018
Concentration (ug/L): 0.66

uL dispensed: 4 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 10:28
Peak Area (A-s): 0.050 Peak Height (A): 0.053
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.015
Concentration (ug/L): 0.55

Mean Conc (ug/L): 0.61 SD: 0.083 RSD(%): 13.68

****

Ag ID: 93-2351 Seq. No.: 00146 A/S Pos.: 16 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 16
Replicate 1 Time: 10:30
Peak Area (A-s): 0.328 Peak Height (A): 0.391
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.293
Concentration (ug/L): 10.90

uL dispensed: 5 from 35, 4 from 34, 20 from 16
Replicate 2 Time: 10:33
Peak Area (A-s): 0.329 Peak Height (A): 0.388
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.294
Concentration (ug/L): 10.94

Mean Conc (ug/L): 10.92 SD: 0.025 RSD(%): 0.23

Recovery is 103.1%

****

Ag ID: CCV2 ICV-4 50x Seq. No.: 00147 A/S Pos.: 17 Date: 02/03/93
(1240) ICP 1016 mg/L 2/3/93
uL dispensed: 4 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 10:35
Peak Area (A-s): 0.622 Peak Height (A): 0.615
Background Pk Area (A-s): 0.027 Background Pk Height (A): 0.014
Blank Corrected Pk Area (A-s): 0.587
Concentration (ug/L): 21.82

uL dispensed: 4 from 0, 5 from 35, 20 from 17
Sample abs. is greater than that of the largest standard.
Replicate 2 Time: 10:37
Peak Area (A-s): 0.629 Peak Height (A): 0.625
Background Pk Area (A-s): 0.024 Background Pk Height (A): 0.014
Blank Corrected Pk Area (A-s): 0.593
Concentration (ug/L): 22.07

Sample abs. is greater than that of the largest standard.
Mean Conc (ug/L): 21.94 SD: 0.179 RSD(%): 0.81

****

Ag ID: CCB 3 Seq. No.: 00148 A/S Pos.: 18 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 18
Replicate 1 Time: 10:39
Peak Area (A-s): 0.045 Peak Height (A): 0.040
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 0.35

uL dispensed: 4 from 0, 5 from 35, 20 from 18
Replicate 2 Time: 10:42
Peak Area (A-s): 0.042 Peak Height (A): 0.039
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 0.24

Mean Conc (ug/L): 0.29 SD: 0.076 RSD(%): 25.91

****

Ag ID: 93-2437 Seq. No.: 00149 A/S Pos.: 19 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 19
Replicate 1 Time: 10:44
Peak Area (A-s): 0.044 Peak Height (A): 0.051
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 0.34

uL dispensed: 4 from 0, 5 from 35, 20 from 19
Replicate 2 Time: 10:46
Peak Area (A-s): 0.045 Peak Height (A): 0.052
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.010
Concentration (ug/L): 0.35

Mean Conc (ug/L): 0.34 SD: 0.012 RSD(%): 3.61

****

Ag ID: 93-2437 Seq. No.: 00150 A/S Pos.: 19 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 19
Replicate 1 Time: 10:48
Peak Area (A-s): 0.321 Peak Height (A): 0.386
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.286
Concentration (ug/L): 10.63

uL dispensed: 5 from 35, 4 from 34, 20 from 19
Replicate 2 Time: 10:50
Peak Area (A-s): 0.325 Peak Height (A): 0.391
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.290
Concentration (ug/L): 10.77

Mean Conc (ug/L): 10.70 SD: 0.095 RSD(%): 0.89

Recovery is 103.6%

****

Ag ID: 93-2438 Seq. No.: 00151 A/S Pos.: 20 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 10:53
Peak Area (A-s): 0.045 Peak Height (A): 0.052
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 0.35

uL dispensed: 4 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 10:55
Peak Area (A-s): 0.044 Peak Height (A): 0.052
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 0.32

Mean Conc (ug/L): 0.33 SD: 0.026 RSD(%): 7.68

****

Ag ID: 93-2438 Seq. No.: 00152 A/S Pos.: 20 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 20
Replicate 1 Time: 10:57
Peak Area (A-s): 0.322 Peak Height (A): 0.390
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.287
Concentration (ug/L): 10.67

uL dispensed: 5 from 35, 4 from 34, 20 from 20
Replicate 2 Time: 10:59
Peak Area (A-s): 0.326 Peak Height (A): 0.396
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.290
Concentration (ug/L): 10.80

Mean Conc (ug/L): 10.74 SD: 0.088 RSD(%): 0.82

Recovery is 104.0%

****

Ag ID: 93-2451 Seq. No.: 00153 A/S Pos.: 21 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 11:01
Peak Area (A-s): 0.043 Peak Height (A): 0.051
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.007
Concentration (ug/L): 0.28

uL dispensed: 4 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 11:04
Peak Area (A-s): 0.043 Peak Height (A): 0.051
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 0.29

Mean Conc (ug/L): 0.28 SD: 0.006 RSD(%): 2.28

****

Ag ID: 93-2451 Seq. No.: 00154 A/S Pos.: 21 Date: 02/03/93

uL dispensed: 5 from 35, 4 from 34, 20 from 21
Replicate 1 Time: 11:06
Peak Area (A-s): 0.320 Peak Height (A): 0.396
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.285
Concentration (ug/L): 10.59

uL dispensed: 5 from 35, 4 from 34, 20 from 21
Replicate 2 Time: 11:08
Peak Area (A-s): 0.328 Peak Height (A): 0.393
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.292
Concentration (ug/L): 10.87

Mean Conc (ug/L): 10.73 SD: 0.202 RSD(%): 1.88

Recovery is 104.5%

****

Ag ID: LCS + Bi 5x Seq. No.: 00155 A/S Pos.: 22 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 22
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:10
Peak Area (A-s): 0.629 Peak Height (A): 0.615
Background Pk Area (A-s): 0.022 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): 0.594
Concentration (ug/L): 22.09

****

Ag ID: LCS + Bi 5x Seq. No.: 00156 A/S Pos.: 22 Date: 02/03/93

uL dispensed: 19 from 0, 5 from 35, 5 from 22
Replicate 1 Time: 11:12
Peak Area (A-s): 0.184 Peak Height (A): 0.179
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.149
Concentration (ug/L): 5.55 Corrected Conc (ug/L): 22.18

uL dispensed: 19 from 0, 5 from 35, 5 from 22
Replicate 2 Time: 11:15
Peak Area (A-s): 0.182 Peak Height (A): 0.174
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.146
Concentration (ug/L): 5.45 Corrected Conc (ug/L): 21.78

Mean Conc (ug/L): 5.50 SD: 0.071 RSD(%): 1.29
Corrected Conc (ug/L): 21.98

****

Ag ID: LCS + Bi 5x Seq. No.: 00157 A/S Pos.: 22 Date: 02/03/93

uL dispensed: 15 from 0, 5 from 35, 4 from 34, 5 from 22
Replicate 1 Time: 11:17

Peak Area (A-s): 0.460 Peak Height (A): 0.437
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.425
Concentration (ug/L): 15.81 Corrected Conc (ug/L): 63.24

uL dispensed: 15 from 0, 5 from 35, 4 from 34, 5 from 22
Replicate 2 Time: 11:19
Peak Area (A-s): 0.467 Peak Height (A): 0.451
Background Pk Area (A-s): 0.019 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.432
Concentration (ug/L): 16.05 Corrected Conc (ug/L): 64.19

Mean Conc (ug/L): 15.93 SD: 0.169 RSD(%): 1.06
Corrected Conc (ug/L): 63.72

Recovery is 104.3%

****

Aq ID: CCV3 ICV-4 50x Seq. No.: 00158 A/S Pos.: 23 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 23
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:22
Peak Area (A-s): 0.634 Peak Height (A): 0.612
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.599
Concentration (ug/L): 22.27

****

Aq ID: CCV3 ICV-4 ~~50x~~ 200x Seq. No.: 00159 A/S Pos.: 23 Date: 02/03/93
(200) ICF 10/1 ug/L OF 2/3/93
uL dispensed: 19 from 0, 5 from 35, 5 from 23
Replicate 1 Time: 11:24
Peak Area (A-s): 0.186 Peak Height (A): 0.176
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.151
Concentration (ug/L): 5.60 Corrected Conc (ug/L): 22.42

uL dispensed: 19 from 0, 5 from 35, 5 from 23
Replicate 2 Time: 11:26
Peak Area (A-s): 0.180 Peak Height (A): 0.174
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.145
Concentration (ug/L): 5.38 Corrected Conc (ug/L): 21.51

Mean Conc (ug/L): 5.49 SD: 0.161 RSD(%): 2.93
Corrected Conc (ug/L): 21.96

****

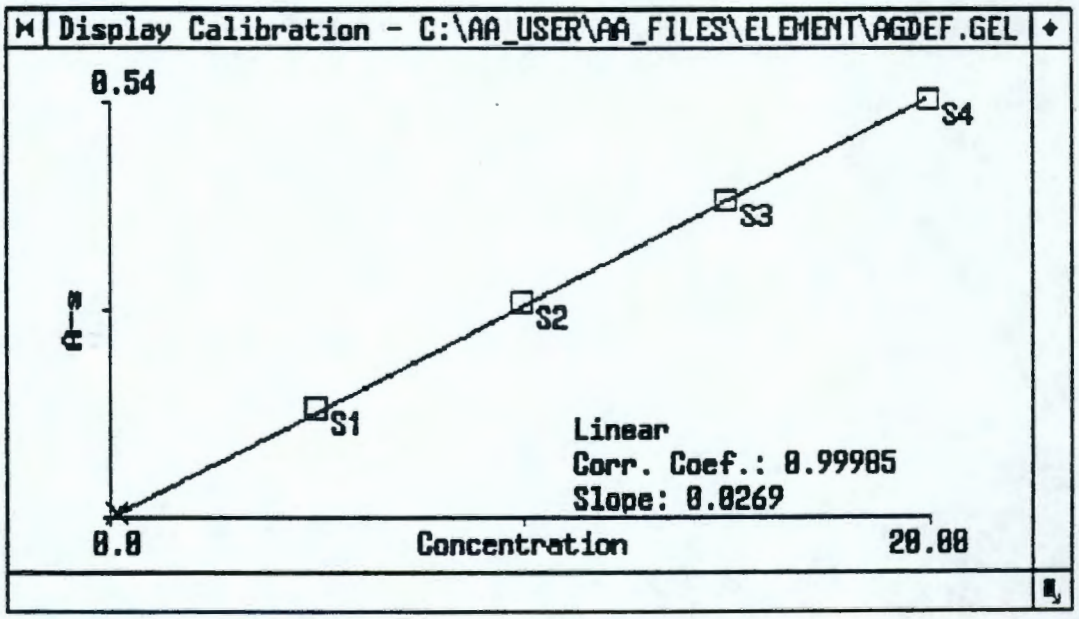
Aq ID: CCB4 Seq. No.: 00160 A/S Pos.: 24 Date: 02/03/93

uL dispensed: 4 from 0, 5 from 35, 20 from 24
Replicate 1 Time: 11:28
Peak Area (A-s): 0.040 Peak Height (A): 0.040
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 0.19

uL dispensed: 4 from 0, 5 from 35, 20 from 24

Replicate 2 Time: 11:31
Peak Area (A-s): 0.040 Peak Height (A): 0.038
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 0.17

Mean Conc (ug/L): 0.18 SD: 0.009 RSD(%): 4.74



ID/Weight File Name: DF.IDW Analyst: DE Faulk

Sample Volume: 1 L Sample Weight: 1.0 ug
Autosampler Type: Last Stored: 93/02/03, at 07:36:12

Loc.	Sample ID	Weight	Dilution
1	5 ppb Ag std		
2	ICV-4 50x		
3	ICB		
4	CRA 5 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-2239		
9	93-2240		
10	CCV1 ICV-4 50x		
11	CCB 2		
12	93-2241		
13	93-2241D		
14	93-2241S		
15	LCS 5x		
16	93-2351		
17	CCV2 ICV-4 50x		

9613492.0908

Element File: PBDEF.GEL Last Stored: 93/01/29 08:07:22
Element: Pb Wavelength: 283.3 Peak Slit: 0.7 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100, ~~MA93267~~ WB76757 mwl 4/16/93
Matrix Modifier - Palladium Nitrate
procedure PNL-ALO-217
locations: S1(34 w/dil), S2(34),dil(0),mod(35)
IDL 1-93

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 5.00 S2: 10.00 S3:
S4: S5: S6:
S7: SB: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 1

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
90	1	15	300		Norm	
130	10	10	300		Norm	
1100	10	20	300		Norm	
20	1	15	300		Norm	
2150	0	5	30	*	Norm	
2600	1	2	300		Norm	
20	1	5	300		Norm	

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 8 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

---

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	8	5	
Standard 1	34	10	18	5	
Standard 2	34	20	8	5	
Standard 3					
Standard 4					
Standard 5					
Standard 6					
Standard 7					
Standard 8					
Reslope					

Sample Blank Location: Automated Additions

18	CCB 3
19	93-2437
20	93-2438
21	93-2451
22	LCS + Bi 5x
23	CCV3 ICV-4 50x
24	CCB4

D04-127

9613492.0909

Element File: SEDEF.GEL Element: Se Wavelength: 196.0
Date: 01/27/93 Time: 12:37 Slit: 2.0
Data File: ID/Wt File: DF.IDW Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 66
Remark 1: AA5100, ~~WA73267~~ 08760757 mwk 4/16/93
Remark 2: Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
Remark 3: locations:S1 S2 S3 S4 (34 w/dil), mod(35),blk(0)
Remark 4: procedure: PNL-ALO-215, rev.1
Remark 5: T-106 C-109 & C-112 Hot Cell Blanks Darrin Faulk 1/27/93

Se ID: Blank Seq. No.: 00001 A/S Pos.: 0 Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 12:40
Peak Area (A-s): 0.006 Peak Height (A): 0.008
Background Pk Area (A-s): 0.129 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.03

Auto-zero performed.

Se ID: Standard 1 Seq. No.: 00002 A/S Pos.: 34 Date: 01/27/93

uL dispensed: 20 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 12:43
Peak Area (A-s): 0.043 Peak Height (A): 0.053
Background Pk Area (A-s): 0.122 Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): 0.037
Concentration (ug/L): 10.93

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0037

Se ID: Standard 2 Seq. No.: 00003 A/S Pos.: 34 Date: 01/27/93

uL dispensed: 16 from 0, 5 from 35, 8 from 34
Replicate 1 Time: 12:46
Peak Area (A-s): 0.073 Peak Height (A): 0.090
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.067
Concentration (ug/L): 18.19

Standard number 2 applied. [20.00]
Correlation coefficient: 0.99239 Slope: 0.0034

Se ID: Standard 3 Seq. No.: 00004 A/S Pos.: 34 Date: 01/27/93

uL dispensed: 12 from 0, 5 from 35, 12 from 34
Replicate 1 Time: 12:49
Peak Area (A-s): 0.104 Peak Height (A): 0.132
Background Pk Area (A-s): 0.112 Background Pk Height (A): 0.064
Blank Corrected Pk Area (A-s): 0.097
Concentration (ug/L): 28.63

D04-128

Standard number 3 applied. [30.00]
Correlation coefficient: 0.99634 Slope: 0.0033

****

Se ID: Standard 4 Seq. No.: 00005 A/S Pos.: 34 Date: 01/27/93

uL dispensed: 8 from 0, 5 from 35, 16 from 34
Replicate 1 Time: 12:52
Peak Area (A-s): 0.134 Peak Height (A): 0.165
Background Pk Area (A-s): 0.104 Background Pk Height (A): 0.057
Blank Corrected Pk Area (A-s): 0.127
Concentration (ug/L): 38.64

Standard number 4 applied. [40.00]
Correlation coefficient: 0.99764 Slope: 0.0032

****

Se ID: 5 ppb Se std Seq. No.: 00006 A/S Pos.: 1 Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 12:55
Peak Area (A-s): 0.024 Peak Height (A): 0.028
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.055
Blank Corrected Pk Area (A-s): 0.017
Concentration (ug/L): 5.37

****

Se ID: ICV-2 40x Seq. No.: 00007 A/S Pos.: 2 Date: 01/27/93
(1249) ICF 1006 ug/L DF 1/27/93
uL dispensed: 4 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 12:58
Peak Area (A-s): 0.087 Peak Height (A): 0.111
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.055
Blank Corrected Pk Area (A-s): 0.080
Concentration (ug/L): 24.79

****

Se ID: 93-02239 Seq. No.: 00008 A/S Pos.: 8 Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 13:01
Peak Area (A-s): -0.024 Peak Height (A): 0.005
Background Pk Area (A-s): 0.104 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): -0.031
Concentration (ug/L): -9.51

****

Se ID: 93-02239 Seq. No.: 00009 A/S Pos.: 8 Date: 01/27/93

uL dispensed: 5 from 35, 4 from 34, 20 from 8
Replicate 1 Time: 13:05
Peak Area (A-s): -0.001 Peak Height (A): 0.038
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): -0.007
Concentration (ug/L): -2.28

Recovery is 72.3%

```
**********************************************************************
Se    ID: 93-02240          Seq. No.: 00010    A/S Pos.: 9     Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 9
Replicate  1                          Time: 13:08
Peak Area (A-s): -0.032               Peak Height (A): 0.006
Background Pk Area (A-s): 0.109       Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): -0.038
Concentration (ug/L  ): -11.77

**********************************************************************
Se    ID: 93-02240          Seq. No.: 00011    A/S Pos.: 9     Date: 01/27/93

uL dispensed: 5 from 35, 4 from 34, 20 from 9
**********************************************************************
Se    ID: 93-02241          Seq. No.: 00012    A/S Pos.: 12    Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 12
Replicate  1                          Time: 13:11
Peak Area (A-s): -0.027               Peak Height (A): 0.006
Background Pk Area (A-s): 0.103       Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): -0.033
Concentration (ug/L  ): -10.31

**********************************************************************
Se    ID: 93-02351          Seq. No.: 00013    A/S Pos.: 16    Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 16
Replicate  1                          Time: 13:15
Peak Area (A-s): -0.026               Peak Height (A): 0.006
Background Pk Area (A-s): 0.099       Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): -0.032
Concentration (ug/L  ): -9.87

**********************************************************************
Se    ID: 93-02351          Seq. No.: 00014    A/S Pos.: 16    Date: 01/27/93

uL dispensed: 5 from 35, 4 from 34, 20 from 16
**********************************************************************
Se    ID: 93-02437          Seq. No.: 00015    A/S Pos.: 19    Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 19
Replicate  1                          Time: 13:18
Peak Area (A-s): -0.031               Peak Height (A): 0.007
Background Pk Area (A-s): 0.106       Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): -0.038
Concentration (ug/L  ): -11.62

**********************************************************************
Se    ID: 93-02438          Seq. No.: 00016    A/S Pos.: 20    Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 20
Replicate  1                          Time: 13:21
Peak Area (A-s): -0.029               Peak Height (A): 0.005
Background Pk Area (A-s): 0.105       Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): -0.035
Concentration (ug/L  ): -10.87
```

****

Se ID: 93-02451 Seq. No.: 00017 A/S Pos.: 21 Date: 01/27/93

uL dispensed: 4 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 13:24
Peak Area (A-s): -0.035 Peak Height (A): 0.005
Background Pk Area (A-s): 0.110 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): -0.041
Concentration (ug/L): -12.62

* Since all samples are reading ~ -10 ppb I will dilute them 10x for analysis.

1/27/93

RUN LOG: GRAPHITE FURNACE ATOMIC ABSORPTION SPECTROMETRY
ROOM 303

Run Seq #	ALO sample number (s)	Client sample ID's (designator or number)	Client name	Analyte (s)	Date analyzed
1	92-10531 — 42	Trace metals Conc. 1, 2, 3, 4	USEPA	Cd, Tl, Sb As, Se, Pb, Ag	9-16-92
2	92-10501, * 92-11088	400, 300 area Process Monthly	Eric Gregor	Pb, Cd	9-21-92
3	92-10957 — 60	A1-8, A2-8, 1A-1-8, 1A-2-8	W. Greenholt	Cs	9-30-92
4	93-0055 — 93-0106	PCT 2194-2227 Acc. 12228-2249	M. Schweiger	Cs	10-2-92
5	93-00138 — 163	2250 - 2275	M. Schweiger	Cs	10-6-92
6	93-00426 — 465, 93-00469	2276 - 2316	M. Schweiger	Cs	10-13-92
7	93-00765 — 93-00808	2317 - 2360	M. Schweiger	Cs	10-27-92
8	93-489, 93-750	300 area pr. · 400 area pr.	Perry / Gregor	Pb, Cd	11-2-92
9	93-1518, 19, 20	2361, 62, 63	M. Schweiger	Cs	11-10-92
10	—	IDL's	SST	As, Se, Sb	11-17-92
11	93-10669, 93-10670	8201, core 27	SST	As, Se, Sb	11-28-92
12	93-1358, 1363, 1371	C-109 core 47, 48, 49	SST	As, Se, Sb	1-4-93
13	93-1387, 1560, 1994, 2354	300 area pr. - 400 area pr.	Perry	Cd Pb	1-7-93
14	93-282484, 93-2485	run 13 & 14 TCLP extracts	Surma	Cs	1-12-93
15	93-2239, 2240, 2241, 2351, 2437, 2438, 2451	B07J24, J25, J26, J27, J28, J29 K00	Klinger (T-106)	As, Se, Ag, Pb, Tl, Bi	1-22-93
16	—	IDLs	Klinger (T-106)	Ag, Pb, Tl, Bi	1-27-93

Note to analyst and auditors: It is not required that all fields be filled in nor lined out and initialed and dated.

9613492.0913

004-433

GRAPHITE FURNACE ATOMIC ABSORPTION STANDARD and ICV PREPARATION

Preparation of 50 ppb As & 50 ppb Se Working Standard Analyst signature/date Darin Faulk 1/25/93

The 50 ppb As & Se working standard was prepared by adding 0.100 ml of 5 ppm As & 5 ppm Se Intermediate Standard to a ~1% ULTREX HNO_3 water mixture in a 10 ml volumetric flask. The working standard was prepared daily before the sample analysis. The Intermediate Standard, prepared once a year, will expire when the primary standard expires. The Intermediate Standard (5 ppm As & 5 ppm Se standard) was prepared (9/2/92) by diluting 1.00 ml of 10000 ppm As STD (2% HNO_3, I.V., Lot: #G-AS0124, expires 7/1/93) and 1.00 ml of 10000 ppm Se STD (2% HNO_3, I.V., lot# G-SE0110, expires 7/1/93) in a 100 ml volumetric flask containing ~2% ULTREX HNO_3. 10 ml of this solution wad diluted to 100 ml vol flask containing ~ 2% ULTREX HNO3. This gives 10 ppm As and Se. Finally 50 ml of the 10 ppm solution was diluted to 100 ml vol flask containing ~ 2% HNO3.

The As & Se ICV and CCV check standards were prepared from the ICV-2 (1290) EPA standard. The ICV & CCV check standards were prepared by diluting 0.25 ml of ICV-2 in a 10 ml volumetric flask containing ~1% ULTREX HNO_3 water mixture. The As & Se ICV and CCV check standards were prepared daily.

Preparation of 50 ppb Tl & 50 ppb Bi Working Standard Analyst signature/date Darin Faulk 1/22/93

The 50 ppb Tl & Bi working standard was prepared by adding 0.100 ml of 5 ppm Tl & 5 ppm Bi Intermediate Stock Standard to a ~1% ULTREX HNO_3 water mixture in a 10 ml volumetric flask. The working standard was prepared daily before the sample analysis. The Intermediate Standard, prepared once a year, will expire when the primary standard expires. The Intermediate Standard (5 ppm Tl & 5 ppm Bi standard) was prepared (9/2/92) by diluting 1.00 ml of10000 ppm Tl STD (2% HNO_3, I.V. lot# F-TL0114, expires 6/1/93) and 1.00 ml of 10000 ppm Bi STD (2% HNO_3, I.V. lot G-BI0114, expires 7/1/93) in a 100 ml volumetric flask containing ~2% ULTREX HNO_3. 10 ml of this solution was diluted to 100 ml vol flask containing ~ 2% ULTREX HNO3. This gives 10 ppm Tl and Bi. Finally 50 ml of the 10 ppm solution was diluted to 100 ml vol flask containing ~ 2% HNO3.

The Tl ICV and CCV check standards were prepared from the ICV-4 (1290) EPA standard. The ICV & CCV check standards were prepared by diluting 0.200 ml of ICV-4 in a 10 ml volumetric flask containing ~1% ULTREX HNO_3 water mixture. The EPA ICV-4 solution does not contain the element Bi. The Bi ICV and CCV standards were prepared from a Johnson Mathey Bi standard (Lot # 59268, expires 1/20/93). The 50 ppb Bi ICV and CCV standards were prepared by diluting 0.100 ml of 5 ppm Bi Intermediate Standard to a ~1% ULTREX HNO_3 water mixture in a 10 ml volumetric flask. The Intermediate Standard (5 ppm Bi standard) was prepared (1/20/93) by diluting1.00 ml of 500 ppm Bi STD (2% HNO_3, J.M., Lot: #59268, expires 5/12/93) in a 100 ml volumetric flask containing ~2% ULTREX HNO_3. The Tl & Bi ICV and CCV check standards were prepared daily.

Preparation of 50 ppb Pb & 50 ppb Ag Working Standard Analyst signature/date Darin Faulk 2/3/93

The 50 ppb Pb & Ag working standard was prepared by adding 0.100 ml of 5 ppm Pb & 5 ppm Ag Intermediate Standard to a ~1% ULTREX HNO_3 water mixture in a 10 ml volumetric flask. Also, a 150 ppb Pb working standard was prepared by adding 0.300 ml of 5 ppm Pb & 5 ppm Ag Intermediate Standard to a ~1% HNO_3 water mixture in a 10 ml volumetric flask. The working standards were prepared daily before the sample analysis. The Intermediate Standard was prepared once a year and will expire when the primary standard expires. The Intermediate Standard (5 ppm Pb & 5 ppm Ag standard) was prepared (9/2/92) by diluting 1.00 ml of 10000 ppm Pb STD (2% HNO_3, J.M., Lot: #G-PB0121, expires 7/1/93) and 1.00 ml of 10000 ppm Ag STD (2% HNO_3, J.M., Lot: F-AG0109, expires 7/1/93) in a 100 ml volumetric flask containing ~2% ULTREX HNO_3. 10 ml of this solution was diluted to 100 ml vol flask containing ~ 2% ULTREX HNO3. This gives 10 ppm Pb and Ag. Finally 50 ml of the 10 ppm solution was diluted to 100 ml vol flask containing ~ 2% HNO3.

The Pb & Ag ICV and CCV check standards were prepared from the ICV-4 (1290) EPA standard. The ICV & CCV check standards were prepared by diluting 0.200 ml of ICV-4 in a 10 ml volumetric flask containing ~1% ULTREX HNO_3 water mixture. The Pb & Ag ICV and CCV check standards were prepared daily.

Standards Records

The original standard certificates accepted by PNL QC are in the inorganic group RIDS file maintained by NC Cleavenger (325 Bldg., 300 area). Copies of all calibration standard certificates, standard preparations information, and verifications are maintained in a 3-ring binder located in Laboratory 405, 325 Bldg. labeled ICP-325-405 (system file identification) Standard Log.

This form is changed as standards expire. Reviewer signature/date MWThu 3-23-93

Standard tracability for IDL study

As:
5 ppm As intermediate standard (from 10000 ppm As I.V. lot G-AS0124, exp 7/1/93).

Se:
5 ppm Se intermediate standard (from 10000 ppm Se I.V. lot G-SE0110, exp. 7/1/93).

Tl:
5 ppm Tl intermediate standard (from 10000 ppm Tl I.V. lot F-TL0114, exp. 6/1/93).

Bi:
5 ppm Bi intermediate standard (from 10000 ppm Bi I.V. lot G-BI0114, exp. 7/1/93).

Pb:
5 ppm Pb intermediate standard (from 10000 ppm Pb I.V. lot G-PB0121, exp. 7/1/93).

Ag:
5 ppm Ag intermediate standard (from 10000 ppm Ag I.V. lot F-AG0109, exp. 7/1/93).

Analyst/date Damin Smith 3-17-93

GFAAS INSTRUMENT DETECTION LIMIT (IDL) STUDY

Repeat#	As (10 ppb) Meas. (µg/L)	As (10 ppb) Meas. (µg/L)	As (10 ppb) Meas. (µg/L)	Se (3 ppb) Meas. (µg/L)	Se (3 ppb) Meas. (µg/L)	Se (3 ppb) Meas. (µg/L)	Tl (2 ppb) Meas. (µg/L)	Tl (2 ppb) Meas. (µg/L)	Tl (2 ppb) Meas. (µg/L)
1	9.59	8.91	11.40	3.93	3.82	3.02	2.00	2.93	2.24
2	9.85	9.15	10.33	3.37	3.89	3.09	2.62	2.33	2.18
3	10.25	8.71	8.61	3.46	4.16	3.34	2.41	1.67	2.60
4	9.27	8.28	9.04	3.49	4.09	3.3	1.07	1.84	2.76
5	9.99	9.78	10.68	3.39	3.5	2.42	2.47	1.62	3.04
6	10.34	9.82	11.07	3.86	3.22	3.22	1.59	1.76	3.24
7	11.03	9.41	11.13	4.22	4.84	3.62	3.04	2.32	2.13
Standard deviation	0.57	0.57	1.09	0.33	0.52	0.37	0.67	0.48	0.44
Instrument D.L.		As	2.22		Se	1.22		Tl	1.59
Date analyzed	11/17/92	11/20/92	12/16/92	11/18/92	11/20/92	12/16/92	1/27/93	1/29/93	2/2/93

Repeat#	Bi (10 ppb) Meas. (µg/L)	Bi (10 ppb) Meas. (µg/L)	Bi (10 ppb) Meas. (µg/L)	Pb (3 ppb) Meas. (µg/L)	Pb (3 ppb) Meas. (µg/L)	Pb (3 ppb) Meas. (µg/L)	Ag (1 ppb) Meas. (µg/L)	Ag (1 ppb) Meas. (µg/L)	Ag (1 ppb) Meas. (µg/L)
1	13.20	11.03	11.95	2.25	2.61	3.40	1.06	1.07	1.14
2	11.76	9.91	10.13	2.49	3.08	3.65	1.13	1.12	1.13
3	10.45	9.60	12.61	3.01	2.42	3.41	1.09	1.08	1.06
4	8.49	12.03	9.42	3.20	2.60	3.88	1.11	1.11	1.06
5	9.32	10.65	10.17	3.27	2.63	3.57	1.19	1.19	1.09
6	8.64	10.53	11.47	0.56	3.06	3.82	1.17	1.19	1.21
7	10.16	8.18	8.32	0.29	3.16	3.71	1.15	1.15	1.11
Standard deviation	1.71	1.21	1.51	1.24	0.30	0.19	0.05	0.05	0.05
Instrument D.L.		Bi	4.43		Pb	1.72		Ag	0.15
Date analyzed	1/27/93	1/29/93	2/2/93	1/27/93	1/29/93	2/2/93	1/27/93	1/29/93	2/2/93

Procedures:

PNL-ALO-214, Rev. 1 (As)
PNL-ALO-215, Rev. 1 (Se)
PNL-ALO-216, Rev. 0 (Bi)
PNL-ALO-217, Rev. 0 (Pb)
PNL-ALO-220, Rev. 0 (Tl)
PNL-ALO-221, Rev. 0 (Ag)

M&TE: · MA93267, Perkin-Elmer 5100 AAS
384-06-01-004, Mettler AT400 balance

Analyst/date: Darrin Faulk 2/3/93

Reviewer/date: M Walker 3/16/93

9613492.0916

D04-125

Battelle/PNL/Inorganic Analysis Group

HNO3-HCl DIGEST Nitric and Hydrochloric Acid Digestion Worksheet

Client: Kris Klinger T106 Work Order: M99282 Date: 1-13-93

Sample matrix and observations: soil

#	ALO Sample #	Client ID	Weight (g) Bottle	Bottle+ Sample (g)	Initial Weight Sample	Sample+ Water (g)	Percent Solids	Process Factor
1	93-02239	BO7JZ4	32.4990	33.5049	1.0059	200.2663	93.7	199.09
2	93-02240	BO7JZ5	30.1822	31.1830	1.0008	200.2960	95.4	200.14
3	93-02241	BO7JZ6	32.4462	33.4484	1.0022	203.9798	97.2	203.53
4	93-02241D	BO7JZ6	32.0522	33.0563	1.0041	200.2890	97.2	199.47
5	93-02241S	BO7JZ6	30.0188	31.0239	1.0051	200.5935	97.2	199.58
6	LCS	LCS-0287	32.4980	33.4988	1.0008	215.1012	100	214.93
7	PBS	Process Blank	32.5160	33.5160 *	1.0000 *	200.3778	NA	200.38
8	Spike Blank	Spike Blank	31.8803	32.8803 *	1.0000 *	200.4069	NA	200.41
9	93-02351	BO7JZ7	30.0471	31.0495	1.0024	200.2234	97.4	199.74
10	93-02437	BO7JZ8	31.6639	32.6698	1.0059	200.1492	96.2	198.98
11	93-02438	BO7JZ9	31.8504	32.8555	1.0051	200.2120	96.4	199.20
12	93-02451	BO7KO0	31.8161	32.8197	1.0036	200.2555	93.5	199.54
13	LCS + Bi	LCS-0287	31.8459	32.8479	1.0020	200.1188	100	199.72

Comments: Spikes contained 1mL of GFAA cocktail #1, 1mL Ag spike (see attached sheet) + 0.8 mL of 5ppm Bi (#4, #5, #9) #13 is LCS-0287 + 0.8 mL Bi (5ppm) = 20ppb. Samples were filtered w/ 0.45μ filter. * wt's entered solely for Process Factor calculation #7 + #8 were just the bottle taken through the process. added

1. The digestion was performed using 1 g of sample, 1:1 (10 mL) and concentrated HNO3 (5 mL), 3 mL H2O2, heated at 95 C for 2 1/2 hours unless otherwise noted.
2. Blank fields are permitted in this worksheet and they do not require a crossout or comment.

Analyst/date: D. Ot 1-18-92 Reviewer/date: Ingrid Burgoon 1-18-93

3/23/93

D04-136

9613492.0917

GFAA COCKTAIL SPIKE SOLUTION PREPARATION AND VERIFICATION

File 325-419 spikes
IB

Cocktail #1 Prepared 01/11/93 by Ingrid Burgeson Expires 01/11/94

Element	Stock ug/mL	Bar Code	Dilution	Conc ug/mL	Volume mL	Conc in 100 mL of Cocktail mg/L	ICP Result	Final Level ug/L
As	9982	53995	25	399.3	2	8.0	8.01	39.9
Se	10050	59024	50	201.0	1	2.0	1.99	10.1
Sb	10011	53994	25	400.4	5	20.0	19.47	100.1
Tl	9995	59030	50	199.9	5	10.0	10.60	50.0
Cd	10010	59001	100	100.1	1	1.0	1.00	5.0
Pb	10065	59010	50	201.3	2	4.0	3.96	20.1

Cocktail #2 Prepared 01/11/93 by Ingrid Burgeson Expires 01/11/94

Element	Stock ug/mL	Bar Code	Dilution	Conc ug/mL	Volume mL	Conc in 100 mL of Cocktail mg/L	ICP Result	Final Level ug/L
As	9982	53995	25	399.3	2	8.0	7.98	39.928
Se	10050	59024	50	201.0	1	2.0	1.99	10.05
Sb	10011	53994	25	400.4	5	20.0	19.54	100.11
Cd	10010	59001	100	100.1	1	1.0	1.00	5.005
Pb	10065	59010	50	201.3	2	4.0	3.95	20.13

Silver Spike Prepared 01/11/93 by Ingrid Burgeson Expires 01/11/94

Element	Stock ug/mL	Bar Code	Dilution	Conc ug/mL	Volume mL	Conc in 100 mL of Cocktail mg/L	ICP Result	Final Level ug/L
Ag	9990	59026	50	199.8	1	2.0	1.98	9.99

All standards were diluted into 2% HNO3. The dilutions were performed using 25, 50 and 100 mL glass volumetric flasks which had been throughly cleaned and stored in 2% HNO3. Pipet delivery was checked by pipetting into the flask which was tared on a balance. In addition, each final solution was verified by ICP analysis. Use the bar codes as a reference for the Standard Log Books to obtain further information about the stock solutions.

The final spike level is given for preparations which use 1.00 mL of the prepared cocktail (or Ag spike) in 200 mL.

Performance Check for Pipettes

Beginning check results [1,2]

S weight (certified) 1.0000 g S weight (found) 1.0000 g S weight I.D.# WE701

Pipette serial#	B127146		B126888		
pipette volume (ml)	0.1000		1.0000		
Check #1	0.0994		0.9964		
Check #2	0.0993		0.9931		
Check #3	~~0.0994~~	0.0994	0.9960		
mean volume (ml)	0.0994		0.9952		
%pipetting error	0.6%		0.5%		

Ending check results

pipette volume (ml)					
Check #1					
Check #2					
Check #3					
mean volume (ml)					
%pipetting error					

Note: Blank spaces or lines are permitted.

Pipette calibration notes:

(1) Analyst shall do at a minimum, a single pipette performance check at beginning and end of an analytical session or three performance checks before use. Use a two point performance check if using adjustable range pipettes for more than one delivery volume, otherwise performance check at the volume used. For pipettes that deliver greater than or equal to 0.5 ml the criteria for acceptance is ±1%. Acceptance tolerance of pipettes that deliver less than 0.5 ml shall be governed by manufacturer's tables.

(2) If pipette fails single performance check (either before or after use) the analyst shall repeat performance check two more times. If pipette fails the triplicate performance check then the Cognizant Scientist shall be called to resolve the problem.

Analyst's notes:

Analytical balance M&TE# (serial no.): WD04501

Analyst / date: Darin Funk 3/22/93

Reviewer / date: MW Chu 3/23/93

Form date 5-92

Performance Check for Pipettes

Beginning check results [1,2]

S weight (certified) 1.0000 g S weight (found) 1.0001 g S weight I.D.# WB701

Pipette serial#	B127146	B121886			
pipette volume (ml)	0.1000	1.0000			
Check #1	0.0992	0.9971			
Check #2	0.0993	0.9952			
Check #3	0.0991	0.9939			
mean volume (ml)	0.0992	0.9954			
%pipetting error	0.8%	0.5%			

Ending check results

pipette volume (ml)					
Check #1					
Check #2					
Check #3					
mean volume (ml)					
%pipetting error					

Note: Blank spaces or lines are permitted.

Pipette calibration notes:

(1) Analyst shall do at a minimum, a single pipette performance check at beginning and end of an analytical session or three performance checks before use. Use a two point performance check if using adjustable range pipettes for more than one delivery volume, otherwise performance check at the volume used. For pipettes that deliver greater than or equal to 0.5 ml the criteria for acceptance is ±1%. Acceptance tolerance of pipettes that deliver less than 0.5 ml shall be governed by manufacturer's tables.

(2) If pipette fails single performance check (either before or after use) the analyst shall repeat performance check two more times. If pipette fails the triplicate performance check then the Cognizant Scientist shall be called to resolve the problem.

Analyst's notes:

Analytical balance M&TE# (serial no.) : WB 04501

Analyst / date: Damian Fuller 3/26/93

Reviewer / date: M Wilson 3/23/93

Form date 5-92

Performance Check for Pipettes

Beginning check results [1,2]

S weight (certified) 1.0000g S weight (found) 0.9999g S weight I.D.# WE701

Pipette serial#	B127146	B126898			
pipette volume (ml)	0.1000	1.0000			
Check #1	0.0992	0.9922			
Check #2	0.0993	0.9929			
Check #3	0.0993	0.9941			
mean volume (ml)	0.0993	0.9931			
%pipetting error	0.7%	0.7%			

Ending check results

pipette volume (ml)					
Check #1					
Check #2					
Check #3					
mean volume (ml)					
%pipetting error					

Note: Blank spaces or lines are permitted.

Pipette calibration notes:

(1) Analyst shall do at a minimum, a single pipette performance check at beginning and end of an analytical session or three performance checks before use. Use a two point performance check if using adjustable range pipettes for more than one delivery volume, otherwise performance check at the volume used. For pipettes that deliver greater than or equal to 0.5 ml the criteria for acceptance is ±1%. Acceptance tolerance of pipettes that deliver less than 0.5 ml shall be governed by manufacturer's tables.

(2) If pipette fails single performance check (either before or after use) the analyst shall repeat performance check two more times. If pipette fails the triplicate performance check then the Cognizant Scientist shall be called to resolve the problem.

Analyst's notes:

Analytical balance M&TE# (serial no.): WD04501

Analyst / date: Darrin Faulk 1/27/93

Reviewer / date: MW Khu 2-23-93

Form date 5-92

Performance Check for Pipettes

Beginning check results [1,2]

S weight (certified) 1.0000 g S weight (found) 1.0001 g S weight I.D.# WE701

Pipette serial#	B127146	B126888			
pipette volume (ml)	0.1000	1.0000			
Check #1	0.0991	0.9922			
Check #2	0.0989	0.9937			
Check #3	0.0991	0.9940			
mean volume (ml)	0.0990	0.9933			
%pipetting error	1%	0.7%			

Ending check results

pipette volume (ml)					
Check #1					
Check #2					
Check #3					
mean volume (ml)					
%pipetting error					

Note: Blank spaces or lines are permitted.

Pipette calibration notes:

(1) Analyst shall do at a minimum, a single pipette performance check at beginning and end of an analytical session or three performance checks before use. Use a two point performance check if using adjustable range pipettes for more than one delivery volume, otherwise performance check at the volume used. For pipettes that deliver greater than or equal to 0.5 ml the criteria for acceptance is ±1%. Acceptance tolerance of pipettes that deliver less than 0.5 ml shall be governed by manufacturer's tables.

(2) If pipette fails single performance check (either before or after use) the analyst shall repeat performance check two more times. If pipette fails the triplicate performance check then the Cognizant Scientist shall be called to resolve the problem.

Analyst's notes:

Analytical balance M&TE# (serial no.): WD04501

Analyst / date: Damian Faulk 7/3/93

Reviewer / date: MWH 3/23/93

Form date 5-92

Performance Check for Pipettes

Beginning check results [1,2]

S weight (certified) 1.0000 S weight (found) 1.0001 S weight I.D.# WE701

Pipette serial#	B127146	B126889			
pipette volume (ml)	0.1000	1.0000			
Check #1	0.0990	0.9902			
Check #2	0.0993	0.9925			
Check #3	0.0990	0.9937			
mean volume (ml)	0.0991	0.9921			
%pipetting error	0.9%	0.8%			

Ending check results

pipette volume (ml)					
Check #1					
Check #2					
Check #3					
mean volume (ml)					
%pipetting error					

Note: Blank spaces or lines are permitted.

Pipette calibration notes:

(1) Analyst shall do at a minimum, a single pipette performance check at beginning and end of an analytical session or three performance checks before use. Use a two point performance check if using adjustable range pipettes for more than one delivery volume, otherwise performance check at the volume used. For pipettes that deliver greater than or equal to 0.5 ml the criteria for acceptance is ±1%. Acceptance tolerance of pipettes that deliver less than 0.5 ml shall be governed by manufacturer's tables.

(2) If pipette fails single performance check (either before or after use) the analyst shall repeat performance check two more times. If pipette fails the triplicate performance check then the Cognizant Scientist shall be called to resolve the problem.

Analyst's notes:

Analytical balance M&TE# (serial no.): WD04501

Analyst / date: Darrin Faulk 3/15/93

Reviewer / date: [illegible] 3-23-93

Form date 5-92

GRAPHITE FURNACE ATOMIC ABSORPTION ANALYSIS **REVIEW** REPORT

Project: T106

Analyst/date : Darrin Fowler 3/30/93

Archive File: GF012293

Procedures: PNL-ALO-214 (As) PNL-ALO-217 (Pb) PNL-ALO-216 (Bi)
PNL-ALO-215 (Se) PNL-ALO-220 (Tl) PNL-ALO-221 (Ag)

Reviewer/date: MW 3/30/93

M&TE: ~~MA03267~~, P-E 5100 AAS; 384-06-01-004, Balance
W876757 MWW 9/16/93

IDL 2.22

Disk File: GF-t106b
page 1of3 Reruns

***** Reruns *******

Lab ID	Client ID	Liquid Sample Vol (ml)	Solid Sample Wt (g)	% solids	Process Final Vol (ml)	PDF	As ADF	As meas. (µg/L)	Se ADF	Se meas. (µg/L)	Tl ADF	Tl meas. (µg/L)	Bi ADF	Bi meas. (µg/L)	Pb ADF	Pb meas. (µg/L)	Ag ADF	Ag meas. (µg/L)
							3/25/93								3/24/93			
ICV	EPA sample						40	25.47							50	19.40		
ICB							1	1.33							1	0.57		
CRA	CRDL STD						1	10.08							1	2.19		
CCB1							1	1.12							1	-0.61		
ICV	EPA sample						40	23.92										
ICB							1	1.20										
PB	Process blk		1.0000	100.0	200.4	200.4	1	0.48							1	-0.64		
PB+A.S.							1	19.04							1	19.12		
BS	Blank spike	199.7			200.4	1.0	1	38.14							1	19.23		
93-02339	B07JZ4		1.0059	93.7	200.3	212.5	1	24.36							4	12.55		
2339+A.S.							1	42.39							4	29.62		
93-02340	B07JZ5		1.0008	95.4	200.3	209.8	1	26.27							2	9.55		
2340+A.S.							1	43.55							2	25.74		
CCV1							40	26.43							50	20.48		
CCB2							1	1.92							1	0.02		
93-02341	B07JZ6		1.0022	97.2	204.0	209.4	1	21.45							5	11.31		
2341+A.S.							1	38.53							5	29.81		
93-02341D	B07JZ6 Dup		1.0041	97.2	200.3	205.2	1	28.20							5	13.08		
2341D+A.S.							1	46.43							5	30.88		
93-02341S	B07JZ6 Spk		1.0051	97.2	200.6	205.3	4	18.27							5	16.23		
LCS	LCS-287		1.0008	100.0	215.1	214.9	200	21.37							100	12.18		
LCS+A.S.							200	40.68							100	32.05		
93-02351	B07JZ7		1.0024	97.4	200.2	205.1	1	23.18							2	14.46		
2351+A.S.							1	43.22							2	31.99		
CCV2							40	26.52							50	20.66		
CCB3							1	1.95							1	-1.10		
93-02437	B07JZ8		1.0059	96.2	200.1	206.8	1	20.88							1	12.04		
2437+A.S.							1	41.19							1	29.06		
93-02438	B07JZ9		1.0051	96.4	200.2	206.6	1	22.10							1	11.49		
2438+A.S.							1	39.86							1	28.96		
93-02451	B07K00		1.0036	93.5	200.3	213.4	1	25.66							1	11.24		
2451+A.S.							1	44.81							1	28.29		
LCS +Bi	LCS-287 +Bi		1.0020	100.0	200.1	199.7									100	11.37		
+A.S															100	31.32		
CCV3							40	~~26.47~~ 26.64							50	21.19		
CCB4							1	1.44							1	-0.21		

24.36 (.2009) / (.0006021 X 93.1)(1000) 5.2

1)* 93-02339, 02340 & 02341 are mislabeled
SHOULD BE 93,02239, 02240 & 02241, respectively
Mulle 9/1/93

MWW 3/30/93

004-142

9613192.0924

NO Blank Contamination

GRAPHITE FURNACE ATOMIC ABSORPTION ANALYSIS **REVIEW** REPORT

Disk File: GF-t106b page 2of3 Reruns

Archive File: GF012293

IDL = 2.22 IDL = 1.72

Cal Range to 50 ug/L — ARSENIC

Lab ID	Meas. (µg/L)	Sample Solution Results (µg/L)	A.S. Abs.	% Rec EPA	C	ARSENIC RESULTS	Quality Control: Predigest Spike Add	Predigest Spike Rec	ICV LCS Rec
V ICV	25.5	1018.8							101%
Q ICB	1.3	1.3							
Q CRA	10.1	10.1							
Q CCB1	1.1	1.1							
V ICV	23.9	956.8	** Note 5						95%
Q ICB	1.2	1.2	** Note 5						
S PB	0.5	0.5			U	0.44 mg/Kg			
X PB+A.S.	19.0		93%	95%					
A BS	38.1	38.1				38.27 µg/L	40.04	96%	
S 93-02339	24.4	24.4				5.18 mg/Kg	** Note 6		
X 2339+A.S.	42.4		90%	90%			** Note 6		
S 93-02340	26.3	26.3				5.51 mg/Kg	** Note 6		
X 2340+A.S.	43.6		86%	86%			** Note 6		
V CCV1	26.4	1057.2							105%
Q CCB2	1.9	1.9							
S 93-02341	21.5	21.5				4.49 mg/Kg			
X 2341+A.S.	38.5		85%	85%					
S 93-02341D	28.2	28.2				5.79 mg/Kg			
X 2341D+A.S.	46.4		91%	91%					
A 93-02341S	18.3	73.1				15.01 mg/Kg	8.19	128%	
C LCS	21.4	4274.0				918.61 mg/Kg			100%
X LCS+A.S.	40.7		97%	97%					
S 93-02351	23.2	23.2				4.75 mg/Kg			
X 2351+A.S.	43.2		100%	100%					
V CCV2	26.5	1060.8							105%
Q CCB3	2.0	2.0							
S 93-02437	20.9	20.9				4.32 mg/Kg			
X 2437+A.S.	41.2		102%	102%					
S 93-02438	22.1	22.1				4.57 mg/Kg			
X 2438+A.S.	39.9		89%	89%					
S 93-02451	25.7	25.7				5.48 mg/Kg			
X 2451+A.S.	44.8		96%	96%					
C LCS +Bi									
X +A.S									
V CCV3	26.4	~~1056.5~~ 1065.6 mull 3/30/93							103% 106% mull 3/30/93
Q CCB4	1.4	1.4							

As 93-02341 RPD= 25.2%
As CRA Recovery= 100.8%

Cal Range to 50 ug/L — LEAD

Lab ID	Meas. (µg/L)	Sample Solution Results (µg/L)	A.S. Abs.	% Rec EPA	C	LEAD RESULTS	Quality Control: Predigest Spike Add	Predigest Spike Rec	ICV LCS Rec
V ICV	19.4	970.0							99%
Q ICB	0.6	0.6							
Q CRA	2.2	2.2							
Q CCB1	-0.6	-0.6							
V ICV									
Q ICB									
S PB	-0.6	-0.6			U	0.34 mg/Kg			
X PB+A.S.	19.1		99%	96%					
A BS	19.2	19.2				19.30 µg/L	20.17	94%	
S 93-02339	12.6	50.2				10.67 mg/Kg			
X 2339+A.S.	29.6		85%	85%					
S 93-02340	9.6	19.1				4.01 mg/Kg			
X 2340+A.S.	25.7		81%	81%					
V CCV1	20.5	1024.0							104%
Q CCB2	0.0	0.0							
S 93-02341	11.3	56.6				11.84 mg/Kg			
X 2341+A.S.	29.8		93%	93%					
S 93-02341D	13.1	65.4				13.42 mg/Kg			
X 2341D+A.S.	30.9		89%	89%					
A 93-02341S	16.2	81.1				16.66 mg/Kg	4.13	117%	
C LCS	12.2	1218.0				261.78 mg/Kg			111%
X LCS+A.S.	32.1		99%	99%					
S 93-02351	14.5	28.9				5.93 mg/Kg			
X 2351+A.S.	32.0		88%	88%					
V CCV2	20.7	1033.0							105%
Q CCB3	-1.1	-1.1							
S 93-02437	12.0	12.0				2.49 mg/Kg			
X 2437+A.S.	29.1		85%	85%					
S 93-02438	11.5	11.5				2.37 mg/Kg			
X 2438+A.S.	29.0		87%	87%					
S 93-02451	11.2	11.2				2.40 mg/Kg			
X 2451+A.S.	28.3		85%	85%					
C LCS +Bi	11.4	1137.0				227.08 mg/Kg			96%
X +A.S	31.3		100%	100%					
V CCV3	21.2	1059.5							108%
Q CCB4	-0.2	-0.2							

Pb 93-02341 RPD= 12.5%
Pb CRA Recovery= 73.0%

see note 1) page 1

D03-154

9613492.0925

A AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ

GRAPHITE FURNACE ATOMIC ABSORPTION ANALYSIS **REVIEW** REPORT Disk File: GF page 3of3

Reruns

Archive File: GF012293

QUALITY CONTROL STANDARD AND LIMIT INFORMATION

	As	Se	Tl	Bi	Pb	Ag
Analytical Spike (ug/L) (A.S.)	20.0	10.0	20.0	20.0	20.0	10.0
LCS-0287 (mg/Kg) Average	917.0	39.2	39.0	(1)	236.0	22.2
Low	635.0	19.1	24.6		188.0	15.5
High	1199.0	59.4	53.5		285.0	29.0
ICV (ug/L)	1008.0	1006.0	1007.0	50.0	984.0	1016.0
CRDL (ug/L)	10.0	5.0	10.0	10.0	3.0	5.0
IDL (ug/L)	2.22	1.22	1.59	4.43	1.72	0.15
Digestion spike (ug/L) (D.S.)	39.9	10.1	50.0	20.0	20.1	10.0
CRA (ug/L)	10.0	5.0	10.0	10.0	3.0	5.0

A.S. = AnalyticD.S. = Digestion Spike

NOTES:

1. The EPA ICV solutions do not contain Bi. The Bi ICV solution is an Inorganic Ventures Bi Standard (Lot# G-BI0114, exp 7/1/93)
2. Where the analytical spike recovery is less than 40% a 10x dilution is performed and the samples rerun.
3. The working standards (See std prep sheet) are used to prepare both the calibration solution and the spiking solutions. The I is used as the independent calibration verification.
4. The PE-5100 utilizes deuterium background correction.
5. CCV/CCB used for As only, see run sequence in raw data.
6. 93-02339/2340 out of run sequence; however, analytical runs bounded by valid CCV/CCB results.

V=Verify Std, Q=QC Info Only, S=Sample, X=Analytical Spike, A=Process Spike

********** EQUATIONS **********

Process Dilution Factor (PDF):	Liquids = [Final Vol / Sample Vol]
:	Solids = [Final Vol / (Weight * %Solids)]
Sample Solution Result :	[Measured concentration * ADF]
Absolute A.S. Recovery :	[(A.S. Sample Result - Sample Result) / Spike Value]
EPA A.S. Recovery, Sample>IDL:	[(A.S. Sample Result - Sample Result) / Spike Value]
Sample <=IDL:	[A.S. Sample Result / Spike Value]
ANALYTE RESULTS :	Liquids = [Measured µg/L * ADF * PDF]
:	Solids = [(Measured ug/L * ADF * PDF) / 1000]
Predigestion Spike Added :	Liquids = [D.S. Concentration * PDF]
Added :	Solids = [(D.S. Concentration * PDF) / 1000]
% Recovery :	[D.S. Sample Results - Sample Results / D.S. Value]
ICV % Recovery :	[Sample Solution Results / ICV Value]
LCS % Recovery :	[Sample Results / LCS Value]

9413792.0926

001-145

Element File: ASDEF.GEL Element: As Wavelength: 193.7
Date: 03/26/93 Time: 09:55 Slit: 0.70
Data File: T_106.DATTXXXX ID/Wt File: DF.IDW Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 59
Remark 1: AA3100.~~AA9326~~ WB76757 mwk 4/16/93
Remark 2: Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
Remark 3: locations: S1-S4(34 w/dil) S5 (34) , std(35), blk0
Remark 4: procedure: PML-ALD-214, rev.1
Remark 5: T-106 rerun Damon Faulk 3-26-93

As ID: Blank Seq. No.: 00186 A/S Pos.: 0 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 10:29
Peak Area (A-s): -0.002 Peak Height (A): 0.009
Background Pk Area (A-s): 0.091 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.44

uL dispensed: 8 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 10:32
Peak Area (A-s): -0.002 Peak Height (A): 0.008
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.45

Mean Conc (ug/L): -0.44 SD: 0.008 RSD(%): 1.73

Auto-zero performed.

As ID: Standard 1 Seq. No.: 00187 A/S Pos.: 34 Date: 03/26/93

uL dispensed: 24 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 10:35
Peak Area (A-s): 0.036 Peak Height (A): 0.106
Background Pk Area (A-s): 0.108 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.038
Concentration (ug/L): 9.89

uL dispensed: 24 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 10:37
Peak Area (A-s): 0.042 Peak Height (A): 0.108
Background Pk Area (A-s): 0.103 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): 0.044
Concentration (ug/L): 11.36

Mean Conc (ug/L): 10.62 SD: 1.044 RSD(%): 9.83

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0041

As ID: Standard 2 Seq. No.: 00188 A/S Pos.: 34 Date: 03/26/93

uL dispensed: 20 from 0, 5 from 35, 8 from 34
Replicate 1 Time: 10:40

Peak Area (A-s): 0.073 Peak Height (A): 0.203
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): 0.074
Concentration (ug/L): 18.16

uL dispensed: 20 from 0, 5 from 35, 8 from 34
Replicate 2 Time: 10:43
Peak Area (A-s): 0.074 Peak Height (A): 0.207
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.076
Concentration (ug/L): 18.44

Mean Conc (ug/L): 18.30 SD: 0.194 RSD(%): 1.06

Standard number 2 applied. [20.00]
Correlation coefficient: 0.99332 Slope: 0.0038

~~~~~~

As ID: Standard 3 Seq. No.: 00189 A/S Pos.: 34 Date: 03/26/93

uL dispensed: 16 from 0, 5 from 35, 12 from 34
Replicate 1 Time: 10:45
Peak Area (A-s): 0.113 Peak Height (A): 0.287
Background Pk Area (A-s): 0.112 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.115
Concentration (ug/L): 30.00

uL dispensed: 16 from 0, 5 from 35, 12 from 34
Replicate 2 Time: 10:48
Peak Area (A-s): 0.107 Peak Height (A): 0.280
Background Pk Area (A-s): 0.119 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.109
Concentration (ug/L): 28.47

Mean Conc (ug/L): 29.24 SD: 1.086 RSD(%): 3.71

Standard number 3 applied. [30.00]
Correlation coefficient: 0.99780 Slope: 0.0038

~~~~~~

As ID: Standard 4 Seq. No.: 00190 A/S Pos.: 34 Date: 03/26/93

uL dispensed: 12 from 0, 5 from 35, 16 from 34
Replicate 1 Time: 10:51
Peak Area (A-s): 0.146 Peak Height (A): 0.381
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.148
Concentration (ug/L): 39.27

uL dispensed: 12 from 0, 5 from 35, 16 from 34
Replicate 2 Time: 10:53
Peak Area (A-s): 0.146 Peak Height (A): 0.358
Background Pk Area (A-s): 0.120 Background Pk Height (A): 0.076
Blank Corrected Pk Area (A-s): 0.148
Concentration (ug/L): 39.36

Mean Conc (ug/L): 39.31 SD: 0.070 RSD(%): 0.18

Standard number 4 applied. [40.00]

Correlation coefficient: 0.99890 Slope: 0.0037

****

As ID: Standard 5 Seq. No.: 00191 A/S Pos.: 34 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 34
Replicate 1 Time: 10:56
Peak Area (A-s): 0.179 Peak Height (A): 0.468
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): 0.181
Concentration (ug/L): 48.56

uL dispensed: 8 from 0, 5 from 35, 20 from 34
Replicate 2 Time: 10:59
Peak Area (A-s): 0.178 Peak Height (A): 0.444
Background Pk Area (A-s): 0.123 Background Pk Height (A): 0.087
Blank Corrected Pk Area (A-s): 0.180
Concentration (ug/L): 48.15

Mean Conc (ug/L): 48.35 SD: 0.290 RSD(%): 0.60

Standard number 5 applied. [50.00]
Correlation coefficient: 0.99869 Slope: 0.0037

****

As ID: 10 ppb As Seq. No.: 00192 A/S Pos.: 1 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 11:02
Peak Area (A-s): 0.039 Peak Height (A): 0.101
Background Pk Area (A-s): 0.112 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.041
Concentration (ug/L): 11.08

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 2 Time: 11:04
Peak Area (A-s): 0.037 Peak Height (A): 0.093
Background Pk Area (A-s): 0.112 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.039
Concentration (ug/L): 10.65

Mean Conc (ug/L): 10.87 SD: 0.306 RSD(%): 2.82

****

As ID: ICV-2 40x Seq. No.: 00193 A/S Pos.: 2 Date: 03/26/93
(1299) ICP 1000 mg/L DF 3/26-93

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 11:07
Peak Area (A-s): 0.096 Peak Height (A): 0.245
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.098
Concentration (ug/L): 26.62

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 2 Time: 11:10
Peak Area (A-s): 0.088 Peak Height (A): 0.228
Background Pk Area (A-s): 0.115 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.089
Concentration (ug/L): 24.32

Mean Conc (ug/L): 25.47 SD: 1.627 RSD(%): 6.39

****

As ID: ICB Seq. No.: 00194 A/S Pos.: 3 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 1 Time: 11:12
Peak Area (A-s): 0.005 Peak Height (A): 0.009
Background Pk Area (A-s): 0.115 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): 0.007
Concentration (ug/L): 1.84

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 2 Time: 11:15
Peak Area (A-s): 0.001 Peak Height (A): 0.010
Background Pk Area (A-s): 0.115 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.82

Mean Conc (ug/L): 1.33 SD: 0.723 RSD(%): 54.43

****

As ID: CRA 10 ppb Seq. No.: 00195 A/S Pos.: 4 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate 1 Time: 11:18
Peak Area (A-s): 0.034 Peak Height (A): 0.085
Background Pk Area (A-s): 0.124 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.036
Concentration (ug/L): 9.74

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate 2 Time: 11:21
Peak Area (A-s): 0.036 Peak Height (A): 0.082
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.086
Blank Corrected Pk Area (A-s): 0.038
Concentration (ug/L): 10.42

Mean Conc (ug/L): 10.08 SD: 0.483 RSD(%): 4.79

****

As ID: CCB 1 Seq. No.: 00196 A/S Pos.: 5 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate 1 Time: 11:23
Peak Area (A-s): 0.006 Peak Height (A): 0.011
Background Pk Area (A-s): 0.123 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.007
Concentration (ug/L): 2.00

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate 2 Time: 11:26
Peak Area (A-s): -0.001 Peak Height (A): 0.011
Background Pk Area (A-s): 0.126 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.24

Mean Conc (ug/L): 1.12 SD: 1.250 RSD(%): 111.68

As ID: PBS Seq. No.: 00197 A/S Pos.: 6 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 1 Time: 11:29
Peak Area (A-s): -0.001 Peak Height (A): 0.009
Background Pk Area (A-s): 0.125 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.22

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 2 Time: 11:32
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.121 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.70

Mean Conc (ug/L): 0.46 SD: 0.343 RSD(%): 74.92

As ID: PBS Seq. No.: 00198 A/S Pos.: 6 Date: 03/26/93

Data Not used Mulle 3/29/93

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 1 Time: 11:34
Peak Area (A-s): 0.060 Peak Height (A): 0.150
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 16.88

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 2 Time: 11:37
Peak Area (A-s): 0.061 Peak Height (A): 0.149
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): 0.063
Concentration (ug/L): 17.04

Mean Conc (ug/L): 16.96 SD: 0.114 RSD(%): 0.67

Recovery is 82.5%

As ID: sok blk Seq. No.: 00199 A/S Pos.: 7 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 11:40
Peak Area (A-s): 0.134 Peak Height (A): 0.297
Background Pk Area (A-s): 0.125 Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): 0.136
Concentration (ug/L): 36.95

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 11:43
Peak Area (A-s): 0.129 Peak Height (A): 0.288
Background Pk Area (A-s): 0.128 Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): 0.131
Concentration (ug/L): 35.68

Mean Conc (ug/L): 36.31 SD: 0.900 RSD(%): 2.48

****

As ID: 93-2239 2x Seq. No.: 00200 A/S Pos.: 8 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 11:46
Peak Area (A-s): 0.037 Peak Height (A): 0.073
Background Pk Area (A-s): 0.244 Background Pk Height (A): 0.221
Blank Corrected Pk Area (A-s): 0.039
Concentration (ug/L): 10.70

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 11:48
Peak Area (A-s): 0.039 Peak Height (A): 0.073
Background Pk Area (A-s): 0.246 Background Pk Height (A): 0.220
Blank Corrected Pk Area (A-s): 0.041
Concentration (ug/L): 11.13

Mean Conc (ug/L): 10.92 SD: 0.310 RSD(%): 2.84

****

As ID: 93-2239 2x Seq. No.: 00201 A/S Pos.: 8 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 1 Time: 11:51
Peak Area (A-s): 0.098 Peak Height (A): 0.165
Background Pk Area (A-s): 0.225 Background Pk Height (A): 0.227
Blank Corrected Pk Area (A-s): 0.100
Concentration (ug/L): 27.12

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 2 Time: 11:54
Peak Area (A-s): 0.096 Peak Height (A): 0.165
Background Pk Area (A-s): 0.225 Background Pk Height (A): 0.222
Blank Corrected Pk Area (A-s): 0.098
Concentration (ug/L): 26.73

Mean Conc (ug/L): 26.92 SD: 0.274 RSD(%): 1.02

Recovery is 80.0%

Data not used 3/29/93 Mitch

****

As ID: 93-2240 2x Seq. No.: 00202 A/S Pos.: 9 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 11:57
Peak Area (A-s): 0.048 Peak Height (A): 0.083
Background Pk Area (A-s): 0.254 Background Pk Height (A): 0.223
Blank Corrected Pk Area (A-s): 0.049
Concentration (ug/L): 13.44

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 12:00
Peak Area (A-s): 0.045 Peak Height (A): 0.084
Background Pk Area (A-s): 0.251 Background Pk Height (A): 0.214
Blank Corrected Pk Area (A-s): 0.046
Concentration (ug/L): 12.63

Mean Conc (ug/L): 13.04 SD: 0.568 RSD(%): 4.36

****

As ID: 93-2240 2x Seq. No.: 00203 A/S Pos.: 9 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 1 Time: 12:03
Peak Area (A-s): 0.099 Peak Height (A): 0.156
Background Pk Area (A-s): 0.229 Background Pk Height (A): 0.215
Blank Corrected Pk Area (A-s): 0.101
Concentration (ug/L): 27.51

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 2 Time: 12:05
Peak Area (A-s): 0.104 Peak Height (A): 0.171
Background Pk Area (A-s): 0.230 Background Pk Height (A): 0.217
Blank Corrected Pk Area (A-s): 0.106
Concentration (ug/L): 28.91

Mean Conc (ug/L): 28.21 SD: 0.994 RSD(%): 3.52

Recovery is 75.9%

****

As ID: CCV1 ICV-2 40x Seq. No.: 00204 A/S Pos.: 10 Date: 03/26/93
(1290) ICF 1008 ug/L DF 3/26/93

Data Not used 3/29/93 MLK

uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 1 Time: 12:08
Peak Area (A-s): 0.086 Peak Height (A): 0.158
Background Pk Area (A-s): 0.126 Background Pk Height (A): 0.087
Blank Corrected Pk Area (A-s): 0.088
Concentration (ug/L): 23.94

uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 2 Time: 12:11
Peak Area (A-s): 0.085 Peak Height (A): 0.151
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): 0.087
Concentration (ug/L): 23.63

Mean Conc (ug/L): 23.79 SD: 0.221 RSD(%): 0.93

****

As ID: CCB 2 Seq. No.: 00205 A/S Pos.: 11 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 1 Time: 12:14
Peak Area (A-s): 0.003 Peak Height (A): 0.007
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.19

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 2 Time: 12:17
Peak Area (A-s): 0.004 Peak Height (A): 0.007
Background Pk Area (A-s): 0.110 Background Pk Height (A): 0.077
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 1.51

Mean Conc (ug/L): 1.35 SD: 0.227 RSD(%): 16.77

****

As ID: 93-2241 2x Seq. No.: 00206 A/S Pos.: 12 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 1 Time: 12:20
Peak Area (A-s): 0.034 Peak Height (A): 0.063
Background Pk Area (A-s): 0.229 Background Pk Height (A): 0.192
Blank Corrected Pk Area (A-s): 0.036
Concentration (ug/L): 9.69

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 2 Time: 12:22
Peak Area (A-s): 0.036 Peak Height (A): 0.063
Background Pk Area (A-s): 0.230 Background Pk Height (A): 0.193
Blank Corrected Pk Area (A-s): 0.038
Concentration (ug/L): 10.28

Mean Conc (ug/L): 9.98 SD: 0.417 RSD(%): 4.18

****

As ID: 93-2241 2x Seq. No.: 00207 A/S Pos.: 12 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 1 Time: 12:25
Peak Area (A-s): 0.102 Peak Height (A): 0.148
Background Pk Area (A-s): 0.216 Background Pk Height (A): 0.201
Blank Corrected Pk Area (A-s): 0.104
Concentration (ug/L): 28.19

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 2 Time: 12:28
Peak Area (A-s): 0.103 Peak Height (A): 0.153
Background Pk Area (A-s): 0.220 Background Pk Height (A): 0.202
Blank Corrected Pk Area (A-s): 0.105
Concentration (ug/L): 28.50

Mean Conc (ug/L): 28.35 SD: 0.223 RSD(%): 0.79

Recovery is 91.8%

Data not used 3/29/93 MWM

****

As ID: 93-2241 D 2x Seq. No.: 00208 A/S Pos.: 13 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 12:31
Peak Area (A-s): 0.047 Peak Height (A): 0.085
Background Pk Area (A-s): 0.256 Background Pk Height (A): 0.213
Blank Corrected Pk Area (A-s): 0.049
Concentration (ug/L): 13.38

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 12:33
Peak Area (A-s): 0.048 Peak Height (A): 0.080
Background Pk Area (A-s): 0.259 Background Pk Height (A): 0.215
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 13.65

Mean Conc (ug/L): 13.52 SD: 0.188 RSD(%): 1.39

****

As ID: 93-2241 D 2x Seq. No.: 00209 A/S Pos.: 13 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 1 Time: 12:36
Peak Area (A-s): 0.111 Peak Height (A): 0.157
Background Pk Area (A-s): 0.239 Background Pk Height (A): 0.215
Blank Corrected Pk Area (A-s): 0.113
Concentration (ug/L): 30.78

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 2 Time: 12:39
Peak Area (A-s): 0.117 Peak Height (A): 0.164
Background Pk Area (A-s): 0.241 Background Pk Height (A): 0.216
Blank Corrected Pk Area (A-s): 0.118
Concentration (ug/L): 32.21

Mean Conc (ug/L): 31.50 SD: 1.008 RSD(%): 3.20

Recovery is 89.9%

Data not used MWH 3/29/93

****

As ID: 93-2241 S 4x Seq. No.: 00210 A/S Pos.: 14 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Replicate 1 Time: 12:42
Peak Area (A-s): 0.057 Peak Height (A): 0.093
Background Pk Area (A-s): 0.193 Background Pk Height (A): 0.155
Blank Corrected Pk Area (A-s): 0.059
Concentration (ug/L): 16.05

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Replicate 2 Time: 12:44
Peak Area (A-s): 0.060 Peak Height (A): 0.086
Background Pk Area (A-s): 0.184 Background Pk Height (A): 0.147
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 16.76

Mean Conc (ug/L): 16.40 SD: 0.497 RSD(%): 3.03

****

As ID: LCS 200x Seq. No.: 00211 A/S Pos.: 15 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 12:47
Peak Area (A-s): 0.074 Peak Height (A): 0.124
Background Pk Area (A-s): 0.122 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.074
Concentration (ug/L): 20.27

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 12:50
Peak Area (A-s): 0.078 Peak Height (A): 0.124
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.081
Blank Corrected Pk Area (A-s): 0.080
Concentration (ug/L): 21.70

Mean Conc (ug/L): 20.98 SD: 1.013 RSD(%): 4.83

****

As ID: LCS 200x Seq. No.: 00212 A/S Pos.: 15 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Replicate 1 Time: 12:53
Peak Area (A-s): 0.137 Peak Height (A): 0.223
Background Pk Area (A-s): 0.104 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.139
Concentration (ug/L): 37.84

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Replicate 2 Time: 12:55
Peak Area (A-s): 0.133 Peak Height (A): 0.220
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.135
Concentration (ug/L): 36.81

Mean Conc (ug/L): 37.33 SD: 0.734 RSD(%): 1.97

Recovery is 81.7%

****

As ID: 93-2251 2x Seq. No.: 00213 A/S Pos.: 16 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 12:58
Peak Area (A-s): 0.047 Peak Height (A): 0.069
Background Pk Area (A-s): 0.229 Background Pk Height (A): 0.178
Blank Corrected Pk Area (A-s): 0.049
Concentration (ug/L): 13.22

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 13:01
Peak Area (A-s): 0.046 Peak Height (A): 0.074
Background Pk Area (A-s): 0.240 Background Pk Height (A): 0.188
Blank Corrected Pk Area (A-s): 0.048
Concentration (ug/L): 12.95

Mean Conc (ug/L): 13.09 SD: 0.194 RSD(%): 1.48

Date Rotured 3/29/93 MWh

****

As ID: 93-2251 Seq. No.: 00214 A/S Pos.: 16 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 1 Time: 13:04
Peak Area (A-s): 0.109 Peak Height (A): 0.165
Background Pk Area (A-s): 0.222 Background Pk Height (A): 0.196
Blank Corrected Pk Area (A-s): 0.111
Concentration (ug/L): 30.11

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 2 Time: 13:06
Peak Area (A-s): 0.109 Peak Height (A): 0.169
Background Pk Area (A-s): 0.229 Background Pk Height (A): 0.197
Blank Corrected Pk Area (A-s): 0.111
Concentration (ug/L): 30.27

Mean Conc (ug/L): 30.19 SD: 0.108 RSD(%): 0.36

Recovery is 85.5%

****

As ID: 93-2451 Seq. No.: 00215 A/S Pos.: 21 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 13:09
Peak Area (A-s): 0.048 Peak Height (A): 0.082
Background Pk Area (A-s): 0.268 Background Pk Height (A): 0.213
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 13.53

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 13:12
Peak Area (A-s): 0.048 Peak Height (A): 0.078
Background Pk Area (A-s): 0.271 Background Pk Height (A): 0.216
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 13.48

Mean Conc (ug/L): 13.50 SD: 0.029 RSD(%): 0.22

Data not used 3/29/93 mwh

****

As ID: 93-2451 Seq. No.: 00216 A/S Pos.: 21 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 1 Time: 13:14
Peak Area (A-s): 0.107 Peak Height (A): 0.166
Background Pk Area (A-s): 0.258 Background Pk Height (A): 0.219
Blank Corrected Pk Area (A-s): 0.109
Concentration (ug/L): 29.69

uL dispensed: 5 from 35, 8 from 34, 20 from 21

****

As ID: CCV3 ICV-2 40x Seq. No.: 00217 A/S Pos.: 17 Date: 03/26/93
(1200) ICP 1000 mg/L DF 3/26/93
uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 13:17
Peak Area (A-s): 0.086 Peak Height (A): 0.148
Background Pk Area (A-s): 0.111 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.087
Concentration (ug/L): 23.77

uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 2 Time: 13:20
Peak Area (A-s): 0.087 Peak Height (A): 0.135
Background Pk Area (A-s): 0.107 Background Pk Height (A): 0.076
Blank Corrected Pk Area (A-s): 0.088
Concentration (ug/L): 24.07

Mean Conc (ug/L): 23.92 SD: 0.214 RSD(%): 0.90

****

As ID: CCB 3 Seq. No.: 00218 A/S Pos.: 18 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 1 Time: 13:23
Peak Area (A-s): 0.002 Peak Height (A): 0.011
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.004

Concentration (ug/L): 1.01

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 2 Time: 13:25
Peak Area (A-s): 0.003 Peak Height (A): 0.009
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 1.39

Mean Conc (ug/L): 1.20 SD: 0.267 RSD(%): 22.29

since post spike recoveries are low. I will restart the samples minus the 2x dilution.

****

As ID: PBS Seq. No.: 00219 A/S Pos.: 6 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 1 Time: 13:29
Peak Area (A-s): 0.001 Peak Height (A): 0.009
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 0.89

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 2 Time: 13:32
Peak Area (A-s): -0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.095 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.07

Mean Conc (ug/L): 0.48 SD: 0.583 RSD(%): 121.51

****

As ID: PBS Seq. No.: 00220 A/S Pos.: 6 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 1 Time: 13:34
Peak Area (A-s): 0.067 Peak Height (A): 0.119
Background Pk Area (A-s): 0.082 Background Pk Height (A): 0.064
Blank Corrected Pk Area (A-s): 0.069
Concentration (ug/L): 18.73

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 2 Time: 13:37
Peak Area (A-s): 0.069 Peak Height (A): 0.122
Background Pk Area (A-s): 0.080 Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): 0.071
Concentration (ug/L): 19.35

Mean Conc (ug/L): 19.04 SD: 0.441 RSD(%): 2.31

Recovery is 92.8%

****

As ID: spk blk Seq. No.: 00221 A/S Pos.: 7 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 13:40
Peak Area (A-s): 0.137 Peak Height (A): 0.235
Background Pk Area (A-s): 0.091 Background Pk Height (A): 0.066
Blank Corrected Pk Area (A-s): 0.139
Concentration (ug/L): 37.90

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 13:43
Peak Area (A-s): 0.139 Peak Height (A): 0.225
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): 0.141
Concentration (ug/L): 38.37

Mean Conc (ug/L): 38.14 SD: 0.329 RSD(%): 0.86

As ID: 93-2239 Seq. No.: 00222 A/S Pos.: 8 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 13:46
Peak Area (A-s): 0.082 Peak Height (A): 0.117
Background Pk Area (A-s): 0.290 Background Pk Height (A): 0.234
Blank Corrected Pk Area (A-s): 0.084
Concentration (ug/L): 22.89

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 13:48
Peak Area (A-s): 0.088 Peak Height (A): 0.127
Background Pk Area (A-s): 0.308 Background Pk Height (A): 0.248
Blank Corrected Pk Area (A-s): 0.090
Concentration (ug/L): 24.45

Mean Conc (ug/L): 23.67 SD: 1.099 RSD(%): 4.64

Rerun #245 Seq MWilk 3/29/93

As ID: 93-2239 Seq. No.: 00223 A/S Pos.: 8 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 1 Time: 13:51
Peak Area (A-s): 0.143 Peak Height (A): 0.211
Background Pk Area (A-s): 0.291 Background Pk Height (A): 0.250
Blank Corrected Pk Area (A-s): 0.144
Concentration (ug/L): 39.30

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 2 Time: 13:54
Peak Area (A-s): 0.149 Peak Height (A): 0.219
Background Pk Area (A-s): 0.293 Background Pk Height (A): 0.249
Blank Corrected Pk Area (A-s): 0.151
Concentration (ug/L): 41.10

Mean Conc (ug/L): 40.20 SD: 1.274 RSD(%): 3.17

Recovery is 82.6%

Rerun 246 Seq MWilk 3/29/93

As ID: 93-2240 Seq. No.: 00224 A/S Pos.: 9 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 13:57
Peak Area (A-s): 0.099 Peak Height (A): 0.143
Background Pk Area (A-s): 0.327 Background Pk Height (A): 0.265
Blank Corrected Pk Area (A-s): 0.101
Concentration (ug/L): 27.36

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 14:00
Peak Area (A-s): 0.107 Peak Height (A): 0.161
Background Pk Area (A-s): 0.347 Background Pk Height (A): 0.280
Blank Corrected Pk Area (A-s): 0.109
Concentration (ug/L): 29.59

Mean Conc (ug/L): 28.47 SD: 1.592 RSD(%): 5.56

Rerun #247 Seq MWilk 3/29/93

****

As ID: 93-2240 Seq. No.: 00225 A/S Pos.: 9 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 1 Time: 14:03
Peak Area (A-s): 0.157 Peak Height (A): 0.222
Background Pk Area (A-s): 0.318 Background Pk Height (A): 0.272
Blank Corrected Pk Area (A-s): 0.159
Concentration (ug/L): 43.32

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 2 Time: 14:05
Peak Area (A-s): 0.158 Peak Height (A): 0.224
Background Pk Area (A-s): 0.317 Background Pk Height (A): 0.278
Blank Corrected Pk Area (A-s): 0.160
Concentration (ug/L): 43.43

Mean Conc (ug/L): 43.37 SD: 0.077 RSD(%): 0.18

Recovery is 74.5%

Rerun SW 248 Mulle 3/29/93

****

As ID: CCV1 ICV-3 40x Seq. No.: 00226 A/S Pos.: 10 Date: 03/26/93
(1296) ICP 1004 mg/L OP 3/26/93
uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 1 Time: 14:08
Peak Area (A-s): 0.098 Peak Height (A): 0.170
Background Pk Area (A-s): 0.111 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.100
Concentration (ug/L): 27.07

uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 2 Time: 14:11
Peak Area (A-s): 0.093 Peak Height (A): 0.154
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.095
Concentration (ug/L): 25.78

Mean Conc (ug/L): 26.43 SD: 0.917 RSD(%): 3.47

****

As ID: CCB 2 Seq. No.: 00227 A/S Pos.: 11 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 1 Time: 14:14
Peak Area (A-s): 0.004 Peak Height (A): 0.009
Background Pk Area (A-s): 0.104 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 1.65

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 2 Time: 14:17
Peak Area (A-s): 0.006 Peak Height (A): 0.009
Background Pk Area (A-s): 0.100 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 2.19

Mean Conc (ug/L): 1.92 SD: 0.376 RSD(%): 19.61

****

As ID: 93-2241 Seq. No.: 00228 A/S Pos.: 12 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 1 Time: 14:20
Peak Area (A-s): 0.076 Peak Height (A): 0.110
Background Pk Area (A-s): 0.304 Background Pk Height (A): 0.241
Blank Corrected Pk Area (A-s): 0.078
Concentration (ug/L): 21.15

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 2 Time: 14:22
Peak Area (A-s): 0.078 Peak Height (A): 0.119
Background Pk Area (A-s): 0.322 Background Pk Height (A): 0.253
Blank Corrected Pk Area (A-s): 0.080
Concentration (ug/L): 21.76

Mean Conc (ug/L): 21.45 SD: 0.426 RSD(%): 1.99

****

As ID: 93-2241 Seq. No.: 00229 A/S Pos.: 12 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 1 Time: 14:25
Peak Area (A-s): 0.137 Peak Height (A): 0.225
Background Pk Area (A-s): 0.297 Background Pk Height (A): 0.259
Blank Corrected Pk Area (A-s): 0.139
Concentration (ug/L): 37.84

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 2 Time: 14:28
Peak Area (A-s): 0.142 Peak Height (A): 0.225
Background Pk Area (A-s): 0.307 Background Pk Height (A): 0.268
Blank Corrected Pk Area (A-s): 0.144
Concentration (ug/L): 39.21

Mean Conc (ug/L): 38.53 SD: 0.968 RSD(%): 2.51

Recovery is 85.4%

****

As ID: 93-2241D Seq. No.: 00230 A/S Pos.: 13 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 14:31
Peak Area (A-s): 0.102 Peak Height (A): 0.145
Background Pk Area (A-s): 0.354 Background Pk Height (A): 0.273
Blank Corrected Pk Area (A-s): 0.104
Concentration (ug/L): 28.36

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 14:33
Peak Area (A-s): 0.101 Peak Height (A): 0.142
Background Pk Area (A-s): 0.361 Background Pk Height (A): 0.278
Blank Corrected Pk Area (A-s): 0.103
Concentration (ug/L): 28.04

Mean Conc (ug/L): 28.20 SD: 0.230 RSD(%): 0.82

****

As ID: 93-2241D Seq. No.: 00231 A/S Pos.: 13 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 1 Time: 14:36
Peak Area (A-s): 0.165 Peak Height (A): 0.237
Background Pk Area (A-s): 0.340 Background Pk Height (A): 0.276
Blank Corrected Pk Area (A-s): 0.167
Concentration (ug/L): 45.33

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 2 Time: 14:39
Peak Area (A-s): 0.173 Peak Height (A): 0.249
Background Pk Area (A-s): 0.345 Background Pk Height (A): 0.286
Blank Corrected Pk Area (A-s): 0.175
Concentration (ug/L): 47.53

Mean Conc (ug/L): 46.43 SD: 1.554 RSD(%): 3.35 ✓

Recovery is 91.2% ✓

****

As ID: 93-2241 S 4x Seq. No.: 00232 A/S Pos.: 14 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Replicate 1 Time: 14:42
Peak Area (A-s): 0.070 Peak Height (A): 0.112
Background Pk Area (A-s): 0.213 Background Pk Height (A): 0.162
Blank Corrected Pk Area (A-s): 0.071
Concentration (ug/L): 19.42

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Replicate 2 Time: 14:44
Peak Area (A-s): 0.061 Peak Height (A): 0.102
Background Pk Area (A-s): 0.194 Background Pk Height (A): 0.142
Blank Corrected Pk Area (A-s): 0.063
Concentration (ug/L): 17.11

Mean Conc (ug/L): 18.27 SD: 1.637 RSD(%): 8.96 ✓

****

As ID: LCS 200x Seq. No.: 00233 A/S Pos.: 15 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 14:47
Peak Area (A-s): 0.076 Peak Height (A): 0.140
Background Pk Area (A-s): 0.126 Background Pk Height (A): 0.076
Blank Corrected Pk Area (A-s): 0.078
Concentration (ug/L): 21.19

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 14:50
Peak Area (A-s): 0.077 Peak Height (A): 0.133
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.079
Concentration (ug/L): 21.55

Mean Conc (ug/L): 21.37 SD: 0.255 RSD(%): 1.19 ✓

****

As ID: LCS 200x Seq. No.: 00234 A/S Pos.: 15 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Replicate 1 Time: 14:53
Peak Area (A-s): 0.147 Peak Height (A): 0.245
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.149
Concentration (ug/L): 40.42

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Replicate 2 Time: 14:55
Peak Area (A-s): 0.149 Peak Height (A): 0.258
Background Pk Area (A-s): 0.092 Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): 0.150
Concentration (ug/L): 40.95

Mean Conc (ug/L): 40.68 SD: 0.371 RSD(%): 0.91 ✓

Recovery is 96.6% ✓

****

As ID: 93-2751 3 mul 4/16/93 Seq. No.: 00235 A/S Pos.: 16 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 14:58
Peak Area (A-s): 0.083 Peak Height (A): 0.116
Background Pk Area (A-s): 0.295 Background Pk Height (A): 0.234
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 23.12

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 15:01
Peak Area (A-s): 0.084 Peak Height (A): 0.121
Background Pk Area (A-s): 0.317 Background Pk Height (A): 0.245
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 23.25

Mean Conc (ug/L): 23.18 SD: 0.091 RSD(%): 0.39 ✓

****

As ID: 93-2751 3 mul 4/16/93 Seq. No.: 00236 A/S Pos.: 16 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 1 Time: 15:04
Peak Area (A-s): 0.158 Peak Height (A): 0.251
Background Pk Area (A-s): 0.298 Background Pk Height (A): 0.257
Blank Corrected Pk Area (A-s): 0.160
Concentration (ug/L): 43.55

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 2 Time: 15:06
Peak Area (A-s): 0.156 Peak Height (A): 0.244
Background Pk Area (A-s): 0.299 Background Pk Height (A): 0.252
Blank Corrected Pk Area (A-s): 0.158
Concentration (ug/L): 42.89

Mean Conc (ug/L): 43.22 SD: 0.465 RSD(%): 1.08 ✓

Recovery is 100.2%

As ID: CCV3 ICV-2 40x Seq. No.: 00237 A/S Pos.: 17 Date: 03/26/93
(4.0) ICP 100.8 ug/L DR 3/26/93
uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 15:09
Peak Area (A-s): 0.099 Peak Height (A): 0.176
Background Pk Area (A-s): 0.125 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): 0.101
Concentration (ug/L): 27.43

uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 2 Time: 15:12
Peak Area (A-s): 0.092 Peak Height (A): 0.155
Background Pk Area (A-s): 0.104 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.094
Concentration (ug/L): 25.61

Mean Conc (ug/L): 26.52 SD: 1.292 RSD(%): 4.87

As ID: CCB 3 Seq. No.: 00238 A/S Pos.: 18 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 1 Time: 15:14
Peak Area (A-s): 0.008 Peak Height (A): 0.014
Background Pk Area (A-s): 0.097 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.010
Concentration (ug/L): 2.80

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 2 Time: 15:17
Peak Area (A-s): 0.002 Peak Height (A): 0.010
Background Pk Area (A-s): 0.105 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.10

Mean Conc (ug/L): 1.95 SD: 1.204 RSD(%): 61.68

As ID: 93-2437 Seq. No.: 00239 A/S Pos.: 19 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 1 Time: 15:20
Peak Area (A-s): 0.073 Peak Height (A): 0.107
Background Pk Area (A-s): 0.286 Background Pk Height (A): 0.230
Blank Corrected Pk Area (A-s): 0.074
Concentration (ug/L): 20.26

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 2 Time: 15:22
Peak Area (A-s): 0.077 Peak Height (A): 0.113
Background Pk Area (A-s): 0.302 Background Pk Height (A): 0.241
Blank Corrected Pk Area (A-s): 0.079
Concentration (ug/L): 21.50

Mean Conc (ug/L): 20.88 SD: 0.878 RSD(%): 4.21

****

As ID: 93-2437 Seq. No.: 00240 A/S Pos.: 19 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Replicate 1 Time: 15:25
Peak Area (A-s): 0.147 Peak Height (A): 0.251
Background Pk Area (A-s): 0.285 Background Pk Height (A): 0.245
Blank Corrected Pk Area (A-s): 0.148
Concentration (ug/L): 40.39

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Replicate 2 Time: 15:28
Peak Area (A-s): 0.152 Peak Height (A): 0.248
Background Pk Area (A-s): 0.295 Background Pk Height (A): 0.251
Blank Corrected Pk Area (A-s): 0.154
Concentration (ug/L): 41.99

Mean Conc (ug/L): 41.19 SD: 1.126 RSD(%): 2.73 ✓

Recovery is 101.5% ✓

****

As ID: 93-2438 Seq. No.: 00241 A/S Pos.: 20 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 15:30
Peak Area (A-s): 0.082 Peak Height (A): 0.115
Background Pk Area (A-s): 0.321 Background Pk Height (A): 0.249
Blank Corrected Pk Area (A-s): 0.084
Concentration (ug/L): 22.77

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 15:33
Peak Area (A-s): 0.077 Peak Height (A): 0.115
Background Pk Area (A-s): 0.335 Background Pk Height (A): 0.253
Blank Corrected Pk Area (A-s): 0.079
Concentration (ug/L): 21.43

Mean Conc (ug/L): 22.10 SD: 0.945 RSD(%): 4.28 ✓

****

As ID: 93-2438 Seq. No.: 00242 A/S Pos.: 20 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Replicate 1 Time: 15:36
Peak Area (A-s): 0.143 Peak Height (A): 0.238
Background Pk Area (A-s): 0.312 Background Pk Height (A): 0.256
Blank Corrected Pk Area (A-s): 0.145
Concentration (ug/L): 39.42

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Replicate 2 Time: 15:38
Peak Area (A-s): 0.146 Peak Height (A): 0.243
Background Pk Area (A-s): 0.300 Background Pk Height (A): 0.257
Blank Corrected Pk Area (A-s): 0.148
Concentration (ug/L): 40.30

Mean Conc (ug/L): 39.86 SD: 0.622 RSD(%): 1.56 ✓

Recovery is 88.8%

****

As ID: 93-2451 Seq. No.: 00243 A/S Pos.: 21 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 15:41
Peak Area (A-s): 0.094 Peak Height (A): 0.129
Background Pk Area (A-s): 0.333 Background Pk Height (A): 0.267
Blank Corrected Pk Area (A-s): 0.096
Concentration (ug/L): 26.19

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 15:44
Peak Area (A-s): 0.091 Peak Height (A): 0.122
Background Pk Area (A-s): 0.356 Background Pk Height (A): 0.269
Blank Corrected Pk Area (A-s): 0.092
Concentration (ug/L): 25.14

Mean Conc (ug/L): 25.66 SD: 0.741 RSD(%): 2.89

****

As ID: 93-2451 Seq. No.: 00244 A/S Pos.: 21 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 1 Time: 15:46
Peak Area (A-s): 0.162 Peak Height (A): 0.247
Background Pk Area (A-s): 0.339 Background Pk Height (A): 0.270
Blank Corrected Pk Area (A-s): 0.164
Concentration (ug/L): 44.53

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 2 Time: 15:49
Peak Area (A-s): 0.164 Peak Height (A): 0.252
Background Pk Area (A-s): 0.323 Background Pk Height (A): 0.267
Blank Corrected Pk Area (A-s): 0.166
Concentration (ug/L): 45.09

Mean Conc (ug/L): 44.81 SD: 0.395 RSD(%): 0.88

Recovery is 95.7%

****

As ID: 93-2239 repeat Seq. No.: 00245 A/S Pos.: 8 Date: 03/26/93
[illegible] 3/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 15:52
Peak Area (A-s): 0.089 Peak Height (A): 0.119
Background Pk Area (A-s): 0.337 Background Pk Height (A): 0.255
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 24.80

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 15:55
Peak Area (A-s): 0.086 Peak Height (A): 0.121
Background Pk Area (A-s): 0.344 Background Pk Height (A): 0.253
Blank Corrected Pk Area (A-s): 0.088
Concentration (ug/L): 23.91

Mean Conc (ug/L): 24.36 SD: 0.634 RSD(%): 2.60

****

As ID: 93-2239 Seq. No.: 00246 A/S Pos.: 9 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 1 Time: 15:58
Peak Area (A-s): 0.157 Peak Height (A): 0.242
Background Pk Area (A-s): 0.315 Background Pk Height (A): 0.251
Blank Corrected Pk Area (A-s): 0.158
Concentration (ug/L): 43.11

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 2 Time: 16:01
Peak Area (A-s): 0.151 Peak Height (A): 0.243
Background Pk Area (A-s): 0.312 Background Pk Height (A): 0.248
Blank Corrected Pk Area (A-s): 0.153
Concentration (ug/L): 41.67

Mean Conc (ug/L): 42.39 SD: 1.020 RSD(%): 2.41

Recovery is 90.2%

****

As ID: 93-2240 recalc 3/26/93 Seq. No.: 00247 A/S Pos.: 9 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 16:03
Peak Area (A-s): 0.099 Peak Height (A): 0.127
Background Pk Area (A-s): 0.353 Background Pk Height (A): 0.264
Blank Corrected Pk Area (A-s): 0.101
Concentration (ug/L): 27.55

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 16:06
Peak Area (A-s): 0.090 Peak Height (A): 0.129
Background Pk Area (A-s): 0.360 Background Pk Height (A): 0.268
Blank Corrected Pk Area (A-s): 0.092
Concentration (ug/L): 24.99

Mean Conc (ug/L): 26.27 SD: 1.812 RSD(%): 6.90

****

As ID: 93-2240 Seq. No.: 00248 A/S Pos.: 9 Date: 03/26/93

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 1 Time: 16:09
Peak Area (A-s): 0.163 Peak Height (A): 0.248
Background Pk Area (A-s): 0.328 Background Pk Height (A): 0.259
Blank Corrected Pk Area (A-s): 0.165
Concentration (ug/L): 44.81

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 2 Time: 16:12
Peak Area (A-s): 0.154 Peak Height (A): 0.246
Background Pk Area (A-s): 0.323 Background Pk Height (A): 0.252
Blank Corrected Pk Area (A-s): 0.155
Concentration (ug/L): 42.30

Mean Conc (ug/L): 43.55 SD: 1.776 RSD(%): 4.08

Recovery is 86.4%

****

As ID: CCV3 ICV-2 40x Seq. No.: 00249 A/S Pos.: 23 Date: 03/26/93

(1290) ICP 1008 mg/L DF 3/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 23
Replicate 1 Time: 16:15
Peak Area (A-s): 0.099 Peak Height (A): 0.187
Background Pk Area (A-s): 0.134 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.100
Concentration (ug/L): 27.32

uL dispensed: 8 from 0, 5 from 35, 20 from 23
Replicate 2 Time: 16:17
Peak Area (A-s): 0.094 Peak Height (A): 0.168
Background Pk Area (A-s): 0.122 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): 0.095
Concentration (ug/L): 25.96

Mean Conc (ug/L): 26.64 SD: 0.962 RSD(%): 3.61

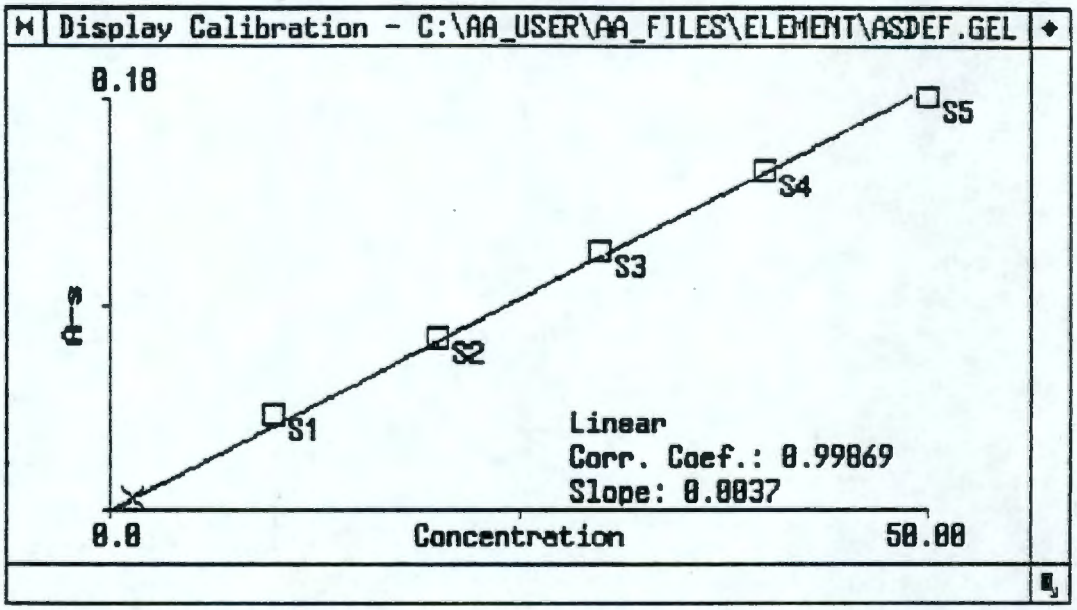
****

As ID: CCB4 Seq. No.: 00250 A/S Pos.: 24 Date: 03/26/93

uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate 1 Time: 16:20
Peak Area (A-s): 0.007 Peak Height (A): 0.016
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 2.42

uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate 2 Time: 16:23
Peak Area (A-s): -0.000 Peak Height (A): 0.009
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.47

Mean Conc (ug/L): 1.44 SD: 1.381 RSD(%): 95.73



ID/Weight File Name: DF.IDW Analyst: DE Faulk

Sample Volume: 1 L Sample Weight: 1.0 ug
Autosampler Type: Last Stored: 93/03/26, at 12:59:27

Loc.	Sample ID	Weight	Dilution
1	10 ppb As		
2	ICV-2 40x		
3	ICB		
4	CRA 10 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-2239		
9	93-2240		
10	CCV1 ICV-3 40x		
11	CCB 2		
12	93-2241		
13	93-2241D		
14	93-2241 S 4x		
15	LCS 200x		
16	93-2251		
17	CCV3 ICV-2 40x		
18	CCB 3		
19	93-2437		
20	93-2438		
21	93-2451		
22	LCS + Bi 200x		
23	CCV3 ICV-2 40x		
24	CCB4		

Element File: ASDEF.GEL Last Stored: 93/03/26 10:59:46
Element: As Wavelength: 193.7 Peak Slit: 0.70 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100,~~MA97267~~ WB76757 mwl 4/16/93
Matrix Modifier - Palladium Nitrate & Magnesium Nitrate
locations: S1-S4(34 w/dil) S5 (34) , mod(35), blk0
procedure: PNL-ALO-214, rev.1
T-106 rerun

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 10.00 S2: 20.00 S3: 30.00
S4: 40.00 S5: 50.00 S6:
S7: S8: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 2

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
90	10	15	300		Norm	
130	5	15	300		Norm	
1100	10	25	300		Norm	
20	1	15	300		Norm	
2300	0	5	30	*	Norm	
2600	1	4	300		Norm	
20	1	10	300		Norm	

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 8 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

Spike Recovery: Frequency: 6,8,9,12,13,15,16,19-22
Location: 34 Volume: 8 uL Concentration: 50.00 ug/L

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	8	5	
Standard 1	34	4	24	5	
Standard 2	34	8	20	5	
Standard 3	34	12	16	5	
Standard 4	34	16	12	5	
Standard 5	34	20	8	5	
Standard 6					
Standard 7					
Standard 8					
Reslope					

Sample Blank Location: Automated Additions

Element File: PBDEF.GEL Element: Pb Wavelength: 283.3
Date: 03/24/93 Time: 18:41 Slit: 0.7
Data File: T_106.DATTXXXXX ID/Wt File: DF.IDW Lamp Current: 0
Technique: HGA Calib. Type: Linear Energy: 71
Remark 1: AA5100.~~MA9Z67~~ 6076757 mwh 9/16/93
Remark 2: Matrix Modifier - Palladium Nitrate
Remark 3: procedure PNL-ALO-217
Remark 4: locations: S1,S2,S3,S4(34 w/dil)S5(34),dil(0),mod(35)
Remark 5: T-106 rerun Darrin Funk 3-25-93

Pb ID: Blank Seq. No.: 00127 A/S Pos.: 0 Date: 03/24/93

uL dispensed: 6 from 0, 5 from 35, 20 from 0
Replicate 1 Time: 18:43
Peak Area (A-s): 0.011 Peak Height (A): 0.038
Background Pk Area (A-s): 0.108 Background Pk Height (A): 0.202
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.12

uL dispensed: 6 from 0, 5 from 35, 20 from 0
Replicate 2 Time: 18:45
Peak Area (A-s): 0.010 Peak Height (A): 0.037
Background Pk Area (A-s): 0.109 Background Pk Height (A): 0.209
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.57

Mean Conc (ug/L): 0.84 SD: 0.383 RSD(%): 45.38

Auto-zero performed.

Pb ID: Standard 1 Seq. No.: 00128 A/S Pos.: 34 Date: 03/24/93

uL dispensed: 22 from 0, 5 from 35, 4 from 34
Replicate 1 Time: 18:48
Peak Area (A-s): 0.025 Peak Height (A): 0.051
Background Pk Area (A-s): 0.103 Background Pk Height (A): 0.108
Blank Corrected Pk Area (A-s): 0.015
Concentration (ug/L): 7.73

uL dispensed: 22 from 0, 5 from 35, 4 from 34
Replicate 2 Time: 18:50
Peak Area (A-s): 0.036 Peak Height (A): 0.095
Background Pk Area (A-s): 0.133 Background Pk Height (A): 0.232
Blank Corrected Pk Area (A-s): 0.025
Concentration (ug/L): 13.01

Mean Conc (ug/L): 10.37 SD: 3.734 RSD(%): 36.00

Standard number 1 applied. [10.00]
Correlation coefficient: 1.00000 Slope: 0.0020

Pb ID: Standard 2 Seq. No.: 00129 A/S Pos.: 34 Date: 03/24/93

uL dispensed: 18 from 0, 5 from 35, 8 from 34
Replicate 1 Time: 18:52

Peak Area (A-s): 0.057 Peak Height (A): 0.151
Background Pk Area (A-s): 0.140 Background Pk Height (A): 0.247
Blank Corrected Pk Area (A-s): 0.046
Concentration (ug/L): 22.89

uL dispensed: 18 from 0, 5 from 35, 8 from 34
Replicate 2 Time: 18:55
Peak Area (A-s): 0.055 Peak Height (A): 0.147
Background Pk Area (A-s): 0.138 Background Pk Height (A): 0.244
Blank Corrected Pk Area (A-s): 0.045
Concentration (ug/L): 22.23

Mean Conc (ug/L): 22.56 SD: 0.466 RSD(%): 2.06

Standard number 2 applied. [20.00]
Correlation coefficient: 0.98919 Slope: 0.0022

****

Pb ID: Standard 3 Seq. No.: 00130 A/S Pos.: 34 Date: 03/24/93

uL dispensed: 14 from 0, 5 from 35, 12 from 34
Replicate 1 Time: 18:57
Peak Area (A-s): 0.077 Peak Height (A): 0.203
Background Pk Area (A-s): 0.140 Background Pk Height (A): 0.240
Blank Corrected Pk Area (A-s): 0.067
Concentration (ug/L): 29.64

uL dispensed: 14 from 0, 5 from 35, 12 from 34
Replicate 2 Time: 18:59
Peak Area (A-s): 0.080 Peak Height (A): 0.212
Background Pk Area (A-s): 0.140 Background Pk Height (A): 0.246
Blank Corrected Pk Area (A-s): 0.070
Concentration (ug/L): 31.09

Mean Conc (ug/L): 30.37 SD: 1.026 RSD(%): 3.38

Standard number 3 applied. [30.00]
Correlation coefficient: 0.99719 Slope: 0.0023

****

Pb ID: Standard 4 Seq. No.: 00131 A/S Pos.: 34 Date: 03/24/93

uL dispensed: 10 from 0, 5 from 35, 16 from 34
Replicate 1 Time: 19:02
Peak Area (A-s): 0.101 Peak Height (A): 0.263
Background Pk Area (A-s): 0.133 Background Pk Height (A): 0.220
Blank Corrected Pk Area (A-s): 0.091
Concentration (ug/L): 40.27

uL dispensed: 10 from 0, 5 from 35, 16 from 34
Replicate 2 Time: 19:04
Peak Area (A-s): 0.102 Peak Height (A): 0.254
Background Pk Area (A-s): 0.132 Background Pk Height (A): 0.220
Blank Corrected Pk Area (A-s): 0.092
Concentration (ug/L): 40.49

Mean Conc (ug/L): 40.39 SD: 0.156 RSD(%): 0.39

Standard number 4 applied. [40.00]

Correlation coefficient: 0.99881 Slope: 0.0023

****

Pb ID: Standard 5 Seq. No.: 00132 A/S Pos.: 34 Date: 03/24/93

uL dispensed: 6 from 0, 5 from 35, 20 from 34
Replicate 1 Time: 19:06
Peak Area (A-s): 0.123 Peak Height (A): 0.300
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.206
Blank Corrected Pk Area (A-s): 0.112
Concentration (ug/L): 49.50

uL dispensed: 6 from 0, 5 from 35, 20 from 34
Replicate 2 Time: 19:09
Peak Area (A-s): 0.119 Peak Height (A): 0.282
Background Pk Area (A-s): 0.125 Background Pk Height (A): 0.197
Blank Corrected Pk Area (A-s): 0.109
Concentration (ug/L): 47.82

Mean Conc (ug/L): 48.66 SD: 1.183 RSD(%): 2.43

Standard number 5 applied. [50.00]
Correlation coefficient: 0.99890 Slope: 0.0022

****

Pb ID: 3 ppb Pb Seq. No.: 00133 A/S Pos.: 1 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 1 Time: 19:11
Peak Area (A-s): 0.017 Peak Height (A): 0.051
Background Pk Area (A-s): 0.120 Background Pk Height (A): 0.182
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 2.84

uL dispensed: 8 from 0, 5 from 35, 20 from 1
Replicate 2 Time: 19:14
Peak Area (A-s): 0.018 Peak Height (A): 0.055
Background Pk Area (A-s): 0.123 Background Pk Height (A): 0.193
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 3.67

Mean Conc (ug/L): 3.25 SD: 0.581 RSD(%): 17.86

****

Pb ID: ICV-4 50x Seq. No.: 00134 A/S Pos.: 2 Date: 03/24/93
(1200) ICF 984 ug/L DF 3-25-93

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 1 Time: 19:16
Peak Area (A-s): 0.055 Peak Height (A): 0.142
Background Pk Area (A-s): 0.121 Background Pk Height (A): 0.191
Blank Corrected Pk Area (A-s): 0.045
Concentration (ug/L): 19.85

uL dispensed: 8 from 0, 5 from 35, 20 from 2
Replicate 2 Time: 19:18
Peak Area (A-s): 0.053 Peak Height (A): 0.140
Background Pk Area (A-s): 0.122 Background Pk Height (A): 0.196
Blank Corrected Pk Area (A-s): 0.043
Concentration (ug/L): 18.96

Mean Conc (ug/L): 19.40 SD: 0.630 RSD(%): 3.25

****

Pb ID: ICB Seq. No.: 00135 A/S Pos.: 3 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 1 Time: 19:21
Peak Area (A-s): 0.011 Peak Height (A): 0.038
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.184
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.18

uL dispensed: 8 from 0, 5 from 35, 20 from 3
Replicate 2 Time: 19:23
Peak Area (A-s): 0.012 Peak Height (A): 0.038
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.174
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.96

Mean Conc (ug/L): 0.57 SD: 0.554 RSD(%): 97.56

****

Pb ID: CRA 3 ppb Seq. No.: 00136 A/S Pos.: 4 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate 1 Time: 19:25
Peak Area (A-s): 0.015 Peak Height (A): 0.049
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.180
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 2.24

uL dispensed: 8 from 0, 5 from 35, 20 from 4
Replicate 2 Time: 19:28
Peak Area (A-s): 0.015 Peak Height (A): 0.048
Background Pk Area (A-s): 0.121 Background Pk Height (A): 0.185
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 2.13

Mean Conc (ug/L): 2.19 SD: 0.078 RSD(%): 3.56

****

Pb ID: CCB 1 Seq. No.: 00137 A/S Pos.: 5 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate 1 Time: 19:30
Peak Area (A-s): 0.008 Peak Height (A): 0.035
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.179
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.98

uL dispensed: 8 from 0, 5 from 35, 20 from 5
Replicate 2 Time: 19:33
Peak Area (A-s): 0.010 Peak Height (A): 0.036
Background Pk Area (A-s): 0.120 Background Pk Height (A): 0.184
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.25

Mean Conc (ug/L): -0.61 SD: 0.514 RSD(%): 84.15

****

Pb ID: PBS Seq. No.: 00138 A/S Pos.: 6 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 1 Time: 19:35
Peak Area (A-s): 0.009 Peak Height (A): 0.032
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.179
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.72

uL dispensed: 8 from 0, 5 from 35, 20 from 6
Replicate 2 Time: 19:38
Peak Area (A-s): 0.009 Peak Height (A): 0.032
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.175
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.56

Mean Conc (ug/L): -0.64 SD: 0.112 RSD(%): 17.51

****

Pb ID: PBS Seq. No.: 00139 A/S Pos.: 6 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 1 Time: 19:40
Peak Area (A-s): 0.053 Peak Height (A): 0.134
Background Pk Area (A-s): 0.090 Background Pk Height (A): 0.137
Blank Corrected Pk Area (A-s): 0.043
Concentration (ug/L): 19.18

uL dispensed: 5 from 35, 8 from 34, 20 from 6
Replicate 2 Time: 19:43
Peak Area (A-s): 0.053 Peak Height (A): 0.134
Background Pk Area (A-s): 0.091 Background Pk Height (A): 0.137
Blank Corrected Pk Area (A-s): 0.043
Concentration (ug/L): 19.06

Mean Conc (ug/L): 19.12 SD: 0.086 RSD(%): 0.45

Recovery is 98.8%

****

Pb ID: sok blk Seq. No.: 00140 A/S Pos.: 7 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 1 Time: 19:45
Peak Area (A-s): 0.054 Peak Height (A): 0.134
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.173
Blank Corrected Pk Area (A-s): 0.044
Concentration (ug/L): 19.55

uL dispensed: 8 from 0, 5 from 35, 20 from 7
Replicate 2 Time: 19:48
Peak Area (A-s): 0.053 Peak Height (A): 0.133
Background Pk Area (A-s): 0.115 Background Pk Height (A): 0.176
Blank Corrected Pk Area (A-s): 0.042
Concentration (ug/L): 18.90

Mean Conc (ug/L): 19.23 SD: 0.464 RSD(%): 2.42

Pb ID: 93-2339 4x Seq. No.: 00141 A/S Pos.: 8 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 1 Time: 19:50
Peak Area (A-s): 0.039 Peak Height (A): 0.117
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.189
Blank Corrected Pk Area (A-s): 0.028
Concentration (ug/L): 12.62

uL dispensed: 8 from 0, 5 from 35, 20 from 8
Replicate 2 Time: 19:53
Peak Area (A-s): 0.038 Peak Height (A): 0.116
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.182
Blank Corrected Pk Area (A-s): 0.028
Concentration (ug/L): 12.48

Mean Conc (ug/L): 12.55 SD: 0.095 RSD(%): 0.76

Pb ID: 93-2339 4x Seq. No.: 00142 A/S Pos.: 8 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 1 Time: 19:55
Peak Area (A-s): 0.076 Peak Height (A): 0.228
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.143
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 29.34

uL dispensed: 5 from 35, 8 from 34, 20 from 8
Replicate 2 Time: 19:58
Peak Area (A-s): 0.077 Peak Height (A): 0.233
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.144
Blank Corrected Pk Area (A-s): 0.067
Concentration (ug/L): 29.91

Mean Conc (ug/L): 29.62 SD: 0.409 RSD(%): 1.38

Recovery is 85.4%

Pb ID: 93-2340 2x 3DF 3-25-93 Seq. No.: 00143 A/S Pos.: 9 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 1 Time: 20:00
Peak Area (A-s): 0.033 Peak Height (A): 0.117
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.211
Blank Corrected Pk Area (A-s): 0.023
Concentration (ug/L): 10.05

uL dispensed: 8 from 0, 5 from 35, 20 from 9
Replicate 2 Time: 20:03
Peak Area (A-s): 0.031 Peak Height (A): 0.117
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.214
Blank Corrected Pk Area (A-s): 0.020
Concentration (ug/L): 9.05

Mean Conc (ug/L): 9.55 SD: 0.709 RSD(%): 7.42

Pb ID: 93-2340 2x 3/24/93 Seq. No.: 00144 A/S Pos.: 9 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 1 Time: 20:05
Peak Area (A-s): 0.069 Peak Height (A): 0.241
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.169
Blank Corrected Pk Area (A-s): 0.059
Concentration (ug/L): 26.24

uL dispensed: 5 from 35, 8 from 34, 20 from 9
Replicate 2 Time: 20:08
Peak Area (A-s): 0.067 Peak Height (A): 0.239
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.166
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L): 25.24

Mean Conc (ug/L): 25.74 SD: 0.706 RSD(%): 2.74

Recovery is 80.9%

Low Spike recovery

Pb ID: CCV1 ICV-4 50x Seq. No.: 00145 A/S Pos.: 10 Date: 03/24/93
(290) ICF 984 ug/L D.F 3-25-93

uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 1 Time: 20:10
Peak Area (A-s): 0.056 Peak Height (A): 0.146
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.181
Blank Corrected Pk Area (A-s): 0.046
Concentration (ug/L): 20.40

uL dispensed: 8 from 0, 5 from 35, 20 from 10
Replicate 2 Time: 20:13
Peak Area (A-s): 0.056 Peak Height (A): 0.146
Background Pk Area (A-s): 0.121 Background Pk Height (A): 0.197
Blank Corrected Pk Area (A-s): 0.046
Concentration (ug/L): 20.56

Mean Conc (ug/L): 20.48 SD: 0.111 RSD(%): 0.54

Pb ID: CCB 2 Seq. No.: 00146 A/S Pos.: 11 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 1 Time: 20:15
Peak Area (A-s): 0.010 Peak Height (A): 0.038
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.188
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.00

uL dispensed: 8 from 0, 5 from 35, 20 from 11
Replicate 2 Time: 20:18
Peak Area (A-s): 0.010 Peak Height (A): 0.037
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.184
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.05

Mean Conc (ug/L): 0.02 SD: 0.028 RSD(%): 113.98

****

Pb ID: 93-2241 5x Seq. No.: 00147 A/S Pos.: 12 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 1 Time: 20:20
Peak Area (A-s): 0.035 Peak Height (A): 0.105
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.193
Blank Corrected Pk Area (A-s): 0.025
Concentration (ug/L): 10.92

uL dispensed: 8 from 0, 5 from 35, 20 from 12
Replicate 2 Time: 20:23
Peak Area (A-s): 0.036 Peak Height (A): 0.110
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.187
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 11.70

Mean Conc (ug/L): 11.31 SD: 0.549 RSD(%): 4.85

****

Pb ID: 93-2241 5x Seq. No.: 00148 A/S Pos.: 12 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 1 Time: 20:25
Peak Area (A-s): 0.076 Peak Height (A): 0.216
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.149
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 29.24

uL dispensed: 5 from 35, 8 from 34, 20 from 12
Replicate 2 Time: 20:27
Peak Area (A-s): 0.078 Peak Height (A): 0.222
Background Pk Area (A-s): 0.097 Background Pk Height (A): 0.150
Blank Corrected Pk Area (A-s): 0.068
Concentration (ug/L): 30.38

Mean Conc (ug/L): 29.81 SD: 0.809 RSD(%): 2.71

Recovery is 92.5%

****

Pb ID: 93-2241 D 5x Seq. No.: 00149 A/S Pos.: 13 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 1 Time: 20:30
Peak Area (A-s): 0.040 Peak Height (A): 0.119
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.184
Blank Corrected Pk Area (A-s): 0.030
Concentration (ug/L): 13.37

uL dispensed: 8 from 0, 5 from 35, 20 from 13
Replicate 2 Time: 20:32
Peak Area (A-s): 0.039 Peak Height (A): 0.116
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.190
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 12.80

Mean Conc (ug/L): 13.08 SD: 0.402 RSD(%): 3.07

Pb ID: 93-2241 D 5x Seq. No.: 00150 A/S Pos.: 13 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 1 Time: 20:35
Peak Area (A-s): 0.080 Peak Height (A): 0.230
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.155
Blank Corrected Pk Area (A-s): 0.069
Concentration (ug/L): 30.95

uL dispensed: 5 from 35, 8 from 34, 20 from 13
Replicate 2 Time: 20:37
Peak Area (A-s): 0.079 Peak Height (A): 0.232
Background Pk Area (A-s): 0.097 Background Pk Height (A): 0.154
Blank Corrected Pk Area (A-s): 0.069
Concentration (ug/L): 30.80

Mean Conc (ug/L): 30.88 SD: 0.104 RSD(%): 0.34

Recovery is 89.0%

Pb ID: 93-2241 S 5x Seq. No.: 00151 A/S Pos.: 14 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Replicate 1 Time: 20:40
Peak Area (A-s): 0.047 Peak Height (A): 0.133
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.181
Blank Corrected Pk Area (A-s): 0.036
Concentration (ug/L): 16.21

uL dispensed: 8 from 0, 5 from 35, 20 from 14
Replicate 2 Time: 20:42
Peak Area (A-s): 0.047 Peak Height (A): 0.134
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.186
Blank Corrected Pk Area (A-s): 0.037
Concentration (ug/L): 16.26

Mean Conc (ug/L): 16.23 SD: 0.037 RSD(%): 0.23

Pb ID: LCS 100x Seq. No.: 00152 A/S Pos.: 15 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 1 Time: 20:45
Peak Area (A-s): 0.038 Peak Height (A): 0.095
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.167
Blank Corrected Pk Area (A-s): 0.028
Concentration (ug/L): 12.35

uL dispensed: 8 from 0, 5 from 35, 20 from 15
Replicate 2 Time: 20:47
Peak Area (A-s): 0.037 Peak Height (A): 0.093
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.170
Blank Corrected Pk Area (A-s): 0.027
Concentration (ug/L): 12.00

Mean Conc (ug/L): 12.18 SD: 0.249 RSD(%): 2.05

****

Pb ID: LCS 100x Seq. No.: 00153 A/S Pos.: 15 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Replicate 1 Time: 20:49
Peak Area (A-s): 0.080 Peak Height (A): 0.196
Background Pk Area (A-s): 0.095 Background Pk Height (A): 0.139
Blank Corrected Pk Area (A-s): 0.070
Concentration (ug/L): 31.10

uL dispensed: 5 from 35, 8 from 34, 20 from 15
Replicate 2 Time: 20:52
Peak Area (A-s): 0.084 Peak Height (A): 0.198
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.138
Blank Corrected Pk Area (A-s): 0.074
Concentration (ug/L): 32.99

Mean Conc (ug/L): 32.05 SD: 1.334 RSD(%): 4.16

Recovery is 99.3%

****

Pb ID: 93-2751 2x Seq. No.: 00154 A/S Pos.: 16 Date: 03/24/93
3 mul 4/16/93

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 1 Time: 20:54
Peak Area (A-s): 0.042 Peak Height (A): 0.140
Background Pk Area (A-s): 0.110 Background Pk Height (A): 0.208
Blank Corrected Pk Area (A-s): 0.032
Concentration (ug/L): 14.30

uL dispensed: 8 from 0, 5 from 35, 20 from 16
Replicate 2 Time: 20:57
Peak Area (A-s): 0.043 Peak Height (A): 0.141
Background Pk Area (A-s): 0.116 Background Pk Height (A): 0.210
Blank Corrected Pk Area (A-s): 0.033
Concentration (ug/L): 14.62

Mean Conc (ug/L): 14.46 SD: 0.228 RSD(%): 1.58

****

Pb ID: 93-2751 2x Seq. No.: 00155 A/S Pos.: 16 Date: 03/24/93
3 mul 4/16/93

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 1 Time: 20:59
Peak Area (A-s): 0.084 Peak Height (A): 0.266
Background Pk Area (A-s): 0.102 Background Pk Height (A): 0.175
Blank Corrected Pk Area (A-s): 0.073
Concentration (ug/L): 32.67

uL dispensed: 5 from 35, 8 from 34, 20 from 16
Replicate 2 Time: 21:01
Peak Area (A-s): 0.081 Peak Height (A): 0.268
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.176
Blank Corrected Pk Area (A-s): 0.070
Concentration (ug/L): 31.31

Mean Conc (ug/L): 31.99 SD: 0.966 RSD(%): 3.02

Recovery is 87.6%

****

Pb ID: CCV2 ICV-4 50x Seq. No.: 00156 A/S Pos.: 17 Date: 03/24/93
(1290) ICF 994 ~9% DF 3/25/93

uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 1 Time: 21:04
Peak Area (A-s): 0.058 Peak Height (A): 0.147
Background Pk Area (A-s): 0.115 Background Pk Height (A): 0.182
Blank Corrected Pk Area (A-s): 0.048
Concentration (ug/L): 21.19

uL dispensed: 8 from 0, 5 from 35, 20 from 17
Replicate 2 Time: 21:06
Peak Area (A-s): 0.055 Peak Height (A): 0.145
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.188
Blank Corrected Pk Area (A-s): 0.045
Concentration (ug/L): 20.12

Mean Conc (ug/L): 20.66 SD: 0.761 RSD(%): 3.69

****

Pb ID: CCB 3 Seq. No.: 00157 A/S Pos.: 18 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 1 Time: 21:08
Peak Area (A-s): 0.009 Peak Height (A): 0.036
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.187
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.54

uL dispensed: 8 from 0, 5 from 35, 20 from 18
Replicate 2 Time: 21:11
Peak Area (A-s): 0.007 Peak Height (A): 0.035
Background Pk Area (A-s): 0.111 Background Pk Height (A): 0.184
Blank Corrected Pk Area (A-s): -0.004
Concentration (ug/L): -1.65

Mean Conc (ug/L): -1.10 SD: 0.783 RSD(%): 71.48

****

Pb ID: 93-2437 Seq. No.: 00158 A/S Pos.: 19 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 1 Time: 21:13
Peak Area (A-s): 0.037 Peak Height (A): 0.152
Background Pk Area (A-s): 0.117 Background Pk Height (A): 0.235
Blank Corrected Pk Area (A-s): 0.027
Concentration (ug/L): 12.04

uL dispensed: 8 from 0, 5 from 35, 20 from 19
Replicate 2 Time: 21:15
Peak Area (A-s): 0.037 Peak Height (A): 0.155
Background Pk Area (A-s): 0.122 Background Pk Height (A): 0.229
Blank Corrected Pk Area (A-s): 0.027
Concentration (ug/L): 12.04

Mean Conc (ug/L): 12.04 SD: 0.002 RSD(%): 0.02

****

Pb ID: 93-2437 Seq. No.: 00159 A/S Pos.: 19 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Replicate 1 Time: 21:19
Peak Area (A-s): 0.076 Peak Height (A): 0.289
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.175
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 29.51

uL dispensed: 5 from 35, 8 from 34, 20 from 19
Replicate 2 Time: 21:20
Peak Area (A-s): 0.074 Peak Height (A): 0.292
Background Pk Area (A-s): 0.105 Background Pk Height (A): 0.177
Blank Corrected Pk Area (A-s): 0.064
Concentration (ug/L): 28.60

Mean Conc (ug/L): 29.06 SD: 0.645 RSD(%): 2.22

Recovery is 85.1%

****

Pb ID: 93-2438 Seq. No.: 00160 A/S Pos.: 20 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 1 Time: 21:22
Peak Area (A-s): 0.036 Peak Height (A): 0.164
Background Pk Area (A-s): 0.122 Background Pk Height (A): 0.231
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 11.43

uL dispensed: 8 from 0, 5 from 35, 20 from 20
Replicate 2 Time: 21:25
Peak Area (A-s): 0.036 Peak Height (A): 0.163
Background Pk Area (A-s): 0.129 Background Pk Height (A): 0.240
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 11.55

Mean Conc (ug/L): 11.49 SD: 0.085 RSD(%): 0.74

****

Pb ID: 93-2438 Seq. No.: 00161 A/S Pos.: 20 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Replicate 1 Time: 21:27
Peak Area (A-s): 0.075 Peak Height (A): 0.304
Background Pk Area (A-s): 0.108 Background Pk Height (A): 0.184
Blank Corrected Pk Area (A-s): 0.064
Concentration (ug/L): 28.63

uL dispensed: 5 from 35, 8 from 34, 20 from 20
Replicate 2 Time: 21:29
Peak Area (A-s): 0.076 Peak Height (A): 0.304
Background Pk Area (A-s): 0.107 Background Pk Height (A): 0.186
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 29.30

Mean Conc (ug/L): 28.96 SD: 0.477 RSD(%): 1.65

Recovery is 87.4%

****

Pb ID: 93-2451 Seq. No.: 00162 A/S Pos.: 21 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 1 Time: 21:32
Peak Area (A-s): 0.036 Peak Height (A): 0.167
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.248
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 11.54

uL dispensed: 8 from 0, 5 from 35, 20 from 21
Replicate 2 Time: 21:34
Peak Area (A-s): 0.035 Peak Height (A): 0.165
Background Pk Area (A-s): 0.127 Background Pk Height (A): 0.249
Blank Corrected Pk Area (A-s): 0.025
Concentration (ug/L): 10.94

Mean Conc (ug/L): 11.24 SD: 0.418 RSD(%): 3.71

****

Pb ID: 93-2451 Seq. No.: 00163 A/S Pos.: 21 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 1 Time: 21:37
Peak Area (A-s): 0.074 Peak Height (A): 0.301
Background Pk Area (A-s): 0.108 Background Pk Height (A): 0.208
Blank Corrected Pk Area (A-s): 0.063
Concentration (ug/L): 28.26

uL dispensed: 5 from 35, 8 from 34, 20 from 21
Replicate 2 Time: 21:39
Peak Area (A-s): 0.074 Peak Height (A): 0.305
Background Pk Area (A-s): 0.111 Background Pk Height (A): 0.212
Blank Corrected Pk Area (A-s): 0.064
Concentration (ug/L): 28.33

Mean Conc (ug/L): 28.29 SD: 0.051 RSD(%): 0.18

Recovery is 85.3%

****

Pb ID: LCS + Bi 100x Seq. No.: 00164 A/S Pos.: 22 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 22
Replicate 1 Time: 21:41
Peak Area (A-s): 0.037 Peak Height (A): 0.093
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.181
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 11.80

uL dispensed: 8 from 0, 5 from 35, 20 from 22
Replicate 2 Time: 21:44
Peak Area (A-s): 0.035 Peak Height (A): 0.093
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.187
Blank Corrected Pk Area (A-s): 0.025
Concentration (ug/L): 10.94

Mean Conc (ug/L): 11.37 SD: 0.605 RSD(%): 5.32

****

Pb ID: LCS + Bi 100x Seq. No.: 00165 A/S Pos.: 22 Date: 03/24/93

uL dispensed: 5 from 35, 8 from 34, 20 from 22
Replicate 1 Time: 21:46
Peak Area (A-s): 0.080 Peak Height (A): 0.198
Background Pk Area (A-s): 0.095 Background Pk Height (A): 0.152
Blank Corrected Pk Area (A-s): 0.070
Concentration (ug/L): 31.23

uL dispensed: 5 from 35, 8 from 34, 20 from 22
Replicate 2 Time: 21:48
Peak Area (A-s): 0.081 Peak Height (A): 0.199
Background Pk Area (A-s): 0.092 Background Pk Height (A): 0.148
Blank Corrected Pk Area (A-s): 0.071
Concentration (ug/L): 31.41

Mean Conc (ug/L): 31.32 SD: 0.131 RSD(%): 0.42

Recovery is 99.7%

****

Pb ID: CCV3 ICV-4 50x Seq. No.: 00166 A/S Pos.: 23 Date: 03/24/93
(1270) ICF 984 ug/L DP 3/25/93
uL dispensed: 8 from 0, 5 from 35, 20 from 23
Replicate 1 Time: 21:51
Peak Area (A-s): 0.057 Peak Height (A): 0.152
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.192
Blank Corrected Pk Area (A-s): 0.047
Concentration (ug/L): 20.90

uL dispensed: 8 from 0, 5 from 35, 20 from 23
Replicate 2 Time: 21:53
Peak Area (A-s): 0.058 Peak Height (A): 0.150
Background Pk Area (A-s): 0.113 Background Pk Height (A): 0.193
Blank Corrected Pk Area (A-s): 0.048
Concentration (ug/L): 21.48

Mean Conc (ug/L): 21.19 SD: 0.416 RSD(%): 1.96

****

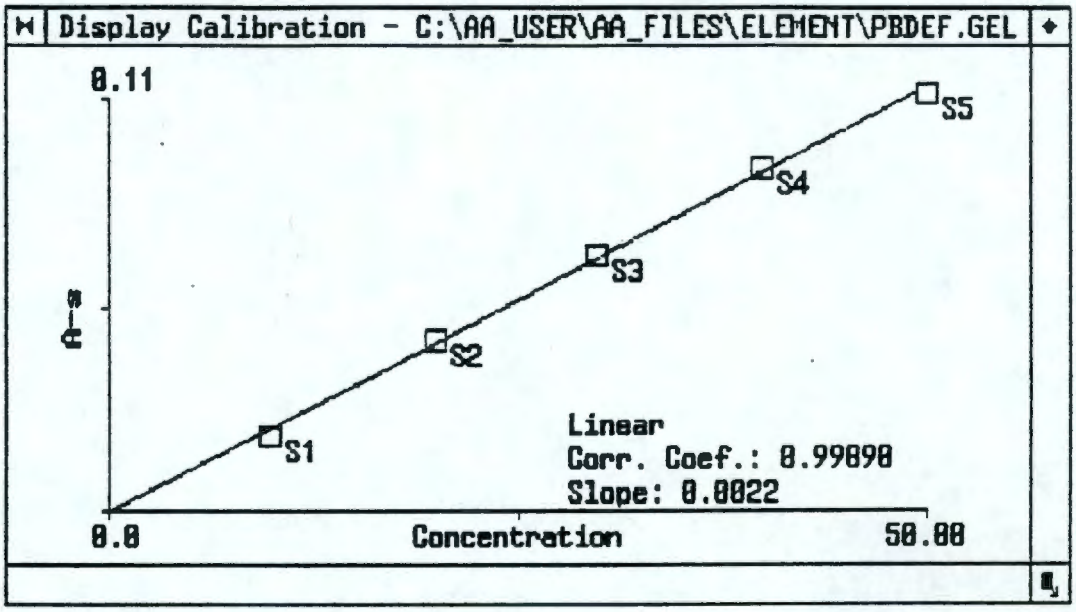
Pb ID: CCB4 Seq. No.: 00167 A/S Pos.: 24 Date: 03/24/93

uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate 1 Time: 21:56
Peak Area (A-s): 0.010 Peak Height (A): 0.039
Background Pk Area (A-s): 0.110 Background Pk Height (A): 0.192
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.26

uL dispensed: 8 from 0, 5 from 35, 20 from 24
Replicate 2 Time: 21:58
Peak Area (A-s): 0.010 Peak Height (A): 0.041
Background Pk Area (A-s): 0.111 Background Pk Height (A): 0.195
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.15

9613492.0966

Mean Conc (ug/L): -0.21 SD: 0.080 RSD(%): 38.87



ID/Weight File Name: DF.IDW Analyst: DE Fault

Sample Volume: 1 L Sample Weight: 1.0 ug
Autosampler Type: Last Stored: 93/03/24, at 15:47:51

Loc.	Sample ID	Weight	Dilution
1	3 ppb Pb		
2	ICV-4 50x		
3	ICB		
4	CRA 3 ppb		
5	CCB 1		
6	PBS		
7	spk blk		
8	93-2339 4x		
9	93-2240 2x		
10	CCV1 ICV-4 50x		
11	CCB 2		
12	93-2241 5x		
13	93-2241 D 5x		
14	93-2241 S 5x		
15	LCS 100x		
16	93-2251 2x		
17	CCV2 ICV-4 50x		
18	CCB 3		
19	93-2437		
20	93-2438		
21	93-2451		
22	LCS + Bi 100x		
23	CCV3 ICV-4 50x		
24	CCB4		

D04-185

Element File: PBDEF.GEL Last Stored: 93/03/24 19:09:31
Element: Pb Wavelength: 283.3 Peak Slit: 0.7 L
Technique: HGA Analyst: DE Faulk

Printer: Main+Suppl. Options: Volumes
Remarks:
AA5100, ~~MA93263~~ 00876757 mwh 4/16/93
Matrix Modifier - Palladium Nitrate
procedure PNL-ALO-217
locations: S1,S2,S3,S4(34 w/dil)S5(34),dil(0),mod(35)
T-106 rerun

Signal Type: AA-BG Calibration Type: Linear (Zero Int.)
Measurement Type: Peak Area Peak Height Smoothing: None
Standard Units: ug/L Sample Units: ug/L
Standards: S1: 10.00 S2: 20.00 S3: 30.00
S4: 40.00 S5: 50.00 S6:
S7: S8: RS:

Integration Time: 5 sec Read Delay: 0 sec BOC: 2 sec
Replicates: 2

HGA Time/Temperature Program:

Temp	Ramp	Hold	Gas Flow	Read	Gas Type	Prelim/Repeat
90	1	15	300		Norm	
130	10	10	300		Norm	
1100	10	20	300		Norm	
20	1	15	300		Norm	
2150	0	5	30	t	Norm	
2600	1	4	300		Norm	
20	1	5	300		Norm	

Sample Volume: 20 uL Overcal Volume: 5 uL
Diluent Volume: 8 uL Diluent Location: 0
Modifier 1 Volume: 5 uL Location: 35 Protocol: Pipet With Sample

Spike Recovery: Frequency: 6,8,9,12,13,15,16,19-22
Location: 34 Volume: 8 uL Concentration: 50.00 ug/L

Standards Preparation:

Solutions	Location	Volume	Diluent Volume	Modifier #1 Volume	Modifier #2 Volume
Std. Blank	0	20	6	5	
Standard 1	34	4	22	5	
Standard 2	34	8	18	5	
Standard 3	34	12	14	5	
Standard 4	34	16	10	5	
Standard 5	34	20	6	5	
Standard 6					
Standard 7					
Standard 8					
Resloop					

Sample Blank Location: Automated Additions

Performance Check for Pipettes

Beginning check results [1,2]

S weight (certified) 1.0000g S weight (found) 1.0001g S weight I.D.# WE701

Pipette serial#	B127146	B126888			
pipette volume (ml)	0.1000	1.0000			
Check #1	0.0992	0.9921			
Check #2	0.0997	0.9957			
Check #3	0.0990	0.9965			
mean volume (ml)	0.0993	0.9948			
%pipetting error	0.7%	0.6%			

Ending check results

pipette volume (ml)					
Check #1					
Check #2					
Check #3					
mean volume (ml)					
%pipetting error					

Note: Blank spaces or lines are permitted.

Pipette calibration notes:

(1) Analyst shall do at a minimum, a single pipette performance check at beginning and end of an analytical session or three performance checks before use. Use a two point performance check if using adjustable range pipettes for more than one delivery volume, otherwise performance check at the volume used. For pipettes that deliver greater than or equal to 0.5 ml the criteria for acceptance is ±1%. Acceptance tolerance of pipettes that deliver less than 0.5 ml shall be governed by manufacturer's tables.

(2) If pipette fails single performance check (either before or after use) the analyst shall repeat performance check two more times. If pipette fails the triplicate performance check then the Cognizant Scientist shall be called to resolve the problem.

Analyst's notes:

Analytical balance M&TE# (serial no.) : WD04501

Analyst / date: Darrin Faulk 3-24-93

Reviewer / date: [illegible] 3-~~29~~ 24-93

Form date 5-92

Performance Check for Pipettes

Beginning check results [1,2]

S weight (certified) 1.0000 g S weight (found) 1.0000 g S weight I.D.# WE701

Pipette serial#	B127146	B126825			
pipette volume (ml)	0.100	1.000			
Check #1	0.0991	0.9971			
Check #2	0.0991	0.9961			
Check #3	0.0992	0.9936			
mean volume (ml)	0.0991	0.9956			
%pipetting error	0.9%	0.5%			

Ending check results

pipette volume (ml)					
Check #1					
Check #2					
Check #3					
mean volume (ml)					
%pipetting error					

Note: Blank spaces or lines are permitted.

Pipette calibration notes:

(1) Analyst shall do at a minimum, a single pipette performance check at beginning and end of an analytical session or three performance checks before use. Use a two point performance check if using adjustable range pipettes for more than one delivery volume, otherwise performance check at the volume used. For pipettes that deliver greater than or equal to 0.5 ml the criteria for acceptance is ±1%. Acceptance tolerance of pipettes that deliver less than 0.5 ml shall be governed by manufacturer's tables.

(2) If pipette fails single performance check (either before or after use) the analyst shall repeat performance check two more times. If pipette fails the triplicate performance check then the Cognizant Scientist shall be called to resolve the problem.

Analyst's notes:

Analytical balance M&TE# (serial no.) : WO 04501

Analyst / date: Damian Gaulke 3/26/93

Reviewer / date: [illegible] 3/29/93

Form date 5-92

GRAPHITE FURNACE ATOMIC ABSORPTION STANDARD and ICV PREPARATION

Preparation of 50 ppb As & 50 ppb Se Working Standard Analyst signature/date Darin Faulk 3/24/93

The 50 ppb As & Se working standard was prepared by adding 0.100 ml of 5 ppm As & 5 ppm Se Intermediate Standard to a ~1% ULTREX HNO_3 water mixture in a 10 ml volumetric flask. The working standard was prepared daily before the sample analysis. The Intermediate Standard, prepared once a year, will expire when the primary standard expires. The Intermediate Standard (5 ppm As & 5 ppm Se standard) was prepared (9/2/92) by diluting 1.00 ml of 10000 ppm As STD (2% HNO_3, **I.V., Lot: #G-AS0124, expires 7/1/93**) and 1.00 ml of 10000 ppm Se STD (2% HNO_3, **I.V., lot# G-SE0110, expires 7/1/93**) in a 100 ml volumetric flask containing ~2% ULTREX HNO_3. 10 ml of this solution wad diluted to 100 ml vol flask containing ~ 2% ULTREX HNO3. This gives 10 ppm As and Se. Finally 50 ml of the 10 ppm solution was diluted to 100 ml vol flask containing ~ 2% HNO3.

The As & Se ICV and CCV check standards were prepared from the **ICV-2 (1290) EPA standard.** The ICV & CCV check standards were prepared by diluting 0.25 ml of ICV-2 in a 10 ml volumetric flask containing ~1% ULTREX HNO_3 water mixture. The As & Se ICV and CCV check standards were prepared daily.

Preparation of 50 ppb Tl & 50 ppb Bi Working Standard Analyst signature/date _____

The 50 ppb Tl & Bi working standard was prepared by adding 0.100 ml of 5 ppm Tl & 5 ppm Bi Intermediate Stock Standard to a ~1% ULTREX HNO_3 water mixture in a 10 ml volumetric flask. The working standard was prepared daily before the sample analysis. The Intermediate Standard, prepared once a year, will expire when the primary standard expires. The Intermediate Standard (5 ppm Tl & 5 ppm Bi standard) was prepared (9/2/92) by diluting 1.00 ml of10000 ppm Tl STD (2% HNO_3, I.V. **lot# F-TL0114, expires 6/1/93**) and 1.00 ml of 10000 ppm Bi STD (2% HNO_3, I.V. lot G-BI0114, expires 7/1/93) in a 100 ml volumetric flask containing ~2% ULTREX HNO_3. 10 ml of this solution was diluted to 100 ml vol flask containing ~ 2% ULTREX HNO3. This gives 10 ppm Tl and Bi. Finally 50 ml of the 10 ppm solution was diluted to 100 ml vol flask containing ~ 2% HNO3.

The Tl ICV and CCV check standards were prepared from the **ICV-4 (1290) EPA standard.** The ICV & CCV check standards were prepared by diluting 0.200 ml of ICV-4 in a 10 ml volumetric flask containing ~1% ULTREX HNO_3 water mixture. The EPA ICV-4 solution does not contain the element Bi. The Bi ICV and CCV standards were prepared from a Johnson Mathey Bi standard **(Lot # 59268, expires 1/20/93).** The 50 ppb Bi ICV and CCV standards were prepared by diluting 0.100 ml of 5 ppm Bi Intermediate Standard to a ~1% ULTREX HNO_3 water mixture in a 10 ml volumetric flask. The Intermediate Standard (5 ppm Bi standard) was prepared (1/20/93) by diluting1.00 ml of 500 ppm Bi STD (2% HNO_3, J.M., **Lot: #59268, expires 5/12/93**) in a 100 ml volumetric flask containing ~2% ULTREX HNO_3. The Tl & Bi ICV and CCV check standards were prepared daily.

Preparation of 50 ppb Pb & 50 ppb Ag Working Standard Analyst signature/date Darin Faulk 3/24/93

The 50 ppb Pb & Ag working standard was prepared by adding 0.100 ml of 5 ppm Pb & 5 ppm Ag Intermediate Standard to a ~1% ULTREX HNO_3 water mixture in a 10 ml volumetric flask. Also, a 150 ppb Pb working standard was prepared by adding 0.300 ml of 5 ppm Pb & 5 ppm Ag Intermediate Standard to a ~1% HNO_3 water mixture in a 10 ml volumetric flask. The working standards were prepared daily before the sample analysis. The Intermediate Standard was prepared once a year and will expire when the primary standard expires. The Intermediate Standard (5 ppm Pb & 5 ppm Ag standard) was prepared (9/2/92) by diluting 1.00 ml of 10000 ppm Pb STD (2% HNO_3, ~~J.M.~~ I.V., **Lot: #G-PB0121, expires 7/1/93**) and 1.00 ml of 10000 ppm Ag STD (2% HNO_3, ~~J.M.~~ I.V., **Lot: F-AG0109, expires 7/1/93**) in a 100 ml volumetric flask containing ~2% ULTREX HNO_3. 10 ml of this solution was diluted to 100 ml vol flask containing ~ 2% ULTREX HNO3. This gives 10 ppm Pb and Ag. Finally 50 ml of the 10 ppm solution was diluted to 100 ml vol flask containing ~ 2% HNO3.

The Pb & Ag ICV and CCV check standards were prepared from the **ICV-4 (1290) EPA standard.** The ICV & CCV check standards were prepared by diluting 0.200 ml of ICV-4 in a 10 ml volumetric flask containing ~1% ULTREX HNO_3 water mixture. The Pb & Ag ICV and CCV check standards were prepared daily.

Standards Records

The original standard certificates accepted by PNL QC are in the inorganic group RIDS file maintained by NC Cleavenger (325 Bldg., 300 area). Copies of all calibration standard certificates, standard preparations information, and verifications are maintained in a 3-ring binder located in Laboratory 405, 325 Bldg. labeled ICP-325-405 (system file identification) Standard Log.

This form is changed as standards expire. Reviewer signature/date MWH 3/24/93

9613492.0971

0045426

4 of 42

E-93-22/2978-62

WESTINGHOUSE HANFORD COMPANY
241-T-106 DATA VALIDATION
DISTRIBUTION FORM

SDG: B07JZ4

Document Title Final QA Record Case #: B07JZ4

Fraction: Rad

Document Number: _____ Date: 4/15/94

		DISTRIBUTION			
M. Baker (HCRL)		D. Mantooth (ERL)		D. Wiley (ERL)	
P. Bartley (ERL)		T. McDonald (HCRL)		N. Wold (ERL)	
Y. Chun (HCSEA)		R. Potter (HCRL)		ERL Project File/J. Pawlowski	
B. Downs (HCSEA)		K. Rolla (HCSEA)		Project File/D. Simpson (HCRL)	
M. Gerboth (HCRL)		C. Sater (ERL)		Duplicate Project File/T. Trevino (HCSEA)	
J. Grover (ERL)		M. Schwarz (ERL)		Westinghouse EDMC	X
L. Hammerle (HCSEA)		A. Shen (HCSEA)			
K. Pool (WHC)					

Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		1.6.6.3	Plans Doc. Log		3.4	Original Chemical Data
1.2	Distribution Lists		1.6.6.4	Deliverables Doc. Log		3.5	Original Radiochemical Data
1.3	Project Procedures		1.7	Budget			
1.4	Project Modifications		1.7.1	Downloads		4.1	Task Plan
1.5	Staff		1.7.2	M-113s			
1.5.1	Staff Resumes		1.7.3	A-208s		4.2	Data Pkg. Completeness Verif. Checklist
1.5.2	Staff Training		1.7.4	Budget Status		4.3	Data Valididation Calcs./Annotated DP X
1.5.3	Auth. Former Site Employee		1.7.5	Invoices		4.4	Prelim. QA Records
1.6	QA		1.8	Requisitions			
1.6.1	QA Manual		1.9	Meeting Minutes		4.5	Data Valid. & Qual. Summary Rpts.
1.6.2	QA Implementation		1.10	Record of Telecon		4.5.1	Internal Drafts/Comments/Resol.
1.6.3.1	QA Audits-Deliverables		1.11	Progress Reports		4.5.2	WHC Review Draft Comments/Resol.
1.6.3.2	QA Audits-Files		1.12	Subcontractor (HC)		4.5.3	Final Report
1.6.4.1	Audit Resps. - Deliverables					4.6	Weekly Status Reports
1.6.4.2	Audit Resps. - Files		2.1	Incoming Correspondence		4.7	Weekly Management Reports
1.6.5	QA Training		2.2	Outgoing Correspondence			
1.6.6.1	QA Manual Document Log		2.3	Internal Correspondence			
1.6.6.2	Procedure Document Log						
			3.1	Task Order			
			3.2	Sample Lists			
			3.3	Data Validation Procedures			

9613492.0972

ATTACHMENT 1

Glossary of Data Qualifiers

9613492.0973

ATTACHMENT 1

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported nay not accurately reflect the sample quantitation lirnit.

J - Indicate the compound or analyte was analyzed for and detected. The associated values is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

9613492.0974

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

Entered by: Sandra K. Tadlock Date 3/22/93

Reviewed by: [illegible] Date 3/22/93

Gross Alpha Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	1181	98	< 15				
BO7JZ5	93-02240	Soil	205	17	< 3				
BO7JZ5	93-02240D	Duplicate	187	16	< 3	9			
BO7JZ6	93-02241	Soil	3297	295	< 56				
BO7JZ7	93-02351	Soil	1475	131	< 28				
BO7JZ8	93-02437	Soil	681	62	< 13				
BO7JZ9	93-02438	Soil	808	67	< 10				
BO7KO0	93-02451	Soil	796	55	< 5				
	BS-02240A	Blank Spike	22	2	< 2		23.57	0.24	95
	93-02240MS	Matrix Spike	1444	99	< 6		1228	27	102
	PB-02240	Blank	< 2						

*The error is based on the propogated counting, pipetting, and weighing errors.

**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.

***Relative percent difference

9013962.0975

0022-0036

Entered by: D. K. Todd Date 2/5/93

Reviewed by: [illegible] Date 2/22/93

Gross Beta Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	8.90E+04	2.7E+03	4.9E+02				
BO7JZ5	93-02240	Soil	4.36E+03	1.4E+02	4.4E+01				
BO7JZ5	93-02240D	Duplicate	4.89E+03	1.5E+02	4.5E+01	12			
BO7JZ6	93-02241	Soil	1.09E+06	2.9E+04	1.1E+04				
BO7JZ7	93-02351	Soil	1.12E+05	3.7E+03	1.1E+03				
BO7JZ8	93-02437	Soil	4.24E+04	1.4E+03	4.3E+02				
BO7JZ9	93-02438	Soil	4.88E+04	1.5E+03	4.0E+02				
BO7KO0	93-02451	Soil	2.88E+04	9.1E+02	2.3E+02				
	BS-02240B	Blank Spike	2.17E+02	5.6E+00	1.1E+01		2.34E+02	9.0E+00	93
	93-02240MS	Matrix Spike	2.14E+04	5.6E+02	4.4E+01		1.91E+04	8.4E+02	89
	PB-02240	Blank	1.08E+01	2.5E+00					

*The error is based on the propogated counting, pipetting, and weighing errors.

**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.

***Relative percent difference

9013492.1976

Entered by: D. K. Hadley Date 2/22/93

Reviewed by: [illegible] Date 2/22/93

Strontium-90 Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered	Batch Yield
BO7JZ4	93-02239	Soil	3.55E+04	2.8E+03	1.3E+02					
BO7JZ5	93-02240	Soil	9.83E+02	8.4E+01	9.4E+00					
BO7JZ5	93-02240D	Duplicate	1.31E+03	1.1E+02	9.6E+00	29				
BO7JZ6	93-02241	Soil	4.92E+05	3.8E+04	1.2E+03					
BO7JZ7	93-02351	Soil	4.85E+04	3.7E+03	2.4E+02					
BO7JZ8	93-02437	Soil	1.78E+04	1.4E+03	5.8E+01					
BO7JZ9	93-02438	Soil	2.06E+04	3.0E+03	9.1E+01					
BO7KO0	93-02451	Soil	1.13E+04	9.0E+02	6.3E+01					
	BS-02240Sr	Blank Spike	1.13E+02	8.8E+00	1.2E+00		1.17E+02	5.0E+00	97	
	93-02240MS	Matrix Spike	4.14E+03	3.1E+02	9.4E+00		3.76E+03	1.7E+02	84	
	PB-02240	Blank	5.80E+00	2.5E+00						
	YS-2240Sr	Used to determine batch yield								92%

*The error is based on the propogated counting, pipetting, and weighing errors.

**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.

***Relative percent difference

9413942.0977

200-T-03

Gamma Energy Analysis of 241-T-106 Soils

Activity in pCi/g, dry weight

	93-2437	±	93-2438	±	93-2451	±	93-2451B
WHC ID #	B07JZ8		B07JZ9		B07KO0		Blank
PNL LRB #	54529-56-A		54529-57-A		54529-58-A		54529-59-A
Collection date	12/15/92 9:00		12/15/92 9:00		12/16/92 10:30		1/19/93 16:35
Dry Weight (g)	27.74		27.64		24.51		27.8
K-40	15	6	14	6	14	8	<0.9
Co-60	68.7	0.6	69.7	0.9	78.5	2.2	<0.1
Nb-94	1.5	0.3	1.5	0.3	2.5	0.3	<0.1
Ru-106	ND		ND		ND		
Sb-125	116	2	129	0.7	34.3	1.1	<0.1
Cs-134	<8		<8		<9		
Cs-137	15.3	0.6	12.7	1.0	5.0	0.4	<0.1
Ce-141	2.3	0.4	<2		3.0	0.4	<0.1
Ce-144	<170		<170		<170		<6
Eu-152	35.6	1.1	33.9	2.7	41.7	1.3	<0.1
Eu-154	1,730	40	1,840	40	1,830	110	<0.8
Eu-155	1,670	70	1,860	60	1800	100	<0.5
Np-237	3.4	0.4	3.4	1.0	<10		<1.0
Am-241	515	36	555	38	559	63	<6

The one sigma uncertainties are based on counting statistics. All "<" values are detection limits associated with each not detected analysis. The detection limits are calculated as if the isotope was present at a level that is 2.5 times the square root of twice the average background (approximately 3.3 sigma). The term "ND" is used to denote that there was No Detected activity for Ru-106.

9613492.0978

SDT-007

Gamma Energy Analysis of 241-T-106 Soils

Activity in pCi/g ,dry weight

	93-2239	±	93-2239D	±	93-2240	±	93-2241	±	93-2351	±
WHC ID #	B07JZ4		B07JZ4		B07JZ5		B07JZ6		B07JZ7	
PNL LRB #	54529-52-A		54529-60-A		54529-53-A		54529-54-A		54529-55-A	
Collection date	12/7/92 10:00		12/7/92 10:00		12/7/92 10:00		12/8/92 14:00		12/11/92 10:35	
Dry Weight (g)	27.09		26.90		28.89		30.22		29.25	
K-40	15	8	15	6	19	6	<30		<20	
Co-60	62.4	0.5	77.3	0.6	44.2	0.4	78.4	2.1	80.4	1.6
Nb-94	1.7	0.5	<1.1		0.7	0.1	<8		<1.7	
Ru-106	ND		ND		ND		ND		ND	
Sb-125	29.3	0.6	37.5	0.9	30.3	0.4	428	7	237	4
Cs-134	<6		<9		<5		<60		<9	
Cs-137	4.9	0.3	8.1	0.5	1.9	0.2	1230	20	12.7	0.7
Ce-141	2.5	0.3	4.3	0.6	1.5	0.2	<30		<3	
Ce-144	<130		<190		<80		<1500		<300	
Eu-152	35.2	0.9	40.8	1.1	13.7	0.3	114	26	41	5
Eu-154	1,640	30	1,940	20	591	11	6,290	190	2,450	80
Eu-155	1,600	110	1,960	130	590	6	6,320	620	2,460	210
Np-237	<8		<2		<5		27	5	7.9	2.5
Am-241	536	45	699	37	157	4	1950	210	750	70

The one sigma uncertainties are based on counting statistics. All "<" values are detection limits associated with each not detected analysis. The detection limits are calculated as if the isotope was present at a level that is 2.5 times the square root of twice the average background (approximately 3.3 sigma). The term "ND" is used to denote that there was No detected activity for Ru-106.

9613492.0979

E01-006

Entered by: [illegible] Date 4/8/93

Reviewed by: [illegible] Date 4/8/93

Neptunium Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	3.86E-01	2.5E-02				
BO7JZ5	93-02240	Soil	4.30E-02	5.8E-03				
BO7JZ5	93-02240D	Duplicate	5.50E-02	5.2E-03	24			
BO7JZ6	93-02241	Soil	1.64E+01	9.6E-01				
BO7JZ7	93-02351	Soil	6.75E+00	4.4E-01				
BO7JZ8	93-02437	Soil	1.44E+00	8.6E-02				
BO7JZ9	93-02438	Soil	2.08E+00	1.2E-01				
BO7KO0	93-02451	Soil	9.20E-02	8.2E-03				
	BS-02240	Blank Spike	1.23E+00	7.2E-02		1.12E+00	2.5E-02	110
	93-02240MS	Matrix Spike	1.34E+00	8.3E-02		1.12E+00	2.5E-02	115
	PB-02240	Blank**	1.46E-03	6.0E-04				

*The error is based on the propogated counting, pipetting, and weighing errors.

**The blank is calculated relative to the nominal sample aliquot analyzed (e.i., 10g).

***Relative percent difference

9413192.0400

9413192.0400

Entered by: J. M. Kaiga Date 3/8/93

Reviewed by: J. L. Fadis Date 3/9/93

Tritium Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	< 5		< 4				
BO7JZ4	93-02239D	Soil	< 4		< 4				
BO7JZ5	93-02240	Soil	3	1	< 3				
BO7JZ6	93-02241	Soil	5	2	< 5				
BO7JZ7	93-02351	Soil	5	2	< 4				
BO7JZ8	93-02437	Soil	< 4		< 4				
BO7JZ9	93-02438	Soil	< 4		< 4				
BO7KO0	93-02451	Soil	8	2	< 4				
	BS-02239	Blank Spike	3629	198	< 24		4055	70	90
	MS-02239	Matrix Spike	822	31	< 5		818	14	101
	PB-02239	Blank	< 8						

*The error is based on the propagated counting, pipetting, and weighing errors.

**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.

***Relative percent difference; not calculated because H-3 activity was not detected in the duplicate.

9413942.0981

505-005

9613492.0982

Battelle
Pacific Northwest Laboratories

Project Number _____

Internal Distribution

EW Hoppe
RT Steele
MW Urie
ALO Office
File/LB

Date January 27, 1993

To 241-T-106 Project Manager

From DL Baldwin

Subject Carbon-14 Results on 241-T-106

This work was done by the High-Temperature Furnace dry combustion method, Test Procedure 7-40.42, rev. 0, "Determination of Carbon-14 in Radioactive Liquids, Soils and Sludges". The combustion took place in pure oxygen at 962°C for 20 minutes, with the released $^{14}CO_2$ collected in NaOH collection bubblers. NIST C-14 standard, W-16-3, was used as internal standard for determination of recovery fraction and for determination of counting efficiency. The estimate of precision at these very low levels is ± 20%.

The reported result is in uCi/g, based on the weight of the analyzed portion of sample. In all cases, a single sample portion was analyzed, the resulting collection bubbler solution measured in duplicate, and the values averaged.

Table of Results

ALO No.	Weight (g)	C-14 (μCi/g)
93-02239	0.1929	5.5e-04
93-02240	0.0933	2.5e-04
93-02241	0.1271	9.0e-05
93-02351	0.1108	6.7e-05
93-02437	0.0929	1.3e-04
93-02438	0.1324	1.2e-04
93-02451	0.1794	1.5e-04
93-02451D (Dup)	0.1463	1.3e-04

Narrative: There are no identified outliers among the samples. Among the system standards, the first standard was quite low, 69.1% recovery, while the remaining standards were slightly above 100% recovery. This low first result is unusual and there is no apparent experimental reason for the result. The matrix spike gave a very good result, 105% recovery, indicating no matrix interference. The sample results are all very low, all but one being within twice the blank level, therefore the uncertainty must be set high, 20%.

E54-1900-001 (10/89)

DATA REPORT
PNL Analytical Chemistry Lab.
Radioanalytical Group, 325 Building

04/ 29/ 93

Cognizant scientist: F O Hanny Date: 4/29/93

Reviewer: L R Greenwood Date: 4/30/93

ALO #	Customer ID	Selenium 79 pCi/g (Dry)
93-02239	B07JZ4	< 6
93-02240	B07JZ5	< 6
93-02241	B07JZ6	< 5
93-02241NC	B07JZ6	< 5
93-02351	B07JZ7	< 6
93-02437	B07JZ8	< 6
93-02438	B07JZ9	< 10
93-02451	B07K00	< 7
93-02451NC	B07JK00	< 5
Digestion Prep Blank NC		< 5
Reagent Blank		< 0.2
Reagent Blank		< 0.2

NC= No carrier added before sample prep.
Carrier was added at time of analysis.

Filename: PNL 241-T-106C

T-106 SOILS ANALYSIS

Tc-99 and Uranium determinations

March 11, 1993; Revised April 26, 1993

PNL sample I.D. Number	Dry Wgt grams	Digest Dil. Factor (a)	ICP/MS Analysis No.	Analysis Dilution Factor (b)	Tc-99, ng/ml solution analyzed	Ru Corrn Factor (c)	Tc-99, ng/g soil (d)	Tc-99, ng/g spiked	Tc-99, spike recovery, % (e)	Tc-99, pCi/g, dry soil	ICP/MS Analysis No.	U, ng/ml solution analyzed	U, ng/g soil (d)	U, ng/g spiked	U, spike recovery, % (e)	U, pCi/g (total), dry soil (f)
93-02351/2437 Blk	0.9887	202.30	3312r2	1.053x	0.003	0.97	0.7			12	3312r2	0.0119±0.003	2.5±0.6			0.0017±0.0004
93-02351/2437 Blk Spike	0.9916	201.70	3312r6	1.053x	0.0146	0.90	2.8	7.89	26	47	3312r6	0.0410	8.7	7.66	78	0.00808
93-02239	1.0473	191.17	3218q10	4x	0.00845	0.00	<1			<17	3218q10	1.13	862			0.602
93-02240	1.0321	193.84	3218q16	4x	0.0097±0.0020	0.00	<1			<17	3218q16	0.598	463			0.324
93-02241	1.1289	177.30	3311a3	1.053x	0.047	0.00	<1			<17	3309a3**	15.0	2800			1.98
93-02351	1.0893	183.56	3218q11	4x	0.0181	0.60	8.0			138	3218q11	21.1	15500			10.8
93-02351D (duplicate)	1.1770	170.48	3218q21	4x	0.0212±0.0023	0.56	8.1±0.9			137±15	3218q21	24.4	16600			11.6
93-02437	0.9671	207.03	3218q7	4x	0.0160	0.53	7.0			119	3218q7	9.83	8140			6.69
93-02437S (spike)	1.1371	178.16	3218q18	4x	0.113±0.014	0.93	75±9	67.5	101	1270±160	3218q18	10.3	7320	144	-570	6.11
93-02438	1.1590	172.56	3218q4	4x	0.0260	0.65	11.7			198	3218q4	10.6	7320			6.11
93-02451	1.2435	165.28	3218q14	4x	0.0246±0.0028	0.50	8.1±0.9			138±15	3218q14	0.928	613			0.428
0.004986 ppb Tc	N/A	N/A	3218q5		0.00543											
0.04986 ppb Tc	N/A	N/A	3311a5		0.0492											
0.0996 ppb Tc	N/A	N/A	3218q17		0.0945						3218q17					
25.3 pCi/L U STD	N/A	N/A									3218q20	24.0 pCi/L				
25.3 pCi/L U STD	N/A	N/A									3309a6	24.6 pCi/L				
5 ppb U STD	N/A	N/A									3218q9	5.05				

(a) units of mL/g moist soil samples
(b) additional dilution for analysis
(c) Ruthenium Correction Factor: (Counts @ 99 - ((12.7/17.1)*cts @101))/Counts @ 99
(d) moist soil concentration corrected for preparation dilution factor and additional dilution for analysis.
(e) = ([Spiked Sample] - [Sample]) / [Spike]
(f) all uranium found to be natural isotopic abundance. Total uranium activity calculated using following formula: pCi/g = [U-238]*0.000336/0.481

**Dilution factor for 3309a3 = 4X

Entered by: N Wyatt Date: 4-7-93

Reviewed by: J. H. Kage Date: 4-7-93

AMERICIUM ANALYSIS DATA FOR 241-T-106

Client Sample ID	Program Sample ID	Sample Type	Am-241 pCi/g	RPD	Am-241 Spike pCi	% Recovery
B07JZ4	93-02239	Soil	NR**			
B07JZ5	93-02240	Soil	110			
	93-02240MS	Matrix Spike	NR**			
B07JZ5	93-02240D	Duplicate	170	41		
	PB-02240	Blank*	<.1			
	BS-02240	Blank Spike*	19		10	190
B07JZ6	93-02241	Soil	2300			
B07JZ7	93-02351	Soil	810			
B07JZ8	93-02437	Soil	330			
B07JZ9	93-02438	Soil	470			
B07KC0	93-02451	Soil	340			

* Reported in pCi.

** NR - Not Reported. The Am-243 tracer was not detectable from the spectrum of these samples so no Am-241 result could be calculated.

NW 4-13-93

Due to the analytical problems for this batch, uncertainties for the individual measurements are not reported. The estimated overall uncertainty of these results is 50%.

E:\T106\AMT106

Entered by: [illegible] Date: 2-5-93

Reviewed by: [illegible] Date: 2/5/93

PLUTONIUM ANALYSIS DATA FOR 241-T-106

Batch #1

Client Sample ID	Program Sample ID	Sample Type	Pu-239+240 pCi/g	+/- 1 sigma	Pu-239+240 RPD	Pu-238 pCi/g	+/- 1 sigma	Pu-238 RPD	Pu-239 Spike pCi	+/- 1 sigma	% Recovery
B07JZ4	93-02239	Soil	2.72E+02	1.10E+01		4.29E+01	2.32E+00				
B07JZ5	93-02240	Soil	3.49E+01	1.37E+00		4.20E+00	2.70E-01				
	93-02240MS	Matrix Spike	1.53E+02	5.20E+00		6.52E+00	3.24E-01		1.19E+02	3.30E+00	97
B07JZ5	93-02240D	Duplicate	4.00E+01	1.53E+00	14	5.29E+00	3.06E-01	23			
	PB-02240	Blank*	9.07E-02	3.31E-02		1.03E-01	3.70E-02				
	BS-02240	Blank Spike*	1.25E+01	3.87E-01		3.52E-01	2.64E-02		1.19E+01	7.00E-02	105
B07JZ6	93-02241	Soil	1.17E+03	4.48E+01		2.28E+02	1.07E+01				
B07JZ7	93-02351	Soil	5.18E+02	1.44E+01		9.26E+01	2.90E+00				
B07JZ8	93-02437	Soil	1.76E+02	5.82E+00		2.75E+01	9.80E-01				
B07JZ9	93-02438	Soil	2.14E+02	6.70E+00		3.56E+01	1.25E+00				
B07K00	93-02451	Soil	1.36E+02	4.61E+00		1.83E+01	6.68E-01				

* Reported in pCi.

One sigma uncertainties are the propagated error of individual measurements.
Using a sample size similar to the lowest activity sample results in a detection limit of approximately 5 E-2 pCi/g for Pu-239+240 and for Pu-238.

E:\T106\PUT106

9623192.0906

B03-003

9613492.0987

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda, and other documentation completed as a result of the data validation.

(insert calculation notes, etc. here)

9613492.0988

ATTACHMENT 3

Summary of Data Qualifications

Attachment 3 - Summary of Data Qualifications

This attachment provides a complete summary of all qualifications applied as result of the validation.

Total Alpha (CRDL =10pCi/g)

Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
BO7JZ4	1181	1181	1181	
BO7JZ5	205	205	205	
BO7JZ5D	187	187	187	
BO7JZ6	3297	3297	3297	
BO7JZ7	1475	1475	1475	
BO7JZ8	681	681	681	
BO7JZ9	808	808	808	
BO7K00	796	796	796	

	Total Beta (CRDL =15pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4	8.90E+04	8.90E+04	8.90E+04	
BO7JZ5	4.36E+03	4.36E+03	4.36E+03	
BO7JZ5D	4.89E+03	4.89E+03	4.89E+03	
BO7JZ6	1.09E+06	1.09E+06	1.09E+06	
BO7JZ7	1.12E+05	1.12E+05	1.12E+05	
BO7JZ8	4.24E+04	4.24E+04	4.24E+04	
BO7JZ9	4.88E+04	4.88E+04	4.88E+04	
BO7K00	2.88E+04	2.88E+04	2.88E+04	

	Strontium-90 (CRDL = 1 pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4	3.55E+04	3.55E+04	3.55E+04	
BO7JZ5	9.84E-02	9.83E-02	9.83E-02	
BO7JZ5D	1.31E+03	1.31E+03	1.31E+03	
BO7JZ6	4.93E+05	4.92E+05	4.92E+05	
BO7JZ7	4.85E+04	4.85E+04	4.85E+04	
BO7JZ8	1.78E+04	1.78E+04	1.78E+04	
BO7JZ9	2.05E+04	2.06E+04	2.06E+04	
BO7K00	1.13E+04	1.13E+04	1.13E+04	

9613492.0990

	Cobalt-60 (CRDL = 0.05 pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4	58.5 wet wt, 62.4 dry wt	58.5	62.4	J
BO7JZ4D	7.73E+01		77.3	J
BO7JZ5	4.42E+01		44.2	J
BO7JZ6			78.4	J
BO7JZ7	7.50E+01		80.4	J
BO7JZ8	6.87E+01		68.7	J
BO7JZ9	7.04E+01		69.7	J
BO7K00	8.01E+01		78.5	J

	Cesium-137 (CRDL = 0.1 pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4	4.6 wet wt, 4.9 dry wt	4.6	4.9	J
BO7JZ4D	8.10E+00		8.1	J
BO7JZ5	1.90E+00		1.9	J
BO7JZ6			1230	J
BO7JZ7	1.27E+01		12.7	J
BO7JZ8	1.53E+01		15.3	J
BO7JZ9	1.34E+01		12.7	J
BO7K00	5.00E+00		5.0	J

	Neptunium-237 (CRDL = 1 pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4	3.86E-01	3.86E-01	3.86E-01	
BO7JZ5	4.30E-02	4.30E-02	4.30E-02	R
BO7JZ5D	5.50E-02	5.50E-02	5.50E-02	
BO7JZ6	1.64E+01	1.64E+01	1.64E+01	
BO7JZ7	6.75E+00	6.75E+00	6.75E+00	
BO7JZ8	1.44E+00	1.44E+00	1.44E+00	
BO7JZ9	2.08E+00	2.08E+00	2.08E+00	
BO7K00	9.20E-02	9.20E-02	9.20E-02	

9613492.0991

	Tritium (CRDL = 400 pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4			<5	UJ
BO7JZ5	3.498 (MDA)	3.494 (MDA)	<4	UJ
BO7JZ5D	3.258	3.256	3	J
BO7JZ6			5	J
BO7JZ7			5	J
BO7JZ8			<4	UJ
BO7JZ9			<4	UJ
BO7K00			8	J

	Carbon-14 (CRDL = 30 pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4	5.46E-04	5.50E-04	5.5E-04	
BO7JZ5	2.5E-04	2.5E-04	2.5E-04	
BO7JZ6	9.0E-05	9.0E-05	9.0E-05	
BO7JZ7	6.7E-05	6.7E-05	6.7E-05	
BO7JZ8	1.3E-04	1.3E-04	1.3E-04	
BO7JZ9	1.2E-04	1.2E-04	1.2E-04	
BO7K00	1.5E-04	1.5E-04	1.5E-04	
BO7K00D	1.3E-04	1.3E-04	1.3E-04	

	Selenium-79 (CRDL = pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4			<6	UJ
BO7JZ5			<6	UJ
BO7JZ6			<5	UJ
BO7JZ7			<6	UJ
BO7JZ8			<6	UJ
BO7JZ9			<10	UJ
BO7K00			<7	UJ

9613492.0992

	Technetium-99 (CRDL =15pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4			<17	R
BO7JZ5			<17	R
BO7JZ6			<17	R
BO7JZ7			135	R
BO7JZ7D			137	R
BO7JZ8			119	R
BO7JZ9			198	R
BO7K00			138	R

CRDL = 1 ug/g

	Total U		pCi/g	
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4			0.602	R
BO7JZ5			0.324	R
BO7JZ5D			1.96	R
BO7JZ6			10.8	R
BO7JZ7			11.6	R
BO7JZ8			5.69	R
BO7JZ9			5.11	R
BO7K00			0.428	R

	Americium-241 (CRDL = 1 pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4			NR	R
BO7JZ5			110	R
BO7JZ5D			170	R
BO7JZ6			2300	R
BO7JZ7			810	R
BO7JZ8			330	R
BO7JZ9			470	R
BO7K00			340	R

9613492.0993

	Plutonium-238 (CRDL = pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4	4.29E+01	4.29E+01	4.29E+01	
BO7JZ5	4.20E+00	4.20E+00	4.20E+00	
BO7JZ5D	5.29E+00	5.29E+00	5.29E+00	
BO7JZ6	2.28E+02	2.28E+02	2.28E+02	
BO7JZ7	9.26E+01	9.26E+01	9.26E+01	
BO7JZ8	2.75E+01	2.75E+01	2.75E+01	
BO7JZ9	3.56E+01	3.56E+01	3.56E+01	
BO7K00	1.83E+01	1.83E+01	1.83E+01	

	Plutonium-239/240 (CRDL = 1 pCi/g)			
Customer I.D. #	**Calculated Results**	**Raw Data Results**	**Reported Results**	**Qualifier**
BO7JZ4	2.72E+02	2.72E+02	2.72E+02	
BO7JZ5	3.61E+01	3.49E+01	3.49E+01	
BO7JZ5D	4.00E+01	4.00E+01	4.00E+01	
BO7JZ6	1.17E+03	1.17E+03	1.17E+03	
BO7JZ7	5.18E+02	5.18E+02	5.18E+02	
BO7JZ8	1.76E+02	1.76E+02	1.76E+02	
BO7JZ9	2.14E+02	2.14E+02	2.14E+02	
BO7K00	1.36E+02	1.36E+02	1.36E+02	

9613492.0994

Attachment 4 - As Qualified Data Summary

This attachment provides a copy of the as-received sample concentration reports, with data qualifiers assigned.

(insert photocopied pages here)

Attachment 3 - Summary of Data Qualifications

This attachment provides a complete summary of all qualifications applied as result of the validation.

Total Alpha (CRDL = pCi/g)

Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	1181	1181	1181	
B07JZ5	205	205	205	
B07JZ5D	187	187	187	
B07JZ6	3297	3297	3297	
B07JZ7	1475	1475	1475	
B07JZ8	681	681	681	
B07JZ9	808	808	808	
B07K00	796	796	796	

	Total Beta (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	8.90E+04	8.90E+04	8.90E+04	
B07JZ5	4.36E-03	4.36E+03	4.36E+03	
B07JZ5D	4.89E-03	4.89E+03	4.89E+03	
B07JZ6	1.09E-06	1.09E+06	1.09E+06	
B07JZ7	1.12E+05	1.12E+05	1.12E+05	
B07JZ8	4.24E+04	4.24E+04	4.24E+04	
B07JZ9	4.88E+04	4.88E+04	4.88E+04	
B07K00	2.88E-04	2.88E+04	2.88E+04	

	Strontium-90 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	3.55E+04	3.55E+04	3.55E+04	
B07JZ5	9.84E-02	9.83E-02	9.83E-02	
B07JZ5D	1.31E+03	1.31E+03	1.31E+03	
B07JZ6	4.93E+05	4.92E+05	4.92E+05	
B07JZ7	4.85E+04	4.85E+04	4.85E+04	
B07JZ8	1.78E+04	1.78E+04	1.78E+04	
B07JZ9	2.05E+04	2.06E+04	2.06E+04	
B07K00	1.13E+04	1.13E+04	1.13E+04	

9613492.0996

	Cobalt-60 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	58.5 wet wt, 62.4 dry wt	58.5	62.4	J
B07JZ4D	7.73E+01		77.3	J
B07JZ5	4.42E+01		44.2	J
B07JZ6			78.4	J
B07JZ7	7.50E+01		80.4	J
B07JZ8	6.87E+01		68.7	J
B07JZ9	7.04E+01		69.7	J
B07K00	8.01E+01		78.5	J

	Cesium-137 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	4.6 wet wt, 4.9 dry wt	4.6	4.9	J
B07JZ4D	8.10E+00		8.1	J
B07JZ5	1.90E+00		1.9	J
B07JZ6			1230	J
B07JZ7	1.27E+01		12.7	J
B07JZ8	1.53E+01		15.3	J
B07JZ9	1.34E+01		12.7	J
B07K00	5.00E+00		5.0	J

	Neptunium-237 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	3.86E-01	3.86E-01	3.86E-01	~~J~~
B07JZ5	4.30E-02	4.30E-02	4.30E-02	R
B07JZ5D	5.50E-02	5.50E-02	5.50E-02	~~J~~
B07JZ6	1.64E+01	1.64E+01	1.64E+01	~~J~~
B07JZ7	6.75E+00	6.75E+00	6.75E+00	~~J~~
B07JZ8	1.44E+00	1.44E+00	1.44E+00	~~J~~
B07JZ9	2.08E+00	2.08E+00	2.08E+00	~~J~~
B07K00	9.20E-02	9.20E-02	9.20E-02	~~J~~

9613492.0997

	Tritium (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4			<5	J
B07JZ5	3.498 (MDA)	3.494 (MDA)	<4	J
B07JZ5D	3.258	3.256	3	J
B07JZ6			5	J
B07JZ7			5	J
B07JZ8			<4	J
B07JZ9			<4	J
B07K00			8	J

	Carbon-14 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	5.46E-04	5.50E-04	5.5E-04	J
B07JZ5	2.5E-04	2.5E-04	2.5E-04	J
B07JZ6	9.0E-05	9.0E-05	9.0E-05	J
B07JZ7	6.7E-05	6.7E-05	6.7E-05	J
B07JZ8	1.3E-04	1.3E-04	1.3E-04	J
B07JZ9	1.2E-04	1.2E-04	1.2E-04	J
B07K00	1.5E-04	1.5E-04	1.5E-04	J
B07K00D	1.3E-04	1.3E-04	1.3E-04	J

	Selenium-79 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4			<6	J
B07JZ5			<6	J
B07JZ6			<5	J
B07JZ7			<6	J
B07JZ8			<6	J
B07JZ9			<10	J
B07K00			<7	J

9613492.0998

	Technetium-99 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4			<17	R
B07JZ5			<17	R
B07JZ6			<17	R
B07JZ7			135	R
B07JZ7D			137	R
B07JZ8			119	R
B07JZ9			198	R
B07K00			138	R

	Total U (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4			0.602	R
B07JZ5			0.324	R
B07JZ5D			1.96	R
B07JZ6			10.8	R
B07JZ7			11.6	R
B07JZ8			5.69	R
B07JZ9			5.11	R
B07K00			0.428	R

	Americium-241 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4			NR	R
B07JZ5			110	R
B07JZ5D			170	R
B07JZ6			2300	R
B07JZ7			810	R
B07JZ8			330	R
B07JZ9			470	R
B07K00			340	R

9613492.0999

	Plutonium-238 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	4.29E+01	4.29E+01	4.29E+01	
B07JZ5	4.20E+00	4.20E+00	4.20E+00	
B07JZ5D	5.29E+00	5.29E+00	5.29E+00	
B07JZ6	2.28E+02	2.28E+02	2.28E+02	
B07JZ7	9.26E+01	9.26E+01	9.26E+01	
B07JZ8	2.75E+01	2.75E+01	2.75E+01	
B07JZ9	3.56E+01	3.56E+01	3.56E+01	
B07K00	1.83E+01	1.83E+01	1.83E+01	

	Plutonium-239/240 (CRDL = pCi/g)			
Customer I.D. #	Calculated Results	Raw Data Results	Reported Results	Qualifier
B07JZ4	2.72E+02	2.72E+02	2.72E+02	
B07JZ5	3.61E+01	3.49E+01	3.49E+01	
B07JZ5D	4.00E+01	4.00E+01	4.00E+01	
B07JZ6	1.17E+03	1.17E+03	1.17E+03	
B07JZ7	5.18E+02	5.18E+02	5.18E+02	
B07JZ8	1.76E+02	1.76E+02	1.76E+02	
B07JZ9	2.14E+02	2.14E+02	2.14E+02	
B07K00	1.36E+02	1.36E+02	1.36E+02	

Attachment 4 - As Qualified Data Summary

This attachment provides a copy of the as-received sample concentration reports, with data qualifiers assigned.

(insert photocopied pages here)

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda, and other documentation completed as a result of the data validation.

(insert calculation notes, etc. here)

9613492.1002

ATTACHMENT 4

As Qualified Data Summary

Entered by: Sandra K. Fadiff Date 2/22/93

Reviewed by: [illegible] Date 3/22/93

QA checks/results in attachment 5

Gross Alpha Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	1181	98	< 15				
BO7JZ5	93-02240	Soil	205	17	< 3				
BO7JZ5	93-02240D	Duplicate	187	16	< 3	9			
BO7JZ6	93-02241	Soil	3297	295	< 56				
BO7JZ7	93-02351	Soil	1475	131	< 28				
BO7JZ8	93-02437	Soil	681	62	< 13				
BO7JZ9	93-02438	Soil	808	67	< 10				
BO7KO0	93-02451	Soil	796	55	< 5				
	BS-02240A	Blank Spike	22	2	< 2		23.57	0.24	95
	93-02240MS	Matrix Spike	1444	99	< 6		1228	27	102
	PB-02240	Blank	< 2						

*The error is based on the propogated counting, pipetting, and weighing errors.

**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.

***Relative percent difference

9303192.0015

B02-008

Entered by: D. K. Todd Date 2/5/93

Reviewed by: [illegible] Date 2/22/93

QA checks/results in attachment 5

Gross Beta Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	8.90E+04	2.7E+03	4.9E+02				
BO7JZ5	93-02240	Soil	4.36E+03	1.4E+02	4.4E+01				
BO7JZ5	93-02240D	Duplicate	4.89E+03	1.5E+02	4.5E+01	12			
BO7JZ6	93-02241	Soil	1.09E+06	2.9E+04	1.1E+04				
BO7JZ7	93-02351	Soil	1.12E+05	3.7E+03	1.1E+03				
BO7JZ8	93-02437	Soil	4.24E+04	1.4E+03	4.3E+02				
BO7JZ9	93-02438	Soil	4.88E+04	1.5E+03	4.0E+02				
BO7KO0	93-02451	Soil	2.88E+04	9.1E+02	2.3E+02				
	BS-02240B	Blank Spike	2.17E+02	5.6E+00	1.1E+01		2.34E+02	9.0E+00	93
	93-02240MS	Matrix Spike	2.14E+04	5.6E+02	4.4E+01		1.91E+04	8.4E+02	89
	PB-02240	Blank	1.08E+01	2.5E+00					

*The error is based on the propogated counting, pipetting, and weighing errors.

**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.

***Relative percent difference

Entered by: D K Hodges Date 2/22/93

Reviewed by: [illegible] Date 2/22/93

QA checks/results in attachment 5

Strontium-90 Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered	Batch Yield
BO7JZ4	93-02239	Soil	3.55E+04	2.8E+03	1.3E+02					
BO7JZ5	93-02240	Soil	9.83E+02	8.4E+01	9.4E+00					
BO7JZ5	93-02240D	Duplicate	1.31E+03	1.1E+02	9.6E+00	29				
BO7JZ6	93-02241	Soil	4.92E+05	3.8E+04	1.2E+03					
BO7JZ7	93-02351	Soil	4.85E+04	3.7E+03	2.4E+02					
BO7JZ8	93-02437	Soil	1.78E+04	1.4E+03	5.8E+01					
BO7JZ9	93-02438	Soil	2.06E+04	3.0E+03	9.1E+01					
BO7KO0	93-02451	Soil	1.13E+04	9.0E+02	6.3E+01					
	BS-02240Sr	Blank Spike	1.13E+02	8.8E+00	1.2E+00		1.17E+02	5.0E+00	97	
	93-02240MS	Matrix Spike	4.14E+03	3.1E+02	9.4E+00		3.76E+03	1.7E+02	84	
	PB-02240	Blank	5.80E+00	2.5E+00						
	YS-2240Sr	Used to determine batch yield								92%

*The error is based on the propogated counting, pipetting, and weighing errors.

**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.

***Relative percent difference

9013942.1405

E03-003

QA checks/results in attachment 5

Gamma Energy Analysis of 241-T-106 Soils

Activity in pCi/g ,dry weight

	93-2239	±	93-2239D	±	93-2240	±	93-2241	±	93-2351	±
WHC ID #	B07JZ4		B07JZ4		B07JZ5		B07JZ6		B07JZ7	
PNL LRB #	54529-52-A		54529-60-A		54529-53-A		54529-54-A		54529-55-A	
Collection date	12/7/92 10:00		12/7/92 10:00		12/7/92 10:00		12/8/92 14:00		12/11/92 10:35	
Dry Weight (g)	27.09		26.90		28.89		30.22		29.25	
K-40	15	8	15	6	19	6	<30		<20	
Co-60	62.4	0.5	77.3	0.6	44.2	0.4	78.4	2.1	80.4	1.6
Nb-94	1.7	0.5	<1.1		0.7	0.1	<8		<1.7	
Ru-106	ND		ND		ND		ND		ND	
Sb-125	29.3	0.6	37.5	0.9	30.3	0.4	428	7	237	4
Cs-134	<6		<9		<5		<60		<9	
Cs-137	4.9	0.3	8.1	0.5	1.9	0.2	1230	20	12.7	0.7
Ce-141	2.5	0.3	4.3	0.6	1.5	0.2	<30		<3	
Ce-144	<130		<190		<80		<1500		<300	
Eu-152	35.2	0.9	40.8	1.1	13.7	0.3	114	26	41	5
Eu-154	1,640	30	1,940	20	591	11	6,290	190	2,450	80
Eu-155	1,600	110	1,960	130	590	6	6,320	620	2,460	210
Np-237	<8		<2		<5		27	5	7.9	2.5
Am-241	536	45	699	37	157	4	1950	210	750	70

The one sigma uncertainties are based on counting statistics. All "<" values are detection limits associated with each not detected analysis. The detection limits are calculated as if the isotope was present at a level that is 2.5 times the square root of twice the average background (approximately 3.3 sigma). The term "ND" is used to denote that there was No detected activity for Ru-106.

JP 2-25-94

9613492.1006

E04-006

QA checks / results in attachment 5

Gamma Energy Analysis of 241-T-106 Soils

Activity in pCi/g, dry weight

	93-2437	±	93-2438	±	93-2451	±	93-2451B
WHC ID #	B07JZ8		B07JZ9		B07KO0		Blank
PNL LRB #	54529-56-A		54529-57-A		54529-58-A		54529-59-A
Collection date	12/15/92 9:00		12/15/92 9:00		12/16/92 10:30		1/19/93 16:35
Dry Weight (g)	27.74		27.64		24.51		27.8
K-40	15	6	14	6	14	8	<0.9
Co-60	68.7	0.6	69.7	0.9	78.5	2.2	<0.1
Nb-94	1.5	0.3	1.5	0.3	2.5	0.3	<0.1
Ru-106	ND		ND		ND		
Sb-125	116	2	129	0.7	34.3	1.1	<0.1
Cs-134	<8		<8		<9		
Cs-137	15.3	0.6	12.7	1.0	5.0	0.4	<0.1
Ce-141	2.3	0.4	<2		3.0	0.4	<0.1
Ce-144	<170		<170		<170		<6
Eu-152	35.6	1.1	33.9	2.7	41.7	1.3	<0.1
Eu-154	1,730	40	1,840	40	1,830	110	<0.8
Eu-155	1,670	70	1,860	60	1800	100	<0.5
Np-237	3.4	0.4	3.4	1.0	<10		<1.0
Am-241	515	36	555	38	559	63	<6

The one sigma uncertainties are based on counting statistics. All "<" values are detection limits associated with each not detected analysis. The detection limits are calculated as if the isotope was present at a level that is 2.5 times the square root of twice the average background (approximately 3.3 sigma). The term "ND" is used to denote that there was No Detected activity for Ru-106.

JP 2-25-94

9613492.1007

204-007

QA checks/results in attachment 5

Entered by: Wanda K. Jacobs Date 4/8/93

Reviewed by: J. M. Kaye Date 4/8/93

Neptunium Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	3.86E-01	2.5E-02				
BO7JZ5	93-02240	Soil	4.30E-02	5.8E-03				
BO7JZ5	93-02240D	Duplicate	5.50E-02	5.2E-03	24			
BO7JZ6	93-02241	Soil	1.64E+01	9.6E-01				
BO7JZ7	93-02351	Soil	6.75E+00	4.4E-01				
BO7JZ8	93-02437	Soil	1.44E+00	8.6E-02				
BO7JZ9	93-02438	Soil	2.08E+00	1.2E-01				
BO7KO0	93-02451	Soil	9.20E-02	8.2E-03				
	BS-02240	Blank Spike	1.23E+00	7.2E-02		1.12E+00	2.5E-02	110
	93-02240MS	Matrix Spike	1.34E+00	8.3E-02		1.12E+00	2.5E-02	115
	PB-02240	Blank**	1.46E-03	6.0E-04				

*The error is based on the propogated counting, pipetting, and weighing errors.
**The blank is calculated relative to the nominal sample aliquot analyzed (e.i., 10g).
***Relative percent difference

QA checks/results in attachments

Entered by: J. H. Kaiser Date 3/8/93

Reviewed by: J. K. Fadeff Date 3/9/93

Tritium Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	U < 5		< 4				
BO7JZ4	93-02239D	Soil	U < 4		< 4				
BO7JZ5	93-02240	Soil	U 3	1	< 3				
BO7JZ6	93-02241	Soil	— 5	2	< 5				
BO7JZ7	93-02351	Soil	— 5	2	< 4				
BO7JZ8	93-02437	Soil	U < 4		< 4				
BO7JZ9	93-02438	Soil	U < 4		< 4				
BO7KO0	93-02451	Soil	— 8	2	< 4				
	BS-02239	Blank Spike	3629	198	< 24		4055	70	90
	MS-02239	Matrix Spike	822	31	< 5		818	14	101
	PB-02239	Blank	< 8						

*The error is based on the propagated counting, pipetting, and weighing errors.

**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.

***Relative percent difference; not calculated because H-3 activity was not detected in the duplicate.

2-22-94

9603192.1109

BO7-C05

9613492.1010

QA checks/results in attachments

Battelle
Pacific Northwest Laboratories

Project Number _____

Internal Distribution

EW Hoppe
RT Steele
MW Urie
ALO Office
File/LB

Date January 27, 1993

To 241-T-106 Project Manager

From DL Baldwin DL Baldwin

Subject Carbon-14 Results on 241-T-106

This work was done by the High-Temperature Furnace dry combustion method, Test Procedure 7-40.42, rev. 0, "Determination of Carbon-14 in Radioactive Liquids, Soils and Sludges". The combustion took place in pure oxygen at 962°C for 20 minutes, with the released $^{14}CO_2$ collected in NaOH collection bubblers. NIST C-14 standard, W-16-3, was used as internal standard for determination of recovery fraction and for determination of counting efficiency. The estimate of precision at these very low levels is ± 20%.

The reported result is in uCi/g, based on the weight of the analyzed portion of sample. In all cases, a single sample portion was analyzed, the resulting collection bubbler solution measured in duplicate, and the values averaged.

Table of Results

ALO No.	Weight (g)	C-14 (μCi/g)
93-02239	0.1929	5.5e-04
93-02240	0.0933	2.5e-04
93-02241	0.1271	9.0e-05
93-02351	0.1108	6.7e-05
93-02437	0.0929	1.3e-04
93-02438	0.1324	1.2e-04
93-02451	0.1794	1.5e-04
93-02451D (Dup)	0.1463	1.3e-04

Narrative: There are no identified outliers among the samples. Among the system standards, the first standard was quite low, 69.1% recovery, while the remaining standards were slightly above 100% recovery. This low first result is unusual and there is no apparent experimental reason for the result. The matrix spike gave a very good result, 105% recovery, indicating no matrix interference. The sample results are all very low, all but one being within twice the blank level, therefore the uncertainty must be set high, 20%.

E54-1900-001 (10/89)

E11-003

9613492.1011

QA checks results in Attachment 5

DATA REPORT
PNL Analytical Chemistry Lab.
Radioanalytical Group, 325 Building

04/ 29/ 93

Cognizant scientist: F O Hoffman Date: 4/29/93

Reviewer: L R Greenwood Date: 4/30/93

ALO #	Customer ID	Selenium 79 pCi/g (Dry)
93-02239	B07JZ4	< 6 UJ
93-02240	B07JZ5	< 6
93-02241	B07JZ6	< 5
93-02241NC	B07JZ6	< 5
93-02351	B07JZ7	< 6
93-02437	B07JZ8	< 6
93-02438	B07JZ9	< 10
93-02451	B07K00	< 7
93-02451NC	B07JK00	< 5
Digestion Prep Blank NC		< 5
Reagent Blank		< 0.2
Reagent Blank		< 0.2 UJ

NC= No carrier added before sample prep.
Carrier was added at time of analysis.

E10-002

QA checks / results in Attachment 5

Filename: PNL 241-T-106C

T-106 SOILS ANALYSIS

Tc-99 and Uranium determinations

March 11, 1993; Revised April 26, 1993

PNL sample I.D. Number	Dry Wgt grams	Digest Dil. Factor (a)	ICP/MS Analysis No.	Analysis Dilution Factor (b)	Tc-99, ng/ml solution analyzed	Ru Corrxn Factor (c)	Tc-99, ng/g soil (d)	Tc-99, ng/g spiked	Tc-99, spike recovery, % (e)	Tc-99, pCi/g, dry soil
93-02351/2437 Blk	0.9887	202.30	3312r2	1.053x	0.003	0.97	0.7			1.2
93-02351/2437 Blk Spike	0.9916	201.70	3312r6	1.053x	0.0146	0.90	2.8	7.89	26	4.7
93-02239	1.0473	191.17	3218q10	4x	0.00845	0.00	<1		U	<1.7
93-02240	1.0321	193.84	3218q16	4x	0.0097±0.0020	0.00	<1		U	<1.7
93-02241	1.1289	177.30	3311a3	1.053x	0.047	0.00	<1		U	<1.7
93-02351	1.0893	183.58	3218q11	4x	0.0181	0.60	8.0		-	13.8
93-02351D (duplicate)	1.1770	170.46	3218q21	4x	0.0212±0.0023	0.56	8.1±0.9			13.7±1.6
93-02437	0.9671	207.03	3218q7	4x	0.0160	0.53	7.0		-	11.9
93-02437S (spike)	1.1371	178.18	3218q18	4x	0.113±0.014	0.93	75±9	67.5	101	127.0±16.0
93-02438	1.1590	172.58	3218q4	4x	0.0260	0.65	11.7		-	18.8
93-02451	1.2435	165.28	3218q14	4x	0.0246±0.0028	0.50	8.1±0.9		-	13.6±1.6
0.004986 ppb Tc	N/A	N/A	3218q5		0.00543					
0.04986 ppb Tc	N/A	N/A	3311a5		0.0492					
0.0998 ppb Tc	N/A	N/A	3218q17		0.0945					
25.3 pCi/L U STD	N/A	N/A								
25.3 pCi/L U STD	N/A	N/A								
8 ppb U STD	N/A	N/A								

ICP/MS Analysis No.	U, ng/ml solution analyzed	U, ng/g soil (d)	U, ng/g spiked	U, spike recovery, % (e)	U, pCi/g (total), dry soil (f)
3312r2	0.0119±0.003	2.5±0.6			0.0017±0.0004
3312r6	0.0410	8.7	7.66	78	0.00608
3218q10	1.13	862			0.602
3218q16	0.598	463			0.324
3309a3**	15.0	2800			1.96
3218q11	21.1	15500			10.8
3218q21	24.4	16600			11.6
3218q7	9.83	8140			5.69
3218q18	10.3	7320	144	-570	5.11
3218q4	10.6	7320			5.11
3218q14	0.928	613			0.428
3218q17					
3218q20	24.0 pCi/L				
3309a6	24.6 pCi/L				
3218q9	5.05				

(a) units of mL/g moist soil samples
(b) additional dilution for analysis
(c) Ruthenium Correction Factor: (Counts @ 99 - ((12.7/17.1)*cts @101))/Counts @ 99
(d) moist soil concentration corrected for preparation dilution factor and additional dilution for analysis.
(e) = ([Spiked Sample] - [Sample]) / [Spike]
(f) all uranium found to be natural isotopic abundance. Total uranium activity calculated using following formula: pCi/g = [U-238]*0.000336/0.481

**Dilution factor for 3309a3 = 4X

JP 2-22-94

9613192.0112

QA checks / results attachments

Entered by: [illegible] Date: 4-7-93

Reviewed by: J. H. Kage Date: 4-7-93

AMERICIUM ANALYSIS DATA FOR 241-T-106

Client Sample ID	Program Sample ID	Sample Type	Am-241 pCi/g	RPD	Am-241 Spike pCi	% Recovery
B07JZ4	93-02239	Soil	NR**			
B07JZ5	93-02240	Soil	110			
	93-02240MS	Matrix Spike	NR**			
B07JZ5	93-02240D	Duplicate	170	41		
	PB-02240	Blank*	<.1			
	BS-02240	Blank Spike*	19		10	190
B07JZ6	93-02241	Soil	2300			
B07JZ7	93-02351	Soil	810			
B07JZ8	93-02437	Soil	330			
B07JZ9	93-02438	Soil	470			
B07KO0	93-02451	Soil	340			

* Reported in pCi.

** NR – Not Reported. The Am-243 tracer was not detectable from the spectrum of these samples so no Am-241 result could be calculated.

4-23-93

Due to the analytical problems for this batch, uncertainties for the individual measurements are not reported. The estimated overall uncertainty of these results is 50%.

E:\T106\AMT106

2-22-94

QA checks/results in attachments

Entered by: M T Wagstaff Date: 2-5-93

Reviewed by: M. L. Fadley Date: 2/5/93

PLUTONIUM ANALYSIS DATA FOR 241-T-106

Batch #1

Client Sample ID	Program Sample ID	Sample Type	Pu-239+240 pCi/g	+/- 1 sigma	Pu-239+240 RPD	Pu-238 pCi/g	+/- 1 sigma	Pu-238 RPD	Pu-239 Spike pCi	+/- 1 sigma	% Recovery
B07JZ4	93-02239	Soil	2.72E+02	1.10E+01		4.29E+01	2.32E+00				
B07JZ5	93-02240	Soil	3.49E+01	1.37E+00		4.20E+00	2.70E-01				
	93-02240MS	Matrix Spike	1.53E+02	5.20E+00		6.52E+00	3.24E-01		1.19E+02	3.30E+00	97
B07JZ5	93-02240D	Duplicate	4.00E+01	1.53E+00	14	5.29E+00	3.06E-01	23			
	PB-02240	Blank*	9.07E-02	3.31E-02		1.03E-01	3.70E-02				
	BS-02240	Blank Spike*	1.25E+01	3.87E-01		3.52E-01	2.64E-02		1.19E+01	7.00E-02	105
B07JZ6	93-02241	Soil	1.17E+03	4.48E+01		2.28E+02	1.07E+01				
B07JZ7	93-02351	Soil	5.18E+02	1.44E+01		9.26E+01	2.90E+00				
B07JZ8	93-02437	Soil	1.76E+02	5.82E+00		2.75E+01	9.80E-01				
B07JZ9	93-02438	Soil	2.14E+02	6.70E+00		3.56E+01	1.25E+00				
B07KO0	93-02451	Soil	1.36E+02	4.61E+00		1.83E+01	6.68E-01				

* Reported in pCi.

One sigma uncertainties are the propagated error of individual measurements.
Using a sample size similar to the lowest activity sample results in a detection limit of approximately 5 E-2 pCi/g for Pu-239+240 and for Pu-238.

E:\T106\PUT106

9309202.0104

9309202.0103

9613492.1015

ATTACHMENT 5

Data Review Supporting Documentation

9613492.1016

EBASCO

BY R DATE 11/29/93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. ____ DEPT. NO. ____

CLIENT WHC

PROJECT T-106

SUBJECT PNL Rad validation Status

1. Samples with recalculation performed by Ebasco
   ✓Sr^{90}, ✓Gamma, ✓Gross Alpha/Beta, ✓Pu, ✓Np, ✓C^{14},
   all sample recalculations ok.
   ~~still need H^3, Se^{79}, ICP ms for Tc^{99} & Total U~~
   americium - (R) based on lab report

2. QA checks
   ✓GEA - cont. calibration - no source info, no traceability
   ✓Gross Alpha - Tracers used in counters Alpha 2 & 4
   = 52733-62-2 & 54124-44-4
   Traceability provided 52733-144-1 & 2
   54124-51-1 & 0
   ✓Gross Beta - sources used not traceable
   ✓Pu - ok
   ✓Sr^{90} - ~~all Beta counter sources not traceable~~ OK suff. to
   Americium - NA - (R) for all based on lab report.
   ✓Np^{237} - Gamma - no continuing cal info
   Alpha - no values nor traceability found
   H^3 - source identified for spikes but not for calibration
   Se^{79} - awaiting procedure to complete checks
   ✓C^{14} - LCS differs from reported. - Supplemental Data Provided
   ~~still need Se^{79}, ICP ms for Tc^{99} & Total U~~

   Lots of Traceability Info Provided & Suppl. Info

   Just want Docs

3. Budget - WHC 3403.252
   used 244
   available 159

4. Procedures - H^3, Se^{79} & ms/ICP provided in supplemental info

581/2-93

9613492.1017

EBASCO

BY [illegible] DATE 12/13/93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. ____ DEPT. NO. ____

CLIENT WHC

PROJECT T-106

SUBJECT PNL Rad validation QA check review

Review based on ~~Sum~~ PNL Supplemental Data (Pkg 307524 GEA, Gross Alpha, Gross Beta, NP-237 Doc. # HCRL-WHC/9322-SD-93-017 Date 11/15/93

Original Problem	Supp Data ~~on~~ result
GEA No source info - continuing cal. no traceability	PNL referenced E[01]-210 through 215. These ~~pages~~ pages establish efficiency, not continuing cal — ~~Results stated qualified as "J"~~ Detector controls pg 225 & 226 indicate detector sources in control but source activities not identified — Results "J".
Gross Alpha - wrong Tracer info provided	response acceptable
Gross Beta - sources used not traceable	response acceptable
NP-237 - Initial & cont. calibration info missing	response acceptable
H^3 - no traceability	source info provided but still not traceable
Sr^{90} - Beta source not traceable	- response acceptable
C^{14} - LCS wrong	- response acceptable

581/2-93

9613492.1018

EBASCO

BY BB DATE 10/12/93 SHEET 1 OF 5

CHKD. BY WA DATE OFS NO. WHC 3405.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data Val

SUBJECT PNL 307524 QA checks GEA (Gamma)

A. GEA (Gamma)

1) Dups - based on Co^{60} sample #

First - 62.4 93-2239

Second - 77.3 93-2239 D

$\frac{62.4-77.3}{\frac{62.4+77.3}{2}} \times 100 = 21.3\%$ OK

2) LCS

- Neither LCS nor matrix spike performed
- calibrated using aliquot of a mixed radioisotope w/ similar geometry
- See Cont. Cal Below

3) Blank 93-2451 B

All < - OK

4) Holding Times - OK

5) Detection Limits / ~~Sample Results~~

PNL used $2.5\sqrt{2 \times \text{Background}}$ instead of $4.66\sqrt{\text{Background}}$

$\approx 3.3\sqrt{\text{Background}}$

OK

considered acceptable but must note.

6) Initial Cal -

instrument used = HH1 for All Geometry = 1/2 x 2 Ring

Source Traceable to primary standards - OK - Done ~~2/23/93~~ ~~3/30/93~~ calibrated 2/23/93

7) Cont. Cal. - System in control during period but

* no source info, no traceability.

"Activity & identity of the radionuclide(s) used in the check source(s) are not provided, qualify all associated data as estimated" (J) *

581/2-93

9613492.1019

EBASCO

BY B DATE 10/12/93 SHEET 2 OF

CHKD. BY WA DATE OFS NO. WHC 3403.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data Val

SUBJECT PNL 307524 QA checks GEA cont - Gross ALPHA

A. GEA cont.

8) Yield - NA

9) notes - Lab reported sample not homogeneous.

B. Gross ALPHA

1) Dups -

First - 205 93-02240

Second - 187 93-02240D

$\frac{205-187}{\frac{205+187}{2}} \times 100 = 9.2\%$ OK

2) LCS - reviewed ~~blank~~ matrix spike 93-02240 Blank spike also OK

$\frac{(534 \text{ dpm/ml})(0.24652)\ Pu^{239}}{1.21 \text{ g/50ml} \times 1.9958 \text{ ml} \ (2.22 \text{ dpm/pci})} = 1228$

$\frac{1444.5 - 187.5}{1228} \times 100 = 102\%$ recovery OK

3) Blank

< - OK

4) Holding Times - OK

5) Detection limits - All samples Hits - Background low (≈ 1.3 = mdA) - OK

6) Initial Cal / Cont. Cal

* Tracers used in counters Alpha 2, 4 = 52733-82-2 and 54124-4-4 *

* Traceability provided = 52733-144-1-2 and 54124-51-1-0 * (Pu 239) and -10-2 (Pu 242)

(J)

581/2-93

9613492.1020

EBASCO

BY [illegible] DATE 10/12/93 SHEET 3 OF

CHKD. BY N/A DATE OFS NO. WHC 3403.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data Val

SUBJECT PNL 307524 QA Checks G. ALPA Cont - G Beta

B. G. ALPA Cont.

8) Yield - matrix spike used to determine yield - OK
- Reviewed Blk calibration - OK

9) Notes -

C. GROSS BETA

1) Dups

First - 4.36E+3 930240

Second - 4.89E+3 930240D

$\frac{4.36E+3 - 4.89E+3}{\frac{\Sigma}{2}} \times 100 = 11.5\%$ OK

2) LCS Based on matrix Spike Blank spike also OK

Sample result - 2.14E+4 93-02240 MS

Added = 1.90 E+4

Original In sample = 4.36 E+3

$\frac{2.14E+4 - 4.36E+3}{1.90E+4} \times 100 = 89.4\%$ OK

3) BLANK

PB-02240

10.8 pCi/g - all sample results >10x Blank OK

4) Holding Times - OK

5) Detection limits - PNL based on *3σ = 5.1 pCi/g OK

6) 7) Init. & Cont. Cal - Instruments used - 66, 67, 68 yes are traceable -

LB BETA #1	STND - 52733-81-1	Sources not Traceable see supl. info
#66	" "	
#67	" 52733-81-2	Traceable Source - 52733-117 *
#68	52733-81-3	

J

581/2-93

9613492.1021

EBASCO

BY RB DATE 10/1/2 SHEET 4 OF

CHKD. BY NA DATE OFS NO. WHC 3403.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data VAL

SUBJECT PNL B07JZ4 QA Checks Gross B Cont - Pu

C. Gross Beta

8) Yield - matrix spike used to check yield (OK)
- Reviewed d/c calibration - (OK)

9) notes -

D. Pu

1) Dups - $Pu^{239 \& 240}$ (OK) note 23% = 23% RPD (OK)

First - 3.49E+1 93-02240

Second - 4.00 E+1 93-02240 D

$\frac{34.9 - 40.0}{\frac{\Sigma}{2}} \times 100 = 13.6\%$ OK

2) LCS - matrix Spike 93-2240 ms Blank spike also (OK)

Pu^{239} added 119.2

ms total Result 153

93-2240 Orig 33.5

$\frac{153 - 33.5}{119.2} \times 100 = 96.9\%$ (OK)

3) ~~Pu 239~~ BLANK

Pu^{239} - 0.091 pCi/g Pu^{240} 0.10 - BLANK Results

34.9 4.2 - Lowest Sample

differences in both cases >10 x BKG = (OK)

4) Holding Times - (OK)

5) Detection Limits - values >> BKG MDA not an issue (OK)

6) Initial Cal & Count Cal - Using Tracer evaluation

Pu-242 Tracer 54124-51-10-2

Source is Traceable (OK)

581/2-93

9613492.1022

EBASCO

BY RB DATE 10/12 SHEET 5 OF

CHKD. BY WA DATE OFS NO. WHC 3403.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL 307 J Z4 QA checks Pu -

D. Pu cont

6) i) Tracer Evaluation - note Tracer accounts for both Yield & Efficiency
cont. - Evaluating to determine intersample consistency

Sample # 93-2351

Pu^{242} spike - total dpm = 17.44 DPM

net peak counts/min = 17014 counts / 5713.87 min = 2.97 cpm

Total cpm / dpm = .17 = 17% recovery/Efficiency

Review of other samples

Range of net peak counts / min =

$\frac{21855}{5713.87} = 3.82$ $\frac{14237}{5713.87} = 2.49$ $\frac{18181}{5713.87} = 3.18$ $\frac{3950}{1604.13} = 2.46$

21% ~~Rec.~~ Recovery & Efficiency 14% 18% 14%

$\frac{4508}{1604.13} = 2.93$ $\frac{4466}{1604.13} = 2.78$

17% 16%

OK

6) Yield - used matrix spike recovery because unable to determine efficiency of counters vs Tracer results matrix spike recovery 96.9% OK

9) notes - Lab noted sample results indicate samples in homogeneous.

581/2-93

9613492.1023

EBASCO

BY RLB DATE 10/12 SHEET 6 OF

CHKD. BY WA DATE OFS NO. WHC 3403.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL 1307524 QA Checks Sr 90

E Sr^{90}

1) Dups

First - 9.83 E+02 93-02240

Second - 1.31 E+03 93-02240D

$$\frac{9.83E+02 - 1.31E+03}{\frac{\Sigma}{2}} \times 100 = 28.5\% \quad OK$$

2) LCS - matrix spike — Blank spike also OK 96.6%

93-02240ms result 4.14 E+03

93-02240 result 9.83 E+2

added = 3.76 E+3

$$\frac{4.14E+3 - 9.83E+2}{3.76E+3} = 83.9\% \quad OK$$

3) BLANK = 1.16 pCi/g

normalized, largest Blank value sample 2241

Norm Blank For Sample			Sample result =	
2241	=	1208 pCi/g	>10x	OK
2357	=	243	>10x	OK
2437	=	58	>10x	OK
2438	=	91	>10x	OK
2457	=	63	>10x	OK
2240D	=	9.59	>10x	OK
2239	=	131	>10x	OK

4) Holding Times - OK

5) Detection Limits values >> BKG MDA not an issue OK

~~6) ...~~

581/2-93

9613492.1024

EBASCO

BY PCB DATE 10/12 SHEET 7 OF

CHKD. BY WH DATE OFS NO. WHC 3403.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL B07J24 QA Checks Sr 90 cont, ^{241}Am

E. Sr 90 cont

6) i) Beta Counters used C131, 66, 67, 68 yes - OK
See Gross Beta notes - Sources not Traceable
(J) *

8) Yield PNL provided spread sheet of
yield determination, also provided $SrCO_3$ carrier calibration summary
Yield 91.92% (OK) $SrCO_3$ carrier review - (OK)

4) notes - PNL reports samples in homogeneous based on sample results review.

F. Americium -241 (R) for ALL

General note - All samples rejected - lab reported "Significant problems were experienced with the analysis of ^{241}Am by ALPHA spectrometry (AEA)." "Estimated uncertainty ± 50% primarily due to poor resolution. PNL reports they have identified cause and problem has been resolved.
Originally recommended performing ^{241}Am by GAMMA (GEA), however, measurement by GEA not successfull due to Background peak interference.

G. ^{237}Np

1) ~~ECSD~~ Dups

First - 4.30E-2 93-02240
Second - 5.50E-2 93-02240D

$$\frac{4.3E-2 - 5.5E-2}{\frac{\Sigma}{2}} \times 100 = 24.5\% \quad (OK)$$

581/2-93

9613492.1025

EBASCO

BY RB DATE 10/12/93 SHEET 8 OF

CHKD. BY WH DATE OFS NO. WHC 3413.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL B07J24 QA Checks ^{237}Np

G. ^{237}Np Cont.

2) LCS reviewed matrix spike 93-02240 ms ^{237}Np Blank Spike (OK)

ms result = 1.34 110%

orig sample = 4.30 E-2 LCS Source - ^{237}Np 4491-100-2500

Amount Added = ~~0.04~~ 1.12 pCi/g Traceable (OK)

$$\frac{1.34 - 4.30E-2}{1.12} = 116\% \quad (OK)$$

3) Blank 1.46×10^{-3} < 10x all results (OK)

4) Holding Times - OK

5) Detection Limits - PNL used $3\sqrt{BKG}$ vs $4.66\sqrt{BKG}$
however either result lower than reported samples (OK)

6) Initial Calibration - Gamma
no info provided on original cal - (J) *
& For ALPHA D/C determination reviewed (OK)

7) Continuing Cal - Gamma
no info - (J) *
Source used ^{243}Am - ^{239}Np 52733-29-100
Traceability provided

Cont. Cal - ALPHA used Pu^{239}
Source - Control Source #s 1, 2, 3 & 4
No values nor traceability found (J) *
(activity)
control ~~[illegible]~~ log has only one value w/ no "True" value

8) Yield

Based on Np-239 additions

Yields ~~[illegible]~~ %

93-02239	0.392	(OK)	02351	0.651	(OK)
-02240	0.224 *	(J) use *	02437	0.636	(OK)
-02240D	0.376	(OK)	02438	0.667	(OK)
-02241	0.597	(OK)	02451	0.411	(OK)

581/2-93

9613492.1026

EBASCO

BY PCB DATE 10/12/93 SHEET 9 OF

CHKD. BY NG DATE OFS NO. WHC3403.242 DEPT. NO.

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL B07J24 QA Checks Np^{237} cont, ^3H

G. ^{237}Np Cont.

9) Notes

sample 93-02240 R due to low yield (22%)
if use 93-02240D, yield acceptable @ (37.6%)

H. ^3H

1) Dups

Sample Dups - 93-02239 & 93-02239D both <, NORPD possible
If compare Blank spike and matrix spike,

*	BS-02239	MS-02239
Added	4055	818
Sample Result	3629	822
% Recovered	90%	101%

comparison of % recovered will provide normalized duplication comparison

$$\frac{(90-101)\times 100}{\frac{\Sigma}{2}} = 11\% \quad \text{OK}$$

2) LCS

LCS info in Dups above - OK

3) Blanks Blank <d OK

4) Holding Times OK

5) Detection Limits

581/2-93

9613492.1027

EBASCO

BY B DATE 10/13/93 SHEET ____ OF ____

CHKD. BY WH DATE ____ OFS NO. WHL 3403.242 DEPT. NO. ____

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL B07JZ4 QA Checks ^3H

6) f) 7) Calibration H.^{3}H Count

Sources used 52733-109-100 for spikes - Traceable OK

* no source identified for calibration - (5)

8) Yield - not applicable

STILL TRUE

9) Notes

- PNL reports Detects had total counts greater than BKG but no peak matching that of the tritium standard. Over Reported possible source of activity is Sr 90 as a result, detects listed as (5) also because MDA calculation different, lower, than WHL's, and positive results had >25% uncertainty.

I. ^{79}Se

1) Dups - no formal duplicate samples analyzed
Comparison of ^{14}C Standard #1 & ^{14}C Standard #1 will be used in lieu.

Avg Count #1 3844 counts Avg Count #2 3783

$$\frac{3844-3783}{\frac{\Sigma}{2}} \times 100 = 1.6\% \quad \text{OK}$$

2) LCS

581/2-93

9613492.1028

EBASCO

BY TB DATE 10/13/93 SHEET ____ OF ____

CHKD. BY WH DATE ____ OFS NO. WHL 3403.242 DEPT. NO. ____

CLIENT WHL

PROJECT T-106 Data validation

SUBJECT PNL 1307374 QA checks 79 Sr cont,

581/2-93

9613492.1029

EBASCO

BY TB DATE 10/13/93 SHEET ____ OF ____

CHKD. BY WG DATE ____ OFS NO. WHC 3403.293 DEPT. NO. ____

CLIENT WHC

PROJECT T-106 Data validation

SUBJECT PNL B075Z4 QA checks ^{14}C

J. C^{14}

1) Dups

First 1.5 E-04 93-02451

Second 1.3 E-04 93-02451D

$$\frac{\frac{1.5-1.3}{1.5+1.3}}{2} \times 100 = 14\% \quad \text{OK}$$

2) LCS reviewed matrix spike 93-02451 ms

PNL supplied equation

$$\frac{(1506-6) * 1.304 * 0.05\,ml * 7.5}{1392} = 0.53$$

Factor of 2 off, possibly due to 0.05 ml aliquot volume other aliquots for standards 0.1 ml

Reported recovery 1.05

* (J) *

see next page - OK

~~weight~~ "Sample size" reported as 0.16672 - no units - assumed grams because other sample values match grams listed on summary spread sheet

3) BLANK - acceptable - OK

4) Holding Times - OK

5) Detection Limits - all results identified as hits - OK

6) Calibration

- Calibration standards NIST Traceable

Average standard Recovery Fraction = 0.93 OK

581/2-93

241-T-106 Carbon-14

Matrix Spike Calculation Check.

Sample: $\frac{(10.9+12.3)\text{cpm}}{2} = \frac{2.32E1\text{cpm}}{2} = 1.16E01\text{cpm} - 6\text{cpm} = 5.6\text{cpm}$ in Sample

$$\frac{5.6\text{cpm}\,(7.5)\,1.304\,\text{d/c}}{0.1794\text{g}\,(0.929)} = 3.2862E2\ \text{d/g} \Big/ 2.22E6\ \frac{\text{d}}{\text{uCi}} = 1.4803E-4\ \text{uCi/g}$$

Sample Spike: $1506\text{cpm} - 6\text{cpm} = 1500\text{cpm}\,(1.304\ \text{d/c}) = 1956\text{dpm}\ \frac{(7.5)}{0.16672\text{g}\,(0.929)}$

$$= 94716.73\ \text{d/g} \Big/ 2.22E6\ \text{d/uCi} = 4.2665E-2\ \text{uCi/g}$$

Spike True: $2.78E5\ \text{dpm/ml} \cdot 0.05\ \text{ml} = 1.39E4\ \text{dpm} \Big/ 0.16672\text{g} = 8.3373E4\ \text{d/g}$

$$\frac{8.3373E4\ \text{d/g}}{2.22E6\ \text{d/uCi}} = 3.7556E-2\ \text{uCi/g}$$

Final Calculation: $\frac{4.2665E-2\ \text{uCi/g} - 1.4803E-4\ \text{uCi/g}}{3.7556E-2\ \text{uCi/g}} = 1.1321\,(100) = 113\%$ Recovery.

9615492.1040

9613492.1031

EBASCO

BY PWB DATE 10/13/93 SHEET ____ OF ____

CHKD. BY NLA DATE ____ OFS NO. WHC 3403.242 DEPT. NO. ____

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT TNL 307574 QA Checks ^{14}C cont

5. ^{14}C cont.

a) Yield - Average Recovery Fraction 93% OK

a) notes -

581/2-93

9613492.1032

241-T-106 | PNL B07JZ4 | S. HAWLEY

ICP/MS Tc-99, TOTAL U

NOTES

- NOT INFORMATION / KNOWLEDGE TO DO RECALCULATION CHECK ON RESULTS
- DIGESTION PROCESS MAY HAVE VOLATILIZED THE Tc
- APPROPRIATE MASS, CONCENTRATIONS FOR TUNE SOLUTIONS BUT NO INFORMATION ON TRACEABILITY TO NIST

  QUALIFY RESULTS AS R
- NOT CLEAR WHY RU CORRECTIONS NEEDED FOR ONLY SOME SAMPLES; PATTERN IS PUZZLING TO VALIDATOR
- CALIBRATION STDS OK BUT CALIBRATION CURVE APPEARS OFF AT LOW END FOR Tc

RUN 3218 Tc (ppt)

FOUND	2.0913	5.784	4.8868	19.6	97.2
TRUE	0.98	4.986	4.901	19.6	98

U ppt

FOUND	9.7197	~~49~~ 60.4	210.9	1000.6
TRUE	9.955	49.8	199.1	995.5

- CONTINUING CALIBRATION APPEARS ACCEPTABLE
- BLANKS · APPEARS INITIAL BLK (1% HNO_3) RUN BUT BEFORE STDS

  2ND BLK (1% HNO_3) also run; total analysis time < 2hrs OK

  Process blank run also

ICP/MS (CONT.)

- BLK SPIKE (LCS) AND MS ARE STATED TO HAVE ACCEPTABLE RECOVERIES

- OVERALL THE ASSEMBLAGE OF DATA ~~[illegible]~~ DOES NOT READILY CONVEY SUFFICIENT INFORMATION NOR PERMIT EFFICIENT EVALUATION OF WHETHER NECESSARY INFORMATION IS PRESENT.

100 SHEETS EYE-EASE® 5 SQUARE
100 SHEETS EYE-EASE® 5 SQUARE
100 SHEETS EYE-EASE® 5 SQUARE
RECYCLED WHITE 5 SQUARE
National® Brand

PNL B07JZ4 DATA PACKAGE 241-T-106

^{79}Se NOTES ~~AND CALC. CHKS.~~

- μwave digestion should avoid ~~volitili~~ volatilization of Se; and extra study shows method ~~procedu~~ produces acceptable yields.

- NOT CLEAR WHY 4 RUNS WERE USED TO PRODUCE AVERAGED RESULT
- NOT CLEAR WHY 2 OF THE 4 RUNS APPEAR TO OVERLAP IN TIME
- NOT CLEAR ~~WH~~ HOW TWO DIFFERENT EFFICIENCES CALCULATED FROM SAME INPUTS, AND WHICH ONE USED.
- LABELLING OF COUNTS AND COUNT RATES AMBIGUOUS -OR- ~~WRONG~~ ERROR MADE IN RESULTS
- DILUTION FACTORS DO NOT APPEAR TO AGREE BETWEEN PREP SHEETS AND ~~CAL~~ SPREAD SHEETS (pg E10-11 and E10-12)
- DO NOT HAVE TABLE OF QUENCH FACTORS TO DO RECALC CHECK. OTHERWISE CALCULATIONS APPEAR TO BE OK.
- BLANKS ACCEPTABLE
- EXACT DUPLICATES NOT RUN; ALSO ALL SAMPLES ~~fo~~ NONDETECTS
- LCS or BLK SPK APPARENTLY NOT RUN

9613492.1055

S. HAWLEY

PNL DATA PACKAGE B07JZ4 241-T-106

^3H CALC. CHK + NOTES

- BLANKS OK (NORMALIZATION PROCESS APPEARS ACCEPTABLE)
- RPD NOT CALCULATED SINCE ACTIVITIES NOT SUFFICIENT;

  HOWEVER RPD for MATRIX SPIKE AND BLANK SPIKE DEMONSTRATES ACCEPTABLE PRECISION — AT HIGHER ~~conc~~ ACTIVITIES

  SUGGEST DO NOT QUALIFY RESULTS DUE TO LACK OF SAMPLE ACTIVITY ~~+ ALSO~~

- BLANK SPIKE (LCS) AND MATRIX SPIKE RECOVERIES ACCEPTABLE AT 90 and 101 % respectively

- NIST TRACEABILITY AMBIGUOUS; NOT CLEAR FROM DOCUMENTATION PROVIDED; NO DEFINITE LINK FROM NIST CERTIFICATE TO STD. USED.

  QUALIFY RESULTS AS J

- INFORMATION ON HOLDING TIMES + DISTILLATION TIMES NOT AVAILABLE IN DOCUMENTATION REC'D.

  QUALIFIERS NOT ASSIGNED DUE TO LACK OF DOCUMENTATION

- CONTROL CHARTS INCLUDED FOR CALIBRATION — APPEARS ACCEPTABLE (STD AND BLKS)

- PROCEDURE IN SUPP. INFO IS FOR BECKMAN LS 8000;

  DATA OBTAINED WITH A QUANTULUS; DO NOT HAVE SUFFICIENT INFO. TO EVALUATE NECESSITY OF QUENCH CURVE(S); NONE ~~provided~~ OBSERVED IN DATA PACKAGE.

- CONTINUING CAL. APPEARS ACCEPTABLE

^3H CALC CHKS — USING INFO IN SUPP. INFORMATION — NOT PNL-ALO-443 SCH

~~Combin~~

$$\text{sample pCi/g} = \text{net sample cpm} \times \frac{(2.235\ d/c)(\text{Vol leach})(\text{net Vol soln})}{(\text{VOL DIST})(\text{VOL CNTD})(Y)(\text{Smple WT})(2.22}$$

$$MDA = \frac{3\sqrt{2.99 \times 100}}{100} \times [\text{above FACTORS}]$$

2.99 = BKG COUNT RATE ; 100 = CNT TIME

Sample 02239 WORKED IN SUPPL. INFO. OK

02239D

$$MDA = 0.519 \times \frac{(2.235)(150)(164.97 - 96.42)}{(80)(3.824)(.84733)(5.930)(2.22)} =$$

$$= 0.519 \times .311 \times \frac{(150)(68.55)}{(80)(5.93} = 3.498$$

.311 = CONSTANTS

3.494 SPREAD SHEET

< 4 REPORTED

OK

02240

$$pCi/g = (3.55 - 2.99)(.311)\frac{(110)(141.19 - 97.99)}{(50)(5.080} = 3.258$$

CALC

3.256 SPRDSHT

3 REPORTED

OK

Strontium-90 Calculations

PNL Sample Number	93-2239		93-2240		93-2240D		93-2241		93-2351		93-2437	
WHC Sample Number	BO7JZ4		BO7JZ5		BO7JZ5		BO7JZ6		BO7JZ7		BO7JZ8	
Matrix	Soil		Soil		Duplicate		Soil		Soil		Soil	
Strontium Yield	0.9192		0.9192		0.9192		0.9192		0.9192		0.9192	
Theoretical yield of SrCO3	66.89		66.89		66.89		66.89		66.89		66.89	
Actual Yield of SrCO3	56.3		58.5		54.9		56.1		53.2		57.8	
Sep Time to midpoint (Hours)	4.42		4.42		4.42		4.63		4.63		4.62	
Calc. net cpm	200.7		79.8		98.9		301.2		142.3		231.8	
d/c of counter	2.828		2.861		2.806		2.825		2.781		2.85	
Sample weight	8.87E-03		1.24E-01		1.21E-01		9.60E-04		4.78E-03		2.00E-02	
Calculated Results	3.55E+04	OK	9.84E+02	OK	1.31E+03	OK	4.93E+05	OK	4.85E+04	OK	1.78E+04	OK
Spread Sheet Results	3.55E+04		9.83E+02		1.31E+03		4.92E+05		4.85E+04		1.78E+04	
Summary Table Results	3.55E+04	OK	9.83E+02	OK	1.31E+03	OK	4.92E+05	OK	4.85E+04	OK	1.78E+04	OK

9613492.1037

Strontium-90 Calculations

PNL Sample Number	93-2438		93-2451		BS-2240		93-2240MS		PB-2240	
WHC Sample Number	BO7JZ9		BO7JZ0							
Matrix	Soil		Soil		Blank Spike		Matrix Spike		Blank	
Strontium Yield	0.9192		0.9192		0.9192		0.9192		0.9192	
Theoretical yield of SrCO3	66.89		66.89		66.89		66.89		66.89	
Actual Yield of SrCO3	57.4		60.2		48.6		57.3		56.0	
Sep Time to midpoint (Hours)	4.87		4.87		4.95		5.05		5.05	
Calc. net cpm	168.8		139.7		65.3		333.7		0.74	
d/c of counter	2.844		2.886		2.712		2.843		2.823	
Sample weight	1.27E-02		1.85E-02		1.00E+00		1.24E-01		1.00E+00	
Calculated Results	2.05E+04	OK	1.13E+04	OK	1.13E+02	OK	4.14E+03	OK	1.16E+00	OK
Spread Sheet Results	2.06E+04		1.13E+04		1.13E+02		4.14E+03		1.16E+00	
Summary Table Results	2.06E+04	OK	1.13E+04	OK	1.13E+02	OK	4.14E+03	OK	5.80E+00	*

9613492.1038

9613492.1039

EBASCO

BY JCP DATE 10-17-93 SHEET 1 OF

CHKD. BY DATE OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT E-93-22 241-T-106 Data Validation

SUBJECT PNL-B07JZ4 - Gamma Calculations.

(93-2239)

Co^{60} ① calculated average:

dps @ time 0 = 6.287 E+01
6.230 E+01

$$\text{average} = \frac{(6.287E+01) + (6.230E+01)}{2} = 6.2585\ E+01$$

Reported average = calculated average ✓

② Calculated pci/g.

$$\frac{6.2585E+1\ \text{dps}}{(0.037\ \text{dps/pci})(27.09g)} = 62.44\ \text{pci/g} = \text{OK}$$

(Reported Results = 62.4 pci/g)

Cs^{137} ① Calculated pci/g.

$$\frac{4.879\ \text{dps}}{(0.037\ \text{dps/pci})(27.09g)} = 4.868\ \text{pci/g} = \text{OK}$$

(Reported Results = 4.9 pci/g).

581/2-93

9613492.1040

EBASCO

BY JCP DATE 10-17-93 SHEET 2 OF

CHKD. BY DATE OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT E-93-22 241-T-106 Data Validation

SUBJECT Sample B07J24 (93-2239D) Gamma Calculations

Co^{60} ① Calculated Average

dps @ time 0 = 76.77
77.02

$$\text{average} = \frac{76.77 + 77.02}{2} = 76.90$$

Reported average = Calculated average.

② Calculated pCi/g.

$$\frac{76.90 \text{ dps}}{(0.037 \text{ dps/pCi})(\cancel{28.71g}\ 26.9g)} \quad \cancel{72.39}\ 77.26 \text{ pCi/g.}$$

JCP

Reported Results = 77.3 pCi/g. OK

Cs^{137} ① Calculated pCi/g.

$$\frac{8.072 \text{ dps}}{(0.037 \text{ dps/pCi})(26.9g)} = 8.11 \text{ pCi/g}$$

Reported = 8.1 pCi/g OK

581/2-93

9613492.1041

EBASCO

BY JCP DATE 10-17-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT E93-22 241-T-106 Data Validation

SUBJECT Sample B07J25 (93-2240) Gamma Calculations.

Co^{60} ① Calculated dps average

dps @ time 0 = 47.15
= 47.36

$$\text{dps average} = \frac{47.15 + 47.36}{2} = 47.255 \text{ dps} = \underline{OK}$$

② Calculated pCi/g.

$$\frac{47.255 \text{ dps}}{(0.037 \text{ dpm/pCi})(28.89 \text{ g})} = 44.2 \text{ pCi/g} = \underline{OK}$$

Cs^{137} ① Calculated pCi/g.

$$\frac{2.028 \text{ dps}}{(0.037 \text{ dpm/pCi})(28.89 \text{ g})} = 1.9 \text{ pCi/g} = \underline{OK}$$

581/2-93

9613492.1042

EBASCO

BY JCP DATE 10-17-93

CHKD. BY _____ DATE _____

SHEET _____ OF _____

OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Sample B07JZ6 (93-2241) Gamma Calculations

Co^{60}

581/2-93

9613492.1043

EBASCO

BY JCP DATE 10-17-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. ____ DEPT. NO. ____

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Sample B07J27 (93-2351) Gamma Calculations.

Co^{60} ① Calculated dps average

reported dps @ 0 time = 80.11
= 82.20

$$\text{dps average} = \frac{80.11 + 82.20}{2} = 81.16 \text{ dps} = \underline{\underline{OK}}$$

② Calculated pCi/g.

$$\frac{81.16 \text{ dps}}{\left(0.037 \frac{\text{dps}}{\text{pCi}}\right)(29.25\text{g})} = 74.99 \text{ pCi/g.}$$

Reported value = 80.4 pCi/g.

Cs^{137} Calculated pCi/g.

$$\frac{13.78 \text{ dps}}{\left(0.037 \frac{\text{dps}}{\text{pCi}}\right)(29.25\text{g})} = 12.7 \text{ pCi/g} = \underline{\underline{OK}}$$

581/2-93

9613492.1044

EBASCO

BY JCP DATE 10-17-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Sample B07J78 (93-2437) Gamma Calculations.

Co^{60} ① Calculated dps average

Reported dps @ 0 time = 70.25
70.77

$$\text{dps average} = \frac{70.25 + 70.77}{2} = 70.51 \text{ dps} = \text{OK}$$

② Calculated pCi/g.

$$\frac{70.51 \text{ dps}}{(0.037 \text{ dps/pCi})(27.74 \text{ g})} = 68.7 \text{ pCi/g} = \underline{\underline{\text{OK}}}$$

Cs^{137} Calculated pCi/g.

$$\frac{15.71 \text{ dps}}{(0.037 \text{ dps/pCi})(27.74 \text{ g})} = 15.3 \text{ pCi/g} = \underline{\underline{\text{OK}}}$$

581/2-93

9613492.1045

EBASCO

BY JCP DATE 10-17-93

CHKD. BY _____ DATE _____

SHEET _____ OF _____

OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Sample B07J29 (93-2438) Gamma Calculation

Co^{60}

① Calculated dps average

Reported dps @ 0 time = 72.23
71.75

dps average = $\frac{72.23 + 71.75}{2}$ = 71.99 ~~dpms~~ JCP dps
= OK

(reported value = 71.98 dps)

② Calculated pCi/g.

$$\frac{71.99 \text{ dps}}{\left(0.037 \frac{\text{dps}}{\text{pCi}}\right)(27.64\text{g})} = 70.39 \text{ pCi/g.}$$

(Reported value = 69.7 pCi/g)

Cs^{137}

Calculated pCi/g.

$$\frac{13.73 \text{ dps}}{\left(0.037 \frac{\text{dps}}{\text{pCi}}\right)(27.64\text{g})} = 13.43 \text{ pCi/g.}$$

(dry wt.)

(reported results = 12.7 pCi/g)

581/2-93

9613492.1046

EBASCO

BY QCP DATE 10-17-93

CHKD. BY _____ DATE _____

SHEET _____ OF _____

OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Sample B07K00 (93-2451) Gamma Calculations

Co^{60} ① Calculated dps average

Reported aps @ 0 time = 72.62
72.63

$$\text{aps average} = \frac{72.62 + 72.63}{2} = 72.63 = \text{OK}$$

② Calculated pci/g.

QCP

$$\frac{72.63 \text{ aps}}{\left(0.037 \frac{\text{aps}}{\text{pci}}\right)(24.51 \text{g})} = 80.08 \text{ pci/g.}$$

(reported value = 78.5 pci/g)

Cs^{137} Calculated pci/g.

$$\frac{4.549 \text{ aps}}{\left(0.037 \frac{\text{aps}}{\text{pci}}\right)(24.51 \text{g})} = 5.0 \text{ pci/g} = \underline{\text{OK}}$$

581/2-93

9613492.1047

EBASCO

BY JCP DATE 10-17-93

CHKD. BY _____ DATE _____

SHEET _____ OF _____

OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Sample: Blank (93-245IB) Gamma Calculations.

Co^{60} = nondetect.

Cs^{137} Calculated pCi/g.

$$\frac{.09503 \text{ dps}}{\left(0.037 \frac{\text{dps}}{\text{pCi}}\right)(27.8)} = .09 \text{ pCi/g.}$$

Reported results = <0.1 pCi/g.

581/2-93

9613492.1048

EBASCO

BY JCP DATE 10-17-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total Alpha & Beta Calculations.

(1) Sample: B07JZ4 (93-02239) - Total α

1A - Raw data = "Spreadsheet for Calculation"

1B - Calculation for ~~Gross~~ Total α. JCP

Net cpm = $\frac{445 \text{ counts}}{30 \text{ min}}$ - .115 bkg ct. = 14.718 = OK

ml subsample = (1ml) $\left(\frac{997.9 \text{ g}}{1000 \text{ g/ml}}\right)$ = .9979

d/c = 3.2007

ml leachate = 50

initial sample amt = 0.9g

$$\frac{(14.718 \text{ cpm})(3.2007)(50 \text{ ml})}{(0.9\text{g})(.9979\text{ml})(2.22 \text{ dpm/pCi})} = 1181.36 \text{ pCi/g} \checkmark$$

Reported - Spreadsheet = 1181.37 pCi/g. ✓

Reported - Summary = 1181 pCi/g ✓

1C - Calculation for ~~Gross~~ Total β JCP

net cpm = $\frac{4804 \text{ cts}}{10 \text{ min}}$ - 18.1 bkg cts = ~~463~~ JCP 462.3 cpm ✓

d/c = 1.8954 ml leachate = 50 ml subsample = .2465

581/2-93

9613492.1049

EBASCO

BY JCP DATE 10-18-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total Alpha & Beta Calculations — Con't.

1C - Calculation for Gross β - Con't

$$\frac{(462.3\text{ cpm})(1.8954)(50\text{ ml})}{(.9\text{ g})(.2465\text{ ml})(2.22\text{ dpm/pci})} = 88{,}957.46\text{ pCi/g.}$$ ✓

Reported - Spreadsheet = 88959.241 pCi/g ✓
Summary = 89000 pCi/g ✓

② Sample: B07J25 (93-02240)

2A - Raw Data = "Spreadsheet for Calculation"

2B - Calculation for Total α

net cpm = $\frac{324\text{ cts}}{30\text{ min}} - 0.1250\text{ bkg} = 10.675\text{ cpm}$ = OK

ml subsample = $(4\text{ ml})\left(\frac{997.9\text{ g}}{1000\text{ ml}}\right) = 3.9916$ = OK

d/c = 4.2275
ml leachate = 50
initial sample amt = 1.24g.

$$\frac{(10.675\text{ cpm})(4.2275)(50\text{ ml})}{(1.24\text{ g})(3.9916)(2.22\text{ dpm/pci})} = 205.256\text{ pCi/g.}$$ ✓

Reported - Spreadsheet = 205.353 pCi/g ✓
- Summary = 205 pCi/g ✓

581/2-93

9613492.1050

EBASCO

BY JCP DATE 10-18-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total Alpha + Beta Calculations — Con't.

2C - Calculation for Total Beta.

$$\text{net cpm} = \frac{2627\text{cts}}{10\text{min}} - 17.4\text{bkg} = 245.3 \checkmark$$

$$\text{ml subsample} = 2\text{ml}\left(\frac{997.9\text{g}}{1000\text{ml}}\right) = 1.9958 \checkmark$$

d/c = 1.9539 ml leachate = 50 initial sample wt = 1.24g

$$\frac{(245.3\text{cpm})(1.9539\text{d/c})(50\text{ml})}{(1.24\text{g})(1.9958\text{ml})(2.22\text{dpm/pCi})} = 4361.925\ \text{pCi/g.}$$

Reported · Spreadsheet = 4361.993 pCi/g ✓
Summary = 4360.0 pCi/g. ✓

(3) Sample: Duplicate (93-02240D — B07J25)

3A. Raw Data = "Spreadsheet" — no transcription errors.

3B - Calculation for Total Alpha

$$\text{net cpm} = \frac{303\text{cts}}{30\text{min}} - .115\text{bkg} = 9.9850\ \text{cpm} \checkmark$$

$$\text{ml subsample} = 4\text{ml}\left(\frac{997.9}{1000}\right) = 3.9916 \checkmark$$

d/c = 4.02666 ml leachate = 50 initial sample = 1.24g.

581/2-93

9613492.1051

EBASCO

BY GCP DATE 10-18-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 Data Validation) 241-T-106

SUBJECT Total Alpha + Beta Calculations - Con't.

3B- Calculation for Total α - Con't

$$\frac{(9.9850\ cpm)(4.0266\ d/c)(50\ ml)}{(1.21g)(3.9916\ ml)(2.22\ dpm/pCi)} = 187.487\ pCi/g.$$

Reported - Spreadsheet = 187.485 pCi/g.
Summary = 187 pCi/g

3C - Calculation for Total β

$$net\ cpm = \frac{2845\ cts}{10\ min} - 15.8\ bkg = 268.7\ cpm.$$

$$ml\ sub\ sample = (2\ ml)\left(\frac{997.9\ g}{1000\ ml}\right) = 1.9958$$

d/c = ~~1.9539~~ 1.9525 ml leachate - 50 Sample wt = ~~1.249~~ 1.21g.

$$\frac{(268.7\ cpm)(\cancel{1.9539}\ 1.9525\ d/c)(50\ ml)}{(\cancel{1.249}\ 1.21\ g)(1.9958\ ml)(2.22\ dpm/pCi)} = 4892.979\ pCi/g.$$

Reported - Spreadsheet = 4893.017 pCi/g.
- Summary = 4890 pCi/g.

④ Sample: B07JZ6 (93-02241)

4A- Raw Data = "Spreadsheet" — no transcription errors.

4B- Calculation for Total α

$$net\ cpm = \frac{354\ cts}{30\ min} - .125\ bkg = 11.675\ cpm$$

581/2-93

9613492.1052

EBASCO

BY JCP DATE 10-18-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total Alpha & Beta Calculations - con't.

4B- Calculation for Total α - con 4.

ml Prep Sample = .2465 d/c = 2.9982

ml leachate = 50 Sample wt = .97g.

$$\frac{(11.1675\ cpm)(2.9982\ d/c)(50\ ml)}{(.97g)(.2465\ ml)(2.22\ dpm/pci)} = 3297.204\ pci/g.$$

Reported - Spreadsheet = 3297.246 pci/g.
Summary = 3297 pci/g.

4C- Calculation for Total β

$$net\ cpm = \frac{2627\ cts}{10\ min} - 18.1\ Bkg = 244.6\ cpm.$$

ml Prep Sample = .4942 d/c = 1.8904

ml leachate = 2500 Sample wt = .97g.

$$\frac{(244.6\ cpm)(1.8904\ d/c)(2500\ ml)}{(.97g)(.4942\ ml)(2.22\ dpm/pci)} = 1{,}086{,}232.319\ pci/g.$$

Report - Spreadsheet = 1,086,232.319 pci/g ✓
Summary = 1,090,000 pci/g.

581/2-93

9613492.1053

EBASCO

BY JCP DATE 10-18-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total α + β Calculations — Con't.

⑤ Sample: B07JZ7 (93-02351)

5A - Raw Data = "Spreadsheet" — no transcription errors.

5B - Total α Calculation

net cpm = $\frac{315 \text{ cts}}{30 \text{ min}}$ − .115 DKg = 10.385 cpm. ✓

ml subsample = (1ml) $\left(\frac{997.9 \text{ g}}{1000 \text{ ml}}\right)$ = .9979 ✓

ml leachate = 100 ml d/c = 3.0516

Sample wt = .97g.

$$\frac{(10.385 \text{ cpm})(3.0516 \text{ d/c})(100 \text{ ml})}{(.97 \text{g})(.9979 \text{ ml})(2.22 \text{ dpm/pCi})} = 1474.764 \text{ pCi/g.}$$ ✓

Reported - Spreadsheet = 1474.765 pCi/g. ✓
Summary = 1475 pCi/g ✓

5C - Calculation for Total β

net cpm = $\frac{2713 \text{ cts}}{10 \text{ min}}$ − 17.4 DKg = 253.9 cpm. ✓

ml ~~leachate~~ subsample = .199 d/c = 1.8911

ml leachate = 100 sample wt = .97g.

581/2-93

9613492.1054

EBASCO

BY JCP DATE 10-18-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total α & β Calculations — Con't.

5C- Calculation for Total β — con't.

$$\frac{(253.9\text{ cpm})(1.8911\text{ d/c})(100\text{ ml})}{(.97\text{ g})(.199\text{ ml})(2.22\text{ dpm/pCi})} = 112{,}046.788\text{ pCi/g.}$$

Reported - Spreadsheet = 112047.981 pCi/g.
Summary = 112,000 pCi/g.

(6) Sample: B07J78 (93-02437)

6A- Raw Data = "Spreadsheet" - no transcription errors ✓

6B- Total α Calculation

$$\text{net cpm} = \frac{292\text{ cts}}{30\text{ min}} - .125\text{ bkg} = 9.6083 \checkmark$$

ml subsample = .9979 d/c = 3.1708

ml leachate = 50 Sample wt = 1.01

$$\frac{(9.6083\text{ cpm})(\overset{\text{JCP}}{\cancel{3}}\ 3.1708\text{ d/c})(50\text{ ml})}{(.9979\text{ ml})(1.01\text{ g})(2.22\text{ dpm/pCi})} = 680.807\text{ pCi/g} \checkmark$$

Reported - Spreadsheet = 680.800 pCi/g. ✓
Summary = 681. pCi/g. ✓

581/2-93

9613492.1055

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total α + β Calculations - con't.

6C - Total β Calculation

$$\text{net cpm} = \frac{2631 \text{ cts}}{10 \text{ min}} - 15.8 = 247.3 \text{ cpm} \checkmark$$

ml. subsample = .2465 d/c = 1.8969

ml leachate = 50 sample amt = 1.01

$$\frac{(247.3 \text{cpm})(1.8969)(50 \text{ml})}{(1.01 \text{g})(.2465 \text{ml})(2.22 \text{ dpm/pci})} = 42{,}437.255 \text{ pci/g.}$$

Reported - Spreadsheet = 42436.721 pci/g.
Summary = 42400 pci/g.

(7) Sample BD7J79 (93-02438)

7A - Raw Data = "Spreadsheet" - no transcription errors.

7B - Total α Calculation.

$$\text{net cpm} = \frac{437 \text{ cts}}{30 \text{ min}} - .111 = 14.4557 \text{ cpm} \checkmark$$

ml subsample = .9979 d/c = 3.1947

ml leachate = 50 sample amt = 1.29

$$\frac{(14.4557 \text{cpm})(3.1947 \text{d/c})(50 \text{ ml})}{(1.29 \text{g})(.9979 \text{ ml})(2.22 \text{ dpm/pci})} = 807.995 \text{ pci/g} \checkmark$$

Reported - Spreadsheet = 807.990 pci/g ✓
Summary = 808 pci/g. ✓

581/2-93

9613492.1056

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total α & β Calculations — con't.

7C - Total β Calculation.

$$\text{net cpm} = \frac{3814 \text{ cpm}}{10 \text{ min}} - 18.1 \text{ bkg} = 363.3 \text{ cpm}. \checkmark$$

ml subsample = .2465 d/c = 1.8969

ml leachate = 50 sample amt = 1.29

$$\frac{(363.3 \text{cpm})(1.8969 \text{ d/c})(50 \text{ml})}{(1.29 \text{g})(.2465 \text{ ml})(2.22 \text{ dpm/g})} = 48{,}811.284 \text{ pCi/g}.$$

Reported - Spreadsheet = 48810.6669 pCi/g.
Summary = 48,800 pCi/g.

(8) Sample ~~B8K~~ B07K00 (93-02451)

8A - Raw Data = "Spreadsheet" - no transcription errors.

8B - Total α Calculation

$$\text{net cpm} = \frac{6664 \text{ cts}}{30 \text{ min}} - .072 \text{ bkg} = 22.0613 \checkmark$$

$$\text{ml subsample} = 3\text{ml}\left(\frac{997.9 \lambda}{1000 \text{ml}}\right) = 2.9937$$

ml leachate = 50 d/c = 4.5071

sample amt = .94 g.

$$(22.0613)(4.5071)(50)/(2.9937)(2.22)(.94) = 795.81 \text{ pCi/g}$$

581/2-93

9613492.1057

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total α & β Calculations — con't.

8C- Total β Calculation.

$$\text{net cpm} = \frac{3299 \text{ cts}}{10 \text{ min}} - 17.4 \text{ DKg} = 312.5 \text{ cpm} \checkmark$$

ml Dup Sample = .4942 d/c = 1.9019

ml leachate = 50 Sample amt = .94

$$\frac{(312.5 \text{ cpm})(1.9019 \text{ d/c})(50 \text{ ml})}{(0.94 \text{ g})(.4942 \text{ ml})(2.22 \text{ dpm/pCi})} = 28{,}815.3166 \text{ pCi/g}$$

Reported - Spreadsheet = 28,815.442 pCi/g.
Summary = 28,800 pCi/g.

⑨ Blank Spike (BS-022410A)

9A- Total α Calculation.

$$\text{net cpm} = \frac{398 \text{ cts}}{30 \text{ min}} - .072 = 13.1947 \checkmark$$

ml Dup Sample = 1 d/c = 3.7535

ml leachate = 1 Sample amt. = 1g.

$$\frac{(13.1947 \text{ cpm})(3.7535 \text{ d/c})(1 \text{ ml})}{(1 \text{ g})(1 \text{ ml})(2.22 \text{ dpm/pCi})} = 22.309 \text{ pCi/g}.$$

Reported - Spreadsheet = 22.309 pCi/g.
Summary = 22 pCi/g.

581/2-93

9613492.1058

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total α & β Calculations — con't.

9B - Total β Calculation:

$$\text{net cpm} = \frac{2430 \text{ cts}}{10 \text{ min}} - 15.8 \text{ bkg} = 227.2 \checkmark$$

ml leachate = 1 d/c = 2.1250
ml-subsample = 1 sample amt = 1

$$\frac{(227.2 \text{ cpm})(2.125 \text{ d/c})(1 \text{ ml})}{(1 \text{ g})(1 \text{ ml})(2.22 \text{ dpm/pCi})} = 217.478 \text{ pCi/g}.$$

Reported - Spreadsheet = 217.473 pCi/g.
Summary = 217 pCi/g.

(10) Matrix Spike — 93-02240MS

10A - Total α Calculation.

$$\text{net cpm} = \frac{1314 \text{ cts}}{30 \text{ min}} - .111 \text{ bkg} = 43.689 \checkmark$$

ml subsample = 1.9958 d/c = 3.5451
ml leachate = 50 sample amt = 1.21

$$\frac{(43.689 \text{ cpm})(3.5451 \text{ d/c})(50 \text{ ml})}{(1.21 \text{ g})(1.9958 \text{ ml})(2.22 \text{ dpm/pCi})} = 1444.492 \text{ pCi/g}.$$

Reported - Spreadsheet = 1444.477 pCi/g.
Summary = 1444 pCi/g.

581/2-93

9613492.1059

EBASCO

BY JCD DATE 10-1993 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 241-T-106 Data Validation - 93-22

SUBJECT Total α, β Calculations - con't.

10B - Total β Calculation.

net cpm = $\frac{12130 \text{ cts}}{10 \text{ min}}$ - 17.4 DKg = 1195.6 cpm ✓

ml leachate = 50 d/c = 1.96666

ml Aliquot sample = 1.9958 Sample wt = 1.24.

$$\frac{(1195.6 \text{ cpm})(1.96666 \text{ d/c})(50 \text{ ml})}{(1.24 \text{g})(1.9958 \text{ ml})(2.22 \text{ dpm/pci})} = 21,398.349 \text{ pci/g.}$$

Reported - Spreadsheet = 21,398.795 pci/g.

Summary = 21,400 pci/g

(11) Blank - PB-02240

11A - Total α Calculation

net cpm = $\frac{8 \text{ cts}}{30 \text{ min}}$ - .111 = .1557 ✓

ml ~~leachate~~ Aliquot sample = 10 ml $\left(\frac{997.9}{1000}\right)$ = 9.979

ml leachate = 50 d/c = 3.2486 Sample wt = 1

$$\frac{(.1557 \text{ cpm})(3.2486 \text{ d/c})(50 \text{ ml})}{(1 \text{g})(9.979 \text{ ml})(2.22 \text{ dpm/pci})} = 1.1416 \text{ pci/g.}$$

Reported - Spreadsheet = 1.139 pci/g

Summary = <2 pci/g.

581/2-93

9613492.1060

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Total α + β Calculations — Con't.

11B - Total β Calculation.

$$\text{net cpm} = \frac{1830 \text{ cts}}{100 \text{ min}} - 15.8 \text{ bkg} = 2.5 \checkmark$$

$$\text{ml aliquot sample} = 10 \text{ ml} \left(\frac{997.97}{1000 \text{ ml}}\right) = 9.979$$

ml leachate = 50 d/c = ~~1.16~~ 1.9162 Sample wt = 1

$$\frac{(2.5 \text{ cpm})(1.9162 \text{ d/c})(50 \text{ ml})}{(1 \text{ g})(9.979 \text{ ml})(2.22 \text{ dpm/pci})} = 10.812 \text{ pci/g.}$$

Reported - Spreadsheet = 10.790 pci/g.
Summary - 10.8 pci/g.

581/2-93

9613492.1061

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. ____

CLIENT WHC

PROJECT 93-22 Data Validation - 241-T-106

SUBJECT Plutonium Calculation

① Sample B07JZ4 (93-02293)

net peaks - Pu^{239} = ~~4213~~ 4212 cpm Pu^{238} = ~~1616~~ 1665 cpm
(matches raw data)

Pu^{242} counts = ~~3392~~ 3391 cpm (matches raw data)

dpm 242 = 17.44 CF = .45045
leach volume = 50 ml Sample amt = .9g.
Diluted volume = 1ml Dilution aliquot = 1
aliquot = 1.9932 ml.

Calculation for Pu^{239}

$$\frac{(4212 \text{ net peak cts})(17.44 \text{ dpm})(50 \text{ ml})(1 \text{ ml})(.45045)}{(0.9 \text{ g})(3391 \text{ net peak cts})(1 \text{ ml})(1)(1.9932 \text{ ml})} = 271.98 \text{ pCi/g}$$

OK

Reported - Spreadsheet = 272 pCi/g OK
Summary - 272 pCi/g OK

Calculation for Pu^{238}

$$\frac{(1665 \text{ cts})(17.44 \text{ dpm})(50 \text{ ml})(1 \text{ ml})(.45045)}{(0.9 \text{ g})(3391 \text{ cts})(1 \text{ ml})(1)(1.9932 \text{ ml})} = \text{~~429.530~~ } 42.94 \text{ pCi/g.}$$

Reported - Spreadsheet = 42.9 pCi/g

Summary = 42.9 pCi/g

OK

581/2-93

9613492.1062

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 Data Validation — 241-T-106

SUBJECT Plutonium Calculation.

② Sample B07J25 (93-02240)

Net peaks - Pu^{239} = 2916 (This is 100 more than what is reported. Possible transcription error - raw data reports 294 - Spreadsheet reports 194).

Pu^{238} = 339 (matches raw data)

dpm Pu^{242} = 17.44
leach volume = 50 ml
diluted volume = 1 ml
CF = .45045

Sample amt = 1.24g.
Pu^{242} counts = 3209 (matches raw data)
dilution aliquot = 1 ml
aliquot = 7.9728

Pu^{239} Calculation

$$\frac{(2916\text{ cts})(17.44\text{ dpm})(50\text{ ml})(1\text{ ml})(\cancel{.4045}\ .45045)}{(1.24\text{g})(3209\text{ cts})(1\text{ ml})(7.9729\text{ ml})} = \cancel{32.42\text{ pCi/g}}\ 36.1\text{ pCi/g}$$

JCP.

Reported - Spreadsheet = 34.9 pCi/g
Summary = 34.9 pCi/g.

Although possible transc. error, raw data results within 10% of reported results OK

11/21/93

Pu^{238} Calculation

$$\frac{(339\text{ cts})(17.44\text{ dpm})(50\text{ ml})(1\text{ ml})(\cancel{.4045}\ .45045)}{(1.24\text{g})(3209\text{ cts})(1\text{ ml})(7.9729\text{ ml})} = 4.20\text{ pCi/g}$$

JCP

Reported - Spreadsheet = 4.20 pCi/g.
Summary = 4.20 pCi/g

OK

581/2-93

9613492.1063

EBASCO

BY GCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Plutonium Calculations - con't.

③ Sample B07J25 - Duplicate (93-02240D)

net peaks - Pu^{239} = 3489 Pu^{238} = 461 Pu^{242} = 3549
(all match raw data)

dpm Pu^{242} = 17.44
leach volume = 50 ml
diluted volume = 1ml
CF = .45045

Sample amt = 1.21g.
dilution aliquot = 1ml
aliquot = 7.9728

Pu^{239} Calculation

$$\frac{(3489\ cts)(17.44\ dpm)(50\ ml)(1\ ml)(.45045)}{(1.21g)(3549\ cts)(1\ ml)(7.9728\ ml)} = 40.03\ pCi/g$$

Reported - Spreadsheet = 40.0 pCi/g. OK
Summary = 40.0 pCi/g

Pu^{238} Calculation

$$\frac{(\cancel{3489}\ 461\ cts)(17.44\ dpm)(50\ ml)(1\ ml)(.45045)}{(1.21g)(3549\ cts)(1\ ml)(7.9728\ ml)} = 5.29\ pCi/g$$

Reported - Spreadsheet = 5.29 pCi/g. OK
Summary = 5.29 pCi/g

581/2-93

9613492.1064

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Plutonium Calculations - Con't.

(H) Sample: B07JZ6 (93-02241)

net peak counts = Pu^{239} = 5648 Pu^{238} = 1107 Pu^{242} = 3957
(matches raw data)

apm Pu^{242} = 17.44
leach volume = 50 ml
diluted volume = 1ml
CF = .45045

Sample amt = 0.97g.
dilution aliquot = 1ml
aliquot = 0.496 ml

Pu^{239} Calculation

$$\frac{(5648\text{ cts})(17.44\text{ apm})(50\text{ ml})(1\text{ ml})(.45045)}{(0.97\text{g})(3957\text{ cts})(1\text{ ml})(0.496\text{ ml})} = 1165.3 \text{ pCi/g.}$$

Reported - Spreadsheet = 1170 pCi/g.
Summary = 1170 pCi/g.

Pu^{238} Calculation

$$\frac{(1107\text{ cts})(17.44\text{ apm})(50\text{ ml})(1\text{ ml})(.45045)}{(0.97\text{g})(3957\text{ cts})(1\text{ ml})(0.496\text{ ml})} = 228.4 \text{ pCi/g.}$$

Reported - Spreadsheet = 228.0 ~~9~~ pCi/g JCP
Summary = 228 pCi/g

OK

581/2-93

9613492.1065

EBASCO

BY JCP DATE 10-1993

CHKD. BY _____ DATE _____

SHEET _____ OF _____

OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Plutonium Calculation - Con't.

⑤ Sample: B07JZ7 (93-02351)

net peak counts - Pu^{239} = 21712 Pu^{238} = 3878 Pu^{242} = 17014
(matches raw data)

apm Pu^{242} = 17.44
leach volume = 100ml
diluted volume = 1ml
CF = .45045

Sample amt = 0.97g.
dilution aliquot = 1ml
aliquot = 1.9932

Pu^{239} Calculation

$$\frac{(21712\ cts)(17.44\ dpm)(100ml)(1ml)(.45045)}{(0.97g)(17014\ cts)(1\ ml)(1.9932\ ml)} = 518.52\ pCi/g.$$

Reported - Spreadsheet = 518 pCi/g
Summary = 518 pCi/g

OK

Pu^{238} Calculation

$$\frac{(3878\ cts)(17.44\ dpm)(100ml)(1ml)(.45045)}{(0.97g)(17014\ cts)(1\ ml)(1.9932\ ml)} = 92.61\ pCi/g.$$

Reported - Spreadsheet = 92.6 pCi/g
Summary = 92.6 pCi/g

OK

581/2-93

9613492.1066

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Plutonium Calculations — con't.

(1e) Sample: B07JZ8 (93-02437)

Net peak counts: Pu^{239} = 29631 Pu^{238} = 4619 Pu^{242} = 21849
(matches raw data)

dpm Pu^{242} = 17.44
leach volume = 50 ml
diluted volume = 1 ml
CF = .45046

Sample amt = 1.01 g.
dilution aliquot = 1 ml
aliquot = 2.9898

Pu^{239} Calculation

$$\frac{(29631\ cts)(17.44\ dpm)(50\ ml)(1\ ml)(.45045)}{(1.01\ g)(21849\ cts)(1\ ml)(2.9898)} = 176.41\ pCi/g.$$

Reported - Spreadsheet = 176 pCi/g.
Summary = 176 pCi/g OK

Pu^{238} Calculation

$$\frac{(4619\ cts)(17.44\ dpm)(50\ ml)(1\ ml)(.45045)}{(1.01\ g)(21849\ cts)(1\ ml)(2.9898)} = 27.5\ pCi/g.$$

Reported - Spreadsheet = 27.5 pCi/g
Summary = 27.5 pCi/g OK

581/2-93

9613492.1067

EBASCO

BY JCP DATE 10-19-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Valiciation

SUBJECT Plutonium Calculations — con't

(7) Sample: B07J29 (93-02438)

net peak counts = Pu^{239} = 19985 Pu^{238} = 3317 Pu^{242} = 14237
(matches raw data)

dpm Pu^{242} = 17.44
Leach volume = 50 ml
diluted volume = 1 ml
CF = .45045

Sample amt = 1.29 g.
dilution aliquot = 1 ml
aliquot = 1.9932 ml.

Pu^{239} Calculation

$$\frac{(19985\text{ cts})(17.44\text{ dpm})(50\text{ ml})(1\text{ ml})(.45045)}{(1.29\text{ g})(14237\text{ cts})(1\text{ ml})(1.9932\text{ ml})} = 214.44\text{ pCi/g}$$

~~JCP~~ ~~Pu^{2}~~ Reported - Spreadsheet = 214 pCi/g. OK
Summary = 214 pCi/g.

Pu^{238} Calculation

$$\frac{(3317\text{ cts})(17.44\text{ dpm})(50\text{ ml})(1\text{ ml})(.45045)}{(1.29\text{ g})(14237\text{ cts})(1\text{ ml})(1.9932\text{ ml})} = 35.59\text{ pCi/g}$$

Reported - Spreadsheet = 35.6 pCi/g. OK
Summary = 35.6 pCi/g

581/2-93

9613492.1068

EBASCO

BY JCP DATE 10-22-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. ____

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Plutonium Calculations — con't.

(8) Sample : B07K00 (93-02451)

net peak counts = Pu^{239} = 35369 Pu^{238} = 4762 Pu^{242} = 18181
(matches raw data)

dpm Pu^{242} = 17.44
Leach volume = 50 ml
diluted volume = 1 ml
CF = .45045

Sample amt = 0.94g.
dilution aliquot = 1 ml
aliquot = 5.9796 ml.

Pu^{239} Calculation

$$\frac{(35369\ cts)(17.44\ dpm)(50\ ml)(1\ ml)(.45045)}{(0.94g)(18181\ cts)(1\ ml)(5.9796\ ml)} = 135.95\ pCi/g.$$

Reported - Spreadsheet = 136 pCi/g
Summary = 136 pCi/g

OK

Pu^{238} Calculation

$$\frac{(4762\ cts)(17.44\ dpm)(50\ ml)(1\ ml)(.45045)}{(0.94g)(18181\ cts)(1\ ml)(5.9796\ ml)} = 18.3\ pCi/g.$$

Reported - Spreadsheet = 18.3 pCi/g.
Summary = 18.3 pCi/g

OK

581/2-93

9613492.1069

EBASCO

BY JCP DATE 10-22-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Plutonium Calculation — con't.

9- Blank (PB-02240)

net peak counts: Pu^{239} = 9 (matches raw data) Pu^{238} = 10 Pu^{242} = 3950

Pu^{242} dpm = 17.44
leach volume = 50 ml
diluted volume = 1ml
CF = .45045

Sample amt = 1.0g.
dilution aliquot = 1ml
aliquot = 9.966 ml.

Pu^{239} Calculation

$$\frac{(9\text{cts})(17.44\text{dpm})(50\text{ml})(1\text{ml})(.45045)}{(1\text{g})(3950\text{cts})(1\text{ml})(9.966\text{ml})} = .09 \text{ pCi/g.}$$

Reported - Spreadsheet = .0907 pCi/g
Summary = .0907 pCi/g

OK

Pu^{238} Calculation

$$\frac{(10\text{cts})(17.44\text{dpm})(50\text{ml})(1\text{ml})(.45045)}{(1\text{g})(3950\text{cts})(1\text{ml})(9.966\text{ml})} = .0998 \text{ pCi/g.}$$

Reported - Spreadsheet = .103 pCi/g
Summary = .103 pCi/g

OK

581/2-93

9613492.1070

EBASCO

BY JCP DATE 10-25-93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT Plutonium Calculation — con't.

10 - Matrix Spike (93-2240MS)

net peak counts: Pu^{239} = 17188 Pu^{238} = 734 Pu^{242} = 44666
(matches raw data)

Pu^{242} dpm = 17.44
leach volume = 50 ml
diluted volume = 1 ml
CF = .45045

Sample amt = 1.24g.
dilution aliquot = 1ml
aliquot = 7.9728 ml)

Pu^{239} Calculation

$$\frac{(17188\text{cts})(17.44\text{dpm})(50\text{ml})(1\text{ml})(.45045)}{(1.24\text{g})(44666\text{cts})(1\text{ml})(7.9728\text{ml})} = 152.91 \text{ pCi/g}$$

Reported - Spreadsheet = 153 pCi/g
Summary = 153 pCi/g OK

Pu^{238} Calculation

$$\frac{(734\text{cts})(17.44\text{dpm})(50\text{ml})(1\text{ml})(.45045)}{(1.24\text{g})(44666\text{cts})(1\text{ml})(7.9728\text{ml})} = 6.53 \text{ pCi/g}$$

Reported - Spreadsheet = 6.52 pCi/g
Summary = 6.52 pCi/g OK

581/2-93

9613492.1071

EBASCO

BY JCP DATE 10-27-93 SHEET 1 OF 6

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07J74 Np^{237} Calculation

1- Sample B07J74 (93-2239)

$$\text{net cpm} = \frac{1377 \text{ cts}}{1000 \text{ min}} - \frac{10 \text{ ct}}{3321 \text{ min}} = 1.374 \checkmark$$

$$\text{yield} = \frac{5.90 \text{ cpm sample cts}}{15.07 \text{ Std. } Np^{237} \text{ @ ct. time}} = .392 \checkmark$$

d/c = 2.467 wt = 10.09g.

$$\frac{(1.374)(2.467)}{\cancel{(2.467)}\,(10.09)(2.22)} = 0.386 \text{ pCi/g}$$

.392

Reported - Spreadsheet = 0.386 pCi/g
Summary = 0.386 pCi/g

OK

2- Sample B07J75 (93-2240)

$$\text{net cpm} = \frac{80 \text{ cts}}{1000 \text{ min}} - \frac{7 \text{ cts}}{3321 \text{ min}} = .078 \checkmark$$

$$\text{yield} = \frac{3.30}{14.75} = .224 \checkmark$$

d/c = 2.604 wt = 9.55g ✓

$$\frac{(.078)(2.604)}{(.224)(9.55)(2.22)} = 0.043 \text{ pCi/g}$$

Reported - Spreadsheet = 0.043 pCi/g
Summary = 0.043 pCi/g

OK

581/2-93

9613492.1072

EBASCO

BY JCP DATE 10-27-93 SHEET 2 OF 4

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07J74 - Np^{237} Calculation - con't.

3- Sample B07J25 (93-02240D) - Duplicate

$$\text{net cpm} = \frac{193 \text{ cts}}{1000 \text{ min}} - \frac{4 \text{ cts}}{3321 \text{ min}} = .192 \checkmark$$

$$\text{yield} = \frac{5.42}{14.43} = 0.376 \checkmark$$

d/c = 2.41 wt = 10g.

$$\frac{(.192)(2.41)}{(.376)(10)(2.22)} = 0.055 \text{ pCi/g.}$$

Reported - Spreadsheet = 0.055 pCi/g
Summary = 0.055 pCi/g

OK

4- Sample B07J26 (93-02241)

$$\text{net cpm} = \frac{83674 \text{ cts}}{1000 \text{ min}} - \frac{8 \text{ cts}}{3321 \text{ min}} = 83.672$$

$$\text{yield} = \frac{8.68}{14.54} = 0.597 \checkmark$$

d/c = 2.584 wt = 9.97g.

$$\frac{(83.672)(2.584)}{(0.597)(9.97)(2.22)} = 16.363 \text{ pCi/g.}$$

Reported - Spreadsheet = 16.368 pCi/g.
Summary = 16.4 pCi/g.

OK

581/2-93

9613492.1073

EBASCO

BY JCP DATE 10-27-93 SHEET 3 OF 6

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07J24 Np237 Calculations — con't.

5 - Sample B07J27 (93-2351)

$$\text{net cpm} = \frac{39425 \text{ cts}}{1000 \text{ min}} - \frac{11 \text{ cts}}{3321 \text{ min}} = 39.422$$

$$\text{yield} = \frac{9.28}{14.27} = .650$$

d/c = 2.467 wt = 9.98 g.

$$\frac{(39.422)(2.467)}{(.650)(9.98)(2.22)} = 6.753 \text{ pCi/g.}$$

OK

Reported - Spreadsheet = 6.745 pCi/g.
Summary = 6.75 pCi/g.

6 - Sample B07J28 (93-2437)

$$\text{net cpm} = \frac{7953 \text{ cts}}{1000 \text{ min}} - \frac{11 \text{ cts}}{3321 \text{ min}} = 7.950 \checkmark$$

$$\text{yield} = \frac{8.91}{14.01} = .636 \checkmark$$

d/c = 2.604 wt = 10.15 g.

$$\frac{(7.950)(2.604)}{(.636)(10.15)(2.22)} = 1.445 \text{ pCi/g.}$$

OK

Reported - Spreadsheet = 1.444 pCi/g.
Summary = 1.44 pCi/g.

581/2-93

9613492.1074

EBASCO

BY JCP DATE 10-27-93 SHEET 4 OF 6

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07J24 Np^{237} Calculation — Con 4.

7 - Sample B07J79 (93-02438)

net cpm = $\frac{13234 \text{ cts}}{1000 \text{ min}} - \frac{7 \text{ cts}}{3321 \text{ min}} = 13.232$ ✓

yield = $\frac{10.04}{15.09} = .6667$ ✓

d/c = 2.41 wt = 10.35g.

$\frac{(13.252)(2.41)}{(.6667)(10.35)(2.22)} = 2.084$ pCi/g.

Reported — Spreadsheet = 2.082 pCi/g. OK
Summary = 2.08 pCi/g

8 - Sample ~~B07J20~~ JP B07K00 (93-2451)

net cpm = $\frac{308 \text{ cts}}{1000 \text{ min}} - \frac{3 \text{ cts}}{3321 \text{ min}} = .307$ ✓

yield = $\frac{6.07}{14.78} = .411$ ✓

d/c = 2.584 wt = 9.42g.

$\frac{(.307)(2.584)}{(.411)(9.42)(2.22)} = 0.092$ pCi/g.

Reported - Spreadsheet = 0.092 pCi/g. OK
Summary = 0.092 pCi/g

581/2-93

9613492.1075

EBASCO

BY JCP DATE 10-27-93 SHEET 5 OF 6

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07J24 Np^{237} Calculation — Con't.

9 - Sample ~~BS-2240 - Blank Spike~~ JCP PB-2240 - Blank

$$\text{net cpm} = \frac{9\text{ cts}}{1000\text{ min}} - \frac{5\text{ cts}}{3321\text{ min}} = 0.007 \checkmark$$

$$\text{yield} = \frac{8.28}{14.47} = 0.572 \checkmark$$

d/c = 2.467 wt = 10g.

$$\frac{(0.007)(2.467)}{(.572)(10)(2.22)} = .00136 \text{ pCi/g.}$$

Reported - Spreadsheet = .00146 pCi/g. OK

Summary = ~~1.23 pCi/g.~~ JCP .00146 pCi/g

10 - Sample 93-2240MS - Matrix Spike

$$\text{net cpm} = \frac{6596\text{ cts}}{1000\text{ min}} - \frac{9\text{ cts}}{3321\text{ min}} = 6.593 \checkmark$$

$$\text{yield} = \frac{8.65}{15.01} = .576 \checkmark$$

d/c = 2.604 wt = 9.99g.

$$\frac{(6.593)(2.604)}{(.576)(9.99)(2.22)} = 1.344 \text{ pCi/g.}$$

Reported - Spreadsheet = 1.34 pCi/g. OK

Summary = 1.34 pCi/g

581/2-93

9613492.1076

EBASCO

BY JCP DATE 10-27-93 SHEET 6 OF 6

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07JZ4 Np^{237} Calculation — cont.

11- Sample ~~PB-2240 - Blank~~ JCP BS-2240 - Blank Spike

$$\text{net cpm} = \frac{8121 \text{ cts}}{1000 \text{ min}} - \frac{4 \text{ cts}}{3321 \text{ min}} = 8.120$$

$$\text{yield} = \frac{10.39}{14.47} = .718 \checkmark$$

d/c = 2.41 wt = 10g.

$$\frac{(8.120)(2.41)}{(.718)(10)(2.22)} = 1.228 \text{ pCi/g.}$$

OK

Reported — Spreadsheet = 1.23 pCi/g.
Summary = 1.23 pCi/g.

581/2-93

9613492.1077

EBASCO

BY JCP DATE 10-27-93 SHEET 1 OF 4

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 Data Validation - 241-T-106

SUBJECT PNL B07J24 C^{14} Calculations

1- Sample 93-2239

cpm(a) = 28.90 Blank = 6 dilution factor = 7.50
cpm(b) = 27.55 d/c = 1.304 weight = 0.1929
average recovery = .929.

$$\frac{\left[\left(\frac{28.90+27.55}{2}\right)-6\right](1.304)(7.50)}{(.1929)(2.22\times10^{6})(.929)} = 5.46\times10^{-4}\ \text{uCi/g}$$

Reported - Spreadsheet = 5.5×10^{-4} uCi/g

OK

2- Sample 93-2240

cpm(a) = 12.3 Blank = 6 dilution factor = 7.50 avg. rec = .929
cpm(b) = 9.4 d/c = 1.304 weight = .0933

$$\frac{\left[\left(\frac{12.3+9.4}{2}\right)-6\right](1.304)(7.50)}{(.0933)(222\times10^{6})(.929)} = 2.47\times10^{-4}\ \text{uCi/g.}$$

Reported = 2.5×10^{-4}

OK

581/2-93

9613492.1078

EBASCO

BY JCP DATE 10-27-93 SHEET 2 OF 4

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07J74 C^{14} Calculations — con't.

3 - Sample = 93-2241

cpm(a) = 9.0 Blank = 6 dilution factor = 7.50 avg. rec = .929
cpm(b) = 7.8 d/c = 1.304 weight = .1271

$$\frac{\left[\left(\frac{9.0+7.8}{2}\right)-6\right](1.304)(7.5)}{(.1271)(2.22\times10^{6})(.929)} = 9.0\times10^{-5}\ \text{uCi/g}.$$

Reported = 9.0×10^{-5} uCi/g

OK

4 - Sample 93-2351

cpm(a) = 6.85 Blank = 6 dil. factor = 7.5 avg. rec = .929
cpm(b) = 8.30 d/c = 1.304 weight = .1108

$$\frac{\left[\left(\frac{6.85+8.30}{2}\right)-6\right](1.304)(7.5)}{(.1108)(2.22\times10^{6})(.929)} = 6.7\times10^{-5}\ \text{uCi/g}$$

Reported = 6.7×10^{-5} uCi/g

OK

9613492.1079

EBASCO

BY JCP DATE 10-27-93 SHEET 3 OF 4

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07J74 C^{14} Calculations -con't.

5- Sample 93-2437

cpm(a) = 7.75 Blank = 6 aif. factor = 7.5 avg. rec. = .929.
cpm(b) = 9.45 a/c = 1.304 weight = .0929

$$\frac{\left[\left(\frac{7.75+9.45}{2}\right)-6\right](1.304)(7.5)}{(.0929)(2.22\times10^{6})(.929)} = 1.33\times10^{-4}\ \text{uCi/g.}$$

Reported = 1.3×10^{-4} uCi/g OK

6- Sample 93-2438

cpm(a) = 9.95 blank = 6 aif. factor = 7.5 avg. rec. = .929
cpm(b) = 8.70 a/c = 1.304 weight = .1324

$$\frac{\left[\left(\frac{9.95+8.70}{2}\right)-6\right](1.304)(7.5)}{(.1324)(2.22\times10^{6})(.929)} = 1.19\times10^{-4}\ \text{uCi/g}$$

Reported = 1.2×10^{-4} uCi/g OK

581/2-93

9613492.1080

EBASCO

BY JCP DATE 10-27-93 SHEET 4 OF 4

CHKD. BY _____ DATE _____ OFS NO. 3403.252 DEPT. NO. 757

CLIENT WHC

PROJECT 93-22 241-T-106 Data Validation

SUBJECT PNL B07J24 C^{14} Calculations — Con't

7 - Sample 93-2451

cpm(a) = 10.9 Blank = 6 air factor = 7.5 avg. rec = .929
cpm(b) = 12.3 a/c = 1.304 weight = .1794

$$\frac{\left[\left(\frac{10.9+12.3}{2}\right)-6\right](1.304)(7.5)}{(.1794)(2.22\times10^{6})(.929)} = 1.48\times10^{-4}\ \text{uCi/g.}$$

Reported = 1.5×10^{-4} uCi/g OK

8 - Sample 93-2451D (Duplicate)

cpm(a) = 10.65 Blank = 6 Dil. factor = 7.5 avg. rec = .929
cpm(b) = 9.50 a/c = 1.304 weight = ~~.1467~~ .1463

$$\frac{\left[\left(\frac{10.65+9.5}{2}\right)-6\right](1.304)(7.5)}{(.1463)(2.22\times10^{6})(.929)} = 1.32\times10^{-4}\ \text{uCi/g.}$$

Reported = 1.3×10^{-4} uCi/g OK

581/2-93

9613492.1081

EBASCO

BY [illegible] DATE 10/16/93 SHEET ____ OF ____

CHKD. BY [illegible] DATE ____ OFS NO. WHC3403.242 DEPT. NO. ____

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL B07524 ~~QA checklist~~ Calculation/Template Np 237

Np 237

Basic Equation = $\frac{(\text{net cpm})\ (d/c)}{\text{yield} \times \text{weight} \times 2.22}$

net cpm - pg E06-014 $\frac{(\text{gross sample counts} - \text{bkg counts})}{(\text{Live Time in minutes})}$ - bkg count time

$\frac{1377 \text{ counts}}{1000 \text{ min}} - \frac{10 \text{ counts}}{3321 \text{ min}} = 1.374$ counts (ok)

d/c - use pg E06-013 - All Reviewed against suppl. Data - ok = 2.467 (ok)

Yield = use pg E06-013 = $\frac{\text{cpm sample counts}}{\text{standard with 10g-239 at count time (100\% yield)}}$

$= \frac{5.90}{15.07} = 0.392$ (ok)

weight = use pg E06-012 = 10.09 (ok)

$\frac{(1.374)(2.467)}{(0.392)(10.09)(2.22)} = 0.3860$ pCi/g

Calculated result	Spreadsheet	Summary
0.3860	0.386	0.386
	OK	OK

581/2-93

9613492.1082

EBASCO

BY PB DATE 10/16/97 SHEET ____ OF ____

CHKD. BY MA DATE ____ OFS NO. ____ DEPT. NO. ____

CLIENT WHC

PROJECT T-106 Data validation

SUBJECT PNL B07574 ~~QA checks~~ Calculations / Template ^{14}C

^{14}C

Equation $\frac{uci}{g} = \frac{\left(\frac{(cpm(a)+cpm(b))}{2} - Blank\right) * d/c * \text{Dilution Factor}}{\text{weight} * 2.22\times10^{6} * \text{Avg Recovery}}$

cpm(a) & cpm(b) - pg E11-07 - (a) - 28.90 ✓
(b) - 27.55 ✓

2 Blank - E11-005 Blank = 6 ✓
reviewed against
E11-005 - OK

3 d/c - E11-005 - 1.304 ✓

4 Dilution Factor = E11-005 - 7.50 ✓

weight - E11-006 0.1929 ✓

6 Avg. Recovery - E11-005 0.929

$$\frac{\left[\left(\frac{28.90+27.55}{2}\right)-6\right] * 1.304 * 7.50}{0.1929 * 2.22\times10^{6} * 0.929}$$

Calculated
5.46×10^{-4}

Spreadsheet = Summary Page
5.5×10^{-4} OK

581/2-93

9613492.1083

EBASCO

BY TBB DATE 10/14/98 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. ____ DEPT. NO. ____

CLIENT WHC

PROJECT T-106 Data validation

SUBJECT PNL B07 JZ4 [Calculation Proof / Template]

4. GEA - GAMMA

Equation Act pci/g = $\frac{\text{dps @ 0 Time}}{0.037\ \text{dis/pci} \cdot \text{wt}}$

Use Average for multiple gram determinations

Test on Sample 93-2239 Co 60

wt = 28.91 g (pg E01-026)

dps@ 0 time = 6.287E+01 } pg E01-031
6.23 E+01

Calculated average

$\frac{(6.287E+01)+(6.23E+01)}{2} = 6.258E+01$

Reported Average
6.25E+01 ok
E01-031

calculated pci/g

$\frac{6.258E+01}{0.037\ \text{dis/pci} * 28.91} = 58.50$

Reported pci/g
58.50 ok
E01-031

Summary report reported value = 62.4 (E01-006)
Reason - Raw data was wet weight
Summary table uses dry weight
No Lab pages indicate dry weights
Solution - use dry weights from summary table
dry weights confirmed / E08-009

Calculation Templates.

581/2-93

$$\text{Act pCi/g} = \frac{\text{dps @ 0 Time}}{0.037\ \text{dps/pCi} \cdot \text{Dry weight}}$$

e.g. $\frac{(1)\ \text{from E01-031}}{0.037 \cdot (2)\ \text{from this page}}$

Gamma Energy Analysis of 241-T-106 Soils

Activity in pCi/g ,dry weight

	93-2239	±	93-2239D	±	93-2240	±	93-2241	±	93-2351	±
WHC ID #	B07JZ4		B07JZ4		B07JZ5		B07JZ6		B07JZ7	
PNL LRB #	54529-52-A		54529-60-A		54529-53-A		54529-54-A		54529-55-A	
Collection date	12/7/92 10:00		12/7/92 10:00		12/7/92 10:00		12/8/92 14:00		12/11/92 10:35	
Dry Weight (g)	27.09 (2)		26.90		28.89		30.22		29.25	
K-40	15	8	15	6	19	6	<30		<20	
Co-60	62.4	0.5	77.3	0.6	44.2	0.4	78.4	2.1	80.4	1.6
Nb-94	1.7	0.5	<1.1		0.7	0.1	<8		<1.7	
Ru-106	ND		ND		ND		ND		ND	
Sb-125	29.3	0.6	37.5	0.9	30.3	0.4	428	7	237	4
Cs-134	<6		<9		<5		<60		<9	
Cs-137	4.9	0.3	8.1	0.5	1.9	0.2	1230	20	12.7	0.7
Ce-141	2.5	0.3	4.3	0.6	1.5	0.2	<30		<3	
Ce-144	<130		<190		<80		<1500		<300	
Eu-152	35.2	0.9	40.8	1.1	13.7	0.3	114	26	41	5
Eu-154	1,640	30	1,940	20	591	11	6,290	190	2,450	80
Eu-155	1,600	110	1,960	130	590	6	6,320	620	2,460	210
Np-237	<8		<2		<5		27	5	7.9	2.5
Am-241	536	45	699	37	157	4	1950	210	750	70

The one sigma uncertainties are based on counting statistics. All "<" values are detection limits associated with each not detected analysis. The detection limits are calculated as if the isotope was present at a level that is 2.5 times the square root of twice the average background (approximately 3.3 sigma). The term "ND" is used to denote that there was No detected activity for Ru-106.

GEA (GAMMA SPEC)

9613492.1084

E01-006

83	214	1407.980	-2.00	0.998	-5.00	-2.00	-2.00
89	228	1459.200	-3.201E-23	0.776	-5.00	-2.00	1.601E-23
89	228	1495.800	-2.00	0.771	-5.00	-2.00	-2.00

* Test value of -5 means that the test did not apply.

Ru106 is being removed from the component set.
Hf175 is being removed from the component set.
Bi214 is being removed from the component set.
Ra228 is being removed from the component set.

** Least-squares Results **

(interferences)

nuclide	energy Kev	dps at zero time	uCi /g	peak frac	err (%)	dev (sig)	pCi /g	error (%)
1 Na 22	- - - -	1.499E+00	1.401E-06	- - - - - - - - -			1.401E+00	~~64.11~~
	511.07	1.450E+00	1.356E-06	1.03	21.66	-0.05		
	1274.48	1.547E+00	1.446E-06	0.00	1.01	0.96	Eu154	
2 K 40	- - - -	1.506E+01	1.408E-05	- - - - - - - - -			1.408E+01	55.55
	1460.87	1.506E+01	1.408E-05	1.00	55.55	0.00		
3 Co 60	- - - -	6.258E+01	5.850E-05	- - - - - - - - -			5.850E+01	0.80
	1173.37	6.287E+01	5.878E-05	1.00	1.14	0.13		
	1332.50	6.230E+01	5.824E-05	1.00	1.13	-0.12		
4 Nb 94	- - - -	1.690E+00	1.580E-06	- - - - - - - - -			1.580E+00	33.87
	702.79	1.607E+00	1.502E-06	1.05	19.84	-0.08		
	873.34	1.726E+00	1.613E-06	0.01	1.14	0.56	Eu154	
5 Sb125	- - - -	2.945E+01	2.753E-05	- - - - - - - - -			2.753E+01	2.13
	176.59	3.141E+01	2.937E-05	0.94	4.58	0.43		
	427.95	2.862E+01	2.676E-05	1.03	2.33	-0.39		
	463.64	2.909E+01	2.720E-05	1.01	6.51	-0.06		
	600.74	3.174E+01	2.967E-05	0.93	5.00	0.45		
	606.82	2.435E+01	2.276E-05	1.21	18.41	-0.36		
	636.20	3.080E+01	2.880E-05	0.96	6.19	0.22		
6 Cs137	- - - -	4.879E+00	4.561E-06	- - - - - - - - -			4.561E+00	5.98
	661.76	4.879E+00	4.561E-06	1.00	5.98	0.00	Am241	
7 Ce141	- - - -	2.505E+00	2.342E-06	- - - - - - - - -			2.342E+00	13.23
	145.99	2.505E+00	2.342E-06	1.00	13.23	0.00		
8 Eu152	- - - -	3.529E+01	3.299E-05	- - - - - - - - -			3.299E+01	2.50

14 ± 8

58.5 ± .5 → ① = Average of these for Co 60

1.58 ± 0.54

27.15 ± 0.6

4.56 ± 0.27 → ① = This for Cs 137

2.34 ± 0.31

137

E01-031

96 5492 2045

9613492.1086

EBASCO

BY PGS DATE _____ SHEET _____ OF _____

CHKD. BY _____ DATE _____ OFS NO. _____ DEPT. NO. _____

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL B075Z4 Calculation Proof/Template Pu

D. Pu

$$\text{Equation} = \frac{(\text{net peak}) \times \text{dpm } 242 \times \text{leach vol} \times \text{dilu vol} \times \text{CF}}{\text{sample amt} \times \text{Pu-242 counts} \times \text{dilu aliquot} \times \text{aliquot}}$$

Example Sample 93-2239

				Pu 239	Pu 238
(1)	net peak	E03009	compare w/ E03007	= 4212	665
(2)	dpm 242	E03007	note - All sample values confirmed	= 17.44	
(3)	leach vol	E03007	note - All sample values confirmed	= 50	
(4)	dilu vol	E03007	1 in all cases	= 1	
(5)	CF	E03007	$\frac{1}{2.22}$	= 0.45045	
(6)	sample amt	E02011	from ALPHA/BETA	= 0.9	
(7)	Pu 242 counts	E03009	compare w/ E03007	= 3391	
(8)	dilu aliquot	E03007	1 in all cases	= 1	
(9)	aliquot	E03007	note - All sample values confirmed	= 1.9932 w/ E08-004	
(10)	Results	[illegible]	and E03-003	= 272 for Pu 239	

calculated value	Spreadsheet	Summary Report
272 for Pu 239	272 ok	272 ok

$$\frac{(1) \times (2) \times (3) \times (4) \times (5)}{(6) \times (7) \times (8) \times (9)} = (10) \text{ s summary page}$$

$$^{238}\text{Pu} \quad \frac{665 \times 17.44 \times 50 \times 1 \times 0.45045}{0.9 \times 3391 \times 1 \times 1.9932} = 4.294\text{E}+1$$

Bli

2918

581/2-93

Entered by: [illegible] Date: 2-5-93

Reviewed by: [illegible] Date: 2/5/93

PLUTONIUM ANALYSIS DATA FOR 241-T-106

Batch #1

Client Sample ID	Program Sample ID	Sample Type	Pu-239+240 pCi/g	+/- 1 sigma	Pu-239+240 RPD	Pu-238 pCi/g	+/- 1 sigma	Pu-238 RPD	Pu-239 Spike pCi	+/- 1 sigma	% Recovery
B07JZ4	93-02239	Soil	2.72E+02	1.10E+01		4.29E+01	2.32E+00				
B07JZ5	93-02240	Soil	3.49E+01	1.37E+00		4.20E+00	2.70E-01				
	93-02240MS	Matrix Spike	1.53E+02	5.20E+00		6.52E+00	3.24E-01		1.19E+02	3.30E+00	97
B07JZ5	93-02240D	Duplicate	4.00E+01	1.53E+00	14	5.29E+00	3.06E-01	23			
	PB-02240	Blank*	9.07E-02	3.31E-02		1.03E-01	3.70E-02				
	BS-02240	Blank Spike*	1.25E+01	3.87E-01		3.52E-01	2.64E-02		1.19E+01	7.00E-02	105
B07JZ6	93-02241	Soil	1.17E+03	4.48E+01		2.28E+02	1.07E+01				
B07JZ7	93-02351	Soil	5.18E+02	1.44E+01		9.26E+01	2.90E+00				
B07JZ8	93-02437	Soil	1.76E+02	5.82E+00		2.75E+01	9.80E-01				
B07JZ9	93-02438	Soil	2.14E+02	6.70E+00		3.56E+01	1.25E+00				
B07KO0	93-02451	Soil	1.36E+02	4.61E+00		1.83E+01	6.68E-01				

* Reported in pCi.

One sigma uncertainties are the propagated error of individual measurements.
Using a sample size similar to the lowest activity sample results in a detection limit of approximately 5 E-2 pCi/g for Pu-239+240 and for Pu-238.

E:\T106\PUT106

E03-003

96135492 1087

Executive - See Bldg work sheet

Step 1 - Enter in Excel in work sheet, confirm values & file date

Step 2 - Print & file letter

Step 3 - Compare & / sp file sheet & comments page

9613492.1088

PLUTONIUM ANALYSIS
Spreadsheet filename: PUCALC Revision 4, 1/7/92, NLW
ALO Sample ID: 93-2239
Date Calculated: 01/17/93
Data filename: PU2239
Spectrum: 2239PU.C5;1 M&TE No. = C5
Sample Count Time (Min.): 1050.07

6 Sample Amount: g, ml or sample?g	0.9	0.02	error
3 Leach Volume (ml):	50	1	error
8 Dilution aliquot,	1	0.00001	error
4 Diluted to, ml	1	0.00001	error
9 Aliquot (ml):	1.9932	0.0021	error
Pu-242 Tracer:	54124-51-10-2		
volume added, ml:	0.098	0.0009	error
dpm/ml:	177.93	2.03	error
2 total dpm =	17.44	0.26	error

Reporting Units
Activity: pCi
per ?: g
5 CF = 0.45045 5
= factor to convert generic formula to reporting units

Background File: AEABKG.C5;24
Count Time (Min.): 8801.75

Isotope:	Pu-242	Pu-239+240	Pu-238
Bkgd/Bkgd Count Time:	11	5	9
Peak Counts:	139	161	29
	155	195	40
	166	192	48
	216	264	45
	220	260	50
	285	293	67
	271	333	55
	291	396	44
	341	464	64
	369	469	72
	354	428	68
	289	360	47
	173	216	23
	94	117	11
	29	65	3
Interfering Tail Correction	0	0	0
Gross Peak Counts:	3392	4213	666
Sample-equiv bkgd:	1	1	1
Net peak counts:	7 3391	4212 1 for Pu239	665 1 for Pu238
error:	58	65	26
pCi/ g		2.72E+02 10	4.29E+01 10
error		1.10E+01	2.32E+00
%error		4.05	5.40
MDA		NA	NA

Generic
Formula: net peak x dpm Pu242 x leach vol x diln vol x CF
---
sample amt x Pu-242 counts x diln aliquot x aliquot

1-18-93 1-26-93
Entered by Date Reviewed by Date

E03-007

9613492.1089

EBASCO

BY PLB DATE 10/14/93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. ____ DEPT. NO. ____

CLIENT WHC

PROJECT T-106 Data Validation

SUBJECT PNL B07524 [Calculation Proof / Template] α, β⁻

B. Total ALPHA (GROSS ALPHA)

$$\text{Equation} = \frac{(\text{net cpm})(d/c)(\text{ml leachate})}{(\text{initial sample amount})(\text{ml sub sampled})(2.22\ \text{dpm/pCi})}$$

Check on Sample 93-2239

net cpm = $\frac{\text{Total count}}{\text{count time}}$ − Bkg cpm = $\frac{445}{30}$ − 0.115 E02-014

d/c = 3.2007 = sample E02-016

ml leachate = 50 E02-009

initial sample amount = 0.9 E02-011

ml sub sampled = volume for alpha dw * $\frac{\text{Pipette Volume}}{1000}$ E02-012

= 1 ml * $\frac{999.93}{1000\ \lambda/\text{ml}}$ = .9993

Calc. Total = 1181.4 Spreadsheet = 1181.4 ok Summary = 1181 ok

C. Total BETA (GROSS BETA)

Do same as Total ALPHA

net cpm E02-028

ml leachate same as ALPHA E02-009

initial sample amount " " E02-011

ml sub sampled " " E02-012

581/2-93

SPREADSHEET FOR CALCULATION OF TOTAL ALPHA ACTIVITY

Date calculated	21-Jan-93
Enter Radiochem Sample Number (XXXX)	93-2239
Enter Log-In Number ('90-XXXX)	93-2239
Enter Client Sample ID	TOTAL ALPHA
Enter File Name	932239TA
(4) Initial amount of sample used	0.9 +\- 0.0100
Which units, ml, g or sample?	G
(3) If leached, enter final leach soln volume (ml)	50 +\- 1.0000
(5) If leached, enter ml of leach soln analyzed	0.9979 +\- 0.0011
Enter total counts observed	445
Enter count time in minutes	30
Enter background (cpm)	0.115
(1) Calculated net cpm	14.7183 +\- 0.7059
Weight of residue on dish (NOT IN GRAMS) - in MG	3.6 +\- 0.1
(2) d/c for detector based on mg loading	3.2007 +\- 0.2040

Signature Gwen G. Bodaczynski 1-21-93
(Entered by) (Date)

(6) (7) Total Alpha Activity 1181.371 pCi/g

Error in activity units* 98.031 pCi/g

Percent Error 8.30 %

Minimum detectable activity NA

Signature A. K. Jadeff 1/26/93
(Reviewed by) (Date)

CALCULATION OF SAMPLE ACTIVITY:

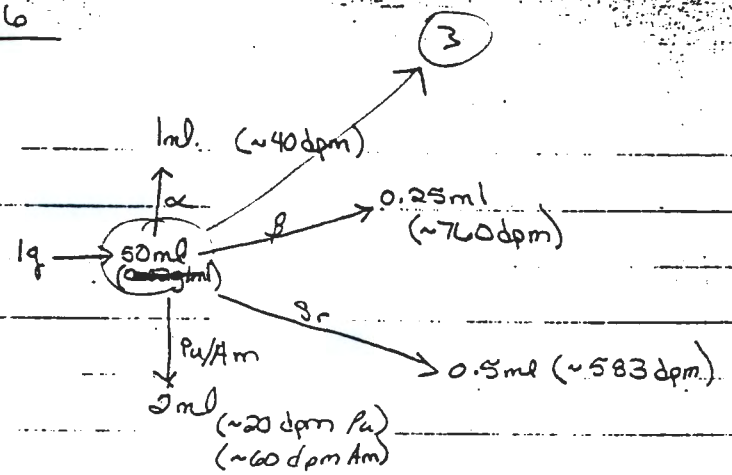
$$\frac{(\text{net cpm})(\text{d/c})(\text{pCi}/2.22\text{dpm})(\text{ml leachate})}{(\text{initial sample amount})(\text{ml subsampled})}$$

*Note: The propagated error includes the error associated with the d/c calculation based on the mg loading on the plate.

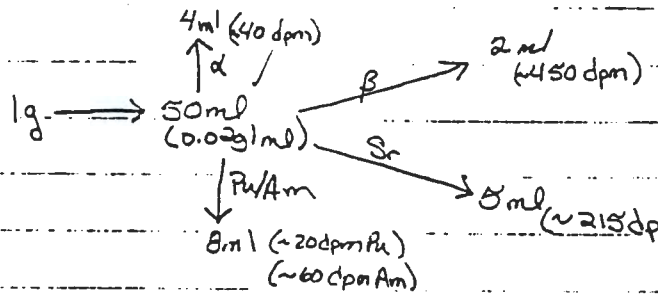
Total Alpha Spreadsheet Revision 3, 6/13/91
Alpha D/C Calibration Curve: May, 1991
TOTALPHA

T-106

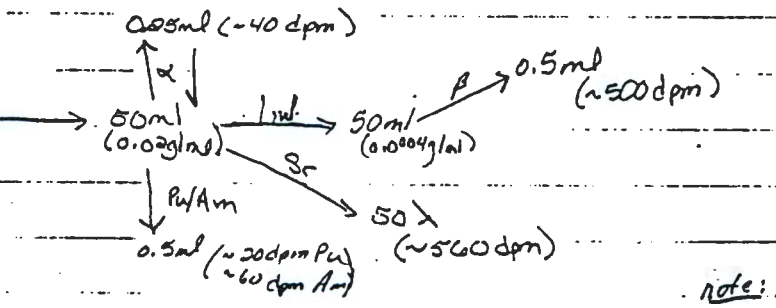
93-2239



93-2240

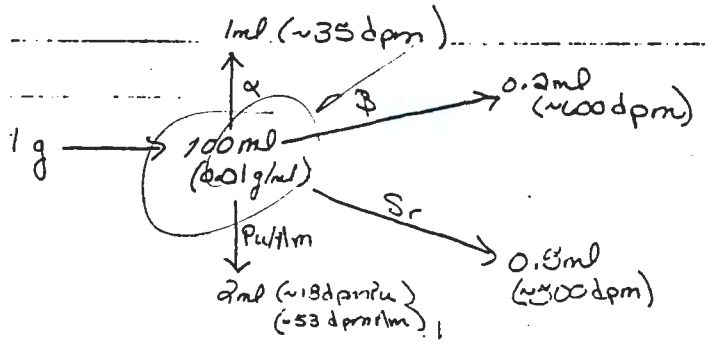


93-2241



note: serial dilution for Beta

93-2351



Entered by: Sandra K. Fadiff Date 2/22/93

Reviewed by: [signature] Date 2/22/93

Gross Alpha Analysis For 241-T-106

Summary Data Table

Client Sample ID	ACL Sample ID	Sample Type	Sample pCi/g	+/- 1 sigma*	Normalized Blank**	RPD***	Added pCi/g	+/- 1 sigma*	Percent Recovered
BO7JZ4	93-02239	Soil	1181	98	< 15				
BO7JZ5	93-02240	Soil	205	17	< 3				
BO7JZ5	93-02240D	Duplicate	187	16	< 3	9			
BO7JZ6	93-02241	Soil	3297	295	< 56				
BO7JZ7	93-02351	Soil	1475	131	< 28				
BO7JZ8	93-02437	Soil	681	62	< 13				
BO7JZ9	93-02438	Soil	808	67	< 10				
BO7KO0	93-02451	Soil	796	55	< 5				
	BS-02240A	Blank Spike	22	2	< 2		23.57	0.24	95
	93-02240MS	Matrix Spike	1444	99	< 6		1228	27	102
	PB-02240	Blank	< 2						

*The error is based on the propogated counting, pipetting, and weighing errors.
**The normalized blank is calculated relative to the reagent blank and takes into account dilutions and volumes analyzed.
***Relative percent difference

Equation = (net cpm)(d/l)(ml leachate) / (initial sample amount)(ml subsampled)(2.22 dpm/pCi)

= (1) * (2) * (3) / (4) * (5) * (6) * 2.22 = (7)

Step 1 - confirm that the spreadsheet and raw data agree

Step 2 - use summary table for calculation

Step 3 - confirm that answer = summary table answer

Raw data example for sample 93-02239 ps:

(1) = E02-014

(2) = E02-016

(3) = E02-009

(4) = E02-011

(5) = E02-012

(6) = E02-016 - This page

E02-C06

Sample #	wet wt	% Solids	Corrected Wt (4)
93.02239	0.96 g	93.7	0.90 g
93.02240	1.30 g	95.4	1.24 g.
93.02240D	1.27 g	95.4	1.21 g.
93.02241	1.00 g	97.2	0.97 g.
93.02351	1.00 g	97.4	0.97 g.
93.02437	1.05 g.	96.2	1.01 g.
93.02438	1.34 g	96.4	1.29 g.
93.02451	1.01 g	93.5	0.94 g.

G. G. Bodaczynski
1-21-93
D. K. Tadyf
1/25/93

9613492.1094

Gross Alpha and Beta Data Sheet

Battelle, Pacific Northwest Laboratories
Analytical Chemistry Laboratory
File Location: Red, 329 Building

		Check if used
Procedure PNL-ALO-106	Rev.0, leach:	
Procedure PNL-ALO-460	Rev.0, α prep:	✓
Procedure PNL-ALO-461	Rev.0, α count:	✓
Procedure PNL-ALO-462	Rev.0, β prep:	✓
Procedure PNL-ALO-463	Rev.0, β count:	✓

Date Sample
Prep Started 1-13-93
Date Completed 1-14-93

Added Spike Volume
Alpha Spike Isotope ^{239}Pu
Pipette No. 13A-6 Volume 246.5 λ +/- 0.8 Date Pipetted 1-14-93
Spike ID 52733-144-1 Spike Activity 534 ± 2.5 dpm/ml

Beta Spike Isotope ^{90}Sr-Y (x2)
Pipette No. 5A-31 Volume 997.9 ± λ +/- 1.1 Date Pipetted 1-14-93
Spike ID 52733-117-2 Spike Activity 1064.8 ± 40.3 dpm/ml 7-92

Sample ID, Aliquot Size, and Leachate Volume

Balance Number NA Temperature (if weighing liquid samples) NA

Sample ID			Sample Wt or Vol	Final Leachate Vol.	Volume for alpha anal.	Volume for beta anal.
93-2239					1ml ✓	250 λ
93-2240					4ml ✓	2ml
93-2240MSA used 2240D		(5)			2ml	
93-2240MSB						2ml
93-2240D		1ml x 0.9477			4ml	2ml
PB 2240	Should Fits				1ml	10ml
BS 2240A		for			all	
BS 2240B		All				all
93-2241		low 93-2241			(250 λ)	500 λ 1-750 see dil.
93-2351					1ml	200 λ
93-2437					1ml	250 λ
93-2438					1ml	250 λ
93-2451					3ml	500 λ

Sample Volumes (if a pipet was used for small aqueous samples or leach aliquots)

Aliquot of original sample or ~~alpha or beta~~ aliquot?
Pipette No. 5A-31 Volume 997.9 λ +/- 1.1 λ Date Pipetted 1-14-93

Aliquot of original sample or ~~alpha or beta~~ aliquot?
Pipette No. 13A-6 Volume 246.5 λ +/- 0.8 λ Date Pipetted 1-14-93

Gwen G. Brodbeck 1-22-93 — Analyst, Date
M. K. Fadeff 1/26/93 — Reviewer, Date
ABDATA2.LOG

13A-5 199.0 ± 0.4 λ 1-14-93
13A-7 494.2 ± 2.0 λ 1-14-93

E02-012

Battelle
Pacific Northwest Laboratories

ALPHA COUNTING DATA

REQUESTED BY	DATE ANALYZED	SAMPLE TYPE	CHARGE CODE
		Total α - T-106	

REMARKS

SAMPLE DESIGNATION	DATE - TIME SAMPLED	PROCESS USED	WT. - VOL. ANALYZED	WT. RESIDUE	ANALYST	SET NUMBER	COUNTED	DATE - TIME	COUNTS	MINUTES	BKG. S/M	CORR. S/M	BACKGROUND	TECH. FACTOR	GEOMETRY FACTOR	VOLUME FACTOR	WEIGHT - µG PER D/M	CHEMICAL YIELD FACTOR	RESULTS UNITS OF µc/
93-2239							2	1-14-93 12:50	445	30	.115		445/30 - .115 = 1						
93-2240							4	↓	324	↓	.125								
93-2240 D							2	1-14-93 13:25	303	30	.115								
93-2241							4	↓	354	↓	.125								
93-2351							2	1-14-93 14:20	315	30	.115								
93-2437							4	↓	292	↓	.125								
93-2438							2	1-18-93 0835	437	30	.111	✓							
93-2451							4	↓	664	↓	.072	✓							
93-2240 MSD							2	1-18-93 0955	1314	30	.111								
BS 2240A							4	↓	398	↓	.072								
PB 2240 A							2	1-18-93 11:50	8	30	.111								

Gwen L. Rudzynski 1-21-93

Sandra K. Fahey 1/26/93

0.4205 X 10-6

BD-1700-047 (12-71)

E02-214

9613492.1095

Battelle
Pacific Northwest Laboratories

BETA COUNTING DATA

REQUESTED BY

DATE ANALYZED: 1-14-93

SAMPLE TYPE: T-106

CHARGE CODE

REMARKS: Total α + Beta

SAMPLE DESIGNATION	DATE - TIME SAMPLED	CARRIER (ML)	PROCESS	WT.-VOL. ANALYZED	WT. RESIDUE	ANALYST	SET NUMBER	SHELF	COUNTED	DATE - TIME COUNTS	MINUTES	BKG. C/M	BKG. CORR. C/M	TECHNICIAN	CALCULATIONS (C/M) (VOLUME FACTOR) / ((EC)(2.22×10⁶)(MS)(BS)(BSA)(AW)(YIELD)) =	RESULTS UNITS OF µc/
93-2239								66	1	1-14-93 12:50	4804	10	18.1			
93-2240								67	1		2627		17.4			
93-2240D								68	1		2845		15.8			
93-2241								66	1	1-14-93 01:05	2627	10	18.1			
93-2351								67	1		2713		17.4			
93-2437								68	1		2631		15.8			
93-2438								66	1	1-14-93 13:20	3814	10	18.1			
93-2451								67	1		3299		17.4			
BS2240B								68	1		2430		15.8			
93224OMS-B								66	1	13:30 1-14-93	12130	10	17.4			
PB 2240								67	1		502	30	15.8			
"								67	1	14:20 1-14-93	1830	100	15.8			

Gwen G Brodzczynski 1-20 93

Sandra K. Fadeff 1/20/93

BD-1700-049 (12-71)

№ 1549

9613492.1096

830-203

9613492.1097

EBASCO

BY TB DATE 10/14/93 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. ____ DEPT. NO. ____

CLIENT WHC

PROJECT T-106 Data validation

SUBJECT PNL 307 JZ4 Calculation Proof / Template Sr

E. Sr^{90}

Equation $\left[\text{net cpm sample} - \text{net cpm sample}\left(1 - e^{-\frac{.693}{64.0\text{hrs}} * \Delta T}\right)\right] * TSC * d/c *$ (.0467)

$WP * YS * 2.22 *$ sample weight

Example - sample 93-2239

net cpm sample = E04-009 = $\frac{\text{counts}}{\text{minutes}}$ - Bkg cpm = 200.70

ΔT = Time between Sr Separation and midpoint of the sample count = 4.42 hrs must be in hrs

Get ΔT from E04-009 Times

TSC = See bottom E04-011 for explanation use E04-011 = 66.89

Reviewed against E09-294 - OK

d/c = efficiency - E04-011 = 2.828

Reviewed against E09-294-OK

WP = $SrCO_3$ weight E04-011 = 56.3

YS = Strontium Yield = 0.9192

Sample weight = 8.67×10^{-3}

calculated result	Spreadsheet Result	Summary Report Result
3.55×10^4	3.55×10^4	3.55 E+4 OK

581/2-93

9613492.1098

Spreadsheet for Calculating the Sr-90 Beta Activity
Sample Activity Determination

Calculation Date		18-Jan-93		
Internal Sample ID		93-2239		
ACL Log-in Number		93-2239		
Data File Name	(SR------)	~~SR5335~~ SR2239		
			Errors +/-	
(1) Strontium yield (from spiked sample calculation)		0.9192 *	0.0521	
Sample Yield Calculation				
Sr carrier volume added to sample (ul)		1968.4 *	1	0.000000
Concentration of Sr carrier (mg/ml)		20.17	0.04	0.000003
(2) Theoretical yield of SrCO3 (100%) in mg (1)		66.89	0.14	0.002047
(3) Actual yield of SrCO3 (precip. weight)	(mg)	56.3 *	0.2	0.000012
(9) Time of final sample separation	(@time(hr,min,sec))	08:19 *		
Time sample count began	(@time(hr,min,sec))	12:39 *		
Total count time	(@time(hr,min,sec))	00:10 *		
(4) Sep. time to midpoint of count time		04:25 - convert to hours		
Total counts of sample		2188 *		
Counter used for Beta count		66 *		
Background cpm for the counter		18.100 *		
(5) Calculated net cpm: sample - background cpm		200.70	4.87	
(6) d/c of the counter	(2)	2.828	0.103	0.0013
(7) Sample volume if liquid or weight if solid (ml or g		8.87E-03 *	2.66E-04	
Enter g if sample is solid, ml if liquid		g *		
(8) Sr-90 activity in the sample** pCi/L or pCi/g (3)		3.55E+04	2.77E+03	pCi/g
Percent error		7.81		
Minimum detectable activity		NA	pCi/g	

** not corrected for Sr-89 activity

Diana Tomphlin 1-18-93
Entered by Date

S. K. Fadey 2/8/93
Reviewed by Date

(1) Theoretical yield of SrCO3:

(ml added carrier)(conc. added carrier)(0.0114129mmoles Sr/mg)(147.62mg SrCO3/mmole)

(2) d/c based on SrCO3 loading on plate

d/c = 0.01505(mg SrCO3) + 1.9802

(3) Activity of Sr-90 in the sample

$$\text{pCi/g} = \frac{[\text{net cpm sample} - \text{net cpm sample}(1-e^{(-\ln 2/(\text{Y-90 half-life}))} * \text{delta t})] * \text{TSC} * \text{d/c} *}{\text{WP} * \text{YS} * 2.22\text{dpm} * \text{sample weight or volume}}$$

(5) (5) (4) (2) (6) (8) (3) (1) (7) 64.08

Decay constant for Y-90 = 2.67 days or 64.08 hours
WP = Weight of SrCO3 ppt. on the dish
TSC = Theoretical SrCO3 ppt. weight for 100% yield
delta t = Interval of time between the Sr separation and the mid-point of the sample count

SRCALC 12/13/90

E04-011

9613492.1099

Spreadsheet for PNL SR 90

PNL Sample Number	93-2239
WHC Sample Number	

Strontium Yield	0.9192
Theoretical yield of SrC	66.89
Actual Yield of SrCO3	56.3
Sep Time to midpoint (hours)	4.42
Calc. net cpm	200.7
d/c of counter	2.828
Sample weight	0.00887

Calculated Results	3.55E+04
Spread Sheet Results	
Summary Table Results	