12193 199
30 of 10

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

222-S/RCRA ANALYTICAL LABORATORIES

BEST AVAILABLE COPY

9112050369

PROJECT:	SINGLE-SHELL TANK WASTE CHARACTERIZATION
TANK:	241-U-110
CORE:	6
SEGMENT:	3
CUSTOMER ID. NUMBER:	89-044
REPORT REVISION:	1
DATE PRINTED:	JULY 12, 1990

SEP 1990
RECEIVED
J.H. KESSNER

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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 for the Chemical Analysis of Highly Radioactive Samples in Support of Envirionmental Activities on the Hanford Site", 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 September 7, 1990
Shirley A. Cervantes
Data Coordinator

Cary M. Seidel — Date September 7, 1990
Cary M. Seidel
Unit Manager

Stephen Scott Moss for — Date September 7, 1990
Larry H. Taylor
Laboratory Q.A. Officer
Stephen Scott Moss

9 1 1 2 0 6 0 0 8 7 1

INTRODUCTION

9 1 1 2 0 5 0 0 8 7 2

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. 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 6 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 so any errors introduced by the loss of moisture will bias the 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 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.

9 1 1 2 5 0 9 7 4

SAMPLING AND CUSTODY DATA

9 1 1 2 2 5 0 0 8 7 5

9 1 1 2 0 5 0 0 8 7 6

F0077

5-023-89 DCH 11-15-89

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number ~~2W-89-00958-W~~ (2) Sample Number 89-044 (3) Supervisor D.C. Hartley

(4) Tank 110U (5) Riser 17 (6) Segment #3 (7) Cask Serial Number C1023

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	<.5 Mr/HR.	<.5 mR/hr
Side Dose Rate	3.5 Mr/HR	3.5 mR/hr
Bottom Dose Rate	1.5 Mr/HR	1.5 mR/hr
Smearable Contamination	<DET. (alpha)	<Det (alpha)
	<DET. (beta-gamma)	<Det (beta-gamma)
	RPT [signature] (Signature)	RPT D. Arnold (Signature)

(9) Shipment Description:

A. Work Package Number	2W-89-00958-W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	#31
D. Date and Time Sampler Unseated	11-14-89, 1600
E. Expected Liquid Content	20%
F. Expected Solid Content	80%
G. Dose Rate Through Drill String	120 mr/HR
H. Expected Sample Length	19"

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

Core #006,
WHC-EP-0210, Waste Characterization Plan for the Hanford Site Single Shell Tanks

*Reference laboratory work request, if available.

Comments:

(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	D.C. Hartley SENDER SIGNATURE [signature]	11-15-89 0920	222S LABS. 200 West	C.M. Seidel RECIPIENT SIGNATURE Cary M Seidel	0955 11-15-89

(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:	17
Core ID:	006

Date Sampling Initiated:	11-10-89
Date Sampling Completed:	11-14-89

Segment 1	Lab Serial No.	F0029
	Customer ID. No.	89-042
	Last Segment?	NO
Segment 2	Lab Serial No.	F0053
	Customer ID. No.	89-043
	Last Segment?	NO
Segment 3	Lab Serial No.	F0077
	Customer ID. No.	89-044
	Last Segment?	NO
Segment 4	Lab Serial No.	F0101
	Customer ID. No.	89-045
	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?	

REMARKS: CUSTOMER ID# 89-042 WAS RECEIVED EMPTY.

Prepared by: [signature] Signature — H. S. RICH Printed Name — Date: 05-15-90

Verified by: Cary M Seidel Signature — C. M. SEIDEL Printed Name — Date: 05-15-90

Approved by: Stephen Scott Moss Signature — for L.H. Taylor Printed Name — Date: 9-7-90

Stephen Scott Moss

Interim

SST-1 Rev. B 3/27/90

9 1 1 2 1 4 0 3 7 7

SAMPLE DATA SUMMARY

SUMMARY DATA REPORT

Tank	241-U-110
Core	6
Segment	3
Customer Id.	89-044

Untreated Sample

	Sample	Duplicate
pH	12.00	12.89
Percent Water	44.60 %	44.40 %

Fusion Analysis

Total Alpha	0.19 uci/g	0.35 uci/g
Total Beta	1330 uci/g	1460 uci/g
GEA		
Cs-137	20.6 uci/g	25.8 uci/g
Uranium	5060 ug/g	6120 ug/g

Water Digestion

Fluoride	2910 ug/g	3400 ug/g
Chloride	<1130 ug/g	<1130 ug/g
Nitrate	53500 ug/g	51000 ug/g
Phosphate	21700 ug/g	25900 ug/g
Sulfate	<11300 ug/g	<11300 ug/g
Total Organic Carbon	10800 ug/g	9230 ug/g

Acid Digestion Results

	Sample	Duplicate
Aluminum	90269 ug/g	89127 ug/g
Antimony	LT ug/g	470 ug/g
Barium	21 ug/g	40 ug/g
Beryllium	LT ug/g	1 ug/g
Bismuth	17746 ug/g	21187 ug/g
Boron	LT ug/g	LT ug/g
Cadmium	LT ug/g	LT ug/g
Calcium	521 ug/g	492 ug/g
Chromium	531 ug/g	529 ug/g
Cobalt	LT ug/g	LT ug/g
Copper	LT ug/g	LT ug/g
Europium	LT ug/g	LT ug/g
Iron	12927 ug/g	12762 ug/g
Lanthanum	LT ug/g	52 ug/g
Lead	212 ug/g	601 ug/g
Lithium	LT ug/g	LT ug/g
Magnesium	886 ug/g	3118 ug/g
Manganese	5691 ug/g	5569 ug/g
Mercury	54 ug/g	28 ug/g
Molybdenum	LT ug/g	29 ug/g
Nickel	107 ug/g	138 ug/g
Potassium	LT ug/g	LT ug/g
Samarium	LT ug/g	LT ug/g
Selenium	411 ug/g	522 ug/g
Silicon	3877 ug/g	4760 ug/g
Silver	LT ug/g	LT ug/g
Sodium	86491 ug/g	88734 ug/g
Strontium	517 ug/g	577 ug/g
Sulfur	413 ug/g	456 ug/g
Tantalum	LT ug/g	LT ug/g
Thallium	LT ug/g	260 ug/g
Thorium	LT ug/g	LT ug/g
Tin	LT ug/g	52 ug/g
Titanium	LT ug/g	22 ug/g
Uranium	LT ug/g	5655 ug/g
Vanadium	LT ug/g	LT ug/g
Zinc	193 ug/g	283 ug/g
Zirconium	LT ug/g	83 ug/g

** All reported results are wet sample weight.

LT : Less than instrument detection limit.

revised August 13, 1990

9112150679

PHYSICAL TEST RESULTS

Single Shell Tank
Extrusion of Segment -- Physical Tests

Phase I-A

Lab Segment Serial No.: F0077 Customer ID: 89-044

Analyst: Richard L. Weiss Date Extruded: 11-15-89

Drainable Liquid Liquid Submitted for Segment Analysis? -- No

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

Appearance of Liquid:

Not collected

Dimensions of Segment

Complete Segment Obtained? No	Length: 13.00"	Calculated Volume: 10.21 cubic in.
Remarks None		

Appearance of Solid:

Sample graded upward in color from medium brown to dark brown. The sample was firm and cohesive throughout, and there was a 2" segment at the bottom which was separated from the rest of the segment by a small void.

Penetrometer 6.3 lbs/sq in Remarks: None

Homogenization

Procedure: T038A-00712 Revision: F	Quantity of Material 203.32 grams
Date Homogenized: 12-21-89	Time Homogenized: 5 Minutes
Opperator: John R. Smith (65286)	

Laboratory Notebook Reference WHC-N-313-4 (Notebook No.) 9 (Page No.)

Prepared by: [signature] (Signature) H. S. Rich (Printed Name) Date: 5-15-90

Verified by: [signature] (Signature) C. M. Seidel (Printed Name) Date: 5-15-90

Approved by: Stephen Scott Moss for Stephen Scott Moss (Signature) L.H. Taylor (Printed Name) Date: 9-7-90

Interim

SST-3 Rev. C 3/27/90

Single Shell Tank Segment -- Subsamples

Phase 1A

Customer ID: 89-044 Lab Segment Serial No. F0077

Volatile Organic Analysis		
VOA Sample	Laboratory Serial Number: 89-044-25	Date Sampled: 11-15-89

Particle Size Distribution Analysis		
Particle Size Sample	Laboratory Serial Number: F0077	Date Sampled: 11-15-89

Homogenized Solids

Undigested Solids Analysis			
Laboratory Serial Number for Sample:	F0077	Date Sampled:	12-21-89
Laboratory Serial Number of Duplicate Sample:	F0078		

Fusion Analysis of Solids			
Laboratory Serial Number for Sample:	F0082	Date Sampled:	12-21-89
Laboratory Serial Number of Duplicate Sample::	F0083		
Laboratory Serial Number of Spiked Sample:			

Acid Digestion Analysis of Solids			
Laboratory Serial Number for Sample:	F0092	Date Sampled:	12-21-89
Laboratory Serial Number of Duplicate Sample:	F0093		
Laboratory Serial Number of Spiked Sample:			

Water Digestion Analysis of Solids			
Laboratory Serial Number for Sample:	F0087	Date Sampled	12-21-89
Laboratory Serial Number of Duplicate Sample:	F0088		
Laboratory Serial Number of Spiked Sample:	F0089		

Laboratory Notebook Reference

WHC-N-313-4	9
Notebook No.	Page No.

Prepared by: H. S. Rich (Signature) H. S. Rich (Printed Name) Date: 12-21-89

Verified by: Carry M Seidel (Signature) C. M. Seidel (Printed Name) Date: 12-21-89

Approved by: Stephen Scott Moss for (Signature) Stephen Scott Moss L.H. Taylor (Printed Name) Date: 9-7-90

SST-17 Rev.A 04/24/90

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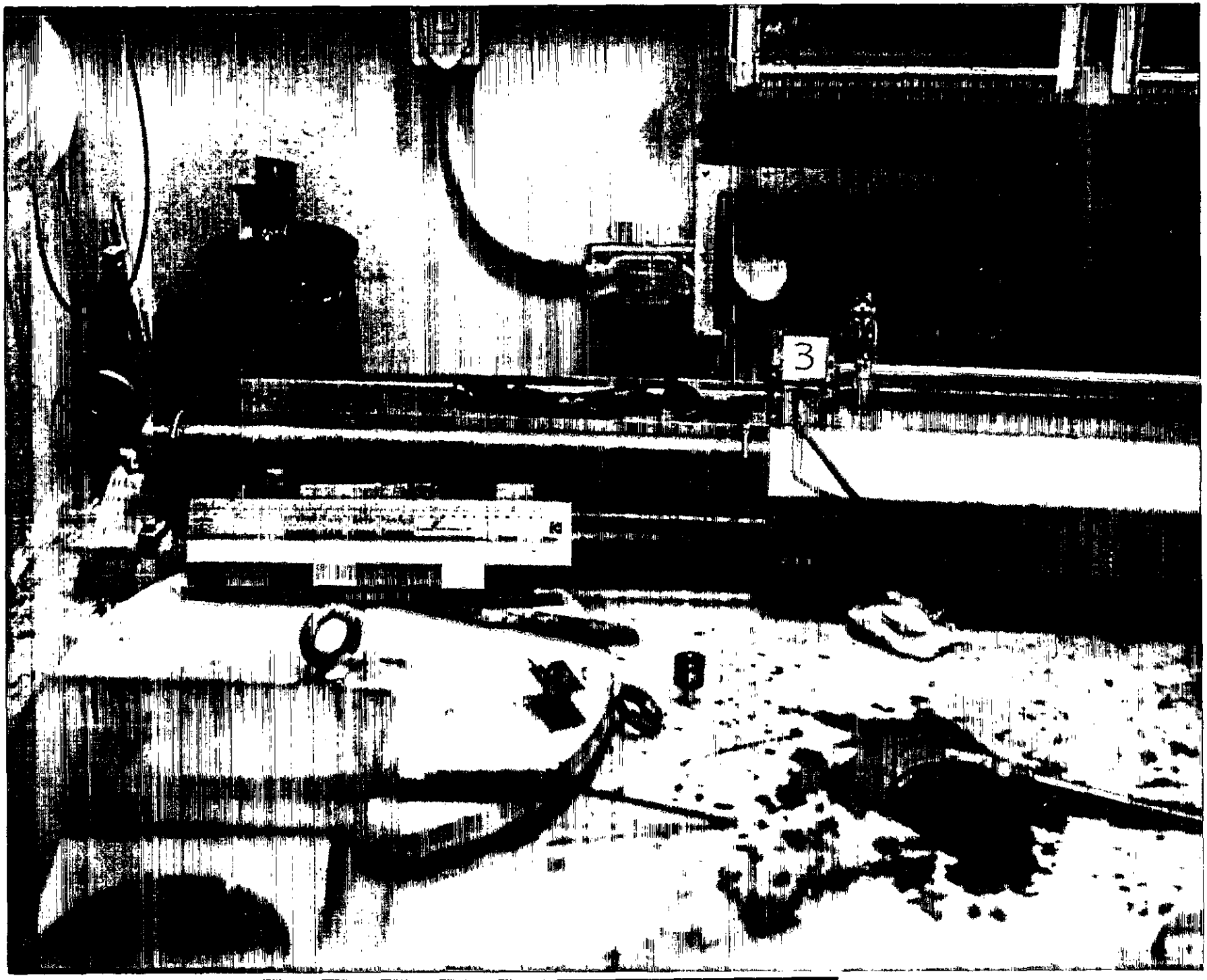


TANK 241-U-110. CORE 6. SEGMENT 3

B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010

STATISTICS

SAMPLE NAME : SST,B000032,F0077,H2O,SBK
FILE NAME : F0077.001

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 101205
TIME	: 12:33	ACQ. MODE	: SAMPLE	S.N.F.	: 0.60
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 494 SEC	S.D.U.	: 5771
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.9E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.7E-02 %

	MEAN Diameter	S.D.
Number, Length :	1.96 µm	1.93 µm
Number, Area :	2.75 µm	2.09 µm
Number, Volume :	4.04 µm	2.84 µm
Length, Area :	3.87 µm	4.33 µm
Length, Volume :	5.80 µm	4.75 µm
Area, Volume :	8.72 µm	10.21 µm
Volume, Moment :	20.68 µm	16.91 µm

	MEDIAN Diameter	MODE	CONFIDENCE
Number :	1.24 µm	0.75 µm	100.00%
Area :	5.14 µm	4.75 µm	96.60%
Volume :	15.11 µm	41.61 µm	99.19%

Sample dry, dark brown

Dispersed well in water, nil agglomeration, except for a fraction which balled up in corners of cuvette.

Dispersal particles < 150 µ

B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010

SAMPLE NAME : SST,B000032,F0077,H20,SBK
FILE NAME : F0077.001

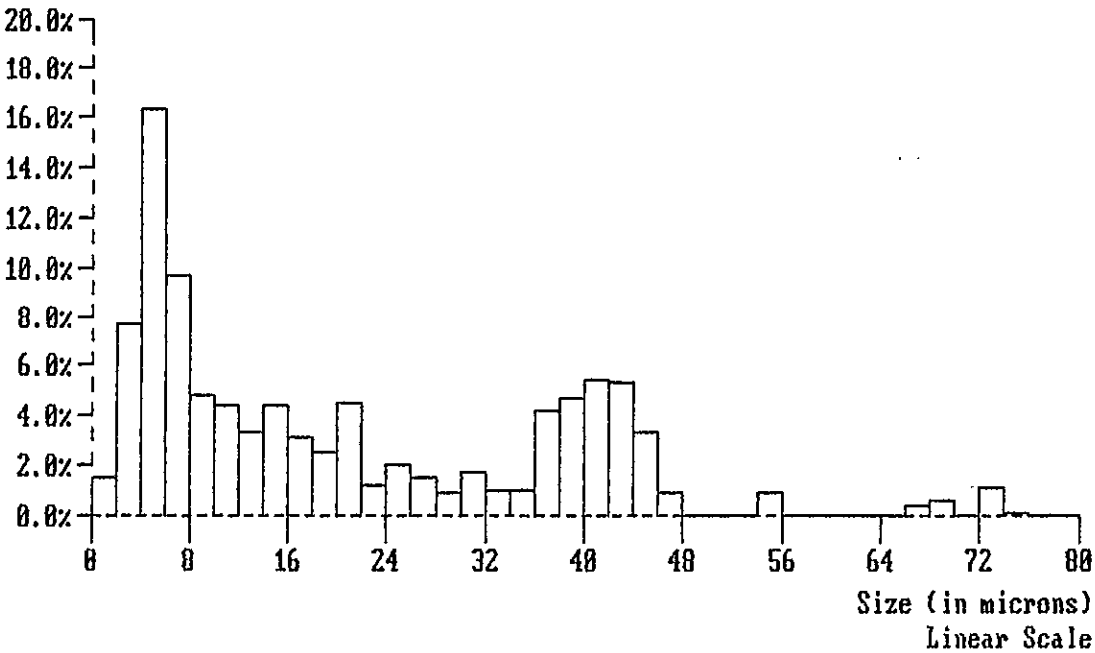
DATE	: 30/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 101205
TIME	: 12:33	ACQ. MODE	: SAMPLE	S.N.F.	: 0.60
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 494 SEC	S.D.U.	: 5771
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.9E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.7E-02 %

PROBABILITY VOLUME DENSITY GRAPH

Name: SST,B000032,F0077,H20,SBK
1.7E-04 cc/ml(100.0%)
Mode at 5.00 µm
<< SCALE RANGE (µm): ADJUSTED >>

Mean(nv): 4.04µm
S.D.(nv): 2.84µm

Median : 15.11µm
Mean(vm): 20.68µm
S.D.(vm): 16.91µm
Conf(vm): 99.19 %



B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS
VIA BRINKMANN 2010

SAMPLE NAME : SST,B000032,F0077,H20,SBK
FILE NAME : F0077.001

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 101205
TIME	: 12:33	ACQ. MODE	: SAMPLE	S.N.F.	: 0.60
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 494 SEC	S.D.U.	: 5771
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.9E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.7E-02 %

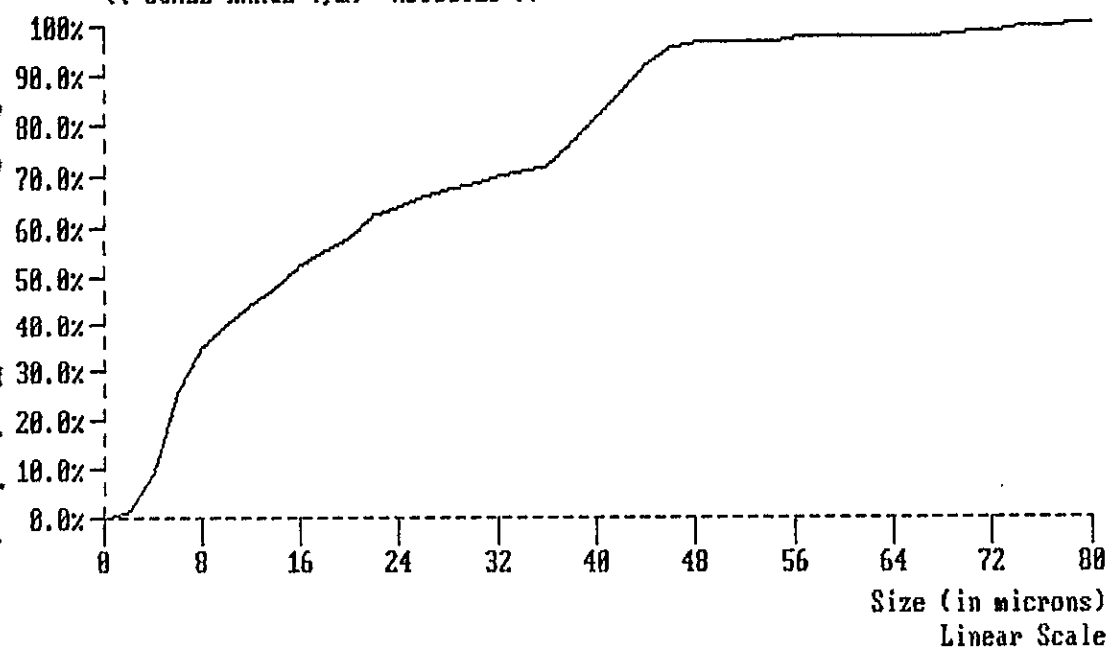
PROBABILITY VOLUME DISTRIBUTION GRAPH

Name: SST,B000032,F0077,H20,SBK
1.7E-04 cc/ml(100.0%)

Mean(nv): 4.04µm
S.D.(nv): 2.84µm

Median : 15.11µm
Mean(vm): 20.68µm
S.D.(vm): 16.91µm
Conf(vm): 99.19 %

<< SCALE RANGE (µm): ADJUSTED >>



B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010

STATISTICS

SAMPLE NAME : SST,B000032,F0077,H20,SBK
FILE NAME : F0077.002

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-60	COUNTS	: 83457
TIME	: 12:58	ACQ. MODE	: SAMPLE	S.N.F.	: 0.50
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 401 SEC	S.D.U.	: 6143
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.4E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.8E-02 %

	MEAN Diameter	S.D.
Number, Length :	1.84 µm	1.81 µm
Number, Area :	2.58 µm	1.95 µm
Number, Volume :	3.74 µm	2.62 µm
Length, Area :	3.62 µm	3.92 µm
Length, Volume :	5.33 µm	4.28 µm
Area, Volume :	7.86 µm	9.37 µm
Volume, Moment :	19.02 µm	16.74 µm

	MEDIAN Diameter	MODE	CONFIDENCE
Number :	1.14 µm	0.55 µm	100.00%
Area :	4.86 µm	4.86 µm	93.07%
Volume :	12.24 µm	49.19 µm	98.61%

B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010

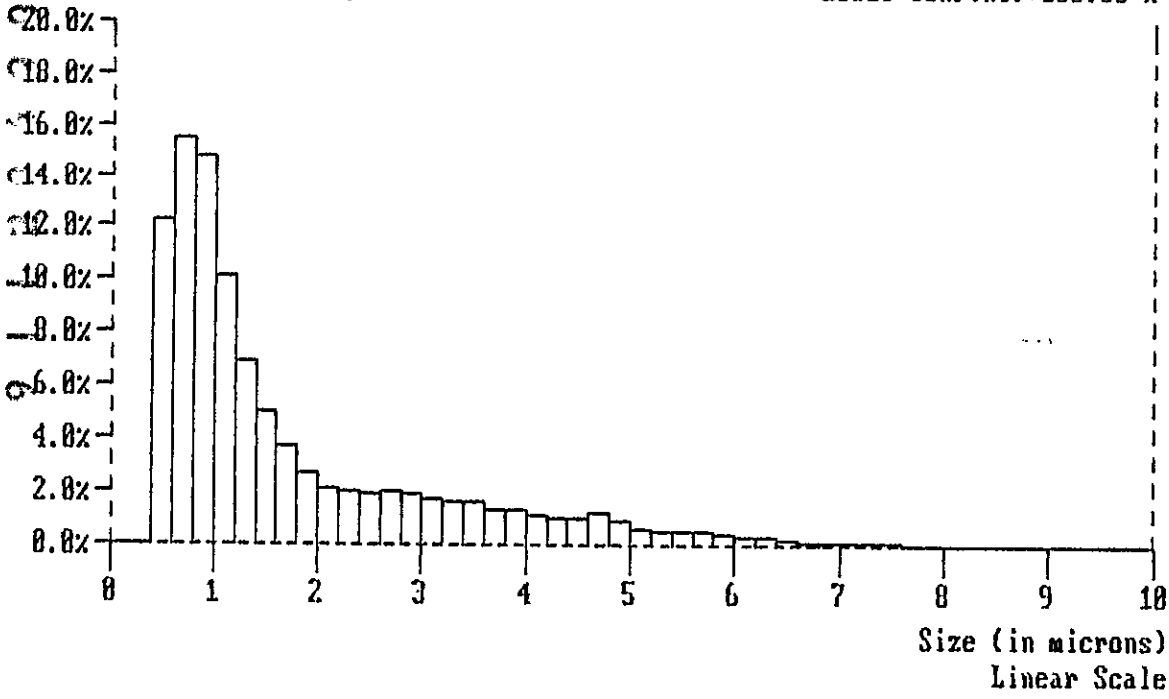
SAMPLE NAME : SST,B000032,F0077,H20,SDK
FILE NAME : F0077.002

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-60	COUNTS	: 93457
TIME	: 12:58	ACQ. MODE	: SAMPLE	S.N.F.	: 0.50
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 401 SEC	S.D.U.	: 6143
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.4E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.8E-02 %

PROBABILITY NUMBER DENSITY GRAPH

Name: SST,B000032,F0077,H20,SDK
6.4E+06 #/ml(99.6%)
Mode at 0.70 µm
<< SCALE RANGE (µm): 0 - 10 >>

Local Median : 1.14µm
Local Mean(nl): 1.78µm
Local S.D.(nl): 1.51µm
Local Conf(nl):100.00 %



SAMPLE NAME : SST,B000032,F0077,H20,SBK
FILE NAME : F0077.002

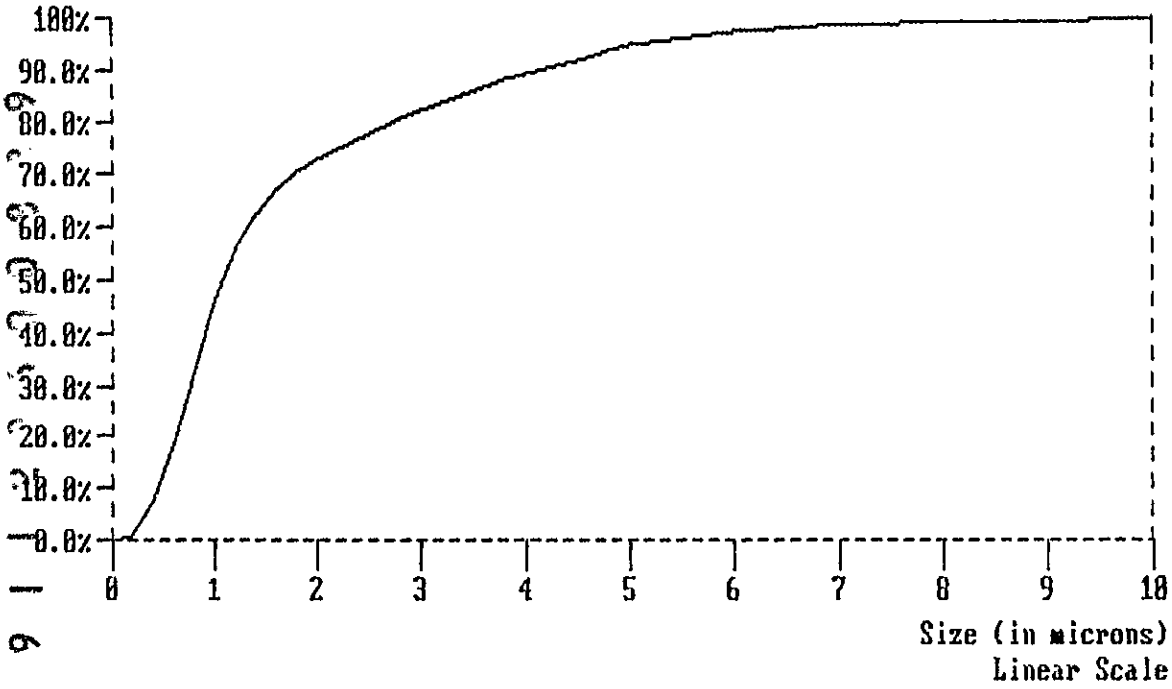
DATE	: 30/11/1989	ACQ. RANGE	: 0.5-60	COUNTS	: 83457
TIME	: 12:58	ACQ. MODE	: SAMPLE	S.N.F.	: 0.50
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 401 SEC	S.D.U.	: 6143
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.4E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.6E-02 %

PROBABILITY NUMBER DISTRIBUTION GRAPH

Name: SST,B000032,F0077,H20,SBK
6.4E+06 #/ml(99.6%)

Local Median : 1.06µm
Local Mean(nl): 1.66µm
Local S.D.(nl): 1.51µm
Local Conf(nl):100.00 %

<< SCALE RANGE (µm): 0 - 10 >>



UNDIGESTED SAMPLE ANALYSIS

Single Shell Tank Project

Untreated Sample Results

Tank: 241-U-110
Core: 6
Segment: 3
Customer ID: 89-044

	Check Standard	Blank	Sample	Sample Duplicate	Check Standard
Laboratory ID:	F0076	F0097	F0077	F0078	F0080
pH	101.10%	4.68	12.00	12.89	100.90%
Laboratory ID:	F0076	F0193	F0077	F0078	F0176
% Of Water	104.60%	7.5 mg	44.60%	44.40%	96.50%

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

pH analysis on solid sample
Undigested sample

Instrument	AL10653
Procedure / Rev	LA-212-103/A-3
Technologist	6C269/M. FRANZ
Date	12-22-89
Temperature	23.0 C
Starting Time	08:00
Ending Time	14:00
Chemist	R. E. BRANDT

	Description	Lab. Id.
1	INITIAL CHECK STD	F0076
2	BLANK	F0097
3	SAMPLE 89-044	F0077
4	DUPLICATE 89-044	F0078
5	ENDING CHECK STD	F0080
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 STD	72C11/5.0 mL			5.0 mL

Prepared by: [signature] Signature — H. S. RICH Printed Name — Date: 05-15-90

Verified by: Cary M Seidel Signature — C.M. SEIDEL Printed Name — Date: 05-15-90

Approved by: Stephen Scott Moss Signature Stephen Scott Moss for L.H. Taylor Printed Name — Date: 9-7-90

Interim Rev.E 4/04/90

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Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Percent Water

Instrument	N/A
Procedure / Rev	LA-564-101/D-1
Technologist	6B598/R. D. Hale
Date	12-23-89
Temperature	120 C
Starting Time	11:00
Ending Time	not recorded
Chemist	R. E. Brandt

	Description	Lab. Id.
1	Initial Check Standard	F0076
2	Blank	F0193
3	Sample 89-044	F0077
4	Duplicate 89-044	F0078
5	Sample 89-049	F0173
6	Duplicate 89-049	F0174
7	Ending Check Standard	F0176
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 mL			1 mL

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 05-15-90

Verified by: [signature] Signature — C. M. Seidel Printed Name — Date: 05-15-90

Approved by: Stephen Scott Moss for Signature Stephen Scott Moss — L. H. Taylor Printed Name — Date: 9-7-90

Interim Rev E 4/04/90

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9 1 1 2 9 6 1 0 9 9 3

KOH FUSION ANALYSIS

Single Shell Tank Project

Fusion Analysis

Laboratory Results Of Solids
Units Are Sample Wet Weight

Tank: 241-U-110
Core: 6
Segment: 3
Customer ID: 89-044

Laboratory ID:	Check Standard F0081	Blank F0192	Sample F0082	Sample Duplicate F0083	Spike of Sample F0084	Check Standard F0181
Fusion Digestion			3.22 g/L	2.27 g/L		
Total Alpha	96.60%	<1.81E-04 uci/L	1.85E-01 uci/g	3.50E-01 uci/g	*	91.20%
Total Beta	98.60%	<6.05E-04 uci/L	1.33E+03 uci/g	1.48E+03 uci/g	*	96.50%
GEA						
Cs-137	99.90%	<4.77E-02 uci/L	2.06E+01 uci/g	2.58E+01 uci/g	103.90%	96.00%
Laboratory ID:	F0081	F0192	F0082	F0083	F0180	F0181
Uranium	106.40%	<8.60E-05 ug/L	5.06E+03 ug/g	6.12E+03 ug/g	106.56%	102.00%

* Ratio Between Spike and Sample is Too Low To Calculate

Single Shell Tank Project

Fusion Analysis

Sample Results On Laboratory Digestions

Tank: 241-U-110
Core: 6
Segment: 3
Customer ID: 89-044

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:	F0081	F0192		F0082		F0083		F0084	F0181
Fusion Digestion				3.22	g/L	2.27	g/L		
Total Alpha	96.60%	<1.81E-04	uci/L	5.96E-01	uci/L	7.94E-01	uci/L	*	91.20%
Total Beta	98.60%	<6.05E-04	uci/L	4.27E+03	uci/L	3.35E+03	uci/L	*	96.50%
GEA Cs-137	99.90%	<4.77E-02	uci/L	6.64E+01	uci/L	5.86E+01	uci/L	103.90%	96.00%
Laboratory ID:	F0081	F0192		F0082		F0083		F0180	F0181
Uranium	106.40%	<8.60E-05	ug/L	1.63E-02	g/L	1.39E-02	g/L	106.56%	102.00%

* Ratio Of Standard To Sample Insufficient To Calculate Spike Recover

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Fusion Dissolution

Instrument	N/A
Procedure / Rev	LA-549-141 / A-1
Technologist	6B598 / R.D. Hale
Date	12-23-89
Temperature	450 C
Starting Time	9:00
Ending Time	11:00
Chemist	S. A. Catlow

	Description	Lab. Id.
1	Blank	F0192
2	Sample 89-044	F0082
3	Duplicate 89-044	F0083
4	Sample 89-049	F0178
5	Duplicate 89-049	F0179
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: [signature] Signature — H. S. Rich Printed Name — Date: 05-15-90

Verified by: Carry M. Seidel Signature — C. M. Seidel Printed Name — Date: 05-15-90

Approved by: Stephen Scott Moss Signature Stephen Scott Moss Printed Name — Date: 9-7-90

9 1 1 2 0 5 0 3 0 7

Interim

Rev. E 4/04/90

SST-102

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Instrument	Multi-detector
Procedure / Rev	LA-548-101/A-2
Technologist	6B598/R. D. Hale
Date	12-23-89
Temperature	24 C
Starting Time	14:00
Ending Time	15:00
Chemist	S. A. Catlow

Total Alpha and Total Beta
Fusion Dissolution
Detectors 9, & 10; HW38295, & HW38316 respectively.

Samples were prepared in batch, but counted randomly.

	Description	Lab. Id.
1	Initial Check Standard	F0081
2	Blank	F0192
3	Sample 89-044	F0082
4	Duplicate 89-044	F0083
5	Sample 89-049	F0178
6	Duplicate 89-049	F0179
7	Spike of 89-044	F0084
8	Ending Check Standard	F0181
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			10.0 mL
Spike	83B44/10 mL	Sample/5.0 uL		10.005 mL

Prepared by: H. S. Rich (Signature) — H. S. Rich (Printed Name) — Date: 05-15-90

Verified by: Carry M Seidel (Signature) — C. M. Seidel (Printed Name) — Date: 05-15-90

Approved by: Stephen Scott Moss for (Signature) — L. H. Taylor, Stephen Scott Moss (Printed Name) — Date: 9-7-90

Interim Rev E 4/04/90

Single Shell Tank Calibration Record

Phase I-A

Analyte:	Am^{241}		
Procedure	LQ-508-002	Revision:	A-0
Instrument:	Detector # 9	Property Number:	HW38295
Technologist:	R.A. Jones	Payroll Number:	65B01
Date:	5-5-88		

Calibration Standard ID: 36B40A8; 32B40B7; 36B40C7; 36B40A3; 36B40B3; 36B40C3

Analyte Concentration: N/A

Type of Calibration: Efficiency

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

Comments:

Prepared by: S.A. Cervantes (Signature) S A. Cervantes (Printed Name) Date: 7-12-90

Verified by: Carry M. Siedel (Signature) C. M. Siedel (Printed Name) Date: 7-12-90

Approved by: Stephen Scott Moss (Signature) for L.H. Taylor Stephen Scott Moss (Printed Name) Date: 9-7-90

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

9112170969

CALIBRATION SHEET FOR ALPHA/BETA SYSTEMS: USING PROCEDURE LQ-508-002

DETECTOR No. 9

TIME ZERO DATE (HD): 15897

RADIONUCLIDE: Am-241
HALF LIFE: 157784
COUNT TIME: 5
CPM BKG: 1.4

DATE COUNTED (HD): 15928

CALIBRATED BY: RA JONES HD 0 = 09/25/44

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
36B40A8	1	05/05/88		86156	85754	86607	87377
36B40B7	1	05/05/88		151307	151005	152761	150073
36B40C7	1	05/05/88		221280	220175	221234	220973
36B40A3	2	05/05/88		56696	58197	56226	56766
36B40B3	2	05/05/88		101615	103410	103823	104376
36B40C3	2	05/05/88		141830	145579	144373	145452
36B40A6	5						
36B40B6	5						
36B40C5	5						

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM		EFFICIENCY
36B40A8	1"	60570	17293	1.00	17296		0.2855
36B40B7	1"	109900	30256	1.00	30260		0.2753
36B40C7	1"	159700	44182	1.00	44188		0.2767
AVERAGE, 1" =		0.2792	+/- @95%	0.0109	3.89 %	ON	05/05/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM		EFFICIENCY
36B40A3	2"	61800	11393	1.00	11394		0.1844
36B40B3	2"	110700	20660	1.00	20663		0.1867
36B40C3	2"	161400	28860	1.00	28864		0.1788
AVERAGE, 2" =		0.1833	+/- @95%	0.0079	4.30 %	ON	05/05/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM		EFFICIENCY
36B40A6	5"	59470	-1	1.00	-1		-0.0000
36B40B6	5"	109800	-1	1.00	-1		-0.0000
36B40C5	5"	160100	-1	1.00	-1		-0.0000
AVERAGE, 5" =		-0.0000	+/- @95%	0.0000	-99.92 %	ON	05/05/88

NEW EFFS FOR DET 9 Am-241 1" = 0.2792 2" = 0.1833

5" = -0.0000

Single Shell Tank Calibration Record

Phase I-A

Analyte:	Co^{60}		
Procedure	LQ-508-002	Revision:	A-0
Instrument:	Detector #10	Property Number:	HW38316
Technologist:	R.A. Jones	Payroll Number:	65B01
Date:	4-21-88		

Calibration Standard ID: 32B40A8; 32B40B7; 32B40C7; 32B40A4; 32B40B3; 32B40C4

Analyte Concentration: N/A

Type of Calibration: Efficiency

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

Comments:

Prepared by: S.A. Cervantes (Signature) S.A. Cervantes (Printed Name) Date: 7-12-90

Verified by: Carry M Seidel (Signature) C.M. Seidel (Printed Name) Date: 7-12-90

Approved by: Stephen Scott Moss for (Signature) L.H. Taylor (Printed Name) Date: 9-7-90

Stephen Scott Moss

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

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9112[illegible]

CALIBRATION SHEET FOR ALPHA/BETA SYSTEMS: USING PROCEDURE LQ-508-002

DETECTOR No. 10

		2",5" STD	TIME ZERO DATE (HD):	15883
RADIONUCLIDE:	Co-60	1" STD	TIME ZERO DATE (HD):	15883
HALF LIFE:	1925		DATE COUNTED (HD):	15912
COUNT TIME:	5		DATE COUNTED 1" (HD)	15914
CPM BKG:	25			
CPM 1" BKG:	23	CALIBRATED BY: RA JONES	HD 0 =	09/25/44

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
32B40A8	1	04/21/88		118636	118818	117690	118528
32B40B7	1	04/21/88		229200	232188	230895	230518
32B40C7	1	04/21/88		346128	346588	346957	344687
32B40A4	2	04/19/88		105657	105173	105509	105768
32B40B3	2	04/19/88		202781	201303	202629	202870
32B40C4	2	04/19/88		297058	297200	297951	296664
32B40A5	5	03/03/90					
32B40B6	5	03/03/90					
32B40C5	5	03/03/90					

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A8	1"	69550	23661	1.01	23926	0.3440
32B40B7	1"	134700	46117	1.01	46635	0.3462
32B40C7	1"	201000	69195	1.01	69972	0.3481

AVERAGE, 1" = 0.3461 +/- @95% 0.0040 1.16 % ON 04/21/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A4	2"	70480	21080	1.01	21302	0.3022
32B40B3	2"	135100	40454	1.01	40879	0.3026
32B40C4	2"	202400	59419	1.01	60042	0.2967

AVERAGE, 2" = 0.3005 +/- @95% 0.0065 2.17 % ON 04/19/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A5	5"	70160	-25	1.01	-25	-0.0004
32B40B6	5"	135700	-25	1.01	-25	-0.0002
32B40C5	5"	201900	-25	1.01	-25	-0.0001

AVERAGE, 5" = -0.0002 +/- @95% 0.0002 -106.77 % ON 07/05/90

NEW EFFS FOR DET 10 Co-60 1" = 0.3461 2" = 0.3005

5" = -0.0002

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Instrument	WA77228 & WA401934
Procedure / Rev	LA-548-121/C-3
Technologist	69769/D.M. Southwick
Date	01/09/90
Temperature	72 F
Starting Time	12:30
Ending Time	14:00
Chemist	S. A. Catlow

GEA Analysis
Fusion Dissolution

Samples were prepared in batch, but counted randomly.

Detectors 1, 2, 3, and 4.

	Description	Lab. Id.
1	Initial Check Standard	F0081
2	Blank	F0192
3	Sample 89-044	F0082
4	Duplicate 89-044	F0083
5	Spike 89-044	F0084
6	Sample 89-045	F0106
7	Duplicate 89-045	F0107
8	Sample 89-049	F0178
9	Duplicate 89-049	F0179
10	Ending Check Standard	F0181
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	89B44/500 uL			22 mL
Spike	89B44/100 uL	Sample/100 uL		22 mL

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 05/16/90

Verified by: Cary M Seidel Signature — C. M. Seidel Printed Name — Date: 05/16/90

Approved by: Stephen Scott Moss for Stephen Scott Moss Signature — L. H. Taylor Printed Name — Date: 9-7-90

Interim Rev E 4/04/90 SST-102

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:	JL 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	SEE ATTACHED		
4			
5			
6			
7			
8			
9			
10			

Comments:

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 07/11/90

Verified by: Carry M Seidel Signature — C. M. Seidel Printed Name — Date: 7/11/90

Approved by: Stephen Scott Moss for Stephen Scott Moss Signature — L.H. Taylor Printed Name — Date: 9-7-90

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

9 1 1 2 9 5 0 9 9 6

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:	JL 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: [signature] Signature — H. S. Rich Printed Name — Date: 05-21-90

Verified by: Cary M Seidel Signature — C. M. Seidel Printed Name — Date: 6-26-90

Approved by: Stephen Scott Moss Signature for Stephen Scott Moss — L.H. Taylor Printed Name — Date: 9-7-90

Interim Rev. (Draft) 1/18/89 SS

9 1 1 2 1 5 0 9 0 9

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
```

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
```

Single Shell Tank Calibration Record

Phase I-A

Analyte:	Mixed Isotope Standards		
Procedure	LQ-508-003	Revision:	A-0
Instrument:	GEA Detector #3	Property Number:	WA77228
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	02/07/89		

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: [signature] Signature — H. S. Rich Printed Name — Date: 05-21-90

Verified by: Carry M Seidel Signature — C. M. Seidel Printed Name — Date: 7-3-90

Approved by: Stephen Scott Moss for Stephen Scott Moss Signature — L.H. Taylor Printed Name — Date: 9-7-90

Interim

SST 03 Rev. (Draft) 1/18/89

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: 56B40 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: 56B40 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: 56840 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
```

Single Shell Tank Calibration Record

Phase I-A

Analyte:	Mixed Isotope Standards		
Procedure	LO-508-003	Revision:	A-0
Instrument:	GEA Detector #4	Property Number:	401934
Technologist:	J. L. Anderson	Payroll Number:	61913
Date:	2-07-89		

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: [signature] (Signature) H. S. Rich (Printed Name) Date: 07/11/90

Verified by: [signature] (Signature) C. M. Seidel (Printed Name) Date: 7/11/90

Approved by: Stephen Scott Moss (Signature) for L.H. Taylor (Printed Name) Date: 9-7-90

Stephen Scott Moss

Rev.(Draft) 1/18/89 Interim

SST-103

44

9112100915

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 4
GEOMETRY CODE: 41
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 1
CALIBRATION DATE: 1-Sep-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	2.682446E-02
88.032	8.210956E-02
122.0614	1.118411E-01
165.853	1.066653E-01
279.1967	
391.668	5.704220E-02
513.99	
661.65	3.685958E-02
898.021	2.541629E-02
1173.237	2.161710E-02
1332.501	1.973393E-02
1836.129	1.484468E-02

EQUATION 0-165 KEV

```
LOG(EFF) =   -5.844056E+01
         +    2.310700E+01 *LOG(ENERGY)
         +    2.371355E+00 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

```
LOG(EFF) =   -1.718967E+01
         +    8.164155E+00 *LOG(ENERGY)
         +   -1.384196E+00 *LOG(ENERGY)^2
         +    7.025985E-02 *LOG(ENERGY)^3
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                     *
*          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 30-MAY-90 13:47:25

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD1998
ANALYZED BY: AJ

SAMPLE DESCRIPTION: ~~E81~~ 5/30/90 F81
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 5.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 9-JAN-90 AT 13:41:59

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 30-MAY-90 13:47:25

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
1C	1126.46	562.70	1.41	645.	764.	10.1	CS-134, EU-152
2C	1138.69	568.82	1.41	640.	1301.	9.0	CS-134, BI-207
3	1209.44	604.18	1.47	583.	8369.	2.3	SB-124, CS-134
4	1323.29	661.08	1.54	419.	12295.	1.8	CS-137
4B		661.82			35.	46.4	
5C	1591.64	795.25	1.56	321.	5855.	3.0	CS-134
6C	1603.76	801.31	1.56	274.	553.	9.3	CS-134
7	2346.14	1172.62	1.68	255.	5341.	2.8	CO-60
8	2664.59	1331.97	1.88	55.	4914.	2.8	CO-60
9	2729.47	1364.44	2.40	13.	144.	18.2	CS-134
10	2800.60	1400.04	1.92	13.	59.	32.1	I-132,BI-214
11	2921.54	1460.58	1.84	11.	172.	16.2	K-40
11B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

G - MULTIPLET ANALYSIS CONVERGED NORMALLY
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

SAMPLE: EB1
DATA COLLECTED ON 9-JAN-90 AT 13:41:59
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
AC-228	LLD<7.90E-01		LLD<7.90E-01		911.07	
AG-108M	LLD<2.25E-01		LLD<2.25E-01		433.94	
AG-110M	LLD<1.05E+00		LLD<1.05E+00		657.76	
AM-241	LLD<9.30E-01		LLD<9.30E-01		59.54	
AM-243	LLD<2.44E-01		LLD<2.44E-01		74.67	
AR-41	LLD<1.44E-01		LLD<1.44E-01		1293.64	
AU-198	LLD<2.00E-01		LLD<2.00E-01		411.80	
BA-133	LLD<3.00E-01		LLD<3.00E-01		356.02	
BA-139	LLD<5.85E-01		LLD<5.85E-01		165.85	
BA-140	LLD<7.76E-01		LLD<7.76E-01		537.27	
BA-141	LLD<6.03E-01		LLD<6.03E-01		190.23	
BE-7	LLD<2.07E+00		LLD<2.07E+00		477.59	
BI-207	LLD<1.98E-01		LLD<1.98E-01		569.70	
BI-212	LLD<2.58E+00		LLD<2.58E+00		727.27	
BI-214	LLD<8.68E-01		LLD<8.68E-01		609.32	
CD-109	LLD<3.47E+00		LLD<3.47E+00		88.03	
CE-139	LLD<1.32E-01		LLD<1.32E-01		165.85	
CE-141	LLD<2.02E-01		LLD<2.02E-01		145.44	
CEPR144	LLD<1.75E+00		LLD<1.75E+00		133.51	
CO-56	LLD<1.93E-01		LLD<1.93E-01		846.76	
CO-57	LLD<1.08E-01		LLD<1.08E-01		122.06	
CO-58	LLD<1.86E-01		LLD<1.86E-01		810.75	
CO-60	2.34E+01	+-7.09E-01	2.34E+01	+-7.09E-01	1332.50	-0.53
					1173.24	-0.62
CR-51	LLD<1.51E+00		LLD<1.51E+00		320.09	
CS-134	2.11E+01	+-6.82E-01	2.11E+01	+-6.82E-01	795.84	-0.60
					604.70	-0.52
CS-136	LLD<1.85E-01		LLD<1.85E-01		818.51	
CS-137	3.81E+01	+-8.42E-01	3.81E+01	+-8.42E-01	661.65	-0.57
CS-138	LLD<1.83E-01		LLD<1.83E-01		1435.86	
EU-152	LLD<2.61E-01		LLD<2.61E-01		1408.01	
EU-154	LLD<3.59E-01		LLD<3.59E-01		1274.45	
EU-155	LLD<4.22E-01		LLD<4.22E-01		105.31	
FE-59	LLD<4.31E-01		LLD<4.31E-01		1099.25	
HF-181	LLD<2.29E-01		LLD<2.29E-01		482.20	
HG-203	LLD<1.81E-01		LLD<1.81E-01		279.20	
I-131	LLD<2.32E-01		LLD<2.32E-01		364.48	
I-132	LLD<2.14E-01		LLD<2.14E-01		667.69	
I-133	LLD<2.29E-01		LLD<2.29E-01		529.69	
I-134	LLD<2.70E-01		LLD<2.70E-01		847.03	
I-135	LLD<4.50E-01		LLD<4.50E-01		1260.41	
K-40	LLD<1.88E+00		LLD<1.88E+00		1460.75	
KR-85	LLD<4.52E+01		LLD<4.52E+01		513.99	
KR-85M	LLD<1.30E-01		LLD<1.30E-01		151.17	
KR-87	LLD<4.97E-01		LLD<4.97E-01		402.58	
KR-89	LLD<7.42E+00		LLD<7.42E+00		220.90	
LA-140	LLD<9.05E-02		LLD<9.05E-02		1596.20	

LA-142	LLD<4.45E-01	LLD<4.45E-01	641.83
MN-54	LLD<1.81E-01	LLD<1.81E-01	834.83
MN-56	LLD<2.17E-01	LLD<2.17E-01	846.76
NA-22	LLD<1.10E-01	LLD<1.10E-01	1274.55
NA-24	LLD<2.33E-01	LLD<2.33E-01	1368.60
NB-94	LLD<1.59E-01	LLD<1.59E-01	702.63
NB-95	LLD<1.57E-01	LLD<1.57E-01	765.78
NB-97	LLD<1.28E+00	LLD<1.28E+00	657.92
NP-238	LLD<8.29E-01	LLD<8.29E-01	984.45
NP-239	LLD<1.04E+00	LLD<1.04E+00	277.60
PA-233	LLD<4.70E-01	LLD<4.70E-01	311.98
PA-234M	LLD<3.78E+01	LLD<3.78E+01	1001.03
PB-210	LLD<5.44E+00	LLD<5.44E+00	465.03
PB-212	LLD<3.30E-01	LLD<3.30E-01	239.00
PB-214	LLD<5.01E-01	LLD<5.01E-01	351.92
PO-210	LLD<2.06E+04	LLD<2.06E+04	804.00
PO-214	LLD<8.05E+03	LLD<8.05E+03	799.70
PO-216	LLD<1.67E+04	LLD<1.67E+04	804.90
PU-239	LLD<1.45E+03	LLD<1.45E+03	129.30
PU-241	LLD<5.32E+04	LLD<5.32E+04	148.57
RA-224	LLD<3.57E+00	LLD<3.57E+00	240.99
RA-226	LLD<3.27E+00	LLD<3.27E+00	186.10
RB-88	LLD<6.33E-01	LLD<6.33E-01	1836.00
RB-89	LLD<1.04E+00	LLD<1.04E+00	1031.88
RN-220	LLD<1.69E+02	LLD<1.69E+02	549.73
RU-103	LLD<2.11E-01	LLD<2.11E-01	497.08
RURH106	LLD<3.62E+00	LLD<3.62E+00	621.80
SB-124	LLD<2.52E-01	LLD<2.52E-01	602.72
SB-125	LLD<1.70E+00	LLD<1.70E+00	176.33
SC-46	LLD<2.13E-01	LLD<2.13E-01	1120.45
SE-75	LLD<2.38E-01	LLD<2.38E-01	264.66
SN-113	LLD<2.89E-01	LLD<2.89E-01	391.67
SR-85	LLD<1.98E-01	LLD<1.98E-01	513.99
SR-91	LLD<3.54E-01	LLD<3.54E-01	555.60
SR-92	LLD<9.07E-02	LLD<9.07E-02	1383.94
TA-182	LLD<6.07E-01	LLD<6.07E-01	1121.30
TC-99M	LLD<1.16E-01	LLD<1.16E-01	140.51
TC-123M	LLD<1.25E-01	LLD<1.25E-01	159.00
TE-125M	LLD<3.28E+01	LLD<3.28E+01	109.27
TE-132	LLD<1.53E-01	LLD<1.53E-01	228.16
TH-228	LLD<1.09E+01	LLD<1.09E+01	84.37
TL-208	LLD<2.47E-01	LLD<2.47E-01	583.14
U-235	LLD<2.17E-01	LLD<2.17E-01	185.71
U-237	LLD<6.23E-01	LLD<6.23E-01	208.00
W-187	LLD<5.94E-01	LLD<5.94E-01	685.74
XE-131M	LLD<5.77E+00	LLD<5.77E+00	163.98
XE-133	LLD<3.81E-01	LLD<3.81E-01	81.00
XE-133M	LLD<1.35E+00	LLD<1.35E+00	233.21
XE-135	LLD<1.60E-01	LLD<1.60E-01	249.79
XE-138	LLD<1.21E+00	LLD<1.21E+00	258.41
Y-88	LLD<6.00E-02	LLD<6.00E-02	1836.06
Y-91	LLD<4.73E+01	LLD<4.73E+01	1204.90
Y-91M	LLD<2.68E-01	LLD<2.68E-01	555.60
ZN-65	LLD<5.03E-01	LLD<5.03E-01	1115.55
ZR-95	LLD<3.46E-01	LLD<3.46E-01	756.73
ZR-97	LLD<1.84E-01	LLD<1.84E-01	743.33
	---	---	
TOTAL	8.25E+01 +-1.29E+00	8.25E+01 +-1.29E+00	

STANDARD DEVIATION = 0.04

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                     *
*          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 22-MAY-90 12:38:39

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD1002
ANALYZED BY: AJ

SAMPLE DESCRIPTION: F192
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 9-JAN-90 AT 19:58:58

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

222-S COUNTING ROOM 22-MAY-90 12:38:39

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	1322.80	660.84	1.47	33.	33.	62.0	CS-137
1B		661.82			35.	46.4	
2	2921.42	1460.52	2.04	3.	146.	16.7	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 22-MAY-90 12:38:39

SAMPLE: F192
DATA COLLECTED ON 9-JAN-90 AT 19:58:58
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
AC-228	LLD<1.03E-01		LLD<1.03E-01		911.07	
AG-108M	LLD<2.60E-02		LLD<2.60E-02		433.94	
AG-110M	LLD<3.82E-02		LLD<3.82E-02		657.76	
AM-241	LLD<1.54E-01		LLD<1.54E-01		59.54	
AM-243	LLD<4.29E-02		LLD<4.29E-02		74.67	
AR-41	LLD<3.48E-02		LLD<3.48E-02		1293.64	
AU-198	LLD<2.19E-02		LLD<2.19E-02		411.80	
BA-133	LLD<4.59E-02		LLD<4.59E-02		356.02	
BA-139	LLD<9.13E-02		LLD<9.13E-02		165.85	
BA-140	LLD<1.04E-01		LLD<1.04E-01		537.27	
BA-141	LLD<8.40E-02		LLD<8.40E-02		190.23	
BE-7	LLD<2.45E-01		LLD<2.45E-01		477.59	
BI-207	LLD<2.76E-02		LLD<2.76E-02		569.70	
BI-212	LLD<4.40E-01		LLD<4.40E-01		727.27	
BI-214	LLD<8.03E-02		LLD<8.03E-02		609.32	
CD-109	LLD<5.91E-01		LLD<5.91E-01		88.03	
CE-139	LLD<2.07E-02		LLD<2.07E-02		165.85	
CE-141	LLD<3.22E-02		LLD<3.22E-02		145.44	
CEPR144	LLD<2.84E-01		LLD<2.84E-01		133.51	
CO-56	LLD<2.34E-02		LLD<2.34E-02		846.76	
CO-57	LLD<1.83E-02		LLD<1.83E-02		122.06	
CO-58	LLD<2.81E-02		LLD<2.81E-02		810.75	
CO-60	LLD<1.31E-02		LLD<1.31E-02		1332.50	
CR-51	LLD<2.12E-01		LLD<2.12E-01		320.09	
CS-134	LLD<3.07E-02		LLD<3.07E-02		795.84	
CS-136	LLD<2.53E-02		LLD<2.53E-02		818.51	
CS-137	LLD<4.77E-02		LLD<4.77E-02		661.65	
CS-138	LLD<6.89E-02		LLD<6.89E-02		1435.86	
EU-152	LLD<1.30E-01		LLD<1.30E-01		1408.01	
EU-154	LLD<1.13E-01		LLD<1.13E-01		1274.45	
EU-155	LLD<6.59E-02		LLD<6.59E-02		105.31	
FE-59	LLD<5.71E-02		LLD<5.71E-02		1099.25	
HF-181	LLD<2.39E-02		LLD<2.39E-02		482.20	
HG-203	LLD<2.46E-02		LLD<2.46E-02		279.20	
I-131	LLD<2.90E-02		LLD<2.90E-02		364.48	
I-132	LLD<3.48E-02		LLD<3.48E-02		667.69	
I-133	LLD<2.85E-02		LLD<2.85E-02		529.69	
I-134	LLD<3.71E-02		LLD<3.71E-02		847.03	
I-135	LLD<1.29E-01		LLD<1.29E-01		1260.41	
K-40	LLD<9.20E-01		LLD<9.20E-01		1460.75	
KR-85	LLD<8.59E+00		LLD<8.59E+00		513.99	
KR-85M	LLD<2.16E-02		LLD<2.16E-02		151.17	
KR-87	LLD<6.41E-02		LLD<6.41E-02		402.58	
KR-89	LLD<1.09E+00		LLD<1.09E+00		220.90	
LA-140	LLD<3.16E-02		LLD<3.16E-02		1596.20	
LA-142	LLD<6.40E-02		LLD<6.40E-02		641.83	
MN-54	LLD<2.94E-02		LLD<2.94E-02		834.83	

LA-142	LLD<4.45E-01	LLD<4.45E-01	641.83
MN-54	LLD<1.81E-01	LLD<1.81E-01	834.83
MN-56	LLD<2.17E-01	LLD<2.17E-01	846.76
NA-22	LLD<1.10E-01	LLD<1.10E-01	1274.55
NA-24	LLD<2.33E-01	LLD<2.33E-01	1368.60
NB-94	LLD<1.59E-01	LLD<1.59E-01	702.63
NB-95	LLD<1.57E-01	LLD<1.57E-01	765.78
NB-97	LLD<1.28E+00	LLD<1.28E+00	657.92
NP-238	LLD<8.29E-01	LLD<8.29E-01	984.45
NP-239	LLD<1.04E+00	LLD<1.04E+00	277.60
PA-233	LLD<4.70E-01	LLD<4.70E-01	311.98
PA-234M	LLD<3.78E+01	LLD<3.78E+01	1001.03
PB-210	LLD<5.44E+00	LLD<5.44E+00	465.03
PB-212	LLD<3.30E-01	LLD<3.30E-01	239.00
PB-214	LLD<5.01E-01	LLD<5.01E-01	351.92
PO-210	LLD<2.06E+04	LLD<2.06E+04	804.00
PO-214	LLD<8.05E+03	LLD<8.05E+03	799.70
PO-216	LLD<1.67E+04	LLD<1.67E+04	804.90
PU-239	LLD<1.45E+03	LLD<1.45E+03	129.30
PU-241	LLD<5.32E+04	LLD<5.32E+04	148.57
RA-224	LLD<3.57E+00	LLD<3.57E+00	240.99
RA-226	LLD<3.27E+00	LLD<3.27E+00	186.10
RB-88	LLD<6.33E-01	LLD<6.33E-01	1836.00
RB-89	LLD<1.04E+00	LLD<1.04E+00	1031.88
RN-220	LLD<1.69E+02	LLD<1.69E+02	549.73
RU-103	LLD<2.11E-01	LLD<2.11E-01	497.08
RURH106	LLD<3.62E+00	LLD<3.62E+00	621.80
SB-124	LLD<2.52E-01	LLD<2.52E-01	602.72
SB-125	LLD<1.70E+00	LLD<1.70E+00	176.33
SC-46	LLD<2.13E-01	LLD<2.13E-01	1120.45
SE-75	LLD<2.38E-01	LLD<2.38E-01	264.66
SN-113	LLD<2.89E-01	LLD<2.89E-01	391.67
SR-85	LLD<1.98E-01	LLD<1.98E-01	513.99
SR-91	LLD<3.54E-01	LLD<3.54E-01	555.60
SR-92	LLD<9.07E-02	LLD<9.07E-02	1383.94
TA-182	LLD<6.07E-01	LLD<6.07E-01	1121.30
TC-99M	LLD<1.16E-01	LLD<1.16E-01	140.51
TE-123M	LLD<1.25E-01	LLD<1.25E-01	159.00
TE-125M	LLD<3.28E+01	LLD<3.28E+01	109.27
TE-132	LLD<1.53E-01	LLD<1.53E-01	228.16
TH-228	LLD<1.09E+01	LLD<1.09E+01	84.37
TL-208	LLD<2.47E-01	LLD<2.47E-01	583.14
U-235	LLD<2.17E-01	LLD<2.17E-01	185.71
U-237	LLD<6.23E-01	LLD<6.23E-01	208.00
W-187	LLD<5.94E-01	LLD<5.94E-01	685.74
XE-131M	LLD<5.77E+00	LLD<5.77E+00	163.98
XE-133	LLD<3.81E-01	LLD<3.81E-01	81.00
XE-133M	LLD<1.35E+00	LLD<1.35E+00	233.21
XE-135	LLD<1.60E-01	LLD<1.60E-01	249.79
XE-138	LLD<1.21E+00	LLD<1.21E+00	258.41
Y-88	LLD<6.00E-02	LLD<6.00E-02	1836.06
Y-91	LLD<4.73E+01	LLD<4.73E+01	1204.90
Y-91M	LLD<2.68E-01	LLD<2.68E-01	555.60
ZN-65	LLD<5.03E-01	LLD<5.03E-01	1115.55
ZR-95	LLD<3.46E-01	LLD<3.46E-01	756.73
ZR-97	LLD<1.84E-01	LLD<1.84E-01	743.33
TOTAL	8.25E+01 +-1.29E+00	8.25E+01 +-1.29E+00	

STANDARD DEVIATION = 0.04

MN-56	LLD<2.64E-02	LLD<2.64E-02	846.76
NA-22	LLD<3.52E-02	LLD<3.52E-02	1274.55
NA-24	LLD<2.71E-02	LLD<2.71E-02	1368.60
NB-94	LLD<2.93E-02	LLD<2.93E-02	702.63
NB-95	LLD<2.36E-02	LLD<2.36E-02	765.78
NB-97	LLD<4.63E-02	LLD<4.63E-02	657.92
NP-238	LLD<1.09E-01	LLD<1.09E-01	984.45
NP-239	LLD<1.43E-01	LLD<1.43E-01	277.60
PA-233	LLD<6.07E-02	LLD<6.07E-02	311.98
PA-234M	LLD<2.96E+00	LLD<2.96E+00	1001.03
PB-210	LLD<6.08E-01	LLD<6.08E-01	465.03
PB-212	LLD<4.85E-02	LLD<4.85E-02	239.00
PB-214	LLD<6.66E-02	LLD<6.66E-02	351.92
PO-210	LLD<2.43E+03	LLD<2.43E+03	804.00
PO-214	LLD<2.78E+02	LLD<2.78E+02	799.70
PO-216	LLD<1.27E+03	LLD<1.27E+03	804.90
PU-239	LLD<2.51E+02	LLD<2.51E+02	129.30
PU-241	LLD<9.09E+03	LLD<9.09E+03	148.57
RA-224	LLD<5.50E-01	LLD<5.50E-01	240.99
RA-226	LLD<4.77E-01	LLD<4.77E-01	186.10
RB-88	LLD<1.98E-01	LLD<1.98E-01	1836.00
RB-89	LLD<1.44E-01	LLD<1.44E-01	1031.88
RN-220	LLD<2.35E+01	LLD<2.35E+01	549.73
RU-103	LLD<2.63E-02	LLD<2.63E-02	497.08
RURH106	LLD<5.53E-01	LLD<5.53E-01	621.80
SB-124	LLD<2.50E-02	LLD<2.50E-02	602.72
SB-125	LLD<2.71E-01	LLD<2.71E-01	176.33
SC-46	LLD<3.04E-02	LLD<3.04E-02	1120.45
SE-75	LLD<3.41E-02	LLD<3.41E-02	264.66
SN-113	LLD<3.28E-02	LLD<3.28E-02	391.67
SR-85	LLD<3.77E-02	LLD<3.77E-02	513.99
SR-91	LLD<4.97E-02	LLD<4.97E-02	555.60
SR-92	LLD<2.99E-02	LLD<2.99E-02	1383.94
TA-182	LLD<9.06E-02	LLD<9.06E-02	1121.30
TC-99M	LLD<1.94E-02	LLD<1.94E-02	140.51
TE-123M	LLD<2.01E-02	LLD<2.01E-02	159.00
TE-125M	LLD<5.19E+00	LLD<5.19E+00	109.27
TE-132	LLD<2.28E-02	LLD<2.28E-02	228.16
TH-228	LLD<1.90E+00	LLD<1.90E+00	84.37
TL-208	LLD<2.89E-02	LLD<2.89E-02	583.14
U-235	LLD<3.28E-02	LLD<3.28E-02	185.71
U-237	LLD<8.54E-02	LLD<8.54E-02	208.00
W-187	LLD<7.53E-02	LLD<7.53E-02	685.74
XE-131M	LLD<8.52E-01	LLD<8.52E-01	163.98
XE-133	LLD<6.62E-02	LLD<6.62E-02	81.00
XE-133M	LLD<1.87E-01	LLD<1.87E-01	233.21
XE-135	LLD<2.24E-02	LLD<2.24E-02	249.79
XE-138	LLD<1.65E-01	LLD<1.65E-01	258.41
Y-88	LLD<1.88E-02	LLD<1.88E-02	1836.06
Y-91	LLD<1.28E+01	LLD<1.28E+01	1204.90
Y-91M	LLD<3.76E-02	LLD<3.76E-02	555.60
ZN-65	LLD<1.12E-01	LLD<1.12E-01	1115.55
ZR-95	LLD<4.95E-02	LLD<4.95E-02	756.73
ZR-97	LLD<2.33E-02	LLD<2.33E-02	743.33
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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%

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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 22-MAY-90 12:37:16

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD2740
ANALYZED BY: AJ

SAMPLE DESCRIPTION: F82
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 9-JAN-90 AT 13:43:56

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3001. SECONDS
DEAD TIME: 0.03 %

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

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

'22-S COUNTING ROOM 22-MAY-90 12:37:16

SAMPLE: F82
DATA COLLECTED ON 9-JAN-90 AT 13:43:56
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
AC-228	LLD<1.84E+00		LLD<1.84E+00		911.07	
AG-108M	LLD<6.85E-01		LLD<6.85E-01		433.94	
AG-110M	LLD<4.03E+00		LLD<4.03E+00		657.76	
AM-241	LLD<4.65E+00		LLD<4.65E+00		59.54	
AM-243	LLD<1.28E+00		LLD<1.28E+00		74.67	
AR-41	LLD<4.97E-01		LLD<4.97E-01		1293.64	
AU-198	LLD<5.33E-01		LLD<5.33E-01		411.80	
BA-133	LLD<8.39E-01		LLD<8.39E-01		356.02	
BA-139	LLD<2.15E+00		LLD<2.15E+00		165.85	
BA-140	LLD<1.98E+00		LLD<1.98E+00		537.27	
BA-141	LLD<1.94E+00		LLD<1.94E+00		190.23	
BE-7	LLD<5.54E+00		LLD<5.54E+00		477.59	
BI-207	LLD<4.96E-01		LLD<4.96E-01		569.70	
BI-212	LLD<6.88E+00		LLD<6.88E+00		727.27	
BI-214	LLD<1.14E+00		LLD<1.14E+00		609.32	
CD-109	LLD<1.65E+01		LLD<1.65E+01		88.03	
CE-139	LLD<4.86E-01		LLD<4.86E-01		165.85	
CE-141	LLD<8.33E-01		LLD<8.33E-01		145.44	
CEPR144	LLD<6.72E+00		LLD<6.72E+00		133.51	
CO-56	LLD<4.73E-01		LLD<4.73E-01		846.76	
CO-57	LLD<4.63E-01		LLD<4.63E-01		122.06	
CO-58	LLD<4.39E-01		LLD<4.39E-01		810.75	
CO-60	LLD<5.24E-01		LLD<5.24E-01		1332.50	
CR-51	LLD<4.60E+00		LLD<4.60E+00		320.09	
CS-134	LLD<4.55E-01		LLD<4.55E-01		795.84	
CS-136	LLD<4.24E-01		LLD<4.24E-01		818.51	
CS-137	6.64E+01	+-2.57E+00	6.64E+01	+-2.57E+00	661.65	0.10
CS-138	LLD<1.11E+00		LLD<1.11E+00		1435.86	
EU-152	LLD<2.45E+00		LLD<2.45E+00		1408.01	
EU-154	LLD<1.42E+00		LLD<1.42E+00		1274.45	
EU-155	LLD<2.22E+00		LLD<2.22E+00		105.31	
FE-59	LLD<1.01E+00		LLD<1.01E+00		1099.25	
HF-181	LLD<6.20E-01		LLD<6.20E-01		482.20	
HG-203	LLD<5.12E-01		LLD<5.12E-01		279.20	
I-131	LLD<5.95E-01		LLD<5.95E-01		364.48	
I-132	LLD<2.11E+00		LLD<2.11E+00		667.69	
I-133	LLD<5.80E-01		LLD<5.80E-01		529.69	
I-134	LLD<7.04E-01		LLD<7.04E-01		847.03	
I-135	LLD<1.71E+00		LLD<1.71E+00		1260.41	
K-40	LLD<1.02E+01		LLD<1.02E+01		1460.75	
KR-85	LLD<1.47E+02		LLD<1.47E+02		513.99	
KR-85M	LLD<5.47E-01		LLD<5.47E-01		151.17	
KR-87	LLD<1.27E+00		LLD<1.27E+00		402.58	
KR-89	LLD<2.22E+01		LLD<2.22E+01		220.90	
LA-140	LLD<6.64E-01		LLD<6.64E-01		1596.20	
LA-142	LLD<1.30E+00		LLD<1.30E+00		641.83	
MN-54	LLD<4.48E-01		LLD<4.48E-01		834.83	

222-S COUNTING ROOM 22-MAY-90 12:37:16

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	1324.27	661.75	1.61	80.	3112.	3.6	CS-137
1B		661.85			36.	13.9	
2	2921.94	1460.51	2.06	14.	150.	18.1	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

9 1 1 2 5 7 0 9

% 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
2921.94	1460.51	150.	18.1	1.96E+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 22-MAY-90 12:41:22

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: 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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD3880
ANALYZED BY: AJ

SAMPLE DESCRIPTION: F83
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 9-JAN-90 AT 17:32:47

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3003. SECONDS
DEAD TIME: 0.10 %

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

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 22-MAY-90 12:41:22

SAMPLE: F83
DATA COLLECTED ON 9-JAN-90 AT 17:32:47
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
AC-228	LLD<7.39E+00		LLD<7.39E+00		911.07	
AG-108M	LLD<1.37E+00		LLD<1.37E+00		433.94	
AG-110M	LLD<5.43E+00		LLD<5.43E+00		657.76	
AM-241	LLD<2.60E+00		LLD<2.60E+00		59.54	
AM-243	LLD<1.65E+00		LLD<1.65E+00		74.67	
AR-41	LLD<2.15E+00		LLD<2.15E+00		1293.64	
AU-198	LLD<1.34E+00		LLD<1.34E+00		411.80	
BA-133	LLD<2.10E+00		LLD<2.10E+00		356.02	
BA-139	LLD<4.96E+00		LLD<4.96E+00		165.85	
BA-140	LLD<5.45E+00		LLD<5.45E+00		537.27	
BA-141	LLD<5.02E+00		LLD<5.02E+00		190.23	
BE-7	LLD<1.22E+01		LLD<1.22E+01		477.59	
BI-207	LLD<1.31E+00		LLD<1.31E+00		569.70	
BI-212	LLD<2.02E+01		LLD<2.02E+01		727.27	
BI-214	LLD<4.18E+00		LLD<4.18E+00		609.32	
CD-109	LLD<2.62E+01		LLD<2.62E+01		88.03	
CE-139	LLD<1.12E+00		LLD<1.12E+00		165.85	
CE-141	LLD<1.97E+00		LLD<1.97E+00		145.44	
CEPR144	LLD<1.69E+01		LLD<1.69E+01		133.51	
CO-56	LLD<1.37E+00		LLD<1.37E+00		846.76	
CO-57	LLD<1.07E+00		LLD<1.07E+00		122.06	
CO-58	LLD<1.50E+00		LLD<1.50E+00		810.75	
CO-60	LLD<1.62E+00		LLD<1.62E+00		1332.50	
CR-51	LLD<1.07E+01		LLD<1.07E+01		320.09	
CS-134	LLD<1.68E+00		LLD<1.68E+00		795.84	
CS-136	LLD<1.37E+00		LLD<1.37E+00		818.51	
CS-137	5.61E+01	+-3.86E+00	5.61E+01	+-3.86E+00	661.65	-0.10
CS-138	LLD<2.87E+00		LLD<2.87E+00		1435.86	
EU-152	LLD<6.30E+00		LLD<6.30E+00		1408.01	
EU-154	LLD<4.31E+00		LLD<4.31E+00		1274.45	
EU-155	LLD<4.33E+00		LLD<4.33E+00		105.31	
FE-59	LLD<2.96E+00		LLD<2.96E+00		1099.25	
HF-181	LLD<1.64E+00		LLD<1.64E+00		482.20	
HG-203	LLD<1.36E+00		LLD<1.36E+00		279.20	
I-131	LLD<1.51E+00		LLD<1.51E+00		364.48	
I-132	LLD<1.76E+00		LLD<1.76E+00		667.69	
I-133	LLD<1.46E+00		LLD<1.46E+00		529.69	
I-134	LLD<2.05E+00		LLD<2.05E+00		847.03	
I-135	LLD<6.77E+00		LLD<6.77E+00		1260.41	
K-40	LLD<4.61E+01		LLD<4.61E+01		1460.75	
KR-85	LLD<3.51E+02		LLD<3.51E+02		513.99	
KR-85M	LLD<1.45E+00		LLD<1.45E+00		151.17	
KR-87	LLD<2.83E+00		LLD<2.83E+00		402.58	
KR-89	LLD<5.27E+01		LLD<5.27E+01		220.90	
LA-140	LLD<1.32E+00		LLD<1.32E+00		1596.20	
LA-142	LLD<3.27E+00		LLD<3.27E+00		641.83	
MN-54	LLD<1.58E+00		LLD<1.58E+00		834.83	

MN-56	LLD<1.55E+00	LLD<1.55E+00	846.76
NA-22	LLD<1.56E+00	LLD<1.56E+00	1274.55
NA-24	LLD<1.43E+00	LLD<1.43E+00	1368.60
NB-94	LLD<1.35E+00	LLD<1.35E+00	702.63
NB-95	LLD<1.46E+00	LLD<1.46E+00	765.78
NB-97	LLD<6.59E+00	LLD<6.59E+00	657.92
NP-238	LLD<5.51E+00	LLD<5.51E+00	984.45
NP-239	LLD<7.82E+00	LLD<7.82E+00	277.60
PA-233	LLD<3.05E+00	LLD<3.05E+00	311.98
PA-234M	LLD<2.84E+02	LLD<2.84E+02	1001.03
PB-210	LLD<3.58E+01	LLD<3.58E+01	465.03
PB-212	LLD<2.73E+00	LLD<2.73E+00	239.00
PB-214	LLD<4.16E+00	LLD<4.16E+00	351.92
PO-210	LLD<1.10E+05	LLD<1.10E+05	804.00
PO-214	LLD<1.39E+04	LLD<1.39E+04	799.70
PO-216	LLD<7.06E+04	LLD<7.06E+04	804.90
PU-239	LLD<1.49E+04	LLD<1.49E+04	129.30
PU-241	LLD<5.01E+05	LLD<5.01E+05	148.57
RA-224	LLD<3.02E+01	LLD<3.02E+01	240.99
RA-226	LLD<3.16E+01	LLD<3.16E+01	186.10
RB-88	LLD<1.35E+01	LLD<1.35E+01	1836.00
RB-89	LLD<6.80E+00	LLD<6.80E+00	1031.88
RN-220	LLD<1.34E+03	LLD<1.34E+03	549.73
RU-103	LLD<1.51E+00	LLD<1.51E+00	497.08
RURH106	LLD<2.57E+01	LLD<2.57E+01	621.80
SB-124	LLD<1.22E+00	LLD<1.22E+00	602.72
SB-125	LLD<1.40E+01	LLD<1.40E+01	176.33
SC-46	LLD<2.39E+00	LLD<2.39E+00	1120.45
SE-75	LLD<1.83E+00	LLD<1.83E+00	264.66
SN-113	LLD<1.92E+00	LLD<1.92E+00	391.67
SR-85	LLD<1.54E+00	LLD<1.54E+00	513.99
SR-91	LLD<2.45E+00	LLD<2.45E+00	555.60
SR-92	LLD<2.48E+00	LLD<2.48E+00	1383.94
TA-182	LLD<5.76E+00	LLD<5.76E+00	1121.30
TC-99M	LLD<1.11E+00	LLD<1.11E+00	140.51
TE-123M	LLD<1.07E+00	LLD<1.07E+00	159.00
TE-125M	LLD<3.38E+02	LLD<3.38E+02	109.27
TE-132	LLD<1.25E+00	LLD<1.25E+00	228.16
TH-228	LLD<7.35E+01	LLD<7.35E+01	84.37
TL-208	LLD<1.92E+00	LLD<1.92E+00	583.14
U-235	LLD<1.94E+00	LLD<1.94E+00	185.71
U-237	LLD<5.08E+00	LLD<5.08E+00	208.00
W-187	LLD<5.12E+00	LLD<5.12E+00	685.74
XE-131M	LLD<4.80E+01	LLD<4.80E+01	163.98
XE-133	LLD<2.39E+00	LLD<2.39E+00	81.00
XE-133M	LLD<1.15E+01	LLD<1.15E+01	233.21
XE-135	LLD<1.23E+00	LLD<1.23E+00	249.79
XE-138	LLD<9.04E+00	LLD<9.04E+00	258.41
Y-88	LLD<1.28E+00	LLD<1.28E+00	1836.06
Y-91	LLD<6.62E+02	LLD<6.62E+02	1204.90
Y-91M	LLD<1.85E+00	LLD<1.85E+00	555.60
ZN-65	LLD<4.37E+00	LLD<4.37E+00	1115.55
ZR-95	LLD<2.51E+00	LLD<2.51E+00	756.73
ZR-97	LLD<1.29E+00	LLD<1.29E+00	743.33
TOTAL	5.61E+01 +-3.86E+00	5.61E+01 +-3.86E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 5.61E+01 (+-3.86E+00) UC/LI

222-S COUNTING ROOM WESTINGHOUSE HANFORD 22-MAY-90 12:41:22

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	63.98	32.57	1.26	764.	300.	27.2	CE-144
2	704.06	352.24	1.16	246.	167.	30.9	PB-214
2B		351.90			109.	28.2	
3	1166.20	583.14	1.53	95.	130.	28.0	EU-154,
3B		583.13			94.	24.1	TL-208
4	1218.31	609.18	1.49	114.	132.	29.8	BI-214,
4B		609.19			122.	21.0	RU-103
5	1323.09	661.55	1.60	108.	1310.	5.9	CS-137
5B		661.41			81.	28.8	
6	1821.76	910.81	1.84	63.	80.	38.6	
6B		910.98			84.	23.3	
7	2920.80	1460.50	2.10	16.	574.	8.5	K-40
7B		1460.58			611.	5.5	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0013
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 15-JAN-90 AT 11:00:00
BACKGROUND LIVE TIME: 7000. SECONDS

% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
63.98	32.57	300.	27.2	1.45E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
704.06	352.24	167.	30.9	1.45E+01
1166.20	583.14	130.	28.0	1.69E+01
1218.31	609.18	132.	29.8	1.77E+01
1821.76	910.81	80.	38.6	1.48E+01
2920.80	1460.50	574.	8.5	1.57E+02

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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 22-MAY-90 12:57:40

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD1000
ANALYZED BY: AJ

SAMPLE DESCRIPTION: F84
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 9-JAN-90 AT 17:38:48

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3003. 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

222-S COUNTING ROOM 22-MAY-90 12:57:40

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	93.93	46.86	1.14	351.	105.	53.0	
2C	1126.47	562.71	1.54	183.	186.	27.2	CS-134, EU-152
3C	1138.56	568.75	1.54	210.	285.	23.1	CS-134, BI-207
4	1209.44	604.18	1.49	221.	1797.	5.2	SB-124, CS-134
5	1323.32	661.10	1.47	149.	6884.	2.4	CS-137
5B		661.82			35.	46.4	
6C	1591.62	795.24	1.46	92.	1210.	7.1	CS-134
7C	1603.60	801.23	1.46	87.	134.	21.5	CS-134
8	2346.20	1172.65	1.87	56.	1128.	6.2	CO-60
9	2664.57	1331.96	1.86	13.	1060.	6.1	CO-60
10	2921.50	1460.56	1.63	5.	162.	16.0	K-40
10B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
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 22-MAY-90 12:57:40

SAMPLE: F84
DATA COLLECTED ON 9-JAN-90 AT 17:38:48
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
AC-228	LLD<2.06E+00		LLD<2.06E+00		911.07	
AG-108M	LLD<7.20E-01		LLD<7.20E-01		433.94	
AG-110M	LLD<3.92E+00		LLD<3.92E+00		657.76	
AM-241	LLD<3.84E+00		LLD<3.84E+00		59.54	
AM-243	LLD<1.05E+00		LLD<1.05E+00		74.67	
AR-41	LLD<4.93E-01		LLD<4.93E-01		1293.64	
AU-198	LLD<6.21E-01		LLD<6.21E-01		411.80	
BA-133	LLD<9.63E-01		LLD<9.63E-01		356.02	
BA-139	LLD<2.18E+00		LLD<2.18E+00		165.85	
BA-140	LLD<2.14E+00		LLD<2.14E+00		537.27	
BA-141	LLD<2.15E+00		LLD<2.15E+00		190.23	
BE-7	LLD<6.79E+00		LLD<6.79E+00		477.59	
BI-207	LLD<5.86E-01		LLD<5.86E-01		569.70	
BI-212	LLD<7.22E+00		LLD<7.22E+00		727.27	
BI-214	LLD<2.25E+00		LLD<2.25E+00		609.32	
CD-109	LLD<1.50E+01		LLD<1.50E+01		88.03	
CE-139	LLD<4.94E-01		LLD<4.94E-01		165.85	
CE-141	LLD<7.99E-01		LLD<7.99E-01		145.44	
CEPR144	LLD<6.74E+00		LLD<6.74E+00		133.51	
CO-56	LLD<5.21E-01		LLD<5.21E-01		846.76	
CO-57	LLD<4.35E-01		LLD<4.35E-01		122.06	
CO-58	LLD<4.57E-01		LLD<4.57E-01		810.75	
CO-60	2.52E+01	+-1.56E+00	2.52E+01	+-1.56E+00	1332.50	-0.54
					1173.24	-0.59
CR-51	LLD<5.03E+00		LLD<5.03E+00		320.09	
CS-134	2.18E+01	+-1.57E+00	2.18E+01	+-1.57E+00	795.84	-0.61
					604.70	-0.52
CS-136	LLD<4.96E-01		LLD<4.96E-01		818.51	
CS-137	1.06E+02	+-2.90E+00	1.06E+02	+-2.90E+00	661.65	-0.55
CS-138	LLD<6.89E-01		LLD<6.89E-01		1435.86	
EU-152	LLD<1.18E+00		LLD<1.18E+00		1408.01	
EU-154	LLD<9.67E-01		LLD<9.67E-01		1274.45	
EU-155	LLD<1.78E+00		LLD<1.78E+00		105.31	
FE-59	LLD<1.15E+00		LLD<1.15E+00		1099.25	
HF-181	LLD<7.35E-01		LLD<7.35E-01		482.20	
HG-203	LLD<6.16E-01		LLD<6.16E-01		279.20	
I-131	LLD<7.08E-01		LLD<7.08E-01		364.48	
I-132	LLD<6.05E-01		LLD<6.05E-01		667.69	
I-133	LLD<6.64E-01		LLD<6.64E-01		529.69	
I-134	LLD<7.39E-01		LLD<7.39E-01		847.03	
I-135	LLD<1.39E+00		LLD<1.39E+00		1260.41	
K-40	LLD<9.13E+00		LLD<9.13E+00		1460.75	
KR-85	LLD<1.52E+02		LLD<1.52E+02		513.99	
KR-85M	LLD<4.99E-01		LLD<4.99E-01		151.17	
KR-87	LLD<1.49E+00		LLD<1.49E+00		402.58	
KR-89	LLD<2.49E+01		LLD<2.49E+01		220.90	
LA-140	LLD<3.68E-01		LLD<3.68E-01		1596.20	

LA-142	LLD<1.38E+00	LLD<1.38E+00	641.83
MN-54	LLD<5.70E-01	LLD<5.70E-01	834.83
MN-56	LLD<5.87E-01	LLD<5.87E-01	846.76
NA-22	LLD<3.91E-01	LLD<3.91E-01	1274.55
NA-24	LLD<6.13E-01	LLD<6.13E-01	1368.60
NB-94	LLD<4.96E-01	LLD<4.96E-01	702.63
NB-95	LLD<5.02E-01	LLD<5.02E-01	765.78
NB-97	LLD<4.75E+00	LLD<4.75E+00	657.92
NP-238	LLD<2.24E+00	LLD<2.24E+00	984.45
NP-239	LLD<3.38E+00	LLD<3.38E+00	277.60
PA-233	LLD<1.48E+00	LLD<1.48E+00	311.98
PA-234M	LLD<9.84E+01	LLD<9.84E+01	1001.03
PB-210	LLD<1.76E+01	LLD<1.76E+01	465.03
PB-212	LLD<1.13E+00	LLD<1.13E+00	239.00
PB-214	LLD<1.59E+00	LLD<1.59E+00	351.92
PO-210	LLD<5.80E+04	LLD<5.80E+04	804.00
PO-214	LLD<1.89E+04	LLD<1.89E+04	799.70
PO-216	LLD<4.45E+04	LLD<4.45E+04	804.90
PU-239	LLD<5.92E+03	LLD<5.92E+03	129.30
PU-241	LLD<2.02E+05	LLD<2.02E+05	148.57
RA-224	LLD<1.21E+01	LLD<1.21E+01	240.99
RA-226	LLD<1.13E+01	LLD<1.13E+01	186.10
RB-88	LLD<3.16E+00	LLD<3.16E+00	1836.00
RB-89	LLD<2.42E+00	LLD<2.42E+00	1031.88
RN-220	LLD<4.89E+02	LLD<4.89E+02	549.73
RU-103	LLD<6.34E-01	LLD<6.34E-01	497.08
RURH106	LLD<1.04E+01	LLD<1.04E+01	621.80
SB-124	LLD<6.53E-01	LLD<6.53E-01	602.72
SB-125	LLD<5.89E+00	LLD<5.89E+00	176.33
SC-46	LLD<5.37E-01	LLD<5.37E-01	1120.45
SE-75	LLD<7.77E-01	LLD<7.77E-01	264.66
SN-113	LLD<8.83E-01	LLD<8.83E-01	391.67
SR-85	LLD<6.69E-01	LLD<6.69E-01	513.99
SR-91	LLD<9.44E-01	LLD<9.44E-01	555.60
SR-92	LLD<4.94E-01	LLD<4.94E-01	1383.94
TA-182	LLD<1.73E+00	LLD<1.73E+00	1121.30
TC-99M	LLD<4.47E-01	LLD<4.47E-01	140.51
TE-123M	LLD<4.48E-01	LLD<4.48E-01	159.00
TE-125M	LLD<1.36E+02	LLD<1.36E+02	109.27
TE-132	LLD<5.24E-01	LLD<5.24E-01	228.16
TH-228	LLD<4.75E+01	LLD<4.75E+01	84.37
TL-208	LLD<6.98E-01	LLD<6.98E-01	583.14
U-235	LLD<7.44E-01	LLD<7.44E-01	185.71
U-237	LLD<2.17E+00	LLD<2.17E+00	208.00
W-187	LLD<1.66E+00	LLD<1.66E+00	685.74
XE-131M	LLD<2.00E+01	LLD<2.00E+01	163.98
XE-133	LLD<1.72E+00	LLD<1.72E+00	81.00
XE-133M	LLD<4.69E+00	LLD<4.69E+00	233.21
XE-135	LLD<5.41E-01	LLD<5.41E-01	249.79
XE-138	LLD<4.03E+00	LLD<4.03E+00	258.41
Y-88	LLD<3.00E-01	LLD<3.00E-01	1836.06
Y-91	LLD<1.52E+02	LLD<1.52E+02	1204.90
Y-91M	LLD<7.14E-01	LLD<7.14E-01	555.60
ZN-65	LLD<1.31E+00	LLD<1.31E+00	1115.55
ZR-95	LLD<8.81E-01	LLD<8.81E-01	756.73
ZR-97	LLD<4.69E-01	LLD<4.69E-01	743.33
TOTAL	1.53E+02 +-3.65E+00	1.53E+02 +-3.65E+00	

STANDARD DEVIATION = 0.04

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 2.33E-09 UC/LI
TOTAL MEASURED ACTIVITY = 1.53E+02 (+-3.65E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
93.93	46.86	105.	53.0	1.51E+01
1126.47	562.71	186.	27.2	7.94E+00
1138.56	568.75	285.	23.1	1.23E+01
1603.60	801.23	134.	21.5	7.67E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.50	1460.56	162.	16.0	1.54E+01

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                     *
*          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 22-MAY-90 12:58:18

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: 1.0
DETECTOR NUMBER: 4 / 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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD4881
ANALYZED BY: AJ

SAMPLE DESCRIPTION: F181
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 5.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 9-JAN-90 AT 21:47:12

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3031. SECONDS
DEAD TIME: 1.02 %

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

ENERGY CALIBRATION PERFORMED 26-DEC-89
EFFICIENCY CALIBRATION PERFORMED 1-SEP-89

222-S COUNTING ROOM WESTINGHOUSE HANFORD 22-MAY-90 12:58:18

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	53.52	26.94	1.09	2647.	1374.	11.6	
1B		27.06			123.	34.3	
2	951.30	475.58	1.50	4649.	925.	22.0	CS-134
3C	1126.85	563.33	1.57	3190.	3491.	6.5	CS-134, EU-152
4C	1138.98	569.39	1.57	3111.	6628.	4.7	CS-134, BI-207
5	1209.75	604.77	1.55	3004.	41038.	1.0	CS-134
6	1323.62	661.70	1.66	2076.	63912.	0.8	CS-137
6B		661.35			379.	12.7	
7C	1591.87	795.82	1.72	1666.	29757.	1.5	CS-134
8C	1604.14	801.96	1.72	1599.	2941.	7.8	CS-134
9	2077.47	1038.67	1.87	1554.	402.	32.7	CS-134
10C	2335.39	1167.68	2.06	968.	634.	19.9	CS-134
11C	2346.28	1173.13	2.06	950.	27131.	1.4	CO-60
12	2664.80	1332.48	2.26	274.	24465.	1.3	CO-60
13	2729.85	1365.03	2.22	113.	815.	8.1	CS-134
14	2801.21	1400.74	2.60	92.	374.	13.2	BI-214
15	2921.41	1460.88	2.44	62.	818.	7.6	K-40
15B		1460.80			854.	7.1	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0014
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 8-SEP-89 AT 12:00:00
BACKGROUND LIVE TIME: 3000. SECONDS

LA-142	LLD<1.83E-01	LLD<1.83E-01	641.83
MN-54	LLD<8.51E-02	LLD<8.51E-02	834.83
MN-56	LLD<1.01E-01	LLD<1.01E-01	846.76
NA-22	LLD<5.34E-02	LLD<5.34E-02	1274.55
NA-24	LLD<7.43E-02	LLD<7.43E-02	1368.60
NB-94	LLD<6.84E-02	LLD<6.84E-02	702.63
NB-95	LLD<8.00E-02	LLD<8.00E-02	765.78
NB-97	LLD<5.74E-01	LLD<5.74E-01	657.92
NP-238	LLD<3.59E-01	LLD<3.59E-01	984.45
NP-239	LLD<3.79E-01	LLD<3.79E-01	277.60
PA-233	LLD<1.60E-01	LLD<1.60E-01	311.98
PA-234M	LLD<1.81E+01	LLD<1.81E+01	1001.03
PB-210	LLD<1.97E+00	LLD<1.97E+00	465.03
PB-212	LLD<1.27E-01	LLD<1.27E-01	239.00
PB-214	LLD<1.76E-01	LLD<1.76E-01	351.92
PO-210	LLD<7.22E+03	LLD<7.22E+03	804.00
PO-214	LLD<3.73E+03	LLD<3.73E+03	799.70
PO-216	LLD<6.39E+03	LLD<6.39E+03	804.90
PU-239	LLD<5.10E+02	LLD<5.10E+02	129.30
PU-241	LLD<1.82E+04	LLD<1.82E+04	148.57
RA-224	LLD<1.29E+00	LLD<1.29E+00	240.99
RA-226	LLD<1.29E+00	LLD<1.29E+00	186.10
RB-88	LLD<3.41E-01	LLD<3.41E-01	1836.00
RB-89	LLD<4.32E-01	LLD<4.32E-01	1031.88
RN-220	LLD<6.96E+01	LLD<6.96E+01	549.73
RU-103	LLD<8.38E-02	LLD<8.38E-02	497.08
RURH106	LLD<1.46E+00	LLD<1.46E+00	621.80
SB-124	LLD<1.92E-01	LLD<1.92E-01	602.72
SB-125	LLD<5.59E-01	LLD<5.59E-01	176.33
SC-46	LLD<1.12E-01	LLD<1.12E-01	1120.45
SE-75	LLD<8.99E-02	LLD<8.99E-02	264.66
SN-113	LLD<1.10E-01	LLD<1.10E-01	391.67
SR-85	LLD<7.40E-02	LLD<7.40E-02	513.99
SR-91	LLD<1.40E-01	LLD<1.40E-01	555.60
SR-92	LLD<4.77E-02	LLD<4.77E-02	1383.94
TA-182	LLD<3.00E-01	LLD<3.00E-01	1121.30
TC-99M	LLD<3.90E-02	LLD<3.90E-02	140.51
TE-123M	LLD<4.36E-02	LLD<4.36E-02	159.00
TE-125M	LLD<1.21E+01	LLD<1.21E+01	109.27
TE-132	LLD<5.78E-02	LLD<5.78E-02	228.16
TH-228	LLD<3.95E+00	LLD<3.95E+00	84.37
TL-208	LLD<1.00E-01	LLD<1.00E-01	583.14
U-235	LLD<7.18E-02	LLD<7.18E-02	185.71
U-237	LLD<2.32E-01	LLD<2.32E-01	208.00
W-187	LLD<2.39E-01	LLD<2.39E-01	685.74
XE-131M	LLD<1.98E+00	LLD<1.98E+00	163.98
XE-133	LLD<1.45E-01	LLD<1.45E-01	81.00
XE-133M	LLD<4.62E-01	LLD<4.62E-01	233.21
XE-135	LLD<5.41E-02	LLD<5.41E-02	249.79
XE-138	LLD<4.54E-01	LLD<4.54E-01	258.41
Y-88	LLD<3.21E-02	LLD<3.21E-02	1836.06
Y-91	LLD<2.36E+01	LLD<2.36E+01	1204.90
Y-91M	LLD<1.06E-01	LLD<1.06E-01	555.60
ZN-65	LLD<2.27E-01	LLD<2.27E-01	1115.55
ZR-95	LLD<1.37E-01	LLD<1.37E-01	756.73
ZR-97	LLD<7.73E-02	LLD<7.73E-02	743.33
TOTAL	7.96E+01 +-6.23E-01	7.96E+01 +-6.23E-01	

STANDARD DEVIATION = 0.07

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.45E-09 UC/LI
TOTAL MEASURED ACTIVITY = 7.96E+01 (+-6.23E-01) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
53.52	26.94	1251.	13.2	1.32E+03
951.30	475.58	925.	22.0	6.21E+00
1126.85	563.33	3491.	6.5	2.73E+01
1138.98	569.39	6628.	4.7	5.24E+01
1604.14	801.96	2941.	7.8	3.19E+01
2077.47	1038.67	402.	32.7	5.52E+00
2335.39	1167.68	634.	19.9	9.66E+00
2729.85	1365.03	815.	8.1	1.42E+01
2801.21	1400.74	374.	13.2	6.66E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.41	1460.88	818.	7.6	1.51E+01

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Uranium Analysis

Fusion Dissolution

Instrument	WA77344
Procedure / Rev	LA-925-106/A-2
Technologist	6B598/R. D. Hale
Date	12/27/89
Temperature	23 C
Starting Time	09:00
Ending Time	11:00
Chemist	S. A. Catlow

	Description	Lab. Id.
1	Initial Check Standard	F0081
2	Blank	F0192
3	Sample 89-044	F0082
4	Duplicate 89-044	F0083
5	Sample 89-049	F0178
6	Duplicate 89-049	F0179
7	Spike 89-049	F0180
8	Ending Check Standard	F0181
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/.17 uL			5.7 mL
Spike	54B38/.16 uL	Sample/.80 uL		6.2 mL

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 05/16/90

Verified by: Cary M Seidel Signature — C. M. Seidel Printed Name — Date: 05/16/90

Approved by: Stephen Scott Moss for Stephen Scott Moss Signature — L.H. Taylor Printed Name — Date: 9-7-90

9 1 1 2 3 5 0 0 9 1 4

Interim

Rev E 4/04/90

SST-102

WATER DIGESTION TEST ANALYSIS

9 1 1 2 5 0 9 1 5

Single Shell Tank Project

Water Digestion
Laboratory Results of Solids
Units are Sample Wet Weight

Tank 241-U-110
Core 6
Segment 3
Customer ID: 89-044 Laboratory Segment Serial No.: F0077

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:	F0086	F0098		F0087		F0088		F0089	F0186
Water Digestion				8.90	g/L	8.91	g/L	13.2	g/L
Ion Chromatograph									
Fluoride	94.20%	<.1	ppm	2.91E+03	ug/g	3.40E+03	ug/g	117.10%	92.80%
Chloride	104.60%	<.1	ppm	<1.13E+03	ug/g	<1.13E+03	ug/g	113.00%	92.60%
Nitrate	104.80%	<1.0	ppm	5.35E+04	ug/g	5.10E+04	ug/g	104.70%	102.40%
Phosphate	97.40%	<1.0	ppm	2.17E+04	ug/g	2.59E+04	ug/g	117.90%	95.80%
Sulfate	97.20%	<1.0	ppm	<1.13E+04	ug/g	<1.13E+04	ug/g	109.90%	94.20%
Laboratory ID:	F0086	F0098		F0087		F0088		F0089	F0090
Total Organic Carbon/ Carbonate	100.72%	6.37E-01	ug/min	1.08E+04	ug/g	9.23E+03	ug/g	81.70%	103.27%

Single Shell Tank Project

Water Digestion
Sample Results on Laboratory Digestion

Tank 241-U-110
Core 6
Segment 3
Customer ID: 89-044

Laboratory Segment Serial No.: F0077

Laboratory ID:	Check Standard F0086	Blank F0098		Sample F0087		Sample Duplicate F0088		Spike of Sample F0089	Check Standard F0186
Water Digestion				8.90	g/L	8.91	g/L	13.2	g/L
Ion Chromatograph									
Fluoride	94.20%	<.1	ppm	25.9	ppm	30.3	ppm	117.10%	92.80%
Chloride	104.60%	<.1	ppm	<10.1	ppm	<10.1	ppm	113.00%	92.60%
Nitrate	104.80%	0.29	ppm	476	ppm	454	ppm	104.70%	102.40%
Phosphate	97.40%	<1	ppm	193	ppm	231	ppm	117.90%	95.80%
Sulfate	97.20%	<1	ppm	<101	ppm	<101	ppm	109.90%	94.20%
Laboratory ID:	F0086	F0098		F0087		F0088		F0089	F0090
Total Organic Carbon/ Carbonate	100.72%	6.37E-01	ug/min	9.62E-02	g/L	8.22E-02	g/L	81.70%	103.27%

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Instrument	N/A
Procedure / Rev	LA-504-101/A-2
Technologist	6B107/N. E. Wright
Date	12-28-90
Temperature	24 C
Starting Time	14:00 12-27-90
Ending Time	10:28 12-18-90
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	Blank	F0098
2	Sample 89-044	F0087
3	Duplicate 89-044	F0088
4	Spike	F0089
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: [signature] Signature — H. S. Rich Printed Name — Date: 05-16-90

Verified by: Carey M Seidel Signature — C. M. Seidel Printed Name — Date: 05-16-90

Approved by: Stephen Scott Moss for Stephen Scott Moss Signature — L.H. Taylor Printed Name — Date: 9-7-90

Interim

SS 102 Rev E 4/04/90

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Ion Chromatograph Analysis
Water Digestion

Instrument	WB24721
Procedure / Rev	LA-533-105/A-3
Technologist	N. Wright/6B107
Date	1-3-90
Temperature	26 C
Starting Time	10:00
Ending Time	15:00
Chemist	H. S. Rich

	Description	Lab. Id.
1	Initial Check Standard	F0086
2	Blank 89-044	F0098
3	Sample 89-044	F0087
4	Duplicate 89-044	F0088
5	Spike 89-044	F0089
6	Check Standard	F0090
7	Reagent Blank 89-049	F0194
8	Sample 89-049	F0183
9	Duplicate 89-049	F0184
10	Spike 89-049	F0185
11	Ending Check Standard	F0186

	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	6C11HF/100 uL			10.1 mL
Spike	35C9-61/300	Sample/10 uL		5.31 mL

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: 05-22-90

Verified by: [signature] Signature — C.M. Seidel Printed Name — Date: 05-22-90

Approved by: Stephen Scott Moss for Stephen Scott Moss Signature — L.H. Taylor Printed Name — Date: 9-7-90

Interim

S. 102 Rev. E 4/04/90

9 1 1 2 7 5 0 0 3 1 9

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:	01-02-90		

Calibration Standard ID:	Book number 35C9-61 issued 12-08-89
Analyte Concentration:	F=49.6; Cl=61.0; NO3=500.5; PO4=500.6; SO4=500.5 (in ppm)
Type of Calibration:	Quadratic least squares

	Dilution	Concentration	Instrument Reading Units =
1			
2			
3			
4	See Attached	Calibration	Sheets.
5			
6			
7			
8			
9			
10			

Comments:

Prepared by: [signature] Signature — H.S. Rich Printed Name — Date: 5-08-90

Verified by: Cary M Seidel Signature — C.M. Seidel Printed Name — Date: 5-08-90

Approved by: Stephen Scott Moss for Stephen Scott MOSS Signature — L.H. Taylor Printed Name — Date: 9-7-90

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

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

IC Control File: C:\WINDOWS\AI400\METHOD\GROUT01.TE

Step	Time	Description
Init		CDM AutoOffset Off
Init		CDM Recorder Mark OFF
Init		CDM Temp. Comp. = 1.7 / Deg C
Init		CDM Recorder Range = 1.000 uS
Init		CDM Cell ON
Init		CMA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		CIM Relay 1 OFF
Init		CIM Relay 2 OFF
Init		CIM AC 1 OFF
Init		CIM AC 2 OFF
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM AutoOffset ON
1	0.0	GPM Reset OFF
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	CIM Relay 1 ON
5	4.0	CIM Relay 1 OFF

GpmFile: C:\WINDOWS\AI400\METHOD\GROUT01.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - BICARBONATE
Eluant 3 - CARBONATE
Eluant 4 -

Time	Flow	%1	%2	%3	%4	Comment
0.0	2.0	84	8	8	0	
15.8	2.0	84	8	8	0	

Component # 1 FLUORIDE Retention Time 0.98
Reference Peak FLUORIDE Window Size 5.00%
Least Squares Slope = 2.85664E-004
Least Squares Intercept = 4.60391E-002
Ka = -7.01211E-010

Level	Amount	Area	Height
1	1.00000E-001	1236	247
2	2.49000E-001	3682	744
3	4.96000E-001	7741	1533
4	9.82000E-001	16531	3180
5	1.92700E+000	37370	6795
6	3.71100E+000	81106	13242

Component # 2 CHLORIDE Retention Time 1.62
Reference Peak FLUORIDE Window Size 7.00%
Least Squares Slope = 5.69042E-004
Least Squares Intercept = -2.52994E-002
Ka = -1.42372E-008

Level	Amount	Area	Height
1	1.20000E-001	1170	210
2	2.99000E-001	3427	592
3	5.95000E-001	6474	1222
4	1.17900E+000	13307	2165
5	2.31200E+000	27960	4657
6	4.45200E+000	58342	10771

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 = 1.69781E-003
Least Squares Intercept = -3.38014E-003
Ka = 1.19273E-008

Level	Amount	Area	Height
1	9.99000E-001	6114	614
2	2.49000E+000	15873	1479
3	4.95500E+000	31781	2811
4	9.81400E+000	66164	5536
5	1.92500E+001	137582	10594
6	3.70740E+001	285670	19231

Component # 5 PHOSPHATE Retention Time 5.35
Reference Peak FLUORIDE Window Size 7.00%
Least Squares Slope = 4.52311E-003
Least Squares Intercept = 2.58616E-001
Ka = -6.53030E-008

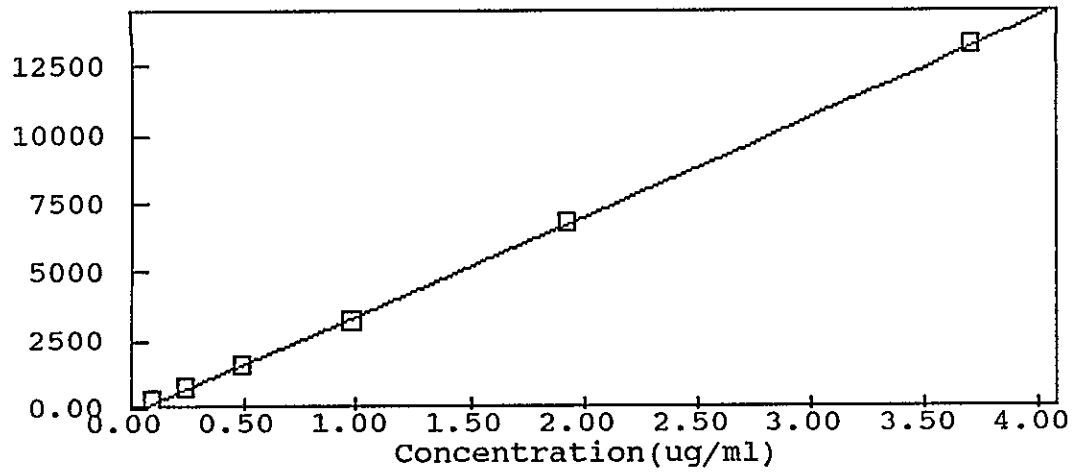
Level	Amount	Area	Height
1	9.99000E-001	2494	179
2	2.49000E+000	7725	511
3	4.95500E+000	16061	1043
4	9.81400E+000	33837	2134
5	1.92500E+001	71926	4526
6	3.70740E+001	156060	9414

Component # 6 SULFATE Retention Time 7.10
Reference Peak FLUORIDE Window Size 10.00%
Least Squares Slope = 1.96810E-003
Least Squares Intercept = 2.30818E-001
Ka = -1.00806E-008

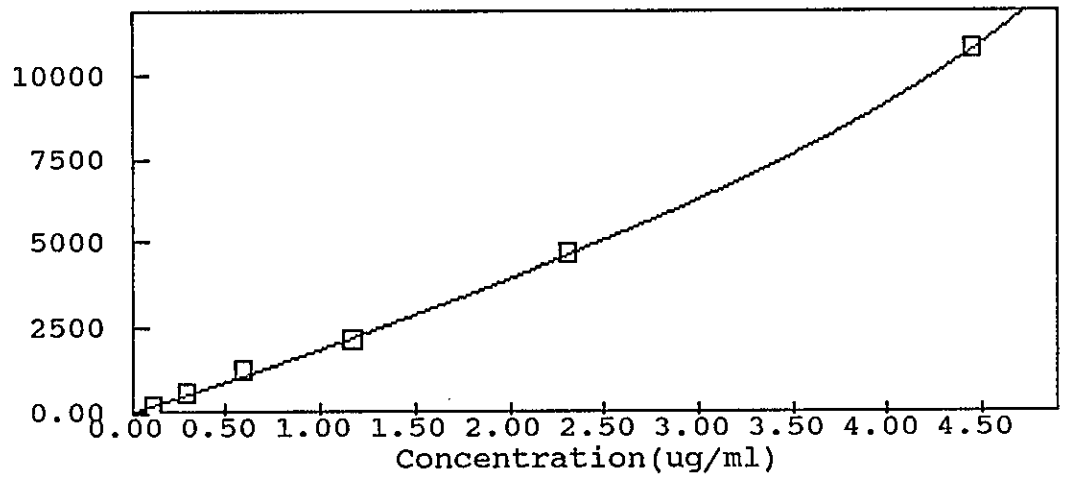
Level	Amount	Area	Height
1	9.99000E-001	7667	464
2	2.49000E+000	19957	1147
3	4.95500E+000	41209	2360
4	9.81400E+000	86948	4959
5	1.92500E+001	178459	10251
6	3.70740E+001	375814	20962

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

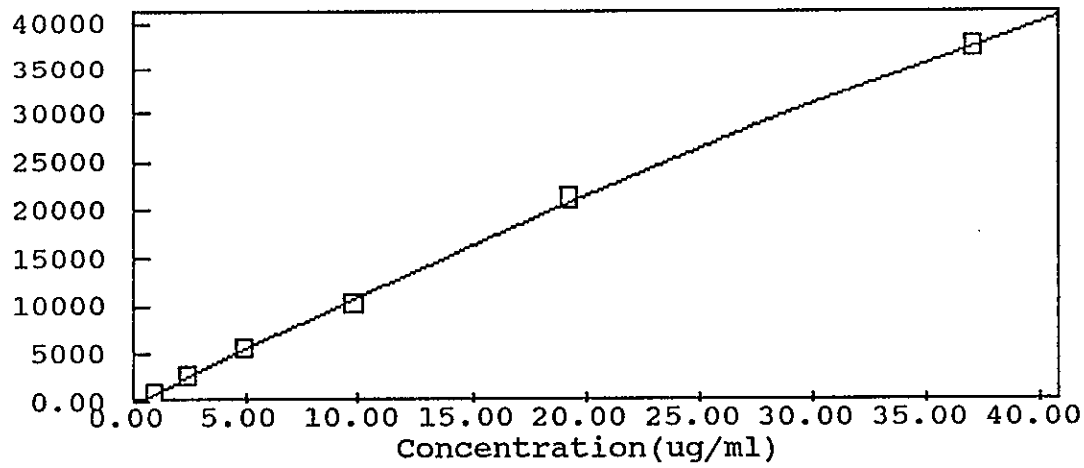
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98993	5848



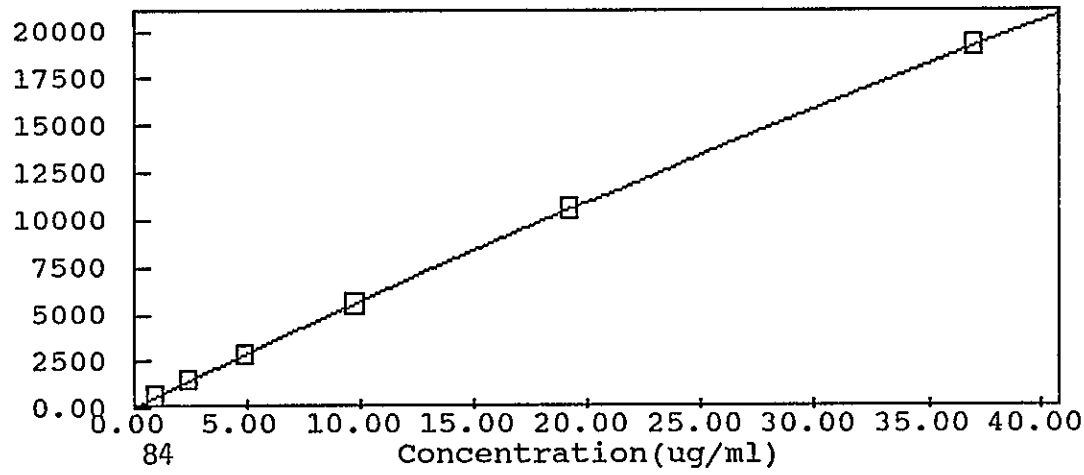
Component: FLUOR
Fit Type: Quadr
Conc = (-7.012105e-
(2.856637e-004 * Res
Standardization:
Calibration: Heigh



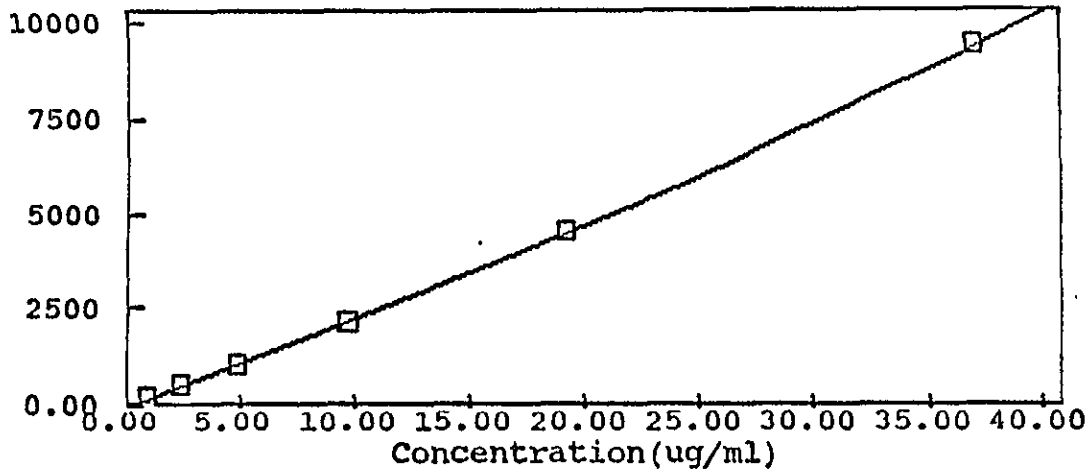
Component: CHLOR
Fit Type: Quadr
Conc = (-1.423720e-
(5.690421e-004 * Res
Standardization:
Calibration: Heigh



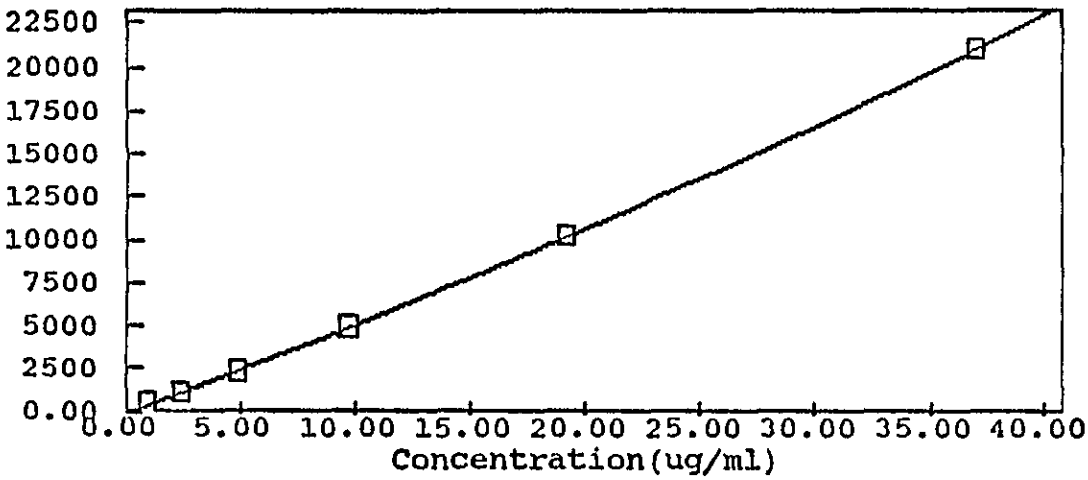
Component: NITRI
Fit Type: Quadr
Conc = (4.245484e-0
(8.191672e-004 * Res
Standardization:
Calibration: Heigh



Component: NITRA
Fit Type: Quadr
Conc = (1.192733e-0
(1.697806e-003 * Res
Standardization:
Calibration: Heigh



Component: PHOSP
Fit Type: Quadr
Conc = (-6.530302e-
(4.523107e-003 * Res
Standardization:
Calibration: Heigh



Component: SULFA
Fit Type: Quadr
Conc = (-1.008059e-
(1.968097e-003 * Res
Standardization:
Calibration: Heigh

DATA REPROCESSED ON Tue Jun 05 18:26:12 1990

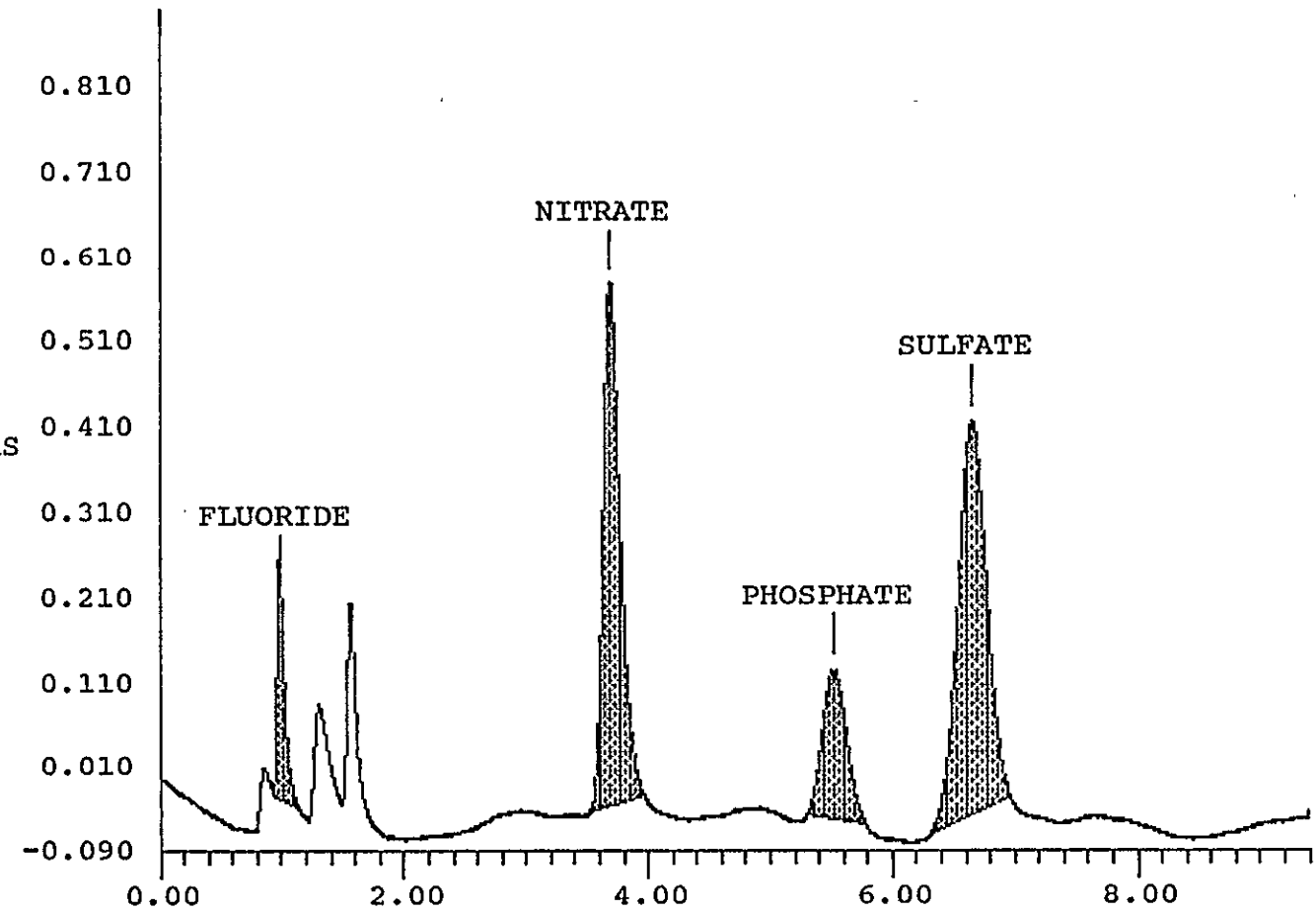
Sample Name: AUTOCAL1R Date: Tue Jan 02 10:21:45 1990
Data File : A:\90010200.D03
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 1000 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	1.00	FLUORIDE	1.000e-001	1.236e+003	247	1	0	0.00%
2	3.68	NITRATE	9.990e-001	6.114e+003	614	1	0	0.00%
3	5.52	PHOSPHATE	9.990e-001	2.494e+003	179	1	0	0.00%
4	6.65	SULFATE	9.990e-001	7.667e+003	464	1	0	0.00%

File: A:\90010200.D03 Sample: AUTOCAL1R



DATA REPROCESSED ON Tue Jun 05 18:10:27 1990

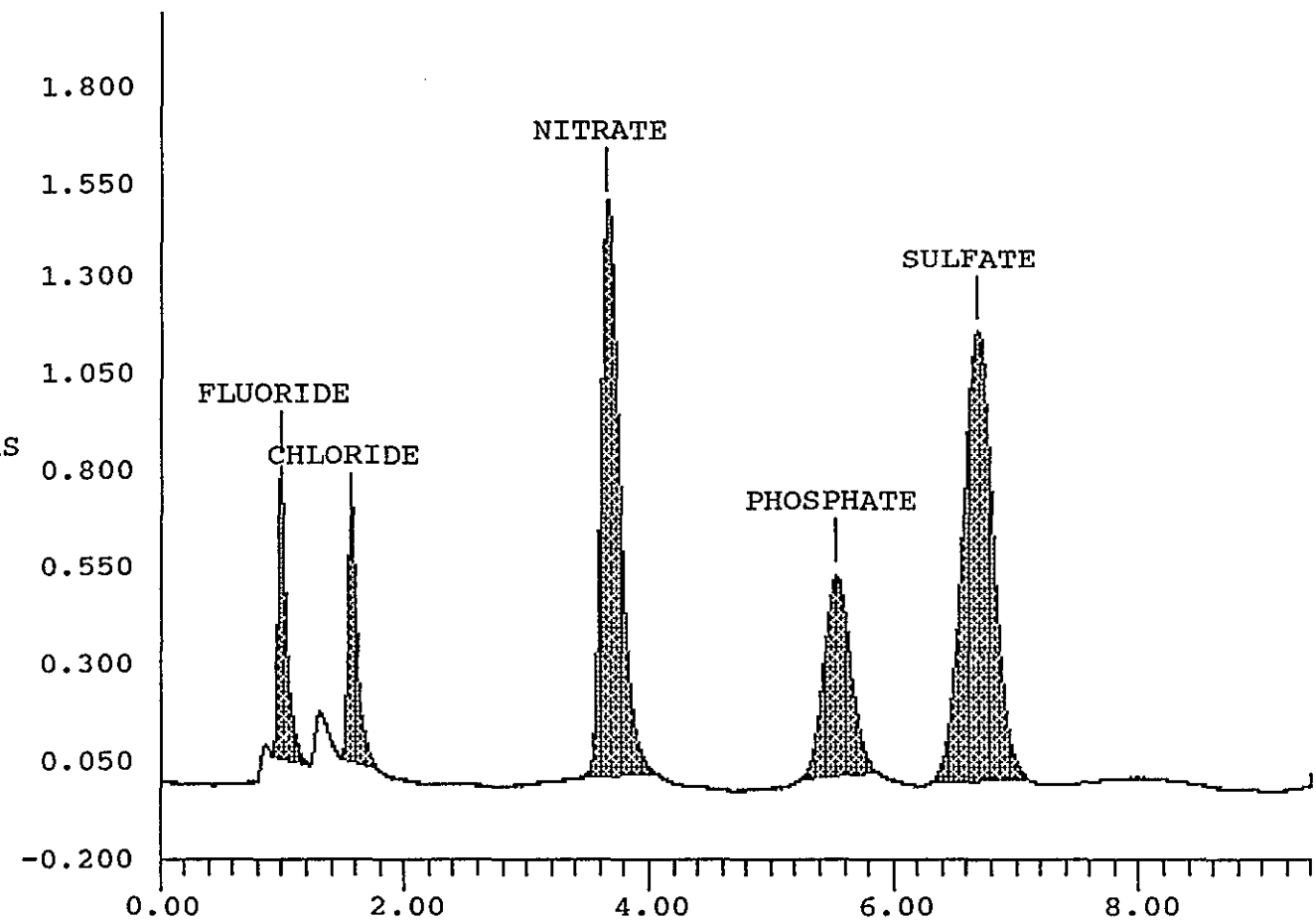
Sample Name: AUTOCAL2R	Date: Tue Jan 02 10:31:54 1990
Data File : A:\90010200.D04	
Method : c:\windows\ai400\method\GROUT01.met	
ACI Address: 1 System : 1 Inject#: 4	Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 1000 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	3.682e+003	744	1	0	0.00%
2	1.55	CHLORIDE	2.990e-001	3.427e+003	592	1	0	0.00%
3	3.65	NITRATE	2.490e+000	1.587e+004	1479	1	0	0.00%
4	5.53	PHOSPHATE	2.490e+000	7.725e+003	511	1	0	0.00%
5	6.67	SULFATE	2.490e+000	1.996e+004	1147	1	0	0.00%

File: A:\90010200.D04 Sample: AUTOCAL2R



DATA REPROCESSED ON Tue Jun 05 18:09:08 1990

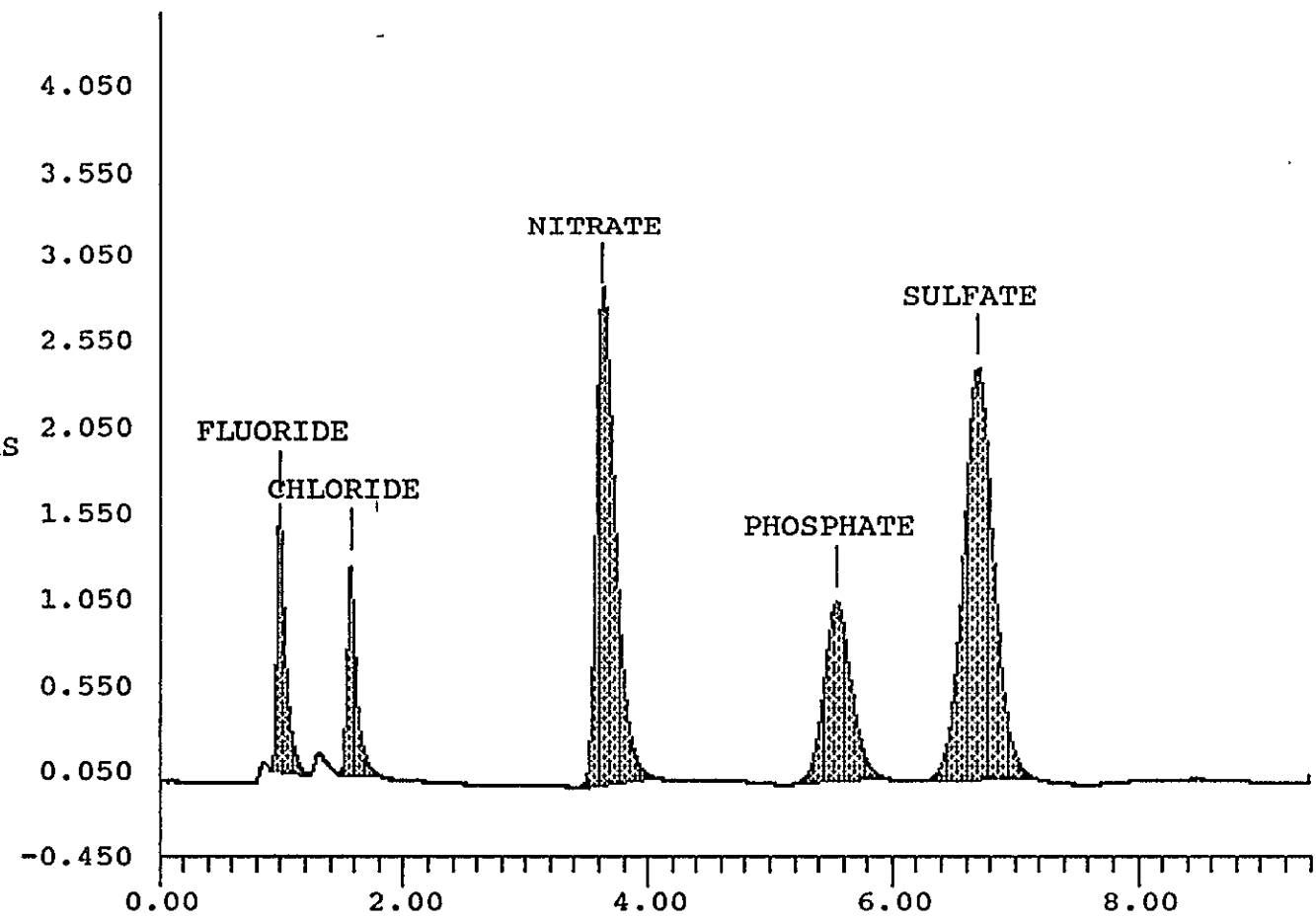
Sample Name: AUTOCAL3R Date: Tue Jan 02 10:42:02 1990
Data File : A:\90010200.D05
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 5 Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 1000 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	7.741e+003	1533	1	0	0.00%
2	1.57	CHLORIDE	5.950e-001	6.474e+003	1222	1	0	0.00%
3	3.62	NITRATE	4.955e+000	3.178e+004	2811	1	0	0.00%
4	5.53	PHOSPHATE	4.955e+000	1.606e+004	1043	1	0	0.00%
5	6.68	SULFATE	4.955e+000	4.121e+004	2360	1	0	0.00%

File: A:\90010200.D05 Sample: AUTOCAL3R



DATA REPROCESSED ON Tue Jun 05 18:06:54 1990

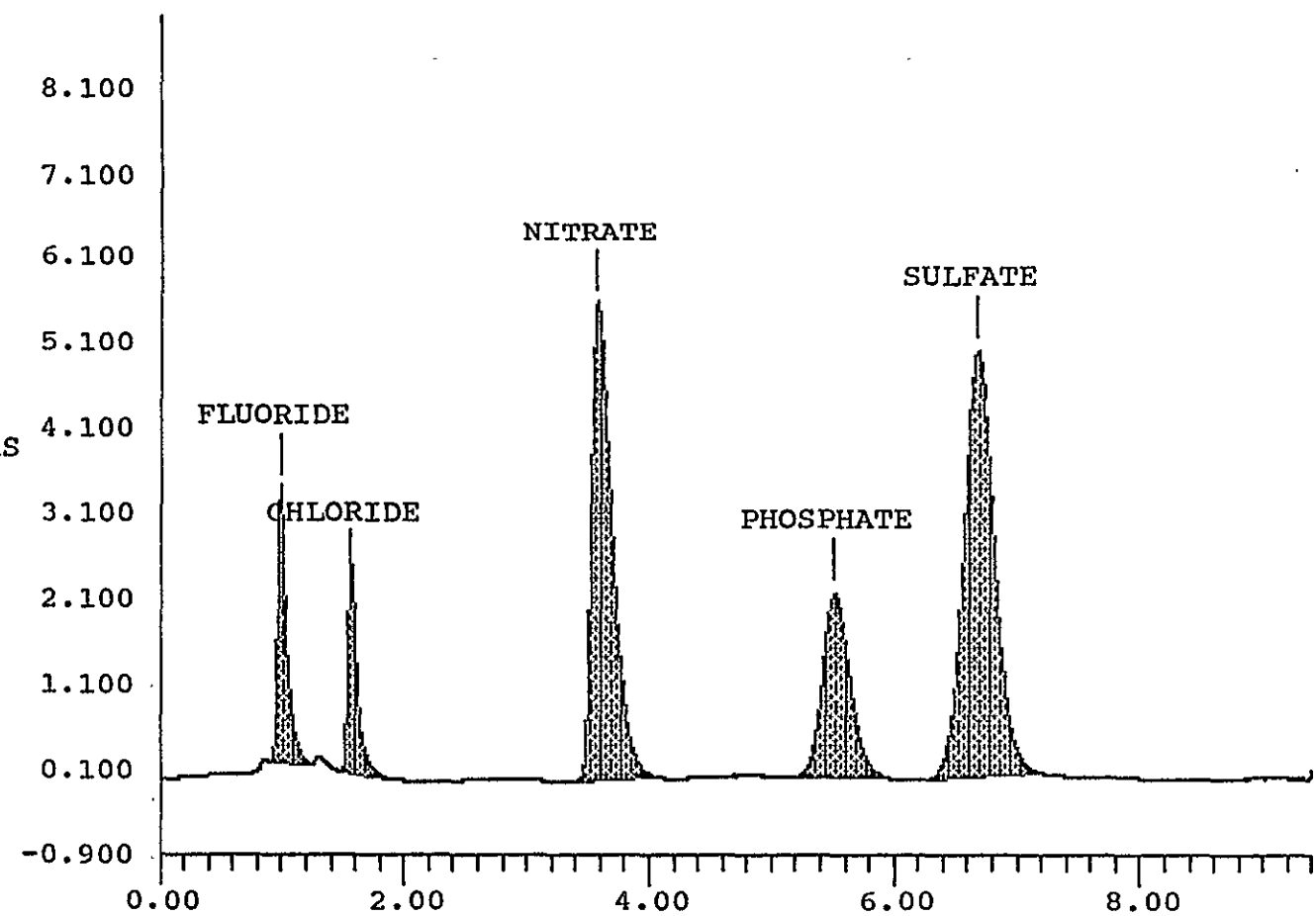
Sample Name: AUTOCAL4R Date: Tue Jan 02 10:52:10 1990
Data File : A:\90010200.D06
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 6 Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 1000 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	1.653e+004	3180	1	0	0.00%
2	1.55	CHLORIDE	1.179e+000	1.331e+004	2165	1	0	0.00%
3	3.57	NITRATE	9.814e+000	6.616e+004	5536	1	0	0.00%
4	5.50	PHOSPHATE	9.814e+000	3.384e+004	2134	1	0	0.00%
5	6.67	SULFATE	9.814e+000	8.695e+004	4959	1	0	0.00%

File: A:\90010200.D06 Sample: AUTOCAL4R



DATA REPROCESSED ON Tue Jun 05 18:04:22 1990

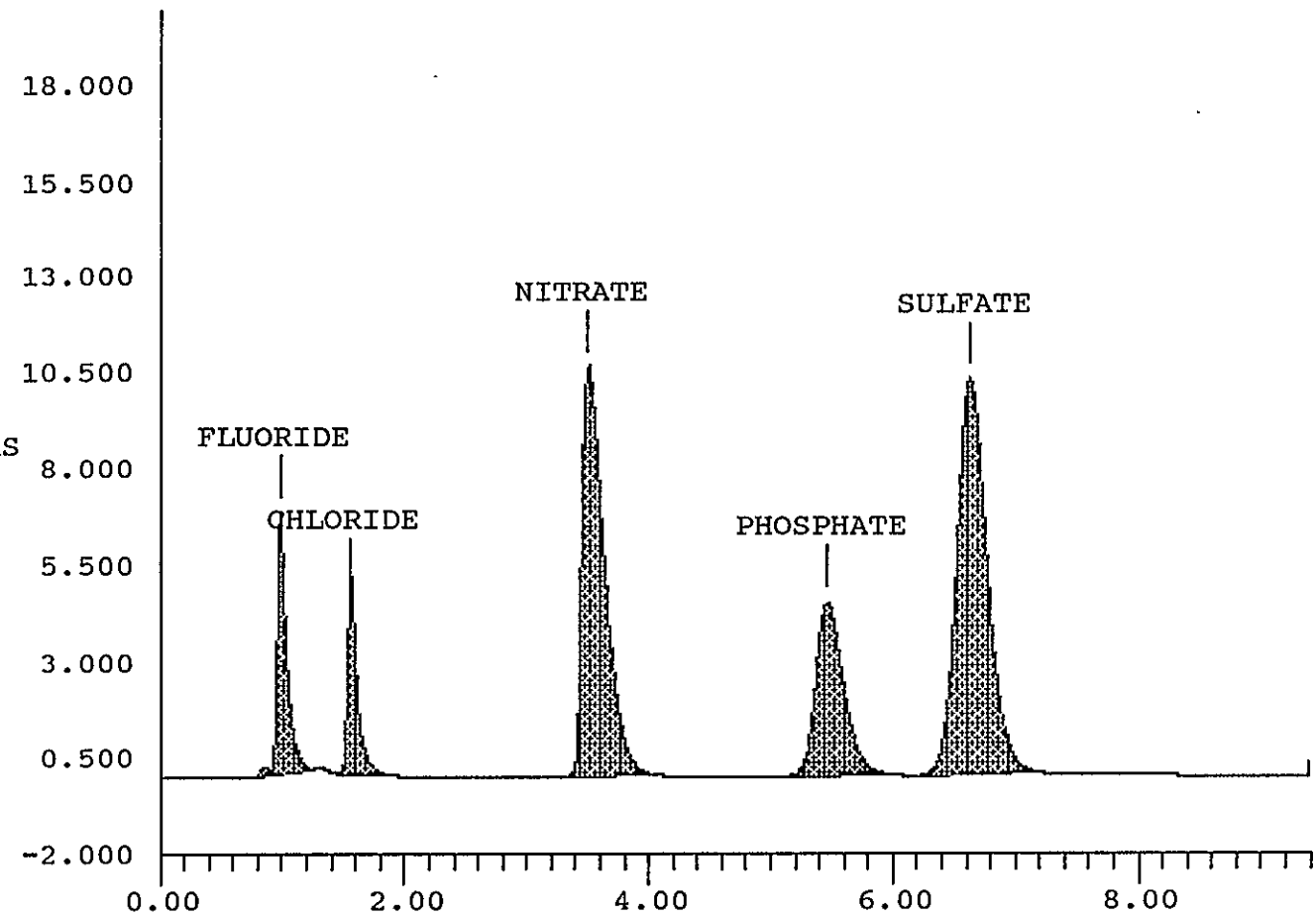
Sample Name: AUTOCAL5R Date: Tue Jan 02 11:02:18 1990
Data File : A:\90010200.D07
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 7 Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 1000 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	1.927e+000	3.737e+004	6795	1	0	0.00%
2	1.55	CHLORIDE	2.312e+000	2.796e+004	4657	1	0	0.00%
3	3.50	NITRATE	1.925e+001	1.376e+005	10594	1	0	0.00%
4	5.47	PHOSPHATE	1.925e+001	7.193e+004	4526	1	0	0.00%
5	6.63	SULFATE	1.925e+001	1.785e+005	10251	1	0	0.00%

File: A:\90010200.D07 Sample: AUTOCAL5R



DATA REPROCESSED ON Tue Jun 05 18:30:16 1990

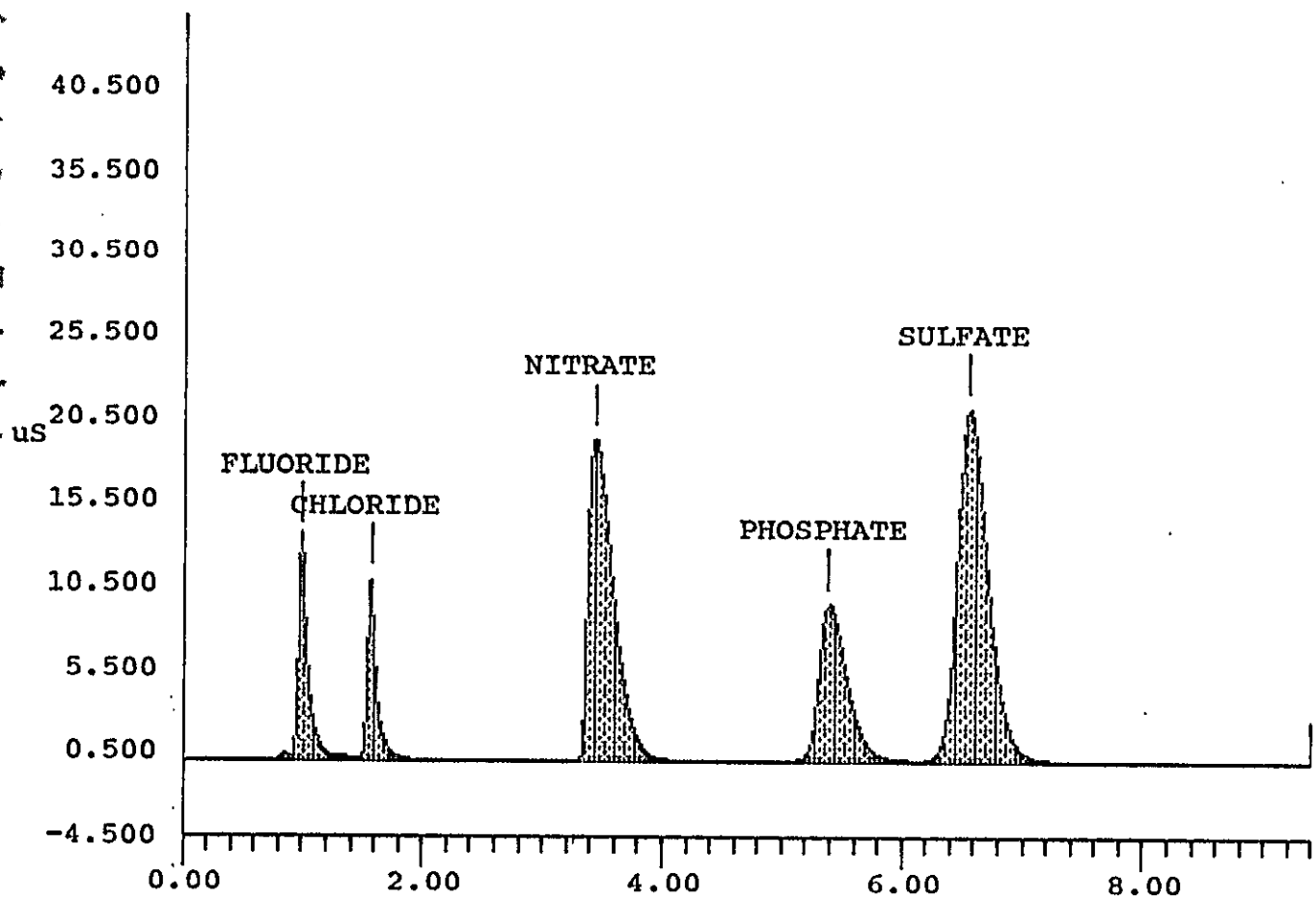
Sample Name: AUTOCAL6R Date: Tue Jan 02 11:12:31 1990
Data File : A:\90010200.D08
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 8 Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 1000 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	3.711e+000	8.111e+004	13242	2	0	0.00%
2	1.57	CHLORIDE	4.452e+000	5.834e+004	10771	2	0	0.00%
3	3.43	NITRATE	3.707e+001	2.857e+005	19231	1	0	0.00%
4	5.38	PHOSPHATE	3.707e+001	1.561e+005	9414	2	0	0.00%
5	6.55	SULFATE	3.707e+001	3.758e+005	20962	2	0	0.00%

File: A:\90010200.D08 Sample: AUTOCAL6R



DIONEX SCHEDULE - A:\90010300.SCH

Inj#	Sample Name	Method Name	Data File	Vol.	Dil.	Int.Std.
1	SETUP	...\GROUT01	...\900103001		1	0
2	BLANK	...\GROUT01	...\900103001		1	0
3	LMCS/6C11HF	...\GROUT01	...\900103001		101	0
4	6067	...\GROUT01	...\900103001		101	0
5	6068	...\GROUT01	...\900103001		101	0
6	LMCS/6C11HF	...\GROUT01	...\900103001		101	0
7	LMCS/73C11F	...\GROUT01	...\900103001		101	0
8	98B	...\GROUT01	...\900103001		1	0
9	87	...\GROUT01	...\900103001		101	0
10	88D	...\GROUT01	...\900103001		101	0
11	89S	...\GROUT01	...\900103001		101	0
12	LMCS/6C11HF	...\GROUT01	...\900103001		101	0
13	LMCS/73C11F	...\GROUT01	...\900103001		101	0
14	194B	...\GROUT01	...\900103001		1	0
15	183	...\GROUT01	...\900103001		101	0
16	184D	...\GROUT01	...\900103001		101	0
17	185S	...\GROUT01	...\900103001		101	0
18	LMCS/6C11HF	...\GROUT01	...\900103001		101	0
19	LMCS/73C11F	...\GROUT01	...\900103001		101	0

DATA REPROCESSED ON Fri May 11 08:08:33 1990

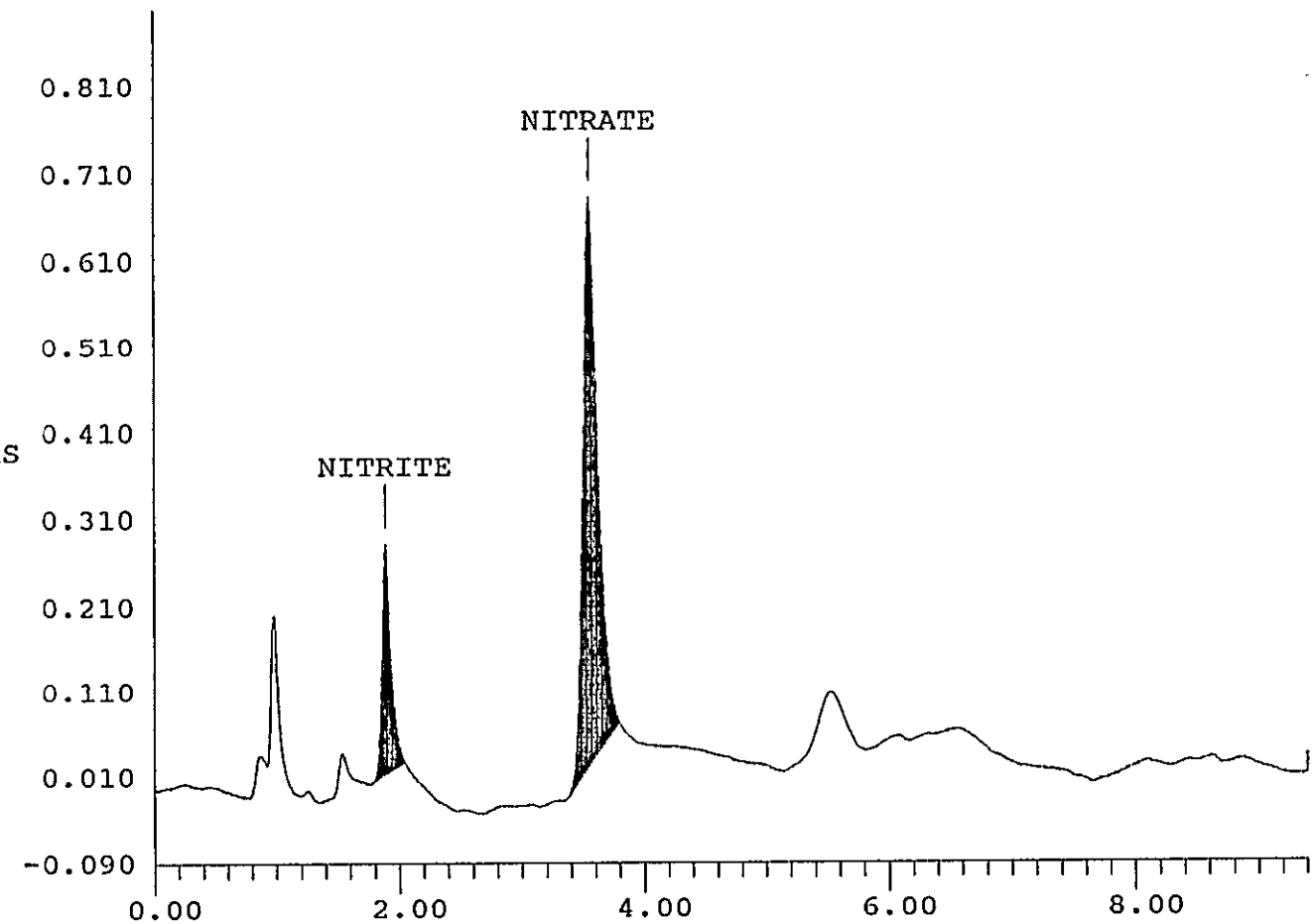
Sample Name: SETUP	Date: Wed Jan 03 10:34:40 1990
Data File : A:\90010300.D01	
Method : c:\windows\ai400\method\GROUT01.met	
ACI Address: 1 System : 1 Inject#: 1	Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 1000 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	1.88	NITRITE	5.418e-001	1.553e+003	271	1	0	0.00%
2	3.55	NITRATE	1.127e+000	6.161e+003	663	1	0	0.00%

File: A:\90010300.D01 Sample: SETUP



DATA REPROCESSED ON Fri May 11 08:15:02 1990

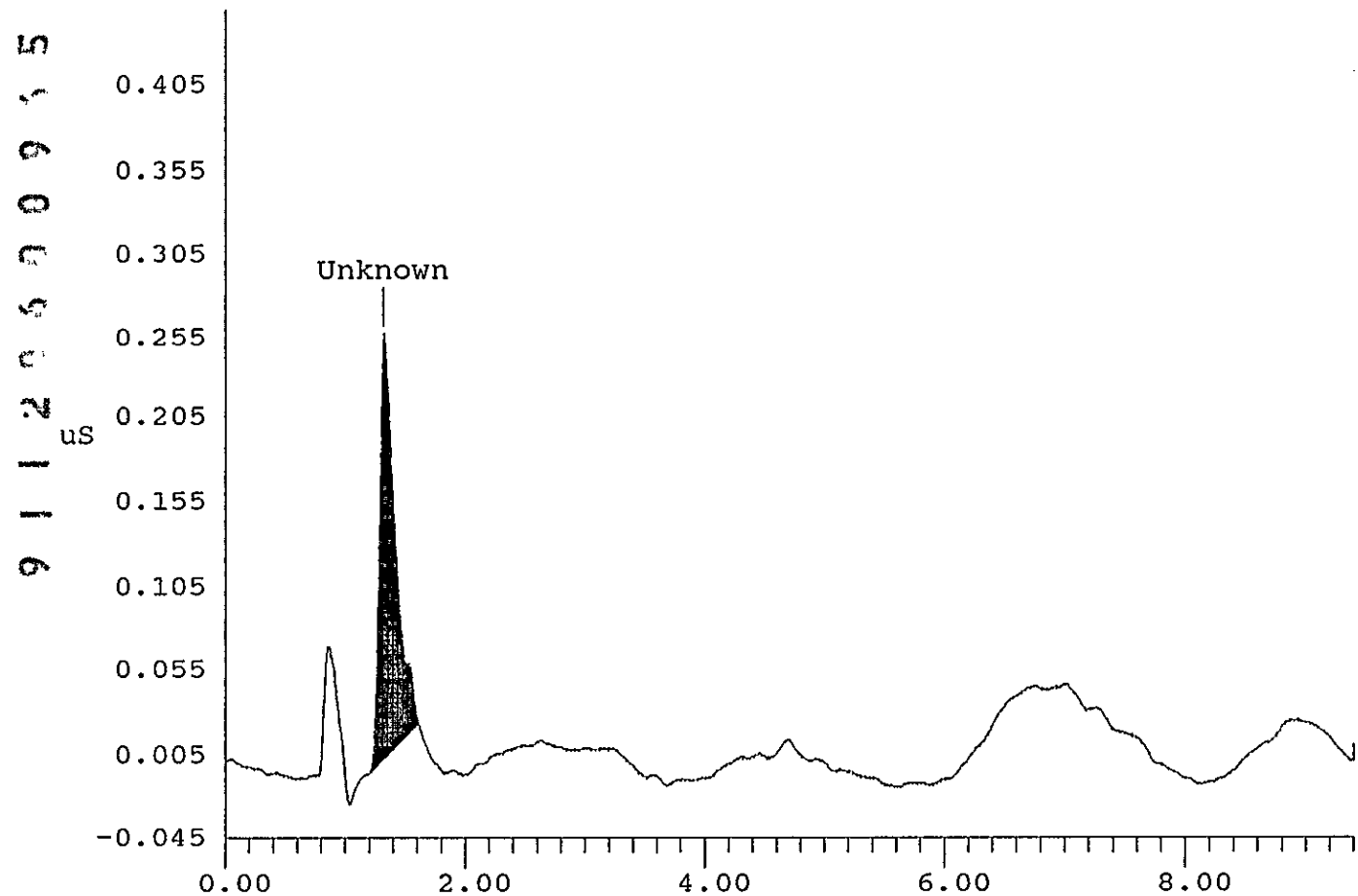
Sample Name: BLANK	Date: Wed Jan 03 10:44:46 1990
Data File : A:\90010300.D02	
Method : c:\windows\ai400\method\GROUT01.met	
ACI Address: 1 System : 1 Inject#: 2	Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 1000 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	2.449e+003	251	1		

File: A:\90010300.D02 Sample: BLANK



DATA REPROCESSED ON Fri May 11 08:41:21 1990

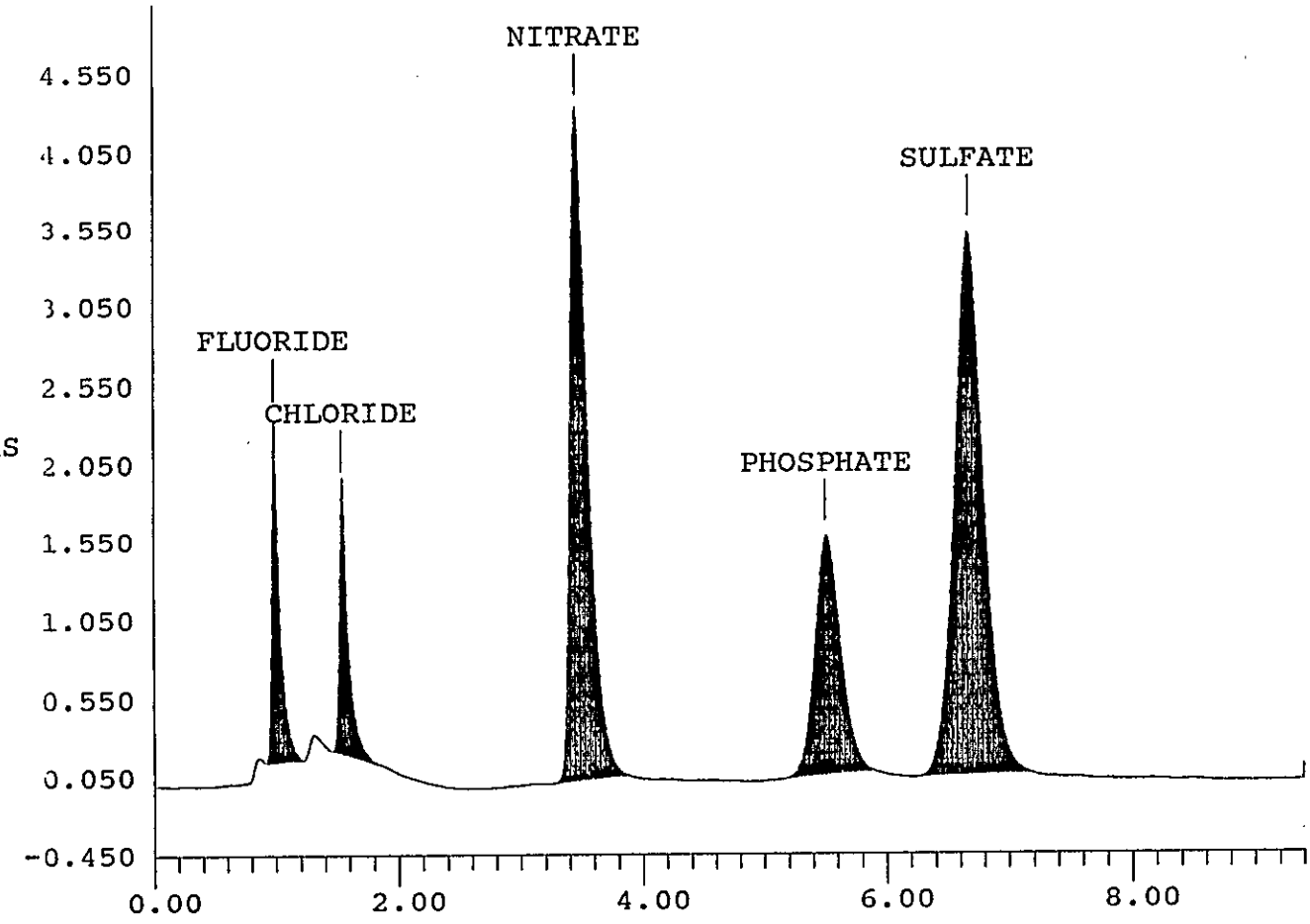
Sample Name: LMCS/6C11HF	Date: Wed Jan 03 11:25:04 1990
Data File : A:\90010300.D06	
Method : c:\windows\ai400\method\GROUT01.met	
ACI Address: 1 System : 1 Inject#: 6	Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 1000 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	6.784e+001	1.123e+004	2203	1	0	0.00%
2	1.53	CHLORIDE	9.100e+001	9.533e+003	1700	1	0	0.00%
3	3.45	NITRATE	7.566e+002	4.685e+004	4286	1	0	0.00%
4	5.50	PHOSPHATE	7.033e+002	2.319e+004	1515	1	0	0.00%
5	6.67	SULFATE	7.015e+002	5.949e+004	3474	1	0	0.00%

File: A:\90010300.D06 Sample: LMCS/6C11HF



DATA REPROCESSED ON Fri May 11 08:56:59 1990

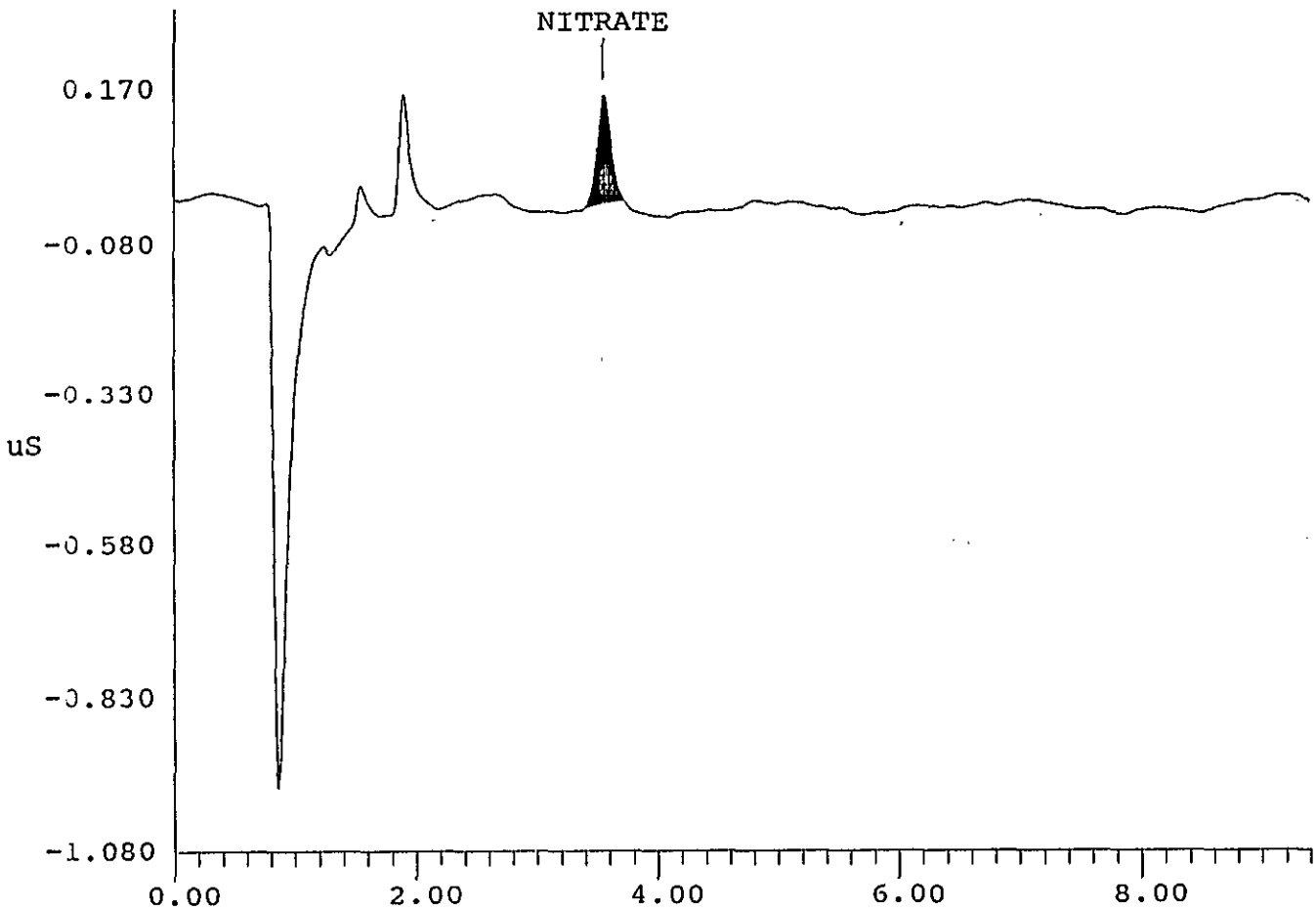
Sample Name: 98B	Date: Wed Jan 03 11:45:15 1990
Data File : A:\90010300.D08	
Method : c:\windows\ai400\method\GROUT01.met	
ACl Address: 1 System : 1 Inject#: 8	Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 1000 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	3.55	NITRATE	2.890e-001	1.472e+003	172	1	0	0.00%

File: A:\90010300.D08 Sample: 98B



DATA REPROCESSED ON Fri May 11 09:01:38 1990

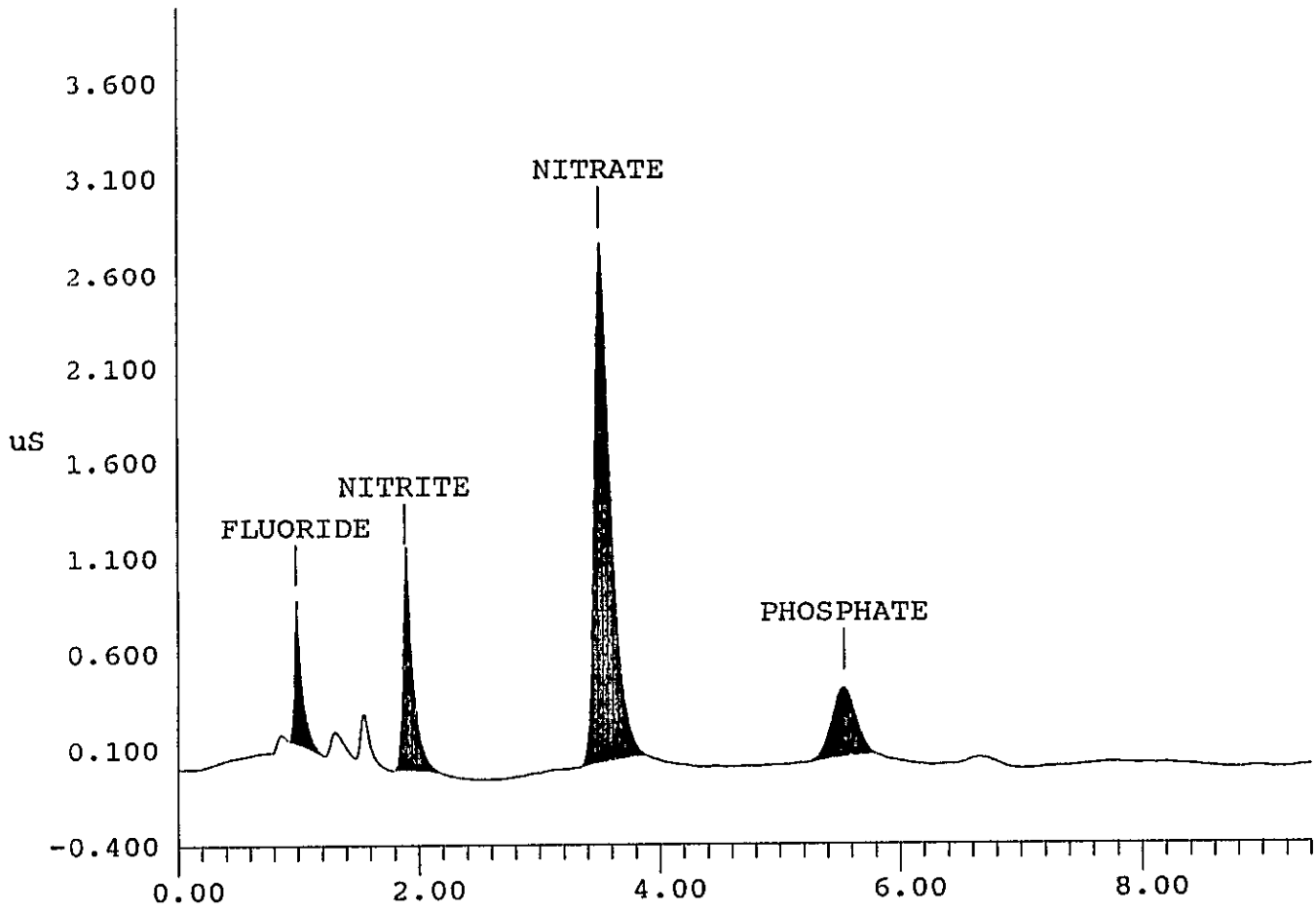
Sample Name: 87 Date: Wed Jan 03 11:55:18 1990
Data File : A:\90010300.D09
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 9 Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 1000 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	2.590e+001	3.717e+003	738	1	0	0.00%
2	1.88	NITRITE	1.200e+002	7.270e+003	1091	1	0	0.00%
3	3.50	NITRATE	4.764e+002	2.859e+004	2728	1	0	0.00%
4	5.53	PHOSPHATE	1.926e+002	5.271e+003	367	1	0	0.00%

File: A:\90010300.D09 Sample: 87



DATA REPROCESSED ON Fri May 11 09:08:43 1990

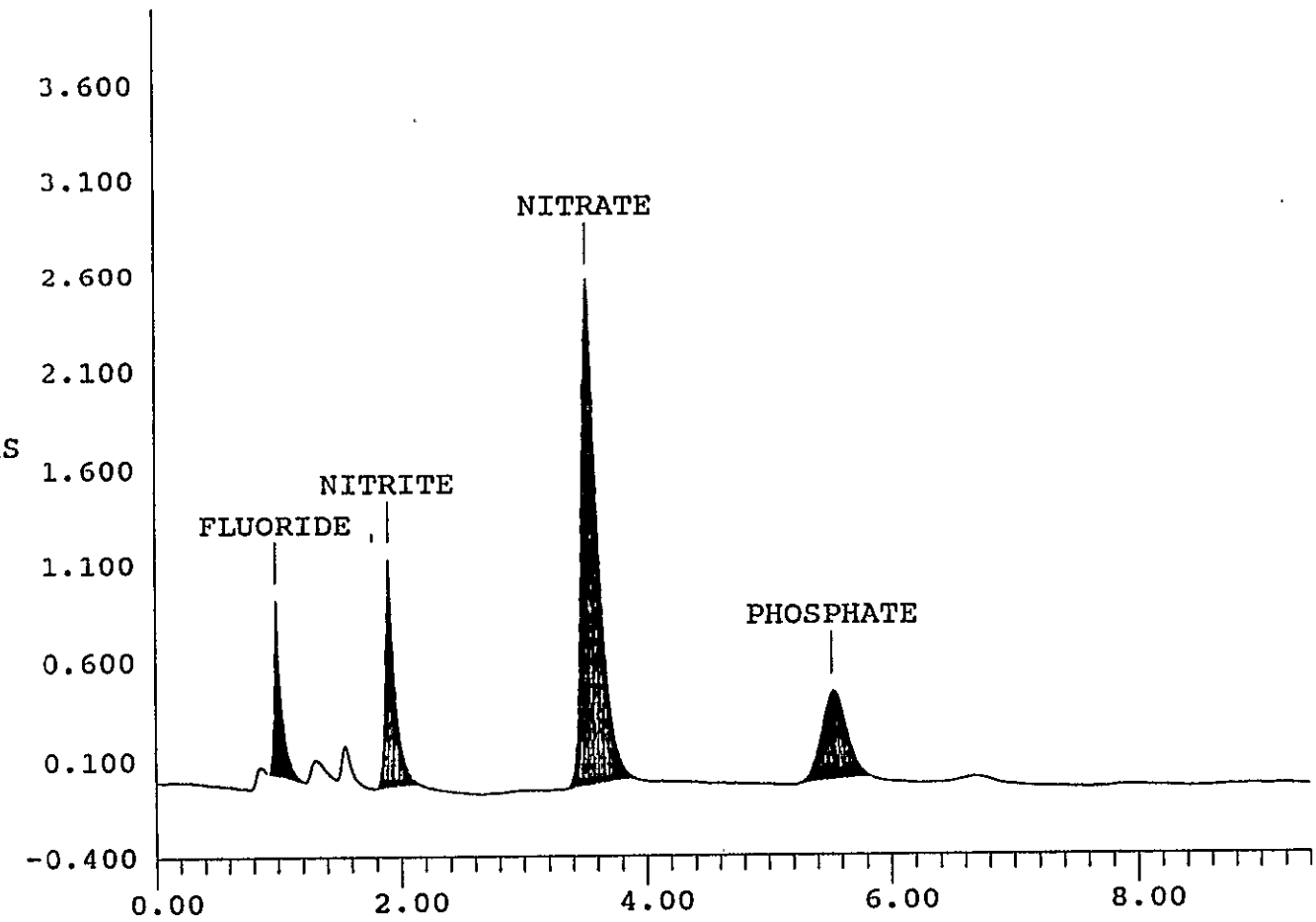
Sample Name: 88D Date: Wed Jan 03 12:05:22 1990
Data File : A:\90010300.D10
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 10 Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 1000 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	3.027e+001	4.420e+003	890	1	0	0.00%
2	1.90	NITRITE	1.258e+002	7.312e+003	1164	1	0	0.00%
3	3.52	NITRATE	4.538e+002	2.728e+004	2601	1	0	0.00%
4	5.52	PHOSPHATE	2.312e+002	6.860e+003	452	1	0	0.00%

File: A:\90010300.D10 Sample: 88D



DATA REPROCESSED ON Fri May 11 10:27:40 1990

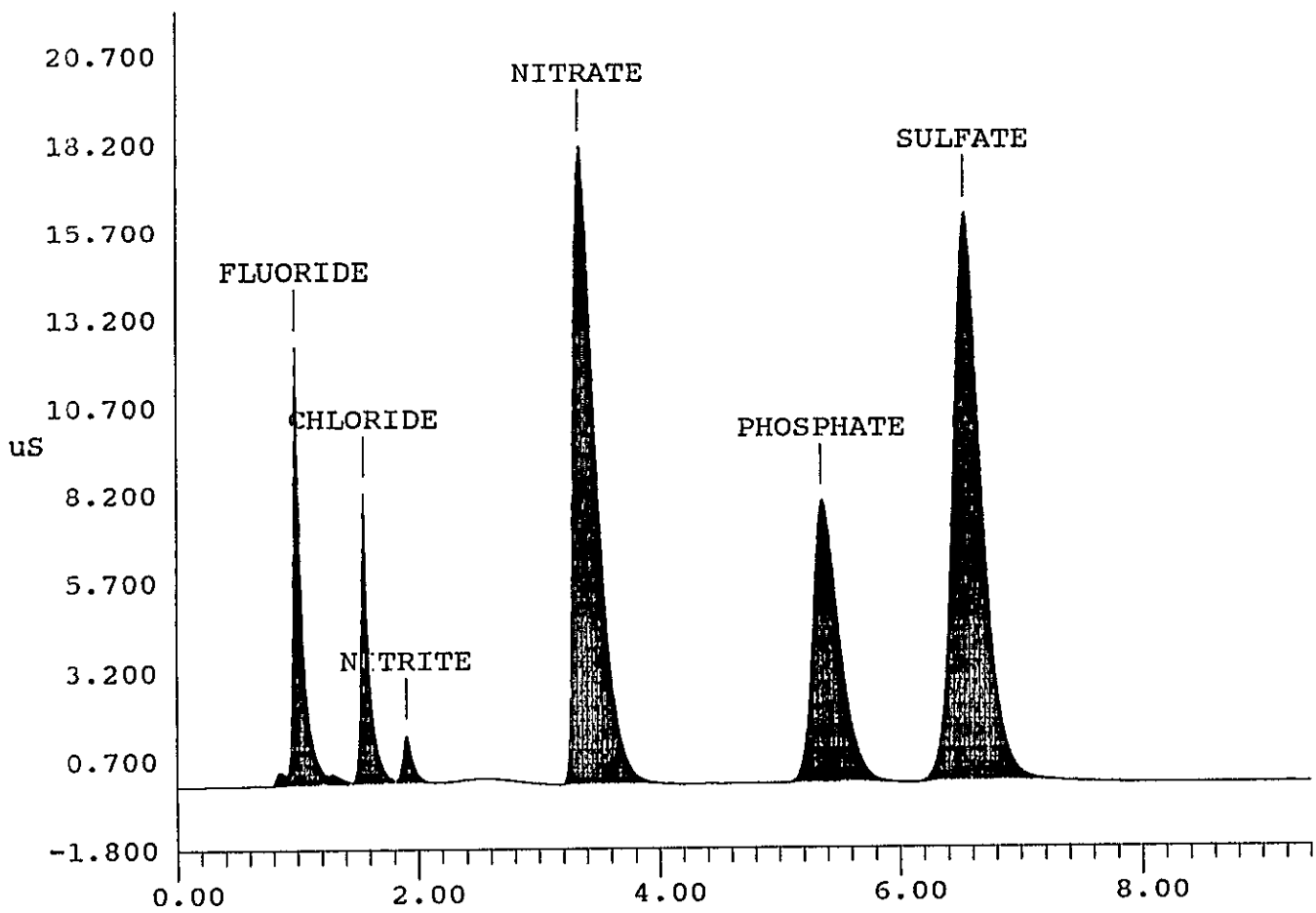
Sample Name: 89S Date: Wed Jan 03 12:15:26 1990
Data File : A:\90010300.D11
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 11 Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2821
Area reject = 1000 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	3.518e+002	7.491e+004	12408	2	0	0.00%
2	1.55	CHLORIDE	3.717e+002	4.434e+004	8189	2	0	0.00%
3	1.90	NITRITE	1.388e+002	8.232e+003	1327	2	0	0.00%
4	3.33	NITRATE	3.494e+003	2.561e+005	18081	1	0	0.00%
5	5.35	PHOSPHATE	3.239e+003	1.296e+005	7944	1	0	0.00%
6	6.53	SULFATE	2.970e+003	2.831e+005	16160	1	0	0.00%

File: A:\90010300.D11 Sample: 89S



DATA REPROCESSED ON Fri May 11 10:37:30 1990

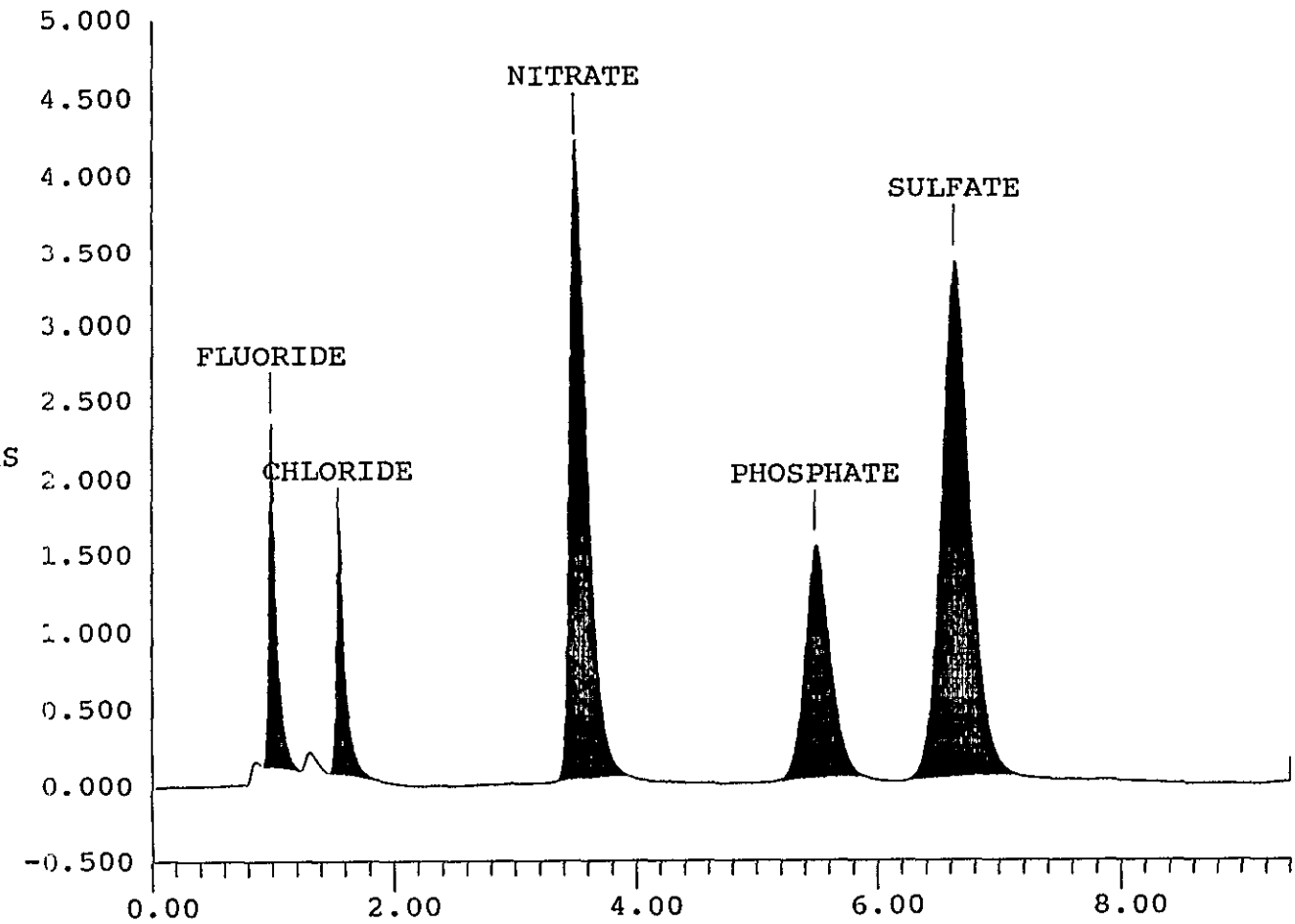
Sample Name: LMCS/6C11HF	Date: Wed Jan 03 12:25:31 1990
Data File : A:\90010300.D12	
Method : c:\windows\ai400\method\GROUT01.met	
ACI Address: 1 System : 1 Inject#: 12	Detector: CDM

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

Stop time = 9.40 Minutes Number of Data Points = 2820
Area reject = 1000 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	6.755e+001	1.115e+004	2192	1	0	0.00%
2	1.53	CHLORIDE	7.998e+001	9.207e+003	1492	1	0	0.00%
3	3.48	NITRATE	7.267e+002	4.618e+004	4121	1	0	0.00%
4	5.48	PHOSPHATE	6.981e+002	2.303e+004	1504	1	0	0.00%
5	6.63	SULFATE	6.858e+002	5.840e+004	3392	1	0	0.00%

File: A:\90010300.D12 Sample: LMCS/6C11HF



Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Instrument	WB39937
Procedure / Rev	LA-344-105/A-3
Technologist	80028/E. H. Colvin
Date	01/03/90
Temperature	N/A
Starting Time	08:00
Ending Time	15:00
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	Blank	F0098
2	Initial Check Standard	F0086
3	Sample 89-044	F0087
4	Duplicate 89-044	F0088
5	Spike 89-044	F0089
6	Ending Check Standard	F0090
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	70C11B/200 uL			2.2 mL
Spike	70C11B/100 ug	F0087/200 uL		0.3 mL

Prepared by: Shirley Cervantes (Signature) S. A. Cervantes (Printed Name) Date: 05/17/90

Verified by: Cary M Seidel (Signature) C. M. Seidel (Printed Name) Date: 05/17/90

Approved by: Stephen Scott Moss (Signature) Stephen Scott Moss (Printed Name) Date: 9-7-90

Interim 4.04.90 Rev E SST-102

9 1 1 2 0 5 0 0 9 7 3

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: BLK-A Date: 01-03-1989 Time: 11:00:09

Blank = N/A Sample Size = 200 Dilution Factor = 1
% 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	2.40	29.17
4	4.01	3.00	20.00
5	5.01	3.40	11.76
6	6.01	4.00	15.00
7	7.01	4.60	13.04
8	8.01	5.10	9.80

BLANK VALUE = 5.1 / 8.006165 = .6370091 ug/minute

Sample Run By: 80028 _____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD-BEG Date: 01-03-1989 Time: 11:21:18

Blank = .6370091 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	47.50	100.00
3	3.01	52.80	10.04
4	4.01	55.60	5.04
5	5.01	57.30	2.97
6	6.01	58.40	1.88
7	7.01	59.40	1.68

(59.4 - 4.463263)(11)/(200) = 3.021521 g/L Carbon

(59.4 - 4.463263)(11)/(200)(12) = .2517934 Molar Carbon

Sample Run By: 80028_____

0

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-87 Date: 01-03-1989 Time: 13:33:37

Blank = .6370091 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	17.00	100.00
3	3.01	19.90	14.57
4	4.01	21.40	7.01
5	5.01	22.30	4.04
6	6.01	23.10	3.46
7	7.01	23.70	2.53

(23.7 - 4.463302)(1)/(200) = 9.618349E-02 g/L Carbon

(23.7 - 4.463302)(1)/(200)(12) = 8.015291E-03 Molar Carbon

Sample Run By: B0028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-88 Date: 01-03-1989 Time: 13:51:11

Blank = .6370091 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	14.90	100.00
3	3.01	17.50	14.86
4	4.01	18.80	6.91
5	5.01	19.70	4.57
6	6.01	20.40	3.43
7	7.01	20.90	2.39

(20.9 - 4.463263)(1)/(200) = 8.218369E-02 g/L Carbon

(20.9 - 4.463263)(1)/(200)(12) = 6.848641E-03 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-89 Date: 01-03-1989 Time: 14:03:44

Blank = .6370091 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 10

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	1.01	8.00	-137.21
2	2.01	148.80	94.22
3	3.01	174.00	14.48
4	4.01	185.30	6.10
5	5.01	191.00	2.98
6	6.01	194.10	1.60
7	7.01	196.10	1.02

(196.1 - 4.463341)(1)/(200) = .9581833 g/L Carbon

(196.1 - 4.463341)(1)/(200)(12) = 7.984861E-02 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-90 Date: 01-03-1989 Time: 14:13:04

Blank = .6370091 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	45.90	100.00
3	3.01	53.20	13.72
4	4.01	56.60	6.01
5	5.01	58.50	3.25
6	6.01	59.90	2.34
7	7.01	60.80	1.46

(60.8 - 4.462796)(11)/(200) = 3.098546 g/L Carbon

(60.8 - 4.462796)(11)/(200)(12) = .2582122 Molar Carbon

Sample Run By: 80028_____

ACID DIGESTION TEST ANALYSIS

9 1 1 2 0 3 0 0 9 7 9

ICP Results Data Summary

Date Analyzed:	April 19, 1990	Digested Acid Standard	F1083
Procedure:	LA-505-151/A-0	Reagent Blank	F1084
Analyst:	J. A. White	Sample 89-044	F0092
Digestion	Acid Digestion	Duplicate of 89-044	F0093
Procedure:	LA-505-159/A-0	Spike of F1085	F1087
		Digested Acid Standard	F1088

	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	100.37%		0.07 LT	90269	89127	NOT CALC.	100.63%	100.81%
Antimony	105.91%		-0.01 LT	105 LT	470			102.57%
Barium	104.16%		-0.01 LT	21	40	103.28%	92.28%	102.53%
Beryllium	98.38%		0.00 LT	0 LT	1			97.50%
Bismuth	108.36%	102.12%	-0.01 LT	17746	21187	NOT CALC.		106.64%
Boron	101.73%	94.43%	0.03	21 LT	27 LT	134.81%		99.43%
Cadmium	100.12%	93.46%	0.00 LT	-7 LT	-2 LT	89.32%		97.72%
Calcium	106.89%	102.58%	0.09	521	492	146.72%		105.03%
Chromium	95.51%		-0.03 LT	531	529	235.92%	84.79%	93.30%
Cobalt	97.27%		0.02 LT	32 LT	50 LT	85.08%	86.00%	93.22%
Copper	105.17%	99.09%	-0.01 LT	0 LT	40 LT	100.71%		103.36%
Europium	98.92%		-0.01 LT	-14 LT	0 LT			97.72%
Iron	103.46%		0.03	12927	12762	NOT CALC.	94.41%	101.50%
Lanthanum	94.12%	91.05%	-0.02 LT	-33 LT	52	89.51%		92.92%
Lead	106.64%	99.04%	0.01 LT	212	601	93.18%		104.61%
Lithium	106.08%		-0.01 LT	-37 LT	-9 LT	91.11%	93.39%	103.61%
Magnesium	104.79%	97.56%	0.02	886	3118	4138.61%		102.45%
Manganese	102.81%		0.01	5691	5569	NOT CALC.	92.70%	100.65%
Mercury	102.27%		-0.05 LT	54	28			101.94%
Molybdenum	97.14%	93.73%	0.00 LT	10 LT	29	85.72%		97.14%
Nickel	101.54%		-0.01 LT	107	138	98.98%	92.68%	99.05%
Potassium	99.66%	82.65%	-0.53 LT	-1340 LT	-302 LT	73.37%		97.22%
Samarium	99.36%		-0.35 LT	-867 LT	-58 LT			96.54%
Selenium	105.01%		-0.06 LT	411	522			104.86%
Silicon	90.40%	75.18%	0.63	3877	4760	-114.70%		90.53%
Silver	107.97%		-0.02 LT	-41 LT	7 LT	53.52%		106.46%
Sodium	102.01%	94.66%	0.06 LT	86491	88734	NOT CALC.		100.05%
Strontium	105.80%	100.02%	0.00 LT	517	577	86.77%		104.01%
Sulfur	106.08%		0.03	413	456			107.95%
Tantalum	96.38%		-0.04 LT	-81 LT	15 LT	27.57%	73.62%	96.12%
Thallium	105.99%		-0.33 LT	-143 LT	260			106.22%
Thorium	106.38%		-0.18 LT	-442 LT	35 LT			104.74%
Tin	100.85%		0.02 LT	15 LT	52	102.74%	93.54%	98.35%
Titanium	100.86%		0.13	-4 LT	22	90.61%	92.17%	101.40%
Uranium	106.74%		-2.40 LT	771 LT	5655			103.29%
Vanadium	99.32%		-0.02 LT	3 LT	20 LT			100.05%
Zinc	100.91%	93.05%	0.23	193	283	66.80%		98.82%
Zirconium	101.51%		-0.04 LT	-11 LT	83	46.04%	93.47%	100.46%

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

Prepared by: H. S. Rich Date: May 21, 1990

Verified by: Carry M. Seidel Date: May 21, 1990

Approved by: Stephen Scott Moss for L. H. Taylor Date: 9-7-90
Stephen Scott Moss

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Acid Digestion

Instrument	N/A
Procedure / Rev	LA-505-159/A-0
Technologist	D. M. Southwick
Date	01/02/90
Temperature	N/A
Starting Time	9:00am
Ending Time	16:00pm
Chemist	S. A. Jones

	Description	Lab. Id.
1	Reagent Blank	F0099
2	Sample 89-044	F0092
3	Sample Duplicate	F0093
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

Prepared by: H. S. Rich (Signature) — H. S. Rich (Printed Name) — Date: June 28, 1990

Verified by: Carey M Seidel (Signature) — C. M. Seidel (Printed Name) — Date: June 28, 1990

Approved by: Stephen Scott Moss for (Signature) — L.H. Taylor, Stephen Scott Moss (Printed Name) — Date: 9-7-90

Interim 4.04.90 Rev. E SST-102

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Instrument	WB39939
Procedure / Rev	LA-505-151/A-0
Technologist	J. A. White
Date	April 19, 1990
Temperature	70 F
Starting Time	07:47
Ending Time	15:00
Chemist	S. A. Jones

ICP analysis of sample 89-044.
Only data directly related to the analysis of 89-044 wil be included in this package.
No inter-element corrections were made on this data.

	Description	Lab. Id.
1	Initial LMCS Check Std.	na
2	Digested Std. (81C11A)	F1083
3	Reagent Blank	F1084
4	Sample Comp. Core 13	F1085
5	Duplicate Core 13	F1086
6	Spike of F1085	F1087
7	Digested Std. (82C11A)	F1088
8	LMCS Check Std.	na
9	Sample Comp. Core 5	F0899
10	Duplicate Core 5	F0900
11	Acid Blank	na

	Description	Lab. Id.
12	Sample 89-043	F0068
13	Duplicate of 89-043	F0069
14	Sample 89-044	F0092
15	Duplicate of 89-044	F0093
16	LMCS Check Std.	na
17	Sample 89-047	F0140
18	Duplicate of 89-047	F0141
19	Sample 89-048	F0164
20	Duplicate of 89-048	F0165
21	Sample Comp. Core 8	F0959
22	Duplicate of Core 8	F0960

Standard Type	Primary Book No. & Aliquot	Second Book No. & Aliquot	Third Book No. & Aliquot	Final Volume of Standard
LMCS Check Std.	78C11J/1.0mL	82B38F/1.0mL	77C11I/1.0mL	11.0 mL
Digested LMCS (1)	81C11A/5.0mL			50.0 mL
Digested LMCS (2)	82C11A/5.0mL			50.0 mL
Spike F1087	34C11CO/5.mL	34C11CK/5.0mL	F1085/0.5143g	50.0 mL

Prepared by: [signature] Signature — H. S. Rich Printed Name — Date: May 24, 1990

Verified by: Carey M Seidel Signature — C. M. Seidel Printed Name — Date: May 24, 1990

Approved by: Stephen Scott Moss for Signature — L.H. Taylor Printed Name — Date: 9-7-90

Stephen Scott Moss

Interim Rev E 4/04/90 SA 102

111

2160092116

Analytical Batch

Lab Segment Serial No.: F0077

Customer ID.: 89-044

Instrument	WB39939
Procedure / Rev	LA-505-151/A-0
Technologist	J. A. White
Date	April 19, 1990
Temperature	70 F
Starting Time	07:47
Ending Time	15:00
Chemist	S. A. Jones

ICP analysis of sample 89-044.

Only data directly related to the analysis of 89-044 will be included in this package.

No inter-element corrections were made on this data.

	Description	Lab. Id.
1	Initial LMCS Check Std.	N/A
2	Sample Composite 15	F1037
3	Duplicate Composite 15	F1038
4	Final LMCS Check Std.	N/A
5		
6		
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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.	78C11J/1.0mL	82B38F/1.0mL	77C11I/1.0mL	11.0 mL
Digested LMCS (1)	81C11A/5.0mL			50.0 mL
Digested LMCS (2)	82C11A/5.0mL			50.0 mL
Spike F1087	34C11CO/5.mL	34C11CK/5.0mL	F1085/0.5143g	50.0 mL

Prepared by: H. S. Rich (Signature) H. S. Rich (Printed Name) Date: May 24, 1990

Verified by: Carry M Seidel (Signature) C. M. Seidel (Printed Name) Date: May 24, 1990

Approved by: Stephen Scott Moss for Stephen Scott Moss (Signature) L. H. Taylor (Printed Name) Date: 9-7-90

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

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	0.00986 g/mL		Digestion	0.00943 g/mL		Digestion	0.01029 g/mL		
g		Weight	0.4717 g		Weight	0.5143 g			
mL		Volume	50.00 mL		Volume	50.00 mL			
	Sample Dilution One ppm	Sample Duplicate Dilution Three ppm	Sample Duplicate Dilution Two ppm	Sample Duplicate Dilution One ppm	Spike of Sample Dilution Three ppm	Spike of Sample Dilution Two ppm	Spike of Sample Dilution One ppm	Spike Recovery %	Standard LMCS Acid Digestion ppm
Aluminum	865.76		840.82	825.41		507.09	473.99	NOT CALC.	10.06
Antimony	1.03 LT		11.91	4.44		13.40	14.24		
Arsenic	0.28 LT		0.64	0.75		-0.58	1.02		
Barium	0.21		0.24	0.38		10.83	10.57	103.28%	9.23
Beryllium	0.00 LT		0.07	0.01		0.02	0.03		
Bismuth	193.79		199.88	195.76		160.79	176.36	NOT CALC.	
Boron	0.21 LT		1.51	0.26 LT		14.10	10.25	134.81%	
Cadmium	-0.07 LT		-0.23	-0.02 LT		9.00	10.03	89.32%	
Calcium	4.50		4.64	3.97		20.40	14.91	146.72%	
Cerium	-6.82 LT		-0.60	0.06 LT		-30.01	1.54 LT	15.40%	8.87
Chromium	5.24		2.35	4.99		30.54	19.37	235.92%	8.56
Cobalt	0.31 LT		3.40	0.47 LT		8.30	9.83	85.08%	8.60
Copper	0.00 LT		0.26	0.38 LT		9.26	10.82	100.71%	
Europium	-0.13 LT		-0.09	0.00 LT		-0.57	0.04 LT		
Iron	122.79		120.40	116.81		218.35	212.56	NOT CALC.	9.44
Lanthanum	-0.33 LT		0.13	0.49		7.16	9.85	89.51%	
Lead	2.09		14.34	5.67		17.21	20.87	93.18%	
Lithium	-0.36 LT		-0.26	-0.08 LT		9.24	10.65	91.11%	9.34
Magnesium	4.92		29.41	2.84		416.09	37.95	4138.61%	
Manganese	53.73		52.54	51.04		56.88	57.54	NOT CALC.	9.27
Mercury	0.53		2.83	0.26		-2.46	-0.27 LT		
Molybdenum	0.09 LT		0.31	0.28		8.93	9.87	85.72%	
Neodymium	-15.59 LT		-45.69	-10.76 LT		-66.75	0.47 LT	NOT CALC.	7.74
Nickel	1.06		1.26	1.30		9.91	11.36	98.98%	9.27
Phosphorou	102.72		125.09	115.56		116.71	118.22	NOT CALC.	
Potassium	-13.22 LT		-20.64	-2.85 LT		-34.01	9.41	73.37%	
Samarium	-8.55 LT		-4.01	-0.55 LT		-36.47	0.62 LT		
Selenium	4.05		6.49	4.92		7.17	9.37		
Silicon	38.24		44.91	44.11		42.19	25.60	-114.70%	
Silver	-0.41 LT		-0.10	0.07 LT		4.89	5.71	53.52%	
Sodium	845.25		837.12	824.33		838.67	827.74	NOT CALC.	
Strontium	5.63		5.44	5.35		14.46	14.97	86.77%	
Sulfur	4.07		9.41	4.30		67.98	12.69		
Tantalum	-0.80 LT		0.01	0.14 LT		-0.70	3.53	27.57%	7.33
Thallium	-1.41 LT		5.57	2.46		-18.49	7.30		
Thorium	-4.36 LT		2.92	0.33 LT		-19.12	2.21		
Tin	0.15 LT		1.30	0.49		14.05	10.97	102.74%	9.35
Titanium	-0.04 LT		0.11	0.21		9.35	9.90	90.61%	9.23
Tungsten	0.59 LT		1.66	1.11		-2.06	1.00		
Uranium	7.61 LT		17.58	53.35		-175.80	60.96		5.01
Vanadium	0.03 LT		0.52	0.19 LT		-0.93	0.32 LT		
Zinc	1.01		2.67	1.41		25.48	13.50	66.80%	
Zirconium	-0.11 LT		0.88	0.78		1.83	5.97	46.04%	9.33
Dilution Factor	21.00	1.00	101.00	21.00	1.00	101.00	21.00		10.00

ICP Results Raw Data Report

Date Analyzed:	April 19, 1990	Digested Acid Standard	F1083
Procedure:	LA-505-151/A-0	Reagent Blank	F1084
Analyst:	J. A. White	Sample 89-044	F0092
Digestion	Acid Digestion	Duplicate of 89-044	F0093
Procedure:	LA-505-159/A-0	Spike of F1085	F1087
	LMCS Standard	Digested Acid Standard	F1088

										Digestion
									Weight	0.4932
									Volume	50.00
			Starting			LMCS	Acid	Reagent	Sample	Sample
			LMCS Standard			Acid	Digestion	Blank		
			Instrument	Recovery		Digestion	Standard		Dilution	Dilution
			Standard			Standard	Recovery		Three	Two
			ppm	%		ppm	%	ppm	ppm	ppm
	SST-1	SST-2	SST-3							
Aluminum			50.18	100.37%				0.07 LT		890.41
Antimony	10.59			105.91%				-0.01 LT		-15.39
Arsenic			57.77	115.53%	#			-0.02 LT		-6.24
Barium	10.42			104.16%				-0.01 LT		-1.89
Beryllium			9.84	98.38%				0.00 LT		-0.13
Bismuth		54.29		108.36%		10.21	102.12%	-0.01 LT		175.05
Boron	10.17			101.73%		9.44	94.43%	0.03		-1.03
Cadmium	10.01			100.12%		9.35	93.46%	0.00 LT		-1.17
Calcium	10.69			106.89%		10.26	102.58%	0.09		5.14
Cerium	9.18			91.75%				-0.31 LT		-79.44
Chromium	9.55			95.51%				-0.03 LT		-0.39
Cobalt	9.73			97.27%				0.02 LT		-2.64
Copper	10.52			105.17%		9.91	99.09%	-0.01 LT		-4.25
Europium		9.89		98.92%				-0.01 LT		-1.50
Iron	10.35			103.46%				0.03		127.51
Lanthanum		47.15		94.12%		9.11	91.05%	-0.02 LT		-5.47
Lead		53.43		106.64%		9.90	99.04%	0.01 LT		-5.74
Lithium	10.61			106.08%				-0.01 LT		-3.64
Magnesium	10.48			104.79%		9.76	97.56%	0.02		8.74
Manganese	10.28			102.81%				0.01		56.13
Mercury			25.57	102.27%				-0.05 LT		0.10
Molybdenum			48.57	97.14%		9.35	93.73%	0.00 LT		-1.65
Neodymium	9.08			90.76%				-0.64 LT		-119.90
Nickel	10.15			101.54%				-0.01 LT		-2.04
Phosphorou			57.86	115.73%	#	9.34	93.37%	0.11		98.76
Potassium	24.91			99.66%		8.27	82.65%	-0.53 LT		-123.50
Samarium		9.94		99.36%				-0.35 LT		-94.10
Selenium			52.51	105.01%				-0.06 LT		-14.61
Silicon			45.20	90.40%		7.52	75.18%	0.63		27.32
Silver		10.80		107.97%		7.42		-0.02 LT		-5.64
Sodium	25.50			102.01%		9.47	94.66%	0.06 LT		853.15
Strontium	10.58			105.80%		10.00	100.02%	0.00 LT		5.10
Sulfur			53.04	106.08%				0.03		0.13
Tantalum			48.19	96.38%				-0.04 LT		-11.88
Thallium			53.00	105.99%				-0.33 LT		-89.99
Thorium		53.29		106.38%				-0.18 LT		-58.41
Tin	50.43			100.85%				0.02 LT		-3.04
Titanium			50.43	100.86%				0.13		-2.72
Tungsten			20.93	83.72%	#			-0.02 LT		-6.11
Uranium		53.48		106.74%				-2.40 LT		-521.30
Vanadium			9.93	99.32%				-0.02 LT		-3.80
Zinc	10.09			100.91%		9.31	93.05%	0.23		1.91
Zirconium			50.76	101.51%				-0.04 LT		-7.94
Dilution Factor	1.00	1.00	1.00			10.00		1.00	1.00	101.00

	Acid Digestion Standard Recovery %	SST-1	SST-2	Ending LMCS Standard SST-3	Standard Recovery %		Spike Standard LMCS ppm added	Spike Standard ID Book # 34C11CO 34C11CK	SST-1	SST-2
Aluminum	100.63%			50.41	100.81%		10.00			
Antimony		10.26			102.57%				10.00	
Arsenic				57.88	115.75%	#				
Barium	92.28%	10.25			102.53%		10.00		10.00	
Beryllium				9.75	97.50%					
Bismuth			53.43		106.64%		10.00			50.10
Boron		9.94			99.43%		10.00		10.00	
Cadmium		9.77			97.72%		10.00		10.00	
Calcium		10.50			105.03%		10.00		10.00	
Cerium	88.66%	8.86			88.57%	#	10.00		10.00	
Chromium	84.79%	9.33			93.30%		10.00		10.00	
Cobalt	86.00%	9.32			93.22%		10.00		10.00	
Copper		10.34			103.36%		10.00		10.00	
Europium			9.77		97.72%					10.00
Iron	94.41%	10.15			101.50%		10.00		10.00	
Lanthanum			46.55		92.92%		10.00			50.10
Lead			52.41		104.61%		10.00			50.10
Lithium	93.39%	10.36			103.61%		10.00		10.00	
Magnesium		10.25			102.45%		10.00		10.00	
Manganese	92.70%	10.07			100.65%		10.00		10.00	
Mercury				25.49	101.94%					
Molybdenum				48.57	97.14%		10.00			
Neodymium	77.36%	8.75			87.52%	#	10.00		10.00	
Nickel	92.68%	9.91			99.05%		10.00		10.00	
Phosphorou				59.26	118.51%	#	10.00			
Potassium		24.31			97.22%		10.00		25.00	
Samarium			9.65		96.54%					10.00
Selenium				52.43	104.86%					
Silicon				45.26	90.53%		10.00			
Silver			10.65		106.46%		10.00			10.00
Sodium		25.01			100.05%		10.00		25.00	
Strontium		10.40			104.01%		10.00		10.00	
Sulfur				53.97	107.95%					
Tantalum	73.62%			48.06	96.12%		9.95			
Thallium				53.11	106.22%					
Thorium			52.47		104.74%					50.10
Tin	93.54%	49.18			98.35%		10.00		50.00	
Titanium	92.17%			50.70	101.40%		10.00			
Tungsten				20.97	83.88%	#				
Uranium			51.75		103.29%					50.10
Vanadium				10.01	100.05%					
Zinc		9.88			98.82%		10.00		10.00	
Zirconium	93.47%			50.23	100.46%		9.98			
Dilution Factor		1.00	1.00	1.00						

	LMCS Standards Values ppm SST-3	LMCS Standard IDs Book # 78C11J 82B38J 77C11I	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book # 81C11A 82C11A
Aluminum	50.00		100.00	
Antimony				
Arsenic	50.00			
Barium			100.00	
Beryllium	10.00			
Bismuth			100.00	
Boron			100.00	
Cadmium			100.00	
Calcium			100.00	
Cerium			100.00	
Chromium			100.90	
Cobalt			100.00	
Copper			100.00	
Europium				
Iron			100.00	
Lanthanum			100.00	
Lead			100.00	
Lithium			100.00	
Magnesium			100.00	
Manganese			100.00	
Mercury	25.00			
Molybdenum	50.00		99.80	
Neodymium			100.00	
Nickel			100.00	
Phosphorou	50.00		100.00	
Potassium			100.00	
Samarium				
Selenium	50.00			
Silicon	50.00		100.00	
Silver				
Sodium			100.00	
Strontium			100.00	
Sulfur	50.00			
Tantalum	50.00		99.50	
Thallium	50.00			
Thorium				
Tin			100.00	
Titanium	50.00		100.10	
Tungsten	25.00			
Uranium				
Vanadium	10.00			
Zinc			100.00	
Zirconium	50.00		99.80	
Dilution Factor			10.00	

ICP Calibration Report

Procedure: LA-505-151 Revision: A-0
Instrument: WB39939
Technologist: J. A. White
Date: April 19, 1990 Time: 07:47

Calibration Standards for ICP Program "SST"

Element	Standard	Element	Standard
Aluminum	SST-3	Antimony	SST-4
Arsenic	SST-4	Barium	SST-2
Beryllium	SST-2	Bismuth	SST-4
Boron	SST-3	Cadmium	SST-2
Calcium	SST-2	Cerium	SST-5
Chromium	SST-2	Cobalt	SST-2
Copper	SST-2	Europium	SST-5
Iron	SST-2	Lanthanum	SST-5
Lead	SST-4	Lithium	SST-1
Magnesium	SST-2	Manganese	SST-2
Mercury	SST-3	Molybdenum	SST-3
Neodymium	SST-5	Nickel	SST-2
Phosphorous	SST-3	Potassium	SST-1
Samarium	SST-5	Selenium	SST-4
Silicon	SST-3	Silver	SST-2
Sodium	SST-1	Strontium	SST-2
Sulfur	SST-3	Tantalum	SST-3
Thallium	SST-4	Thorium	SST-4
Tin	SST-4	Titanium	SST-3
Tungsten	SST-3	Uranium	SST-4
Vanadium	SST-2	Zinc	SST-2
Zirconium	SST-3		

ICP Standard Formulations

SST-0:
Calibration blank, 1 M ultrex HNO3.

SST-1:
Stock solutions from AESAR/John Mathey Inc., Seabrook, NH 03874. Individual element solutions as follows:

Li	$LiCO_3$ 10,000 ppm in 5% HNO_3 Lot# 14394A
K	KNO_3 10,000 ppm in 5% HNO_3 Lot# 14379A
Na	$NaCO_3$ 10,000 ppm in 5% HNO_3 Lot# 14400A

200 mL of standard made by combining 25 mL HCl/HNO_3 mixed acid, 1 mL each single element standards, and water.

SST-2:
Stock solutions from VHG labs, Inc., 180 Zachary Rd. #5, Manchester, NH 03103. Mixed element standards as follows:

SM-10	Li, Na, K, Rb, Cs, Be, Mg, Ca, Sr, & Ba 100 ppm Lot# 0-119A
SM-20	V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ag, & Cd 100 ppm Lot# 0-119B

50 mL of each mixed standard are added to a 250 mL volumetric flask and diluted to volume with 1 M HNO3.

SST-3:
Stock solutions from AESAR/John Mathey Inc., Seabrook, NH 03874. Individual element solutions as follows:

Al	Al 10,000 ppm in 10% HCl Lot# 9-053A
B	H_3BO_3 10,000 ppm in 1% NH_4OH Lot# 9-335A
Hg	Hg 10,000 ppm in 5% HNO_3 Lot# 8-656S
Mo	Mo 10,000 ppm in 5% HCl Lot# 9-159T
P	P 10,000 ppm in 5% HNO3 Lot# 9-160A
Si	Si 1000 ppm in KOH Lot# 086DM Spex Industries, Edison, NJ
S	$(NH_4)_2SO_4$ in H_2O Lot# 9-231M
Ta	TaCl5 10,000 ppm in 5% HCl/tr HF Lot# 9-335M
Ti	Ti 10,000 ppm in 5% HF Lot# 9-079EE
W	W 10,000 ppm in 5% HF/tr HNO_3 Lot# 8-685L
Zr	$ZrCl_2O$ 10,100 ppm in 5% HCl Lot# 9-078G

50 mL of each mixed standard are added to a 250 mL volumetric flask and diluted to volume with 1 M HNO33.

SST-4:
Stock solution from VHG labs, Inc., 180 Zachary Rd. #5, Manchester, NH 03103. Mixed element standard as follows:

SM-50 Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Se, Te, Th, & U 100 ppm Lot# 0-119D

Solution is used directly for calibration.

SST-5:
Stock solution from VHG labs, Inc., 180 Zachary Rd. #5, Manchester, NH 03103. Mixed element standard as follows:

SM-60 Sc, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, & Lu 100 ppm Lot# 7-165F

50 mL of SM-60 is added to a 250 mL volumetric flask and diluted to volume with 1 M HNO_3.

19-Apr-90 07:39:21

Condition		Value	Min	/	Max
VACUUM	=	16.74	7.000	/	50.00
SPTEMP	=	38.70	37.00	/	39.00
MAINS	=	235.8	220.0	/	247.0
-1000V	=	-1005	-1010	/	-990
CTEMP	=	23.65	19.00	/	35.00
+5V	=	5.160	4.750	/	5.250
+12V	=	12.14	11.70	/	12.30
-12V	=	-12.2	-12.3	/	-11.7
+24V	=	23.16	22.50	/	26.50
-100V	=	-100	-101	/	-99.0
+5VSQ	=	5.150	4.750	/	5.250
+15VSQ	=	15.14	14.70	/	15.30
-15VSQ	=	-15.2	-15.3	/	-14.7

Position Calibration in Progress

	SLIT POS'N	PM	ALPHA SLIT	BETA SLIT	ALPHA LAMBDA1	BETA LAMBDA1	ALPHA LAMBDA2	BETA LAMBDA2
Previous data :								
INSTR	0.00000	586.483	1.00096	-0.3843	1.00009	-0.0675	0.00000	0.00000
Current data :								
INSTR	0.00000	587.525	1.00102	0.31641	1.00009	-0.0667	0.00000	0.00000

START THE PLASMA NOW, PLEASE.19-Apr-90 07:47:14

Sample name : SST0
Programme : SST 19-Apr-90 08:12:00

NAME	MV INT	RSD
AL	2.02	0.96
SB	0.38	1.41
AS	1.10	1.16
BA	4.06	1.19
BE	0.70	0.99
BI	3.93	1.41
B	4.65	1.82
CD	2.38	1.48
CA	0.49	0.82
CE	5.47	1.21
CR	1.49	3.91
CO	0.26	0.58
CU	3.01	1.11
EU	4.24	1.30
FE	1.67	1.92
LA	0.36	0.48
PB	0.27	0.94
LI	4.07	0.98
MG	0.46	0.77
MN	0.78	0.84
HG	4.63	0.23
MO	1.71	0.90
ND	5.87	0.99
NI	3.48	1.25
P	1.28	2.59
K	3.43	0.69
SM	5.25	1.20
SE	1.77	0.54
SI	3.37	1.05
AG	15.51	1.25
NA	5.63	1.34
SR	3.77	1.02
S	0.75	1.80
TA	3.80	1.41
TL	4.43	1.33
TH	1.10	1.05
SN	1.25	3.05
TI	3.63	1.19
W	1.38	1.82
U	5.31	1.19
VI	4.42	1.18
ZN	2.42	0.91
ZR	4.76	1.07

Sample name : SST1
Programme : SST 19-Apr-90 08:16:04

NAME	MV INT	RSD
LI	417.24	1.20
K	13.63	0.90
NA	60.13	1.10

Sample name : SST2
Programme : SST 19-Apr-90 08:18:03

NAME	MV INT	RSD
BA	278.36	0.28
BE	483.17	0.26
CD	331.93	0.52
CA	391.86	0.23
CR	67.99	2.97
CO	5.62	0.30
CU	94.95	0.39
FE	123.57	0.44
MG	418.22	0.28
MN	269.40	0.50
NI	157.96	0.48
AG	443.38	0.51
SR	491.83	0.29
VI	166.57	0.26
ZN	614.54	0.39

Sample name : SST3
Programme : SST 19-Apr-90 08:20:44

NAME	MV INT	RSD
AL	21.20	0.57
B	656.56	0.52
HG	769.40	0.79
MO	294.93	0.47
P	61.19	1.41
SI	77.63	0.49
S	40.45	0.07
TA	124.10	0.63
TI	435.43	0.60
W	64.46	0.68
ZR	152.16	0.53

Sample name : SST4
Programme : SST 19-Apr-90 08:22:54

NAME	MV INT	RSD
SB	7.16	1.20
AS	132.50	1.01
BI	102.90	1.08
PB	4.96	1.03
SE	51.55	0.68
TL	43.76	1.40
TH	13.78	1.01
SN	237.10	0.91
U	12.39	0.65

Sample name : SST5
Programme : SST 19-Apr-90 08:25:27

NAME	MV INT	RSD
CE	15.66	0.48
EU	442.41	0.60
LA	5.53	0.60
ND	16.65	0.23
SM	12.65	0.42

Programme name : SST Channel name : AL Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9228	22.261	-0.527706E+01	0.260724E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.0240	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	21.201	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : SB1 Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.3572	7.5166	-0.554354E+01	0.147435E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.3760	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	7.1587	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : AS Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.0472	128.63	-0.908003E+00	0.823710E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.1023	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	122.50	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : BA Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.8602	292.37	-0.296277E+00	0.729147E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.0633	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	278.36	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : BE1 Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.6697	507.33	-0.292248E-01	0.414536E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.7050	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	483.17	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : BI Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.7316	108.05	-0.396876E+01	0.101038E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.9280	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	102.90	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : B Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.4166	689.39	-0.356566E+00	0.766975E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6490	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	656.56	50.000	50.000	50.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : CB Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.2588	338.03	-0.148813E+00	0.625878E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.3777	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	321.93	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : CA Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4645	411.45	-0.249891E-01	0.511025E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.4890	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	391.86	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : CE Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.1981	16.440	-0.107442E+02	0.196361E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.4717	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	15.657	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : CR Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.4123	71.394	-0.447064E+00	0.300716E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.4867	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	67.985	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : CO Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2492	5.8975	-0.979891E+00	0.373529E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.2623	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	5.6167	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : CU Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.8560	99.693	-0.653979E+00	0.217534E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.0063	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	94.946	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : EU Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.0261	464.53	-0.193441E+00	0.456443E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.2380	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	442.41	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : FE Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.5878	129.75	-0.274221E+00	0.164073E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.6713	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	123.57	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : LA Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.3420	5.8083	-0.139220E+01	0.386723E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.3600	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	5.5317	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : PB Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2530	5.2094	-0.567270E+01	0.212993E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.2663	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	4.9613	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : LI Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.8693	438.10	-0.492900E+00	0.121017E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.0730	0.0000	0.0000	-0.000	-0.000		CRV1
SST1	0	417.24	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : MG Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4326	439.14	-0.217983E-01	0.478733E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.4553	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	418.22	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : MN Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.7388	282.87	-0.579004E-01	0.744540E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.7777	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	269.40	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : HG Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.3982	807.87	-0.302682E+00	0.653788E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6297	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	769.40	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : MO Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.6201	309.67	-0.290791E+00	0.170519E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.7053	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	394.93	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : ND Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.5790	17.478	-0.109022E+02	0.185644E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.8727	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	16.646	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : NI Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.3022	165.86	-0.450011E+00	0.129462E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.4760	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	157.96	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : P Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.2138	64.234	-0.106655E+01	0.834761E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.2777	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	61.175	50.000	50.000	50.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : K Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.2604	14.309	-0.168307E+02	0.490405E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.4320	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	13.628	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : SM Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.9904	14.337	-0.125057E+02	0.238067E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.2530	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	13.654	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : SE Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.6825	54.131	-0.355749E+01	0.200874E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.7710	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	51.553	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : SI Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.2028	81.507	-0.227014E+01	0.673364E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.3713	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	77.625	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : AG Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	14.739	465.55	-0.725194E+00	0.467435E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	15.514	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	443.38	20.000	20.000	20.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : NA Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.3441	63.140	-0.516007E+01	0.917291E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.6253	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	60.134	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : SR Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.5802	516.42	-0.154433E+00	0.409782E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.7687	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	491.83	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : S Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.7166	42.473	-0.950130E+00	0.125956E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.7543	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	40.451	50.000	50.000	50.000	-0.000	0.000	CRV1

Programme name : SST Channel name : TA Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.6113	130.30	-0.157996E+01	0.415634E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.8013	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	124.10	50.000	50.000	50.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : TL2 Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.3129	45.944	-0.112779E+02	0.254313E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.4347	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	43.756	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : TH Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.0418	14.465	-0.864879E+01	0.788644E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.0967	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	13.777	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : SN Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.1919	248.95	-0.531989E+00	0.424008E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.2547	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	237.10	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : TI Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.4453	457.20	-0.419948E+00	0.115795E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.6267	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	435.43	50.000	50.000	50.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : W Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.3075	67.678	-0.109096E+01	0.792657E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.3763	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	64.455	50.000	50.000	50.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : U Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.0432	13.014	-0.749247E+02	0.141137E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.3087	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	12.394	100.00	100.00	100.00	0.0000	0.0000	CRV1

Programme name : SST Channel name : V1 Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.1949	174.90	-0.544610E+00	0.123336E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.4157	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	166.57	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : ZN Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.2965	645.27	-0.789814E-01	0.326729E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.4173	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	614.54	20.000	20.000	20.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : ZR Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.5261	159.77	-0.161619E+01	0.339226E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.7643	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	152.16	50.000	50.000	50.000	-0.000	-0.000	CRV1

ICP Data Report - Acid Blank - (File 1)

Sample name : HNO3
Programme : SSI 19-Apr-90 08:44:13

NAME	MV INT	CONCEN	RSD
Al	1.95	-0.199	-21.62
Sb	0.37	-0.039	-57.28
As	1.07	-0.031	-35.43
Ba	3.85	(-0.015	-13.46
Be	0.69	-0.001	-22.94
Bi	3.76	-0.167	-9.26
B	4.49	-0.013	-14.19
Cd	2.28	-0.006	-3.54
Ca	0.48	-0.000	-37.80
Ce	5.20	-0.534	-14.27
Cr	1.29	(-0.058	-5.90
Co	0.26	0.000	*******
Cu	2.88	-0.028	-14.78
Eu	4.02	(-0.010	-11.14
Fe	1.60	-0.012	-22.18
La	0.35	-0.032	-18.33
Pb	0.26	-0.043	-144.34
Li	4.01	-0.007	-68.58
Mg	0.44	-0.001	-18.92
Mn	0.75	-0.002	-13.86
Hg	3.89	(-0.049	-7.27
Mo	1.64	-0.012	-21.56
Nd	5.38	(-0.906	-8.91
Ni	3.33	-0.020	-11.69
P	1.27	-0.004	-531.46
K	3.27	-0.775	-14.72
Sm	4.99	-0.623	-14.98
Se	1.70	-0.139	-26.84
Si	3.23	-0.092	-17.41
Ag	14.76	-0.035	-15.27
Na	5.35	-0.253	-15.33
Sr	3.62	-0.006	-14.57
S	0.72	-0.044	-1.67
Ta	3.63	-0.073	-14.82
Tl	4.16	(-0.701	-13.24
Th	1.05	-0.376	-21.29
Sn	1.21	-0.018	-20.97
Ti	3.46	-0.020	-13.00
W	1.30	(-0.059	-20.24
U	5.04	-3.735	-13.04
V	4.16	(-0.031	-11.46
Zn	2.34	-0.003	-39.44
Zr	4.59	-0.058	-14.15

ICP Data Report - LMCS Check Standard 78C11J - (File 2)

Sample name : 78C11J
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 08:48:34

17300

NAME	MV INT	CONCEN	RSD
Al	2.02	-0.013	-393.95
Sb	1.08	10.306	1.08
As	1.17	0.057	24.65
Ba	143.20	10.145	0.69
Be	0.72	0.001	30.70
Bi	3.92	-0.009	-390.64
B	134.59	9.966	0.37
Cd	160.15	9.875	0.17
Ca	204.52	10.427	0.74
Ce	10.07	9.035	0.59
Cr	32.84	9.427	0.43
Co	2.89	9.818	0.57
Cu	50.17	10.260	0.51
Eu	4.60	0.016	11.83
Fe	63.21	10.098	0.40
La	0.37	0.048	20.40
Pb	0.27	0.028	43.30
Li	89.66	10.357	0.50
Mg	214.58	10.251	0.47
Mn	136.15	10.079	0.34
Hg	3.95	(-0.044	-7.94
Mo	1.75	0.008	48.40
Nd	10.71	8.972	2.24
Ni	80.53	9.975	0.19
P	1.35	0.061	36.28
K	8.43	24.525	0.30
Sm	5.01	-0.575	-22.70
Se	3.40	3.272	0.48
Si	3.31	-0.040	-45.96
Ag	14.91	-0.028	-26.79
Na	32.79	24.917	0.33
Sr	254.70	10.283	0.68
S	0.91	0.200	8.19
Ta	3.70	-0.043	-44.43
Tl	4.39	-0.106	-120.98
Th	1.09	-0.053	-167.03
Sn	117.72	49.380	0.22
Ti	3.49	-0.016	-24.97
W	1.60	0.175	7.38
U	5.39	1.077	66.40
V	4.28	-0.017	-33.23
Zn	305.53	9.904	0.18
Zr	4.65	-0.038	-36.27

ICP Data Report - LMCS Check Standard 82B38F - (File 3)

Sample name : 82B38F
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 08:52:57

18226

NAME	MV INT	CONCEN	RSD
Al	3.67	4.283	1.52
Sb	0.42	0.659	5.63
As	2.98	1.548	2.05
Ba	4.30	0.017	14.28
Be	0.74	0.001	27.77
Bi	57.46	54.091	0.47
B	5.40	0.058	3.39
Cd	2.48	0.007	10.95
Ca	0.73	0.012	1.25
Ce	5.75	0.550	14.46
Cr	1.68	0.058	5.97
Co	0.28	0.062	6.00
Cu	4.10	0.238	1.78
Eu	217.80	9.748	0.28
Fe	2.08	0.067	27.96
La	12.43	)46.675	0.17
Pb	2.77	53.326	0.33
Li	4.43	0.044	19.70
Mg	0.59	0.006	0.74
Mn	0.91	0.010	2.54
Hg	4.56	-0.005	-52.91
Mo	1.83	0.022	7.87
Nd	6.12	0.465	22.94
Ni	3.69	0.027	19.97
P	1.65	0.308	7.52
K	3.40	-0.167	-32.75
Sm	9.47	10.049	0.83
Se	1.93	0.319	5.03
Si	4.21	0.563	3.60
Ag	244.24	10.691	0.28
Na	5.66	0.036	89.17
Sr	3.95	0.008	12.55
S	0.87	0.140	11.23
Ta	4.22	0.173	9.35
Tl	6.75	5.881	1.93
Th	7.80	52.868	0.36
Sn	1.44	0.080	3.41
Ti	4.14	0.059	6.67
W	1.42	0.038	72.86
U	9.18	54.596	1.19
V	6.31	0.233	1.69
Zn	2.69	0.009	9.21
Zr	5.15	0.132	7.08

ICP Data Report - LMCS Check Standard 77C11I - (File 4)

Sample name : 77C11I
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 09:02:22

18244

NAME	MV INT	CONCEN	RSD
Al	21.57	50.973	0.24
Sb	0.46	1.263	5.36
As	71.94	58.350	0.32
Ba	4.29	0.017	10.32
Be	244.28	10.097	1.63
Bi	4.89	0.971	1.41
B	5.42	0.059	5.14
Cd	2.61	0.015	11.90
Ca	0.75	0.013	0.67
Ce	5.51	0.073	85.92
Cr	1.50	0.005	95.47
Co	0.29	0.115	6.52
Cu	3.27	0.058	6.13
Eu	4.27	0.002	74.28
Fe	1.95	0.046	3.70
La	0.37	0.027	24.74
Pb	0.28	0.390	8.33
Li	4.13	0.007	40.18
Mg	0.52	0.003	1.60
Mn	1.04	0.019	1.02
Hg	399.37	25.808	0.58
Mo	293.51	49.758	0.43
Nd	5.79	-0.158	-100.24
Ni	7.41	0.510	0.95
P	66.26	)54.245	1.07
K	3.40	-0.132	-80.12
Sm	5.31	0.147	53.52
Se	28.39	53.466	0.71
Si	72.02	46.228	0.06
Ag	22.28	0.316	0.94
Na	5.78	0.146	19.94
Sr	3.87	0.004	21.45
S	42.73	)52.876	0.82
Ta	122.84	49.478	0.72
Tl	25.50	53.560	0.57
Th	1.22	0.983	4.04
Sn	1.71	0.193	0.76
Ti	447.29	51.373	0.16
W	28.21	21.266	0.47
U	6.19	12.420	1.28
V	86.99	10.184	2.07
Zn	3.56	0.037	2.26
Zr	154.39	50.756	0.11

ICP Data Report - Acid Digested Standard 81C11A - (File 5)

Sample name : F1083
Sample code 1 : 81C11A
Sample code 2 : DIRECT
Sample code 3 : DIGEST
Programme : SST 19-Apr-90 09:07:31

NAME	MV INT	CONCEN	RSD
Al	2.11	0.228	31.49
Sb	0.37	-0.049	-180.83
As	1.44	0.275	9.55
Ba	3.83	(-0.017	-20.65
Be	0.70	-0.000	-141.52
Bi	14.03	10.212	0.64
B	127.77	9.443	0.82
Cd	151.70	9.346	1.27
Ca	201.23	10.258	0.57
Ce	5.08	(-0.772	-15.81
Cr	1.39	(-0.030	-21.13
Co	0.26	-0.012	-51.96
Cu	48.56	9.909	0.71
Eu	3.88	(-0.016	-17.94
Fe	1.84	0.028	23.66
La	2.71	9.105	0.51
Pb	0.73	9.904	1.43
Li	3.82	(-0.031	-22.41
Mg	204.24	9.756	0.53
Mn	0.89	0.008	16.27
Hg	3.96	(-0.043	-19.37
Mo	56.56	9.354	0.88
Nd	5.41	(-0.864	-24.79
Ni	3.28	(-0.025	-31.55
P	12.46	9.337	3.79
K	5.12	8.265	0.63
Sm	4.80	(-1.072	-13.13
Se	1.70	-0.151	-53.17
Si	14.54	7.518	6.68
Ag	174.24	7.419	0.59
Na	15.94	9.466	0.71
Sr	247.86	10.003	0.60
S	0.93	0.222	5.59
Ta	3.50	(-0.126	-22.37
Tl	4.00	(-1.116	-14.91
Th	1.02	(-0.573	-16.68
Sn	1.47	0.092	9.79
Ti	4.84	0.140	3.27
W	1.52	0.110	21.00
U	4.90	(-5.829	-16.47
V	4.04	(-0.046	-11.84
Zn	287.21	9.305	0.41
Zr	4.46	(-0.105	-14.93

ICP Data Report - Reagent Blank - (File 6)

Sample name : F1084
Sample code 1 : REAGEN
Sample code 2 : DIRECT
Sample code 3 : 000013
Programme : SST 19-Apr-90 09:12:39

NAME	MV INT	CONCEN	RSD
Al	2.05	0.068	59.96
Sb	0.38	-0.005	-916.63
As	1.08	-0.022	-50.24
Ba	3.96	-0.008	-35.37
Be	0.71	0.000	28.39
Bi	3.92	-0.006	-797.45
B	5.08	0.033	2.92
Cd	2.38	0.000	6376.32
Ca	2.16	0.085	0.70
Ce	5.32	-0.306	-35.66
Cr	1.39	(-0.029	-12.21
Co	0.27	0.022	34.69
Cu	2.95	-0.011	-37.31
Eu	4.09	-0.007	-27.58
Fe	1.87	0.032	14.36
La	0.35	-0.022	-50.94
Pb	0.27	0.014	150.01
Li	3.99	-0.010	-47.62
Mg	0.78	0.015	7.20
Mn	0.92	0.011	4.16
Hg	3.83	(-0.053	-9.08
Mo	1.69	-0.003	-74.48
Nd	5.53	(-0.640	-21.86
Ni	3.42	-0.008	-60.28
P	1.41	0.114	12.79
K	3.32	-0.528	-24.44
Sm	5.10	-0.354	-30.58
Se	1.74	-0.064	-26.70
Si	4.31	0.631	16.43
Ag	15.13	-0.018	-28.50
Na	5.69	0.059	76.28
Sr	3.70	-0.003	-40.42
S	0.78	0.034	6.50
Ta	3.72	-0.035	-47.06
Tl	4.30	-0.331	-21.52
Th	1.07	-0.176	-43.95
Sn	1.29	0.016	107.80
Ti	4.74	0.129	2.06
W	1.35	-0.019	-35.11
U	5.14	-2.399	-29.80
V	4.29	-0.016	-21.91
Zn	9.48	0.231	1.22
Zr	4.66	-0.036	-34.15

ICP Data Report - Sample F1085 - (File 7)

Sample name : F1085
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : 000013
Programme : SST 19-Apr-90 09:17:05

NAME	MV INT	CONCEN	DILCOR	RSD
Al	4.10	5.418	547.20✓	0.81
Sb	0.39	0.172	17.373	26.19
As	1.12	0.018	1.858	22.98
Ba	4.18	0.009	0.869	19.07
Be	0.74	0.001	0.134	6.25
Bi	5.40	1.487	150.15✓	0.66
B	4.98	0.025	2.561	3.31
Cd	2.39	0.001	0.072	49.13
Ca	1.52	0.053	5.321✓	1.32
Ce	5.59	0.232	23.469	27.20
Cr	1.70	0.064	6.459✓	5.18
Co	0.27	0.045	4.527	19.24
Cu	3.08	0.017	1.706	17.32
Eu	4.31	0.003	0.324	42.80
Fe	9.83	1.338	135.13✓	0.88
La	0.37	0.024	2.474	18.23
Pb	0.28	0.234	23.663	20.99
Li	4.15	0.009	0.949	34.77
Mg	0.88	0.021	2.071✓	14.02
Mn	8.02	0.540	54.494✓	1.44
Hg	4.11	(-0.034	(-3.456	-7.45
Mo	1.76	0.009	0.878	11.15
Nd	5.72	-0.292	-29.50	-43.58
Ni	3.64	0.021	2.105	5.99
P	2.14	0.719	72.620✓	2.36
K	3.47	0.186	18.822	42.10
Sm	5.35	0.236	23.804	30.12
Se	1.83	0.123	12.444	2.49
Si	4.10	0.494	49.851✓	6.26
Ag	15.84	0.015	1.525	30.69
Na	13.44	7.173	724.43✓	0.45
Sr	5.07	0.053	5.376✓	0.58
S	0.83	0.100	10.050	22.51
Ta	3.86	0.025	2.561	59.21
Ti	4.57	0.337	33.990	23.79
Th	1.12	0.200	20.179✓	21.98
Sn	1.30	0.021	2.141	26.56
Ti	3.70	0.008	0.850	22.37
W	1.42	0.035	3.496	22.08
U	5.45	1.924	194.34	20.58
V	4.55	0.016	1.657	20.90
Zn	7.71	0.173	17.465✓	0.60
Zr	4.86	0.032	3.278	26.87

Dilution factor : 101.000

ICP Data Report - Sample F1085 - (File 8)

Sample name : F1085
Sample code 1 : SAMPLE
Sample code 2 : 500-10
Sample code 3 : 000013
Programme : SST 19-Apr-90 09:21:46

NAME	HV INT	CONCEN	DILCOR	RSD
Al	11.60	24.956	524.07	0.56
Sb	0.39	0.260	5.470✓	16.34
As	1.15	0.039	0.813✓	8.06
Ba	4.37	0.022	0.467✓	12.31
Be	0.74	0.001	0.031✓	4.81
Bi	10.44	6.584	138.27	0.67
B	5.01	0.027	0.574✓	6.67
Cd	2.42	0.003	0.060✓	20.70
Ca	4.15	0.187	3.925	0.36
Ce	5.57	0.193	4.055✓	58.07
Cr	2.94	0.438	9.193	1.38
Co	0.28	0.059	1.229✓	38.30
Cu	3.16	0.033	0.700✓	13.37
Eu	4.30	0.003	0.058	65.98
Fe	40.70	6.404	134.48	0.23
La	0.37	0.040	0.839✓	24.35
Pb	0.29	0.511	10.735✓	9.62
Li	4.12	0.006	0.124	69.90
Mg	1.83	0.066	1.386	0.39
Mn	35.10	2.555	53.656	0.20
Hg	4.19	(-0.029	(-0.601	-9.82
Mo	1.80	0.016	0.335✓	13.38
Nd	5.69	-0.342	-7.186✓	-44.51
Ni	3.97	0.065	1.356✓	11.66
P	4.85	2.984	62.670	2.21
K	3.45	0.092	1.922✓	144.38
Sm	5.32	0.163	3.416✓	77.57
Se	1.92	0.308	6.468✓	13.53
Si	5.65	1.533	32.198	3.75
Ag	15.85	0.016	0.331✓	51.32
Na	42.19	33.545	704.44	0.20
Sr	9.71	0.243	5.110	0.21
S	1.07	0.402	8.438✓	1.10
Ta	3.88	0.035	0.730✓	17.69
Tl	4.58	0.371	7.797✓	35.95
Th	1.12	0.163	3.423	66.05
Sn	1.33	0.031	0.644✓	24.10
Ti	3.74	0.013	0.264✓	30.83
W	1.45	0.057	1.193✓	6.08
U	5.59	3.938	83.692✓	18.67
V	4.54	0.015	0.325✓	42.05
Zn	5.64	0.105	2.214	0.59
Zr	4.94	0.061	1.278✓	17.58

Dilution factor : 21.0000

ICP Data Report - Spike of Sample F1085 - (File 11)

Sample name : F1087
Sample code 1 : SPIKE
Sample code 2 : 100-10
Sample code 3 : 000013
Programme : SST 19-Apr-90 09:33:58

NAME	MV INT	CONCEN	DILCOR	RSD
Al	3.95	5.021	507.09	0.42
Sb	0.39	0.133	13.402	29.40
As	1.10	-0.006	-0.582	-151.41
Ba	5.53	0.107	10.831	1.87
Be	0.71	0.000	0.020	152.03
Bi	5.50	1.592	160.79	3.06
B	6.47	0.140	14.099	0.83
Cd	3.80	0.089	8.997	1.16
Ca	4.44	0.202	20.399	1.38
Ce	5.32	-0.297	-30.01	-40.41
Cr	2.49	0.302	30.544	0.76
Co	0.28	0.082	8.300	9.46
Cu	3.43	0.092	9.264	5.83
Eu	4.12	-0.006	-0.566	-43.79
Fe	14.85	2.162	218.35	1.12
La	0.38	0.071	7.161	15.75
Pb	0.27	0.170	17.210	14.43
Li	4.83	0.092	9.244	4.74
Mg	86.51	4.120	416.09	1.10
Mn	8.34	0.563	56.883	1.21
Hg	4.36	(-0.024	(-2.461	-12.56
Mo	2.22	0.088	8.933	1.90
Nd	5.52	(-0.661	(-66.75	-21.22
Ni	4.23	0.098	9.907	5.58
P	2.66	1.156	116.71	3.69
K	3.36	-0.337	-34.01	-45.88
Sm	5.10	-0.361	-36.47	-40.03
Se	1.81	0.071	7.169	63.81
Si	3.99	0.418	42.189	4.24
Ag	16.55	0.048	4.889	84.71
Na	14.68	8.304	838.67	0.63
Sr	7.26	0.143	14.464	0.43
S	1.29	0.673	67.976	0.29
Ta	3.78	-0.007	-0.700	-235.49
Tl	4.36	-0.183	-18.49	-62.27
Th	1.07	-0.189	-19.12	-43.37
Sn	1.58	0.139	14.047	4.75
Ti	4.43	0.093	9.345	3.03
W	1.35	-0.020	-2.055	-73.65
U	5.19	-1.741	-175.8	-51.50
V	4.34	-0.009	-0.926	-39.04
Zn	10.14	0.252	25.479	0.53
Zr	4.82	0.018	1.827	70.96

Dilution factor : 101.000

Sample name : F1087
Sample code 1 : SPIKE
Sample code 2 : 500-10
Sample code 3 : 000013
Programme : SST 19-Apr-90 09:38:10

NAME	MV INT	CONCEN	DILCOR	RSD
Al	10.68	22.571	473.99	0.53

ICP Data Report - Spike of F1085 - (File 12)

Sample name : F1087
Sample code 1 : SPIKE
Sample code 2 : 500-10
Sample code 3 : 000013
Programme : SST 19-Apr-90 09:38:10

NAME	MV INT	CONCEN	DILCOR	RSD
Al	10.68	22.571	473.99	0.53
Sb	0.42	0.678	14.242	4.35
As	1.16	0.049	1.021	14.61
Ba	10.96	0.503	10.565	0.24
Be	0.74	0.001	0.028	8.84
Bi	12.24	8.398	176.36	0.47
B	11.02	0.488	10.254	1.00
Cd	10.01	0.477	10.026	0.88
Ca	14.39	0.710	14.914	0.51
Ce	5.51	0.073	1.540	73.99
Cr	4.55	0.922	19.370	0.03
Co	0.39	0.468	9.831	5.31
Cu	5.38	0.515	10.824	0.23
Eu	4.28	0.002	0.040	45.94
Fe	63.36	10.122	212.56	0.37
La	0.48	0.469	9.854	1.26
Pb	0.31	0.994	20.873	0.00
Li	8.26	0.507	10.652	0.10
Mg	38.20	1.807	37.950	0.31
Mn	37.58	2.740	57.543	0.62
Hg	4.44	-0.013	-0.265	-7.65
Mo	4.46	0.470	9.871	1.15
Nd	5.88	0.022	0.468	646.39
Ni	7.65	0.541	11.358	0.70
P	8.02	5.630	118.22	1.18
K	3.52	0.448	9.406	8.78
Sm	5.27	0.029	0.617	172.07
Se	1.99	0.446	9.365	1.19
Si	5.18	1.219	25.604	0.66
Ag	21.33	0.272	5.708	16.77
Na	48.60	39.416	827.74	0.16
Sr	21.16	0.713	14.969	0.35
S	1.23	0.604	12.688	1.78
Ta	4.21	0.168	3.529	0.14
Tl	4.57	0.348	7.299	14.95
Th	1.11	0.105	2.208	41.76
Sn	2.49	0.522	10.967	0.69
Ti	7.70	0.471	9.897	0.22
W	1.44	0.048	0.999	11.10
U	5.51	2.903	60.957	11.26
V	4.54	0.015	0.319	23.24
Zn	22.10	0.643	13.503	0.69
Zr	5.60	0.284	5.970	1.20

Dilution factor : 21.0000

ICP Data Report - Acid Digested Standard 82C11A - (File 13)

Sample name : F1008
Sample code 1 : DIGEST
Sample code 2 : DIRECT
Sample code 3 : 000013
Programme : SST 19-Apr-90 09:43:08

NAME	MV INT	CONCEN	RSD
Al	5.88	10.063	1.45
Sb	0.39	0.246	18.33
As	1.42	0.262	2.83
Ba	130.62	9.328	1.74
Be	0.79	0.004	4.42
Bi	4.21	0.280	13.02
B	5.31	0.050	11.73
Cd	2.52	0.009	21.14
Ca	5.75	0.269	1.89
Ce	9.99	8.866	0.56
Cr	29.93	8.555	1.83
Co	2.56	8.600	3.63
Cu	3.10	0.019	29.28
Eu	4.70	0.021	4.16
Fe	59.21	9.441	1.52
La	0.38	0.083	9.76
Pb	0.28	0.341	18.04
Li	81.35	9.339	2.39
Mg	2.33	0.090	1.83
Mn	125.29	9.270	1.65
Hg	4.47	-0.010	-47.80
Mo	1.89	0.031	8.35
Nd	10.04	7.736	4.51
Ni	75.07	9.268	1.53
P	1.49	0.176	8.13
K	3.38	-0.263	-50.60
Sm	5.22	-0.067	-135.85
Se	3.23	2.921	2.60
Si	4.33	0.645	4.64
Ag	16.78	0.059	8.32
Na	6.25	0.577	9.74
Sr	3.96	0.008	11.46
S	0.92	0.207	6.34
Ta	21.42	7.325	0.93
Tl	4.59	0.384	38.16
Th	1.14	0.352	21.51
Sn	23.32	9.354	1.21
Ti	83.30	9.226	1.68
W	2.31	0.739	3.69
U	5.66	5.010	11.19
V	4.42	0.000	
Zn	4.55	0.070	3.50
Zr	32.26	9.328	1.63

ICP Data Report - Acid Blank - (File 14)

Sample name : HNO3
Programme : SST 19-Apr-90 09:48:24

NAME	MV INT	CONCEN	RSD
Al	1.96	-0.169	-16.21
Sb	0.37	-0.044	-66.67
As	1.07	-0.029	-17.39
Ba	3.86	-0.015	-9.37
Be	0.69	-0.000	-43.59
Bi	3.79	-0.139	-34.05
B	4.67	0.001	332.54
Cd	2.26	-0.007	-9.03
Ca	0.47	-0.001	-13.58
Ce	5.23	-0.467	-12.83
Cr	1.29	(-0.060	-7.45
Co	0.26	-0.020	-56.25
Cu	2.88	-0.027	-9.05
Eu	4.04	-0.009	-10.82
Fe	1.61	-0.010	-3.63
La	0.35	-0.030	-32.83
Pb	0.27	0.071	45.83
Li	4.08	0.001	551.09
Mg	0.45	-0.000	-29.04
Mn	0.75	-0.002	-35.38
Hg	4.19	(-0.029	-10.54
Mo	1.63	-0.012	-5.72
Nd	5.42	(-0.847	-9.40
Ni	3.33	-0.019	-24.70
P	1.29	0.012	168.99
K	3.29	-0.696	-9.86
Sm	5.02	-0.546	-12.21
Se	1.71	-0.129	-19.31
Si	3.26	-0.078	-8.60
Ag	14.89	-0.029	-14.95
Na	5.38	-0.227	-11.66
Sr	3.64	-0.005	-12.98
S	0.72	-0.038	-13.19
Ta	3.62	-0.074	-10.21
Tl	4.19	(-0.628	-10.05
Th	1.05	-0.334	-16.76
Sn	1.21	-0.021	-39.90
Ti	3.47	-0.018	-12.54
W	1.31	-0.051	-12.88
U	5.07	-3.387	-10.46
V	4.21	-0.025	-0.48
Zn	2.33	-0.003	-6.18
Zr	4.61	-0.053	-9.39

ICP Data Report - LMCS Check Standard 78C11J - (File 15)

Sample name : 78C11J
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 09:52:37

NAME	MV INT	CONCEN	RSD
Al	2.00	-0.068	-15.38
Sb	1.09	10.591	1.18
As	1.16	0.044	18.97
Ba	146.91	10.416	0.94
Be	0.71	0.000	123.72
Bi	3.84	-0.088	-28.18
B	137.29	10.173	0.55
Cd	162.34	10.012	0.92
Ca	209.66	10.689	0.86
Ce	10.14	9.175	1.22
Cr	33.25	9.551	1.09
Co	2.87	9.727	0.57
Cu	51.35	10.517	0.88
Eu	4.54	0.014	7.31
Fe	64.73	10.346	0.71
La	0.37	0.036	30.93
Pb	0.27	0.078	0.00
Li	91.73	10.608	0.70
Mg	219.35	10.479	0.97
Mn	138.86	10.281	0.91
Hg	4.09	(-0.035	-11.09
Mo	1.73	0.004	36.37
Nd	10.76	9.076	3.51
Ni	81.91	10.154	0.63
P	1.34	0.051	34.41
K	8.51	24.914	1.12
Sm	4.93	(-0.775	-4.39
Se	3.42	3.316	2.26
Si	3.27	-0.067	-9.81
Ag	14.68	(-0.039	-6.98
Na	33.43	25.503	0.87
Sr	261.95	10.580	0.96
S	0.93	0.217	4.65
Ta	3.65	-0.062	-5.75
Tl	4.31	-0.328	-16.88
Th	1.07	-0.189	-23.69
Sn	120.18	50.427	0.94
Ti	3.43	(-0.023	-5.57
W	1.55	0.136	8.71
U	5.30	-0.080	-351.61
V	4.20	-0.026	-17.47
Zn	311.25	10.091	0.84
Zr	4.60	-0.057	-6.57

ICP Data Report - LMCS Check Standard 82B38F - (File 16)

Sample name : 82B38F
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 09:57:20

NAME	MV INT	CONCEN	RSD
Al	3.63	4.198	1.58
Sb	0.41	0.506	1.68
As	2.96	1.528	0.96
Ba	4.20	0.010	17.94
Be	0.73	0.001	34.69
Bi	57.66	54.288	0.85
B	5.47	0.063	4.91
Cd	2.42	0.003	40.50
Ca	0.73	0.012	0.64
Ce	5.63	0.314	13.05
Cr	1.63	0.044	11.62
Co	0.27	0.024	9.12
Cu	4.03	0.224	1.56
Eu	220.96	9.892	0.09
Fe	1.97	0.048	5.86
La	12.55	>47.153	0.49
Pb	2.77	53.426	0.77
Li	4.28	0.025	17.91
Mg	0.59	0.006	0.89
Mn	0.91	0.010	2.66
Hg	4.89	0.017	14.65
Mo	1.79	0.014	15.81
Nd	6.00	0.235	35.15
Ni	3.65	0.022	14.24
P	1.62	0.286	5.77
K	3.33	-0.487	-21.53
Sm	9.43	9.936	0.75
Se	1.88	0.226	5.77
Si	4.16	0.531	3.11
Ag	246.50	10.797	0.49
Na	5.53	-0.091	-31.98
Sr	3.89	0.005	13.79
S	0.86	0.134	10.36
Ta	4.16	0.147	3.21
Tl	6.65	5.646	1.78
Th	7.85	53.294	0.50
Sn	1.42	0.070	6.68
Ti	4.05	0.049	6.51
W	1.39	0.009	92.71
U	9.10	53.477	1.11
V	6.20	0.220	3.16
Zn	2.64	0.007	7.86
Zr	5.07	0.105	8.25

ICP Data Report - LMCS Check Standard 77C11I - (File 17)

Sample name : 77C11I
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 10:01:41

NAME	MV INT	CONCEN	RSD
Al	21.27	50.184	0.81
Sb	0.47	1.322	7.83
As	71.23	57.765	0.66
Ba	4.34	0.020	13.08
Be	238.03	9.838	0.55
Bi	4.97	1.052	3.17
B	5.56	0.070	0.75
Cd	2.62	0.015	10.58
Ca	0.74	0.013	0.23
Ce	5.58	0.221	45.03
Cr	1.50	0.004	99.35
Co	0.30	0.153	3.73
Cu	3.30	0.064	8.80
Eu	4.33	0.004	37.48
Fe	1.97	0.049	13.03
La	0.37	0.030	45.81
Pb	0.29	0.454	9.76
Li	4.23	0.019	2.28
Mg	0.52	0.003	4.16
Mn	1.04	0.019	4.69
Hg	395.71	25.568	0.10
Mo	286.55	48.572	0.80
Nd	5.81	-0.108	-91.66
Ni	7.35	0.501	0.75
P	70.59	>57.863	1.02
K	3.45	0.082	129.01
Sm	5.39	0.318	32.27
Se	27.91	52.507	0.60
Si	70.49	45.198	0.49
Ag	22.48	0.326	0.77
Na	5.87	0.220	21.74
Sr	3.92	0.006	18.45
S	42.86	>53.038	0.68
Ta	119.75	48.190	0.68
Tl	25.27	52.995	1.13
Th	1.24	1.117	6.33
Sn	1.74	0.205	5.94
Ti	439.15	50.431	0.96
W	27.78	20.931	0.68
U	6.29	13.916	4.64
V	84.95	9.932	0.54
Zn	3.56	0.037	0.71
Zr	152.09	49.976	0.95

ICP Data Report - Acid Blank - (File 22)

Sample name : HNO3
Programme : SST 19-Apr-90 10:31:48

NAME	MV INT	CONCEN	RSD
Al	1.94	-0.232	-7.87
Sb	0.37	-0.113	-53.71
As	1.06	-0.034	-3.67
Ba	3.81	(-0.019	-5.82
Be	0.69	-0.001	-26.96
Bi	3.73	(-0.303	-12.90
B	4.58	-0.005	-65.95
Cd	2.22	(-0.010	-7.10
Ca	0.48	-0.001	-8.33
Ce	5.15	(-0.622	-6.75
Cr	1.28	(-0.063	-3.86
Co	0.26	-0.016	-23.08
Cu	2.84	(-0.036	-7.86
Eu	3.98	(-0.012	-5.47
Fe	1.59	(-0.014	-4.45
La	0.35	-0.035	-29.40
Pb	0.27	-0.014	-173.20
Li	3.85	(-0.027	-9.23
Mg	0.44	-0.001	-6.52
Mn	0.75	-0.002	-13.88
Hg	4.40	-0.015	-13.52
Mo	1.62	-0.014	-8.71
Nd	5.31	(-1.045	-4.18
Ni	3.27	(-0.026	-8.51
P	1.28	0.002	809.72
K	3.28	-0.744	-12.25
Sm	4.95	(-0.728	-6.26
Se	1.70	-0.148	-13.04
Si	3.21	-0.111	-6.65
Ag	14.62	(-0.042	-6.40
Na	5.30	(-0.300	-7.25
Sr	3.59	-0.007	-5.68
S	0.73	-0.037	-32.52
Ta	3.59	(-0.089	-5.63
Tl	4.13	(-0.770	-3.81
Th	1.04	(-0.442	-2.73
Sn	1.20	-0.022	-21.73
Ti	3.42	(-0.023	-6.47
W	1.31	-0.052	-10.09
U	4.99	(-4.516	-6.44
V	4.16	(-0.031	-9.86
Zn	2.31	-0.004	-10.83
Zr	4.56	-0.069	-7.46

ICP Data Report - Acid Blank - (File 23)

Sample name : HNO3
Programme : SST 19-Apr-90 10:35:25

NAME	MV INT	CONCEN	RSD
Al	1.92	(-0.278	-11.18
Sb	0.37	-0.128	-35.25
As	1.05	-0.044	-8.81
Ba	3.78	(-0.021	-11.59
Be	0.68	-0.001	-20.00
Bi	3.71	(-0.225	-20.53
B	4.53	-0.009	-66.96
Cd	2.20	(-0.011	-1.19
Ca	0.47	-0.001	-12.74
Ce	5.12	(-0.688	-13.18
Cr	1.26	(-0.068	-5.56
Co	0.26	-0.001	-300.01
Cu	2.82	(-0.040	-10.19
Eu	3.95	(-0.013	-9.75
Fe	1.57	(-0.017	-38.84
La	0.35	-0.050	-13.32
Pb	0.26	-0.128	-9.62
Li	3.82	(-0.031	-10.12
Mg	0.44	-0.001	-15.26
Mn	0.74	(-0.003	-21.36
Hg	4.46	-0.011	-108.21
Mo	1.60	(-0.017	-20.41
Nd	5.32	(-1.030	-7.12
Ni	3.27	(-0.026	-6.48
P	1.26	-0.013	-178.13
K	3.24	(-0.937	-10.43
Sm	4.92	(-0.804	-11.85
Se	1.68	(-0.188	-10.69
Si	3.18	(-0.127	-11.19
Ag	14.53	(-0.046	-11.30
Na	5.36	(-0.337	-15.02
Sr	3.57	(-0.008	-14.01
S	0.72	(-0.048	-37.62
Ta	3.57	(-0.095	-16.69
Tl	4.12	(-0.813	-15.82
Th	1.03	(-0.492	-15.42
Sn	1.20	-0.025	-14.32
Ti	3.40	(-0.026	-11.09
W	1.30	(-0.063	-8.04
U	4.96	(-4.982	-12.47
V	4.15	(-0.033	-17.17
Zn	2.29	(-0.004	-23.36
Zr	4.54	-0.075	-12.22

ICP Data Report (File 28)

Sample name : E92
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : 89044
Programme : SST 19-Apr-90 10:56:38

NAME	MV INT	CONCEN	DILCOR	RSD
Al	5.41	8.816	890.41	2.20
Sb	0.37	-0.152	-15.39	-44.70
As	1.03	(-0.062	(-6.240	-6.84
Ba	3.81	(-0.019	(-1.893	-7.33
Be	0.67	-0.001	-0.134	-35.32
Bi	5.64	1.733	175.03	1.99
B	4.52	-0.010	-1.028	-16.42
Cd	2.19	(-0.012	(-1.167	-11.73
Ca	1.49	0.051	5.144	0.75
Ce	5.07	(-0.786	(-79.40	-5.20
Cr	1.47	-0.004	-0.385	-163.14
Co	0.26	-0.026	-2.641	-8.25
Cu	2.81	(-0.042	(-4.248	-6.96
Eu	3.91	(-0.015	(-1.501	-6.49
Fe	9.37	1.262	127.51	0.64
La	0.35	-0.054	-5.468	-7.14
Pb	0.26	-0.057	-5.737	-57.28
Li	3.78	(-0.036	(-3.638	-4.05
Mg	2.26	0.087	8.737	1.00
Mn	8.24	0.556	56.133	1.09
Hg	4.64	0.001	0.097	554.13
Mo	1.61	(-0.016	(-1.653	-9.68
Nd	5.23	(-1.188	(-119.9	-5.32
Ni	3.32	-0.020	-2.040	-10.59
P	2.45	0.978	98.756	2.83
K	3.18	(-1.223	(-123.5	-3.41
Sm	4.86	(-0.932	(-94.10	-5.51
Se	1.70	-0.145	-14.61	-15.47
Si	3.77	0.270	27.317	5.25
Ag	14.36	(-0.054	(-5.461	-5.39
Na	14.83	8.447	853.15	1.18
Sr	5.00	0.050	5.096	1.60
S	0.76	0.001	0.127	602.74
Ta	3.52	(-0.118	(-11.88	-2.41
Tl	4.08	(-0.891	(-89.99	-8.20
Th	1.02	(-0.578	(-58.41	-5.16
Sn	1.18	(-0.030	(-3.041	-19.43
Ti	3.39	(-0.027	(-2.721	-6.70
W	1.30	(-0.061	(-6.11)	-30.22
U	4.94	(-5.161	(-521.3	-7.62
V	4.11	(-0.038	(-3.799	-13.46
Zn	2.99	0.019	1.905	4.25
Zr	4.53	-0.079	-7.937	-8.17

Dilution factor : 101.000

ICP Data Report (File 29)

Sample name : F92
Sample code 1 : DAMPLE
Sample code 2 : 500-2010
Sample code 3 : 89044
Programme : SST 19-Apr-90 11:00:53

NAME	MV INT	CONCEN	DILCOR	RSD
Al	17.84	41.227	865.76	0.74
Sb	0.38	0.049	1.032	86.60
As	1.12	0.013	0.277	38.19
Ba	4.20	0.010	0.205	23.34
Be	0.70	-0.000	-0.002	-251.12
Bi	13.06	9.228	193.79	0.26
B	4.78	0.010	0.205	58.75
Cd	2.32	-0.003	-0.071	-16.56
Ca	4.68	0.214	4.495	0.45
Ce	5.31	-0.325	-6.818	-29.84
Cr	2.32	0.250	5.241	1.95
Co	0.27	0.015	0.314	52.04
Cu	3.01	0.000	0.003	3582.99
Eu	4.10	-0.006	-0.134	-22.45
Fe	37.31	5.847	122.79	0.03
La	0.36	-0.015	-0.325	-90.14
Pb	0.27	0.099	2.087	21.43
Li	3.93	-0.017	-0.363	-16.50
Mg	5.35	0.234	4.920	0.36
Mn	35.14	2.559	53.732	0.39
Hg	5.01	0.025	0.529	20.48
Mo	1.73	0.004	0.094	48.09
Nd	5.47	(-0.743	(-15.59	-4.85
Ni	3.86	0.050	1.056	6.29
P	7.14	4.891	102.72	2.17
K	3.30	-0.629	-13.22	-19.12
Sm	5.08	-0.407	-8.549	-22.43
Se	1.87	0.193	4.050	12.01
Si	6.08	1.821	38.241	0.37
Ag	15.10	-0.019	-0.405	-30.90
Na	49.50	40.250	845.25	0.32
Sr	10.31	0.268	5.632	0.31
S	0.91	0.194	4.073	3.91
Ta	3.71	-0.038	-0.803	-26.72
Tl	4.41	-0.067	-1.406	-182.29
Th	1.07	-0.208	-4.361	-30.69
Sn	1.27	0.007	0.148	84.07
Ti	3.61	-0.002	-0.042	-95.21
W	1.41	0.028	0.594	61.87
U	5.33	0.362	7.607	161.32
V	4.43	0.002	0.034	248.71
Zn	3.89	0.048	1.011	0.83
Zr	4.75	-0.005	-0.107	-191.19

Dilution factor : 21.0000

ICP Data Report (File 30)

Sample name : F93
Sample code 1 : DUPSAM
Sample code 2 : 100-10
Sample code 3 : 89044
Programme : SST 19-Apr-90 11:05:08

NAME	MV INT	CONCEN	DILCOR	RSD
Al	5.22	8.325	840.82	1.32
Sb	0.38	0.118	11.913	54.49
As	1.11	0.006	0.638	266.36
Ba	4.10	0.002	0.243	58.63
Be	0.72	0.001	0.073	33.80
Bi	5.89	1.979	199.88	2.15
B	4.84	0.015	1.513	33.61
Cd	2.34	-0.002	-0.225	-46.66
Ca	1.39	0.046	4.638	1.61
Ce	5.47	-0.006	-0.595	-907.87
Cr	1.56	0.023	2.349	18.10
Co	0.27	0.034	3.395	23.13
Cu	3.02	0.003	0.264	93.66
Eu	4.22	-0.001	-0.085	-140.17
Fe	8.94	1.192	120.40	1.45
La	0.36	0.001	0.130	866.06
Pb	0.27	0.142	14.341	15.00
Li	4.05	-0.003	-0.261	-42.53
Mg	6.54	0.291	29.414	1.38
Mn	7.76	0.520	52.539	1.55
Hg	5.06	0.028	2.831	16.84
Mo	1.72	0.003	0.310	26.25
Nd	5.63	-0.452	-45.69	-14.38
Ni	3.57	0.012	1.260	41.95
P	2.76	1.239	125.09	3.30
K	3.39	-0.204	-20.64	-21.78
Sm	5.24	-0.040	-4.008	-142.15
Se	1.80	0.064	6.492	37.89
Si	4.03	0.445	44.909	1.59
Ag	15.49	-0.001	-0.098	-331.92
Na	14.66	8.288	837.12	1.53
Sr	5.08	0.054	5.444	2.24
S	0.83	0.093	9.414	9.20
Ta	3.80	0.000	0.014	4804.04
Tl	4.46	0.055	5.565	85.40
Th	1.10	0.029	2.921	175.33
Sn	1.28	0.013	1.299	17.44
Ti	3.64	0.001	0.109	161.78
W	1.40	0.016	1.655	92.32
U	5.32	0.174	17.581	173.33
V	4.46	0.005	0.519	60.40
Zn	3.23	0.026	2.674	2.61
Zr	4.79	0.009	0.879	48.82

Dilution factor : 101.000

ICP Data Report (File 31)

Sample name : E93
Sample code 1 : DUPSAM
Sample code 2 : 500-10
Sample code 3 : 89044
Programme : SSI 19-Apr-90 11:09:18

NAME	MV INT	CONCEN	DILCOR	RSD
Al	17.10	39.305	825.41	1.11
Sb	0.39	0.211	4.438	42.63
As	1.15	0.036	0.750	19.63
Ba	4.31	0.018	0.376	17.11
Be	0.72	0.001	0.013	65.65
Bi	13.15	9.322	195.76	0.92
B	4.81	0.012	0.259	52.31
Cd	2.36	-0.001	-0.018	-165.23
Ca	4.19	0.189	3.967	1.12
Ce	5.47	0.003	0.055	4355.11
Cr	2.28	0.237	4.987	3.71
Co	0.27	0.022	0.471	63.10
Cu	3.09	0.018	0.381	34.81
Eu	4.23	-0.000	-0.004	-1187.8
Fe	35.57	5.563	116.81	0.82
La	0.37	0.023	0.487	44.10
Pb	0.28	0.270	5.666	7.89
Li	4.04	-0.004	-0.084	-129.03
Mg	3.28	0.135	2.842	0.90
Mn	33.42	2.431	51.042	0.90
Hg	4.82	0.013	0.264	51.23
Mo	1.78	0.013	0.277	16.88
Nd	5.60	-0.512	-10.76	-28.98
Ni	3.96	0.062	1.302	8.48
P	7.87	5.503	115.56	1.36
K	3.40	-0.136	-2.849	-84.79
Sm	5.24	-0.026	-0.550	-489.45
Se	1.89	0.234	4.921	17.02
Si	6.49	2.100	44.105	2.24
Ag	15.58	0.003	0.069	265.93
Na	48.42	39.254	824.33	0.94
Sr	9.98	0.255	5.345	0.97
S	0.92	0.205	4.303	3.84
Ta	3.82	0.007	0.140	187.11
Tl	4.48	0.117	2.457	182.72
Th	1.10	0.016	0.331	625.18
Sn	1.31	0.023	0.487	21.36
Ti	3.71	0.010	0.212	35.72
W	1.44	0.053	1.110	21.63
U	5.49	2.540	53.350	31.77
V	4.49	0.009	0.189	104.47
Zn	4.47	0.067	1.411	2.54
Zr	4.87	0.037	0.784	39.19

Dilution factor : 21.0000

ICP Data Report - Acid Blank - (File 32)

Sample name : HNO3
Programme : SST 19-Apr-90 11:13:28

NAME	MV INT	CONCEN	RSD
Al	1.93	-0.253	-16.20
Sb	0.37	-0.074	-40.00
As	1.05	-0.044	-20.44
Ba	3.80	(-0.019	-8.95
Be	0.68	-0.001	-26.15
Bi	3.71	(-0.224	-28.45
B	4.46	-0.014	-35.03
Cd	2.21	(-0.010	-5.79
Ca	0.47	-0.001	-11.27
Ce	5.14	(-0.647	-8.84
Cr	1.26	(-0.068	-4.38
Co	0.36	-0.017	-44.61
Cu	2.83	(-0.038	-12.61
Eu	3.97	(-0.012	-8.86
Fe	1.60	-0.012	-17.73
La	0.35	-0.036	-26.96
Pb	0.27	-0.000	*******
Li	3.83	(-0.029	-12.16
Mg	0.44	-0.001	-10.60
Mn	0.74	-0.003	-5.14
Hg	4.58	-0.003	-101.25
Mo	1.62	(-0.015	-8.76
Nd	5.30	(-1.071	-8.15
Ni	3.24	(-0.030	-10.24
P	1.29	0.008	296.65
K	3.23	(-1.002	-2.99
Sm	4.94	(-0.744	-8.34
Se	1.70	-0.145	-5.23
Si	3.18	(-0.129	-9.79
Ag	14.57	(-0.044	-6.64
Na	5.38	(-0.316	-9.66
Sr	3.58	-0.008	-8.69
S	0.72	-0.042	-33.52
Ta	3.57	(-0.095	-8.10
Tl	4.12	(-0.799	-7.55
Th	1.04	(-0.463	-9.02
Sn	1.19	(-0.028	-33.34
Ti	3.41	(-0.025	-7.21
W	1.30	(-0.061	-11.20
U	4.97	(-4.780	-8.74
V	4.14	(-0.034	-4.68
Zn	2.29	(-0.004	-21.36
Zr	4.55	-0.072	-10.58

ICP Data Report - LMCS Check Standard 78C11J - (File 33)

Sample name : 78C11J
Sample code 1 : SST1
Sample code 3 : DIRECT
Programme : SST 19-Apr-90 11:17:13

NAME	MV INT	CONCEN	RSD
Al	1.97	-0.137	-15.35
Sb	1.07	10.257	0.36
As	1.14	0.034	24.35
Ba	144.69	10.253	0.70
Be	0.69	-0.000	-34.64
Bi	3.79	-0.141	-3.68
B	134.29	9.943	0.65
Cd	158.51	9.772	0.97
Ca	206.02	10.503	0.57
Ce	9.98	8.857	0.92
Cr	32.51	9.330	0.99
Co	2.76	9.322	0.25
Cu	50.52	10.336	0.70
Dy	4.47	0.011	8.04
Fe	63.53	10.150	0.88
La	0.37	0.024	18.23
Pb	0.27	0.014	396.88
Li	89.69	10.361	0.52
Mg	214.46	10.245	0.70
Mn	135.96	10.065	0.84
Hg	4.24	(-0.026	-7.84
Mo	1.70	-0.001	-109.08
Nd	10.59	8.752	1.94
Ni	79.98	9.905	0.96
P	1.34	0.053	32.82
K	8.39	24.306	0.90
Sm	4.86	(-0.947	-4.23
Se	3.34	3.158	0.80
Si	3.21	-0.112	-8.22
Ag	14.44	(-0.050	-5.18
Na	32.89	25.012	0.87
Sr	257.58	10.401	0.66
S	0.91	0.196	15.52
Ta	3.58	(-0.092	-13.15
Tl	4.24	-0.496	-15.01
Th	1.06	-0.300	-10.64
Sn	117.24	49.177	0.77
Ti	3.38	(-0.029	-5.66
W	1.54	0.129	15.81
U	5.21	-1.327	-19.07
V	4.14	(-0.034	-18.06
Zn	304.88	9.882	0.86
Zr	4.55	-0.074	-8.91

9 1 1 2 5 0 1 0 9

ICP Data Report - LMCS Check Standard 82B38F - (File 34)

Sample name : 82B38F
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 11:21:20

NAME	MV INT	CONCEN	RSD
Al	3.58	4.069	1.38
Sb	0.41	0.452	4.98
As	2.90	1.477	1.89
Ba	4.15	0.006	29.78
Be	0.72	0.001	5.88
Bi	56.81	53.426	1.49
B	5.34	0.053	7.04
Cd	2.37	-0.000	-557.56
Ca	0.72	0.012	2.17
Ce	5.56	0.175	48.32
Cr	1.60	0.034	7.54
Co	0.26	0.002	149.99
Cu	3.98	0.213	0.87
Eu	218.33	9.772	1.47
Fe	1.95	0.046	7.95
La	12.40	>46.554	1.62
Pb	2.73	52.410	1.22
Li	4.16	0.011	25.99
Mg	0.58	0.006	1.89
Mn	0.89	0.009	6.31
Hg	5.12	0.032	5.58
Mo	1.75	0.008	17.90
Nd	5.93	0.110	49.02
Ni	3.57	0.012	43.95
P	1.62	0.282	6.00
K	3.29	-0.683	-16.18
Sm	9.31	9.654	0.99
Se	1.86	0.176	16.23
Si	4.09	0.487	3.07
Ag	243.27	10.646	1.11
Na	5.45	-0.159	-19.64
Sr	3.85	0.003	27.75
S	0.85	0.120	0.61
Ta	4.10	0.135	10.61
Tl	6.61	5.532	1.17
Th	7.75	52.474	1.49
Sn	1.40	0.061	1.59
Ti	4.00	0.043	4.73
W	1.38	0.001	377.53
U	8.98	51.750	1.10
V	6.18	0.217	2.11
Zn	2.60	0.006	5.67
Zr	5.02	0.088	8.18

ICP Data Report - LMCS Check Standard 77C11I - (File 35)

Sample name : 77C11I
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 11:25:06

NAME	MV INT	CONCEN	RSD
Al	21.36	50.406	0.19
Sb	0.46	1.288	6.31
As	71.36	57.875	0.46
Ba	4.28	0.016	20.19
Be	235.91	9.750	1.00
Bi	4.91	0.991	2.95
B	5.46	0.062	1.83
Cd	2.59	0.013	19.09
Ca	0.74	0.013	1.21
Ce	5.50	0.059	193.40
Cr	1.49	0.000	2621.02
Co	0.29	0.118	3.16
Cu	3.26	0.055	10.19
Eu	4.27	0.001	153.56
Fe	1.95	0.045	6.19
La	0.36	0.009	89.21
Pb	0.28	0.284	4.33
Li	4.15	0.009	27.52
Mg	0.51	0.003	5.92
Mn	1.02	0.018	6.79
Hg	394.44	25.485	0.91
Mo	286.54	48.570	0.58
Nd	5.70	-0.317	-25.18
Ni	7.35	0.502	1.43
P	72.26	)59.255	1.62
K	3.40	-0.160	-96.82
Sm	5.31	0.135	106.53
Se	27.87	52.432	1.18
Si	70.59	45.263	0.59
Ag	22.41	0.322	0.69
Na	5.76	0.128	44.89
Sr	3.87	0.004	34.51
S	43.60	)53.973	1.14
Ta	119.44	48.062	0.84
Tl	25.32	53.112	0.17
Th	1.22	1.004	6.23
Sn	1.73	0.201	1.41
Ti	441.46	50.698	0.22
W	27.83	20.969	0.26
U	6.23	13.003	1.81
V	85.53	10.005	0.09
Zn	3.53	0.036	3.64
Zr	152.84	50.232	0.26

APPENDIX A
ANALYTICAL ANALYSIS CARDS

9 1 1 2 2 3 0 1 0 7 2

9 1 1 2 0 6 9 1 0 7 3

Physical Properties

Serial No	Sample Point	Date	Time Issued	Priority
F 77.-5003	~~SEGMENT-2~~	11-15-89	10:22	16

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

Sample Size	Customer ID
?	89-044

Remarks, Calculations, Results:

Homogenization complete 12-21-89 Jar# 130

WHC N 3134 09 9

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP KHS	6A297 61300 6B090			
Hrs 12-21-89	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
			DMS

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

2-3

Serial No.	Sample Point	Date	Time Issued	Priority
F 77.-5001	~~SEGMENT-2~~	11-15-89	10:22	18

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

Sample Size	Customer ID
? 3.21g	89-044

Remarks, Calculations, Results: Bottle #25

DUPLICATE SAMPLE

Bottle 25
Sample + Bottle 25.84
Tare 22.63
Sample 3.2g

Sent to PNL

WHC N 3133

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP JRS	6A297 61300 65286			
Hrs 11-15-89	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
			DMS

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

2-3

Serial No.	Sample Point	Date	Time Issued	Priority
F 77.-5002	~~SEGMENT-2~~	11-15-89	10:22	24

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

Sample Size	Customer ID
? 0.79g	89-044

Remarks, Calculations, Results: Bottle #32

PARTICLE SIZE DISTRIBUTION

Sample + Bottle 23.30
TARE 22.51
Sample wt. 0.79g

Results:
See attached sheets (6)

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
12-5-89 [illegible]				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
		[illegible]	

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

2-3

Serial No	Sample Point	Date	Time Issued	Priority
F 77.-5000	~~SEGMENT-2~~	11-15-89	10:22	18

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

Sample Size	Customer ID
? 199.16g WHC N3133	89-044

Remarks, Calculations, Results: Barometer (RAW) = 100

A. JAR ID# 008
B. JAR TARE WT. 221.84
C. JAR TOTAL WT. 421.00
D. C-B= 199.16
E. EST. VOL./LENGTH ~13 in of solids
F. VISUAL REMARKS

Much liquid. soft brown segment ~2 in thin a empty space followed by the rest in a med brown grading to dark brown firm segment wash water "beaded" up on tray. Mixed with solids but not to sample liq residue

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP JRS	6A297 61300 65286			
Hrs 11-15-89	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
		[illegible]	DMS

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

pH Analysis of Solid Sample

Serial No.	Sample Point	Date	Time Issued	Priority
F 76.-5515	SEGMENT-1	11-15-89	10:22	19

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

Sample Size: ?

Customer ID: SD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
pH FOUND 10.11
STD ID 72C11
SAMPLE TEMP 22.7

101.1%

10.11/10.00

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

Date	Time Completed	Lab Unit Mgr
12-22-89		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 77.-5015	SEGMENT-2	11-15-89	10:22	19

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

Sample Size: ? 2.140g /2.140 ml

Customer ID: 089044

Remarks, Calculations, Results
pH 12.00
SAMPLE TEMP 23.0

Bottle # 207

8.94 gm

WHC-N-313-4

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6L300	6B090	6C269		R Bennett
Hrs	Hrs	Mary Fraley	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-22-89		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 78.-5115	SEGMENT-3	11-15-89	10:22	19

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

Sample Size: ? 2.582g /2.582 ml

Customer ID: 089044

Remarks, Calculations, Results:
pH 12.89
SAMPLE TEMP 23.0

duplicate #207

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

Date	Time Completed	Lab Unit Mgr
12-22-89		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 80.-5515	SEGMENT-5	11-15-89	10:22	19

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

Sample Size: ?

Customer ID: SD

Remarks, Calculations, Results
LMCS CHECK SAMPLE
pH FOUND 10.09
STD ID 72C11
SAMPLE TEMP 23.1

100.9%

10.09/10.00

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

Date	Time Completed	Lab Unit Mgr
12-22-89		

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

pH Analysis of Solid Sample

Serial No	Sample Point	Date	Time Issued	Priority
F 97.-5315	SEGMENT-22	11-15-89	10:26	18

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

Sample Size	Customer ID
?	089044

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
pH FOUND 4.68
STD ID 4.0 Kle
SAMPLE TEMP 22.7

Blank

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				R Edmondt
	Hrs	Hrs	Hrs	Hrs
Date 12-22-89	Time Completed	Lab Unit Mgr		

84-6900-061 (R-10-83)

9 1 1 2 0 5 7 1 0 3 6

Percent Water Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 193.-5310	SEGMENT-V	11-17-89	10:34	18

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

Sample Size: ?

Customer ID: 089049

Remarks, Calculations, Results:

REAGENT BLANK

① 22.0868 G. ② 22.1205
22.0868 T. 22.1205
22.0795 W① 22.1128
22.0784 W② 22.1120

7.5 3

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

Date	Time Completed	Lab Unit Mgr
12-23-89		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 76.-5510	SEGMENT-1	11-15-89	10:22	19

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

Sample Size: ? /mL

Customer ID:

Remarks, Calculations, Results:

LMCS CHECK SAMPLE 67.19% 104.6%
LMCS ID 11C11AG ② 57.66
① [redacted] G. ① 22.7543 G. 23.0249
[redacted] T. 21.5772 T. 21.6303
W① 21.9634 W① 22.2222
62.375/59.61 W② 21.9581 W② 22.2107

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

Date	Time Completed	Lab Unit Mgr
12-23-89		[signature]

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

Serial No	Sample Point	Date	Time Issued	Priority
F 78.-5110	SEGMENT-3	11-15-89	10:22	19

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

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:

DUPLICATE SAMPLE

G. 22.4207
T. 21.5833
W① 22.0488
W② 22.0485

44.4%

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

Date	Time Completed	Lab Unit Mgr
12-23-89		[signature]

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

Serial No	Sample Point	Date	Time Issued	Priority
F 77.-5010	SEGMENT-2	11-15-89	10:22	19

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

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:

Bottle # 202
2.46 gm

G. 22.9151
T. 21.8318
W① 22.4326
W② 22.4321

44.6%

WAC N-313-4

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
61300	6B090	6B598/RH		R E Bennett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
		[signature]

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

9 1 1 2 3 5 0 1 0 3 7

Percent Water Analysis

Serial No	Sample Point	Date	Time Issued	Priority
F 176.-5510	SEGMENT-E	11-17-89	10:31	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H20	LA-564-101	% RECOVERY	WB75L	0

Sample Size	Customer ID
? /mL	089049

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 11G11AG.1 x100 = 57.98
5.7985 5.768⁻¹ x 100 = 57.08 96.5%
23.2873 G1 23.4849
21.9131 T1 22.1007
22.4905 W1 22.6948
22.4845 W2 22.6866
57.53 / 59.61

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB598/RH				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		[signature]

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

9 1 1 2 0 5 0 1 0 3 8

Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 83.-6100	SEGMENT-8	11-15-89	10:23	18

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

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE .4536
VOLUME ON
COMPLETION 200 mL

SEQUENCE # : 58
WT 1: 35.6514
WT 2: 36.1050

NET WEIGHT:

---> 0.4536 GRAMS

12-23/89 @ 08:57:41

2.27 $^{-3}$ g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/BH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		[illegible]

54-9800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 82.-6000	SEGMENT-7	11-15-89	10:23	18

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

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:

GRAMS SAMPLE .6443
VOLUME ON
COMPLETION 200 mL

SEQUENCE # : 57
WT 1: 31.8366
WT 2: 32.4809

NET WEIGHT:

---> 0.6443 GRAMS

12-23/89 @ 08:54:34

~~3.22 $^{-3}$ g/ml~~

3.22 $^{-3}$ g/ml WHC-N-313

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
61300	6B090	6B598/BH		[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
		[illegible]

54-9800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 192.-6300	SEGMENT-U	11-17-89	10:33	18

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

Sample Size: ? 200 mL

Customer ID: 089049

Remarks, Calculations, Results:

REAGENT BLANK

Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/BH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		[illegible]

54-9800-061 (R-10-83)

9 1 1 2 0 3 7 1 0 3 9

Total Alpha Analysis on the Fusion Dissolution

Serial No	Sample Point	Date	Time Issued	Priority
F 81.-6520	SEGMENT-6	11-15-89	10:22	19

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

Sample Size: ? 10 mL

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 13344

96.6%

$9.658^{-3} / 1.0002^{-2}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GBS98/RA				GAC
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		

S4-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 192.-6320	SEGMENT-U	11-17-89	10:33	18

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

Sample Size: ? 10 mL

Customer ID: 089049

Remarks, Calculations, Results
REAGENT BLANK

$<1.81^{-4}$ neil

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GBS98/RA				GAC
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		

S4-6600-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 83.-6120	SEGMENT-8	11-15-89	10:23	19

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

Sample Size: ? 100-10-500

Customer ID: 089044

Remarks, Calculations, Results.
DUPLICATE SAMPLE

7.94^{-1} neil

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GBS98/RA				GAC
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		

S4-6600-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 82.-6020	SEGMENT-7	11-15-89	10:23	19

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

Sample Size: ? 100-10-500

Customer ID: 089044

Remarks, Calculations, Results:

5.96^{-1} neil

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GBS98/RA				GAC
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		

S4-6600-081 (R-10-83)

Total Alpha Analysis on the Fusion Dissolution

9/2

$\frac{25}{10} - 1.0$

$\frac{19}{10}$

Alpha Calculation by DM on 12-23-1989 at 17:01:25
Det #9 2 -inch mount Alpha eff. : .1833
Sample size : .5 mL Dilution : 101

Mount # 1

$\frac{25}{10} - 1.0 = 7.4461E-01$ uCi/L alpha

Mount # 2

$\frac{19}{10} - 1.0 = 4.4676E-01$ uCi/L alpha

F 82.-6020

9/2

$\frac{22}{10} - 1.0$

$\frac{30}{10}$

Alpha Calculation by DM on 12-23-1989 at 21:33:28
Det #9 2 -inch mount Alpha eff. : .1833
Sample size : .5 mL Dilution : 101

Mount # 1

$\frac{22}{10} - 1.0 = 5.9569E-01$ uCi/L alpha

Mount # 2

$\frac{30}{10} - 1.0 = 9.9281E-01$ uCi/L alpha

F 83.-6120

9/2

$\frac{8}{10} - 1.0$

$\frac{8}{10}$

Alpha Calculation by DM on 12-23-1989 at 21:30:50
Det #9 2 -inch mount Alpha eff. : .1833
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{8}{10} - 1.0 < 1.8107E-04$ uCi/L alpha

Mount # 2

$\frac{8}{10} - 1.0 < 1.8107E-04$ uCi/L alpha

F 192.-6320

9/2

$\frac{410}{10} - 1.0$

$\frac{396}{10}$

Alpha Calculation by DM on 12-23-1989 at 21:31:46
Det #9 2 -inch mount Alpha eff. : .1833
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{410}{10} - 1.0 = 9.8298E-03$ uCi/L alpha

Mount # 2

$\frac{396}{10} - 1.0 = 9.4858E-03$ uCi/L alpha

F 81.-6520

0 1 0 1 0 5 0 2 1 1 6

9 1 1 2 7 5 0 1 0 4 1

Total Alpha Analysis on the Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 181.-6520	SEGMENT-J	11-17-89	10:32	19

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

Sample Size	Customer ID
? 10 mL	089049

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 83B44

91.2%

9.117 -3 / 18002 -2

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 84.-6220	SEGMENT-9	11-15-89	10:23	19

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

Sample Size	Customer ID
? 100 → 10-500	089044

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 83B44
SPIKE VOLUME 10 mL

spike too low

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		[illegible]

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

9/2

$\frac{441}{10} - 1.0$

$\frac{381}{10}$

Alpha Calculation by DM on 12-23-1989 at 21:33:59
Bet #9 2 -inch mount Alpha eff. : .1833
Sample size : .5 mL Dilution : 101.

Mount # 1

$\frac{441}{10} - 1.0 = 2.1395E+01$ uCi/L alpha

Mount # 2

$\frac{381}{10} - 1.0 = 1.8417E+01$ uCi/L alpha

F 84.-6220

9/2

$\frac{390}{10} - 1.0$

$\frac{372}{10}$

Alpha Calculation by DM on 12-23-1989 at 21:31:17
Bet #9 2 -inch mount Alpha eff. : .1833
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{390}{10} - 1.0 = 9.3383E-03$ uCi/L alpha

Mount # 2

$\frac{372}{10} - 1.0 = 8.8960E-03$ uCi/L alpha

F 181.-6520

9 1 1 2 1 4 0 1 0 4 2

9 1 1 2 ? 5 ? 1 9 1 3

Total Beta Analysis on the Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 81.-6525	SEGMENT-6	11-15-89	10:22	19

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

Sample Size: ? 10 mL

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 83344

98.6%

1.38 -1 uci/l / 1.3988 -1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
		[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 192.-6325	SEGMENT-U	11-17-89	10:34	18

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

Sample Size: ? 10 mL

Customer ID: 089049

Remarks, Calculations, Results:
REAGENT BLANK

<6.05 -4 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 83.-6125	SEGMENT-8	11-15-89	10:23	19

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

Sample Size: ? 100-10-500

Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE SAMPLE

3.35 3 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 82.-6025	SEGMENT-7	11-15-89	10:23	19

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

Sample Size: ? 100-10-500

Customer ID: 089044

Remarks, Calculations, Results:

4.269 3 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
12-23-89		[illegible]

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

10/2

70763 / 5 -30

70534 / 5

Beta Calculation by DM on 12-23-1989 at 16:40:32
Det #10 2 -inch mount Beta eff. : .3005
Sample size : .5 mL Dilution : 101

Mount # 1

70763 / 5 - 30.0 = 4.2763E+03 uCi/L beta

Mount # 2

70534 / 5 - 30.0 = 4.2624E+03 uCi/L beta

F 82.-6025

10/2

54460 / 5 -30

56472 / 5

Beta Calculation by DM on 12-23-1989 at 21:28:42
Det #10 2 -inch mount Beta eff. : .3005
Sample size : .5 mL Dilution : 101

Mount # 1

54460 / 5 - 30.0 = 3.2890E+03 uCi/L beta

Mount # 2

56472 / 5 - 30.0 = 3.4108E+03 uCi/L beta

F 83.-6125

10/2

260 / 10 -30

300 / 10

Beta Calculation by DM on 12-23-1989 at 21:25:01
Det #10 2 -inch mount Beta eff. : .3005
Sample size : 10 mL Dilution : 1

Mount # 1

260 / 10 - 30.0 < 6.0495E-04 uCi/L beta

Mount # 2

300 / 10 - 30.0 < 6.9585E-04 uCi/L beta

F 192.-6325

10/2

9413 / 10 -30

9613 / 10

Beta Calculation by DM on 12-23-1989 at 21:26:13
Det #10 2 -inch mount Beta eff. : .3005
Sample size : 10 mL Dilution : 1

Mount # 1

9413 / 10 - 30.0 = 1.3660E-01 uCi/L beta

Mount # 2

9613 / 10 - 30.0 = 1.3960E-01 uCi/L beta

F 81.-6525

9 1 1 2 9 6 0 1 0 4 5

Total Beta Analysis on the Fusion Dissolution

Serial No	Sample Point	Date	Time Issued	Priority
F 181.-6525	SEGMENT-J	11-17-89	10:32	19

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

Sample Size: ? 10 mL

Customer ID: 089049

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 83B44

96.5%

1.3497 -1 / 1.3988 -1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-23-89		[illegible]	[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 84.-6225	SEGMENT-9	11-15-89	10:23	19

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

Sample Size: ? 100 x 10 - 500

Customer ID: 089044

Remarks, Calculations, Results: F82

SPIKE SAMPLE [redacted]
SPIKE ID 83B44
SPIKE VOLUME 10 mL

spike to low

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-23-89		[illegible]	[illegible]

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

Total Beta Analysis on the Fusion Dissolution

10/2

$\frac{74173}{5} - 30$

$\frac{71262}{5}$

Beta Calculation by DM on 12-23-1989 at 21:29:22
Det #10 2 -inch mount Beta eff. : .3005
Sample size : .5 mL Dilution : 101

Mount # 1

$\frac{74173}{5} - 30.0 = 4.4828E+03$ uCi/L beta

Mount # 2

$\frac{71262}{5} - 30.0 = 4.3065E+03$ uCi/L beta

F 84.-6225

10/2

$\frac{9207}{10} - 30$

$\frac{9400}{10}$

Beta Calculation by DM on 12-23-1989 at 21:25:41
Det #10 2 -inch mount Beta eff. : .3005
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{9207}{10} - 30.0 = 1.3352E-01$ uCi/L beta

Mount # 2

$\frac{9400}{10} - 30.0 = 1.3641E-01$ uCi/L beta

F 181.-6525

9 1 1 2 5 0 1 0 4 6

1002

Serial No.	Sample Point	Date	Time Issued	Priority
F 192.-6330	SEGMENT-U	11-17-89	10:34	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L.	WB75L	0

Sample Size: ? 1 ml

Customer ID: 089049

Remarks, Calculations, Results:
REAGENT BLANK
Cs 137 <4.77 $^{-2}$ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DMS/69765				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-90		GW

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

1998

Serial No	Sample Point	Date	Time Issued
F 81.-6530	SEGMENT-6	11-15-89	10:22

Determination	Method/Standard	Result Units	Charge Code
GEA	LA-548-121	% RECOVERY	WB75L

Sample Size: ? 500 λ

Customer ID: SLW 89844

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 89844
Co 60 2.34'/2.2255' 105.1%
Cs 137 3.81'/3.813' 99.9%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DMS/69765				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-90		GW

54-6600-061 (R

2740

Serial No.	Sample Point	Date	Time Issued	Priority
F 82.-6030	SEGMENT-7	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 100 λ

Customer ID: 089044

Remarks, Calculations, Results:
Cs 137 6.64' uci/l or 2.06' uci/g

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DMS/69765				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-90		GW

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

3880

Serial No.	Sample Point	Date	Time Issued
F 83.-6130	SEGMENT-8	11-15-89	10:23

Determination	Method/Standard	Result Units	Charge Code
GEA	LA-548-121	uCI/L	WB75L

Sample Size: ? 100 λ

Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE SAMPLE
Cs 137 5.86' uci/l or 2.58' uci/g

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DMS/69765				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-90		GW

54-6600-061 (R

9 1 1 2 0 5 0 1 0 1 3

Gamma Energy Analysis of the Fusion Dissolution

1000

Serial No.	Sample Point	Date	Time Issued	Priority
F 84.-6230	SEGMENT-9	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size: ? ~~500λ~~ 100λ

Customer ID: 089044

Remarks, Calculations, Results:
SPIKE SAMPLE ~~F88~~ F82
SPIKE ID 89B44
SPIKE VOLUME 100λ

~~104~~ 103.9 ~~70~~ 5/15/90

$1.06^2 - 6.64' = 3.96'/3.813'$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DMS/69769				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
		[illegible] 5/15/90		

Date	Time Completed	Lab Unit Mgr	
1-9-90		[illegible]	[illegible]

54-5800-061 (R-10-83)

4881

Serial No.	Sample Point	Date	Time Issued	Priority
F 181.-6530	SEGMENT-J	11-17-89	10:32	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size: ? 500λ

Customer ID: Std 89B44

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID

Co^{60} 2.26' weight/2.2255' 101.6%

Cs^{137} 3.66' weight/3.813' 96.0%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DMS/69769				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-9-90		[illegible]	[illegible]

54-5800-061 (R-10-83)

9 1 1 2 0 6 0 1 0 1 9

Uranium Analysis of the Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 178.-6040	SEGMENT-G	11-17-89	10:31	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 100-10-500 — Customer ID: 89-044

Remarks, Calculations, Results: 5.62-4

SpK 54B38

SpK vol. 100λ

.095 .400

$$\frac{(.00099)(0.05676)(.095)}{.00495\left[.400\left(\frac{6.1}{6.0}\right)-0.095\right]} = 3.46E\text{-}03$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				

Date: 12-27-89 — Time Completed: — Lab Unit Mgr: [signature]

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 83.-6140	SEGMENT-8	11-15-89	10:23	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 100-10-100 — Customer ID: 89-044

Remarks, Calculations, Results: 5.62-4

DUPLICATE SAMPLE

SpK 54B38

SpK vol. 100λ

.085 .425

$$\frac{\left(\frac{5.6}{5.7}\right)(.085)(5.62E\text{-}04)(.1)(101)}{\left[(.425)-\left(\frac{5.6}{5.7}\right)(.085)\right](.1)} = 1.39E\text{-}02 \text{ g/l}$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				

Date: 12-27-89 — Time Completed: — Lab Unit Mgr: [signature]

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 82.-6040	SEGMENT-7	11-15-89	10:23	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 100-10-100 — Customer ID: 89-044

Remarks, Calculations, Results: 5.62-4

SpK 54B38

SpK vol. 100λ

.100 .440

$$\frac{\left(\frac{5.6\text{ ml}}{5.7\text{ ml}}\right)(.100)(5.62^{-4})(.1)(101)}{\left[(.440)-\left(\frac{5.6}{5.7}\right)(.1)\right](.1)} = 1.63E\text{-}02 \text{ g/l}$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				

Date: 12-27-89 — Time Completed: — Lab Unit Mgr: [signature]

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 81.-6540	SEGMENT-6	11-15-89	10:22	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100-10-100 — Customer ID: 89-044

Remarks, Calculations, Results: 5.62-4 106.4%

LMCS CHECK SAMPLE

LMCS ID 54B38

SpK vol. 100λ

SpK 54B38

.190 .520

$$\frac{\frac{5.6\text{ ml}}{5.7\text{ ml}} \times .190 \times 0.000562 \text{ g/l} \times .1\text{ml} \times 101}{\left[.520-\left(\frac{5.6}{5.7}\right)(.190)\right].1\text{ml}} = 3.18E\text{-}02 \text{ g/l}$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				

Date: 12-27-89 — Time Completed: — Lab Unit Mgr: [signature]

54-5800-061 (R-10-83)

Uranium Analysis Of The Fusion Dissoltuion

Serial No.	Sample Point	Date	Time Issued	Priority
F 181.-6540	SEGMENT-J	11-17-89	10:32	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100-10-100

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE 5.62-4
LMCS ID 58638

SpK 54B38 $\frac{5.6}{5.7}(.185)(5.68\text{-}4)(.1)(101) = 3.05E\text{-}02$
SpK Vol. 100λ

$\left[.520 - \left(\frac{5.6}{5.7}\right)(.185)\right] .1 = 2.99E\text{-}02$

$= 102.0\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
12-27-89				

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

Serial No	Sample Point	Date	Time Issued	Priority
F 180.-6240	SEGMENT-I	11-17-89	10:31	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100-10-500

Customer ID:

Remarks, Calculations, Results:
SPIKE SAMPLE 178 5.62-4
SPIKE ID 58638
SPIKE VOLUME 100-10-100

106.56 %

SpK 54B38
SpK Vol. 100λ
.250
.530

$\frac{(.00099)(5.676 \times 10E\text{-}02)(.250)}{(.00099)\left[(.530)\left(\frac{6.2}{6.1}\right)\right] - .250} = \frac{(.00495)(3.46 \times 10^{-3})}{(.00099)}$

(over)

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
12-27-89				

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

Serial No	Sample Point	Date	Time Issued	Priority
F 192.-6340	SEGMENT-U	11-17-89	10:34	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 50λ

Customer ID:

Remarks, Calculations, Results:
REAGENT BLANK 5.62-4

SpK 54B38 S.C.
SpK Vol. 100λ ~~< 4.09E-06~~

.0
.275

$\frac{(.00099)(5.68E\text{-}02)(.02)}{.050\left[.275\left(\frac{5.65}{5.55}\right) - .02\right]} = 8.65E\text{-}05$

< 8.60E-05

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
12-27-89				

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

Water Digestion

Serial No	Sample Point	Date	Time Issued	Priority
F 98.-7300	SEGMENT-23	11-15-89	10:26	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ? 50 ml

Customer ID: 089044

Remarks, Calculations, Results:
REAGENT BLANK

Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - Chemist
6B107				9417
Hrs 1035	Hrs	Hrs	Hrs	Hrs

Date: 12/28/89 | Time Completed | Lab Unit Mgr

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

Serial No	Sample Point	Date	Time Issued	Priority
F 87.-7000	SEGMENT-12	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:
GRAMS SAMPLE .4452g Bottle # 231
VOLUME ON
COMPLETION 50 ml

5.21 gm

8.90^{-3} g/ml 8.90 g/L

WHC-N-313-4

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - Chemist
61300	6B090	6B107		9417
Hrs 1080	Hrs	Hrs 1800	Hrs	Hrs

Date: 12/28/89 | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 89.-7200	SEGMENT-14	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	% RECOVERY	WB75L	0

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:
SPIKED ANALYSIS
GRAMS SAMPLE .6600g
VOLUME ON
COMPLETION 50 ml
VOLUME SPIKE
SPIKE ID

1.32^{-2} g/mL
13.2 g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - Chemist
6B107				9417
Hrs 1035	Hrs	Hrs	Hrs	Hrs

Date: 12/28/89 | Time Completed | Lab Unit Mgr

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

Serial No	Sample Point	Date	Time Issued	Priority
F 88.-7100	SEGMENT-13	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE ANALYSIS
GRAMS SAMPLE .4456g
VOLUME ON
COMPLETION 50 ml

8.91^{-3} g/ml 8.91 g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - Chemist
6B107				9417
Hrs 1030	Hrs	Hrs	Hrs	Hrs

Date: 12/28/89 | Time Completed | Lab Unit Mgr

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

Ion Chromatographic Analysis of the Water Digestion - Fluoride Analysis

Serial No	Sample Point	Date	Time Issued	Priority
F 87.-7071	SEGMENT-12	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
F	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089044

Remarks, Calculations, Results:

2.59' ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				[signature] 94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date: 1/2/90 | Time Completed: | Lab Unit Mgr: [signature] | DMS

54-5600-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 86.-7571	SEGMENT-11	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID:

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11AF

67.84 / 7.2' 94.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				[signature] 94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date: 1/2/90 | Time Completed: | Lab Unit Mgr: [signature] | DMS

54-5600-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 89.-7271	SEGMENT-14	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? 100µL - 10mL

Customer ID: 89-044

Remarks, Calculations, Results:

SPIKE SAMPLE F0087
SPIKE ID 35C9-61
SPIKE VOLUME .300/5 mL

$$\frac{\left(\frac{5.3\,mL}{5.0\,mL}\right)(3.518\,EC\,?\,ppm) - (2.57\,ppm)\left(\frac{13.2}{8.96}\right)}{\frac{(.300\,mL)(5.0\,ppm)}{5.3\,mL}(101)} \cdot 100 = 117.1\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				[signature]
Hrs 15:00	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 | Time Completed: | Lab Unit Mgr: [signature] [signature]

54-5600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 88.-7171	SEGMENT-13	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
F	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089044

Remarks, Calculations, Results:

DUPLICATE SAMPLE

303' ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				[signature] 94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date: 1/3/90 | Time Completed: | Lab Unit Mgr: [signature] | DMS

54-5600-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Fluoride Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 186.-7571	SEGMENT-0	11-17-89	10:33	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089049

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11-HF

66.82/72

92.8%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NCW				94171
Hrs: 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/2/90			DMS

54-5600-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 98.-7371	SEGMENT-23	11-15-89	10:26	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	WB75L	0

Sample Size: ~~100-10~~ NCW Direct

Customer ID: 089044

Remarks, Calculations, Results:

REAGENT BLANK

<.1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NCW				94171
Hrs: 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/2/90			DMS

54-5600-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Chloride Analysis

Serial No	Sample Point	Date	Time Issued	Priority
F 87.-7072	SEGMENT-12	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089044

Remarks, Calculations, Results:

<1.01' ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107/NEW				9/1/71
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 86.-7572	SEGMENT-11	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11HP

9.1'/8.7' 104.6%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107/NEW				9/1/71
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 98.-7372	SEGMENT-23	11-15-89	10:26	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID: 089044

Remarks, Calculations, Results:
REAGENT BLANK

<.1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107/NEW				9/1/71
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 88.-7172	SEGMENT-13	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE SAMPLE

<1.01' ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	~~Analyst - 5~~ Chemist
6B107/NEW				9/1/71
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

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

Ion Chromatographic Analysis of the Water Digestion - Chloride Analysis

Serial No	Sample Point	Date	Time Issued	Priority
F 186.-7572	SEGMENT-0	11-17-89	10:33	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: US9049

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6611 HF

80.52 / 87 92.8%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107 / NEW				
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1/3/90		DMS

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

Serial No	Sample Point	Date	Time Issued	Priority
F 89.-7272	SEGMENT-14	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? 100 µL - 10 mL

Customer ID: 89-044

Remarks, Calculations, Results:

SPIKE SAMPLE F0087
SPIKE ID 35C9-61
SPIKE VOLUME .300 mL | 5mL

$$\frac{\left(\frac{5.3}{5.9}\right)(371.7) - 0.01\left(\frac{3.2}{5.9}\right)}{\frac{(.300\ mL)(61\ ppm)}{5.3}(101)} \times 100 = 113.0\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107				
Hrs 15:00	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-3-90		

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

Ion Chromatographic Analysis of the Water Digestion - Nitrate Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 98.-7373	SEGMENT-23	11-15-89	10:26	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct
Customer ID: 089044

Remarks, Calculations, Results:
REAGENT BLANK

~~.1 ppm~~ .289

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				
Hrs: 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 86.-7573	SEGMENT-11	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10
Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 16C11HF

7.566²/7.22² 104.8%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				
Hrs: 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 88.-7173	SEGMENT-13	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10
Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE SAMPLE

4.54² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				
Hrs: 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 87.-7073	SEGMENT-12	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-0
Customer ID: 089044

Remarks, Calculations, Results:

4.76² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				
Hrs: 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

54-8800-061 (R-10-83)

9 1 1 2 3 5 9 1 0 7 7

Ion Chromatrographic Analysis of the Water Digestion - Nitrate Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 186.-7573	SEGMENT-0	11-17-89	10:33	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	089049

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11-AF

739.5/722

102.4%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 89.-7273	SEGMENT-14	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100µL-10mL	89-044

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 35C9-61
SPIKE VOLUME .300 mL/5mL

$$\frac{\left(\frac{5.3}{5.0}\right)(3494) - (476)\left(\frac{13.2}{8.9}\right)}{\frac{(.300)(501)}{5.3}(101)} \times 100 = 104.7\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs 15:00	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-3-90		

54-8800-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Phosphate Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 98.-7374	SEGMENT-23	11-15-89	10:26	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID: 089044

Remarks, Calculations, Results:
REAGENT BLANK

<1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
68107/NEW				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

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

Serial No	Sample Point	Date	Time Issued	Priority
F 87.-7074	SEGMENT-12	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089044

Remarks, Calculations, Results:

1.93² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
68107/NEW				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

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

Serial No	Sample Point	Date	Time Issued	Priority
F 88.-7174	SEGMENT-13	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE SAMPLE

2.31² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
68107/NEW				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 86.-7574	SEGMENT-11	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11NF

7.033² / 7.22² 97.4%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
68107/NEW				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/3/90			DMS

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

9 1 1 2 3 6 9 1 0 7 9

Serial No	Sample Point	Date	Time Issued	Priority
F 89.-7274	SEGMENT-14	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100 µL - 10 mL	89-044

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 35C9-61
SPIKE VOLUME .300 mL/5 mL

$$\frac{\left(\frac{5.3}{5.0}\right)(3239) - (193)\left(\frac{132}{8.9}\right)}{\frac{(.300)(509)}{5.3}\ (101)} \times 100 = 117.9\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
15:00				

Date	Time Completed	Lab Unit Mgr
1-3-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 186.-7574	SEGMENT-0	11-17-89	10:33	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	089049

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11AF

691.4/722 95.8%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				[signature] 94171
Hrs	Hrs	Hrs	Hrs	Hrs
1500				

Date	Time Completed	Lab Unit Mgr	
1/3/90		[signature]	DMS

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

9 1 1 2 0 5 0 1 0 5 0

Ion Chromatographic Analysis of the Water Digestion - Sulphate Analysis

Serial No	Sample Point	Date	Time Issued	Priority
F 88.-7175	SEGMENT-13	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE SAMPLE

<1.01² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date: 1/3/90 | Time Completed: | Lab Unit Mgr: | DMS

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

Serial No	Sample Point	Date	Time Issued	Priority
F 87.-7075	SEGMENT-12	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089044

Remarks, Calculations, Results

<1.01² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date: 1/3/90 | Time Completed: | Lab Unit Mgr: | DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
98.-7375	SEGMENT-23	11-15-89	10:25	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	

Sample Size: Direct

Customer ID: 089044

Remarks, Calculations, Results:
REAGENT BLANK

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date: 1/3/90 | Time Completed: | Lab Unit Mgr: | DMS

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

17017

Serial No	Sample Point	Date	Time Issued	Priority
F 86.-7575	SEGMENT-11	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11HF

7.015²/7.22² 97.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				94171
Hrs 1500	Hrs	Hrs	Hrs	Hrs

Date: 1/3/90 | Time Completed: | Lab Unit Mgr: | DMS

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

Ion Chromatographic Analysis of the Water Digestion - Sulphate Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 186.-7575	SEGMENT-0	11-17-89	10:33	19

Determination	Method/Standard	Result Units	Charge Code	Returns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089049

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6011HF

94.2%

680.2/722

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs: 1500	Hrs	Hrs	Hrs	Hrs
Date: 1/3/90	Time Completed	Lab Unit Mgr	OMS	

54-8800-061 (R-10-53)

Serial No.	Sample Point	Date	Time Issued	Priority
F 89.-7275	SEGMENT-14	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Returns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? 100uL - 10mL

Customer ID: 89-044

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 35C9-61
SPIKE VOLUME 300mL/5mL

$$\frac{\left(\frac{5.3}{5.0}\right)(297) - \left(0.0\left(\frac{133}{5.9}\right)\right)}{\frac{(.300)(501)}{53}\,(101)} \times 100 = 109.9\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107				
Hrs: 15:00	Hrs	Hrs	Hrs	Hrs
Date: 1-3-90	Time Completed	Lab Unit Mgr		

54-8800-061 (R-10-53)

9 1 1 2 ? 5 ? 1 0 5 2

Total Organic Carbon Analysis on the Water Digestion

Serial No	Sample Point	Date	Time Issued	Priority
F 98.-7326	SEGMENT-23	11-15-89	10:26	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200uL

Customer ID: 089044

Remarks, Calculations, Results:
REAGENT BLANK

6.37 -1 g/l ug/min.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R E Burnett
Hrs: Ed Cohen	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 | Time Completed: | Lab Unit Mgr: [signature]

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

Serial No	Sample Point	Date	Time Issued	Priority
F 86.-7526	SEGMENT-11	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200uL-2mL-200uL

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 70C11B

3.0215 / 100.72%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs: Ed Cohen	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 1-5-90 | Time Completed: 22:22 | Lab Unit Mgr: [signature]

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

Serial No	Sample Point	Date	Time Issued	Priority
F 88.-7126	SEGMENT-13	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200uL

Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE SAMPLE

8.22 -2 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R E Burnett
Hrs: Ed Cohen	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 | Time Completed: | Lab Unit Mgr: [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 87.-7026	SEGMENT-12	11-15-89	10:23	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200uL

Customer ID: 089044

Remarks, Calculations, Results:

9.618 -2 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R E Burnett
Hrs: Ed Cohen	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 | Time Completed: | Lab Unit Mgr: [signature]

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

9 1 1 2 3 5 7 1 0 3

Total Organic Carbon Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 89.-7226	SEGMENT-14	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200 ml

Customer ID:

Remarks, Calculations, Results:
SPIKE SAMPLE 7087
SPIKE ID 70C11B
SPIKE VOLUME 100 A

(196.1 - 5.10 ug) - (23.7 - 5.10 ug)(13.2 g/l / 8.9 g/l) × 100

200 ug = ~~87.5%~~ 200
= 81.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr	
1-3-90		[signature]	[signature]

64-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 90.-7526	SEGMENT-15	11-15-89	10:24	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200 ml - 2 ml - 200 ml

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 70C11B
3.4.

3.098

103.278
W.R # 4765

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr	
1-3-90	21:30	[signature]	[signature]

64-6800-061 (R-10-83)

Acid Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 92.-8000	SEGMENT-17	11-15-89	10:25	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	~~G/L~~ g/mL sj	W375L	0

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:
GRAMS SAMPLE_____
VOLUME ON COMPLETION 50ml

9.864^{-3} g/ml

WHC-N310-1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
61300	68090	69769/DMS		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1/2/90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 99.-8300	SEGMENT-24	11-15-89	10:26	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	G/L	WB75L	0

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:
REAGENT BLANK
VOLUME ON COMPLETION 50mL

Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769/DMS				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1/2/90		

84-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 93.-8100	SEGMENT-18	11-15-89	10:25	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	~~G/L~~ g/mL sj	WB75L	0

Sample Size: ?

Customer ID: 089044

Remarks, Calculations, Results:
DUPLICATE ANALYSIS
GRAMS SAMPLE_____
VOLUME ON COMPLETION 50ml

9.434^{-3} g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769/DMS				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1/2/90		

84-6600-061 (R-10-83)

ICP Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 1084.-8550	SEG.COMP#20	2-16-90	9:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	E21D1	0

Sample Size: ? Direct

Customer ID: 000013

Remarks, Calculations, Results:
REAGENT BLANK

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
J. White				
Date	Time Completed	Lab Unit Mgr		
4-19-90				

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1083.-8550	SEG.COMP#19	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	E21D1	0

Sample Size: ? Direct

Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 8ICIIA

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
4-19-90				
Date	Time Completed	Lab Unit Mgr		
J. White				

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 93.-8150	SEGMENT-18	11-15-89	10:25	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10 & 500-10

Customer ID: 089044

RERUN

Remarks, Calculations, Results:
DUPLICATE SAMPLE

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
J. White				
Date	Time Completed	Lab Unit Mgr		
4-19-90				

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 92.-8050	SEGMENT-17	11-15-89	10:25	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10 & 500-10

Customer ID: 089044

RERUN

Remarks, Calculations, Results:

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
J. White				
Date	Time Completed	Lab Unit Mgr		
4-19-90				

54-5800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 1087.-8250	SEG.COMP#23	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	E21D1	0

Sample Size: ? 100-10 & 500-10

Customer ID: 000013

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID
SPIKE VOLUME

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
J White				
Date	Time Completed	Lab Unit Mgr		
4-19-90				

54-6500-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1088.-8550	SEG.COMP#24	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	E21D1	0

Sample Size: ? Direct

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 82C11A

Digested STD.
Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
J White				
Date	Time Completed	Lab Unit Mgr		
4-19-90				

54-6500-061 (R-10-83)