012192 185
3 of 5

Westinghouse Hanford Company

Laboratory Report

JAN 1991
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222-S/RCRA ANALYTICAL LABORATORIES

PROJECT:	SINGLE-SHELL TANK WASTE CHARACTERIZATION
TANK:	241-U-110
CORE:	5
SEGMENT:	3
CUSTOMER ID. NUMBER:	89-040
REPORT REVISION:	2
DATE PRINTED:	JUNE 4, 1990

AUG 1990
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J.H. KESSNER

9 1 1 2 5 0 9 0 3 4

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Appendix A Analytical Analysis Cards

I have reviewed this report and certify that the package is in compliance with "Quality Assurance Project Plan" - WHC-SD-CP-QAPP-002. I found it to be a true and accurate accounting both technically and for completeness of the laboratory analyses performed on this sample.

Shirley A. Cervantes — Date August 17, 1990
Shirley A. Cervantes
Data Coordinator

Cary M. Seidel — Date August 17, 1990
Cary M. Seidel
Unit Manager

Larry H. Taylor — Date August 17, 1990
Larry H. Taylor
Laboratory Q.A. Officer

INTRODUCTION

INTRODUCTION

Westinghouse Hanford Company Analytical Laboratories are supporting the characterization efforts of the single shell tanks. The characterization of tank 241-U-110 was performed under Phase 1A and 1B of the "Waste Characterization Plan for the Hanford Site Single-Shelled Tanks" (WHC-EP-0210).

Tank 241-U-110 has a 500,000 gallon capacity. This tank was construction was completed in 1944. The tank received first cycle waste, REDOX high-level waste, coating waste, and laboratory waste until 1975. Between July 7, 1975 and February 2, 1976, P-10 pumps were installed, and 41,700 gallons of liquid waste were pumped from the tank. Tank 241-U-110 still contains an estimated 195,000 gallons of waste.

The Analytical Laboratories performs all analytical analysis to the specifications of the "Quality Assurance Project Plan", WHC-SD-CP-QAPP-002. In accordance with WHC-SD-CP-QAPP-002 the following laboratory policies are being followed. Spikes are performed on either the undissolved sample, or the sample after dissolution as directed by the chemist. If the spike addition is found to be less than 20% of an analyte concentration, the spike recovery is not reported due to errors introduced by the precision of the sample analysis. The concentration of spike additions will be re-evaluated before the start of phase 1C. Two spiking routines are being used during phase 1A and 1B. For the following analyses, Ion Chromatography, Inductively Coupled Plasma, Mercury Hydride, Total Organic Carbon, and Carbonate analyses the solid sample is spiked independently from the sample digestion. Any non-homogeneity of the sample could adversely affect the spike recoveries. For the radio-isotopic analysis and other analyses not specified above the spikes were performed by spiking an aliquot of sample after digestion.

The laboratory does not report sample results from batch analyses that are questionable. The results from questionable batches are discarded and the analysis is repeated. Sample cards (laboratory travelers) for the repeated analysis are reissued for analysis after they have been stamped "rerun". Laboratory travelers are issued using a computerized routine according to a "sample point". This sample point label (segment-n) on the laboratory travelers and on the GEA analysis reports has no relationship to the sampling activities or the sample identification. All results in this data package relate only to the sample identified as segment 3 from core 5 taken from tank 241-U-110.

The organic analysis of this sample will be performed by Pacific Northwest Laboratories (PNL). Due to instrument and procedure problems, PNL has been unable to separate organics from the normal paraffin hydrocarbon present in the samples. The results from the organic analysis will be provided when available.

Samples analyzed for Total Organic Carbon between November 1, 1989 and February 22, 1990 were not acidified. The results from these analyses include total organic carbon, carbonate, and dissolved carbon dioxide from the air. The validity of these analyses are subject to interpretation. The total organic carbon procedure was corrected and these analyses will be repeated

wherever possible.

All sample results reported here by weight are reported as the "wet weight" of the sample. Some samples did noticeably lose moisture during the process of aliquoting and weighing the sample for digestion. The percent moisture was determined at the earliest opportunity to minimize any errors introduced by the loss of moisture. Drying samples before analysis resulted in radiation exposure increases of about a factor of ten. In order to reduce and control radiation exposure to laboratory personnel, the samples were not dried before aliqouting and digestion. This policy may result in some laboratory results being biased high.

This report is formatted into sections corresponding to the type of dissolutions performed prior to analysis. A brief summary of analytical results is reported, followed by calibration data and an analysis batch report. Any notable observations regarding an analysis are noted on the batch report for that analysis. Copies of laboratory travelers can be found in Appendix A.

SAMPLING AND CUSTODY DATA

9 1 1 2 1 5 2 0 3 7 0

9 1 1 2 ? 5 ? 0 8 7 1

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number S-022-89 (2) Sample Number 89-040 (3) Supervisor Blinn L Hall

(4) Tank 241-U-110 (5) Riser 19 (6) Segment 3 (7) Cask Serial Number 1013Z 8CB 11-7-89

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	.4 mr/hr	N.T.
Side Dose Rate	5 mr/hr	5 10 mr/h
Bottom Dose Rate	1.5 mr/hr	1.3 10 mr/h
Smearable Contamination	LDet (alpha)	<Det (alpha)
	LDet (beta-gamma)	<Det (beta-gamma)
	RPT R Reid (Signature)	RPT [signature] (Signature)

(9) Shipment Description:	
A. Work Package Number	2W-89-009571W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	59
D. Date and Time Sampler Unseated	11-7-89 7:15AM
E. Expected Liquid Content	0-20%
F. Expected Solid Content	80-100%
G. Dose Rate Through Drill String	200 mr/hr
H. Expected Sample Length	19

(10) INFORMATION *(Include statement of laboratory tests to be performed.*)*

Characterize segment according to WHC-EP-0210

*Reference laboratory work request, if available.

Comments: Core #5

(11) POINT OF ORIGIN	(12) SENDER NAME	(13) DATE AND TIME RELEASED	(14) DESTINATION	(16) RECIPIENT NAME	(17) DATE AND TIME RECEIVED
241-U-110 200W Area	Blinn L. Hall SENDER SIGNATURE [signature]	11-7-89 10:00 AM	222S Lab 200W Area	Vida Boyle RECIPIENT SIGNATURE [signature]	11/7/89 10:40

(15) Seal Intact Upon Release? ☒ Yes ☐ No

(18) Seal Intact Upon Receipt? ☒ Yes ☐ No

(19) Seal Data Consistent with this Record?
Shipment No. ☒ Yes ☐ No
Sample No. ☒ Yes ☐ No

Single Shell Tank Waste Characterization
Summary of Core Sample

Phase I-A

Tank ID:	241-U-110
Riser ID:	19
Core ID:	5

Date Sampling Initiated:	9/19/89
Date Sampling Completed:	11/7/89

Segment 1	Lab Serial No.	F0003
	Customer ID. No.	89-038
	Last Segment?	NO
Segment 2	Lab Serial No.	F0027
	Customer ID. No.	89-039
	Last Segment?	NO
Segment 3	Lab Serial No.	F5001
	Customer ID. No.	89-040
	Last Segment?	NO
Segment 4	Lab Serial No.	F5033
	Customer ID. No.	89-041
	Last Segment?	YES
Segment 5	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	
Segment 6	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	
Segment 7	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	

Segment 8	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	
Segment 9	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	
Segment 10	Lab Serial No.	
	Customer ID. No..	
	Last Segment?	
Segment 11	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	
Segment 12	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	
Segment 13	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	
Segment 14	Lab Serial No.	
	Customer ID. No.	
	Last Segment?	

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 4/18/90

Verified by: [signature] Signature — C. M. Seidel Printed Name — Date: 4/18/90

Approved by: [signature] Signature — L.H. Taylor Printed Name — Date: 4-19-90

Interim

SST-1 Rev.B 3/27/90

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9 1 1 2 9 5 9 0 3 7 2

SAMPLE DATA SUMMARY

9 1 1 2 5 9 0 8 7 3

SUMMARY DATA REPORT

Tank	241-U-110
Core	5
Segment	3
Customer ID	89-040

Untreated Sample

	Sample	Duplicate
pH	12.28	12.94
Percent Water	39.20%	39.06%

Fusion Analysis

Total Alpha	0.79 uci/g	0.69 uci/g
Total Beta	1930 uci/g	1830 uci/g
GEA		
Cs-137	36.3 uci/g	32.9 uci/g
Uranium	13900 ug/g	11700 ug/g

Water Digestion

Fluoride	825 ug/g	2020 ug/g
Chloride	1600 ug/g	1490 ug/g
Nitrate	7480 ug/g	72800 ug/g
Phosphate	3640 ug/g	17300 ug/g
Sulfate	2500 ug/g	2380 ug/g

Total Organic Carbon and Carbonate (First Analysis*)

2923 ug/g	1730 ug/g

Total Oranic Carbon (Second Analysis*)

<530 ug/g	<530 ug/g

*See introduction

LT Less Than Detection Limit

Acid Digestion

	Sample	Duplicate
Aluminum	119471 ug/g	133517 ug/g
Barium	3 ug/g	747 ug/g
Bismuth	3537 ug/g	3534 ug/g
Boron	LT	804 ug/g
Cadmium	LT	741 ug/g
Calcium	212 ug/g	91 ug/g
Cerium	LT	LT
Chromium	593 ug/g	1494 ug/g
Copper	69 ug/g	923 ug/g
Iron	8124 ug/g	8330 ug/g
Lanthanum	LT ug/g	576 ug/g
Lead	709 ug/g	1192 ug/g
Lithium	LT	980 ug/g
Magnesium	915 ug/g	988 ug/g
Manganese	5067 ug/g	5340 ug/g
Molybdenum	41 ug/g	846 ug/g
Nickel	51 ug/g	28 ug/g
Silver	LT	527 ug/g
Sodium	75687 ug/g	80622 ug/g
Strontium	692 ug/g	726 ug/g
Tantalum	LT	791 ug/g
Tin	50 ug/g	17 ug/g
Titanium	100 ug/g	62 ug/g
Zinc	59 ug/g	904 ug/g
Zirconium	104 ug/g	866 ug/g

PHYSICAL TEST RESULTS

Single Shell Tank Extrusion of Segment -- Physical Tests	Phase I-A

Lab Segment Serial No.: F5001 Customer ID: 89-040

Analyst: Richard L. Weiss Date Extruded: 11/08/89

Drainable Liquid Liquid Submitted for Segment Analysis? -- No

Gross <10 ml	Tare	Net
Serial	Date/Time_____/_____	Estimated
Specific	Calculated	

Appearance of Liquid:

No liquid was collected.

Dimensions of Segment

Complete Segment Obtained? No	Length: 14.0 inches	Calculated Volume: 11.0 cubic in.
Remarks none		

Appearance of Solid:

Sample was dark brown. Slighty moist on the lower surface drying towards top. The last 1 inch of the top of this sample was dry and crumbly with no cohesion.

Penetrometer 18.8 lbs/sq in Remarks: none

Homogenization

Procedure: T038A-00712 Revision: F		Quantity of Material	187.37 grams
Date Homogenized:	11/10/89	Time Homogenized:	5.0 Minutes
Opperator: John R. Smith (65286)			

Laboratory Notebook Reference WHC-N-313-4 (Notebook No.) 4 (Page No.)

Prepared by: Herlene S. Rich (Signature) Herlene S. Rich (Printed Name) Date: 3/27/90

Verified by: Cary M. Seidel (Signature) Cary M. Seidel (Printed Name) Date: 3/27/90

Approved by: L.H. Taylor (Signature) L.H. Taylor (Printed Name) Date: 4-19-90

Interim 3/27/90 Rev. C SST-3

12

9 1 1 2 5 9 0 8 7 6

Single Shell Tank Segment -- Subsamples	Phase 1A

Customer ID: 89-040 Lab Segment Serial No. F5001

Volatile Organic Analysis		
VOA Sample	Laboratory Serial Number: 89-040-34	Date Sampled: 11/08/90
Sample shipped to PNL for analysis.		

Particle Size Distribution Analysis		
Particle Size Sample	Laboratory Serial Number: F5001	Date Sampled: 11/08/90
Sample analysis performed at 222-S		

Homogenized Solids

Undigested Solids Analysis	
Laboratory Serial Number for Sample: F5001	Date Sampled: 11/10/90
Laboratory Serial Number of Duplicate Sample: F5002	

Fusion Analysis of Solids	
Laboratory Serial Number for Sample: F5006	Date Sampled: 11/10/90
Laboratory Serial Number of Duplicate Sample:: F5007	
Laboratory Serial Number of Spiked Sample: F5008	

Acid Digestion Analysis of Solids	
Laboratory Serial Number for Sample: F5016	Date Sampled: 11/10/90
Laboratory Serial Number of Duplicate Sample: F5017	
Laboratory Serial Number of Spiked Sample: F5018	

Water Digestion Analysis of Solids	
Laboratory Serial Number for Sample: F5011	Date Sampled 11/10/90
Laboratory Serial Number of Duplicate Sample: F5012	
Laboratory Serial Number of Spiked Sample: F5013	

Laboratory Notebook Reference

WHC-N-313-4	4
Notebook No.	Page No.

Prepared by: Herlene S. Rich (Signature)	Herlene S. Rich (Printed Name)	Date: 3/28/90
Verified by: Cary M. Seidel (Signature)	Cary M. Seidel (Printed Name)	Date: 3/28/90
Approved by: L.H. Taylor (Signature)	L.H. Taylor (Printed Name)	Date: 4-19-90

SST-5 Rev.C 3/28/90

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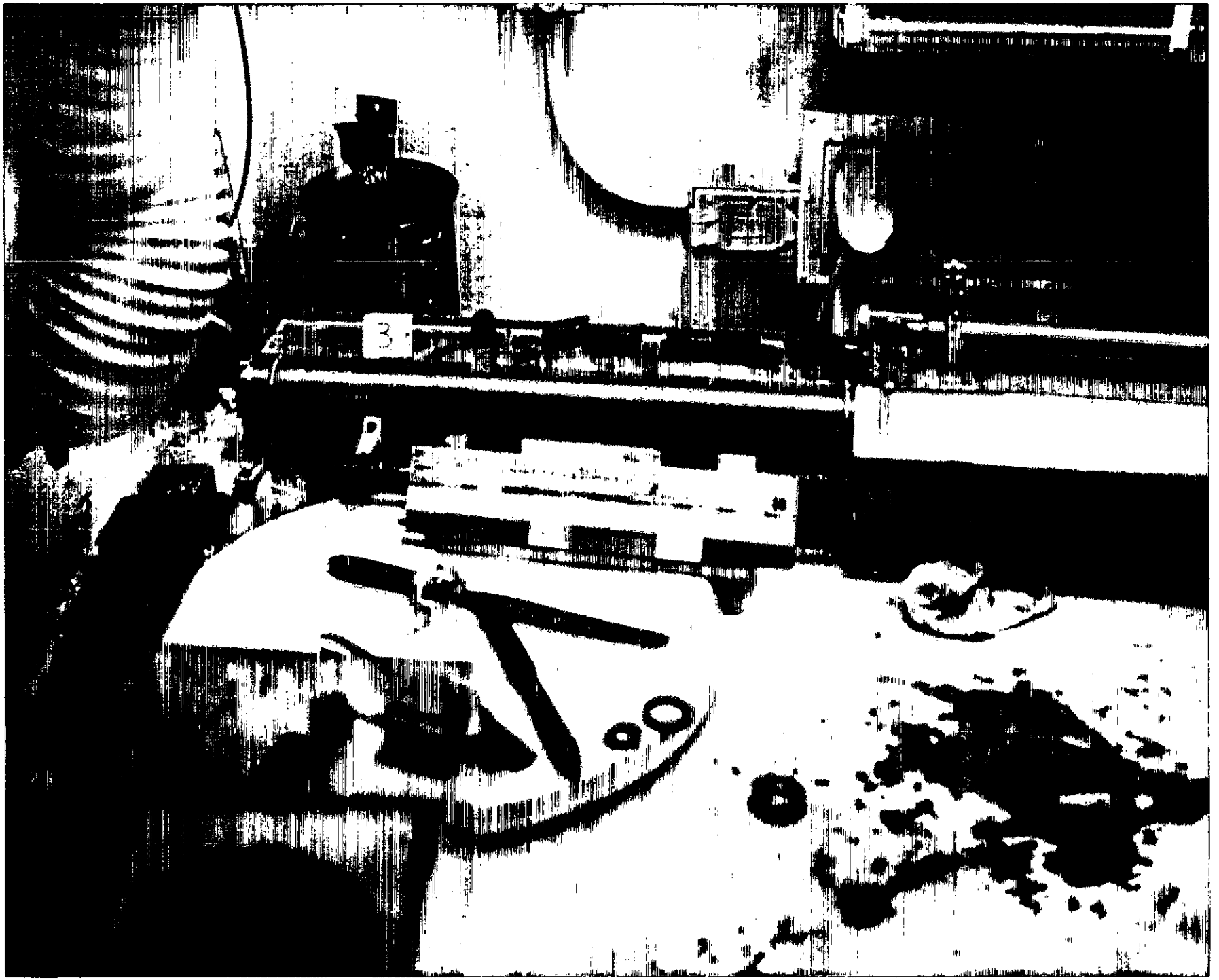


TANK 241-U-110, CORE 5, SEGMENT 3

Particle Size Analysis:

B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS
VIA BRINKMANN 2010
STATISTICS

SAMPLE NAME : SST,B000031,F5001,H20,DBB/SBK
FILE NAME : A:\SST\F5001.003

DATE	: 15/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 134016
TIME	: 11:04	ACQ. MODE	: SAMPLE	S.N.F.	: 0.95
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 368 SEC	S.D.U.	: 4373
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 9.5E-03 %

	MEAN Diameter	S.D.
Number, Length :	1.67 µm	1.69 µm
Number, Area :	2.38 µm	1.83 µm
Number, Volume :	3.52 µm	2.50 µm
Length, Area :	3.37 µm	3.84 µm
Length, Volume :	5.11 µm	4.22 µm
Area, Volume :	7.75 µm	10.09 µm
Volume, Moment :	20.86 µm	21.23 µm

	MEDIAN Diameter	MODE	CONFIDENCE
Number :	0.99 µm	0.75 µm	100.00%
Area :	4.89 µm	4.75 µm	96.83%
Volume :	11.63 µm	4.75 µm	96.66%

Particle Size Analysis:

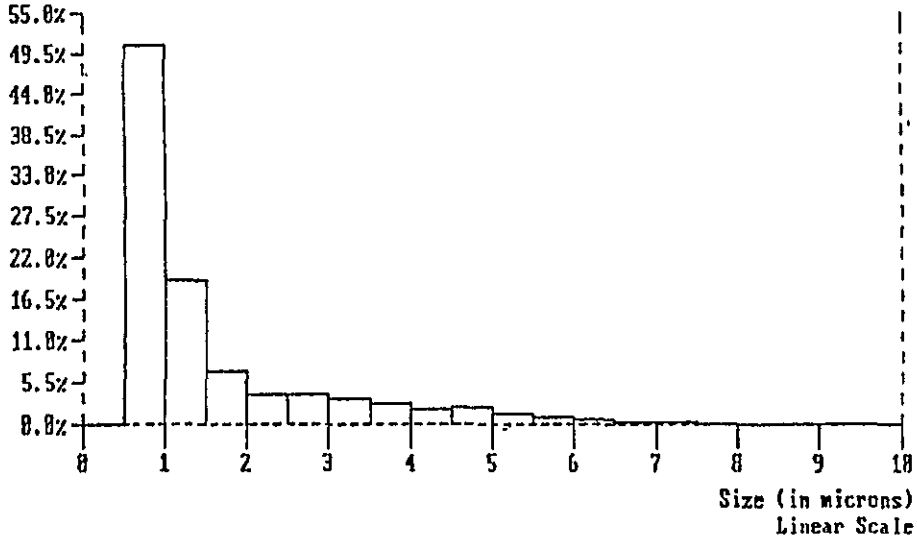
SAMPLE NAME : SST,B000031,F5001,H20,DBB/SBK
FILE NAME : A:\SST\F5001.003

DATE	: 15/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 134016
TIME	: 11:04	ACQ. MODE	: SAMPLE	S.N.F.	: 0.95
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 568 SEC	S.D.U.	: 4373
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 9.5E-03 %

PROBABILITY NUMBER DENSITY GRAPH

Name: SST,B000031,F5001,H20,DBB/SBK
4.1E+06 #/ml(99.6%)
Mode at 0.75 µm
<< SCALE RANGE (µm): 0 - 10 >>

Local Median : 0.99µm
Local Mean(nl): 1.62µm
Local S.D.(nl): 1.42µm
Local Conf(nl):100.00 %



SAMPLE NAME : SST,B000031,F5001,H20,DBB/SDK
FILE NAME : A:\SST\F5001.003

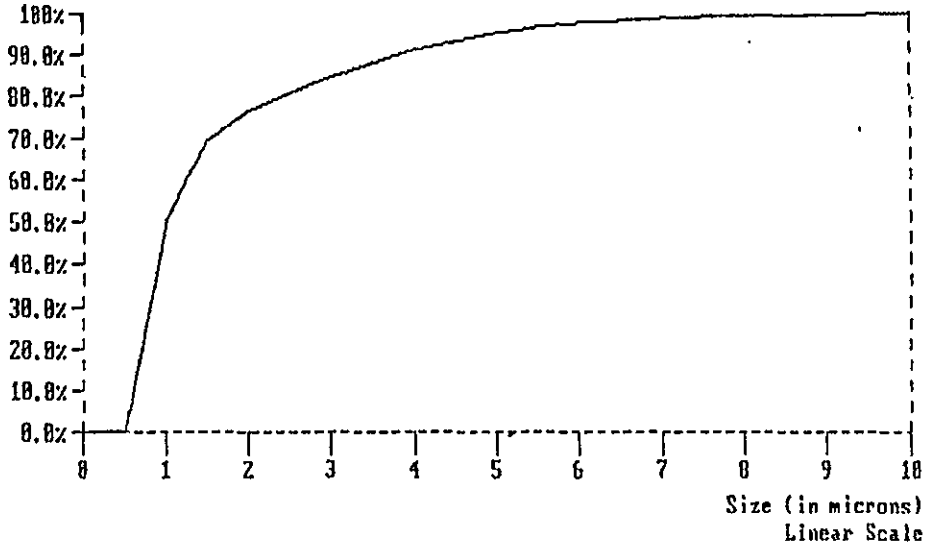
DATE	: 15/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 134016
TIME	: 11:04	ACQ. MODE	: SAMPLE	S.N.F.	: 0.95
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 568 SEC	S.D.U.	: 4373
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 9.5E-09 %

PROBABILITY NUMBER DISTRIBUTION GRAPH

Name: SST,B000031,F5001,H20,DBB/SDK
4.1E+06 #/ml(99.6%)

Local Median : 0.99µm
Local Mean(nl): 1.62µm
Local S.D.(nl): 1.42µm
Local Conf(nl):100.00 %

<< SCALE RANGE (µm): 0 - 10 >>



SAMPLE NAME : SST,B000031,F5001,H20,DBB/SBK
FILE NAME : A:\SST\F5001.003

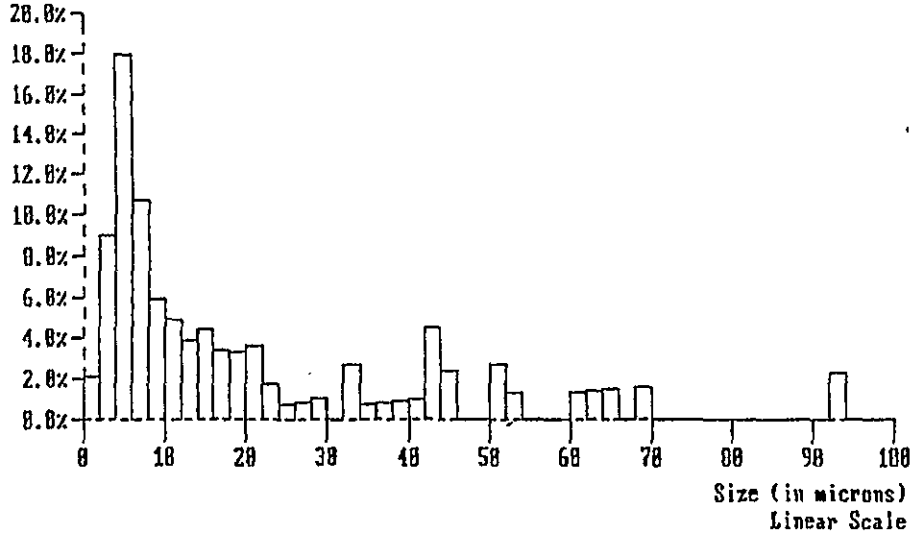
DATE	: 15/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 134016
TIME	: 11:04	ACQ. MODE	: SAMPLE	S.N.F.	: 0.95
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 548 SEC	S.D.U.	: 4373
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.1E+06 N/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 9.5E-03 %

PROBABILITY VOLUME DENSITY GRAPH

Name: SST,B000031,F5001,H20,DBB/SBK
9.5E-05 cc/ml(100.0%)
Mode at 5.00 µm
((SCALE RANGE (µm): ADJUSTED))

Mean(nv): 3.52µm
S.D.(nv): 2.50µm

Median : 11.63µm
Mean(vm): 20.86µm
S.D.(vm): 21.23µm
Conf(vm): 96.66 %



SAMPLE NAME : SST,B000031,F5001,H20,DBB/SBK
FILE NAME : A:\SST\F5001.003

DATE	: 15/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 134016
TIME	: 11:04	ACQ. MODE	: SAMPLE	S.N.F.	: 0.95
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 568 SEC	S.D.U.	: 4373
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 9.5E-03 %

PROBABILITY VOLUME DISTRIBUTION GRAPH

Name: SST,B000031,F5001,H20,DBB/SBK
9.5E-05 cc/ml(100.0%)

Mean(nv): 3.52μm
S.D.(nv): 2.50μm

Median : 11.63μm
Mean(vm): 20.06μm
S.D.(vm): 21.23μm
Conf(vm): 96.66 %

<< SCALE RANGE (μm): ADJUSTED >>

UNDIGESTED SAMPLE ANALYSIS

Single Shell Tank Project — Untreated Sample Results — 3/30/90

Tank: 241-U-110
Core: 5
Segment: 3
Customer ID: 89-040

	Check Standard	Blank	Sample	Sample Duplicate	Check Standard
Laboratory ID:	F5000	F5021	F5001	F5002	F5004
pH	100.00%	4.83	12.28	12.94	100.90%
%Water	95.40%	0.4mg	39.20%	39.06%	96.20%

Approved by: H.S. Rich — Date: 4/3/90

Verified by: C.M. Seidel — Date: 4/3/90

Approved by: L.H. Taylor — Date: 4/19/90

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

pH analysis of the solid sample.

Instrument	AL10653
Procedure / Rev	LA-212-103/A-3
Technologist	6C269 M. Franz
Date	11/22/89
Temperature	24.9 C
Starting Time	08:00
Ending Time	11:30
Chemist	Richard E. Brandt

	Description	Lab. Id.
1	Initial LMCS Check Std.	F5000
2	Reagent Blank	F5021
3	Sample 89-040	F5001
4	Duplicate of 89-040	F5002
5	Final LMCS Check Std.	F5004
6		
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Standard	72C11/5.0 mL			5.0 mL

Prepared by: Herlene S. Rich (Signature) Herlene S. Rich (Printed Name) Date: 4/5/90

Verified by: Cary M Seidel (Signature) Cary M. Seidel (Printed Name) Date: 4/5/90

Approved by: L.H. Taylor (Signature) L.H.Taylor (Printed Name) Date: 4-19-90

Interim

Rev E 4/04/90

SST-102

9 1 1 2 0 5 9 0 3 4 6

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

% water in sample 89-040.

Instrument	N/A
Procedure / Rev	LA-564-101/D-1
Technologist	6B598 R. D. Hale
Date	11/20/89
Temperature	120 C
Starting Time	14:30
Ending Time	15:05
Chemist	Richard E. Brandt

	Description	Lab. Id.
1	Initial LMCS Check STd.	F5000
2	Reagent Blank	F5021
3	Sample 89-040	F5001
4	Duplicate of 89-040	F5002
5	Final LMCS Check Std.	F5004
6		
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Standard	11C11AG/1.0g			1 gram

Prepared by: Herlene S. Rich (Signature) Herlene S. Rich (Printed Name) Date: 4/5/90

Verified by: Cary M Seidel (Signature) Cary M. Seidel (Printed Name) Date: 4/5/90

Approved by: L. H. Taylor (Signature) L. H. Taylor (Printed Name) Date: 4-19-90

Interim Rev. E 4/04/90 SST-102

9 1 1 2 5 9 0 3 4 7

KOH FUSION ANALYSIS

Single Shell Tank Project

Fusion Analysis

Laboratory Results of Solids

Units are Sample Wet Weight

Tank 241-U-110
Core 5
Segment 3
Customer ID: 89-040

Laboratory ID:	Check Standard F5005	Blank F5020	Sample F5006	Sample Duplicate F5007	Spike of Sample F5008	Check Standard F5009
Fusion Digestion			3.31 g/L	2.57 g/L		
Total Alpha	89.20%	<6.23E-04 uci/L	7.90E-01 uci/g	6.90E-01 uci/g	*	88.00%
Total Beta	93.70%	<3.10E-04 uci/L	1.93E+03 uci/g	1.83E+03 uci/g	*	92.80%
GEA						
Cs-137	108.30%	<0.0487 uci/L	3.63E+01 uci/g	3.29E+01 uci/g	98.00%	109.20%
Uranium	98.60%	<2.0 ug/L	1.39E+04 ug/g	1.13E+04 ug/g	112.00%	95.40%

* Ratio of Standard to Sample insufficient to calculate spike recovery.

Single Shell Tank Project

Fusion Analysis

Sample Results on Laboratory Digestions

Tank 241-U-110
Core 5
Segment 3
Customer ID: 89-040

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:	F5005	F5020		F5006		F5007		F5008	F5009
Fusion Digestion				3.31	g/L	2.57	g/L		
Total Alpha	89.20%	<6.23E-04	uci/L	2.63E+00	uci/L	1.78E+00	uci/L	*	86.40%
Total Beta	95.40%	<3.10E-04	uci/L	6.39E+03	uci/L	4.68E+03	uci/L	*	94.80%
GEA									
Cs-137	105.90%	<0.0487	uci/L	1.20E+02	uci/L	8.46E+01	uci/L	98.00%	98.00%
Uranium	98.60%	<2.0	ug/L	4.46E-02	g/L	2.91E-02	g/L	112.00%	95.40%

*Ratio of Standard to Sample insufficient to calculate spike recovery

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Fusion Dissolution.

Instrument	N/A
Procedure / Rev	LA-549-141
Technologist	6B598 R. D. Hale
Date	11/22/89
Temperature	450 C
Starting Time	10:30
Ending Time	14:30
Chemist	S. A. Catlow

	Description	Lab. Id.
1	Reagent Blank	F5020
2	Sample 89-040	F5006
3	Duplicate of 89-040	F5007
4		
5		
6		
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
N/A				

Prepared by: Herlene S. Rich (Signature) — Herlene S. Rich (Printed Name) — Date: 4/5/90

Verified by: Cary M. Seidel (Signature) — Cary M. Seidel (Printed Name) — Date: 4/5/90

Approved by: L. H. Taylor (Signature) — L. H. Taylor (Printed Name) — Date: 4/19/90

Interim Rev. E 4/04/90 SST-102

9112250871

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Instrument	Multi-Detector
Procedure / Rev	LA-548-101/A-2
Technologist	6C269 M Franz
Date	11/29/89
Temperature	N/A
Starting Time	08:00
Ending Time	13:30
Chemist	S. A. Catlow

Total Beta + Total Alpha analysis of the Fusion Dissolution.
Detectors 13, 14, and 15
WA45709, WA57276, WA57277.
Samples were prepared in batch, but counted randomly.

	Description	Lab. Id.
1	Initial LMCS Check Std.	F5005
2	Reagent Blank	F5020
3	Sample 89-040	F5006
4	Duplicate of 89-040	F5007
5	Spike of Sample 89-040	F5008
6	Ending LMCS Check Std.	F5009
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Standard	83B44/10 mL			10 mL
Spike	83B44/10 mL	Sample/1.0 uL		10.001 mL

Prepared by: [signature] Signature — H. S. Rich, Printed Name — Date: 4/5/90

Verified by: Cary M Seidel, Signature — C. M. Seidel, Printed Name — Date: 4/5/90

Approved by: [signature] Signature — L.H. Taylor, Printed Name — Date: 4/19/90

Interim

Rev.E 4/04/90

SST-102

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Instrument	WA77228 & WA401934
Procedure / Rev	LA-548-121/C-3
Technologist	6B598 R. D. Hale
Date	11/27/89
Temperature	N/A
Starting Time	14:02
Ending Time	19:00
Chemist	S. A. Catlow

GEA Analysis
Fusion Dissolution
Sample are prepared in batch, but counted randomly.

	Description	Lab. Id.
1	Initial LMCS Check Std.	F5005
2	Reagent Blank	F5020
3	Sample of 89-040	F5006
4	Duplicate of 89-040	F5007
5	Spike of 89-040	F5008
6	Final LMCS Check Std.	F5009
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Std.	30B44/2.5 ul			22 ml
Spike	30B44/200 ul	Sample/200 ul		22 ml

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 4/5/90

Verified by: Carey M Seidel Signature — C. M. Seidel Printed Name — Date: 4/5/90

Approved by: L. H. Taylor Signature — L. H. Taylor Printed Name — Date: 4/19/90

Interim Rev.E 4/04/90 SST-102

9 1 1 2 0 5 9 0 8 5 3

Single Shell Tank Calibration Record

Phase I-A

Analyte:	Isotope, Mixed Gamma		
Procedure	LQ-508-003	Revision:	A-0
Instrument:	GEA Detector #1	Property Number:	401934
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	3/2/89		

Calibration Standard ID:	56B40 D1
Analyte Concentration:	N/A
Type of Calibration:	Gamma Energy Analysis (Efficiency)

	Dilution	Concentration	Instrument Reading Units =
1			
2			
3			
4	SEE ATTACHED		
5			
6			
7			
8			
9			
10			

Comments:

Prepared by: Cathy Davey (Signature) CA Davey (Printed Name) Date: 4/18/90

Verified by: H.S. Rich (Signature) H.S. Rich (Printed Name) Date: 4/18/90

Approved by: L.H. Taylor (Signature) L.H. Taylor (Printed Name) Date: 4/19/90

Interim Rev. (Draft) 1/13/89 SST-103

9112305054

DETECTOR: 1
GEOMETRY CODE: 42
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 2
CALIBRATION DATE: 14-Feb-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56B40 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	5.721347E-03
88.032	1.512568E-02
122.0614	2.041958E-02
165.853	1.856472E-02
279.1967	
391.668	1.042777E-02
513.99	7.856059E-03
661.65	6.838966E-03
898.021	5.300244E-03
1173.237	4.218416E-03
1332.501	3.785537E-03
1836.129	2.931033E-03

EQUATION 0-165 KEV

```
LOG(EFF) =    -5.343694E+01
         +     2.034704E+01 *LOG(ENERGY)
         +    -2.088264E+00 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

```
LOG(EFF) =     8.372735E+00
         +    -7.762489E+00 *LOG(ENERGY)
         +     2.017698E+00 *LOG(ENERGY)^2
         +    -2.447560E-01 *LOG(ENERGY)^3
         +     1.067720E-02 *LOG(ENERGY)^4
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 1
GEOMETRY CODE: 43
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 3
CALIBRATION DATE: 16-Feb-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56B40 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	1.397695E-03
88.032	3.641448E-03
122.0614	5.035820E-03
165.853	4.620516E-03
279.1967	
391.668	2.619018E-03
513.99	1.890740E-03
661.65	1.782478E-02
898.021	1.392563E-03
1173.237	1.117189E-03
1332.501	1.007670E-03
1836.129	7.782502E-04

EQUATION 0-165 KEV

```
LOG(EFF) =    -5.354869E+01
```

```
                    +    1.975356E+01 *LOG(ENERGY)
                    +   -2.020858E+00 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

```
          LOG(EFF) =     4.001880E+01
                    +   -2.857555E+01 *LOG(ENERGY)
                    +    6.748440E+00 *LOG(ENERGY)^2
                    +    7.173093E-01 *LOG(ENERGY)^3
                    +    2.821780E-02 *LOG(ENERGY)^4
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

Single Shell Tank Calibration Record

Phase I-A

Analyte:	Mixed Isotope Standards		
Procedure	LQ-508-003	Revision:	A-0
Instrument:	GEA Detector #2	Property Number:	401934
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	9-1-88		

Calibration Standard ID:	56B40 D1
Analyte Concentration:	N/A
Type of Calibration:	Gamma Energy Analysis (Efficiency)

	Dilution	Concentration	Instrument Reading Units =
1			
2			
3	SEE	ATTACHED	
4			
5			
6			
7			
8			
9			
10			

Comments:

Prepared by: Cathie Davey (Signature) CA Davey (Printed Name) Date: 4/18/90

Verified by: H. S. Rich (Signature) H.S. Rich (Printed Name) Date: 4/18/90

Approved by: L. H. Taylor (Signature) L.H. Taylor (Printed Name) Date: 4/19/90

Interim Rev. (Draft) 1/18/89 SST-103

33

9112150857

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 2
GEOMETRY CODE: 43
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 3
CALIBRATION DATE: 28-Sep-88
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56B40 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	1.476000E-03
88.032	4.721000E-03
122.0614	6.589000E-03
165.853	6.613000E-03
279.1967	4.692000E-03
391.668	3.542000E-03
513.99	2.810000E-03
661.65	2.327000E-03
898.021	1.790000E-03
1173.237	1.437000E-03
1332.501	1.277000E-03
1836.129	9.824000E-04

EQUATION 0-165 KEV

```
LOG(EFF) =  -5.826830E+01
          +  2.165450E+01 *LOG(ENERGY)
          + -2.198930E+00 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

```
LOG(EFF) =  -2.233890E+01
          +  1.174520E+01 *LOG(ENERGY)
          + -2.739550E+00 *LOG(ENERGY)^2
          +  2.655450E-01 *LOG(ENERGY)^3
          + -9.668420E-03 *LOG(ENERGY)^4
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 2
GEOMETRY CODE: 42
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 2
CALIBRATION DATE: 21-Oct-88
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56B40 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	3.417000E-03
88.032	1.090000E-02
122.0614	1.408000E-02
165.853	1.516000E-02
279.1967	9.929000E-03
391.668	7.578000E-03
513.99	5.875000E-03
661.65	4.927000E-03
898.021	3.727000E-03
1173.237	3.085000E-03
1332.501	2.683000E-03
1836.129	2.102000E-03

EQUATION 0-122 KEV

```
LOG(EFF) =  -6.654070E+01
          +  2.583780E+01 *LOG(ENERGY)
          + -2.677550E+00 *LOG(ENERGY)^2
```

EQUATION 122-1836 KEV

```
LOG(EFF) =  -1.050740E+02
          +  6.428950E+01 *LOG(ENERGY)
          + -1.503170E+01 *LOG(ENERGY)^2
          +  1.533670E+00 *LOG(ENERGY)^3
          + -5.838530E-02 *LOG(ENERGY)^4
```

Single Shell Tank Calibration Record

Phase I-A

Analyte:	Mixed Isotope Standard		
Procedure	LQ-508-003	Revision:	A-0
Instrument:	Detector #3 (GEA)	Property Number:	WA77228
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	7/31/89		

Calibration Standard ID:	56B40 D1
Analyte Concentration:	N/A
Type of Calibration:	Gamma Energy Analysis (Efficiency)

	Dilution	Concentration	Instrument Reading Units =
1			
2			
3	SEE ATTACHED		
4			
5			
6			
7			
8			
9			
10			

Comments:

Prepared by: Cathie Davey (Signature) CA Davey (Printed Name) Date: 4/18/90

Verified by: [signature] (Signature) H.S. Rich (Printed Name) Date: 4/18/90

Approved by: [signature] (Signature) L.H. Taylor (Printed Name) Date: 4/19/90

Interim Rev. (Draft) 1/18/89 SST-103

DETECTOR: 3
GEOMETRY CODE: 41
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 1
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	2.833765E-02
88.032	2.881764E-02
122.0614	2.756557E-02
165.853	2.270614E-02
279.1967	
391.668	1.285730E-02
513.99	
661.65	7.841011E-03
898.021	5.779292E-03
1173.237	4.773005E-03
1332.501	4.278530E-03
1836.129	3.371238E-03

EQUATION 0-165 KEV

```
LOG(EFF) =    -1.113845E+01
         +     3.484260E+00 *LOG(ENERGY)
         +    -3.990659E-01 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

```
LOG(EFF) =    -2.052334E+01
         +     9.121738E+00 *LOG(ENERGY)
         +    -1.553578E+00 *LOG(ENERGY)^2
         +     8.018036E-02 *LOG(ENERGY)^3
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 3
GEOMETRY CODE: 42
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 2
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	7.455306E-03
88.032	7.462748E-03
122.0614	7.578302E-03
165.853	6.965814E-03
279.1967	
391.668	3.596591E-03
513.99	
661.65	2.318396E-03
898.021	1.824191E-03
1173.237	1.461179E-03
1332.501	1.321243E-03
1836.129	1.011332E-03

EQUATION 0-165 KEV

```
LOG(EFF) =    -6.838496E+00
```

```
                    +    8.819509E-01 *LOG(ENERGY)
                    +   -9.970528E-02 *LOG(ENERGY)^2

EQUATION 165-1836 KEV
          LOG(EFF) =     3.082260E-01
                    +   -1.410839E+00 *LOG(ENERGY)
                    +    1.042898E-01 *LOG(ENERGY)^2
                    +   -5.874725E-03 *LOG(ENERGY)^3
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 3
GEOMETRY CODE: 43
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 3
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56B40 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	2.020462E-03
88.032	1.924344E-03
122.0614	2.027231E-03
165.853	1.712371E-03
279.1967	
391.668	1.056509E-03
513.99	
661.65	7.115743E-04
898.021	5.243928E-04
1173.237	4.551585E-04
1332.501	4.223636E-04
1836.129	3.139091E-04

```
EQUATION 0-165 KEV
          LOG(EFF) =    -5.300788E+00
                    +   -3.550643E-01 *LOG(ENERGY)
                    +    3.272635E-02 *LOG(ENERGY)^2

EQUATION 165-1836 KEV
          LOG(EFF) =    -9.815549E+00
                    +    2.402920E+00 *LOG(ENERGY)
                    +   -4.428877E-01 *LOG(ENERGY)^2
                    +    2.059131E-02 *LOG(ENERGY)^3
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

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```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                       *
*              G A M M A   S P E C T R U M   A N A L Y S I S            *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                   27 Cen ~~11~~-NOV-89  14:02:55

                 A N A L Y S I S   P A R A M E T E R S

MCA UNIT NUMBER:    1      /      ADC UNIT NUMBER: 2.0
DETECTOR NUMBER:     2     /      GEOMETRY NUMBER:  42
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AND:
ANALYZED BY:          VR

SAMPLE DESCRIPTION: F5005 SEGMENT 6
GEOMETRY DESCRIPTION:
SAMPLE SIZE:    1.0000E+00 EA        / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON 27 Cen ~~11~~-NOV-89 AT 13:12:42

COLLECT LIVE TIME:     3000. SECONDS
        REAL TIME:     3005. SECONDS
        DEAD TIME:      0.17 %

 DECAYED TO       0. DAYS,  0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 17-MAR-89
EFFICIENCY CALIBRATION PERFORMED 21-OCT-88
```

222-S COUNTING ROOM 27-NOV-89 14:02:55

P E A K A N A L Y S I S

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	1324.05	661.64	1.62	210.	26184.	1.2	CS-137
1B		661.85			36.	13.9	
2	2921.71	1460.39	2.15	6.	160.	16.3	K-40
2B		1460.85			156.	3.8	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0012
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 30-AUG-88 AT 16:46:00
BACKGROUND LIVE TIME: 60000. SECONDS

222-S COUNTING ROOM 27-NOV-89 14:02:55

SAMPLE: F5005 SEGMENT 6
DATA COLLECTED ON 27-NOV-89 AT 13:12:42
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AM-241	LLD<6.78E-04		LLD<6.78E-04		59.54	
AM-243	LLD<1.75E-04		LLD<1.75E-04		74.67	
BA-133	LLD<1.69E-04		LLD<1.69E-04		356.02	
BA-140	LLD<4.27E-04		LLD<4.27E-04		537.27	
CEPR144	LLD<1.04E-03		LLD<1.04E-03		133.51	
CO-60	LLD<5.50E-05		LLD<5.50E-05		1332.50	
CR-51	LLD<9.58E-04		LLD<9.58E-04		320.09	
CS-134	LLD<4.67E-05		LLD<4.67E-05		795.84	
CS-137	5.65E-02	+-9.81E-04	5.65E-02	+-9.81E-04	661.65	-0.01
EU-152	LLD<1.90E-04		LLD<1.90E-04		1408.01	
EU-154	LLD<1.68E-04		LLD<1.68E-04		1274.45	
EU-155	LLD<3.11E-04		LLD<3.11E-04		105.31	
FE-59	LLD<7.50E-05		LLD<7.50E-05		1099.25	
I-131	LLD<1.27E-04		LLD<1.27E-04		364.48	
K-40	LLD<1.00E-03		LLD<1.00E-03		1460.75	
LA-140	LLD<5.81E-05		LLD<5.81E-05		1596.20	
MN-54	LLD<4.27E-05		LLD<4.27E-05		834.83	
NA-22	LLD<5.98E-05		LLD<5.98E-05		1274.55	
NB-95	LLD<3.97E-05		LLD<3.97E-05		765.78	
NP-237	LLD<6.20E-04		LLD<6.20E-04		86.50	
PU-239	LLD<9.98E-01		LLD<9.98E-01		129.30	
PU-241	LLD<3.10E+01		LLD<3.10E+01		148.57	
RA-224	LLD<2.02E-03		LLD<2.02E-03		240.99	
RA-226	LLD<1.93E-03		LLD<1.93E-03		186.10	
RU-103	LLD<1.27E-04		LLD<1.27E-04		497.08	
RU103	LLD<1.33E-04		LLD<1.33E-04		497.08	
RURH106	LLD<1.91E-03		LLD<1.91E-03		621.80	
SB-125	LLD<9.80E-04		LLD<9.80E-04		176.33	
SE-75	LLD<1.46E-04		LLD<1.46E-04		264.66	
SN-113	LLD<1.76E-04		LLD<1.76E-04		391.67	
SR-85	LLD<1.22E-04		LLD<1.22E-04		513.99	
TH-228	LLD<7.32E-03		LLD<7.32E-03		84.37	
U-235	LLD<1.26E-04		LLD<1.26E-04		185.71	
Y-88	LLD<6.08E-05		LLD<6.08E-05		1836.06	
ZN-65	LLD<1.44E-04		LLD<1.44E-04		1115.55	
ZR-95	LLD<7.88E-05		LLD<7.88E-05		756.73	
TOTAL	5.65E-02	+-9.81E-04	5.65E-02	+-9.81E-04		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/EA
TOTAL MEASURED ACTIVITY = 5.65E-02 (+-9.81E-04) UC/EA
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

42

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

9112750936

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.71	1460.39	160.	16.3	2.09E+01

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* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                       *
*              G A M M A   S P E C T R U M   A N A L Y S I S            *
*                                                                       *
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CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                   27 ~~11~~-NOV-89  14:04:53

                 A N A L Y S I S   P A R A M E T E R S

MCA UNIT NUMBER:    2      /      ADC UNIT NUMBER: 1.0
DETECTOR NUMBER:     1     /      GEOMETRY NUMBER:  42
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
ANALYZED BY:          VRE

SAMPLE DESCRIPTION: F5009 SEGMENT 10
GEOMETRY DESCRIPTION:
SAMPLE SIZE:    1.0000E+00 EA        / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON 27 ~~11~~-NOV-89 AT 13:14:36

COLLECT LIVE TIME:     3000. SECONDS
        REAL TIME:     3004. SECONDS
        DEAD TIME:      0.13 %

 DECAYED TO       0. DAYS,  0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
```

222-S COUNTING ROOM 27-NOV-89 14:04:53

P E A K A N A L Y S I S

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	1324.52	661.70	1.54	213.	36823.	1.0	CS-137
1B		661.82			35.	46.4	
2	2922.83	1461.23	1.65	5.	167.	15.7	K-40
2B		1461.77			183.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0011
BACKGROUND DESCRIPTION: BK0011
BACKGROUND COLLECT STARTED ON 10-JAN-85 AT 12:00:00
BACKGROUND LIVE TIME: 6000. SECONDS

222-S COUNTING ROOM 27 ~~11~~-NOV-89 14:04:53

SAMPLE: F5009 SEGMENT ~~302~~
DATA COLLECTED ON ~~11~~ 27-NOV-89 AT 13:14:36
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AM-241	LLD<4.72E-04		LLD<4.72E-04		59.54	
AM-243	LLD<1.29E-04		LLD<1.29E-04		74.67	
BA-133	LLD<1.51E-04		LLD<1.51E-04		356.02	
BA-140	LLD<3.27E-04		LLD<3.27E-04		537.27	
CEPR144	LLD<8.74E-04		LLD<8.74E-04		133.51	
CO-60	LLD<2.60E-05		LLD<2.60E-05		1332.50	
CR-51	LLD<7.53E-04		LLD<7.53E-04		320.09	
CS-134	LLD<3.07E-05		LLD<3.07E-05		795.84	
CS-137	5.71E-02	+-9.09E-04	5.71E-02	+-9.09E-04	661.65	0.05
EU-152	LLD<8.75E-05		LLD<8.75E-05		1408.01	
EU-154	LLD<1.05E-04		LLD<1.05E-04		1274.45	
EU-155	LLD<2.11E-04		LLD<2.11E-04		105.31	
FE-59	LLD<5.50E-05		LLD<5.50E-05		1099.25	
I-131	LLD<1.14E-04		LLD<1.14E-04		364.48	
K-40	LLD<9.13E-04		LLD<9.13E-04		1460.75	
LA-140	LLD<3.26E-06		LLD<3.26E-06		1596.20	
MN-54	LLD<2.87E-05		LLD<2.87E-05		834.83	
NA-22	LLD<3.38E-05		LLD<3.38E-05		1274.55	
NB-95	LLD<2.72E-05		LLD<2.72E-05		765.78	
NP-237	LLD<5.41E-04		LLD<5.41E-04		86.50	
PU-239	LLD<7.50E-01		LLD<7.50E-01		129.30	
PU-241	LLD<2.65E+01		LLD<2.65E+01		148.57	
RA-224	LLD<1.74E-03		LLD<1.74E-03		240.99	
RA-226	LLD<1.64E-03		LLD<1.64E-03		186.10	
RU-103	LLD<1.06E-04		LLD<1.06E-04		497.08	
RU103	LLD<1.11E-04		LLD<1.11E-04		497.08	
RURH106	LLD<1.39E-03		LLD<1.39E-03		621.80	
SB-125	LLD<8.42E-04		LLD<8.42E-04		176.33	
SE-75	LLD<1.21E-04		LLD<1.21E-04		264.66	
SN-113	LLD<1.41E-04		LLD<1.41E-04		391.67	
SR-85	LLD<9.62E-05		LLD<9.62E-05		513.99	
TH-228	LLD<5.54E-03		LLD<5.54E-03		84.37	
U-235	LLD<1.07E-04		LLD<1.07E-04		185.71	
Y-88	LLD<2.51E-05		LLD<2.51E-05		1836.06	
ZN-65	LLD<8.76E-05		LLD<8.76E-05		1115.55	
ZR-95	LLD<4.46E-05		LLD<4.46E-05		756.73	
TOTAL	5.71E-02	+-9.09E-04	5.71E-02	+-9.09E-04		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/EA
TOTAL MEASURED ACTIVITY = 5.71E-02 (+-9.09E-04) UC/EA
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.83	1461.23	167.	15.7	1.59E+01

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*                                                                     *
*            G A M M A   S P E C T R U M   A N A L Y S I S            *
*                                                                     *
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CANBERRA SPECTRAN-F V2.04  SOFTWARE

222-S COUNTING ROOM  .                                  27-NOV-89  19:16:05

                    A N A L Y S I S   P A R A M E T E R S

MCA UNIT NUMBER:    2      /      ADC UNIT NUMBER: 1.0
DETECTOR NUMBER:     1     /      GEOMETRY NUMBER:  42
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
ANALYZED BY:          DM

SAMPLE DESCRIPTION: F-5008
GEOMETRY DESCRIPTION:
SAMPLE SIZE:    1.0000E-03 LI        / CONVERSION FACTOR: 2.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON 27-NOV-89 AT 18:25:49

COLLECT LIVE TIME:     3000. SECONDS
        REAL TIME:     3006. SECONDS
        DEAD TIME:      0.20 %

 DECAYED TO       0. DAYS;  0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
```

222-S COUNTING ROOM 27-NOV-89 19:16:05

P E A K A N A L Y S I S

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	1324.41	661.65	1.52	263.	51192.	0.9	CS-137
1B		661.82			35.	46.4	
2	2923.14	1461.38	1.94	8.	145.	17.4	K-40
2B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0011
BACKGROUND DESCRIPTION: BK0011
BACKGROUND COLLECT STARTED ON 10-JAN-85 AT 12:00:00
BACKGROUND LIVE TIME: 6000. SECONDS

222-S COUNTING ROOM 27-NOV-89 19:16:05

SAMPLE: F-5008
DATA COLLECTED ON 27-NOV-89 AT 18:25:49
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AM-241	LLD<3.50E+00		LLD<3.50E+00		59.54	
AM-243	LLD<9.68E-01		LLD<9.68E-01		74.67	
BA-133	LLD<8.96E-01		LLD<8.96E-01		356.02	
BA-140	LLD<1.93E+00		LLD<1.93E+00		537.27	
CEPR144	LLD<6.26E+00		LLD<6.26E+00		133.51	
CO-60	LLD<1.61E-01		LLD<1.61E-01		1332.50	
CR-51	LLD<4.62E+00		LLD<4.62E+00		320.09	
CS-134	LLD<1.97E-01		LLD<1.97E-01		795.84	
CS-137	3.97E+02	+-5.94E+00	3.97E+02	+-5.94E+00	661.65	-0.00
EU-152	LLD<8.95E-01		LLD<8.95E-01		1408.01	
EU-154	LLD<5.26E-01		LLD<5.26E-01		1274.45	
EU-155	LLD<1.63E+00		LLD<1.63E+00		105.31	
FE-59	LLD<3.24E-01		LLD<3.24E-01		1099.25	
I-131	LLD<6.74E-01		LLD<6.74E-01		364.48	
K-40	LLD<4.60E+00		LLD<4.60E+00		1460.75	
LA-140	LLD<1.84E-01		LLD<1.84E-01		1596.20	
MN-54	LLD<1.54E-01		LLD<1.54E-01		834.83	
NA-22	LLD<1.76E-01		LLD<1.76E-01		1274.55	
NB-95	LLD<1.75E-01		LLD<1.75E-01		765.78	
NP-237	LLD<4.09E+00		LLD<4.09E+00		86.50	
PU-239	LLD<5.33E+03		LLD<5.33E+03		129.30	
PU-241	LLD<1.83E+05		LLD<1.83E+05		148.57	
RA-224	LLD<1.09E+01		LLD<1.09E+01		240.99	
RA-226	LLD<1.05E+01		LLD<1.05E+01		186.10	
RU-103	LLD<6.37E-01		LLD<6.37E-01		497.08	
RU103	LLD<6.70E-01		LLD<6.70E-01		497.08	
RURH106	LLD<8.38E+00		LLD<8.38E+00		621.80	
SB-125	LLD<5.43E+00		LLD<5.43E+00		176.33	
SE-75	LLD<7.35E-01		LLD<7.35E-01		264.66	
SN-113	LLD<8.55E-01		LLD<8.55E-01		391.67	
SR-85	LLD<5.55E-01		LLD<5.55E-01		513.99	
TH-228	LLD<4.32E+01		LLD<4.32E+01		84.37	
U-235	LLD<6.97E-01		LLD<6.97E-01		185.71	
Y-88	LLD<1.50E-01		LLD<1.50E-01		1836.06	
ZN-65	LLD<4.21E-01		LLD<4.21E-01		1115.55	
ZR-95	LLD<2.95E-01		LLD<2.95E-01		756.73	
TOTAL	3.97E+02	+-5.94E+00	3.97E+02	+-5.94E+00		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 3.97E+02 (+-5.94E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2923.14	1461.38	145.	17.4	1.37E+01

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*                                                                       *
*              G A M M A   S P E C T R U M   A N A L Y S I S            *
*                                                                       *
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CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                   27 Cm ~~11~~-NOV-89  15:26:23

                 A N A L Y S I S   P A R A M E T E R S

MCA UNIT NUMBER:    2      /      ADC UNIT NUMBER: 1.0
DETECTOR NUMBER:     1     /      GEOMETRY NUMBER:  42
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
ANALYZED BY:          VR

SAMPLE DESCRIPTION: F5006 SEGMENT 7
GEOMETRY DESCRIPTION:
SAMPLE SIZE:    1.0000E-03 LI        / CONVERSION FACTOR: 2.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON 27 Cm ~~11~~-NOV-89 AT 15:09:33

COLLECT LIVE TIME:     1000. SECONDS
        REAL TIME:     1001. SECONDS
        DEAD TIME:      0.10 %

 DECAYED TO       0. DAYS:  0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 27-NOV-89 15:36:33

P E A K A N A L Y S I S

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	1324.47	661.68	1.53	33.	5165.	2.7	CS-137
1B		661.82			12.	46.4	
2	2923.01	1461.31	1.95	4.	55.	28.8	K-40
2B		1461.77			61.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0011
BACKGROUND DESCRIPTION: BK0011
BACKGROUND COLLECT STARTED ON 10-JAN-85 AT 12:00:00
BACKGROUND LIVE TIME: 6000. SECONDS

9112506077

223-S COUNTING ROOM 27-NOV-89 15:26:23

SAMPLE: F5006 SEGMENT 7
DATA COLLECTED ON 27-NOV-89 AT 15:09:33
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AM-241	LLD<4.76E+00		LLD<4.76E+00		59.54	
AM-243	LLD<1.33E+00		LLD<1.33E+00		74.67	
BA-133	LLD<9.30E-01		LLD<9.30E-01		356.02	
BA-140	LLD<2.08E+00		LLD<2.08E+00		537.27	
CEPR144	LLD<8.18E+00		LLD<8.18E+00		133.51	
CO-60	LLD<2.61E-01		LLD<2.61E-01		1332.50	
CR-51	LLD<4.84E+00		LLD<4.84E+00		320.09	
CS-134	LLD<3.35E-01		LLD<3.35E-01		795.84	
CS-137	1.20E+02	+-3.61E+00	1.20E+02	+-3.61E+00	661.65	0.03
EU-152	LLD<1.56E+00		LLD<1.56E+00		1408.01	
EU-154	LLD<5.33E-01		LLD<5.33E-01		1274.45	
EU-155	LLD<2.25E+00		LLD<2.25E+00		105.31	
FE-59	LLD<5.54E-01		LLD<5.54E-01		1099.25	
I-131	LLD<6.93E-01		LLD<6.93E-01		364.48	
K-40	LLD<7.32E+00		LLD<7.32E+00		1460.75	
LA-140	LLD<3.18E-01		LLD<3.18E-01		1596.20	
MN-54	LLD<2.89E-01		LLD<2.89E-01		834.83	
NA-22	LLD<1.80E-01		LLD<1.80E-01		1274.55	
NB-95	LLD<2.90E-01		LLD<2.90E-01		765.78	
NP-237	LLD<5.56E+00		LLD<5.56E+00		86.50	
PU-239	LLD<6.93E+03		LLD<6.93E+03		129.30	
PU-241	LLD<2.31E+05		LLD<2.31E+05		148.57	
RA-224	LLD<1.25E+01		LLD<1.25E+01		240.99	
RA-226	LLD<1.27E+01		LLD<1.27E+01		186.10	
RU-103	LLD<6.41E-01		LLD<6.41E-01		497.08	
RU103	LLD<6.75E-01		LLD<6.75E-01		497.08	
RURH106	LLD<1.00E+01		LLD<1.00E+01		621.80	
SB-125	LLD<6.88E+00		LLD<6.88E+00		176.33	
SE-75	LLD<8.03E-01		LLD<8.03E-01		264.66	
SN-113	LLD<9.40E-01		LLD<9.40E-01		391.67	
SR-85	LLD<6.50E-01		LLD<6.50E-01		513.99	
TH-228	LLD<6.00E+01		LLD<6.00E+01		84.37	
U-235	LLD<8.36E-01		LLD<8.36E-01		185.71	
Y-88	LLD<5.25E-02		LLD<5.25E-02		1836.06	
ZN-65	LLD<7.27E-01		LLD<7.27E-01		1115.55	
ZR-95	LLD<7.07E-01		LLD<7.07E-01		756.73	
TOTAL	1.20E+02	+-3.61E+00	1.20E+02	+-3.61E+00		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 1.20E+02 (+-3.61E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2923.01	1461.31	55.	28.8	1.55E+01

9112520679

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*                                                                       *
*              G A M M A   S P E C T R U M   A N A L Y S I S            *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM WESTINGHOUSE HANFORD                 27 ~~11~~-NOV-89  15:30:54

                 A N A L Y S I S   P A R A M E T E R S

MCA UNIT NUMBER:    2      /      ADC UNIT NUMBER: 3.0
DETECTOR NUMBER:     3     /      GEOMETRY NUMBER:  41
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
ANALYZED BY:          VR

SAMPLE DESCRIPTION: F5007 SEGMENT 8
GEOMETRY DESCRIPTION:
SAMPLE SIZE:    1.0000E-03 LI        / CONVERSION FACTOR: 2.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON 27 ~~11~~-NOV-89 AT 15:14:04

COLLECT LIVE TIME:     1000. SECONDS
        REAL TIME:     1002. SECONDS
        DEAD TIME:      0.20 %

 DECAYED TO       0. DAYS,  0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 17-OCT-89
EFFICIENCY CALIBRATION PERFORMED 31-JUL-89
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222-S COUNTING ROOM WESTINGHOUSE HANFORD 27-NOV-89 15:30:54

P E A K A N A L Y S I S

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	63.30	32.23	1.10	1611.	819.	14.4	CE-144
2	1323.45	661.73	1.60	73.	4190.	3.1	CS-137
2B		661.78			9.	38.6	
3	2922.39	1461.29	2.32	14.	207.	15.0	K-40
3B		1460.97			316.	1.8	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0013
BACKGROUND DESCRIPTION: BACKGROUND
BACKGROUND COLLECT STARTED ON 28-JUN-89 AT 15:00:00
BACKGROUND LIVE TIME: 60000. SECONDS

222-S COUNTING ROOM WESTINGHOUSE HANFORD 27-NOV-89 15:30:54

SAMPLE: F5007 SEGMENT 8
DATA COLLECTED ON 27-NOV-89 AT 15:14:04
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (MEV) EXPECT	DIFF
AM-241	LLD<1.29E+00		LLD<1.29E+00		59.54	
AM-243	LLD<6.61E-01		LLD<6.61E-01		74.67	
BA-133	LLD<7.36E-01		LLD<7.36E-01		356.02	
BA-140	LLD<2.03E+00		LLD<2.03E+00		537.27	
CEPR144	LLD<6.72E+00		LLD<6.72E+00		133.51	
CO-60	LLD<3.35E-01		LLD<3.35E-01		1332.50	
CR-51	LLD<4.24E+00		LLD<4.24E+00		320.09	
CS-134	LLD<5.17E-01		LLD<5.17E-01		795.84	
CS-137	8.46E+01	+-2.88E+00	8.46E+01	+-2.88E+00	661.65	0.07
EU-152	LLD<2.58E+00		LLD<2.58E+00		1408.01	
EU-154	LLD<1.44E+00		LLD<1.44E+00		1274.45	
EU-155	LLD<1.69E+00		LLD<1.69E+00		105.31	
FE-59	LLD<8.70E-01		LLD<8.70E-01		1099.25	
I-131	LLD<5.83E-01		LLD<5.83E-01		364.48	
K-40	LLD<1.11E+01		LLD<1.11E+01		1460.75	
LA-140	LLD<6.45E-01		LLD<6.45E-01		1596.20	
MN-54	LLD<4.52E-01		LLD<4.52E-01		834.83	
NA-22	LLD<5.62E-01		LLD<5.62E-01		1274.55	
NB-95	LLD<3.46E-01		LLD<3.46E-01		765.78	
NP-237	LLD<3.07E+00		LLD<3.07E+00		86.50	
PU-239	LLD<5.99E+03		LLD<5.99E+03		129.30	
PU-241	LLD<2.04E+05		LLD<2.04E+05		148.57	
RA-224	LLD<1.14E+01		LLD<1.14E+01		240.99	
RA-226	LLD<1.18E+01		LLD<1.18E+01		186.10	
RU-103	LLD<6.07E-01		LLD<6.07E-01		497.08	
RU103	LLD<6.39E-01		LLD<6.39E-01		497.08	
RURH106	LLD<9.47E+00		LLD<9.47E+00		621.80	
SB-125	LLD<5.30E+00		LLD<5.30E+00		176.33	
SE-75	LLD<7.01E-01		LLD<7.01E-01		264.66	
SN-113	LLD<8.08E-01		LLD<8.08E-01		391.67	
SR-85	LLD<5.89E-01		LLD<5.89E-01		513.99	
TH-228	LLD<3.26E+01		LLD<3.26E+01		84.37	
U-235	LLD<7.11E-01		LLD<7.11E-01		185.71	
Y-88	LLD<4.99E-01		LLD<4.99E-01		1836.06	
ZN-65	LLD<1.26E+00		LLD<1.26E+00		1115.55	
ZR-95	LLD<7.44E-01		LLD<7.44E-01		756.73	
TOTAL	8.46E+01	+-2.88E+00	8.46E+01	+-2.88E+00		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 8.46E+01 (+-2.88E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

58

PEAKS NOT USED IN ANALYSIS

9115903072

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
43.30	32.23	819.	14.4	3.85E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.39	1461.29	207.	15.0	5.17E+01

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* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                       *
*              G A M M A   S P E C T R U M   A N A L Y S I S            *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
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CANBERRA SPECTRAN-F V2.06 SOFTWARE

222-S COUNTING ROOM WESTINGHOUSE HANFORD 27 ~~14~~-NOV-89 14:08:20

A N A L Y S I S P A R A M E T E R S

MCA UNIT NUMBER: 2 / ADC UNIT NUMBER: 3.0
DETECTOR NUMBER: 3 / GEOMETRY NUMBER: 41
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
ANALYZED BY: VR

SAMPLE DESCRIPTION: F5020 SEGMENT 21
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON 27 ~~14~~-NOV-89 AT 13:18:06

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3002. SECONDS
DEAD TIME: 0.07 %

DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 17-OCT-89
EFFICIENCY CALIBRATION PERFORMED 31-JUL-89

P E A K A N A L Y S I S

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	1218.57	609.31	1.43	106.	164.	24.3	BI-214,
1B		609.49			150.	8.3	RU-103
2	1822.82	911.34	1.87	70.	58.	52.4	
2B		911.29			84.	8.4	
3	2922.49	1461.34	2.32	23.	609.	8.4	K-40
3B		1460.97			648.	1.8	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0013
BACKGROUND DESCRIPTION: BACKGROUND
BACKGROUND COLLECT STARTED ON 28-JUN-89 AT 15:00:00
BACKGROUND LIVE TIME: 60000. SECONDS

9112150908 5

222-S COUNTING ROOM WESTINGHOUSE HANFORD 27-NOV-89 14:08:20

SAMPLE: F5020 SEGMENT 21
DATA COLLECTED ON 27-NOV-89 AT 13:10:06
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AM-241	LLD<5.23E-02		LLD<5.23E-02		59.54	
AM-243	LLD<3.87E-02		LLD<3.87E-02		74.67	
BA-133	LLD<5.23E-02		LLD<5.23E-02		356.02	
BA-140	LLD<1.46E-01		LLD<1.46E-01		537.27	
CEPR144	LLD<5.01E-01		LLD<5.01E-01		133.51	
CO-60	LLD<4.70E-02		LLD<4.70E-02		1332.50	
CR-51	LLD<2.98E-01		LLD<2.98E-01		320.09	
CS-134	LLD<4.41E-02		LLD<4.41E-02		795.84	
CS-137	LLD<4.87E-02		LLD<4.87E-02		661.65	
EU-152	LLD<2.82E-01		LLD<2.82E-01		1408.01	
EU-154	LLD<1.77E-01		LLD<1.77E-01		1274.45	
EU-155	LLD<1.13E-01		LLD<1.13E-01		105.31	
FE-59	LLD<9.38E-02		LLD<9.38E-02		1099.25	
I-131	LLD<3.92E-02		LLD<3.92E-02		364.48	
K-40	LLD<1.25E+00		LLD<1.25E+00		1460.75	
LA-140	LLD<5.96E-02		LLD<5.96E-02		1596.20	
MN-54	LLD<4.10E-02		LLD<4.10E-02		834.83	
NA-22	LLD<6.12E-02		LLD<6.12E-02		1274.55	
NB-95	LLD<4.43E-02		LLD<4.43E-02		765.78	
NP-237	LLD<1.83E-01		LLD<1.83E-01		86.50	
PU-239	LLD<4.13E+02		LLD<4.13E+02		129.30	
PU-241	LLD<1.51E+04		LLD<1.51E+04		148.57	
RA-224	LLD<8.44E-01		LLD<8.44E-01		240.99	
RA-226	LLD<9.01E-01		LLD<9.01E-01		186.10	
RU-103	LLD<3.56E-02		LLD<3.56E-02		497.08	
RU103	LLD<3.74E-02		LLD<3.74E-02		497.08	
RURH106	LLD<7.50E-01		LLD<7.50E-01		621.80	
SB-125	LLD<4.24E-01		LLD<4.24E-01		176.33	
SE-75	LLD<5.22E-02		LLD<5.22E-02		264.66	
SN-113	LLD<4.85E-02		LLD<4.85E-02		391.67	
SR-85	LLD<4.51E-02		LLD<4.51E-02		513.99	
TH-228	LLD<1.88E+00		LLD<1.88E+00		84.37	
U-235	LLD<5.58E-02		LLD<5.58E-02		185.71	
Y-88	LLD<5.54E-02		LLD<5.54E-02		1836.06	
ZN-65	LLD<1.10E-01		LLD<1.10E-01		1115.55	
ZR-95	LLD<7.84E-02		LLD<7.84E-02		756.73	
TOTAL	0.00E-01	+-0.00E-01	0.00E-01	+-0.00E-01		

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID ENERGY NET AREA ERROR GAMMAS/SEC

CHANNEL	[illegible]	COUNTS	%	
1218.57	609.31	164.	24.3	6.46E+00
1822.82	911.34	58.	53.4	3.29E+00
2922.49	1461.34	609.	8.1	5.08E+01

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Uranium Analysis
Fusion Digestion

Instrument	WA77344
Procedure / Rev	LA-925-106/A-2
Technologist	6C269 M. Franz
Date	11/28/89
Temperature	N/A
Starting Time	08:00
Ending Time	14:30
Chemist	S. A. Catlow

	Description	Lab. Id.
1	Initial LMCS Check Std.	F5005
2	Reagent Blank	F5020
3	Sample of 89-040	F5006
4	Duplicate of 89-040	F5007
5	Spike of 89-040	F5008
6	Final LMCS Check Std.	F5009
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Standard	58B38/1 ul			5.7 ml
Spike	58B38/1 ul	Sample/10 ul		5.8 ml

Prepared by: H. S. Rich (Signature) — H. S. Rich (Printed Name) — Date: 06-05-90

Verified by: Carry M Seidel (Signature) — C. M. Seidel (Printed Name) — Date: 06-05-90

Approved by: L. H. Taylor (Signature) — L.H. Taylor (Printed Name) — Date: 8-16-90

Interim

Rev. E 4/04/90

SST-102

WATER DIGESTION TEST ANALYSIS

Single Shell Tank Project

Water Digestion
Laboratory Results of Solids
Units are Sample Wet Weight

Tank 241-U-110
Core 5
Segment 3
Customer ID: 89-040

Laboratory Segment Serial No.: F5001

Laboratory ID:	Check Standard F5010	Blank F5022	Sample F5011	Sample Duplicate F5011	Spike of Sample F5013	Check Standard F5014
Water Digestion			9.41 g/L	9.2 g/L	10.4 g/L	
Ion Chromatograph						
Fluoride	94.30%	<0.1 ppm	8.25E+02 ug/g	2.02E+03 ug/g	68.00%	90.60%
Chloride	95.60%	<0.1 ppm	1.60E+03 ug/g	1.49E+03 ug/g	54.80%	104.00%
Nitrate	97.00%	<1.0 ppm	7.48E+03 ug/g	7.28E+04 ug/g	77.90%	97.70%
Phosphate	96.90%	<1.0 ppm	3.64E+03 ug/g	1.73E+04 ug/g	85.60%	97.10%
Sulfate	98.90%	<1.0 ppm	2.50E+03 ug/g	2.38E+03 ug/g	98.60%	96.20%
Total Organic Carbon/ Carbonate	99.20%	6.0 ug	2.92E+03 ug/g	1.73E+03 ug/g	92.20%	100.10%
			These samples were not acitified before analysis.			
Water Digestion II			10.38 g/L	9.92 g/L	10.48 g/L	
Total Organic Carbon	96.60%	3.3 ug	<5.30E+02 ug/g	<5.54E+02 ug/g	96.20%	97.30%
			These samples were acidified before analysis			

Single Shell Tank Project

Water Digestion
Sample Results on Laboratory Digestion

Tank 241-U-110
Core 5
Segment 3
Customer ID: 89-040

Laboratory Segment Serial No.: F5001

	Check Standard	Blank	Sample	Sample Duplicate	Spike of Sample	Check Standard
Laborator ID:	F5010	F5022	F5011	F5012	F5013	F5014
Water Digestion I			9.41 g/L	9.2 g/L	10.4 g/L	
Ion Chromatograph						
Fluoride	94.30%	<0.1 ppm	7.75E+00 ppm	1.86E+01 ppm	68.00%	90.60%
Chloride	95.60%	<0.1 ppm	1.50E+01 ppm	1.37E+01 ppm	54.80%	104.00%
Nitrate	97.00%	<1.0 ppm	7.04E+01 ppm	6.70E+02 ppm	77.90%	97.70%
Phosphate	96.90%	<1.0 ppm	3.43E+00 ppm	1.59E+02 ppm	85.60%	97.10%
Sulfate	98.90%	<1.0 ppm	2.36E+01 ppm	2.19E+01 ppm	98.60%	96.20%
Total Organic Carbon/ Carbonate	99.20%	6.0 ug	2.75E-02 g/L	1.04E-02 g/L	92.20%	100.10%
			These samples were not acitified before analysis			
Water Digestion II			10.38 g/L	9.92 g/L	10.48 g/L	
Total Organic Carbon	96.60%	3.3 ug	<5.5E-03 g/L	<5.5E-03 g/L	96.20%	97.30%
			These samples were acidified before analysis			

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Instrument	N/A
Procedure / Rev	LA-504-101/A-2
Technologist	80725 S. Cervantes
Date	11/27/89
Temperature	22 C
Starting Time	11/22/89 08:00
Ending Time	11/27/89 15:00
Chemist	H. S. Rich

Water Digestion
Note: Sample is not spiked prior to digestion. This procedure provides a sample to be spiked later with the appropriate elements.

	Description	Lab. Id.
1	Reagent Blank	F5022
2	Sample of 89-040	F5011
3	Duplicate of 89-040	F5012
4	Spike of 89-040	F5013
5		
6		
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
N/A				
Spike (see note)				

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 4/5/90

Verified by: Carry M Seidel Signature — C. M. Seidel Printed Name — Date: 4/5/90

Approved by: [signature] Signature — L.H. Taylor Printed Name — Date: 4/19/90

Interim 4/04/90 Rev.E SST-102

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9 1 1 2 7 5 9 0 3 7 2

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Instrument	N/A
Procedure / Rev	LA-504-101 / A-2
Technologist	E. Colvin
Date	06/29/90
Temperature	Not Reported.
Starting Time	06/27/90: 08:00
Ending Time	06/29/90; 11:30
Chemist	H. Rich

Water Digestion - Second Leach.

NOTE: Sample is not spiked prior to digestion. This procedure provides a sample to be spiked later with the appropriate elements.

	Description		Lab. Id.
1	Blank	89-041	F5054
2	Sample	89-040	F5011
3	Duplicate	89-040	F5012
4	Spike	89-040	F5013
5	Sample	89-041	F5043
6	Duplicate	89-041	F5044
7	Spike	89-041	F5045
8			
9			
10			
11			

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
N/A				

Prepared by: Shirley Cervantes (Signature) S. A. Cervantes (Printed Name) Date: 8-09-90

Verified by: Gary M Seidel (Signature) C. M. Seidel (Printed Name) Date: 8-09-90

Approved by: L.H. Taylor (Signature) L.H. Taylor (Printed Name) Date: 8-16-90

SST-102 Rev. E 4/04/90 Interim
68.1

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Ion Chromatograph Analysis
Water Digestion

Instrument	WB24721
Procedure / Rev	LA-533-105/A-3
Technologist	6B107
Date	12/01/89
Temperature	25 C
Starting Time	10:30
Ending Time	14:45
Chemist	H. S. Rich

* Chromatogram only

	Description	Lab. Id.
1	Initial LMCS Check Std.	F5010
2	Eluent Blank	*
3	Reagent Blank	F5022
4	Sample of 89-040	F5011
5	Duplicate of 89-040	F5012
6	Spike of 89-040	F5013
7	Ending LMCS Check Std.	F5014
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Standard	6C11HC/100 ul			10.1 ml
Spike	40C9-A/50 ul	Sample/100 ul		5.15 ml

Prepared by: H. S. Rich (Signature) — H. S. Rich (Printed Name) — Date: 4/5/90

Verified by: Carry M Seidel (Signature) — C. M. Seidel (Printed Name) — Date: 4/5/90

Approved by: L. H. Taylor (Signature) — L. H. Taylor (Printed Name) — Date: 4-19-90

Interim Rev.E 4/04/90 SST-102

9112150974

Single Shell Tank Calibration Record

Phase I-A

Analyte:	Ion Chromatograph		
Procedure	LA-533-105	Revision:	A-3
Instrument:	Dionex 4000	Property Number:	WB24721
Technologist:	Nora Wright	Payroll Number:	6B107
Date:	Dec. 1, 1989		

Calibration Standard ID: Book number 35C9-60 issued 11-22-89

Analyte Concentration: F-49.6; Cl-61.0; NO_3-500.5; PO_4-500.6; SO_4-500.5 (in ppm)

Type of Calibration:

	Dilution	Concentration	Instrument Reading Units =
1			
2			
3	SEE ATTACHED CALIBRATION SHEETS		
4			
5			
6			
7			
8			
9			
10			

Comments:

Prepared by: Cathie Davey (Signature) CA Davey (Printed Name) Date: 4/18/90

Verified by: [signature] (Signature) H.S. Rich (Printed Name) Date: 4/18/90

Approved by: L.H. Taylor (Signature) L.H. Taylor (Printed Name) Date: 4/19/90

Interim Rev. (Draft) 1/18/89 SST-103

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9 1 1 2 1 5 9 0 8 7 5

DIONEX SCHEDULE - C:\DX\SCHEDULE\89120102.SCH

Inj#	Sample Name	Method Name	Data File	Vol.	Dil.	Int.Std.
1	SETUP	...\GROUT01	...\891201021		1	0
2	BLANK	...\GROUT01	...\891201021		1	0
3	LMCS/6C11HC	...\GROUT01	...\891201021		101	0
4	AUTOCAL1R	...\GROUT01	...\891201021		1	0
5	AUTOCAL2R	...\GROUT01	...\891201021		1	0
6	AUTOCAL3R	...\GROUT01	...\891201021		1	0
7	AUTOCAL4R	...\GROUT01	...\891201021		1	0
8	AUTOCAL5R	...\GROUT01	...\891201021		1	0
9	AUTOCAL6R	...\GROUT01	...\891201021		1	0
10	LMCS/6C11HC	...\GROUT01	...\891201021		101	0
11	BLANK	...\GROUT01	...\891201021		1	0
12	5022b	...\GROUT01	...\891201021		1	0
13	5011	...\GROUT01	...\891201021		51	0
14	5012d	...\GROUT01	...\891201021		51	0
15	5013s	...\GROUT01	...\891201021		51	0
16	LMCS/6C11HC	...\GROUT01	...\891201021		101	0

DIONEX METHOD PARAMETERS - GROUT01.MET

Detector Parameters

Number of Detectors	1
Detector 1 Type	CDM-1

Report Options

Run Time (minutes)	10.00
Detector 1 real time plot scale	20.00
Print Report	Yes
Print Replot	Yes
AutoScale Replot to Highest Peak	Yes
Print Retention Times on Chromatogram	Yes
List Peaks Not Found in this run	No
Report Unknowns found in run	Yes
Record Raw Data	Yes
Raw Data File Name: c:\dx\data\89120102.d09	
Record Result Data	No

Integration Parameters

Sampling Rate (seconds)	0.20
Peak Threshold (mV or uS/data pt interval)	0.400
Starting Peak Width (seconds)	10.0
Peak Area Reject	1000

Integration Timed Events

Time	Description

Calibration Parameters

External or Internal Calibration	External
Calibrate by Area or Height	Height
Replace Or Average Calibrations	Replace
Number Of Levels for Calibration	6
Calibration fit type	Quadratic
Response Factor for unknown peaks	0.0
Default Injection Volume	1.0
Default Dilution Factor	1.0
Area Reject for Reference Peaks	1000
Percent Retention Time Window for Reference Peaks	5.0

Component # 1 FLUORIDE Retention Time 0.98
Reference Peak FLUORIDE Window Size 5.00%
Least Squares Slope = 3.04502E-004
Least Squares Intercept = 3.36166E-002
Ka = -7.42672E-010

Level	Amount	Area	Height
1	9.72100E-002	1547	292
2	2.46800E-001	3814	699
3	4.91100E-001	8014	1443
4	9.72500E-001	18242	3026
5	1.90770E+000	37268	6331
6	3.67410E+000	82101	12310

Component # 2 CHLORIDE Retention Time 1.62
Reference Peak FLUORIDE Window Size 7.00%
Least Squares Slope = 5.28651E-004
Least Squares Intercept = 2.16821E-002
Ka = -4.60837E-009

Level	Amount	Area	Height
1	1.21800E-001	1174	211
2	3.03500E-001	3127	534
3	6.03960E-001	6384	1090
4	1.19610E+000	13048	2257
5	2.34610E+000	26949	4596
6	4.51840E+000	56310	9249

Component # 3 NITRITE Retention Time 2.00
Reference Peak FLUORIDE Window Size 7.00%
Least Squares Slope = 8.19167E-004
Least Squares Intercept = 3.87713E-001
Ka = 4.24548E-009

Level	Amount	Area	Height
1	1.00000E+000	6728	955
2	2.49250E+000	17398	2609
3	4.96040E+000	36144	5455
4	9.82350E+000	72479	10242
5	1.92690E+001	156757	21248
6	3.71110E+001	299406	37444

Component # 4 NITRATE Retention Time 4.03
Reference Peak FLUORIDE Window Size 10.00%
Least Squares Slope = 1.94357E-003
Least Squares Intercept = -1.10952E-001
Ka = 1.78504E-008

Level	Amount	Area	Height
1	9.99000E-001	5537	519
2	2.49000E+000	15382	1323
3	4.95550E+000	33066	2632
4	9.81380E+000	67697	4864
5	1.92492E+001	142777	9168
6	3.70730E+001	296013	16606

Component # 5 PHOSPHATE Retention Time 5.35
Reference Peak FLUORIDE Window Size 7.00%
Least Squares Slope = 4.25699E-003
Least Squares Intercept = 1.29081E-001
Ka = -2.86430E-008

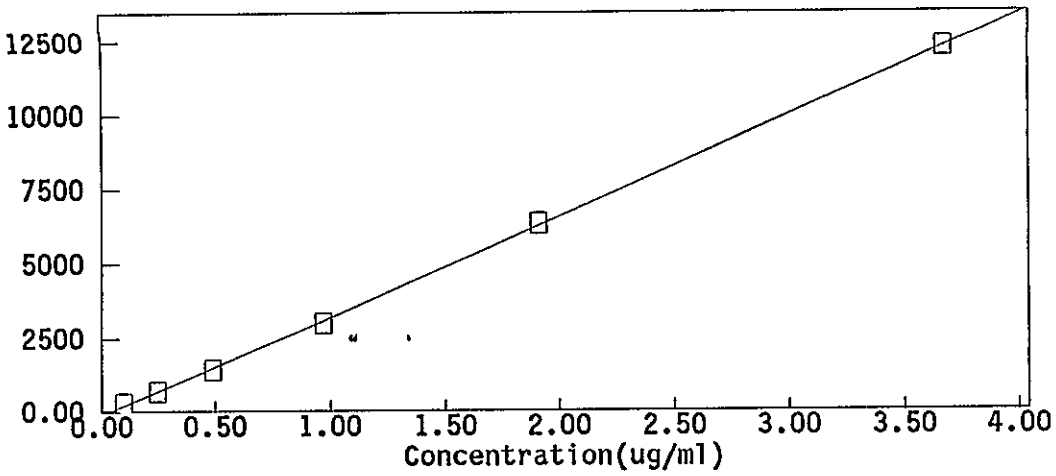
Level	Amount	Area	Height
1	9.99200E-001	2588	195
2	2.49050E+000	11460	648
3	4.95640E+000	16063	1091
4	9.81580E+000	33316	2235
5	1.92531E+001	72002	4693
6	3.70804E+001	149467	9246

Component # 6 SULFATE Retention Time 7.10
Reference Peak FLUORIDE Window Size 10.00%
Least Squares Slope = 2.01226E-003
Least Squares Intercept = 2.11736E-001
Ka = -1.25909E-009

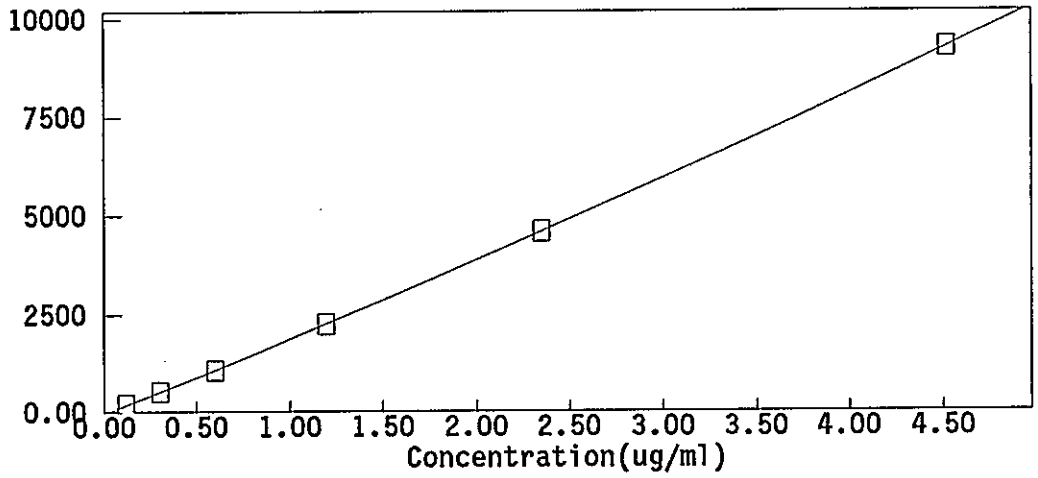
Level	Amount	Area	Height
1	9.99000E-001	8490	472
2	2.49000E+000	20937	1134
3	4.95550E+000	42330	2329
4	9.81380E+000	84876	4644
5	1.92492E+001	182078	9631
6	3.70730E+001	373505	18512

Component # 7 Oxalate Retention Time 9.77
Reference Peak FLUORIDE Window Size 10.00%
Least Squares Slope = 0.00000E+000
Least Squares Intercept = 0.00000E+000
Ka = 0.00000E+000

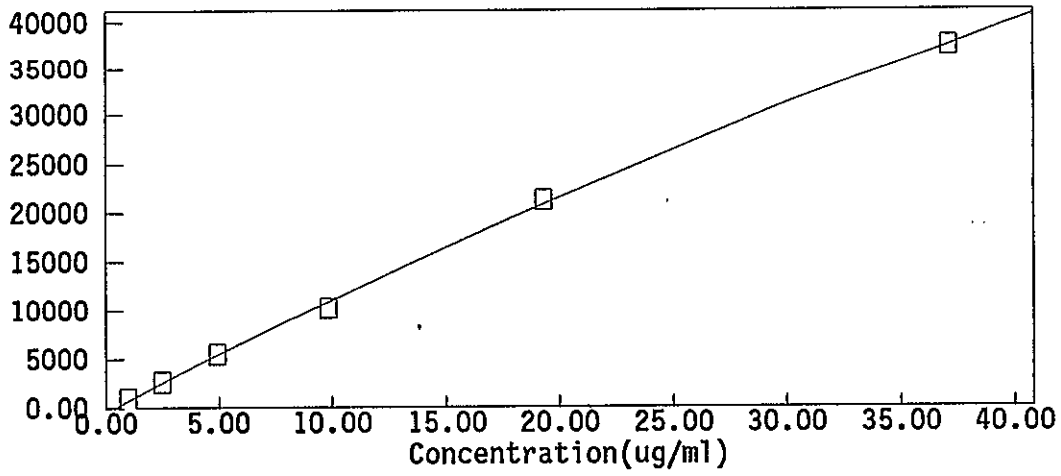
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98993	5848



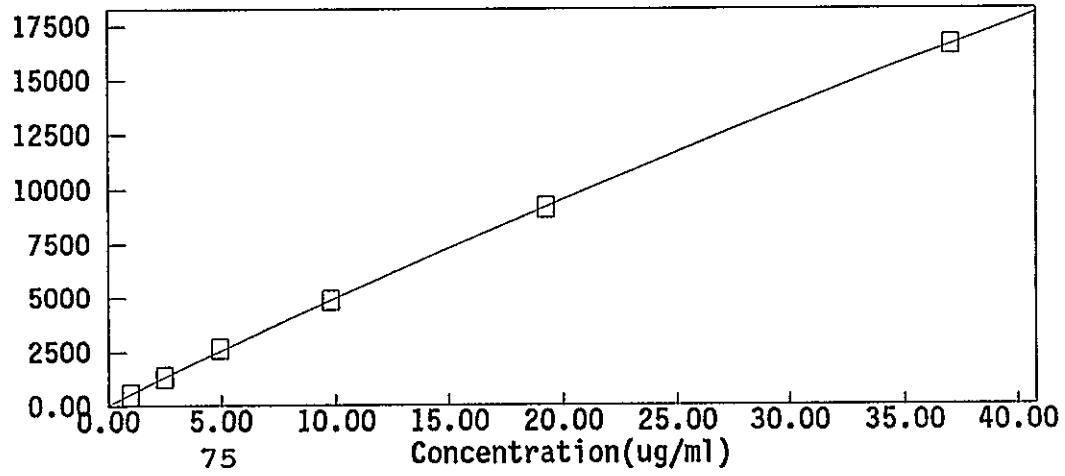
Component: FLUORIDE
Fit Type: Quadratic
Conc = (-7.426720e-010
(3.045016e-004 * Resp)+
Standardization:
Calibration: Height



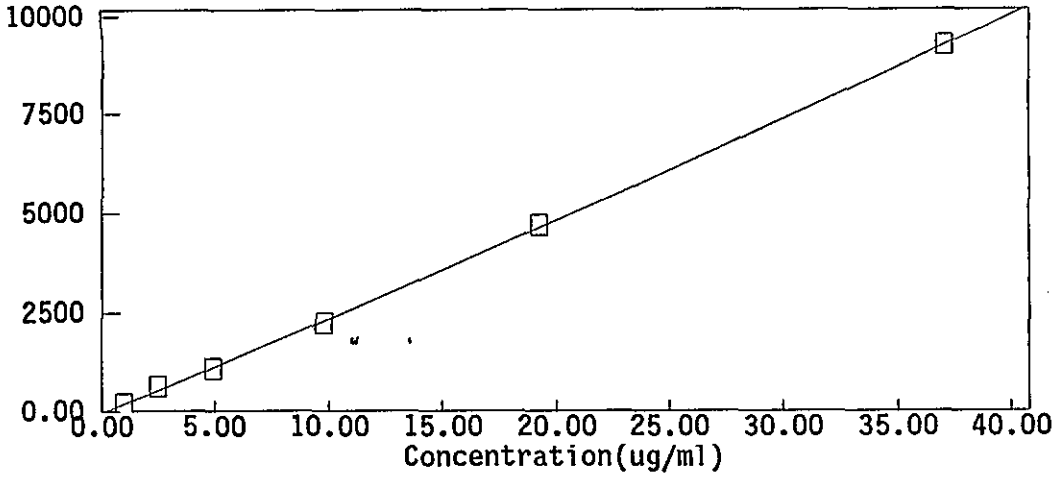
Component: CHLORIDE
Fit Type: Quadratic
Conc = (-4.608369e-009
(5.286507e-004 * Resp)+
Standardization:
Calibration: Height



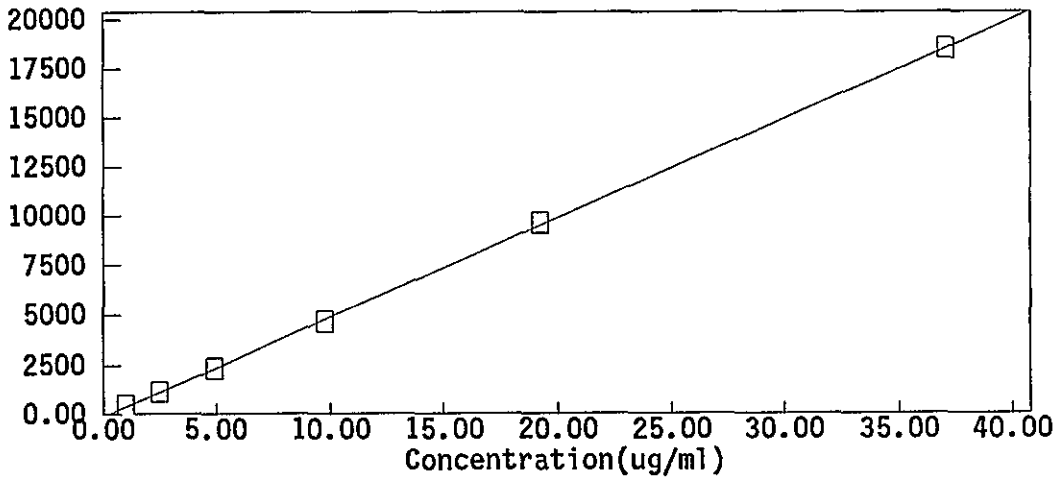
Component: NITRITE
Fit Type: Quadratic
Conc = (4.245484e-009 *
(8.191672e-004 * Resp)+
Standardization:
Calibration: Height



Component: NITRATE
Fit Type: Quadratic
Conc = (1.785043e-008 *
(1.943571e-003 * Resp)+
Standardization:
Calibration: Height



Component: PHOSPHATE
Fit Type: Quadratic
Conc = (-2.864303e-008
(4.256992e-003 * Resp)+
Standardization:
Calibration: Height



Component: SULFATE
Fit Type: Quadratic
Conc = (-1.259086e-009
(2.012255e-003 * Resp)+
Standardization:
Calibration: Height

********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\GROUT01.MET
Calibration Level : 1
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	8.53	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	0.98	0.98	0.98	3.257e+002	3.257e+002	3.257e+002
2	CHLORIDE	1.62	1.62	1.62	2.477e+002	2.477e+002	2.477e+002
3	NITRITE	2.00	2.00	2.00	9.671e+002	9.671e+002	9.671e+002
4	NITRATE	3.72	4.03	4.03	6.260e+002	5.327e+002	5.327e+002
5	PHOSPHATE	5.22	5.35	5.35	2.065e+002	2.065e+002	2.065e+002
6	SULFATE	7.10	7.13	7.13	4.943e+002	4.943e+002	4.943e+002

DATA REPROCESSED ON Thu May 24 15:24:24 1990

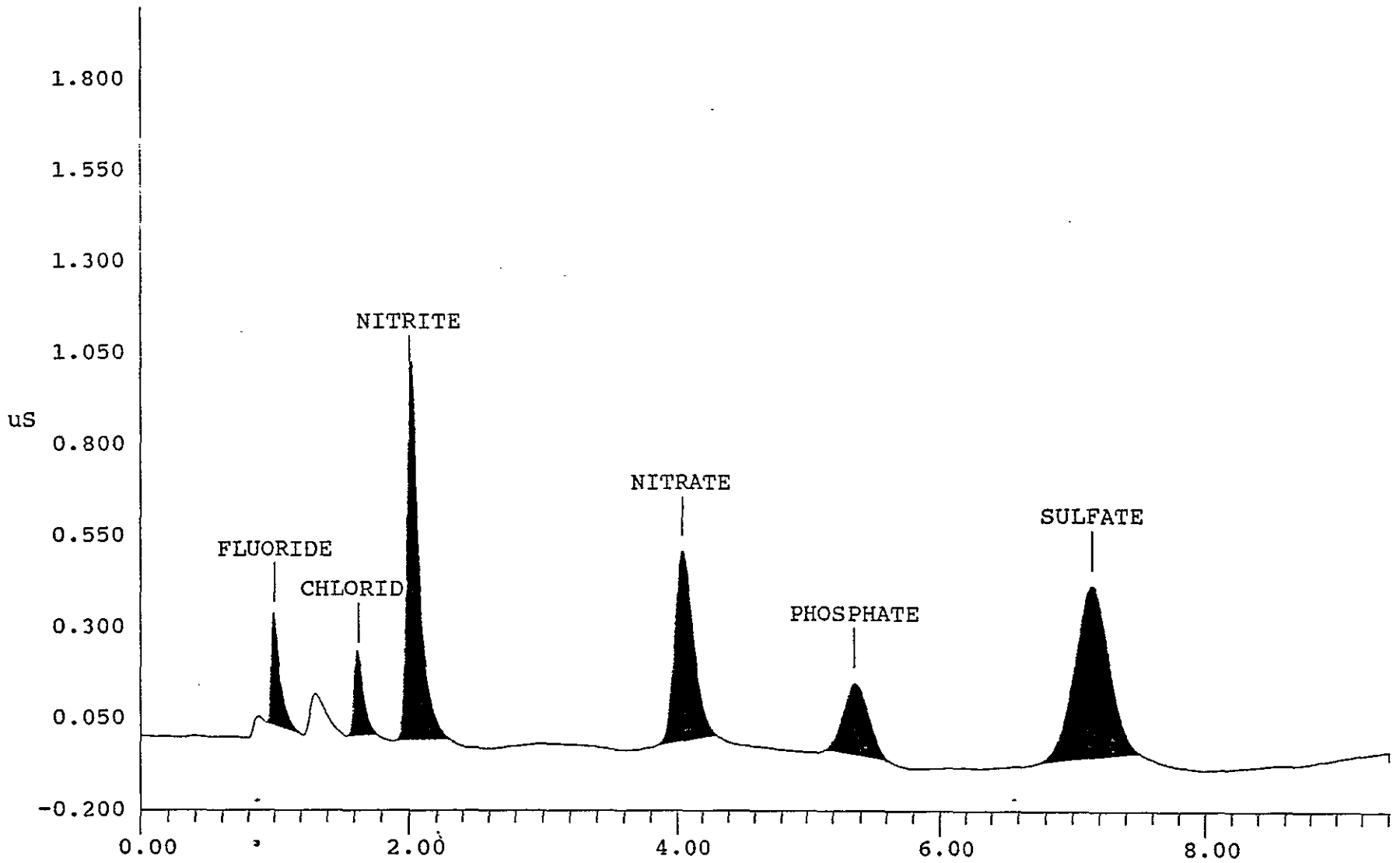
Sample Name: AUTOCAL1R Date: Fri Dec 01 12:44:23 1989
Data File : C:\DX\DATA\89120102.D04
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET
Interface : 1 System : 1 Inject#: 4 Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	1.000e-001	2.405e+003	326	2	0	0.00%
2	1.30		0.000e+000	1.254e+003	125	2		
3	1.62	CHLORIDE	1.200e-001	1.534e+003	248	2	0	0.00%
4	2.00	NITRITE	9.990e-001	7.143e+003	967	2	0	0.00%
5	4.03	NITRATE	9.990e-001	6.104e+003	533	1	0	0.00%
6	5.35	PHOSPHATE	9.990e-001	2.958e+003	206	1	0	0.00%
7	7.13	SULFATE	9.990e-001	9.725e+003	494	1	0	0.00%

File: C:\DX\DATA\89120102.D04 Sample: AUTOCAL1R



9112590903

********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\GROUT01.MET
Calibration Level : 2
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	8.53	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	0.98	0.98	0.98	7.641e+002	7.641e+002	7.641e+002
2	CHLORIDE	1.62	1.62	1.62	5.715e+002	5.715e+002	5.715e+002
3	NITRITE	2.00	2.02	2.02	2.628e+003	2.628e+003	2.628e+003
4	NITRATE	4.03	4.02	4.02	1.491e+003	1.328e+003	1.328e+003
5	PHOSPHATE	5.35	5.40	5.40	6.728e+002	6.728e+002	6.728e+002
6	SULFATE	7.13	7.22	7.22	1.148e+003	1.148e+003	1.148e+003

DATA REPROCESSED ON Thu May 24 15:24:51 1990

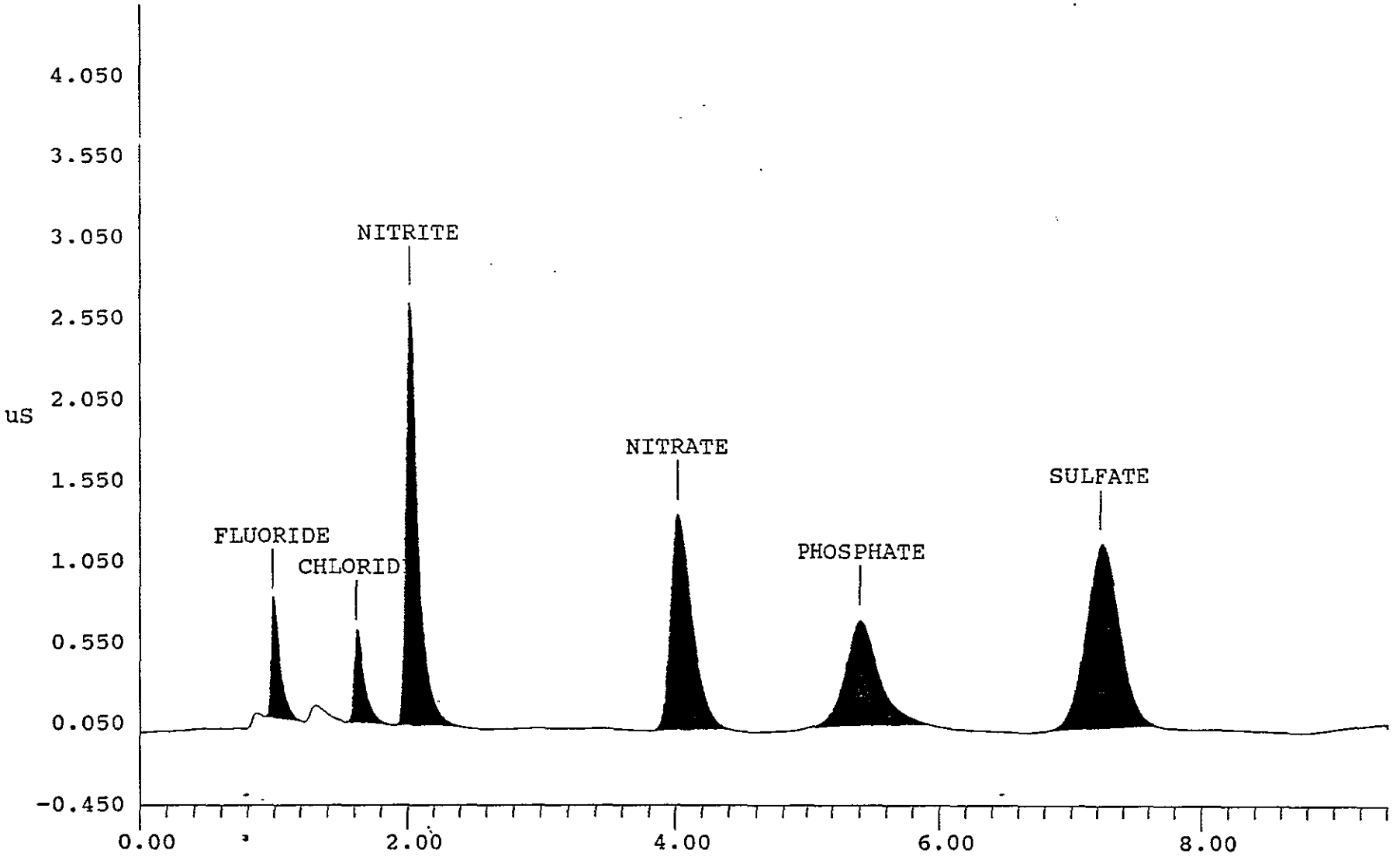
Sample Name: AUTOCAL2R Date: Fri Dec 01 12:54:32 1989
Data File : C:\DX\DATA\89120102.D05
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET
Interface : 1 System : 1 Inject#: 5 Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	2.490e-001	5.336e+003	764	2	0	0.00%
2	1.30		0.000e+000	1.573e+003	137	2		
3	1.62	CHLORIDE	2.990e-001	3.784e+003	571	2	0	0.00%
4	2.02	NITRITE	2.490e+000	1.793e+004	2628	2	0	0.00%
5	4.02	NITRATE	2.490e+000	1.565e+004	1328	1	0	0.00%
6	5.40	PHOSPHATE	2.490e+000	1.303e+004	673	1	0	0.00%
7	7.22	SULFATE	2.490e+000	2.174e+004	1148	1	0	0.00%

File: C:\DX\DATA\89120102.D05 Sample: AUTOCAL2R



9 1 1 2 1 5 3 0 9 0 5

********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\GROUT01.MET
Calibration Level : 3
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	8.53	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	0.98	0.98	0.98	1.542e+003	1.542e+003	1.542e+003
2	CHLORIDE	1.62	1.62	1.62	1.125e+003	1.125e+003	1.125e+003
3	NITRITE	2.02	2.02	2.02	5.458e+003	5.458e+003	5.458e+003
4	NITRATE	4.02	3.97	3.97	2.817e+003	2.642e+003	2.642e+003
5	PHOSPHATE	5.40	5.35	5.35	1.102e+003	1.102e+003	1.102e+003
6	SULFATE	7.22	7.22	7.22	2.340e+003	2.340e+003	2.340e+003

DATA REPROCESSED ON Thu May 24 15:25:22 1990

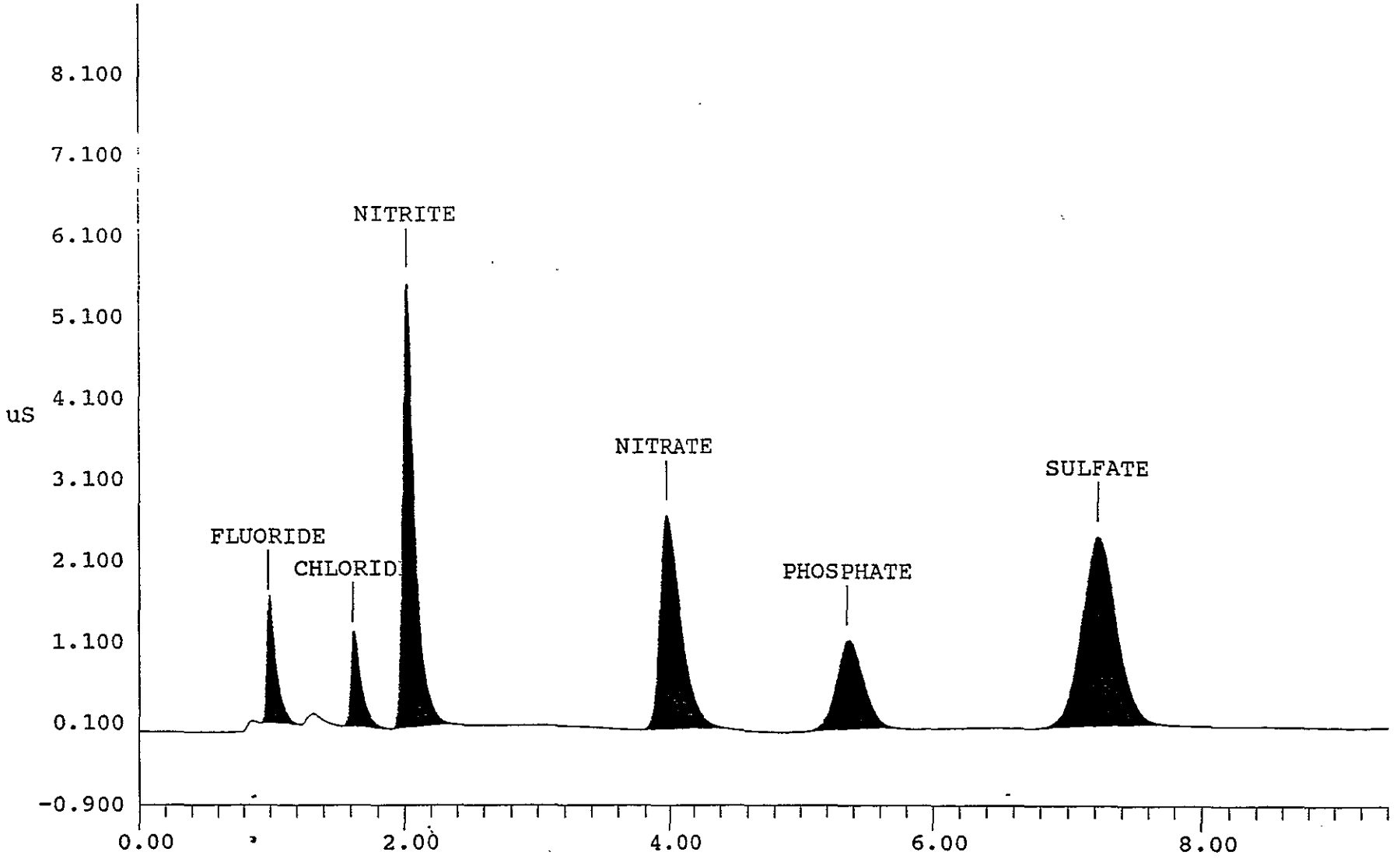
Sample Name: AUTOCAL3R Date: Fri Dec 01 13:04:42 1989
Data File : C:\DX\DATA\89120102.D06
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET
Interface : 1 System : 1 Inject#: 6 Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	4.960e-001	1.066e+004	1542	3	0	0.00%
2	1.32		0.000e+000	1.892e+003	183	4		
3	1.62	CHLORIDE	5.950e-001	6.856e+003	1125	2	0	0.00%
4	2.02	NITRITE	4.955e+000	3.642e+004	5458	1	0	0.00%
5	3.97	NITRATE	4.955e+000	3.403e+004	2642	1	0	0.00%
6	5.35	PHOSPHATE	4.955e+000	1.655e+004	1102	1	0	0.00%
7	7.22	SULFATE	4.955e+000	4.306e+004	2340	1	0	0.00%

File: C:\DX\DATA\89120102.D06 Sample: AUTOCAL3R



********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\GROUT01.MET
Calibration Level : 4
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	8.53	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	0.98	0.98	0.98	3.070e+003	3.070e+003	3.070e+003
2	CHLORIDE	1.62	1.62	1.62	2.314e+003	2.314e+003	2.314e+003
3	NITRITE	2.02	2.00	2.00	1.033e+004	1.033e+004	1.033e+004
4	NITRATE	3.97	3.88	3.88	4.872e+003	4.872e+003	4.872e+003
5	PHOSPHATE	5.35	5.28	5.28	2.245e+003	2.245e+003	2.245e+003
6	SULFATE	7.22	7.13	7.13	4.658e+003	4.658e+003	4.658e+003

DATA REPROCESSED ON Thu May 24 15:25:51 1990

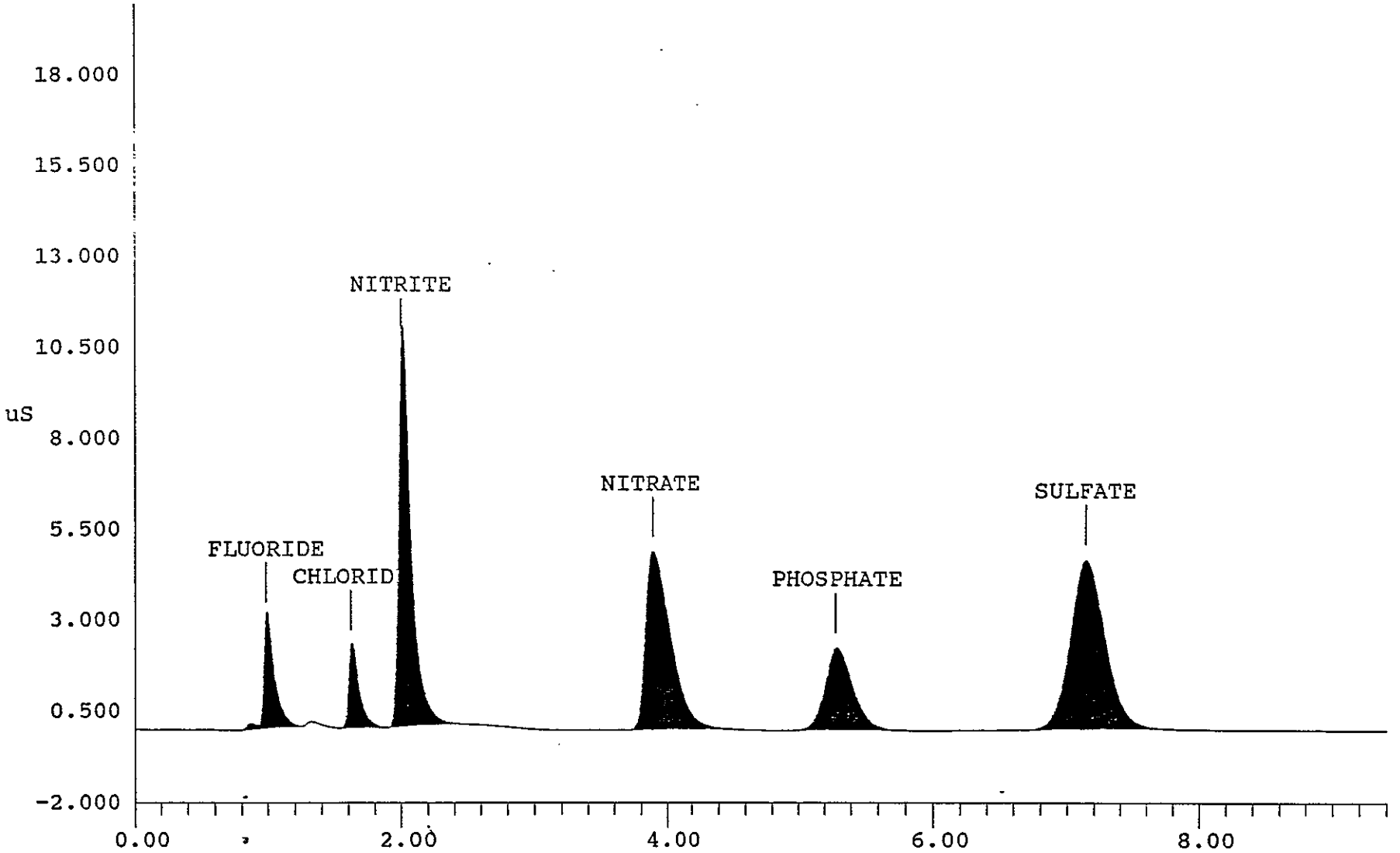
Sample Name: AUTOCAL4R Date: Fri Dec 01 13:14:52 1989
Data File : C:\DX\DATA\89120102.D07
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET
Interface : 1 System : 1 Inject#: 7 Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	9.820e-001	1.985e+004	3070	3	0	0.00%
2	1.32		0.000e+000	2.037e+003	204	4		
3	1.62	CHLORIDE	1.179e+000	1.429e+004	2314	2	0	0.00%
4	2.00	NITRITE	9.814e+000	8.011e+004	10329	2	0	0.00%
5	3.88	NITRATE	9.814e+000	6.865e+004	4872	1	0	0.00%
6	5.28	PHOSPHATE	9.814e+000	3.387e+004	2245	1	0	0.00%
7	7.13	SULFATE	9.814e+000	8.594e+004	4658	1	0	0.00%

File: C:\DX\DATA\89120102.D07 Sample: AUTOCAL4R



********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\GROUT01.MET
Calibration Level : 5
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	8.53	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	0.98	0.98	0.98	6.413e+003	6.413e+003	6.413e+003
2	CHLORIDE	1.62	1.62	1.62	4.621e+003	4.621e+003	4.621e+003
3	NITRITE	2.00	2.00	2.00	2.127e+004	2.127e+004	2.127e+004
4	NITRATE	3.88	3.82	3.82	9.173e+003	9.173e+003	9.173e+003
5	PHOSPHATE	5.28	5.27	5.27	4.705e+003	4.705e+003	4.705e+003
6	SULFATE	7.13	7.15	7.15	9.655e+003	9.655e+003	9.655e+003

DATA REPROCESSED ON Thu May 24 15:26:20 1990

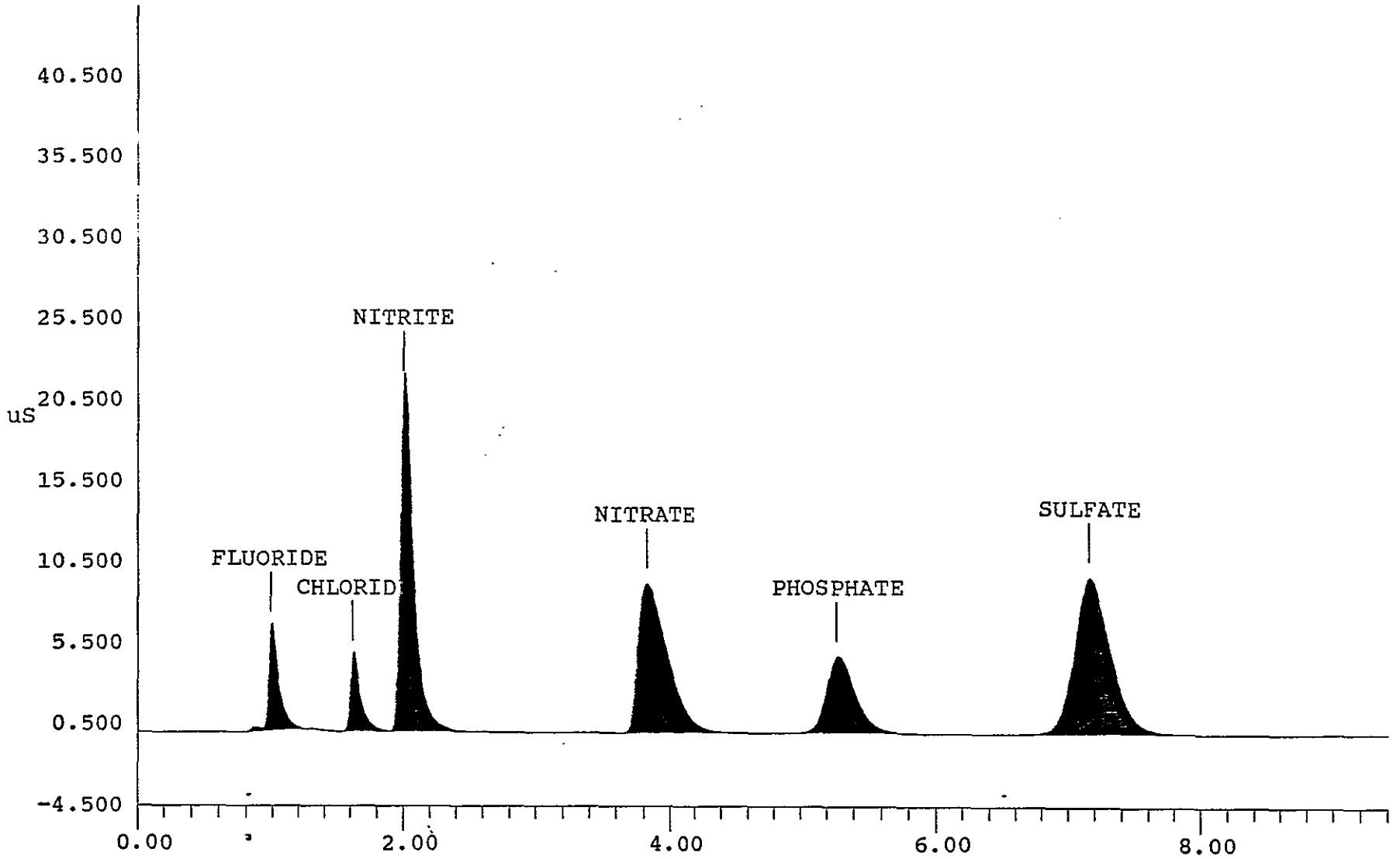
Sample Name: AUTOCAL5R Date: Fri Dec 01 13:25:03 1989
Data File : C:\DX\DATA\89120102.D08
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET
Interface : 1 System : 1 Inject#: 8 Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.87		0.000e+000	1.558e+003	311	2		
2	0.98	FLUORIDE	1.927e+000	4.002e+004	6413	2	0	0.00%
3	1.62	CHLORIDE	2.312e+000	2.746e+004	4621	2	0	0.00%
4	2.00	NITRITE	1.925e+001	1.578e+005	21272	2	0	0.00%
5	3.82	NITRATE	1.925e+001	1.434e+005	9173	1	0	0.00%
6	5.27	PHOSPHATE	1.925e+001	7.282e+004	4705	1	0	0.00%
7	7.15	SULFATE	1.925e+001	1.842e+005	9655	1	0	0.00%

File: C:\DX\DATA\89120102.D08 Sample: AUTOCAL5R



********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\GROUT01.MET
Calibration Level : 6
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	8.53	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	0.98	0.98	0.98	1.231e+004	1.231e+004	1.231e+004
2	CHLORIDE	1.62	1.62	1.62	9.258e+003	9.258e+003	9.258e+003
3	NITRITE	2.00	2.00	2.00	3.746e+004	3.746e+004	3.746e+004
4	NITRATE	3.82	3.72	3.72	1.661e+004	1.661e+004	1.661e+004
5	PHOSPHATE	5.27	5.22	5.22	9.261e+003	9.261e+003	9.261e+003
6	SULFATE	7.15	7.10	7.10	1.853e+004	1.853e+004	1.853e+004

DATA REPROCESSED ON Thu May 24 15:26:49 1990

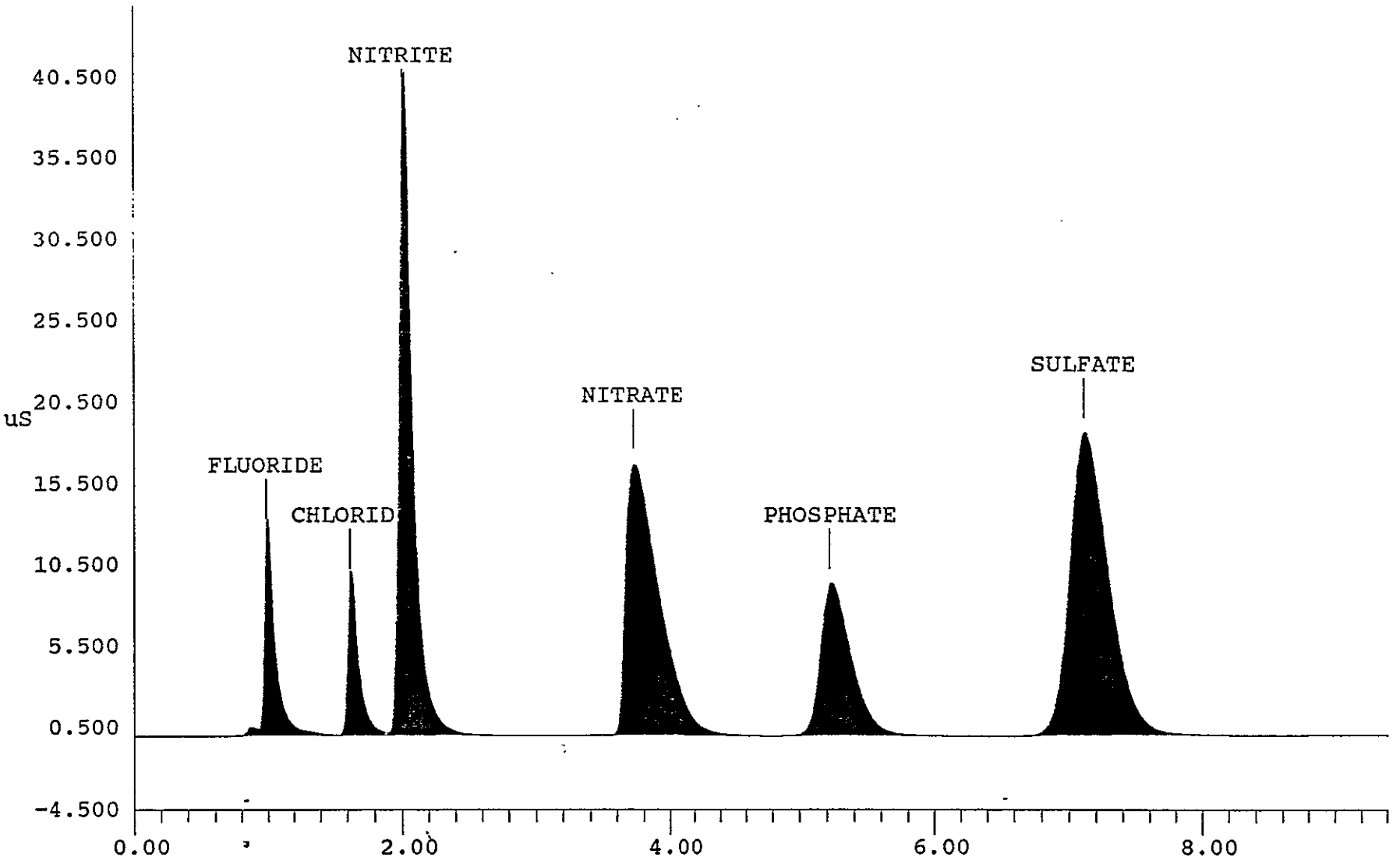
Sample Name: AUTOCAL6R Date: Fri Dec 01 13:35:14 1989
Data File : C:\DX\DATA\89120102.D09
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET
Interface : 1 System : 1 Inject#: 9 Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.87		0.000e+000	2.351e+003	547	2		
2	0.98	FLUORIDE	3.711e+000	7.957e+004	12312	2	0	0.00%
3	1.62	CHLORIDE	4.452e+000	5.649e+004	9258	2	0	0.00%
4	2.00	NITRITE	3.707e+001	3.001e+005	37457	2	0	0.00%
5	3.72	NITRATE	3.707e+001	2.963e+005	16607	1	0	0.00%
6	5.22	PHOSPHATE	3.707e+001	1.508e+005	9261	1	0	0.00%
7	7.10	SULFATE	3.707e+001	3.762e+005	18535	1	0	0.00%

File: C:\DX\DATA\89120102.D09 Sample: AUTOCAL6R



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DATA REPROCESSED ON Thu May 24 16:07:25 1990

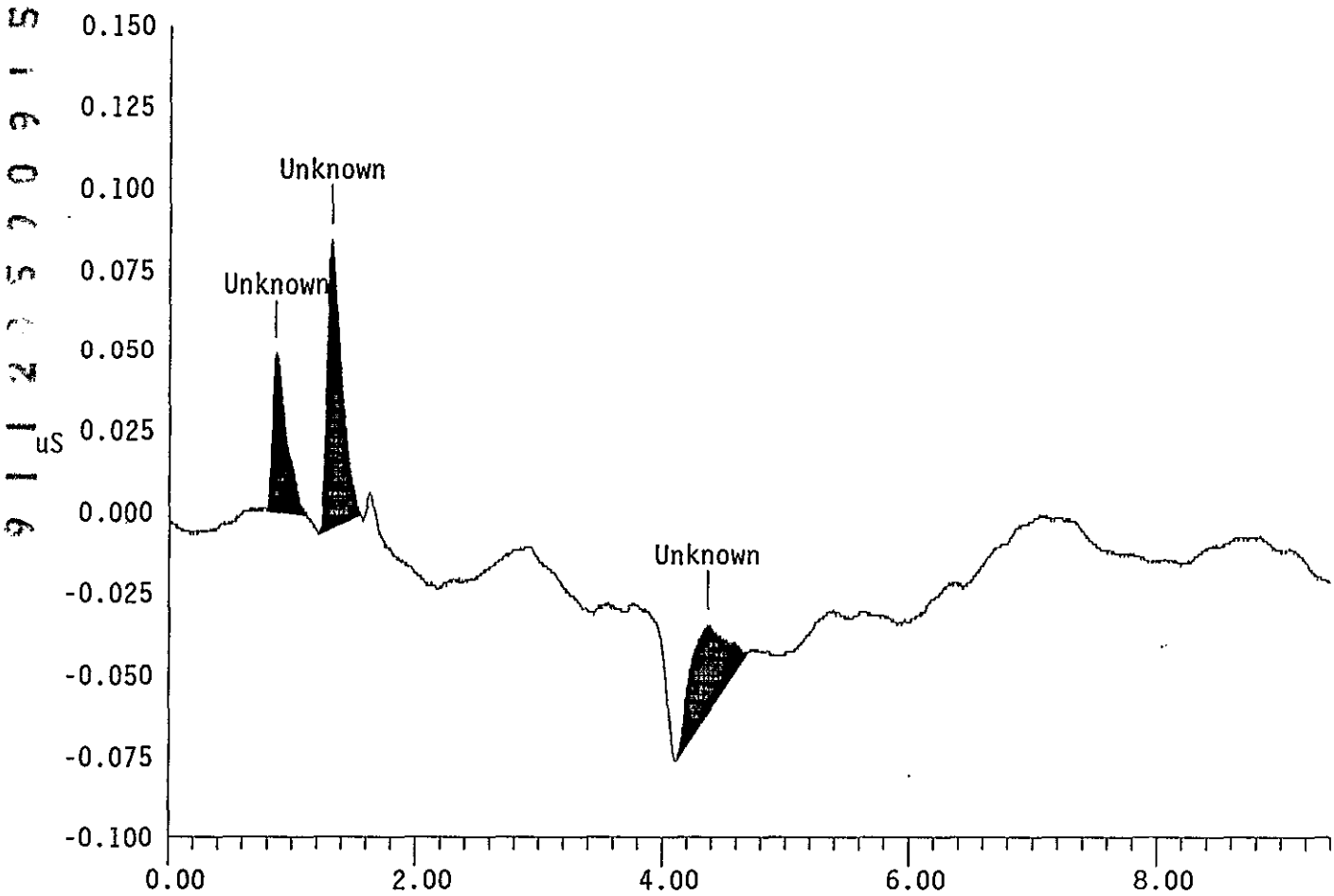
Sample Name: BLANK	Date: Fri Dec 01 13:55:28 1989
Data File : C:\DX\DATA\89120102.D11	
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET	
ACI Address: 1 System : 1 Inject#: 11	Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
2	1.32		0.000e+000	7.598e+002	89	1		
3	4.37		0.000e+000	5.511e+002	27	1		

File: C:\DX\DATA\89120102.D11 Sample: BLANK



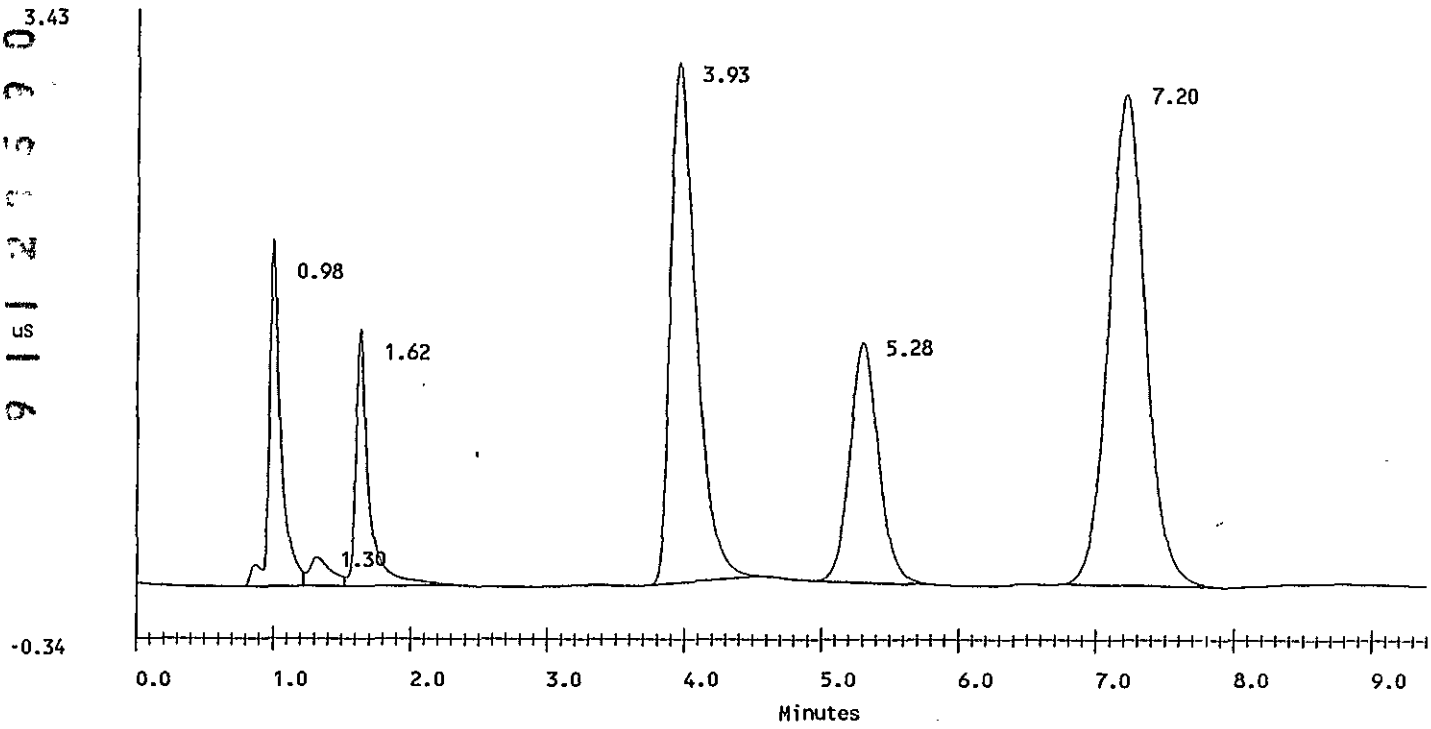
DATA REPROCESSED ON Thu May 24 17:03:05 1990

Sample Name: LMCS/6C11HC	Date: Fri Dec 01 13:45:23 1989
Data File : C:\DX\DATA\89120102.D10	
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET	
Interface : 1 System : 1 Inject#: 10	Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	5.922e+001	1.247e+004	1870	3	0	0.00%
2	1.30		0.000e+000	1.602e+003	143	4		
3	1.62	CHLORIDE	7.231e+001	9.939e+003	1389	2	0	0.00%
4	3.93	NITRATE	6.020e+002	4.035e+004	3048	1	0	5.83%
5	5.28	PHOSPHATE	6.002e+002	2.082e+004	1392	1	0	0.00%
6	7.20	SULFATE	6.133e+002	5.440e+004	2934	1	0	0.00%



DATA REPROCESSED ON Thu May 24 16:09:52 1990

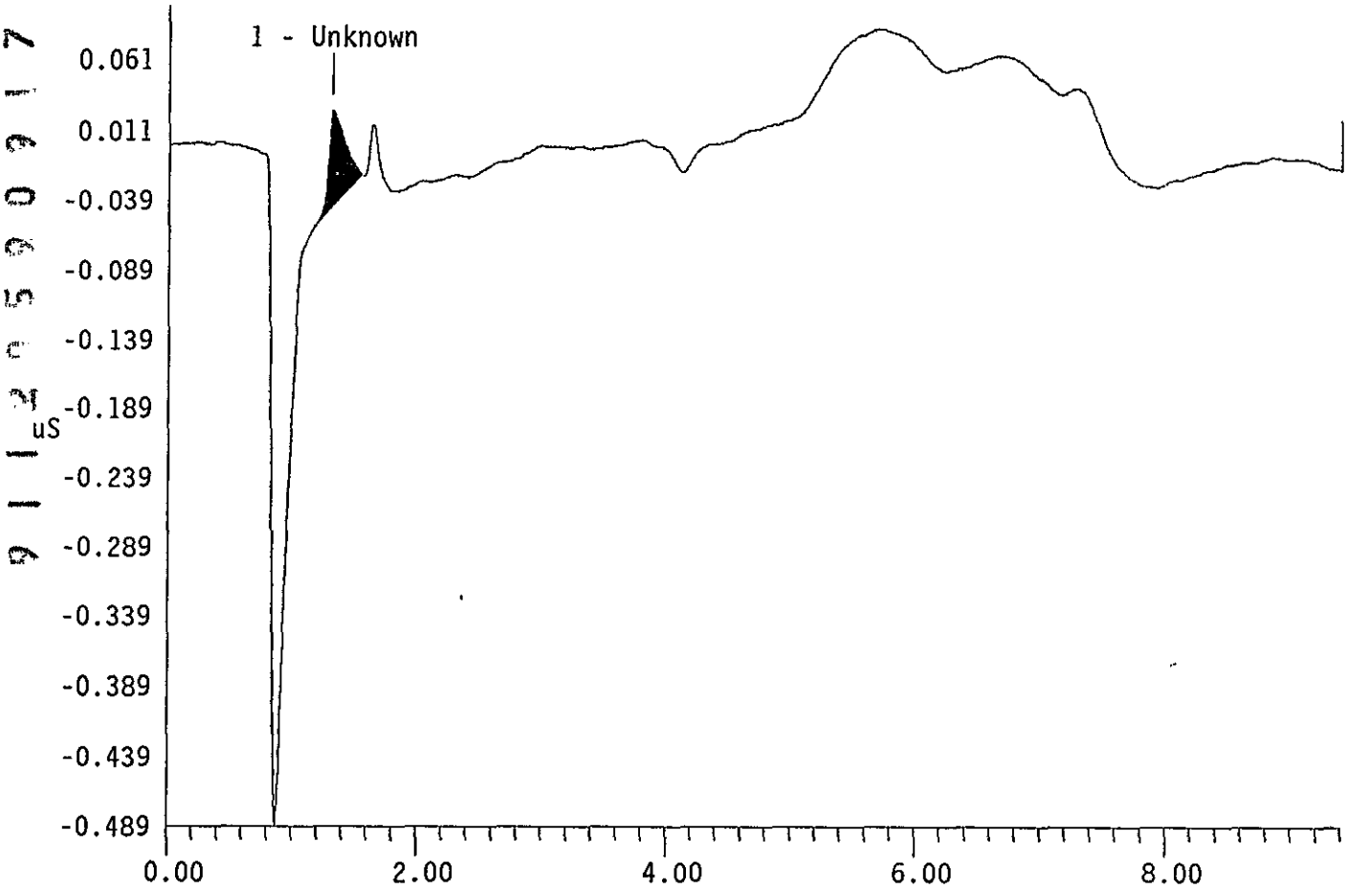
Sample Name: 5022B	Date: Fri Dec 01 14:05:58 1989
Data File : C:\DX\DATA\89120102.D12	
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET	
ACI Address: 1 System : 1 Inject#: 12	Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.32		0.000e+000	6.425e+002	69	1		

File: C:\DX\DATA\89120102.D12 Sample: 5022B



DATA REPROCESSED ON Thu May 24 16:16:01 1990

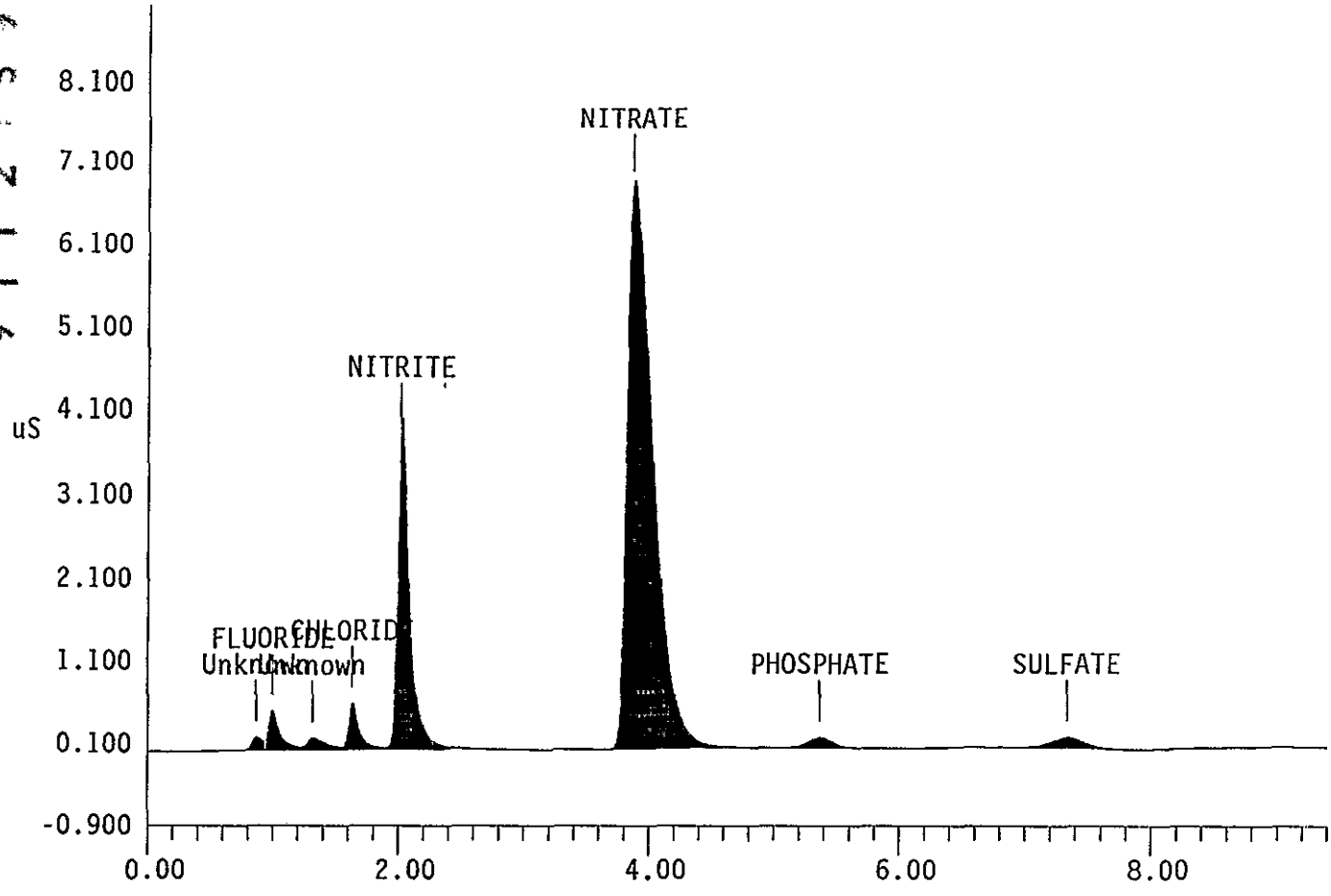
Sample Name: 5011	Date: Fri Dec 01 14:17:03 1989
Data File : C:\DX\DATA\89120102.D13	
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET	
ACI Address: 1 System : 1 Inject#: 13	Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 51

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.87		0.000e+000	8.864e+002	158	2		
2	1.00	FLUORIDE	8.300e+000	3.074e+003	472	2	0	0.00%
3	1.32		0.000e+000	1.588e+003	148	2		
4	1.63	CHLORIDE	1.487e+001	3.444e+003	560	2	0	0.00%
5	2.02	NITRITE	1.761e+002	2.690e+004	3700	2	0	0.00%
6	3.87	NITRATE	7.043e+002	1.008e+005	6751	1	0	0.00%
7	5.37	PHOSPHATE	3.233e+001	1.855e+003	134	1	0	0.00%
8	7.33	SULFATE	2.371e+001	2.714e+003	141	1	0	0.00%

File: C:\DX\DATA\89120102.D13 Sample: 5011



DATA REPROCESSED ON Thu May 24 16:17:25 1990

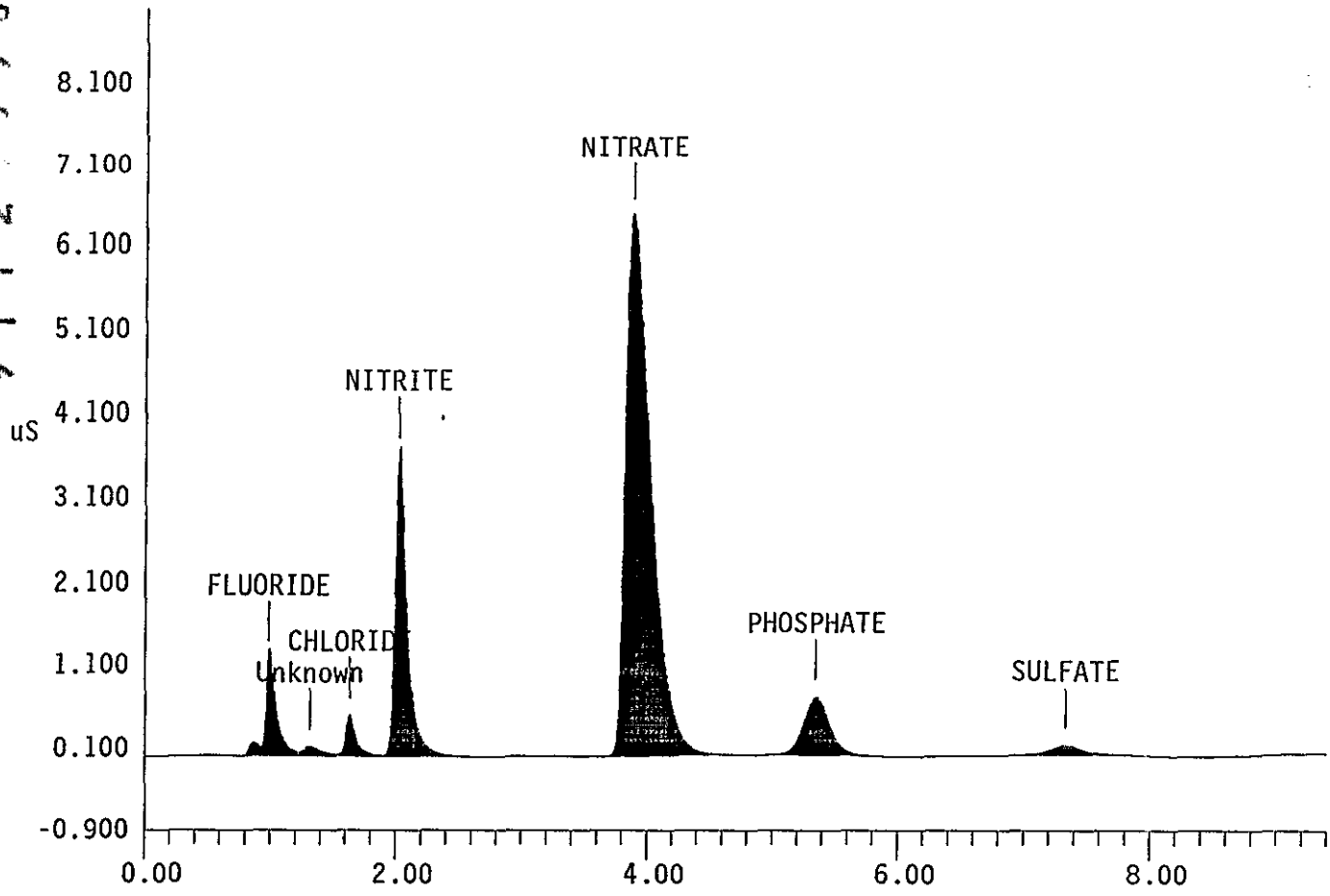
Sample Name: 5012d	Date: Fri Dec 01 14:41:09 1989
Data File : C:\DX\DATA\89120102.D14	
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET	
ACI Address: 1 System : 1 Inject#: 14	Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 51

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	1.922e+001	8.536e+003	1178	3	0	0.00%
2	1.32		0.000e+000	1.140e+003	113	4		
3	1.63	CHLORIDE	1.336e+001	3.023e+003	503	2	0	0.00%
4	2.02	NITRITE	1.720e+002	2.517e+004	3607	2	0	0.00%
5	3.88	NITRATE	6.694e+002	9.334e+004	6436	1	0	0.00%
6	5.35	PHOSPHATE	1.580e+002	1.069e+004	716	1	0	0.00%
7	7.33	SULFATE	2.196e+001	2.275e+003	124	1	0	0.00%

File: C:\DX\DATA\89120102.D14 Sample: 5012d



DATA REPROCESSED ON Thu May 24 16:31:13 1990

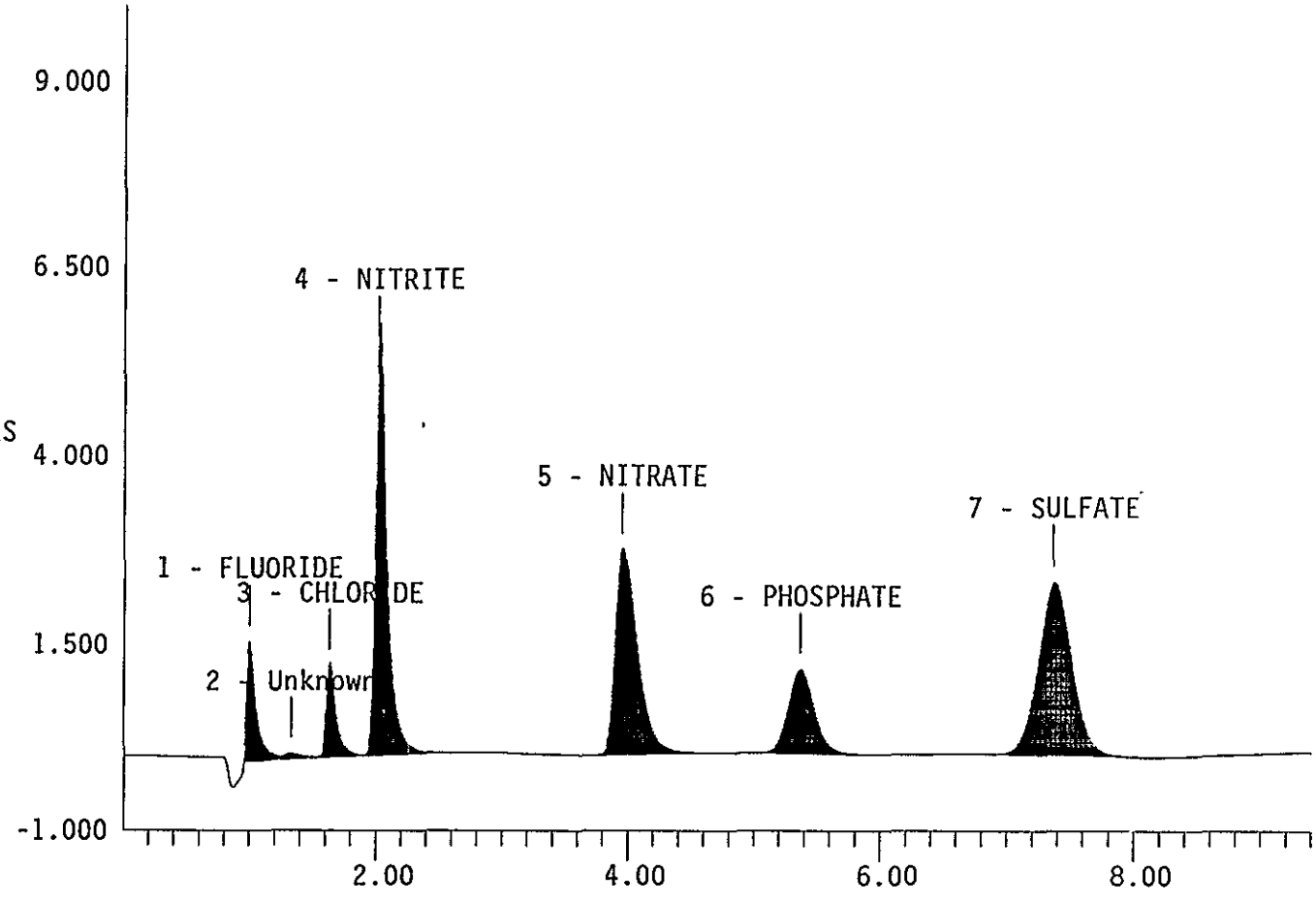
Sample Name: 5013s Date: Fri Dec 01 14:51:36 1989
Data File : C:\DX\DATA\89120102.D15
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET
ACI Address: 1 System : 1 Inject#: 15 Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 51

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	2.598e+001	8.808e+003	1616	3	0	0.00%
2	1.33		0.000e+000	5.729e+002	61	4		
3	1.63	CHLORIDE	3.264e+001	7.164e+003	1240	2	0	0.00%
4	2.02	NITRITE	2.479e+002	3.702e+004	5350	2	0	0.00%
5	3.95	NITRATE	2.716e+002	3.472e+004	2738	1	0	6.28%
6	5.37	PHOSPHATE	2.503e+002	1.677e+004	1145	1	0	0.00%
7	7.37	SULFATE	2.485e+002	4.348e+004	2336	1	0	0.00%

File: C:\DX\DATA\89120102.D15 Sample: 5013s



DATA REPROCESSED ON Thu May 24 16:33:12 1990

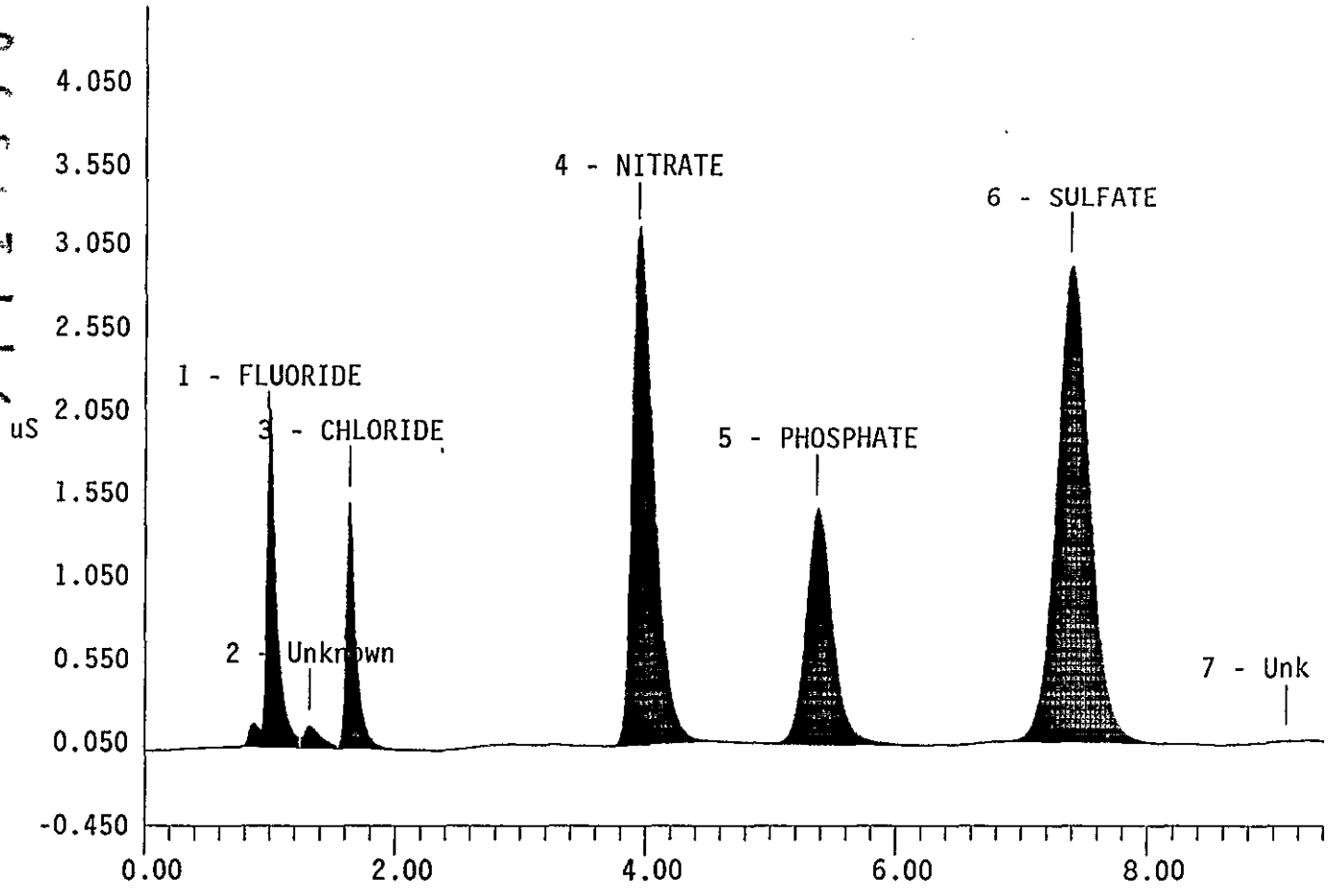
Sample Name: LMCS/6C11HC	Date: Fri Dec 01 15:02:03 1989
Data File : C:\DX\DATA\89120102.D16	
Method : C:\WINDOWS\AI400\METHOD\GROUT01.MET	
ACI Address: 1 System : 1 Inject#: 16	Detector: CDM

********** EXTERNAL STANDARD REPORT **********

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 500 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	5.705e+001	1.240e+004	1799	3	0	0.00%
2	1.32		0.000e+000	1.165e+003	121	4		
3	1.63	CHLORIDE	7.679e+001	8.402e+003	1477	2	0	0.00%
4	3.93	NITRATE	6.066e+002	3.904e+004	3070	1	0	5.83%
5	5.37	PHOSPHATE	6.042e+002	2.143e+004	1402	1	0	0.00%
6	7.38	SULFATE	5.963e+002	5.357e+004	2850	1	0	0.00%

File: C:\DX\DATA\89120102.D16 Sample: LMCS/6C11HC



Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Instrument	WB39937
Procedure / Rev	LA-344-105/A-3
Technologist	S. Cervantes
Date	11/29/89
Temperature	25 C
Starting Time	11/28/89 10:30
Ending Time	11/29/89 13:00
Chemist	R. E. Brandt

Total organic carbon from water digestion. Samples were not acidified before analysis. Results reported are TOC and carbonate combined.

	Description	Lab. Id.
1	Initial LMCS Check Std.	F5010
2	Sample 89-040	F5011
3	Duplicate of 89-040	F5012
4	Spike of 89-040	F5013
5	Reagent Blank	F5022
6	Final LMCS Check Std.	F5014
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Std.	70C11B/11 ul			2.4 ml
Spike	70C11B/50 ug	Sample/200 ul		2.4 ml

Prepared by: Shirley A Cervantes (Signature) S.A. Cervantes (Printed Name) Date: 8/09/90

Verified by: Cindy M Seidel (Signature) C. M. Seidel (Printed Name) Date: 8/09/90

Approved by: L.H. Taylor (Signature) L.H. Taylor (Printed Name) Date: 8-16-90

Interim Rev. E 4/04/90 SST-102

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD/5010 Date: 11-28-1989 Time: 14:25:27

Blank = .6107053 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	52.10	100.00
3	3.01	55.40	5.96
4	4.01	56.40	1.77
5	5.01	57.20	1.40
6	6.01	57.80	1.04
7	7.01	58.40	1.03

(58.4 - 4.278404)(11)/(200) = 2.976688 g/L Carbon

(58.4 - 4.278404)(11)/(200)(12) = .2480573 Molar Carbon

Sample Run By: 80725_____

97.1

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: 5011 Date: 11-28-1989 Time: 14:52:22

Blank = .6107053 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	2.20	100.00
3	3.01	2.80	21.43
4	4.01	3.30	15.15
5	5.01	3.90	15.38
6	6.01	4.40	11.36
7	7.01	4.90	10.20
8	8.01	5.50	10.91
9	9.01	6.00	8.33

(6 - 5.499926)(11)/(200) = 2.750407E-02 g/L Carbon

(6 - 5.499926)(11)/(200)(12) = 2.292005E-03 Molar Carbon

97.2 Sample Run By: 80725_____

9 1 1 2 5 9 0 9 2 4

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: 5012 Date: 11-28-1989 Time: 15:08:24

Blank = .6107053 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading	==== Analysis Time	==== Coulometer	===== % Difference ==
1	1.01	1.10	-400.00
2	2.01	1.80	38.89
3	3.01	2.40	25.00
4	4.01	3.00	20.00
5	5.01	3.60	16.67
6	6.01	4.10	12.20
7	7.01	4.60	10.87
8	8.01	5.20	11.54
9	9.01	5.80	10.34
10	10.01	6.30	7.94

(6.3 - 6.110408)(11)/(200) = 1.042758E-02 g/L Carbon

(6.3 - 6.110408)(11)/(200)(12) = 8.68965E-04 Molar Carbon

97.3

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: 5013 Date: 11-28-1989 Time: 15:27:25

Blank = .6107053 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	47.40	100.00
3	3.01	49.70	4.63
4	4.01	50.60	1.78
5	5.01	51.20	1.17
6	6.01	51.70	0.97
7	7.01	52.30	1.15

(52.3 - 4.278478)(11)/(200) = 2.641184 g/L Carbon

(52.3 - 4.278478)(11)/(200)(12) = .2200987 Molar Carbon

Sample Run By: 80725_____

97.4

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: 5022 Date: 11-28-1989 Time: 15:39:51

Blank = .6107053 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	1.70	100.00
3	3.01	2.20	22.73
4	4.01	2.80	21.43
5	5.01	3.30	15.15
6	6.01	3.80	13.16
7	7.01	4.50	15.56
8	8.01	4.90	8.16

(4.9 - 4.889519)(11)/(200) = 5.764485E-04 g/L Carbon

(4.9 - 4.889519)(11)/(200)(12) = 4.803737E-05 Molar Carbon

Sample Run By: 80725_____

97.5

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD/5014 Date: 11-28-1989 Time: 16:02:34

Blank = .6107053 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	53.40	100.00
3	3.01	56.30	5.15
4	4.01	57.20	1.57
5	5.01	57.80	1.04
6	6.01	58.40	1.03
7	7.01	58.90	0.85

(58.9 - 4.279001)(11)/(200) = 3.004155 g/L Carbon

(58.9 - 4.279001)(11)/(200)(12) = .2503463 Molar Carbon

Sample Run By: 80725_____

97.6

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Instrument	WB39937
Procedure / Rev	LA 344-105/A-3
Technologist	E. Colvin/80028
Date	06/28/90
Temperature	N/A
Starting Time	0800
Ending Time	1130
Chemist	R. Brandt

Total Organic Carbon
from Water Digestion II.

Samples were acitified before analysis..

	Description	Lab. Id.
1	Initial LMCS Check Std.	F5010
2	Reagent Blank	F5022
3	Sample 89-040	F5011
4	Duplicate 89-040	F5012
5	Spike	F5013
6	Final LMCS Check Std.	F5014
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Std.	70C11D/18uL			2.2 mL
Spike	80C11A/200 uL	Sample/200 uL		.5 mL

Prepared by: Shirley Cervantes (Signature) S.A. Cervantes (Printed Name) Date: 08/09/90

Verified by: Cary M Seidel (Signature) C.M. Seidel (Printed Name) Date: 08/09/90

Approved by: L.H. Taylor (Signature) L.H. Taylor (Printed Name) Date: 8/16/90

Interim 4/04/90 Rev. E SST-102

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-5022 Date: 06-28-1990 Time: 09:37:40

Blank = H/O Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	1.10	100.00
3	3.01	1.60	31.25
4	4.01	2.10	23.81
5	5.01	2.50	16.00
6	6.01	2.90	13.79
7	7.01	3.30	12.12

BLANK VALUE = 3.3 / 7.006653 = .470981 ug/minute

Sample Run By: 80028

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98.1

COULOMETER ANALYSIS REPORT
FICTUC Rev. 0

Sample: F-5010 Date: 06-28-1990 Time: 09:46:15

Blank = .470581 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	39.50	100.00
3	3.01	48.50	11.56
4	4.01	52.30	7.27
5	5.01	54.30	3.68
6	6.01	55.30	1.81
7	7.01	56.00	1.25

(56 - 3.299627)(11)/(200) = 2.698521 g/L carbon

(56 - 3.299627)(11)/(200)(12) = .2415434 Molar carbon

Sample Run By: [illegible]

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COULOMETER ANALYSIS REPORT
(ICTOC Rev. 0

Sample: F-5011 Date: 06-28-1990 Time: 09:59:20

Blank = .470981 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	1.60	100.00
3	3.01	2.20	27.27
4	4.01	3.00	26.67
5	5.01	3.30	9.09
6	6.01	3.70	10.81
7	7.01	4.10	9.76

(4.1 - 3.299541)(1.1)/(200) = 4.402527E-03 g/L Carbon

(4.1 - 3.299541)(1.1)/(200)(12) = 3.668772E-04 Molar Carbon

Sample Run By: SOOZE

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COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-5012 Date: 06-28-1990 Time: 10:03:38

Blank = .470981 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	1.60	100.00
3	3.01	2.20	77.27
4	4.01	2.70	18.5%
5	5.01	3.20	15.63
6	6.01	3.70	13.51
7	7.01	4.00	7.50

(4 - 3.299541)(1.1)/(200) = 3.852527E-03 g/l Carbon

(4 - 3.299541)(1.1)/(200)(12) = 3.210439E-04 Molar Carbon

Sample Run By: RW028

POOR COPY RECEIVED

COULOMETER ANALYSIS REPORT
FICTUC Rev. 0

Sample: F-5013 Date: 06-28-1990 Time: 10:12:04

Blank = .470981 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.00	0.00	0.00
2	2.01	79.50	100.00
3	3.01	104.70	24.07
4	4.01	113.50	7.75
5	5.01	117.20	3.16
6	6.01	118.60	1.18
7	7.01	119.50	0.75

(119.5 - 3.299512)(1.1)/(200) = .6391027 g/L Carbon

(119.5 - 3.299512)(1.1)/(200)(12) = 5.325856E-02 Molar Carbon

Sample Run By: 80028

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COULOMETER ANALYSIS REPORT
11C10C Rev. 0

Sample: F-5014 Date: 06-28-1990 Time: 10:22:16

Blank = .470981 Sample Size = .200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	38.30	100.00
3	3.01	49.10	22.00
4	4.01	53.00	7.36
5	5.01	54.70	3.11
6	6.01	55.80	1.97
7	7.01	56.40	1.06

(56.4 - 3.299627)(11)/(200) = 2.920521 g/L Carbon

(56.4 - 3.299627)(11)/(200)(12) = .2433767 Molar Carbon

Sample Run By: 80028

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ACID DIGESTION TEST ANALYSIS

ICP Results Data Summary

		Digested LMCS Standard	F5015
Date Analyzed:	February 22, 1990	Reagent Blank	F5023
Procedure:	LA-505-151/A-0	Sample	F5016
Analyst:	D. M. Southwick	Duplicate	F5017
Digestion	Acid Digestion	Spiked Sample	F5018
Procedure:	LA-505-159/A-0	Digested LMCS Standard	F5019

Laboratory ID#

	Instrument Starting LMCS Standard %	Acid Digest. LMCS Standard %	Reagent BLANK ppm	Wet Weight Sample ug/g	Wet Weight Sample Duplicate ug/g	Spike Recovery %	LMCS ACID Digestion %	Closing LMCS Standard %
Aluminum	98.80%		-0.05 LT	119471	133517	NOT CALC.	113.50%	99.40%
Barium	97.92%		-0.01 LT	3	747	81.66%	97.80%	98.57%
Bismuth	97.72%	91.70%	-0.08 LT	3537	3534	NOT CALC.		100.73%
Boron	95.35%	91.85%	0.02	8 LT	804	88.08%		97.58%
Cadmium	95.97%	91.80%	-0.04 LT	-8 LT	741	NOT CALC.		96.60%
Calcium	99.34%	108.35%	0.06	212	91	65.35%		101.90%
Cerium	90.73%		-0.36 LT	36 LT	43 LT	10.00%	69.20%	91.68%
Chromium	92.05%		-0.12 LT	593	1494	132.36%	84.79%	92.27%
Copper	98.71%	99.05%	0.00 LT	69	923	95.04%		101.92%
Iron	94.88%		0.07	8124	8330	NOT CALC.	99.65%	95.88%
Lanthanum	91.54%	88.40%	-0.07 LT	5 LT	576	67.60%		93.81%
Lead	90.76%	87.60%	-0.18 LT	709	1192	66.75%		92.75%
Lithium	104.42%		-0.02 LT	-1 LT	980	NOT CALC.	101.05%	105.95%
Magnesium	98.53%	98.65%	0.01	915	988	-33.20%		100.40%
Manganese	94.59%		0.01	5067	5340	NOT CALC.	97.60%	94.69%
Molybdenum	91.69%	93.79%	0.00 LT	41	846	89.23%		91.78%
Nickel	94.36%		0.00 LT	51	28	100.76%	96.25%	94.95%
Silver	99.02%		-0.07 LT	6 LT	527	62.17%		102.65%
Sodium	94.44%	96.10%	0.04 LT	75687	80622	NOT CALC.		97.77%
Strontium	99.83%	99.20%	0.00 LT	692	726	84.53%		102.81%
Tantalum	93.50%		-0.05 LT	24 LT	791	91.72%		94.32%
Tin	91.16%		0.00 LT	50	17	91.00%	92.75%	92.29%
Titanium	96.60%		0.12	100	62	89.85%	104.00%	97.24%
Zinc	95.71%	93.75%	0.02	59	904	92.53%		98.20%
Zirconium	95.06%		-0.04 LT	104	866	91.99%	94.59%	95.75%

LT: Less Than
NC: Not Calibrated
NOT CALC: Not Calculated

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Acid Digestion of sample 89-040.

Instrument	N/A
Procedure / Rev	LA-505-159/A-0
Technologist	S. A. Jones
Date	11/28/89
Temperature	72 C
Starting Time	11:00
Ending Time	16:00
Chemist	S.A. Jones

	Description	Lab. Id.
1	Digested LMCS	F5015
2	Sample 89-040	F5016
3	Duplicate of 89-040	F5017
4	Spike of 89-040	F5018
5	Reagent Blank	F5023
6	Digested LMCS	F5019
7		
8		
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
Digested LMCS	34C11C/5.0 mL	35C11/5.0 mL		25.0 mL
Spike of 89-040	103C15C/5.mL	104C15D/5.mL	Sample/.526g	25.0 mL

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 4/17/90

Verified by: Carry M Seidel Signature — C. M. Seidel Printed Name — Date: 4/17/90

Approved by: [signature] Signature — L. H. Taylor Printed Name — Date: 4/19/90

Interim

Rev.E 4/04/90

SST-102

106

9 1 1 2 5 0 9 7 8

Analytical Batch

Lab Segment Serial No.: F5001

Customer ID.: 89-040

Instrument	WB39939
Procedure / Rev	LA-505-151/A-0
Technologist	D.M. Southwick
Date	Feb. 22, 1990
Temperature	70 F
Starting Time	08:00
Ending Time	14:57
Chemist	S.A. Jones

ICP analysis of sample 89-040.
No inter-element corrections have been made on this data.

	Description	Lab. Id.
1	Initial LMCS Check Std.	
2	Digested Standard 34C11C	F5015
3	Reagent Blank	F5023
4	Sample 89-040	F5016
5	Duplicate of 89-040	F5017
6	Spike of 89-040	F5018
7	Digested Standard	F5019
8	Closing LMCS Check Std.	
9		
10		
11		

	Description	Lab. Id.
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Std.	81C11A/1.0 mL	82C11A/1.0 mL		11.0 mL
Digested LMCS Std.	34C11C/5.0 mL			25.0 mL
Spike of Sample 89-040	103C15C/5. mL	104C15D/5. mL	Sample/.526 g	25.0 mL

Prepared by: [signature] Signature — H.S. Rich Printed Name — Date: 4/16/90

Verified by: Cary M Seidel Signature — C.M. Seidel Printed Name — Date: 4/16/90

Approved by: L.H. Taylor Signature — L.H. Taylor Printed Name — Date: 4/19/90

Interim Rev.E 4/04/90 SST-102

Raw Data Summary

ICP Results

Date Analyzed:	February 22, 1990	Digested LMCS Standard	F5015
Procedure:	LA-505-151/A-0	Reagent Blank	F5023
Analyst:	D. M. Southwick	Sample	F5016
Digestion	Acid Digestion	Duplicate	F5017
Procedure:	LA-505-159/A-0	Spiked Sample	F5018
		Digested LMCS Standard	F5019

	Instrument Starting LMCS Standard %	Acid Digest. LMCS Standard %	Reagent BLANK ppm	Wet Weight Sample ug/g	Wet Weight Sample Duplicate ug/g	Spike Recovery %	LMCS ACID Digestion %	Closing LMCS Standard %
Aluminum	98.80%		-0.05 LT	119471	133517	NOT CALC.	113.50%	99.40%
Antimony			-0.14 LT	221	913	NOT CALC.		
Arsenic			-0.01 LT	100	110	NOT CALC.		
Barium	97.92%		-0.01 LT	3	747	81.66%	97.80%	98.57%
Beryllium			0.00 LT	0 LT	1	NOT CALC.		
Bismuth	97.72%	91.70%	-0.08 LT	3537	3534	NOT CALC.		100.73%
Boron	95.35%	91.85%	0.02	8 LT	804	88.08%		97.58%
Cadmium	95.97%	91.80%	-0.04 LT	-8 LT	741	NOT CALC.		96.60%
Calcium	99.34%	108.35%	0.06	212	91	65.35%		101.90%
Cerium	90.73%		-0.36 LT	36 LT	43 LT	10.00%	69.20%	91.68%
Chromium	92.05%		-0.12 LT	593	1494	132.36%	84.79%	92.27%
Cobalt	70.67% #		-0.16 LT	26 LT	24	128.57%	141.45%	123.40% #
Copper	98.71%	99.05%	0.00 LT	69	923	95.04%		101.92%
Europium			-0.01 LT	1 LT	3 LT	NOT CALC.		
Iron	94.88%		0.07	8124	8330	NOT CALC.	99.65%	95.88%
Lanthanum	91.54%	88.40%	-0.07 LT	5 LT	576	67.60%		93.81%
Lead	90.76%	87.60%	-0.18 LT	709	1192	66.75%		92.75%
Lithium	104.42%		-0.02 LT	-1 LT	980	NOT CALC.	101.05%	105.95%
Magnesium	98.53%	98.65%	0.01	915	988	-33.20%		100.40%
Manganese	94.59%		0.01	5067	5340	NOT CALC.	97.60%	94.69%
Mercury			0.00 LT	4	22	NOT CALC.		
Molybdenum	91.69%	93.79%	0.00 LT	41	846	89.23%		91.78%
Neodymium	78.96% #		-0.49 LT	-76 LT	554	NOT CALC.		79.84% #
Nickel	94.36%		0.00 LT	51	28	100.76%	96.25%	94.95%
Phosphorous	37.79% #	108.30%	0.13	2090	1996	53.34%		107.06%
Potassium	88.36% #		-0.86 LT	-125 LT	734	NOT CALC.	43.80%	90.39%
Samarium			-0.40 LT	67 LT	56 LT	NOT CALC.		
Selenium			-0.04 LT	554	1109	NOT CALC.		
Silicon	70.91% #	72.70%	0.04 LT	851	571	422.28%		71.86% #
Silver	99.02%		-0.07 LT	6 LT	527	62.17%		102.65%
Sodium	94.44%	96.10%	0.04 LT	75687	80622	NOT CALC.		97.77%
Strontium	99.83%	99.20%	0.00 LT	692	726	84.53%		102.81%
Sulfur			0.04	277	384	NOT CALC.		
Tantalum	93.50%		-0.05 LT	24 LT	791	91.72%		94.32%
Thallium			-0.29 LT	799	827	NOT CALC.		
Thorium			-0.35 LT	48	64	NOT CALC.		
Tin	91.16%		0.00 LT	50	17	91.00%	92.75%	92.29%
Titanium	96.60%		0.12	100	62	89.85%	104.00%	97.24%
Tungsten			-0.04 LT	2283	278	NOT CALC.		
Uranium			-2.27 LT	12591	11627	NOT CALC.		
Vanadium	10.26% #		-0.02 LT	41	41	0.27%		0.00% #
Zinc	95.71%	93.75%	0.02	59	904	92.53%		98.20%
Zirconium	95.06%		-0.04 LT	104	866	91.99%	94.59%	95.75%

LT: Less Than
NC: Not Calibrated
NOT CALC: Not Calculated
Instrument Standards Outside Control Limits

ICP REPORT

ICP Results

		Digested Acid Standard	F5015
Date Analyzed	February 22, 1990	Reagent Blank	F5023
Procedure:	LA-505-151/A-0	Sample	F5016
Analyst:	D. M. Southwick	Duplicate	F5017
Digestion	Acid Digestion	Spiked Sample	F5018
Procedure:	LA-505-159/A-0		

	Instrument Starting LMCS Standard %	Acid Digest. LMCS Standard %	Reagent BLANK ppm	Wet Weight Sample ug/g	Wet Weight Sample Duplicate ug/g	Spike Recovery %	LMCS ACID Digestion %	Closing LMCS Standard %
Aluminum	98.80%		-0.05 LT	119471	133517	NOT CALC.	113.50%	99.40%
Antimony			-0.14 LT	221	913			
Arsenic			-0.01 LT	100	110			
Barium	97.92%		-0.01 LT	3	747	81.66%	97.80%	98.57%
Beryllium			0.00 LT	0 LT	1			
Bismuth	97.72%	91.70%	-0.08 LT	3537	3534	NOT CALC.		100.73%
Boron	95.35%	91.85%	0.02	8 LT	804	88.08%		97.58%
Cadmium	95.97%	91.80%	-0.04 LT	-8 LT	741	NOT CALC.		96.60%
Calcium	99.34%	108.35%	0.06	212	91	65.35%		101.90%
Cerium	90.73%		-0.36 LT	36 LT	43 LT	10.00%	69.20%	91.68%
Chromium	92.05%		-0.12 LT	593	1494	132.36%	84.79%	92.27%
Cobalt	70.67%		-0.16 LT	26 LT	24	128.57%	141.45%	123.40% #
Copper	98.71%	99.05%	0.00 LT	69	923	95.04%		101.92%
Europium			-0.01 LT	1 LT	3 LT			
Iron	94.88%		0.07	8124	8330	NOT CALC.	99.65%	95.88%
Lanthanum	91.54%	88.40%	-0.07 LT	5 LT	576	67.60%		93.81%
Lead	90.76%	87.60%	-0.18 LT	709	1192	66.75%		92.75%
Lithium	104.42%		-0.02 LT	-1 LT	980	NOT CALC.	101.05%	105.95%
Magnesium	98.53%	98.65%	0.01	915	988	-33.20%		100.40%
Manganese	94.59%		0.01	5067	5340	NOT CALC.	97.60%	94.69%
Mercury			0.00 LT	4	22			
Molybdenum	91.69%	93.79%	0.00 LT	41	846	89.23%		91.78%
Neodymium	78.96%		-0.49 LT	-76 LT	554	NOT CALC.		79.84% #
Nickel	94.36%		0.00 LT	51	28	100.76%	96.25%	94.95%
Phosphorous	37.79%	108.30%	0.13	2090	1996	53.34%		107.06%
Potassium	88.36%		-0.86 LT	-125 LT	734	NOT CALC.	43.80%	90.39%
Samarium			-0.40 LT	67 LT	56 LT			
Selenium			-0.04 LT	554	1109			
Silicon	70.91%	72.70%	0.04 LT	851	571	422.28%		71.86% #
Silver	99.02%		-0.07 LT	6 LT	527	62.17%		102.65%
Sodium	94.44%	96.10%	0.04 LT	75687	80622	NOT CALC.		97.77%
Strontium	99.83%	99.20%	0.00 LT	692	726	84.53%		102.81%
Sulfur			0.04	277	384			
Tantalum	93.50%		-0.05 LT	24 LT	791	91.72%		94.32%
Thallium			-0.29 LT	799	827			
Thorium			-0.35 LT	48	64			
Tin	91.16%		0.00 LT	50	17	91.00%	92.75%	92.29%
Titanium	96.60%		0.12	100	62	89.85%	104.00%	97.24%
Tungsten			-0.04 LT	2283	278			
Uranium			-2.27 LT	12591	11627			
Vanadium	10.26%		-0.02 LT	41	41			0.00% #
Zinc	95.71%	93.75%	0.02	59	904	92.53%		98.20%
Zirconium	95.06%		-0.04 LT	104	866	91.99%	94.59%	95.75%

LT: Less Than
NC: Not Calibrated
NOT CALC: Not Calculated
Instrument Standards Outside Control Limits

ICP Results

Date Analyzed	February 22, 1990	Digested Acid Standard	F5015	page 1 of 3
Procedure:	LA-505-151/A-0	Reagent Blank	F5023	
Analyst:	D. M. Southwick	Sample	F5016	
Digestion	Acid Digestion	Duplicate	F5017	
Procedure:	LA-505-159/A-0	Spike of Sample	F5018	
		Digested Acid Standard	F5019	

	Starting LMCS Standard Instrument Standard ppm	Starting LMCS Standard Recovery %	LMCS Acid Digestion Standard ppm	Acid Digestion Standard Recovery %	Reagent Blank ppm	Sample Digestion Weight 0.4734 g Volume 25.00 mL Sample Dilution Three ppm	Sample Dilution Two ppm	F5016 0.01894 Sample Dilution One ppm
Aluminum	98.80	98.80%			-0.05 LT	2262.30	2242.70	2181.20
Antimony	0.00				-0.14 LT	-2.98	-1.41	4.19
Arsenic	0.00				-0.01 LT	-0.36	0.11	1.89
Barium	97.92	97.92%			-0.01 LT	0.06	0.53	1.01
Beryllium	0.00				0.00 LT	-0.02	-0.03	0.01 LT
Bismuth	97.72	97.72%	9.17	91.70%	-0.08 LT	66.98	69.72	73.14
Boron	95.35	95.35%	9.19	91.85%	0.02	-1.27	-0.49	0.15 LT
Cadmium	95.97	95.97%	9.18	91.80%	-0.04 LT	-4.71	-1.99	-0.15 LT
Calcium	99.34	99.34%	10.84	108.35%	0.06	-2.00	4.02	7.40
Cerium	90.73	90.73%			-0.36 LT	-32.28	-16.39	0.68 LT
Chromium	92.05	92.05%			-0.12 LT	-3.75	11.22	16.78
Cobalt	70.67	70.67% #			-0.16 LT	0.49	-1.39	-0.06 LT
Copper	98.71	98.71%	9.91	99.05%	0.00 LT	-0.15	0.37	1.31
Europium	0.00				-0.01 LT	-0.61	-0.32	0.02 LT
Iron	94.88	94.88%			0.07	153.84	149.84	149.40
Lanthanum	91.54	91.54%	8.84	88.40%	-0.07 LT	-4.03	-2.15	0.10 LT
Lead	90.76	90.76%	8.76	87.60%	-0.18 LT	13.42	3.47	10.87
Lithium	104.42	104.42%			-0.02 LT	-1.32	-0.68	-0.02 LT
Magnesium	98.53	98.53%	9.87	98.65%	0.01	17.32	17.45	16.95
Manganese	94.59	94.59%			0.01	95.96	94.32	92.65
Mercury	0.00				0.00 LT	0.08	0.23	0.59
Molybdenum	91.69	91.69%	9.36	93.79%	0.00 LT	-0.03	0.24	0.79
Neodymium	78.96	78.96% #			-0.49 LT	-70.06	-21.03	-1.44 LT
Nickel	94.36	94.36%			0.00 LT	0.97	1.48	2.39
Phosphorous	37.79	37.79% #	10.83	108.30%	0.13	39.58	31.58	32.00
Potassium	88.36	88.36% #			-0.86 LT	-86.34	-35.45	-2.37 LT
Samarium	0.00				-0.40 LT	-33.58	-17.07	1.28 LT
Selenium	0.00				-0.04 LT	10.48	10.66	18.15
Silicon	70.91	70.91% #	7.27	72.70%	0.04 LT	16.11	45.39	16.87
Silver	99.02	99.02%	9.37		-0.07 LT	-6.44	-2.73	0.11 LT
Sodium	94.44	94.44%	9.61	96.10%	0.04 LT	1433.20	1437.80	1390.50
Strontium	99.83	99.83%	9.92	99.20%	0.00 LT	13.10	13.10	12.87
Sulfur	0.00				0.04	5.25	9.68	11.03
Tantalum	93.03	93.50%			-0.05 LT	-5.30	-3.13	0.45 LT
Thallium	0.00				-0.29 LT	-16.61	-10.60	15.13
Thorium	0.00				-0.35 LT	-27.46	-13.27	0.90
Tin	91.16	91.16%			0.00 LT	0.94	0.92	1.79
Titanium	96.60	96.60%			0.12	1.90	0.29	0.97
Tungsten	21.33				-0.04 LT	43.22	3.22	5.74
Uranium	32.32				-2.27 LT	-1.11	136.82	238.42
Vanadium	10.26	10.26% #			-0.02 LT	-0.92	-0.74	0.78
Zinc	95.71	95.71%	9.38	93.75%	0.02	-1.29	0.20	1.11
Zirconium	94.87	95.06%			-0.04 LT		0.11	1.96
Dilution Factor	1.00		10.00		1.00	1.00	101.00	21.00

ICP Results

Date Analyzed
Procedure:
Analyst:
Digestion
Procedure:

	Digestion Weight Volume Sample Duplicate Dilution Three ppm	0.5078 g 25.00 mL Sample Duplicate Dilution Two ppm	Sample Duplicate F5017 0.02031 Sample Duplicate Dilution One ppm	Spike of Digestion Weight Volume Spike of Sample Dilution Three ppm	Sample 0.5262 g 25.00 mL Spike of Sample Dilution Two ppm	F5018 0.02105 Spike of Sample Dilution One ppm	Spike Recovery %	Standard LMCS Acid Digestion ppm	Acid Digestion Standard Recovery %	Ending LMCS Standard ppm
Aluminum	2712.00	1776.80	1589.30	1804.80	1828.70	1859.00	NOT CALC.	11.35	113.50%	99.40
Antimony	-8.94	15.93	18.56	0.00	15.93	21.59				
Arsenic	-1.72	0.64	2.24	-1.52	0.29	2.56				
Barium	-0.10	15.18	14.08	14.70	15.59	16.40	81.66%	9.78	97.80%	98.57
Beryllium	-0.06	-0.01	0.01	-0.07	-0.02	0.01				
Bismuth	71.77	99.55	94.24	93.56	103.36	109.70	NOT CALC.			100.73
Boron	-1.55	16.33	15.22	16.23	16.77	17.78	88.08%			97.58
Cadmium	-5.08	15.05	15.59	13.06	15.76	17.88	NOT CALC.			96.60
Calcium	1.84	15.10	15.06	7.81	13.60	17.54	65.35%			101.90
Cerium	-43.80	-17.91	0.88 LT	-46.41	-16.98	1.00 LT	10.00%	6.92	69.20%	91.68
Chromium	-2.55	30.34	33.86	19.41	30.96	38.94	132.36%	8.56	84.79%	92.27
Cobalt	0.49	28.85	23.23	33.32	32.23	26.26	128.57%	14.15	141.45%	123.40
Copper	-1.17	18.76	17.56	17.80	19.30	20.46	95.04%			101.92
Europium	-0.84	-0.30	0.06 LT	-0.84	-0.29	0.07 LT				
Iron	169.19	193.26	176.29	198.76	198.15	203.63	NOT CALC.	9.97	99.65%	95.88
Lanthanum	-6.40	10.55	11.71	4.76	10.47	13.63	67.60%			93.81
Lead	-13.42	22.78	24.21	1.22	21.30	28.27	66.75%			92.75
Lithium	-1.67	19.91	17.86	18.94	20.34	21.05	NOT CALC.	10.11	101.05%	105.95
Magnesium	20.08	12.18	10.87	13.55	12.28	12.61	-33.20%			100.40
Manganese	108.47	124.97	113.43	129.74	128.51	130.87	NOT CALC.	9.76	97.60%	94.69
Mercury	-0.58	-0.13	0.45	-0.71	0.15	0.54				
Molybdenum	-0.39	17.18	16.16	16.41	17.49	18.72	89.23%			91.78
Neodymium	-75.81	-10.30	11.25	-50.07	-10.00	12.94	NOT CALC.			79.84
Nickel	0.57	19.56	18.51	18.95	19.95	21.23	100.76%	9.63	96.25%	94.95
Phosphorous	40.55	54.11	48.36	53.07	53.81	54.67	53.34%			107.06
Potassium	-103.80	-17.88	14.91	-76.31	-18.20	17.49	NOT CALC.	4.38	43.80%	90.39
Samarium	-45.17	-18.30	1.14 LT	-48.94	-17.31	1.44 LT				
Selenium	-1.77	17.98	22.53	8.01	17.55	26.01				
Silicon	11.60	95.81	87.40	127.32	106.47	102.36	422.28%			71.86
Silver	-7.26	9.22	10.71	4.86	9.65	12.56	62.17%			102.65
Sodium	1637.60	925.16	817.21	914.80	946.02	959.77	NOT CALC.			97.77
Strontium	14.75	29.92	27.00	30.28	30.67	31.47	84.53%			102.81
Sulfur	7.79	10.15	12.03	6.75	11.06	13.89				
Tantalum	-8.09	14.30	16.07	9.60	14.44	18.75	91.72%			93.84
Thallium	-43.33	-6.93	16.81	-42.72	-8.15	16.72				
Thorium	-35.40	-13.36	1.29	-39.04	-12.35	1.54				
Tin	0.35	17.41	16.74	17.38	18.06	19.25	91.00%	9.28	92.75%	92.29
Titanium	1.25	18.47	17.29	17.83	18.93	20.08	89.85%	10.41	104.00%	97.24
Tungsten	-10.20	4.39	5.64	1.25	4.34	6.47				
Uranium	-2.58	148.06	236.17	-22.34	157.72	275.52				30.52
Vanadium	-0.89	-0.66	0.83	-2.67	-0.63	0.92				
Zinc	-2.24	18.35	16.92	18.07	18.91	19.74	92.53%			98.20
Zirconium		17.59	17.69	15.42	18.26	20.54	91.99%	9.44	94.59%	95.56
Dilution Factor	1.00	101.00	21.00	1.00	101.00	21.00		10.00		1.00

ICP Results

Date Analyzed
Procedure:
Analyst:
Digestion
Procedure:

	LMCS Standard Recovery %		Spike Standard LMCS ppm added	Spike Standard ID Book # 5.0 mL 103C15C + 5.0 mL 104C15D	LMCS Standards Values ppm	LMCS Standard IDs Book # 81C11A 82C11A	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book # 81C11A 82C11A
Aluminum	99.40%		10.00		100.00		100.00	
Antimony								
Arsenic								
Barium	98.57%		10.00		100.00		100.00	
Beryllium								
Bismuth	100.73%		10.00		100.00		100.00	
Boron	97.58%		10.00		100.00		100.00	
Cadmium	96.60%		10.00		100.00		100.00	
Calcium	101.90%		10.00		100.00		100.00	
Cerium	91.68%		10.00		100.00		100.00	
Chromium	92.27%		10.00		100.00		100.90	
Cobalt	123.40%	#	10.00		100.00		100.00	
Copper	101.92%		10.00		100.00		100.00	
Europium								
Iron	95.88%		10.00		100.00		100.00	
Lanthanum	93.81%		10.00		100.00		100.00	
Lead	92.75%		10.00		100.00		100.00	
Lithium	105.95%		10.00		100.00		100.00	
Magnesium	100.40%		10.00		100.00		100.00	
Manganese	94.69%		10.00		100.00		100.00	
Mercury								
Molybdenum	91.78%		10.00		100.00		99.80	
Neodymium	79.84%	#	10.00		100.00		100.00	
Nickel	94.95%		10.00		100.00		100.00	
Phosphorous	107.06%		10.00		100.00		100.00	
Potassium	90.39%		10.00		100.00		100.00	
Samarium								
Selenium								
Silicon	71.86%	#	10.00		100.00		100.00	
Silver	102.65%		10.00		100.00			
Sodium	97.77%		10.00		100.00		100.00	
Strontium	102.81%		10.00		100.00		100.00	
Sulfur								
Tantalum	94.32%		9.95		99.50		99.50	
Thallium								
Thorium								
Tin	92.29%		10.00		100.00		100.00	
Titanium	97.24%		10.00		100.00		100.10	
Tungsten								
Uranium								
Vanadium	0.00%	#						
Zinc	98.20%		10.00		100.00		100.00	
Zirconium	95.75%		9.98		99.80		99.80	
Dilution Factor							10.00	

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Sample name : 81C11A
Programme : SST 22-Feb-90 13:18:43

NAME	MV INT	CONCEN	DILCOR	RSD
Al	1.34	-0.141	-1.555	-8.48
Sb	0.33	-0.123	-1.352	-60.00
As	0.91	0.200	2.205	8.94
Ba	2.66	-0.005	-0.052	-11.83
Be	0.51	-0.000	-0.005	-5.25
Bi	10.15	8.884	97.719	1.54
B	96.03	8.668	95.351	1.14
Cd	70.64	8.724	95.967	2.89
Ca	145.73	9.031	99.342	1.54
Ce	3.58	-0.249	-2.741	-4.06
Cr	1.21	(-0.117	(-1.290	-15.34
Co	0.21	(-0.281	(-3.096	-5.17
Cu	37.13	8.974	98.712	1.31
Eu	2.75	-0.005	-0.060	-6.23
Fe	1.11	-0.017	-0.185	-24.73
La	1.86	8.322	91.539	1.64
Pb	0.48	8.251	90.759	2.08
Li	2.78	-0.016	-0.174	-5.22
Mg	141.05	8.957	98.525	1.94
Mn	0.71	0.015	0.162	27.69
Hg	2.70	0.015	0.162	9.96
Mo	1.14	-0.007	-0.073	-4.29
Nd	4.46	-0.182	-2.005	-30.00
Ni	2.26	-0.012	-0.131	-8.49
P	10.16	9.443	103.87	2.49
K	4.01	8.032	88.357	1.05
Sm	3.47	-0.406	-4.462	-3.95
Se	1.16	-0.048	-0.526	-37.55
Si	2.29	0.011	0.125	49.14
Ag	156.56	9.002	99.019	1.25
Na	11.37	8.586	94.442	1.48
Sr	195.28	9.076	99.833	1.48
S	0.63	0.041	0.446	57.16
Ta	2.38	-0.036	-0.391	-53.74
Tl	2.74	-0.327	-3.601	-19.32
Th	1.04	-0.344	-3.782	0.00
Sn	0.99	0.108	1.186	4.54
Ti	2.42	-0.013	-0.145	-10.76
W	1.00	0.095	1.047	1.55
U	3.38	-1.543	-16.98	-8.48
V	3.00	-0.021	-0.231	-29.56
Zn	154.76	8.701	95.706	1.64
Zr	3.46	-0.033	-0.365	-3.72

Dilution factor : 11.0000

Sample name : 81C11A
Programme : SST 22-Feb-90 13:23:57

NAME	MV INT	CONCEN	DILCOR	RSD
Al	1.36	-0.071	-0.777	-4.48
Sb	0.32	-0.162	-1.785	-10.50
As	0.73	-0.016	-0.175	-51.96
Ba	2.55	(-0.014	(-0.154	-4.97
Be	0.51	-0.000	-0.005	-27.37
Bi	2.38	(-0.180	(-1.976	-11.44
B	2.98	0.003	0.038	284.12
Cd	1.46	(-0.051	(-0.559	-3.54
Ca	0.70	(-0.096	(-1.057	-0.17
Ce	3.48	(-0.502	(-5.517	-3.63
Cr	1.04	(-0.203	(-2.230	-9.87
Co	0.22	-0.170	-1.868	-21.57
Cu	2.00	-0.018	-0.198	-7.16
Eu	2.67	(-0.010	(-0.107	-3.62
Fe	1.11	(-0.018	(-0.201	-20.77
La	0.32	-0.074	-0.817	-16.90
Pb	0.24	-0.193	-2.126	-21.65
Li	2.76	(-0.018	(-0.203	-4.15
Mg	0.54	0.006	0.071	2.86
Mn	0.63	0.005	0.053	18.32
Hg	2.52	-0.008	-0.088	-26.09
Mo	30.62	8.335	91.690	1.10
Nd	4.02	(-0.659	(-7.246	-15.01
Ni	2.22	-0.022	-0.237	-14.35
P	0.98	0.012	0.128	222.06
K	2.47	(-0.993	(-10.92	-5.14
Sm	3.42	(-0.520	(-5.724	-3.72
Se	1.13	-0.173	-1.898	-13.50
Si	10.79	6.447	70.914	0.95
Ag	8.77	(-0.079	(-0.874	-1.06
Na	3.48	(-0.252	(-2.767	-1.18
Sr	2.66	-0.006	-0.065	-5.01
S	0.58	-0.036	-0.396	-7.27
Ta	2.29	(-0.095	(-1.046	-4.22
Tl	2.67	(-0.677	(-7.448	-22.98
Th	1.04	-0.346	-3.807	-2.98
Sn	0.83	-0.019	-0.205	-28.54
Ti	2.38	(-0.019	(-0.212	-2.89
W	0.88	-0.058	-0.634	-20.04
U	3.28	(-3.024	(-33.27	-2.38
V	2.92	(-0.046	(-0.501	-49.82
Zn	1.60	(-0.018	(-0.201	-2.35
Zr	3.41	-0.054	-0.591	-2.98

Dilution factor : 11.0000

Sample name : 82C11A
Programme : SST 22-Feb-90 13:28:28

NAME	MV INT	CONCEN	DILCOR	RSD
Al	4.22	8.982	98.803	0.87
Sb	0.33	0.020	0.216	216.50
As	0.91	0.209	2.297	6.04
Ba	105.44	8.902	97.924	1.02
Be	0.56	0.002	0.020	12.57
Bi	2.55	0.026	0.282	18.92
B	3.06	0.011	0.121	5.07
Cd	1.53	(-0.042	(-0.460	-7.07
Ca	3.06	0.053	0.578	3.65
Ce	7.08	8.249	90.734	1.26
Cr	18.11	8.368	92.049	1.68
Co	0.67	6.424	70.665	1.12
Cu	2.02	-0.013	-0.138	-20.44
Eu	3.12	0.016	0.171	5.96
Fe	30.18	8.626	94.884	1.63
La	0.33	-0.002	-0.020	-624.56
Pb	0.25	0.036	0.399	0.00
Li	82.73	9.493	104.42	0.64
Mg	1.48	0.066	0.727	1.15
Mn	74.44	8.599	94.588	1.61
Hg	2.70	0.016	0.171	21.10
Mo	1.23	0.018	0.194	23.04
Nd	11.19	7.178	78.956	3.80
Ni	41.14	8.578	94.362	1.60
P	1.03	0.067	0.734	9.61
K	2.48	(-0.946	(-10.41	-5.93
Sm	3.47	-0.405	-4.453	-8.04
Se	2.16	3.435	37.787	2.22
Si	2.71	0.332	3.655	3.22
Ag	9.66	-0.025	-0.277	-15.33
Na	3.55	-0.167	-1.839	-13.06
Sr	2.74	-0.002	-0.023	-17.06
S	0.65	0.073	0.798	22.45
Ta	15.61	8.458	93.034	1.19
Cl	2.79	-0.103	-1.135	-46.01
Th	1.09	0.009	0.099	370.00
Sn	11.21	8.287	91.158	1.20
Ti	62.32	8.782	96.601	1.22
W	0.92	-0.009	-0.099	-121.50
U	3.69	2.938	32.317	9.22
V	2.98	-0.027	-0.293	-20.62
Zn	2.10	0.010	0.109	12.16
Zr	25.98	8.624	94.867	1.22

Dilution factor : 11.0000

Sample name : 34C11C
Programme : SST 22-Feb-90 13:34:45

NAME	MV INT	CONCEN	RSD
Al	1.38	-0.023	-59.44
Sb	0.33	-0.074	-46.19
As	0.76	0.025	27.90
Ba	2.64	-0.006	-3.87
Be	0.51	-0.000	-16.24
Bi	4.11	1.884	1.50
B	22.67	1.837	1.72
Cd	16.33	1.836	1.89
Ca	36.67	2.167	1.32
Ce	3.50	-0.440	-2.09
Cr	1.09	(-0.176	-5.18
Co	0.22	(-0.238	-6.12
Cu	9.81	1.981	1.31
Eu	2.69	(-0.009	-4.15
Fe	1.48	0.093	5.32
La	0.66	1.768	0.94
Pb	0.30	1.752	1.19
Li	2.77	-0.017	-1.06
Mg	31.42	1.973	1.03
Mn	0.65	0.007	10.98
Hg	2.51	-0.009	-22.23
Mo	7.78	1.872	0.76
Nd	3.99	(-0.695	-1.55
Ni	2.27	-0.011	-21.48
P	3.08	2.166	0.44
K	2.79	0.876	2.69
Sm	3.43	(-0.505	-2.28
Se	1.15	-0.087	-28.84
Si	4.20	1.454	0.73
Ag	40.57	1.874	1.38
Na	5.42	1.922	0.50
Sr	44.86	1.984	1.09
S	0.65	0.080	30.00
Ta	2.34	-0.063	-15.74
Tl	2.72	-0.450	-6.41
Th	1.04	(-0.382	-3.67
Sn	0.89	0.023	43.11
Ti	3.28	0.113	1.83
W	0.91	-0.010	-234.63
U	3.30	(-2.736	-3.29
V	2.99	-0.025	-16.95
Zn	34.86	1.875	1.27
Zr	3.42	-0.048	-4.27

Sample name : REAGEN
Programme : SST 22-Feb-90 13:39:15

NAME	MV INT	CONCEN	RSD
Al	1.37	-0.049	-56.48
Sb	0.32	-0.138	-18.56
As	0.73	-0.012	-55.08
Ba	2.64	-0.006	-12.11
Be	0.51	-0.000	-37.86
Bi	2.47	-0.077	-18.82
B	3.10	0.015	33.08
Cd	1.55	(-0.039	-8.03
Ca	3.16	0.059	6.45
Ce	3.54	-0.362	-5.41
Cr	1.31	(-0.117	-9.53
Co	0.22	-0.160	-18.92
Cu	2.09	0.004	53.15
Eu	2.72	-0.007	-3.10
Fe	1.41	0.071	9.92
La	0.32	-0.074	-8.45
Pb	0.24	-0.181	-20.00
Li	2.79	-0.015	-9.92
Mg	0.64	0.013	4.00
Mn	0.64	0.006	4.99
Hg	2.55	-0.004	-150.05
Mo	1.16	-0.003	-25.60
Nd	4.18	(-0.487	-16.49
Ni	2.32	-0.001	-233.33
P	1.10	0.132	22.24
K	2.49	(-0.861	-5.30
Sm	3.47	-0.395	-6.96
Se	1.17	-0.036	-67.28
Si	2.33	0.038	20.26
Ag	8.96	(-0.068	-2.27
Na	3.74	0.044	27.50
Sr	2.71	-0.004	-7.35
S	0.63	0.043	19.73
Ta	2.35	-0.054	-35.06
Tl	2.75	-0.293	-34.24
Th	1.04	-0.353	-9.81
Sn	0.86	0.004	146.44
Ti	3.35	0.123	3.26
W	0.89	-0.035	-44.51
U	3.33	-2.274	-8.25
V	3.02	-0.017	-34.94
Zn	2.31	0.022	9.01
Zr	3.46	-0.035	-4.46

Sample name : F501G
Programme : SST 22-Feb-90 13:45:47

NAME	MV INT	CONCEN	DILCOR	RSD
Al	18.67	)54.700	)2242.7	1.02
Sb	0.33	-0.034	-1.411	-113.39
As	0.74	0.003	0.114	261.86
Ba	2.86	0.013	0.532	11.03
Be	0.51	-0.001	-0.025	-11.46
Bi	3.99	4.700	69.715	2.70
B	2.82	-0.012	-0.487	-21.71
Cd	1.48	(-0.048	(-1.987	-5.20
Ca	3.79	0.098	4.023	2.85
Ce	3.52	-0.400	-16.39	-8.25
Cr	1.99	0.274	11.221	6.77
Co	0.23	-0.034	-1.393	-74.23
Cu	2.11	0.009	0.371	30.61
Eu	2.71	-0.008	-0.321	-10.80
Fe	13.46	3.655	149.84	1.90
La	0.32	-0.053	-2.154	-11.95
Pb	0.25	0.085	3.467	24.74
Li	2.77	-0.017	-0.678	-7.69
Mg	7.12	0.426	17.448	1.71
Mn	20.34	2.300	94.317	1.61
Hg	2.62	0.005	0.225	38.43
Mo	1.19	0.006	0.236	62.27
Nd	4.16	(-0.513	(-21.03	-10.31
Ni	2.48	0.036	1.477	22.11
P	1.72	0.770	31.576	3.35
K	2.49	(-0.865	(-35.45	-6.90
Sm	3.46	-0.416	-17.07	-8.86
Se	1.25	0.260	10.661	9.16
Si	3.74	1.107	45.386	11.89
Ag	8.98	(-0.067	(-2.734	-4.50
Na	35.02	35.068	1437.8	0.87
Sr	9.56	0.320	13.103	1.35
S	0.74	0.236	9.677	1.92
Ta	2.32	-0.076	-3.133	-12.44
Tl	2.76	-0.259	-10.60	-40.64
Th	1.04	-0.324	-13.27	-9.55
Sn	0.88	0.022	0.919	5.46
Ti	2.56	0.007	0.285	27.95
W	0.98	0.079	3.220	23.65
U	3.72	3.337	136.82	7.08
V	3.01	-0.018	-0.743	-28.68
Zn	2.01	0.005	0.196	16.89
Zr	3.55	0.003	0.110	199.97

Dilution factor : 41.0000

Sample name : HNO3
Programme : SST 22-Feb-90 13:50:42

NAME	MV INT	CONCEN	RSD
Al	1.32	-0.198	-6.04
Sb	0.33	-0.089	-34.69
As	0.70	(-0.050	-17.69
Ba	2.55	(-0.014	-9.53
Be	0.51	-0.001	-7.70
Bi	2.38	(-0.174	-5.58
B	2.73	(-0.019	-8.43
Cd	1.45	(-0.051	-3.33
Ca	0.54	(-0.106	-0.27
Ce	3.48	(-0.489	-10.47
Cr	1.03	(-0.207	-1.88
Co	0.23	-0.010	-173.21
Cu	1.96	(-0.028	-14.48
Eu	2.68	(-0.009	-11.01
Fe	1.11	(-0.016	-41.00
La	0.32	-0.058	-5.41
Pb	0.25	-0.060	-91.65
Li	2.76	(-0.019	-11.27
Mg	0.34	(-0.006	-1.77
Mn	0.58	-0.001	-86.60
Hg	2.47	-0.014	-13.29
Mo	1.11	-0.015	-25.37
Nd	4.02	(-0.656	-6.58
Ni	2.19	(-0.027	-24.87
P	0.96	-0.008	-86.60
K	2.47	(-0.974	-6.95
Sm	3.43	(-0.496	-11.97
Se	1.12	(-0.210	-12.02
Si	2.13	(-0.111	-12.31
Ag	8.76	(-0.080	-4.75
Na	3.44	(-0.296	-8.46
Sr	2.66	-0.006	-10.50
S	0.56	(-0.078	-17.70
Ta	2.28	(-0.105	-11.11
Te	2.67	(-0.641	-2.52
Th	1.04	(-0.382	-10.34
Sn	0.84	-0.017	-16.72
Ti	2.38	(-0.019	-10.26
W	0.89	-0.043	-10.39
U	3.28	(-2.972	-10.23
V	2.95	-0.037	-12.13
Zn	1.54	(-0.022	-2.16
Zr	3.41	-0.053	-11.97

Sample name : F5016
Sample code 1 : 100-10
Programme : SST 22-Feb-90 13:54:55

NAME	MV INT	CONCEN	DILCOR	RSD
Al	8.46	22.399	2262.3	2.22
Sb	0.33	-0.030	-2.980	-152.75
As	0.74	-0.004	-0.361	-440.12
Ba	2.72	*0.001	0.058	99.87
Be	0.52	-0.000	-0.024	-141.97
Bi	3.10	0.663	66.983	6.16
B	2.81	-0.013	-1.273	-19.50
Cd	1.49	(-0.047	(-4.706	-5.32
Ca	1.91	(-0.020	(-2.004	-10.94
Ce	3.55	-0.320	-32.28	-3.82
Cr	1.37	(-0.037	(-3.751	-34.11
Co	0.23	0.005	0.490	458.24
Cu	2.06	-0.001	-0.146	-140.07
Eu	2.74	-0.006	-0.614	-7.52
Fe	6.29	1.523	153.84	2.05
La	0.32	-0.040	-4.025	-7.87
Pb	0.25	0.133	13.421	31.49
Li	2.80	-0.013	-1.317	-4.82
Mg	3.13	0.171	17.319	2.71
Mn	8.75	0.950	95.958	2.48
Hg	2.59	0.001	0.081	95.17
Mo	1.17	-0.000	-0.029	-709.51
Nd	3.99	(-0.694	(-70.06	-7.54
Ni	2.36	0.010	0.967	59.67
P	1.35	0.392	39.583	2.89
K	2.49	(-0.855	(-86.34	-4.48
Sm	3.50	-0.332	-33.58	-5.11
Se	1.21	0.104	10.482	40.21
Si	2.49	0.159	16.107	13.71
Ag	9.03	(-0.064	(-6.436	-2.90
Na	16.37	14.190	1433.2	1.90
Sr	5.54	0.130	13.100	2.61
S	0.64	0.052	5.252	26.44
Ta	2.36	-0.052	-5.297	-41.10
Tl	2.78	-0.164	-16.61	-24.44
Th	1.05	-0.272	-27.46	-6.24
Sn	0.87	0.009	0.943	85.86
Ti	2.50	-0.002	-0.217	-83.78
W	0.94	0.019	1.897	54.55
U	3.52	0.428	43.223	34.59
V	3.04	-0.011	-1.110	-34.05
Zn	1.76	(-0.009	(-0.918	-3.13
Zr	3.51	-0.013	-1.294	-25.52

Dilution factor : 101.000

Sample name : F5016
Sample code 1 : 2-10
Programme : SST 22-Feb-90 14:00:25

NAME	MV INT	CONCEN	DILCOR	RSD
Al	116.26	)363.53	)2181.2	1.19
Sb	0.38	0.698	4.189	3.23
As	1.00	0.314	1.887	2.84
Ba	4.65	0.168	1.009	1.90
Be	0.55	0.001	0.007	28.29
Bi	12.98	12.189	73.136	1.65
B	3.21	0.025	0.149	2.50
Cd	1.67	(-0.024	(-0.146	-10.77
Ca	21.83	1.234	7.402	1.16
Ce	3.73	0.114	0.684	45.78
Cr	7.01	2.796	16.779	2.64
Co	0.23	-0.010	-0.058	-229.14
Cu	2.92	0.217	1.305	2.26
Eu	2.91	0.003	0.020	24.69
Fe	84.91	)24.900	)149.40	1.47
La	0.34	0.016	0.098	0.00
Pb	0.30	1.812	10.872	3.46
Li	2.88	-0.004	-0.022	-59.22
Mg	44.80	2.825	16.953	1.43
Mn	133.21	15.442	92.653	1.15
Hg	3.36	0.099	0.593	2.77
Mo	1.63	0.131	0.785	0.82
Nd	4.41	-0.240	-1.439	-48.96
Ni	4.12	0.398	2.390	0.77
P	6.16	5.332	31.995	1.44
K	2.57	-0.395	-2.372	-30.44
Sm	3.71	0.213	1.277	24.65
Se	2.04	3.025	18.149	3.07
Si	5.99	2.811	16.867	15.25
Ag	10.37	0.018	0.111	24.26
Na	210.66	)231.75	)1390.5	0.83
Sr	48.27	2.145	12.867	1.09
S	1.68	1.839	11.034	3.33
Ta	2.56	0.074	0.447	18.67
Tl	3.38	2.522	15.130	4.55
Th	1.12	0.151	0.903	26.99
Sn	1.23	0.299	1.793	0.80
Ti	3.62	0.162	0.974	1.92
W	1.67	0.957	5.744	4.19
U	6.25	39.736	238.42	1.49
V	3.54	0.130	0.780	4.22
Zn	5.17	0.185	1.109	1.41
Zr	4.40	0.327	1.960	3.41

Dilution factor : 6.00000

Sample name : HNO3
Programme : SST 22-Feb-90 14:04:53

NAME	MV INT	CONCEN	RSD
Al	1.33	-0.187	-14.42
Sb	0.32	-0.162	-13.89
As	0.71	-0.037	-13.04
Ba	2.57	(-0.012	-12.95
Be	0.51	-0.001	-27.61
Bi	2.44	-0.108	-30.42
B	2.79	(-0.014	-33.46
Cd	1.47	(-0.049	-2.32
Ca	0.55	(-0.106	-0.28
Ce	3.51	-0.418	-13.44
Cr	0.95	(-0.248	-3.00
Co	0.23	-0.116	-31.46
Cu	1.99	-0.019	-17.92
Eu	2.70	-0.008	-11.92
Fe	1.10	(-0.021	-21.59
La	0.32	(-0.091	-3.46
Pb	0.24	-0.242	-8.66
Li	2.77	-0.017	-7.50
Mg	0.35	(-0.006	-2.70
Mn	0.57	-0.001	-50.22
Hg	2.52	-0.008	-51.01
Mo	1.12	-0.013	-16.08
Nd	3.90	(-0.796	-3.79
Ni	2.23	-0.020	-20.96
P	0.96	-0.013	-118.24
K	2.46	(-1.022	-6.87
Sm	3.46	-0.434	-12.11
Se	1.14	-0.135	-46.00
Si	2.24	-0.028	-189.11
Ag	8.89	(-0.072	-5.59
Na	3.47	(-0.264	-12.35
Sr	2.68	-0.005	-13.25
S	0.57	(-0.062	-33.48
Ta	2.32	-0.078	-12.37
Tl	2.72	-0.451	-19.53
Th	1.04	(-0.371	-7.27
Sn	0.84	-0.013	-38.30
Ti	2.40	-0.016	-15.50
W	0.89	-0.045	-27.16
U	3.31	(-2.568	-11.57
V	2.97	-0.031	-10.62
Zn	1.55	(-0.021	-2.30
Zr	3.44	-0.039	-16.40

Sample name : F5017D
Sample code 1 : 100-10
Programme : SST 22-Feb-90 14:09:48

NAME	MV INT	CONCEN	DILCOR	RSD
Al	9.87	26.851	2712.0	0.69
Sb	0.33	-0.088	-8.938	-53.58
As	0.72	-0.017	-1.724	-48.34
Ba	2.70	-0.001	-0.096	-113.91
Be	0.51	*0.001	-0.064	-14.87
Bi	3.14	0.711	71.773	6.11
B	2.78	(-0.015	(-1.546	-23.11
Cd	1.46	(-0.050	(-5.082	-0.67
Ca	2.52	0.018	1.843	7.18
Ce	3.51	-0.434	-43.80	-8.57
Cr	1.39	-0.025	-2.551	-29.82
Co	0.23	0.005	0.490	173.20
Cu	2.02	-0.012	-1.172	-22.31
Eu	2.70	(-0.008	(-0.837	-7.33
Fe	6.80	1.675	169.19	1.41
La	0.32	-0.063	-6.403	-9.90
Pb	0.25	-0.133	-13.42	-15.75
Li	2.77	-0.017	-1.674	-6.67
Mg	3.56	0.199	20.077	0.90
Mn	9.81	1.074	108.47	1.42
Hg	2.54	-0.006	-0.577	-33.28
Mo	1.15	-0.004	-0.391	-58.69
Nd	3.94	(-0.751	(-75.81	-0.44
Ni	2.34	0.006	0.565	37.93
P	1.36	0.401	40.551	5.57
K	2.46	(-1.028	(-103.8	-9.24
Sm	3.45	-0.447	-45.17	-8.93
Se	1.17	-0.017	-1.767	-170.88
Si	2.43	0.115	11.596	4.49
Ag	8.90	(-0.072	(-7.261	-4.81
Na	18.18	16.213	1637.6	0.95
Sr	5.88	0.146	14.746	0.95
S	0.65	0.077	7.792	26.51
Ta	2.31	(-0.080	(-8.086	-15.73
Tl	2.72	-0.429	-43.33	-4.71
Th	1.04	-0.351	-35.40	-7.69
Sn	0.86	0.003	0.350	317.25
Ti	2.46	-0.007	-0.702	-31.64
W	0.93	0.012	1.250	90.18
U	3.48	-0.101	-10.20	-198.14
V	2.99	-0.026	-2.580	-13.78
Zn	1.77	(-0.009	(-0.893	-3.88
Zr	3.48	-0.024	-2.421	-20.69

Dilution factor : 101.000

Sample name : F5017D
Sample code 1 : 250-10
Programme : SST 22-Feb-90 14:14:01

NAME	MV INT	CONCEN	DILCOR	RSD
Al	15.08	43.338	1776.8	1.01
Sb	0.36	0.388	15.925	7.91
As	0.75	0.015	0.635	64.51
Ba	6.98	0.370	15.176	1.19
Be	0.52	-0.000	-0.013	-67.51
Bi	4.61	2.428	99.551	1.80
B	7.22	0.398	16.334	1.70
Cd	4.75	0.367	15.050	2.16
Ca	8.08	0.368	15.099	1.44
Ce	3.51	-0.437	-17.91	-5.09
Cr	2.92	0.740	30.344	2.40
Co	0.28	0.704	28.845	1.19
Cu	3.86	0.457	18.755	1.31
Eu	2.72	-0.007	-0.298	-6.97
Fe	17.02	4.714	193.26	1.19
La	0.38	0.257	10.546	2.44
Pb	0.26	0.556	22.783	9.96
Li	7.00	0.486	19.914	0.73
Mg	5.11	0.297	12.193	1.61
Mn	26.76	3.048	124.97	1.03
Hg	2.56	-0.003	-0.125	-95.95
Mo	2.65	0.419	17.182	2.46
Nd	4.39	-0.251	-10.30	-6.04
Ni	4.48	0.477	19.563	2.65
P	2.25	1.320	54.114	2.11
K	2.56	-0.436	-17.88	-4.30
Sm	3.45	-0.446	-18.30	-6.44
Se	1.30	0.438	17.976	5.07
Si	5.36	2.337	95.810	3.49
Ag	13.73	0.225	9.220	1.44
Na	23.85	22.565	925.16	0.88
Sr	18.27	0.730	29.922	1.18
S	0.75	0.247	10.145	7.41
Ta	2.98	0.349	14.297	2.53
Tl	2.78	-0.169	-6.925	-19.57
Th	1.04	-0.326	-13.36	-4.78
Sn	1.39	0.425	17.414	3.01
Ti	5.58	0.451	18.473	1.38
W	1.01	0.107	4.392	2.39
U	3.74	3.611	148.06	5.64
V	3.02	-0.016	-0.655	-23.14
Zn	9.79	0.448	18.354	0.95
Zr	4.66	0.429	17.593	2.48

Dilution factor : 41.0000

Sample name : F5017D
Sample code 1 : 2-10
Programme : SST 22-Feb-90 14:18:33

NAME	MV INT	CONCEN	DILCOR	RSD
Al	85.09	)264.88	)1589.3	21.79
Sb	0.54	3.093	18.555	21.56
As	1.05	0.373	2.237	23.53
Ba	29.78	2.346	14.076	21.33
Be	0.57	0.002	0.014	7.16
Bi	16.00	15.706	94.239	21.53
B	30.19	2.537	15.221	22.02
Cd	22.35	2.599	15.593	21.93
Ca	42.12	2.510	15.062	22.29
Ce	3.75	0.147	0.883	62.47
Cr	12.69	5.644	33.862	22.19
Co	0.50	3.872	23.231	20.32
Cu	13.51	2.927	17.563	21.51
Eu	3.01	0.009	0.056	30.98
Fe	99.98	)29.382	)176.29	21.43
La	0.69	1.951	11.705	21.97
Pb	0.36	4.035	24.209	22.84
Li	27.94	2.977	17.860	21.23
Mg	28.89	1.812	10.873	31.09
Mn	162.96	)18.906	)113.43	21.50
Hg	3.17	0.075	0.451	26.21
Mo	10.69	2.694	16.164	20.73
Nd	6.34	1.874	11.246	39.48
Ni	16.28	3.085	18.512	21.67
P	8.82	8.060	48.363	21.54
K	3.06	2.485	14.908	26.82
Sm	3.71	0.190	1.137	55.56
Se	2.25	3.755	22.528	23.54
Si	21.52	14.567	87.400	27.90
Ag	39.10	1.784	10.705	22.76
Na	125.33	)136.20	)817.21	21.11
Sr	98.24	4.501	27.003	21.23
S	1.78	2.005	12.032	20.23
Ta	6.61	2.679	16.074	21.18
Tl	3.44	2.801	16.807	2.82
Th	1.13	0.216	1.294	44.08
Sn	4.34	2.790	16.739	21.77
Ti	22.14	2.881	17.289	21.54
W	1.66	0.940	5.642	21.17
U	6.22	39.361	236.17	21.98
V	3.57	0.138	0.827	2.78
Zn	51.46	2.820	16.920	21.97
Zr	11.21	2.947	17.685	21.73

Dilution factor : 6.00000

Sample name : HNO3
Programme : SST 22-Feb-90 14:22:32

NAME	MV INT	CONCEN	RSD
Al	1.34	-0.142	-25.76
Sb	0.32	-0.147	-23.09
As	0.72	-0.022	-34.06
Ba	2.58	-0.012	-17.95
Be	0.51	-0.001	-17.97
Bi	2.45	-0.101	-25.52
B	2.94	-0.001	-826.00
Cd	1.47	(-0.049	-5.31
Ca	0.50	(-0.109	-0.29
Ce	3.52	-0.388	-20.26
Cr	1.04	(-0.203	-6.09
Co	0.23	-0.092	0.00
Cu	2.01	-0.015	-40.89
Eu	2.72	-0.007	-19.16
Fe	1.13	-0.012	-29.67
La	0.32	-0.080	-17.16
Pb	0.24	-0.266	-20.83
Li	2.78	-0.015	-22.40
Mg	0.34	(-0.006	-2.74
Mn	0.57	-0.001	-57.07
Hg	2.55	-0.004	-213.17
Mo	1.13	-0.010	-64.39
Nd	4.07	(-0.611	-8.68
Ni	2.25	-0.015	-61.99
P	0.98	0.008	273.18
K	2.48	(-0.937	-12.14
Sm	3.46	-0.416	-19.03
Se	1.14	-0.114	-29.42
Si	4.19	1.447	53.62
Ag	8.92	(-0.070	-7.64
Na	3.48	(-0.252	-17.10
Sr	2.68	-0.005	-21.10
S	0.57	(-0.055	-15.46
Ta	2.35	-0.057	-26.49
Tl	2.73	-0.384	-29.35
Th	1.04	-0.360	-10.33
Sn	0.85	-0.007	-55.93
Ti	2.42	-0.014	-25.13
W	0.90	-0.035	-55.72
U	3.32	-2.399	-19.61
V	2.99	-0.025	-20.25
Zn	1.56	(-0.021	-6.49
Zr	3.45	-0.037	-24.21

Sample name : F5018S
Sample code 1 : 100-10
Programme : SST 22-Feb-90 14:27:10

NAME	MV INT	CONCEN	DILCOR	RSD
Al	7.03	17.869	1804.8	0.14
Sb	0.33	0.000	0.000	
As	0.73	-0.015	-1.524	-53.74
Ba	4.39	0.146	14.696	0.16
Be	0.51	-0.001	-0.071	-38.30
Bi	3.33	0.926	93.564	0.98
B	4.67	0.161	16.227	1.63
Cd	2.88	0.129	13.063	2.29
Ca	3.46	0.077	7.810	0.76
Ce	3.50	(-0.460	(-46.41	-7.93
Cr	1.82	0.192	19.414	5.45
Co	0.26	0.330	33.324	11.67
Cu	2.76	0.176	17.802	0.67
Eu	2.70	(-0.008	(-0.835	-7.48
Fe	7.79	1.968	198.76	0.40
La	0.34	0.047	4.757	17.63
Pb	0.25	0.012	1.220	173.19
Li	4.49	0.188	18.943	0.26
Mg	2.55	0.134	13.547	0.15
Mn	11.62	1.285	129.74	0.34
Hg	2.53	-0.007	-0.705	-57.76
Mo	1.74	0.162	16.408	1.91
Nd	4.17	(-0.496	(-50.07	-6.50
Ni	3.17	0.188	18.948	1.59
P	1.48	0.525	53.066	2.36
K	2.51	-0.756	-76.31	-13.94
Sm	3.43	(-0.485	(-48.94	-7.21
Se	1.20	0.079	5.009	65.04
Si	3.94	1.261	127.32	0.99
Ag	10.85	0.048	4.859	3.84
Na	11.79	9.057	914.80	0.16
Sr	9.14	0.300	30.277	0.15
S	0.64	0.067	6.753	17.45
Ta	2.59	0.095	9.600	7.97
Tl	2.72	-0.423	-42.72	-22.35
Th	1.04	(-0.386	(-39.04	-8.78
Sn	1.07	0.172	17.380	3.03
Ti	3.71	0.176	17.825	0.10
W	0.93	0.012	1.250	82.11
U	3.48	-0.221	-22.34	-81.55
V	2.98	-0.026	-2.666	-32.40
Zn	5.07	0.179	18.069	1.05
Zr	3.94	0.153	15.417	1.33

Dilution factor : 101.000

Sample name : F50018
Sample code 1 : 250-10
Programme : SST 22-Feb-90 14:31:03

NAME	MV INT	CONCEN	DILCOR	RSD
Al	15.48	44.603	1828.7	1.19
Sb	0.36	0.388	15.925	4.39
As	0.75	0.007	0.293	108.44
Ba	7.10	0.380	15.592	1.37
Be	0.51	-0.000	-0.020	-37.85
Bi	4.69	2.521	103.36	1.80
B	7.34	0.409	16.766	0.34
Cd	4.89	0.384	15.764	3.68
Ca	7.50	0.332	13.597	1.73
Ce	3.51	-0.414	-16.98	-5.54
Cr	2.95	0.755	30.962	2.79
Co	0.29	0.786	32.227	3.85
Cu	3.91	0.471	19.297	1.13
Eu	2.72	-0.007	-0.285	-9.11
Fe	17.42	4.833	198.15	1.58
La	0.38	0.255	10.472	2.13
Pb	0.26	0.519	21.297	4.03
Li	7.08	0.496	20.337	0.99
Mg	5.14	0.300	12.281	1.43
Mn	27.51	3.134	128.51	1.62
Hg	2.61	0.004	0.146	105.36
Mo	2.67	0.427	17.487	2.31
Nd	4.40	-0.244	-9.999	-3.92
Ni	4.52	0.487	19.953	2.91
P	2.25	1.312	53.805	2.37
K	2.56	-0.444	-18.20	-8.04
Sm	3.46	-0.422	-17.31	-8.40
Se	1.30	0.428	17.546	1.70
Si	5.71	2.597	106.47	2.17
Ag	13.90	0.235	9.652	2.86
Na	24.31	23.074	946.02	1.08
Sr	18.65	0.748	30.671	1.30
S	0.76	0.270	11.059	3.72
Ta	2.99	0.352	14.438	2.90
Tl	2.77	-0.199	-8.151	-4.70
Th	1.05	-0.301	-12.35	-11.27
Sn	1.41	0.440	18.059	3.82
Ti	5.66	0.462	18.934	1.70
W	1.00	0.106	4.340	5.54
U	3.76	3.847	157.72	6.88
V	3.02	-0.015	-0.632	-9.51
Zn	10.03	0.461	18.913	1.35
Zr	4.70	0.445	18.260	2.29

Dilution factor : 41.0000

Sample name : F5018S
Sample code 1 : 2-10
Programme : SST 22-Feb-90 14:35:19

NAME	MV INT	CONCEN	DILCOR	RSD
Al	99.29	)309.83	)1859.0	1.57
Sb	0.58	3.599	21.594	2.40
As	1.10	0.427	2.563	3.22
Ba	34.24	2.733	16.396	1.73
Be	0.58	0.002	0.014	1.09
Bi	18.21	18.283	109.70	1.36
B	34.77	2.964	17.781	1.71
Cd	25.35	2.980	17.881	1.38
Ca	48.68	2.923	17.541	1.73
Ce	3.75	0.167	1.000	27.53
Cr	14.37	6.491	38.944	1.64
Co	0.53	4.377	26.259	21.65
Cu	15.39	3.410	20.459	1.70
Eu	3.04	0.011	0.066	7.36
Fe	115.30	)33.938	)203.63	1.53
La	0.75	2.272	13.629	0.96
Pb	0.38	4.711	28.268	2.04
Li	32.41	3.508	21.048	2.20
Mg	33.43	2.102	12.610	1.35
Mn	187.92	)21.812	)130.87	1.65
Hg	3.29	0.090	0.543	4.30
Mo	12.19	3.120	18.719	1.27
Nd	6.60	2.157	12.941	2.96
Ni	18.33	3.538	21.227	1.34
P	9.84	9.111	54.665	1.51
K	3.14	2.915	17.490	0.99
Sm	3.73	0.239	1.436	18.84
Se	2.42	4.335	26.012	1.42
Si	24.81	17.061	102.36	3.70
Ag	44.13	2.093	12.558	1.58
Na	146.55	)159.96	)959.77	2.27
Sr	114.02	5.244	31.467	1.52
S	1.96	2.314	13.887	0.83
Ta	7.31	3.125	18.750	0.91
Tl	3.44	2.786	16.717	0.46
Th	1.13	0.256	1.537	11.47
Sn	4.87	3.208	19.249	1.25
Ti	25.30	3.346	20.078	1.64
W	1.76	1.078	6.466	1.76
U	6.67	45.920	275.52	1.37
V	3.55	0.132	0.792	0.21
Zn	59.72	3.290	19.739	1.48
Zr	12.45	3.423	20.540	1.48

Dilution factor : 6.00000

Sample name : HNO3
Programme : SST 22-Feb-90 14:39:27

NAME	MV INT	CONCEN	RSD
Al	1.36	-0.091	-47.49
Sb	0.32	-0.128	-35.25
As	0.73	-0.010	-161.69
Ba	2.61	-0.009	-24.38
Be	0.52	-0.000	-737.75
Bi	2.47	-0.073	-8.88
B	3.04	0.009	68.74
Cd	1.49	(-0.046	-1.53
Ca	0.51	(-0.108	-0.38
Ce	3.57	-0.281	-30.89
Cr	0.97	(-0.239	-0.53
Co	0.23	-0.029	-28.87
Cu	2.04	-0.009	-56.67
Eu	2.75	-0.006	-26.95
Fe	1.13	-0.012	-38.29
La	0.32	-0.063	-17.84
Pb	0.25	-0.036	-0.00
Li	2.81	-0.012	-20.58
Mg	0.35	(-0.006	-2.26
Mn	0.58	-0.001	-27.06
Hg	2.55	-0.005	-54.17
Mo	1.15	-0.004	-90.57
Nd	3.93	(-0.764	-3.04
Ni	2.28	-0.009	-65.14
P	1.00	0.035	67.83
K	2.49	(-0.878	-10.95
Sm	3.51	-0.309	-27.31
Se	1.17	-0.021	-350.00
Si	4.65	1.798	41.68
Ag	9.04	(-0.063	-8.34
Na	3.52	(-0.209	-14.76
Sr	2.71	-0.003	-26.18
S	0.59	-0.020	-64.33
Ta	2.37	-0.043	-57.36
Tl	2.82	0.010	4223.76
Th	1.05	-0.288	-18.94
Sn	0.86	0.002	546.43
Ti	2.45	-0.009	-27.18
W	0.91	-0.010	-84.87
U	3.37	-1.784	-25.53
V	3.04	-0.011	-39.25
Zn	1.59	(-0.019	-5.68
Zr	3.48	-0.025	-44.61

Sample name : 35C11C
Programme : SST 22-Feb-90 14:43:35

NAME	MV INT	CONCEN	RSD
Al	2.10	2.270	1.74
Sb	0.32	-0.157	-19.52
As	0.76	0.019	81.49
Ba	25.28	1.956	1.66
Be	0.51	-0.000	-17.92
Bi	2.47	-0.068	-49.50
B	3.09	0.013	13.77
Cd	1.51	(-0.044	-3.08
Ca	4.32	0.132	3.36
Ce	4.26	1.384	3.88
Cr	4.85	1.711	2.36
Co	0.43	2.829	3.31
Cu	2.07	-0.001	-38.50
Eu	2.77	-0.004	-13.65
Fe	7.87	1.993	2.84
La	0.32	(-0.091	-9.17
Pb	0.24	-0.230	-9.12
Li	19.90	2.021	1.00
Mg	0.96	0.033	2.61
Mn	17.35	1.952	2.10
Hg	2.55	-0.004	-121.70
Mo	1.15	-0.005	-31.03
Nd	5.49	0.951	4.42
Ni	11.03	1.925	2.52
P	1.08	0.111	13.83
K	2.44	(-1.178	-6.70
Sm	3.42	(-0.531	-7.45
Se	1.39	0.743	1.65
Si	3.41	0.862	17.59
Ag	8.99	(-0.066	-3.16
Na	3.84	0.153	12.59
Sr	2.71	-0.004	-10.32
S	0.64	0.063	50.51
Ta	3.80	0.876	3.94
Tl	2.71	-0.484	-11.26
Th	1.04	(-0.371	-4.81
Sn	3.17	1.855	3.14
Ti	16.69	2.082	1.81
W	0.88	-0.054	-16.89
U	3.37	-1.774	-8.14
V	2.97	-0.030	-7.30
Zn	2.76	0.047	3.36
Zr	8.46	1.888	1.85

Sample name : 81C11A
Programme : SST 22-Feb-90 14:47:33

NAME	MV INT	CONCEN	RSD	
Al	1.34	-0.138	-31.09	
Sb	0.33	-0.113	-61.66	
As	0.90	0.191	15.38	
Ba	2.65	-0.006	-40.42	
Be	0.51	-0.001	-19.15	
Bi	10.38	9.157	5.15	100.7%
B	98.21	8.871	3.93	97.6%
Cd	71.09	8.782	6.43	96.6%
Ca	149.43	9.264	4.64	101.9%
Ce	3.58	-0.247	-32.54	
Cr	0.98	(-0.230	-5.62	
Co	0.24	0.024	60.00	
Cu	38.27	9.265	4.24	101.9%
Eu	2.75	-0.005	-25.20	
Fe	1.15	-0.006	-92.46	
La	1.90	8.528	4.73	93.8%
Pb	0.49	8.432	6.47	92.8%
Li	2.78	-0.016	-16.75	
Mg	143.73	9.127	5.16	100.4%
Mn	0.60	0.001	83.25	
Hg	2.58	0.000	3533.07	
Mo	1.13	-0.010	-33.45	
Nd	4.07	(-0.603	-7.36	
Ni	2.28	-0.008	-190.87	
P	10.45	9.733	5.32	107.1%
K	4.05	8.217	6.16	90.4%
Sm	3.47	-0.392	-18.45	
Se	1.15	-0.106	-27.45	
Si	2.55	0.209	42.00	
Ag	161.93	9.332	4.57	102.6%
Na	11.64	8.888	4.18	97.8%
Sr	201.02	9.346	4.49	102.8%
S	0.65	0.071	51.74	
Ta	2.35	-0.055	-44.38	
Tl	2.72	-0.451	-26.10	
Th	1.05	-0.315	-17.97	
Sn	0.99	0.105	19.58	
Ti	2.41	-0.015	-20.51	
W	0.99	0.088	20.31	
U	3.38	-1.654	-28.07	
V	2.97	-0.030	-18.64	
Zn	158.75	8.927	5.19	98.2%
Zr	3.45	-0.039	-20.85	

x11

Sample name : 81C11A
Programme : SST 22-Feb-90 14:51:32

NAME	MV INT	CONCEN	DILCOR	RSD
Al	1.37	-0.044	-0.487	-17.98
Sb	0.32	-0.148	-1.623	-28.87
As	0.72	-0.025	-0.275	-62.15
Ba	2.55	(-0.014	(-0.153	-4.07
Be	0.51	-0.001	-0.006	-29.69
Bi	2.38	(-0.181	(-1.988	-6.53
B	3.24	0.027	0.300	61.51
Cd	1.46	(-0.051	(-0.559	-0.66
Ca	0.67	(-0.098	(-1.082	-0.45
Ce	3.49	(-0.483	(-5.313	-4.11
Cr	0.97	(-0.236	(-2.597	-6.32
Co	0.24	0.082	0.907	17.65
Cu	2.01	-0.016	-0.178	-20.06
Eu	2.68	(-0.009	(-0.100	-5.25
Fe	1.12	-0.015	-0.165	-23.20
La	0.32	-0.078	-0.857	-4.03
Pb	0.24	-0.157	-1.727	-26.65
Li	2.75	(-0.019	(-0.206	-3.67
Mg	0.39	(-0.004	(-0.039	-3.78
Mn	0.57	-0.002	-0.020	-9.75
Hg	2.48	-0.013	-0.141	-15.67
Mo	30.65	8.344	91.783	2.16
Nd	3.88	(-0.809	(-8.902	-11.20
Ni	2.21	-0.023	-0.252	-26.53
P	0.97	0.001	0.008	2574.12
K	2.47	(-1.005	(-11.05	-4.84
Sm	3.43	(-0.505	(-5.559	-5.41
Se	1.13	-0.175	-1.924	-19.29
Si	10.91	6.533	71.861	2.07
Ag	8.80	(-0.078	(-0.855	-4.81
Na	3.48	(-0.254	(-2.796	-3.31
Sr	2.67	-0.005	-0.060	-6.53
S	0.58	-0.051	-0.559	-7.02
Ta	2.30	(-0.087	(-0.961	-10.37
Tl	2.67	(-0.661	(-7.267	-13.41
Th	1.04	-0.326	-3.584	-4.78
Sn	0.83	-0.025	-0.276	-18.43
Ti	2.38	(-0.019	(-0.213	-4.74
W	0.89	-0.044	-0.488	-58.58
U	3.28	(-3.049	(-33.53	-4.40
V	2.95	-0.036	-0.397	-5.20
Zn	1.54	(-0.022	(-0.242	-0.79
Zr	3.41	-0.052	-0.572	-5.19

Dilution factor : 11.0000

Sample name : 32C11A
Programme : SST 22-Feb-90 14:57:03

NAME	MV INT	CONCEN	DILCOR	RSD
Al	4.26	9.085	99.940	0.74
Sb	0.33	0.015	0.162	288.67
As	0.92	0.221	2.428	7.90
Ba	106.12	8.961	98.571	0.55
Be	0.56	0.002	0.019	6.45
Bi	2.55	0.023	0.257	55.75
B	3.09	0.014	0.149	8.11
Cd	1.52	(-0.043	(-0.476	-2.97
Ca	3.07	0.053	0.585	1.87
Ce	7.12	8.334	91.677	0.77
Cr	18.15	8.388	92.269	0.68
Co	1.00	11.218	123.40	5.84
Cu	2.02	-0.012	-0.136	-13.46
Eu	3.12	0.015	0.167	1.32
Fe	30.48	8.716	95.881	0.97
La	0.32	0.013	0.139	65.46
Pb	0.25	0.072	0.797	50.00
Li	83.90	9.632	105.95	0.79
Mg	1.50	0.067	0.741	1.05
Mn	74.51	8.608	94.695	0.75
Hg	2.67	0.012	0.128	11.00
Mo	1.23	0.017	0.189	7.19
Nd	11.26	7.258	79.843	1.37
Ni	41.38	8.632	94.952	0.68
P	1.03	0.066	0.723	16.31
K	2.47	(-1.009	(-11.10	-4.68
Sm	3.46	-0.421	-4.636	-2.13
Sc	2.16	3.442	37.864	1.03
Si	2.76	0.364	4.000	1.10
Ag	9.64	-0.026	-0.285	-6.21
Na	3.54	-0.177	-1.946	-6.34
Sr	2.74	-0.002	-0.025	-4.31
S	0.64	0.055	0.603	17.21
Ta	15.72	8.531	93.844	1.35
Tl	2.80	-0.093	-1.019	-112.06
Th	1.09	-0.011	-0.124	-91.64
Sn	11.34	8.390	92.285	0.68
Ti	62.72	8.840	97.237	0.66
W	0.92	-0.001	-0.014	-1320.5
U	3.68	2.774	30.519	3.25
V	3.00	-0.021	-0.230	-15.77
Zn	2.10	0.010	0.110	9.13
Zr	26.14	8.687	95.562	0.71

Dilution factor : 11.0000

APPENDIX A
ANALYTICAL ANALYSIS CARDS

9 1 1 2 0 5 9 0 9 1 8

9 1 1 2 ? 5 9 0 9 ? 9

Physical Properties

Serial No.	Sample Point	Date	Time Issued	Priority
F 5001.-5003	SEGMENT-2	11- 7-89	11: 1	16

Determination	Method/Standard	Result Units	Charge Code	Reruns
HOMOGZT	LI-000-200	NONE	WB75L	0

Sample Size: ?

Customer ID: 89-040

Remarks, Calculations, Results:

Homogenization completed

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
DLH	MLW			
11-10-89 Hrs	12-14-89 Hrs	Hrs	Hrs	Hrs

Date | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5001.-5001	SEGMENT-2	11- 7-89	11: 1	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
VOA SAMP	LI-000-200	NONE	WB75L	0

Sample Size: ?

Customer ID: 89-040

Remarks, Calculations, Results: Bottle #034

DUPLICATE SAMPLE Bottle Total wt = ~~19.28g~~ 21.27g
Bottle TARE wt. 17.96g
SAMPLE wt. = 3.31g

Completed

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
SJS 11-9-89	MLW 12-14-89			
Hrs	Hrs	Hrs	Hrs	Hrs

Date | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5001.-5000	SEGMENT-2	11- 7-89	11: 1	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
APPR/QTR	LI-000-200	NONE	WB75L	0

Sample Size: ?

Customer ID: 89-040

Remarks, Calculations, Results:

Penetrometer 300

A. JAR ID# 001
B. JAR TARE WT. 222.84g
C. JAR TOTAL WT. 405.68g
D. C-B= 182.84g
E. EST. VOL./LENGTH= 3.14
F. VISUAL REMARKS ~14" sample, Dry no Free liquid
Sample Ranging from slightly moist at Bottom to crumbly dry at Top

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
SJS - 11-8-89	MLW 12-14-89			
Hrs	Hrs	Hrs	Hrs	Hrs

Date | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5001.-5002	SEGMENT-2	11- 7-89	11: 1	24

Determination	Method/Standard	Result Units	Charge Code	Reruns
PRT-SIZE	LI-000-200	NONE	WB75L	0

Sample Size: ? 1.32g

Customer ID: 89-040

Remarks, Calculations, Results: Bottle #031

PARTICLE SIZE DISTRIBUTION
results:
1) NO particles greater than 150μ
2) 5 sheets attached

Bottle total wt. = 19.26g
Bottle tare wt = 17.94g
SAMPLE WT = 1.32g

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
SJ	SBK 11.15.89	BSB 11-15-89		
11-8-89 Hrs	Hrs	Hrs	Hrs	Hrs

Date | Time Completed | Lab Unit Mgr

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

1

9 1 1 2 ? 5 ? 0 ? 7 0

pH Analysis of Solid Sample

(1)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5004.-5515	SEGMENT-5	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	% RECOVERY	WB75L	0

Sample Size: ?

Customer ID: STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
pH FOUND 10.09
STD ID ~~10.00~~ 72C11
SAMPLE TEMP 24.2

100.9%

10.09/10.00

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				R E Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-22-89		

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5001.-5015	SEGMENT-2	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	NONE	WB75L	0

Sample Size: ? .8391g / .839 ml

Customer ID: 89-040

Remarks, Calculations, Results:

pH 12.28
SAMPLE TEMP 24.7

Bottle #075

26.08
22.43
3.65g

~~.8391g~~

WHC-N-313-8 P#7

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65286 J R Smith DL Hertz 66931	6C269			R E Bennett
Hrs 11-21-89	Hrs 11-22-89	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5000.-5515	SEGMENT-1	11- 7 89	11: 1	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	% RECOVERY	WB75L	0

Sample Size: ?

Customer ID: STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
pH FOUND 10.00
STD ID 72C11
SAMPLE TEMP 24.8

100.0%

10.00/10.00

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				R E Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-22-89		

54-6600-061 (R-10-83)

(2)

Serial No	Sample Point	Date	Time Issued	Priority
F 5002.-5115	SEGMENT-3	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	NONE	WB75L	0

Sample Size: ? .9959g / .796 ml

Customer ID:

Remarks, Calculations, Results:

pH 12.94
SAMPLE TEMP 24.8

Duplicate Sample
.9959g

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				R E Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-22-89		

54-6600-061 (R-10-83)

9 1 1 2 0 5 9 0 9 7 1

pH Analysis of Solid Sample

Serial No	Sample Point	Date	Time Issued	Priority
F 5021.-5315	SEGMENT-22	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
oH	LA-212-103	NONE	WB75L	0

Sample Size	Customer ID
?	

Remarks, Calculations, Results:

~~LMSS CHECK SAMPLE~~ Reg H_2O (m)
~~oH FOUND~~
~~STD ID~~
~~SAMPLE TEMP~~ Reagent Blank

4.83 ? OK

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				R E Burnett
Hrs MJ	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-22-89		[signature]	[signature]

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

9 1 1 2 9 5 9 0 9 7 2

Percent Water Analysis

Serial No	Sample Point	Date	Time Issued	Priority
F 5001.-5010	SEGMENT-2	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H2O	LA-564-101	%	WB75L	0

Sample Size	Customer ID
?	89-040

Remarks, Calculations, Results:

Bottle # 045

24.6540 G
23.8115 T.
24.3235 W1 24.3223 W2

39.2%

25.91
22.15
3.76 g

WHC-N-313-8 P.7

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
JK Smith 65286 DL Hertz 66931	6B598			R L Burnett
Hrs	Hrs	Hrs	Hrs	Hrs
11-21-89				

Date	Time Completed	Lab Unit Mgr
		[signature]

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5002.-5110	SEGMENT-3	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H2O	LA-564-101	%	WB75L	0

Sample Size	Customer ID
?	

Remarks, Calculations, Results:

DUPLICATE SAMPLE

24.5626 G
23.6819 T
24.2186 W1 24.2177 W2

39.06%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				R L Burnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-21		[signature]

54-6600-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 5004.-5510	SEGMENT-5	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H2O	LA-564-101	% RECOVERY	WB75L	0

Sample Size	Customer ID
?	STD 2

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 11C11AG

24.8074 G.
23.4403 T
24.0233 W1 24.0173 [redacted] W2

96.2%

57.35 / 59.61

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				R L Burnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-21		[signature]

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5000.-5510	SEGMENT-1	11- 7-89	11: 1	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H2O	LA-564-101	% RECOVERY	WB75L	0

Sample Size	Customer ID
?	STD 1

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 11C11AG

24.7585 GROSS
23.3880 TARE
23.9795 W1 23.9733 [redacted] W2

95.4%

56.84 / 59.61

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				R L Burnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-21		[signature]

54-6600-061 (R-10-83)

9 1 1 2 ~ 5 9 0 9 7 3

Percent Water Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 5021.-5310	SEGMENT-22	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Retune
% H2O	LA-564-101	3 mg	WB75L	0

Sample Size	Customer ID
?	

Remarks, Calculations, Results:

REAGENT BLANK

23.4183 G.
23.4183 T.
23.4144 W1 23.4140 W2 0.4 mg

0.0004 g

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				R/Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-21		[signature]	[signature]

84-6800-061 (R-10-83)

Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 5006.-6000	SEGMENT-7	11- 7-89	11: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
FUSION	LA-549-141	G/L	WB75L	0

Sample Size: ?

Customer ID: 89-040

Remarks, Calculations, Results:

GRAMS SAMPLE .6615
VOLUME ON COMPLETION 200 mL

.6615/200 = 3.31 g/ml

****
SEQUENCE # : 4
WT 1: 37.7851
WT 2: 38.3666
NET WEIGHT:
---> 0.6615 GRAMS
11/22/89 @ 08:26:58
****

Analyst-1	Analyst-2	Analyst-3		Analyst-5
6596 OR Smith 6493 DC Westaby				
Hrs: 11-21-89	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr

84-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5007.-6100	SEGMENT-8	11- 7-89	11: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
FUSION	LA-549-141	G/L		0

Sample Size: ? .5139g ~ 200 mL

Customer ID:

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE .5139
VOLUME ON COMPLETION 200 mL

.5139/200 = 2.57 g/ml

****
SEQUENCE # : 5
WT 1: 38.1766
WT 2: 38.6845
NET WEIGHT:
---> 0.5139 GRAMS
11/22/89 @ 14:27:26
****

Analyst-1	Analyst-2	Analyst-3		Analyst-5
6598				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-22		

84-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5020.-6300	SEGMENT-21	11- 7-89	11: 4	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
FUSION	LA-549-141	G/L	WB75L	0

Sample Size: ?

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6598				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-22		

84-6800-061 (R-10-83)

9 1 1 2 ? 5 9 0 9 7 5

Total Alpha on the Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 5020.-6320	SEGMENT-21	11- 7-89	11: 4	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	uCI/L	WB75L	0

Sample Size: ?

Customer ID:

Remarks, Calculations, Results:
REAGENT BLANK

<6.23^{-4} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				[illegible]
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date: 11-29-89 | Time Completed: | Lab Unit Mgr: [illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5005.-6520	SEGMENT-6	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-548-101	% RECOVERY	RERUN	0

Sample Size: ? 10ml

Customer ID: STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 83B44

89.2%

8.927^{-3}/1.0003^{-2}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				[illegible]
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date: 11-29-89 | Time Completed: | Lab Unit Mgr: [illegible]

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

Serial No	Sample Point	Date	Time Issued	Priority
F 5007.-6120	SEGMENT-8	11- 7-89 RERUN		19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	uCI/L	WB75L	0

Sample Size: ? 100-10-500

Customer ID: [illegible]

Remarks, Calculations, Results:
DUPLICATE SAMPLE

1.78 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date: 11-29-89 | Time Completed: | Lab Unit Mgr: [illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5006.-6020	SEGMENT-7	11- 7-89 RERUN		19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	uCI/L	WB75L	0

Sample Size: ? 100-10-500

Customer ID:

Remarks, Calculations, Results:

2.63 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				[illegible]
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date: 11-29-89 | Time Completed: | Lab Unit Mgr: [illegible]

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

16/2

$\frac{6}{10}$

Alpha Calculation by EMB on 11-30-1989 at 02:51:16
Det #16 2 -inch mount Alpha eff. : .22
Sample size : 1 ea Dilution : 1

Mount # 1

$\frac{2}{10}$

$\frac{6}{10}$ - 0.2 = 8.1900E-07 uCi/ea alpha

8.19 -5 neil

Mount # 2

$\frac{2}{10}$ - 0.2 (6.7568E-07 uCi/ea alpha

<6.23-4 neil

F 5020-6320

16/2

$\frac{454}{10}$ - .6

Alpha Calculation by DM on 11-29-1989 at 21:46:03
Det #16 2 -inch mount Alpha eff. : .22
Sample size : 10 mL Dilution : 1

$\frac{430}{10}$

Mount # 1

$\frac{454}{10}$ - 0.6 = 9.1728E-03 uCi/L alpha

Mount # 2

$\frac{430}{10}$ - 0.6 = 8.6814E-03 uCi/L alpha

F 5005-6520

16/2

$\frac{51}{10}$ - .6

Alpha Calculation by DM on 11-29-1989 at 21:50:36
Det #16 2 -inch mount Alpha eff. : .22
Sample size : .5 mL Dilution : 101

$\frac{47}{10}$

Mount # 1

$\frac{51}{10}$ - 0.6 = 1.8612E+00 uCi/L alpha

Mount # 2

$\frac{47}{10}$ - 0.6 = 1.6957E+00 uCi/L alpha

F 5007-6120

16/2

$\frac{71}{10}$ - .6

Alpha Calculation by DM on 11-29-1989 at 21:51:35
Det #16 2 -inch mount Alpha eff. : .22
Sample size : .5 mL Dilution : 101

$\frac{68}{10}$

Mount # 1

$\frac{71}{10}$ - 0.6 = 2.6884E+00 uCi/L alpha

Mount # 2

$\frac{68}{10}$ - 0.6 = 2.5643E+00 uCi/L alpha

F 5006-6020

9 1 1 2 9 5 9 0 9 7 7

Total Alpha on the Fusion Dissolution

Serial No	Sample Point	Date	Time Issued	Priority
F 5009.-6520	SEGMENT-10	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-548-101	% RECOVERY	WB75L	0

Sample Size: ? 10ml

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 83B44

KT

88.0%

8.804^{-3} / 1.0003^{-2}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				[illegible]
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-29-89		[illegible]	KT

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5008.-6220	SEGMENT-9	11- 7-89	11: 3	19

RERUN

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	% RECOVERY	WB75L	0

Sample Size: ? 100-10 -100

Customer ID:

Remarks, Calculations, Results:
SPIKE SAMPLE F5006
SPIKE ID 83B44
SPIKE VOLUME 10ml

Ratio of sample to standard insuf.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				[illegible]
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-29-89		[illegible]	KT

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

Total Alpha on the Fusion Dissolution

16/2

$\frac{426}{10}$ - .2

$\frac{438}{10}$

Alpha Calculation by EMB on 11-30-1989 at 01:03:11
Bet #16 2 -inch mount Alpha eff. : .22
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{426}{10}$ - 0.2 = 8.6814E-03 uCi/L alpha

Mount # 2

$\frac{438}{10}$ - 0.2 = 8.9271E-03 uCi/L alpha

F 5009.-6520

16/2

$\frac{435}{10}$ - .6

$\frac{437}{10}$

Alpha Calculation by DM on 11-29-1989 at 22:22:04
Bet #16 2 -inch mount Alpha eff. : .22
Sample size : .1 mL Dilution : 101

Mount # 1

$\frac{435}{10}$ - 0.6 = 8.8716E+01 uCi/L alpha

Mount # 2

$\frac{437}{10}$ - 0.6 = 8.9130E+01 uCi/L alpha

F 5008.-6220

Total Beta Analysis on the Fusion Dissolution

Serial No	Sample Point	Date	Time Issued	Priority
F 5020.-6325	SEGMENT-21	11- 7-89 RERUN	11:14	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	uCI/L	WB75L	0

Sample Size: ?

Customer ID:

Remarks, Calculations, Results:
REAGENT BLANK

$< 3.096^{4}$ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				M
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

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

1-2

Serial No	Sample Point	Date	Time Issued	Priority
F 5005.-6525	SEGMENT-6	11- 7-89 RERUN	[illegible]	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-548-101	% RECOVERY	WB75L	0

Sample Size: ? 10ml 83844

Customer ID: STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 83844

$1.323^{-1} / 1.4114^{-1}$ 93.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				M
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

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

3-4

Serial No.	Sample Point	Date	Time Issued	Priority
F 5007.-6125	SEGMENT-8	11- 7-89 RERUN		19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	uCI/L	WB75L	0

Sample Size: ? 100-10-500 DF:202

Customer ID:

Remarks, Calculations, Results:
DUPLICATE SAMPLE

4.68^{3} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				M
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

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

7-8

Serial No.	Sample Point	Date	Time Issued	Priority
F 5006.-6025	SEGMENT-7	11- 7-89 RERUN	11:12	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	uCI/L	WB75L	0

Sample Size: ? 100-10-500 DF202

Customer ID:

Remarks, Calculations, Results:

6.39^{3} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				M
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

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

Total Beta Analysis on the Fusion Dissolution

16/2

197/10

Beta Calculation by EKB on 11-30-1989 at 02:51:14
Det #16 2 -inch mount Beta eff. : .291
Sample size : 1 ea Dilution : 1

Mount # 1

183/10

197 / 10 - 17.0 = 9.0724E-06 uCi/ea beta

<4.179-4 uci/l

Mount # 2

183 / 10 - 17.0 = 6.8110E-06 uCi/ea beta

<2.012-4

F 5020.-6325

16/2

8861/10 - 18

8598/10

Beta Calculation by DM on 11-29-1989 at 21:46:01
Det #16 2 -inch mount Beta eff. : .291
Sample size : 10 mL Dilution : 1

Mount # 1

8861 / 10 - 18.0 = 1.3438E-01 uCi/L beta

Mount # 2

8598 / 10 - 18.0 = 1.3031E-01 uCi/L beta

F 5006.-6525

16/2

153505/10 - 18

146518/10

Beta Calculation by DM on 11-29-1989 at 21:50:34
Det #16 2 -inch mount Beta eff. : .291
Sample size : .5 mL Dilution : 101

Mount # 1

153505 / 10 - 18.0 = 4.7942E+03 uCi/L beta

Mount # 2

146518 / 10 - 18.0 = 4.5758E+03 uCi/L beta

F 5007.-6125

16/2

205208/10 - 18

204141/10

Beta Calculation by DM on 11-29-1989 at 21:51:33
Det #16 2 -inch mount Beta eff. : .291
Sample size : .5 mL Dilution : 101

Mount # 1

205208 / 10 - 18.0 = 6.4109E+03 uCi/L beta

Mount # 2

204141 / 10 - 18.0 = 6.3775E+03 uCi/L beta

F 5006.-6025

9 1 1 2 7 5 9 0 9 3 1

Total Beta Analysis on the Fusion Dissolution

1-2

Serial No.	Sample Point	Date	Time Issued	Priority
F 5009.-6525	SEGMENT-10	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-548-101	% RECOVERY	WB75L	0

RERUN

Sample Size	Customer ID
? 10ml	89-040

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 83B44

92.8%

1.31, -1 / 1.4114 -1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

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

9-10

Serial No.	Sample Point	Date	Time Issued	Priority
F 5008.-6225	SEGMENT-9	11- 7-89	11: 3	19

RERUN

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100-10-100	

Remarks, Calculations, Results:
SPIKE SAMPLE F5006
SPIKE ID 5006 83B44
SPIKE VOLUME 10ml

63%

Redo at sample is shd insuff. ~~(7.24 3 - 6.39 3) - 8.50 2~~

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

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

16/2

8573/10 - 17

8692/10

Beta Calculation by EMB on 11-30-1989 at 01:03:08
Det #16 2 -inch mount Beta eff. : .291
Sample size : 10 mL Dilution : 1

Mount # 1

8573/10 - 17.0 = 1.3007E-01 uCi/L beta

Mount # 2

8652/10 - 17.0 = 1.3192E-01 uCi/L beta

F 5009.-6525

16/2

46966/10 - 18

45804/10

Beta Calculation by BM on 11-29-1989 at 22:22:01
Det #16 2 -inch mount Beta eff. : .291
Sample size : .1 mL Dilution : 101

Mount # 1

46966/10 - 18.0 = 7.3146E+03 uCi/L beta

Mount # 2

45804/10 - 18.0 = 7.1329E+03 uCi/L beta

F 5008.-6225

1649

Serial No.	Sample Point	Date	Time Issued	Priority
F 5008.-6230	SEGMENT-9	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size: ? 200 λ

Customer ID:

Remarks, Calculations, Results:

SPIKE SAMPLE F5006
SPIKE ID 30844
SPIKE VOLUME 1mL

98%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 11-27 | Time Completed: | Lab Unit Mgr:

54-6600-061 (R-10-83)

3873

Serial No.	Sample Point	Date	Time Issued	Priority
F 5007.-6330	SEGMENT-8	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 200λ Li .021 5

Customer ID:

Remarks, Calculations, Results:

DUPLICATE SAMPLE

Cs^{137} 8.46 uci/l or 3.29 uci/g

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 11-27 | Time Completed: | Lab Unit Mgr:

54-6600-061 (R-10-83)

3871

Serial No	Sample Point	Date	Time Issued	Priority
F 5020.-6330	SEGMENT-21	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 1mL Li .021 1

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK

Cs^{137} <4.87 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 11-27 | Time Completed: | Lab Unit Mgr:

54-6600-061 (R-10-83)

1645

Serial No	Sample Point	Date	Time Issued	Priority
F 5009.-6330	SEGMENT-10	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size: ? .5-200 mL MT 1mL CA1

Customer ID: STD30844

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID

109.2%

$5.71^{-2} \times 400 \times 1000 = 2.29^{4} / 2.0963^{4}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 11-27 | Time Completed: | Lab Unit Mgr:

54-6600-061 (R-10-83)

9 1 1 2 ? 5 9 0 9 ? 4

Gamma Engery Analysis of the Fusion Dissolution

1647

Serial No.	Sample Point	Date	Time Issued	Priority
F 5006.-6030	SEGMENT-7	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 200 L1 .001 5

Customer ID:

Remarks, Calculations, Results:

Cs 137 1.20² uci/l. or 3.63¹ g/ml uci/g

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-27		[illegible]

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

2310

Serial No.	Sample Point	Date	Time Issued	Priority
F 5005.-6530	SEGMENT-6	11- 7-89	11: 2	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size: ? .5-250 mL MT 1mL EA 1

Customer ID: STO 30844

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID_____

108.3%

5.65⁻² x 1000 x 400 = 2.27⁴ / 2.0963⁴

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-27		[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5020.-6340	SEGMENT-21	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? DIRECT

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK

spike val 5.113^{-5} - 100λ

Sample : .01
Smpl + Spk : .31

$$\frac{(.01)(5.113^{-5})(.1)(1)}{(.31-.01)} = <1.7^{-7}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				MC
Hrs 20	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-28-89		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5005.-6540	SEGMENT-6	11- 7-89	11: 2	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100-10-100 58B38

Customer ID: STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 58B38 101.2%

STD : .16
STD + Spk : .46

↑ Spk Val : 5.62^{-4} 100λ

$$\frac{(.16)(5.62^{-4})(.1)(1010)}{.46-.16} = 3.02^{-2} \quad 2.99^{-2}$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				MC
Hrs 20	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-28-89		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5007.-6140	SEGMENT-8	11- 7-89	11: 3	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 89-040

Remarks, Calculations, Results:

DUPLICATE SAMPLE

Sample : .18
Smpl + Spk : .52

↑ spk 100λ
std Val spik : 5.62^{-4}

$$\frac{(.18)(5.62^{-4})(.1)(1010)}{.52-.18} = 3.00^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				MC
Hrs 20	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-28-89		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5006.-6040	SEGMENT-7	11- 7-89	11: 2	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 89-040

Remarks, Calculations, Results:

spk val 5.62^{-4} 100λ

Sample : .26
Smpl + Spk : .58

$$\frac{(.26)(5.62^{-4})(.1)(1010)}{.58-.26} = 4.61^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				MC
Hrs 20	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-28-89		

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

Uranium Analysis of the Fusion Dissolution

F 5006.-6040

$$\frac{(.00099)(5.676\times10^{-2})(.26)}{(.00099)[[(.58)(\frac{5.7}{5.6})]-.26]} = \frac{1.46E-5}{3.27E-4}$$

$$= 4.46E-2 \text{ g/l}$$

F 5007.-6140

$$\frac{(.00099)(5.676\times10^{-2})(.18)}{(.00099)[[.52(\frac{5.7}{5.6})]-.18]} = \frac{1.01E-5}{3.46E-4}$$

$$= 2.91E-2$$

F 5005.-6540

$$\frac{(.00099)(5.676\times10^{-2})(.16)}{(.00099)[[(.46)(\frac{5.7}{5.6})]-.16]} = \frac{8.99E-6}{3.05E-4} = 2.95E-2$$

$$\frac{2.95E-2}{2.99E-2} = 98.6\%$$

F 5020.-6340

$$\frac{(.00099)(5.676\times10^{-2})(.01)}{(1\text{ ml})[[(.31)(\frac{6.6}{6.5})]-.01]} = \frac{5.61E-7}{3.05E-1}$$

$$= \cancel{<1.83E-6 \text{ g/l}}$$

$$< 2.0\times10^{-6} \text{ g/L}$$

Serial No	Sample Point	Date	Time Issued	Priority
F 5009.-6540	SEGMENT-10	11- 7-89	11: 3	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100-10-100 58838	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 58838

98.0% std: .16
std+spk: .47

$$\frac{(.16)(5.62^{-4})(.1)(1010)}{.47-.16} = 2.93^{-2}/2.99^{-2}$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				GM
Hrs 20	Hrs	Hrs	Hrs	Hrs
Date 11-28-89	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5008.-6240	SEGMENT-9	11- 7-89	11: 3	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100-10-100	

Remarks, Calculations, Results:

SPIKE SAMPLE F5006
SPIKE ID 58838
SPIKE VOLUME 100λ

119%

$8.16^{-2} - 4.61^{-2}$ Sample: .46
$3.55^{-2}/299^{-2}$ Smpl+Spk: .78

spk vol = 100λ
spk vol = 5.62^{-4}

$$\frac{(.46)(5.62^{-4})(.1)(1010)}{.78-.46} = 8.16^{-2}$$

~~4.61~~ 47 = 8.16^{-2}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				GM
Hrs 20	Hrs	Hrs	Hrs	Hrs
Date 11-28-89	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

Uranium Analysis of the Fusion Dissolution

Uranium Analysis of the Fusion Dissolution

F 5008.-6240

$$\frac{(.00099)(5.676\times10^{-2})(.46)}{(.00099)\left[\left[.78\left(\frac{5.8}{5.7}\right)\right]-.46\right]} - \frac{(.00099)(4.46E-2)}{(.00099)}$$

$$7.81E-2 - .0446 = .0335$$

$$\frac{3.35E-2}{2.99E-2} = 112\%$$

F 5009.-6540

$$\frac{(.00099)(5.676\times10^{-2})(.16)}{(.00099)\left[\left[(.47)\left(\frac{5.7}{5.6}\right)\right]-.16\right]} = \frac{8.99E-6}{3.15E-4}$$

$$\frac{2.85E-2}{2.99E-2} = 95.4\%$$

Water Digestion I

Serial No	Sample Point	Date	Time Issued	Priority
F 5013.-7200	SEGMENT-14	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	% RECOVERY	WB75L	0

Sample Size: ?

Customer ID: 89-040

Remarks, Calculations, Results:

SPIKED ANALYSIS
GRAMS SAMPLE 1.040 g
VOLUME ON
COMPLETION 100 ml
VOLUME SPIKE
SPIKE ID

$\frac{1.040}{100} = 1.04^{-2}$ g/ml

Analyst-1	Analyst-2	Analyst-3	Analyst-4	~~Analyst-5~~ Chemist
80725				94171
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-27-89		

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5022.-7300	SEGMENT-23	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 89-040

Remarks, Calculations, Results:

REAGENT BLANK

Complete

Analyst-1	Analyst-2	Analyst-3	Analyst-4	~~Analyst-5~~ Chemist
80725				94171
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-27-89		

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7000	SEGMENT-12	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 89-040

Remarks, Calculations, Results:

Bottle #074

GRAMS SAMPLE .9409 g
VOLUME ON
COMPLETION 100 ml

$\frac{.9409}{100} = 9.41^{-3}$ g/ml

28.63
22.31
6.32 g

WHC-N-312-F B7

Analyst-1	Analyst-2	Analyst-3	Analyst-4	~~Analyst-5~~ Chemist
65286 S.H. Smith / 64931 D.L. Hudsey				90111
Hrs	Hrs	Hrs	Hrs	Hrs
11-21-89				

Date	Time Completed	Lab Unit Mgr

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7100	SEGMENT-13	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 89-040

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE .9200 g
VOLUME ON
COMPLETION 100 ml

$\frac{.9200}{100} = 9.20^{-3}$ g/ml

Analyst-1	Analyst-2	Analyst-3	Analyst-4	~~Analyst-5~~ Chemist
80725				94171
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-27-89		

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7100	SEGMENT-M	11- 7-89	11: 3	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H20 DGST	LA-504-101	G/L	E21D1	0

Sample Size	Customer ID
DIRECT	2nd LEACH

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE .4962g
VOLUME ON
COMPLETION 50mL
9.924 E -3 g/ml
9.924 g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				
Date	Time Completed	Lab Unit Mgr		
6-27-90				

54-6400-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5013.-7200	SEGMENT-N	11- 7-89	11: 4	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H20-DGST	LA-504-101	% RECOVERY	E21D1	0

Sample Size	Customer ID
?	2nd leach

Remarks, Calculations, Results:

SPIKED ANALYSIS
GRAMS SAMPLE .5242g
VOLUME ON
COMPLETION 50mL
VOLUME SPIKE
SPIKE ID
1.048 E -2 g/ml
1.048 E 1 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				
Date	Time Completed	Lab Unit Mgr		
6-27-90				

54-6400-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7000	SEGMENT-L	11- 7-89	11: 3	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H20-DGST	LA-504-101	G/L	E21D1	0

Sample Size	Customer ID
DIRECT	2nd LEACH

Remarks, Calculations, Results:

GRAMS SAMPLE .5189g
VOLUME ON
COMPLETION 50mL
1.038 E -3 g/ml
1.038 E 1 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				
Date	Time Completed	Lab Unit Mgr		
6-27-90				

54-6400-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5022.-7371	SEGMENT-23	11- 7-89	11: 5	18

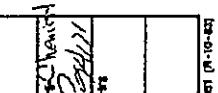
Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	WB75L	0

Sample Size: ? ~~200-10~~ new Direct

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK



Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
WB107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

S4-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7071	SEGMENT-12	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	WB75L	0

Sample Size: ? 200-10

Customer ID: S-70074

Remarks, Calculations, Results:

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
WB107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

S4-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5010.-7571	SEGMENT-11	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6611HC

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
WB107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

S4-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7171	SEGMENT-13	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	WB75L	0

Sample Size: ? 200-10

Customer ID:

Remarks, Calculations, Results:

DUPLICATE SAMPLE

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
WB107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

S4-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5014.-7271	SEGMENT-15	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Returns
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C/1HC

90.6%

56.17/62

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs	Hrs	Hrs	Hrs	Hrs
1445				
Date	Time Completed	Lab Unit Mgr		
12/1/89				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5013.-7271	SEGMENT-14	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Returns
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 200µL - 10mL	89-040

Remarks, Calculations, Results:
SPIKE SAMPLE F5011
SPIKE ID 4059-A
SPIKE VOLUME 50µL

$$\frac{\left(\frac{5.05\,mL}{5.00\,L}\right)(2.60E{+}01\,ppm) - 8.30\,ppm\left(\frac{10.4\,g}{9.41\,g}\right)}{\frac{(.05\,mL)(49.79)}{5.05}\,(51)} \times 100 = 68.0\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs	Hrs	Hrs	Hrs	Hrs
14:45				
Date	Time Completed	Lab Unit Mgr		
12-1-89				

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

9 1 1 2 ? 5 9 0 9 ? 3

Ion Chromatographic Analysis of the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7072	SEGMENT-12	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? 200-10

Customer ID: ~~STD~~ #074

Remarks, Calculations, Results:

~~2.973~~ 15.01 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107				94171
Hrs 1445	Hrs	Hrs	Hrs	Hrs

Date: 12/1/89 | Time Completed: | Lab Unit Mgr: [signature] KT

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5010.-7572	SEGMENT-11	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10 6C11HC

Customer ID: STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HC

95.6%

71.74/75.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107				94171
Hrs 1445	Hrs	Hrs	Hrs	Hrs

Date: 12/1/89 | Time Completed: | Lab Unit Mgr: [signature] KT

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5013.-7272	SEGMENT-14	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? 200µL - 10mL

Customer ID: 89-040

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 40C9-A
SPIKE VOLUME 50µL

$$\frac{\left(\frac{5.0mL}{5.0mL}\right)(32.6)-(14.9)(1.10)}{\frac{(.05)(\cancel{5.0mL})}{5.05}(51)} \times 100 = 54.8\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107				[signature]
Hrs 14:45	Hrs	Hrs	Hrs	Hrs

Date: 12-1-89 | Time Completed: | Lab Unit Mgr: [signature] [signature]

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7172	SEGMENT-13	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? 200-10

Customer ID:

Remarks, Calculations, Results:

DUPLICATE SAMPLE

1.37 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107				94171
Hrs 1445	Hrs	Hrs	Hrs	Hrs

Date: 12/1/89 | Time Completed: | Lab Unit Mgr: KT

54-5800-061 (R-10-83)

9 1 1 2 3 5 7 0 9 7 4

Ion Chromatographic Analysis of the Water Digestion

Serial No	Sample Point	Date	Time Issued	Priority
F 5014.-7572	SEGMENT-15	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HC

104.0%

77.98 / 75ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				[signature] 94171
Hrs 1445	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12/1/89		[signature]

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5022.-7372	SEGMENT-23	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Rerune
CL	LA-533-105	PPM	WB75L	0

Sample Size	Customer ID
? ~~200-10~~ new Digest	

Remarks, Calculations, Results:

REAGENT BLANK

<.1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				[signature] 94171
Hrs 1445	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12/1/89		[signature]

54-5800-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7073	SEGMENT-12	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? 200-10

Customer ID: STD #074

Remarks, Calculations, Results:

70.4ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs: 1445	Hrs	Hrs	Hrs	Hrs
Date: 12/1/89	Time Completed	Lab Unit Mgr		

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5010.-7573	SEGMENT-11	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10 6C11HC

Customer ID: STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HC

97.0%

602.1 / 621

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs: 1445	Hrs	Hrs	Hrs	Hrs
Date: 12/1/89	Time Completed	Lab Unit Mgr		

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5022.-7373	SEGMENT-23	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK

<1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs: 1445	Hrs	Hrs	Hrs	Hrs
Date: 12/1/89	Time Completed	Lab Unit Mgr		

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7173	SEGMENT-13	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? 200-10

Customer ID:

Remarks, Calculations, Results:

DUPLICATE SAMPLE

6.70 2 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs: 1445	Hrs	Hrs	Hrs	Hrs
Date: 12/1/89	Time Completed	Lab Unit Mgr		

54-5800-061 (R-10-83)

9 1 1 2 ~ 5 9 0 9 7 6

Ion Chromatographic Analysis of the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5014.-7573	SEGMENT-15	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HC

97.7%

607/621

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				Clerk 94171
Hrs 1445	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12/1/89		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5013.-7273	SEGMENT-14	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 200µL - 10mL	89-040

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 40C9-A
SPIKE VOLUME 50µL

$$\frac{\left(\frac{5.05}{5.0}\right)(271.6)-(70.4)(1.10)}{\frac{(.05)(500.31)}{5.05}(51)} \times 100 = 77.9\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				[signature]
Hrs 14:45	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-1-89		[signature]

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

Ion Chromatographic Analysis of the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5022.-7374	SEGMENT-23	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5010.-7574	SEGMENT-11	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6CIIHC

96.9%

601.8/621

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7174	SEGMENT-13	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? 200-10

Customer ID:

Remarks, Calculations, Results:

DUPLICATE SAMPLE

1.59 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7074	SEGMENT-12	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? 200-10

Customer ID: ~~STD~~ 4074

Remarks, Calculations, Results:

3.43 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5013.-7274	SEGMENT-14	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 200µL -10mL	89-040

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 4009-A
SPIKE VOLUME 50µL

$$\frac{(1.01)(250.0)-(32.3)(1.10)}{253.33} \times 100 = 85.6\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs	Hrs	Hrs	Hrs	Hrs
14:45				

Date	Time Completed	Lab Unit Mgr
12-01-89		

54-8600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5014.-7574	SEGMENT-15	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11AC

603.2/621 97.10%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs	Hrs	Hrs	Hrs	Hrs
1445				

Date	Time Completed	Lab Unit Mgr
12/1/89		

54-8600-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5022.-7375	SEGMENT-23	11- 7-89	11: 5	18
Determination	**Method/Standard**	**Result Units**	**Charge Code**	**Reruns**
SO4	LA-533-105	PPM	WB75L	0
Sample Size			**Customer ID**	
? Direct				

Remarks, Calculations, Results:
REAGENT BLANK
<1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

54-5600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5010.-7575	SEGMENT-11	11- 7-89	11: 3	19
Determination	**Method/Standard**	**Result Units**	**Charge Code**	**Reruns**
SO4	LA-533-105	% RECOVERY	WB75L	0
Sample Size			**Customer ID**	
100-10			STD	

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C1HC
614.3%/621
98.9%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

54-5600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7175	SEGMENT-13	11- 7-89	11: 4	19
Determination	**Method/Standard**	**Result Units**	**Charge Code**	**Reruns**
SO4	LA-533-105	PPM	WB75L	0
Sample Size			**Customer ID**	
? 200-10				

Remarks, Calculations, Results:
DUPLICATE SAMPLE
219' ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7075	SEGMENT-12	11- 7-89	11: 3	19
Determination	**Method/Standard**	**Result Units**	**Charge Code**	**Reruns**
SO4	LA-533-105	PPM	WB75L	0
Sample Size			**Customer ID**	
? 200-10			~~STD~~ 61074	

Remarks, Calculations, Results:
236' ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

Serial No.	Sample Point	Date	Time Issued	Priority
F 5014.-7575	SEGMENT-15	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	STO

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HC

96.2%

597.4/621

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs 1445	Hrs	Hrs	Hrs	Hrs
Date 12/1/89	Time Completed	Lab Unit Mgr		

54-8600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5013.-7275	SEGMENT-14	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 200µL - 10mL	89-040

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 4OC9-A
SPIKE VOLUME 50µL

$$\frac{(1.01)(249) - (2.37)(1.10)}{\frac{(.05)(500.03)}{5.05}(51)} \times 100 = 98.6\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs 14:45	Hrs	Hrs	Hrs	Hrs
Date 12-1-89	Time Completed	Lab Unit Mgr		

54-8600-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion

9 1 1 2 0 5 7 1 0 0 1

Total Organic Carbon Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5022.-7326	SEGMENT-23	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200-2-200

Customer ID: ~~074~~ 89-040 #074

Remarks, Calculations, Results:

REAGENT BLANK

6.0 ug ~~5.76 g/l~~

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80725 S.C.				R E Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7126	SEGMENT-13	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200-2-200

Customer ID: ~~074~~ 89-040 #074

Remarks, Calculations, Results:

DUPLICATE SAMPLE

1.04 g/l

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80725 S.C.				R E Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7026	SEGMENT-12	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200-2-200

Customer ID: ~~STD 074~~ 89-040 bottle #074

Remarks, Calculations, Results:

2.75 g/l

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80725 SC				R E Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5010.-7526	SEGMENT-11	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200-2-200

Customer ID: STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 70C11B

99.2%

2.9767 / 3.000

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80725 S.C.				R E Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		

54-6600-061 (R-10-83)

9 1 1 2 ? 5 ? 1 0 ? 2

Total Organic Carbon analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5014.-7526	SEGMENT-15	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200-2-200

Customer ID: ~~#074~~ SL STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 70C11B

3.004 gal / 3.00 100.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80725 S.C.				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 5013.-7226	SEGMENT-14	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200-200-2-200

Customer ID: ~~#074~~ 89-040 #074

Remarks, Calculations, Results:

SPIKE SAMPLE #5011
SPIKE ID 70C11B
SPIKE VOLUME 200 ul

~~87.2%~~ HDR 04-06-90

$$100\,\frac{(52.3-4.9)-(6.0-4.9)(1.10)}{50\,\mu g} = \cancel{92.6\%}\ 92.2\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80725 S.C.				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-29-89		[signature]

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

Total Organic Carbon Analysis of the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5011.-7026	SEGMENT-12	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	1

Sample Size: ? 1mL + 100uL .5m H_2SO_4 - 200uL

Customer ID: 89040

Remarks, Calculations, Results:

Second leach

XAP

~~4.40E-3~~ g/L <5.5×10^{-3} g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Burnette
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohen				
Date	Time Completed	Lab Unit Mgr		
6-28-90		Kathy Thorndike		

54-5600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5010.-7526	SEGMENT-11	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	-1

Sample Size: ? 200uL-2mL-200uL

Customer ID: 89040

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 70C11D

Second leach

2.8985 / 3.00 = 96.6%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Burnette
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohen				
Date	Time Completed	Lab Unit Mgr		
6-28-90		Kathy Thorndike		

54-5600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5013.-7226	SEGMENT-14	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WD75L	1

Sample Size: ? 200uL+100uL .5m H_2SO_4 -200uL

Customer ID: 89040

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 80C11A
SPIKE VOLUME 200uL

Second leach

$$\frac{(119.5 - 3.3)(4.1 - 3.3)}{119.9\ ug} \times 100 = 96.2\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Burnette
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohen				
Date	Time Completed	Lab Unit Mgr		
6-28-90		Kathy Thorndike		

54-5600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5012.-7126	SEGMENT-13	11- 7-89	11: 3	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	1

Sample Size: ? 1mL + 100uL .5m H_2SO_4 -200uL

Customer ID: 89040

Remarks, Calculations, Results:

DUPLICATE SAMPLE

Second leach

XAP

~~3.85E-3~~ g/L <5.5×10^{-3} g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Burnette
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohen				
Date	Time Completed	Lab Unit Mgr		
6-28-90		Kathy Thorndike		

54-5600-061 (R-10-83)

9 1 1 2 5 1 0 0 4

Total Organic Carbon Analysis of the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5022.-7326	SEGMENT-23	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	1

Sample Size	Customer ID
? 200uL	89040

Remarks, Calculations, Results:
REAGENT BLANK

Second leach

.47098 ug/min

3.3 ug

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Brunette
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohen				

Date	Time Completed	Lab Unit Mgr
6-28-90		Paul N. Paul Kathy Thomas Dike

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5014.-7526	SEGMENT-15	11- 7-89	11: 4	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	1

Sample Size	Customer ID
? 200uL-2mL-200uL	89040

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 70C11D

Second leach

2.920 g/l / 3.00 = 97.3%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Brunette
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohen			Dennis Smith	

Date	Time Completed	Lab Unit Mgr
6-28-90		Paul N. Paul Kathy Thomas Dike

54-6600-061 (R-10-83)

9 1 1 2 1 5 9 1 0 0 5

ICP Analysis on the Acid Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 5023.-8350	SEGMENT-24	11- 7-89	11: 5	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? Direct

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
D. Southrick				

Date	Time Completed	Lab Unit Mgr	
2/22/90		[signature]	Dayane Southrick

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5015.-8550	SEGMENT-16	11- 7-89	11: 4	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	WB75L	0

Sample Size: ? ~~L-10~~

Customer ID:

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID ~~81C11A~~
~~82C11A~~
3441
Digested Sled

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
D. Southrick				

Date	Time Completed	Lab Unit Mgr	
2/22/90		[signature]	Dayane Southrick

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5017.-8150	SEGMENT-18	11- 7-89	11: 4	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10, 250-10, 2-10

Customer ID: 89-040

Remarks, Calculations, Results:

DUPLICATE SAMPLE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
D. Southrick				

Date	Time Completed	Lab Unit Mgr	
2/22/90		[signature]	Dayane Southrick

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5016.-8050	SEGMENT-17	11- 7-89	11: 4	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10, 250-10, 2-10

Customer ID: 89-040

Remarks, Calculations, Results:

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
D. Southrick				

Date	Time Completed	Lab Unit Mgr	
2/22/90		[signature]	Dayane Southrick

54-6600-061 (R-10-83)

9 1 1 2 1 5 9 1 0 0 6

ICP Analysis on the Acid Digestion

Serial No	Sample Point	Date	Time Issued	Priority
F 5019.-8550	SEGMENT-20	11- 7-89	11: 4	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	WB75L	0

Sample Size	Customer ID
? ~~1-10~~	

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 81C11A
85C11A

35C11
Digested Std

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
K. Southrick				

Date	Time Completed	Lab Unit Mgr	
2/22/90		[signature]	Dyane Southrick

54-5300-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 5018.-8250	SEGMENT-19	11- 7-89	11: 4	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size	Customer ID
? 100-10, 250-10, 2-10	89-040

Remarks, Calculations, Results:

~~DUPLICATE SAMPLE~~
Spike
103C15C & 104C15D
5 ml each into 50 ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
K. Southrick				

Date	Time Completed	Lab Unit Mgr	
2/22/90		[signature]	Dyane Southrick

54-5300-061 (R-10-83)